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18 **UNITED STATES DISTRICT COURT FOR**
 19 **THE CENTRAL DISTRICT OF CALIFORNIA**

20 **MATTHEW BRACH, et al.**

21 Plaintiffs,

22 v.

23 **GAVIN NEWSOM, et al.**

24 Defendants.

25 Case No.: 2:20-cv-06472 SVW (AFMx)

26 **APPLICATION FOR TEMPORARY**
 27 **RESTRAINING ORDER AND FOR**
 28 **ORDER TO SHOW CAUSE WHY**
PRELIMINARY INJUNCTION
SHOULD NOT ISSUE;
MEMORANDUM OF POINTS AND
AUTHORITIES

Judge: Hon. Stephen V. Wilson



1 **TO THE COURT, ALL PARTIES, AND THEIR ATTORNEYS OF RECORD:**

2 PLEASE TAKE NOTICE that Plaintiffs Matthew Brach, Jesse Petrilla, Lacey
3 Beaulieu, Erica Sephton, Kenneth Fleming, John Ziegler, Alison Walsh, Robert
4 Hackett, Christine Ruiz, Z.R., Marianna Bema, Ashley Ramirez, Tiffany Mitrowke,
5 Ade Onibokun, and Brian Hawkins, by and through counsel, will and hereby do apply
6 to this Court pursuant to Fed. R. Civ. P. 65(b) and Local Rule 65-1 for a temporary
7 restraining order against Defendants Gavin Newsom, in his official capacity as
8 Governor of California; Xavier Becerra, in his official capacity as Attorney General of
9 California; Sonia Y. Angell, in her official capacity as the State Public Health Officer
10 and Department of Public Health Director; and Tony Thurmond, in his official capacity
11 as State Superintendent of Public Instruction and Director of Education (“Defendants”),
12 and for the issuance of an order to show cause why a preliminary injunction should not
13 issue, as follows:

14 1. Defendants, as well as their agents, employees, and successors in office,
15 shall be restrained and enjoined from enforcing, attempting to enforce, threatening to
16 enforce, or otherwise requiring compliance with any portion of the California
17 Department of Public Health COVID-19 and Reopening In-Person Learning
18 Framework for K-12 Schools in California, 2020-2021 School Year, issued July 17,
19 2020, to the extent it prevents any school district, charter school, or private school from
20 immediately resuming in-person education.

21 2. Defendants shall show cause, at a time and place to be directed by the
22 Court, why a preliminary injunction should not issue requiring Defendants to act as
23 described in above; the temporary restraining order shall remain effective until such
24 time as the Court has ruled on whether a preliminary injunction should issue.

25 This Application is made on the grounds that Plaintiffs are likely to succeed on
26 the merits of this case, they will suffer irreparable harm without injunctive relief, the
27 balance of equities tips sharply in their favor, and the relief sought is in the public
28 interest.

1 Good cause exists to issue the requested Order to preserve Plaintiffs' rights under
2 the Constitution of the United States and to avoid irreparable harm to those rights. This
3 Application is supported by the accompanying Memorandum of Points and Authorities,
4 by the declarations of 20 expert witnesses, Plaintiffs, and their counsel, Harmeet K.
5 Dhillon, and all exhibits attached thereto, and by such further argument and evidence
6 that may be adduced at any hearing on this matter or of which the Court may take
7 judicial notice.

8 The First Amended Complaint in this action was filed on July 29, 2020; this
9 Application followed. All papers relating to this Application will be delivered by email
10 to the Defendants' counsel shortly after they are filed.

11
12 Respectfully submitted,

13 Date: August 2, 2020

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18 **UNITED STATES DISTRICT COURT**
19 **CENTRAL DISTRICT OF CALIFORNIA**

20 **MATTHEW BRACH**, an individual,
21 *et al.*,

22 Plaintiffs,
23 v.

24 **GAVIN NEWSOM**, in his official ca-
25 pacity as the Governor of California, *et*
26 *al.*,

27 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**MEMORANDUM OF POINTS AND
AUTHORITIES IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER AND FOR
ORDER TO SHOW CAUSE WHY
PRELIMINARY INJUNCTION
SHOULD NOT ISSUE**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

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1 INTRODUCTION

2 With the stroke of a pen, Governor Gavin Newsom has closed all public
3 schools, charter schools, and private schools in 38 of California’s 58 counties, con-
4 signing *millions* of students and their families to another semester (and perhaps a
5 year) of so-called “distance learning,” which has proven an utter failure. The Gover-
6 nor’s one-size-fits-all approach has upended the carefully tailored plans that teachers
7 and administrators have developed to reopen schools this fall safely and effectively.

8 The effects of this ham-handed policy are as predictable as they are tragic.
9 Hundreds of thousands of students will essentially drop out of school, whether be-
10 cause they lack the technological resources to engage with “online learning” or be-
11 cause their parents cannot assist them. Countless more will fall behind academically
12 despite their efforts to remain engaged, because teachers cannot provide the individ-
13 ualized attention they need. And for some students, the consequences of this forced
14 seclusion will be even more dire, including domestic abuse, depression, hunger, and
15 suicide. The order will also inflict collateral damage on families, as parents quit their
16 jobs to supervise their children’s “distance learning.” While affluent families can
17 likely avoid the worst of these problems by hiring tutors, forming educational “pods”
18 with other families, or home schooling, the “distance learning” regime will devastate
19 students from disadvantaged backgrounds, many of whom are Black and Latino, as
20 well as those with learning disabilities and special needs. Experts estimate that the
21 Governor’s decision could set the state’s most vulnerable students back a year or
22 more, and some may never recover.

23 One would expect such an enormously disruptive order to be based on over-
24 whelming scientific evidence. But it is not. On the contrary, the scientific data clearly
25 shows that the risks of COVID-19 to school-age children are negligible, as the nu-
26 merous expert declarations submitted by some of the nation’s leading epidemiolo-
27 gists and physicians explain. Indeed, *only one person* under the age of 18 has died
28 of COVID-19 in California. Scientists have also discovered that children hardly ever
transmit the virus to adults. A recent CDC report, based on exhaustive data from

1 South Korea—the country with the most success tracking and tracing the virus’s
2 spread—found that less than 2% of new transmissions were attributed to those be-
3 tween 0 to 20 years old. Less than 1% of new transmissions were attributed to those
4 under 10, the population most in need of in-person education. The CDC has thus
5 urged the nation’s schools to resume in-person education this Fall. Dozens of other
6 countries have reopened their schools without social distancing, mask wearing, or
7 other protective measures—yet none of these countries has reported an increase in
8 new cases resulting from student-to-teacher contact. In short, the Governor’s mora-
9 torium on in-person education is completely at odds with everything we now know
10 about COVID-19.

11 This Court should issue a TRO and preliminary injunction because the order
12 violates the Fourteenth Amendment of the United States Constitution, which protects
13 Californians’ fundamental right to a basic minimum education and forbids states
14 from enforcing laws—especially laws purporting to shutter school-house doors—
15 that are utterly irrational. The order also violates the Constitution’s guarantee of
16 equal protection because while it bars in-person education at schools in counties on
17 the state’s monitoring list (there are currently 38 such counties¹) it allows in-person
18 education at schools in every other county. Whatever level of scrutiny applies to this
19 unequal treatment, the order fails it, because barring in-person education has no ra-
20 tional relationship to the state’s interest in slowing the spread of COVID-19. The
21 order also tramples the rights provided by Title VI of the Civil Rights Act of 1964
22 and other federal laws, which guarantee access to education for students with disa-
23 bilities and prohibit state action having a disparate impact on racial minorities, as
24 closing schools certainly will.

25 The remaining preliminary-injunction factors overwhelmingly favor Plain-
26 tiffs, who represent a diverse, cross-section of the millions of families and students
27 most harmed by the Governor’s order. Nearly every public school district in the state
28 will have begun the Fall term by August 25. And more than half of public schools,

¹ See County variance info, <https://covid19.ca.gov/roadmap-counties/#track-data>

1 and many private schools, are scheduled to resume classes *this week or next*. Chil-
2 dren suffer irreparable harm every day that the state deprives them of their right to
3 quality, in-person education, and the public has no interest in keeping schools closed
4 this Fall because in-person learning does not meaningfully increase the risk of
5 spreading COVID-19. This is thus the rare case warranting immediate judicial inter-
6 vention.

7 To be clear, granting emergency relief in this case will *not* force any teacher
8 to return to the classroom or compel any parent to send their child to school, but it
9 *will* allow schools and school districts to resume in-person education when and how
10 they deem prudent. Accordingly, Plaintiffs respectfully ask this Court to grant a tem-
11 porary restraining order barring Defendants and all other state agents from enforcing
12 the Governor’s order, and to set a hearing on Plaintiffs’ motion for preliminary in-
13 junction “at the earliest possible time.” Fed. R. Civ. P. 65(b)(3).²

14 RELEVANT FACTUAL BACKGROUND

15 **I. Governor Newsom Shuttters California’s Schools in the Spring, Causing** 16 **Extreme Hardship for All Students, but Especially for Poor, Minority,** 17 **and Disabled Students**

18 On March 4, 2020, Governor Gavin Newsom proclaimed a State of Emergency
19 as a result of the threat of COVID-19.³ On March 19, 2020, he issued Executive Order
20 N-33-20, which provided that “all residents are directed to immediately heed the cur-
21 rent State public health directives.”⁴ The state public health directive, in turn, required
22
23

24 ² If the Court denies the TRO, Plaintiffs request that the hearing on the motion for pre-
25 liminary injunction be scheduled as soon as possible, and no later than August 24,
26 2020. *See* Local Rule 65-1.

27 ³ Executive Dept. of the State of California, Executive Order N-33-20, March 19,
28 2020, available as of the date of filing: [https://www.gov.ca.gov/wp-content/up-
loads/2020/04/N-54-20-COVID-19-text-4.22.20.pdf](https://www.gov.ca.gov/wp-content/uploads/2020/04/N-54-20-COVID-19-text-4.22.20.pdf).

⁴ Executive Dept. of the State of California, Executive Order N-33-20, March 19,
2020, available as of the date of filing: [https://covid19.ca.gov/img/Executive-Order-
N-33-20.pdf](https://covid19.ca.gov/img/Executive-Order-N-33-20.pdf).

1 “all individuals living in the State of California to stay home or at their place of resi-
2 dence except as needed to maintain continuity of operations of the federal critical in-
3 frastructure sectors[.]” *Id.* As a result, schools across the state closed their doors and
4 transitioned to so-called “distance learning.”

5 The problems of remote education—especially for poor, minority, and disabled
6 children—surfaced almost immediately. Less than two weeks after the school shut-
7 down on March 16, 2020, Los Angeles School District officials admitted that 15,000
8 high-school students were completely unaccounted for and more than 40,000 had not
9 been in daily contact with their teachers.⁵ As one teacher explained, her fifth grade
10 online math class, consisting primarily of poor and minority students, had only a 10%
11 attendance rating. Keech Decl. ¶¶ 7, 15. Another explained that, even high-achieving,
12 affluent students, “struggled with online learning at home” and “missed the important
13 social interactions with their friends.” Gerst Decl. ¶ 5. Yet another saw her students’
14 online participation rate start at only 42% at the beginning of the closure and drop to a
15 mere 2% by the end of the school year. Cunningham Decl. ¶ 5.

16 Later studies showed even more starkly how much students suffered academi-
17 cally from online-only learning. A July 7 study conducted by the Los Angeles Unified
18 School District (LAUSD) showed that, between March 16 and May 22, 2020, “on an
19 average day only about 36% of middle and high school students participated online,”
20 while “[a]bout 25% logged on or viewed work only” “[a]nd about 40% were absent.”⁶
21 A survey of parents in the Palos Verde Unified School District showed that over 60%
22 of parents reported that the amount of “face-to-face” teaching during the shutdown was
23 “not enough.” Brach Decl. ¶ 15.

24
25 ⁵ Howard Blume, *15,000 L.A. high school students are AWOL online, 40,000 fail to*
26 *check in daily amid coronavirus closures*, Los Angeles Times (March 30, 2020),
27 available as of the date of filing: <https://www.latimes.com/california/story/2020-03-30/coronavirus-los-angeles-schools-15000-high-school-students-absent>.

28 ⁶ *Report reveals disparities among Black, Latino LAUSD students in online learning amid COVID-19 pandemic*, ABC 7 Eyewitness News (July 17, 2020) (hereinafter “ABC 7”), available as of the date of filing: <https://abc7.com/lausd-los-angeles-unified-school-district-race-disparity-racial-divide/6321930/>.

1 A study by Stanford University found that “white, non-poverty, non-“English
2 Language Learner” and non-special education students who were subject to virtual
3 learning were behind their in-person peers to an extent that reflected an equivalent of
4 180 fewer days of instruction in math and 72 fewer days of instruction in reading.”
5 Keech Decl. ¶ 16 (emphasis omitted). Another study by Brown University projected
6 that, as a result of spring shut downs, students likely would achieve only “63-68% of
7 the learning gains in reading relative to a typical school year” and only “37-50% of the
8 learning gains in math.”⁷

9 Minority and disabled students suffered even more from online-only learning.
10 The July 7 study by the LAUSD found that “Black and Latino students showed partic-
11 ipation rates between 10 and 20 percentage points lower than white and Asian peers.”
12 *ABC 7, supra*. And “English learners, students with disabilities, homeless students and
13 those in the foster-care system had lower rates of online participation.” *Id.* As one spe-
14 cial-education teacher explained, there are 795,000 disabled students in California’s
15 schools, and “[w]hen school campuses are closed and education is moved entirely
16 online, many of the guarantees and tenets afforded to special needs children under the
17 Individuals with Disabilities Education Act (‘IDEA’) collapse.” Walker Decl. ¶¶ 4–5.
18 Indeed, “[m]any students with special needs . . . have a myriad of health needs that
19 require services,” which “simply cannot be provided virtually.” *Id.* ¶ 7; *see also* Rear-
20 don Decl. ¶ 10 (“Autistic children require a tremendous amount of direct support,”
21 including for “their developmental, speech, occupational therapy, behavior (i.e., social
22 skills), and academic needs.”). “One survey found that 4 out of 10 families reported
23 that they were not receiving any special education support at all,” and only “1 in 5
24 families reported that they are receiving all the services their children are entitled to on
25 their IEP.” Walker Decl. ¶ 9. The CDC reports that students with disabilities “had sig-
26 nificant difficulties with remote learning.” *The Importance of Reopening America’s*

27 _____
28 ⁷ Megan Kuhfeld, *et al.*, *Projecting the potential impacts of COVID-19 school
closures on academic achievement*, Brown University EdWorkingPaper No. 20-226,
at 2, 23 (May 2020), available as of the date of filing:
<https://www.edworkingpapers.com/sites/default/files/ai20-226-v2.pdf>.

1 *Schools this Fall, supra*; see also Gavin Decl. ¶¶ 9–10 (“disabilities []
2 make it extremely difficult” to learn at home without special assistance afforded by in-
3 person instruction).

4 Beyond these overwhelming difficulties, a complete lack of access to schools
5 caused students—especially poor, minority, and disabled students—to suffer myriad
6 other traumas. As the CDC explained, “[s]chools play a critical role in supporting the
7 whole child, not just their academic achievement,” including the “development of so-
8 cial and emotional skills.”⁸ “Psychological, social, and emotional development re-
9 quires children to both spend time away from parents and with peers, in structured
10 settings, such as school.” McDonald Decl. ¶ 7. “Peer relationships provide a unique
11 context in which children learn a range of critical social emotional skills, such as em-
12 pathy, cooperation, and problem-solving strategies.” Lyons-Weiler Decl. ¶ 25. And the
13 safe, connected environment many students experience at school reduces students’ de-
14 pression, anxiety, and thoughts of suicide, *The Importance of Reopening America’s*
15 *Schools, supra*, while “extended periods of confinement” increase these problems,
16 McDonald Decl. ¶ 7; see also Lyons-Weiler Decl. ¶ 29. Indeed, one psychiatrist has
17 seen children “with cognitive developmental delays like autism” “regress[] in years”
18 from the closures, “and many have become violent towards themselves and their par-
19 ents.” McDonald Decl. ¶ 7. One teacher reported that “[m]any of her students expressed
20 ... a marked increase in feelings of depression, isolation, and anxiety.” Cunningham
21 Decl. ¶ 8. Plaintiff Mitrowke’s 7-year-old son was so emotionally affected by the clo-
22 sures he frequently cries in the shower because he misses his friends, and he continues
23 to suffer daily from the isolation. Mitrowke Decl. ¶¶ 2, 5–6.

24 In sum, school closures in the Spring harmed children by denying them the social
25 interactions they need to develop emotionally, psychologically, and spiritually. Giap
26 Decl. ¶ 3.

27
28 ⁸ *The Importance of Reopening America’s Schools this Fall*, Centers for Disease
Control and Prevention (July 23, 2020), available as of the date of filing:
[https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-
schools.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html).

1 **II. Experts Agree that Continued “Distance Learning” this Fall Will have**
2 **Disastrous Consequences for Children**

3 There is nearly universal agreement that barring in-person learning this Fall will
4 exacerbate the harm done in the Spring. As an initial matter, forcing children to stare
5 at computer screens for extended periods of time has detrimental effects on children’s
6 brains; so much so that prolonged screen time produces imaging results similar to the
7 brains of people on cocaine and alcohol. Sutton Decl. ¶ 8. Reopening schools is thus
8 necessary to prevent children’s brain development from being significantly inhibited.
9 Addison Decl. ¶ 5. And apart from the cognitive setbacks, digital learning has proven
10 to be far less effective than in-person learning. A study by McKinsey & Company
11 concluded that children who receive average-quality online learning this Fall—which
12 many will *not* receive—will lose “three to four months of learning” by January 2021.⁹

13 This disadvantage will be even starker for minority students, who tend to suffer
14 from the “digital divide”—*i.e.* lack of access to technology—and from a lack of access
15 to childcare.¹⁰ Studies show that “Blacks and Latinos are substantially less likely to
16 have a computer at home than are white, non-Latinos,” with some estimates showing
17 that “70.4 percent of whites have access to a home computer,” while “only 41.3 percent
18 of blacks and 38.8 percent of Latinos have access to a home computer.” *Id.* at 4–5.¹¹
19 And low-income families “have trouble finding, accessing, and affording” childcare.¹²

20 ⁹ Emma Dorn, et al., *COVID-19 and student learning in the United States: The hurt*
21 *could last a lifetime*, McKinsey & Company (June 1, 2020), available as of the date of
22 filing: [https://www.mckinsey.com/industries/public-sector/our-insights/covid-19-and-](https://www.mckinsey.com/industries/public-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime)
23 *student-learning-in-the-united-states-the-hurt-could-last-a-lifetime*.

24 ¹⁰ See Robert W. Fairlie, *Race and the Digital Divide*, UC Santa Cruz: Department of
25 Economics, UCSC, at 2 (2014), available as of the date of filing:
26 <https://escholarship.org/uc/item/48h8h99w>.

27 ¹¹ See also Daniel Wu, *Coronavirus shutdowns expose low-income Bay Area students’*
28 *struggle to get online*, The Mercury News (Aug. 3, 2020) (“one-quarter of California
students lack adequate access to the internet” a “majority of them are Black, Latinx or
Native American”), available at [https://www.mercurynews.com/2020/08/03/corona-](https://www.mercurynews.com/2020/08/03/coronavirus-shutdowns-expose-low-income-students-struggle-to-get-online/)
[virus-shutdowns-expose-low-income-students-struggle-to-get-online/](https://www.mercurynews.com/2020/08/03/coronavirus-shutdowns-expose-low-income-students-struggle-to-get-online/)

¹² *Coronavirus Impact on Students and Education Systems*, NAACP (last visited July
28, 2020), available as of the date of filing: [https://naacp.org/coronavirus/coronavirus-](https://naacp.org/coronavirus/coronavirus-impact-on-students-and-education-systems/)
[impact-on-students-and-education-systems/](https://naacp.org/coronavirus/coronavirus-impact-on-students-and-education-systems/).

1 Indeed, the McKinsey study predicted that Blacks and Latinos would suffer a 15 to 20
2 percent greater loss in educational gains than other students. Dorn, *supra*.

3 Moreover, as the American Academy of Pediatrics has explained, “[l]engthy
4 time away from school and associated interruption of supportive services often results
5 in isolation, making it difficult for schools to identify and address important learning
6 deficits as well as child and adolescent physical or sexual abuse, substance use, depres-
7 sion, and suicidal ideation.”¹³ See also Victory Decl. ¶ 6 (“children’s hearing and vision
8 problems are typically identified at school”). Indeed, teachers and staff report more
9 than one-fifth of all child-abuse cases. *The Importance of Reopening America’s*
10 *Schools, supra*. During the school closures, “there has been a sharp decline in reports
11 of suspected maltreatment.” *Id.*; see also Victory Decl. ¶ 6 (30% drop in nationwide
12 abuse reports). However, hospitals have seen an *increase* in hospitalizations of children
13 suffering physical abuse. *The Importance of Reopening America’s Schools, supra*. And
14 according to the Rape, Abuse & Incest National Network (RAINN), once shelter-in-
15 place orders were implemented “half the victims receiving help from the National Sex-
16 ual Assault Hotline were minors.”¹⁴ “Many minors are now quarantined at home with
17 their abuser” while being “cut off from their safety net – the teachers, coaches, and
18 friends’ parents who are most likely to notice and report suspected abuse.” *Id.*

19 Finally, many students will be cut off from an important source of food and
20 physical activity. The CDC reports that “more than 30 million children participate in
21 the National School Lunch Program and nearly 15 million participate in the School
22 Breakfast Program.” *The Importance of Reopening America’s Schools, supra*; see also
23 *AAP Guidance, supra* (“Beyond the educational impact and social impact of school
24 closures, there has been substantial impact on food security and physical activity for
25

26 ¹³ *COVID-19 Planning Considerations: Guidance for School Re-entry*, American
27 Academy of Pediatrics (last visited July 28, 2020) (hereinafter *AAP Guidance*), avail-
28 able as of the date of filing: <https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html>.

¹⁴ *For the First Time Ever, Minors Make Up Half of Visitors to National Sexual Assault Hotline*, RAINN (April 16, 2020).

1 children and families.”) The state has announced no plans to replace this essential so-
2 cial service for needy children.

3 Given the substantial harms caused by school closures, the World Health Organi-
4 zation (WHO) and US Centers for Disease Control (CDC) have each issued guidance
5 on school opening emphasizing that school opening decisions should be based on the
6 “[c]urrent understanding about COVID-19 transmission and severity in children,” the
7 “[l]ocal situation and epidemiology of COVID-19 where the school(s) are located,”
8 and the “[s]chool setting and ability to maintain COVID-19 prevention and control
9 measure.” Bhattacharya Decl. ¶¶ 16-18. The WHO guidance explicitly recommends
10 the consideration of “what harm might occur due to school closure (e.g. risk of non-
11 return to school, widening disparity in educational attainment, limited access to meals,
12 domestic violence aggravated by economic uncertainties etc.), and the need to maintain
13 schools at least partially open for children whose caregivers are ‘key workers’ for the
14 country.” *Id.* Likewise, the CDC guidance suggests keeping schools open even if there
15 is moderate community spread of SARS-CoV-2 infection, with school closures limited
16 only to communities with “substantial” community spread. *Id.* ¶ 18.

17 **III. The Data Show that Children Are Unlikely to Spread the Coronavirus**
18 **or Suffer Adverse Results from COVID-19, and Many European**
19 **Schools Reopen Without Causing a Resurgence of Coronavirus**

20 The CDC now estimates that the population-wide death rate of COVID-19 is
21 0.26%. Lyons-Weiler Decl. ¶ 4. However, the most recent studies “indicate that the
22 fatality rate for those under age 70 is 0.04%, less than or equal to seasonal influenza.”
23 Atlas Decl. ¶ 9. Of particular relevance here, “younger, healthier people have *virtually*
24 *zero* risk of death from [COVID-19].” *Id.* ¶ 11. In fact, as of July 30, “[n]o child under
25 age 18 in the state of California ha[d] died due to infection from the coronavirus since
26 tracking began on February 1, 2020[.]” McDonald Decl. at ¶ 5.¹⁵ The CDC reports a
27 total of 226 COVID-19 deaths in persons under 24 across the US, out of a total of

28 ¹⁵ California reported the first death of a minor from COVID-19—a teenager with “un-
derlying health conditions”—on July 31, 2020. *See* Sophia Bollag, *California reports*
the first death of a teen from COVID-19, THE SACRAMENTO BEE (July 31, 2020).

1 26,808 deaths for that age group over the same period from all causes. Lyons-Weiler
2 Decl. ¶ 6. By comparison, influenza and pneumonia not attributed to COVID-19 led to
3 966 deaths over the same period in persons aged 0 to 24. *Id.*

4 And young, healthy people are not just surviving the virus; they have “virtually
5 no risk of serious illness from COVID-19” either. Atlas Decl. ¶ 11. As the CDC has
6 concluded, “children who become infected are [] ‘far less likely to suffer severe symp-
7 toms.’” *Id.* ¶ 13 (citing July 2020 CDC study); *see also* Victory Decl. ¶ 4 (“Children are
8 essentially at zero risk of contracting COVID-19 or becoming ill from the virus if
9 schools were to reopen.”). In fact, many “[s]cientists now believe children may be
10 largely immune to SARS-CoV-2 infection.” Lyons-Weiler Decl. ¶ 7.

11 Transmission rates among children and their teachers are also nominal. “[C]hil-
12 dren are unlikely to be a vector” of COVID 19, Victory Decl. ¶ 5, meaning they “do
13 not pose a severe risk of transmission to adults.” Lyons-Weiler Decl. ¶ 4. “Scientific
14 studies from all over the world [] suggest that COVID-19 transmission among children
15 in schools is low.” Atlas Decl. ¶ 15. For example, the “CDC has published a report on
16 the age distribution of transmission to new cases in South Korea, which found that less
17 than 1% of new transmission detected in the study were attributed to children aged 0
18 to 10 years; similarly, less than 1% of new transmissions were from children aged 11
19 to 20 years.” Lyons-Weiler Decl. at ¶ 14. The most important evidence on childhood
20 spread of the disease comes from a study conducted in Iceland and published in the
21 New England Journal of Medicine, which concluded that, “even if children do get in-
22 fected, they are less likely to transmit the disease to others than adults.”¹⁶ The research-
23 ers did not find “a single instance of a child infecting parents.” *Id.*

24 Presently, there are “22 countries that have their schools open without social
25 distancing, mask wearing, and other measures, yet these countries have not experi-
26 enced an increase in COVID-19 cases or spread of the virus among children.” Victory
27 Decl. ¶ 8; McDonald Decl. ¶ 6. Even more significantly, “these countries have not seen

28 ¹⁶ Daniel F. Gudbjartsson, Ph.D., Agnar Helgason, Ph.D., et al., *Spread of SARS-CoV-2 in the Icelandic Population*, The New England Journal of Medicine, <https://www.nejm.org/doi/full/10.1056/NEJMoa2006100> (June 11, 2020).

1 transmission of the virus between children and their parents or elderly grandparents.”
2 Victory Decl. ¶ 8. On the contrary, one July 2020 study from the University of Dresden
3 concluded that “children appeared to act as a barrier to transmission.” McDonald Decl.
4 ¶ 6. Thus, it is “abundantly clear that children under twelve years of age are not trans-
5 mitting in schools.” Lyons-Weiler Decl. ¶ 23.

6 **IV. Although School Districts in California Begin Preparing to Reopen**
7 **Safely for the 2020-21 School Year, The California Department of Pub-**
8 **lic Health Orders All Schools to Remain Closed, Except for Schools in a**
9 **Small Number of Counties**

10 In light of the obvious deficiencies of remote learning and the low risk of coro-
11 navirus infection among children, teachers have diligently prepared since spring to re-
12 turn to schools. In Palos Verdes, for example, home to approximately 11,000 students,
13 the school district established a reopening committee comprised of 40 staff members,
14 45 medical professionals, 30 elementary parents, and 39 high school parents. Brach
15 Decl. ¶¶ 5, 10. The district purchased personal protective equipment and implemented
16 a mitigation strategy, including such tactics as staggered time arrivals, designated en-
17 trance and exit routes, masks or face shields for teachers and students, and hand sani-
18 tizing stations. *Id.* ¶ 12; *see also* Reardon Decl. ¶¶ 8–9 (describing Capistrano Unified
19 School District encompassing 48,000 students plans to reopen). These mitigation strat-
20 egies are consistent with “commonly accepted public health definitions of safe operat-
21 ing that minimize [health] risks” in schools. Kaufman Decl. ¶ 16. Indeed, many schools
22 “are going above and beyond” by making “huge investments of effort and money to
23 comply with the CDC and health directives” to ensure a safe learning environment.
24 Hackett Decl. ¶ 6.

25 On July 17, 2020, Governor Newsom announced a framework for reopening
26 schools. *See* Ex. 3 to Dhillon Decl. This framework is mandatory under Executive Or-
27 der N-60-20, issued May 4, 2020, which ordered “[a]ll residents ... to continue to
28 obey State public health directives, as made available at <https://covid19.ca.gov/stay-home-except-for-essential-needs/> and elsewhere as the State Public Health Officer may provide.” Ex. 1 to Dhillon Decl. Under the Governor’s framework, reopening hinges

1 on not being on the county monitoring list for two weeks. *Id.* (“Schools and school
2 districts may reopen for in-person instruction at any time if they are located in a local
3 health jurisdiction (LHJ) that has not been on the county monitoring list within the
4 prior 14 days.”). “The state places a county on this list if it meets at least one of six
5 criteria related to the number of COVID-19 PCR tests conducted or positivity rate,
6 number of cases and growth in cases, growth in hospitalizations, or inadequate hospital
7 ICU or ventilator capacity.”¹⁷ “None of these criteria are related to the risks to children
8 or to teachers that arise from reopening schools for in-person teaching.” Bhattacharya
9 Decl. ¶ 20.

10 Yet while the Governor has forbidden in-person education, other, similar oper-
11 ations are permitted in counties on the monitoring list, including childcare facilities
12 and day camps.¹⁸ Indeed, many of the school districts barred from providing in-person
13 education are now offering full-time daycare *on school campuses* for several hundred
14 dollars per-month per-child. Petrilla Decl. ¶¶ 13-14; Ex. 16; Dhillon Decl. ¶ 7. Conse-
15 quently, while children are now unable to learn from teachers in the classroom, parents
16 can pay their school district for the privilege of having their children sit in the *very*
17 *same classrooms* with dozens of other children and receive “distance learning support,”
18 whatever that may mean. Ex. 16.

19 **v. Plaintiffs Have Been and Will Continue to be Harmed by the**
20 **Governor’s Mandatory School Closures**

21 Plaintiffs are a student and several parents adversely impacted by the school clo-
22 sures. Ms. Sephton, for example, has two children, one of whom is a toddler and the
23 other a four-year-old. Sephton Decl. ¶¶ 2–3. Since she must take care of her toddler
24 during the day, “distance learning mode is really no education at all” for her oldest
25

26 ¹⁷ See *COVID-19 Update Guidance: Child Care Programs and Providers*, Cal. Dep’t
27 of Pub. Health (July 17, 2020), available as of the date of filing:
28 <https://files.covid19.ca.gov/pdf/guidance-childcare--en.pdf>.

¹⁸ See *COVID-19 Update Guidance, supra*; *COVID-19 Interim Guidance: Day
Camps*, Cal. Dep’t of Pub. Health (July 17, 2020), available as of the date of filing:
<https://files.covid19.ca.gov/pdf/guidance-daycamps.pdf>.

1 child. *Id.* ¶ 5. Ms. Walsh faces a similar situation with her two children. “[W]hen the
2 school was shut down and education was moved to distance learning, what was pro-
3 vided was not learning in any sense of the word.” Walsh Decl. ¶ 4. Ms. Ruiz is the
4 mother of two sons who both have special needs. “Since school was shut down,” her
5 son has “not been provided with any of his services that are required by his [individu-
6 alized education program].” Ruiz Decl. ¶ 5. Moreover, like many other similarly situ-
7 ated children, “[d]ue to his disabilities, Zoom classes are a useless form of education.”
8 *Id.* ¶ 6. Even children without special needs are dropping basic skills as Mr. Ziegler
9 attests. “As a result of [his] daughter’s school moving to distance-learning, [he] wit-
10 nessed [his] daughter ... fall[] behind in schooling.” Ziegler Decl. ¶ 3. Ms. Beaulieu
11 experienced the same. For her, it was “extremely concerning that [her] son received no
12 Zoom instruction at all from his math teacher the entire time that the school was
13 closed.” Beaulieu Decl. ¶ 8. In addition to academic shortfalls, unnecessary distance
14 learning has caused “behavioral issues” for Mr. Petrilla’s young boy. Petrilla Decl. ¶ 6.
15 Mr. Fleming’s daughter “has worked tirelessly to ... attend her dream college” but may
16 now miss out because of the negative impact on her grades and lost scholarship oppor-
17 tunities. Fleming Decl. ¶ 11.

18 As a result of the Governor’s order, California is currently the *only* state in
19 America with state-level mandates prohibiting school districts from holding in-person
20 classes—a decision affecting millions of students, from kindergarten through high
21 school. Atlas Decl. ¶ 7.

22 LEGAL STANDARD

23 A plaintiff seeking a temporary restraining order and/or preliminary injunction
24 “must establish that he is likely to succeed on the merits, that he is likely to suffer
25 irreparable harm in the absence of preliminary relief, that the balance of equities tips
26 in his favor, and that an injunction is in the public interest.” *Winter v. Natural Res. Def.*
27 *Council, Inc.*, 555 U.S. 7, 20 (2008). A plaintiff need not show that he will prevail at
28 trial, but only that he is “likely” to prevail. *Id.*; see also *Leiva-Perez v. Holder*, 640 F.3d
962, 966 (9th Cir. 2011). Under the Ninth Circuit’s sliding-scale approach, as long as

1 the plaintiff demonstrates the requisite likelihood of irreparable harm and shows that
2 an injunction is in the public interest, a preliminary injunction can still issue so long as
3 serious questions going to the merits are raised and the balance of hardships tips sharply
4 in the plaintiff’s favor. *Alliance for the Wild Rockies v. Cottrell*, 632 F.3d 1127, 1134–
5 35 (9th Cir. 2011). A “serious question” is one on which the movant “has a fair chance
6 of success on the merits.” *Sierra On-Line, Inc. v. Phoenix Software, Inc.*, 739 F.2d
7 1415, 1421 (9th Cir. 1984) (internal quotation marks and citation omitted).

8 **ARGUMENT**

9 **I. THERE IS A STRONG LIKELIHOOD THAT PLAINTIFFS WILL**
10 **SUCCEED ON THE MERITS**

11 **A. Defendants’ Ban on In-Person Instruction at Every School on the**
12 **State’s Monitoring List Violates the Fourteenth Amendment’s Due**
13 **Process and Equal Protection Clauses.**

14 To determine whether a government act violates the substantive component of
15 the Due Process Clause or the Equal Protection Clause, courts begin “by determining
16 the proper level of scrutiny to apply for review.” *Wright v. Incline Vill. Gen. Improve-*
17 *ment Dist.*, 665 F.3d 1128, 1141 (9th Cir. 2011). “[Courts] apply strict scrutiny if the
18 governmental enactment ‘targets a suspect class or burdens the exercise of a funda-
19 mental right.’ *Id.* An act passes strict scrutiny only if it “is narrowly tailored to serve a
20 compelling governmental interest.” *Id.* “If the [act] does not concern a suspect or semi-
21 suspect class or a fundamental right, [courts] apply rational basis review and simply
22 ask whether the ordinance is rationally-related to a legitimate governmental inter-
23 est.” *Id.*

24 **1. The Order Unlawfully Infringes Californians’ Fundamental (Or, At**
25 **Least, Quasi-Fundamental) Right to Education.**

26 The Fourteenth Amendment protects substantive rights not expressly enumer-
27 ated within the Bill of Rights. *See, e.g., Obergefell v. Hodges*, 135 S. Ct. 2584, 2587
28 (2015); *Roe v. Wade*, 410 U.S. 113, 152-53 (1973). In particular, “the Due Process
Clause specially protects those fundamental rights and liberties which are, objectively,

1 deeply rooted in this Nation’s history and tradition, and implicit in the concept of or-
2 dered liberty, such that neither liberty nor justice would exist if they were sacrificed.”
3 *Washington v. Glucksberg*, 521 U.S. 702, 720–21 (1997) (internal citations and quota-
4 tion marks omitted). Courts must “exercise reasoned judgment in identifying interests
5 of the person so fundamental that the State must accord them its respect”; “[h]istory
6 and tradition guide and discipline this inquiry but do not set its outer boundaries.”
7 *Obergefell*, 135 S. Ct. at 2598 (citation omitted).

8 Historical analysis confirms that, although the Supreme Court has not (yet) so
9 held, the right to a basic education is “deeply rooted in this Nation’s history and tradi-
10 tion,” stretching back at least as far as ratification of the Fourteenth Amendment and
11 is therefore a fundamental right. More than three-quarters of States recognized an af-
12 firmative right to public school education in 1868, the year that the Fourteenth Amend-
13 ment was ratified. Steven G. Calabresi & Michael W. Perl, *Originalism and Brown v.*
14 *Board of Education*, 2014 Mich. St. L. Rev. 429, 449–63 (cataloging State constitu-
15 tional provisions as of 1868). In particular, 30 states (*i.e.*, 81% of the states at the time)
16 had a constitution that “said explicitly that the state legislature ‘shall’ (*i.e.*, it has the
17 ‘duty’ and therefore it ‘must’) establish a system of free public schools.” Calabresi &
18 Perl, 2014 Mich. St. L. Rev. at 451–54 (listing these 30 states and quoting their consti-
19 tutional provisions). Another three states’ constitutions “arguably conferred a right to
20 a free public education,” whereas only four “states’ constitutions in 1868 did not spe-
21 cifically mention education or the establishment of a system of free public schools.”
22 *Id.* at 455–60.

23 State-provided or -permitted education is “implicit in the concept of ordered lib-
24 erty, such that neither liberty nor justice would exist if they were sacrificed.” *Glucks-*
25 *berg*, 521 U.S. at 720–21 (internal quotation marks omitted). To begin with, the foun-
26 dation of American liberty is our *written* Constitution, under which laws must be pub-
27 lished in *writing* before they may be executed to constrain liberty. Thus, texts lie at the
28 heart of our ordered liberty. Basic learning is also a prerequisite for the activities that
form the basis of citizenship in our republic, including “knowledgeable and informed

1 voting,” comprehending ballot initiatives, and engaging in political speech and dis-
2 course. *See also Citizens United v. FEC*, 558 U.S. 310, 339–40 (2010); *Bd. of Educ. v.*
3 *Pico*, 457 U.S. 853 (1982) (“[T]he Constitution protects the right to receive information
4 and ideas.” (internal quotation marks omitted)). And lack of basic reading and writing
5 skills precludes individuals from constitutionally protected access to the justice system.
6 *Id.*; *see also, e.g., Griffin v. Illinois*, 351 U.S. 12, 19–20 (1956); *Boddie v. Connecticut*,
7 401 U.S. 371, 382–83 (1971).

8 Finally, even if education is not a “fundamental” right, it is at least a “quasi”
9 fundamental right subject to intermediate scrutiny. It is well settled that, under *Plyler*
10 *v. Doe*, “infringements on certain ‘quasi-fundamental’ rights, like access to public ed-
11 ucation, also mandate a heightened level of scrutiny.” *United States v. Harding*, 971
12 F.2d 410, 412 n.1 (9th Cir. 1992) (emphasis added).

13 The Order undoubtedly infringes the fundamental or quasi-fundamental right to
14 a basic education. Even assuming that the state has a compelling interest in preventing
15 the spread of COVID-19, the Governor’s orders are not narrowly tailored to advance
16 that interest. Like Texas in *Plyer*, California here is functionally excluding Plaintiffs—
17 including minority children and families of limited economic means—from the oppor-
18 tunity to attain an education. But unlike in *Plyer*, the schoolhouse doors are not even
19 open to Plaintiffs. California hopes that digital learning will provide an equivalent basic
20 minimum education, but this is fantasy. The evidence shows that distance learning will
21 effectively preclude children from receiving a basic minimum education because (1)
22 many students have no access to the internet, (2) even those who do will receive a
23 significantly impaired education, and (3) truancy will run rampant. *See supra* pp. 4-9,
24 12-13 (describing evidence showing extreme hardship from online learning that ex-
25 cludes children from an education); *see also* Keech Decl. ¶ 14 (“[A]ny model of live
26 daily virtual remote instruction ... is so lacking” that it “largely fails to meet [students’]
27 basic educational needs.”).

28 For example, as extensively documented in the supporting declarations, when
school moved online this Spring, classroom participation evaporated. *See* Cunningham

1 Decl. ¶ 5 (“At the beginning of distance learning in March, I had 42% participation by
2 my students; by the end, I had 4 total students participate, or 2%.”). This is because
3 many “students lacked sufficient access to wifi and computers to be able to participate
4 in distance learning.” *Id.* This is particularly true in low-income families and commu-
5 nities of color. “Nearly 50% of low-income families and 42% of families of color lack
6 sufficient devices at home to access distance learning.”¹⁹ As a result, “up to one-third
7 of high school students in the Los Angeles schools system never checked in with their
8 teachers once.” Dr. Hamilton Decl. ¶ 6.

9 Stanford University comprehensively studied the impact of virtual learning
10 models and concluded that students were behind their in-person peers to an extent re-
11 flecting 180 fewer days of instruction in math and 72 fewer days of instruction in read-
12 ing. *Id.* (attaching study). This study comports with a recent analysis from Brown Uni-
13 versity, in which the researchers concluded that “many teachers have had no contact at
14 all with a significant portion of students ... only 39% of teachers reported interacting
15 with their students at last once a day, and most teacher-student communication oc-
16 curred over email.” Megan Kuhfeld, *supra*, at 9. And this is to say nothing of those
17 children requiring special education. “When school campuses are closed and education
18 is moved entirely online, many of the guarantees and key tenants afforded to special
19 needs children” under normal circumstances “collapse.” Walker Decl. ¶ 5; *see also*
20 Reardon Decl. ¶ 10 (“A prolonged shutdown of schools will have significant negative
21 consequences for children with special needs and handicapping conditions.”).

22 Consider also the social and emotional struggle of children trying to learn on
23 their own. Many students have “expressed ... a marked increase in feelings of depres-
24 sion, isolation, and anxiety” as a result of the “school clotures.” Cunningham Decl. ¶ 8.
25 And the “students most greatly impacted by the shutdown [are] not the middle and
26 upper class students, but the lower income and minority students who already suffer
27

28 _____
¹⁹ Megan Kuhfeld, *et al.*, *Project the potential impacts of COVID-19 school closures on academic achievement*, ANNENBERG INSTITUTE AT BROWN UNIVERSITY, at 10 (May 2020), available as of the day of filing: <https://www.edworkingpapers.com/ai20-226>.

1 from an ever-widening achievement gap.” *Id.* For this reason and others, child psy-
2 chologists have sounded the alarm on the mental health risks of locking down school.
3 Just last month, more than 120 specialists in psychology, mental health, and neurosci-
4 ence concluded that school closures are a “national disaster” because the “impact of the
5 lockdown on learning is incredibly harmful, creating a huge attainment gap, and the
6 most vulnerable and marginalized in society . . . are likely to be most affected by this.”²⁰

7 Studies demonstrate why children need to be physically present in schools. Late
8 last month the American Academy of Pediatrics “strongly” recommended that “the
9 coming school year should start with a goal of having students physically present in
10 school.” *AAP Guidance, supra*, ¶ 3. This same Academy noted the health benefits that
11 would otherwise be lost, such as “child . . . development,” “social and emotional skills,”
12 “reliable nutrition,” physical/speech and mental health therapy,” and “opportunities for
13 physical activity” if children are unnecessarily forced to attend school virtually. *Id.* ¶ 1.
14 This comports with the CDC’s recent report, which detailed crucial characteristics that
15 would be lost if in-person schooling is not held, including “development of social and
16 emotional skills,” “a safe environment for learning,” “nutritional needs,” and “physical
17 activity.” *The Importance of Reopening America’s Schools this Fall, supra*. In short,
18 the order undeniably infringes the fundamental (or quasi-fundamental) right to educa-
19 tion, subjecting it to heightened scrutiny.

20 The order violates Defendants’ due process rights regardless whether it is sub-
21 ject to strict scrutiny or intermediate scrutiny. The Governor’s order, which closes
22 every school in 38 counties, is plainly not the least restrictive means of arresting the
23 spread of COVID-19 because children are neither sickened by the disease nor transmit
24 it. *See supra*, pp. 9-11. Nor has the Governor even attempted to narrowly tailor his
25 response to the purported problem—e.g., the spread of COVID-19 in schools.

26
27
28 ²⁰ Professor Ellen Townsend, *et al.*, *Open letter to Gavin Williamson Secretary of State for Education concerning the neglect of children and adolescents in government policy during the UK lockdown*, available as of the date of filing: <https://drive.google.com/file/d/1zytNGOtnySo-YnyU7iazJUVQ0fS2PC1Z/view>.

1 **2. The Order Violates the Equal Protection Clause, Even under**
2 **Rational Basis Review.**

3 The Governor’s order prohibits schools in some counties—those on the state’s
4 monitoring list—from holding in-person classes, while allowing schools in other coun-
5 ties to return to the classroom. Thus, while students in Shasta County can resume in -
6 person learning this Fall, similarly situated students in Los Angeles County, Yolo
7 County, and 36 other counties cannot. This unequal treatment, which will only become
8 more pronounced as some counties manage to get off the state’s monitoring list, is not
9 even “rationally related” to the state’s interest in combatting COVID-19. *City of New*
10 *Orleans v. Dukes*, 427 U.S. 297, 303 (1976)

11 To begin, whether a county is on the monitoring list has *nothing* to do with the
12 prevalence of COVID-19 at schools, or even among children. Instead, a county is
13 placed on the monitoring list based on overall case rates and hospitalization rates. The
14 order simply assumes that it is more dangerous to conduct in-person classes in counties
15 where COVID-19 continues to spread among the general population than in other coun-
16 ties. But that assumption could not “*reasonably* be conceived to be true by the [Gov-
17 ernor]” for several reasons. *Vance v. Bradley*, 440 U.S. 93, 111 (1979). *First*, as Plain-
18 tiffs have explained, the scientific evidence confirms that children are not at risk of
19 being sickened or killed by COVID-19. *See ante* at 9-11. Indeed, *only one* minor in
20 California has died from COVID-19 since the virus began spreading in January and
21 February. *See supra*, fn.13. Children also account for a vanishingly small percentage
22 of total hospitalizations. McDonald Decl. ¶5. Children in hard-hit areas such as Los
23 Angeles are thus just as unaffected by the virus as children in rural parts of the state.
24 And because children do not play a significant role in transmitting the virus to adults,
25 Lyons-Weiler Decl. ¶23, teachers in Orange County are just as safe as teachers in any
26 other county. Indeed, they are significantly safer than essential workers in many other
27 professions who have daily contact with large numbers of adults.

28 *Second*, even the Governor apparently does not believe that allowing children to
congregate in classrooms presents a grave danger of contagion, because he has allowed
thousands of daycare facilities and camps to reopen, even in counties on the monitoring

1 list.²¹ In a bizarre twist, school districts are now offering full-time childcare (for a hefty
2 fee) at the very schools that are now prohibited from providing in-person education.
3 Petrilla Decl. ¶¶13-14; Ex. 16; Dhillon Decl. ¶ 7. There is no reasonable basis for be-
4 lieving that daycare centers and camps are safe but elementary schools are not. Nor is
5 there any reasonable basis to believe that children can safely spend the day at school
6 in “childcare” but cannot safely receive in-person education at that same school. Alt-
7 hough “a government need not provide a perfectly logical solution to regulatory prob-
8 lems, it cannot hope to survive *rational* basis review by resorting to irrationality.” *Mer-*
9 *rifield v. Lockyer*, 547 F.3d 978, 991 (9th Cir. 2008).

10 In short, the order fails rational basis because in the name of stopping the spread
11 of COVID-19 and preventing hospitals from being overwhelmed, it prohibits gather-
12 ings by the one population cohort that does not spread virus and is hardly ever hospi-
13 talized by it. Although the state undoubtedly has broad police powers with which to
14 address public health concerns, it cannot enact a discriminatory regulation that lacks
15 any rational connection to the stated goal—as it has done here, with devastating effect.

16 **B. The Order Violates Title VI’s Implementing Regulations Because it**
17 **Disparately Burdens Racial Minorities**

18 Title VI of the Civil Rights Act of 1964 provides that “[n]o person in the United
19 States shall, on the ground of race, color, or national origin, be excluded from partici-
20 pation in, be denied the benefits of, or be subjected to discrimination under any pro-
21 gram or activity receiving Federal financial assistance.” 42 U.S.C. § 2000d. And, under
22 Title VI regulations, Defendants may not enforce laws causing a disparate impact on
23 racial minorities with regard to federally funded public programs, including Califor-
24 nia’s schools. 28 C.F.R. § 42.104(b)(2).²² “The basis for a successful disparate impact

25 _____
26 ²¹ See *fn* 14-15.

27 ²² Section 1983 creates a private right of action against officials who deprive plaintiffs
28 of federal rights while acting under color of state law. See 42 U.S.C. § 1983. Plaintiffs
can thus rely on § 1983 here. See *Alexander v. Sandoval*, 532 U.S. 275, 300 (2001)
(Stevens, J., dissenting). Plaintiffs recognize, however, that Ninth Circuit precedent
suggests that § 1983 statute cannot be used by private parties to vindicate a disparate-
impact claim under Title VI’s regulations. See *Save Our Valley v. Sound Transit*, 335

1 claim involves a comparison between two groups—those affected and those unaffected
2 by the facially neutral policy.” *Darensburg v. Metro. Transp. Comm’n*, 636 F.3d 511,
3 519–20 (9th Cir. 2011). “An appropriate statistical measure must therefore take into
4 account the correct population base and its racial makeup.” *Id.*

5 Although virtually all students here will be “affected” by the Governor’s order,
6 it will inflict *especially* devastating harm on those students whose socioeconomic cir-
7 cumstances do not allow for distance learning *at all* or who are enrolled in schools
8 whose distance-teaching efforts have proven wholly inadequate. Impoverished, vulner-
9 able families in California are disproportionately minorities.²³ In addition to struggling
10 with distance learning, many of these low-income families also do not receive the ser-
11 vices required by their IEPs and are burdened by the additional costs to obtain private
12 assistance or instruction. (See Ruiz Decl. ¶¶2, 5, 6, 9, 10,; see also Hawkins Decl. ¶¶3,
13 10, 11; Bema Decl. ¶¶4, 6, 8, 9, 12; Ramirez Decl. ¶¶5, 6, 7, 8, 15).

14 **C. Defendants’ Actions Violate Federal Laws Requiring Equal Educa-**
15 **tional Access for Disabled Students**

16 **1. The Order Violates the Individuals with Disabilities Education Act.**

17 The Individuals with Disabilities Education Act (IDEA) requires States to pro-
18 vide disabled students with programming to meet their many needs. A State that re-
19 ceives federal funding under the IDEA “must provide a free appropriate public educa-
20 tion—a FAPE, for short—to all eligible children.” *Endrew F. ex rel. Joseph F. v. Doug-*
21 *las Cty. Sch. Dist. RE-1*, 137 S. Ct. 988, 993 (2017) (citing 20 U.S.C. § 1412(a)(1)).
22 “A FAPE, as the Act defines it, includes both ‘special education’ and ‘related ser-
23 vices.’” *Id.* at 994 (citing 20 U.S.C. § 1401(9)). “‘Special education’ is ‘specially de-
24 signed instruction ... to meet the unique needs of a child with a disability’; ‘related
25 services’ are the support services ‘required to assist a child ... to benefit from’ that

26 F.3d 932 (9th Cir. 2003). If necessary, Plaintiffs intend to ask the Ninth Circuit to re-
27 consider its position en banc, and thus preserve the argument here.

28 ²³ See Just the Facts: Poverty in California, Public Policy Institute of California, July
2020, <https://www.ppic.org/publication/poverty-in-california/> (“22.9% of Latinos
lived in poverty, compared to 18.% of African Americans, 15.9% of Asian
Americans/Pacific Islanders, and 12.8% of whites.

1 instruction.” *Id.* (citing 20 U.S.C. §§ 1401(26), (29)). The instruction and services pro-
2 vided by school districts must meet each student’s “academic, social, health, emotional,
3 communicative, physical and vocational needs.” *Ashland Sch. Dist. v. Parents of Stu-*
4 *dent E.H.*, 587 F.3d 1175, 1185 (9th Cir. 2009). To meet these needs, a school district’s
5 services include “‘developmental, corrective, and other supportive services,’ such as
6 ‘psychological services, physical and occupational therapy, recreation ... [and] social
7 work services.’” *Id.* (citing 20 U.S.C. § 1401(26)).

8 Providing the IDEA’s mandatory “special education” and “related services” re-
9 quires in-person education for nearly all disabled students. To begin, students with dis-
10 abilities suffer “significant[ly]” from the lack of in-person instruction. *See AAP Guid-*
11 *ance, supra.* Additionally, disabled students require more services than simply in-per-
12 son instruction, including services from specialists such as occupational therapists, be-
13 havior specialists, and counselors. *See* 20 U.S.C. § 1401(26); *e.g.*, *Price v. Common-*
14 *wealth Charter Academy – Cyber School*, 2019 WL 4346014, at *3, *5 (E.D. Penn.
15 Sept 12, 2019); *K.B. on behalf of S.B. v. Katonah Lewisboro Union Free Sch. Dist.*,
16 2019 WL 5553292, at *2 (S.D.N.Y. Oct. 28, 2019). Indeed, “[e]ducation for [] students
17 with disabilities often differs dramatically from ‘conventional’ [] education.” *E.R.K.*
18 *ex rel. R.K. v. Hawaii Dep’t of Educ.*, 728 F.3d 982, 990 (9th Cir. 2013) (citation omit-
19 ted). To meet these needs, and the requirements of the IDEA, school districts must be
20 able to provide at least some in-person services.

21 In addition to these general requirements, “[a] State covered by the IDEA must
22 provide [each] disabled child with [] special education and related services ‘in con-
23 formity with the [child’s] individualized education program,’ or IEP.” *Andrew F.*, 137
24 S. Ct. at 994 (citing 20 U.S.C. § 1401(9)(D)). An IEP must be “reasonably calculated
25 to enable a child to make progress appropriate in light of the child’s circumstances[.]”
26 *Id.* at 999–1000 (citation omitted). And “a material failure” by the school “to imple-
27 ment an IEP violates the IDEA.” *Van Duyn ex rel. Van Duyn v. Baker Sch. Dist.* 5J,
28 502 F.3d 811, 822 (9th Cir. 2007) (emphasis omitted). “A material failure occurs when

1 there is more than a minor discrepancy between the services a school provides to a
2 disabled child and the services required by the child's IEP.” *Id.*

3 The Governor’s prohibition of all in-person instruction in counties on the state’s
4 monitoring list will make it impossible for schools in the affected counties to imple-
5 ment hundreds of thousands of IEPs, including those of Plaintiffs’ children. Moreover,
6 without the physical presence of teachers who see these children on a daily basis, many
7 children will not be adequately protected from domestic abuse because teachers often
8 cannot see the signs of abuse via Zoom—if the child even attends the remote teaching
9 sessions. Golden Decl. ¶ 7. Although local health officers may grant waivers to ele-
10 mentary schools, this waiver exception applies only to elementary schools and requires
11 consultation with CDPH. Moreover, the criteria to obtain a waiver is nearly impossible
12 to satisfy. Cicchetti Decl. ¶ 14.

13 This complete failure to provide services to students with disabilities violates the
14 IDEA. Moreover, failure to provide any in-person services will cause uncounted “ma-
15 terial failure[s]” to implement the IEPs of disabled students. *See Van Duyn*, 502 F.3d
16 at 822.

17 **2. The Order Violates the Americans with Disabilities Act (ADA) and**
18 **Section 504 of the Rehabilitation Act.**

19 Both the Americans with Disabilities Act (ADA) and the Rehabilitation Act re-
20 quire that public programs provide the same benefits to persons with disabilities pro-
21 vided to those without. “Section 12132 of the ADA precludes (1) exclusion from/denial
22 of benefits of public services, as well as (2) discrimination by a public entity.” *Crowder*
23 *v. Kitagawa*, 81 F.3d 1480, 1483 (9th Cir. 1996). This statute “was expressly modeled
24 after § 504 of the Rehabilitation Act.” *Duvall v. Cty. of Kitsap*, 260 F.3d 1124, 1135
25 (9th Cir. 2001), *as amended on denial of reh’g* (Oct. 11, 2001). “To establish a prima
26 facie case of disability discrimination under the ADA, a plaintiff must prove that (1)
27 he is an individual with a disability; (2) he is otherwise qualified to participate in or
28 receive the benefit of some public entity’s services, programs, or activities; (3) he was

1 either excluded from participation in or denied the benefits of the public entity’s ser-
2 vices, programs, or activities, or was otherwise discriminated against by the public en-
3 tity; and (4) such exclusion, denial of benefits, or discrimination was by reason of [his]
4 disability.” *E.R.K.*, 728 F.3d at 992 (citation omitted). And to establish a violation of
5 the Rehabilitation Act, the plaintiff must prove these same elements and “must also
6 prove that the relevant program receives federal financial assistance.” *Id.* And any
7 plaintiff “who requires an accommodation to meet a program’s essential eligibility re-
8 quirements can establish the ‘otherwise qualified’ element of the prima facie case only
9 by producing ‘evidence of the existence of a reasonable accommodation’” *Id.*

10 Here, Plaintiffs have demonstrated a reasonably likelihood of proving a prima
11 facie case of discrimination under the ADA and Section 504. California receives fed-
12 eral funding for education, including under the IDEA to provide special education to
13 disabled students.²⁴ Plaintiff Z.R. is an individual with a disability who is otherwise
14 qualified to receive an education and can do so with a reasonable accommodation. Ruiz
15 Decl. ¶¶ 4-15. Given the inability of schools to provide in-person education under the
16 Order, Z.R. has been denied the benefits of a public education. *See pp.* 34-35. And this
17 denial is due to his disability: without his disability, Z.R. would be able to participate
18 more fully in remote learning. *See supra pp.* 34-35.

19 **II. PLAINTIFFS AND THEIR CHILDREN FACE IMMINENT IRREP-**
20 **ARABLE HARM ABSENT IMMEDIATE INJUNCTIVE RELIEF**

21 As Plaintiffs and their experts have explained, if the Governor’s orders are not
22 enjoined, millions of California children will be deprived of an adequate education.
23 Hundreds of thousands will suffer collateral harm, including abuse, depression, and
24 hunger. There is no adequate legal remedy for these “intangible injuries.” *Arizona*
25 *Dream Act Coalition v. Brewer*, 757 F. 3d 1053, 1068 (9th Cir. 2014) (intangible inju-
26 ries “qualify as irreparable harm”). Moreover, deprivation of constitutionally protected
27 rights—including the rights to due process and equal protection—inexorably creates
28 irreparable harm. *See Elrod v. Burns* 427 U.S. 347, 373 (1976).

²⁴ Available as of the date of filing: <https://www.cde.ca.gov/sp/se/as/leagrnts.asp>.

1 Emergency relief is warranted because schools are scheduled to begin the Fall
2 term in a matter of days or weeks. Nearly every school district in the affected counties
3 is scheduled to begin classes no later than August 25, 2020, and many schools are
4 scheduled to begin even earlier. Dhillon Decl. ¶ 6. Indeed, many private schools, in-
5 cluding those attended by children of named Plaintiffs, will resume classes in a matter
6 of days. *Id.* Without a TRO and preliminary injunction, numerous schools will be
7 forced to scrap their plans for in-person schooling and consign students to the failed
8 “distance learning” model. California’s children have already lost more three months
9 of valuable education—they cannot afford to lose any more time in the classroom.

10 **III. THE REMAINING FACTORS WEIGH IN FAVOR OF GRANTING**
11 **INJUNCTIVE RELIEF**

12 Where the government is the opposing party, the balance of harms and the public
13 interest merge. *See Nken v. Holder*, 556 U.S. 418, 435 (2009). Here, the Governor’s
14 forced school closures violates Plaintiffs’ Fourteenth Amendment rights, and “it is al-
15 ways in the public interest to prevent the violation of a party’s constitutional rights.”
16 *Melendres v. Arpaio*, 695 F.3d 990, 1002 (9th Cir. 2012) (*quoting Elrod*, 427 U.S. at
17 373). Moreover, because children are neither at risk from COVID-19 nor a significant
18 source of transmission to adults, no adverse “public consequences” would result from
19 issuing the TRO and preliminary injunction. *Winter*, 555 U.S. at 24 If schools remain
20 closed, however, not only will children suffer, but thousands of parents will be forced
21 to quit their jobs or reduce their hours, harming their families, the businesses where
22 they work, and the entire economy. Faced with such “preventable human suffering,”
23 the Ninth Circuit has had “little difficulty concluding that the balance of hardships tips
24 decidedly in plaintiffs’ favor.” *Hernandez v. Sessions*, 872 F.3d 976, 996 (9th Cir.
25 2017) (*quoting Lopez v. Heckler*, 713 F.2d 1432, 1437 (9th Cir. 1983)).

26 **CONCLUSION**

27 For the foregoing reasons, Plaintiffs’ Application should be granted.
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Date: August 3, 2020

Respectfully submitted,
DHILLON LAW GROUP INC.

By: /s/ Harmeet K. Dhillon

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19 **UNITED STATES DISTRICT COURT FOR**
20 **THE CENTRAL DISTRICT OF CALIFORNIA**

21 **MATTHEW BRACH, et al.**

22 Plaintiffs,

23 v.

24 **GAVIN NEWSOM, et al.**

25 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

**DECLARATION OF HARMEET
DHILLON IN SUPPORT OF
PLAINTIFFS' APPLICATION FOR
A TEMPORARY RESTRAINING
ORDER**

Judge: Hon. Stephen V. Wilson



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I, Harmeet K. Dhillon declare:

1. I am an attorney for the plaintiffs in this matter, and am duly licensed to practice in the State of California and before the District Court for the Central District of California. This declaration is based on personal knowledge of the matters set forth herein.

2. Attached as Exhibit 1 is a true and correct copy of the May 4, 2020 Executive Order N-6-20.

3. Attached as Exhibit 2 is a true and correct copy of the July 17, 2020 COVID-19 Industry Guidance: School and School-Based Programs.

4. Attached as Exhibit 3 is a true and correct copy of the July 17, 2020 California Department of Public Health COVID-19 and Reopening In-Person Learning Framework for K-12 Schools in California, 2020-2021 School Year.

5. According to the California Department of Education there are 1,037 school districts. (*see* <https://www.cde.ca.gov/ds/sd/cb/ceffingertipfacts.asp>). There are also 10,588 schools and 6,163,001 students in the state. *Id.*

6. On August 2, 2020, my office surveyed online information from 519 California school districts (roughly 50%) and found:

- a. 9% of California schools start the week of August 3rd;
- b. 41% of California schools start the week of August 10th;
- c. 30% of California schools start the week of August 17th;
- d. 14% of California schools start the week of August 24th; and
- e. 6% of California schools start the week of August 31st or later.

7. Throughout California, many school districts are offering in-person childcare to parents of younger children for a fee. During the day, staff of unknown training will oversee the students doing their online learning, as well as babysitting them. This supervision will take place in the very classrooms that students would normally attend for in-person education by credentialed teachers.



1 a. South Pasadena Unified School District in Los Angeles County
2 charges \$840 per month for child care starting August 24, 2020 (*see*
3 [https://www.spusd.net/apps/pages/index.jsp?uREC_ID=781658&type=d&pREC](https://www.spusd.net/apps/pages/index.jsp?uREC_ID=781658&type=d&pREC_ID=1163916)
4 [ID=1163916](https://www.spusd.net/apps/pages/index.jsp?uREC_ID=781658&type=d&pREC_ID=1163916));

5 b. Conejo Valley Unified School District in Ventura County charges
6 \$850 per month for child care starting August 19, 2020 (*see*
7 <http://www.cvusdchildcare.com/>);

8 c. Manteca Unified School District in San Joaquin County charges
9 \$640 per month for child care that begins on August 6, 2020 (*see*
10 [https://www.mantecabulletin.com/news/local-news/manteca-offering-emergency-](https://www.mantecabulletin.com/news/local-news/manteca-offering-emergency-child-care-distance-learning/)
11 [child-care-distance-learning/](https://www.mantecabulletin.com/news/local-news/manteca-offering-emergency-child-care-distance-learning/));

12 d. Menlo Park City School District in San Mateo County charges \$500
13 per month for child care that begins on August 19, 2020 (*see*
14 [https://district.mpcsd.org/cms/lib/CA01902565/Centricity/Domain/4/Official%20](https://district.mpcsd.org/cms/lib/CA01902565/Centricity/Domain/4/Official%20MPCSD%20Reopening%20Plan%20.pdf)
15 [MPCSD%20Reopening%20Plan%20.pdf](https://district.mpcsd.org/cms/lib/CA01902565/Centricity/Domain/4/Official%20MPCSD%20Reopening%20Plan%20.pdf)); and

16 e. Glendale Unified School District in Los Angeles County has been
17 providing child care since July 1, 2020 (*see*
18 [https://www.gusd.net/cms/lib/CA01000648/Centricity/domain/6/board%20meeti](https://www.gusd.net/cms/lib/CA01000648/Centricity/domain/6/board%20meeting%20presentations/2020-07-14.2021SchlRpnngPlns.pdf)
19 [ng%20presentations/2020-07-14.2021SchlRpnngPlns.pdf](https://www.gusd.net/cms/lib/CA01000648/Centricity/domain/6/board%20meeting%20presentations/2020-07-14.2021SchlRpnngPlns.pdf)).

20
21 I declare under penalty of perjury under the laws of the United States of America
22 that the foregoing is true and correct and is executed in Sonoma County, California.
23

24 Dated: August 2, 2020.

25 /s Harmeet K. Dhillon
26 Harmeet K. Dhillon
27
28

EXHIBIT 1

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

EXECUTIVE ORDER N-60-20

WHEREAS on March 4, 2020, I proclaimed a State of Emergency to exist in California as a result of the threat of COVID-19; and

WHEREAS on March 19, 2020, I issued Executive Order N-33-20, which directed all California residents to immediately heed current State public health directives; and

WHEREAS State public health directives, available at <https://covid19.ca.gov/stay-home-except-for-essential-needs/>, have ordered all California residents stay home except for essential needs, as defined in State public health directives; and

WHEREAS COVID-19 continues to menace public health throughout California; and

WHEREAS the extent to which COVID-19 menaces public health throughout California is expected to continue to evolve, and may vary from place to place within the State; and

WHEREAS California law promotes the preservation of public health by providing for local health officers—appointed by county boards of supervisors and other local authorities—in addition to providing for statewide authority by a State Public Health Officer; and

WHEREAS these local health officers, working in consultation with county boards of supervisors and other local authorities, are well positioned to understand the local needs of their communities; and

WHEREAS local governments are encouraged to coordinate with federally recognized California tribes located within or immediately adjacent to the external geographical boundaries of such local government jurisdiction; and

WHEREAS the global COVID-19 pandemic threatens the entire State, and coordination between state and local public health officials is therefore, and will continue to be, necessary to curb the spread of COVID-19 throughout the State; and

WHEREAS State public health officials have worked, and will continue to work, in consultation with their federal, state, and tribal government partners; and

WHEREAS the State Public Health Officer has articulated a four-stage framework—which includes provisions for the reopening of lower-risk businesses and spaces (“Stage Two”), to be followed by the reopening of higher-risk businesses and spaces (“Stage Three”)—to allow Californians to gradually resume various activities while continuing to preserve public health in the face of COVID-19; and

WHEREAS the threat posed by COVID-19 is dynamic and ever-changing, and the State's response to COVID-19 (including implementation of the four-stage framework) should likewise retain the ability to be dynamic and flexible; and

WHEREAS to preserve this flexibility, and under the provisions of Government Code section 8571, I find that strict compliance with the Administrative Procedure Act, Government Code section 11340 et seq., would prevent, hinder, or delay appropriate actions to prevent and mitigate the effects of the COVID-19 pandemic.

NOW, THEREFORE, I, GAVIN NEWSOM, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes of the State of California, and in particular, Government Code sections 8567, 8571, 8627, and 8665; and also in accordance with the authority vested in the State Public Health Officer by the laws of the State of California, including but not limited to Health and Safety Code sections 120125, 120130, 120135, 120140, 120145, 120150, 120175, and 131080; do hereby issue the following Order to become effective immediately:

IT IS HEREBY ORDERED THAT:

- 1) All residents are directed to continue to obey State public health directives, as made available at <https://covid19.ca.gov/stay-home-except-for-essential-needs/> and elsewhere as the State Public Health Officer may provide.
- 2) As the State moves to allow reopening of lower-risk businesses and spaces ("Stage Two"), and then to allow reopening of higher-risk businesses and spaces ("Stage Three"), the State Public Health Officer is directed to establish criteria and procedures—as set forth in this Paragraph 2—to determine whether and how particular local jurisdictions may implement public health measures that depart from the statewide directives of the State Public Health Officer.

In particular, the State Public Health Officer is directed to establish criteria to determine whether and how, in light of the extent to which the public health is menaced by COVID-19 from place to place within the State, local health officers may (during the relevant stages of reopening) issue directives to establish and implement public health measures less restrictive than any public health measures implemented on a statewide basis pursuant to the statewide directives of the State Public Health Officer.

The State Public Health Officer is further directed to establish procedures through which local health officers may (during the relevant stages of reopening) certify that, if their respective jurisdictions are subject to proposed public health measures (which they shall specify to the extent such specification may be required by the State Public Health Officer) that are less restrictive than public health measures implemented on a statewide basis pursuant to the statewide directives of the State Public Health Officer, the public health will not be menaced. The State Public Health Officer shall additionally establish procedures to permit, in a manner consistent with public health and

safety, local health officers who submit such certifications to establish and implement such less restrictive public health measures within their respective jurisdictions.

The State Public Health Officer may, from time to time and as she deems necessary to respond to the dynamic threat posed by COVID-19, revise the criteria and procedures set forth in this Paragraph 2. Nothing related to the establishment or implementation of such criteria or procedures, or any other aspect of this Order, shall be subject to the Administrative Procedure Act, Government Code section 11340 et seq. Nothing in this Paragraph 2 shall limit the authority of the State Public Health Officer to take any action she deems necessary to protect public health in the face of the threat posed by COVID-19, including (but not limited to) any necessary revision to the four-stage framework previously articulated by the State Public Health Officer.

- 3) Nothing in this Order shall be construed to limit the existing authority of local health officers to establish and implement public health measures within their respective jurisdictions that are more restrictive than, or that otherwise exist in addition to, the public health measures imposed on a statewide basis pursuant to the statewide directives of the State Public Health Officer.

IT IS FURTHER ORDERED that as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this Order.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 4th day of May 2020.

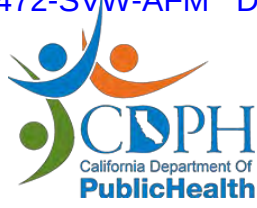


GAVIN NEWSOM
Governor of California

ATTEST:

ALEX PADILLA
Secretary of State

EXHIBIT 2



COVID-19 INDUSTRY GUIDANCE: Schools and School- Based Programs

Release date: July 17, 2020

All guidance should be implemented only with county health officer approval following their review of local epidemiological data including cases per 100,000 population, rate of test positivity, and local preparedness to support a health care surge, vulnerable populations, contact tracing, and testing.



Exhibit 2

OVERVIEW

Communities across the state are preparing for the forthcoming school year. To assist with that planning process, the following guidelines and considerations are intended to help school and community leaders plan and prepare to resume in-person instruction.

This guidance is interim and subject to updates. These guidelines and considerations are based on the best available public health data at this time, international best practices currently employed, and the practical realities of managing school operations; as new data and practices emerge. Additionally, the guidelines and considerations do not reflect the full scope of issues that school communities will need to address, which range from day-to-day site-based logistics to the social and emotional well-being of students and staff.

California public schools (traditional and charter), private schools (including nonpublic nonsectarian schools), school districts, and county offices of education, herein referred to as schools, will determine the most appropriate instructional model, taking into account the needs of their students and staff, and their available infrastructure. This guidance is not intended to prevent a school from adopting a distance learning, hybrid, or mixed-delivery instructional model to ensure safety. Schools are not required to seek out or receive approval from a state or local public health officer prior to adopting a distance-learning model.

Implementation of this guidance will depend on local public health conditions, including those listed [here](#). Communities meeting those criteria, such as lower incidence of COVID-19 and adequate preparedness, may implement the guidance described below as part of a phased reopening. All decisions about following this guidance should be made in collaboration with local health officials and other authorities.

Implementation of this guidance should be tailored for each setting, including adequate consideration of instructional programs operating at each school site and the needs of students and families. School leaders should engage relevant stakeholders—including families, staff and labor partners in the school community—to formulate and implement plans that consider the following:

- Student, Family and Staff Population: Who are the student, family and staff populations who will be impacted by or can serve as partners in implementing any of the following measures?
- Ability to Implement or Adhere to Measures: Do staff, students and families have the tools, information, resources and ability to successfully adhere to or implement the new measures?
- Negative or Unintended Consequences: Are there any negative or unintended consequences to staff, students or families of implementing the measures and how can those consequences be mitigated?

This guidance is not intended to revoke or repeal any worker rights, either statutory, regulatory or collectively bargained, and is not exhaustive, as it does not include county health orders, nor is it a substitute for any existing safety and health-related regulatory requirements such as those of Cal/OSHA. Stay current on changes to public health guidance and state/local orders, as the COVID-19 situation continues.



1. General Measures

- Establish and continue communication with local and State authorities to determine current disease levels and control measures in your community. For example:
 - Review and refer to, if applicable, the relevant county variance documentation. Documentation can be found [here](#).
 - Consult with your county health officer, or designated staff, who are best positioned to monitor and provide advice on local conditions. A directory can be found [here](#).
 - Collaborate with other schools and school partners in your region, including the county office of education.
 - Regularly review updated guidance from state agencies, including the [California Department of Public Health](#) and [California Department of Education](#).
- Establish a written, worksite-specific COVID-19 prevention plan at every facility, perform a comprehensive risk assessment of all work areas and work tasks, and designate a person at each school to implement the plan.
 - Identify contact information for the local health department where the school is located for communicating information about COVID-19 outbreaks among students or staff.
 - Incorporate the [CDPH Guidance](#) for the Use of Face Coverings, into the School Site Specific Plan that includes a policy for handling exemptions.
 - Train and communicate with workers and worker representatives on the plan. Make the written plan available and accessible to workers and worker representatives.
 - Regularly evaluate the workplace for compliance with the plan and document and correct deficiencies identified.
 - Investigate any COVID-19 illness and determine if any work-related factors could have contributed to risk of infection. Update the plan as needed to prevent further cases.
 - Implement the necessary processes and protocols when a workplace has an outbreak, in accordance with [CDPH guidelines](#).
 - Identify individuals who have been in close contact (within six feet for

15 minutes or more) of an infected person and take steps to isolate COVID-19 positive person(s) and close contacts. See Section 10 for more detail.

- Adhere to these guidelines. Failure to do so could result in workplace illnesses that may cause classrooms or the entire school to be temporarily closed or limited.
- Evaluate whether and to what extent external community organizations can safely utilize the site and campus resources. Ensure external community organizations that use the facilities also follow this guidance.
- Develop a plan for the possibility of repeated closures of classes, groups or entire facilities when persons associated with the facility or in the community become ill with COVID-19. See Section 10 below.
- Develop a plan to further support students with access and functional needs who may be at increased risk of becoming infected or having unrecognized illness due to COVID-19. For example, review existing student health plans to identify students who may need additional accommodations, develop a process for engaging families for potentially unknown concerns that may need to be accommodated or identify additional preparations for classroom and non-classroom environments as needed. Groups who might be at increased risk of becoming infected or having unrecognized illness include the following:
 - Individuals who have limited mobility or require prolonged and close contact with others, such as direct support providers and family members;
 - Individuals who have trouble understanding information or practicing preventive measures, such as hand washing and physical distancing; and
 - Individuals who may not be able to communicate symptoms of illness.
- Schools should review the [CDPH Guidance for the Use of Face Coverings](#) and any applicable local health department guidance and incorporate face-covering use for students and workers into their COVID-19 prevention plan. Some flexibility may be needed for younger children consistent with child development recommendations. See Section 3 for more information.



2. Promote Healthy Hygiene Practices

- Teach and reinforce [washing hands](#), avoiding [contact with one's eyes, nose, and mouth](#), and [covering coughs and sneezes](#) among students and staff.
 - Teach students and remind staff to use tissue to wipe their nose and to cough/sneeze inside a tissue or their elbow.
 - Students and staff should wash their hands frequently throughout the day, including before and after eating; after coughing or sneezing; after classes where they handle shared items, such as outside recreation, art, or shop; and before and after using the restroom.
 - Students and staff should wash their hands for 20 seconds with soap, rubbing thoroughly after application. Soap products marketed as “antimicrobial” are not necessary or recommended.
 - Staff should model and practice handwashing. For example, for lower grade levels, use bathroom time as an opportunity to reinforce healthy habits and monitor proper handwashing.
 - Students and staff should use fragrance-free hand sanitizer when handwashing is not practicable. Sanitizer must be rubbed into hands until completely dry. Note: frequent handwashing is more effective than the use of hand sanitizers.
 - Ethyl alcohol-based hand sanitizers are preferred and should be used when there is the potential of unsupervised use by children.
 - Isopropyl hand sanitizers are more toxic when ingested or absorbed in skin.
 - Do not use hand sanitizers that may [contain methanol](#) which can be hazardous when ingested or absorbed.
 - Children under age 9 should only use hand sanitizer under adult supervision. Call Poison Control if consumed: 1-800-222-1222.
- Consider portable handwashing stations throughout a site and near classrooms to minimize movement and congregations in bathrooms to the extent practicable.
- Develop routines enabling students and staff to regularly wash their hands at staggered intervals.
- Ensure adequate supplies to support healthy hygiene behaviors, including soap, tissues, no-touch trashcans, face coverings, and hand sanitizers with at least 60 percent ethyl alcohol for staff and children who can safely use hand sanitizer.

- Information contained in the [CDPH Guidance](#) for the Use of Face Coverings should be provided to staff and families, which discusses the circumstances in which face coverings must be worn and the exemptions, as well as any policies, work rules, and practices the employer has adopted to ensure the use of face coverings.
- Employers must provide and ensure staff use face coverings in accordance with CDPH guidelines and all required protective equipment.
- The California Governor's Office of Emergency Services (CalOES) and the Department of Public Health (CDPH) are and will be working to support procurement and distribution of face coverings and personal protective equipment. Additional information can be found [here](#).
- Strongly recommend that all students and staff be immunized each autumn against influenza unless contraindicated by personal medical conditions, to help:
 - Protect the school community
 - Reduce demands on health care facilities
 - Decrease illnesses that cannot be readily distinguished from COVID-19 and would therefore trigger extensive measures from the school and public health authorities.
- Nothing in this guidance should be interpreted as restricting access to appropriate educational services.



3. Face Coverings

Face coverings must be used in accordance with [CDPH guidelines](#) unless a person is exempt as explained in the guidelines, particularly in indoor environments, on school buses, and areas where physical distancing alone is not sufficient to prevent disease transmission.

- Teach and reinforce use of [face coverings](#), or in limited instances, face shields.
- Students and staff should be frequently reminded not to touch the face covering and to [wash their hands](#) frequently.
- Information should be provided to all staff and families in the school community on [proper use, removal, and washing of cloth face coverings](#).
- Training should also include policies on how people who are exempted from wearing a face covering will be addressed.

STUDENTS

Age	Face Covering Requirement
Under 2 years old	No
2 years old – 2 nd grade	Strongly encouraged**
3 rd grade – High School	Yes, unless exempt

**Face coverings are strongly encouraged for young children between two years old and second grade, if they can be worn properly. A face shield is an acceptable alternative for children in this cohort who cannot wear them properly.

- Persons younger than two years old, anyone who has trouble breathing, anyone who is unconscious or incapacitated, and anyone who is otherwise unable to remove the face covering without assistance are exempt from wearing a face covering.
- A cloth face covering or face shield should be removed for meals, snacks, naptime, or outdoor recreation, or when it needs to be replaced. When a cloth face covering is temporarily removed, it should be placed in a clean paper bag (marked with the student's name and date) until it needs to be put on again.
- In order to comply with this guidance, schools must exclude students from campus if they are not exempt from wearing a face covering under CDPH guidelines and refuse to wear one provided by the school. Schools should develop protocols to provide a face covering to students who inadvertently fail to bring a face covering to school to prevent unnecessary exclusions. Schools should offer alternative educational opportunities for students who are excluded from campus.

STAFF

- All staff must use face coverings in accordance with [CDPH guidelines](#) unless Cal/OSHA standards require respiratory protection.
- In limited situations where a face coverings cannot be used for pedagogical or developmental reasons, (i.e. communicating or assisting young children or those with special needs) a face shield can be used instead of a cloth face covering while in the classroom as long as the wearer maintains physical distance from others, to the extent practicable. Staff must return to wearing a face covering outside of the classroom.

- Workers or other persons handling or serving food must use gloves in addition to face coverings. Employers should consider where disposable glove use may be helpful to supplement frequent handwashing or use of hand sanitizer; examples are for workers who are screening others for symptoms or handling commonly touched items.



4. Ensure Teacher and Staff Safety

- Ensuring staff maintain physical distancing from each other is critical to reducing transmission between adults.
- Ensure that all staff use face coverings in accordance with CDPH guidelines and Cal/OSHA standards.
- Support staff who are at higher risk for severe illness or who cannot safely distance from household contacts at higher risk, by providing options such as telework, where appropriate, or teaching in a virtual learning or independent study context.
- Conduct all staff meetings, professional development training and education, and other activities involving staff with physical distancing measures in place, or virtually, where physical distancing is a challenge.
- Minimize the use of and congregation of adults in staff rooms, break rooms, and other settings.
- Implement procedures for daily symptom monitoring for staff.



5. Intensify Cleaning, Disinfection, and Ventilation

- Consider suspending or modifying use of site resources that necessitate sharing or touching items. For example, consider suspending use of drinking fountains and instead encourage the use of reusable water bottles.
- Staff should [clean and disinfect](#) frequently-touched surfaces at school and on school buses at least daily and, as practicable, these surfaces should be cleaned and disinfected frequently throughout the day by trained custodial staff.
- Buses should be thoroughly cleaned and disinfected daily and after transporting any individual who is exhibiting symptoms of COVID-19. Drivers should be provided disinfectant wipes and disposable gloves to

support disinfection of frequently touched surfaces during the day.

- Frequently touched surfaces in the school include, but are not limited to:
 - Door handles
 - Light switches
 - Sink handles
 - Bathroom surfaces
 - Tables
 - Student Desks
 - Chairs
- Limit use and sharing of objects and equipment, such as toys, games, art supplies and playground equipment to the extent practicable. When shared use is allowed, clean and disinfect between uses.
- When choosing disinfecting products, use those approved for use against COVID-19 on the [Environmental Protection Agency \(EPA\)-approved list "N"](#) and follow product instructions.
 - To [reduce the risk of asthma](#) and other health effects related to disinfecting, programs should select disinfectant products on list N with asthma-safer ingredients (hydrogen peroxide, citric acid or lactic acid) as recommended by the US EPA Design for Environment program.
 - Avoid products that contain peroxyacetic (paracetic) acid, sodium hypochlorite (bleach) or quaternary ammonium compounds, which can cause asthma.
 - Follow label directions for appropriate dilution rates and contact times. Provide workers training on the chemical hazards, **manufacturer's directions**, Cal/OSHA requirements for safe use, and as applicable and as required by the Healthy Schools Act.
 - Custodial staff and any other workers who clean and disinfect the school site must be equipped with proper protective equipment, including gloves, eye protection, respiratory protection, and other appropriate protective equipment as required by the product instructions. All products must be kept out of children's reach and stored in a space with restricted access.
 - Establish a cleaning and disinfecting schedule in order to avoid both under- and over-use of cleaning products.

- Ensure safe and correct application of disinfectant and keep products away from students.
- Ensure proper ventilation during cleaning and disinfecting. Introduce fresh outdoor air as much as possible, for example, by opening windows where practicable. When cleaning, air out the space before children arrive; plan to do thorough cleaning when children are not present. If using air conditioning, use the setting that brings in outside air. Replace and check air filters and filtration systems to ensure optimal air quality.
 - If opening windows poses a safety or health risk (e.g., by allowing pollen in or exacerbating asthma symptoms) to persons using the facility, consider alternatives. For example, maximize central air filtration for HVAC systems (targeted filter rating of at least MERV 13).
- Consider installing portable high-efficiency air cleaners, upgrading the building's air filters to the highest efficiency possible, and making other modifications to increase the quantity of outside air and ventilation in classrooms, offices and other spaces.
- [Take steps](#) to ensure that all water systems and features (for example, drinking fountains and decorative fountains) are safe to use after a prolonged facility shutdown to minimize the risk of [Legionnaires' disease](#) and other diseases associated with water.



6. Implementing Distancing Inside and Outside the Classroom



Arrival and Departure

- Maximize space between students and between students and the driver on school buses and open windows to the greatest extent practicable.
- Minimize contact at school between students, staff, families and the community at the beginning and end of the school day. Prioritize minimizing contact between adults at all times.
- Stagger arrival and drop off-times and locations as consistently as practicable as to minimize scheduling challenges for families.
- Designate routes for entry and exit, using as many entrances as feasible. Put in place other protocols to limit direct contact with others as much as practicable.
- Implement health screenings of students and staff upon arrival at school (see Section 9).

- Ensure each bus is equipped with extra unused face coverings on school buses for students who may have inadvertently failed to bring one.

Classroom Space

- To reduce possibilities for infection, students must remain in the same space and in cohorts as small and consistent as practicable, including for recess and lunch. Keep the same students and teacher or staff with each group, to the greatest extent practicable.
- Prioritize the use and maximization of outdoor space for activities where practicable.
- Minimize movement of students and teachers or staff as much as practicable. For example, consider ways to keep teachers with one group of students for the whole day. In secondary schools or in situations where students have individualized schedules, plan for ways to reduce mixing among cohorts and to minimize contact.
- Maximize space between seating and desks. Distance teacher and other staff desks at least six feet away from student desks. Consider ways to establish separation of students through other means if practicable, such as, six feet between desks, where practicable, partitions between desks, markings on classroom floors to promote distancing or arranging desks in a way that minimizes face-to-face contact.
- Consider redesigning activities for smaller groups and rearranging furniture and play spaces to maintain separation.
- Staff should develop instructions for maximizing spacing and ways to minimize movement in both indoor and outdoor spaces that are easy for students to understand and are developmentally appropriate.
- Activities where there is increased likelihood for transmission from contaminated exhaled droplets such as band and choir practice and performances are not permitted.
- Activities that involve singing must only take place outdoors.
- Implement procedures for turning in assignments to minimize contact.
- Consider using privacy boards or clear screens to increase and enforce separation between staff and students.



Non-Classroom Spaces

- Limit nonessential visitors, volunteers and activities involving other groups at the same time.
- Limit communal activities where practicable. Alternatively, stagger use, properly space occupants and disinfect in between uses.
- Consider use of non-classroom space for instruction, including regular use of outdoor space, weather permitting. For example, consider part-day instruction outside.
- Minimize congregate movement through hallways as much as practicable. For example, establish more ways to enter and exit a campus, create staggered passing times when necessary or when students cannot stay in one room and create guidelines on the floor that students can follow to enable physical distancing while passing. In addition, schools can consider eliminating the use of lockers and moving to block scheduling, which supports the creation of cohort groups and reduces changes of classrooms.
- Serve meals outdoors or in classrooms instead of cafeterias or group dining rooms where practicable. Where cafeterias or group dining rooms must be used, keep students together in their cohort groups, ensure physical distancing, and consider assigned seating. Serve individually plated or bagged meals. Avoid sharing of foods and utensils and buffet or family-style meals.
- Consider holding recess activities in separated areas designated by class.



7. Limit Sharing

- Keep each child's belongings separated and in individually labeled storage containers, cubbies or areas. Ensure belongings are taken home each day to be cleaned.
- Ensure adequate supplies to minimize sharing of high-touch materials (art supplies, equipment, etc.) to the extent practicable or limit use of supplies and equipment to one group of children at a time and clean and disinfect between uses.
- Avoid sharing electronic devices, clothing, toys, books and other games or learning aids as much as practicable. Where sharing occurs, clean and disinfect between uses.



8. Train All Staff and Educate Families

- Train all staff and provide educational materials to families in the following safety actions:
 - Enhanced sanitation practices
 - Physical distancing guidelines and their importance
 - [Proper use, removal, and washing of face coverings](#)
 - Screening practices
 - How COVID-19 is spread
 - COVID-19 specific [symptom](#) identification
 - Preventing the spread of COVID-19 if you are sick, including the importance of not coming to work if staff members have symptoms, or if they or someone they live with has been diagnosed with COVID-19.
 - For workers, COVID-19 specific [symptom](#) identification and when to seek medical attention
 - The employer's plan and procedures to follow when children or adults become sick at school.
 - The employer's plan and procedures to protect workers from COVID-19 illness.
- Consider conducting the training and education virtually, or, if in-person, ensure a minimum of six-foot distancing is maintained.



9. Check for Signs and Symptoms

- Prevent discrimination against students who (or whose families) were or are diagnosed with COVID-19 or who are perceived to be a COVID-19 risk.
- Actively encourage staff and students who are sick or who have recently had [close contact](#) with a person with COVID-19 to stay home. Develop policies that encourage sick staff and students to stay at home without **fear of reprisal, and ensure staff, students and students' families** are aware of these policies.
- Implement screening and other procedures for all staff and students entering the facility.

- Conduct visual wellness checks of all students or establish procedures for parents to monitor at home. If checking temperatures, use a no-touch thermometer.
- Ask all individuals if they or anyone in their home is exhibiting [COVID-19 symptoms](#).
- Make available and encourage use of hand-washing stations or hand sanitizer.
- Document/track incidents of possible exposure and notify local health officials, staff and families immediately of any exposure to a positive case of COVID-19 at school while maintaining confidentiality, as required under FERPA and state law related to privacy of educational records. Additional guidance can be found [here](#). As noted in Section 11 below, the staff liaison can serve a coordinating role to ensure prompt and responsible notification.
- If a student is exhibiting symptoms of COVID-19, staff should communicate with the parent/caregiver and refer to the student's health history form and/or emergency card.
- Monitor staff and students throughout the day for signs of illness; send home students and staff with a fever of 100.4 degrees or higher, cough or other [COVID-19 symptoms](#).
- Policies should not penalize students and families for missing class.



10. Plan for When a Staff Member, Child or Visitor Becomes Sick

- Work with school administrators, nurses and other healthcare providers to identify an isolation room or area to separate anyone who exhibits symptoms of COVID-19.
- Any students or staff exhibiting symptoms should immediately be required to wear a face covering and be required to wait in an isolation area until they can be transported home or to a healthcare facility, as soon as practicable.
- Establish procedures to arrange for safe transport home or to a healthcare facility, as appropriate, when an individual is exhibiting COVID-19 symptoms:
 - Fever
 - Cough

- Shortness of breath or difficulty breathing
- Chills
- Repeated shaking with chills
- Fatigue
- Muscle pain
- Headache
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea
- New loss of taste or smell
- For serious injury or illness, call 9-1-1 without delay. Seek medical attention if COVID-19 symptoms become severe, including persistent pain or pressure in the chest, confusion, or bluish lips or face. Updates and further details are available on [CDC's webpage](#).
- Notify local health officials immediately of any positive case of COVID-19, and exposed staff and families as relevant while maintaining confidentiality as required by state and federal laws. Additional guidance can be found [here](#).
- Close off areas used by any individual suspected of being infected with the virus that causes COVID-19 and do not use before cleaning and disinfection. To reduce risk of exposure, wait 24 hours before you [clean and disinfect](#). If it is not possible to wait 24 hours, wait as long as practicable. Ensure a [safe and correct application](#) of disinfectants using personal protective equipment and ventilation recommended for cleaning. Keep disinfectant products away from students.
- Advise sick staff members and students not to return until they have met CDC criteria to discontinue [home isolation](#), including at least 3 days with no fever, symptoms have improved and at least 10 days since symptoms first appeared.
- Ensure that students, including students with disabilities, have access to instruction when out of class, as required by federal and state law.
- Schools should offer distance learning based on the unique circumstances of each student who would be put at-risk by an in-person instructional model. For example, students with a health condition,

students with family members with a health condition, students who cohabitate or regularly interact with high-risk individuals, or are otherwise identified as “at-risk” by the parents or guardian, are students whose circumstances merit coffering distances learning.

- Implement the necessary processes and protocols when a school has an outbreak, in accordance with [CDPH guidelines](#).
- Investigate the COVID-19 illness and exposures and determine if any work-related factors could have contributed to risk of infection. Update protocols as needed to prevent further cases.
- Update protocols as needed to prevent further cases. See the CDPH guidelines, [Responding to COVID-19 in the Workplace](#), which are incorporated into this guidance and contain detailed recommendations for establishing a plan to identify cases, communicating with workers and other exposed persons, and conducting and assisting with contact tracing.



11. Maintain Healthy Operations

- Monitor staff absenteeism and have a roster of trained back-up staff where available.
- Monitor the types of illnesses and symptoms among your students and staff to help isolate them promptly as needed.
- Designate a staff liaison or liaisons to be responsible for responding to COVID-19 concerns. Workers should know who they are and how to contact them. The liaison should be trained to coordinate the documentation and tracking of possible exposure, in order to notify local health officials, staff and families in a prompt and responsible manner.
- Maintain communication systems that allow staff and families to self-report symptoms and receive prompt notifications of exposures and closures, while maintaining confidentiality, as required by FERPA and state law related to privacy of educational records. Additional guidance can be found [here](#).
- Consult with local health departments if routine testing is being considered by a local educational agency. The role of providing routine systematic testing of staff or students for COVID-19 (e.g., PCR swab testing for acute infection, or presence of antibodies in serum after infection) is currently unclear.
- Support students who are at higher risk for severe illness or who cannot safely distance from household contacts at higher risk, by providing options such as virtual learning or independent stud



12. Considerations for Reopening and Partial or Total Closures

California schools have been closed for in-person instruction since mid-March 2020 due to the COVID-19 pandemic. School closures to in-person instruction were part of a broader set of recommendations intended to reduce transmission of SARS-CoV-2, the virus that causes COVID-19. For more detailed direction on measures to be taken when a student, teacher, or staff member has symptoms or is diagnosed with COVID-19, please see the [COVID-19 and Reopening Framework for K-12 Schools in California](#).

- Check State and local orders and health department notices daily about transmission in the area or closures and adjust operations accordingly.
- When a student, teacher or staff member tests positive for COVID-19 and had exposed others at the school, refer to the [CDPH Framework for K-12 Schools](#), and implement the following steps:
 - In consultation with the local public health department, the appropriate school official may decide whether school closure versus cleaning and quarantine of exposed persons or other intervention is warranted, including the length of time necessary, based on the risk level within the specific community as determined by the local public health officer.
 - Close off the classroom or office where the patient was based and do not use these areas until after cleaning and disinfection. Wait at least 24 hours before cleaning and disinfecting. If 24 hours is not feasible, wait as long as possible.
 - Additional areas of the school visited by the COVID-19 positive individual may also need to be closed temporarily for cleaning and disinfection.
 - Implement communication plans for exposure at school and potential school closures to include outreach to students, parents, teachers, staff and the community.
 - Include information for staff regarding labor laws, information regarding Disability Insurance, Paid Family Leave and Unemployment Insurance, as applicable to schools. See additional [information on government programs supporting sick leave and worker's compensation for COVID-19](#), including worker's sick leave rights under [the Families First Coronavirus Response Act](#) and employee's rights to workers' compensation benefits and

presumption of the work-relatedness of COVID-19 pursuant to the [Governor's Executive Order N-62-20](#), while that Order is in effect.

- o Provide guidance to parents, teachers and staff reminding them of the importance of community physical distancing measures while a school is closed, including discouraging students or staff from gathering elsewhere.
- o Develop a plan for continuity of education. Consider in that plan how to also continue nutrition and other services provided in the regular school setting to establish alternate mechanisms for these services to continue.
- o Maintain regular communications with the local public health department.



EXHIBIT 3

COVID-19 and Reopening In-Person Learning
Framework for K-12 Schools in California, 2020-2021 School Year
July 17, 2020

Overview

California schools have been closed for in-person instruction since mid-March 2020 due to the COVID-19 pandemic. School closures to in-person instruction were part of a broader set of recommendations intended to reduce transmission of SARS-CoV-2, the virus that causes COVID-19. CDPH developed the following framework to support school communities as they decide when and how to implement in-person instruction for the 2020-2021 school year. New evidence and data about COVID-19 transmission, including variations by age, and the effectiveness of disease control and mitigation strategies continues to emerge regularly. Recommendations regarding in-person school reopening and closure should be based on the available evidence as well state and local disease trends.

The CA [School Sector Specific Guidelines](#), and the Centers for Disease Control and Prevention [CDC](#) have published additional guidance on school re-entry.

In-Person Re-Opening Criteria

Schools and school districts may reopen for in-person instruction at any time if they are located in a local health jurisdiction (LHJ) that has not been on the county¹ monitoring list within the prior 14 days.

If the LHJ has been on the monitoring list within the last 14 days, the school must conduct distance learning only, until their LHJ has been off the monitoring list for at least 14 days.²

¹ School districts in LHJs that are cities are considered to be included as part of the county if the county is on the monitoring list.

² A waiver of this criteria may be granted by the local health officer for elementary schools to open for in-person instruction. A waiver may only be granted if one is requested by the superintendent (or equivalent for charter or private schools), in consultation with labor, parent and community organizations. Local health officers must review local community epidemiological data, consider other public health interventions, and consult with CDPH when considering a waiver request.

Guidance Once Re-Opened to In-Person Instruction

How should schools think about testing?

Once schools are re-opened to at least some in-person instruction, it is recommended that surveillance testing be implemented based on the local disease trends. If epidemiological data indicates concern for increasing community transmission, schools should increase testing of staff to detect potential cases as lab testing capacity allows.

Who should be tested and how often?

School staff are essential workers, and staff includes teachers, para-professionals, cafeteria workers, janitors, bus drivers, or any other school employee that may have contact with students or other staff. School districts and schools shall test staff periodically, as testing capacity permits and as practicable. Examples of recommended frequency include testing all staff over 2 months, where 25% of staff are tested every 2 weeks, or 50% every month to rotate testing of all staff over time.

What if a school or school district reopens to in-person instruction, but the county is later placed on the county monitoring list?

Schools should begin testing staff, or increase frequency of staff testing but are not required to close.

What measures should be taken when a student, teacher or staff member has symptoms, is a contact of someone infected, or is diagnosed with COVID-19?

	Student or Staff with:	Action	Communication
1.	<p>COVID-19 Symptoms (e.g., fever, cough, loss of taste or smell, difficulty breathing)</p> <p>Symptom Screening: Per CA School Sector Specific Guidelines</p>	<ul style="list-style-type: none"> • Send home • Recommend testing (If positive, see #3, if negative, see #4) • School/classroom remain open 	<ul style="list-style-type: none"> • No Action needed
2.	Close contact (+) with a confirmed COVID-19 case	<ul style="list-style-type: none"> • Send home • Quarantine for 14 days from last exposure • Recommend testing (but will not shorten 14-day quarantine) • School/classroom remain open 	<ul style="list-style-type: none"> • Consider school community notification of a known contact
3.	Confirmed COVID-19 case infection	<ul style="list-style-type: none"> • Notify the local public health department • Isolate case and exclude from school for 10 days from symptom onset or test date • Identify contacts (+), quarantine & exclude exposed contacts (likely entire cohort (++)) for 14 days after the last date the case was present at school while infectious • Recommend testing of contacts, prioritize symptomatic contacts (but will not shorten 14-day quarantine) • Disinfection and cleaning of classroom and primary spaces where case spent significant time • School remains open 	<ul style="list-style-type: none"> • School community notification of a known case
4.	Tests negative after symptoms	<ul style="list-style-type: none"> • May return to school 3 days after symptoms resolve • School/classroom remain open 	<ul style="list-style-type: none"> • Consider school community notification if prior awareness of testing



(†) A contact is defined as a person who is <6 feet from a case for >15 minutes. In some school situations, it may be difficult to determine whether individuals have met this criterion and an entire cohort, classroom, or other group may need to be considered exposed, particularly if people have spent time together indoors.

(††) A cohort is a stable group with fixed membership that stays together for all courses and activities (e.g., lunch, recess, etc.) and avoids contact with other persons or cohorts.

Guidance on School Closure

What are the criteria for closing a school?

Individual school closure is recommended based on the number of cases, the percentage of the teacher/students/staff that are positive for COVID-19, and following consultation with the Local Health Officer. Individual school closure may be appropriate when there are multiple cases in multiple cohorts at a school or when at least 5 percent of the total number of teachers/student/staff are cases within a 14-day period, depending on the size and physical layout of the school.

The Local Health Officer may also determine school closure is warranted for other reasons, including results from public health investigation or other local epidemiological data.

If a school is closed for in-person learning, when may it reopen?

Schools may typically reopen after 14 days and the following have occurred:

- Cleaning and disinfection
- Public health investigation
- Consultation with the local public health department

What are the criteria for closing a school district?

A superintendent should close a school district if 25% or more of schools in a district have closed due to COVID-19 within 14 days, and in consultation with the local public health department.

If a school district is closed, when may it reopen?

Districts may typically reopen after 14 days, in consultation with the local public health department.

State Resources for Case, Contact & Outbreak Investigations

California is committed to supporting local health departments with resources and other technical assistance regarding school case, contact, and outbreak investigations.



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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF DR. JAYANTA
BHATTACHARYA IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, JAYANTA BHATTACHARYA, declare as follows:

24 1. I am a resident of Los Altos, California. I am 52-years-old, and I am
25 otherwise competent to render this declaration.

26 2. I am a Professor of Medicine at Stanford University and have worked on the
27 Stanford University faculty since 2001. I had an MD and a Ph.D. in economics, both
28 earned from Stanford University. I am the director of the Stanford Center for



1 Demography and Economics of Health and Aging. At Stanford, I teach courses on health
2 economics in the Economics department and on advanced statistical methods in the
3 School of Medicine.

4 3. My primary research area is health economics, including a focus on
5 economic epidemiology. Between 1996 and 2020, I have published 136 articles in peer-
6 reviewed journals, including top-ranked journals in the economics, statistics, public
7 health, epidemiology, medicine, and health policy literatures. I have published numerous
8 papers on the economics and medicine of infectious disease, including on the economics
9 and epidemiology of HIV, H1N1 flu, H5N1 flu, seasonal influenza, antimicrobial
10 resistance and antibiotic use, and COVID-19. I have written a popular textbook, *Health*
11 *Economics*, used to teach the subject in universities around the world. The textbook
12 includes a chapter on economic epidemiology that surveys the literature on disease
13 modeling, including compartment models such as the Susceptible-Infected-Recovered
14 (SIR) models, commonly in use to forecast the COVID-19 epidemic.

15 4. I have been actively researching the COVID-19 epidemic using my
16 expertise in infectious disease epidemiology and health economics. To date, I have
17 published two papers in peer-reviewed journals related to the epidemic, In addition, I
18 have written three articles that are currently under consideration at peer-reviewed
19 journals, and I have published three editorials on economic¹ and epidemiological² issues
20 related to the epidemic, including an editorial³ on optimal public health management of
21 the epidemic.

22
23 ¹ Jay Bhattacharya and Mikko Packalen, *Lives vs Lives: The Global Cost of Lockdown*,
24 Spectator USA, <https://spectator.us/lives-vs-lives-global-cost-lockdown/> (last visited
25 July 9, 2020).

26 ² Eran Bendavid and Jay Bhattacharya, *Is the Coronavirus as Deadly as They Say?*,
27 WSJ Opinion, <https://www.wsj.com/articles/is-the-coronavirus-as-deadly-as-they-say-11585088464> (March 24, 2020).

28 ³ Jay Bhattacharya and Sanjiv Agarwal, Lift lockdowns, protect the vulnerable, treat
Covid like a health issue and not a disaster, The Print, <https://theprint.in/health/lift->

1 5. My published papers on COVID-19 includes the first published serological
2 study measuring the prevalence of the COVID-19 epidemic. This study, conducted in LA
3 County, uses evidence from a specific antibody response to SARS-CoV-2 (the virus that
4 causes COVID-19) infection in an adult community-dwelling sample picked to be
5 representative of the county. This piece was published in the *Journal of the American*
6 *Medical Association*, one of the leading peer-reviewed journals in medicine. This paper
7 finds that by April 10 - 11, 2020, 4.3% of LA County adults show specific antibody
8 evidence of prior or current COVID-19 infection. This prevalence rate represents a
9 multiple of 43.5 times the number of cases confirmed by the county public health
10 authority by that date. One important implication of this paper is that the infection fatality
11 rate from COVID-19 infection in LA County up to the date of the survey (that is, the
12 probability of dying given that a person is infected with SARS-CoV-2) is at least an order
13 of magnitude lower than the case fatality rate. The case fatality rate includes only patients
14 who were infected with SARS-CoV-2 and identified as a case in the denominator of the
15 calculation. Cases most typically include patients who have severe symptoms and thus
16 come to the attention of medical authorities. Our study shows that cases represent only a
17 small fraction of the set of people who have been infected with SARS-CoV-2. I served
18 as the senior author for this article.

19 6. I have also published a second peer-reviewed paper in the *Journal of Public*
20 *Health* on racial disparities in knowledge and attitudes regarding the danger posed by
21 COVID-19 infection and the efficacy of personal behaviors like hand washing and social
22 distancing in protecting against infection. I reviewed the literature cited in the paper
23 regarding best practices for personal protection to prevent exposure to SARS-CoV-2.

24 7. I currently have three unpublished papers on COVID-19 presently
25 undergoing peer review. These include two papers reporting on seroprevalence studies
26 and a third paper using data from seroprevalence studies in the context of an SIR model

27 _____
28 [lockdowns-protect-the-vulnerable-treat-covid-like-a-health-issue-and-not-a-disaster/466786/](https://www.cdc.gov/media/releases/2020/s110320-covid-19-lockdowns-protect-the-vulnerable-treat-covid-like-a-health-issue-and-not-a-disaster/466786/) (last visited July 26, 2020)

1 to forecast the spread of COVID-19 in a way that accounts for the large number of
2 asymptomatic patients.

3 8. First, I am the senior author of the Santa Clara County seroprevalence study.
4 It is the first seroprevalence study where the study team made a scientific paper available
5 (undergoing peer review), and it is still, to my knowledge, the largest community
6 seroprevalence survey in the US. The results from Santa Clara County (SCC) were
7 similar to the results from the LA County seroprevalence study. On April 3rd & 4th, 2020,
8 the seroprevalence of SARS-CoV-2 antibodies in the SCC sample, reweighted to match
9 the zip code of residence, sex, and race distribution of SCC, was 2.8%. The Santa Clara
10 study has been enormously influential and has served as a template for the many
11 seroprevalence studies that have followed it. The preprint article reporting on the Santa
12 Clara study, though not peer-reviewed, has generated 147 citations (according to Google
13 Scholar accessed on July 9, 2020) to date.

14 9. Second, I am the senior author of a study (still undergoing peer review)
15 measuring the seroprevalence of SARS-CoV-2 infection among employees of Major
16 League Baseball on April 14th & 15th, 2020. This is the first seroprevalence study of
17 national scope measuring the extent of COVID-19. The main finding from that study is
18 that, as of the date of data collection, the prevalence of current or prior COVID-19
19 infection in the MLB employee population was 0.7%.

20 10. Finally, I am a co-author of a preprint paper (still undergoing peer review)
21 titled "Visualizing the Invisible: The Effect of Asymptomatic Transmission on the
22 Outbreak Dynamics of COVID-19." This paper presents the first forecasting model that
23 accounts for data provided by seroprevalence studies such as the LA County, Santa Clara
24 County, and MLB studies. In particular, the model accounts for the vast population of
25 previously infected people identified by the seroprevalence studies and challenges the
26 notion that contact tracing can be a viable strategy to control the further spread of
27 COVID-19 infection.

28

1 11. In addition to my published work, over the past three months, I have been
2 invited to serve as a peer reviewer for several scientific journals to review COVID-19
3 related submissions by other scientists. These journals include the *British Medical*
4 *Journal*, *Health Affairs*, the *Journal of Infectious Disease*, and the *Annals of Internal*
5 *Medicine*. For these journals, I have provided scientific advice regarding the publication
6 of articles on topics related to the COVID-19 epidemic.

7 12. In May 2020, I testified at a virtual roundtable organized by Senator Pat
8 Toomey on the subject of the potential reopening of youth baseball leagues while
9 protecting the safety of participants. At this roundtable, I reviewed the evidence regarding
10 the relatively low mortality and morbidity risk that SARS-CoV-2 infection poses to
11 children and adolescents, and I discussed social distancing and other protocols to make
12 youth baseball safer for coaches, umpires, and other adult participants.

13 13. In July 2020, I was invited to testify at a House Oversight Briefing to the
14 Economic and Consumer Policy Subcommittee on SARS-CoV-2 vaccine development.
15 My testimony focused on the randomized trials and other studies currently underway to
16 produce a safe and effective vaccine to SARS-CoV-2 infection, and in particular on the
17 confidence that the public can have on the US Food and Drug Administration's (FDA)
18 evaluation of the scientific evidence regarding new vaccines.

19 14. Plaintiffs in this case contacted me about providing expert testimony
20 regarding the risks of opening schools in California this Fall, and I agreed to provide an
21 affidavit with my professional opinion on these matters. I am not taking any personal
22 payments for my COVID-19 related work, so my work on this affidavit is pro-bono.

23 15. To prepare this affidavit, I have reviewed the Governor's Executive Order
24 N-60-20 and the July 17, 2020 "COVID-19 Industry Guidance: School and School-Based
25 Programs." I have also closely studied the scientific data on COVID-19. I have
26 compared the Governor's July 17th order against guidelines provided by both the World
27 Health Organization (WHO) and the US Centers for Disease Control (CDC) for school
28

1 reopening. My main conclusion is that there is no scientific basis for closing schools
2 across the state this Fall.

3 16. The World Health Organization (WHO) guidance⁴ on school opening
4 emphasizes that school opening decisions be based on the “Current understanding about
5 COVID-19 transmission and severity in children”, the “Local situation and epidemiology
6 of COVID-19 where the school(s) are located “, and the “School setting and ability to
7 maintain COVID-19 prevention and control measure”. The WHO guidance explicitly
8 recommends the consideration of “what harm might occur due to school closure (e.g. risk
9 of non-return to school, widening disparity in educational attainment, limited access to
10 meals, domestic violence aggravated by economic uncertainties etc.), and the need to
11 maintain schools at least partially open for children whose caregivers are ‘key workers’
12 for the country.”

13 17. The US Centers for Disease Control (CDC) March 12th, 2020 interim
14 guidance⁵ concurs with the WHO guidance document, with an emphasis on accounting
15 for local conditions regarding disease spread and providing concrete guidance on steps
16 to take (masks, social distancing, staff training, and the like) to open schools safely. The
17 interim guidance suggests keeping schools open even if there is moderate community
18 spread of SARS-CoV-2 infection, with school closures limited only to communities with
19 “substantial” community spread.

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23
24 ⁴ World Health Organization (2020) Considerations for school-related public health
25 measures in the context of COVID-19.

26 [https://www.who.int/publications/i/item/considerations-for-school-related-public-
27 health-measures-in-the-context-of-covid-19](https://www.who.int/publications/i/item/considerations-for-school-related-public-health-measures-in-the-context-of-covid-19)

28 ⁵ Centers for Disease Control (2020) Interim Guidance for Administrators of US K-12
Schools and Child Care Programs. [https://www.cdc.gov/coronavirus/2019-
ncov/community/schools-childcare/guidance-for-schools.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html)

1 18. The US CDC July 23rd, 2020 guidance⁶ on school opening (entitled “The
2 Importance of Reopening Schools this Fall”) emphasizes the well-documented benefits
3 of keeping schools open. Among the harms of extended school closure include: (1)
4 “severe learning loss” for all students, but especially students with special needs and
5 disabilities; (2) widening of income and racial disparities in educational outcomes for
6 children; (3) hampered development of social and emotional skills by children and
7 potential harm to child mental health; (4) exposure of children to heightened risk of
8 “physical, sexual, and emotional maltreatment and abuse” at home from some families;
9 (5) nutritional deprivation of poor children due to the cessation of school meal programs;
10 and (6) sharp reduction in regular physical activity by children in the absence of physical
11 education programs. Crucially, the CDC recommends that these harms be taken into
12 account in school closure decisions. The guidance document closes by suggesting that
13 “[r]eopening schools creates opportunity to invest in the education, well-being, and future
14 of one of America’s greatest assets—our children—while taking every precaution to
15 protect students, teachers, staff and all their families.”

16 19. Governor Newsom’s Executive Order N-60-20⁷, issued on May 4th, 2020,
17 did not specifically mention schools, but invested power in the State Public Health
18 Officer to make determinations about the re-openings of “businesses and spaces” that are
19 more restrictive than those made by local county public health authorities. Under this
20 authority, on July 17th, 2020, the California Department of Public Health forced the
21 closure of all schools in California counties that have been on the state’s county
22 monitoring list.⁸

23 _____
24 ⁶ Centers for Disease Control (2020) The Importance of Reopening America’s Schools
25 this Fall. [https://www.cdc.gov/coronavirus/2019-ncov/community/schools-
childcare/reopening-schools.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html)

26 ⁷ Newsom G (2020) Executive Order N-60-20. [https://www.gov.ca.gov/wp-
content/uploads/2020/05/5.4.20-EO-N-60-20-text.pdf](https://www.gov.ca.gov/wp-content/uploads/2020/05/5.4.20-EO-N-60-20-text.pdf)

27 ⁸ California Department of Public Health (2020) COVID-19 and Reopening In-Person
28 Learning: Framework for K-12 Schools in California, 2020-2021 School Year.

1 20. The state places a county on this list if it meets at least one of six criteria
2 related to the number of COVID-19 PCR tests conducted or positivity rate, number of
3 cases and growth in cases, growth in hospitalizations, or inadequate hospital ICU or
4 ventilator capacity. None of these criteria are related to the risks to children or to teachers
5 that arise from reopening schools for in-person teaching. The scientific evidence indicates
6 that a county could meet all six criteria for closing schools, and the marginal public health
7 risk from conducting school in-person would be small. In particular, the order ignores the
8 evidence that the mortality risk and severe adverse health outcome risk to children from
9 COVID-19 disease is small or negligible. The order ignores the fact that children are
10 exceedingly unlikely to pass the virus on to adults. The evidence on these points are
11 covered extensively below. The order ignores the fact that keeping schools closed results
12 in public health harm to children outlined in the WHO's guidance on school opening
13 discussed in paragraph 16 above, and the CDC's guidance on school opening discussed
14 in paragraph 18 above. The governor's executive order thus ignores the recommendations
15 of both the CDC and the WHO that school reopening decisions take account of the latest
16 scientific evidence on risk to children and viral transmission dynamics, relevant local
17 conditions, and the public health harm arising from keeping schools closed.

18 21. In the paragraphs that follow, drawn both from my own work and from the
19 scientific literature on COVID-19, I discuss (1) the relative risk that young people (below
20 age 25) with active SARS-CoV-2 infection pose with regard to infecting older people;
21 (2) the mortality risk from COVID-19 infection for patients of different ages; and (3) the
22 public health community's approval of the principle that individuals and groups may
23 appropriately take actions that raise the risk of COVID-19 infection if the value provided
24 by those actions to participants is sufficiently large to outweigh the infection-related
25 harms.

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27
28 <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/Schools%20Reopening%20Recommendations.pdf>

1 22. The overwhelming weight of scientific data suggests that the risk of
2 transmission of the virus from younger people aged 20 and below to older people is small
3 or negligible, and the risk of transmission from people 20 to 25 to older people is small
4 relative to the risk of transmission from people older than 25 to others older than 25.

5 23. The most important evidence on childhood spread of the disease comes from
6 a study conducted in Iceland and published in the *New England Journal of Medicine*.⁹
7 The data for this study come from Iceland's systematic screening of its population to
8 check for the virus. The study reports on both a population-representative sample and a
9 sample of people who were tested because of the presence of symptoms consistent with
10 COVID-19 infection. The study team isolated SARS-CoV-2 virus samples from every
11 positive case, sequenced the genome of the virus for every case, and tracked the mutation
12 patterns in the virus. This analysis, along with contact tracing data, allowed the study
13 team to identify who passed the virus to whom. From this analysis, the senior author of
14 the study, Dr. Kari Stefansson, concluded¹⁰ that "[E]ven if children do get infected, they
15 are less likely to transmit the disease to others than adults. We have not found a single
16 instance of a child infecting parents. There is amazing diversity in the way in which we
17 react to the virus."

18 24. A French study,¹¹ conducted by scientists at the L'Institut Pasteur, examined
19 data from school-teachers, students, and their parents in Crepy-en-Valois in France.
20 Collecting data in late April 2020, the authors found that 61% of the parents of infected

21 _____
22 ⁹ Daniel F. Gudbjartsson, Ph.D., Agnar Helgason, Ph.D., et al., *Spread of SARS-CoV-2*
23 *in the Icelandic Population*, *The New England Journal of Medicine*,
<https://www.nejm.org/doi/full/10.1056/NEJMoa2006100> (June 11, 2020).

24 ¹⁰ Roger Highfield, *Coronavirus: Hunting Down COVID-10*, Science Museum Group,
25 <https://www.sciencemuseumgroup.org.uk/blog/hunting-down-covid-19/> (April 27,
2020).

26 ¹¹ Arnaud Fontanet, MD, DrPH, Rebecca Grant, et al., *SARS-CoV-2 Infection in Primary*
27 *Schools in Northern France: A Retrospective Cohort Study in an Area of High*
28 *Transmission*, Institut Pasteur, <https://www.pasteur.fr/fr/file/35404/download> (last
visited July 9, 2020).

1 students were infected by SARS-CoV-2, while 6.9% of parents of non-infected students
2 were infected. The schools in France were closed from the end of January on, at first
3 because of February holiday and then the late February lockdown. The authors found
4 three cases among kids in January using antibody tests but found no evidence of virus
5 spread to other kids or teachers from those early cases. Any spread between the end of
6 January and the end of April (when the authors collected samples) must have occurred
7 during the lockdown. The kids who tested antibody positive at the end of April, because
8 of the circumstances of the lockdown, must have become positive from a source other
9 than their school. The main contacts of the young children were their parents, of whom
10 61% were positive, which is consistent with parent to child spread. Also consistent is the
11 fact that only 6.9% parents tested positive in April for the virus among the kids who were
12 antibody negative. The authors' main conclusion¹² from these facts is that parents were
13 the source of infections in school children; children were not the source. This finding
14 bolsters the conclusion from the Icelandic study that the disease spreads less easily from
15 children to adults than it does from adults to adults.

16 25. Researchers in Ireland conducted a similar but smaller study¹³ that
17 exhaustively tracked the contacts of three schoolchildren (10-15 years old) and three
18 adults (including one teacher and two adult students). All six patients had confirmed cases
19 of COVID-19 disease but were found to have contracted the virus from contacts outside
20 of the school setting. Despite identifying a total of 722 contacts, the study authors
21 reported finding no instance of an infected child infecting another child. The infected
22

23 ¹² *COVID-19 In Primary Schools: No Significant Transmission among Children or*
24 *From Students to Teachers*, Institut Pasteur, [https://www.pasteur.fr/en/press-area/press-](https://www.pasteur.fr/en/press-area/press-documents/covid-19-primary-schools-no-significant-transmission-among-children-students-teachers)
25 [documents/covid-19-primary-schools-no-significant-transmission-among-children-](https://www.pasteur.fr/en/press-area/press-documents/covid-19-primary-schools-no-significant-transmission-among-children-students-teachers)
[students-teachers](https://www.pasteur.fr/en/press-area/press-documents/covid-19-primary-schools-no-significant-transmission-among-children-students-teachers) (June 23, 2020).

26 ¹³ Laura Heavey, Geraldine Casey, et al., *No Evidence of Secondary Transmission of*
27 *COVID-19 from Children Attending School in Ireland, 2020*, Eurosurveillance,
28 [https://www.eurosurveillance.org/content/10.2807/1560-](https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.21.2000903#html_fulltext)
[7917.ES.2020.25.21.2000903#html_fulltext](https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.21.2000903#html_fulltext) (May 28, 2020).

1 adults, by contrast, had many fewer contacts – 102 – but did pass on the infection to a
2 few adult contacts.

3 26. A report¹⁴ by the ministry of health in the Netherlands, based on contact
4 tracing data, finds almost no disease spread by infected patients 20 and under at all, and
5 only limited spread by adults 20-25 to others outside their own age category. The authors
6 of the study concluded: “Data from the Netherlands also confirms the current
7 understanding: that children play a minor role in the spread of the novel coronavirus. The
8 virus is mainly spread between adults and from adult family members to children. The
9 spread of COVID-19 among children or from children to adults is less common.”

10 27. A German¹⁵ study reports a strikingly similar finding on the likelihood of
11 pediatric disease spread. The German Society for Pediatric Infectious Diseases collected
12 on all children and adolescents admitted to a hospital for COVID-19 treatment between
13 mid-March and early May 2020 – 128 patients in all, admitted to 66 different hospitals.
14 The authors were able to find the source of infection for 38% of these patients, which
15 turned out to be a parent 85% of the time. Though the authors document a limitation of
16 small sample size, they conclude that “In contrast to other epidemic viral respiratory
17 infections, the primary source of infection with SARS-CoV-2 appears not to be other
18 children.” The authors reported a single death among these 128 pediatric patients.

19 28. The National Academies of Sciences, Engineering, and Medicine convened
20 the Committee on Guidance for K-12 Education on Responding to COVID-19 in May
21 2020 to review the science regarding the public health costs and benefits of school
22 reopening and to make recommendations about best practices for reopening, completing
23

24 ¹⁴ *Children and COVID-19*, National Institute for Public Health and the Environment,
25 <https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19> (July 2,
2020).

26 ¹⁵ Armann, J. P., Diffloth, N., Simon, A., Doenhardt, M., Hufnagel, M., Trotter, A.,
27 Schneider, D., Hübner, J., & Berner, R. (2020). Hospital Admission in Children and
28 Adolescents With COVID-19. *Deutsches Arzteblatt international*, 117(21), 373–374.
<https://doi.org/10.3238/arztebl.2020.0373>

1 its report¹⁶ in July 2020. The report emphasizes the need to balance the public health risk
2 from school re-opening against the long term harm arising children missing in-person
3 instruction. The report points to the inequitable harm posed on minority students from
4 closing schools. The report recommends prioritizing in-person instruction for K-5
5 students and special needs students and provides concrete mitigation strategies (such as
6 masks) to support school reopening. Though the report calls for further research on the
7 likelihood of disease spread, it does not review many of the European studies that I review
8 in my declaration.

9 29. A recent South Korean contact tracing study¹⁷ was cited in the New York
10 Times as providing evidence that “Older Children Spread the Coronavirus Just as Much
11 as Adults.” The study authors traced the 59,073 contacts of 5,706 COVID-19 patients,
12 confirmed by PCR to be infected. The authors divide up their patients into 10-year age
13 bins, and report the fraction of contacts in each bin who also tested positive. The authors
14 report that among 0-9-year-old cases, 5.3% of household contacts tested positive, while
15 among 10-19-year-old cases, 18.6% of household contacts tested positive (in both groups,
16 only about 1% of non-household contacts tested positive.

17 30. Contrary to the interpretation of the NYT headline, this pattern of evidence
18 does not imply that older children spread the corona virus as much as adults. First, the
19 authors define an index case as “the first identified laboratory-confirmed case or the first
20 documented case in an epidemiologic investigation within a cluster.” In other words, they
21 cannot tell whether an index case was the first person within a cluster to be infected – just
22 that they were the first to come to the attention of public health authorities. Unlike the

23 ¹⁶ National Academies of Sciences, Engineering, and Medicine. 2020. Reopening K-12
24 Schools During the COVID-19 Pandemic: Prioritizing Health, Equity, and
25 Communities. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/25858>.

26 ¹⁷ Park YJ, Choe YJ, Park O, Park SY, Kim YM, Kim J, et al. Contact tracing during
27 coronavirus disease outbreak, South Korea, 2020. *Emerg Infect Dis*. 2020 Oct (accessed
28 online July 27, 2020) . <https://doi.org/10.3201/eid2610.201315>

1 Icelandic study, referenced in paragraph 23, the authors of the South Korean study do not
2 sequence the genome of the viruses identified to document mutation patterns.
3 Consequently, they cannot distinguish whether the index patient passed the virus to the
4 contact or the other way around. Second, the authors report that children 0-9 years old
5 represented only 0.5% of their index cases and children 10-19 years old represented only
6 2.2% of their index cases. The vast majority of their cases were 20 years old or older. The
7 study data collection took place during a period of strict lockdown and school closure in
8 South Korea. It is highly unlikely that these few index children spread the disease
9 throughout their cluster. The authors document that adults are more likely to have
10 contacts outside their household than children during this period. It is far more likely that
11 older members of households were the true index cases and spread the infection to
12 children within the household. Third, the authors report that 7% of household contacts of
13 20-29 year olds were infected. This is less than the positive case rate for 10-19 year olds.
14 If the higher rate of infections among household contacts of 10-19 year olds is evidence
15 of increased transmissibility, then the low rate of infections among households of 20-29
16 year olds should be taken as evidence of decreased transmissibility for patients in that
17 age group. A better interpretation is that the study methods of this paper do not permit
18 any inference whatsoever about the relative propensity of children and adults to transmit
19 the disease.

20 31. In the paragraphs that follow, I review evidence on the size of the mortality
21 risk with respect to COVID-19 infection. The best evidence on the infection fatality rate
22 from SARS-CoV-2 infection (that is, the fraction of infected people who die due to the
23 infection) comes from seroprevalence studies. The definition of seroprevalence of
24 COVID-19 is the fraction of people within a population who have specific antibodies
25 against SARS-CoV-2 in their bloodstream. Seroprevalence studies provide better
26 evidence on the total number of people who have been infected than do case reports,
27 which miss infected people who are not identified by the public health authorities.

1 Because they ignore unreported cases in the denominator, fatality rate estimates based on
2 case reports are substantially biased upwards.

3 32. According to a meta-analysis¹⁸ by Dr. John Ioannidis of every
4 seroprevalence study conducted with a supporting scientific paper (50 estimates in total
5 from 32 different localities around the world), the median infection fatality rate from
6 COVID-19 infection is 0.27%. For COVID-19 patients under 70, the meta-analysis finds
7 an infection fatality rate of 0.05%, with a range between 0.00% to 0.57% in different
8 locations. A newly released meta-analysis¹⁹ by scientists independent of Dr. Ioannidis'
9 group, published in the National Bureau of Economic Research working paper series,
10 reaches qualitatively similar conclusions.

11 33. A recent US Centers for Disease Control (CDC) report²⁰ found that there
12 were between six and 24 times more SARS-CoV-2 infections than cases reported
13 between March and May 2020. This study is based on serological analysis of blood
14 samples incidentally collected by commercial laboratories in 10 cities nationwide.
15 Though the CDC does not provide the infection fatality rate estimate implied by their
16 seroprevalence estimate in their report, the multiplier to cases they report is in line with
17 the seroprevalence studies reviewed by Dr. Ioannidis above, which imply an infection
18 fatality rate between 2 and 3 in 1,000.

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22 ¹⁸ John P.A. Ioannidis, *The Infection Fatality Rate of COVID-19 Inferred from*
23 *Seroprevalence Data*, medRxiv,
24 <https://www.medrxiv.org/content/10.1101/2020.05.13.20101253v2.full.pdf> (July 14,
2020).

25 ¹⁹ Levin AT, Cochran KB, Walsh SP (2020) Assessing the Age Specificity of Infection
26 Fatality Rates for COVID-19: Meta-Analysis & Public Policy Implications. National
27 Bureau of Economic Research Working Paper #27597.

28 ²⁰ Havers FP, Reed C, Lim T, et al. Seroprevalence of Antibodies to SARS-CoV-2 in 10
Sites in the United States, March 23-May 12, 2020. *JAMA Intern Med*. Published online
July 21, 2020. doi:10.1001/jamainternmed.2020.4130

1 34. In May 2020, the CDC released guidance²¹ for pandemic planning scenario
2 that included its best estimate of the infection fatality rate in the US, of 0.26%. The CDC's
3 estimate of the symptomatic fatality rate among diagnosed cases was 0.4%, and they
4 estimated about 65% of all cases are symptomatic, which implies an infection fatality rate
5 estimate of $0.4\% * 0.65 = 0.26\%$.

6 35. By contrast, the CDC estimated²² that the symptomatic fatality rate from
7 influenza infection of 0.13% and 0.10% during the 2017-18 and 2018-19 seasons,
8 respectively. These figures should be compared against the symptomatic fatality rate for
9 COVID-19 reported by the CDC (0.4%) rather than the infection fatality rate (0.26%).
10 To my knowledge the CDC has not provided a publicly available estimate of the infection
11 fatality rate for the flu during those seasons. Here, the symptomatic fatality rate represents
12 the probability that a patient infected with the flu virus with some flu symptoms dies from
13 the flu, while the infection fatality rate indicates the probability that a patient infected
14 with influenza, either with or without symptoms, dies from the flu.

15 36. In mid-July, the CDC updated its pandemic planning site and revised its
16 preferred estimate of IFR upward to 0.65%.²³ In support of this revision, the CDC cited
17 an pre-print meta-analysis of 25 infection fatality rate estimates.²⁴ This meta-analysis
18 includes IFR estimates provided in modeling papers (based on no direct empirical data)

19 _____
20 ²¹ *COVID-19 Pandemic Planning Scenarios*, Centers for Disease Control and
Prevention, (May 20, 2020).

21 <https://web.archive.org/web/20200706205612/https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html>. Accessed through the internet archive site,
22 <https://web.archive.org>.

23 ²² *Disease Burden of Influenza*, Centers for Disease Control and Prevention,
24 <https://www.cdc.gov/flu/about/burden/index.html> (last visited on July 9, 2020).

25 ²³ *COVID-19 Pandemic Planning Scenarios*, Centers for Disease Control and
Prevention, (July 10, 2020). <https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html>
26

27 ²⁴ Meyerowitz-Katz, G., & Merone, L. (2020). A systematic review and meta-analysis
of published research data on COVID-19 infection-fatality rates. *medRxiv*.

28 <https://www.medrxiv.org/content/10.1101/2020.05.03.20089854v4>

1 and observational studies that do not adequately consider undiagnosed infections.
2 Though the meta-analysis does consider 9 seroprevalence studies among its sources, it
3 arbitrarily restricts attention to only seroprevalence studies reported by a select set of
4 governments, while ignoring the much larger set of seroprevalence studies (including
5 peer-reviewed studies) cited by Prof. Ioannidis in his report cited in paragraph 30 above.

6 37. The mortality risk for those infected with SARS-CoV-2 is not the same for
7 all patients. Older patients are at substantially higher risk of death if infected, while
8 younger patients face a vanishingly small risk. The best evidence on age-specific
9 infection fatality rates comes again from seroprevalence studies. Three such studies (of
10 which I am currently aware) provide age-specific infection fatality rate estimates. The
11 CDC's current best estimates are that the symptomatic fatality rate from COVID-19
12 among patients less than 50 years old is 0.05%, or 5 in 10,000; 0.2% for patients between
13 ages 50 and 64; and 1.3% for patients 65 and above. The infection fatality rates are lower
14 than these numbers since only a fraction of patients is symptomatic.

15 38. A study of the seroprevalence of COVID-19 in Geneva, Switzerland
16 (published in the *Lancet*)²⁵ provides a detailed age break down of the infection fatality
17 rate in a preprint companion paper:²⁶ 0.0016% for patients 5 to 9 years old (16 deaths per
18 100,000 infections); 0.00032% for patients 10 to 19 years old (3.2 deaths per million
19 infections); 0.0092% for patients 20 to 49 years old (92 deaths per 100,000 infections);
20 0.14% for patients 50 to 64 years old (14 cases per 10,000 infections); and 5.6% for
21 patients above 65.

22
23
24 ²⁵ Silvia Stringhini, PhD, Ania Wisniak, MS, et al., *Seroprevalence of Anti-SARS-CoV-*
25 *2 IgG Antibodies in Geneva, Switzerland (SEROCoV-POP): A Population Based Study*,
26 The Lancet, [https://www.thelancet.com/journals/lancet/article/PIIS0140-](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31304-0/fulltext)
27 [6736\(20\)31304-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31304-0/fulltext) (June 11, 2020).

28 ²⁶ Francisco Perez-Saez, Stephen Lauer, et al., *Serology-Informed Estimates of SARS-*
COV-2 Infection Fatality Risk in Geneva, Switzerland, OSFPREPRINTS,
<https://osf.io/wdbpe/> (June 15, 2020).

1 39. For this affidavit, I estimated the age-specific infection fatality rates from
2 the Santa Clara County seroprevalence study²⁷ data (for which I am the senior
3 investigator). The infection fatality rate is 0% among people between 0 and 19 years
4 (there were no deaths in Santa Clara in that age range up to that date); 0.013% for people
5 between 20 and 39 years (1.3 deaths per 10,000 infections); 0.16% for people between
6 40 and 69 years (1.6 deaths per 1,000 infections); and 1.3% for people above 70 years.
7 In fact, in all of California²⁸ up through July 23rd, there have been no deaths at all among
8 COVID-19 patients below 18. 77.5% of all COVID-19 related deaths occurred in patients
9 65 and older.

10 40. In the preceding paragraphs, I have presented evidence that the risk of
11 disease spread from younger people to older people is small, and that the risk of mortality
12 to people under the age of 65 is on the order of 1 in 1,000 if someone does become
13 infected (lower with younger age). The final question I address in my affidavit is a vital
14 principle promoted by public health experts and the public health community that implies
15 that certain action may be justified despite some public health risk if the action is
16 sufficiently important to warrant it.

17 41. The Black Lives Matter (BLM) protests started nationwide shortly after the
18 killing of George Floyd in Minnesota on May 25th, 2020. One press account²⁹ suggests
19 that more than 26 million Americans nationwide (primarily in big cities, but also

20 _____
21 ²⁷ Eran Bendavid, MD, Bianca Mulaney, MS, et al., COVID-19 Antibody
22 Seroprevalence in Santa Clara County, California, medRxiv preprint,
<https://www.medrxiv.org/content/10.1101/2020.04.14.20062463v2> (April 30, 2020)

23 ²⁸ Age Group in California, *Cases and Deaths Associated with COVID-19*, California
24 Department of Public Health,
[https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/COVID-19-Cases-
by-Age-Group.aspx](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/COVID-19-Cases-by-Age-Group.aspx) (July 23, 2020).

25 ²⁹ Matthew Wright, *Black Lives Matter Protests May be the Largest in U.S. History as*
26 *More Than 26 Million Americans Have Been at the More Than 4, 700 Demonstrations*
27 *Around the Country*, DailyMail.com, [https://www.dailymail.co.uk/news/article-
8488409/BLM-protests-largest-U-S-history-26MILLION-Americans-attended.html](https://www.dailymail.co.uk/news/article-8488409/BLM-protests-largest-U-S-history-26MILLION-Americans-attended.html)
28 (July 8, 2020).

1 elsewhere) have participated in at least one protest since the first protests started on May
2 26th, 2020. Protest organizers have manifestly not followed WHO or CDC guidelines
3 regarding the conduct of large scale events during the COVID-19 epidemic. Prominent
4 public officials, including Los Angeles Mayor Eric Garcetti, have participated in BLM
5 protests that violate guidelines regarding the use of masks³⁰ and maintained social
6 distancing during large events.

7 42. The reaction³¹ of many prominent voices³² within the public health
8 community to the BLM protests has emphasized the importance of the right of Americans
9 concerned about racial injustice to protest despite COVID-19. Nearly 1,300 public health
10 experts signed a public letter³³ supporting the right of BLM protestors to gather publicly
11 because of their (the protestors' and the public health experts') deeply held opposition to
12 systemic racism. The letter explicitly acknowledged that social distancing and public
13 masking would minimize the spread of COVID-19 and urged "to the extent possible" that
14 these practices be followed by demonstrators while recognizing that protestors would not
15 always be able to follow these guidelines. The signatories, in effect, weighed the costs of

16 _____
17 ³⁰ Jaclyn Cosgrove, et al., *Mayor Garcetti takes a knee amid chants of 'Defund police!' at downtown L.A. protest*, Los Angeles Times,
18 [https://www.latimes.com/california/story/2020-06-02/mayor-garcetti-takes-a-knee-
19 amid-chants-of-defund-police-at-downtown-l-a-protest](https://www.latimes.com/california/story/2020-06-02/mayor-garcetti-takes-a-knee-amid-chants-of-defund-police-at-downtown-l-a-protest) (June 2, 2020).

20 ³¹ Rachel Weiner, *Political and Health Leaders' Embrace of Floyd Protests Fuels Debate Over Coronavirus Restrictions*, The Washington Post,
21 [https://www.washingtonpost.com/health/political-and-health-leaders-embrace-of-floyd-
22 protests-fuels-debate-over-coronavirus-restrictions/2020/06/11/9c60bca6-a761-11ea-
bb20-ebf0921f3bbd_story.html](https://www.washingtonpost.com/health/political-and-health-leaders-embrace-of-floyd-protests-fuels-debate-over-coronavirus-restrictions/2020/06/11/9c60bca6-a761-11ea-bb20-ebf0921f3bbd_story.html) (June 11, 2020).

23 ³² Dan Diamond, *Suddenly, Public Health Officials Say Social Justice Matters More Than Social Distance*, Politico,
24 <https://www.politico.com/news/magazine/2020/06/04/public-health-protests-301534>
25 (June 4, 2020)

26 ³³ *Open Letter Advocating for an Anti-Racist Public Health Response to Demonstrations Against Systemic Injustice Occurring During the COVID-19 Pandemic*, Google Drive,
27 <https://drive.google.com/file/d/1Jyfn4Wd2i6bRi12ePghMHtX3ys1b7K1A/view> (last
28 visited July 9, 2020).

1 the protests (some risk of COVID-19 disease spread and mortality) against the benefits
2 (support for a cause they deem worthy) and concluded in favor of the BLM
3 demonstrations.

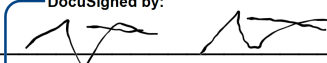
4 43. The principle the public letter supports is entirely reasonable: public health
5 recommendations regarding behavior by private actors (such as the decision to protest)
6 should weigh the benefits of that behavior against the public health costs. Though the
7 signatories of the letter express their own support for the cause underlying the BLM
8 protests, this principle cannot be contingent on their particular support of those activities.
9 If this contingency were necessary, the charge by other public health experts³⁴ that the
10 signatories are hypocritical in their support of masks, social distancing, and social
11 isolation to reduce COVID-19 spread would be correct. If the benefits of the undertaking
12 are important enough relative to the public health risks and care is taken to minimize
13 those risks by adhering to the extent possible to safe practice guidelines promulgated by
14 public health authorities, then the activity should receive approval by public health
15 experts.

16 44. Many of California's schools were preparing to resume in-person education
17 before the Governor issued his most recent guidance. The benefits of in-person schooling
18 are well documented in the CDC and WHO guidance on school reopening (see
19 paragraphs 16 and 18 above). Schools can adhere to the various CDC and WHO
20 guidelines to a much greater extent than the BLM protests, which drew the support of
21 public health experts despite the enhanced public health risk. Given these considerations
22 – and the scientific evidence cited in this affidavit regarding disease spread and the
23 COVID-19 infection fatality rate – I believe that it is a public health priority that most
24 schools in California open safely this Fall.

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27 ³⁴ Joseph S. Ladapo, *The Coronavirus Credibility Gap*, WSJ Opinion,
28 <https://www.wsj.com/articles/the-coronavirus-credibility-gap-11593645643> (July 1,
2020).

1 I declare under penalty of perjury under the laws of the United States of America
2 and the State of California that the foregoing is true and correct.

3
4 Dated: July 27, 2020

DocuSigned by:

5 Jayanta Bhattacharya, M.D., Ph.D.

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF DR. SCOTT
ATLAS IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, SCOTT W. ATLAS, declares as follows:

24 1. My name is Scott Atlas. I am a resident of Stanford, California; I am over
25 18-years-old; and I am otherwise competent to make this declaration.

26 2. I am the Robert Wesson Senior Fellow at the Hoover Institution of Stanford
27 University and former professor and Chief of Neuroradiology at Stanford University
28 Medical Center from 1998 until 2012. I have served as a visiting professor at dozens of
the top academic medical centers in the United States and throughout the world. A true
and correct copy of my CV is attached as Exhibit 4.

1 3. I received a BS degree in biology from the University of Illinois in Urbana-
2 Champaign and an MD degree from the University of Chicago School of Medicine.

3 4. In my profession and work, I investigate the impact of government and the
4 private sector on access, quality, and pricing in health care, global trends in health care
5 innovation, and key economic issues related to the future of technology-based medical
6 advances. I have published more than 100 articles and books, including “Restoring
7 Quality Health Care: A Six Point Plan for Comprehensive Reform at Lower Cost”
8 (Hoover Institution Press, 2020, 2nd ed.) and “In Excellent Health: Setting the Record
9 Straight on America’s Health Care System”. I have been interviewed by and had my
10 work published in a variety of media, including BBC Radio, the PBS NewsHour, the
11 Wall Street Journal, New York Times, Forbes Magazine, CNN, USA Today, Fox News,
12 London’s Financial Times, Brazil’s Correio Braziliense, Italy’s Corriere della Sera,
13 Argentina’s Diario La Nacion, and India's The Hindu.

14 5. I am a frequent policy advisor to policymakers and government officials in
15 the United States and in other countries, including serving as Senior Advisor for Health
16 Care to a number of candidates for President of the United States, as well as having
17 counselled members of the US Congress on health care, testified before Congress, and
18 briefed directors of key agencies in the federal government.

19 6. In the private sector, I am a frequent advisor to start-up entrepreneurs and
20 companies in life sciences and medical technology. I am also the editor of the leading
21 textbook in the field, Magnetic Resonance Imaging of the Brain and Spine, now in its
22 fifth edition and previously translated from English into Mandarin, Spanish, and
23 Portuguese. I have been an editor, an associate editor, and a member of the editorial and
24 scientific boards of many journals as well as national and international scientific societies
25 during the past three decades and I have written and published more than 120 peer
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1 reviewed scientific publications in leading journals. An abbreviated list of my
2 publications can be found at: <https://profiles.stanford.edu/scott-atlas?tab=publications>.¹

3 7. I agreed to be retained by Plaintiffs in this action to provide my professional
4 opinion on the issues addressed in this lawsuit. I have studied in detail the data about the
5 Covid-19 pandemic, including but not limited to the source data on the medical impact
6 in the United States and in California, its impact on children, as well as the clinical science
7 about the virus. In advance of preparing this Declaration, I have reviewed the Governor's
8 Executive Order N-60-20 and the July 17, 2020 "COVID-19 Industry Guidance: School
9 and School-Based Programs." Under the Governor's framework for reopening schools,
10 a county must have been off the monitoring list for 14 consecutive days before *any* school
11 within that county—public or private—is allowed to open. Although the Governor's plan
12 includes a waiver procedure, it is unclear what criteria will be used to grant waivers. At
13 present, California is the only state in the U.S. mandating at the state level that school
14 districts not hold in-person classes, rather than leaving the decision to individual school
15 districts. The Governor's order will thus impact millions of students from kindergarten
16 through high school.

17 8. Despite the enormous consequences of the COVID-19 pandemic, the direct
18 daily toll from the infection has generally decreased throughout the United States,
19 including the epicenter of [New York](#)² and in the state of [California](#).³ In most of the
20 country and in California, the stated goal of societal lockdown – avoiding hospital
21 overcrowding in in-patient and ICU bed occupancy - has been accomplished. Indeed, as
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25 ¹ Scott W. Atlas, *Scott W. Atlas, Senior Fellow at The Hoover Institution*, Stanford
26 Profiles, <https://profiles.stanford.edu/scott-atlas?tab=publications> (last visited July 25,
27 2020).

28 ² NYC.gov, *Covid-19: Data*, [https://www1.nyc.gov/site/doh/covid/covid-19-
data.page](https://www1.nyc.gov/site/doh/covid/covid-19-data.page) (New York) (July 25, 2020).

³ California Coronavirus, COVID-19 Statewide Update.
<https://update.covid19.ca.gov/>

1 of July 24, 2020, the latest data, the hospital bed occupancy by Covid-19 patients in
2 California is only about 11 percent ([8,449](#) of [74,730](#) beds).⁴

3 9. In addition, today we should not, and need not, rely on hypothetical models
4 and theoretical projections because we have extensive evidence about the threat from
5 this coronavirus and who it targets. By now, numerous studies from [Europe](#)⁵, Japan, and
6 the [US](#)⁶ all suggest that the overall fatality rate is far lower than early estimates, likely
7 below 0.1 to 0.4%, i.e., ten to forty times lower than estimates that motivated extreme
8 isolation. The most recent [studies](#)⁷ indicate that the fatality rate for those under age 70 is
9 0.04%, less than or equal to seasonal influenza.

10 10. Given the data released in the most recent studies, we also now know who
11 to protect, because this disease - by the evidence - is not equally dangerous across the
12 population. More than 40 percent of all US deaths occurred in nursing home patients. In
13 California, 76 percent of deaths were in those over the age of 65⁸; 93 percent were in
14 people over 50⁹, similar to what was noted in [New York](#)¹⁰ and all over the world.

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17 ⁴ California Coronavirus, COVID-19 Statewide Update.
<https://update.covid19.ca.gov/>; American Hospital Directory,
18 https://www.ahd.com/states/hospital_CA.html

19 ⁵ Malin Otmani, *COVID-19: First results of the voluntary screening in Iceland*,
20 <https://nordiclifescience.org/covid-19-first-results-of-the-voluntary-screening-in-iceland/> Nordic Life Science News, (*Europe*) (March 22, 2020).

21 ⁶ Leigh Hopper, *Early antibody testing suggests COVID-19 infections in L.A. County greatly exceed documented cases*, USC News,
22 <https://news.usc.edu/168987/antibody-testing-results-covid-19-infections-los-angeles-county/> (April 20, 2020).

23 ⁷ John P.A. Ioannidis, *The infection fatality rate of COVID-19 inferred from seroprevalence data*, *MedRxiv*, *BMJ Yale*,
24 <https://www.medrxiv.org/content/10.1101/2020.05.13.20101253v2> (July 14, 2020).

25 ⁸ California Coronavirus, COVID-19 Statewide Update,
26 <https://update.covid19.ca.gov/>

27 ⁹ *Id.*

28 ¹⁰ New York State Department of Health, *Fatalities by County*,
<https://covid19tracker.health.ny.gov/views/NYS-COVID19-Tracker/NYSDOHCOVID-19Tracker-Fatalities?%3Aembed=yes&%3Atoolbar=no&%3Atabs=n> (July 8, 2020).

1 11. Of particular relevance to student populations in California, we also know
2 that younger, healthier people have *virtually zero* risk of [death](#)¹¹ from this infection. The
3 school setting is an environment where nearly 100 percent of students are under 18 years
4 old, the lowest risk group. For instance, in California, 0% percent of deaths (literally,
5 zero deaths) have occurred in people under 18, and only 6.8% of deaths have occurred
6 in people under 49 years of age.¹² According to the [CDC](#)¹³ on July 1, 2020, of the first
7 112,226 US deaths, 0.01 percent of deaths occurred in people under 25 years of age; i.e.,
8 99.9 percent were in people 25 or older, and 81 percent were in people over 65.

9 12. Younger, healthier people likewise have virtually no risk of serious illness
10 from COVID-19. Less than one percent of New York City's [hospitalizations](#)¹⁴ have been
11 patients under 18 years of age. The data reproduced in a May [JAMA Pediatrics](#)¹⁵ study
12 flatly stated that "children are at far greater risk of critical illness from influenza than
13 from COVID-19." Exceptions exist, as they do with virtually *every other clinically*
14 *encountered infection*, but that should not outweigh the overwhelming evidence to the
15 contrary. If the COVID-19 hazard sets the new standard for health safety, the country
16 will need to close its schools each year from November until April to guard against
17 influenza.

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21 ¹¹ NYC.gov, *Covid-19: Data*, <https://www1.nyc.gov/site/doh/covid/covid-19-data.page#download> (July 8, 2020).

22 ¹² California Coronavirus, COVID-19 Statewide Update,
23 <https://update.covid19.ca.gov/>

24 ¹³ Centers for Disease Control and Prevention, *Weekly Updates by Select*
25 *Demographic and Geographic Characteristics*,
https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm (July 22, 2020).

26 ¹⁴ NYC.gov, *Covid-19: Data, Cases, Hospitalizations and Deaths*,
27 <https://www1.nyc.gov/site/doh/covid/covid-19-data.page#download> (July 24, 2020).

28 ¹⁵ Lara S. Shekerdemain, MD, *Characteristics and Outcomes of Children With*
Coronavirus Disease 2019 (COVID-19) Infection Admitted to US and Canadian
Pediatric Intensive Care Units,
<https://jamanetwork.com/journals/jamapediatrics/fullarticle/2766037> (May 11, 020).

1 13. A recent study by the CDC concluded that children who become infected
2 are also “far less likely to suffer severe symptoms.”¹⁶ The evidence also confirms that
3 death rates among school-aged children are *much* lower than among adults.¹⁷ As of July
4 17, 2020, the US reported that children and adolescents under 18 years old account for
5 under 7 percent of COVID-19 cases and *less than 0.1 percent* of COVID-19-related
6 deaths.¹⁸

7 14. Indeed, COVID-19 appears to be less deadly to children and adolescents
8 than the seasonal flu. From 2004–2005 to 2018–2019, for example, flu-related deaths in
9 children reported to CDC during regular flu seasons ranged from 37 to 187 deaths.¹⁹
10 During the H1N1 pandemic (April 15, 2009 to October 2, 2010), 358 pediatric deaths
11 were reported to CDC.²⁰ So far in this pandemic, only 64 children have died of COVID-
12 19 related symptoms, fewer than the deaths reported in each of the last five flu seasons.

13 15. Scientific studies from all over the world also suggest that COVID-19
14 transmission among children in schools is low.²¹ Current data reported by the CDC
15 indicate that the rate of infection among younger school children, and from students to
16 teachers, is very low, especially if proper precautions are followed.²² There have also
17 been few reports of children being the primary source of COVID-19 transmission among
18 family members. This is consistent with data from both virus and antibody testing,
19 suggesting that children are not the primary drivers of COVID-19 spread in schools or
20 in the community.

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24 ¹⁶ Centers for Disease Control and Prevention, *The Importance of Reopening*
25 *America’s Schools this Fall*, [https://www.cdc.gov/coronavirus/2019-
ncov/community/schools-childcare/reopening-schools.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html) (July 23, 2020).

26 ¹⁷ *Id.*

27 ¹⁸ *Id.*

28 ¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

1 16. The data go even further – in other countries, including [Switzerland](#)²³,
2 [Canada](#)²⁴, the [Netherlands](#)²⁵, [France](#)²⁶, [Iceland](#)²⁷, the [UK](#)²⁸, [Australia](#)²⁹, and
3 [Ireland](#)³⁰, researchers have found that children *rarely* transmit the disease to adults if at

4 _____
5 ²³ RTS Info, *En Suisse, 104 enfants de moins de 10 ans ont été testés positifs au*
6 *Covid-19*, [https://www.rts.ch/info/sciences-tech/medecine/11255942-en-suisse-104-](https://www.rts.ch/info/sciences-tech/medecine/11255942-en-suisse-104-enfants-de-moins-de-10-ans-ont-ete-testes-positifs-au-covid-19.html)
7 [enfants-de-moins-de-10-ans-ont-ete-testes-positifs-au-covid-19.html](https://www.rts.ch/info/sciences-tech/medecine/11255942-en-suisse-104-enfants-de-moins-de-10-ans-ont-ete-testes-positifs-au-covid-19.html) (Switzerland)
8 (April 17, 2020).

9 ²⁴ Sarah Silverberg, MD, *Caring for Children with COVID-19*, British Columbia
10 Ministry of Health, (Canada) [http://www.bccdc.ca/Health-Professionals-](http://www.bccdc.ca/Health-Professionals-Site/Documents/Caring-for-children.pdf)
11 [Site/Documents/Caring-for-children.pdf](http://www.bccdc.ca/Health-Professionals-Site/Documents/Caring-for-children.pdf) (April 3, 2020).

12 ²⁵ National Institute for Public Health and the Environment, Ministry of Health,
13 Welfare and Sport, [https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-](https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19)
14 [covid-19](https://www.rivm.nl/en/novel-coronavirus-covid-19/children-and-covid-19) (July 20, 2020) (“Data from the Netherlands also confirms the current
15 understanding: that children play a minor role in the spread of the novel coronavirus.
16 The virus is mainly spread between adults and from adult family members to
17 children.”).

18 ²⁶ Salome Vincendon, “*Low Carriers, Low Transmitters*”: *Study Confirms the*
19 *Minimal Role of Children in the COVID-19 Epidemic*, BFM TV,
20 [https://www.bfmtv.com/sante/peu-porteurs-peu-transmetteurs-une-etude-confirme-le-](https://www.bfmtv.com/sante/peu-porteurs-peu-transmetteurs-une-etude-confirme-le-role-minime-des-enfants-dans-l-epidemie-de-covid-19_AV-202005120233.html)
21 [role-minime-des-enfants-dans-l-epidemie-de-covid-19_AV-202005120233.html](https://www.bfmtv.com/sante/peu-porteurs-peu-transmetteurs-une-etude-confirme-le-role-minime-des-enfants-dans-l-epidemie-de-covid-19_AV-202005120233.html) (May
22 12, 2020).

23 ²⁷ Roger Highfield, *Coronavirus: Hunting Down Covid-19*, Science Museum
24 Group, <https://www.sciencemuseumgroup.org.uk/blog/hunting-down-covid-19/>
25 (Iceland) (April 27, 2020) (“What is interesting is that even if children do get infected,
26 they are less likely to transmit the disease to others than adults. We have not found a
27 single instance of a child infecting parents.”)

28 ²⁸ Hayley Dixon, *No reported case of a child passing coronavirus to an adult exists,*
evidence review shows, [https://www.telegraph.co.uk/news/2020/04/29/no-case-child-](https://www.telegraph.co.uk/news/2020/04/29/no-case-child-passing-coronavirus-adult-exists-evidence-review/)
passing-coronavirus-adult-exists-evidence-review/ (April 29, 2020).

²⁹ The Australian Health Protection Principal Committee (AHPCC), *Updated*
Advice Regarding Schools, [https://www.health.gov.au/news/australian-health-](https://www.health.gov.au/news/australian-health-protection-principal-committee-ahppc-coronavirus-covid-19-statements-on-24-april-2020#updated-advice-regarding-schools)
[protection-principal-committee-ahppc-coronavirus-covid-19-statements-on-24-april-](https://www.health.gov.au/news/australian-health-protection-principal-committee-ahppc-coronavirus-covid-19-statements-on-24-april-2020#updated-advice-regarding-schools)
2020#updated-advice-regarding-schools (April 16, 2020) (“AHPCC continues to note
that there is very limited evidence of transmission between children in the school
environment; population screening overseas has shown very low incidence of positive
cases in school-aged children.”).

³⁰ Laura Heavey, Geraldine Casey, Ciara Kelly, David Kelly and Geraldine
McDarby, *No evidence of secondary transmission of COVID-19 from children*
attending school in Ireland, 2020, *Eursurveillance*

1 all, even to their parents. This disease is typically spread by individuals with high “viral
2 load”, and children, asymptomatic people, as well as those pre-symptomatic people who
3 will later develop symptoms, all have lower viral loads.

4 17. With respect to teachers, parents, and relatives, it is clear that as a society, it
5 will be necessary to make visible the clear, specific guidelines and warnings about high-
6 risk groups. However, teaching is generally a relatively young profession. Half of K-12
7 [teachers](#)³¹ are 41 or younger; 81% are under 55.

8 18. Many states have noted a significant increase in cases of the coronavirus
9 infection. This specific point has created unnecessary fear and its significance has been
10 widely misinterpreted. Infections are not dangerous to children, in fact they are far less
11 dangerous than seasonal influenza infections. Infections are only significantly dangerous
12 to high-risk adults, and the majority of teachers are not in the high-risk group.

13 19. Moreover, as the CDC’s recent report indicates, extended school closure is
14 harmful to children.³² It is well known that “long breaks from in-person education,”
15 such as occur over the summer, “are harmful to student learning.”³³ The prospect of
16 losing several months of schooling is likely to make the learning loss even more severe.³⁴
17 The CDC notes that “disparities in education outcomes caused by school closures are a
18 particular concern for low-income and minority students and students with disabilities,”
19 as many families do not have the capacity to facilitate distance learning.³⁵ In particular,

20 _____
21 <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.21.2000903>,
22 (May 28, 2020) (“[This study] adds to current evidence that children do not appear to be
23 drivers of transmission, and we argue that reopening schools should be considered safe
24 accompanied by certain measures.”)

24 ³¹ National Center for Education Statistics, *Schools and Staffing Survey*,
25 https://nces.ed.gov/surveys/sass/tables/sass1112_2013314_t1s_002.asp (last visited
26 July 24, 2020).

26 ³² Centers for Disease Control and Prevention, *The Importance of Reopening*
27 *America’s Schools this Fall*, [https://www.cdc.gov/coronavirus/2019-
28 ncov/community/schools-childcare/reopening-schools.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/reopening-schools.html) (July 23, 2020).

28 ³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

1 students who are deaf, hard of hearing, have low vision, are blind, or have other learning
2 disorders (e.g., attention deficit hyperactivity disorder (ADHD) and other physical and
3 mental disabilities have had significant difficulties with remote learning.³⁶

4 20. Extended school closures are also harmful to children's development of
5 social and emotional skills.³⁷ Routine in-person contacts provide opportunities to
6 facilitate social-emotional development that are difficult, if not impossible, to replicate
7 through distance learning.³⁸ Being in a school setting with peers and teachers is also
8 associated with lower levels of depression, thoughts about suicide, social anxiety, and
9 sexual activity, as well as higher levels of self-esteem and more adaptive use of free
10 time.³⁹

11 21. Children also obtain access to vital services at school that they do not receive
12 elsewhere. For example, in-person schooling provides children with access to mental
13 health services, nutrition, physical activity, and even personal safety.⁴⁰ The CDC thus
14 concluded that school closure disrupts the delivery of in-person instruction and critical
15 services to children and families, which has negative individual and societal
16 ramifications.⁴¹

17 22. The Governor's Order appears to be based on the fear that the rising
18 infection rates in California will result in a "second wave" of infections. This fear is
19 misplaced for several reasons.

20 23. **First**, we know and fully anticipate that relaxing total isolation will lead to
21 more infections, and we have had numerous protest marches and riots with thousands of
22 individuals not obeying prescribed social distancing measures. The timing of the rise in
23 cases does not temporally correlate to the gradual, partial reopening policies of states
24 that had begun reopening. The rise in cases does correlate to other factors, however,

25 ³⁶ *Id.*

26 ³⁷ *Id.*

27 ³⁸ *Id.*

28 ³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

1 especially the massive public protests, where most of the protesters were young, as
2 depicted in news reports. And in southern states bordering Mexico, the rise in cases,
3 hospitalizations, and deaths correlates to the timing of cases in Mexico's northern states,
4 as many of the sick and infected seek care here, as reported in the [New York Times](#) in
5 June.⁴²

6 24. **Second**, we know that we will detect more cases now that we have instituted
7 more widespread testing for the infection, given that the definition of a "case" is a
8 positive test, regardless of specific symptoms and even if asymptomatic.

9 25. **Third**, it is simply irrational and unnecessary to seek to eliminate COVID-
10 19 cases as a policy goal, because COVID-19 is a widespread, contagious disease that is
11 already in place in tens of millions of people and from which the vast majority fully
12 recover.

13 26. **Fourth**, in states exhibiting a rise in cases, the overwhelming majority of
14 infections are in younger, healthier people, the very population that has no serious
15 problem with the infection. While the cases have increased steeply, the fact that deaths
16 have not increased dramatically is a clear demonstration that the number of cases is not
17 a significant problem in and of itself, because many of the infected people are not high-
18 risk. Indeed, the disastrous projections of massive deaths in the states with more relaxed
19 reopening policies have proven to be grossly incorrect.

20 27. **Fifth**, the increase in cases among the lower risk groups is actually a
21 positive, because this is the very population that will serve as helpful in developing herd
22 immunity. We know from decades of medical science that infection itself allows people
23 to generate an immune response – antibodies – so that the infection is controlled throughout
24 the population by "[herd immunity](#)⁴³". Indeed, that is the main purpose of widespread

25 _____
26 ⁴² The New York Times, *Coronavirus Jumps the Border, Overwhelming Hospitals*
27 *in California* (updated June 29, 2020),
28 <https://www.nytimes.com/2020/06/07/us/coronavirus-border-mexico-california-el-centro.html>

⁴³ C.J.E. Metcalf, M. Ferrari, A.L. Graham, B.T. Grenfell, *Understanding Herd Immunity*, Science Direct,

1 immunization in other viral diseases – to assist with population immunity. By transmitting
2 the virus to others in the low-risk group who then generate antibodies or other forms of
3 immunity, including [t-cell](#)⁴⁴ responses, they block the network of pathways toward the
4 most vulnerable people, ultimately ending the threat. That is a likely explanation for why
5 large protests in New York City have not resulted in subsequent cases, because the
6 earlier overwhelming number of cases there likely resulted in a significant degree of
7 population immunity, *i.e.*, [26 percent](#) citywide tested by June 26, 2020 showed
8 antibodies to the virus.

9 28. While we do not know with certainty that antibodies from COVID-19 stop
10 infection, it is expected, based on decades of virology science, including other
11 [coronavirus](#)⁴⁵ respiratory viruses, where immunity post-infection is thought to last for a
12 year or more. Indeed, there have been no confirmed cases of reinfection. That's why
13 scientists are hopeful about using COVID-19 antibodies to treat the sickest patients; that's
14 the basis for the drive to generate a vaccine.

15 29. In summary, and in agreement with the June 17, 2020 [recommendations](#) of
16 Toronto's Hospital for Sick Kids,⁴⁶ one of the world's leading pediatric hospitals, it is
17 clear that with appropriate social distancing, adequate hygiene and available sanitization,
18 schools in California can open safely without exposing children to any significant risks
19 from COVID-19, and without significantly increasing the risk of infection to teachers
20 and parents. Further, it is extremely harmful to children to keep schools closed.

21 <https://www.sciencedirect.com/science/article/abs/pii/S1471490615002495?via%3Dihub>
22 [b](#) (December 2015).

23 ⁴⁴ Takuya Sekine, Andre Perez-Potti, et al., *Robust T cell immunity in convalescent*
24 *individuals with asymptomatic or mild COVID-19*, *BioRxiv*,
<https://www.biorxiv.org/content/10.1101/2020.06.29.174888v1> (June 29, 2020).


25 ⁴⁵ David A. J. Tyrrell and Steven H. Myint NCBI Resources, Baron S, editor.
26 *Medical Microbiology*. 4th edition. Galveston (TX): University of Texas Medical
27 Branch at Galveston; *Medical Microbiology - Coronaviruses*,
<https://www.ncbi.nlm.nih.gov/books/NBK7782/> Chapter 60, 1996)

28 ⁴⁶ COVID-19: Recommendations for School Reopening,
<http://www.sickkids.ca/PDFs/About-SickKids/81407-COVID19-Recommendations-for-School-Reopening-SickKids.pdf>

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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

DATED this 25th day of July 2020

DocuSigned by:


Scott W. Atlas AF465151A48467...



EXHIBIT 4

SCOTT WILLIAM ATLAS, M.D.

June 1, 2020



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Date of Birth: July 5, 1955

Place of Birth: Chicago, Illinois, U.S.A.

Education: 1981 M.D. University of Chicago
Pritzker School of Medicine
Chicago, Illinois
1977 B.S. University of Illinois
Champaign-Urbana, Illinois

Postdoctoral Training:

1985-87 Fellow in Neuroradiology
Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania
1984-85 Chief Resident in Radiology
Northwestern University Medical Center
Chicago, Illinois
1982-85 Resident in Diagnostic Radiology
Northwestern University Medical Center
Chicago, Illinois
1981-82 Intern in Medicine - Categorical
University of California, Irvine - Long Beach Medical Program
Long Beach, California

Certification: National Board of Medical Examiners (#249308) 1978-1981
American Board of Radiology 1985
Certificate of Added Qualification - Neuroradiology 1995; 2005

Licensure: California (1987) #G 59953
New York (1996) #202179 (*inactive*)
Pennsylvania (1985) #MD 033549 E (*inactive*)
Oregon (1995) #19287 (*inactive*)

Honors, Awards, and Memberships in Honorary Societies:

National Merit Finalist
Phi Eta Sigma
Alpha Epsilon Delta
Phi Kappa Phi
William J. Cook Scholar
Edmund J. James Scholar
Honorary Member, Chicago Radiological Society
Honorary Member, Pacific Northwest Radiological Society
Honorary Member, New York Medical College Radiological Society
Honorary Member, Mexican Society of Radiology and Imaging
The Best Doctors in America: 1994 (1st edition, Woodward/White Inc.) annually through present
The Best Doctors in America - Northeast Region: 1996-1997, Woodward/White Inc.
"The Best Doctors in New York", New York magazine, May 20, 1996
How to Find the Best Doctors in The New York Metro Area - 1997, Castle & Connolly
How to Find the Best Doctors in The New York Metro Area - 1998, Castle & Connolly
"Silicon Valley's Best Doctors", San Jose magazine, March/April 1999
"Silicon Valley's Best Doctors", San Jose magazine, March/April 2000
"Silicon Valley's Best Doctors", San Jose magazine, July/August 2002
"Top Docs—400 Local Physicians You'd Trust Your Life With", San Jose Magazine, March 2001
How to Find the Best Doctors: San Francisco Bay Area - 2000, Castle & Connolly
"Top 500 Doctors in the Bay Area", San Francisco magazine, January 2001
"Top 500 Doctors in the Bay Area", San Francisco magazine, January 2005
America's Top Doctors, Castle & Connolly, 1997 (1st edition) annually through present
America's Top Radiologists, Consumers Research Council of America 2006
America's Top Doctors for Cancer, 2006; 2007; 2008; 2009
Member, Nominating Committee, Nobel Prize in Medicine and Physiology; 2004 - 2011
Fulbright Scholar (Senior Specialist Award) 2005 - 2010
University of Illinois Comeback Award Distinguished Alumni, 2008
Honorary Member, Sociedade de Radiologia de Pernambuco, Recife, Brazil, 2009
67th Annual Holmes Lecturer, New England Roentgen Ray Society, April 8, 2011
University of Illinois Alumni Achievement Award Distinguished Alumni, 2011
US News and World Report "Top 1% in the Field" , 2011
Honorary Member, Sociedade Brasileira de Neuroradiologia, Fortaleza, Brazil, 2012
Honorary Member, Sociedade Cearense de Radiologia, Fortaleza, Brazil, 2013
Honorary Permanent Visiting Professor, Department of Neuroradiology,
University of Zurich, Zurich, Switzerland, 2013-2016
Advisory Board, Clinical Neuroscience Institute, University of Zurich, Switzerland, 2018-present

Academic Faculty Appointments:

1987-1988 Assistant Professor of Radiology, Neuroradiology Section
University of California, San Francisco
San Francisco, California

1988-1990 Assistant Professor of Radiology, Neuroradiology Section
Assistant Professor of Neurosurgery (secondary appointment)
Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania

1990-1995 Associate Professor of Radiology, Neuroradiology Section
Associate Professor of Neurosurgery (secondary appointment)
Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania

1995-1996 Professor of Radiology
Oregon Health Sciences University School of Medicine
Chief of Divisions of Neuroradiology and Magnetic Resonance
Oregon Health Sciences University Medical Center
Portland, Oregon

1996-1998 Professor of Radiology
The Mount Sinai School of Medicine
Director of Neuroradiology
The Mount Sinai Medical Center
New York, New York

1998-2012 Professor of Radiology
Stanford University Medical Center
Chief of Neuroradiology
Stanford University Medical Center
Stanford, California

2002-2012 Senior Fellow by courtesy
Hoover Institution, Stanford University
Stanford, California

2007-2012 Senior Fellow by courtesy
Freeman Spogli Institute for International Studies
Stanford University
Stanford, California

2010-present Member, Working Group on Health Care Policy
Hoover Institution, Stanford University
Stanford, California

2012-present David and Joan Traitel Senior Fellow (2012-2020)
Robert Wesson Senior Fellow (2020-present)
Hoover Institution, Stanford University
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2013-2016 Visiting Professor in Neuroradiology
Institute of Neuroradiology, University Hospital Zurich
Zurich, Switzerland

Administrative Appointments:

1987-88 Staff Radiologist
University of California Medical Center
San Francisco, California, USA

1987-88 Medical Director
San Francisco Magnetic Resonance Center
UCSF Out-Patient MR Center
San Francisco, California, USA

1988-1995 Staff Radiologist
University of Pennsylvania Medical Center
Philadelphia, Pennsylvania, USA

1988-1995 Staff Radiologist
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania, USA

1988-1995 Staff Radiologist
Wills Eye Hospital
Philadelphia, Pennsylvania, USA

1992-1994 Executive Committee, Radiology Associates
Hospital of the University of Pennsylvania
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1995-1996 Staff Radiologist
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Chief, Divisions of Neuroradiology and Magnetic Resonance
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Director, Neuroradiology Fellowship Program
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Honorary Director, University Radiology Practice Corporation
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Member, Steering Committee, Oregon Brain Institute
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Member, Retirement Benefits Committee
Department of Radiology
Oregon Health Sciences University Medical Center
Portland, Oregon, USA

1995-1996 Member, Resident Education Committee
Department of Radiology
Oregon Health Sciences University Medical Center
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1996-1998 Staff Radiologist
The Mount Sinai Medical Center
New York, New York, USA

1996-1998 Director, Division of Neuroradiology
The Mount Sinai Medical Center
New York, New York, USA

1996-1998 Director, Neuroradiology Fellowship Program
The Mount Sinai Medical Center
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1996-1998 Member, Radiology Executive Committee
The Mount Sinai Medical Center
New York, New York, USA

1996-1998 Chair, Radiology Research Committee
The Mount Sinai Medical Center
New York, New York, USA

1998-2012 Chief, Neuroradiology Section
Stanford University Medical Center
Stanford, California, USA

1998-2012 Staff Radiologist
Stanford University Medical Center
Stanford, California, USA

1998-2012 Staff Radiologist
Lucille Packard Childrens Hospital
Stanford, California, USA

1998-2012 Staff Radiologist
Palo Alto VA Medical Center
Palo Alto, California, USA

1998- 2012 Director, Neuroradiology Fellowship Program
Stanford University Medical Center
Stanford, California, USA

1998-2009 Member, MR Research Committee
Stanford University Medical Center
Stanford, California, USA

1998-2003 Member, PACS Committee
Stanford University Medical Center
Stanford, California, USA

1998-2012 Member, Radiology Executive (Section Chief) Committee
Stanford University Medical Center
Stanford, California, USA

1998-2012 Member, Stanford Brain Institute
Stanford University Medical Center
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1998-1999 Head, Neurointerventional Radiology Faculty Search Committee
Stanford University Medical Center
Stanford, California, USA

1999-2000 Member, Stanford Brain Research Institute
Stanford University Medical Center
Stanford, California, USA

- 1999-2000 Member, Body Interventional Radiology Search Committee
Stanford University Medical Center
Stanford, California, USA
- 1998-2000 Member, Pediatric Radiology Chief Search Committee
Stanford University Medical Center
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- 1999-2001 Chair, Pediatric Neuroradiology Faculty Search Committee
Stanford University Medical Center
Stanford, California, USA
- 1998-2000 Member, Palo Alto VA Radiology Chief Search Committee
Palo Alto VA Medical Center
Stanford, California, USA
- 2000-2004 Chair, General Neuroradiology Faculty Search Committee
Stanford University Medical Center
Stanford, California, USA
- 2000-2001 Member, Magnetic Resonance Neuroscientist Search Committee
Stanford University Medical Center
Stanford, California, USA
- 2000-2003 Member, Radiology Faculty Evaluation Committee
Stanford University Medical Center
Stanford, California, USA
- 2001-2002 Member, MR Process "Six Sigma" Management Committee
Stanford University Medical Center
Stanford, California, USA
- 2002-2007 Member, Radiology Education Committee
Stanford University Medical Center
Stanford, California, USA
- 2006-2008 Member, Pediatric Neuroradiologist Search Committee
Lucile Packard Children's Hospital
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- 2007-2008 Chair, Neuroradiology Faculty Search Committee
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- 2007-2008 Member, 7T High Field Magnetic Resonance Scientist Search Committee
Stanford University Medical Center
Stanford, California, USA
- 2006-2008 Member, Stanford Center in China *Ad Hoc* Advisory Committee
Representative, School of Medicine
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- 2011-2012 Member, BioX
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- 2019-2020 Member, Director of Hoover Institution Faculty Search Committee
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Professional and Scientific Societies, Current and Past:

Radiological Society of North America
American Society of Neuroradiology (Senior Member)
American Heart Association Stroke Council
American Heart Association Cardiovascular Radiology Council
International Society of Magnetic Resonance in Medicine

Scientific and Medical Advisory Boards, and Corporate Boards, Current and Past:

MR Contrast Agent Advisory Board, Bristol-Myers Squibb Diagnostics
MR Advisory Board, Bracco International
MR Advisory Board, Sanofi-Winthrop
MR Contrast Agent Advisory Board, Nycomed
MR Advisory Board, General Electric Medical Systems
High Speed CT Advisory Board, General Electric Medical Systems
Frontiers in MR Advisory Board, Nycomed
Tangiers International, Advisory Board
Neuro Advisory Board, GE Healthcare
Alzeca Biosciences, Inc. Board of Directors (Chairman)
TechTools, Sao Paulo, Brazil (Principal Advisor)
Clinical Neuroscience Institute, University of Zurich

Training Record:

Name of Trainee	Position as Trainee	Years of Training	Current (or Known) Position
Alexander Mark, MD	neuroradiology fellow	1987-1988	Director of MRI Washington Hospital Ctr. Associate Clinical Professor George Washington Univ. Washington, D.C.
Evan Fram, MD	neuroradiology fellow	1987-1988	Neuroradiologist Barrow Neurologic Institute Phoenix, AZ
Christine Emery, MD	neuroradiology fellow	1987-1988	Neuroradiologist Pennsylvania Hospital Assistant Clinical Professor Thomas Jefferson Univ. Philadelphia, PA
Christopher Dowd, MD	neuroradiology fellow	1987-1988	Assistant Clinical Professor UCSF Medical Center San Francisco, CA
N. Raghavan, MD	neuroradiology fellow	1987-1988	Neuroradiologist Sacramento, CA
Donald Jackson, MD	neuroradiology fellow	1987-1988	Neuroradiologist Eureka, CA
Richard Smith, MD	neuroradiology fellow	1986-1988	Associate Professor Indiana Univ. Medical Ctr. Indianapolis, IN
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Wendell Gibby, MD	neuroradiology fellow	1987-1988	Neuroradiologist Utah Valley Hospital Provo, UT
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David Teitelbaum, M.D.	neuroradiology fellow	1987-1989	Neuroradiologist Brockton, MA
Debra Gusnard, MD	neuroradiology fellow	1987-1989	Neuroradiologist St. Louis, MO
William Armington, MD	neuroradiology fellow	1987-1989	Neuroradiologist New Orleans, LA
David Yousem, MD	neuroradiology fellow	1988-1990	Professor of Radiology Johns Hopkins Hospital Baltimore, MD
Stein Rafto, MD, PhD	neuroradiology fellow	1988-1990	Neuroradiologist University of Hawaii Honolulu, HI
Peter Janick, MD	neuroradiology fellow	1988-1990	Neuroradiologist East Lansing, MI
Robert Hurst, MD	neuroradiology fellow	1989-1991	Associate Professor Univ. of Pennsylvania Philadelphia, PA

Elliott Lerner, MD	neuroradiology fellow	1989-1991	Neuroradiologist Radiology Ass. of Ridgewood Ridgewood, NJ
Stuart Bobman, MD	neuroradiology fellow	1989-1991	Neuroradiologist Radiology Regional Center Fort Myers, FL
Barry Menick, MD	neuroradiology fellow	1989-1991	Neuroradiologist South Texas Radiology San Antonio, TX
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Leslie Miller, MD	neuroradiology fellow	1990-1991	Neuroradiologist Winthrop Univ. Hospital Mineola, NY
Sharon Seltzer, MD	neuroradiology fellow	1991-1992	Neuroradiologist VA Hospital Washington D. C.
Frank Lexa, MD	neuroradiology fellow	1990-1992	Assistant Professor Univ. of Pennsylvania Philadelphia, PA
Patricia Cross, MD	medical student	1990	Radiology resident Univ. of Massachusetts
George Holland, MD	medical student	1989	Assistant Professor Univ. of Pennsylvania
Bruce Shlackman, MD	neuroradiology fellow	1991-1993	Neuroradiologist Fort Lauderdale, FL
John Hiehle, MD	neuroradiology fellow	1991-1993	Neuroradiologist Crozier-Chester, PA
Jeffrey Jarvik, MD	neuroradiology fellow	1991-1993	Assistant Professor Univ. of Washington Seattle, WA
Robert Mittl, MD	neuroradiology fellow	1991-1993	Neuroradiologist Charlotte, NC
Jeffrey Boorstein, MD	neuroradiology fellow	1991-1993	Neuroradiologist Akron, OH
Jeffrey Petrella, MD	neuroradiology fellow	1992-1994	Assistant Professor Duke University Medical Ctr Durham, NC
Robert Noone, MD	medical student	1992	Resident in surgery Johns Hopkins Hospital Baltimore, MD
Howard Siegeman, MD	neuroradiology fellow	1992-1994	Neuroradiologist Ridgewood, NJ
Linda Bagley, MD	neuroradiology fellow	1993-1994	Assistant Professor Univ. of Pennsylvania Philadelphia, PA
Richard Lichtenstein, MD	neuroradiology fellow	1992-1993	Neuroradiologist Tampa, FL
Magie Broderick, MD	medical student	1993	Resident in radiology Yale Univ. Med. Center New Haven, CT
Sylvia Coll, M.D.	research fellow	1993	Neuroradiologist Barcelona, Spain
Lisa Sheppard, MD	neuroradiology fellow	1993-1994	Neuroradiologist NJ

Van Wadlington, MD	neuroradiology fellow	1992-1993	Neuroradiologist George Washington Univ. Washington, D.C.
Willis Chung, MD	neuroradiology fellow	1992-1994	Neuroradiologist CO
Elizabeth Greenstein, MD	medical student	1993-1994	medical student Univ. of Pennsylvania
Robert Howard, MD	neuroradiology fellow	1993-1995	Neuroradiologist FL
Joseph Maldjian, MD	neuroradiology fellow	1993-1995	Assistant Professor Univ. of Pennsylvania Philadelphia, PA
Laurie Loevner, MD	neuroradiology fellow	1993-1995	Associate Professor Univ. of Pennsylvania Philadelphia, PA
Lazaro Amaral, M.D.	research fellow	1995-1996	Neuroradiologist Sao Paulo, Brazil
Mark Burton, MD	neuroradiology fellow	1995-1996	Neuroradiologist Lake Tahoe, NV
Kenneth Curtin, MD	neuroradiology fellow	1995-1996	Neuroradiologist Lansing, MI
Michael Singer, MD	neuroradiology fellow	1996-1998	Neuroradiologist New York, NY
June Chong, MD	neuroradiology fellow	1996-1998	Neuroradiologist Singapore
Barbara Eisenkraft, MD	neuroradiology fellow	1997-1998	Neuroradiologist New York, NY
Annette Nusbaum, MD	neuroradiology fellow	1997-1998	Assistant Professor Cornell U. Medical Ctr. New York, NY
Richard Bellon, MD	neuroradiology fellow	1998-1999	Neurointerventional fellow Mass General Hospital Boston, MA
Jonathan Bard, MD	neuroradiology fellow	1998-1999	Neuroradiologist Dallas, TX
Rick Kaplan, MD	neuroradiology fellow	1998-1999	Staff Neuroradiologist Stanford Univ. Medical Center Stanford, CA
Kareen Garjian, MD	neuroradiology fellow	1998-1999	Neuroradiologist Los Angeles, CA
Sophia Symko, MD	neuroradiology fellow	1999-2000	Neuroradiologist Denver, CO
Rajul Pandit, MD	neuroradiology fellow	1999-2000	Neuroradiology attending Santa Clara Valley Med Ctr San Jose, CA
Glenn Tsukada, MD	neuroradiology fellow	1999-2000	Neuroradiologist San Diego, CA
Raymond Weir, MD	neuroradiology fellow	1999-2000	Neuroradiologist Univ. Texas. Medical Center Houston, TX
Shaun Butela, MD	neuroradiology fellow	2000-2002	Neuroradiologist Good Samaritan Hospital Los Angeles, CA
Kevin Woolley, MD	neuroradiology fellow	2000-2001	Neuroradiologist Denver, CO

Gizela Laskowska, MD	neuroradiology fellow	2000-2001	Neuroradiologist San Francisco, CA
Ross Goldstein, MD	neuroradiology fellow	2001-2003	Neuroradiologist Denver, CO
Lynn Huang, MD	neuroradiology fellow	2001-2003	Neuroradiologist Arlington, VA
Yervant Arzoumanian, MD	neuroradiology fellow	2001-2002	Neuroradiologist Saudi Arabia
Dan Stucker, MD	neuroradiology fellow	2002-2003	Neuroradiologist Los Altos, CA
Robert Gardner, MD	neuroradiology fellow	2002-2003	Neuroradiologist Monterey, CA
Imtiaz Qureshi, MD	neuroradiology fellow	2002-2003	Neuroradiologist Hartford, CT
Ravinder Sohal, MD	neuroradiology fellow	2002-2003	Neuroradiologist Palo Alto, CA
Mahesh Jayaraman, MD	neuroradiology fellow	2003-2004	Assistant Professor Brown Univ. Medical Center Providence, RI
Bryan Winn, MD	neuroradiology fellow	2003-2004	Neuroradiologist Portland, OR
Ron Homer, MD	neuroradiology fellow	2003-2004	Neuroradiologist Los Angeles, CA
Lauren Tran, MD	neuroradiology fellow	2003-2004	Neuroradiologist Monterey, CA
Ray Levartnuk, MD	neuroradiology fellow	2003-2004	Neuroradiology research Stanford, CA
Steven Sohn, MD	neuroradiology fellow	2003-2004	MSK radiology fellow Los Angeles, CA
Kirk Chottanapund, MD	neuroradiology fellow	2004-2005	Neuroradiologist Berkeley, CA
Doris Yip, MD	neuroradiology fellow	2004-2005	Neuroradiologist Chicago, IL
Roy Vaid, MD	neuroradiology fellow	2004-2005	Neuroradiologist University of Oxford Oxford, England
Stanley Lu, MD	neuroradiology fellow	2004-2005	Neuroradiologist New Jersey
Vikas Vij, MD	neuroradiology fellow	2004-2005	Neuroradiologist Seattle, WA
Adam Gittelman, MD	neuroradiology fellow	2004-2005	Neuroradiologist Tampa, FL
Talia Vertinsky, MD	neuroradiology fellow	2005-2007	Assistant Professor University of British Columbia Neuroradiologist Vancouver General Hospital Vancouver, BC Canada
Michael Krasnakutsky, MD	neuroradiology fellow	2005-2007	Neuroradiologist US Army Teaching Hospital Spokane, Washington
Conway Lien, MD	neuroradiology fellow	2005-2007	Neuroradiologist San Jose, California
Shawn Corey, MD, PhD	neuroradiology fellow	2006-2008	Neuroradiologist Phoenix, AZ

Kristen Yeom, MD	neuroradiology fellow	2006-2008	Assistant Professor Stanford Univ. Sch. Of Med. Pediatric Neuroradiologist Lucile Packard Child. Hospital Stanford, CA
Guemjoo Hwang, MD	neuroradiology fellow	2007-2008	Assistant Professor UC Davis Medical Center Davis, CA
Tuan Nguyen, MD	neuroradiology fellow	2007-2008	Neuroradiologist San Jose, California
Monique Mogensen, MD	neuroradiology fellow	2007-2009	Assistant Professor USC Medical Center Los Angeles, CA
Peter Takeyama, MD	neuroradiology fellow	2007-2009	Private practice radiology Tokyo, Japan
Michael Zeineh, MD, PhD	neuroradiology fellow	2008-2010	Assistant Professor Stanford Univ. Medical Center Stanford, CA
Seena Dakarganian, MD	neuroradiology fellow	2008-2010	Assistant Professor Emory Univ. Medical Center Atlanta, GA
Cam Tran, MD	neuroradiology fellow	2008-2010	Neuroradiologist San Jose, California
Bo Yoon Ha, MD	neuroradiology fellow	2008-2009	Neuroradiologist San Jose, California
Hedi Eslamy, MD	neuroradiology fellow	2009-2010	Staff Radiologist Lucile Packard Childrens Hosp Stanford University Med. Ctr.
Jalal Andre, MD	neuroradiology fellow	2009-2011	Assistant Professor Univ. of Washington Seattle, WA
Thu Le, MD	neuroradiology fellow	2009-2011	Neuroradiologist Sacramento, California
Daniel Gianella, MD	neuroradiology fellow	2009-2011	Neuroradiologist San Jose, California
Caroline Yuh, MD	neuroradiology fellow	2010-2012	Neuroradiologist San Jose, California
Ryan McTaggart, MD	neuroradiology fellow	2010-2011	Neurointerventional Fellow Stanford Univ. Medical Center Stanford, CA
Michael Pulling, MD	neuroradiology fellow	2010-2012	Staff Radiologist Captain, US Army
Sal Soman, MD	neuroradiology fellow	2010-2012	Neuroscience Fellow Palo Alto VA Medical Center Palo Alto, CA
David Rex, MD	neuroradiology fellow	2010-2012	Staff Radiologist Stanford Univ. Medical Center Stanford, CA
James Kang, MD	neuroradiology fellow	2011-2013	neuroradiology fellow
Michael Iv, MD	neuroradiology fellow	2011-2013	neuroradiology fellow
Lex Mitchell, MD	neuroradiology fellow	2011-2013	neuroradiology fellow
Neil Gupta, MD	neuroradiology fellow	2011-2013	neuroradiology fellow

Funded Research Grants, Principal- or Co-Investigator (>30):

1. "Phase II Study of Gadolinium-DTPA MR Contrast Agent in Patients with Multiple Sclerosis"
PI: R. Grossman; Co-Investigator: S.W. Atlas, MD
Berlex, Wayne, NJ 1987 - 88
2. "A Neurobehavioral Study of Schizophrenia"
PI: R. Gur; Co-Investigator: S.W. Atlas, MD
NIH 1990-91
3. "Phase II Clinical Study of SQ 32,692 MR Contrast Agent in Patients with Intracranial Tumors"
PI: S.W. Atlas, MD
Squibb Diagnostics, Princeton, NJ 1989 - 90
4. "ProHance in MR Angiography for Intracranial Vascular Disease"
PI: S.W. Atlas, MD
Squibb Diagnostics, Princeton, NJ 1991 - 92
5. "Signal Loss in Magnetic Resonance Angiography"
PI: J. Listerud; Co-Investigator: S.W. Atlas, MD
NIH 1990-1991
6. "Dynamic MR Imaging during Brain Activation"
PI: S.W. Atlas, MD
University of Pennsylvania Research Foundation 1993-1994
7. "Phase II Open Label Multicenter Study with Sprodiamide Injection MRI in Patients with Brain Tumors following Treatment for the Detection of Viable Tumor"
PI: S.W. Atlas, MD
Sterling-Winthrop, Malvern, PA 1994
8. "Betaseron Therapy for Progressive Multiple Sclerosis"
PI: R. Whitam; Co-Investigator: S.W. Atlas, MD
Berlex Laboratories, Richmond, California 1995-1996
9. "Phase II Clinical Trial of Gadobenate Dimeglumine in MRI Detection and Evaluation of Intracranial Lesions"
PI: S.W. Atlas, MD
Bracco Diagnostics, Inc., Princeton, NJ 1996-1997
10. "Development and Clinical Validation of Post-Processing Algorithms for Diffusion - Weighted MRI in Acute Cerebral Ischemia"
PI: S.W. Atlas, MD
General Electric Co. 1997 - 1998

11. "MR Spectroscopy in AIDS Dementia"
PI: Brad Novia, MGH; Co-Investigator: S.W. Atlas, MD
NIH 1997 - 1998
12. "Minorities, Risk Factor and Stroke Study"
PI: S. Tuhim; Co-Investigator: S.W. Atlas, MD
NIH 1997-1998
13. "Localization of Depersonalization Using Functional MRI with Behavioral Task Activation"
PI: D Simeon; Co-Investigator: S.W. Atlas, MD
NARSAD 1997 - 1998
14. "Functional MRI of Memory in Temporal Lobe Epilepsy"
PI: A. Golby, M.D.; Preceptor: S.W. Atlas, M.D.
NIH Individual National Research Service Award
1 F32 NS10925-01 7/1/99-6/30/01
15. "Functional MRI in Sexual Arousal in Healthy Males"
PI: B. Arnow, PhD; Co-Investigator: S.W. Atlas, MD
TAP, Inc 7/01/00 – 6/30/01
16. "Quantitative MR of Normal Appearing White Matter in MS"
PI: S.W. Atlas
NIH 1 R21 NS39319-01 2/25/00 – 2/24/03
17. "Effects of Managed Care on Proliferation of MR Scanners and Advancement of MR Technology"
PI: S.W. Atlas 1-HYE-605-61400
Bracco Unrestricted Gift: 2002
18. "New Approach to Detect CP and Brain Injury by Term Age"
PI: R. Ariagno, M.D.; Co-Investigator: S.W. Atlas
R21 NS40374-01 NIH/NINDS 7/1/01 – 6/30/03
19. "Biomedical Ethics Challenges in the Emergence of In Utero/Fetal MRI"
PI: Judy Illes, PhD; Co-Investigator S.W. Atlas
The Childrens Health Initiative 09/01/02 – 12/31/03
20. "Ethical Challenges in Neuroimaging"
PI: S.W. Atlas, M.D.
The Greenwall Foundation 07/01/01 – 06/30/04
21. "Magnetic Resonance Spectroscopic Neoplasm Imaging"
PI: D.M. Spielman, Ph.D. Co-Investigator S.W. Atlas R01 CA48269-08
NIH/NCI 09/01/99-07/30/04

22. "fMRI and TMS Analysis of Cerebellar Cognitive Function"
R01 MH60234 NIH
PI: John Desmond, Ph.D. Co-Investigator S.W. Atlas 07/01/00 - 07/31/04
23. "Advanced neuroimaging: Ethical, legal and social and issues"
R01#NS045831 NIH
PI: J. Illes, Ph.D. ; Co-Investigator S.W. Atlas 10/01/03 – 09/30/06
24. "Low Cost High Quality Pre-Polarized MRI Head Scanner"
1-R33-CA095882-01 NIH/NCI
PI: A. Macovski, Ph.D.; Co-Investigator S.W. Atlas 4/01/053/31/08
25. Fulbright Scholar award (Senior Specialist Program, S.W. Atlas)
"To foster collaboration between Dr. Atlas and China in addressing the structuring of the Chinese health care system over the next five years." 2005 - 2010
26. "The Physiological and Neural Correlates of Tai Chi: An Investigation of Physiologic Mechanisms Underlying Health Benefits of Tai Chi"
PI: Jessica Rose, PhD; Co-PI Scott W. Atlas, MD
Stanford Center on Longevity 2008-2009
27. "Neural Correlates of Gait and Upper Limb Motor Deficits in Preterm Children"
PI: Jessica Rose, PhD; Co-I Scott W. Atlas, MD
Pediatric Health Fund – Child Health Research Program 1/1/09 – 12/31/09
28. "Expanding Outpatient Services, Health Care Utilization, and State Regulation"
PI: Laurence Baker, PhD; Co-Investigator S.W. Atlas
Robert Wood Johnson Foundation 2007-2008
29. "Health Care for One Billion: Controlling Incentives in Rural China Health Care Delivery"
PI: Scott W. Atlas, MD; Co-PI Scott Rozelle, PhD
Presidential Fund for Innovation in International Studies, Freeman Spogli Institute 2007-2010
30. "Ultra-High Resolution Clinical Imaging of the Human Medial Temporal Lobe with 7T MRI"
PI: M. Zeineh; Research Mentor and Co-Investigator S.W. Atlas
RSNA Research Resident / Fellow Grant Application 2009 - 2011
31. "Ultra-High Resolution DTI of the Hippocampus"
PI: M. Zeineh; Research Mentor and Co-Investigator S.W. Atlas
GE Healthcare Seed Project Funds 2009 - 2011
32. "Short-axis EPI for Diffusion Tensor MRI at High Field"
PI: R. Bammer; Co-Investigator S.W. Atlas
NIH R01 EB008706 2009 - 2013
33. "Real-Time MRI Motion Correction System"
PI: R. Bammer; Co-Investigator: S.W. Atlas
National Institutes of Health (NIBIB) R01 EB11654 2010-2014

Appointments and Offices Held in Professional and Scientific Societies (selected):

AMERICAN SOCIETY OF NEURORADIOLOGY

Ad Hoc Committee on Inter-Society Liaison, 1988-1989
Program Committee, 1988-1989
Awards Committee, 1989-1990
Program Committee, 1990-1991
Intersociety Liaison to SMRI and SMRM, 1990-1991
Intersociety Liaison to SMRI, 1991-1993
Intersociety Liaison to SMR, 1994-present
Elected Member-at-Large, Executive Committee, 1995-1997
Member, Curriculum Development Subcommittee of Education, 1995-1999
Member, ASNR Program Directors Subcommittee, 2000-2004

SYMPOSIUM NEURORADIOLOGICUM XVI

Scientific Program Committee, 1997
Scientific Program Committee, 2010

INTERNATIONAL SOCIETY OF MAGNETIC RESONANCE IN MEDICINE

Education and Publications Committee, 1989-1990
Co-Editor, SMRM Newsletter, 1989-1990
Magnetic Resonance Core Curriculum Committee, 1990-1991
Program Committee, 1991-1992
Co-Chair, Clinical Neuro MR Course, 1999 Annual Meeting
Chair, Advanced Neuro MR Course, 2000 Annual Meeting
Co-Chair, Neuro MR Course, 2001 Annual Meeting

SOCIETY FOR MAGNETIC RESONANCE IMAGING

Committee on Resident Training, 1989-1990
Magnetic Resonance Core Curriculum Committee, 1990-1991
Technical Exhibits Committee, 1990-1991
Board of Directors, 1991-1994
Chairman, Scientific Poster Committee, 1991-1992
Chairman, Neuroimaging Committee, 1991-1992
Intersociety Liaison Committee, 1991-1992
Chairman, Tutorial Committee, 1992-1993
Chairman, Neuroimaging Committee, 1992-1994
Nominating Committee, 1992-1993

AMERICAN HEART ASSOCIATION STROKE COUNCIL

AMERICAN BOARD OF RADIOLOGY

Contributor, Written Board Examination for certification, 1990
Examiner, Oral Board Examination for Radiology certification, 1992-2000
Examiner, Oral CAQ Examination for Neuroradiology certification, 1995-2003
ABR Committee for Neuroradiology Certification (CAQ), 1995-2000
Neuroradiology Line Writer, Written Board Examination for certification 1995-1997

AMERICAN COLLEGE OF RADIOLOGY

Committee on Human Resources, Commission on Neuroradiology and
Magnetic Resonance, 1991-1997
Committee on Education in MRI and Neuroradiology, 1996 - 2004

Task Force on Continuing Competence (Neuroradiology), 1997 – 2004
ACRIN CNS Committee, 1999 - 2001

NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2004
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2006
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2007
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2008
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2010
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2011
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2012
NOBEL PRIZE NOMINATING COMMITTEE FOR MEDICINE AND PHYSIOLOGY FOR 2020

Editorial Positions and Reviewer Activities for Scientific Meetings and Journals:

Prior Editorial Positions:

Consultant to the Editor, *Radiology*
Editor-in-Chief, *Topics in MRI*
Editorial Board, *American Journal of Neuroradiology*
Editorial Board, *International Journal of Neuroradiology*
Editorial Board, *Magnetic Resonance Imaging*
Associate Editor, *Radiology*
Associate Editor, *Journal of Magnetic Resonance Imaging*
Editorial Board, *Journal of Magnetic Resonance Imaging*
Editorial Board, *SMRM Pulse*
Co-Editor, *SMRM Newsletter*

Prior Reviewer Activities for Journals:

Radiology
American Journal of Neuroradiology
Annals of Neurology
Cancer
Journal of Magnetic Resonance Imaging
Investigative Radiology
Magnetic Resonance Imaging
Magnetic Resonance in Medicine
British Journal of Ophthalmology
Neurology
Journal of the Neurological Sciences
Topics in MRI

Prior Reviewer Activities for Scientific Meetings:

Society for Magnetic Resonance in Medicine
Society for Magnetic Resonance
International Society of Magnetic Resonance in Medicine
American Society of Neuroradiology
Society for Magnetic Resonance Imaging
American Roentgen Ray Society

Patents:

Three Dimensional Fourier Transform, Fast Spin Echo, Black Blood Magnetic Resonance Angiography
Patent Number 5,271,399

Prior Educational and Teaching Responsibilities:

1998-2012:

Designed structure of Neuroradiology Fellowship and rotations for fellows

Designed structure of Neuroradiology rotations for radiology residents

Designed and taught annual, three month "Introduction to Neuroradiology" lecture series for residents, fellows, and other neuroscience departments

Daily teaching sessions for Neuroradiology fellows and Radiology residents on Neuroradiology rotations

Primary teacher for weekly Neuroradiology Interesting Case conference

Primary teacher for Neuroradiology elective course for neurology/neurosurgery residents

Neuroradiology weekly teaching conferences for radiology residents (rotate with other neuroradiology staff)

Neuroscience Grand Rounds weekly interdepartmental teaching conferences

Pediatric Neuroradiology - Pediatric Neurology bi-weekly correlative conferences (rotate with other neuroradiology staff)

Adult Neurooncology – Neuroradiology weekly staging conferences (rotate with other neuroradiology staff)

Pediatric Neurooncology -Pediatric Neuroradiology weekly correlative conferences (rotate with other neuroradiology staff)

Primary teacher for Neuroradiology elective course for visiting residents in radiology, neurology, and neurosurgery

Primary teacher for Visiting Scholars in Neuroradiology

Educational Course Directorships, National and International:

1990s:

Co-Director

Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations

Educational Symposium, Temple University and Sanofi-Winthrop
Grand Hyatt New York
New York, NY
February 29, 1992

Co-Director
Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations
Educational Symposium, Temple University and Sanofi-Winthrop
Los Angeles Sheraton Hotel
Los Angeles, California
April 4, 1992

Co-Director
Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations
Educational Symposium, Temple University and Sanofi-Winthrop
Berlin, Germany
August 12, 1992

Co-Chair
Educational Program: Neuroimaging Session
Introductory MRI: Techniques and Clinical Applications
1999 Annual Meeting, International Society of Magnetic Resonance in Medicine
Philadelphia, Pennsylvania
May 22, 1999

2000:
Chair
Educational Program: Neuroimaging Session
Advanced Neuro MR: Technical Considerations and Clinical Applications
2000 Annual Meeting, International Society of Magnetic Resonance in Medicine
Denver, Colorado
April 2, 2000

Chair
Educational Program: Neuroimaging Session
Advanced Neuro MR: Technical Considerations and Clinical Applications
2000 Annual Meeting
International Society of Magnetic Resonance in Medicine
Denver, Colorado
April 2, 2000

Course Director
Radiology for The Next Millenium
MR Advances in Neuroradiology and Musculoskeletal Imaging

Stanford University Medical Center, Department of Radiology
San Francisco, California
June 18-20, 2000

2001:

Course Director
Radiology for The Next Millenium
MR Advances in Neuroradiology and Musculoskeletal Imaging
Stanford University Medical Center, Department of Radiology
Bellagio Hotel, Las Vegas, Nevada
February 15-18, 2001

Co-Chair
Educational Program: Neuroimaging Session
Neuro MR: Technical Considerations and Clinical Applications
2001 Annual Meeting
International Society of Magnetic Resonance in Medicine
Glasgow, Scotland
April , 2001

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
The Plaza Hotel
New York, New York
November, 2001

2002:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
February, 2002

Course Co-Director
International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
Four Seasons Hotel
Las Vegas, Nevada
October, 2002

2003:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada

February, 2003

Course Co-Director
Second International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
October, 2003

2004:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
February, 2004

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
Venetian Hotel
Las Vegas, Nevada
May, 2004

Course Co-Director
Third International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
October, 2004

2005:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
February, 2005

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
The Wynn Resort
Las Vegas, Nevada
May, 2005

Course Co-Director
Fourth International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology

The Wynn Resort
Las Vegas, Nevada
October, 2005

2006:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
March, 2006

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
The Wynn Resort
Las Vegas, Nevada
May, 2006

Course Co-Director
Fifth International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
The Wynn Resort
Las Vegas, Nevada
October, 2006

2007:

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Bellagio Hotel
Las Vegas, Nevada
March, 2007

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
The Wynn Resort
Las Vegas, Nevada
May, 2007

Course Co-Director
Sixth International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
The Wynn Resort
Las Vegas, Nevada
October, 2007

2008:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
Four Seasons Hotel
Las Vegas, Nevada
April, 2008

Course Co-Director
MR Advances in Neuroradiology and Sports Medicine
Stanford University Medical Center, Department of Radiology
Wynn Resort
Las Vegas, Nevada
May, 2008

Course Co-Director
Health, Education, and Development in Emerging China
Bing Overseas Seminar Program
Stanford University, in collaboration with Renmin University
Beijing, China
September, 2008

Course Co-Director
Seventh International Symposium on Clinical MRI at High Field
Stanford University Medical Center, Department of Radiology
Bellagio Hotel, Las Vegas, Nevada
October, 2008

2009:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
Four Seasons Hotel
Las Vegas, Nevada
May, 2009

2010:

Course Co-Director
Stoller & Atlas: Musculoskeletal and Neuro MRI
Wynn Resort and Hotel
Las Vegas, Nevada
January, 2010

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head and Neck
Wynn Resort and Hotel
Las Vegas, Nevada
May, 2010

Course Director

Scott Atlas' Neuroradiology Immersion
Mauna Lani Hotel
Kona, Hawaii
November, 2010

2011:

Course Co-Director
Stoller & Atlas: Musculoskeletal and Neuro MRI
Wynn Resort and Hotel
Las Vegas, Nevada
January, 2011

Course Co-Director
Stoller & Atlas: Musculoskeletal and Neuro MRI
Wynn Resort and Hotel
Las Vegas, Nevada
April, 2011

Course Co-Director
Atlas – Edelman – Ascher: Brain and Body MRI Case Tutorial
Wynn Resort and Hotel
Las Vegas, Nevada
October, 2011

2012:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
March, 2012

2013:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
March, 2013

2014:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
March, 2014

Course Co-Director
Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August, 2014

2015:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
February, 2015

Course Director
Scott Atlas' Neuroradiology Tutorial
Renaissance Hotel
Sao Paulo, Brazil
April, 2015

Course Co-Director
Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August, 2015

2016:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
February, 2016

2016:

Course Co-Director
Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August, 2016

Visiting President
Update in Neuro Imaging
Site Oud Sint-Jan
Bruges, Belgium
October, 2016

2017:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
February, 2017

Course Co-Director
Hoover Institution Summer Policy Boot Camp
Hoover Institution, Stanford University
Stanford, California
August, 2017

2018:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
February, 2018

Course Co-Director
Hoover Institution Summer Policy Boot Camp
Hoover Institution, Stanford University
Stanford, California
August, 2018

2019:

Course Co-Director
Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Resort and Hotel
Las Vegas, Nevada
February, 2019

Course Co-Director
Hoover Institution Summer Policy Boot Camp
Hoover Institution, Stanford University
Stanford, California
August, 2019

Visiting Professorships and Lectures by Invitation (>600):

1987

"MR Imaging of the Orbit"

Neuroradiology MR Fellowship Course
University of California, San Francisco
San Francisco, California
June 8, 1987

"MR Imaging of Intracranial Hemorrhage and Related Disorders"

Neuroradiology MR Fellowship Course
University of California, San Francisco
San Francisco, California
June 9, 1987

"Fast Scanning: Applications to the CNS"

Neuroradiology Section - MR Lecture Series
University of California, San Francisco
San Francisco, California
August 4, 1987

"MR of Intracranial Hemorrhage"

Neuroradiology Section - MR Lecture Series
University of California, San Francisco
San Francisco, California
September 1, 1987

"Intracranial Hemorrhage: MR Imaging"

University of California Body MR Fellowship Course
University of California, San Francisco
San Francisco, California
July 15, 1987

"Fast Scanning: CNS Applications"

Clinical Magnetic Resonance Imaging Course
University of California, San Francisco
Hyatt Regency Hotel
San Francisco, California
October 19, 1987

"Supratentorial Tumors: MR Imaging"

Clinical Magnetic Resonance Imaging Course
University of California, San Francisco
Hyatt Regency Hotel
San Francisco, California
October 20, 1987

"MR of the Orbit"

Clinical Magnetic Resonance Imaging Course
University of California, San Francisco
Hyatt Regency Hotel
San Francisco, California
October 21, 1987

"Isolated Palsies of Cranial Nerves 3, 4 and 6: Current Imaging Applications"

Ophthalmology Grand Rounds
University of California, San Francisco
San Francisco, California
October 29, 1987

"Fast Scanning: Applications to the CNS"

University of California Body MR Fellowship Course
University of California, San Francisco
San Francisco, California
November 12, 1987

1988

"Intracranial Hemorrhage: MR Imaging Applications"

Yale University School of Medicine
New Haven, Connecticut
Radiology Daily Conference
February 17, 1988

"Rapid MR Imaging: Applications in the CNS"

Yale University School of Medicine
New Haven, Connecticut
Radiology Grand Rounds
February 17, 1988

"MR Imaging of Intracranial Hemorrhage: Concepts and Applications"

Society for Magnetic Resonance Imaging Annual Meeting
Educational Program
Boston, Massachusetts
February 28, 1988

"Rapid MR Imaging: CNS Applications "

Pacific Northwest Radiological Society
1988 Annual Meeting
Portland, Oregon
April 30, 1988

"MR Anatomy of the Brain and Spine"

MR for Technologists - 1988 Annual Meeting
Hospital of the University of Pennsylvania
Penn Towers Hotel
Philadelphia, Pennsylvania
June 26, 1988

"Clinical Applications of Fast Scanning"

MR for Technologists - 1988 Annual Meeting
Hospital of the University of Pennsylvania
Penn Towers Hotel
Philadelphia, Pennsylvania
June 26, 1988

"MR Imaging of the Orbit: Current Status"

MR Fellowship Course
Barrow Neurological Institute
Phoenix, Arizona
August 15, 1988

"MR Imaging of Intracranial Hemorrhage and Related Lesions"

MR Fellowship Course
Barrow Neurological Institute
Phoenix, Arizona
August 15, 1988

"Fast Scanning: Applications to the CNS"

MR Fellowship Course
Barrow Neurological Institute
Phoenix, Arizona
August 16, 1988

1989

"MRI in Neuroradiology: Clinical Applications"

The Utility of MRI in Clinical Neurodiagnosis
Albert Einstein Medical Center Department of Radiology
Sheraton Hotel
New Rochelle, New York
January 18, 1989

"MR Imaging of Hemorrhage: Relaxation Mechanisms and Clinical Applications"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
February 23, 1989

"MR of the Orbit: Current Status"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
February 23, 1989

"Fast Scanning: Concepts and CNS Applications"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
February 24, 1989

"MR Imaging of Intracranial Hemorrhage and Related Lesions"

Educational Program, 1989 Annual Meeting, Society for Magnetic Resonance Imaging
Los Angeles, California
February 25, 1989

"MR of Intraaxial Tumors"

Neuroradiology at Vail
Hospital of the University of Pennsylvania
Vail, Colorado
March 27-31, 1989

"Anatomy and Pathology of the Orbit: MR Imaging"

Neuroradiology at Vail
Hospital of the University of Pennsylvania
Vail, Colorado
March 27-31, 1989

"Clinical Applications of Fast Scanning in Neuroimaging"

Neuroradiology at Vail
Hospital of the University of Pennsylvania
Vail, Colorado
March 27-31, 1989

"Advanced MR Imaging Techniques in Neuroradiology"

Radiological Society of New York Medical College
1989 Annual Meeting
Valhalla, New York
May 11, 1989

"Orbit: State of the Art MR Imaging"

Visiting Professor
Department of Radiology
New York Medical College
Valhalla, New York
May 12, 1989

"Orbit: Current State of the Art MR Imaging"

Clinical MRI: 1989 Update
Department of Radiology
Massachusetts General Hospital
Harvard Medical School
Boston, Massachusetts
May 17, 1989

"CNS Infections and AIDS: Role of MR Imaging"

Clinical MRI: 1989 Update
Department of Radiology
Massachusetts General Hospital
Harvard Medical School
Boston, Massachusetts
May 17, 1989

"Concepts and Clinical Applications of Fast Imaging to the CNS"

Eastern Neuroradiological Society
First Annual Meeting
New York, New York
July 8, 1989

"MR Imaging of Hemorrhage: Concepts and Misconceptions"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
September 28, 1989

"MR of the Orbit: Current Status"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
September 28, 1989

"Fast Scanning: Concepts and CNS Applications"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
September 28, 1989

"Brain Infection and AIDS: MR Imaging"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
September 28, 1989

"Intracranial Tumors: Role of MR Imaging"

Neuroradiology Advanced MR Fellowship Course
University of California, San Francisco
San Francisco, California
September 28, 1989

"Surface Coil Applications of the Orbit"

Magnetic Resonance Imaging: Techniques and Imaging Methodology
Department of Radiology
University of Pennsylvania
Philadelphia, Pennsylvania
November 6-10, 1989

"New Applications of Gradient Echo Imaging in the Brain"

Magnetic Resonance Imaging: Techniques and Imaging Methodology
Department of Radiology
University of Pennsylvania
Philadelphia, Pennsylvania
November 6-10, 1989

"Workshop: Clinical Uses of Gradient Echo Imaging"

Magnetic Resonance Imaging: Techniques and Imaging Methodology
Department of Radiology
University of Pennsylvania
Philadelphia, Pennsylvania
November 6-10, 1989

"Controversies in MR Imaging"

Magnetic Resonance Imaging: Techniques and Imaging Methodology
Department of Radiology
University of Pennsylvania
Philadelphia, Pennsylvania
November 6-10, 1989

"Advances in Neuroradiologic MR Imaging"

Visiting Professor
Department of Radiology
Charlotte Memorial Hospital
Charlotte, North Carolina
November 21, 1989

"MR Imaging of Intracranial Hemorrhage"

Visiting Professor
Department of Radiology
Charlotte Memorial Hospital
Charlotte, North Carolina
November 21, 1989

"Fast MR Imaging: CNS Applications"

Refresher Course
1989 RSNA Annual Meeting
Chicago, Illinois
November 30, 1989

1990

"MR of Hemorrhage: Concepts and Clinical Applications"

Educational Course
Society of Magnetic Resonance Imaging
1990 Annual Meeting
Washington, D.C.
February 23, 1990

"Fast Scanning: Concepts and CNS Applications"

Neuroradiology at Snowbird
University of Pennsylvania
Snowbird, Utah
February 25 - March 2, 1990

"Brain Infection and AIDS: MR Imaging"

Neuroradiology at Snowbird
University of Pennsylvania
Snowbird, Utah
February 25 - March 2, 1990

"Intracranial Tumors: Role of MR Imaging"

Neuroradiology at Snowbird
University of Pennsylvania
Snowbird, Utah
February 25 - March 2, 1990

"MR Imaging of the Orbit"

Neuroradiology at Snowbird
University of Pennsylvania
Snowbird, Utah
February 25 - March 2, 1990

"Degenerative Disease of the Spine"

Neuroradiology at Snowbird
University of Pennsylvania
Snowbird, Utah
February 25 - March 2, 1990

"MR of Hemorrhage: Concepts and Clinical Applications"

Magnetic Resonance Imaging
Fourth Annual Barrow Neurological Institute Meeting
Scottsdale, Arizona
March 3-7, 1990

"MR Imaging of the Orbit"

Magnetic Resonance Imaging
Fourth Annual Barrow Neurological Institute Meeting
Scottsdale, Arizona
March 3-7, 1990

"Fast Scanning: Current CNS Applications"

MR Imaging: Principles and Methodology
University of Pennsylvania
Grindelwald, Switzerland
March, 1990

"Intracranial Tumors: Role of MR Imaging"

MR Imaging: Principles and Methodology
University of Pennsylvania
Grindelwald, Switzerland
March, 1990

"Controversies in MR Imaging"

MR Imaging: Principles and Methodology
University of Pennsylvania
Grindelwald, Switzerland
March, 1990

"Degenerative Disease of the Spine"

MR Imaging: Principles and Methodology
University of Pennsylvania
Grindelwald, Switzerland
March, 1990

"Intraaxial Brain Tumors in Adults"

Annual Course
American Society of Neuroradiology Annual Meeting
Los Angeles, CA
March, 1990

"MRI of the Orbits"

Visiting Professor
Department of Radiology, St. Francis Regional Medical Center
Wichita, KS
April 18, 1990

"MRI of Brain Tumors"

The Neuroscience Society and MRI City-Wide Conference
St. Francis Regional Medical Center
Wichita, KS
April 18, 1990

"MRI of the Orbits: Current Techniques and Applications"

Visiting Professor
Department of Radiology
Cleveland, OH
April 24, 1990

"Fast Imaging: Principles, Techniques and Clinical Applications"

Visiting Professor
Radiology Grand Rounds
Department of Radiology
Massachusetts General Hospital
Boston, MA
May 2, 1990

"Intraaxial Brain Tumors: MR-Histopathology Correlations"

Guest Lecturer, Boston Neuroradiology Society Meeting
Department of Radiology
Massachusetts General Hospital
Boston, MA
May 2, 1990

"Clinical Applications of Fast Scanning"

1990 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Lafayette Hotel
Boston, MA
October 2, 1990

"Adult Intraaxial Tumors"

1990 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Lafayette Hotel
Boston, MA
October 2, 1990

"Fast Imaging: Principles and Clinical Applications"

Visiting Professor
Radiology Grand Rounds
Department of Radiology
Eastern Virginia Medical School
Norfolk, VA
October 3-4, 1990

"Intraaxial Brain Tumors: MR-Pathology Correlations"

Guest Lecturer
Tidewater Radiological Society
Norfolk, VA
October 3, 1990

"Fast Imaging: Principles and Clinical Applications"

Advanced Neuroradiology Seminar
Department of Radiology
University of South Florida
Orlando, FL
October 24-27, 1990

"MRI of the Orbits: Current Techniques and Applications"

Advanced Neuroradiology Seminar
Department of Radiology
University of South Florida
Orlando, FL
October 24-27, 1990

"MR of Hemorrhage: Concepts and Clinical Applications"

Advanced Neuroradiology Seminar
Department of Radiology
University of South Florida
Orlando, FL
October 24-27, 1990

"Advanced MR Imaging of the Spine: Contrast Considerations for Image Optimization"

Radiological Society of North America
76th Anniversary Scientific Assembly and Annual Meeting
Chicago, IL.
November 25 - November 30, 1990

1991

"MRI of Brain Tumors: Correlations to Neuropathology"

New Brunswick MRI Society
Rutgers University Medical Center
January 30, 1991

"MRI of Intraaxial Brain Tumors"

Magnetic Resonance Imaging
Fifth Annual Barrow Neurological Institute Meeting
Scottsdale, Arizona
March 16-20, 1991

"MRI of Hemorrhage: Current Concepts"

Magnetic Resonance Imaging
Fifth Annual Barrow Neurological Institute Meeting
Scottsdale, Arizona
March 16-20, 1991

"Fast Scanning: Brain and Spine"

Magnetic Resonance Imaging
Fifth Annual Barrow Neurological Institute Meeting
Scottsdale, Arizona
March 16-20, 1991

"Fast Scanning: Concepts and Applications in Brain Imaging"

MRI Update 1991
University of Pennsylvania
Vail, Colorado
March 25 - March 30, 1991

"Brain Infection and AIDS: MR Imaging"

MRI Update 1991
University of Pennsylvania
Vail, Colorado
March 25 - March 30, 1991

"Intraaxial Brain Tumors: Correlations of MR Imaging and Histopathology"

MRI Update 1991
University of Pennsylvania
Vail, Colorado
March 25 - March 30, 1991

"MR Imaging of the Orbit: Current Status"

MRI Update 1991
University of Pennsylvania
Vail, Colorado
March 25 - March 30, 1991

"Degenerative Disease of the Spine"

MRI Update 1991
University of Pennsylvania
Vail, Colorado
March 25 - March 30, 1991

"Fast Imaging of the Brain"

Special Topics Seminar on Fast Imaging
1991 Annual Meeting of the SMRI
Chicago, Illinois
April 14, 1991

"Fast Spin Echo (FSE) MR Imaging: Blinded Comparison with Conventional Spin Echo Imaging for the Detection of Focal Brain Lesions"

HUP Alumni Symposium
Recent Advances in MR Imaging
University of Pennsylvania
Philadelphia, Pennsylvania
June 21, 1991

"Intraaxial Brain Tumors: Correlations of MR Imaging and Histopathology"

Visiting Professor
Stanford University
Stanford, California
July 18, 1991

"Intraaxial Brain Tumors: MR-Histopathology Correlations"

1991 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Lafayette Hotel
Boston, MA
September 23- 27, 1991

"Clinical Applications of Fast Scanning"

1991 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Boston, MA
September 23- 27, 1991

"MR of Intracranial Hemorrhage: Current Concepts"

1991 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Lafayette Hotel
Boston, MA
September 23- 27, 1991

"Gliomas: Magnetic Resonance Imaging"

Third Pan-Philadelphia Neurosurgery Conference: The Glioma
Four Seasons Hotel
Philadelphia, PA
October 11-12, 1991

"Fast Scanning: CNS Applications"

State-of-the-Art MR Imaging Course
University of Pennsylvania
Ritz-Carlton Hotel
Philadelphia, PA
October 23-24, 1991

"Magnetic Resonance Angiography"

Refresher Course
Radiological Society of North America
77th Anniversary Scientific Assembly and Annual Meeting
Chicago, IL
December 1-6, 1991

"Magnetic Resonance Imaging of Intracranial Hemorrhage: Current Status"

Refresher Course
Radiological Society of North America
77th Anniversary Scientific Assembly and Annual Meeting
Chicago, IL
December 1-6, 1991

1992

"MR Angiography in Neurologic Disease: Current Status"

Neurology Grand Rounds
University of Pennsylvania School of Medicine
Philadelphia, PA
January 23, 1992

"MR Angiography: Fact or Fiction"

Innovational Approaches to the CNS Symposium
Philadelphia Neurosurgical Rounds
Philadelphia, PA
January 23, 1992

"Advanced Brain Imaging"

MR Imaging of the Brain, Spine, Head and Neck
University of Pennsylvania
Four Seasons Hotel
Maui, Hawaii
February 10-14, 1992

"Cranial Nerves III, IV, and VI: Eye Movement and Gaze Disorders"

MR Imaging of the Brain, Spine, Head and Neck
University of Pennsylvania
Four Seasons Hotel
Maui, Hawaii
February 10-14, 1992

"Brain Tumors: Correlations of MR and Histopathology"

MR Imaging of the Brain, Spine, Head and Neck
University of Pennsylvania
Four Seasons Hotel
Maui, Hawaii
February 10-14, 1992

"MRI of Vascular Malformations and Aneurysms: Current Status"

MR Imaging of the Brain, Spine, Head and Neck
University of Pennsylvania
Four Seasons Hotel
Maui, Hawaii
February 10-14, 1992

"Fast Imaging of the CNS"

Visiting Professor
Department of Radiology
Indiana University Medical Center
Indianapolis, IN
February 25, 1992

"Intraaxial Brain Tumors: MR-Pathology Correlations"

Visiting Professor
Department of Radiology
Indiana University Medical Center
Indianapolis, IN
February 25, 1992

"MR Angiography in Neurologic Disease: Current Status"

Visiting Professor
Department of Radiology
Indiana University Medical Center
Indianapolis, IN
February 25, 1992

"Contrast Agents in MRI of the Brain and Spine: Rationale and Clinical Applications"

Co-Executive Editor and Speaker
Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations
Educational Symposium
Temple University and Sanofi-Winthrop
Grand Hyatt New York
New York, NY
February 29, 1992

"MR of the Orbit and Eye Movement"

Annual MRI Course
Cleveland Marriott Hotel
Cleveland, Ohio
March 6, 1992

"Intraaxial Brain Tumors: Correlations of MR Imaging and Histopathology"

MRI Update 1992
University of Pennsylvania
Vail, Colorado
March 16 - March 20, 1992

"Fast MR Imaging: Applications in the Brain and Spine"

MRI Update 1992
University of Pennsylvania
Vail, Colorado
March 16 - March 20, 1992

"MR of Intracranial Hemorrhage: Current Theory and Applications"

MRI Update 1992
University of Pennsylvania
Vail, Colorado
March 16 - March 20, 1992

"Intracranial MR Angiography"

MRI Update 1992
University of Pennsylvania
Vail, Colorado
March 16 - March 20, 1992

"MR Angiography in Neurologic Disease: Current Status"

MRI for the 90's
Hospital of the Good Samaritan
Los Angeles, California
March 28, 1992

"Intraaxial Brain Tumors: Correlations of MR Imaging and Histopathology"

MRI for the 90's
Hospital of the Good Samaritan
Los Angeles, California
March 28, 1992

"MR Imaging of the Spine: Degenerative Disc Disease and Recent Advances"

MRI for the 90's
Hospital of the Good Samaritan
Los Angeles, California
March 28, 1992

"Contrast Agents in MRI of the Brain and Spine: Rationale and Clinical Applications"

Co-Executive Editor and Speaker
Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations
Educational Symposium, Temple University and Sanofi-Winthrop
Los Angeles Sheraton Hotel
Los Angeles, California
April 4, 1992

"Fast MR Imaging in Neurologic Disease"

Educational Course for Physicians
Society for Magnetic Resonance Imaging Annual Meeting
New York Hilton
New York, New York
April 25, 1992

"MR Angiography: Current Status"

Lehigh Hospital MR Symposium
Lehigh Hospital
Allentown, Pennsylvania
May 1, 1992

"MR Angiography in Neurologic Disease: Current Status"

Central New Jersey MR Society
University of Medicine and Dentistry
Lehigh Imaging Center
New Brunswick, New Jersey
June 24, 1992

"MR Angiography: Current Status"

Visiting Professor
Maine Medical Center
Portland, Maine
July 14, 1992

“Intracranial Tumors: Correlations of MR to Histopathology”

Visiting Professor
Maine Medical Center
Portland, Maine
July 14, 1992

“Gradient Echo Imaging in the CNS: Applications and Pitfalls

Advanced Neuro MRI Course
Hoag Memorial Hospital
Laguna Niguel, California
July 26-29, 1992

“Intracranial Tumors: Correlations of MR to Histopathology”

Advanced Neuro MRI Course
Hoag Memorial Hospital
Laguna Niguel, California
July 26-29, 1992

“Fast Spin Echo Imaging: Applications in the CNS”

Advanced Neuro MRI Course
Hoag Memorial Hospital
Laguna Niguel, California
July 26-29, 1992

"Contrast Agents in MRI of the Brain and Spine: Rationale and Clinical Applications"

Co-Executive Editor and Speaker
Gadolinium Contrast Agents in MRI: Clinical and Economic Considerations
Educational Symposium, Temple University and Sanofi-Winthrop
Berlin, Germany
August 12, 1992

“Fast Spin Echo Imaging: CNS Applications”

Society of Magnetic Resonance in Medicine Annual Meeting
Berlin, Germany
August 12, 1992

“Intracranial Hemorrhage: More than You Need to Know”

1992 Harvard Postgraduate Course on Basic and Current Concepts in
Neuroradiology, Head and Neck Radiology, and Neuro-MRI
Department of Radiology
Massachusetts General Hospital
Lafayette Hotel
Boston, MA
September 20- 24, 1992

“Fast Spin Echo Imaging: Principles and Brain Applications”

MRI-Clinical State-of-the-Art

NYU School of Medicine

October 11-15, 1992

“Fast Imaging of the Spine: Principles and Brain Applications”

MRI-Clinical State-of-the-Art

NYU School of Medicine

October 11-15, 1992

“Intracranial MR Angiography”

MRI-Clinical State-of-the-Art

NYU School of Medicine

October 11-15, 1992

“Intracranial MR Angiography”

MR Angiography: Principles and Clinical Applications

Lisbon, Portugal

November 14-15, 1992

“MR Angiography of the Extracranial Carotid”

MR Angiography: Principles and Clinical Applications

Lisbon, Portugal

November 14-15, 1992

“Intracranial Hemorrhage: Current Understanding”

Refresher Course

Radiological Society of North America

78th Anniversary Scientific Assembly and Annual Meeting

Chicago, IL

December 1-4, 1992

“MR Angiography: Current Status”

Refresher Course

Radiological Society of North America

78th Anniversary Scientific Assembly and Annual Meeting

Chicago, IL

December 1-4, 1992

1993

“Technical and Clinical Aspects of MR Angiography in Neurologic Disease”

The Complete MRI Course

University of Pennsylvania

Ritz-Carlton Hotel

Maui, Hawaii

January 4-8, 1993

“MR of Degenerative Spine Disease”

The Complete MRI Course
University of Pennsylvania
Ritz-Carlton Hotel
Maui, Hawaii
January 4-8, 1993

“Cranial Nerves and the Orbit”

The Complete MRI Course
University of Pennsylvania
Ritz-Carlton Hotel
Maui, Hawaii
January 4-8, 1993

“Fast MR Imaging of the CNS”

Delaware Valley MRI Society
Thomas Jefferson University Hospital
Philadelphia, PA
January 14, 1993

“Vascular Malformations and Aneurysms: Current Imaging”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 8, 1993

“Imaging of Stroke and Intracranial Hemorrhage”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 8, 1993

“Principles and Clinical Practice in MRA of Neurologic Disease”

MRI at Snowmass
Loyola University of Chicago School of Medicine
Snowmass, Colorado
February 21-26, 1993

“MR in Orbital and Ocular Motility Disorders”

MRI at Snowmass
Loyola University of Chicago School of Medicine
Snowmass, Colorado
February 21-26, 1993

"MR of Intracranial Hemorrhage: Current Understanding"

MRI at Snowmass
Loyola University of Chicago School of Medicine
Snowmass, Colorado
February 21-26, 1993

"Fast Imaging of the Brain and Spine"

MRI at Snowmass
Loyola University of Chicago School of Medicine
Snowmass, Colorado
February 21-26, 1993

"Brain Tumors: Correlations of Pathology and MR"

MRI at Snowmass
Loyola University of Chicago School of Medicine
Snowmass, Colorado
February 21-26, 1993

"MR Angiography in Neurologic Disease: Current Status"

Columbia-Presbyterian Medical Center
Department of Radiology Noon Conference Lecture
New York, New York
March 22, 1993

"Understanding k -Space: Implications for Clinical Imaging"

1993 Annual Meeting of the Society for Magnetic Resonance Imaging
San Francisco, California
March 27-30, 1993

"Fast Imaging: Brain and Spine"

Educational Course
1993 Annual Meeting of the Society for Magnetic Resonance Imaging
San Francisco, California
March 27-30, 1993

"Intraaxial Brain Tumors: Correlations of MR Imaging and Histopathology"

MRI Update 1993
University of Pennsylvania
Vail, Colorado
March 29 - April 2, 1993

"Fast MR Imaging of the Brain and Spine"

MRI Update 1993
University of Pennsylvania
Vail, Colorado
March 29 - April 2, 1993

"Intracranial Hemorrhage: Current Concepts"

MRI Update 1993
University of Pennsylvania
Vail, Colorado
March 29 - April 2, 1993

"Intracranial MR Angiography"

MRI Update 1993
University of Pennsylvania
Vail, Colorado
March 29 - April 2, 1993

"Intraaxial Brain Tumors: MR Imaging - Histopathology Correlations"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

"Fast MR Imaging of the Brain and Spine: Principles and Applications"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

"Imaging of Stroke and Intracranial Hemorrhage"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

"MR Angiography in Neurologic Disease"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

"Orbital and Ocular Motility Disorders: MR Imaging"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

"Vascular Malformations and Aneurysms: Role of Imaging"

Guest Speaker
1993 Annual Sao Paulo Radiological Society Meeting
Sao Paulo, Brazil
April 23-25, 1993

“Functional MR Imaging in Neuro-ophthalmology”

Invited Speaker
Contemporary and Controversial Issues in Neuroophthalmology
The Scheie Eye Institute and the University of Pennsylvania
Philadelphia, PA
October 2, 1993

“Brain Tumors - MRI-Pathology Correlations”

Grand Rounds
Visiting Professor
Department of Radiology
University of Wisconsin School of Medicine
Madison, WI
October 7, 1993

“Fast MR Imaging: Gradient Echo”

Invited Speaker
Contemporary MR Imaging Course
Edgewater Hotel
Department of Radiology
University of Wisconsin School of Medicine
Madison, WI
October 8, 1993

“Brain Hemorrhage”

Invited Speaker
Contemporary MR Imaging Course
Edgewater Hotel
Department of Radiology
University of Wisconsin School of Medicine
Madison, WI
October 8, 1993

“Brain Tumors - MRI-Pathology Correlations”

State of Wisconsin Radiologic Society Meeting
Madison, WI
October 9, 1993

“MRI of Intracranial Hemorrhage”

MR Update Course
University of Alabama-Birmingham School of Medicine
Hilton Head Island, SC
October 25-29, 1993

“Advances in MR Imaging of the Brain and Spine”

MR Update Course
University of Alabama-Birmingham School of Medicine
Hilton Head Island, SC
October 25-29, 1993

“Orbital and Ocular Motility Disorders: MRI Contributions in Diagnosis”

MR Update Course
University of Alabama-Birmingham School of Medicine
Hilton Head Island, SC
October 25-29, 1993

“Intracranial Vascular Malformations and Aneurysms: Role of MRI”

MR Update Course
University of Alabama-Birmingham School of Medicine
Hilton Head Island, SC
October 25-29, 1993

“Neuroradiology Update: Stroke and Hemorrhage”

Refresher Course
Radiological Society of North America
79th Anniversary Scientific Assembly and Annual Meeting
Chicago, IL
November 29, 1993

“MR Angiography: Current Status”

Refresher Course
Radiological Society of North America
79th Anniversary Scientific Assembly and Annual Meeting
Chicago, IL
December 1, 1993

1994

“Brain Tumors - MRI-Pathology Correlations”

Visiting Professor
Department of Radiology
Northwestern University Medical Center
Chicago, IL
January 20, 1994

“MR Angiography in Neurological Disease: Current Status”

Guest Speaker
Chicago Radiological Society Meeting
Chicago, IL
January 20, 1994

“MR Imaging of Intracranial Hemorrhage”

Annual Mid-Winter Meeting
Educational Course
Los Angeles Radiological Society
Los Angeles, CA
January 28-29, 1994

“Vascular Malformations and Aneurysms: Contemporary Imaging”

Annual Mid-Winter Meeting
Educational Course
Los Angeles Radiological Society
Los Angeles, CA
January 28-29, 1994

“MR Angiography in Neurological Disease”

Annual Mid-Winter Meeting
Educational Course
Los Angeles Radiological Society
Los Angeles, CA
January 28-29, 1994

“Imaging of the Eye and Orbit”

Annual Mid-Winter Meeting
Educational Course
Los Angeles Radiological Society
Los Angeles, CA
January 28-29, 1994

“Imaging of Vascular Malformations and Aneurysms”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 7, 1994

“Imaging of Stroke and Intracranial Hemorrhage”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 7, 1994

“MR Angiography in Neurological Disease: State of the Art”

ACR Regional Meeting
Washington, D.C. Chapter
Park Hyatt Hotel
Washington, D.C.
February 24, 1994

“MRI of Vascular Malformations and Aneurysms”

“Principles and Practice of Clinical MRI”

Johns Hopkins Medical Institution

Baltimore, MD

April 22, 1994

“MRI of Intracranial Hemorrhage”

“Principles and Practice of Clinical MRI”

Johns Hopkins Medical Institution

Baltimore, MD

April 22, 1994

“Fast MRI of the Brain and Spine”

“Principles and Practice of Clinical MRI”

Johns Hopkins Medical Institution

Baltimore, MD

April 22, 1994

“Imaging of Orbital Lesions and Oculomotor Dysmotility”

“Principles and Practice of Clinical MRI”

Johns Hopkins Medical Institution

Baltimore, MD

April 22, 1994

“MR Angiography in Neurological Disease: Current Status”

Annual Meeting of the American Academy of Neurology

“New MRI Techniques for Cerebrovascular Disease”

Washington, D.C.

May 6, 1994

“MRI of Vascular Malformations and Aneurysms”

“Clinical MRI at Cape Fear”

Cape Fear, NC

June 17, 1994

“MR Angiography in Neurological Disease”

“Clinical MRI at Cape Fear”

Cape Fear, NC

June 17, 1994

“Fast MR Imaging: Update”

Annual Meeting of the Society of Magnetic Resonance

Educational Course

San Francisco, CA

August 6, 1994

“MR Angiography in Neurological Disease: Current Status”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
August 31-September 2, 1994

“MRI of Vascular Malformations and Aneurysms”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
August 31-September 2, 1994

“Fast MR Imaging of the Brain: Update”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
August 31-September 2, 1994

“MRI of Stroke”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
August 31-September 2, 1994

“Brain Tumors: MRI-Pathology Correlations”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
August 31-September 2, 1994

“Fast MR Imaging of the Brain: Update”

Visiting Professor
Bowman Gray School of Medicine
Winston-Salem, NC
October 6, 1994

“Intracranial Vascular Malformations: State-of-the-Art”

Visiting Professor
Bowman Gray School of Medicine
Winston-Salem, NC
October 7, 1994

“Fast MR Imaging of the Brain: Update”

Harvard Medical School
Brigham and Women’s Hospital
Annual MRI Course
Boston, MA
October 27, 1994

“Intracranial Vascular Malformations: State-of-the-Art”

Harvard Medical School
Brigham and Women’s Hospital
Annual MRI Course
Boston, MA
October 27, 1994

“CT and MRI of the Eye and Orbit”

Rush Presbyterian St. Luke’s Department of Radiology
Annual Neuroradiology Course
Chicago, IL
October 28, 1994

“MR Angiography in Neurological Disease”

Rush Presbyterian St. Luke’s Department of Radiology
Annual Neuroradiology Course
Chicago, IL
October 28, 1994

1995

“Functional MRI in Intracranial Mass Lesions”

MRI Into Its Second Decade
MR ’95 International Symposium
Garmisch, Germany
January 26, 1995

“Imaging Stroke”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 11, 1995

“Imaging Intracranial Vascular Malformations and Aneurysms”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 11, 1995

“Cerebral MR Angiography”

1995 Distinguished Lecturer Series
Department of Vascular Surgery
Oregon Health Sciences University
Portland, OR
March 25, 1995

“Intracranial Hemorrhage”

American Society of Neuroradiology 1995 Annual Meeting
Educational Course
Chicago, IL
April 21-28, 1995

“Advanced MRI in the CNS”

Neuroscience Grand Rounds
Oregon Health Sciences University
Portland, OR
May 10, 1995

“MRA in Neurologic Disease”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“Imaging Vascular Malformations in the CNS”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“Stroke - Current Imaging”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“MRI of Intracranial Hemorrhage”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“Fast MRI of the CNS: Update”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“Imaging Orbital Disease”

XXV Brazilian Congress of Radiology
Salvador-Bahia
Brazil
September 30 - October 4, 1995

“MRA in Neurologic Disease”

Royal Australasian College of Radiologists
46th Annual General and Scientific Meeting
Melbourne
Australia
October 21 - October 25, 1995

“Vascular Malformations of the CNS: Current Imaging”

Royal Australasian College of Radiologists
46th Annual General and Scientific Meeting
Melbourne
Australia
October 21 - October 25, 1995

“Fast MR Imaging of the Brain: Update”

Royal Australasian College of Radiologists
46th Annual General and Scientific Meeting
Melbourne
Australia
October 21 - October 25, 1995

“Imaging of Intracranial Vascular Malformations”

Refresher Course
Radiological Society of North America
81st Anniversary Scientific Assembly and Annual Meeting
Chicago, IL
November 27, 1995

“Advances in Neuro-Ophthalmologic Imaging”

An Update in Neuro-Ophthalmology in Honor of William F. Hoyt, M.D.
UCSF School of Medicine
Ritz-Carlton Hotel
San Francisco, CA
December 7-8, 1995

1996

“Imaging of Vascular Malformations and Aneurysms: Current Status”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 7, 1996

“Imaging of Stroke and Intracranial Hemorrhage: Update”

Neurosurgery Review Course
National Center for Advanced Medical Education
Chicago, IL
February 7, 1996

“Imaging of Stroke: Update”

International Society of Magnetic Resonance in Medicine
Annual Meeting and Scientific Assembly
Educational Course in MRI
New York, NY
April 27, 1996

“Imaging of Stroke: Update”

Visiting Professor
Department of Radiology
University of North Carolina at Chapel Hill
Chapel Hill, NC
May 9, 1996

“MR Angiography in Neurologic Disease: Current Status”

Visiting Professor
Department of Radiology
University of North Carolina at Chapel Hill
Chapel Hill, NC
May 10, 1996

“MR Angiography in Neurological Disease: Current Status”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
May 29-30, 1996

“Imaging of Intracranial Vascular Malformations”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
May 29-30, 1996

“Fast MR Imaging of the Brain: Update”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
May 29-30, 1996

“MRI of Stroke”

Annual International MRI Course
Hospital ABC
Mexico City, Mexico
May 29-30, 1996

“Imaging Primary Brain Tumors: State-of-the-Art”

Annual Meeting of the American Society of Neuroradiology
Educational Course
Seattle, Washington
June 21, 1996

“Imaging Intracranial Vascular Malformations”

The Florida Neuro and Body Imaging Course
Orlando, Florida
July 1-4, 1996

“Intracranial Infection and AIDS: Update”

The Florida Neuro and Body Imaging Course
Orlando, Florida
July 1-4, 1996

“Current Imaging of Stroke”

The Florida Neuro and Body Imaging Course
Orlando, Florida
July 1-4, 1996

“Imaging Primary Brain Tumors: State-of-the-Art”

The Florida Neuro and Body Imaging Course
Orlando, Florida
July 1-4, 1996

“Recent Advances in MRI of the Brain”

Malaysian Radiological Society Special Seminar
Kuala Lumpur, Malaysia
July 12, 1996

“Rationale and Clinical Indications for Contrast Agents in MRI of the Brain”

Malaysian Radiological Society Special Seminar
Kuala Lumpur, Malaysia
July 12, 1996

“Recent Advances in MRI of the Brain”

Singapore Radiological Society Special Seminar
Raffles Hotel
Singapore
July 12, 1996

“Rationale and Clinical Indications for Contrast Agents in MRI of the Brain”

Singapore Radiological Society Special Seminar
Raffles Hotel
Singapore
July 12, 1996

“Advances in MRI of the Brain”

Neurology Grand Rounds
Mount Sinai School of Medicine
New York, New York
September 30, 1996

“Imaging Intracranial Vascular Malformations”

MRI of the Brain, Spine, and Head and Neck
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
October 10-13, 1996

“Stroke and Intracranial Hemorrhage”

MRI of the Brain, Spine, and Head and Neck
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
October 10-13, 1996

“MR Angiography: Current Status”

MRI of the Brain, Spine, and Head and Neck
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
October 10-13, 1996

“Orbit and Disease of the Eye”

MRI of the Brain, Spine, and Head and Neck
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
October 10-13, 1996

“Advanced MRI Techniques”

MRI of the Brain, Spine, and Head and Neck
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
October 10-13, 1996

“Imaging Aneurysms and Subarachnoid Hemorrhage”

Brigham and Women’s Hospital
Harvard Medical School
Magnetic Resonance Imaging and Computed Tomography Update: 1996
Boston, Massachusetts
October 23, 1996

“Intracranial Vascular Malformations”

Brigham and Women’s Hospital
Harvard Medical School
Magnetic Resonance Imaging and Computed Tomography Update: 1996
Boston, Massachusetts
October 23, 1996

“Functional Brain Imaging”

Speaker, Session Chair, and Scientific Committee Member
MRI Contrast Media: New Developments and Trends
Bracco, International
Barcelona, Spain
November 15-17, 1996

“Advances in MRI of the Brain”

Visiting Professor
Radiology Grand Rounds
New York Hospital
Cornell University School of Medicine
New York, New York
November 7, 1996

“Imaging Brain Tumors: Principles and Correlations with Pathology”

NYU School of Medicine Department of Radiology
CT/MRI Head to Toe Course
Grand Hyatt Hotel
New York, New York
December 18, 1996

1997

“Imaging Brain Tumors: Principles and Correlations with Pathology”
“Problem Solving in Brain, Spine, and Head and Neck Imaging”
Mount Sinai School of Medicine Course
Amelia Island, Florida
April 16-20, 1997

“Fast MR Imaging of the Brain: Update”
“Problem Solving in Brain, Spine, and Head and Neck Imaging”
Mount Sinai School of Medicine Course
Amelia Island, Florida
April 16-20, 1997

“Imaging Intracranial Vascular Malformations”
“Problem Solving in Brain, Spine, and Head and Neck Imaging”
Mount Sinai School of Medicine Course
Amelia Island, Florida
April 16-20, 1997

“Imaging of Stroke: State of the Art”
“Problem Solving in Brain, Spine, and Head and Neck Imaging”
Mount Sinai School of Medicine Course
Amelia Island, Florida
April 16-20, 1997

“Imaging Orbital Disease”
“Problem Solving in Brain, Spine, and Head and Neck Imaging”
Mount Sinai School of Medicine Course
Amelia Island, Florida
April 16-20, 1997

“Imaging Orbital Disease”
Invited Speaker
ACR - Washington D.C. Chapter
April 24, 1997
Washington, D.C.

“Functional MR Imaging of the Brain”
Annual Spring Meeting
New York Roentgen Society
New York, New York
April 30-May 2, 1997

“Imaging of Acute Stroke: Current Status”

Treatment and Prevention of Cerebral Infarction
Mount Sinai School of Medicine
New York, New York
May 8, 1997

“Recent Advances in MRI of the Brain”

Radiology Grand Rounds
Stanford University School of Medicine
Palo Alto, California
August 28, 1997

“Intracranial Vascular Malformations”

“MRI of the Brain, Spine, and Head and Neck”
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
September 10-13, 1997

“Stroke and Intracranial Hemorrhage”

“MRI of the Brain, Spine, and Head and Neck”
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
September 10-13, 1997

“Imaging of the Orbit”

“MRI of the Brain, Spine, and Head and Neck”
Mount Sinai School of Medicine
Plaza Hotel
New York, New York
September 10-13, 1997

1998

“Advances in MRI of the Brain”

1998 Annual Meeting
Mexican Society of Radiology and Imaging
Mexico City, Mexico
February 4, 1998

“Imaging of Acute Stroke: Current Status”

1998 Annual Meeting
Mexican Society of Radiology and Imaging
Mexico City, Mexico
February 4, 1998

“Intracranial Vascular Malformations”

1998 Annual Meeting
Mexican Society of Radiology and Imaging
Mexico City, Mexico
February 4, 1998

“Brain Tumors: MRI-Pathology Correlations”

1998 Annual Meeting
Mexican Society of Radiology and Imaging
Mexico City, Mexico
February 4, 1998

“Imaging of the Orbit”

MRI of the Brain, Spine, Head and Neck - Update
Mount Sinai School of Medicine
San Juan, Puerto Rico
February 19, 1998

“Advances in MRI of the Brain”

MRI of the Brain, Spine, Head and Neck - Update
Mount Sinai School of Medicine
San Juan, Puerto Rico
February 19, 1998

“Imaging of Acute Stroke: Current Status”

MRI of the Brain, Spine, Head and Neck - Update
Mount Sinai School of Medicine
San Juan, Puerto Rico
February 19, 1998

“Intracranial Vascular Malformations”

MRI of the Brain, Spine, Head and Neck - Update
Mount Sinai School of Medicine
San Juan, Puerto Rico
February 19, 1998

“Brain Tumors: MRI-Pathology Correlations”

MRI of the Brain, Spine, Head and Neck - Update
Mount Sinai School of Medicine
San Juan, Puerto Rico
February 19, 1998

“Advances in MRI of the Brain”

Visiting Professor, Radiology Grand Rounds
Columbia University School of Medicine
New York, New York
March 11, 1998

“Hot Topics: Diffusion and Perfusion Imaging”

1998 Annual Meeting
International Society of Magnetic Resonance in Medicine
Sydney, Australia
April 17-23, 1998

“Brain Tumors: MRI-Pathology Correlations”

Visiting Professor
University of Virginia School of Medicine
Charlottesville, Virginia
September 10, 1998

“Advances in MRI of the Brain”

Visiting Professor
Radiology Grand Rounds
University of Virginia School of Medicine
Charlottesville, Virginia
September 10, 1998

“Neuroradiology Unknown Case Conference”

Visiting Professor
University of Virginia School of Medicine
Charlottesville, Virginia
September 11, 1998

“MRI of Primary Brain Tumors”

Visiting Professor
MD Anderson Medical Center
Houston, Texas
September 28, 1998

“Imaging of the Eye and Orbit”

Visiting Professor
University of Texas - Houston Medical Center
Houston, Texas
September 28, 1998

“Recent Advances in MRI of the Brain”

The Doubleday Lecture
Houston Radiological Society and MD Anderson Medical Center
Houston, Texas
September 28, 1998

“Imaging Stroke”

“MRI of the Brain, Spine, and Head and Neck”

Mount Sinai School of Medicine

Plaza Hotel

New York, New York

October 14-15, 1998

“Intracranial Hemorrhage: Principles and Clinical Applications”

“MRI of the Brain, Spine, and Head and Neck”

Mount Sinai School of Medicine

Plaza Hotel

New York, New York

October 14-15, 1998

“MRI of Primary Brain Tumors: Correlations to Histopathology”

“MRI of the Brain, Spine, and Head and Neck”

Mount Sinai School of Medicine

Plaza Hotel

New York, New York

October 14-15, 1998

“Recent Advances in MRI of the Brain”

“MRI of the Brain, Spine, and Head and Neck”

Mount Sinai School of Medicine

Plaza Hotel

New York, New York

October 14-15, 1998

“Recent Advances in MRI of the Brain”

“Current Concepts in Magnetic Resonance”

Department of Radiology and the Lucas MR Center

Stanford University School of Medicine

Monterey Plaza Hotel

Monterey, California

November 2-5, 1998

“MRI Advances for the Diagnosis of Neurologic Disorders”

“Advances in Neuroscience”

Stanford Neurology Department

Stanford University School of Medicine

Hotel Sofitel

Redwood City, California

November 20, 1998

1999

“Recent Advances in MRI of the Brain”

San Francisco Neurological Society Annual Meeting
Seascape Resort
Monterey, California
March 5, 1999

“Diffusion Tensor MR: Potential Clinical Applications”

General Electric Medical Systems
MR Advisory Board
Chicago, Illinois
March 17-18, 1999

“Diffusion – Perfusion MRI of the Brain”

Educational Program: Neuroimaging Session
Introductory MRI: Techniques and Clinical Applications
1999 Annual Meeting
International Society of Magnetic Resonance in Medicine
Philadelphia, Pennsylvania
May 22, 1999

“Hot Topics: Diffusion and Perfusion Imaging”

1999 Annual Meeting
International Society of Magnetic Resonance in Medicine
Philadelphia, Pennsylvania
May 23-27, 1999

“Advanced MRI in Brain Tumors”

4TH NICER HORIZON “Functional Imaging” Meeting
International Society of Magnetic Resonance in Medicine
Oslo, Norway
June 11-13, 1999

“Advanced MRI in Aging and Degenerative Disorders of the Brain”

4TH NICER HORIZON “Functional Imaging” Meeting
International Society of Magnetic Resonance in Medicine
Oslo, Norway
June 11-13, 1999

“Advanced MRI in Cerebrovascular Disease”

4TH NICER HORIZON “Functional Imaging” Meeting
International Society of Magnetic Resonance in Medicine
Oslo, Norway
June 11-13, 1999

“Advanced MRI in Epilepsy”

4TH NICER HORIZON “Functional Imaging” Meeting
International Society of Magnetic Resonance in Medicine
Oslo, Norway
June 11-13, 1999

“Recent Advances in MRI of the Brain”

1999 Annual Meeting
International Seoul Radiology Symposium
Seoul, Korea
September 11-12, 1999

“Stroke Imaging: Current Clinical Practice”

1999 Annual Meeting
International Seoul Radiology Symposium
Seoul, Korea
September 11-12, 1999

“MRI of Stroke and Hemorrhage”

1999 UCSF MRI Course
San Francisco, California
October 8, 1999

“Brain Tumors: MRI – Pathology Correlations”

1999 UCSF MRI Course
San Francisco, California
October 8, 1999

“Recent Advances in MRI of the Brain”

South Bay Radiology Society
San Francisco, California
October 19, 1999

“MRI of Intracranial Hemorrhage”

“Current Concepts in Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
November , 1999

“Recent Advances in MRI of the Brain”

“Current Concepts in Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey, California
November 15, 1999

2000

“Brain Tumors: Principles and Clinical Applications”

International Neuroradiology Course
Davos, Switzerland
March 25-30, 2000

“Advanced Neuro MR Course”

ISMRM 2000 Annual Meeting
Course Director and Moderator
Denver, Colorado
April 2, 2000

“MR of Brain Tumors: Principles and Applications”

MR for the Millenium: “Neuro and Musculoskeletal MR”
Stanford University School of Medicine
Department of Radiology
Argent Hotel
San Francisco, California
June 18-20, 2000

“MR of Intracranial Hemorrhage: Current Status”

MR for the Millenium: “Neuro and Musculoskeletal MR”
Stanford University School of Medicine
Department of Radiology
Argent Hotel
San Francisco, California
June 18-20, 2000

“MRI of Intracranial Hemorrhage”

“Current Concepts in Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
September 24, 2000

“Recent Advances in MRI of the Brain”

“Current Concepts in Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
September 28, 2000

2001

“Quantitative Diffusion MR in Multiple Sclerosis”
International Symposium in MR Research
Garmisch, Germany
January 25, 2001

“Regional and Global Diffusion MR in Normal Aging”
International Symposium in MR Research
Garmisch, Germany
January 25, 2001

“MR of Intracranial Hemorrhage: Current Status”
“Neuro and Musculoskeletal MR”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 15-16, 2001

“Stroke Imaging: Current Status”
“Neuro and Musculoskeletal MR”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 15-16, 2001

“Brain Tumors: Fundamentals of MR”
“Neuro and Musculoskeletal MR”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 15-16, 2001

Course Director

“Neuro and Musculoskeletal MR”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 15-16, 2001

Course Director and Moderator

“Neuro MR Course”
ISMRM 2001 Annual Meeting
April 21-22, 2001

“MR of Intracranial Hemorrhage: Update”

Neuro MR Course
ISMRM 2001 Annual Meeting
April 22, 2001

“Advances in Brain MRI”

Visiting Professor
University of Cambridge
Cambridge, England
April 23, 2001

“MRI of Blood and Intracranial Hemorrhage”

“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 14, 2001

“Advanced Neuro MR Applications”

“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 18, 2001

“Effects of Managed Care on Advances in Technology-Based Medicine”

Invited Speaker
Hoover Institution
Health Care Policy Seminars
December 6, 2001

2002

“Managed Care, New Medical Technologies, and Public Policy”

Guest Speaker
Hoover Institution
Lunch Seminars
January 31, 2002

“MR of Intracranial Hemorrhage: Current Status”

“Advances in Neuro MR and Sports Medicine”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 21-22, 2002

“Stroke Imaging: Current Status”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 21-22, 2002

“Imaging Brain Tumors: Fundamentals and Recent Advances”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 21-22, 2002

“Stroke Imaging: Current Status”

Visiting Professor
Department of Radiology
Cleveland Clinic Foundation
Cleveland, Ohio
March 11, 2002

“Imaging Brain Tumors: Fundamentals and Recent Advances”

Visiting Professor
Department of Radiology
Cleveland Clinic Foundation
Cleveland, Ohio
March 11, 2002

“MR of Intracranial Hemorrhage: Current Status”

Department of Radiology
Stanford University School of Medicine
Mauna Lani Hotel
Maui, Hawaii
April 14-18, 2002

“Stroke Imaging: Current Status”

Department of Radiology
Stanford University School of Medicine
Mauna Lani Hotel
Maui, Hawaii
April 14-18, 2002

“Imaging Brain Tumors: Fundamentals and Recent Advances”

Department of Radiology
Stanford University School of Medicine
Mauna Lani Hotel
Maui, Hawaii
April 14-18, 2002

“Recent Advances in Brain MRI”

Department of Radiology
Stanford University School of Medicine
Mauna Lani Hotel
Maui, Hawaii
April 14-18, 2002

“Neurologic Applications of High Field MRI”

Department of Radiology
Stanford University School of Medicine
Four Seasons Hotel
Las Vegas, Nevada
September 27, 28, 2002

“Stroke: Current MRI Status”

Annual Meeting of MRI Advances
Taiwan Radiological Society
Taipei, Taiwan
October 3-4, 2002

“Imaging Brain Tumors: Recent Advances”

Annual Meeting of MRI Advances
Taiwan Radiological Society
Taipei, Taiwan
October 3-4, 2002

“Managed Care, New Medical Technologies, and Public Policy”

Invited Speaker
Hoover Institution
Fall Retreat Seminars
November 11, 2002

2003

“Stroke Imaging: Current Status”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2003

“Imaging Hemorrhage: Current Concepts”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2003

“Imaging Brain Tumors: Fundamentals and Recent Advances”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2003

“Health Care: Time for Fundamental Change”

Invited Speaker
Hoover Institution
Spring Retreat Seminars
April 28, 2003

“Ultrahigh Field MRI in Neuroimaging: Current Status and Potential”

Speaker and Co-Director
Stanford University Medical Center
Four Seasons Hotel
Las Vegas, Nevada
September 13, 14, 2003

“MRI of Intracranial Hemorrhage”

“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 30, 2003

“Advanced Neuro MR Applications”

“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 30, 2003

“MRI of Stroke: Current Concepts”

NYU CT/MRI: Head to Toe
Department of Radiology
Grand Hyatt Hotel
New York, New York
December 15-20, 2003

“MRI of Brain Tumors: From Fundamentals to Advances”

NYU CT/MRI: Head to Toe
Department of Radiology
Grand Hyatt Hotel
New York, New York
December 15-20, 2003

2004

“Stroke Imaging: Current Status”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2004

“Imaging Hemorrhage: Update”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2004

“Imaging Brain Tumors: Fundamentals and Recent Advances”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
February 27-28, 2004

“Stroke Imaging: Current State-of-the-Art”

Department of Radiology
Stanford University School of Medicine
Fairmont Hotel
Maui, Hawaii
March 10-16, 2004

“MRI of Intracranial Hemorrhage: Current Concepts”

Department of Radiology
Stanford University School of Medicine
Fairmont Hotel
Maui, Hawaii
March 10-16, 2004

“Imaging Brain Tumors: Fundamentals and Pathology Correlations”

Department of Radiology
Stanford University School of Medicine
Fairmont Hotel
Maui, Hawaii
March 10-16, 2004

“Recent Advances in Brain MRI”

Department of Radiology
Stanford University School of Medicine
Fairmont Hotel
Maui, Hawaii
March 10-16, 2004

“Non-Traumatic Emergency Imaging of the Brain”

Imaging of the Brain, Spine, Head and Neck International Neuroradiology Symposium
Davos, Switzerland
March 26-April 2, 2004

“Stroke Imaging: Current State-of-the-Art”

Annual Meeting and Scientific Assembly
Jornado de Paulista Radiologica
Sao Paulo, Brazil
April 21-24, 2004

“MRI of Intracranial Hemorrhage: Current Concepts”

Annual Meeting and Scientific Assembly
Jornado de Paulista Radiologica
Sao Paulo, Brazil
April 21-24, 2004

“Imaging Brain Tumors: Fundamentals and Pathology Correlations”

Annual Meeting and Scientific Assembly
Jornado de Paulista Radiologica
Sao Paulo, Brazil
April 21-24, 2004

“Recent Advances in Brain MRI”

Annual Meeting and Scientific Assembly
Jornado de Paulista Radiologica
Sao Paulo, Brazil
April 21-24, 2004

“Imaging Brain Tumors: Fundamentals and Pathology Correlations”

International Imaging Course 2004
Chinese University of Hong Kong
Hong Kong, China
September 4-6, 2004

“Stroke Imaging: Current Status”

International Imaging Course 2004
Chinese University of Hong Kong
Hong Kong, China
September 4-6, 2004

“Imaging Intracranial Hemorrhage: Update”

International Imaging Course 2004
Chinese University of Hong Kong
Hong Kong, China
September 4-6, 2004

“Recent Advances in Brain MRI”

International Imaging Course 2004
Chinese University of Hong Kong
Hong Kong, China
September 4-6, 2004

“Stroke Imaging: Current Status”

Colorado Radiological Society Honorary Speaker
Loews Denver Hotel
Denver, Colorado
September 16, 2004

“Recent Advances in Brain MRI”

Colorado Radiological Society Honorary Speaker
Loews Denver Hotel
Denver, Colorado
September 16, 2004

“Stroke Imaging: Current State-of-the-Art”

50th Annual Meeting of the Argentine Congress of Radiology
Society of Argentina Radiology
Buenos Aires, Argentina
September 22-24, 2004

“MRI of Intracranial Vascular Malformations”

50th Annual Meeting of the Argentine Congress of Radiology
Society of Argentina Radiology
Buenos Aires, Argentina
September 22-24, 2004

“Imaging of Orbital and Ocular Disease”

50th Annual Meeting of the Argentine Congress of Radiology
Society of Argentina Radiology
Buenos Aires, Argentina
September 22-24, 2004

“Imaging Brain Tumors: Fundamentals and Pathology Correlations”

50th Annual Meeting of the Argentine Congress of Radiology
Society of Argentina Radiology
Buenos Aires, Argentina
September 22-24, 2004

“Recent Advances in Brain MRI”

50th Annual Meeting of the Argentine Congress of Radiology
Society of Argentina Radiology
Buenos Aires, Argentina
September 22-24, 2004

“High Field MR in Neurologic Disease: Rationale and Significance”

3rd Annual Clinical Applications in High Field MR Imaging
Bellagio Hotel
Stanford University School of Medicine
Las Vegas, Nevada
October 17, 2004

“Stroke Imaging: Current State-of-the-Art”

XXXIII Brazilian Congress of Radiology
Rio de Janeiro, Brazil
November 12-14, 2004

“MRI of Intracranial Vascular Malformations”

XXXIII Brazilian Congress of Radiology
Rio de Janeiro, Brazil
November 12-14, 2004

“Imaging of Orbital and Ocular Disease”

XXXIII Brazilian Congress of Radiology
Rio de Janeiro, Brazil
November 12-14, 2004

“Imaging Brain Tumors: Fundamentals and Pathology Correlations”
XXXIII Brazilian Congress of Radiology
Rio de Janeiro, Brazil
November 12-14, 2004

“MRI of Intracranial Hemorrhage: Update”
XXXIII Brazilian Congress of Radiology
Rio de Janeiro, Brazil
November 12-14, 2004

2005

“Advances in MRI of the Brain: High Field MRI”
Inaugural Dedication Ceremony
3T MRI Center
Jinan, China
January 22, 2005

“Imaging Stroke: Update”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 3-4, 2005

“Recent Advances in MR of the Brain”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 3-4, 2005

“Imaging of the Orbit”
Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 3-4, 2005

Special Symposium: MultiHance, A New Contrast Agent in Neuro MR
Moderator, Panel Discussion
Bracco International
Green Valley Resort
Las Vegas, Nevada
April 11, 2005

“Health Care in the US: What is the Role of Government?”
Stanford University General Counsel Annual Retreat
Stanford University
Wallenberg Auditorium
September 23, 2005

“MRI of Intracranial Hemorrhage”
“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 20, 2005

“Advanced Neuro MR Applications”
“Current Concepts of Magnetic Resonance”
Department of Radiology and the Lucas MR Center
Stanford University School of Medicine
Monterey Plaza Hotel
Monterey, California
October 20, 2005

“High Field MR in Neurologic Disease: Rationale and Significance”
4th Annual Clinical Applications in High Field MR Imaging
Wynn Resort and Hotel
Stanford University School of Medicine
Las Vegas, Nevada
October 24, 2005

2006

“Advances in Neuro MRI”
Arab World Health
6th Middle East Imaging and Diagnostic Conference Annual Meeting
Dubai, UAE
January 23-25, 2006

“Imaging Stroke: Current Status”
Arab World Health
6th Middle East Imaging and Diagnostic Conference Annual Meeting
Dubai, UAE
January 23-25, 2006

“Advances in Imaging Multiple Sclerosis and White Matter Disease”
1st Annual Emirates Congress of Neurology
Dubai, UAE
March 7, 2006

“Imaging Stroke: Current Status”

1st Annual Emirates Congress of Neurology
Dubai, UAE
March 7, 2006

“Imaging Stroke: Update”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 9, 2006

“Recent Advances in MR of the Brain”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 9, 2006

“Imaging Intracerebral Hemorrhage”

Sessao Medico Inaugural do CID Leblon
Centro Integrado de Diagnostico Leblon
Rio de Janeiro, Brazil
April 7, 2006

“Imaging Ischemic Stroke in the Adult”

Sessao Medico Inaugural do CID Leblon
Centro Integrado de Diagnostico Leblon
Rio de Janeiro, Brazil
April 7, 2006

“Imaging Stroke: Update”

60th Annual Meeting
Pacific Northwest Radiological Society
Fairmont Waterfront Hotel
Vancouver, Canada
April 29, 2006

“Imaging Brain Tumors: Fundamentals and Advances”

60th Annual Meeting
Pacific Northwest Radiological Society
Fairmont Waterfront Hotel
Vancouver, Canada
April 29, 2006

“Stroke Imaging: Update and Clinical Perspective”

Annual Brazilian Congress of Radiology

Curitiba, Brazil

October 11, 2006

“Imaging Brain Tumors: Fundamental Approach and Advances”

Annual Brazilian Congress of Radiology

Curitiba, Brazil

October 11, 2006

“Adult White Matter Disease: Current Status of Imaging”

Annual Brazilian Congress of Radiology

Curitiba, Brazil

October 11, 2006

“Advances in MR Technology: Rationale and Significance”

5th Annual Clinical Applications in High Field MR Imaging

Wynn Resort and Hotel

Stanford University School of Medicine

Las Vegas, Nevada

October 15, 2006

“Stroke Imaging: Fundamentals and Advances”

Ninth Annual Conference of the Indian Society of Neuroradiology

Guwahati, India

November 17-19, 2006

“Imaging Brain Tumors: Current Status”

Ninth Annual Conference of the Indian Society of Neuroradiology

Guwahati, India

November 17-19, 2006

“Acquired White Matter Disease: The Role of Imaging”

Ninth Annual Conference of the Indian Society of Neuroradiology

Guwahati, India

November 17-19, 2006

2007

“Technology Advances and the Future of Neuroimaging”

Shaping the Future of Radiology: International Symposium

Bracco International

Milan, Italy

February 9, 2007

“Imaging Stroke: Update”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 15-16, 2007

“Recent Advances in MR of the Brain”

Department of Radiology
Stanford University School of Medicine
Bellagio Hotel
Las Vegas, Nevada
March 15-16, 2007

“Neuro MRI at 3T”

2007 Summer Symposium on State-of-the-Art Imaging
Stanford Radiology in partnership with the Japanese Society of Radiological Technology
Stanford University School of Medicine
Stanford, California
July 24, 2007

“Advances in MR Technology: Rationale and Significance”

6th Annual Clinical Applications in High Field MR Imaging
Wynn Resort and Hotel
Stanford University School of Medicine
Las Vegas, Nevada
October 14, 2007

“Stroke Imaging: What Is, and What Might Be”

Italian Society of Neuroradiology Annual Course and Meeting
University of Bologna School of Medicine
Bologna, Italy
November 2, 2007

“Stroke Imaging: Current Status”

India Society of Neuroradiology 10th Annual Conference
Mumbai, India
November 13-15, 2007

“Imaging Brain Tumors: Fundamentals and Advances”

India Society of Neuroradiology 10th Annual Conference
Mumbai, India
November 13-15, 2007

“Imaging Diseases of the Eye and Orbit”

India Society of Neuroradiology 10th Annual Conference
Mumbai, India
November 13-15, 2007

“Advances in Imaging Technology: What Are The Drivers?”

India Society of Neuroradiology 10th Annual Conference
Mumbai, India
November 13-15, 2007

“Advances in MRI”

Special Seminar
Lucid Advanced Medical Diagnostics
ITC Grand Kakatiya
Hyderabad, India
November 16, 2007

“Key Health Care Trends in Asian Emerging Markets”

Invited Panel Discussant
GE Healthcare Asian Pacific American Forum
2007 Radiological Society of North American Scientific Assembly and Annual Meeting
Chicago, Illinois
November 26, 2007

“The Future of Health Care in America”

Hoover Institution Fall Retreat
Hoover Institution
Stanford University
Stanford, California
November 30, 2007

2008

“Advances in MRI: Rationale and Future Directions”

General Electric Healthcare
Advanced Users Group
Sao Paulo, Brazil
February 26, 2008

“Key Trends in Health Care in Asia: Implications for China”

Special Seminar
Peking University School of Business
Peking University
April 21, 2008

“MRI in Brain Tumors: Update”

Department of Radiology
Stanford University School of Medicine
Wynn Resort
Las Vegas, Nevada
May 1-2, 2008

“Emerging Advances in MR of the Brain”

Department of Radiology
Stanford University School of Medicine
Wynn Resort
Las Vegas, Nevada
May 1-2, 2008

“Current Imaging of Stroke: What is True and What Might Be”

VI Simposio de Neurociencias FLENI 2008
Buenos Aires, Argentina
May 14, 2008

“Current MRI of Brain Tumors: Fundamentals and Advanced Applications”

VI Simposio de Neurociencias FLENI 2008
Buenos Aires, Argentina
May 14, 2008

“The Future of MRI: Rationale and Emerging Applications”

VI Simposio de Neurociencias FLENI 2008
Buenos Aires, Argentina
May 14, 2008

“Advances in Brain MRI: Evolution of Technology and Emerging Applications”

First Annual Symposium on Advanced MRI
Fudan University School of Medicine
Shanghai, China
June 21, 2008

“Health Care in Emerging China: Trends and Challenges”

Bing Overseas Seminar Program
Stanford University, in collaboration with Renmin University
Renmin University
Beijing, China
September 5, 2008

“Advances in Brain MRI: Evolution of Technology and Emerging Applications”

Guest Lecturer, Department of Psychology
University of Illinois
Champaign-Urbana, Illinois
October 10, 2008

“Advances in High Field MR Technology: Rationale and Significance”

7th Annual “Clinical Applications in High Field MR Imaging”
Bellagio Resort and Hotel
Stanford University School of Medicine
Las Vegas, Nevada
October 18, 2008

“Doctors in Public Advocacy”

Invited Panel Member
First Year School of Medicine Class
Stanford University School of Medicine
October 20, 2008

“Imaging Brain Tumors: Current Status”

Invited Overseas Faculty Member
8th Advanced Neuroradiology Course
National Neuroscience Institute
Singapore
November 13-14, 2008

“Advances in Brain Imaging: High Field and Beyond”

Invited Overseas Faculty Member
8th Advanced Neuroradiology Course
National Neuroscience Institute
Singapore
November 13-14, 2008

“New Advances in High Field Brain MR: Significance and Emerging Applications”

Invited Speaker, GE Healthcare: Russia Symposium
Ritz Carlton Hotel
Moscow, Russia
November 19, 2008

“New Advances in High Field Brain MR: Significance and Emerging Applications”

Invited Speaker, Special Radiology Conference
Medem Clinic
St. Petersburg, Russia
November 20, 2008

“Health Issues in Asia: Health Care Access in Rural Asia, and Medical Tourism”

Invited Panel Discussant, GE Healthcare Asian Pacific American Forum
2008 Radiological Society of North American Scientific Assembly and Annual Meeting
Chicago, Illinois
December 2, 2008

“Current and Emerging Uses of MRI”

Guest Speaker
RDO Diagnostic Clinic
Sao Paulo, Brazil
December 13, 2008

2009

“Advances in Brain MR: High Field and Beyond”

Visiting Professor
Peking Union Medical College
Beijing, China
January 7, 2009

“Advances in MRI of the Brain: Emerging Applications”

Invited Speaker
Nevskiy Annual Radiology Forum
St. Petersburg, Russia
April 7, 2009

“Advances in Brain MR: High Field and Beyond”

Invited Speaker
GE Healthcare CT and MR Customer Summit
Hyderabad, India
April 18-19, 2009

“Stroke Imaging”

Invited Speaker
GE Healthcare CT and MR Customer Summit
Hyderabad, India
April 18-19, 2009

“Advances in Brain MR: Emerging Applications”

Special Seminar
Teleradiology Solutions Educational Center
Bangalore, India
April 20, 2009

“Advances in High Field Brain MR”

Invited Speaker
Jornado de Paulista Radiologia Annual Meeting
Sao Paulo, Brazil
April 29, 2009

“Neuroradiology Board Review”

Visiting Professor
University of Kansas Medical Center
Kansas City, Missouri
May 13, 2009

“Emerging Advances in Brain MRI”

Invited Speaker
University of Kansas and Kansas City Radiological Society
Kansas City, Missouri
May 13, 2009

“US Healthcare Reform: Issues, Facts, and Policy Alternatives”

First Annual J. Arliss Pollock, MD Memorial Lecture 2009
American Society of Neuroradiology Annual Scientific Meeting
Vancouver, Canada
May 19, 2009

“Advances in Brain MRI: 3T and Beyond”

Anniversary Neuroscience Symposium
FLENI Neurological Institute
Buenos Aires, Argentina
September 10, 2009

“Stroke Imaging: Current Status”

Anniversary Neuroscience Symposium
FLENI Neurological Institute
Buenos Aires, Argentina
September 10, 2009

“Imaging Brain Tumors: Fundamentals and Advances”

Anniversary Neuroscience Symposium
FLENI Neurological Institute
Buenos Aires, Argentina
September 10, 2009

“Advances in Brain MRI: 3T and Beyond”

XII Jornada Pernambucana de Radiologia
And XIX Curso de Diagnóstico por Imagem da Mama
Sociedade de Radiologia de Pernambuco
Recife, Brazil
September 12, 2009

“Stroke Imaging: What is True and What Might Be True”
XII Jornada Pernambucana de Radiologia
And XIX Curso de Diagnóstico por Imagem da Mama
Sociedade de Radiologia de Pernambuco
Recife, Brazil
September 12, 2009

“Imaging Brain Tumors: Fundamentals and Advances”
XII Jornada Pernambucana de Radiologia and XIX Curso de Diagnóstico por Imagem
Sociedade de Radiologia de Pernambuco
Recife, Brazil
September 12, 2009

“Advances in Brain MRI”
Annual Scientific Assembly
SORBA (Sociedade de Radiologia e Diagnóstico por Imagem da Bahia)
Salvador, Bahia
Brazil
September 14, 2009

“Doctors in Public Advocacy”
Invited Panel Member
First Year School of Medicine Class
Stanford University School of Medicine
October 9, 2009

“Health Care Reform: Options and Consequences”
Invited Speaker
Hoover Institution Fall Retreat
Hoover Institution
Stanford University
October 19, 2009

“Advances in MRI: Rationale and Emerging Clinical Applications”
Guest Speaker
RDO Diagnostic Clinic
Sao Paulo, Brazil
December 12, 2009

2010

“Advances in MRI of the Brain: High Field and Beyond”
Invited Speaker
63rd Annual Conference
India Radiology and Imaging Association 2010
Ahmedabad, India
January 23, 2010

“Stroke Imaging: What is True and What Might Be True”

Invited Speaker
63rd Annual Conference
India Radiology and Imaging Association 2010
Ahmedabad, India
January 24, 2010

Multiple Lectures

Stoller & Atlas:
A Case by Case Tutorial in Musculoskeletal and NeuroRadiology
Wynn Hotel and Resort
Las Vegas, Nevada
January 28-30, 2010

“Advances in MRI of the Brain: High Field and Beyond”

18th Annual Radiology Conference
Stanford University Department of Radiology
Maui, Hawaii
March 24-25, 2010

“Stroke Imaging: What is True and What Might Be True”

18th Annual Radiology Conference
Stanford University Department of Radiology
Maui, Hawaii
March 24-25, 2010

“Brain Tumors: Fundamentals and Advances in Imaging”

18th Annual Radiology Conference
Stanford University Department of Radiology
Maui, Hawaii
March 24-25, 2010

“Intracranial Hemorrhage: Imaging Update”

18th Annual Radiology Conference
Stanford University Department of Radiology
Maui, Hawaii
March 24-25, 2010

“Advances in Brain MRI: High Field and Beyond”

XIV Radiology Meeting: Recent Advances in Brain CT and MR
Aula Magna Clinica Alemana de Santiago
Santiago, Chile
April 22, 2010

“Health Care Reform: Facts, Options, and Consequences”
Stanford Center for Cardiovascular Technology Annual Symposium 2010
Stanford, California
May 7, 2010

“Stroke MRI: Trends”
2010 Annual Russia Radiology National Congress
Moscow, Russia
May 26, 2010

“Advances in Brain MRI: High Field and Beyond”
2010 Annual Russia Radiology National Congress
Moscow, Russia
May 26, 2010

“Health Care Reform: Facts, Options, and Consequences”
Sierra Ventures - Kaiser Permanente Health IT Summit
Palo Alto, California
June 2, 2010

“Stroke Imaging: Rationale and Current Status”
Guest Speaker
RDO Diagnostic Clinic
Sao Paulo, Brazil
August 10, 2010

“American Health Care: Ignored Facts and Ignored Options for Reform”
Sectoral Asset Management Group
Hoover Institution
Stanford, California
September 9, 2010

“America’s Health Care: Ignored Facts and Disregarded Options”
Southern California Seminar
Hoover Institution
Los Angeles, California
September 29, 2010

“Technology in Neuroradiology: Rationale and Drivers”
Plenary Speaker
Symposium Neuroradiologicum
Bologna, Italy
October 5, 2010

“Reforming America’s Health Care System: Ignored Facts and Disregarded Options”

October Retreat
Hoover Institution
Stanford, California
October 18, 2010

“Doctors in Public Advocacy”

Invited Panel Member, First Year School of Medicine Class
Stanford University School of Medicine
November 8, 2010

“Reforming America’s Health Care System: Ignored Facts and Disregarded Options”

November Special Symposium
Hoover Institution
Stanford, California
November 18, 2010

“New Frontiers in MRI: Fetal Imaging”

RDO Diagnostic Clinic
Sao Paulo, Brazil
December 11, 2010

2011

“MRI in Cerebrovascular Disease”

RDO Diagnostic Clinic
Sao Paulo, Brazil
February 11, 2011

“Technology and Innovation in Radiology”

67th Annual Holmes Lecture
New England Roentgen Ray Society
Harvard Medical School
April 8, 2011

“MRI in Brain Tumors: Fundamentals and Advances”

RDO Diagnostic Clinic
Sao Paulo, Brazil
May 10, 2011

“Technology Advances in Radiology”

Primeiro Curso da
Sociedade Brasileira de Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 28, 2011

“Stroke Imaging: Current Status”

Primeiro Curso da
Sociedade Brasileira de Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 28, 2011

“MRI in Brain Tumors: Fundamentals and Advances”

Primeiro Curso da
Sociedade Brasileira de Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 28, 2011

“Imaging Intracranial Hemorrhage: Update”

Primeiro Curso da
Sociedade Brasileira de Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 28, 2011

“Fetal MRI in the CNS”

Primeiro Curso da
Sociedade Brasileira de Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 28, 2011

“Technology Advances in Radiology”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
July 13, 2011

“Technology Advances in Radiology”

Visiting Professor and Invited Lecturer
Dartmouth Medical Center
Lebanon, New Hampshire
July 27, 2011

“Advances in MRI of the Brain”

Invited Speaker
6th Annual Meeting of the SMRT Australia-New Zealand Chapter
Brisbane Convention and Exhibition Centre
Brisbane, Australia
August 13-14, 2011

“Imaging Brain Tumors: Fundamentals and Advances”

Invited Speaker
6th Annual Meeting of the SMRT Australia-New Zealand Chapter
Brisbane Convention and Exhibition Centre
Brisbane, Australia
August 13-14, 2011

“Rheumatology and the Brain: The Role of Imaging”

RDO Diagnostic Clinic
Sao Paulo, Brazil
September 17, 2011

“Health Care Reform: Setting the Record Straight on America’s Health Care”

Fall Retreat
Hoover Institution 47th Annual Retreat
Stanford, California
October 17, 2011

“Health Care Reform: Setting the Record Straight on America’s Health Care”

Special Seminar
Hoover Institution
Stanford, California
November 8, 2011

“Health Care Reform: Setting the Record Straight on America’s Health Care”

November Retreat
Hoover Institution 48th Annual Retreat
Stanford, California
November 17, 2011

2012

“America’s Health Care and the Principles for Reform ”

Hoover Institution Board of Overseers Annual Meeting
Willard Intercontinental Washington Hotel
Washington, DC
February 27, 2012

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
March 1-3, 2012

“America’s Health Care and the Principles for Reform ”

Hoover Institution Desert Conference
Vintage Club
Indian Wells, CA
March 19, 2012

“Advances in MRI of the Brain”

Invited Speaker
Special MRI Seminar
Ho Chi Minh City, Viet Nam
May 3, 2012

“MRI of Brain Tumors: Fundamentals and Advances”

Invited Speaker
Special MRI Seminar
Surabaya, Indonesia
May 3, 2012

“MRI of Brain Tumors: Fundamentals and Advances”

Invited Speaker
Special MRI Seminar
Surabaya, Indonesia
May 4, 2012

“Advances in MRI of the Brain”

Invited Speaker
Special Seminar, Indonesia Society of Radiology
Jakarta, Indonesia
May 5, 2012

“MRI of Brain Tumors: Fundamentals and Advances”

Invited Speaker
Special Seminar, Indonesia Society of Radiology
Jakarta, Indonesia
May 5, 2012

“MRI of Brain Tumors: Fundamentals and Clinical Analysis”

Invited Speaker
II Curso de Atualizacoe da Sociedade Brasileira De
Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 25-26, 2012

“Stroke Imaging: Clinical Case Analysis”

Invited Speaker
II Curso de Atualizacoe da Sociedade Brasileira De
Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 25-26, 2012

“Imaging of the Eye and Orbit”

Invited Speaker
II Curso de Atualizacoe da Sociedade Brasileira
De Neurorradiologia Diagnostica e Terapeutica
Fortaleza, Brazil
May 25-26, 2012

“MRI in Brain Tumors: Fundamentals and Advanced Applications”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
June 19, 2012

“Stroke Imaging: Current Status”

Invited Speaker
XXII Jornada Gaucha de Radiologia and the X Jornada Sul Brasileira de Radiologia
Porto Alegre, Brazil
July 13-14, 2012

“MRI of Intracranial Hemorrhage: Update”

Invited Speaker
XXII Jornada Gaucha de Radiologia and the X Jornada Sul Brasileira de Radiologia
Porto Alegre, Brazil
July 13-14, 2012

“Advances in MR of the Brain: High Field and Beyond”

Invited Speaker
XXII Jornada Gaucha de Radiologia and the X Jornada Sul Brasileira de Radiologia
Porto Alegre, Brazil
July 13-14, 2012

“Imaging Brain Tumors: Fundamentals and Advances”

Invited Speaker
XXII Jornada Gaucha de Radiologia and the X Jornada Sul Brasileira de Radiologia
Porto Alegre, Brazil
July 13-14, 2012

“Stroke Imaging: Current Status”

Invited Speaker
XLI Congresso Brasileiro de Radiologia
Brasilia, Brazil
September 6-8, 2012

“MRI of Intracranial Hemorrhage: Update”

Invited Speaker
XLI Congresso Brasileiro de Radiologia
Brasilia, Brazil
September 6-8, 2012

“Technology Innovation in Radiology”

Invited Speaker
XLI Congresso Brasileiro de Radiologia
Brasilia, Brazil
September 6-8, 2012

“Imaging Multiple Sclerosis: Clinical Significance and Differential Diagnosis”

Invited Speaker
XLI Congresso Brasileiro de Radiologia
Brasilia, Brazil
September 6-8, 2012

“Imaging Brain Tumors: Fundamentals and Advances”

Invited Speaker
XLI Congresso Brasileiro de Radiologia
Brasilia, Brazil
September 6-8, 2012

“Health Care Reform: Setting the Record Straight on America’s Health Care”

Hoover Institution Public Policy Conference
Sunset Ridge Country Club
Northfield, IL
September 11, 2012

“Health Care Reform: Saving America’s Safety Net”

Hoover Institution Southern California Conference
Century City Hotel
Century City, Los Angeles, CA
September 27, 2012

“Setting the Record Straight on America’s Health Care”
Hoover Institution Orange County Director’s Dinner
Pacific Club
Newport Beach, CA
October 10, 2012

2013

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
February 21-23, 2013

“Imaging Brain Tumors: Fundamentals and Advances”
Invited Speaker
IV Congresso Cearense de Radiologia
Fortaleza, Brazil
June 14-15, 2013

“Imaging Multiple Sclerosis: Clinical Significance and Differential Diagnosis”
Invited Speaker
IV Congresso Cearense de Radiologia
Fortaleza, Brazil
June 14-15, 2013

“Brain Tumors: Unknown Cases”
Invited Speaker
IV Congresso Cearense de Radiologia
Fortaleza, Brazil
June 14-15, 2013

“Imaging Brain Tumors: Fundamentals and Advances”
Invited Speaker
XXV Congress, Ibero-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN).
Panama City, Panama
June 17-18, 2013

“Advances in MRI of the Brain”
Invited Speaker
XXV Congress, Ibero-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN).
Panama City, Panama
June 17-18, 2013

“Intracranial Hemorrhage: Role of MRI”

Invited Speaker
XXV Congress, Ibero-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN).
Panama City, Panama
June 17-18, 2013

“Stroke: Case by Case Analysis”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
June 24, 2012

“Imaging Stroke: Current Status”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
June 25, 2013

“Obamacare: Update”

Hoover Institution Jackson Hole Conference
Hoover Institution, Stanford University
Shooting Star Country Club, Teton Village
Jackson Hole, Wyoming
August 1, 2013

“MRI of Stroke and Hemorrhage”

Invited Lecturer
Chulalongkorn Hospital
Bangkok, Thailand
September 11, 2013

“Recent Advances in MRI of the Brain”

Invited Lecturer
Chulalongkorn Hospital
Bangkok, Thailand
September 11, 2013

“MRI of Stroke and Hemorrhage”

Invited Lecturer
University of Malay Medical Center Research Symposium
Kuala Lumpur, Malaysia
September 13, 2013

“Recent Advances in MRI of the Brain”

Invited Lecturer
University of Malay Medical Center Research Symposium
Kuala Lumpur, Malaysia
September 13, 2013

“Brain Tumor Imaging”

Invited Lecturer
University of Malay Medical Center Research Symposium
Kuala Lumpur, Malaysia
September 13, 2013

“Technology Innovation in Neuroradiology”

Special Seminar
National University of Singapore
Marriott Hotel, Singapore
September 14, 2013

“Intracranial Hemorrhage: Case by Case Analysis”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
October 15, 2013

“Imaging Hemorrhage: Principles and MRI Update”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
October 16, 2013

“Brain Tumors: Case by Case Analysis”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
December 9, 2013

“Imaging Brain Tumors: Fundamentals and Advanced Applications”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
December 10, 2013

2014

“MRI of Head Trauma and Intracranial Hemorrhage”

Invited Speaker
IV Congresso Cearense de Radiologia
Fortaleza, Brazil
February 22, 2014

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
March 8-10, 2014

“Imaging Diseases of the Eye and Orbit”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
April 29, 2014

“Imaging the Pituitary and Sella”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
April 28, 2014

“Technology Innovation in Neuroradiology”

Visiting Professor and Invited Lecturer
Clinical Neurosciences Center Grand Rounds
University Hospital of Zurich
Zurich, Switzerland
August 21, 2014

Multiple Lectures:

Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August 22-27, 2014

“Health Care Reform in the United States: Update”

Keynote Speaker
2014 Annual Board Dinner Meeting
Ann & Robert H. Lurie Children’s Hospital of Chicago
Chicago, Illinois
October 15, 2014

“Imaging Stroke: Current Status”

Invited Speaker
XXVI Congress, Ibero-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN).
Sao Paulo, Brazil
November 3, 2014

“Technology Innovation in Neuroradiology: Key Issues and Future Considerations”

Invited Speaker
XXVI Congress, Ibero-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN).
Sao Paulo, Brazil
November 3, 2014

“Imaging Brain Tumors: Fundamentals and Advances”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
November 17, 2014

“Brain Tumors: Case by Case Analysis”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
November 18, 2014

2015

“Brain Tumor Imaging: Principles and Advances”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 16, 2015

“Brain Tumor Imaging: Case Discussion”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 16, 2015

“Multiple Sclerosis and White Matter Diseases: Updates”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 16, 2015

“Multiple Sclerosis and White Matter Diseases: Case Discussion”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 16, 2015

“Imaging Intracranial Hemorrhage: Concepts and Update”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 17, 2015

“Intracranial Hemorrhage: Case Discussion”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 17, 2015

“Imaging Stroke: Current Status”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 17, 2015

“Stroke: Case Discussion”

Invited Speaker; *MR Imaging @NUH*
National University Hospital of Singapore
Singapore
January 17, 2015

“MRI of Brain Tumors: Principles and Advances”

Special MRI Seminar
JW Marriott Hotel
Jakarta, Indonesia
January 18, 2015

“Imaging Stroke: Current Status and Challenges”

Special MRI Seminar
JW Marriott Hotel
Jakarta, Indonesia
January 18, 2015

“MRI of Brain Tumors: Principles and Advances”

Invited Speaker
Bach Mai Hospital
Hanoi, Vietnam
January 19, 2015

“Imaging Stroke: Current Status and Challenges”

Invited Speaker
Bach Mai Hospital
Hanoi, Vietnam
January 19, 2015

“MRI of Brain Tumors: Principles and Advances”

Invited Speaker
Cho Ray Hospital
Ho Chi Minh City, Vietnam
January 20, 2015

“Imaging Stroke: Current Status and Challenges”

Invited Speaker
Cho Ray Hospital
Ho Chi Minh City, Vietnam
January 20, 2015

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
February 12-14, 2015

“Obamacare: Implementation and Reform”

Invited Speaker
Symposium: *The Affordable Care Act in 2015*
NYU School of Law
The Classical Liberal Institute & NYU Journal of Law & Liberty
New York, New York
March 10, 2015

Multiple Lectures:

Scott Atlas’ Neuroradiology Tutorial
Renaissance Hotel
Sao Paulo, Brazil
April, 2015

“Stroke Imaging: Fundamentals and Current Status”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
April 21, 2015

“Multiple Sclerosis: The Role of Imaging”

Visiting Professor and Invited Lecturer
University Hospital of Zurich Neurologic Institute
Zurich, Switzerland
April 22, 2015

“Health Care Reform: America’s Health Care, Before and After Obamacare”

Invited Speaker
Symposium: *The Affordable Care Act Turns Five...What We Know Now*
Hoover Institution, Washington, D.C.
April 30, 2015

“Health Care Reform: Setting the Record Straight on America’s Health Care”

Invited Speaker
American College of Radiology 2015 Annual Meeting
Marriott Hotel Wardman Park
Washington, D.C.
May 17, 2015

“Innovation in Medical Technology: Global Trends and Implications for Radiology”

Invited Speaker
2015 Annual Sonic Imaging Conference
Gold Coast, Australia
May 30, 2015

“Imaging Brain Tumors: Fundamentals and Advances”

Invited Speaker
2015 Annual Sonic Imaging Conference
Gold Coast, Australia
May 30, 2015

“MS and Adult White Matter Disease: The Role of Imaging”

Invited Speaker
2015 Annual Sonic Imaging Conference
Gold Coast, Australia
May 30, 2015

Multiple Lectures:

23rd Annual Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August 31-September 5, 2015

“MRI-based Patient Selection in Acute Ischemic Stroke”

Invited Speaker
Campo Base NeuroVascolare
Azienda Ospedaliero-Universitaria Careggi
Nuovo Ingresso Careggi - NIC
Florence, Italy
October 8, 2015

“MRI of the CNS: Efficacy and Efficiency in Contrast Use”

Meeting Moderator and Overall Discussant
Curriculum Development Meeting
The Westin Michigan Avenue
Chicago, Illinois
October 23-25, 2015

“Brain Tumor Imaging: Principles and Advances”

Special Tutorial: Advances in Brain MRI
GE Healthcare Latin America
SENAI University
Sao Paulo, Brazil
November 17, 2015

“MS and White Matter Diseases: Update”

Special Tutorial: Advances in Brain MRI
GE Healthcare Latin America
SENAI University
Sao Paulo, Brazil
November 17, 2015

“Imaging Stroke: Current Status”

Special Tutorial: Advances in Brain MRI
GE Healthcare Latin America
SENAI University
Sao Paulo, Brazil
November 17, 2015

“Update on Imaging Brain Tumors: Fundamentals and Advances”

Webinar
GE Healthcare Latin America
Sao Paulo, Brazil
November 18, 2015

2016

“America’s Health Care, Before and After Obamacare”

JMI Private Equity Special Event
JP Morgan Healthcare Annual Meeting
San Francisco, California
January 12, 2016

“Cleaning up the Obamacare Mess: Restoring Quality Health Care at Lower Cost”

Hoover Institution Southern California Conference
Hoover Institution, Stanford University
Pasadena, California
February 1, 2016

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
February 18-20, 2016

“Instilling Incentives and Rational Tax Reform to Restore Quality Health Care at Lower Cost”

Fiscal Foundations Forum
Joint Economic Committee staff
Rayburn House Office Building, Capitol Hill
Washington, DC
March 15, 2016

“Cleaning up the Obamacare Mess: Restoring Quality Health Care at Lower Cost”

Hoover Institution Board of Overseers Spring Retreat
Hoover Institution, Stanford University
Stanford, California
April 18, 2016

“Multiple Sclerosis: The Role of Imaging”

2016 Annual Meeting
Pernambuco Sociedade da Radiologia
Recife, Brazil
June 11, 2016

“Imaging Acute Stroke: The Changing Landscape”

2016 Annual Meeting
Pernambuco Sociedade da Radiologia
Recife, Brazil
June 11, 2016

“MRI of Brain Tumors: Fundamentals and Advances”

Visiting Professor
All India Medical Institute
Delhi, India
August 12, 2016

“Imaging Acute Stroke: The Changing Landscape”

Visiting Professor
All India Medical Institute
Delhi, India
August 12, 2016

“MRI of Brain Tumors: Fundamentals and Advances”

Special Seminar
Taj Hotel
Delhi, India
August 12, 2016

“Imaging Acute Stroke: The Changing Landscape”

Special Seminar
Taj Hotel
Delhi, India
August 12, 2016

“MRI of Brain Tumors: Fundamentals and Advances”

Special Seminar
Chennai, India
August 13, 2016

“Imaging Acute Stroke: The Changing Landscape”

Special Seminar
Chennai, India
August 13, 2016

Multiple Lectures:

24th Annual Zurich Course on Diagnostic and Interventional Neuroradiology
University Hospital of Zurich
Zurich, Switzerland
August 22-27, 2016

“Medicaid Reform to Eliminate Second-Class Health Care for the Poor”

Keynote Speaker
Medicaid Drug Rebate Program Summit
Palmer House Hotel
Chicago, IL
September 23, 2016

Multiple Lectures:

- Update in Neuro Imaging
Site Oud Sint-Jan
Bruges, Belgium
October 6-8, 2016

- “Innovation in Medical Technology: Global Trends and Implications for Radiology”
Keynote Lecture
Update in Neuro Imaging
Site Oud Sint-Jan
Bruges, Belgium
October 6-8, 2016

- “Regulation and the Law: The Burden of Regulation on US Health Care and How to Fix It”
American Exceptionalism in the 21st Century
Hoover Institution Fall Retreat
Hoover Institution, Stanford University
Stanford, California
October 17-18, 2016

- “Cleaning up the Obamacare Mess: Restoring Quality Health Care at Lower Cost”
Hoover Institution Special Seminar
Estancia Hotel
La Jolla, California
November 2, 2016

2017

- “Imaging Acute Stroke: The Evolving Landscape”
70th Annual Conference
Indian Radiological and Imaging Association
Jaipur, India
January 7, 2017

- “Technology Innovation in Radiology: Trends and Projections”
70th Annual Conference
Indian Radiological and Imaging Association
Jaipur, India
January 7, 2017

- “MRI of Brain Tumors: Fundamentals and Advances”
Special Seminar
Taj Hotel
Bangalore, India
January 8, 2017

“MRI of Brain Tumors: Unknown Cases”

Special Seminar
Taj Hotel
Bangalore, India
January 8, 2017

“Technology Innovation in Radiology: Trends and Projections”

Special Seminar
Taj Hotel
Pune, India
January 9, 2017

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
February 9-11, 2017

“Health Care Reform Post-Obamacare”

Hoover Institution Board of Overseers Meeting
Hoover Institution, Stanford University
Willard Intercontinental Washington, Washington DC
February 27, 2017

“Health Care Reform Post-ACA”

American Enterprise Institute's Executive Council
Stanford University
Stanford, California
March 7, 2017

“Cleaning Up the Obamacare Mess”

Hoover Institution Special Event
Pacific Union Club
San Francisco, California
March 16, 2017

“Medical Technology Innovation: Trends and Implications”

Invited Speaker
2017 Jornado Paulista de Radiologia
Sao Paulo, Brazil
May 4-6, 2017

“Technology Innovation in Neuroradiology: Key Issues and Future Considerations”

Invited Speaker
2017 Jornado Paulista de Radiologia
Sao Paulo, Brazil
May 4-6, 2017

“Imaging of Brain Tumors: Fundamentals and Advances”

Invited Speaker
2017 Jornado Paulista de Radiologia
Sao Paulo, Brazil
May 4-6, 2017

“Health Care Reform in the Trump Era: What To Expect”

Hoover Institution Seminar
Dallas, Texas
May 10-11, 2017

“The Trump Health Care Agenda: Impact on Medicaid”

Medicaid Managed Care Congress
Hyatt Regency Baltimore Inner Harbor
Baltimore, Maryland
May 23, 2017

“Healthcare Reform in the Post Obamacare Era”

Washington University School of Medicine
Mallinckrodt Institute of Radiology Grand Rounds
St. Louis, Missouri
June 14, 2017

“Setting The Record Straight On America’s Health Care”

Hoover Institution Summer Policy Boot Camp
Stanford, California
August 21, 2017

“Medicaid Reform in the Trump Era”

Keynote Speaker
Medicaid Drug Rebate Program Summit
Marriott Hotel
Chicago, IL
September 13, 2017

“MRI in Multiple Sclerosis”

Invited Speaker
Nanavati Hospital
Mumbai, India
September 25, 2017

“MRI of Brain Tumors: Fundamentals and Advances”

Invited Speaker
Nanavati Hospital
Mumbai, India
September 25, 2017

“Medical Technology Innovation: Trends and Implications”
Special Seminar “Advances in MRI”
Mumbai, India
September 25, 2017

“MRI of Brain Tumors: Fundamentals and Advances”
Special Seminar “Advances in MRI”
Mumbai, India
September 25, 2017

“MRI of Brain Tumors: Fundamentals and Advances”
Invited Speaker
Shri Chitra Hospital and Research Center
Trivandrum, India
September 26, 2017

“Unknown Case Discussion”
Invited Speaker
Shri Chitra Hospital and Research Center
Trivandrum, India
September 26, 2017

“Acute Stroke Imaging: The Evolving Landscape”
Special Seminar “Advances in MRI”
Taj Vivanta Hotel
Trivandrum, India
September 26, 2017

“Imaging Multiple Sclerosis”
Special Seminar “Advances in MRI”
Taj Vivanta Hotel
Trivandrum, India
September 26, 2017

“Technology Innovation in Radiology: Trends and Implications”
Special Seminar “Advances in MRI”
Kuala Lumpur, Malaysia
September 27, 2017

“MRI of Brain Tumors: Fundamentals and Advances”
Special Seminar “Advances in MRI”
Ho Chi Minh City, Vietnam
September 28, 2017

“Technology Innovation in Radiology: Trends and Implications”
Special Seminar “Advances in MRI”
Ho Chi Minh City, Vietnam
September 28, 2017

“Health Care Reform in the Trump Era: What to Expect”

Keynote Speaker
15th Annual Healthcare Leaders Conference
Four Seasons at Las Colinas Hotel
Dallas, TX
October 5, 2017

“Health Care Reform: Setting the Record Straight”

Invited Speaker
2017 Stanford Reunion Homecoming: Classes Without Quizzes
Stanford University
Stanford, CA
October 12, 2017

Multiple Lectures:

Atlas & Som: Neuroradiology of the Brain, Spine, Head & Neck
Wynn Hotel and Resort
Las Vegas, Nevada
February 17-19, 2018

“Trump Era Health Care Reform”

Hoover Institution Board of Overseers Meeting
Hoover Institution, Stanford University
Willard Intercontinental Washington, Washington DC
February 26, 2018

“Competition-Based Health Care Reform”

Council of Economic Advisors to the White House
Washington DC
February 26, 2018

“Health Care Reform: What Now?”

Director’s Dinner
Hoover Institution
Newport Beach, California
April 5, 2018

“Global Trends in Health Care Innovation”

Keynote Address
TechTools Group
Sao Paulo, Brazil
April 16, 2018

“Health Care Reform in the Post Obamacare Era”

Benjamin Rush Society
Saint Louis University School of Medicine
St. Louis, Missouri
May 3, 2018

“Problematic Active Cases”

Visiting Professor
Ramakrishna Hospital
Coimbatore, India
July 23, 2018

“Acute Stroke Imaging: The Changing Role of Imaging”

Special Seminar “Advances in MRI”
Radisson Hotel
Coimbatore, India
July 23, 2018

“Unknown Case Discussion”

Special Seminar “Advances in MRI”
Radisson Hotel
Coimbatore, India
July 23, 2018

“Imaging MS and White Matter Diseases”

Special Seminar “Advances in MRI”
Radisson Hotel
Coimbatore, India
July 23, 2018

“MRI of Brain Tumors: Fundamentals and Advances”

Special Seminar “Advances in MRI”
Taj Bengal Hotel
Kolkata, India
July 24, 2018

“Technology Innovation in Radiology: Trends and Implications”

Special Seminar “Advances in MRI”
Taj Bengal Hotel
Kolkata, India
July 24, 2018

“Acute Stroke Imaging: The Evolving Landscape”

“CT and MRI Update”, Jaslok Hospital & Research Centre
Radisson Blu Hotel
Goa, India
July 25, 2018

“Imaging MS and White Matter Diseases”

“CT and MRI Update”, Jaslok Hospital & Research Centre
Radisson Blu Hotel
Goa, India
July 25, 2018

“MRI of Brain Tumors: Fundamentals and Advances”
“CT and MRI Update”, Jaslok Hospital & Research Centre
Radisson Blu Hotel
Goa, India
July 25, 2018

“Technology Innovation in Radiology: Trends and Implications”
“CT and MRI Update”, Jaslok Hospital & Research Centre
Radisson Blu Hotel
Goa, India
July 25, 2018

“Global Trends in Health Care Innovation”
Special Seminar, GE Healthcare
Hilton Hotel
Bandung, Indonesia
August 13, 2018

“Imaging Acute Stroke: The Evolving Landscape”
“New Horizons in Head and Neck and Neuro Imaging”
Borromeus Hospital
Bandung, Indonesia
August 14, 2018

“MRI of Brain Tumors: Fundamentals and Advances”
“New Horizons in Head and Neck and Neuro Imaging”
Borromeus Hospital
Bandung, Indonesia
August 14, 2018

“Imaging Acute Stroke: The Evolving Landscape”
Special Seminar, GE Healthcare
JW Marriott Hotel
Bangkok, Thailand
August 15, 2018

“MRI of Brain Tumors: Fundamentals and Advances”
Special Seminar, GE Healthcare
JW Marriott Hotel
Bangkok, Thailand
August 15, 2018

“Global Trends in Health Care Innovation”
Special Seminar, GE Healthcare
JW Marriott Hotel
Hanoi, Vietnam
August 16, 2018

“Unknown Case Discussion”

Special Seminar, GE Healthcare
JW Marriott Hotel
Bangkok, Thailand
August 15, 2018

“Unknown Case Discussion”

Special Seminar, GE Healthcare
JW Marriott Hotel
Hanoi, Vietnam
August 16, 2018

“Imaging Acute Stroke: The Evolving Landscape”

Invited Speaker
20th Vietnam National Radiology & Nuclear Medicine Congress
JW Marriott Hotel
Hanoi, Vietnam
August 17, 2018

“Setting The Record Straight On America’s Health Care”

Hoover Institution Summer Policy Boot Camp
Stanford, California
August 23, 2018

“Health Care Reform in The Trump Era: Where to Next?”

2019 Hoover Spring Retreat
Hoover Institution
Stanford, California
April 16, 2019

“Health Care Reform: What Now?”

Director’s Dinner
Hoover Institution
University of Denver
Denver, Colorado
April 24, 2019

“Imaging MS and White Matter Diseases”

Visiting Professor, GE Healthcare Event
St. Luke’s Hospital
Manila, Philippines
April 29, 2019

“Global Trends in Health Care Innovation”

Special Seminar, GE Healthcare
Conrad Hotel
Manila, Philippines
April 29, 2019

“Unknown Case Discussion”

Special Seminar, GE Healthcare
Conrad Hotel
Manila, Philippines
April 29, 2019

“MRI of Brain Tumors: Fundamentals and Advances”

Invited Speaker
Philippines Society of Radiology Annual Meeting
Conrad Hotel
Manila, Philippines
April 30, 2019

“Imaging Acute Stroke: The Evolving Landscape”

Invited Speaker
Philippines Society of Radiology Annual Meeting
Conrad Hotel
Manila, Philippines
April 30, 2019

“MRI of Brain Tumors: Fundamentals and Advances”

Special Seminar, GE Healthcare
Intercontinental Hotel
Jakarta, Indonesia
May 1, 2019

“Unknown Case Discussion”

Special Seminar, GE Healthcare
Intercontinental Hotel
Jakarta, Indonesia
May 1, 2019

“Health Care Reform: What Now?”

Director’s Wine Country Lunch
Hoover Institution
St. Helena, California
June 19, 2019

“Setting The Record Straight On America’s Health Care, and Where To From Here”

Hoover Institution Summer Policy Boot Camp
Stanford, California
August 22, 2019

“Health Care Reform: What Now?”

Economics Fellowship Program
Hoover Institution
Stanford, California
August 23, 2019

“Setting The Record Straight on America’s Health Care”

2019 Hoover Fall Retreat
Hoover Institution
Stanford, California
October 21, 2019

“Setting The Record Straight on America’s Health Care: Where To Next?”

Director’s Seminar
Hoover Institution
New York, New York
November 19, 2019

“What’s Next in US Health Care Reform”

Hoover Institution Board of Overseers Meeting
Willard Intercontinental Washington, Washington DC
February 24, 2019

Bibliography; Journal Publications:

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2. Atlas SW, Vogelzang R, Bressler E, Gore R, Bergan J: CT diagnosis of a mycotic aneurysm of the thoracoabdominal aorta. *J Comput Assist Tomogr* 1984; 8:1211-1212.
3. Bressler E, Vogelzang R, Atlas SW, Neiman H: Radiation injury to the axillary artery presenting as thromboembolism. *AJR* 1984; 143:1079-1080.
4. Smith S, Vogelzang R, Donovan J, Atlas SW, Gore R, Neiman H: Intraoperative sonography of the pancreas. *AJR* 1985; 144:557-562.
5. Atlas SW, Rochester D, Panella J, Larson R: The utilization of ultrasound in the diagnosis of wandering abdominal viscera. *JCU* 1985; 13:275-277.
6. Atlas SW, Shkolnik A, Naidich TP: Sonographic recognition of agenesis of the corpus callosum. *AJNR* 1985; 6:369-375; *AJR* 1985; 145: 167-173.
7. Regenbogen VS, Rogers LF, Atlas SW, Kim KS: Cervical spinal cord injuries in patients with cervical spondylosis. *AJR* 1986; 146:277-284.
8. Atlas SW, Regenbogen V, Rogers LF, Kim KS: The radiographic characterization of burst fractures of the spine. *AJNR* 1986; 7:675-682; *AJR* 1986; 147:575-582.
9. Atlas SW, Grossman RI, Packer RJ, Goldberg HI, Hackney DB, Zimmerman RA, Bilaniuk LT: Magnetic resonance imaging of disseminated necrotizing leukoencephalopathy. *CT: J Comput Tomogr* 1987; 11:39-43.

10. Atlas SW, Grossman RI, Hackney DB, Goldberg HI, Zimmerman RA, Bilaniuk LT:
MR diagnosis of acute disseminated encephalomyelitis. *J Comput Assist Tomogr* 1986; 10:798-801.
11. Atlas SW, Grossman RI, Savino PJ, Sergott RC, Schatz NJ, Bosley TM, Hackney DB, Goldberg HI, Bilaniuk LT, Zimmerman RA: Surface coil MR of orbital pseudotumor.
AJNR 1987; 8:141-146; *AJR* 1987; 148:803-808.
12. Grossman RI, Gonzalez-Scarano F, Atlas SW, Galetta S, Silberberg DH:
Multiple sclerosis: Gadolinium enhancement in MR imaging. *Radiology* 1986; 161:721-725.
13. Atlas SW, Zimmerman RA, Rorke L, Bilaniuk LT, Hackney DB, Goldberg HI, Grossman RI: Corpus callosum and limbic system: Neuroanatomic MR evaluation of developmental anomalies.
Radiology 1986; 160:355-362.

14. Grossman RI, Gonzalez-Scarano F, Atlas SW, Galetta S, Silberberg D:
Gadolinium-DTPA enhancement in magnetic resonance imaging of multiple sclerosis: a preliminary report. In: *Contrast Agents in Magnetic Resonance Imaging*, pages 121-123, Excerpta Medica, Inc., Amsterdam, 1986.
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Partially thrombosed giant intracranial aneurysms: Correlation of MR and pathologic findings. *Radiology* 1987; 162:111-114.
16. Zimmerman RA, Atlas SW, Bilaniuk LT, Hackney DB, Goldberg HI, Grossman RI:
MRI of cerebral aneurysms. *Acta Radiologica Supplementum* 1986; 369:107-109.
17. Atlas SW, Grossman RI, Savino PJ, Schatz NJ, Sergott RC, Bosley TM, Hackney DB, Goldberg HI, Zimmerman RA, Bilaniuk LT: Internuclear ophthalmoplegia: neuroanatomic - MR correlation. *AJNR* 1987; 8:243-247.
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19. Gonzalez-Scarano F, Grossman RI, Galetta S, Atlas SW, Silberberg DH: Multiple sclerosis disease activity correlates with gadolinium-enhanced magnetic resonance imaging. *Ann Neurol* 1987; 21:300-306.
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21. Atlas SW, Grossman RI, Axel L, Hackney DB, Bilaniuk LT, Goldberg HI, Zimmerman RA: Orbital lesions: proton spectroscopic phase dependent contrast MR imaging. *Radiology* 1987; 164:510-514.
22. Atlas SW, Grossman RI, Gomori JM, Guerry D, Hackney DB, Goldberg HI, Zimmerman RA, Bilaniuk LT: MR imaging of intracranial metastatic melanoma. *J Comput Assist Tomogr* 1987; 11:577-582.
23. Atlas SW, Grossman RI, Gomori JM, Hackney DB, Goldberg HI, Bilaniuk LT, Zimmerman RA: Spin echo MR imaging of hemorrhagic intracranial malignant neoplasms. *Radiology* 1987; 164:71-77.
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Orbit: initial experience with surface coil spin-echo MR imaging at 1.5T. *Radiology* 1987; 164:501-509.
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Subacute intracranial hemorrhage: contribution of spin density to appearance on spin-echo MR images. *Radiology* 1987; 165:199-202.

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36. Atlas SW: Magnetic resonance imaging of the orbit: current status. *Mag Res Q* 1989; 5:39-96.
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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF DR. JAMES
LYONS-WEILER IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, JAMES LYONS-WEILER, declare as follows:

24 1. My name is James Lyons-Weiler. I am a resident of Allison Park,
25 Pennsylvania; I am over 18 years-old; and I am otherwise competent to make this
26 declaration.

27 2. I am currently CEO and Director of The Institute for Pure and Applied
28 Knowledge in Pittsburgh, PA, a registered not-for-profit organization that conducts
biomedical research in the public interest. I was formerly Senior Research Scientist at
the University of Pittsburgh, where I served as the Scientific Director of the University



1 of Pittsburgh's Bioinformatics Analysis Core. Prior to that, I had been faculty in the
2 Departments of Pathology and Biomedical Informatics, where I conducted grant-funded
3 research, taught courses and advised graduate students and medical and post-doctoral
4 fellows. I have over 54 peer-reviewed publications and have served as Associate Editor
5 and Editor-in-Chief on two journals. I currently serve as the Founding Editor-in-Chief
6 of the journal *Science, Public Health Policy & the Law*. I append a biosketch (a form a
7 curriculum vitae) should it be helpful to the Court. (Attached hereto as Exhibit 5)

8 3. Plaintiffs contacted me and asked if I would be willing to offer my expert
9 opinion about the risks teachers and students face upon returning to school, and the harms
10 students suffer as a result of being denied in-person educational opportunities.

11 **Children have a very low risk of serious or critical illness and death from SARS-**
12 **CoV-2 infection, and they do not pose a severe risk of transmission to adults.**

13 4. The CDC estimate of the population-wide death rate of COVID-19 is
14 0.26%¹. However, the vast majority of this risk is in the elderly and in people whose
15 overall health has been significantly deteriorated prior to infection (e.g., individuals with
16 pre-existing chronic pulmonary illness, whose death rate is 6.3%, cardiovascular illness
17 (10.5%), high blood pressure (6%), adults with diabetes (7.3%), and cancer (5.6%)².
18 Even these rates—which are from the earliest reports in the outbreak, from Wuhan City
19 in Hubei Province, China—are massively inflated because they are only *symptomatic*
20 case fatality rates, not infection case fatality rates. After the peak infection wave subsided
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24 ¹ USA Today, *Fact check: CDC's estimates COVID-19 death rate around .26%,*
25 *doesn't confirm it* (June 5, 2020),

26 <https://www.usatoday.com/story/news/factcheck/2020/06/05/fact-check-cdc-estimates-covid-19-death-rate-0-26/5269331002/>

27 ² Business Insider, *The coronavirus is scary to millennials because it shows us how old*
28 *our parents are* (Mar. 16, 2020)

<https://markets.businessinsider.com/news/stocks/coronavirus-age-differences-millennials-parents-health-social-distancing-2020-3-1029000036>

1 in the China, scientists there estimated that as many as 85% of COVID-19 cases were
2 undetected.³

3 5. Even the attribution of death to COVID-19 is still in question, and it is
4 unlikely that we will be able to determine an accurate count of those who “died from” the
5 infection, as opposed to “died with” the infection. In Italy, 99% of deaths have had a
6 significant comorbid condition⁴. Also, late-stage treatment of patients critically ill with
7 COVID-19 initially involved ventilator use, which may have exacerbated the mortality
8 rate. It has been observed that high-pressure “per protocol” use of ventilators in COVID-
9 19 patients with severe infections, showing inflammation to the periphery of the alveoli,
10 may cause further tissue damage to the patients’ already inflamed and thinned-out lung
11 epithelial layers^{5,6}.

12 6. Unlike pneumonia from influenza viruses, in which the risk of the death to
13 children is increased, COVID-19 death rates are effectively zero for children aged 0-10
14 and adolescents ages 11-20. Early data from South Korea, for example, reported zero
15 deaths for children aged 0 to 20 – the same rate indicated by data from Italy⁷. The CDC⁸
16 reports a total of 226 “COVID-19 deaths” in persons under 24 across the US, out of total
17 of 26,808 deaths for that age group over the same time period from all causes. Thus,
18

19 ³ MedPage Today, *Over 85% of COVID-19 Infections in China Went Undetected Early*
20 *on* (Mar. 16, 2020) <https://www.medpagetoday.com/infectiousdisease/covid19/85448>

21 ⁴ Bloomberg, *99% of Those Who Died From Virus Had Other Illness, Italy says* (Mar.
22 *18, 2020)*, [https://www.bloomberg.com/news/articles/2020-03-18/99-of-those-who-](https://www.bloomberg.com/news/articles/2020-03-18/99-of-those-who-died-from-virus-had-other-illness-italy-says)
23 [died-from-virus-had-other-illness-italy-says](https://www.bloomberg.com/news/articles/2020-03-18/99-of-those-who-died-from-virus-had-other-illness-italy-says)

24 ⁵ Time, *Why Ventilators May Not Be Working as Well for COVID-19 Patients as*
25 *Doctors Hoped* (April 16, 2020), <https://time.com/5820556/ventilators-covid-19/>

26 ⁶ The Wall Street Journal, *Some Doctors Pull Back on Using Ventilators to Treat*
27 *COVID-19* (May 11, 2020), [https://www.wsj.com/articles/some-doctors-pull-back-on-](https://www.wsj.com/articles/some-doctors-pull-back-on-using-ventilators-to-treat-covid-19-11589103001)
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⁷ Spruce, *A Tale of Two Death Rates: How South Korea and Italy Predict Our COVID-*
19 Future (Mar. 14, 2020) [https://blog.sprucehealth.com/a-tale-of-two-death-rates-how-](https://blog.sprucehealth.com/a-tale-of-two-death-rates-how-south-korea-and-italy-predict-our-covid-19-future/)
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⁸ Centers for Disease Control and Prevention (July 22, 2020),
[https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-](https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-S/9bhg-hcku)
[S/9bhg-hcku](https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-S/9bhg-hcku)

1 COVID-19 currently accounts for 0.84% of all deaths in people aged 0 to 24 year. This
2 does not come close to meeting the criterion used to classify infectious diseases as an
3 “epidemic” (between 6 and 7%). By comparison, influenza and pneumonia not attributed
4 to COVID-19 led to 966 deaths over the same time period in persons aged 0 to 24.⁹

5 7. Nationwide, although there are now over 4 million confirmed cases in the
6 United States, there have been only 226 deaths for those “under 24 years of age”
7 attributed to COVID-19 infection, amounting to 0.173% of all deaths from COVID-19.
8 Scientists now believe Children may be largely immune to SARS-CoV-2 infection due
9 to an evolutionary conserved and balanced innate immune response, whereas adult
10 response to COVID-19 may elicit the adaptive antibody-based immune system due to
11 larger prior exposure to a variety of coronaviruses relative to our youth¹⁰.

12 8. ACE2 receptors are one of two portals the SARS-CoV-2 virus uses to gain
13 entry into lung cells. Children may also express a different form of ACE2 receptor, or
14 different amounts of ACE2 receptors than adults.¹¹ Smokers, and adults on ACE2
15 inhibitors produce a larger density of ACE2 receptors on the surfaces of their lung
16 epithelia; this may be why people with cardiovascular disease, hypertension and smokers
17 are at higher risk of serious illness and death from COVID-19 than children.

18 9. Underscoring the low risk to children, Dr. Anthony Fauci, Director of the
19 US NIAID, has reported that children are unlikely to be among the first individuals to
20 receive any COVID-19 vaccine found to be safe and effective, and on June 3, 2020,
21 suggested that it would be appropriate to re-open schools¹².

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24 ⁹ *Id.*

25 ¹⁰ The Scientist, *Possible Biological Explanations for Kids’ Escape from COVID-19*
26 (Mar. 16, 2020), <https://www.the-scientist.com/news-opinion/possible-biological-explanations-for-kids-escape-from-covid-19-67273>

27 ¹¹ Malgorzata Kloc, et al., ScienceDirect, *Development of child immunity in the context*
28 *of COVID-19 pandemic*, Volume 17, August 2020,
<https://www.sciencedirect.com/science/article/pii/S1521661620305106>

¹² CNN, *Fauci says it’s time to think about reopening schools* (June 4, 2020)
<https://www.cnn.com/2020/06/03/us/fauci-schools-reopening-coronavirus/index.html>

1 10. Deaths in the US and elsewhere from COVID-19 are restricted to individuals
2 that have potential indicators of expected severity. The medical literature of factors that
3 place individuals at risk of serious illness and mortality from COVID-19 include an
4 altered immune system (specifically Th2-skewed immunity vs. Th1/Th2 balanced
5 immunity¹³). Patients who progress to serious COVID-19 in need of critical care undergo
6 a type of inflammatory response known as a cytokine storm, involving cytokines IL-1 β ,
7 TNF- α and IL-6.¹⁴ Clinical care does not yet make use of an assay to determine patients'
8 Th2/Th1 balance, but a combined risk model that includes comorbidity, age and Th2/Th1
9 cell counts could be useful in predicting the clinical course of SARS-CoV-2 infections,
10 reducing mortality and streamlining resource allocation. This means we can expect
11 improved clinical care of COVID-19 patients and lower serious illness and death as
12 effective and tailored treatments come online.

13 *Current Case Fatality Rates and Infection Case Fatality Rates Are Dropping.*

14 11. Although immunity to SARS-CoV-2 following infection was originally in
15 doubt due to waning presence of antibodies in people previously infected¹⁵, this concern
16 is likely overblown; long-term immunity of COVID-19 is now suspected to involve
17 memory B-cell and T-cell immunity, like other viruses. The very best resource available
18 on this complex issue of antibody vs. T- and B-cell immunity for the layperson is the
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22 ¹³ Wong, BioCentury, *Haste plus speed: the need to ensure COVID-19 vaccines don't*
23 *make infections worse* (Mar. 24, 2020),

24 <https://www.biocentury.com/article/304604/how-covid-19-vaccine-developers-can-lower-the-risk-of-being-derailed-by-antibody-dependent-enhancement>

25 ¹⁴ Betsy Susan Johnson, Malini Laloraya, ScienceDirect (July 1, 2020), *Cytokine Storm*
26 *in COVID-19 patients transforms to a Cytokine Super Cyclone in patients with risk*
27 *factors*, <https://www.sciencedirect.com/science/article/pii/S1359610120301167>

28 ¹⁵ Reuters, *Swiftly waning COVID-19 immunity poses vaccination challenge* (July 14,
2020), <https://www.reuters.com/article/us-health-coronavirus-antibodies-vaccine-idUSKCN24F261>

1 July, 20th 2020 article in *The Atlantic* by Mr. Derek Thompson.¹⁶ In short, the fear over
2 re-infection is false, anecdote-based and rejected by the absences of millions of repeat
3 diagnoses of COVID-19 among those previously infected.

4 12. Due to a surge in testing, more asymptomatic COVID-19 “cases” are being
5 detected. Cross-protection from prior exposure to coronaviruses, including the common
6 cold, is now highly suspected to already have conferred immunity from COVID-19
7 symptomatic disease. The cross-protection may be so effective that in the UK, herd
8 immunity may already have been achieved.¹⁷

9 13. Herd immunity is general immunity in the population achieved when a
10 sufficient number of individuals are immune, either through natural infection or via
11 vaccination to cause viral transmission to end. One estimate from the UK is that only
12 10% infection in a population might provide herd immunity due to such high prior cross-
13 protection due to exposure to other coronaviruses.¹⁸ Eventually, with or without a
14 vaccine, the population will achieve herd immunity, and during that process, the
15 vulnerable – those with comorbid conditions, those with Th2 skewed immunity, and the
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22 ¹⁶ Derek Thompson, *How Long Does COVID-19 Immunity Last?* (July 20, 2020),
23 [https://www.theatlantic.com/ideas/archive/2020/07/could-covid-19-immunity-really-
24 disappear-months/614377/](https://www.theatlantic.com/ideas/archive/2020/07/could-covid-19-immunity-really-disappear-months/614377/)

25 ¹⁷ Daily Mail, *Britain could ALREADY have herd immunity against the coronavirus*
26 *because so many people have had similar illnesses in the past, study claims* (July 17,
2020), [https://www.dailymail.co.uk/news/article-8532935/Britain-herd-immunity-
27 against-coronavirus.html](https://www.dailymail.co.uk/news/article-8532935/Britain-herd-immunity-against-coronavirus.html)

28 ¹⁸ Xiao-yan Che, et al., *Antigenic Cross-Reactivity between Severe Acute Respiratory*
Syndrome—Associated Coronavirus and Human Coronaviruses 229E and OC43,
Journal of Infectious Diseases, Volume 191, Issue 12, (June 15, 2020),
<https://academic.oup.com/jid/article/191/12/2033/839720>

1 elderly, should be cautious about exposure and become educated and ask their doctors
2 for recently reported, safer, potentially highly effective treatment options^{19,20,21}.

3 *Children Are Not A Significant Source of Transmission.*

4 14. The CDC has published a report on the age distribution of transmission to
5 new cases in South Korea, which found that less than 1% of new transmissions detected
6 in the study were attributed to children aged 0 to 10 years; similarly, less than 1% of new
7 transmissions were from children aged 11 to 20 years.²² Within household transmissions,
8 the rates were higher among children than adults, but overall, children accounted for 1.3%
9 of all new transmissions detected.²³ There were two significant limitations in the study;
10 the authors could not determine directionality of transmission (child-adult, adult-child),
11 and the contact tracing that occurred in a population that was, if exposed, put into 14-day
12 quarantine, meaning close, prolonged contact of infected, primarily symptomatic
13 individuals within households.²⁴ The study authors tested all of the household contacts of
14 each patient, regardless of symptoms, but only tested symptomatic contacts outside the
15 household; this could bias the results by increasing the apparent number of total
16 transmissions from (or to) children, due to intimate care of the ill in households.

17 _____
18 ¹⁹ David Brownstein, M.D., et al., Science, Public Healthy Policy and the Law, *A Novel*
19 *Approach to Treating COVID-19 Using Nutritional and Oxidative Therapies* (
<https://www.publichealthpolicyjournal.com/clinical-and-translational-research>

20 ²⁰ Philippe Gautret, et al., *Clinical and microbiological effect of a combination of*
21 *hydroxychloroquine and azithromycin in 80 COVID-19 patients with at least a six-day*
22 *follow up: an observational study*, [https://www.mediterranee-infection.com/wp-](https://www.mediterranee-infection.com/wp-content/uploads/2020/03/COVID-IHU-2-1.pdf)
[content/uploads/2020/03/COVID-IHU-2-1.pdf](https://www.mediterranee-infection.com/wp-content/uploads/2020/03/COVID-IHU-2-1.pdf)

23 ²¹ Daily Mail, *Triple-drug combo of anti-malaria pill hydroxychloroquine, azithromycin*
24 *and ZINC improved coronavirus patients' chances of being discharged and cut death*
25 *risk by almost 50%, study finds* (May 11, 2020)
[https://www.dailymail.co.uk/health/article-8309337/Zinc-hydroxychloroquine-](https://www.dailymail.co.uk/health/article-8309337/Zinc-hydroxychloroquine-effective-COVID-19-patients-study.html)
[effective-COVID-19-patients-study.html](https://www.dailymail.co.uk/health/article-8309337/Zinc-hydroxychloroquine-effective-COVID-19-patients-study.html)

26 ²² [Centers for Disease Control and Prevention, *Contact Tracing During Coronavirus*](https://wwwnc.cdc.gov/eid/article/26/10/20-1315_article)
27 [Disease Outbreak, South Korea, 2020](https://wwwnc.cdc.gov/eid/article/26/10/20-1315_article), [https://wwwnc.cdc.gov/eid/article/26/10/20-](https://wwwnc.cdc.gov/eid/article/26/10/20-1315_article)
28 [1315_article](https://wwwnc.cdc.gov/eid/article/26/10/20-1315_article)

²³ *Id.*

²⁴ *Id.*

1 15. The data from this study has been grossly misinterpreted because they rely
 2 on per-age group apparent rates of transmission. If the total number of transmissions
 3 detected by the study are considered, children aged 10-19 are responsible for (at most)
 4 0.406% of transmissions, far more similar to the 0-9 age group than to adults. (See Their
 5 Table 2; age 0-9 had 2 of 180 tracked people transmitting vs. age 10-19 had 2 of 226
 6 people tracked transmitting).

Age Group	% Total Transmission
0-9	0.371
10-19	0.406
20-29	25.563
30-39	15.279
40-49	16.419
50-59	19.200
60-69	15.369
70-79	3.944
>80	3.391
Total	100%

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Hypothetical Risk to Teachers.

18 16. The only elevated risks to teachers appear to be a hypothetical possibility of
 19 increased risk of miscarriage if the teacher is pregnant and becomes infected with SARS-
 20 CoV-2, and a potential increased risk of hospitalization relative to the full population if
 21 pregnant.²⁵ However, CDC has supported (without FDA approval) the use of both the
 22 influenza vaccine and the Tdap vaccine during pregnancy. A study has found that
 23 military personnel who received the flu vaccine had 36 percent increased risk for
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28 ²⁵ CNN, *Coronavirus infection may make pregnant women more severely ill, CDC says*
 (June 25, 2020) <https://www.cnn.com/2020/06/25/health/coronavirus-pregnant-risks-cdc-study/index.html>

1 coronavirus.²⁶ Other studies support the conclusion of increased risk of viral infections-
2 especially respiratory viral infections – following the influenza shot.^{27,28,29}

3 17. According to the chief medical officer for England, people in the UK who
4 have received the influenza vaccine for this flu season were cautioned to self-isolate for
5 12 weeks because they fall into the government’s “high risk” category for acquiring a
6 SARS-CoV-2 infection.³⁰ This “disease enhancement” from a vaccine is known as
7 “pathogenic priming³¹” which may occur in part due to antibody dependent enhancement.
8 It has inaccurately been referenced as “immune enhancement.”

9 18. **Conclusion:** Contrary to the representation of risk in the mainstream media,
10 there is minimal risk to teachers and students to return to school due to Coronavirus.
11 Teachers receiving vaccinations during pregnancy may be at higher risk to complications
12 if they are vaccinated and become infected with SARS-CoV-2.

13 _____
14 ²⁶ Greg G. Wolf, *Influenza vaccination and respiratory virus interference among*
15 *Department of Defense personnel during the 2017-2018 influenza season*, Vaccine,
16 Volume 38, Issue 30 (June 19, 2020),

17 <https://www.sciencedirect.com/science/article/pii/S0264410X19313647?via%3Dihub>

18 ²⁷ Sharon Rikin, et al., *Assessment of temporally-related acute respiratory illness*
19 *following influenza vaccination*, Vaccine, Volume 36, Issue 15 (April 5, 2018),

20 <https://www.sciencedirect.com/science/article/pii/S0264410X18303153>

21 ²⁸ Heath Kelly, et al., *Vaccine Effectiveness Against Laboratory-confirmed Influenza in*
22 *Healthy Young Children: A Case-Control Study*, The Pediatric Infectious Disease

23 *Journal*, February 2011, [https://insights.ovid.com/pediatric-infectious-](https://insights.ovid.com/pediatric-infectious-disease/pidj/2011/02/000/vaccine-effectiveness-against-laboratory-confirmed/4/00006454)

24 [disease/pidj/2011/02/000/vaccine-effectiveness-against-laboratory-](https://insights.ovid.com/pediatric-infectious-disease/pidj/2011/02/000/vaccine-effectiveness-against-laboratory-confirmed/4/00006454)
25 [confirmed/4/00006454](https://insights.ovid.com/pediatric-infectious-disease/pidj/2011/02/000/vaccine-effectiveness-against-laboratory-confirmed/4/00006454)

26 ²⁹ Benjamin J. Cowling, et al., *Increased Risk of Noninfluenza Respiratory Virus*
27 *Infections Associated with Receipt of Inactivated Influenza Vaccine*, Clinical Infectious
28 *Diseases*, Volume 54, Issue 12 (June 15, 2012),

29 <https://academic.oup.com/cid/article/54/12/1778/455098>

30 *Mirror*, *Coronavirus: Top medic warns anyone who gets the flue jab should stay at*
31 *home* (Mar. 17, 2020), [https://www.mirror.co.uk/news/uk-news/coronavirus-top-medic-](https://www.mirror.co.uk/news/uk-news/coronavirus-top-medic-warns-anyone-21708701)
32 [warns-anyone-21708701](https://www.mirror.co.uk/news/uk-news/coronavirus-top-medic-warns-anyone-21708701)

33 ³¹ James Lyons-Weiler, *Pathogenic priming likely contributes to serious and critical*
34 *illness and mortality in COVID-19 via autoimmunity*, *Journal of Translational*
35 *Autoimmunity*, Volume 3, 2020,

36 <https://www.sciencedirect.com/science/article/pii/S2589909020300186?via%3Dihub>

1 **Closing schools in the Fall will have negative consequences**
2 **for children and their families.**

3 19. There are real, established risks to keeping schools closed this Fall, due
4 primarily to isolation but also to the loss of normative practices in development and
5 learning.

6 20. *Schools are opening around the world.* California has a responsibility
7 among the other 49 states to ensure that our students are not falling behind students
8 around the world. Netherlands reopened in April, and had not enforced social distancing
9 for children under twelve years of age. Due to the positive outcomes, they recently stated
10 they will no longer be enforcing social distancing for children under the age 17.³²

11 21. Denmark, Finland, and Belgium have all also opened without issue. Austria
12 and Germany have reopened. Belgium out for summer but due to positive outcomes will
13 be back to full capacity classes when back in session in Fall. There has been one small
14 outbreak in Germany, with no plans to re-close schools, and Germany plans to drop social
15 distancing standards for students and resume at full capacity classes. Italy has pledged
16 to reopen schools.³³

17 22. In the UK, pediatricians have pleaded for schools to remain open. In an open
18 letter from 1,500 physicians to their government, they report that they are hoping to avoid
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24 ³² Jennifer Couzin-Frankel, *School openings across globe suggest ways to keep*
25 *coronavirus at bay, despite outbreaks* (July 7, 2020),
26 <https://www.sciencemag.org/news/2020/07/school-openings-across-globe-suggest-ways-keep-coronavirus-bay-despite-outbreaks>.

27 ³³ Ashleigh Furlong, *School reopenings in Europe reduce virus concerns – mostly,*
28 *American Association for the Advancement of Science*
<https://www.politico.com/news/2020/06/10/european-school-reopeningsreduce-virus-concerns-for-most-312595>.

1 “scarring the life chances of a generation of young people.”³⁴ UK listened to the
2 pediatricians and have reopened schools on a voluntary basis.³⁵

3 23. It is abundantly clear that children under twelve years of age are not
4 transmitting in schools. Schools across Asia are doing well, including Japan and South
5 Korea; indeed, in Japan, classes are now back to full capacity due to positive outcomes.

6 24. If California does not open schools in the fall, the State could represent a
7 liability for the rest of the country if other States follow suit. Currently, New York State
8 plans to reopen with provisions for distance learning for those students who must stay
9 home – a continuation of the program in place for children who are immunocompromised
10 due to chemotherapy or genetics and must stay home to avoid any infection.

11 25. *Absence of Peer-to-Peer Relationships*. According to a report from The
12 Pennsylvania State University³⁶, “Peer relationships provide a unique context in which
13 children learn a range of critical social emotional skills, such as empathy, cooperation,
14 and problem-solving strategies. Peer relationships can also contribute negatively to
15 social emotional development through bullying, exclusion, and deviant peer processes.
16 Universal, school-based, social emotional learning programs provide a strong foundation
17 for promoting healthy social emotional development and creating positive peer cultures.
18 Children experiencing peer difficulties often need additional, systematic, and intensive
19 social skill coaching. Peers can be powerful forces that facilitate or alternatively
20 undermine group programs.” The report concluded that *Research points to the need to*

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22 ³⁴ *Open letter from UK Paediatricians about the return of children to schools* (June 17,
23 2020) https://www.rcpch.ac.uk/sites/default/files/2020-06/open_letter_re_schools_reopening_2020-06-17.pdf.

24 ³⁵ Michael Birnbaum, *Reopened schools in Europe and Asia have largely avoided*
25 *coronavirus outbreaks. They have lessons for the U.S.*, The Washington Post (July 11,
26 2020), https://www.rcpch.ac.uk/sites/default/files/2020-06/open_letter_re_schools_reopening_2020-06-17.pdf

27 ³⁶ Pepler D, and Bierman K, Pennsylvania State University, *With a Little Help from my*
28 *Friends—The Importance of Peer Relationships for Social-Emotional Development*,
Politico (Dec. 5, 2018), <https://www.rwjf.org/en/library/research/2018/11/with-a-little-help-from-my-friends--the-importance-of-peer-relationships-for-social-emotional-development.html>

1 *not only promote the development of critical social-emotional capacities, but also attend*
2 *to and create positive peer processes to ensure that every child is able to engage in and*
3 *benefit from healthy relationships at home, school, peer group, and community.*

4 26. The importance of peer-peer interactions during social development are well
5 known. On July 21, 2020, The Secretary of California's Health & Human Services
6 Agency, Mark Ghaly, explained how important it is for children to work in teams and be
7 a part of groups.³⁷ Opportunities for this socialization are not likely to occur via distance
8 learning, a non-normative approach to childhood education. Learning these skills does
9 not end at age 10. Californians should be concerned about the ability of their states'
10 children to learn and hone adaptive and optimal social skills at all ages.

11 27. *Isolation/Loneliness.* Like anyone, children who are socially isolated can
12 often develop low self-esteem, as they search for identity with a social group of friends
13 and may find it difficult to easily and readily engage in joint problem solving. They can
14 develop a false sense that the world does not care for them, and they may have a hard
15 time learning age-appropriateness from their peers.

16 28. Consider a quote in *The Atlantic* from Camille Farrington, an education
17 scholar at the University of Chicago who studies the ways students' emotions and
18 mindsets influence learning, in an article on the long-term consequences of missing
19 school: "*(P)oor attendance itself can cause problems with healthy development because*
20 *of the disruption it causes to academic achievement (and learning) and to social*
21 *connections with peers and adults at school.*"³⁸

22 29. *Psychosocial Consequences.* Beyond these obvious effects, we may also
23 expect to observe increased incidence of acting-out behaviors as children try to cope with
24 the psychosocial effects not only of isolation but also fear of the unknown. We may see
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27 ³⁷ Secretary Mark Ghaly, MD, MPH, California Health & Human Services Agency
(July 21, 2020) https://www.youtube.com/watch?v=phBogH_sE-8

28 ³⁸ Mikhail Zinshteyn, *The Long-Term Consequences of Missing School*, *The Atlantic*
(Sept. 6, 2016), <https://www.theatlantic.com/education/archive/2016/09/long-term-consequences-of-missing-school/498599/>

1 increased rates of low self-esteem, depression, anxiety, concomitant increased use of
2 psychotropic medicines, and suicide.

3 30. *Negative Influences on Scholarship.* In addition to the psychosocial and
4 psychological effects, failure to open schools could foster a drop in the appreciation for
5 the craft of scholarship. This could lead to increased attrition and a decrease in college
6 enrollment.

7 31. *Future Fiscal Impact.* Due to lost opportunities and abilities to learn,
8 students who fail to graduate from high school on time will forever be one year behind
9 in their career development, significantly impacting their lifelong financial trajectories -
10 including lost wages, lost contribution to their retirement accounts, etc. The same could
11 be expected for students who graduate, but whose grades suffer due to a depreciated
12 learning arrangement. Many families will incur an extra year – or more – of cost of
13 dependency of high school seniors living at home for an extra year.

14 32. *Lost Scholarship Opportunities.* Athletes will lose their edge in competitive
15 and non-competitive sports and fail to be competitive for the thousands of scholarship
16 opportunities for access to college education both within and outside of the State of
17 California. There are about 178,000 athletic scholarships³⁹ awarded per year across the
18 nation; California's young, bright athletes may be left out of the running for these life-
19 changing opportunities for athletic scholarships in CA and nationwide.

20 33. Scholarship opportunities for academically gifted students will similarly be
21 lost, placing Californian students at a competitive disadvantage nationally. Most
22 academically talented students will likely prove to be autodidacts – student able to learn
23 on their own; as a result, California public schools may well lose their most gifted
24 students to home schooling, reducing the availability positive peer role models.

25 34. *Lack of Access to Technology.* Students across the State of California
26 benefit from access to and training in the use of technology in the classroom. Online
27 training may be considered appealing to effect physical isolation to reduce the spread of
28 SARS-CoV-2, and it is true that such a system would likely reduce the already very low

³⁹ <http://scholarshipstats.com/totalscholarships.html>

1 probability of transmission of new cases originating from children. However, such a
2 system would place low-income students at a disadvantage, exaggerating the digital
3 divide between the well-off and the low-income segments of the population.

4 35. Home PCs and laptops may not be available to some students because their
5 parents may require them during school hours for employment duties. About 3.4% of the
6 US population worked at home prior to COVID-19⁴⁰; that percentage has now
7 skyrocketed.

8 36. *Domestic Violence Risk.* Many California families are out of work due to
9 COVID-19 and are in economic hardship due to the closure of small businesses. This
10 leads to a strain on mental health. Indeed, California doctors reported seeing higher deaths
11 from suicide than from COVID-19 during the most severe lockdowns.⁴¹ Children may
12 also be at increased risk of harm from physical abuse. CBS News reported that the UN
13 estimated that six months of COVID-19 lockdown could lead to 31 million more cases
14 of domestic violence worldwide,⁴² with an additional 15 million every three months
15 thereafter. Sadly, victims may feel increasingly dependent on their abusers, leading to a
16 reduction in the number of calls to domestic abuse hotlines in California⁴³. The safety
17 valve of having children involved in a public forum with face-to-face contact—in which
18 such cases of abuse can come to light, or better yet, be prevented altogether, because the
19 perpetrator at home perceives risk of discovery—is all but lost if schools fail to open.

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21
22 ⁴⁰ <https://www.flexjobs.com/blog/post/remote-work-statistics/>

23 ⁴¹ Washington Examiner, *California doctors say they've seen more deaths from suicide*
24 *than coronavirus since lockdowns* (May 21, 2020),
25 [https://www.washingtonexaminer.com/news/california-doctors-say-theyve-seen-more-](https://www.washingtonexaminer.com/news/california-doctors-say-theyve-seen-more-deaths-from-suicide-than-coronavirus-since-lockdowns)
26 [deaths-from-suicide-than-coronavirus-since-lockdowns.](https://www.washingtonexaminer.com/news/california-doctors-say-theyve-seen-more-deaths-from-suicide-than-coronavirus-since-lockdowns)

27 ⁴² CBS News, *6 months of coronavirus lockdown could mean 31 million more cases of*
28 *domestic violence, UN says* (April 28, 2020),
29 [https://www.cbsnews.com/news/domestic-violence-additional-31-million-cases-](https://www.cbsnews.com/news/domestic-violence-additional-31-million-cases-worldwide/)
30 [worldwide/](https://www.cbsnews.com/news/domestic-violence-additional-31-million-cases-worldwide/)

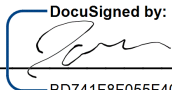
31 ⁴³ ABC News, *Fewer domestic violence calls during COVID-19 outbreak has*
32 *California officials concerned* (April 25, 2020), [https://abcnews.go.com/US/fewer-](https://abcnews.go.com/US/fewer-domestic-violence-calls-covid-19-outbreak-california/story?id=70336388)
33 [domestic-violence-calls-covid-19-outbreak-california/story?id=70336388](https://abcnews.go.com/US/fewer-domestic-violence-calls-covid-19-outbreak-california/story?id=70336388)

1 37. *Restriction of Access to IEP Assistance.* California is home to over 795,000
2 special needs students⁴⁴ who receive government-mandated individual Education
3 Program assistance. Failing to open schools would result in a loss of access to such
4 services to many hundreds of thousands of students. Failure of school districts to provide
5 those services in a pedagogically effective manner denies these citizens of the rights
6 provided by California and Federal mandates. Disenfranchisement of the disabled
7 student, of course, means excess burdens on families of students with disabilities as well.

8 38. **Conclusion:** Having carefully studied the scientific data surrounding
9 COVID-19 and compared it to the harm that will come to students in California should
10 schools be not allowed to open, my conclusion is that harms inflicted on students and
11 their parents of closing schools drastically outweigh the very low risk of harm to students
12 from opening schools.

13
14 I declare under penalty of perjury under the laws of the United States of America
15 that the foregoing is true and correct.

16
17 DATED this 27th day of July 2020

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20 BD741F8F055F40A...
21 James Lyons-Weiler, Ph.D.

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44 California Department of Education, <https://www.cde.ca.gov/sp/se/sr/cefspeced.asp>

EXHIBIT 5

NAME James Lyons-Weiler		POSITION TITLE	
eRA COMMONS USER NAME (credential, e.g., agency login)		CEO/President/Director/Scientist Institute for Pure and Applied Knowledge	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
State University of New York, Oswego, NY	B.A.	8, 1991	Biology
Ohio State University	M. Sc.	6, 1993	Zoology
The University of Nevada, Reno	Ph.D.	6, 1998	Ecology, Evol & Conservation Biology
Pennsylvania State University	Postdoctoral	2000	Computational Molecular Biology

A. Personal Statement

My research program is focused on improving healthcare via the development of treatment efficacy and risk biomarkers, optimizing clinical interventions after adverse events, and understanding the neurological and immunological basis of vaccine injuries. I have been performing collaborative research with DNA sequence data since 1996, microarray gene expression data since 1998, proteomic data since 2003, and next generation sequencing since 2009 in cancer, immunology and neurobiology. I have participated in program-level consortia including the NCI's Early Detection Research Network, caBIG, and managed a large multi-institutional consortium in Proteomics and Bioinformatics (funded via TATRC). With a deep understanding of the effects of data preprocessing algorithms on the validity of downstream statistical inferences, and fundamental comprehension of principles of ecology and evolutionary theory, I have developed novel paradigms for high-dimensional -omic analyses, including advances in statistical methods for variant calling, transcriptional profiling, machine-learning based prediction modeling, integrative translational research via decision modeling, covariate matching for case/control selection, and for the statistical evaluation of survivorship prediction models. These advances are applied via intelligent methods optimization, in which empirically optimized data analysis protocols are arrived at routinely via systematic comparative evaluative methodological research & development to insure reproducibility. I have directed the successful analysis of at least twenty-five Next Generation Sequence data sets with various applications from whole microbial and mouse genome sequencing to from various platforms for transcriptomics, variant detection, ChipSeq, methylomics, and whole genome/exome sequencing. The algorithms I have developed are current in use by many labs as they provide information measures reflective of both data quality and algorithm performance using objective evaluation measures. I have written books on Ebola, Translational Research and Autism. I founded the Institute for Pure and Applied Knowledge to conduct biomedical and translational research in the public interest.

Positions and Honors

- 1998-2000 AP Sloan/US Department of Energy Postdoctoral Fellow in Computational Molecular Biology
- 1998-2001 (Awarded but declined) NIH National Research Service Award in Bioinformatics
- 2000-2002 Assistant Professor, University of Massachusetts, Lowell, Department of Biological Sciences
- 2000-2002 Co-Director, Center for Bioinformatics and Computational Biology, University of Massachusetts, Lowell
- 2002-2007 Assistant Professor, University of Pittsburgh School of Medicine, Department of Biomedical Informatics; Core Faculty Member, Biomedical Informatics Training Program; Department of Pathology; Fully Associated Faculty Member, University of Pittsburgh Cancer Institute
- 2007-2014 Scientific Director, Bioinformatics Analysis Core Service, University of Pittsburgh; Adjunct Assistant Professor, Department of Biomedical Informatics, University of Pittsburgh
- 2014-present CEO/Director/Scientist, Institute for Pure and Applied Knowledge

Other Experience and Professional Membership

2019-present Editor in Chief, *Science, Public Health Policy & the Law*
2016-2019 Editorial Board, *Cancer Research*
2004-present Member, *Society for Experimental Biology*
2004-2006 Associate Editor, *Applied Bioinformatics*
2006-2007 Founding Editor-in-Chief, *Cancer Informatics*
2002-2012 NIH Grant reviewer
2008-2010. Grant Review Committee, New Jersey Commission on Cancer Research
2009 Member, The Society for Clinical and Translational Science

B. Selected Peer-Reviewed Publications

Most relevant to the current application

Lyons-Weiler J. 2020. Pathogenic Priming Likely Contributes to Serious and Critical Illness and Mortality in COVID-19 via Autoimmunity. *J Transl Autoimmun.* 2020 Apr 9:100051. doi: 10.1016/j.jtauto.2020.100051.

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF SEAN G.
KAUFMAN IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, SEAN G. KAUFMAN, declare as follows:

24 1. I am a certified public health professional (CPH), behaviorist, health
25 education and infectious disease specialist, with particular expertise in both behavioral-
26 based training and infectious disease risk mitigation in clinical, laboratory and other
27 public health settings. I make this declaration of personal, firsthand knowledge, and if
28 called and sworn as a witness could and would testify competently thereto.



1 2. I received my Bachelor of Arts and Sciences in Psychology in 1996 from
2 San Diego State University in San Diego, California. In 1999, I received my Master in
3 Public Health in Health and Human Behavior, also from San Diego State University in
4 San Diego California.

5 3. From 1997 to 1999, I was employed as a Project Manager and Health
6 Education Specialist at San Diego State University in San Diego, California, serving in
7 the Student Health Services Office of Health Promotion. In that role, I provided
8 training programs, counseling and patient services for a variety of health issues.

9 4. From 1999 through 2006, I worked for the Centers for Disease Control and
10 Prevention (“CDC”) in Atlanta, Georgia, serving during my tenure in CDC’s National
11 Center for HIV, AIDS and Tuberculosis, CDC’s National Center for Infectious
12 Diseases, CDC’s Office of Terrorism and Emergency Response and the Office of the
13 Director of the CDC. While with the CDC, I assisted with the CDC’s response to HIV,
14 the 9/11 and 2001 anthrax attacks, the West Nile Virus, SARS and monkeypox. I
15 received a Distinguished Service Award from the United States Department of Health
16 and Human Services in 2002 for outstanding contributions and public health activities
17 in response to the 9/11 and subsequent anthrax attacks. I also received a Distinguished
18 Service Award from the United States Department of Health and Human Services in
19 2003 for outstanding contributions and public health activities in response to the 2003
20 SARS outbreak.

21 5. From 2004 through 2014, I served as Senior Associate and Director of the
22 Science and Safety Training Program in the Rollins School of Public Health at Emory
23 University in Atlanta, Georgia. During my association with Emory University, I
24 developed and directed the Biosafety Laboratory 3 (“BSL3”) and BSL4 Science and
25 Safety Training Program along with the ONSITE program, all of which programs
26 trained individuals both domestically and internationally to work safely in and support
27 high-containment laboratories equipped to handle the most infectious and dangerous
28 biological agents in the world. While associated with Emory University, I trained and

1 managed those who clinically treated the first two Ebola patients in the United States
2 working at the Emory University Isolation Unit during the 2014 Ebola outbreak.

3 6. From 2011 through the present, I have served as the Founding Partner,
4 President and Chief Executive Officer of Safer Behaviors (USA), where I serve as an
5 expert consultant in behavioral-based training around infectious diseases in clinical and
6 laboratory settings. In that role, I develop, manage, implement, and deliver a wide
7 range of services for people working with and around infectious diseases, including
8 those in laboratories, healthcare settings, and high-containment work environments,
9 Applied Laboratory Emergency Response Training (ALERT) Programs for first
10 responders, Personal Protective Equipment (“PPE”) Training Programs, Emergency
11 Communication Leadership Programs, and Biological Risk Mitigation Training for
12 those serving on the frontline of emerging infectious diseases. .

13 7. Since 2014, I have provided Advanced Biological Risk Mitigation
14 Training Programs with the American Society for Microbiology (ASM), National
15 Institutes of Health (NIH), Fogarty International Center, CRDF Global throughout
16 Pakistan, Egypt and Malaysia. I have consulted for the World Health Organization
17 (WHO) and developed its Shipping of Infectious Substances Training and its
18 Identification of Polio Samples for Eradication Efforts. In 2015, I received the John H.
19 Richardson Special Recognition Award from the American Biological Safety
20 Association, recognizing outstanding contributions that have enhanced ABSA and the
21 profession of biological safety.

22 8. My publications include the following: (a) *Anthrax in New Jersey: A*
23 *Health Education Experience in Bioterrorism Response and Preparedness*, HEALTH
24 PROMOT. PRACT. 6:430-36 (2005); (b) *Biosafety Behavioral Based Training for High*
25 *Biocontainment Laboratories: Bringing Theory into Practice for Biosafety Training*,
26 APPLIED BIOSAFETY J. 12:3 (2007); (c) *Review of the Emory University Applied*
27 *Laboratory Emergency Response Training (ALERT) Program*, APPLIED BIOSAFETY J.
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6 *Leadership Commitment to the Preparedness, Protection and Promotion of Scientists*,
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8 *Biological Safety Principles and Practices: Chapter 28 – A One-Safe Approach.*
9 *Continuous Safety Training Initiatives*, ASM PRESS (2017); and (h) *Prepare and*
10 *Protect: Safer Behaviors in Laboratories and Clinical Containment Settings*, ASM &
11 WILEY PRESS (2020).

12 9. I am an International Federation of Biosafety Professionals Certified
13 Professional in Biorisk Management, am certified as an MBTI Certified Provider by GS
14 Consultants, hold a Certification in Public Health provided by the National Board of
15 Public Health Examiners and have been accredited as a Certified Health Education
16 Specialist by the National Commission for Health Education Credentialing.

17 10. In or about November 2019, while directing a Leadership Program in
18 Biological Risk Mitigation in Islamabad, Pakistan, I first became aware of an outbreak
19 of what was ultimately determined to be a novel coronavirus, SARS COV-2, in Wuhan,
20 China, that the world has since come to commonly refer to as COVID-19.

21 11. Over the ensuing months, as part of my biosafety work and regular
22 professional development, I have engaged in a thorough review of WHO and CDC data
23 and the reams of international and domestic scientific data that have been published
24 regarding COVID-19 in *The Lancet*, *Dispatch*, *The New England Journal of Medicine*,
25 *JAMA*, *Clinical Infectious Diseases* and other publications, as well as the outcomes of
26 prevailing international and domestic and international biosafety protocols associated
27 with COVID-19. I have also facilitated multiple trainings, discussions, and assisted
28

1 organizations with strategies minimizing risks to health and safety specific to COVID-
2 19.

3 12. Through that process, I have become readily familiar with COVID-19's
4 droplet (micro and macro) and surface transmission, the risks and likelihood of
5 symptomatic and pre-symptomatic transmission, reproduction rates, signs, symptoms,
6 mortality, risks and other infectious disease characteristics of COVID-19 across the
7 population – including in both children and adults, as well as those with co-morbidities.
8 I have put that ongoing review, as well as my education and twenty-five years of public
9 health experience, to use in implementing and evaluating COVID-19 public health and
10 safety protocols, including with respect to public health expertise I am currently
11 providing to, among others, large-scale venues and film and television productions on
12 safe operating procedures and protocols.

13 13. I understand that the State of California currently claims that there is no
14 way, consistent with science and public health, for schools located within any county
15 that is either on or any less than 14 days removed from the State of California's
16 COVID-19 "monitoring list" – the precise criteria for which "monitoring list" are
17 opaque but appear to require some combination of what the state deems to be a
18 COVID-19 "surge" in infections or hospitalizations, what the state deems to be
19 "stretched" ICU bed or ventilator capacity, or what the state deems to be "insufficient"
20 COVID-19 testing – to open their doors to in-person instruction of children and to do so
21 safely. As such, I understand that the default position of the State of California is that
22 the science of public health dictates that no school located in California counties on the
23 "monitoring list" can open for in-person instruction at all absent, at minimum, a
24 difficult-to-obtain waiver that most districts will not seek.

25 14. Despite the state's claim, there is no rational and legitimate scientific or
26 public health basis supporting the sweeping breadth and scope of the State of
27 California's above-described closure mandate. Rather, given the real and significant
28 public health and other harms known to be associated with school closures, such

1 closures are only ever properly wielded as a disease control mechanism when the risks
2 to children are far greater; when such closures are far more targeted – often at the
3 individual school level; and far more limited in time. None of these criteria are met by
4 the State of California’s school closure mandate.

5 15. With respect to risks, everything that we know as public health and
6 infectious disease professionals about the likelihood of symptomatic and pre-
7 symptomatic transmission, reproduction rates, signs, symptoms, mortality, risks and
8 other infectious disease characteristics of COVID-19 in both child and adult
9 populations both domestically and internationally does not rationally comport with what
10 I understand the state is claiming to be true in attempting to justify its mandate. Indeed,
11 commonly utilized Susceptible, Infectious, and Recovered – or “SIR” – disease
12 transmission modeling associated with COVID-19, together with WHO and CDC
13 public health metrics, suggest that California’s mandate is likely to make the overall
14 public health situation worse and not better by, *inter alia*, enlarging the population of
15 susceptible individuals.

16 16. With respect to targeting, the sweeping nature of the State of California’s
17 closure mandate shows that it is not rationally targeted as an infectious disease control
18 mechanism. There is no public health reason that a school in an unaffected portion of a
19 California county must be prohibited from operating because of an outbreak in an
20 affected portion of a California county. Moreover, it is simply not true for the State of
21 California to claim that there is no way to safely operate as a school in a county that
22 meets the state’s criteria for placement on its “monitoring list.” While nothing is ever
23 free from any risk, the data shows that any school in any California county that (1)
24 removes from the in-person school environment for between 5-7 days any student that
25 (i) reports having been in contact with a person who is COVID-19 positive; or (ii) has
26 exhibited COVID-19 symptoms; (2) engages in temperature screening of all students,
27 staff and visitors at points of entry, denying such entry to anyone who has a fever; (3)
28 quickly and aggressively tests, isolates and contact traces any child or staff member

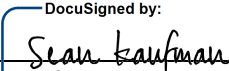
1 presenting with COVID-19 symptoms; and (4) teaches, enforces and engages in
2 frequent handwashing, sanitization and decontamination of high travel points within the
3 school environment, may be said to meet commonly accepted public health definitions
4 of safe operating that minimize risks. From a public health and infectious disease
5 control perspective, all of these features are both feasible and sustainable at minimum
6 cost within a typical school environment.

7 17. And with respect to being limited in time, the State of California’s school
8 closure mandate is not properly time-limited as a matter of public health and infectious
9 disease control. To the extent the State of California may expect a vaccine at some
10 point in the future, it should be noted that a vaccine has never been developed for a
11 coronavirus like COVID-19. And even if developed and sufficiently adopted, any
12 COVID-19 vaccine is likely to be similar to influenza vaccines that have been shown to
13 quickly lose effectiveness. The latest COVID-19 data shows that the disease is not
14 likely to ever be eradicated.

15 18. In short, the State of California’s overbroad and insufficiently targeted
16 school closure mandate is flatly inconsistent with the science of public health, biosafety
17 protocols and with our understanding as infectious disease professionals of the
18 characteristics of the COVID-19 virus.

19 I declare under penalty of perjury under the laws of the United States of America
20 that the foregoing is true and correct.

21 Executed this 26th day of July 2020, at Woodstock, Georgia.

22
23 
24 Sean G. Kaufman
25
26
27
28



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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF CHARLES
CICCHETTI IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, CHARLES CICCHETTI, declares as follows:

24 1. I am a resident of the State of California. I am a Managing Director at
25 Berkeley Research Group, Inc. I prepared my affidavit *pro bono*. The views are my
26 own and do not reflect the views of any entities with which I am affiliated.

27 2. I am an economist with a BA from Colorado College (1965) and a Ph.D.
28 from Rutgers University (1969), and three years of Post Graduate Research at
Resources for the Future (RFF). I was formally trained in statistics and econometrics



1 and accepted as an expert witness in statistics and econometrics in federal court.¹ In the
2 course of my work I regularly use epidemiology models and advanced statistical
3 techniques. I have written expert reports analyzing toxic chemical and health effects,
4 including three reports used in settlements related to the health and cancer risks related
5 to TCP in drinking water. I have written three monographs in support of litigation
6 related to federal regulations based on morbidity and mortality risks from air pollution:
7 *Why EPA's Mercury and Air Toxics Rule is Good for the Economy and America's*
8 *Workforce*, July 2011; *Expensive Neighbors: The Hidden Cost of Harmful Pollution to*
9 *Downwind Employers and Businesses*, January 2011; *The True Cost of Harmful*
10 *Pollution to Downwind Families and Business*, November 2010.² In much of my work
11 I design surveys, draw random samples and tests the data for statistically significant
12 differences. I also have been asked to evaluate the work of other experts and to opine
13 on the data used to draw conclusions and the significance of omitted variables and
14 ignored facts.

15 3. I testified as an expert hundreds of times since my first testimony in 1967
16 before regulators, arbitration panels, state and federal courts in Canada and the United
17 States. Much of my work involves data analysis and interpretation, sampling and
18 survey design.

19 4. I commenced my professional career after completing my academic and
20 post-doctoral studies and eventually became a tenured Professor of Economics and
21 Environmental Studies at the University of Wisconsin from 1972 to 1985. For the first
22 three years I also served as the first economist for the Environmental Defense Fund

23 ¹ For example, I analyzed the American Cancer Society's million-person health data
24 and a Meta study of the combined health risks of smoking and asbestos exposure for a
25 deposition in California Court in *Raybestos-Manhattan of Whiteley v. Raybestos-*
26 *Manhattan*, Case No. 303184, November 30, 1999. More recently, I provided an expert
27 report in *San Diego Unified Port District v. Monsanto*, No. 3:15-CV-0578 (S.D. Cal.
28 Apr. 5, 2019).

² The last two monographs were prepared for Exelon in response to EPA's proposed
Transport Rule under the Clean Air Act.

1 (EDF). From 1975 through 1976, I served as the Director of the Wisconsin Energy
2 Office and as Special Energy Counselor for the Governor. In 1977, I was appointed by
3 the Governor as Chair of the Public Service Commission of Wisconsin (“PSCW”) and
4 held that position until 1979 and served as a Commissioner until 1980.

5 5. I am a consultant and expert witness. During much of my career I taught
6 economics and public policy. From 1987 until 1990, I served as Deputy Director of the
7 Energy and Environmental Policy Center at the John F. Kennedy School of
8 Government at Harvard University. After teaching part time, in 1998, I accepted the
9 Jeffrey J. Miller Chair in Government, Business and the Economy at the University of
10 Southern California, which I held until 2006. I returned to a part time role at USC,
11 where I currently meet with students who study lectures that I pre-recorded. I served on
12 the California Governor’s Market Advisory Group responding to the California Energy
13 Crisis in 2000. I joined Berkeley Research Group as Managing Director in 2016. A
14 true and correct copy of my *c.v.* is attached as Exhibit 6.

15 6. I reviewed the Complaint the Dhillon Law Group filed for Declaratory and
16 Injunctive Relief on behalf Mathew Brach and other Plaintiffs against Gavin Newsome
17 and others to challenge California adopting a new wave of COVID-19 restrictions
18 “barring in-person schooling for most children in California.”

19 7. The purpose of my Affidavit is to explain California’s guidelines that will
20 cause California’s public and private schools to remain shuttered this fall and harm
21 millions of children and their parents. I show that California’s exclusive reliance on the
22 number of COVID-19 “cases” to quantify health risks is too narrow a focus. Very
23 importantly the number of cases tracks the level of testing, which has been ramped-up.
24 This quantum omits other measures of morbidity and mortality that are better indicators
25 of health risks and provide much more accurate measures of changes in health risks
26 over time.

27 8. School closings ignore the stubborn fact that school-age children are not
28 very susceptible to COVID-19 health risks. Teachers and staff are younger than the

1 more at risk seniors. The CDC and California health officials have designed steps that
2 school children should follow, distancing protocols, sanitation and other things to
3 protect children, teachers and staff. Hard data, experience from other nations and
4 sensible steps greatly reduce the health risk of schools reopening in California. There
5 also would be the added benefits of providing a safe and secure place for kids and
6 avoiding critical damages from interrupting and losing what could easily be 10% of a
7 child's elementary and secondary education.

8 9. This action California has taken seems predicated partially on a belief that
9 California is experiencing a worsening in COVID-19 related health conditions. The
10 primary data used to support the conclusion that things are worse in California is the
11 dramatic rise in positive cases reported daily. No death or serious illness should be
12 ignored. California has its share of both. That said, trade-offs are mostly necessary to
13 achieve the Public Interest reflecting a sober balance of benefits and costs. Very
14 importantly, other data related to testing and health must be considered. I teach my
15 students and testify routinely explaining that "omitting variables" biases conclusions.
16 Facts ignored result in flawed public policy.

17 10. In practical terms concentrating on a single measure of health risk to
18 determine the best response omits a great deal, which leads to biased conclusions and
19 can result in faulty policy choices. California relies heavily, if not exclusively on
20 COVID-19 case counts (cases), to determine if various counties should slow down,
21 accelerate or reverse opening businesses, gathering places and more. More specifically,
22 the California Department of Public Health (CDPH) issued "Guidance on Closure of
23 Sectors in Response to COVID-19" on July 1, 2020. The state monitors counties to
24 determine what can open, remain shuttered, and closed after reopening.

25 11. The current Guidance continues the May 7, 2020 Order of the State Public
26 Health Officer that relies on confirmed cases requiring "stable rates of infections",
27 based on new infections, hospitalizations, surge capacity, improved ability to test,
28 contract trace, isolate and provide support to individuals exposed. Two refer to medical

1 matters directly. “Cases” mean people who test positive for a COVID-19 infection.
2 “Hospitalizations” refers to available capacity including standard non-Covid-19
3 patients, current Covid-19 patients in hospital care and potential surges in patients
4 needing hospital care. The description of hospitalizations anticipates that some
5 treatments and surgeries can be postponed. This makes the potential supply of beds,
6 ICU and ventilator resources somewhat elastic because it is reasonable to free-up
7 resources if an “acute care surge” in COVID-19 patients were to hit California’s
8 hospitals. (I explain below that California counties mostly satisfy the standards based
9 on maintaining hospital capacity.)

10 12. The CDPH formulates its “opening” or the more pessimistic “shuttering”
11 criteria for counties and sub-political units with a variance form, “Covid-19 County
12 Variance Attestation Form”. This provides a roadmap that allows political sub-divisions
13 to seek to alter the state’s rules on what can open in either direction.

14 13. The CDPH publishes its data that monitors its “opening” criteria daily. As
15 of July 23, 2020. Only 6 of 58 counties exceeded the 3-day criteria for increased
16 hospitalizations for COVID-19 and other patients by more than 10%. Two of the six
17 were 10.5% or less. None of the counties had less than the 25% of stand-by ventilator
18 capacity criteria. Only 12 of the 58 counties missed the stand-by ICU bed availability
19 criteria of 20%. Based on hospital resource availability criteria, virtually all schools in
20 California could re-open this fall.

21 14. The number of new cases being reported is the criteria that drives school
22 closings in California. Most counties are performing the required number of tests. Four
23 counties had fewer than the CDPH criteria of 150 tests performed per 100,000 people
24 based on a 7-day average with a 7-day lag. Nevertheless, three³ passed at least one of
25 the “Case Rate” criteria based on less than 100 per 100,000 over 14 days, or less than a
26 25 case rate and positivity less than 8%. The other 54 counties exceeded the number of

27 _____
28 ³ Glenn county with a population of about 28,000 did not satisfy the state’s number of
testing and case level criteria.

1 tests per day criteria, but could not satisfy the case level criteria for re-opening. There
2 were 23 counties with case rates that exceeded both the CDPH threshold elevated case
3 rate criteria. There were another 14 counties that did not CDPH's case rate per 100,000
4 (14 day) criteria. These 37 counties could not seek a variance. Others would need to
5 file a variance to re-open.

6 15. It is logical to expect that the number of tests performed and cases reported
7 would be highly correlated. Put simply more testing will yield more positive cases
8 being reported. The only exceptions would reflect differences in demographic and
9 medical conditions in the additional people being tested. In the early days of covid-19
10 most testing was done at hospitals where people who were very sick were omitted and
11 for first responders and medical-care providers. The former were almost certainly
12 infected. The first responders were often healthy and relatively younger than the senior
13 citizens who were very prone to being infected and becoming sick.

14 16. By mid-April testing was ramping up. Prior testing samples were not
15 random. The initial expanded testing involved self-selecting and this skewed early
16 results, but the initial bias was reduced. By mid-May there were 10 million tests
17 performed and a month later in mid-June the total number of tests doubled. In July total
18 testing nationwide approaches 50 million. Testing remains mostly self-selection.
19 Nevertheless, with the number of tests approximating 15% of the population the "law of
20 large numbers" results in the sample mean moving closer to the average of the whole
21 population. For this reason, with more testing the underlying statistics related to
22 infection rates and deaths become more stable. Nationally, the 7-day average infection
23 rate per test using the Johns Hopkins University (JHU) data is 8.5%. The current
24 national death rate across all demographic groups is about 43 people per 100,000. The
25 deaths per infected case nationwide average 3.7%.

26 17. California is a state with about 40 million people. The number tested is
27 about 6.7 million, or nearly 17%. California has a lower corresponding infection rate of
28 about 7.6% than the national average. Current deaths for all demographic groups are

1 19.9 people per 100,000 or less than half the national rate. In California the deaths per
2 infected case averages less than 2.0%.

3 18. The JHU and CDC data show that between mid-May through today that as
4 testing was ramped up cases reported and thus infections 100,000 increased
5 proportionally. The CDPH criteria for seeking a variance to open businesses and
6 schools is based on the cases reported at a county level. With high and growing levels
7 of testing this effectively means shuttering schools and businesses.

8 19. Other states have not implemented what is in effect a statewide ban on
9 school re-opening. This is despite the fact that California has not suffered as much as
10 the rest of the nation and other large states. See the following table⁴. Further, since
11 early July confirmed new cases and deaths have stabilized in California based on
12 moving average data.

13
14 **Politico Summary top five states (July 22, 2020)**

	Deaths	Pos Cases	Tests	Population
15 NY (all)	25,506	407,326	5,164,812	19 million
16 CA	7,694	391,538	6,414,321	40 million
17 FL	5,183	360,394	3,052,106	21 million
18 TX	4,020	332,434	2,984,554	29 million
19 NJ	15,715	176,963	1,802,874	8.9 million

20
21 California has less mortality and morbidity relative to its population size compared to
22 national data and the other large states shown except for Texas with respect to deaths
23 relative to population. California's infection rate of positive cases divided by the
24 number of tests using the Politico data is 6.1%. Nationwide there are about 4.17 million
25 positive cases with about 4.86 million cases for an infection rate nationally of 8.6%.
26 California has less than half the national mortality rate and lower infection rates.

27
28 ⁴ Politico data is used because CDC data separate New York and New York City.

1 20. Other than case growth consistent which is directly tied to the number of
2 tests, there is no evidence that California should continue to shutter schools. There is
3 insufficient evidence or facts to justify the exceptional decision to close virtually every
4 school in the state. The use of the number of cases to drive this policy obfuscates
5 matters and yields a flawed statistic and a costly policy choice all things considered.

6 21. California effectively bans all schools from reopening because it adopted a
7 nearly impossible to achieve “variance” application process. Virtually every county
8 could pass the hospitalization and critical medical resource availability criteria the
9 CDPH adopted for reopening. However, a relatively constant infection rate, regardless
10 of having lower infection rates than other states, means that maintaining daily testing
11 levels will yield more cases. Expanding testing as planned in some counties will
12 actually further increase the number of reported cases. Headlines will proclaim a
13 growing health threat and mostly ignore the stubborn fact that the more people tested
14 the more cases will be detected. Worse, the CDPH criteria will make it impossible with
15 expanded testing for variances to be granted.

16 22. Medical treatments are reportedly showing improvements in recovery and
17 reducing the time COVID-19 patients need to be hospitalized and given extensive
18 treatment. This is good news and deaths in California are also stabilizing since early
19 July. Such successes are mostly good news. Nevertheless, they mask some important
20 data that should affect the reasonableness of shuttering schools this fall.

21 23. The CDPH reported on July 21, 2020 (shown below) there were no deaths
22 for children under 17 in California related to COVID-19. The following table shows the
23 race and ethnic breakdown when the information was reported. The actual number of
24 cases in this category is 37,335 with 34% not reporting race/ethnicity.



1 **Proportions of Cases and Deaths by Race and Ethnicity Among Ages 0- 17**

2

3

4

5

Race/Ethnicity	No. Cases	Percent Cases	No. Deaths	Percent Deaths	Percent CA Population
6 Multi-Race	173	0.7	0	0.0	4.0
7 Latino	16,481	67.3	0	0.0	47.9
8 White	2,231	9.1	0	0.0	29.2
9 Asian	561	2.3	0	0.0	12.7
10 African American	567	2.3	0	0.0	5.4
11 American Indian	36	0.1	0	0.0	0.4
12 Native Hawaiian and other Pacific Islander	70	0.3	0	0.0	0.3
13 Other	4,364	17.8	0	0.0	0.0
14 Total	24,483	100.0	0	0.0	100.0

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21 This comparison shows that Latino children have 2/3 of the reported COVID-19

22 cases and are less than half the sample. For the children that report race/ethnicity,

23 Latino children appear to be at much greater risk of infection. There are no deaths for

24 any children across California. Non-white children represent more than 70% of the

25 infected cases. The different race/ethnicity effects are made worse to the extent there is

26 a similar correlation with respect to access to educational resources during school

27 closings.

28

1 24. Older California residents are more likely to be infected and some will die.
2 The health risks increase with age. The CDPH have compiled the following data with
3 somewhat higher case levels than JHU and CDC. The following table shows the age
4 breakdown of cases and deaths in the CDPH data.

5 **CDPH Infection and Death**
6 **July 21**

7 Age	8 Cases	9 Percent %	10 Deaths	11 Percent %
12 0-17	37335	8.8	0	0
13 18-34	149968	35.3	97	1.2
14 35-49	106885	25.1	429	5.4
15 50-64	82217	19.3	1371	17.3
16 65-79	33529	7.9	2565	32.3
17 80 plus	15215	3.6	3487	43.9
18 Total	425149	100	7949	100

18 More than 76% of deaths in California were people 65 and older, but just about
19 11.5% of the infections. This shows based on age alone that most teachers and staff in
20 schools, who are likely less than 65 have much lower mortality risk. If adults in schools
21 who have pre-existing conditions are protected as the CDPH Guidelines specify, this
22 further reduces teacher and staffing risk.

23 25. I conclude that school age children are not at risk form serious COVID-19
24 and the minimal general risk can be further reduced using the Guidelines of the CDPH
25 and CDC related to hand washing, masks, social distancing, additional sanitation and
26 more. Coupled with widely discussed additional risks related to reduced nutrition, abuse
27 and losing learning, the net benefits for children attending in-person schools are
28 overwhelming. I have been teaching for fifty years. In my experience elementary and



1 secondary preparation can level the ability to perform. Most children lost last semester
2 in class studies. Adding another year would be a loss of more than 10 percent of a
3 child’s time learning in elementary and secondary schools. After returning there would
4 be time spent to enable children to catch-up. Without extending the number of school-
5 days the loss would be difficult to overcome. Later at university and during work years,
6 these lost months of learning will put most kids behind others who did not miss similar
7 time in classroom learning.

8 26. I also conclude that teachers and other staff risks can be controlled with
9 improvements in testing, tracking, better therapeutic care, identifying at risk people and
10 isolating them. Accordingly, it seems certain that the risks this fall for teachers and
11 staff are much less than last spring when schools shuttered in California. Further, there
12 is increasing evidence from other nations that children do not have high transmission
13 rates for COVID-19.

14 27. I have been teaching undergraduate college students for many decades.
15 Many of my generation are living proof that education lifts students and opens many
16 pathways for success. In my experience over a number of decades teaching
17 undergraduates, I find that race and ethnicity do not matter in terms of academic
18 performance. However, I am concerned that a new gap will open without in-classroom
19 teaching, if internet access and other teaching resources are not equal across
20 race/ethnicity. This would reverse the many recent decades of success for many
21 California children.

22 I declare under the penalty of perjury under the laws of the United States of
23 America and the State of California that the foregoing is true and correct.

24
25
26 Dated: July 25, 2020

DocuSigned by:
Charles J. Cicchetti
F358633A818F49B...
Charles J. Cicchetti



EXHIBIT 6

Curriculum Vitae



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SUMMARY

Charles J. Cicchetti, Ph.D. is a Managing Director at Berkeley Research Group. Dr. Cicchetti is an economist and former Chair of the Wisconsin Public Service Commission (PSCW). He was a tenured Full Professor of Economics and Environmental Studies at the University of Wisconsin, Madison, Deputy Director of the Energy and Environmental Policy Center at the John F. Kennedy School at Harvard University, and The Miller Chair of Government, Business and the Economy at The University of Southern California (USC). He currently lectures graduate students in the Electricity Engineering Department at the University of Southern California.

He testified extensively and written a number of books and articles on electricity economics. He co-authored *Perspective on Power* and the *Marginal Cost and Pricing of Electricity*, which is widely referenced worldwide. He also authored *Restructuring Electricity Markets*, discusses market economic principles developed for the World Bank, and *The California Electricity Crisis*, that expanded his discussion of electricity market liberalization and things to avoid. His most recent books are *Going Green and Getting Regulation Right* (2009), and *Climate Change and Regulation* (2019).

Dr. Cicchetti has served as an expert advisor in complex litigation and arbitration related to wholesale markets in Canada and the United States. He was the sole author of an *Amicus Curiae Brief for the US Supreme Court* on expanding wholesale markets to include demand-side management. Much of his work throughout his career includes valuing benefits and costs and estimating damages related to environmental preservation and injury and preservation.

EDUCATION

Ph.D., Economics	Rutgers University, 1969
B.A.	Colorado College, 1965
	US Air Force Academy, 1961 to 1964

PRESENT EMPLOYMENT

Managing Director and Member, Berkeley Research Group (BRG) 2017

Adjunct Instructor, Department of Electrical Engineering, USC Viterbi School of Engineering 2016 to present



PREVIOUS ACADEMIC POSITIONS

2009- Present	Instructor in Electric Engineering, University of Southern California
1991-2008	Adjunct Professor, University of Southern California
1998-2006	Jeffrey J. Miller Professor in Government, Business, and the Economy, University of Southern California
1987-1990	Deputy Director, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University
1979-1986	Tenured Professor of Economics and Environmental Studies, University of Wisconsin-Madison
1974-1979	Associate Professor, Economics and Environmental Studies, University of Wisconsin-Madison
1972-1974	Visiting Associate Professor, Economics and Environmental Studies, University of Wisconsin-Madison
1972	Associate Lecturer, School of Natural Resources of the University of Michigan
1969-1972	Post-Doctoral Research Resources for the Future, Washington, D.C.
1968-1969	Instructor, Rutgers University

PROFESSIONAL AWARDS, RECOGNITION, AND PRIZES

1965 Leo Mohl Award for Best Senior Thesis in Economics, Colorado College
1965 Kaye Prize for Outstanding Student in Economics, Colorado College

EXTERNAL GRANTS

1966 to 1969 US Department of the Interior (DOI), Bureau of Outdoor Recreation, financed PhD Thesis.
1972 to 1975 Environmental Defense Fund (EDF)
1972 to 1975 National Science Foundation and Upper Great Lakes Regional Commission
1973 to 1974 Ford Foundation Energy Policy Project and Public Interest Economic Foundation
1975 to 1977 National Science Foundation and Planning and Conservation Foundation

PROFESSIONAL AFFILIATIONS

PRIOR EDITORIAL BOARDS



Journal of Environmental Economics and Management, Former Member;

Energy Systems and Policy, Former Member

Land Economics, Former Editor

BUSINESS AND NOT-FOR-PROFIT AFFILIATIONS

2013-Present Co-Founder and Board Member, Sally's Rescue Inc., dog rescue 501 3(c) Foundation
1996-2016 Co-Founder, Pacific Economics Group, a California LLC
2008-2016 Senior Advisor to Navigant Consulting, Inc.
1992-1996 Managing Director, Arthur Andersen Economic Consulting
1991-1992 Co-Chairman, Putnam, Hayes & Bartlett, Inc.
1988-1991 Managing Director, Putnam, Hayes & Bartlett, Inc.
1984-1987 Senior Vice President, National Economic Research Associates
1980-1984 Co-Founder and Partner, Madison Consulting Group
1977-1979 Chairman, Public Service Commission of Wisconsin, Appointed by Governor Patrick J. Lucey (member until 1980)
1975-1976 Director, Wisconsin Energy Office and Special Energy Counselor for Governor Patrick J. Lucey, State of Wisconsin

PUBLICATIONS

BOOKS AND MONOGRAPHS

Climate Change and Regulation: Going Green II. Vienna, Virginia: Public Utilities Report, Inc. 2019.

Amicus Curiae Brief of Charles J. Cicchetti (sole author) before the Supreme Court of the United States related to including Demand Side Bidding in wholesale electricity markets on behalf of Petitioners in *Federal Energy Regulatory Commission v. Elec. Power Supply Association*, 135 S. Ct. 2049 (2015).

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- Going Green and Getting Regulation Right: A Primer for Energy Efficiency*. Vienna, Virginia: Public Utilities Report, Inc. 2009.
- Natural Gas: The Other California Energy Crisis*, Pacific Economics Group Working Paper, with Colin M. Long, February 2007.
- The California Electricity Crisis: What, Why, and What's Next*, with Jeffrey A. Dubin & Colin M. Long, 2004.
- A Tarnished Golden State: Why California Needs a Public/Private Partnership for its Electric Supply System*, with Colin M. Long, August 2003.
- Restructuring Electricity Markets: A World Perspective Post-California and Enron*, with Colin M. Long & Kristina M. Sepetys, 2003.
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- The Economic Consequence of Independent Film Making*, with W.B. Peale, Stefan Boedeker, Jeffrey Dubin & Jeff Truitt, 1995.
- The Application of U.S. Regulatory Techniques to Spain's Electric Power Industry, Energy and Environmental Policy Center, Harvard University*, with Irwin M. Stelzer, March 1988.
- The Economic Theory of Enhanced Natural Gas Service to the Industrial Sector: An Applied Approach*, Vol. II, with L.D. Kirsch, 1982 (prepared for the Gas Research Institute, Contract No. 5080-380-0349)
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Visitor Industry and Hawaii's Economy: A Benefit Cost Analysis, MATHEMATICA, Inc., Princeton, NJ 1969. Consultant to Mathematica Inc. (Princeton, NJ) assisted William Baumol to estimate an econometric model for the visitor industry in Hawaii to design state tax and tourist policy.

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“Meeting the Nation’s Future Electricity Needs: Cogeneration, Competition and Conservation,” in *1989 Electricity Yearbook*, New York: Executive Enterprises, 1989.

“Environmental Litigation and Economic Efficiency: Two Case Studies,” with R. Haveman in *Environmental Resources and Applied Welfare Economics: Essays in Honor of John F. Krutilla*, V.K. Smith ed., Washington, DC: Resources for the Future, 1988.

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“Implementing Diurnal Electricity Pricing in the U.S.: A Pragmatic Approach,” in *Energy System Forecasting, Planning and Pricing*, ed. C.J. Cicchetti & W. Foell, Madison: University of Wisconsin Press, February 1975.

“Measuring the Price Elasticity of Demand for Electricity: The U.S. Experience,” with V.K. Smith, in *Energy System Forecasting, Planning and Pricing*, ed. C.J. Cicchetti & W. Foell, Madison: University of Wisconsin Press, 1975.

“Public Utility Pricing: A Synthesis of Marginal Cost, Regulatory Constraints, Averch-Johnson Bias, Peak Load and Block Pricing,” with J. Jurewitz, in *Studies in Electric Utility Regulation*, ed. C.J. Cicchetti & J. Jurewitz, Cambridge: Ballinger Publishing Company, 1975.

“Congestion, Optimal Use and Benefit Estimation: A Case Study of Wilderness Recreation,” with V.K. Smith, in *Social Experiments and Social Program Evaluation*, ed. J.G. Albert & M. Kamrass, Cambridge: Ballinger Publishing Company, 1974.

“Electricity Growth: Economic Incentives and Environmental Quality,” with W. Gillen, in *Energy: Demand, Conservation and Institutional Problems*, ed. M. Macrakis, Cambridge: MIT Press, 1974.



- “Some Institutional and Conceptual Thoughts on the Measurement of Indirect and Intangible Benefits and Costs,” with John Bishop, in *Cost-Benefit Analysis and Water Pollution Policy*, ed. H. Peskin & E. Seskin, Washington, D.C.: Urban Institute, 1974.
- “The Trans-Alaska Pipeline: An Economic Analysis of Alternatives,” with A.M. Freeman III, in *Pollution, Resources and the Environment*, ed. A.C. Enthoven & A.M. Freeman III, New York: W.W. Norton and Co., 1973.
- “Alternative Uses of Natural Environments: The Economics of Environmental Modification,” with A.C. Fisher and J.V. Krutilla, in *Natural Environments: Studies in Theoretical and Applied Analysis*, ed. J.V. Krutilla, Baltimore: Johns Hopkins University Press, 1972.
- “A Multivariate Statistical Analysis of Wilderness Users in the United States,” in *Natural Environments: Studies in Theoretical and Applied Analysis*, ed. J.V. Krutilla, Baltimore: Johns Hopkins University press, 1972.
- “Benefits or Costs? An Assessment of the Water Resources Council's Proposed Principles in Standards,” with R.K. Davis, S.H. Hanke, R.H. Haveman & L. Knetsch, in *Benefit-Cost and Policy Analysis*, ed. W. Nishkanen, et al, Chicago: Aldine Publishing Company, 1972.
- “Observations on the Economics of Irreplaceable Assets: Theory and Method in the Social Sciences,” with J.V. Krutilla, A.M. Freeman III & C. Russell, in *Environmental Quality Analysis*, ed. A Kneese and B.T. Bower, Baltimore: Johns Hopkins University Press, 1972.
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- “Diversification and Shareholder Value,” The Energy Daily’s 27th Annual Conference: Lighting the World, Williamsburg, VA, December 2, 1999.
- “Challenges for Government-Owned Utilities,” The Bond Buyer Public Power Conference, Santa Monica, CA, October 7, 1999.
- “Restructuring America’s Electricity Industry and Public Power or Customer Owned Utilities,” APPA’s CEO Roundtable, Scottsdale, AZ, March 3, 1998.
- “Electricity Restructuring: The Future Role of Regulation (Woulda, Shoulda, Coulda),” American Bar Association’s Annual Electricity Conference, Denver, CO, February 13, 1998.
- “Mergers in the Utility Industry,” Arthur Anderson’s 18th Annual Energy Symposium, Houston, TX, December 9, 1997.
- “Convergence, Competition, Mergers and Marketing: Are You Getting Ready for the Millennium?” California Foundation on the Environment and the Economy, Santa Cruz, CA, December 4, 1997.
- “Electric Utility Strategy: Regulation, Restructuring and Competition,” The Fourth Annual Power Industry Forum: “A View Toward the New Energy Corporation,” San Diego, CA, March 7, 1997.
- “Restructuring Energy Markets: A World Perspective,” The Energy Daily’s 22nd Annual Conference: *The One-Stop Energy Stop*, Williamsburg, VA, December 12, 1996.
- “Mergers in the Utility Industry,” Arthur Anderson’s Energy Symposium, Houston, TX, December 10, 1996.
- “Political, Economic, and Regulatory Challenges when Transforming Privately-Owned Utilities to Competitive Enterprises,” Presentation at the Economist Conferences, Bilbao, Spain, November 12, 1996.
- “Transmission, Divestiture, and the Future,” Panelist at the EEI Strategic Planning Conference, Seattle, WA, October 14, 1996.



- “Merger Mania,” Utilities AIS Conference, St. Charles, IL. October 1-2, 1996.
- “Cost-of-Service Regulation: The Old Dog Won’t Hunt, and Recently, It Wasn’t Very Good,” Presentation to the Board of Wisconsin Electric Power Company, Belize, Central America, April 3, 1996.
- “Primary Mergers: An Insider’s Guide,” Electric Utility Week Conference, March 15, 1996.
- “Merger Policy Issues—When is a Proposed Electric Utility Merger in the Public Interest?” Panelist at the 3rd Annual DOE-NARUC National Electricity Forum, December 5, 1995.
- “Measuring the Effects of Natural Resources Damage and Environmental Stigma on Property Value,” Presented to Morgan, Lewis & Bockius, November 29, 1995.
- “Strategy for a Natural Gas Distributor: Competition, Consolidation, Cost Cutting,” Washington Gas Light, October 23, 1995.
- “Strategic Issues Facing the Electric Utility Industry,” AIS Symposium, St. Charles, IL, October 9, 1995.
- “Worldwide Electricity Restructuring: Regulation, Competition or Both?” presented at the 4th World Economic Development Congress, Washington, D.C., October 6, 1995.
- “Competition, Consolidation, Restructuring: A Program for Expanding Utility Consulting,” Western Region Utility Presentation, September 28, 1995.
- “North/South Estimated Savings Compared to Recent Merger Claimed Savings,” for PSCo information only, July 28, 1995.
- “California PUC Plans for Restructuring the Electric Industry,” Utilities Overheads, July 3, 1995.
- “Public Utility Holding Company Act (PUHCA) Current Issues,” Utilities Overheads, July 3, 1995.
- “Power Industry Restructuring: Competition and Deregulation are Not Synonyms,” Utilities Overheads, July 3, 1995.
- “The FERC’s Role in Electric Utility Industry Restructuring,” Utilities Overheads July 3, 1995.
- “Where to Regulation? Slice and Dice Supplants Command and Control,” HARC Presentation, August 8, 1995.
- “Strategic Issues Facing the Electric Utility Industry,” US West Presentation, August 1, 1995.
- “Proposal to Provide Consulting Services to Assist with An Alternative Ratemaking Proposal,” Boston Gas Presentation, July 27, 1995.
- “Strategic Issues Facing the Electric Utility Industry,” ConEd Presentation, July 26, 1995. (Also “Power Thinking”)
- “Strategic Issues Facing the Electric Utility Industry,” NU Board of Trustee Presentation, July 25, 1995.
- “Public Utility Holding Company Act (PUHCA),” Presentation to Southwest Gas Corporation, June 19, 1995.



- “FERC Activity-Gas Industry Update,” Presentation to Southwest Gas Corporation, June 19, 1995.
- “Electric Industry Restructuring Recent FERC and CPUC Developments,” Presentation to Southwest Gas Corporation, June 19, 1995.
- “Power Marketing and Bulk Power Markets: Power Marketing and its Impact on the Electric Power Industry,” Infocast’s Power Marketing and Bulk Power Markets, June 8, 1995.
- “Energy Industry in Transition,” Yankee Energy Systems presentation, May 23, 1995.
- “State Regulation in an Era of Regulated Competition,” American Enterprise Energy Policy Forum, May 16, 1995.
- “Natural Resource Damages Latest Developments and Future Focus,” The CVM Controversy. Executive Enterprises NRDA Conference, May 5, 1995, San Francisco, CA.
- “Restructuring the Electric Industry,” Prepared for Georgia Power Company, March 28, 1995.
- “Electric, Gas and Telephone Industry Insights and Outlooks,” Prepared for Peoples Energy Corporation Officers’ Planning Retreat, March 12, 1995.
- “The Driving Forces Reshaping the Electric Power Industry,” Presentation to Northeast Utilities Management, February 27, 1995.
- “Electricity Markets: Yesterday, Today, and Tomorrow,” and “The Driving Forces Reshaping the Electric Power Industry,” Presentation to General Electric, February 13, 1995.
- “Power Marketing and Its Role in the Competitive Energy Industry: Projecting Future and International Power Needs,” EEI Conference, January 27, 1995.
- “Evolution or Revolution: Whoever Gets the Customers Wins!” Energy Daily Conference, December 1, 1994.
- “Natural Resource Damages Latest Developments and Trends: CVM Controversy,” Executive Enterprise’s NRDA Conference, November 15, 1994.
- “The Current Natural Gas Transportation Issues that Affect the North American Market,” IGUA/ACIG Natural Gas Conference, November 15, 1994.
- “Power Marketing and Its Role in the Competitive Energy Industry: Projecting Future and International Power Needs,” Infocast-New York, October 28, 1994.
- “FERC and State Regulatory Incentives: Restructuring the Electric Utility Industry,” Arthur Andersen’s Financial Symposium, September 27, 1994.
- “Restructuring the Electric Utility Industry,” Arthur Andersen’s Financial Symposium, September 27, 1994.
- “What Do We Want to Get Out of the CPUC Restructuring Process,” Aspen Institute Presentation Materials, July 6, 1994.



- “The Debate over Retail Competition in California: A Prescriptive Suggestion,” Aspen Institute Presentation Materials, July 6, 1994.
- “A Review and Critique of Internal Revenue Service Economist Report Regarding Electricity Conservation Program Expenditures and Related Tax Deductions,” EEI Taxation Committee Meeting, June 14, 1994.
- “Environmental Law, Liability & Litigation,” Director’s Roundtable, May 18, 1994.
- “Arthur Andersen Group Presentation to The Gas Company: Customer Values Initiative,” Los Angeles, California, 1994.
- “NRDA and Property Valuation Analysis,” presented to Fennemore Craig, P.C., February 28, 1994.
- “Commentary on the Future of Regulation: Pro or Kahn? (To Regulate or Not to Regulate: That is the Question,” NARUC/DOE presentation, February 15, 1994.
- “Latin America Assertion of Membership in Pacific Basin,” Aspen Institute, Pac Rim Workshop, January 31, 1994.
- “Utility Rate Regulation in the 1990s and Beyond,” 1993 Utilities Financial Symposium, September 14, 1993.
- “Natural Resource Damages: An Economic Critique,” Presented to Beveridge & Diamond (with J. Dubin), September 8, 1993.
- “Understanding Economic Damage Valuations Under NRDA,” Presented to Occidental USA, (with L. Wilde), August 17, 1993.
- “Allocating Costs in Superfund Cases,” Presented to Waste Management, July 1993.
- “Understanding Economic Damage Valuations Under NRDA,” Presented to Sidley & Austin, June 29, 1993.
- “Allocating Cost in Superfund Cases,” Presented to Keck, Mahin & Cate, June 23, 1993.
- “Draft RCRA Corrective Action Regulatory Impact Analysis (RIA),” Presented to Beveridge & Diamond, June 18, 1993.
- Chicago Energy Economic Association Speech, (CJC used notes/speech from UC Berkeley/RFF speech of May 10, 1993), June 10, 1993.
- “Understanding Economic Damage Valuations Under NRDA,” AAEC Corporate Counsel Symposium Series (Dallas & Houston), May 18-19, 1993.
- “The Regulatory Triad for the 90s: Integrated Resource Planning, Incentive, Regulation and Social Costing,” UC Berkeley/RFF Briefing, May 10, 1993.
- “Understanding Economic Damage Valuation Under NRDA,” AA/Perkins Coie Presentation, May 4, 1993.
- “DSM & Shareholder Incentive,” 1993 Rate Symposium, April 25-27, 1993.



- “Twenty Years Since Earth-Day I: What Have We Learned?” USC Economic Honor Society Omicron, Delta Epsilon, April 15, 1993.
- “The Clinton Economic Plan,” USC Panel Discussion, February 26, 1993.
- “Incorporating Externalities in Utility Least-Cost Planning,” Edison Electric Institute, February 10, 1993.
- “Incorporating Externalities in Utility Least-Cost Planning,” A Presentation to the ABA Mid-Year Meeting, February 7, 1993.
- “Understanding Economic Damage Valuations Under NRDA,” Presented at “OPA-On the Gulf Coast,” Seminar, sponsored by Haight, Gardner, Poor & Havens, January 27, 1993.
- “DSM and Shareholders Incentives,” Prepared for Southern California Edison, January 1993.
- “DSM and Shareholders Incentives,” Prepared for the Allied Social Science Association 1993 Annual Meetings, January 5, 1993.
- “Social Cost of Electricity,” Panel Discussant, Anaheim, CA, January 5 & 6, 1993.
- “Environmental Externalities: Are There Any Left?” American Bar Association’s Winter Meeting. Boston, MA, February 7, 1993.
- “Incorporating Externalities in Utility Least-Cost Planning,” Edison Electric Institute Energy and Environmental Committee, San Francisco, CA, February 10, 1993.
- “Environmental Policy: The Good, The Bad, The Ugly,” University of Southern California - Los Angeles, CA, February 25, 1993.
- “Incorporating Environmental Strategies into Your Corporation’s Overall Strategy to Improve the Bottom Line,” moderator, Arthur Andersen & Co. 1993 Energy Expo, Pittsburgh, PA, March 2-3, 1993.
- “Resource Planning, Incentives, and Pricing for Electric, Natural Gas, and Telecommunications Services: New Products and Regulations,” University of Missouri’ 1993 Rate Symposium, Kansas City, MO, April 26, 1993.
- “An Economist’s View of Demand Side Management,” Chicago Energy Economists Association, Chicago, IL, June 10, 1993.
- “Presentation to the Board of Southwest Gas,” Las Vegas, NV, June 14, 1993.
- “Draft RCRA Corrective Action Regulatory Impact Analysis (RIA),” Beveridge & Diamond, June 18, 1993.
- “Where Do We Go From Here: Bush or Clinton?” Presented at the Corporate Recovery Conference sponsored by Arthur Andersen & Co., Scottsdale, AZ, September 17, 1992.
- “The Economic Effect of the Clean Air Act on the U.S. Economy: Tradable Emissions Allowances,” National Clean Air Conference, Houston, TX, May 20, 1992.
- “Electric Utility Industry Through 2000,” Fluor Daniel Power Sector Meeting, San Diego, CA, January 28, 1992.



- “Valuation of Natural Resource Damages: Evolution of a Process,” Executive Enterprises, Inc. Conference Natural Resource Damages Claims and Litigation “Problems in Valuation,” November 7, 1991.
- “The Evolution of the Electric Utility Sponsored Conservation Movement in North America: Remembrance of Things Past,” Demand Side Management: A Current and Future Resource Conference Sponsored by the Commission of the European Communities and the International Energy Agency; Copenhagen, Denmark, October 23, 1991.
- “Are There Any Economic Efficiency Arguments for Embracing Utility-Sponsored Conservation Programs?” WEA International Conference, Seattle, WA, June 29, 1991.
- “National Resource Damages: What Does the Proposed Final DOI Rule Mean?” Presented at the Workshop on Natural Resource Damages, Washington, D.C., May 30, 1991.
- When Green Turns Mean: Pollution as a Crime,” Emerging Environmental Policies and Business Conference, University of North Carolina State University, April 18, 1991.
- “When Green Turns Mean: Pollution as a Crime,” Presented at the Third Annual Law and Economics Seminar of Putnam, Hayes & Bartlett, Inc., The Arizona Biltmore Hotel, Phoenix, AZ, November 7-11, 1990.
- “The Legal and Economic Consequences of 1992,” Presented at the Second Workshop on Post Keynesian Economics, Knoxville, TN, July 3, 1990.
- “Environment: A Green Gimmick or a New Game Plan?” Presented at Pacific Gas & Electric Company’s Managers Meeting, San Francisco, CA, May 31, 1990.
- “Energy Firms and Global Environmental Policy,” 1990 PacRim Workshop, Seoul, Korea, May 16, 1990.
- “Can the Gas Business Fulfill Its New Promise?” Presented at “Inside F.E.R.C.,” San Francisco, CA, April 20, 1990.
- “Energy Firms and Global Environmental Policy,” Presented at Pacific Gas & Electric’s Management Committee Retreat, Santa Cruz, CA, March 17-26, 1990.
- “Can Economic Efficiency and Demand Side Bidding Co-Exist?” Bidding for Electricity Conference, Davis, CA, March 15, 1990.
- “Electric Utility Mergers and Reorganization: Antitrust Meets Regulation,” Presented at the Third Annual Conference on Electric Law and Regulation, Denver, CO, March 9, 1990.
- “Infrastructure, Regulatory, Risk/Reward Issues,” Presented at the Portland General Symposium, Portland, OR, November 6, 1989.
- “Belated and Expensive: How Utilities Have Reacted to New Economic Imperatives in the Last Two Decades,” Conference Sponsored by the Energy Daily, The Watergate Hotel, Washington, D.C., November 3, 1989.
- “Competitive Building: Price, Time, Location and Uncertainties,” Presented at the Coopers & Lybrand Annual Electric & Gas Conference, Crystal Gateway Marriot, Arlington, VA, November 2, 1989.



- “Electric Utilities: New Markets, New Challenges,” Speech before the Interstate Natural Gas Association of America Seminar, The Greenbrier, White Sulphur Springs, West Virginia, October 17, 1989.
- “Sweetening the Pot: Plaintiff Devices to Maximize Claims (Contingent Value Surveys Hedonic Price Measures),” Second Annual Law and Economics Seminar a Putnam, Hayes & Bartlett, Inc., The Arizona Biltmore Hotel, Phoenix, AZ, October 11-14, 1989.
- “Incentive Regulation and Conservation Policy,” Presented at the New England Conference of Public Utility Commissioners, Kennebunkport, ME, September 2, 1989.
- “Incentive Regulation and Conservation Policy,” Presented at the New England Conference of Public Utility Commissioners (NARUC) Least-Cost Planning Conference, Charleston, SC, September 11, 1989.
- “Twenty Years Since Earth Day I: What Have We Learned,” 7th International Oil and Gas Conference, Cambridge, MA, June 1-2, 1989.
- “The Resurgence of Political Economy in Regulated Industries,” Law and Economics Seminar, London, England, May 18, 1989.
- “Back to the Future in Gas and Electric Industries,” Annual Meeting of the Federal Bar Association, Washington, D.C., May 5, 1989.
- “The Role of Rate Reform: The Bundling of Services,” International Association of Energy Economists, North American Gas Supply and Markets Conference, The Hyatt Regency, Denver, CO, September 7, 1989.
- “Incentive Regulation: What Works and What Doesn’t,” Presented at the Great Lakes Conference of Public Utility Commissioners, The Greenbrier, White Sulphur Springs, WV, July 11, 1989.
- “New Proposals for Incentive Regulation in the Electric Utility Industry,” Chief Executives’ Forum, Key Largo, FL, Sponsored by the First Boston Corporation and Putnam, Hayes & Bartlett, Inc., February 9-12, 1989.
- “Current Trends in Regulation and Some New Proposals to Alter Incentives in the Electric Utility Industry,” Harvard Utility Forum Meeting, Cambridge, MA, February 2, 1989.
- “Some New Proposals to Introduce Incentive Tariffs in the Electric and Natural Gas Industries,” Utility Discussion Group, Held by Putnam, Hayes & Bartlett, Inc., Capital Hilton, Washington, D.C., January 5, 1989.
- “Privatization in Developing Countries: Case Studies of Electricity in Turkey and Pakistan,” EESIG Brown-Bag Lunch, December 14, 1988.
- “Some New Proposals to Introduce Incentive Tariffs in the Electric and Natural Gas Industries,” Harvard Utility Forum – Harvard Gas Forum Demand-Side Bidding/Alternatives to Rate Base Regulation Workshop, Cambridge, MA, December 13, 1988.
- “The March Towards a Competitive Gas Industry: Obligation to Serve, Incentive Regulation, and Risk Allocation,” The Interstate Natural Gas Association of America Seminar, Washington, D.C., December 2, 1988.



- “Pricing and Contracting Issues and Experience,” Presented at the AIT/ASEAN Senior Executive Seminar, Hua Hin, Thailand, November 9-11, 1988.
- “Some Thoughts on Why and How to Initiate Private Power in Pakistan,” ASEA/AIT/USAID Senior Executive Seminar in Co-Generation and Private Power, Hua Hin, Thailand, November 1988.
- “Meeting the Nation’s Future Electricity Needs: Cogeneration, Competition and Conservation,” Presented at the 100th Annual Convention and Regulatory Symposium of the National Association of Regulatory Utility Commissioners, San Francisco, CA, November 2, 1988.
- Speech before the New Dimensions in Pricing Electricity Conference of Niagara Mohawk Power Corporation and the Electric Power Research Institute, “Cogeneration and Competition,” Syracuse, NY, September 30, 1988.
- Speech before the Second Annual Conference of the American Cogeneration Association, “Cogeneration and Competition,” Chicago, IL, September 26, 1988.
- “Valuing Damages to Natural Resources in Environmental Litigation,” Presentation before the American Bar Association Annual Meeting, Toronto, Ontario, CAN, August 8, 1988.
- “Decision Making and Environmental Risks: Economic and Political Issues An Executive Summary,” The Robert M. La Follette Institute of Public Affairs, The University of Wisconsin-Madison, June 1988.
- Comments Before the American Bar Association First Annual Conference on Electricity Law and Regulation, Denver, CO, April 7-8, 1988.
- “After the Chaos: Gas Strategies for the Long Term,” Inside F.E.R.C.’s Eight Annual Conference, New Orleans, LA, March 21-22, 1988.
- “Wholesale Electricity, Old Scar-Tissue: New Wounds Versus New Solutions,” before the National Governors’ Association, Washington, D.C., December 10, 1987.
- “Recent Changes in Natural Gas Transportation and Marketing: What, if Anything, Can They Tell Us About Electricity Reform?” Seventh Annual Electricity and Gas Executives Conference, First National Bank of Chicago, September 21, 1987.
- “U.S. Economic Regulation of Electricity,” with Miles Bidwell, NERA Seminar, London, England, June 26, 1987.
- “Pricing and Energy Policy in Wisconsin and the United States,” Workshop on Energy, The Economy, and the Environment, IIASA, Laxenburg, Austria, June 23-25, 1987.
- “State Regulation in the Natural Gas Revolution,” presented at Proceeding of Gas Mart ’87, The First National Trade Fair for Natural Gas, sponsored by *Natural Gas Intelligence*, Washington, D.C., May 3-5, 1987.
- “Can Natural Gas Deregulation be a Model for the Electric Industry?” Speech given at the First Rutgers/New Jersey Department of Commerce Annual Conference on Energy Policy in the Middle Atlantic States, February 20, 1987 (also published in *Energy Deregulation and Economic Growth*).



- “Are Energy Efficiency Programs Worth It?” with Suellen M. Curkendall, IAEE Conference, MIT, Cambridge, MA, November 19-21, 1986.
- “Marketing Strategies for Natural Gas Distributors in the 1900s,” before the Gas Utility Managers Conference Sponsored by the New England Gas Association, September 7-9, 1986.
- “Conservation and Cogeneration: The Utilities’ Friends or Foes?” with M. Berkman, S. Curkendall and H. Parmesano, before the NERA Electric Utility Conference, Scottsdale, AZ, February 12-15, 1986.
- “The Future Competitive Environment for Utilities,” remarks prepared for Dayton Power & Light Company 1985 Interdivisional Meeting, December 9, 1985.
- “The Final Rule for Natural Gas Carriage,” Presentation before the Ohio Electric Association, Cincinnati, OH, October 23, 1985.
- “The FERC’s Recent Interest in Wheeling and Carriage,” co-authored by Robert D. Obeiter, before the Ninth Annual News Media Seminar, Columbus, Ohio, and the Third NARUC Electric Research and Development Seminar, St. Charles, IL, October 22, 1985.
- “The Regulatory World of Natural Gas: Are We Quitting the Game or Changing the Rules?” before the Natural Gas Supply Association 1985 Annual Meeting, Miami, FL, October 10, 1985.
- “Marginal Cost and Competition: Unbundling Natural Gas Carriage,” before the Advanced Seminar in Gas Pricing Policies, Sponsored by the American Gas Association, College Park, MD, October 8, 1985.
- “Commingling Competition with Regulation: Closing the Circle or Quitting the Game,” before the Iowa Investor-Owned Utilities Management Conference, Waterloo, IA, October 7, 1985.
- “The State Regulator in a Free Gas Market,” Comments Presented at a Conference Sponsored by The Gas Daily, Chicago, IL, August 1985.
- “Grafting Competition Onto Regulation: The Problems and The Promise,” before the Iowa State Regulatory Conference, Ames, IA, May 1985.
- “Comments Before The Workshop on Current Antitrust Issues in Public Utility Industries, sponsored by the American Bar Association, Washington, D.C., March 1985.
- “Yesterday, Today and Tomorrow,” Comments before the IEEE Winter Power Meeting, New York, NY, February 5, 1985.
- “Natural Gas: The Eggs Have Been Scrambled, Now What?” Before the National Association for Regulatory Utility Commissioners Annual Meeting, Los Angeles, CA, November 1984.
- “The Performance of the Regulation of Public Utilities in the U.S., “A NERA Seminar: Is American-Style Regulation Appropriate to the UK?” London, England, October 1984.
- “A Strategy for Implementing Electricity Tariff Reform and Load Management in Korea,” Seoul, Korea, 1982.
- “The National Energy Act and State Utility Regulation,” NARUC Convention, Las Vegas, NV, November 1982.



“Time of the Electricity Pricing: Correcting Some Continuing Confusion,” NARUC Annual Convention, New Orleans, LA, November 16, 1977.

“Our Energy Crisis and Education: A Critical Assessment,” Council for Educational Development and Research Conference on Education Confronts Energy Conference, Washington, D.C., June 22, 1977.

“Alaskan Oil and Gas: The Wrong Route Revisited,” American Association for the Advancement of Science, Denver, CO, February 22, 1977.

The At Rann II Symposium, Prepared Summary of NSF Study to Provide a Practical Guide for the Analysis of the Marginal Cost Structure of Electric Utilities for the Purpose of Designing Electricity Tariffs, Washington, D.C., November, 1976.

Prepared Remarks “Cost/Benefit Aspects of Non-Waste Technology and Production,” presented at the NWT Seminar, Seminar on the Principles and Creation of Non-Waste Technology, Paris, France, November, 1976

The Advest Seminar comments entitled “Meeting Experiments,” at New York, NY, October, 1976.

The Annual Meeting of American Economic Association,” Nixon-Ford National Policy Plans: A Critique,” Atlantic City, New Jersey, September, 1976.

The NARUC annual Regulatory Studies Program, Prepared Remarks “Excerpt from the Marginal Cost and Pricing of Electricity: An applied Approach,” East Lansing, MI, August, 1976.

Prepared Remarks before the 1976 Symposium on Rate Design Problems of Regulated Industries, “The Marginal Cost of Electricity and Continuing Rate Controversies,” Kansas City, MO, February, 1976.

Prepared Remarks before the Wisconsin Manufacturing Association in Stevens Point, WI, September, 1975.

“Public Utility Pricing, Conservation and Ecology,” NARUC Annual Regulatory Studies Program, Michigan State University, East Lansing, MI. August 1975.

“Energy Pricing: The Growing Consumer Burden,” Third National Seminar for Consumer Representatives in State and Local Government. Milwaukee, WI, July, 1975.

“New Approaches to Public Utility Rate Setting,” Third National Seminar for Consumer Representatives in State and Local Government, Milwaukee, WI, July, 1975.

“The Design of Electricity Tariffs,” Upper Great Lakes Utilities Commission. Greenbriar, West Virginia. July 1975.

“Time of Day Pricing: WHY and HOW,” Joint Conference by the Federal Energy Administration, the American Public Power Association, the Edison Electric Institute, the National Association of Regulatory Utility Commissioners, and the National Electric Cooperatives Association. Washington, D.C., June, 1975.

Prepared Remarks before the Institute of Public Utilities, Michigan State University, East Lansing, MI, May, 1975.



“The Energy Game: Who are the Players?” 49th Annual Convention of the Wisconsin Petroleum Association, April 2, 1975.

“Implementing Time-of-Day Pricing of Electricity: Promises and Pitfalls,” Atlanta, GA. March, 1975.

Prepared remarks “The Time has Come to Speak Out On Our Energy and Economic Crisis,” Madison, WI, March, 1975.

Prepared Remarks before The American Association for the Advancement of Science at the Minnesota Energy Agency Conference, 1975,” Energy Pricing in the United States: A Critique,” 1975.

“Benefit Cost Analysis and the National Environmental Policy Act,” Proceedings of the American Bar Association, 1975.

“Electricity Price Regulation: Critical Crossroads or New Group Participation Sport,” Ames Public Utility Conference and the Midwest Association of Regulated Utilities Conference, both 1974.

“Implementing Diurnal Pricing: A Pragmatic Approach,” At the Regulatory Information Systems Conference. St. Louis, MO. 1974.

“An Economist Views the National Environmental Policy Act and the Environmental Impact Statement,” Public Choice Meetings, American Bar Association Annual Meeting, College Park, MD, March, 1973.

“Electricity Growth: Economic Incentive and Environmental Quality,” With W. Gillen. Conference on Energy: Demand and Institutional Problems, February, 1973.

“Some Economic Implications of the NEPA,” Public Choice Meetings, American Bar Association Annual Meeting, Washington, D.C., 1973.

“Regression Analysis with Dichotomous Dependent Variables,” With V. Kerry Smith. Toronto, CAN, December, 1972.

“Optimality in Producing and Distributing Public Outputs,” The American Economic Association, December, 1971.

“Preservation Versus Development: Some Economic Issues,” with J.V. Krutilla, Econometric Society Meetings, December, 1970.

CIVIL PROCEEDINGS AND RELATED LEGISLATIVE TESTIMONY

Before the U. S. District Court for Northern California, 2019, Declaration and Deposition in a matter related to contract termination based in part on the feasibility of burning wood as a renewable energy resource compared to solar and wind power on the Big Island of Hawaii.

Testimony in the Matter of an Arbitration (Alberta) between TransAlta Generation Partnership and the Balancing Pool, in the matter of the definition of Rate Base and Net Book Value, April, 2019.



Before the U.S. District Court, Southern District of California, Expert Report in San Diego Unified Port District v. Monsanto for plaintiff in Case No. 3:15-CV-0578, April 5, 2019.

Expert Report in the Matter of an Arbitration (Alberta) between TransAlta Generation Partnership and the Balancing Pool, in the matter of the definition of Rate Base and Net Book Value, January, 2019.

Before the Superior Court of California, County of Los Angeles, Expert Report in Shell Oil Company v Barclay Hollander Corporation, Case No. BC544786, June 15, 2017.

Before the Superior Court of California, County of Los Angeles, Declaration in Support of Plaintiff's Motion for Class Certification, Imhoff v Goin, Case No. BC593161, January 3, 2017.

Before the United States District Court for the District of Arizona, Declaration in Support of the Navajo Transitional Energy Company's Motions to Dismiss, October 26, 2016.

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Before the American Arbitration Association, Declaration in Opposition to Motion for Summary Judgment, *U.S. Topco, Inc. v. Ever Energy Co., Ltd.*, Case No. 01-15-0002-6291, June 30, 2016.

Before the Supreme Court of the State of New York, County of Albany, Affidavit in Support of National Energy Marketers Association's Application for an Order to Show Cause for a Temporary Restraining Order and Permanent Injunction, Index No. 868-16, May 9, 2016.

Expert Report in the Matter of an Arbitration (Alberta) between TransAlta Generation Partnership, ENMAX Energy Corporation, and the Balancing Pool, December 18, 2015.

Before the United States District Court for the District of Colorado Supplemental Expert Report in the matter of *Arkansas River Power Authority (ARPA) v. Babcock & Wilcox Power Generation*, in re ARPA's Conversion of the Lamar Power Plant to Coal from Natural Gas, July 27, 2015.

Before the United States Supreme Court, Amicus Curiae Brief of Charles J. Cicchetti (sole author) on behalf of Petitioners in *Federal Energy Regulatory Commission v. Electric Power Supply Association, et. al.*, Nos. 14-480 & 14-841, July 2015.

Before the United States District Court for the District of Colorado, Expert Report of in the matter of *Arkansas River Power Authority (ARPA) v. Babcock Wilcox Power Generation*, in re ARPA's Conversion of the Lamar Power Plant to Coal from Natural Gas, April 6, 2015.

New Jersey Department of Environmental Protection, et al. v. Occidental Chemical Corporation, et al., Superior Court of New Jersey Law Division—Essex County, Docket No. ESX-L-9868-05), Expert Report Estimating Economic Damages Related to Dioxin at Lister Avenue and the Passaic River, March 13, 2014.

In the Matter of Arbitration Proceedings Concerning Disputes with to TAGP'S July 26, 2012 Notice of Force Majeure at Sundance Generating Station Unit 6, Among TransAlta Generation Partnership (TAGP) and Capital Power PPA Management, Inc. (CPPMI) and Balancing Pool (Balancing Pool), Expert Report November 13, 2013.



Before the Superior Court of New Jersey Law Division: Union County, Union County Docket No.: UNN-L-2601-11, *Lionetti Associates, LLC t/a Lorco Petroleum Services v. City of Elizabeth, City Council of the City of Elizabeth and Liberty Water Company v. Joint Meeting of Essex and Union Counties*, Deposition Transcript, November 1, 2013.

Before the Superior Court of New Jersey Law Division: Union County, Civil Action Docket No.: UNN-L-0556-10, *Papetti's Hygrade Egg Products, Inc. v. City of Elizabeth, City Council of the City of Elizabeth and Liberty Water Company*, Expert Report, April 1, 2013.

Before the United States District Court for the District of Colorado, Civil Action No. 1:12-cv-01275-JLK, *Diné Citizens Against Ruining our Environment v. Kenneth Salazar*, Declaration August 2012.

Before the Supreme Court of the United States, *Metropolitan Edison Company and Pennsylvania Electric Company v. Pennsylvania Public Utility Commission*, On Petition for a Writ of Certiorari to the Commonwealth Court of Pennsylvania, Motion for Leave to File Brief as Amici Curiae in Support of Petitioners and Brief of Electrical Engineers, Scientists and Economists as Amici Curiae in Support of Petitioners, August 1, 2012.

Before the United States Court of Appeals for the Tenth Circuit, Nos. 11-9552, 11-9557 & 11-9567, On Petitions for Review of Final Action of the United States Environmental Protection Agency, Declaration in Support of the Navajo Nation's Amicus Brief, May 18, 2012.

Before the State Assessment Review Board, Prepared Supplemental Testimony on behalf of Anadarko Petroleum, Case No. P-08-9, May 9, 2012.

Expert Rebuttal Report In the Matter of Arbitration Proceedings Concerning Disputes with Respect to Units 1 & 2 at Sundance Generating Station among TransAlta Generation Partnership, TransCanada Energy LTD. and Balancing Pool, March 27, 2012.

Expert Report in the Matter of Arbitration Proceedings Concerning Disputes with Respect to Units 1 & 2 at Sundance Generating Station among TransAlta Generation Partnership, TransCanada Energy LTD. and Balancing Pool, February 3, 2012.

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Before the Federal Energy Regulatory Commission, Oral Comments on behalf of National Economic Research Associates, Inc., *Notice of Inquiry Re: Regulation of Electricity Sales-for-Resale and Transmission Services* (Phase I), Docket No. RM85-17-000, August 9, 1985.

Before the Maine Public Utilities Commission, Direct Testimony on behalf of Central Maine Power Company, Docket No. 85-132, August, 1985.

Before the Public Utilities Commission of Ohio, Direct Testimony on behalf of Ohio Power Company, Docket No. 85-726-EL-AIR, July, 1985.

Before the Public Service Commission of Wisconsin, Direct Testimony on behalf of Wisconsin Gas Company, Docket Nos. 05-UI-18 and 6650-DR-2, June, 1985.

Before the Ontario Energy Board, Testimony on behalf of Unicorp of Canada Corporation, *In the Matter of Union Enterprises Ltd. and Unicorp of Canada Utilities Corporation*, E.B.R.L.G. 28, Exhibit 10.4, April, 1985.

Before the Utah Public Utilities Commission, Testimony on behalf of NUCOR Steel, Docket No. 84-035-01 (Rate Spread Phase), January, 1985.

Before the Nuclear Regulatory Commission, Affidavit for Alabama Power Company, October 1984.

Before the Federal Energy Regulatory Commission, Prepared Direct Testimony on behalf of Consolidated Gas Supply Corporation, *Application of Consolidated Gas Supply Corporation for Rate Relief*, Docket No. RP82-115, April, 1984.

Before the Public Utilities Commission of Ohio, Rebuttal Testimony on behalf of East Ohio Gas Company, *et.al., In the Matter of the Investigation into Long Term Solutions Concerning Disconnection of Gas and Electric Service During Winter Emergencies*, Case No. 83-303-GE-COI, March, 1984.

Before the Federal Energy Regulatory Commission, Testimony on behalf of Florida Power and Light Company, Docket Nos. ER82-793 and EL83-24, February, 1984.

Before the Public Utilities Commission of Ohio, Direct Testimony on behalf of East Ohio Gas Company, *et.al., In the Matter of the Investigation into Long Term Solutions Concerning Disconnection of Gas and Electric Service During Winter Emergencies*, Case No. 83-303-COI, January, 1984.

Before the Federal Energy Regulatory Commission, Supplemental Direct Testimony on behalf of Consolidated Gas Supply Corporation, Docket No. RP81-80, September, 1983.

Before the Arkansas Public Service Commission, Direct Testimony on behalf of Arkansas Louisiana Gas Company, Docket No. 83-161-U, August, 1983.



Before the New Mexico Public Service Commission, Testimony on behalf of Public Service Company of New Mexico, Case No. 1811, July 17, 1983.

Before the Federal Communications Commission, Rebuttal Case Testimony on behalf of Interstate Mobile Phone Company, in *American Mobile Commission of Washington and Oregon*, CC Docket No. 83-445, June, 1983.

Before the Public Service Commission of Indiana, Prepared Rebuttal Testimony on behalf of Northern Indiana Public Service Company, Case No. 37023, May, 1983.

Before the Public Service Commission of New York, Testimony on behalf of the Industrial Energy Users Association, in *Procedure to Inquire into the Benefits to Ratepayers and Utilities from Implementation of Conservation Programs that will Reduce Electric Use*, Case No. 28223, May, 1983.

Before the Public Utilities Commission of Maryland, Testimony on behalf of the Mid-Atlantic Petroleum Distributors Association, the Oil Heat Association of Washington, and Steuart Petroleum Company, Case No. 7649, May, 1983.

Before the Connecticut Department of Public Utility Control, Testimony on behalf of the Independent Petroleum Association, Docket No. 83-01-01, April, 1983.

Before the State Corporation Commission of Virginia, Testimony on behalf of the Mid-Atlantic Petroleum Distributors Association, the Oil Heat Association of Washington, and Steuart Petroleum Company, Case No. PUE 830008, March, 1983.

Before the Federal Energy Regulatory Commission, Rebuttal Testimony on behalf of Arkansas Louisiana Gas Company, Docket Nos. RP82-75-000 *et.al.*, February 1983.

Before the Federal Communications Commission, Rebuttal Case Testimony on behalf of Interstate Mobile Phone Company, in *American Mobile Communications of Washington and Oregon*, CC Docket No. 83-3, February, 1983.

Before the Federal Energy Regulatory Commission, Prepared Testimony on behalf of Consolidated Gas Supply Corporation, in *Application of Consolidated Gas Supply Corporation for Rate Relief*, Docket No. RP82-115, July, 1982.

Before the Federal Energy Regulatory Commission, Rebuttal Testimony on behalf of Consolidated Gas Supply Corporation, Docket No. RP81-80, April, 1982.

Before the Florida Public Service Commission, Testimony on behalf of Florida Power & Light Company, Docket No. 820097-EU, April, 1982.

Before the Massachusetts Department of Public Utilities, Direct Testimony on behalf of Boston Edison Company, Docket No. 906, January, 1982.

Before the New Mexico Public Service Commission, Testimony on behalf of Public Service Company of New Mexico, *In the Matter of New Mexico Public Service Commission Authorization for Southern Union Company to Transfer Certain Property to Western Gas Company*, NMPSC Case 1689, January, 1982.



- Before the Connecticut Department of Public Utility Control Authority, Testimony on behalf of Southern Connecticut Gas Works, *DPUC Investigation Into Utility Financing of Conservation and Efficiency Improvements*, Docket No. 810707, August, 1981.
- Before the Connecticut Public Utility Control Authority, Prepared Testimony on behalf of Connecticut Natural Gas Corporation, July, 1981.
- Before the Philadelphia Gas Commission, Testimony on behalf of Philadelphia Gas Works, in *PGW Rate Investigations*, July, 1981.
- Before the California Public Utility Commission, Prepared Testimony on behalf of Pacific Gas and Electric Company, In *Application of Pacific Gas and Electric Company for Rate Relief*, Application No. 68153, June, 1981.
- Before the Federal Energy Regulatory Commission, Prepared Testimony on behalf of Consolidated Gas Supply Corporation, Docket No. RP81-80, June, 1981.
- Before the Tennessee Valley Authority Board, Comments on Tennessee Valley Authority Proposed Determinations on Ratemaking Standards, Contract TV-53565A, October, 1980.
- Before the Federal Energy Regulatory Commission, Testimony on behalf of Pennsylvania Power and Light Company, *Split-Savings and Emergency Tariffs*, August, 1980.
- Before the Public Service Commission of Maryland, Answering Testimony on behalf of the People's Counsel of Maryland re Baltimore Gas & Electric Company, Docket No. 7159, May 1, 1980.
- Final Report of Consultants' Activities Submitted to Tennessee Valley Authority Division of Energy Conservation and Rates, in *Consideration of Ratemaking Standards Pursuant to the Public Utility Regulatory Policy Act of 1978 (P.L. 95-617) and One Additional Standard*, Contract No. TV-53575A, May, 1980.
- Before the Utah Public Service Commission, Direct Testimony on behalf of NUCOR Steel, PSCU Case No. 83-035-06, 1980.
- Before the Council on Environmental Quality, Washington, D.C., statement on "Alaskan Natural Gas, May, 1980.
- Presentation entitled "An Analysis of the Proposed Building Energy Performance Standards (BEPS)," Washington, D.C. in March, 1980.
- Before the Ontario Energy Board, Testimony on behalf of the Public Interest Advocacy Board and National Anti-Poverty Organization, February 27, 1979.
- Before the Federal Power Commission/Federal Energy Regulatory Commission, Testimony with respect to Cogeneration Pricing Rules, 1979.
- Before the Federal Energy Regulatory Commission, Testimony on behalf of the State of Wisconsin in the Matter of the Northwest Alaskan Pipeline Company, Docket No. CP78-123, 1979.



Before the Federal Energy Administration, “The Effects of Middle Distillate Decontrol on the American Consumer: A Critique of the Decontrol Monitoring and Price Index Actions of the FEA with Michael McNamara and Rod Shaughnessy, Washington, D.C., August, 1977.

Before the Pennsylvania Public Utility Commission in Case No. 76-PRND-7, February 7, 1977.

Statements before the Council on Environmental Quality, Washington D.C., May 1977

Before the Wisconsin Public Service Commission, Testimony on behalf of the Environmental Defense Fund, December 1, 1976.

Before the Public Utilities Control Authority of the State of Connecticut, Testimony re Marginal Cost Pricing of Electricity and Natural Gas on behalf of the Environmental Defense Fund, July 22, 1976.

Before the Federal Energy Administration, “Analysis and Recommendations of Northern Tier Pipeline Proposals, July, 1976.

Before the Energy Council of the Federal Government, “Third State of EPCA: Additional Incentives,” June, 1976.

Before the Wisconsin Public Service Commission, Testimony with respect to Electric Rate Structures; Price Elasticity of Demand for Electricity; and Application for WEPCO for Authority to Construct and Place in Operation a Coal Fired Power Plant and Related Facilities in the Town of Pleasant Prairie, Kenosha County and Certain Related Transmission and Substation Additions, CA-5489, June, 1976.

Before the Federal Power Commission/Federal Energy Regulatory Commission, Testimony with respect to Alaskan Natural Gas, March, 1976.

Before the Federal Power Commission/Federal Energy Regulatory Commission, Testimony with respect to Natural Gas Pricing, March, 1976.

Before the Wisconsin Assembly Environmental Quality Committee, Testimony re Assembly Bill 1228, January 22, 1976.

Before the Public Utility Commission of Maine, Testimony on behalf of Attorney General of the State of Maine re electricity pricing principles, 1976.

Before the Federal Energy Administration, “Allocation of Canadian Crude Oil,” December, 1975.

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Before the Federal Energy Administration, Comments re Modification or Termination of the State Set-Aside Program, November 20, 1975.

Comments before the U.S. Department of Interior on its Study: Alaskan Natural Gas Transportation Systems, October 29, 1975.

Before the Public Service Commission of Minnesota, Rebuttal Testimony on behalf of the Minnesota Energy Agency in the Application of Northern States Power to Raise Rates, September 4, 1975.



Before the Public Service Commission of Minnesota, Testimony on behalf of the Minnesota Energy Agency in the Application of Northern States Power to Raise Rates, July 25, 1975

Before the Federal Energy Administration, "Rate Design and Its Relationship to Loan Management," June, 1975.

Comments before the Federal Power Commission on Proposed Rulemaking RM 75-19 on end Use Rate Schedules, May 30, 1975.

Before the Public Utilities Commission of Maine, Testimony in CMP Case No. F.C. 2072, February 7, 1975.

Before the Federal Energy Administration, "Modification or Termination of the State Set-Aside Program," 1975.

Before the California Public Utilities Commission, Testimony on behalf of the Environmental Defense Fund in the Application of Pacific Gas & Electric to raise its rates, Application No. 54279, 1975.

Before the Public Service Commission of the State of Nevada, Testimony on behalf of the Washoe County District Attorney's Office in the Matter of the Application of Sierra Pacific Power Company for Authority to Increase Rates for Electric, Gas and Water Service, Docket Nos. 574, 575, and 576, 1974-76

Before the Michigan Public Service Commission, Testimony in the matter of Detroit Edison Company, Case No. U-4570 and Consumers Power Company, Case No. U-4576, 1974.

Before the Virginia State Corporation Commission, Testimony on behalf of the Central Virginia Environmental League, Case No. 10848, 1974.

Before the Federal Energy Regulatory Commission, Testimony on behalf of the Environmental Defense Fund re electricity pricing, October 8, 1974.

Before the New Jersey Public Utility Commission, Supplemental Testimony on behalf of the Environmental Defense Fund in PSEG rate increase case, August 8, 1974.

Before the Michigan Public Service Commission, Testimony on behalf of the Environmental Defense Fund in Detroit Edison Case No. U-4570, August 8, 1974.

Before the Maryland Public Service Commission, Testimony on behalf of the Environmental Defense Fund in Baltimore Gas & Electric Case No. 6700, January 24, 1974.

Before the Public Service Commission of Wisconsin, Supplemental Testimony on behalf of the Environmental Defense Fund in Madison Gas & Electric Rate Increase Case 1973.

Before the Federal Power Commission/Federal Energy Regulatory Commission Testimony With Respect to El Paso Natural Gas Coal Gasification, 1972.

Before the Federal Power Commission/Federal Energy Regulatory Commission Testimony With Respect to El Paso Natural Gas Pricing, 1972.

Comments before various Utility Regulatory Commissions (Maryland, New York, Michigan, New Jersey, Arkansas, Maine, California, Florida, Rhode Islands, Minnesota, Connecticut, Massachusetts, Missouri, Nevada, New Hampshire, Vermont, Virginia, Wisconsin, Texas, Ontario, Philadelphia, New Mexico,



Pennsylvania, TVA, Indiana) on Marginal Cost Pricing of Electricity; Conservation; Rate of Return; Diversification; Nuclear Cancellation; Sale of Utility Property; and Public Policy, 1972-1976.

Before various Canadian Regulatory Commissions, Testimony on Energy and Telephone Pricing, 1972-1976.

Before the U.S. Postal Rate Commission, Testimony on Marginal Cost Pricing of Postal Rates, 1972.

Before the Federal Communications Commission, Testimony on Telegraph Price Elasticity and Cellular Mobile Telephone Pricing, 1972

Before the Public Service Commission of Wisconsin, Testimony on behalf of the Environmental Defense Fund in Madison Gas & Electric Rate Increase Case, 1972.

Before the Council on Environmental Quality, US Department of the Interior and Joint Economic Committee on the National Environmental Policy Act (NEPA) and the Trans Alaska Pipeline on behalf of the Center for Law and Social Policy, Environmental Defense Fund, Wilderness Society and Friends of the Earth (FOE).

Before the Federal Power Commission, Testimony with respect to The Economics of Preservation versus Development of Hells Canyon, Hearings Nos. 2243/73, 1969.

Before the Federal Power Commission, Exhibit R-667, Technical Note Estimating the Present Value of a Non-Reproducible Asset With Increasing Annual Benefits Over Time, Hearings Nos. 2243/73, 1969.

Before the FCC, Testimony for Western Union Telegraph Company and related Statistical Analysis of Elasticity of Demand for Public Message Telegraph Service(1968). The Western Union work included econometric analyses to determine the price elasticity of demand for various classes of service to change rates from distance related charges to a "postalized" system, and insure the recovery of required rate of return.

Consultant to Robert R. Nathan Associates, The Impact of Mine Drainage on Recreation (Appendix E, Appalachian Regional Commission, 1969). State of New York: an analysis recreation participation to develop the recreational attributes of Finger Lakes (1969).

Consultant to Mathematica Inc. (Princeton, NJ), estimate an econometric model for the visitor industry in Hawaii to design state tax and tourist policy. (Visitor Industry and Hawaii's Economy: A Benefit Cost Analysis, MATHEMATICA, Inc., Princeton, NJ 1969.)

Wharton School of Finance, The Demand for Water Oriented Recreation, RFF Mimeo, 1967.



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13 **UNITED STATES DISTRICT COURT FOR**
THE CENTRAL DISTRICT OF CALIFORNIA

14 **MATTHEW BRACH**, an individual,
15 *et al.*,

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM**, in his official
19 capacity as the Governor of California,
20 *et al.*,

21 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

22 **DECLARATION OF MARK**
MCDONALD, M.D. IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, MARK MCDONALD, M.D., declare as follows:

24 1. I am a clinical psychiatrist retained by Plaintiffs to render an expert
25 opinion in this action. I make this declaration based on my own personal knowledge. If
26 called as a witness, I would testify competently as follows.

27 2. I have reviewed the court filing and exhibits provided by Plaintiffs and
28 have reached an opinion on the question of safety for children to return to K-12 school
in fall 2020 in the state of California.



1 3. My training, expertise, and skills qualify me to express the opinions set
2 forth in this declaration. I am a UCLA-trained double-boarded psychiatrist (adult and
3 child & adolescent psychiatry) in active full-time clinical practice. I have worked in
4 child and adolescent inpatient psychiatric hospital units (including those for eating
5 disordered patients), residential substance abuse treatment programs for young adults,
6 and incarcerated juvenile treatment programs. I began my private practice in Los
7 Angeles in 2013, specializing in child and adolescent psychiatry, in which I provide
8 therapy to individuals, couples, and families; play therapy to children; and medication
9 treatment to individuals of all ages. Attached as Exhibit 7 is a true and correct copy
10 of my CV.

11 4. In forming my opinion, I relied on matters of a type reasonably relied upon
12 by experts in my field, to wit, peer-reviewed medical evidence related to the question of
13 safety for children to return to K-12 school. The underlying facts revealed by this
14 evidence led to my ultimate conclusion, namely, that there is no potential for
15 meaningful medical harm for children to return to the classroom now or in the fall.

16 5. According to the CDC, based on the most recent data available from July
17 22, 2020, no child under age 18 in the state of California has died due to infection from
18 the coronavirus since tracking began on February 1, 2020. This contrasts with 1,033
19 deaths of all causes in children under age 15 during the same time period. Unlike
20 seasonal flu, which kills approximately 200 children per year nationally, the
21 coronavirus largely spares children. The hospitalization rate in children who are
22 infected is exceedingly low and makes up an insignificant percentage of total
23 hospitalizations within the general population.

24 6. Numerous recent studies performed in Europe have shown low rates of
25 infection among children attending school and low rates of transmission of the virus
26 from children to adults. Most recent and notable among them, a July 15, 2020 German
27 study from the University of Dresden found that among 2,000 students and teachers,
28 few students became infected with the virus, and no meaningful transmission occurred

1 from students to teachers. One of the study's author's concluded that, in fact, children
2 appeared to act as a barrier to transmission. Following publication, the local German
3 state of Saxony dropped mask requirements in schools, finding that they served no
4 purpose. Most European nations have re-opened their schools, and none have reported a
5 meaningful increase in pediatric illness or measurable transmission from children to
6 adults.

7 7. Keeping schools closed contributes to a substantial known risk to
8 children's health and safety. Psychological, social, and emotional development requires
9 children to both spend time away from parents and with their peers, in structured
10 settings, such as school. Robbing them of this critical experience places them at high
11 risk of stunted growth and developmental arrest. In addition, extended periods of
12 confinement provoke numerous mental and emotional illnesses such as depression,
13 anxiety, phobias, self-harming behaviors and suicide. In vulnerable populations,
14 physical and sexual abuse at home will worsen. I have seen a substantial increase in
15 illness among existing pediatric patients in my clinical practice, all of whom have been
16 confined at home for over three months. For patients with cognitive developmental
17 delays like autism, most have regressed in years, and many have become violent toward
18 themselves and their parents. No child in my practice has maintained or improved in his
19 emotional condition since school closures began in March 2020.

20 8. Re-opening all schools in California is necessary to protect the health and
21 safety of the state's children. There is no medical basis for continuing to keep schools
22 closed; in fact, not re-opening will certainly cause significant harm to children. This
23 harm will worsen the longer children are kept from returning to school.

24 I declare under the penalty of perjury under the laws of the United States of
25 America and the State of California that the foregoing is true and correct.

26
27 Dated: July 23, 2020

DocuSigned by:

Mark McDonald

6632556EC345441...

Dr. Mark McDonald

EXHIBIT 7

MARK MCDONALD, M.D.

LICENSES AND BOARD CERTIFICATIONS

Qualified Medical Evaluator (QME), State of California DWC – 2015
American Board of Psychiatry (ABPN), Child and Adolescent Certification – 2012
ABPN, Adult Certification – 2011
State of California medical license – 2010
DEA registration with buprenorphine prescribing license – 2010

EMPLOYMENT

PRESIDENT, MARK MCDONALD, M.D. INC.; LOS ANGELES, CA – 2013-PRESENT
Psychiatric evaluation and treatment of children, adolescents, and adults with both medication management and individual therapy; QME evaluation for State of California DWC; independent medical evaluation (IME) for disability, return-to-work, and fitness-for-duty; medical-legal consultation, including medical record review and deposition preparation; expert witness reporting and deposition; clinical teaching and seminars for Maple Counseling Center and Psychoanalytic Center of California

STAFF PSYCHIATRIST, LA COUNTY DMH; LOS ANGELES, CA – 2012-2014
Psychiatric evaluation and treatment of pre and post-adjudicated minors—juvenile hall and camp—for Los Angeles County Department of Mental Health

STAFF PSYCHIATRIST, PACIFIC HOSPITAL; LONG BEACH, CA – 2010-2012
Adult inpatient psychiatric evaluation and treatment for three hospital units, weekend coverage; adult medical inpatient psychiatric consultation and treatment on medical floor, weekend coverage

STAFF PSYCHIATRIST, ST. ELIZABETH HOSPITAL; EDGEWOOD, KY – 2010-2010
Adult inpatient psychiatric evaluation and treatment for 24-bed unit, weekend coverage

EDUCATION

PSYCHOANALYTIC CENTER OF CALIFORNIA (PCC), CANDIDATE IN ADULT
PSYCHOANALYSIS – 2012-PRESENT
PCC, ADULT PSYCHOANALYTIC PSYCHOTHERAPY PROGRAM – 2012
HARBOR-UCLA CHILD AND ADOLESCENT PSYCHIATRY FELLOWSHIP – 2012
UNIVERSITY OF CINCINNATI ADULT PSYCHIATRY RESIDENCY – 2010
MEDICAL COLLEGE OF WISCONSIN: DOCTOR OF MEDICINE – 2007
UNIVERSITY OF CALIFORNIA, BERKELEY: BACHELOR OF ARTS JAPANESE HISTORY,
FIRST HONORS – 1995

LANGUAGES

Proficiency in speaking and writing Japanese, Spanish, and French

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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF ROBERT C.
HAMILTON, M.D., F.A.A.P., IN
SUPPORT OF APPLICATION FOR
TEMPORARY RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, ROBERT C. HAMILTON, M.D., declares as follows:

24 1. I am a pediatric physician retained by Plaintiffs to render an expert opinion
25 in this action. I make this declaration based on my own personal knowledge. If called as
26 a witness, I could and would testify competently as follows.

27 2. I have reviewed the court filings provided by Plaintiffs and have reached
28 an opinion on the question of safety from children to return to K-12 school in fall 2020
in the state of California.

1 3. My training, expertise, and skills qualify me to express opinions set forth
2 in this declaration. I am a full-time general pediatrician in Santa Monica, California. I
3 am a graduate of Humboldt State University and UC Davis, where I majored in science
4 and biochemistry. I graduated from UCLA medical school, where I also completed my
5 residency and chief residency. I have been in practice in the community for the past
6 thirty-six years. I also have had several academic appointments, including Assistant
7 Clinical Professor of Pediatrics at UCLA and Instructor of Pediatrics at Western
8 University School of Medicine. I am the author of a published book, titled *Seven*
9 *Secrets of the Newborn: Secrets and (Happy) Surprises of the First Year* (2018). I am
10 also a member of the American Academy of Pediatrics, California Chapter and the Los
11 Angeles Pediatric Society. Attached as Exhibit __g__ is a true and correct copy of my CV.

12 4. I base my opinion regarding school opening on published studies that
13 consider the medical effect COVID-19 has had on the health of children, conversations
14 I have had with knowledgeable colleagues, and my personal experience. The
15 underlying facts, supported by the evidence, lead me to conclude that children must
16 return to in-person instruction.

17 5. First, it is clear that children are tolerating COVID-19 infections much
18 better than adults. The overall number of children (0-18 years of age) who have been
19 infected with COVID-19 represents only eight percent of all cases of COVID-19 in the
20 country. Of those who do get infected, the mortality rate is one-fifth of one percent.
21 Far more children in this age category die from the flu annually than have died from
22 coronavirus.

23 6. Second, the closing of schools this last spring and the conversion from in-
24 class teaching to online instruction turned out to be an educational failure. Up to one-
25 third of high school students in the Los Angeles school system never checked in with
26 their teachers once. The reasons are numerous but could possibly be due to the lack of
27 internet access or even lack of computers. In other words, the shutdown of the schools
28 revealed the depth of the digital divide.

1 7. Third, children are not spreading the virus to adults in any significant level.
2 Dr. Mark Woolhouse, a Professor of Infectious Disease from Edinburgh, Scotland, after
3 reviewing the literature that pertained to this matter, stated that “there have been no
4 recorded cases of a teacher catching coronavirus from a pupil anywhere in the world.”
5 Furthermore, the current President of the American Academy of Pediatrics (“AAP”),
6 Sally Goza, recently wrote, “there is evidence that children are less likely to be infected,
7 less likely to have severe symptoms and less likely to spread the infection to others.”
8 Her comments were based on studies done in Switzerland, China, France and Australia.

9 8. Both statements, one from an eminent pediatrician and the other from a
10 seasoned Infectious Disease specialist indicate that the infectious risks for children
11 returning to schools is minimal.

12 9. Fourth, socialization is a critical part of a child’s education. Regarding this
13 issue, AAP President Goza has also said that “missing school can have serious
14 consequences for child health and well-being, particularly for students with disabilities
15 or with special healthcare needs.” As a pediatrician, I agree with these comments.

16 10. From my own experiences in my office, it is clear to me that children are
17 not handling remote learning and endless quarantining well. Many are bored by
18 spending hours in front of a screen. Many others are gaining weight due to the lack of
19 activity. All of this is detrimental to their health and not good.

20 11. For these reasons, it is time for children to return to school. Reopening of
21 schools is necessary to prevent further harm to our children and there is no medical
22 basis for preventing our children from receiving in-person instruction.

23
24
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26 ///

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I declare under the penalty of perjury under the laws of the United States of America and the State of California that the foregoing is true and correct.

Dated: July 25, 2020

DocuSigned by:
Robert Hamilton

Dr. Robert C. Hamilton

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EXHIBIT 8

CIRRUCULUM VITAE

Robert Curtis Hamilton, M.D., F.A.A.P.

Office telephone: (310) 264-2100

Office FAX: 310) 264-2108

E-mail: rchamiltonmd@gmail.com

Date of Birth: May 25th, 1953

Place of Birth: Eureka, California, United States of America

Pre-Medical Education:

1. Humboldt State University: Arcata, California (9/1971-6/1974)
2. University of California, Davis: Davis, California (9/1974-6/1976)
Degree: Bachelor of Science, Biochemistry

Medical Education:

University of California, Los Angeles: Los Angeles, California (9/1976-6/1980)
Degree: Doctor of Medicine

Hospital Training:

1. Internship/Residency: UCLA Department of Pediatrics
Los Angeles, California 90025
William F. Friedman, M.D., Chairman
(June 1980-June 1983)
2. Chief Residency: UCLA Department of Pediatrics
Los Angeles, California 90025
William F. Friedman, M.D., Chairman
(June 1983-June 1984)

Medical Practice:

1. Santa Monica Pediatric Medical Group (Partner in Group)
2122 Wilshire Boulevard
Santa Monica, California 90404
(July 1984-October 1996)
2. Pacific Ocean Pediatrics (President of Group)
2216 Santa Monica Boulevard, #204

Santa Monica, California 90404
(October 1996-Present)

Hospital Affiliations:

1. Saint John's Health Center
1328 22nd Street
Santa Monica, California 90404
2. Santa Monica/UCLA
1250 16th Street
Santa Monica, California 90404

Academic Appointments:

1. Assistant Clinical Professor of Pediatrics
University of California, Los Angeles
Los Angeles, California 90025
2. Instructor of Pediatrics
Western University School of Medicine
Pomona, California

Hospital Responsibilities:

1. Saint John's Health Center
 - A. Member, Pediatric Committee-current
 - B. Speaker's Coordinator, Department of Pediatrics (1984-2017)
2. Santa Monica/UCLA Hospital: Clinical Instructor of Pediatrics

Non-Hospital Medical Related Responsibilities:

1. Past-President, Los Angeles Pediatric Society (10/2001-10/2002)
2. Coordinator, Gene and Eve Black Summer Internship Program, administered through the Los Angeles Pediatric Society, current
3. Coordinator, Lighthouse Medical Missions (Over the past 25 years I have led 31 medical mission teams to Central America, Africa and more recently Asia. Countries that we have served include: Nicaragua, Guatemala, Sierra Leone, The Gambia, Burundi, Benin, Burkina Faso, Liberia, Guinea Bissau, Democratic Republic of the Congo and Kyrgyzstan.)
4. Board of Advisors: [*] Insyght Corporation (2011 – current)
5. Board of Advisors: Pacifica Christian High School (2010 – current)

6. Board of Advisors: Claris Health (2008 – current)
7. Board of Advisors: PROLLERGY Corporation (2018)
8. Board of Directors: Santa Monica Symphony Orchestra (2013-current)

Professional Societies:

1. American Academy of Pediatrics, California Chapter #2
2. Los Angeles Pediatric Society

Certification: Fellow in the American Academy of Pediatrics: 1986-present

Licensing:

1. California License: G046186
2. DEA License: AH1619761

Media:

1. Podcast Host: “The Hamilton Review: Where Kids and Culture Collide”
2. Producer and creator of “Hamilton Hold” video, “How to Calm a Crying Baby”. Video on YouTube has garnered over 44 million views
3. Guest: Good Morning America (12/2015) (New York)
4. Guest: Fox and Friends (12/2015) (New York)
5. Guest: Dr. OZ Show (12/2015) (New York)
6. Guest: ‘Challenge Impossible’: CCTV-Channel 1, Beijing, People’s Republic of China (11/2016)
7. Guest: The Dennis Prager Show (11/2018)
8. Guest: Eric Metaxas Show (12/2018)
9. Guest: The Evening Beat, Spectrum News (12/2018)
10. Guest Speaker: American Visionary Art Museum (3/2019)
11. Guest Speaker: Mommy Con (4/2019)
12. Guest: Access Online (5/2019)
13. Guest: The Dennis Prager Show (5/2020)
14. Guest: The Ingraham Angle, Fox News (5/2020)
15. Guest: The Ingraham Angle, Fox News (6/2020)
16. Guest: The Evening Beat, Spectrum News (7/2020)

Articles:

1. The Effect of Prophylactic Acetaminophen Administration of Reactions to DPT Vaccination: Lewis, Cherry, Sachs, Woo, Hamilton, Tarle and Overturf, American Journal of the Diseases of Children, January 1988
2. Making an Impossible Trip Possible: Kobal, Czer, Czer, Feldsher, Hamilton and Siegel, Chest, 125:1, January 2004

3. *Wall Street Journal* Opinion Section, “God Said, ‘Be Fruitful and Multiply’”, September 12, 2018
4. *Wall Street Journal* Opinion Section, “Let Children Go to Summer School”, May 18, 2020

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1. *Seven Secrets of the Newborn: Secrets and (Happy) Surprises of the First Year*, St. Martin’s Press, New York, New York, September 2018

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF JEFF
BARKE, M.D. IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, JEFF BARKE, M.D., declare as follows:

24 1. I am a primary care physician retained by Plaintiffs to render
25 an expert opinion in this action. I make this declaration based on my personal
26 knowledge. If called as a witness, I could and would testify competently to the matters
27 set forth herein.
28

1 2. I have reviewed the court filings provided by Plaintiffs and have reached
2 an opinion on the question of safety for children to return to K-12 school in fall 2020 in
3 the state of California. Given the evidence I reviewed, it led me to conclude that
4 returning to in-person instruction poses very little risk to children.

5 3. My training, expertise, and skills qualify me to express the opinions set
6 forth in this declaration. I am a Board-Certified Primary Care Physician in private
7 practice for the last 25 years. I completed medical school and family practice residency
8 training at the University of California, Irvine. I have also taught at UC Irvine as an
9 associate clinical professor. I have been a board member of the Orange County
10 Medical Association, I am a former school board member for the Los Alamitos Unified
11 School District, and I am the co-founder and current board chair of Orange County
12 Classical Academy, a public charter school.

13 4. Over the last several months, I have provided treatment for COVID-19
14 patients on a daily basis.

15 5. I have reviewed numerous data and science sources on COVID-19, which
16 provide the basis for my opinion. One data point that has remained true throughout the
17 pandemic is that COVID-19 poses an extremely low risk to school age children and the
18 science showing very little, if any, risk of asymptomatic children passing COVID-19 to
19 adults. Indeed, numerous recent studies released from Europe support this conclusion.

20 6. A recent study of 2,000 children and teachers conducted in Germany found
21 very few coronavirus antibodies among them, suggesting that schools and young people
22 do not play as a big a role in transmission as previously feared.

23 7. A recent report comparing the opening of schools in Sweden and Finland
24 showed a similar conclusion. A true and correct copy is attached as Exhibit 9.

25 8. According to the CDC, no child had died from COVID-19 in the state of
26 California. In fact, the CDC has issued a report on the importance of reopening
27 America's schools this fall. Among other things, the CDC found that the best available
28

1 evidence indicates if children become infected, they are far less likely to suffer severe
2 symptoms.” A true and correct copy is attached as Exhibit ~~10~~.

3 9. A study in Ireland found that there is no evidence of secondary
4 transmission of COVID-19 from children attending school. A true and correct copy is
5 attached as Exhibit ~~11~~.

6 10. A study by the British Columbia Minister of Health found that COVID-19
7 virus has a very low infection rate in children. A true and correct copy is attached as
8 Exhibit ~~12~~.

9 11. Children have a far higher risk of morbidity and mortality from seasonal
10 influenza, yet we never shut down schools. Children also have a much higher risk of
11 dying in an automobile accident or from drowning than from COVID-19 yet we still
12 drive and keep our pools and beaches open.

13 12. It is my expert opinion that reopening schools with in-person instruction
14 poses a very low risk to children. Countries all over Europe have opened their schools
15 successfully and we should do the same. There is no medical basis for continuing to
16 keep schools closed.

17
18 I declare under penalty of perjury under the laws of the United States of America
19 and the State of California that the foregoing is true and correct.

20
21 Dated: July 24, 2020

DocuSigned by:

5C755C03C4CD479...
Dr. Jeff Barke

EXHIBIT 9

Covid-19 in schoolchildren

A comparison between Finland and Sweden

This title be downloaded from: www.folkhalsomyndigheten.se/publicerat-material/.

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Article number: 20108-1

About the report

- This report has been written to compare the effect of different approaches in regards to school closure, as a response to the covid-19 pandemic.
- It adds to the knowledge of the effectiveness of measures aimed at the mitigation of covid-19.
- It could be of interest for any decision maker involved in choosing the most effective measures.
- This report has been produced in cooperation with the Finnish Institute for Health and Welfare THL, represented by Dr Hanna Nohynek, MD PhD and Dr Otto Helve, MD PhD.

The Public Health Agency of Sweden

Johan Carlson
General Director

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Abbreviations/glossary

Covid-19 – the infection caused by the new coronavirus SARS-CoV-2

ICU - intensive care unit

SARS-CoV-2 – the new coronavirus that causes covid-19

Summary

This report is a comparison between Finland and Sweden, two in many ways similar countries who applied different measures regarding schools during the covid-19 pandemic. There is no difference in the overall incidence of the laboratory confirmed covid-19 cases in the age group 1-19 years in the two countries and the number of laboratory confirmed cases does not fluctuate with school closure or change in testing policy in Finland. In Sweden, the number of laboratory confirmed cases is affected by change in testing policy. Severe covid-19 disease as measured in ICU admittance is very rare in both countries in this age group and no deaths were reported. Outbreak investigations in Finland has not shown children to be contributing much in terms of transmission and in Sweden a report comparing risk of covid-19 in different professions, showed no increased risk for teachers.

In conclusion, closure or not of schools had no measurable direct impact on the number of laboratory confirmed cases in school-aged children in Finland or Sweden. The negative effects of closing schools must be weighed against the positive indirect effects it might have on the mitigation of the covid-19 pandemic.

Background

This report is a comparison between Finland and Sweden, two in many ways similar countries who applied different measures regarding schools during the covid-19 pandemic. As covid-19 is a completely new infection to humankind there are still many question marks regarding what mitigation measures to apply for maximum effect.

Sweden is one of very few countries that decided to keep day care and primary schools open during the pandemic. School closure may have many negative effects, mainly of social character but also secondary effects such as parents having to stay at home with their children (1, 2). This could add to staffing problem for example in hospitals or other for society critical areas.

Children in general seem to be much less affected by covid-19 than adults (3, 4). They do not become severely ill in the same extent as adults and because of less severe symptoms or none at all, might be less infectious (5).

In Sweden this assumption and weighing in the negative effects of a school closure, resulted in the decision not to close day care or primary schools for children, when secondary schools and universities were closed on March 17.

In Finland on the other hand, all schools were closed on March 18 until May 13 with the exception of children in grades 1-3, who had the possibility to participate in regular on site teaching if their caretakers were working in areas that were considered critical for the society (18.3.-13.5) or if the caretakers deemed participation necessary (23.3.-13.5). However, caretakers of children in grades 1-3 were encouraged to have their children participate in distance learning from home.

Both in Finland and Sweden children usually start attending day care during their second year of life and preschool the year they turn six years old. Primary school is from seven to fifteen years of age followed by three to four years of secondary school. Regarding the population, Finland is about half the size of Sweden with 5,5 million inhabitants compared to 10,3 million.

Table 1. Number of schools and pupils

Country	Number of primary schools	Number of pupils (class 1-9, 7-15 y)	Mean number of children per school unit
Finland*	2 333	550 509	235
Sweden**	4 829	1 086 180	225

* Finnish National Agency for Education, 2018

**Swedish National Agency for Education 2019

Data

Table 2, Finland: Number of reported cases, number admitted in intensive care unit (ICU), number of deaths due to covid-19 and cumulative incidence of reported cases, per June 14, 2020.

Age group (school level)	Number of reported cases	Number admitted in ICU	Number of deaths	Population*	Incidence of reported cases (per 100 000)
1-5 years (day care)	96	0	0	269 246	36
6-15 years (pre- and primary school)	257	0	0	616 516	42
16-19 years (secondary school)	231	1	0	236 199	98
Total 1-19 years	584	1	0	1 121 961	52
Percentage of total number	8.2%	0.3%	0%	20.3%	
Total all ages	7 110	288	320	5 525 292	129

* Population numbers from Statistics Finland, as reported December 2019

Table 3, Sweden: Number of reported cases, number admitted in intensive care unit (ICU), number of deaths due to covid-19 and cumulative incidence of reported cases, per June 14, 2020.

Age group (school level)	Number of reported cases	Number admitted in ICU	Number of deaths	Population*	Incidence of reported cases (per 100 000)
1-5 years (day care)	98	2	0	610 904	16
6 -15 years (pre- and primary school))	370	6	0	1 225 478	30
16-19 years (secondary school)	680	6	0	451 965	150
Total 1-19 years	1124	14	0	2 288 347	49
Percentage of total number	2,1%	0,6%	0%	22.2%	
Total all ages	52 424	2 328	5 051	10 327 589	508

* Population numbers from Statistics Sweden, as reported November 2019

Figure 1. Cases in Finland by age group and week of diagnosis. All schools closed week 12 to week 20. Extended testing started midweek 16.

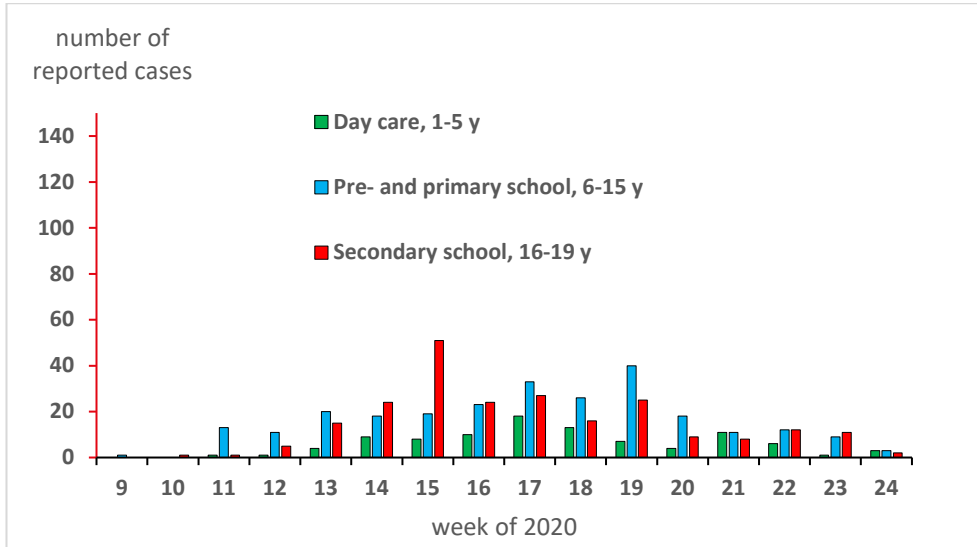


Figure 2. Cases in Sweden by age group and week of diagnosis. Secondary school closed week 12 and extended testing started week 22.

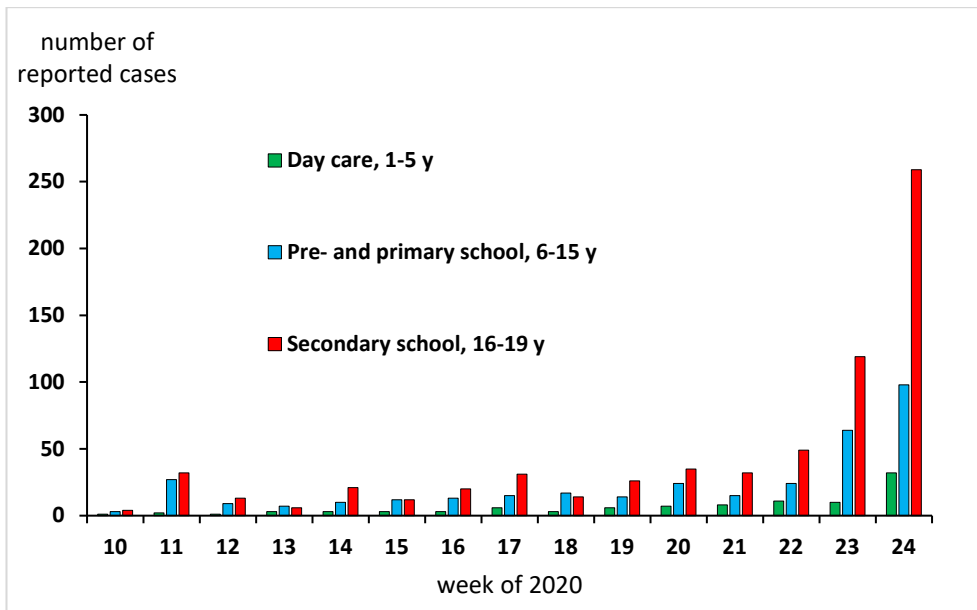


Table 4, Sweden: Number of teachers, cases among them and relative risk compared to other professions.

Teachers in	Number of teachers 2019/2020	Number of cases	Median age at diagnosis	Relative risk* (95% CI)
Day care	157 263	192	45	0.9 (0.7-1.1)
Primary school	105 418	160	50	1.1 (0.9-1.3)
Secondary school	30 357	29	47	0.7 (0.5-1)

* compared to other professions

Analysis/results

In Finland, primary school closures took place between March 18 and May 13. Primary schools were reopened between May 14 and May 31. During this reopening period, there were 23 primary school exposures (index cases) in 21 primary schools. Of the index cases, 16 were pupils and seven adults. There were 392 pupils and 54 adults placed under quarantine and the last quarantine ended on June 12. The Finnish Institute for Health and Welfare and the Ministry of Education issued restriction guidelines for primary school openings on the 4th of May. A key component of these guidelines was limiting the number of contacts in schools and therefore minimizing the number of possible quarantines. During the period May 14 to June 12 (the end of the last quarantine period), there were no secondary cases in any of the primary schools.

Primary school closure and reopening did not have any significant impact on the weekly number of laboratory-confirmed cases in primary school aged children (**figure 1**).

In Finland, the number of cases in primary school aged children has been less than half of their percentage of the population (**table 2**). In general, the testing guidelines for SARS-CoV-2 have not differed between children and adults and children with symptoms have been tested according to the same protocols as adults. Until April 15, testing was mostly focused on those belonging to risk groups and staff in healthcare. Thereafter testing was encouraged among all suspected cases of covid-19 infection.

The extremely low percentage of SARS-CoV-2 positive children requiring intensive care and no deaths underlines the age-specific pathology of covid-19.

In Sweden, the percentage of reported cases among schoolchildren is only one tenth of their percentage of the population. Also very few cases have been admitted to ICU and there has been no deaths reported in cases aged 1-19 years (**table 3**). **Figure 2** shows the epidemic curve for schoolchildren in Sweden per week where the somewhat higher number week 11 is related to extensive testing of people returning from spring break in Italy. In week 12 testing was limited to cases seeking hospital care. Also in week 12, secondary school and universities switched to on-line teaching, but day care and primary schools remained open. Because of the reduction in testing, contact tracing was limited in most parts of the country and no outbreak investigations performed in schools, missing any opportunity to fill the knowledge gap on the role of children in propagating the epidemic. The increase in number of cases from week 22 coincides with introduction of a more generous testing policy again, testing all with symptoms. In **table 4**, data from Statistics Sweden on individuals and profession was matched with reported cases to get an idea of which professions were overrepresented among reported cases (6). Compared to other professions, the relative risk among teachers in day care, primary and secondary school were close to one, indicating no increased risk of exposure and infection in this group.

The Public Health Agency of Sweden published a report on covid-19 and school children on May 29, summarising the findings and effects of keeping day care and primary schools open in Sweden (7).

Discussion

Schools have been closed in most countries affected by the pandemic, with the intention to protect children from being infected and to reduce the spread in general. It has been suggested that children may be important in spreading this infection, especially since they usually do not become very ill but still can have a high viral load (8-10).

The overall cumulative incidence among school-aged children in Finland and Sweden is similar even though Finland closed schools for most children and Sweden did not. Sweden has been much more affected by the pandemic than Finland but this does not show in the incidence among children. It is likely that many mild cases in children in Sweden never been detected since testing during week 12 to 22 mainly focused on persons seeking hospital care. By now it is evident that children are much less likely to develop serious disease if they become infected (3, 10, 11), meaning that keeping schools open might be less harmful for children than closing them.

In Sweden, outbreak investigations have been very limited in the regions with the highest number of cases due to strained resources. In the contact tracings in primary schools in Finland, there has been hardly any evidence of children infecting other persons. The Swedish comparison of number of reported cases among staff in day care and primary school to number of cases in other professions does not show any increased risk for teachers. This also indicates that the role of children in propagating this infection is likely to be small. Various papers on contact tracing have also found that children rarely are the first case in family clusters (4, 12, 13).

In the US, a peer reviewed paper has been published suggesting that children might be the best group to target for covid-19 immunization in order to reduce the spread of the virus also to other groups, comparing it with other respiratory infections like influenza and pneumococcal infections (14). This theory is not supported by the findings in our report.

Another study, still only available as a pre-print, finds school closure to be the most effective non-pharmaceutical intervention when looking at a number of countries and different interventions (15). However, as they do point out, it might be a confounded finding as it was one of the first interventions in most countries, thus raising the awareness of the gravity of the situation, which would affect behaviour in general.

Conclusions

- Closing of schools had no measurable effect on the number of cases of covid-19 among children.
- Children are not a major risk group of the covid-19 disease and seem to play a less important role from the transmission point of view, although more active surveillance and special studies such as school and household transmission studies are warranted.
- The negative effects of closing schools must be weighed against the possible positive indirect effects it might have on the mitigation of the covid-19 pandemic.

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EXHIBIT 10

The Importance of Reopening America's Schools this Fall

The Importance of Reopening America's Schools this Fall

Updated July 23, 2020

Languages

As families and policymakers make decisions about their children returning to school, it is important to consider the full spectrum of benefits and risks of both in-person and virtual learning options. Parents are understandably concerned about the safety of their children at school in the wake of COVID-19. The best available evidence indicates if children become infected, they are far less likely to suffer severe symptoms.^{[1],[2],[3]} Death rates among school-aged children are much lower than among adults. At the same time, the harms attributed to closed schools on the social, emotional, and behavioral health, economic well-being, and academic achievement of children, in both the short- and long-term, are well-known and significant. Further, the lack of in-person educational options disproportionately harms low-income and minority children and those living with disabilities. These students are far less likely to have access to private instruction and care and far more likely to rely on key school-supported resources like food programs, special education services, counseling, and after-school programs to meet basic developmental needs.^[4]

Aside from a child's home, no other setting has more influence on a child's health and well-being than their school. The in-person school environment does the following:

- provides educational instruction;
- supports the development of social and emotional skills;
- creates a safe environment for learning;
- addresses nutritional needs; and
- facilitates physical activity.

This paper discusses each of these critical functions, following a brief summary of current studies regarding COVID-19 and children.

COVID-19 and Children

The best available evidence indicates that COVID-19 poses relatively low risks to school-aged children. Children appear to be at lower risk for contracting COVID-19 compared to adults. To put this in perspective, according to the Centers for Disease Control and Prevention (CDC), as of July 17, 2020, the United States reported that children and adolescents under 18 years old account for under 7 percent of COVID-19 cases and less than 0.1 percent of COVID-19-related deaths.^[5] Although relatively rare, flu-related deaths in children occur every year. From 2004-2005 to 2018-2019, flu-related deaths in children reported to CDC during regular flu seasons ranged from 37 to 187 deaths. During the H1N1 pandemic (April 15, 2009 to October 2, 2010), 358 pediatric deaths were reported to CDC. So far in this pandemic, deaths of children are less than in each of the last five flu seasons, with only 64.[†] Additionally, some children with certain underlying medical conditions, however, are at increased risk of severe illness from COVID-19.*

Scientific studies suggest that COVID-19 transmission among children in schools may be low. International studies that have assessed how readily COVID-19 spreads in schools also reveal low rates of transmission when community transmission is low. Based on current data, the rate of infection among younger school children, and from students to teachers, has been low, especially if proper precautions are followed. There have also been few reports of children being the primary source of COVID-19 transmission among family members.^{[6],[7],[8]} This is consistent with data from both virus and antibody testing, suggesting that children are not the primary drivers of COVID-19 spread in schools or in the community.^{[9],[10],[11]} No studies are conclusive, but the available evidence provides reason to believe that in-person schooling is in the best interest of students, particularly in the context of appropriate mitigation measures similar to those implemented at essential workplaces.

Extended school closure is harmful to children. It can lead to severe learning loss, and the need for in-person instruction is particularly important for students with heightened behavioral needs.^{[12],[13]} Following the wave of school closures in March 2020 due to COVID-19, academic learning slowed for most children and stopped for some. A survey of 477 school districts by the University of Washington's Center on Reinventing Public Education found that, "far too many schools are leaving learning to chance."^[13] Just one in three school districts expected teachers to provide instruction, track student engagement, or monitor academic progress for all students, and wealthy school districts were twice as likely to have such expectations compared to low-income districts.^[13]

We also know that, for many students, long breaks from in-person education are harmful to student learning. For example, the effects of summer breaks from in-person schooling on academic progress, known as "summer slide," are also well-documented in the literature. According to the Northwest Evaluation Association, in the summer following third grade, students lose nearly 20 percent of their school-year gains in reading and 27 percent of their school-year gains in math.^[14] By the summer after seventh grade, students lose on average 39 percent of their school-year gains in reading and 50 percent of their school-year gains in math.^[14] This indicates that learning losses are large and become even more severe as a student progresses through school. The prospect of losing several months of schooling, compared to the few weeks of summer vacation, due to school closure likely only makes the learning loss even more severe.

Disparities in educational outcomes caused by school closures are a particular concern for low-income and minority students and students with disabilities. Many low-income families do not have the capacity to facilitate distance learning (e.g. limited or no computer access, limited or no internet access), and may have to rely on school-based services that support their child's academic success. A study by researchers at Brown and Harvard Universities assessed how 800,000 students used Zearn, an online math program, both before and after schools closed in March 2020.^[15] Data showed that through late April, student progress in math decreased by about half, with the negative impact more pronounced in low-income zip codes.^[15] Persistent achievement gaps that already existed before COVID-19, such as disparities across income levels and races, can worsen and cause serious, hard-to-repair damage to children's education outcomes.^{[15],[16]} Finally, remote learning makes absorbing information more difficult for students with disabilities, developmental delays, or other cognitive disabilities. In particular, students who are deaf, hard of hearing, have low vision, are blind, or have other learning disorders (e.g., attention deficit hyperactivity disorder (ADHD)) and other physical and mental disabilities have had significant difficulties with remote learning.^[17]

Social and Emotional Skill Development

Schools play a critical role in supporting the whole child, not just their academic achievement. In addition to a structure for learning, schools provide a stable and secure environment for developing social skills and peer relationships. Social interaction at school among children in grades PK-12 is particularly important for the development of language, communication, social, emotional, and interpersonal skills.^[18]

Extended school closures are harmful to children's development of social and emotional skills. Important social interactions that facilitate the development of critical social and emotional skills are greatly curtailed or limited when students are not physically in school. In an in-person school environment, children more easily learn how to develop and maintain friendships, how to behave in groups, and how to interact and form relationships with people outside of their family. In school, students are also able to access support systems needed to recognize and manage emotions, set and achieve positive goals, appreciate others' perspectives, and make responsible decisions. This helps reinforce children's feelings of school connectedness, or their belief that teachers and other adults at school care about them and their well-being. Such routine in-person contacts provide opportunities to facilitate social-emotional development that are difficult, if not impossible, to replicate through distance learning.^{[18],[19],[20]}

Additionally, extended closures can be harmful to children's mental health and can increase the likelihood that children engage in unhealthy behaviors. An environment where students feel safe and connected, such as a school, is associated with lower levels of depression, thoughts about suicide, social anxiety, and sexual activity, as well as higher levels of self-esteem and more adaptive use of free time.^{[19],[20]} A longitudinal study of 476 adolescents over 3 years starting in the 6th grade found school connectedness to be

especially protective for those who had lower connectedness in other areas of their lives, such as home, and to reduce their likelihood of substance use.^[20]

Further, a review of studies conducted on pandemics found a strong association between length of quarantine and Post Traumatic Stress Disorder symptoms, avoidance behavior, and anger. Another review published this year found that post-traumatic stress scores of children and parents in quarantine were four times higher than those not quarantined.^{[21],[22]}

In-person schooling provides children with access to a variety of mental health and social services, including speech language therapy, and physical or occupational therapy to help the physical, psychological, and academic well-being of the child.^{[23], [24],[25],[26]} Further, school counselors are trained in the mental health needs of children and youth and can recognize signs of trauma that primary caregivers are less able to see because they themselves are experiencing the same family stresses. School counselors can then coordinate with teachers to implement interventions to offer children a reassuring environment for regaining the sense of order, security, and normalcy.

Without in-person schooling, many children can lose access to these important services. For example, we know that, even outside the context of school closures, children often do not receive the mental health treatment they need. Among children ages 9-17, it is estimated that 21 percent, or more than 14 million children, experience some type of mental health condition.^[27] Yet only 16 percent of those with a condition receive any treatment.^[23] Of those, 70-80 percent received such care in a school setting.^[23] School closures can be particularly damaging for the 7.4 million American children suffering from a serious emotional disturbance. For those individuals who have a diagnosable mental, behavioral or emotional condition that substantially interferes with or limits their social functioning, schools play an integral role in linking them to care and necessary support services.

For children with intellectual or physical disabilities, nearly all therapies and services are received through schools. These vital services are difficult to provide through distance learning models. As a result, more children with disabilities have received few to no services while schools have been closed.

Safety

Extended school closures deprive children who live in unsafe homes and neighborhoods of an important layer of protection from neglect as well as physical, sexual, and emotional maltreatment and abuse. A 2018 Department of Health and Human Services report found that teachers and other educational staff were responsible for more than one-fifth of all reported child abuse cases—more than any other category of reporter.^[28] During the COVID-19 school closures, however, there has been a sharp decline in reports of suspected maltreatment, but tragically a notable increase in evidence of abuse when children are seen for services. For example, the Washington, D.C. Child and Family Services Agency recorded a 62 percent decrease in child abuse reporting calls between mid-March and April 2020 compared to the same time period in 2019, but saw more severe presentation of child abuse cases in emergency rooms.^[29] Children who live in a home or neighborhood where neglect, violence, or abuse occur, but who are not physically in school, are deprived of access to trained school professionals who can readily identify the signs of trauma and provide needed support and guidance.^{[30],[31],[32],[33],[34]}

Nutrition

Extended school closures can be harmful to the nutritional health of children. Schools are essential to meeting the nutritional needs of children with many consuming up to half their daily calories at school. Nationwide more than 30 million children participate in the National School Lunch Program and nearly 15 million participate in the School Breakfast Program.^{[35],[36]} For children from low-income families, school meals are an especially critical source of affordable, healthy foods. While schools have implemented strategies to continue meal services throughout periods of school closures, it is difficult to maintain this type of school nutrition program over the long-term. This is a particularly severe problem for the estimated 11 million food-insecure children, living in the United States.

Physical Activity

When schools are closed, children lose access to important opportunities for physical activity. Many children may not be sufficiently physically active outside of the context of in-school physical education (PE) and other school-based activities. Beyond PE, with schools closed, children may not have sufficient opportunities to participate in organized and safe physical activity. They also lose access to other school-based physical activities, including recess, classroom engagements, and after school programs.

The loss of opportunities for physical activity from school closures, especially when coupled with potentially diminished nutrition, can be particularly harmful to children. Physical inactivity and poor nutrition among children are major risk factors for childhood obesity and other chronic health conditions. Over 75 percent of children and adolescents in the United States do not meet the daily physical activity level recommendations (60 minutes or more), and nearly half exceed 2 hours per day in sedentary behavior. Current models estimate that childhood obesity rate may increase by 2.4 percent if school closures continue to December 2020.^{[37],[38],[39]}

Conclusion

Schools are an important part of the infrastructure of our communities, as they provide safe, supportive learning environments for students, employ teachers and other staff, and enable parents, guardians, and caregivers to work. Schools also provide critical services that help meet the needs of children and families, especially those who are disadvantaged, through supporting the development of social and emotional skills, creating a safe environment for learning, identifying and addressing neglect and abuse, fulfilling nutritional needs, and facilitating physical activity. School closure disrupts the delivery of in-person instruction and critical services to children and families, which has negative individual and societal ramifications. The best available evidence from countries that have opened schools indicates that COVID-19 poses low risks to school-aged children, at least in areas with low community transmission, and suggests that children are unlikely to be major drivers of the spread of the virus. Reopening schools creates opportunity to invest in the education, well-being, and future of one of America's greatest assets—our children—while taking every precaution to protect students, teachers, staff and all their families.

*Some children have developed multisystem inflammatory syndrome (MIS-C) after exposure to SARS-CoV-2 (the virus that causes COVID-19). (<https://www.cdc.gov/mis-c/cases/index.html>) In one targeted surveillance study for MIS-C associated with SARS-CoV-2, however, the majority of children who were hospitalized with COVID-related MIS-C (70 percent) had recovered by the end date of the study period. (Feldstein LR et al.. Multisystem Inflammatory Syndrome in US Children and Adolescents. *N Engl J Med*. 2020;10.1056/NEJMoa2021680)

†CDC COVID Data Tracker. Available at <https://www.cdc.gov/covid-data-tracker/>. Accessed on July 21, 2020.

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Last Updated July 23, 2020

Community, Work & School

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EXHIBIT 11

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Rapid communication

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No evidence of secondary transmission of COVID-19 from children attending school in Ireland, 2020 |

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Abstract

As many countries begin to lift some of the restrictions to contain COVID-19 spread, lack of evidence of transmission in the school setting remains. We examined Irish notifications of SARS-CoV2 in the school setting before school closures on 12 March 2020 and identified no paediatric transmission. This adds to current evidence that children do not appear to be drivers of transmission, and we argue that reopening schools should be considered safe accompanied by certain measures.



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News/announcements

The [European Scientific Conference on Applied Infectious Disease Epidemiology \(ESCAIDE\)](#) is going online. Originally planned for Warsaw, Poland, ESCAIDE 2020 will instead take place online from 26 to 27 November. Click [here](#) for more information and for updates.

News/announcements

The [European Centre for Disease Prevention and Control \(ECDC\)](#) has set up a dedicated webpage for [coronavirus disease \(COVID-19\) updates and risk assessments](#) with a focus on Europe.

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EXHIBIT 12

Coronavirus COVID-19

BC Centre for Disease Control | BC Ministry of Health



HOW YOU CAN SLOW THE SPREAD OF COVID-19

Take care of others by taking care of yourself.

Wash your hands, don't touch your face, and stay home if you are sick.

Stay at Home and Physically Distance

Stay at home whenever you can. Maintain 2 meters distance from those outside of your household.

Caring for Children with COVID-19

April 3, 2020

By Sarah Silverberg (MD) and Laura Sauv  (MD, MPH, FRCPC)

Key Points

- COVID-19 virus has a very low infection rate in children estimated at 1-5% worldwide.
- The majority of cases in children are the result of a household transmission by droplet spread from another family member with symptoms of COVID-19.
- Children who are infected with the virus and develop COVID-19 have milder symptoms if any, and very few become critically ill.
- Children with COVID-19 illness typically have a fever, dry cough and fatigue. Some may also experience nausea, vomiting, abdominal pain and diarrhea.
- Unlike adults the rates of transmission are unknown. There is no documented evidence of child-to-adult transmission. There are no documented cases of children bringing an infection into the home, from school or otherwise. This is likely the result of the limited number of cases and the mild symptoms in those who do have COVID illness.
- There is no conclusive evidence that children who are asymptomatic pose a risk to other children or to adults.
- There is no evidence indicating children of HCWs are at increased risk of COVID-19 infection than children of non-HCWs. This is likely due to the careful monitoring of HCWs for symptoms and follow-up of their household contacts.
- Like adults, children with any common cold, influenza or COVID-19 like symptoms should stay home and isolate for 10 days following onset of symptoms and until symptoms resolve.
- More research is needed to fully characterize infection, transmission and COVID-19 disease in children.

COVID-19 Illness in Children

1. Case counts of SARS-CoV2 infection and COVID-19 illness in children are low, representing only 1-5% of confirmed cases worldwide.
2. The severity of disease in children appears to be lower, with only a few documented cases of severe illness and/or death. Younger infants (those <1 year of age) have the highest rates of severe or critical illness.
3. Children are more likely to have few, if any symptoms. Up to 32% of children have been asymptomatic with presumed or confirmed COVID-19.
4. Typically, children with COVID-19 have a fever, dry cough and fatigue. In rare cases, dyspnea and respiratory compromise appear after a week of disease progression. These are associated with systemic symptoms including malaise, restlessness, and poor appetite.



Ministry of Health

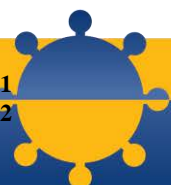


BC Centre for Disease Control

If you have fever, a new cough, or are having difficulty breathing, call 8-1-1.

Non-medical inquiries 1-888-COVID19 (1888-268-4319)
(ex. travel, physical distancing): or text 604-630-0300

Exhibit 12



5. Some children experience GI symptoms, including abdominal discomfort, nausea, vomiting, abdominal pain and diarrhea.

Children and Infectivity

1. The majority of children with COVID-19 have a positive household contact.
2. The incubation period in children is approximately two days, with a range of 2-10 days (similar to adults). The mean incubation period between household exposure and pediatric symptom onset is approximately 1 day longer than observed in adult cases.
3. Children typically have negative swabs within 6-22 days of symptom onset, but often not until 2 weeks' time. Children have been found to have high viral loads despite mild symptoms, with prolonged shedding in nasal secretions.
4. As a result of the lower symptom burden, the rates of asymptomatic transmission or transmission with mild symptoms are unknown.
5. There is no documented evidence of child-to-adult transmission of SARS-CoV2. This is different than outbreaks of other viruses such as Influenza where children have been found to have a high rate of infection outside of the household and significant inter-generational transmission.
6. It is unlikely the children of health care workers have more frequent COVID-19 than other children, however, no evidence is available.

Recommendations for care for children with suspected or confirmed cases of COVID-19

1. Children are at a lower risk of developing COVID-19, including developing severe disease. Most children who have COVID-19 can be cared for at home, with supportive care performed by their parents.
2. Children under 1 year of age and those who are immunocompromised or have pre-existing pulmonary conditions are at a higher risk of severe disease.
3. As for all members of the community at this time, children should physically distance themselves as much as possible outside of the family unit.
4. Children, and particularly young children, who develop fever, cough or shortness of breath should be evaluated, as influenza as well as other viral illnesses are still circulating in B.C. Symptomatic children should be cared for using droplet and contact precautions (with airborne precautions if aerosol generating medical procedures are needed).
5. While evidence is limited at this time, children with COVID-19 may shed the virus for longer than adults.

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April 3, 2020
Caring for Children with COVID-19 by Dr. S. Silverberg & Dr. L. Sauvé

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF COLLEEN
VICTORY, M.D. IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, COLLEEN (“KELLY”) VICTORY, M.D., declares as follows:

24 1. I am a physician retained by Plaintiffs to render an expert opinion in this
25 action. I make this declaration based on my own personal knowledge. If called as a
26 witness, I could and would testify competently to the matters set forth within.

27 2. I have reviewed the court filings provided by Plaintiffs, and the Governor’s
28 orders and public guidance on school closures, and have reached an opinion on the



1 question of safety for children to return to K-12 school in Fall 2020 in the state of
2 California.

3 3. My training, expertise, and skills qualify me to express the opinions set
4 forth in this declaration. I am a trauma and emergency physician with a specialty in
5 disaster preparedness and response, and public health. I have significant post-graduate
6 training, including the National Preparedness Leadership Initiative program at The
7 Harvard School of Public Health. I am the President of Victory Health, a consulting
8 firm focused on driving and supporting meaningful reform and innovation in healthcare.
9 For the past two decades, I have been in the public health arena advising and working
10 with large, fortune 100 companies, as well as hospitals, school systems, and
11 municipalities as they work to develop disaster preparedness and response plans to large
12 disasters, including hurricanes, earthquakes, school shootings, and pandemics. I
13 worked with Continental Airlines during the 2002-04 SARS epidemic, advising them
14 on how to manage and operate their business during the epidemic. I was also the Chief
15 Medical Officer for Whole Health Management, where I provided clinical direction and
16 oversight for over 70 on-site clinics and wellness centers across the United States and
17 Guam.

18 4. Matters of a type reasonably relied upon by experts in my field, to wit,
19 numerous peer-reviewed studies provided the basis for my opinion. After reviewing the
20 underlying facts presented by evidence, including studies and reports from the Centers
21 for Disease Control (CDC), the World Health Organization (WHO), the New England
22 Journal of Medicine (NEJM), and the American Academy of Pediatrics, I came to the
23 conclusion that children are essentially at zero risk of contracting COVID-19 or
24 becoming ill from the virus if schools were to reopen. A recent JAMA Pediatrics study
25 flatly states: “Our data indicate that children are at far greater risk of critical illness from
26 influenza than from COVID-19.” If the COVID-19 hazard sets the new standard for health
27 safety, the country will need to close its schools each year from November until April to
28 guard against influenza.

1 5. Keeping schools closed is a huge mistake. The evidence is clear that
2 children are at extraordinary low-risk of becoming ill from COVID-19—in fact, the risk
3 is near zero. The children across the country that have become ill or needed
4 hospitalization, have almost all had significant underlying health conditions. Secondly,
5 we know that children are unlikely to be a vector, meaning a spreader of COVID-19.
6 Children carry far less virus—that is, their viral load is significantly less even if they get
7 the virus; they are estimated to carry about twenty-five percent of what infected adults
8 carry, so children are very unlikely to spread the virus.

9 6. On the other hand, the lockdown of the schools and prohibition on
10 children’s activities has had devastating effects on children and has translated into
11 significant social issues. School is one of the primary places where child abuse and
12 neglect are discovered—it’s teachers, not the parents, who make these reports.
13 Nationwide, there has been a 30% drop in reported cases of child abuse and neglect
14 since the closure of schools, raising serious concerns about the welfare of children.
15 Likewise, children’s hearing and vision problems are typically identified at school.
16 Thus, when we keep kids out of school, we are not only delaying their academic
17 endeavors, but we are having a profound impact on their mental, social, and physical
18 health. In addition to the profound impact on children, there is significant economic
19 impact, as parents are required to stay home with their kids and are therefore unable to
20 work.

21 7. Several studies have examined the efficacy of nonpharmaceutical
22 interventions to mitigate the spread of COVID-19, such as handwashing, mask wearing,
23 social distancing, respiratory etiquette, washing surfaces. These studies found that all
24 the nonpharmaceutical measures are not the panacea we were led to believe they would
25 be. Although these measures all make sense and in theory seem like they should work,
26 the data are not compelling. While these studies examined influenza and not COVID-
27 19, both diseases are respiratory illnesses and spread in very much the same way.
28 There is limited data that we should be doing all of these nonpharmaceutical

1 interventions. A meta-analysis of 10 peer-reviewed studies, posted on the CDC's own
2 website, concluded that masks-wearing had essentially no meaningful impact on the
3 spread of a respiratory virus.

4 8. Continuing social distancing and mask wearing is not an appropriate
5 measure, especially in schools. There are 22 countries that have their schools open
6 without social distancing, mask wearing, and other mandates, yet these countries have
7 not experienced an increase in COVID-19 cases or spread of the virus among children.
8 And, most importantly, these countries have not seen transmission of the virus between
9 children and their parents or elderly grandparents. Notably, these countries have had
10 their schools open, not for a few days, but for five or six weeks without seeing
11 increased spread of COVID-19. If children return to school, as I believe they should,
12 they should not be required to social distance, wear masks and practice these other
13 nonpharmaceutical measures.

14 9. With regard to potential risk to teachers, cafeteria staff, custodial staff, etc.,
15 I believe this can easily be managed. Approximately 56% of public school teachers in
16 the United States are under the age of 40. 80% are under the age of 55. The percentage
17 of teachers and staff who fall into the "high-risk" category for COVID-19 is relatively
18 small, and those individuals can take additional precautions to limit their risk.

19 10. One of the mandates of public health is that we must consider the potential
20 ramifications of any response or decisions on the overall population, not just on the
21 individual. The wider impacts must be taken into consideration when you begin to
22 make broad mandates such as shuttering businesses, closing schools, limiting travel,
23 etc. Given the extraordinarily low risk of the virus to children, and the small number of
24 teachers and staff who would fall into the high-risk categories, keeping schools closed
25 to in-person attendance defies public health logic; we should be isolating the few to
26 protect the many, not isolating the many to protect the few.

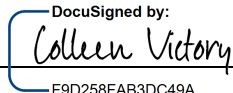
27 11. We know that people over the age of 70, and those who have significant
28 underlying health conditions, are the most vulnerable to COVID-19. Only 6.5% of the

1 population in the United States is over the age of 65, and the vast majority of these
2 people aren't in the workforce because of their age. We can easily protect and isolate
3 the at-risk groups without taking draconian measures like school closures, and certainly
4 without negatively impacting children in the way that school closures have.

5 12. Re-opening schools is necessary to prevent the devastating effects on our
6 children that we are currently witnessing. There is no medical basis to require children
7 to wear masks or social distance and certainly no medical basis for continuing to keep
8 schools closed. School closures not only have a devastating effect on the economy but
9 have a profound impact on the social and psychological development of children, which
10 will only worsen over time if schools are to remain closed.

11
12 I declare under penalty of perjury under the laws of the United States of
13 America and the State of California that the foregoing is true and correct.

14
15
16 Dated: July 25, 2020

17 
18 Colleen Victory, M.D.
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24
25
26
27
28



1 HARMEET K. DHILLON (SBN: 207873)
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10 Telephone: (415) 433-1700
11 Facsimile: (415) 520-6593

12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF M. KELLY
SUTTON, M.D. IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, M. KELLY SUTTON, M.D., declares as follows:

24 1. I am a physician practicing in Sacramento County. I have been retained
25 by Plaintiffs to render an expert opinion in this action. I make this declaration based
26 on my own personal knowledge. If called as a witness, I could and would testify
27 competently to the matters set forth herein.
28

1 2. I have reviewed the court filings provided by Plaintiffs and have reached
2 an opinion on the question of safety for children to return to K-12 school in fall 2020 in
3 the state of California.

4 3. My training, expertise, and skills qualify me to express the opinions set
5 forth in this declaration. I am a medical doctor with over forty years' experience in
6 family practice. I graduated from Marquette University, where I majored in Biology
7 and English. I then attended medical school at the University of Missouri. I completed
8 an Internal Medicine internship at the Medical College of South Carolina and my
9 Residency in Internal Medicine at the Menorah Medical Center. I was named
10 "outstanding resident" in 1973-74. I also completed a partial residency in pediatrics at
11 Children's Mercy Hospital. I am certified by the American Board of Internal Medicine.

12 4. I base my opinions regarding the reopening of schools on my specialized
13 knowledge and first-hand experience as a physician. This evidence and the underlying
14 facts brought me to the conclusion that reopening schools poses no risk to children,
15 while the extreme measures put in place have a significant impact on children.

16 5. In my practice, I have seen an 8-year-old California student who has
17 developed phobias and the family is considering leaving the country given the
18 lockdown measures. The child was formerly well-adjusted in a welcoming classroom
19 with a wise teacher. Since being isolated at home as an only child, she has become
20 fearful of going outside and of people in masks among other limiting phobias.
21 California has made a long-lasting mark on this child's development by depriving her
22 of school and instilling fear.

23 6. Several families have opted to leave school settings with inhumane
24 requirements for children and do the best they can at starting their own alternative
25 education. This may prove equal to, better than, or worse than prior education
26 provided, but nonetheless imposes breaking of social bonds and economic restrictions
27 on families who counted on the educational system to teach children while adults work.
28 The uprooted children suffer; and the school system undergoes a shockwave.

1 7. I have also seen families in which children essentially receive absolutely
2 no education when schools are closed, due to single parent requirements to work
3 combined with lack of inclination or ability to teach.

4 8. Children are being forced home into an online learning environment that
5 requires them to stare at screens for long periods throughout the day. Staring at
6 computer screens for extended periods of time has detrimental effects on children's
7 brains. Indeed, it is known that prolonged screen time affects children's brains,
8 producing imaging results similar to the brains of people on cocaine and alcohol.

9 10. For these reasons, I believe that there is no medical basis to keep schools
10 closed and prevent children from receiving in-person instruction; in fact, such extreme
11 measures are based on faulty science and have caused profound harm to our children.

12
13 I declare under the penalty of perjury under the laws of the United States of
14 America and the State of California that the foregoing is true and correct.

15
16 Dated: July 25, 2020

DocuSigned by:
M. KELLY SUTTON
A57AC1FB96DF429...
Dr. M. Kelly Sutton

EXHIBIT 13

MaryKelly Sutton MD
CA G076932 DEA BS0802858 MA 263141 NPI 1770672230

Curriculum Vitae - chronological August 5, 2019

Born: January 6, 1947, Kansas City MO.
Family: two sons, born 1983, 1985. Divorced.

College:

Marquette University Milwaukee WI Sept 1964-June 1966
Honorary English Fraternity, Sigma Tau Delta, Sept 1965-June 66
Honors Biology course
National Science Foundation Undergraduate Research Program in Plant
Physiology summer, 1966
University of Missouri at Kansas City KCMO Sept 1966-June 1967
Majors in Biology and English. Accepted into Medical School after three years.

Medical School: University of Missouri School of Medicine Columbia MO
Sept 1967 - June 1971
Medical Degree conferred June 1, 1971
Honors in Psychiatry

Internship: Medical College of South Carolina Charleston SC Sept 1971-August 1972
Internal Medicine internship, with electives in Obstetrics and Emergency Rm

Residency: Menorah Medical Center KCMO September 1972-August 1974
Residency in Internal Medicine
Goppert Award in Gastroenterology Sept 1973-Aug 1974
Outstanding resident Sept 1973-Aug 1974

Childrens Mercy Hospital KCMO*
July through November 1974
Pediatrics (partial residency)

* I was allowed to go to Children's Mercy Hosp in July, 1974, as part of my second year residency at Menorah. I did not receive 'credits' for the partial residency at CMH, but if I had chosen to stay longer, I could have become board eligible for pediatrics.

Special training in Anthroposophic Medicine
Lukas Klinik, Arlesheim, Switzerland
September - November, 1991

Boards: Certified, American Board of Internal Medicine, June 18, 1974
Certified by the American College of Anthroposophically-extended Medicine, 1993

Curriculum vitae, MaryKelly Sutton MD page 2

Faculty appointments: Clinical Instructor
Institute of Comparative and Human Toxicology
Albany Medical College Albany NY at International Center of Environmental Safety
Holloman AFB NM July 1975 through December 1977
Clinical Assistant Professor January 1978 to June 1979

Research: Non-human primate neonatology
Director of the chimpanzee nursery
International Center of Environmental Safety Holloman AFB NM
June 1975 to June 1979

Publications: Kelly, M.E., Soike, K., Ahmed, K., and Iatropoulos, M.J.,
"Coxsackievirus in an infant chimpanzee," *J. Med. Primatol.*, 7:119-121 (1978).

From November, 1974, until March, 1975, I took time off to spend holidays with my family, travel with my parents, and move from Kansas City to Alamogordo, NM.

Private Practice:

Alamogordo NM March 1975-June 1979 with admitting privileges at Gerald
Champion Memorial Hospital, departments of Internal Medicine and Pediatrics
From June, 1979, until November, 1979, I took time off, got married, travelled, and moved with my husband from Alamogordo, NM, to Virginia Beach, VA.

Virginia Beach VA Nov 1979-Jan 1981 with admitting privileges at three hospitals, in
Departments of Internal Medicine and Pediatrics:
Leigh Memorial Hospital, Bayside Hospital,
Chesapeake General Hospital,
and Childrens Hospital of the Kings Daughters in Pediatrics only.
I assisted with teaching interviewing skills in Life Cycle Course for first
year medical students at Eastern Virginia Medical School, Norfolk VA.

Locum tenens: March 1981-March 1983

Employers: Indian Health Service, Comp Health and American Medical International
Under the Indian Health Service, Aberdeen SD, I served two brief locum tenens in South Dakota
February - March, 1981.

Under Comp Health, Dr. Therus Kolff MD, Salt Lake City UT, I worked in Marshalltown IA,
Greenville ME, Farmington NM, Jal NM, in primary care settings, and in Lewistown
PA for six months in a hospital-based cardiology-oriented Internal Medicine practice.

Under American Medical International, I worked in Saudi Arabia in the department of
Internal Medicine at King Fahad Hospital, Al Baha KSA for nine months.

Private Practice: June 1983-Nov 1985 Salama Clinic Abu Dhabi, United Arab Emirates Dr.
Sami Kanderian, employer. Full time outpatient work during most of this time. Children born
October, 1983 and June, 1985. My husband's job ended, and we returned to the United States.
From November, 1985, until March, 1986, I stayed home with the boys and focussed on settling the family after an overseas move.

Weekend call coverage: March 1986-June 1988 Employers: Robert Rufsvold MD, Lyme NH
(family practice) and Monadnock Community Hospital, Peterborough NH, (internal medicine).

Curriculum vitae MaryKelly Sutton MD page 3

From June, 1988, until October, 1988, I did not work because the family relocated to another town in New Hampshire.

Emergency Room and Urgent Care Work: Oct 1988-Sept 1994 Employers: Spectrum Emergency Care (March, 1989 – December, 1995), Brattleboro Memorial Hospital, Keene Clinic, and Valley Regional Hospital.

Private Practice: beginning in Aug 1990 part time in Peterborough NH, increasing to full-time in March 1995 with two locations, Peterborough, and in my Westmoreland home; from 1997, until March, 2004, the practice was located entirely at 103 Roxbury Street, Suite 203, Keene NH.

I closed the practice in 2004, and moved to Prescott, AZ.

Consulting and educating (part-time private practice): June, 2004 - June 2005, in Prescott, AZ and Fair Oaks, CA.

Locum tenens with CompHealth: June 20, 2005 - September 23, 2005, at Mascoma Valley Community Care Center, Rt 4, Enfield, NH 03748 (now closed), and Alice Peck Day Hospital, 125 Mascoma Street, Lebanon, NH 03766.

Chapa De Indian Health Service (part-time employee), Grass Valley, CA: January 2006 - January 2007.

Raphael Association (part-time employee), Fair Oaks, CA: December 2005 - August 2008.

Private practice, half-time: Raphael Medicine & Therapies PC 9801 Fair Oaks Blvd Suite 300, Fair Oaks CA 95628, (916) 671-1780: September 2008 – present.

Locum tenens part-time December 26, 2014 – February 20, 2015, working at Livingston Community Health Center, in Livingston, CA.

November, 2018, moved to Rhode Island to be grandma to my first grandchild. Home address: 494 Woonasquatucket Ave #221, North Providence RI 02911.

Private practice part-time Raphael Medicine East, PC, Lydian Center, 777 Concord Ave #301, Cambridge MA 01238. February 2019 – present.

PROFESSIONAL MEMBERSHIPS current

Physicians for Informed Consent
Physicians Association for Anthroposophic Medicine
Round Table Discussion Group Mederi Center

Curriculum vitae MaryKelly Sutton MD page 4
INSTITUTIONAL AFFILIATIONS

Gerald Champion Memorial Hospital 1975-1979
1209 9th Street
Alamogordo NM 88310
Ph: 505-439-2100 F: 505-439-2386

Bayside Hospital 1979-1980
PO Box 5695 Independence Blvd
Virginia Beach VA
Ph: 757-363-6196

Leigh Memorial Hospital 1979-1980
600 Gresham Drive
Norfolk VA 23507
Ph: 757-668-3481 F: 757-466-6379

Chesapeake General Hospital 1979-1980
736 Battlefield Blvd North
Chesapeake VA 23320
Ph: 757-547-8121 F: 757-482-6184

Childrens Hospital of the Kings Daughters 1979-1980
601 Childrens Lane
Norfolk VA 23507
Ph: 757-668-7032 F: 757-668-9775

Hospitals in Jal NM, Lewistown PA, Greenville ME, Marshall IA 1981-1982
as locum tenens under employ of CompHealth, Salt Lake City, UT

King Fahad General Hospital June 1982- March 1983
Al Baha, Kingdom of Saudia Arabia
Supervisors: Dr. Tom Atkins and Dr. Maynard Jacobson

New Medical Center (outpatient) 1983-1985
Abu Dhabi, United Arab Emirates

Monadnock Community Hospital 1988
Old Street Road weekend coverage for Drs.
Forsell and Garhart
Peterborough, NH 03458 included admitting/ICU privileges
Ph: 603-924-7191 F: 603-924-9586

The Cheshire Medical Center 1989-1995
570 Court Street part-time
Keene NH 03431
Ph: 603-352-4111
Emergency Medicine Department

as employee of Spectrum Emergency Care

Curriculum vitae MaryKelly Sutton MD page 5

March, 1989 – December, 1995
Active Staff Internal Medicine February, 1999
-April, 2002.
Courtesy Staff Internal Medicine April, 2002
- April, 2003
Ph: 800-325-3982 F: 314-919-8931

Keene Clinic Urgent Care Center 1989-1990 (approx)
590 Court Street part-time
Keene NH 03431
Ph: 603-357-3411 F: 603-355-8472

Whispering Pines (later Seafield Pines) 1990-1991 (approx)
Rt 9 Keene NH 03431 part-time
Keene NH 03431 (now closed)
admitting history, physical, orders, and call coverage

Seminole Point Hospital (now closed) 1990-1991 (approx)
Lake Sunapee NH part-time
admitting history, physical, orders, and call coverage

Valley Regional Hospital 1993
243 Elm Street part-time
Claremont NH 03743
Ph: 603-542-7771 F: 603-542-1815
work at Newport UCC, Newport NH

Spofford Hall (now closed) 1991-1993 (approx)
Spofford NH part-time
admitting history, physical, orders, and call coverage

The Cheshire Medical Center Active Staff Internal Medicine February,
1999-
580 Court Street -April, 2002.
Keene NH 03431 Courtesy Staff Internal Medicine April, 2002
- April, 2003 February 1999 to Feb 2003

Otter Brook Center 2000 to 2002
Route 9
Keene, NH 03431
medical coverage for adolescent substance abuse rehab

Curriculum vitae MaryKelly Sutton MD page 6

MEDICAL LICENSES Mary Kelly Sutton MD

State	Number	Issued	Expiration	Status
California	G076932	2/7/04	6/21/93 1/31/16	1/31/97 Active
Massachussetts	263141	12/3/15	1/06/21	Active
Arizona	33767	2/10/05	1/6/07	Inactive
New Hampshire Inactive	7451	10/2/86	8/3/06	
Vermont Inactive	42-0007877		12/07/88	11/30/90
New York Inactive	150168		5/28/82	----
Pennsylvania Inactive	MD-026167E		12/15/81	12/31/82
Maine Inactive	10939		8/12/82	1986
Iowa Inactive	687 Temporary	6/1/81		6/2/82
Virginia Inactive	30751		7/30/79	1/31/86
New Mexico Inactive	75-059		1975	1986
Missouri Inactive	33488		6/26/71	1/31/85

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2 harmeet@dhillonlaw.com
3 MARK P. MEUSER (SBN: 231335)
4 mmeuser@dhillonlaw.com
5 GREGORY R. MICHAEL (SBN: 306814)
6 gmichael@dhillonlaw.com
7 DHILLON LAW GROUP INC.
8 177 Post Street, Suite 700
9 San Francisco, California 94108
10 Telephone: (415) 433-1700
11 Facsimile: (415) 520-6593

12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF RICHARD
ADDISON IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, RICHARD ADDISON, declare as follows:

24 1. I am a resident of Riverside County, California and am an educational
25 psychologist retained by Plaintiffs to render an expert opinion in this action. I make this
26 declaration based on my own personal knowledge. If called as a witness, I could and
27 would testify competently as follows.
28



1 2. I have reviewed the court filings provided by Plaintiffs and have reached
2 an opinion on the question of long-term effects school closures will have on the
3 developing brains of children.

4 3. My training, expertise, and skills qualify me to express the opinions set
5 forth in this declaration. I am an educational psychologist at Southern California
6 Psycho-Educational Services. I obtained my Doctorate in Psychology from Alliant
7 International University. I earned my master's in educational psychology from Azusa
8 Pacific University. I am a diplomate in school neuropsychology, and I am a member of
9 the American Board of School Neuropsychology. I am also a school psychologist at
10 Temecula Valley USD. I am a member of the American Psychological Association.
11 Having worked as an educator for the past nineteen years and the last thirteen as a
12 school psychologist, I have a unique perspective on learning styles and neurocognitive
13 functioning.

14 4. I specialize in school neuropsychological and general assessments that
15 focus on the whole child. I routinely evaluate children for suspected learning
16 disabilities, including dyslexia, dyscalculia, and dysgraphia. I also evaluate social-
17 emotional and attention regulation. Additionally, I offer consultation about ecological
18 changes to assist in the student's educational progress.

19 5. I base my opinion on my own professional experience and knowledge, as
20 well as medical research. Relying on this evidence led me to conclude that the
21 reopening of schools is necessary to prevent children's brain development from being
22 significantly inhibited.

23 6. Research shows that the developing brains of children, particularly
24 children from disadvantaged, low socioeconomic communities and children with
25 special needs are particularly at risk.

26 7. Developing brains need guided stimulation for effective neural pathways to
27 be established. These pathways through a biological process will ultimately make
28 synapses. Synapses are communication sites where neurons pass nerve impulses among

1 themselves. This process facilitates learning. Experiences that are provided through
2 the back and forth interactions among teachers, students, and peers determine whether
3 these synapses are strengthened or weakened. If these experiences are inconsistent or
4 interrupted, synaptic pruning will occur and impede ultimate development. The process
5 of synaptic pruning is the process by which the brain eliminates synapses that are either
6 under-used or irrelevant; hence the phrase, “use it or lose it,” applies.

7 8. A child’s experiences during the earliest years of life have a lasting
8 influence on the architecture of the developing brain. Genes provide the basic
9 blueprint, but experiences provide the process that determines whether a child’s brain
10 will create a strong or weak foundation for all future learning, behavior, and health.
11 During this important period of brain development billions of brain cells called neurons
12 send electrical signals to communicate with each other forming circuits that become the
13 foundation of lightning fast pathways that facilitate learning with a well-developed
14 brain. This ultimate development happens with consistent and repeated use. Structured
15 and guided experiences within a stimulating educational environment are critical in
16 providing the child with the best course for ultimate growth and development.

17 9. In this critical, developmental process, neurons form strong connections
18 for emotions, motor skills, language, behavioral control, logic, and memory. With
19 repeated use, the circuits become more efficient and connect to other areas of the brain.
20 What comes first forms the foundation for all that comes later.

21 10. Additionally, experts now widely regard the time between kindergarten
22 and first grade as the critical window for providing early intervention services to
23 children with dyslexia. Studies show that when children receive services during this
24 window, reading and achievement gaps diminish significantly or disappear altogether.
25 When children do not receive intervention services until third grade or later, they have a
26 more difficult time catching up, which exacerbates the reading gap over time. As an
27 educational psychologist with years of experience, I can attest to the fact that the type of
28


1 interventions necessary to facilitate growth would be difficult, if not impossible, to
2 achieve online.

3 11. All children are at risk of cognitive-developmental difficulties as well as
4 adaptive and social-emotional difficulties from being denied the experiences that can
5 only be effectively provided with face-to-face interactions with a skilled educator
6 within an educational environment, and with interactions with peers. Data supports that
7 children who come from disadvantaged families and children with learning disabilities
8 are at much greater risk, because many parents from these households are not qualified
9 to provide even minimally adequate stimulation to replace the experiences in the school
10 setting.

11 12. Reopening the schools is necessary to provide students with the adequate
12 social interactions and brain stimulation to ensure proper brain development. Without
13 in-person instruction, children’s brain development will be harmed. Safely opening
14 schools should be the number one priority of the country. Our children’s brain
15 development is at stake.

16 I declare under penalty of perjury under the laws of the United States of America
17 and the State of California that the foregoing is true and correct.

18
19 Dated: July 27, 2020

DocuSigned by:

B98BE6885D7E46C...
Dr. Richard Addison



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2 harmeet@dhillonlaw.com
3 MARK P. MEUSER (SBN: 231335)
4 mmeuser@dhillonlaw.com
5 GREGORY R. MICHAEL (SBN: 306814)
6 gmichael@dhillonlaw.com
7 DHILLON LAW GROUP INC.
8 177 Post Street, Suite 700
9 San Francisco, California 94108
10 Telephone: (415) 433-1700
11 Facsimile: (415) 520-6593

12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF MARI BARKE IN
SUPPORT OF APPLICATION FOR
TEMPORARY RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, MARI BARKE, declare as follows:

24 1. I am a citizen of the United States. I have personal knowledge of the
25 facts set forth in this declaration. If called as a witness, I could and would testify
26 competently to the matters set forth herein.

27 2. I was elected to the Orange County Board of Education in June 2018 to
28 represent the second district.

1 3. On June 24, 2020, the Board held a meeting to receive written and oral
2 testimony from families and teachers in the district. The Board heard from an expert
3 panel consisting of physicians, psychiatrists, and school educators on the viability of
4 reopening schools.

5 4. After the meeting, the Executive Committee of the Orange County Board
6 of Education prepared a white paper with alternative recommendations to those
7 proposed by the State of California for the reopening of schools.

8 5. On July 13, 2020, the Board held a special meeting to decide whether to
9 adopt the white paper. During this meeting, the Board heard oral testimony from
10 members of the public. The Board voted 4-1 to adopt the white paper. Attached as
11 Exhibit 14 is a true and correct copy of the white paper the Board adopted on July 13,
12 2020.

13 6. After listening to all the evidence presented to the Orange County Board of
14 Education, I personally believe that the risk of harm to the education, physical well-
15 being, and mental health of most students, and to the community in general of closing
16 schools this fall significantly exceeds the minimal risk of harm to students, their
17 families, teachers, and the community if schools resume in-person classes. I also
18 believe that there are much less draconian risk-mitigation measures that can be taken to
19 protect uniquely vulnerable individuals than a continuing prohibition on in-person
20 education in our county and state.

21 7. As I made clear during the board meetings, I do not believe that any
22 student, teacher, or staff member should be compelled to attend classes at this time. I
23 believe that the decision as to when students, teachers, and staff return to school should
24 be a decision they make individually. It is my opinion that the school districts should
25 provide options for everyone so that everyone can make the best decision for their
26 family based upon their individual needs.

27

28

1 I declare under penalty of perjury under the laws of the United States of America
2 and the State of California that the foregoing is true and correct.

3
4 Dated: July 26, 2020

DocuSigned by:
mari barke

Mari Barke 6CE819D2753E4FE...

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EXHIBIT 14

Orange County Board of Education



Orange County Department of Education
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Costa Mesa, CA

White Paper

Special Community Forum on “Opening Schools in Orange County”

Recommendations for the Safe and Effective Reopening of Orange County Schools

Adopted and approved by the Orange County Board of Education on July 13, 2020.

Forum Moderator

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Expert Panelists

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PREFACE

California public schools are critical community institutions with civic responsibilities that often move far beyond teaching. For many families, public schools also provide crucial childcare and recreation needs as well as important mental health care and nutritional needs.

Public school employees frequently function as front-line detectors and reporters of child abuse and neglect issues. The shutdown of our schools has not diminished these risks to children; abuse doesn't stop merely because reporting from teachers is halted. Indeed, as one expert told us, children "are the silent casualties of this lockdown." For too many children, our schools are a refuge from a difficult, even violent world, and now that refuge is closed. Dr. Sherry Kropp stated, "We have hurt hundreds of thousands more children than we have helped." Orange County District Attorney Todd Spitzer predicts, *"One of the things we're going to learn after this pandemic is over is that by having people sheltered at home, we have potentially put children and elderly people closer to their abusers."*

There are reasonable arguments on all sides about whether this is the best and highest outcome for our school system, or why we often fall short of the high education standards we set for ourselves. But this is not the place for that debate. Here, we accept what is: that parents of school-age children – and children themselves – have come to rely on our schools. Deprived of these institutions even for a short time, children have lost valuable instruction. Many American communities have been plunged into social and economic chaos.

Therefore, the Orange County Board of Education concludes that it is not acceptable to delay the opening of public schools as it is not in the best interests of our children and families. Further, it is not clear that an effective cure or a vaccination for *SARS-CoV-2 infection* (Covid-19) will be developed in the near future if at all.

Declaring this in the face of widely held misconceptions and mixed messages about Covid-19 – particularly about its lethality and contagiousness to children – requires fact-finding and courage, as we

move through these uncertainties together. The American Academy of Pediatrics reported the following in late June ¹:

“Although many questions remain, the preponderance of evidence indicates that children and adolescents are less likely to be symptomatic and less likely to have severe disease resulting from Covid-19 infection. In addition, children may be less likely to become infected and to spread infection. Policies to mitigate the spread of COVID-19 within schools must be balanced with the known harms to children, adolescents, families, and the community by keeping children at home.”

We recognize that this conclusion is dramatically and significantly different from some common misconceptions about the disease. It was a conclusion that our panelists – and many in the medical community – reached long before the AAP released its recommendations. For that reason, we asked these experts to attend a special June 2020 special community forum at the Orange County Department of Education’s Costa Mesa office. Each board member had the opportunity to place an expert of choice on the panel, and the board approved the resulting expert panel at its regular board meeting.

The OCBE special board public meeting on June 24, 2020 on reopening schools in Orange County followed the governor’s current guidelines on social distancing. Members of the public were allowed to attend in person on a space-available basis, and we simultaneously made it possible for the public to attend the live-streamed meeting with more than 1,000 attendees. Hundreds of on-line listeners submitted questions and comments for discussion. And though we certainly could not answer all of the questions submitted, the experts’ discussion, feedback, and conclusions provided a general response to all.

The board received both support and criticism to the stated mission and purpose of the meeting. Observers of the meeting saw evidence that the public and parents are eager to participate in the conversation on reopening schools. The purpose of the board’s public dialogue is to provide transparent, open discussions for interested parents and community members, which are often in contrast with decision-making processes of other federal, state and local government agencies on the same subject. For instance, the board’s community public forum and meeting reflected great

¹ <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/>

transparency in contrast to the county superintendent’s task force and meetings. In creating guidelines, this task force utilized community healthcare experts and primarily unelected school administrators in which the public and elected county department trustees were prevented from attending or participating. The subsequently released superintendent task force guidelines on re-opening schools, “Orange County Together”², is available for review on-line.

In this white paper, we have done our best to capture the general assessment of the various expert opinions. And, of course, some panelists were careful to say that they were speaking only for themselves and not necessarily for all colleagues or organizations with which they work in their professional capacities (see e.g. Appendix A.).

INTRODUCTION

Our schools were closed in March 2020 in order to meet what state officials said was the short-term goal of “flattening the curve,” that is to slow the spread of Covid-19. Many of our panel experts said that decisions made to halt the spread of the virus by federal, state, and local government entities was reasonable at the time, given the general lack of knowledge about this novel infectious disease and evolving epidemic/pandemic. But continuing the shutdown despite new science and data, our experts said, has been a mistake with disastrous implications for children, their families and community. It hardly goes without saying that poorer families with fewer options, and families with special-needs children, have suffered most from the shutdown.

The current knowledge of this virus and its virulence has given science and medicine much information and knowledge to make reasonable public health policy, recommendations, and guidelines. More efficacious data and science will inform our knowledge of Covid-19 over time and guidelines will be continually adapted as we learn more about how to best live in the COVID-19 era.

General recommendations

What we know to date allows us to offer the following guidelines:

² <https://newsroom.ocde.us/orange-county-together-guide-provides-recommendations-for-safely-reopening-local-schools/>

- K-12 children represent the lowest-risk cohort for Covid-19. Because of that fact, social distancing of children and reduced census classrooms is not necessary and therefore not recommended.
- Requiring children to wear masks during school is not only difficult – if not impossible to implement – but not based on science. It may even be harmful and is therefore not recommended.
- Children play a very minor role in the spread of Covid-19. Teachers and staff are in greater danger of infection from other adults, including parents, than from students in their classrooms.
- Participation in any reopening of public education should be voluntary. These guidelines are not “laws” or “regulations” or even “rules.” Parents, not government officials, are in the best position to determine the education environment that best suits their children. If a school district is unable or unwilling to provide that education, parents should be allowed to send their children to a district or charter school that will provide that education. Some parents with the means will opt for private schools or home schooling.
- Temperature checks should be performed regularly. As with any illness, ill children, teachers, or staff should be sent home and if identified not allowed to be on campus.
- As always, good hygiene with frequent hand washing and the use of hand sanitizer should be encouraged.
- Classrooms, meeting rooms, transportation vehicles (e.g., busses) and administrative offices should be thoroughly cleaned each night

Our goal is to provide parents, teachers, schools trustees, administrators and other stakeholders with evidence following the CDC’s and the Academy of American Pediatrics’ simple, common-sense guidelines that will allow us to reopen our schools safely this fall – and that our schools must reopen.

The general use of the U.S. Centers for Disease Control and Prevention (Appendix B-Schools during the Covid-19 pandemic,) and the American Academy of Pediatrics (Appendix C- COVID-19 Planning Considerations: Guidance for School Re-entry) is prudent reference for policy makers.

K-12 children represent the lowest risk cohort for Covid-19. Because of that fact, social distancing and masking of children is unnecessary and therefore not recommended.

There's no question that children generally represent the lowest risk cohort for Covid-19. The American Academy of Pediatrics concludes ³ :

SARS-CoV-2 appears to behave differently in children and adolescents than other common respiratory viruses, such as influenza, on which much of the current guidance regarding school closures is based. Although children and adolescents play a major role in amplifying influenza outbreaks, to date, this does not appear to be the case with SARS-CoV-2. Although many questions remain, the preponderance of evidence indicates that children and adolescents are less likely to be symptomatic and less likely to have severe disease resulting from SARS-CoV-2 infection. In addition, children may be less likely to become infected and to spread infection. Policies to mitigate the spread of COVID-19 within schools must be balanced with the known harms to children, adolescents, families, and the community by keeping children at home.

Similarly, weeks before the Pediatric Academy's publication, the *Journal of the American Medical Association* reported, "it is important to emphasize that the overall burden of COVID-19 infection in children remains relatively low compared with seasonal influenza." ⁴

As of June 24, 2020 the Orange County Healthcare Agency reported that residents under the age of 24 (38 percent of the population) accounted for just 15 percent of all Covid-19 cases and no Orange County deaths (Appendix D - "Orange County Covid-19 Cases and Deaths by Age). By contrast, individuals over the age of 75 (just 13.5 percent of the population) accounted for 56 percent of all deaths. As one of our experts on the panel put it, "This is a disease that kills our most elderly and spares our children. It may sound callous, but would we want it the other way around?"

The importance of vital social interaction among children is well-documented and is indeed foundational to American K-12 education. Social distancing and mandatory masking have been found to be more harmful to children than previously thought. An American Enterprise Institute working group notes ⁵:

"The isolation brought about by social distancing can exacerbate children's depression and anxiety. As students return, schools must have counseling support to address the numerous

³ <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/>

⁴ <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2766037>

⁵ <https://www.aei.org/wp-content/uploads/2020/05/A-Blueprint-for-Back-to-School.pdf>

causes of trauma that result from the deaths of friends and family members, economic hardship from a parent losing his or her job, or abuse, violence, or neglect” (Appendix E, “[A Blueprint for Back to School](#),”).

Indeed, our expert panelists expressed the same concerns about the lockdown’s impact on our children’s health. Dr. Sherry Kropp, recently retired superintendent of Los Alamitos Unified School District, summed up the conclusions of many on this issue: In closing our schools, *“we have hurt hundreds of thousands more children than we have helped.”*

Our professional educators and other support staff do not need to be reminded when and how to look for signs of psychological or mental health distress, including distress caused by social distancing, among our students and colleagues. Because of the established link between social-distancing and child harm, we cannot support extraordinary efforts aimed at social-distancing at school.

There’s a complementary form of social-distancing that’s often recommended or even required in other guidelines on school-reopening, that is considered just as unwise as social-distancing itself, i.e., the use of masks by children. The argument that children should wear masks to prevent the asymptomatic spread of the coronavirus to other students or a high-risk teacher or administrator is fallacious and lacks science and data to support this notion.

Requiring children to wear face coverings may even be very harmful to the child. Learning is inhibited and critical social interactions among students and between student and teacher are fractured. Mandatory masks may well lead to a spike in childhood behavior problems such as learning disabilities, anxiety disorders, and depression to name a few.

Responding to guidelines published by our colleagues in the Los Angeles Unified School District, Dr. Alice Kuo, President of the Southern California chapter of the American Academy of Pediatrics, opined ⁶:

“Our concern is that recently issued guidelines for schools re-opening in Los Angeles County are not realistic or even developmentally appropriate for children. For example, wearing masks throughout the day can hinder language and socio-emotional development, particularly for

⁶ <http://aapca2.org/wp-content/uploads/2020/06/AAP-CA2-press-release-on-schools-re-opening-6-2-20-Rev.pdf>

younger children.” (Appendix F)

It’s important to note masks that are effective in preventing disease by viral contagions require formal certified instruction and training. Health professionals are generally experienced and fitted properly with personal protective equipment (PPE), and sophisticated masks that are properly fitted to the individual by a thirty minute test and process called “fit testing.” That’s not the case with children and adults who currently are using inadequate filtering cloth or medical-surgical grade masks. According to the US. Department of Labor-Occupational Safety and Health Administration ⁷, *“cloth face coverings are not considered personal protective equipment (PPE)”*, and surgical masks *“will not protect the wearer against airborne transmissible infectious agents due to lose fit and lack of adequate seal or inadequate filtration.”*

“Medical-surgical grade masks can be worn to contain the wearer’s respiratory droplets (e.g., healthcare workers, such as surgeons, wear them to avoid contaminating surgical sites, and dentists and dental hygienists wear them to protect patients).” Additionally, medical-surgical masks should be used by infected individuals to decrease the transmission of respiratory infections that spread by large Covid-19 droplets ⁸. Pragmatically, as our panel of pediatric and medical experts iterated, the use of mask by children is unnatural and difficult to enforce. Prolong face mask during the schools day use will inevitably contribute to the increase frequency of children touching their faces and constantly adjusting their masks, thereby potentially increasing the rate of contaminating their hands and face coverings.

Future prevention by vaccines that are tested and approved by the FDA will not available for some future undefined time period. The Covid-19 virus will be a global endemic disease for the next generations until herd immunity or a vaccination is available. As the world advances its knowledge and medical science on the Covid-19 virus, we currently do not have any data or evidence of the effectiveness in preventing Covid infections in children and adults by the mandatory use of masks.

⁷ <https://www.osha.gov/SLTC/covid-19/covid-19-faq.html#testing>

⁸ Ibid

The only evidence and data available on mask effectiveness against viruses are studies from the analysis of the 2009 pandemic Influenza (H1N1) virus. Cowling in his meta-analysis study⁹ of 279 citations and 12 articles found by PubMed search, concluded there is “*limited evidence base supporting the efficacy or effectiveness of face masks to reduce influenza virus transmission*”. Likewise, bin-Reza PubMed database search concluded in his meta-analysis study¹⁰ that none of the “*studies reviewed established a conclusive relationship between mask/respirator use and protection against influenza infection.*” There is a paucity of studies and data that does not support the use of masks to prevent becoming infected with Covid-19. In the future months and years ahead perhaps meta-analysis studies and data will reveal more information on mask effectiveness in preventing disease.

Future Covid-19 prevention in both adults and children by vaccines that are tested and approved by the FDA will not be available for an undefined time period. The Covid-19 virus will be a global endemic disease for the next generations until herd immunity or a vaccination is available. Because children represent such a negligible risk for reasons unknown but with data and science supporting this notion, we cannot recommend masking children or social distancing. Indeed, we would ask those who advocate such requirements to respond to the medical evidence that masks and social distancing actually inhibit learning.

Children play a very minor role in the spread of Covid-19. Teachers and staff are in greater danger from one another – from all other adults, including parents – than from children.

If our neighbors are surprised that children are not vectors for Covid-19, it may come as a greater shock that many nonprofit childcare centers have remained open throughout the pandemic – even in New York City, the nation’s hotspot for viral spread. National Public Radio reports¹¹:

“Throughout the pandemic, many child care centers have stayed open for the children of front-line workers — everyone from doctors to grocery store clerks. YMCA of the USA and New York City’s Department of Education have been caring for, collectively, tens of thousands of children since March, and both tell NPR they have no reports of coronavirus clusters or outbreaks. As

⁹ [Cowling, BJ., et. al., *Race Masks to Prevent Transmission of Influenza Virus: A Systematic Review*. *Epidemiol. Infect.* \(2010\), 138, 489-456](#)

¹⁰ [bin-Reza, F., et.al., *The Use of Masks And Respirators to Prevent Transmission Of Influenza: A Systematic Review Of The Scientific Evidence*.](#)

¹¹ <https://www.npr.org/2020/06/24/882316641/what-parents-can-learn-from-child-care-centers-that-stayed-open-during-lockdowns>

school districts sweat over reopening plans, and with just over half of parents telling pollsters they're comfortable with in-person school this fall, public health and policy experts say education leaders should be discussing and drawing on these real-world child care experiences."

A researcher from Brown university ¹² similarly found as of June 24, 2020, the day of our hearing, that "916 childcare centers serving more than 20,000 children, just over 1% of staff and 0.16% of children were confirmed infected with the coronavirus." Thus, indicating preliminary data and observations from childcare centers reflects low transmission capacity by children.

Data increasingly supports the conclusion that children are a very low risk of Covid-19 infection and are also not likely to transmit the disease along to adults. We therefore recommend that adults – including teachers, staff, parents – consider guidelines from the American Academy of Pediatrics (AppendixC)

Participation in any reopening of public education is voluntary. Parents, not government officials or a group of health experts, are in the best position to determine the education that best suits their children. If a school district is unable or unwilling to provide that education, parents will be allowed to send their children to a district or charter school that will provide that education.

Perhaps our most important recommendation is based on the principle of individual choice – both for the families of our students and, to the extent possible, for select employees. Though it is important that we reopen our schools, some parents and some employees may reasonably question their own fitness for a fall return. We understand that multigenerational families, for instance, or families in which children or adults live with maladies that make them more vulnerable might feel safe at home. It's important that school districts accommodate these choices to the best of their ability.

Similarly, parents must be granted the freedom to move – must be assisted in moving – to any other school that serves their interests. Our goal is to see to the continued education of our children, not to produce a top-down, centralized approach that assumes all families make this important decision in the same way.

¹² <https://watson.brown.edu/taubman/news/2020/what-parents-can-learn-child-care-centers-stayed-open-during-lockdown-emily-oster-cited>

COMMUNITY FEAR AND FUTURE GOVERNANCE DECISIONS

Among the many compelling expert arguments for reopening our schools, a number of us were also struck by something different, something we might call advice for adults. Several panelists – policy experts and medical doctors – admonished us to remember that the data is clear, but data should not penetrate fear. Among our greatest responsibilities as adults is our responsibility to model courage and persistence in the face of uncertainty and fear, which is what many families are feeling with the mixed messages and confusion surrounding reopening of schools in the COVID-19 era.

Among these panel experts at the June 24, 2020 special board meeting, Dr. Mark McDonald, a psychiatrist who specializes in children and at-risk youth, may have summed it up best:

“Children are not dying from Covid-19. Children are not passing the disease on to adults. So the only question is, “Why are we even having this meeting tonight?” We’re meeting because we adults are afraid.

As parents, we will face many moments of anxiety: seeing our children off on their first day of kindergarten, their first day of camp, their first year of college. We may want to keep them home to protect them from the world, which can indeed be a frightening place. But let’s be clear, when we do that, we are not really protecting our children. We are only attempting to manage our own anxiety, and we do that at their expense. We are acting as negligent parents. We are harming our children. We are failing them.

We must agree to make decisions in the best interest of the children. If we do not – if, paralyzed by fear, we continue to act purely out of self-interest – we will ensure an entire generation of traumatized young adults, consigned to perpetual adolescence and residency in their parents’ garages, unable to move through life with independence, courage, and confidence. They deserve better — we owe it to them as parents.”

ON DISTANCE LEARNING

While a thorough discussion of distance learning is beyond the scope of this discussion, it’s important to note that it appears so far to have been an utter failure. Abandoning the classroom in favor of computer-based learning proved frustrating to all – not just parents and students but teachers, too.

The move has revealed huge class-based disparities in access to technology. It produced irregular attendance by children, and teachers simply (generally through no lack of effort) unable to manage distracted children in multiple locations. Its reliance on parental oversight is also a fatal weakness. With good reason, virtually every major newspaper report has declared the experiment a failure. Here are just a few of the many reports:

- [Los Angeles Times, "With the coronavirus keeping campuses closed, parents report academic, financial struggles and stress"](#) ¹³
- [Sacramento Bee, "Moving California schools online was difficult. Imagine doing it without fast internet or laptops"](#) ¹⁴
- [San Diego Union-Tribune, "Some schools are pulling the plug on distance learning"](#) ¹⁵
- [Wall Street Journal, "The Results Are In for Remote Learning: It Didn't Work"](#) ¹⁶
- [Zocalo Public Square, "I deserve a 'A' for flunking my kids' distance learning"](#) ¹⁷

Summary

The Orange County Board of Education held a community public forum on reopening schools in Orange County with varied responses from constituents. The board's experts presented evidence that strongly supports opening schools in the fall as it is critical to the well-being of our children, families, and communities. The intent of the board was to demonstrate and provide expert opinions and science-based data that can be considered by local school trustees and superintendents when making policies for reopening schools in their district. K-12 children represent the lowest-risk cohort for Covid-19, and children play a very minor role in the spread of Covid-19 to adults. Evidence shows that teachers and staff are in greater danger of contracting a Covid-19 infection from other adults in the teachers' lounge than from students in their classrooms.

The findings of this forum are reflected in these guidelines:

- Social distancing of children and reduction of classroom size and census may be considered, but not vital to implement for school aged children.
- Requiring children to wear masks during school is not only difficult, but may even be harmful over time.

¹³ <https://www.latimes.com/california/story/2020-05-18/la-schools-distance-learning-students-survey>

¹⁴ <https://www.sacbee.com/news/local/education/article241799591.html>

¹⁵ <https://www.sandiegouniontribune.com/news/nation-world/story/2020-05-14/some-us-schools-are-pulling-the-plug-on-distance-learning>

¹⁶ <https://www.wsj.com/articles/schools-coronavirus-remote-learning-lockdown-tech-11591375078>

¹⁷ <https://www.zocalopublicsquare.org/2020/05/12/distancing-learning-covid-19-education-students-parents-broken-system/ideas/connecting-california/>

- Participation in any reopening of public education should be voluntary. These guidelines are not “laws” or “regulations” or even “rules.” Parents are in the best position to determine the education environment that best suits their children rather than government officials.
- If a school district is unable or unwilling to reopen schools in a manner that resumes a typical classroom environment and school atmosphere, parents should be allowed to send their children to another school district or charter school that will provide that preferred education. In fact, many parents stated they will opt for private schools or home schooling if their child does not have a typical interactive academic classroom environment.
- Temperature checks should be performed regularly. As with any active disease or illness, children, teachers, or staff suspected of having an acute respiratory illness should be sent home and if identified not allowed to be on campus if testing and medical evaluation is performed.
- As always, good hygiene with frequent hand washing and the use of hand sanitizer is encouraged.
- Classrooms, meeting rooms, transportation vehicles (e.g., busses) and administrative offices should be thoroughly cleaned each night.
- Ongoing surveillance and coordination with county public health is encouraged.

Appendix A-Community Forum Expert Panelists

Dr. Steven Abelowitz is past Pediatric Department Chair, Hoag Memorial Hospital Presbyterian. He is board certified in Pediatric Medicine and Medical Director of Coastal Kids Pediatric Medical Group in Newport Beach, Irvine, Laguna Niguel, and Ladera Ranch. Among other credentials and honors, Dr Abelowitz is a fellow of the American Academy of Pediatrics and board certified in Pediatric Medicine.

Dr. Clayton Chau is the director of the OC Health Care Agency, having worked for the agency's Behavioral Health Services team from 1999-2012. He was most recently Chief Clinical and Strategy Officer for Mind OC, the not-for-profit created to support the advancement of Be Well OC. Dr. Chau received his PhD in Clinical Psychology from Chelsea University in 2004, and his medical degree from the University of Minnesota in 1994. He completed his psychiatry residency at the University of California, Los Angeles/San Fernando Valley followed by a fellowship with the National Institute of Mental Health in psychoneuroimmunology focusing on substance use disorder and HIV. Dr. Chau has conducted international trainings in the areas of health care integration, health care system reform, cultural competency and mental health policy.

Dr. Michael Eilbert is a hospitalist and pulmonologist practicing medicine in Newport's Hoag Memorial Hospital Presbyterian. He has been in private practice for more than 20 years in Orange County. In this pandemic, Dr. Eilbert is actively involved in the treatment and care of acute Covid-19 positive patients. He is a member of the Board of Directors of the Orange County Medical Association (OCMA) and president elect to OCMA.

Dr. Mike Fitzgibbons is a hospitalist and an Infectious Disease specialist practicing medicine in central Orange County for over three decades. He is on staff at St. Joseph Hospital in Orange. A graduate of Georgetown Medical School, Dr. Fitzgibbons completed his residency and fellowship at UC Irvine Medical Center. In the current pandemic, Dr. Fitzgibbons is actively involved in the treatment and care of acute Covid-19 -positive patients. He is an expert on infectious pathogens and their associated morbidity and mortality. Dr. Fitzgibbons is a delegate to the California Medical Association and active in public policy on health and medical issues with the Orange County Medical Association.

Dr. Simone Gold is a board-certified emergency physician in Los Angeles, California. She graduated from Chicago Medical School before attending Stanford University Law School to earn her Juris Doctorate degree. She completed her residency in Emergency Medicine at Stony Brook University Hospital in New York. Dr. Gold has had a life-long interest in health policy, and worked in Washington D.C. for the former Surgeon General, as well as for the Chairman of the Labor & Human Resources Committee. She has also worked as a physician advisor determining inpatient or outpatient status, and as a physician-attorney advocate for hospital-clients with Medicare and Medicaid appeals. She is a published author and editor of several magazine and newspaper articles.

Joel Kotkin is the Presidential Fellow in Urban Futures at Chapman University in Orange, California and Executive Director of the Houston-based Urban Reform Institute. He is Senior Advisor to the Kem C. Gardner Policy Institute. Kotkin has recently completed several studies including on urbanism, the future of localism, the changing role of transit in America and most recently California's lurch towards feudalism. He is co-author, with Michael Lind, on a report published in 2018 on the revival of the American Heartland for the Center for Opportunity Urbanism. As director of the Center for Demographics and Policy at Chapman University, he was the lead author of a major study on housing, and recently, with Marshall Toplansky, published a strategic analysis for Orange County.

Sherry Kropp PhD served in Orange County's Los Alamitos Unified School District since 1985 and was superintendent from 2011 until her retirement in 2019. A graduate of Orange County schools, she began her teaching career in 1978 as an English, math, and biology teacher and coach in Washington state before returning to Southern California. Before she was named Superintendent of Los Alamitos Unified School District, Dr. Kropp was a teacher, assistant principal, and interim principal at Los Alamitos High School, a principal at a continuation high school, and a director and assistant superintendent in the district. She has a bachelors degree in English, masters in Educational Administration, and a doctorate in Educational Leadership.

Dr. Mark McDonald is a double board-certified child and adolescent psychiatrist in private practice in Los Angeles. He studied classical cello and world literature at UC Berkeley before beginning medical training at the Medical College of Wisconsin. He completed his adult psychiatry residency at the University of Cincinnati and child psychiatry fellowship at Harbor-UCLA in Los Angeles. He specializes in working with children with autism and trauma, as well as obsessive-compulsive and bipolar disorders. He is a candidate in psychoanalysis at the Psychoanalytic Center of California (PCC).

Larry Sand is an education policy expert with an insider's view: he began teaching in New York in 1971, and, in 1985, taught elementary school as well as English, math, history and ESL in the Los Angeles Unified School District, where he also served as a Title 1 Coordinator. Retired but not retiring, he is the president of the nonprofit [California Teachers Empowerment Network](#) (CTEN), a nonpartisan group dedicated to providing teachers with reliable and balanced information about professional affiliations and positions on education issues. In 2011, realizing that parents, taxpayers and others frequently receive faulty information from the mainstream media, CTEN expanded its mission to help the general public understand the array of educational issues facing our country today.

Michael A. Shires, Ph.D is associate dean for strategy and special projects and an Associate Professor at Pepperdine University School of Public Policy. Shires has a long record of success finding new strategies and solutions to problems across a wide range of organizations, from small and mid-sized businesses to nonprofit organizations and think tanks to local communities and governments. Over 25 years, he has worked extensively with new organizations with line responsibility for developing management and educational systems. Dr. Shires has published extensively on state and local government finance in California, K-12 education policy and

higher education policy. His research includes not only the nuts and bolts of state and local governance and finance, but also the ethics and politics of decision-making at these levels

Orange County Supervisor Don Wagner was re-elected to the Third Supervisorial district seat in March 2020, and has served as an elected leader in Orange County for over 24 years. He represents nearly 600,000 residents in Orange County's Third District (Anaheim Hills, Irvine, Orange, Tustin, North Tustin, Villa Park, Yorba Linda, and the unincorporated canyons). A practicing attorney, he has also served as a community college district trustee, state legislator, and mayor of Irvine from 2016 – 2019.

APPENDIX B -U.S. Centers for Disease Control and Prevention-“Schools during the Covid-19 pandemic,”

SCHOOLS DURING THE COVID-19 PANDEMIC



The purpose of this tool is to assist administrators in making (re)opening decisions regarding K-12 schools during the COVID-19 pandemic. It is important to check with state and local health officials and other partners to determine the most appropriate actions while adjusting to meet the unique needs and circumstances of the local community.

Should you consider opening?

- ✓ Will reopening be consistent with applicable state and local orders?
- ✓ Is the school ready to protect children and employees at **higher risk** for severe illness?
- ✓ Are you able to screen students and employees upon arrival for symptoms and history of exposure?

ANY
NO



Are recommended health and safety actions in place?

- ✓ Promote healthy hygiene practices such as hand washing and employees wearing a cloth face covering, as feasible
- ✓ Intensify cleaning, disinfection, and ventilation
- ✓ Encourage social distancing through increased spacing, small groups and limited mixing between groups, if feasible
- ✓ Train all employees on health and safety protocols

ANY
NO



Is ongoing monitoring in place?

- ✓ Develop and implement procedures to check for signs and symptoms of students and employees daily upon arrival, as feasible
- ✓ Encourage anyone who is sick to stay home
- ✓ Plan for if students or employees get sick
- ✓ Regularly communicate and monitor developments with local authorities, employees, and families regarding cases, exposures, and updates to policies and procedures
- ✓ Monitor student and employee absences and have flexible leave policies and practices
- ✓ Be ready to consult with the local health authorities if there are cases in the facility or an increase in cases in the local area

ANY
NO



ALL YES → OPEN AND MONITOR



cdc.gov/coronavirus

APPENDIX C-American Academy of Pediatrics Guidelines

COVID-19 Planning Considerations: Guidance for School Re-entry

[Critical Updates on COVID-19](#) / [Clinical Guidance](#) / COVID-19 Planning Considerations: Guidance for School Re-entry

The purpose of this guidance is to support education, public health, local leadership, and pediatricians collaborating with schools in creating policies for school re-entry that foster the overall health of children, adolescents, staff, and communities and are based on available evidence. Schools are fundamental to child and adolescent development and well-being and provide our children and adolescents with academic instruction, social and emotional skills, safety, reliable nutrition, physical/speech and mental health therapy, and opportunities for physical activity, among other benefits. Beyond supporting the educational development of children and adolescents, schools play a critical role in addressing racial and social inequity. As such, it is critical to reflect on the differential impact SARS-CoV-2 and the associated school closures have had on different races, ethnic and vulnerable populations. These recommendations are provided acknowledging that our understanding of the SARS-CoV-2 pandemic is changing rapidly.

Any school re-entry policies should consider the following key principles:

- School policies must be flexible and nimble in responding to new information, and administrators must be willing to refine approaches when specific policies are not working.
- It is critically important to develop strategies that can be revised and adapted depending on the level of viral transmission in the school and throughout the community and done with close communication with state and/or local public health authorities and recognizing the differences between school districts, including urban, suburban, and rural districts.
- Policies should be practical, feasible, and appropriate for child and adolescent's developmental stage.
- Special considerations and accommodations to account for the diversity of youth should be made, especially for our vulnerable populations, including those who are medically fragile, live in poverty, have developmental challenges, or have special health care needs or disabilities, with the goal of safe return to school.
- No child or adolescent should be excluded from school unless required in order to adhere to local public health mandates or because of unique medical needs. Pediatricians, families, and schools should partner together to collaboratively identify and develop accommodations, when needed.
- School policies should be guided by supporting the overall health and well-being of all children, adolescents, their families, and their communities. These policies

should be consistently communicated in languages other than English, if needed, based on the languages spoken in the community, to avoid marginalization of parents/guardians who are of limited English proficiency or do not speak English at all.

With the above principles in mind, **the AAP strongly advocates that all policy considerations for the coming school year should start with a goal of having students physically present in school.** The importance of in-person learning is well-documented, and there is already evidence of the negative impacts on children because of school closures in the spring of 2020. Lengthy time away from school and associated interruption of supportive services often results in social isolation, making it difficult for schools to identify and address important learning deficits as well as child and adolescent physical or sexual abuse, substance use, depression, and suicidal ideation. This, in turn, places children and adolescents at considerable risk of morbidity and, in some cases, mortality. Beyond the educational impact and social impact of school closures, there has been substantial impact on food security and physical activity for children and families.

Policy makers must also consider the mounting evidence regarding COVID-19 in children and adolescents, including the role they may play in transmission of the infection. SARS-CoV-2 appears to behave differently in children and adolescents than other common respiratory viruses, such as influenza, on which much of the current guidance regarding school closures is based. Although children and adolescents play a major role in amplifying influenza outbreaks, to date, this does not appear to be the case with SARS-CoV-2. Although many questions remain, the preponderance of evidence indicates that children and adolescents are less likely to be symptomatic and less likely to have severe disease resulting from SARS-CoV-2 infection. In addition, children may be less likely to become infected and to spread infection. Policies to mitigate the spread of COVID-19 within schools must be balanced with the known harms to children, adolescents, families, and the community by keeping children at home.

Finally, policy makers should acknowledge that COVID-19 policies are intended to mitigate, not eliminate, risk. No single action or set of actions will completely eliminate the risk of SARS-CoV-2 transmission, but implementation of several coordinated interventions can greatly reduce that risk. For example, where physical distance cannot be maintained, students (over the age of 2 years) and staff can wear face coverings (when feasible). In the following sections, we review some general principles that policy makers should consider as they plan for the coming school year. For all of these, education for the entire school community regarding these measures should begin early, ideally at least several weeks before the start of the school year.

Physical Distancing Measures

Physical distancing, sometimes referred to as social distancing, is simply the act of keeping people separated with the goal of limiting spread of contagion between individuals. It is fundamental to lowering the risk of spread of SARS-CoV-2, as the primary mode of transmission is through respiratory droplets by persons in close proximity. There is a conflict between optimal academic and social/emotional learning in schools and strict adherence to current physical distancing guidelines. For example, the Centers for Disease Control and Prevention (CDC) recommends that schools "space seating/desks at least 6 feet apart when feasible."

In many school settings, 6 feet between students is not feasible without limiting the number of students. Evidence suggests that spacing as close as 3 feet may approach the benefits of 6 feet of space, particularly if students are wearing face coverings and are asymptomatic. Schools should weigh the benefits of strict adherence to a 6-foot spacing rule between students with the potential downside if remote learning is the only alternative. Strict adherence to a specific size of student groups (e.g., 10 per classroom, 15 per classroom, etc.) should be discouraged in favor of other risk mitigation strategies.

Given what is known about transmission dynamics, adults and adult staff within schools should attempt to maintain a distance of 6 feet from other persons as much as possible, particularly around other adult staff. For all of the below settings, physical distancing by and among adults is strongly recommended, and meetings and curriculum planning should take place virtually if possible. In addition, other strategies to increase adult-adult physical distance in time and space should be implemented, such as staggered drop-offs and pickups, and drop-offs and pickups outside when weather allows. Parents should, in general, be discouraged from entering the school building. Physical barriers, such as plexiglass, should be considered in reception areas and employee workspaces where the environment does not accommodate physical distancing, and congregating in shared spaces, such as staff lounge areas, should be discouraged.

The recommendations in each of the age groups below are not instructional strategies but are strategies to optimize the return of students to schools in the context of physical distancing guidelines and the developmentally appropriate implementation of the strategies. Educational experts may have preference for one or another of the guidelines based on the instructional needs of the classes or schools in which they work.

Pre-Kindergarten (Pre-K)

In Pre-K, the relative impact of physical distancing among children is likely small based on current evidence and certainly difficult to implement. Therefore, Pre-K should focus on more effective risk mitigation strategies for this population. These include hand hygiene, infection prevention education for staff and families, adult physical distancing from one another, adults wearing face coverings, cohorting, and spending time outdoors.

Higher-priority strategies:

- Cohort classes to minimize crossover among children and adults within the school; the exact size of the cohort may vary, often dependent on local or state health department guidance.
- Utilize outdoor spaces when possible.
- Limit unnecessary visitors into the building.

Lower-priority strategies:

- Face coverings(cloth) for children in the Pre-K setting may be difficult to implement.
- Reducing classmate interactions/play in Pre-K aged children may not provide substantial COVID-19 risk reduction.

Elementary Schools

Higher-priority strategies:

- Children should wear face coverings when harms (e.g., increasing hand-mouth/nose contact) do not outweigh benefits (potential COVID-19 risk reduction).
- Desks should be placed 3 to 6 feet apart when feasible (if this reduces the amount of time children are present in school, harm may outweigh potential benefits).
- Cohort classes to minimize crossover among children and adults within the school.
- Utilize outdoor spaces when possible.

Lower-priority strategies:

- The risk reduction of reducing class sizes in elementary school-aged children may be outweighed by the challenge of doing so.
- Similarly, reducing classmate interactions/play in elementary school-aged children may not provide enough COVID-19 risk reduction to justify potential harms.

Secondary Schools

There is likely a greater impact of physical distancing on risk reduction of COVID in secondary schools than early childhood or elementary education. There are also different barriers to successful implementation of many of these measures in older age groups, as the structure of school is usually based on students changing classrooms. Suggestions for physical distancing risk mitigation strategies when feasible:

- Universal face coverings in middle and high schools when not able to maintain a 6-foot distance (students and adults).
- Particular avoidance of close physical proximity in cases of increased exhalation (singing, exercise); these activities are likely safest outdoors and spread out.

- Desks should be placed 3 to 6 feet apart when feasible.
- Cohort classes if possible, limit cross-over of students and teachers to the extent possible.
 - Ideas that may assist with cohorting:
 - Block schedule (much like colleges, intensive 1-month blocks).
 - Eliminate use of lockers or assign them by cohort to reduce need for hallway use across multiple areas of the building. (This strategy would need to be done in conjunction with planning to ensure students are not carrying home an unreasonable number of books on a daily basis and may vary depending on other cohorting and instructional decisions schools are making.)
 - Have teachers rotate instead of students when feasible.
 - Utilize outdoor spaces when possible.
 - Teachers should maintain 6 feet from students when possible and if not disruptive to educational process.
 - Restructure elective offerings to allow small groups within one classroom. This may not be possible in a small classroom.

Special Education

Every child and adolescent with a disability is entitled to a free and appropriate education and is entitled to special education services based on their individualized education program (IEP). Students receiving special education services may be more negatively affected by distance-learning and may be disproportionately impacted by interruptions in regular education. It may not be feasible, depending on the needs of the individual child and adolescent, to adhere both to distancing guidelines and the criteria outlined in a specific IEP. Attempts to meet physical distancing guidelines should meet the needs of the individual child and may require creative solutions, often on a case-by-case basis.

Physical Distancing in Specific Enclosed Spaces

Bussing

- Encourage alternative modes of transportation for students who have other options.
- Ideally, for students riding the bus, symptom screening would be performed prior to being dropped off at the bus. Having bus drivers or monitors perform these screenings is problematic, as they may face a situation in which a student screens positive yet the parent has left, and the driver would be faced with leaving the student alone or allowing the student on the bus.
- Assigned seating; if possible, assign seats by cohort (same students sit together each day).
- Tape marks showing students where to sit.

- When a 6-foot distance cannot be maintained between students, face coverings should be worn.
- Driver should be a minimum of 6 feet from students; driver must wear face covering; consider physical barrier for driver (e.g., plexiglass).
- Minimize number of people on the bus at one time within reason.
- Adults who do not need to be on the bus should not be on the bus.
- Have windows open if weather allows.

Hallways

- Consider creating one-way hallways to reduce close contact.
- Place physical guides, such as tape, on floors or sidewalks to create one-way routes.
- Where feasible, keep students in the classroom and rotate teachers instead.
- Stagger class periods by cohorts for movement between classrooms if students must move between classrooms to limit the number of students in the hallway when changing classrooms.
- Assign lockers by cohort or eliminate lockers altogether.

Playgrounds

Enforcing physical distancing in an outside playground is difficult and may not be the most effective method of risk mitigation. Emphasis should be placed on cohorting students and limiting the size of groups participating in playground time. Outdoor transmission of virus is known to be much lower than indoor transmission.

Meals/Cafeteria

School meals play an important part in addressing food security for children and adolescents. Decisions about how to serve meals must take into account the fact that in many communities there may be more students eligible for free and reduced meals than prior to the pandemic.

- Consider having students cohorted, potentially in their classrooms, especially if students remain in their classroom throughout the day.
- Create separate lunch periods to minimize the number of students in the cafeteria at one time.
- Utilize additional spaces for lunch/break times.
- Utilize outdoor spaces when possible.
- Create an environment that is as safe as possible from exposure to food allergens.
- Wash hands or use hand sanitizer before and after eating.

Cleaning and Disinfection

The main mode of COVID-19 spread is from person to person, primarily via droplet transmission. For this reason, strategies for infection prevention should center around this form of spread, including physical distancing, face coverings, and hand hygiene. Given the challenges that may exist in children and adolescents in effectively adhering

to recommendations, it is critical staff are setting a good example for students by modeling behaviors around physical distancing, face coverings and hand hygiene. Infection via aerosols and fomites is less likely. However, because the virus may survive in certain surfaces for some time, it is possible to get infected after touching a virus contaminated surface and then touching the mouth, eyes, or nose. Frequent handwashing as a modality of containment is vital.

Cleaning should be performed per established protocols followed by disinfection when appropriate. Normal cleaning with soap and water decreases the viral load and optimizes the efficacy of disinfectants. When using disinfectants, the manufacturers' instructions must be followed, including duration of dwell time, use of personal protective equipment (PPE), if indicated, and proper ventilation. The use of EPA approved disinfectants against COVID-19 is recommended ([EPA List N](#)). When possible, only products labeled as [safe for humans and the environment](#) (e.g., Safer or Designed for the Environment), containing active ingredients such as hydrogen peroxide, ethanol, citric acid, should be selected from this list, because they are less toxic, are not strong respiratory irritants or asthma triggers, and have no known carcinogenic, reproductive, or developmental effects.

When EPA-approved disinfectants are not available, alternative disinfectants such as diluted bleach or 70% alcohol solutions can be used. Children should not be present when disinfectants are in use and should not participate in disinfecting activities. Most of these products are not safe for use by children, whose "hand-to-mouth" behaviors and frequent touching of their face and eyes put them at higher risk for toxic exposures. If disinfection is needed while children are in the classroom, adequate ventilation should be in place and nonirritating products should be used. Disinfectants such as bleach and those containing quaternary ammonium compounds or "Quats" should not be used when children and adolescents are present, because these are known respiratory irritants.

In general, elimination of high-touch surfaces is preferable to frequent cleaning. For example, classroom doors can be left open rather than having students open the door when entering and leaving the classroom or the door can be closed once all students have entered followed by hand sanitizing. As part of increasing social distance between students and surfaces requiring regular cleaning, schools could also consider eliminating the use of lockers, particularly if they are located in shared spaces or hallways, making physical distancing more challenging. If schools decide to use this strategy, it should be done within the context of ensuring that students are not forced to transport unreasonable numbers of books back and forth from school on a regular basis.

When elimination is not possible, surfaces that are used frequently, such a drinking fountains, door handles, sinks and faucet handles, etc., should be cleaned and disinfected at least daily and as often as possible. Bathrooms, in particular, should receive frequent cleaning and disinfection. Shared equipment including computer equipment, keyboards, art supplies, and play or gym equipment should also be

disinfected frequently. Hand washing should be promoted before and after touching shared equipment. Computer keyboard covers can be used to facilitate cleaning between users. practices should be used for indoor areas that have not been used for 7 or more days or outdoor equipment. Surfaces that are not high touch, such as bookcases, cabinets, wall boards, or drapes should be cleaned following standard protocol. The same applies to floors or carpeted areas.

Outdoor playgrounds/natural play areas only need routine maintenance, and hand hygiene should be emphasized before and after use of these spaces. Outdoor play equipment with high-touch surfaces, such as railings, handles, etc., should be cleaned and disinfected regularly if used continuously.

UV light kills viruses and bacteria and is used in some controlled settings as a germicide. UV light-emitting devices should not be used in the school setting, because they are not safe for children and adults and can cause skin and eye damage.

Testing and Screening

Virologic testing is an important part of the overall public health strategy to limit the spread of COVID-19. Virologic testing detects the viral RNA from a respiratory (usually nasal) swab specimen. Testing all students for acute SARS-CoV-2 infection prior to the start of school is not feasible in most settings at this time. Even in places where this is possible, it is not clear that such testing would reduce the likelihood of spread within schools. It is important to recognize that virologic testing only shows whether a person is infected at that specific moment in time. It is also possible that the nasal swab virologic test result can be negative during the early incubation period of the infection. So, although a negative virologic test result is reassuring, it does not mean that the student or school staff member is not going to subsequently develop COVID-19. Stated another way, a student who is negative for COVID 19 on the first day of school may not remain negative throughout the school year.

If a student or school staff member has a known exposure to COVID-19 (e.g., a household member with laboratory-confirmed SARS-CoV-2 infection or illness consistent with COVID-19) or has COVID-19 symptoms, having a negative virologic test result, according to [CDC guidelines](#), may be warranted for local health authorities to make recommendations regarding contact tracing and/ or school exclusion or school closure.

The other type of testing is serologic blood testing for antibodies to SARS-CoV-2. At the current time, serologic testing should not be used for individual decision-making and has no place in considerations for entrance to or exclusion from school. [CDC guidance](#) regarding antibody testing for COVID-19 is that serologic test results should not be used to make decisions about grouping people residing in or being admitted to congregate settings, such as schools, dormitories, or correctional facilities. Additionally, serologic test results should not be used to make decisions about returning people to the workplace. The CDC states that serologic testing should not be used to determine

immune status in individuals until the presence, durability, and duration of immunity is established. The AAP recommends this guidance be applied to school settings as well.

Schools should have a policy regarding symptom screening and what to do if a student or school staff member becomes sick with COVID-19 symptoms. Temperature checks and symptom screening are a frequent part of many reopening processes to identify symptomatic persons to exclude them from entering buildings and business establishments. The list of symptoms of COVID-19 infection has grown since the start of the pandemic and the manifestations of COVID-19 infection in children, although similar, is often not the same as that for adults.

School policies regarding temperature screening and temperature checks must balance the practicality of performing these screening procedures for large numbers of students and staff with the information known about how children manifest COVID-19 infection, the risk of transmission in schools, and the possible lost instructional time to conduct the screenings. Schools should develop plans for rapid response to a student or staff member with fever who is in the school regardless of the implementation of temperature checks or symptom screening prior to entering the school building. In many cases, it will not be practical for temperature checks to be performed prior to students arriving at school. **Parents should be instructed to keep their child at home if they are ill.** Any student or staff member with a fever of 100.4 degrees or greater or symptoms of possible COVID-19 virus infection should not be present in school.

In lieu of temperature checks and symptom screening being performed after arrival to school, **methods to allow parent report of temperature checks done at home may be considered.** Resources and time may necessitate this strategy at most schools. The epidemiology of disease in children along with evidence of the utility of temperature screenings in health systems may further justify this approach. Procedures using texting apps, phone systems, or online reporting rely on parent report and may be most practical but possibly unreliable, depending on individual family's ability to use these communication processes, especially if not made available in their primary language. Although imperfect, these processes may be most practical and likely to identify the most ill children who should not be in school. School nurses or nurse aides should be equipped to measure temperatures for any student or staff member who may become ill during the school day and should have an identified area to separate or isolate students who may have COVID-19 symptoms.

COVID-19 infection manifests similarly to other respiratory illness in children. Although children manifest many of the same symptoms of COVID-19 infection as adults, some differences are noteworthy. [According to the CDC](#), children may be less likely to have fever, may be less likely to present with fever as an initial symptom, and may have only gastrointestinal tract symptoms. A student or staff member excluded because of symptoms of COVID-19 should be encouraged to contact their health care provider to

discuss testing and medical care. In the absence of testing, students or staff should follow local health department guidance for exclusion.

Face Coverings and PPE

Cloth face coverings protect others if the wearer is infected with SARS CoV-2 and is not aware. Cloth masks may offer some level of protection for the wearer. Evidence continues to mount on the importance of universal face coverings in interrupting the spread of SARS-CoV-2. Although ideal, universal face covering use is not always possible in the school setting for many reasons. Some students, or staff, may be unable to safely wear a cloth face covering because of certain medical conditions (e.g., developmental, respiratory, tactile aversion, or other conditions) or may be uncomfortable, making the consistent use of cloth face coverings throughout the day challenging. For individuals who have difficulty with wearing a cloth face covering and it is not medically contraindicated to wear a face covering, behavior techniques and social skills stories (see resource section) can be used to assist in adapting to wearing a face covering. When developing policy regarding the use of cloth face coverings by students or school staff, school districts and health advisors should consider whether the use of cloth face coverings is developmentally appropriate and feasible and whether the policy can be instituted safely. If not developmentally feasible, which may be the case for younger students, and cannot be done safely (e.g., the face covering makes wearers touch their face more than they otherwise would), schools may choose to not require their use when physical distancing measures can be effectively implemented. School staff and older students (middle or high school) may be able to wear cloth face coverings safely and consistently and should be encouraged to do so. Children under 2 years and anyone who has trouble breathing or is unconscious, incapacitated, or otherwise unable to remove a face covering without assistance should not wear cloth face coverings.

For certain populations, the use of cloth face coverings by teachers may impede the education process. These include students who are deaf or hard of hearing, students receiving speech/language services, young students in early education programs, and English-language learners. Although there are products (e.g., face coverings with clear panels in the front) to facilitate their use among these populations, these may not be available in all settings.

Students and families should be taught how to properly wear (cover nose and mouth) a cloth face covering, to maintain hand hygiene when removing for meals and physical activity, and for replacing and maintaining (washing regularly) a cloth face covering.

School health staff should be provided with appropriate medical PPE to use in health suites. This PPE should include N95 masks, surgical masks, gloves, disposable gowns, and face shields or other eye protection. School health staff should be aware of the [CDC guidance on infection control](#) measures. Asthma treatments using inhalers with spacers are preferred over nebulizer treatments whenever possible. The [CDC recommends](#) that nebulizer treatments at school should be reserved for children who cannot use or do not have access to an inhaler (with spacer or spacer with mask). Schools should work with families and health care providers to assist with obtaining an inhaler for students

with limited access. In addition, schools should work to develop and implement asthma action plans, which may include directly observed controller medication administration in schools to promote optimal asthma control.

If required while waiting for a student to be picked up to go home or for emergency personnel to arrive, when using nebulizer or a peak flow meter, school health staff should wear gloves, an N95 [facemask](#), and eye protection. Staff should be trained on proper donning and doffing procedures and follow the CDC guidance regarding precautions when performing [aerosol-generating procedures](#). Nebulizer treatments should be performed in a space that limits exposure to others and with minimal staff present. Rooms should be well ventilated or treatments should be performed outside. After the use of the nebulizer, the room should undergo routine [cleaning and disinfection](#).

School staff working with students who are unable to wear a cloth face covering and who must be in close proximity to them should ideally wear N95 masks. When access to N95 masks is limited, a surgical mask in combination with a face shield should be used. Face shields or other forms of eye protection should also be used when working with students unable to manage secretions.

On-site School Based Health Services

On-site school health services should be supported if available, to complement the pediatric medical home and to provide pediatric acute and chronic care. Collaboration with [school nurses](#) will be essential, and school districts should involve School Health Services staff early in the planning phase for reopening and consider collaborative strategies that address and prioritize immunizations and other needed health services for students, including behavioral health and reproductive health services.

Education

The impacts of lost instructional time and social emotional development on children and adolescents should be anticipated, and schools will need to be prepared to adjust curricula and instructional practices accordingly without the expectation that all lost academic progress can be caught up. Plans to make up for lost academic progress because of school closures and distress associated with the pandemic should be balanced by a recognition of the likely continued distress of educators and students that will persist when schools reopen. If the academic expectations are unrealistic, school will likely become a source of further distress for students (and educators) at a time when they need additional support. It is also critical to maintain a balanced curriculum with continued physical education and other learning experiences rather than an exclusive emphasis on core subject areas.

Students With Disabilities

The impact of loss of instructional time and related services, including mental health services as well as occupational, physical, and speech/language therapy during the period of school closures is significant for students with disabilities. Students with

disabilities may also have more difficulty with the social and emotional aspects of transitioning out of and back into the school setting. As schools prepare for reopening, school personnel should develop a plan to ensure a review of each child and adolescent with an IEP to determine the needs for compensatory education to adjust for lost instructional time as well as other related services.

Schools can expect a backlog in evaluations; therefore, plans to prioritize those for new referrals as opposed to re-evaluations will be important. Many school districts require adequate instructional effort before determining eligibility for special education services. However, virtual instruction or lack of instruction should not be reasons to avoid starting services such as response-to-intervention (RTI) services, even if a final eligibility determination is postponed.

Behavioral Health/Emotional Support for Children and Adolescents

Schools should anticipate and be prepared to address a wide range of mental health needs of children and staff when schools reopen. Preparation for [infection control](#) is vital and admittedly complex during an evolving pandemic. But the emotional impact of the pandemic, financial/employment concerns, social isolation, and growing concerns about systemic racial inequity — coupled with prolonged limited access to critical school-based mental health services and the support and assistance of school professionals — demands careful attention and planning as well. Schools should be prepared to adopt an approach for mental health support.

Schools should consider providing training to classroom teachers and other educators on how to talk to and support children during and after the COVID-19 pandemic. Students requiring mental health support should be referred to school mental health professionals.

Suicide is the second leading cause of death among adolescents or youth 10 to 24 years of age in the United States. In the event distance learning is needed, schools should develop mechanisms to evaluate youth remotely if concerns are voiced by educators or family members and should be establishing policies, including referral mechanisms for students believed to be in need of in-person evaluation, even before schools reopen.

School mental health professionals should be involved in shaping messages to students and families about the response to the pandemic. Fear-based messages widely used to encourage strict physical distancing may cause problems when schools reopen, because the risk of exposure to COVID-19 may be mitigated but not eliminated.

When schools do reopen, plans should already be in place for outreach to students who do not return, given the high likelihood of separation anxiety and agoraphobia in students. Students may have difficulty with the social and emotional aspects of transitioning back into the school setting, especially given the unfamiliarity with the changed school environment and experience. Special considerations are warranted for students with pre-existing anxiety, depression, and other mental health conditions;

children with a prior history of trauma or loss; and students in early education who may be particularly sensitive to disruptions in routine and caregivers.

Students facing other challenges, such as poverty, food insecurity, and homelessness, and those subjected to ongoing racial inequities may benefit from additional support and assistance.

Schools need to incorporate academic accommodations and supports for all students who may still be having difficulty concentrating or learning new information because of stress associated with the pandemic. It is important that schools do not anticipate or attempt to catch up for lost academic time through accelerating curriculum delivery at a time when students and educators may find it difficult to even return to baseline rates. These expectations should be communicated to educators, students, and family members so that school does not become a source of further distress.

Mental Health of Staff

The personal impact on educators and other school staff should be recognized. In the same way that students are going to need support to effectively return to school and to be prepared to be ready to process the information they are being taught, teachers cannot be expected to be successful at teaching children without having their mental health needs supported. The strain on teachers this year as they have been asked to teach differently while they support their own needs and those of their families has been significant, and they will be bringing that stress back to school as schools reopen.

Resources such as Employee Assistance Programs and other means to provide support and mental health services should be established prior to reopening. The individual needs and concerns of school professionals should be addressed with accommodations made as needed (e.g., for a classroom educator who is pregnant, has a medical condition that confers a higher risk of serious illness with COVID-19, resides with a family member who is at higher risk, or has a mental health condition that compromises the ability to cope with the additional stress). Although schools should be prepared to be agile to meet evolving needs and respond to increasing knowledge related to the pandemic and may need to institute partial or complete closures when the public health need requires, they should recognize that staff, students, and families will benefit from sufficient time to understand and adjust to changes in routine and practices. During a crisis, people benefit from clear and regular communication from a trusted source of information and the opportunity to dialogue about concerns and needs and feel they are able to contribute in some way to the decision-making process. Change is more difficult in the context of crisis and when predictability is already severely compromised.

Food Insecurity

In 2018, 11.8 million children and adolescents (1 in 7) in the United States lived in a food-insecure household. The coronavirus pandemic has led to increased unemployment and poverty for America's families, which in turn will likely increase even further the number of families who experience food insecurity. School re-entry planning must consider the many children and adolescents who experience food insecurity

already (especially at-risk and low-income populations) and who will have limited access to routine meals through the school district if schools remain closed. The short- and long-term effects of food insecurity in children and adolescents are profound. **Plans should be made prior to the start of the school year for how students participating in free- and reduced- meal programs will receive food in the event of a school closure or if they are excluded from school because of illness or SARS-CoV-2 infection.**

Immunizations

Existing school immunization requirements should be maintained and not deferred because of the current pandemic. In addition, although influenza vaccination is generally not required for school attendance, in the coming academic year, it should be highly encouraged for all students. School districts should consider requiring influenza vaccination for all staff members. Pediatricians should work with schools and local public health authorities to promote childhood vaccination messaging well before the start of the school year. It is vital that all children receive recommended vaccinations on time and get caught up if they are behind as a result of the pandemic. The capacity of the health care system to support increased demand for vaccinations should be addressed through a multifaceted collaborative and coordinated approach among all child-serving agencies including schools.

Organized Activities

It is likely that sporting events, practices, and conditioning sessions will be limited in many locations. Preparticipation evaluations should be conducted in alignment with the [AAP Preparticipation Physical Evaluation Monograph](#), 5th ed, and state and local guidance.

Additional Information

If you need a print version of this guidance, use the Print icon at the top of the page or download a pdf [here](#).

- Information for Parents on HealthyChildren.org: [Returning to School During COVID-19](#)
- [Guidance Related to Childcare During COVID-19](#)
- [Guidance on Providing Pediatric Well-Care During COVID-19](#)
- [List of latest AAP News articles on COVID-19](#)
- [Pediatrics COVID-19 Collection](#)
- [COVID-19 Advocacy Resources](#)(Login required)
- [Centers for Disease Control and Prevention: Considerations for Schools](#)
- [Centers for Disease Control and Prevention: School Decision Tree](#)
- [Centers for Disease Control and Prevention: Activities and Initiatives Supporting the COVID Response](#)

Resources

- [Coalition to Support Grieving Students](#)
- [Using Social Stories to Support People with I/DD During the COVID-19 Emergency](#)
- [Social Stories for Young and Old on COVID-19](#)

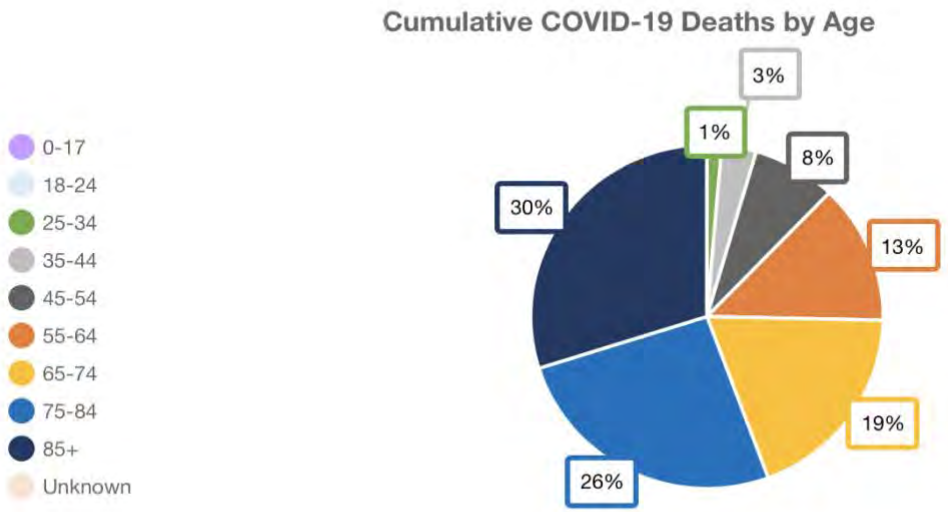
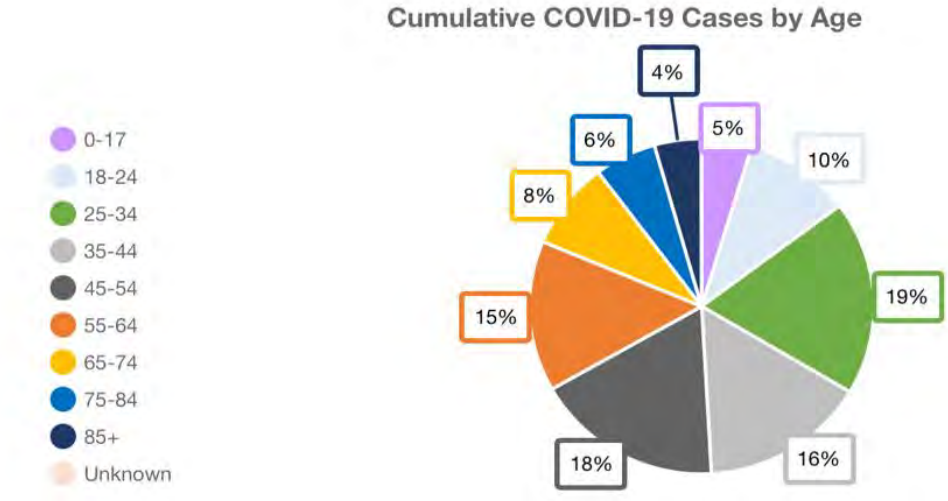
Interim Guidance Disclaimer: The COVID-19 clinical interim guidance provided here has been updated based on current evidence and information available at the time of publishing. Guidance will be regularly reviewed with regards to the evolving nature of the pandemic and emerging evidence. All interim guidance will be presumed to expire in December 2020 unless otherwise specified.

Last Updated

06/25/2020

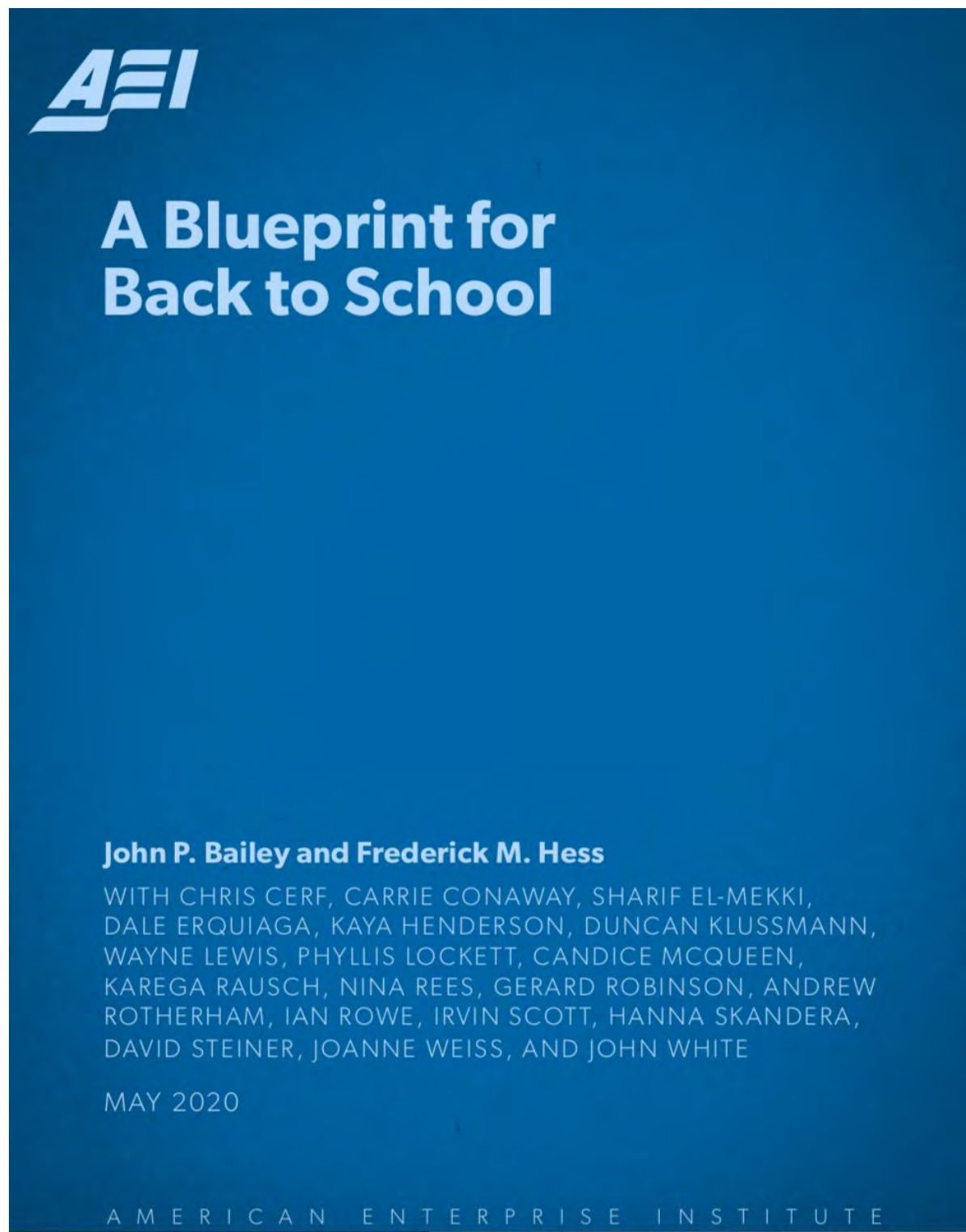
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APPENDIX D- Orange County Covid-19 Cases and Deaths by Age



Source: Orange County Healthcare Agency, June 16

Appendix E- A Blueprint for Back to School. The American Enterprise Institute



APPENDIX F- Statement: Southern California Chapter-American Academy of Pediatric

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Southern California Chapter – Los Angeles, Central Coast and Inland Empire

Press release

Local Pediatricians Urge Collaborative Decision-Making About Reopening Schools

PASADENA, CA (June 2, 2020)

As pediatricians, our top priority is the health and safety of our children. We urge those in public health and education to work together to strike the right balance between preventing the spread of COVID-19 and providing children with the education, nutrition, physical activity, and mental health benefits provided through the reopening of schools.

The risk of COVID-19 transmission among groups of children has not been well-studied, but current research suggests that the risk is much lower than the adult population. The negative effects of missing in-person educational time as children experience prolonged periods of isolation and lack of instruction, however, is clear. Children rely on schools for multiple needs, including but not limited to education, nutrition, physical activity, socialization, and mental health. Special populations of students receive services for disabilities and other conditions that are virtually impossible to deliver online. Prolonging a meaningful return to in-person education would result in hundreds of thousands of children in Los Angeles County being at risk for worsening academic, developmental and health outcomes.

Because of the nature of COVID-19 and of Los Angeles County, we cannot implement a one-size-fits-all set of rules for reopening schools. Los Angeles County covers more than 4,700 square miles and has a population of more than 10 million. Schools must have the flexibility to implement intermittent closures, phased reopenings, and isolation protocols that are appropriate for their specific areas and their specific populations.

“Our concern is that recently issued guidelines for schools re-opening in Los Angeles County are not realistic or even developmentally appropriate for children,” says Dr. Alice Kuo, President of the Southern California chapter of the American Academy of Pediatrics. “For example, wearing masks throughout the day can hinder language and socio-emotional development, particularly for younger children.”

“The guidelines need to be flexible for different age groups within a school district,” says Kuo. “They also need to take into account what is feasible for the most number of students to return to in-person education, including practical spacing measures.”

The AAP encourages collaborative decision-making among school districts and local and state public health departments to balance the academic needs of students with minimizing the risk of transmission of COVID-19. Pediatricians want to be involved in these discussions as experts on children’s health and development. The national AAP recommendations for return to in-person education in schools can be found on our website at:

<https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools/>

The Southern California chapter of the American Academy of Pediatrics is an organization of 1,500 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults.

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF JAMES M.
REARDON IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, JAMES M. REARDON, declare as follows:

24 1. I am a citizen of the United States. I have personal knowledge of the
25 facts set forth in this declaration. If called as a witness, I could and would testify
26 competently to the matters set forth herein.

27 2. I am the President of the Capistrano Unified School District (“CUSD”)
28 Board of Trustees, where I represent the unincorporated communities of Ladera Ranch,
Escencia, Sendero, Las Flores, Coto de Caza, and incorporated San Juan Capistrano.



1 3. I am a co-founder of New Vista School, a 501(c)(3) charitable non-profit
2 private school, located in Laguna Hills, CA. New Vista serves the educational, social
3 and vocational needs of students with Autism Spectrum Disorder, as well as students
4 with similar learning needs. New Vista is an accredited secondary school program for
5 grades 6 through 12, operating as a private school for students who are placed by
6 parents, while also serving public students under contract-placement from local public-
7 school districts.

8 4. I am also the father of an autistic son. For all these reasons, I have
9 specialized knowledge and personal experience in how to educate children and children
10 with special needs.

11 5. CUSD is the 11th largest school district in California by enrollment,
12 serving the incorporated cities of San Clemente, Dana Point, Laguna Niguel, Mission
13 Viejo, Rancho Santa Margarita, Aliso Viejo and San Juan Capistrano, as well as a
14 populous unincorporated area of the County of Orange. CUSD's 56 schools serve
15 48,000 students and their families.

16 6. Of the 48,000 students in CUSD, more than twelve percent are assigned
17 Individual Education Programs (IEPs) due to their special needs. Of the 6,156 students
18 with IEPs, approximately one-third require close support and instruction from teachers
19 and other staff with specialized credentials and skills.

20 7. Importantly, CUSD supports more than a thousand students with formal
21 accommodation plans under provisions of section 504 of the Rehabilitation Act of
22 1973. Such plans require the school district to provide learning accommodation to
23 students with handicapping conditions, such as special classroom seating, assistive
24 technology, extra time, and a myriad of other supportive accommodations that allow
25 these students to participate in education on a more equal footing with their peers.
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1 Many of the critical accommodations mandated by these 504 plans are impossible to
2 provide through online instruction and are abandoned without due process.

3 8. On July 15, 2020, the CUSD Board of Trustees met to discuss and approve
4 our district's plan for reopening schools; the plan was under development since May.
5 At that time, we recognized that distance-learning provides an inadequate learning
6 experience for many, if not the majority of our 48,000 students, but especially those
7 receiving special services and accommodation under IEPs and 504 plans.

8 9. CUSD operated three in-class summer school programs during July, all
9 with the necessary COVID-19 protection measures outlined in the guidance provided
10 by the California Department of Public Health. We experienced no problems related to
11 these programs. However, as a result of the Governor's July 17, 2020 order, CUSD
12 canceled its summer school program and sent students home. The program was
13 exclusively for the most academically at-risk students in our district that are known to
14 be at least two grade levels behind their actual standing. This cancellation had a serious
15 impact on students, some with special needs.

16 10. A prolonged shutdown of schools will have significant negative
17 consequences for children with special needs and handicapping conditions. Learning
18 and developmental support will be incredibly difficult for them in an online
19 environment. Autistic children require a tremendous amount of direct support and will
20 undoubtedly regress while participating in online learning, which can provide little to
21 no support for their developmental, speech, occupational therapy, behavior (i.e., social
22 skills), and academic needs. How do you conduct speech or occupational therapy or
23 provide behavioral support effectively online? The answer is: it's impossible.
24 Practically speaking, schools are unable to provide most services called for in the
25 students' IEPs and 504 plans while online, because schools do not send staff into the
26 students' homes. Although some schools may claim to offer services online, a student
27
28

1 with special needs student simply will not receive the legally mandated IEP services or
2 504 accommodations.

3 11. Schools provide a venue for student-teacher interaction and create a sense
4 of structure; indeed, all students require this. For students with special needs, this
5 requirement is enshrined in the Individuals with Disabilities Education Act (“IDEA”),
6 which establishes that students have a right to be educated in the least restrictive
7 environment to facilitate their social development. The Governor’s order ignores this
8 legal requirement by forcing students into a very restricted online environment at home,
9 without justification.

10 12. When students are sent home, the quality of learning varies significantly
11 for each student depending on the conditions in the household. For example, in affluent
12 households, parents have jobs that enable or require them to work from home.
13 Although these households may have computers and broadband internet, they are not
14 necessarily available for use by students as their parents may use them working from
15 home. Conversely, in a lower-income household parents may work away from home
16 and thus provide no support for their children, regardless of how much free technology
17 support is provided by the schools. Irrespective of socioeconomic status, many families
18 are unable to maintain a household conducive to learning when they all share the same
19 living space.

20 13. Enforcing the Governor’s order at a county level is illogical as the order
21 essentially combines southern Orange County with far-away northern communities,
22 applying a one-size-fits-all approach rather than tailoring guidance to the specific needs
23 of each school district. The order does not properly consider the different
24 circumstances in each community, school district or school, and unjustly closes schools
25 without any evidence that schools pose a risk to the children or greater population.
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1 14. Schools must reopen for in-person instruction to ensure that every child is
2 protected and provided the special needs services not capable of being provided through
3 online learning. Special needs students and those with handicaps will suffer the
4 negative consequences of these unnecessary school closures and such harm will only
5 worsen, unless they are permitted to return to in person instruction.

6 I declare under penalty of perjury under the laws of the United States of America
7 and the State of California that the foregoing is true and correct.
8
9

10 Dated: July 25, 2020

DocuSigned by:
James M. Reardon
0016145B1EFD454...
James M. Reardon



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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF ANNA WALKER
IN SUPPORT OF APPLICATION FOR
TEMPORARY RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, ANNA WALKER, declare as follows:

24 1. I am a citizen of the United States. I have personal knowledge of the
25 facts set forth in this declaration. If called as a witness, I could and would testify
26 competently to the matters set forth herein.

27 2. For over twenty years, I have been a special education teacher,
28 diagnostician, and school administrator in both Northern and Southern California,
serving public schools. I hold a master's degree in Special Education. I also hold



1 several credentials, including one in Severely Handicapped and Learning Handicapped.
2 I also hold a multiple Subjects Learning Credential and a clear Administrative
3 Credential.

4 3. I have worked for the California Department of Education in the
5 Diagnostic Centers, visiting schools from the Mexican border to northern California, to
6 work with school teams to conduct student assessments, develop Individualized
7 Education Programs (“IEPs”), and provide training to schools and families. For the
8 past ten years, I have been a special education administrator overseeing the
9 implementation of special education services for over an estimated 2,000 students in
10 both the Bay Area and Los Angeles County.

11 4. As of the end of the 2018-19 school year, there were 795,000 students
12 enrolled in California schools that received special education. That amounts to 12.5
13 percent of the total enrollment.

14 5. When school campuses are closed and education is moved entirely online,
15 many of the guarantees and key tenants afforded to special needs children under the
16 Individuals with Disabilities Education Act (“IDEA”) collapse. The home is
17 recognized as being the most restrictive setting in the continuum of special education
18 placements, next to a residential treatment facility. The IDEA clearly states that
19 students with disabilities have a right to be in the least restrictive setting. I know from
20 first-hand experience that, even under the best of circumstances, it is challenging for
21 schools to provide a free and appropriate education in the least restrictive environment.
22 At a minimum, waivers should be allowed for students with special needs to so that
23 they can receive in-person instruction.

24 6. Numerous students rely on the schools to administer medications. I have
25 worked with several students, including one with diabetes and ADHD who required a
26 one-on-one aide and school nurses to manage the medication regime. This student is
27 not an isolated case; indeed, numerous others are literally having their lives jeopardized
28 while schools remain closed.

1 7. Many students with special needs, particularly more severely disabled
2 students, have a myriad of health needs that require services from schools to address.
3 Simple day-to-day tasks, such as eating, balancing, etc., may require special education
4 and services that simply cannot be provided virtually. For example, there is no way for
5 a teacher or orientation and mobility specialist to help a student learn to use the school
6 restroom independently on Zoom.

7 8. There is also a significant assessment problem when children are not in
8 school. When California schools transitioned to online learning, missing was the
9 extremely complex processes that underlie the development, monitoring, and review of
10 the IEP. The process for one single student to go through the referral and assessment
11 process and develop an IEP takes collectively, on average, over 100 hours of
12 collaborative effort, and it must be done in an educational environment. Several key
13 parts of this process simply cease to exist when schools are closed. While many
14 districts were holding IEP meetings online during school closures, a valid, new IEP
15 cannot be developed under these circumstances for several reasons. Furthermore, IEPs,
16 under the IDEA were never designed to be implemented in the home setting. For
17 students to receive their special needs services outlined in the IEPs, they must be in
18 school.

19 9. Perhaps the most notable issue is that of access and equity. Even when
20 students with special needs are being offered virtual services, there is mounting
21 evidence that there are significant and disturbing inequalities among students of color
22 and from lower income households. One survey found that 4 out of 10 families
23 reported that they were not receiving any special education support at all. Just 1 in 5
24 families reported that they are receiving all the services their children are entitled to on
25 their IEP. Thirty-five percent report that their children are doing little to no remote
26 learning, compared with seventeen percent of their general education peers.
27 Importantly, when these results were disaggregated based on family household income,
28 the results were startling: thirty percent of households earning less than \$25,000 per

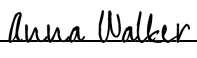
1 year reported that their child was receiving none of their supports as compared to ten
2 percent of households earning over \$100,000 per year. The statistics are staggering and
3 prove that school closures cause access and equity issues.

4 10. Schools are the best venues to provide students with their legally mandated
5 special services. For example, over thirty percent of all students that have IEPs are
6 identified as learning disabled. The vast majority of these students have trouble
7 learning to read. Special educators with the proper training in a school setting can help
8 children fix this, but it requires certain services that simply cannot be replicated by
9 families in the home.

10 11. Reopening schools is necessary so that special needs children may receive
11 the services they are legally entitled to and children do not suffer further harm. Schools
12 must also reopen so that families who opt for in-person instruction may avail their
13 children of all the benefits that their special education will provide them to live
14 successful lives. We cannot allow special needs students and those with handicaps to
15 suffer the negative consequences of these unnecessary school closures.

16 I declare under penalty of perjury under the laws of the United States of America
17 and the State of California that the foregoing is true and correct.

18
19 Dated: July 26, 2020

DocuSigned by:

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Anna Walker



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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

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19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

DECLARATION OF ALISON M. KEECH IN SUPPORT OF APPLICATION FOR TEMPORARY RESTRAINING ORDER

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, ALISON M. KEECH, declares as follows:

24 1. I am a credentialed California teacher, duly qualified to teach all subjects
25 in K-6 classrooms in the State of California. As explained more fully below, I am
26 currently employed as a fifth grade mathematics teacher in a middle school in the
27 Los Angeles Unified School District located and serving families in historically
28 underserved communities. I have firsthand, personal knowledge of the facts set forth
below and if called as a witness could and would competently testified thereto.

1 2. My personal educational background is as follows: I received a Bachelor
2 of Arts (Honours) in Geography, with a minor in French, from Queen’s University in
3 Kingston, Ontario, Canada in 2007. I received a Bachelor of Education from Queen’s
4 University in Kingston, Ontario, Canada in 2008. I received my Master of Arts in
5 Education with a focus in Bilingual/Bicultural Childhood Education from Teachers
6 College at Columbia University in New York, New York in 2011.

7 3. After completing several practical classroom internships during my
8 undergraduate and graduate education, my full-time teaching career began in 2010.
9 Specifically, I served as a second grade teacher in a dual-language French-English
10 public school classroom at P.S. 58 in Brooklyn, New York, from 2010 through 2011.

11 4. From 2011 through the birth of my first child in 2012, I served as a second
12 grade teacher at Futuro College Preparatory Elementary School in the El Sereno
13 neighborhood of Los Angeles, California.

14 5. Since returning to work full-time in 2018, I have served as a fifth grade
15 mathematics teacher at Valor Academy Charter Middle School in the North Hills
16 neighborhood of Los Angeles, California.

17 6. During the period of time that I taught second grade at Futuro College
18 Preparatory Elementary School in the El Sereno neighborhood of Los Angeles, the
19 student body was **approximately 99.6% Hispanic or Latino**, as determined by the
20 California Department of Education, and where **approximately 91% of the student**
21 **body was eligible for free or reduced lunch**, a commonly utilized indicator of student
22 poverty whose eligibility is defined by the state and federal governments. In addition,
23 **more than half of the student body were classified as “English Language**
24 **Learners,”** which is a pedagogical term that generally refers to students who often
25 come from non-English-speaking homes and backgrounds and who generally require
26 specialized or modified instruction in both the English language and their academic
27 courses.

28

1 7. In my current role as fifth grade mathematics teacher at Valor Academy
2 Charter Middle School in the North Hills neighborhood of Los Angeles, I teach students
3 who are **approximately 94% Hispanic or Latino**, as determined by the California
4 Department of Education, and where **approximately 83% of the student body is**
5 **eligible for free or reduced lunch**. Approximately **one quarter of the student body is**
6 **classified as “English Language Learners.”**

7 8. Despite these challenges, and at least prior to March 2020, all objective
8 measures of which I am aware showed that the academic, social and emotional needs of
9 our students were being met in a way that exceeded comparable neighborhood schools.

10 9. In March 2020, due to the initial effects of state and local orders associated
11 with the COVID-19 pandemic, our school joined others across the state and country in
12 closing its doors to in-person instruction. Because it was initially anticipated that this
13 closure would not last more than two weeks, our school at first did not require live
14 virtual instruction for our students. Instead, our students were directed to (a) complete
15 one page of notes per week per subject drawn from commonly-available online
16 resources; and to (b) attempt an assessment for each such page of notes so completed.

17 10. Although I understand that most LAUSD schools largely proceeded with a
18 similar model for the remainder of the 2019-20 school year, we as educators quickly
19 and collaboratively determined that the model negotiated for use in traditional LAUSD
20 district schools did not satisfy basic pedagogical standards and would not meet the
21 educational needs of our students. Accordingly, we decided at the end of March 2020 to
22 transition our students to live daily virtual remote instruction, which we utilized from
23 April 2020 through June 2020.

24 11. To effectuate the delivery of this instruction, on the first Monday after
25 school closed, laptops and chargers were distributed to students and we directed our
26 families to free Internet resources being provided. Our initial hope in taking these steps
27 was that live daily virtual remote instruction would begin to meet the educational needs
28 of our students.

1 12. The pedagogical specifics were as follows: each of our students was
2 provided with (a) between **five and seven hours each day of live virtual teacher**
3 **interaction over the Zoom videoconferencing platform**, including both “main” and
4 “breakout” rooms; with (b) approximately **five hours each day of core content**
5 **instruction in Math, Reading, Writing and Science** – approximately one hour per
6 subject per teacher; and (c) spread out throughout each week, **at least one hour of**
7 **virtual visual art, at least one hour of virtual physical education** and **at least one**
8 **hour of social-emotional learning and office hours** led by each teacher. Written
9 assignments were distributed and reviewed via Google Classroom and similar online
10 tools.

11 13. In order to facilitate this live virtual teacher interaction, I and my
12 colleagues used all available virtual learning best practices. We created and
13 implemented numerous virtual lesson plans in conjunction with my peers and
14 administrators. In addition, we had weekly grade-level meetings where we refined our
15 lesson plans. And we regularly pooled our collective child development education and
16 expertise to discuss what was working, what was not working and where we could do
17 better, both generally and with respect to specific students.

18 14. Unfortunately, as hard as we worked and as many best practices as we
19 implemented, I quickly discovered that any model of live daily virtual remote
20 instruction through virtual platforms is so lacking in the ability to provide for basic
21 classroom management and other pedagogical features that it does not and will not
22 work for young children – particularly those from the underserved and
23 socioeconomically disadvantaged communities where I teach – and thus largely fails to
24 meet their basic educational needs.

25 15. As but one illustration, from April through June of 2020, I was responsible
26 for teaching mathematics to **128 fifth grade children**. Despite frequent student-specific
27 interventions, on any given day and during any given class, **less than 10%** – or a total
28 overall average of **between 10 and 12 children** – logged in to and “attended” live

1 virtual instruction through the Zoom platform. **The maximum number of my 128**
2 **students that logged in for live virtual instruction from April through June of 2020**
3 **was 17.** Far fewer actually turned on their video and participated in class – on average,
4 **between 6 and 7 children per class.** This level of participation was consistent with the
5 experience of all of my colleagues. Collectively, **only about 60% of my students**
6 **properly completed their virtually-assigned assignments.**

7 16. It is my understanding that in 2015, Stanford University pedagogical
8 researchers comprehensively studied the impact of virtual learning models as opposed
9 to in-person education models and found that, on average, white, non-poverty, non-
10 “English Language Learner” and non-special education students who were subject to
11 virtual learning **were behind their in-person peers to an extent that reflected an**
12 **equivalent of 180 fewer days of instruction in math and 72 fewer days of**
13 **instruction in reading.** Attached hereto as Exhibit ___ is a true and correct copy of this
14 study.

15 17. I have reviewed Exhibit ___ and have concluded that, if anything given the
16 demographics of the students that I teach, the findings of this study may understate the
17 learning loss that my students experienced from March through June of 2020. Being
18 prevented from providing in-person instruction has resulted in a situation where my
19 students have forgotten essential, standards-based skills taught thoroughly earlier in the
20 year. Moreover, even those children who are motivated and engaged have fallen
21 steadily behind; those who were already struggling to meet grade level standards find
22 themselves even more so.

23 18. Virtual learning is thus not a real substitute of any kind – whether
24 temporary or permanent – for in-person education. Young children like those I teach, in
25 addition to dual-language, “English Language Learners” and special needs children are
26 being especially harmed. Its forced use improperly interferes with our professional
27 judgment as educators and is damaging the children for which we as educators are
28 responsible. Our students cannot simply press “pause” on their development as the

1 adults in charge attempt to sort out the politics of this pandemic. We may never
2 ultimately be able to fully compensate for these compounding academic, social and
3 emotional learning losses at all, let alone in a virtual learning environment.

4 19. As I have experienced and thus recognize the failings of virtual instruction,
5 I know that it is necessary to return to in-person instruction now in order to meet the
6 basic educational needs of our community. As such, as of the week of July 13, 2020, we
7 were planning to provide in-person instruction opportunities for the students that we
8 serve consistent with social distancing and other guidelines adopted in other states and
9 in countries around the world. I was, and remain, fully prepared to take whatever
10 precautions that may necessary to deliver such in-person instruction and know that such
11 instruction is not only possible but is essential.

12 20. At the end of that week, our collective efforts were halted. The reason, as I
13 ultimately learned, was that we as educators had been deprived by the state of the
14 choice to provide in-person instruction to our students and that virtual learning had been
15 mandated. At no time was I (or, to my knowledge, my colleagues) consulted by any
16 state or local officials regarding (a) our professional pedagogical judgment; or (b) our
17 own professional experience with virtual learning prior to this decision being made.
18 This absence of meaningful consultation remains the case today.

19 21. Since July 17, 2020, I have listened carefully to state officials and have
20 reviewed the resources that I understand state and local officials publicly claim have
21 provided to educators to provide for what they apparently believe will be a “robust”
22 model of distance learning, including, *inter alia*, the California Department of
23 Education’s “Distance Learning” resources, available at
24 <https://www.cde.ca.gov/ci/cr/dl/>, and the Los Angeles Unified School District’s
25 “Remote Learning Resources” for mathematics, available at
26 <https://achieve.lausd.net/site/default.aspx?PageType=3&ModuleInstanceID=9858&ViewID=ed695a1c-ef13-4546-b4eb-4fefcdd4f389&RenderLoc=0&FlexDataID=87781&PageID=1237&Comments=true>.

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22. Having carefully reviewed the foregoing and listened to and understood what state and district officials are planning to provide, it is my professional judgment that what is being planned to effectuate what is being characterized as “robust” distance learning is not only not “robust” but is not sufficient to satisfy the minimum obligations that we as educators owe to our students in the State of California. In fact, the model being characterized by the state as “robust” will involve less actual education than the model described above implemented at my school between April and June of 2020.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 24th day of July 2020, at Los Angeles, California.


DocuSigned by:

Alison M. Keech



EXHIBIT 15



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CENTER FOR RESEARCH ON EDUCATION OUTCOMES

Online Charter School Study **2015**

Online Charter School Study

2015

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CREDO, the Center for Research on Education Outcomes at Stanford University, was established to improve empirical evidence about education reform and student performance at the primary and secondary levels. CREDO at Stanford University supports education organizations and policymakers in using reliable research and program evaluation to assess the performance of education initiatives. CREDO's valuable insight helps educators and policymakers strengthen their focus on the results from innovative programs, curricula, policies and accountability practices.

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List of Acronyms & Definitions

CMOs	Charter School Management Organizations
CREDO	Center for Research on Education Outcomes
EOC	End-of-Course Exam
ELA	English Language Arts
ELLs	English Language Learners
FERPA	Family Education Records Privacy Act
NAEP	National Assessment of Educational Progress
TPS	Traditional Public School
VCR	Virtual Control Record
Asynchronous	Learning that occurs when students complete assignments and learning on their own time and schedule without live interaction with a teacher
Brick-district	A public school operated by a traditional school district which uses standard in-person learning as its primary means of curriculum delivery (aka – TPS)
Brick-charter	A public school operated under a charter as defined by the state which uses standard in-person learning as its primary means of curriculum delivery
Online charter	A public school operated under a charter as defined by the state which uses online learning as its primary means of curriculum delivery
Online district	A public school operated by a traditional public school district which uses online learning as its primary means of curriculum delivery
Growth	The year-to-year change in academic performance relative to one’s peers. Growth can be positive or negative.
Network	A network is defined as a single organization which oversees the operation of at least three charter schools. Not all the schools in a network must be online for the schools to be considered part of a network.
Online School	A school which offers a full-time online curriculum to the majority of its students

Synchronous Learning that occurs with all students in a class receiving instruction and completing work at the same time. Students do not necessarily have to be in the same location for synchronous work.

Online Charter School Study

2015

1. Introduction

Purpose of Study

The Center for Research on Education Outcomes (CREDO), Mathematica Policy Research, and the Center on Reinventing Public Education (CRPE) have undertaken a collection of studies to contribute more extensive information on the landscape and operation of online charter schools and their impact on students' academic growth than has been available to date. Our aim was to deliver an unbiased, data-driven examination of online charter schools. The intent of this report is to present to lay-readers and policy decision makers information based on advanced statistical models of student growth in a manner which is accessible and useful for the promotion of deeper discussion of the role of online schools in the K-12 setting. This report presents the findings about impacts of online charter enrollment on the academic progress of students.

Need for the Study

Online schools, especially online charter schools, are a tiny, but rapidly growing sector in the education realm. Full-time online schools are still a relatively new phenomenon, and some states have seen enrollment growth which is literally exponential. While the overall percentage of students who attend online schools is small, only 0.5% of students in our data, based on increasing growth rates we should expect to see continued expansion of online educational services. The online schools within our 18 state data set have increased their tested student enrollment from 35,000 students in 2009-10 to over 65,000 students in 2012-13. Based on even modest funding levels of \$6,000 per student, 65,000 students represents a public investment of \$390,000,000 annually. With the number of students expected to continue to grow rapidly, good stewardship demands an examination of the outcomes of public investment.

Online schools may be a good investment of these millions of dollars if they can provide quality education to students, especially those students poorly served by the current education system. Online schooling options have the potential to provide students a flexible, student-centered educational option.

One of the desirable attributes of online schools is their adaptability for atypical students. Across the country, there are students who work to provide for their families. There are other students who are who are already active in their chosen professions such as actors, artists, or Olympic hopefuls. These students could also benefit from a flexible, portable means of receiving their education. For migrant students or those in unstable households, the ability to sustain a consistent schooling environment could greatly

boost educational outcomes. Likewise, students who learn at a greatly different rate from their age peers (both slower and faster) might benefit from the self-paced nature of many online programs.

Despite these potential benefits, online learning may not be a good fit for many students. Only high quality, rigorous research will provide the data necessary to address such policy questions.

In spite of the rapid growth of the online sector, there have been few detailed longitudinal analyses on the impact of online schools on academic achievement. Many states have little data on the number of online programs that operate within their state or who they serve. Basic identification data on online schools turns out to be a challenge to collect. Without reliable information on school performance, policy makers, school officials, and families risk the future learning and career opportunities of students in an uncharted arena. Since online learning at the K-12 level is still in its infancy, measures of the quality of the available online school options can provide feedback to educational stakeholders, including authorizers and providers, about program performance that can shape the field as it evolves.

Questions to Be Addressed

This report presents the findings of an ambitious scope of analysis about online charter schools and their performance. The findings look at performance at several levels: at the individual student level, at the student population level, at the organizational level of the online schools and at the state policy level. Each facet of the analysis offers its particular insights about the influence of online charter schooling on the students who attend them.

For this study, we examine the impact of attending an online charter school on the academic progress of students who attend them. We measure academic impact by comparing the annual academic growth of online students with the growth of equivalent students who attend schools with traditional settings, i.e. brick-and-mortar district schools. This question, “What is the average impact of attending an online charter school on the academic growth of students?” frames the analysis and drives the discussion of results throughout the report. We assess how academic growth in online charter schools differs for students with different student backgrounds including race-ethnicity, poverty status, and exceptional needs.

Online schools may be the best option for some students. Alternatively, it may not be the best option for every student. Are there students who are better suited to the online school experience? Looking at the characteristics of the students at the population level, we examine if success in online charter schools is more likely for some students than others.

Attributes of the schools are also new territory for study. We studied differences in the makeup and operation of the schools themselves. Descriptions of these organizations provide a useful chart of the current landscape. Where possible, those differences were incorporated into the impact analyses to discern if school attributes varied with student results. To explore this aspect of the education equation, Mathematica Policy Research developed and administered to school principals a survey of online school characteristics. The survey covered many aspects of school operations including a range of students

served, methods of curriculum delivery, teacher credentials, and parental involvement. In addition to direct analyses of responses, we combined survey responses with student testing data for mixed-methods analyses of these school characteristics. These analyses will allow providers to explore which services currently offered have stronger and weaker relationships with student outcomes.

Finally, under the terms of the Constitution, each state is free to implement public education policies as they wish, including the terms under which online schools operate. The Center on Reinventing Public Education (CRPE) conducted a review of state policies related to online schools. Their review included categorizing state policies and documenting policy changes which could be expected to have an impact on educational outcomes for online school students. The policy findings from CRPE were combined with student-level data for mixed-methods analyses of policy implications on student academic growth. Policy makers should explore these results for policies they may wish to implement or eliminate from their states to maximize to student benefits of online schools.

It is our intent that this study will serve as the foundation for constructive discussions on the role of online schools in the K-12 sector. The findings presented in the rest of the report are by no means exhaustive. There are more questions policy makers and stakeholders need to ask. Are online schools the solution for many of the educational challenges faced by families today or are they a niche option appropriate for only a small group of students with a specific set of characteristics? Is the current regulatory structure for online enrollment properly matching kids with services? Are online schools having a positive impact on students' educational experiences? What additional measures should be used to define "success" for online K-12 schools? Rather this report aims to build a solid evidence base as the first of many analyses.

The report provides a brief description of the approach to the analysis in the following section. The next chapter includes an analysis on the student-level, school-level, and network-level impact of attending an online charter school as well as a mixed methods analysis which combines impact data with school-level information gleaned from a survey of school leaders. The report concludes with a discussion of the implications of the study findings.

2. Methods and Data

Identifying Online Charter Schools

Identifying students enrolled in online charter schools was a challenge. States typically do not record an indicator for students attending an online school. Lists of the schools offering online enrollment in each state proved to be incomplete or non-existent.

CREDO searched for information about online schools and programs from across the country using multiple Internet searches. Information from the International Association for K-12 Online Learning (iNACOL) was the most complete directory we located. We extended the directory with additional contacts with known online providers such as K12. To identify additional potential online schools, we searched the National Center for Education Statistics (NCES) website, the websites of state departments of education, and completed Google searches for terms related to online schools. Our searches included terms such as “online”, “virtual”, “cyber”, and “distance learning” among others.

In creating this list of potential online schools, we found many of the identified schools were not independent schools, but were instead virtual education programs operating under the umbrella of a traditional brick-and-mortar school setting. For several reasons, we decided to exclude these schools: it was impossible to isolate the records of students enrolled in online-programs which were part of a larger brick-and-mortar school and we were concerned that the influence of traditional enrollment of students might influence the behavior of either the operator or the students in the online setting. For the purposes of this study, a student was considered to be attending an online school if the

WHAT IS AN ONLINE CHARTER SCHOOL?

One of the challenges faced by organizations which push beyond the familiar boundaries is the absence of the common language needed to describe what it is they do. Online charter schools are not an exception to this problem. With the addition of online learning options in the K-12 setting has come a surplus of terms to describe these new types of learning. Most problematically, the virtual schooling sector is so new many of the terms used have differing definitions.

We found many schools using terms like online, virtual, digital, distance, etc. to describe very different types of services. In some locations, a distance learning school fit our definition of an online school, in others distance learning had nothing to do with online delivered education.

For the purposes of this study, an online school is a school which provides the majority of classes (everything except PE, band, or a similar elective) to full-time students through a computer via the internet. Lessons may be synchronous or asynchronous. Lessons may consist of videos, live chat, bulletin boards, or any other common means of electronic communication. But the primary delivery method must be online.

school's enrollment consisted of full-time, online students only.

CREDO contacted each of the identified online schools to verify the status of the program as a full-time online only school. The program also had to have a state school identification number which was unique from any brick-and-mortar school. This means this study does not include the majority of students who take one or more online course while enrolled in traditional brick-and-mortar schools.

Schools were also excluded as an online school if they reported offering a mixed or blended curriculum. As with brick-and-mortar school students taking online courses, the combination of classroom-based and online instruction creates a different educational environment from the one targeted in this study.

To be clear, our data set for online school students is restricted to those students attending public, full-time online schools. After the multiple screens described above, data from 158 online schools was included in the report.

Table 1: States with Online-Students

Arkansas	Colorado	Georgia	Minnesota	Ohio	Texas
Arizona	DC	Louisiana	New Mexico	Oregon	Utah
California	Florida	Michigan	Nevada	Pennsylvania	Wisconsin

Consolidating Student Data from Multiple States

In order to create a national data set for studies of this type, CREDO worked with the state departments of education in 17 states and the District of Columbia. Because each state used its own standards and tests to evaluate student academic achievement, it was necessary for CREDO to standardize the values to make them comparable. CREDO did this by creating a "Bell curve" for each test -- by subject, grade and year --where the average student score on the test becomes the central value, and all other scores are distributed around it. The transformation places each students' performance in relation to all other equivalent tested students, making it ready for comparison with other students. By comparing each student's performance relative to the other students from one year to that same student's relative performance in the next year, CREDO could estimate if the student was growing academically at a rate which was faster, similar, or slower than the rate of their peers.

CREDO was able to combine growth results from multiple grades, states, and years. Even though average academic performance in state A may represent a difference in achievement from the average academic performance in state B, a change in academic performance (growth) of .05 standard deviations in state A and .05 standard deviation change in performance in state B both represent the same level of improvement relative to their peers in the students' home state. This is one of the reasons measurement of academic growth is superior to simple measures of academic achievement; the level of which can vary greatly from state to state.

Multiple Datasets

Matched Data

CREDO conducted analyses using its Virtual Control Record (VCR) method. The first step in conducting a VCR analysis is to create a matched data set. The matched data set consists of treated students (in this case students attending an online charter school) and demographically identical students in the control group. CREDO established two control groups for this analysis. The first was a traditional control group of students who attend a brick-and-mortar school operated by a traditional school district (brick-district). These schools are those normally referred to in CREDO's studies as TPS. Due to the dual nature of the treatment group, both online and charter, it was beneficial to make comparisons between the treated students and brick-and-mortar traditional schools and treated students and brick-and-mortar charter schools. This necessitated the creation of a second matched comparison group with students attending brick-charter schools as the control group. This comparison group allowed CREDO to examine the "online-ness" of an online charter school as compared to physical charter schools.



[Click here for an infographic about the Virtual Control Record method.](#)

At the outset of the study, it was hoped a third comparison group would focus on the "charterness" of the online charter by creating a dataset with students who attended online schools operated by districts as the control group. Unfortunately, the number of students who attend online-district schools is too small to allow for an acceptable online charter/online-district matched dataset.

Selection of Comparison Observations

A fair analysis of the impact of online charter schools requires a comparison group which matches the demographic and academic profile of online charter students to the fullest extent possible. As in previous CREDO studies, this study employed the virtual control record (VCR) method of analysis developed by CREDO. The VCR approach creates a "virtual twin" for each online charter student who is represented in the data. In theory, this virtual twin would differ from the online charter student only in that the student attended an online charter school. The VCR matching protocol has been assessed against other possible study designs and judged to be reliable and valuable by peer reviewers.¹

Using the VCR approach, a "virtual twin" was constructed for each online charter student by drawing on the available records of traditional public school (TPS) students with identical traits and identical or very

¹ Forston, K. and Verbitsky-Savitz, N. et al. (2012). "Using an Experimental Evaluation of Charter Schools to Test Whether Nonexperimental Comparison Group Methods Can Replicate Experimental Impact Estimates," NCEE 2012-4019, U.S. Department of Education.

similar² prior test scores who were enrolled in TPS that the charter students would have likely attended if they were not in their online charter school. To better isolate the effect of attending an online charter school as opposed to just a charter school, a second VCR data set was created. For the second data set a “virtual twin” was constructed for each online charter student by drawing on the available records of brick-and-mortar charter school students with identical traits and identical or very similar prior test scores who were enrolled in brick-and-mortar charter schools that the charter students would have likely attended if they were not in their online charter school. The second VCR data set using brick-and-mortar charter school students to form the VCRs allowed CREDO to differentiate between the effects of online charter school attendance compared to just charter school attendance. If the effect sizes for online charter students compared to TPS VCRs was found to be similar to the effect sizes for online charter students compared to brick-and-mortar charter VCRs, the effect sizes would be primarily attributable to the online nature of the school.

Factors included in the matching criteria were:

- Grade level
- Gender³
- Race/Ethnicity
- Free or Reduced-Price Lunch Eligibility
- English Language Learner Status
- Special Education Status
- Prior test score on state achievement tests

Figure 1 shows the matching process used by CREDO to create the virtual twins linked to each online charter school student. In the first step, CREDO identifies all TPS with students who transferred to a given charter school. These schools are referred to as “feeder schools” for that particular online charter school. Students attending an online charter school are eliminated from the match pool for each charter student to ensure VCRs consist entirely of TPS students. The feeder school method provides a strong counterfactual as residential school assignment commonly used to place students in TPS has been shown to group demographically and socio-economically similar students into schools. This practice increases the likelihood that students assigned to similar schools have similar backgrounds, knowledge of school choice programs, and school choice options. Once a school is identified as a feeder school for a particular online charter, all the students in that TPS become potential matches for students in that particular charter school. All of the student records from all of a charter’s feeder schools were pooled – this became the source of records for creating the virtual twin match⁴.

² Achievement scores were considered similar if they were within 0.1 standard deviations of the online charter student’s pre-online charter achievement.

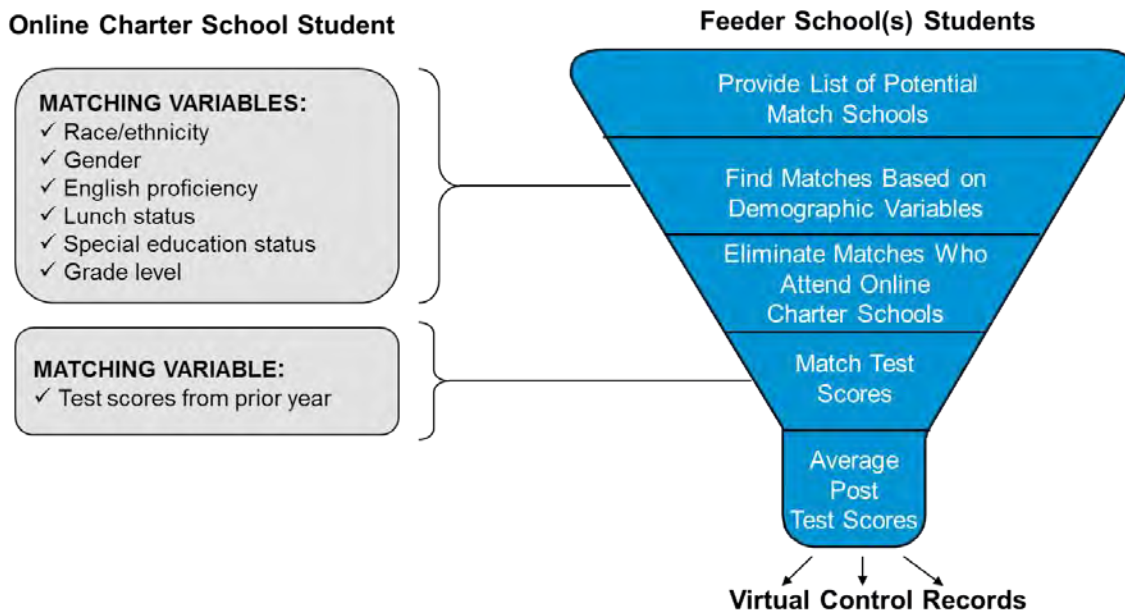
³ Gender is used as a match factor for all states except Florida due to lack of data availability.

⁴ Each charter school has its own independent feeder list, and thus a unique pool of potential VCR matches.

The VCR matching method then eliminates any of the TPS students from the match pool whose demographic characteristics do not match exactly to the individual online charter student. As part of the match process, we also drop from the TPS match pool any students who enrolled in an online charter school in subsequent comparison years.

Using the records of TPS students at feeder schools in the year *prior* to the first year of growth, CREDO randomly selects up to seven TPS students with identical values on the matching variables in Figure 1, including identical or very similar prior test scores. Students with similar test scores were used only when there were not enough TPS students with exact test score matches. The values for the selected TPS students are then averaged to create values for the virtual twin. As all other observable characteristics are identical, the only observable characteristic that differs between the online charter student and their VCR is attendance in an online charter school. The prior test score represents the impact on academic achievement of both the observable and unobservable student characteristics up to the time of the match, the year before the first growth measurement. Since we matched on observable characteristics and the prior test score, we concluded that any differences in the post-test scores are primarily attributable to online charter school attendance. The same process was used for the brick-and-mortar VCR match except feeder list was based on transfers from brick-and-mortar charter schools to online charter schools.

Figure 1: CREDO VCR Methodology



[Brick-District VCR Matched Sample](#)

As stated above, this report uses two VCR groups. The first VCR data set created for these analyses matched online charter students with students from traditional brick-and-mortar district-run schools (TPS). Due to the large number of feeder schools sending students to online schools, this data set had an

exceptionally high match rate⁵. The online charter to brick-district match rate was 96 percent. As a result, the sample included in this analysis is highly reflective of the full population of online charter students for the states included in the impact analysis.

Table 2 shows the characteristics of the student bodies in the online charter schools, the TPS feeder schools, and all TPS schools for the states included in the impact analysis. The major difference between the online charter students and the students attending feeder schools is the percentage of White students enrolled in the online charter schools (69%) is much higher than the feeder schools (45%). The difference in the percentage of White students is offset by a decrease in the percentage of Hispanic students. As would be expected, this also leads online charter schools to serve a much smaller percentage of English language learners (1%) than the feeder schools (9%). Since written communications are the major form of interaction between students and teachers in many online settings, it should not be surprising to find a lower percentage of English language learners (ELL) in online charter settings. We cannot determine whether lower ELL enrollment in online schools is the cause of lower Hispanic student enrollment or an effect of lower Hispanic student enrollment.

Table 2: Student Population Demographics by TPS Sector

	All TPS	TPS Feeder Schools	Online Charter Schools
Number of Schools	108,476	11,574	166 ⁶
Percent Students in Poverty	39%	51%	48%
Percent English Language Learner Students	8%	9%	1%
Percent Special Education Students	8%	11%	11%
Percent White	49%	45%	69%
Percent Black	15%	13%	13%
Percent Hispanic	27%	32%	11%
Percent Asian/Pacific Islander	5%	6%	2%
Percent Native American	1%	1%	1%
Percent Multi-Racial	3%	3%	4%
Average Total Enrollment per School	503	772	986
Total Enrollment	54,602,134	8,933,313	163,722

The brick-district VCR population had a special education student rate identical to the feeder schools. This rate is slightly higher than the rate of special education students enrolled in all TPS schools across the states included in the study. Online charter schools serve a slightly smaller percentage of students in poverty, those eligible for free or reduced lunches, than the feeder schools, but a higher percentage than all TPS schools. The average total enrollment for online charter schools is larger than all TPS feeder schools.

⁵ Match rate was the percentage of online charter students with at least a student in the comparison school who was an exact match on demographics and a close/exact match on prior achievement.

⁶ Includes some multi-campus schools with separate IDs, but one administration.

Some states have a large number of students who supplement their course work by taking one or more classes via online methods. These students were **not** included in the treatment group as the impact of their online education could not be separated from their traditional class work. Additionally, students from schools which offer online study in addition to other forms of distance education were not included unless the school had a separate school identifier for just the online students.

Mobility Study Data Set

One of the analyses included in this report focused on student mobility. The data set for the mobility portion of the report consists of all of the online charter students' available records from the 2007-2008 school year through the 2012-2013 as well as all of the records for all the TPS students included in the VCR for any online charter student. The data set was constructed by appending the data for each year of the study for each state included in the study. Within each state, all students who were either an online charter student or selected to be part of any online student's VCR were flagged based on the records from the VCR match process. Once all the student records were properly marked, the files from each state were appended together to form a national panel data.

As should be expected, the characteristics of the VCR students and the online charter students are similar (see Table 3). The only reason the two samples are not identical as they are in a standard matched VCR data set is because the VCR students are not combined in a single value. In the traditional VCR matched data set, the TPS students who make up the VCR are combined into one value. This means for each Hispanic student charter student, there is one Hispanic VCR. However, in the mobility data set, the VCR students are not combined. There could be five Hispanic VCR students for one Hispanic charter student. The differing number of VCR students assigned to each charter student allows for some variance between the percentages of students by demographic categories. As part of the VCR match process, online students are matched multiple times based on the number of years the student appears in the data set. For analysis, only the matches from the longest time period are included in the VCR. For this data set, the students who make up the VCR from each match are included. This is why the ratio of VCR students to online charter students is higher than the 7:1 maximum ratio used for the standard VCR matched data set.

Table 3: Student Record Demographics for Mobility Study

	All TPS	VCR Students	Online Charter Students
Percent Students in Poverty	39%	56%	53%
Percent English Language Learner Students	8%	3%	2%
Percent Special Education Students	8%	8%	10%
Percent White	49%	73%	69%
Percent Black	15%	12%	12%
Percent Hispanic	27%	11%	13%
Percent Asian/Pacific Islander	5%	2%	2%
Percent Native American	1%	0%	1%
Percent Multi-Racial	3%	1%	2%
Total Enrollment	54,602,134	4,697,266	500,836

The mobility data set includes a record for each year a student has a test score. Students may remain in the data set for a different number of years based on their grade in a given year, the testing regimen of the state of residence, and the students’ interstate mobility patterns. The records for a single student are labeled by period. The first period record for a student is the earliest record chronologically. In the mobility data set, it was possible for students to have up to six individual year records. Table 4 includes the number of records in each period and what percentage of the data set is encompassed by each period.

Table 4: Number and Percentage of Records per Period

Period	N of Students	Percentage of Total Students
1	1,135,139	22%
2	1,134,562	22%
3	1,044,064	20%
4	881,526	17%
5	630,200	12%
6	294,949	6%

Basic Analytic Model

The primary question for this study is “How did enrollment in an online charter school affect the academic growth of students?” To answer this central question, we need to address multiple lines of inquiry around enrollment in an online charter school. For example, we explore, “How did the academic growth of online charter school students compare to students who are just like them but instead attended traditional public schools (TPS)?” As there has been little work in this research area, we believe

our work will support the policy discussions about this rapidly expanding educational trend by extending the pool of knowledge on online charter school effectiveness.

Appendix A includes a more detailed descriptive analysis with the demographic make-up of the tested students who were enrolled in the online charter sector. We include analyses of the demographics of students in the data set. This discussion provides information on the percentage of students representing each race/ethnicity, eligibility for free or reduced priced lunches, English language learners, and special education students.

The primary methodological challenge associated with any study of charter schools is selection bias. Even after controlling for student characteristics such as gender, poverty, race, and ethnicity, the fact that some students choose to enroll in charter schools and other students do not may indicate the existence of some unobserved difference between the two groups of students. The ideal solution to this problem is a randomized experiment that creates a control group that is identical to the treatment group before entering the online charter school. Several charter school studies have used admissions lotteries in oversubscribed charter schools to conduct randomized experiments. The approach is not applicable to most charter schools and especially not online charter schools as enrollments in online charter schools are not constrained by physical space, thus they usually have no need to allocate seats by a lottery.⁷

In the absence of a randomized experiment, several recent studies have demonstrated that it is possible to successfully address selection bias by accounting for students' prior academic achievement levels before entering charter schools (Gleason et al. forthcoming; Furgeson et al. 2012; Fortson et al. 2015). The three previous studies of the achievement effects of online charter schools used variations on this approach. Unfortunately, however, it is not clear that the approach can succeed in eliminating all selection bias in the context of online schools. Because online schools differ radically from brick-and-mortar schools, the students who enroll might be quite different from those enrolling in conventional schools. For example, some students might enroll in online schools because they have had significant academic, behavioral, or social problems in conventional schools, which may, in turn, affect their later achievement trajectories. If so, prior scores might not be predictive of future scores, regardless of whether a student stays in a conventional school or moves to an online school.

Given the uncertainties about whether online schools are subject to unique kinds of student selection, we used several different analytic approaches to test the sensitivity of findings to modeling approaches. The first approach uses virtual control records (VCRs) method developed by CREDO (Davis and Raymond 2012), involving virtual controls that closely mirror the matched charter school students on known demographic attributes, eligibility or participation in special support programs (free or reduced-price lunch, English language learners, or special education), and prior academic achievement. In order to determine the impact of attending an online charter school on student academic growth (the change in

⁷ Although a small number of online charter schools have enrollment constraints and hold admissions lotteries, it would be impossible to generalize from a study of the few online schools in such circumstances.

academic achievement), we employ statistical models which compare online charter students to their virtual twins. The virtual twins represent the expected performance of charter students had they not enrolled in online charter schools. Due to the dual nature of online charter schools, we include in this study findings for online charter students compared to brick-district VCRs and online charter students compared to brick-charter VCRs. The VCR method has been shown to produce results similar to those obtained with randomized control trials and student fixed-effects approaches (Davis and Raymond 2012), such as those used in several published studies of charter-school impacts (for example, Bifulco and Ladd 2006; Booker et al. 2007; Zimmer et al. 2003, 2009).

The second approach uses a method that has been validated experimentally in a study of charter management organizations (CMOs) (Furgeson et al. 2012). That study demonstrated that an ordinary least squares (OLS) regression that controls for demographic characteristics and prior academic achievement before entering a charter school produces results that are nearly identical to the results of randomized experimental analyses using admissions lotteries.

In addition, we use two parallel analytic approaches designed to address the student selection that is unique to online schools. Both of these approaches use comparison groups consisting of students who enrolled in online schools at some point in their academic careers. These models recognize the key conclusion from the nonexperimental evaluation literature that the validity of a comparison group depends on its similarity on key characteristics (Cook et al. 2008). In the context of online schooling, an important characteristic is the student's willingness to enroll in an online school. Selecting a comparison group of students who have enrolled in an online school at some point in time is one way to account for this characteristic. We describe these models as "chooser-matched" designs.

The first chooser-matched design employs a method that has previously been used to measure charter-school effects on students' academic attainment (Booker et al. 2011). This approach identifies the effect of online schools by comparing the difference in achievement trajectories of two groups of students who are enrolled in online schools in the same grades and years. The difference occurs after one group subsequently switches to brick-and-mortar schools and the other does not. We identify the effect of online schools by comparing the achievement trajectories of students who switched to brick-and-mortar (the comparison group) and students who remain in online charter schools (the treatment group), while controlling for any observable differences between the groups in the year before the switch.

The second "chooser-matched" designs uses a comparison group of students who are enrolled in brick-and-mortar schools during the period of treatment, but who are known to enroll in online schools later in the data set. This method, in essence, compares the achievement trajectories of current online students (the treatment group) with those of future online students (the comparison group), again controlling statistically for any observable differences between the groups. This method has been used in the past in an evaluation of after-school programs conducted for the U.S. Department of Education (Zimmer et al. 2007). As with the first chooser-matched method, this approach has the virtue of

identifying a comparison group of students who have also chosen to enroll in online schools, only at a different point in time.

The main body of the report contains results for the brick-district VCR analysis. Results for each set of additional analyses are explained in a separate subsection of Appendix B.

Mixed Methods Analysis

For this portion of the study, we merged information obtained from the online charter school survey administered by Mathematica Policy Research (Mathematica) with student-level test data and school-level effect sizes. These processes allow for the analysis of the relationship between school characteristics and student academic growth for the schools which have both student data and survey responses. The models used for this section are not causal models, so we are describing a relationship between two factors rather than claiming one factor causes the other. The Mathematica survey covers a wide variety of school practices. These practices, described in detail in Volume 1, include pedagogical concerns such as the method of curricula delivery, family issues such as expected parental participation, and school practices such as providing equipment or internet connectivity to students' homes.

This report includes two levels of mixed-methods analyses. The first correlates school-level average effect sizes with data from the survey conducted by Mathematica. The second mixes student growth data with school-level characteristics gleaned from the survey.⁸ The survey includes data on school characteristics such as size, location, operational practices, expectations for parents and students, and expectations for teachers.

Some of the questionnaire items are restricted to students of a certain grade. Other items are general and applied to all schools regardless of grades served. Because a particular educational practice might have differentiated impacts for younger students compared to older students, the survey includes a set of responses for 4th grade students, 7th grade students, and high school students. These grade levels were picked to be representative of elementary school, middle school, and high school respectively. Using this system enables the researchers to tease out the differing relationships of a particular school-wide procedure on students of different ages. It also allows for schools which have differing procedures for students based on the students' ages. The survey question with the smallest number of students contains responses from schools which collectively serve over 13,000 individual students.

The number of schools with average effect sizes and data responses was small. Only 60 schools had both school-level effects and data responses. Further, some questions were not applicable to some schools because of the grade range of the students in that school. This greatly limits the generalizability of the findings.

⁸ By including the student-level analysis, we were able to increase the analytic power of the statistical models. Additionally, using student-level analyses allowed us to control for the differing characteristics of the students within each school.

Presentation of Results

In this report, we present the impacts of attending charter schools in terms of standard deviations. The base measures for these outcomes are referred to in statistics as z-scores. A z-score of 0 indicates the student's achievement is average for his or her grade. Positive values represent higher performance while negative values represent lower. Likewise, a positive effect size value means a student or group of students has improved relative to the students in the state taking the same exam. This remains true regardless of the absolute level of achievement for those students. As with the z-scores, a negative effect size means the students have on average lost ground compared to their peers.

It is important to remember that a school can have a positive effect size for its students (students are improving) but still have below average achievement. Students with consistently positive effect sizes will eventually close the achievement gap if given enough time; however, such growth might take longer to close a particular gap than students spend in school.

While it is fair to compare two effect sizes relationally (i.e. 0.08 is twice 0.04), this must be done with care as to the size of the lower value. It would be misleading to state one group grew twice as much as another if the values were extremely small such as 0.0001 and 0.0002.

Finally, it is important to consider if an effect size is significant or not. In statistical models, values which are not statistically significant should be considered as no different from zero. Two effects sizes, one equal to .001 and the other equal to .01, would both be treated as nil if neither were statistically significant.

To assist the reader in interpreting the meaning of effect sizes, we include an estimate of the average number of days of learning required to achieve a particular effect size. This estimate is based on findings by Hanushek, Perterson, and Woessman (2012) that "student growth is typically about 1 full standard deviation on standardized tests between 4th and 8th grade, or about 25 percent of a standard deviation from one grade to the next."⁹ This transformation is approximate and dependent on estimates of average annual academic growth. Another study on the topic (Hill, Bloom, Black, and Lipsey, 2008) derived differentiated rates of growth by grade which would result in a lower number of days of learning for our estimates. While we evaluate the use of a more sensitive measure for computing days of learning, we continue to use the values from Hanushek et al. to maintain consistency with previous CREDO reports.

⁹ Using a standard 180 day school year, each 0.01 sd change in effect size is equivalent to 7.2 days of learning.

3. Student Mobility

Because students generally do not start school in an online setting, it is clear that students attending online charter schools may have a higher mobility rate than students in a traditional public school. The mobility rates of students matter because high mobility can be correlated with lower academic growth (Hanushek, Kain, & Rivkin, 2004) as well as higher likelihood of dropping out of school (South, Haynie, and Bose, 2007). Mobility can be a tricky variable to follow because many states report a student's enrollment at specific times of the year such as beginning of school and testing day, but do not report changes which occur between those times. To estimate mobility, CREDO linked student records longitudinally across the years of this study. Students were identified as being mobile if they experienced a non-structural school change from one testing year to the next. A non-structural school change is one which does not occur because the student aged out of their previous school. This method likely underestimates the number of students who voluntarily changed schools because it does not capture students who wait until a structural change to move to a new district or a school other than the one they would have attended. However, those students were going to experience a school change no matter the choices they made, so the impact of the voluntary school change may not be greater than the forced school change the student was going to have to make anyway.

As part of the discussion on mobility, CREDO also examined the characteristics of new online students in charter schools. Our view is constrained by the testing patterns of the various states which typically exclude the early elementary grades and are sporadic in the high school years.

In addition to straightforward comparisons of mobility rates between online charter students and brick-and-mortar students, we were also able to investigate questions such as:

1. How many years do online students remain in online charter schools?
2. What is the percentage of online students who return to brick-and-mortar schools after attending an online school?
3. What grades are students in when entering an online school?
4. What grade are students in when they leave an online school?

These questions further the understanding of the experience of online charter students.

Characteristics of Online Charter Mobility

Some online charter school operators state that their students come to them with additional academic deficits beyond the typical student. Often they cite the students' history of mobility as a cause for these deficits. If it were true that students arrive at online schools with academic deficits created by high mobility, we would expect to find online students experienced higher mobility before switching to the online school than the comparison students. In fact, students who switched to online schools have a pre-online school mobility rate of nine percent compared to eight percent of the comparison students. These findings place doubt on the argument that higher pre-online mobility creates widespread, systematic academic deficits for students who eventually switch to online charter schools.

The data in Table 5 shows the entry grade of students who transitioned to an online charter school. Students enroll in online charter schools at different points in their academic careers. Since all the states included in the analysis require students to test from grades 3 – 8, these grades are comparable and show the relational pattern between student age and online charter enrollment. There is a steady increase in the number of students enrolling in online charter schools as students age into middle school. The large drop off in enrollments in 9th grade is likely an under estimate due to state testing patterns.

Table 5: Grade at Initial Enrollment in Online Charter School for New Entrants

Grade	N	Percentage
K-3	13,815	11.3%
4	12,587	10.3%
5	13,380	10.9%
6	17,691	14.4%
7	21,943	17.9%
8	18,147	14.8%
9	5,243	4.3%
10	13,669	11.2%

Nearly one-half of students in our study (47 percent) are enrolled in an online charter school for one year. This number must be tempered with the fact 19 percent of the individuals in the study enrolled in an online charter school for the first time in 2012-2013. Students whose first entry into an online school is 2012-2013 can only have one year in an online charter school. On average, online charter students in our study spend two years in online schools. Table 6 includes information on the percentage of students who remained in an online charter school categorized by the students’ entry year into an online charter school.

Table 6: Duration of Student Enrollment in Online Charter Schools by Entry Year

Entry Year	1 Year	2 Years	3 Years	4 Years	5 Years
2008-2009	100%	65%	43%	29%	16%
2009-2010	100%	63%	39%	23%	
2010-2012	100%	58%	34%		
2011-2012	100%	56%			
2012-2013	100%				

Obviously, the students first entering an online charter school in 2012-2013 school year cannot be included in a discussion of persistence trends as many of those students may be shown to continue on past one year once more data is available. An examination of the first four years shows a decreasing percentage of students are remaining in online charter schools for a second year. This decrease has coincided with an increase in the number of students enrolling in online charter schools.

Table 7 includes the percentage of individual students in each state who remained enrolled in online charter schools for a given number of years. In some states, online schools have not existed long enough for students to have accumulated more than a few years in an online school.

Table 7: Percentage of Online Students Remaining in Online Charter Schools by State

State	1 Year	2 Years	3 Years	4 Years	5 Years
AR	100%	64%	32%	16%	6%
AZ	100%	37%	16%	7%	3%
CA	100%	57%	29%	16%	8%
CO	100%	48%	21%	9%	4%
DC	100%	72%	28%	11%	3%
FL	100%	19%	1%	1%	0%
GA	100%	60%	23%	11%	4%
IL	100%	83%	42%	20%	7%
LA	100%	39%	-	-	-
MI	100%	54%	14%	-	-
MN	100%	51%	23%	13%	5%
NM	100%	50%	15%	9%	-
NV	100%	50%	22%	9%	4%
OH	100%	57%	32%	17%	8%
OR	100%	46%	19%	10%	4%
PA	100%	60%	32%	19%	10%
UT	100%	43%	15%	4%	1%
WI	100%	35%	14%	-	-
Total	100%	53%	25%	13%	6%

- Duration not possible in given state

Twenty-three percent of online charter student test scores in the data set were from a year in which the student experienced a non-structural school change. For TPS students, the rate was only eight percent. Of course, one of those moves for online charter students would be for the student to enter the online charter school. This mandatory additional move inflates the mobility rate for online students. Even after we remove the initial move to the online school from the estimate, students who attend an online charter school still have a mobility rate of 15 percent, almost twice the rate of the VCR students. As we did not find higher mobility for online charter students before transferring to an online charter, the conclusion is that online charter students have more mobility after transferring to an online charter school. Table 8 shows the mobility rates for online and traditional students by state. The full online results include the switch to the online school. The limited online percentages include all school switches for online students except the initial switch to an online school. The full traditional values are the rates for the comparison students. In most states even after removing the triggering school switch to an online charter school, students attending online charter schools still have mobility rates of at least 1.5 times the rates of the comparison students in that state (column 5 of Table 8).

Table 8: Mobility Rates for Students by Sector and State

State	Full Online	Limited Online	Full Traditional	Comparison Ratio ¹⁰
AR	14%	8%	5%	1.60
AZ	28%	21%	10%	2.10
CA	23%	16%	8%	2.00
CO	29%	20%	8%	2.50
DC	23%	18%	11%	1.64
FL	29%	17%	10%	1.70
GA	20%	12%	9%	1.33
IL	16%	10%	6%	1.67
LA	23%	11%	8%	1.38
MI	22%	16%	10%	1.60
MN	24%	15%	5%	3.00
NM	23%	19%	7%	2.71
NV	24%	15%	8%	1.88
OH	18%	12%	7%	1.71
OR	26%	16%	7%	2.29
PA	22%	13%	6%	2.17
UT	26%	17%	7%	2.43
WI	21%	10%	2%	5.00
Total	23%	15%	8%	1.88

A portion of the difference in mobility stems from the return of many online students to traditional schools after a period of time. Using testing data, online students were flagged as returning to the traditional sector if they have a test in a non-online school after they complete a test in an online charter school. The rate of return for unique students from the online charter setting to a traditional setting is 22 percent. One-in-five students who use online education eventually return to a traditional setting within the data window. Table 9 shows the percentage of online students who return to traditional settings remains steady as the number of students enrolling in online charter schools increases. Please note the rates in Table 9 of students returning from an online charter to a traditional setting is lower than the 22 percent figure given. This is because the 22 percent figure is for unique students; whereas the annual figures include multiple records for students with multiple years in an online school. Since 2009-2010, the annual percentage of students returning to the traditional setting has remained steady.

¹⁰ Comparison ratio=limited online mobility rate/full traditional mobility rate

Table 9: Annual Rates of Return from Online School to Traditional Schools

Year	Online Charter Enrollment	Percent Returning to Traditional Setting
2008-2009	16,102	‡
2009-2010	32,620	16%
2010-2011	35,984	16%
2011-2012	43,471	16%
2012-2013	52,843	17%

‡Prior online charter status not available for all students.

Table 10 includes data for online charter students who leave an online charter school and return to TPS. As would be expected, grades in which students return to TPS has a similar but slightly lagged pattern as the grades when students enter online charter schools. Online charter students who return to TPS are most likely to do so in their 8th grade year.¹¹

Table 10: Grade on Return to TPS from Online Charter School

Grade	N	Percentage of Total Returns
4	2,889	11.3%
5	3,490	13.7%
6	4,568	17.9%
7	5,524	21.7%
8	6,240	24.5%

The mobility rate for students’ post-online school years are extremely high. Even after eliminating the switch from the online school to the traditional setting, former online students have a mobility rate of 36%. This suggests students who leave online schools have a more chaotic school experience post online.

Mobility and Student Characteristics

Another question related to mobility is whether student demographic characteristics are related to mobility. To examine this, CREDO compares mobility rates for students separated by race-ethnicity, poverty status, ELL status, and special education status.

Mobility by Race-Ethnicity

Mobility varies greatly by the race-ethnicity of the student. Minority students, black students especially, have a history of high mobility between schools. High levels of mobility, or the life issues causing high levels of mobility, are likely related to lower academic performance. Among the VCR students in the mobility data, this same pattern holds true. White and Asian VCR students have an average mobility rate

¹¹ It should be noted the drop off in students returning to TPS in the upper grades could be due to fewer tests being given in those grades. Students who return to TPS after 8th grade may not be included since the lack of upper grade tests would mean those students would not be in the data set.

of just 6 percent. Hispanic, Native American, and Multi-racial students have mobility of 10 percent. Black students have the highest mobility rate among the VCR students at 13 percent. The Black VCR mobility rate is twice that of the White and Asian students.

The patterns are quite different for the students in online charters. In addition to being higher overall, 23 percent for online charter students vs. 8 percent for VCR students, the disparity between white students and minority students is much smaller for online charter students. This shift in the differences between groups is being driven primarily by the higher mobility rates for white students enrolled in online charter schools. The mobility rates for each group of students is shown in Table 11. The comparison ratio is the relative difference between online charter student rates and VCR student rates. The results indicate that White students, and to a lesser extent Asian students, in online charter schools have much less stable educational histories as compared to their VCR counterparts.

Table 11: Mobility Rates by Race-Ethnicity and Sector

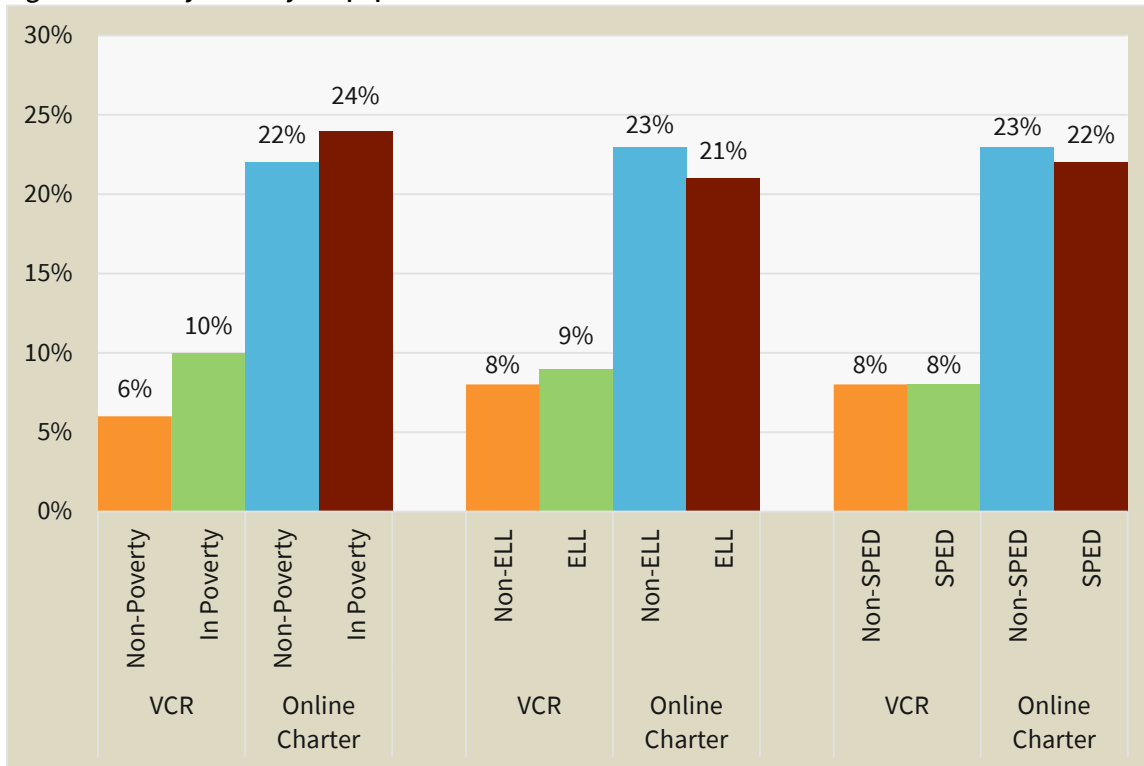
Group	VCR Students	Online Charter Students	Comparison Ratio
White	6%	22%	3.4
Asian	6%	19%	3.2
Black	13%	25%	2.0
Hispanic	10%	26%	2.7
Native American	10%	25%	2.6
Multi-Racial	10%	25%	2.5

Mobility by Student Sub-populations

Another set of student characteristics which have been shown to have an impact on educational attainment are students with exceptional needs. These are students who live in poverty, students who are English language learners, and special education students. Being a member of one of these sub-populations often comes with additional educational deficits. These deficits may be impacted by higher rates of mobility. Additionally, disaggregating mobility rates by membership in these sub-populations can provide additional insight to the unique characteristics of the online charter population.

Being an ELL student or special education student should have little direct impact on mobility. There are few direct factors with those characteristics which motivate a student’s family to more frequently relocate to a different school zone. While migrant families do tend to have a higher rate of ELL students, most ELL students are not from migrant families. Poverty, however, has been shown to be highly correlated with high student mobility. Families of students in poverty often live in rental properties rather than owning their homes. This results in a lower transaction cost for moving within a community, so we tend to see many more moves for students in poverty. Students not in poverty generally have more stable home lives with less relocation. Figure 2 includes data for mobility rates of students from the various subpopulations.

Figure 2: Mobility Rates by Subpopulation



For online charter students, the mobility rates for ELL and special education students are approximately two-and-a-half times the rate of mobility for the same groups of students in TPS. In fact, the mobility rates are slightly lower for both online charter ELL students and special education students compared to the non-ELL and non-special education students in online charters. But the difference between students in poverty and non-poverty students who attend online charter schools is only two percentage points compared to a four percent difference in the VCR comparison group.

Overall, students who enroll in an online school demonstrate higher overall levels of mobility than VCR students. However, the mobility of online charter school students before they transfer to the online charter is similar to the rate of VCR students. Twenty-two percent of online charter school students eventually return to TPS schools.

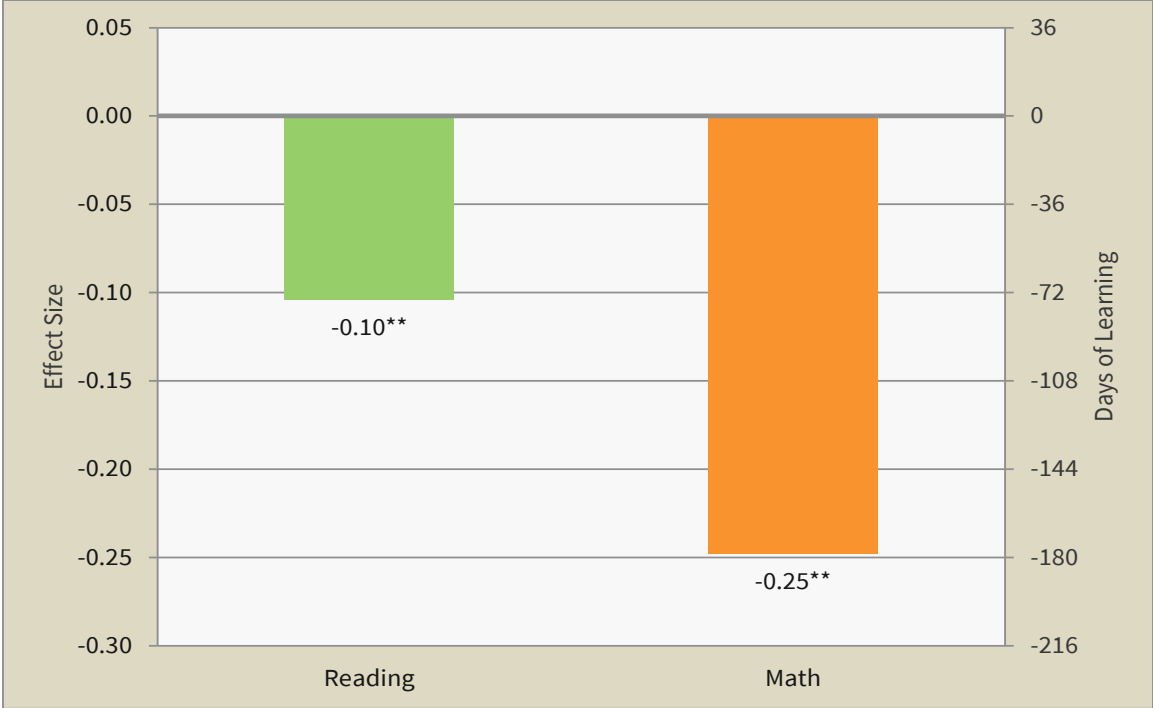
4. Impact Analysis

For the impact analyses, we compare the growth of students in online charter schools to that of their VCRs. This type of analysis provides information about the year-to-year change in achievement relative to that of the rest of the students in the sample. On average, the effect sizes for students attending online charter schools are negative. A negative effect size does not mean the student did not increase in academic achievement. A negative effect size means the student did not advance as much as expected based on the student’s characteristics.

Online Charter Students Compared to Brick-District Students

The first set of analyses examines the academic growth of online charter students compared to the matched VCRs made up of students who attended brick-and-mortar district-run schools. These schools are typically referred to as traditional public schools (TPS). Compared to their VCRs in the TPS, online charter students have much weaker growth overall. Across all tested students in online charters, the typical academic gains for math are -0.25 standard deviations (equivalent to 180 fewer days of learning) and -0.10 (equivalent to 72 fewer days) for reading (see Figure 3). This means that compared to their twin attending TPS, the sizes of the coefficients leave little doubt attending an online charter school leads to lessened academic growth for the average student.

Figure 3: Impact of Online Charter Attendance on Average Student Academic Growth, Reading and Math



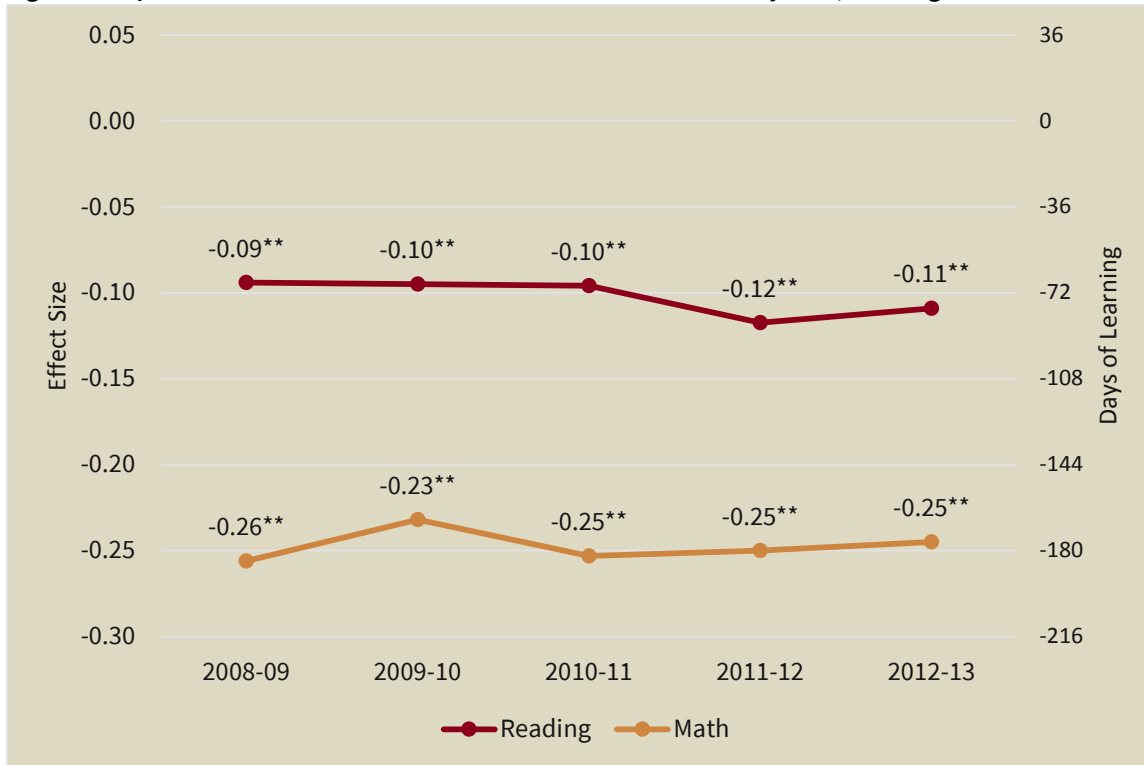
The 0.00 line for this graph represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

** Denotes significant at the .01 level.

These results cover all students with a growth measure (i.e., at least two years of tested performance) in all the states in all the periods. Accordingly these average measures of academic growth reveal that the general case for online charter students is not a positive one. The all-in figures, however mask the story of the underlying distribution. Around the average, some online charters will perform better and some will perform worse than the average. While overall results establish a baseline for discussion, these results are not subtle enough to provide insight for policy implications. A clearer picture of the more granular distribution around the averages along with the student or school factors that are associated with the distribution will add to a general understanding of the situation of online charters.

Figure 4 shows the results of this analysis. There is no consistent trend either upward or downward in the results. Instead the overall effect size in math stays fairly consistent over time. The overall effect size in reading shows a gradual dip, but recovers part of that loss in 2012-13.

Figure 4: Impact of Online Charter Attendance on Academic Growth by Year, Reading and Math



The 0.00 line for this graph represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

** Denotes significant at the .01 level.

In the 2009 CREDO charter school study, charter schools had on average weaker growth than their traditional public school counterparts (Raymond, 2009). The 2013 update to that study showed stronger results for the charter sector compared to the TPS (Cremata, Dickey, Lawyer, Negassi, Raymond, and

Woodworth, 2013). An examination of growth trends for brick-and-mortar charter schools in the 2013 study showed a pattern of slow but gradual improvement over the past several years. Taking into consideration the newness of the online sector, it is possible such a pattern might appear here as well given sufficient time.

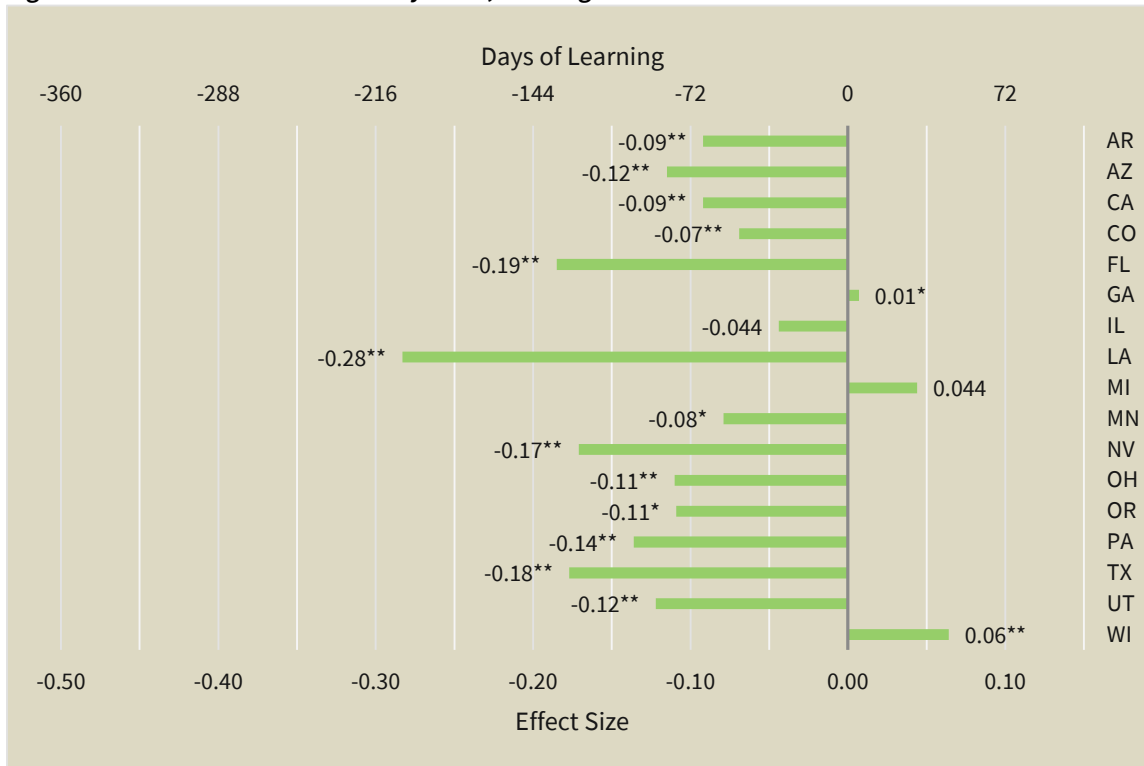
Results by State

To delve deeper, we also included analyses of online charter attendance by state. In the full-data general case analysis, we use statistical methods to control for differences between states. In the online charter by state analyses, we examine the impact of online charter attendance by each state as compared to the state's average student academic growth. In Figure 5 and Figure 6 the zero line is the average **growth** of a VCR student in the state. A positive effect size means the average online charter student had stronger growth than the average comparison. A negative effect size means growth for online charter students was weaker than the average VCR comparison student.

While the majority of states have negative effect sizes for students attending online charter schools, there are a few exceptional states with no difference or even positive effect sizes between online charter students and TPS students. Figure 5 shows the impact for online charter students in reading. Thirteen states have negative effect sizes in reading, two states positive, and in two states the differences were not significant¹². As was indicated by the general results, the average reading effect size is negative; however in Wisconsin and Georgia, online charter students have growth which was significantly stronger than their VCRs. While the value for Michigan is positive and larger than that of Georgia, the Michigan value is not significant. This means we cannot be certain the result is not spurious or due to chance; thus it is described as "not different".

¹² DC was not included in these analyses due to insufficient number of schools.

Figure 5: Online Charter Effect Size by State, Reading



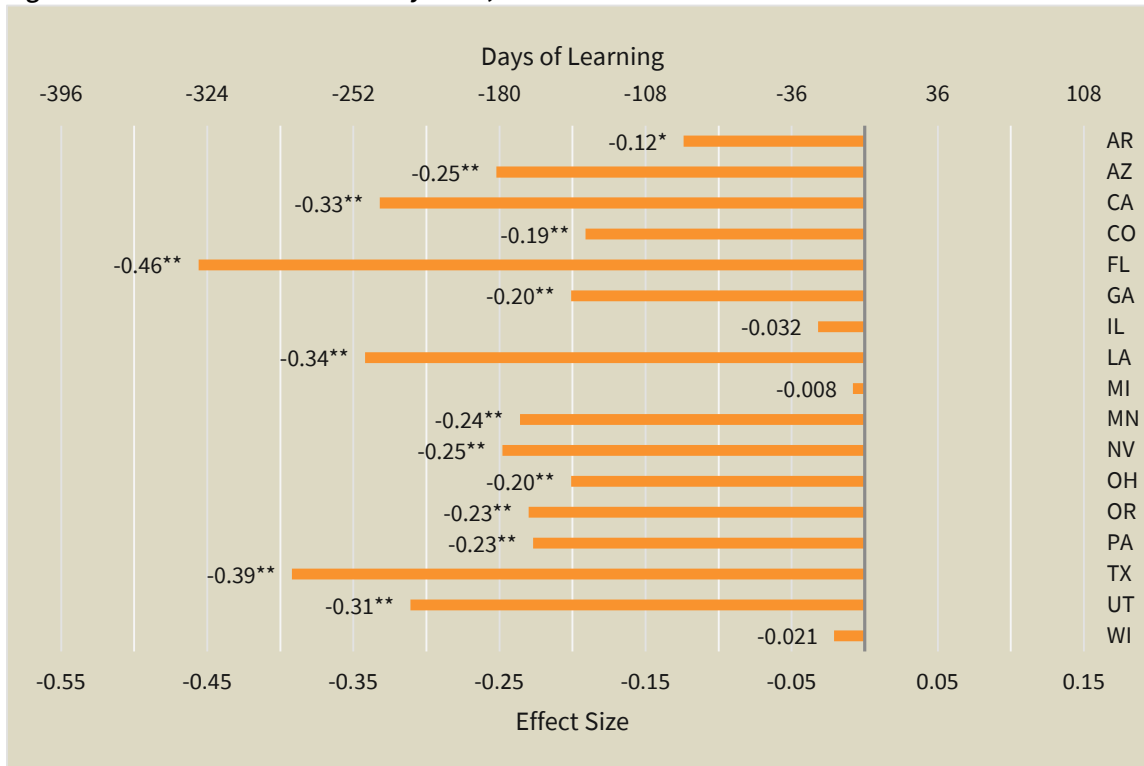
The 0.00 line for this graph represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

The effect sizes by state in math are shown in Figure 6. The effect sizes for math were both more negative and larger than those for reading. In 14 states, the impacts on math growth of attending an online charter school were significantly weaker than the comparison group. Three states had effect sizes which were not different from the comparison groups. No state had a positive effect size in math on average.

The math and reading results show there is a large amount of variation in the effectiveness of online charter schools in promoting academic growth in students attending those schools. The reasons behind this variation is a topic for future study. Practices in those states who are producing positive results may hold useful lessons for the remaining states.

Figure 6: Online Charter Effect Size by State, Math



The 0.00 line for this graph represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Sub-populations

Race-ethnicity

Exploring deeper into the performance question of schools requires us to examine the various sub-populations served by schools. In past studies of charter schools (Cremata, et al., 2013), CREDO has found evidence that students of different racial-ethnic backgrounds have different impacts on academic growth from attending charter schools. It has become standard practice to report academic growth by racial-ethnic groups. In the past, part of the motivation for the separate look at each student subgroup stems from the explicit mission of some charter school operators to serve communities whose students have historically fared poorly in school.

The student populations that online charter operators serve was shown in Table 2 to have greater proportions of White students and smaller shares of Hispanic and English Language Learner students.

While there is variation in the effect sizes of racial-ethnic groups, they are still all consistently negative.¹³ Table 12 has the effect sizes in math and reading equal to the difference in performance between TPS students and online charter students for each of the racial-ethnic groups. Results were consistently less negative for reading than for math across all groups. Additionally, reading effect sizes are much more consistent between groups ranging from -0.08 (56 days) to -0.12 (86 days). White students in online charters have larger differences in growth relative to their TPS peers than all other groups except Native Americans in reading, but better than all sub-populations except Black students in math.

Table 12: Effect Size of Attending Online Charter School by Racial-Ethnic Group, Reading and Math

Racial-Ethnic Subpopulation	Reading	Days of Learning	Math	Days of Learning
White	-0.11**	-79	-0.25**	-180
Black	-0.08**	-58	-0.22**	-158
Hispanic	-0.11**	-79	-0.29**	-209
Asian/Pacific Islander	-0.09**	-65	-0.26**	-187
Native American	-0.12**	-86	-0.30**	-216
Multi-Racial	-0.09**	-65	-0.26**	-187

The effects in this table represent the difference between a student of a specific race in TPS and a student of the same race in an online charter school.

** Denotes significant at the .01 level.

Students in Poverty

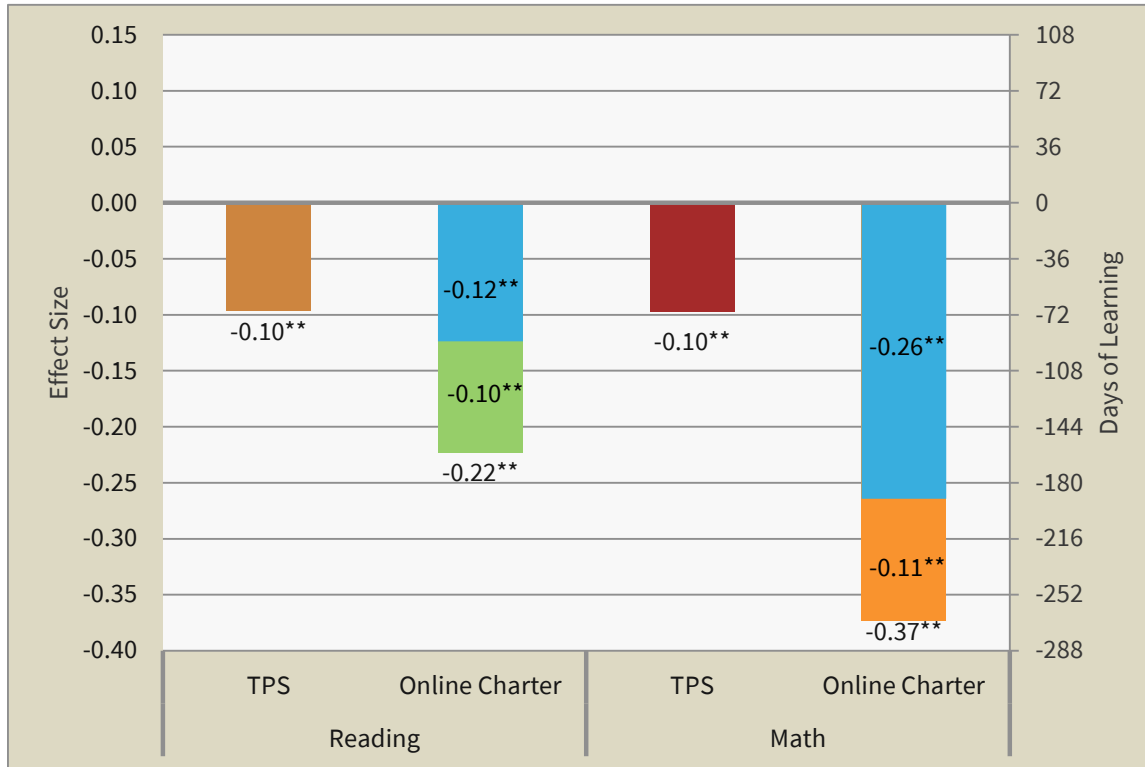
Race-ethnicity is not the only student characteristic which commonly has an impact on students' academic growth. Students in poverty, those who are English language learners, and special education students also often have academic growth which differs from the typical comparison student.

The average growth for students in poverty is generally lower than that for students who are not in poverty. In this analysis, the baseline comparison is TPS students who are not in poverty. We isolate the relationship between poverty and growth. This leaves a picture of the difference in the impact of online charter attendance on students in poverty compared to similar students who are not in poverty. The bars for online charter schools in Figure 7 consist of two different colors. The blue portion of the bar represents the average impact of attending an online charter school which effects all online charter students. The remainder of the bar represents the average difference between being an online charter student in poverty and an online charter student not in poverty. The total length of the bar is the average expected impact on growth of being an online charter student in poverty compared to being a TPS student who is not in poverty. Figure 7 confirms that being a student in poverty results in lower academic growth in both math and reading for all student groups regardless of the type of school attended with the online charter

¹³ The survey of online charter providers also showed that they did not target any particular student demographically, but rather sought students with particular academic profiles. Thus a breakout of performance by the ordinary categories may not be as pertinent in an online environment as elsewhere.

student having the more negative overall effect. Figures 8 and 9 are read in the same manner with the blue portion of the bar representing the negative effect which all charter students face.

Figure 7: Overall Academic Growth for Students in Poverty Compared to Students Not in Poverty, Reading and Math



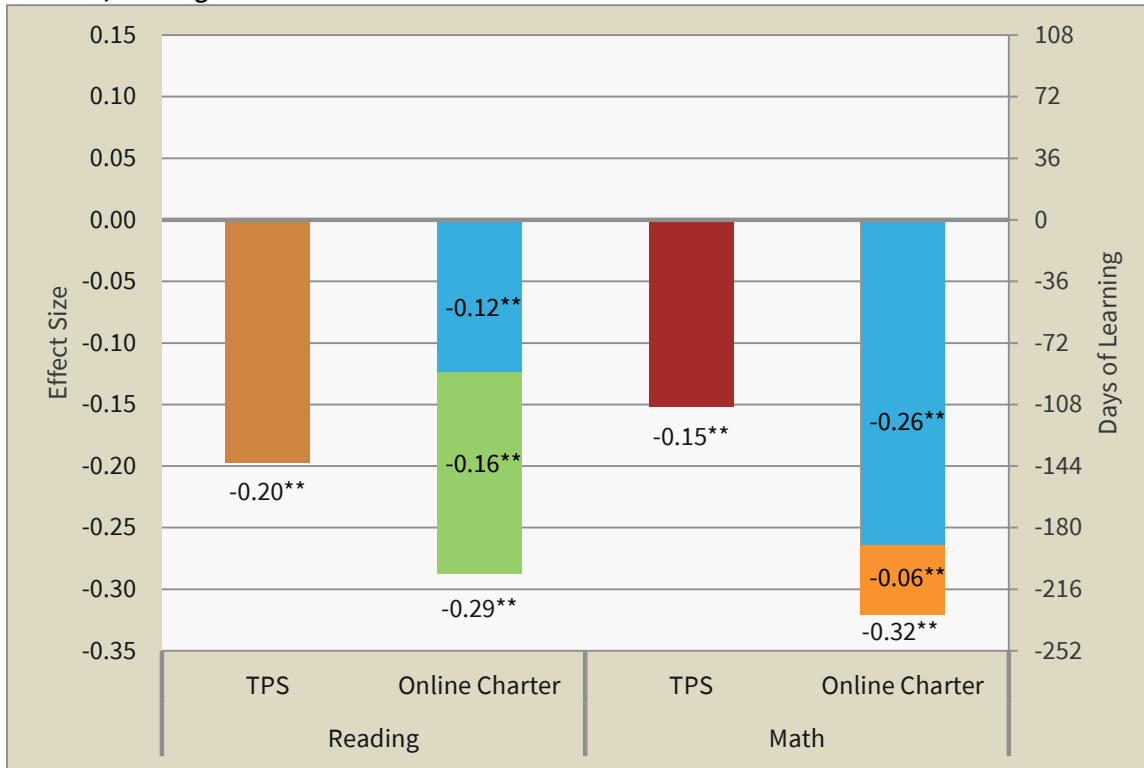
The 0.00 line for this graph represents the average non-poverty TPS student.

** Denotes significant at the .01 level.

English language learners

As with students in poverty, students who are English language learners tend to progress academically more slowly than students whose primary language is English. This is potentially even more of an issue in an online setting where students typically rely more heavily on reading as the primary method of curriculum delivery. Again, the data show that English-language learners in the data set have weaker growth as a group than non-English language learners. Figure 8 shows the growth for English language learners as compared TPS native English speakers.

Figure 8: Overall Academic Growth for English Language Learners Compared to Non-English Language Learners, Reading and Math



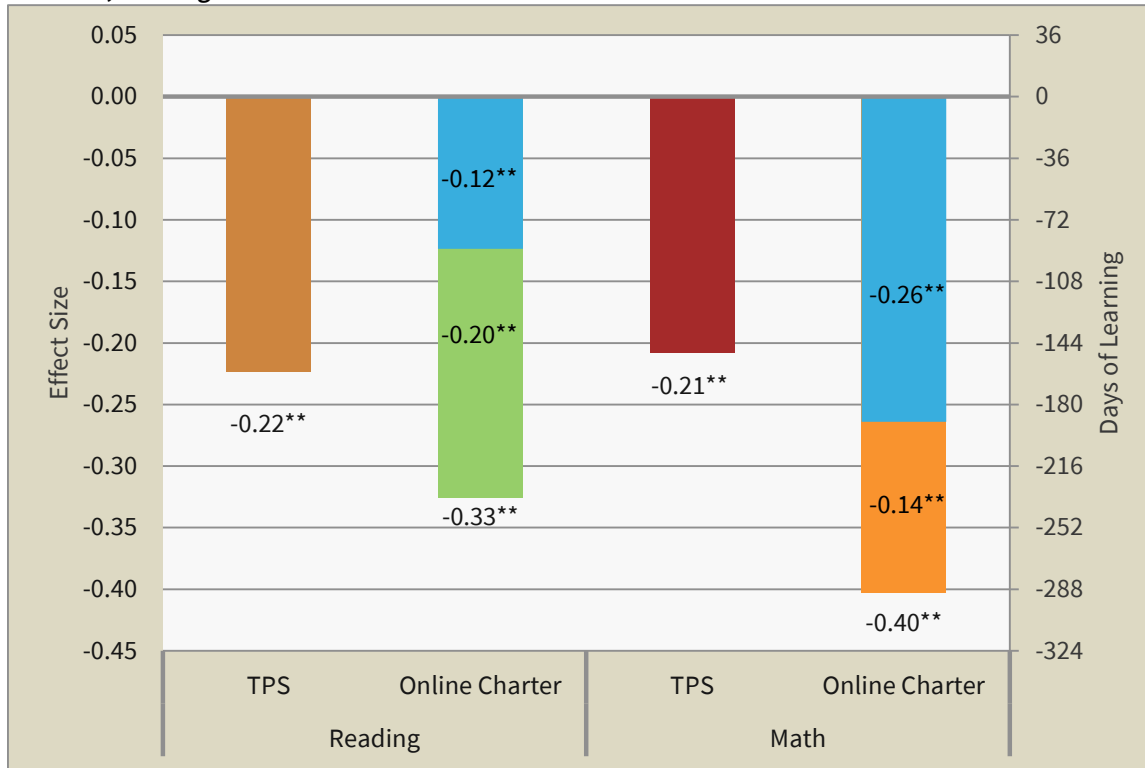
The 0.00 line for this graph represents the average TPS non-ELL student.

** Denotes significant at the .01 level.

Special education students

Another sub-population with significant impacts from online charter attendance is special education students. Again, special education students as a whole demonstrate weaker academic growth than their non-special education classmates as seen by the comparison of overall academic growth of special education students regardless of race/ethnicity or school type attended to non-special education student VCRs (see Figure 9).

Figure 9: Overall Academic Growth for Special Education Students Compared to Non-Special Education Students, Reading and Math



The 0.00 line for this graph represents the average TPS non-SPED student.

** Denotes significant at the .01 level.

Online charter schools again demonstrate an ability to reduce the impacts of being a SPED student compared to non-SPED students. Math academic growth for students in online charters is significantly less negative compared to their non-SPED schoolmates, represented by the orange portion of the online charter bar, than that of the SPED VCRs and their classmates, the red bar. However, the full effect of being a special education student in an online charter school is still more negative overall than being a special education student in a TPS.

Interpretation of Subpopulation Effects

To help the reader to better understand the marginal differences in effect sizes included in the subpopulation analyses, we have included the two figures below. Figures 10 and 11 show the expected value of the effect size¹⁴ for student profiles with certain combinations of characteristics. The column on the left shows the expected value of the effect size for each student profile in a traditional public school setting. The column on the right shows the expected values for the same student profiles if the student

¹⁴ Effect sizes in Figures 10 and 11 represent growth of each profile relative to White non-ELL non-poverty non-SPED students.

attended an online charter school. The higher a profile is positioned up the vertical axis, the stronger the expected growth for a student with that profile. The number after the profile is the expected effect size for that profile.

The student profiles include a profile for each racial-ethnic group students who are not ELL, not SPED, and not in poverty. There are additional profiles are for each racial-ethnic group with one of the three additional factors (ELL, SPED, in poverty) included. Student profiles which do not specifically state they include ELL or SPED or in poverty do not have those features. We did not produce profiles for every possible combination of race-ethnicity and the three factors as doing so would have made the figures unreadable. However, as the effect sizes for ELL, SPED, and being in poverty are additive, any profile which includes a combination of ELL, SPED, and/or poverty would appear lower on the vertical axis than the profiles shown with only one factor.

Figures 10 and 11 demonstrate how the findings from the subpopulation analyses impact expected student growth. All student profiles regardless of race-ethnicity or other factors have weaker growth in online charter schools than in TPS. This is due to the overwhelming negative impact on student growth from attending an online charter school.

ELL students and SPED students of a given race-ethnicity have weaker expected growth than students of the same race-ethnicity who are not ELL or SPED; however, as shown in Figures 8 and 9, online charter schools are more successful in minimizing these negative impacts relative to their sector average in math. This is most apparent in Figure 11 when comparing the performance differences between Asian non-ELL non-poverty non-SPED students with Asian ELL students between the two sectors. The distance between the dots representing the Asian non-ELL non-poverty non-SPED and Asian-ELL students on the TPS line is much larger than the same distance on the online charter line.

Figure 10: Expected Values of Effect Sizes by Student Profile, Reading

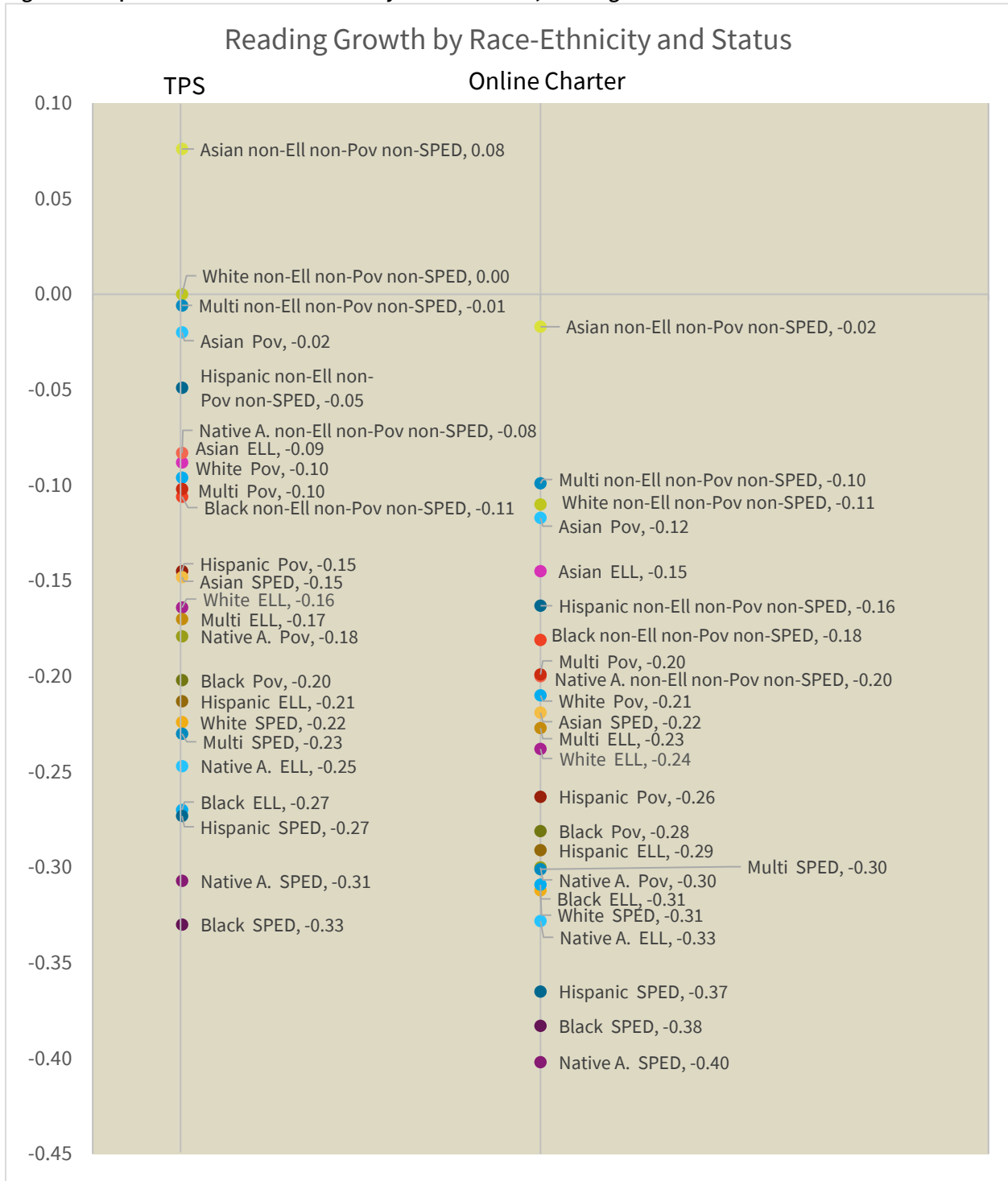
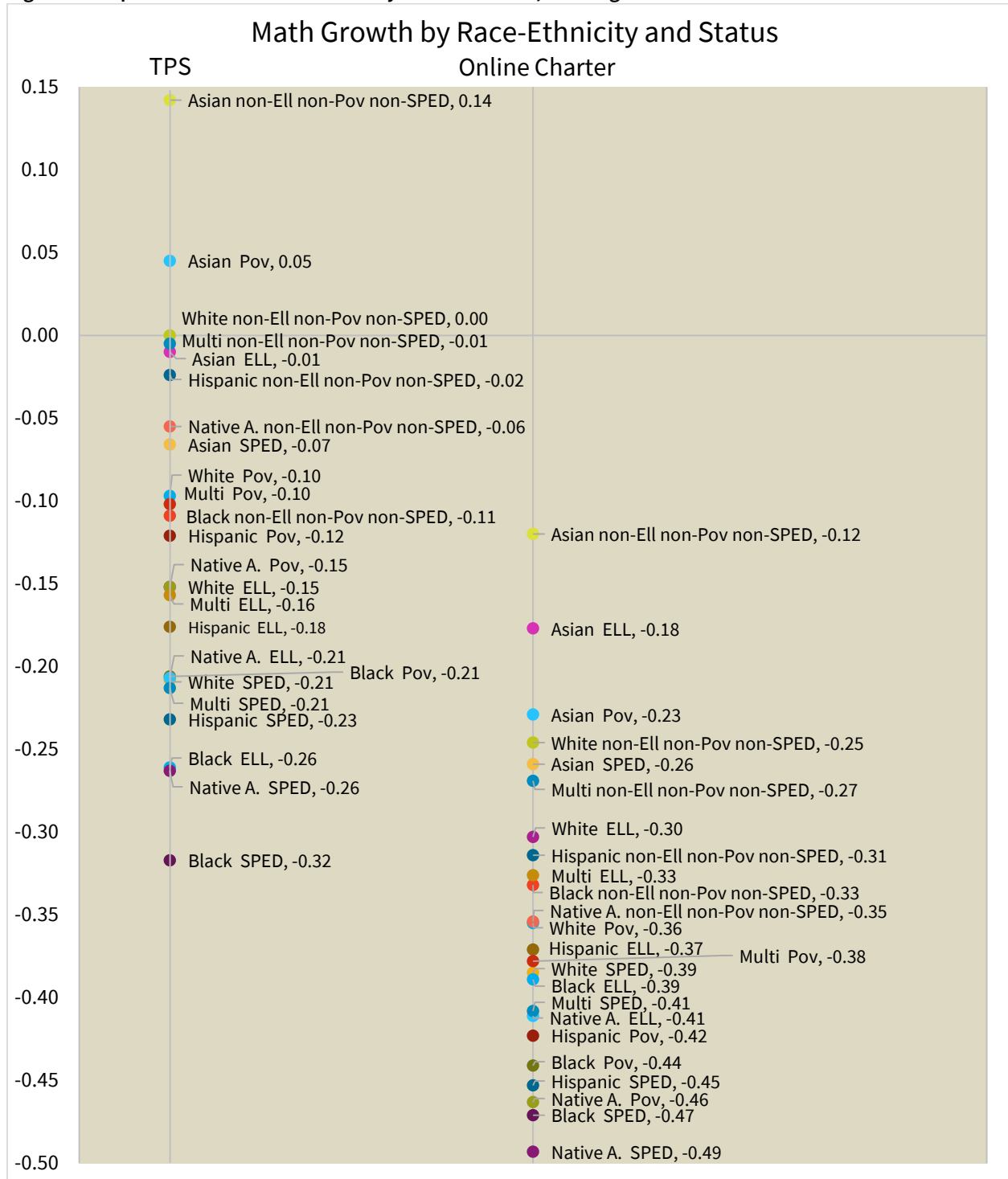


Figure 11: Expected Values of Effect Sizes by Student Profile, Reading



Online Charter Schools Compared to Brick-District Schools

In its 2009 charter school study, CREDO introduced the idea of the school quality curve. The quality curve uses a statistical model to compare each charter school to a virtual school consisting of the VCRs for students from each charter school. This is a strong comparison as it allows the reader to see how individual online charter schools compare to a school of their peers. These measures use a smaller growth period data window made of the last two growth periods as opposed to the four growth period data window of the student analyses.¹⁵ To minimize the statistical inconsistencies which may arise from including schools with only a few students, we limit this analysis to only schools with at least 30 tested students per year.

The quality curve consists of three categories, those schools with average growth statistically significantly lower than that of their feeders, those with average growth which is not statistically different from their feeders, and those schools with average growth statistically significantly stronger than their feeders. These three categories are distinct. The placing of a school into each category has different meaning as to the performance of the school. As such, readers should resist the urge to combine categories from this analysis. Specifically, it is improper and can be misleading to state “x% of schools performed stronger or no different than their local market” just as it is improper to combine the weaker and no different schools. These numbers should always be reported as three separate categories.

Compared to their comparison schools, online charter schools generally have significantly weaker academic growth. Figure 12 shows the quality curve in reading. As there are 101 schools in the quality curve, the numbers represent both the number and percentage of schools in each category. Only two percent of the online charter schools outperform their comparison schools, 32 percent perform no differently, and 67 percent have weaker growth than their comparison schools. In math, a full 88 percent of online charter schools had significantly weaker growth than their comparison. These numbers are extremely weak compared to charter school performance found in previous CREDO studies.

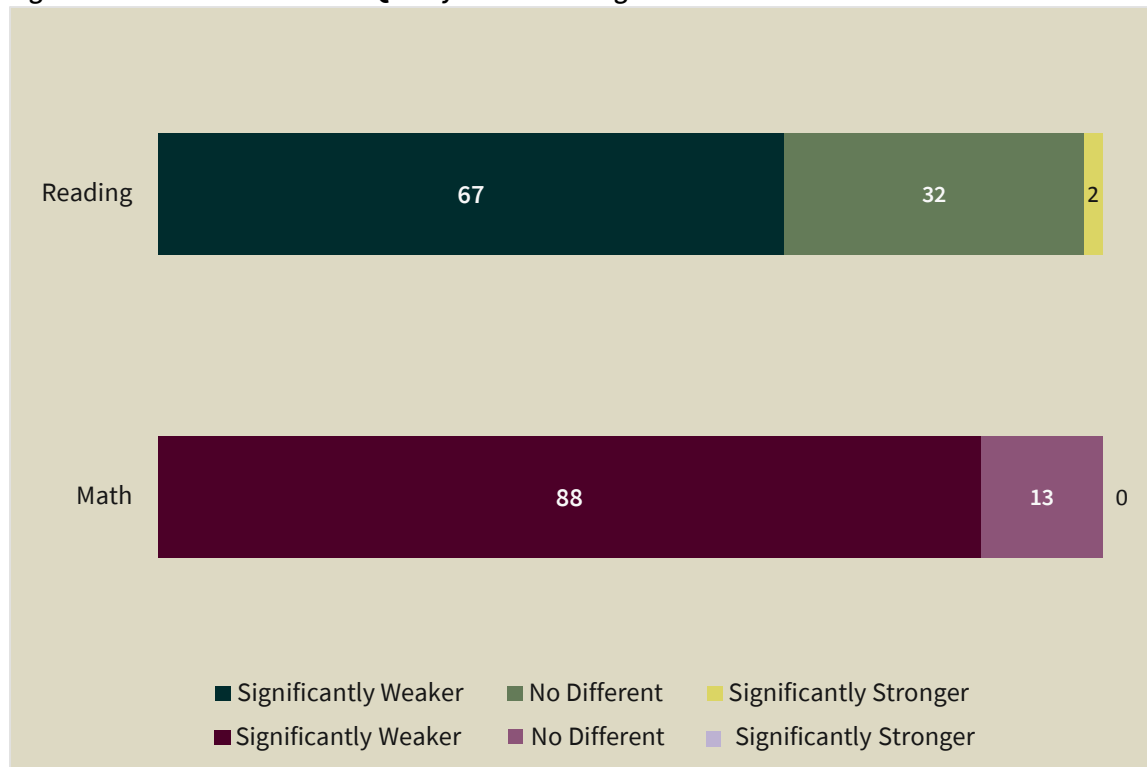
While these numbers clearly show students attending online charter schools are not performing at the level of their comparisons, it is important to note the incredibly large size of the individual school feeder pools may have consequences on the strength of the aggregated VCR matches. With the elimination of the restraints of physical location, online schools pull students from a much broader portion of the state than do standard schools of choice. This increases the number of schools in the comparison group and weakens the comparability between each online charter school and its feeders compared to CREDO’s other studies. Online charter schools tend to serve a much higher percentage of white students than TPS. Previous studies have consistently shown white students have smaller effect sizes from charter attendance than minority students. Also, online charter students have higher mobility rates than the

¹⁵ The shorter period is necessary as the online charter sector in some states, as well as many individual online schools, are expanding at an exponential rate and comparisons from the earlier years may not reflect the current state of performance for the smaller samples which make up individual schools.

students who make up their VCRs. School instability has long been demonstrated to have a negative impact on student growth (South, Haynie, and Bose, 2007).

Due to the large number of feeder schools from which online charter schools attract their students, the TPS comparison groups for the quality curve consists of a much larger proportion of the schools in the state than the typical charter school. As a consequence, the bar for online schools in this comparison was high. In reading, even though only two online charter schools outperformed their comparison schools 18 of the online charter schools had achievement higher than their state’s average achievement. Eleven of the 32 schools with growth not significantly different from their comparison schools had achievement above their state’s average achievement, and six schools with weaker growth than their comparison school had achievement above the state mean. In math, none of the online charter schools had average achievement scores higher than their state average.

Figure 12: Online Charter School Quality Curve: Reading and Math



Even with these caveats firmly in mind, the percent of online charter schools whose students have weaker growth than their comparison is concerning. The qualifying argument of some online school providers is many of their students would have otherwise dropped out of school entirely. Thus any educational gains no matter how small are of benefit to the students and society. This argument may be justified when applied to high schools students, of which online charter schools have a higher percentage, but does not take into account the outcomes for elementary and middle schools students enrolling in online schools.

Network Affiliation

Being part of a larger network of schools may allow online charter schools to take advantage of economies-of-scale in purchasing supplies and equipment. But more importantly online charter schools in a network may be able to leverage human capital gains across multiple schools.

The overall results for online charter schools in a network do not show a significant difference in effect sizes for schools which are part of a larger network as compared to independent online charter schools. The results show no statistically significant difference for academic progress in either subject. This is not to say, however, that all networks of charter schools perform the same.

Charter schools in the same network often share resources such as curricula, operational practices, and personnel training programs. If the schools within a network consistently produce common outcomes which are significantly above or below those of independent online charters and other schools in other networks, it is reasonable to presume the schools in that network are doing something different from the other schools. The statistical models used already account for differences in the starting academic endowments of students. Further, due to the wide geographic range of online charter schools, the results are likely not due to locale. This points to network resources such as work processes, teacher recruiting/training/retention, or other shared resources as the source of the network's higher or lower performance. To investigate this, CREDO applies a statistical model which isolates the impact on student growth of affiliation with each network.

Table 13 shows that even the students who attended the highest performing online network schools had academic growth which was weaker or not significantly different when compared to VCRs attending school in TPS settings. A value of 0.00 in Table 14 would be equal to the performance of the average brick-and-mortar TPS.

Table 13: Effect Sizes by Network Compared to Average VCR, Reading and Math

	Reading	Days of Learning	Math	Days of Learning
Network 1	0.07	48	-0.17**	-124
Network 2	-0.02	-12	0.03	21
Network 3	-0.02	-15	-0.19**	-134
Network 4	-0.05**	-39	-0.16**	-114
Network 5	-0.07**	-48	-0.05**	-32
Network 6	-0.07**	-48	-0.21**	-152
Network 7	-0.09*	-66	-0.16**	-116
Network 8	-0.12**	-83	-0.27**	-191
Network 9	-0.12*	-84	-0.21**	-150
Network 10	-0.14**	-98	-0.28**	-202
Network 11	-0.15**	-105	-0.28*	-199
Network 12	-0.15**	-107	-0.20**	-147
Network 13	-0.15**	-109	-0.27**	-193
Network 14	-0.16**	-114	-0.25**	-177
Network 15	-0.17**	-121	-0.30**	-218
Network 16	-0.18**	-126	-0.18**	-130
Network 17	-0.18**	-130	-0.33**	-235
Network 18	-0.22**	-156	-0.36**	-260
Network 19	-0.26**	-188	-0.49**	-353
Network 20	-0.28**	-204	-0.50**	-360
Network 21	-0.35**	-250	-0.38**	-274

The 0.00 value for this table represents the average TPS, White, non-poverty, non-ELL, non-SPED student.

** Denotes significant at the .01 level.

Table 13 shows the impact of attending an online charter school as compared to TPS schools, but it is also interesting to see how networks perform within the online charter sector. Table 14 provides the results of this analysis using the same data as Table 13 re-centered on the average non-network online charter student. Table 14 shows a marked variation in the average performance of online charter schools by network as compared to the average independent online charter school. A value of 0.00 in Table 14 would be equal to the performance of the average independent online charter school.

Table 14: Effect Sizes by Network Compared to Independent Online Charter Schools, Reading and Math

	Reading	Days of Learning	Math	Days of Learning
Network 1	0.16**	115	0.06	43
Network 2	0.08**	58	0.26**	187
Network 3	0.08**	58	0.05	36
Network 4	0.04**	29	0.08**	58
Network 5	0.03	22	0.19**	137
Network 6	0.03	22	0.02	14
Network 7	0.00	0	0.07	50
Network 8	-0.02	-14	-0.03	-22
Network 9	-0.02	-14	0.02	14
Network 10	-0.04	-29	-0.05**	-36
Network 11	-0.05*	-36	-0.04	-29
Network 12	-0.05**	-36	0.03	22
Network 13	-0.06	-43	-0.04	-29
Network 14	-0.06**	-43	-0.01	-7
Network 15	-0.07**	-50	-0.07**	-50
Network 16	-0.08**	-58	0.05**	36
Network 17	-0.09**	-65	-0.10**	-72
Network 18	-0.12**	-86	-0.13**	-94
Network 19	-0.17**	-122	-0.26**	-187
Network 20	-0.19**	-137	-0.27**	-194
Network 21	-0.25**	-180	-0.15**	-108

The 0.00 value for this table represents the average Online Charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Online Charter Students Compared to Brick-Charter Students

It is possible the differences in performance between online charter students and brick-district students is due to the charter nature of the online charter schools rather than the online nature. To address this concern, we created an additional matched data set in which we matched online charter students to brick-charter students using the same algorithm we typically use to match charter students to TPS (i.e. matched online charter students to demographically identical students in brick-and-mortar schools from which the online charter students transferred). We then repeated all the analyses using this brick-charter as VCR set (see Appendix B for full results). The summary in Table 15 shows the results between the two samples were highly similar. There were no major differences between the two sets of analyses. These results confirm that the findings presented above are a result of the online aspect of the schools as opposed to the charter aspect.

Table 15: Summary of Significant Online Charter Impacts by VCR Group

	Reading		Math	
	TPS VCR	Brick-Charter VCR	TPS VCR	Brick-Charter VCR
Overall	Negative	Negative	Negative	Negative
White	Negative	Negative	Negative	Negative
Black	Negative	Negative	Negative	Negative
Hispanic	Negative	Negative	Negative	Negative
Asian	Negative	Negative	Negative	Negative
Native American	Negative	Similar	Negative	Negative

Mixed-Methods Analyses

The quantitative analysis of online charter impact results provides insight into how growth differs from a TPS student for those students who attend an online charter school. However, that information is the starting point to the larger question of why does attending an online school impact the students’ growth. To delve deeper into the mechanisms behind the answer to the question of why, we can combine data on student achievement with information about the schools which students attend. We do this by estimating correlations between the presence (and in some cases dosage) of practices included in the survey and student achievement for students who attended online charter schools.¹⁶

While these models may provide some insight into the relationships between school practices and student achievement, they are not causal, that is to say we cannot prove the presence of a particular school policy creates the impact seen in the quantitative analysis. Such correlational examinations are interesting in that they point towards areas for additional research using causal models as well as provide information for future policy trials by online charter providers. It should also be noted the sample size of schools with both survey data and impact data was small (n=60) which limits the generalizability of these results.

Student Testing Data and School Survey Data

For the student-level comparisons, we were able to use statistical models which controlled for differences in race-ethnicity, gender, SPED, ELL, and poverty status of students to estimate effect sizes for several factors. Factors in the survey group naturally into clusters: curriculum, instructional practices, parent/student expectations, communications, student supports, etc. Results for the different clusters of questions are presented below. Again, while these results provide information about the relationship between online charter school characteristics/practices and student academic growth, they should not be considered causal.

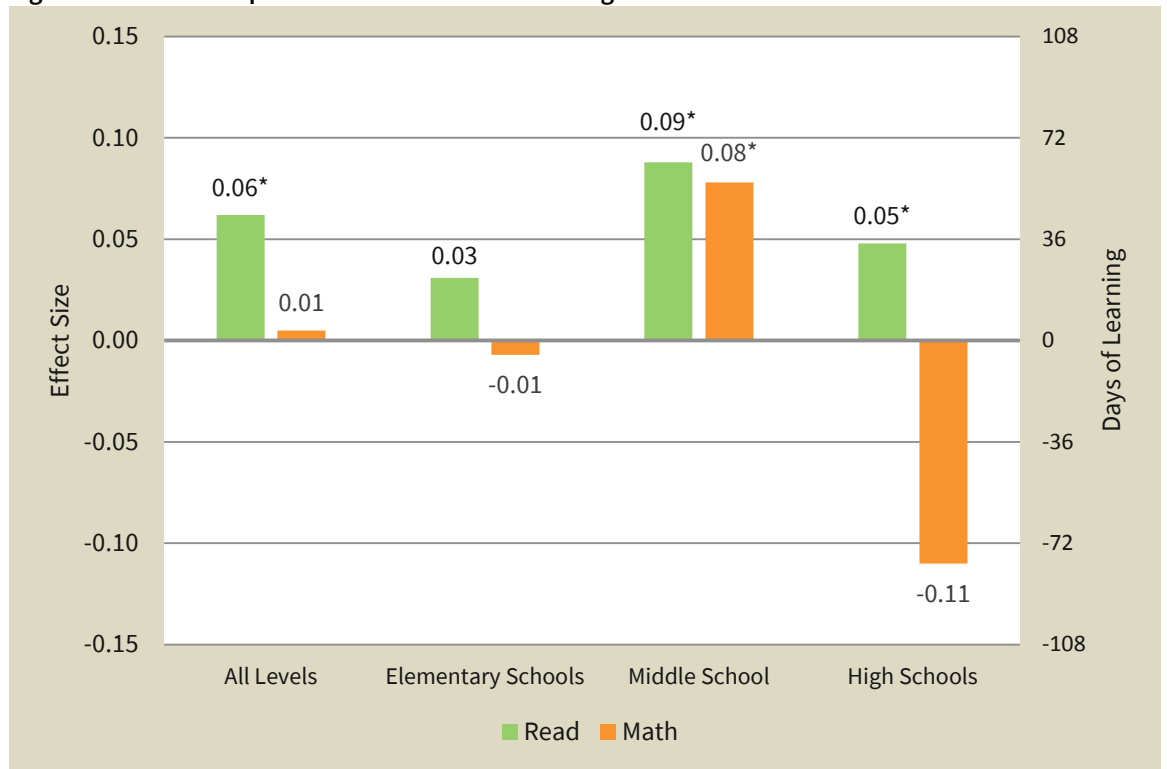
¹⁶ As the survey was not administered to TPS school leaders, these correlations relate to online charter schools only. This means a positive or negative correlation represents growth which is stronger or weaker than the online charter average growth.

Self-Paced Delivery

A major characteristic of online education is the ability for curricula to be consumed in a self-paced manner. While some brick-and-mortar schools have broken away from the standard model by using a lesson structure in which students work through self-paced lessons, usually via technological delivery, most still use the typical single class lessons.

The survey administered by Mathematica asked online charter schools if they offered courses that are entirely self-paced. Seventy-seven percent of schools state they offer some entirely self-paced courses. CREDO’s analysis of student academic growth finds students attending schools offering self-paced courses have academic growth in math which is not significantly different from schools not offering self-paced courses, but stronger growth in reading. However, it is reasonable to propose the ability to work independently in a self-paced course is a function of age. Younger students likely require more academic support than older students, thus the impact of participating in self-paced courses may differ by school level. Figure 13 shows the effect size of attending an online charter school which permits some level of self-paced courses by school level.

Figure 13: Relationship between Growth and Attending an Online Charter School with Self-Paced Classes



The 0.00 line for this graph represents the average online charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level.

Attending a school which allows self-paced courses has a significant positive relationship in reading for schools of all levels combined compared to online charter schools which do not allow self-paced courses. Breaking the effect out by school level shows the relationship is positive and significant for middle school and high school students, but not significantly different for elementary students. The relationship in math, however, was very different. The overall relationship for students in math was not significantly different from zero, and only for middle school students was access to self-paced math classes a positive benefit on academic growth. While the effect size in math for high school students was large, it was not significant. This means the effect could be due to chance even with its large size.

The survey results also contain information about the dosage of self-paced coursework. The question asks what percentage of a school's coursework is entirely self-paced. The responses ranged from five percent to 100 percent of coursework being self-paced with the most common answer being 100 percent. The statistical models show increasing the percentage of self-paced work has a negative relationship on academic growth in both reading and math. At first, this may not seem logical, especially in reading where having access to self-paced courses has a significant positive effect size. But, the apparent inconsistency can be explained by the concept that just because a proper dose of something is good, it doesn't mean a larger dose is better.

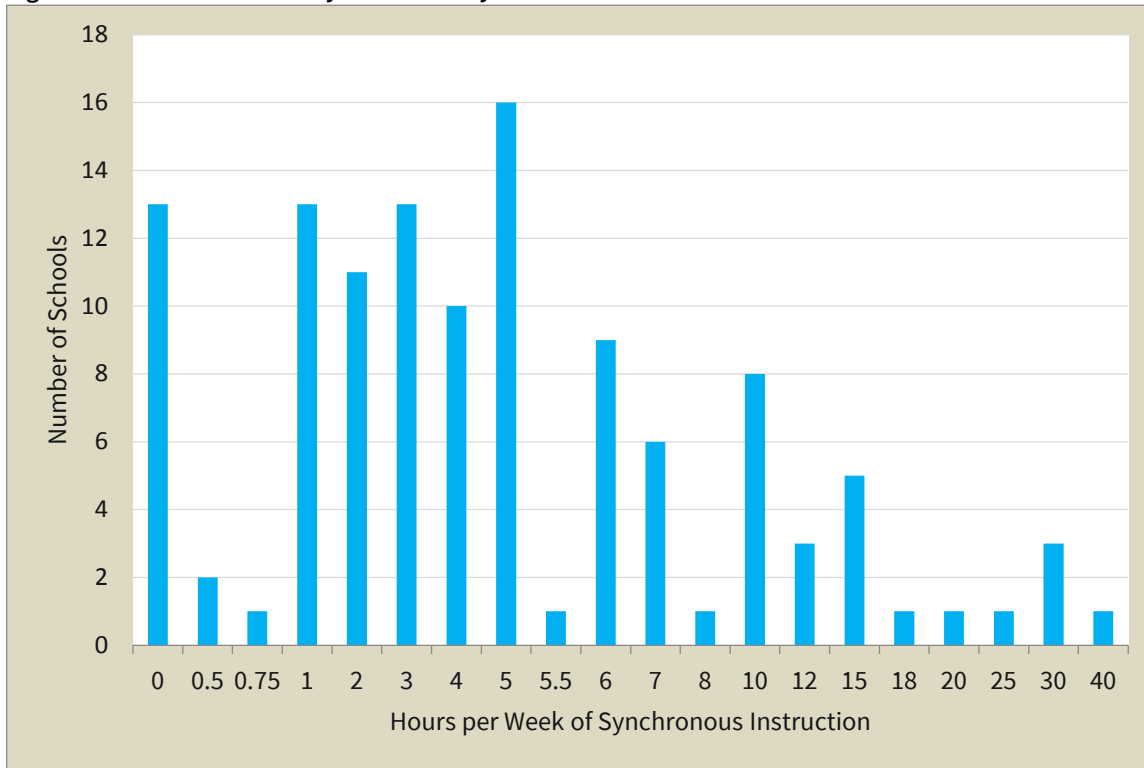
Synchronous vs. Asynchronous

Another element of curricula delivery is whether students complete work at the same time as a group or on their own schedule. Synchronous delivery is typically described as all students receiving instruction at the same time. Synchronous instruction is exemplified by the historical model in which the teacher teaches a lesson to the entire class all at once. Online schools can adopt various levels of synchrony in their curricula deliveries. Some schools may function exactly like the traditional brick-and-mortar school. They may require all students to log in at specific times to receive instruction with the only difference from a traditional brick-and-mortar school being that the students are in different physical locations.

Some online schools fully embrace the asynchronous model by allowing students to complete educational requirements whenever they wish. In fully asynchronous schools, students can meet their educational commitments at odd hours which better fit around the students' other activities, such as work or training. Even the number of days or number of hours a student must devote to educational experiences can be flexible in a fully asynchronous setting.

The Mathematica survey also addressed the hours of instruction which was synchronous by school level. The statistical models do not show any significant relationships in either reading or math at any school level based on the hours of instruction which was synchronous. As with self-paced instruction, schools varied greatly on the amount of time they spent in synchronous instruction. Figure 14 contains the number of online charter schools from the survey and the number of hours students in each school spend in synchronous instruction.

Figure 14: Count of Schools by Number of Synchronous Hours of Instruction



Class Size

The Mathematica survey includes information at each school level, elementary, middle, and high, on the average course size in the online school in both reading and math. The class size for ranged from one student per class to 180 students per class. Table 16 has the average class size and maximum class size by school-level. The impact of class size was significant and positive for middle school and high school students in both reading and math. While the effect size was very small, only .001, this is the impact per additional student.

Table 16: Reported Average and Maximum Class Size by School Level

	Average Class Size	Maximum Class Size
Elementary School	39	70
Middle School	60	150
High School	71	180

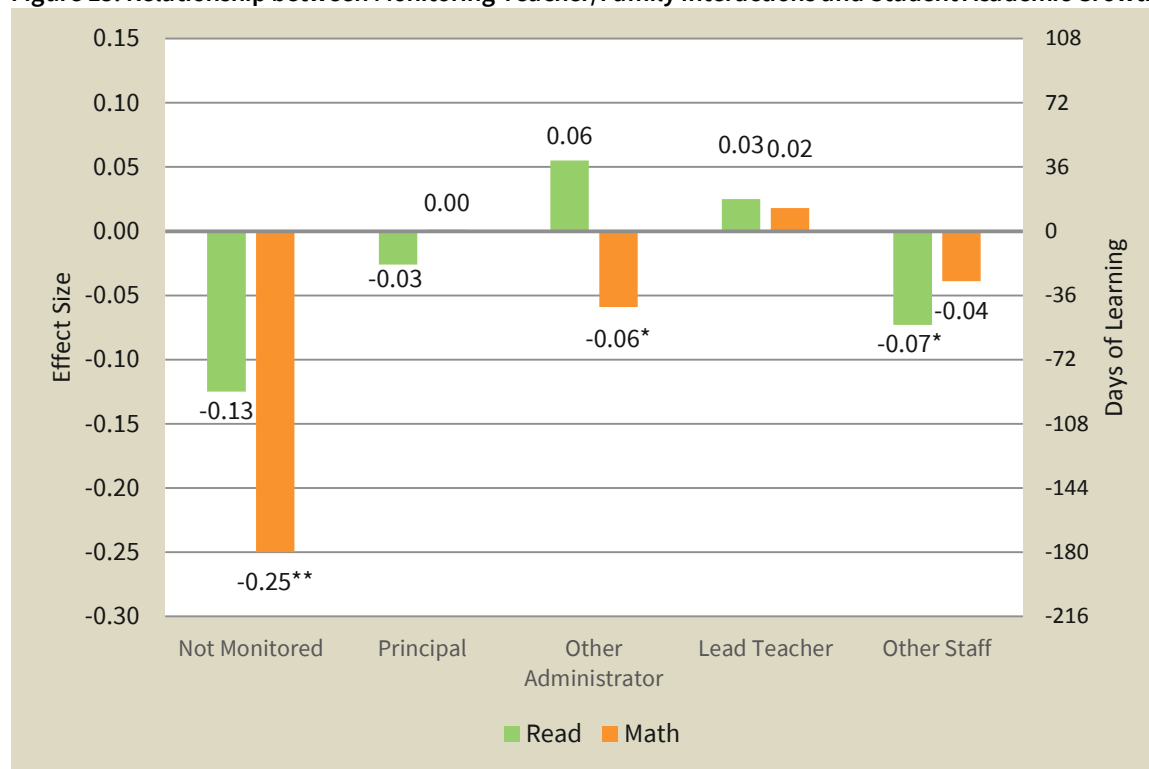
School and Family Interactions

One of the more interesting sets of questions included in the survey was an inquiry into the relationship between the school and the family receiving services. This line of questioning is of interest because schools employ a wide variety of policies. As the online student and their family may be located some

distance from the school’s center of operations, it is possible no one in the family has ever had an in-person interaction with the teachers or a school administrator. Even if the family has visited the school operations center, it is still possible the teacher works out of a third location remote to the student and the operations center. These remote practices are different from the standard education model whereby teachers interact with students on a daily basis and provide parents with regular conference opportunities. Departures by some online schools from the traditional educational model also include a shifting of the responsibility for supervising educational progress and participation from the teacher to the parents.

The Mathematica survey includes a question about who monitors the interactions between the online teachers and students/parents. The options were: contact is not formally monitored, principal, other school administrator, lead mentor/teacher, other staff not listed. School leaders completing the survey were allowed to choose all answers which applied to their school. Results from the statistical models are very revealing about the need for someone to monitor these interactions. Figure 15 includes the relationships between student scores and attending a school which uses each policy.

Figure 15: Relationship between Monitoring Teacher/Family Interactions and Student Academic Growth



The 0.00 line for this graph represents the average online charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

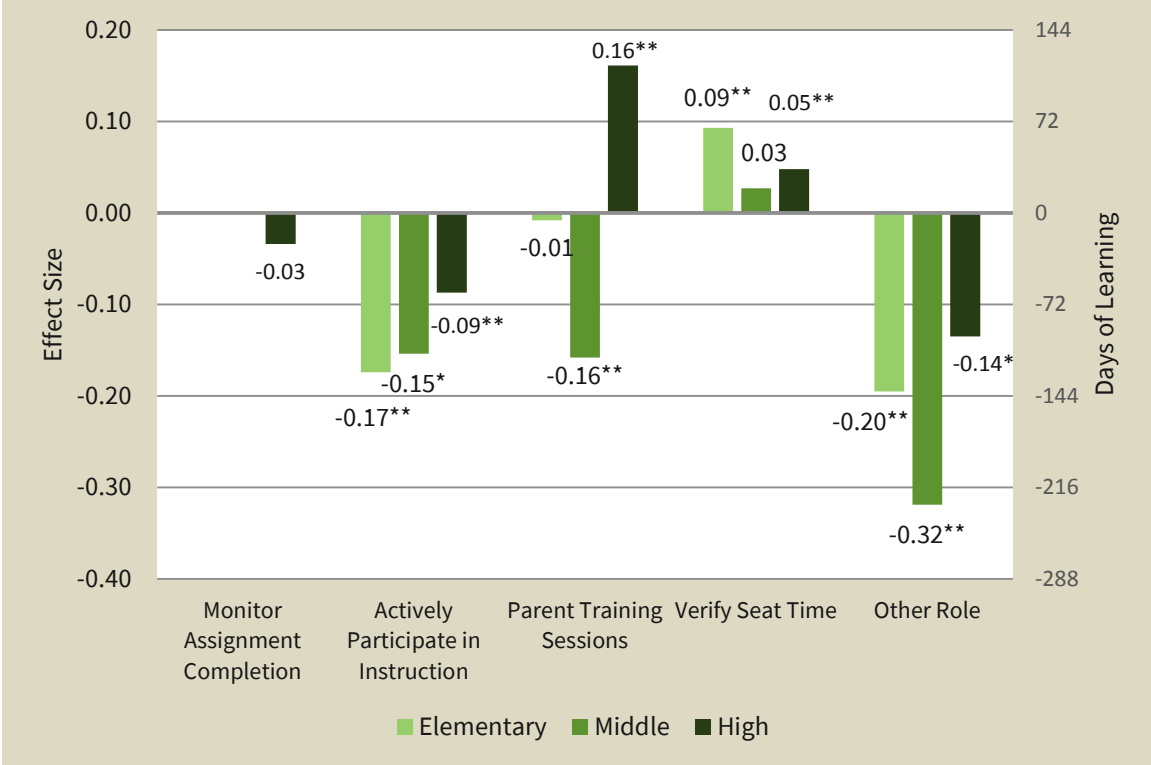
Not formally monitoring the interactions between teachers and families of online charter students is correlated with a large significant negative impact on math academic growth. The results were also negative in math when the supervision is delegated to a school administrator other than the principal. In reading the only significant result occurs for schools where the interaction is monitored by a non-administrator, non-teacher staff member. What is clear from these results is communication between the school and the family matters for online students, and the existence of that relationship needs to be monitored by someone other than just the assigned teacher to ensure the communication occurs.

Part of the reason communication between the schools and the families of online charter students is important may lie in the roles the online school expects parents to fill in their child's educational experience. Expectations for the role of the parent differ across online schools. In the survey, the principals are asked to select from a list of roles the school expects the parent to fill. It is worth noting the principal's affirmative response does not mean the parents are adequately fulfilling these roles, only that the school has an expectation the parents will provide these supports. This is a useful distinction when interpreting how student outcomes vary with these expectations.

The role of the parent is likely to change with the age of the student; accordingly, this survey item is asked in relation to specific school-levels: elementary, middle school, and high school. Building principals were asked to select all the roles which apply to their school. Some schools selected all possible responses while others reported only some or none. Some replies are ubiquitous across all the schools of a level which means a relationship between that reply and student academic growth cannot be estimated. For example, all elementary and middle school principals replied that they expect parents to monitor completion of assignments, this means we cannot estimate how strongly parental review of assignment completion matters for student performance.

The strength of the relationships between the online charter school reporting expected parental roles and academic growth in reading and math are given in Figures 16 and 17 respectively. The only parental roles which have a consistent positive relationship to student academic growth are the expectation of parents verifying seat time. In high school math, most of the parental roles were significant; however, this was primarily due to the fact that high schools which expected parents to actively participate in instruction and attend parent training sessions all also expected parents to monitor assignment completion. This means those two factors get a boost from the effect of monitoring assignment completion. Parents actively participating in instruction and filling other roles both have a consistently negative relationship with academic growth for all groups except high school math. While the statistical models in these analyses are not causal, the strong patterns we are seeing suggest the issue may be that schools are holding expectations for parents which the parents do not meet. It would be hard to explain otherwise why a school expecting parents to actively participate in instruction would have a negative relationship with growth if parents were adequately meeting the expectation.

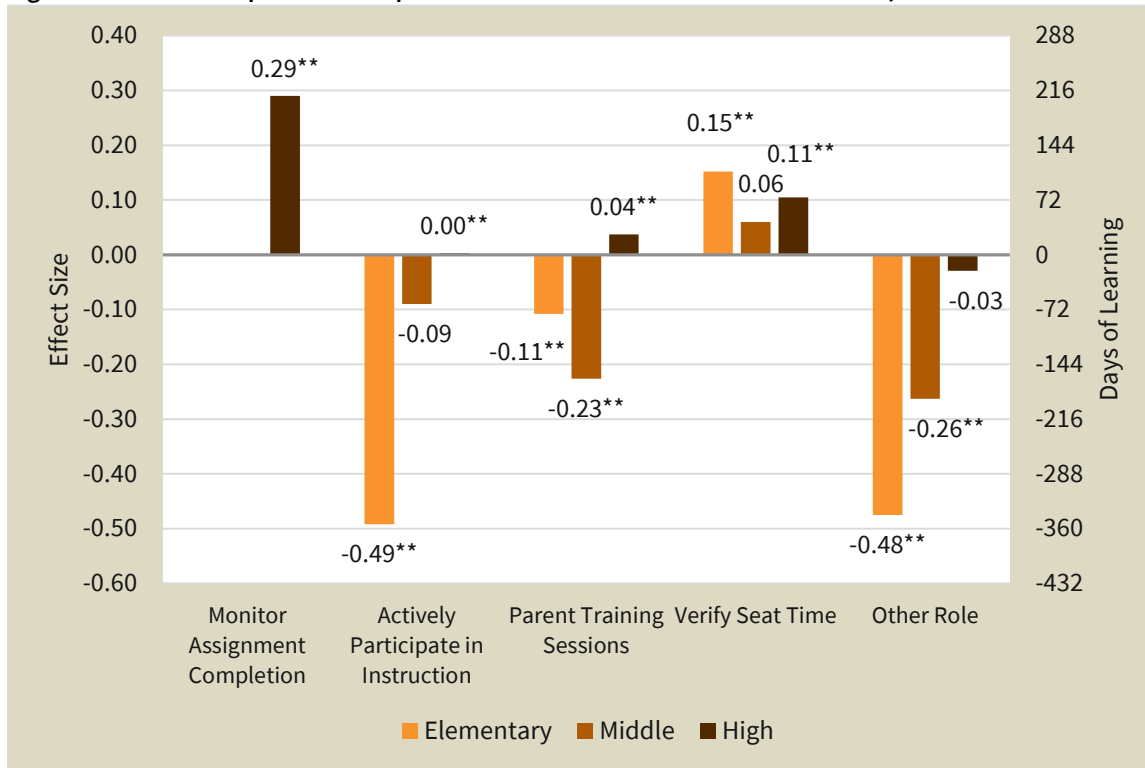
Figure 16: Relationship between Expected Parental Roles and Academic Growth, Reading



The 0.00 line for this graph represents the average online charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Figure 17: Relationship between Expected Parental Roles and Academic Growth, Math



The 0.00 line for this graph represents the average online charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Methods of Class Communication

Other items on the survey sought information on methods used by online schools to interact with students during instruction. There are questions which focused separately on asynchronous instruction and synchronous instruction.

For asynchronous instruction, the respondents are asked to identify all the methods used in their school to engage students in asynchronous learning. Possible survey responses were

- Email
- access to physical textbooks
- interactive online exercises
- using other websites with instructional focus or content
- recordings of lectures
- discussion forums or threaded discussion groups
- social media
- other tools not listed above

Of all the options, only two have significant relationships with academic growth. In reading, having access to recordings of lectures has a positive 0.10 standard deviation (72 days) effect size in relation to reading growth in schools which do not have access. In math, having access to physical (paper) textbooks has 0.09 (65 days) positive relationship with math growth compared to schools which do not.

Practices for synchronous instruction are also included in the survey. Because of the “real time” nature of synchronous instruction, these practices are more centered on live communications methods. Table 17 lists the various communication methods and their relationship with academic growth in reading and math.¹⁷ In both reading and math, using audio conferencing in synchronous instruction has a positive relationship with academic growth. Providing instruction through online chat forums has a strong negative relationship with math growth. Likewise, instant messaging does not appear to be an effective means of communicating “real time” reading instruction to students.

Table 17: Tools Used to Support Synchronous Instruction, Reading and Math

	Reading	Math
Video Conferencing	-0.01	0.07
Screen Sharing	0.19	0.18
Audio Conferencing	0.13*	0.29**
Online Chat Forum	-0.19	-0.54**
Instant Messaging	-0.13**	0.00
Phone Calls	-0.03	-0.17
Text Messaging	0.10	0.05
Other	0.00	0.21**

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Another question asks principals if their school provides technological support to students. Options include schools providing an internet connection, a computer, computer accessories, or assistive technology for students with disabilities. Of these options, none has a significant relationship with academic growth in either reading or math with the exception of assistive technology in math has a strong (-0.10) significant relationship with academic growth. This relationship emphasizes why we do not make causal claims in this portion of the study. It is difficult to imagine a situation where providing disabled students with assistive technology would cause the student to experience weaker academic growth. What is more likely is that students with disabilities so severe they require special adaptive equipment may not be fully compensated for in the statistical models which control for the average effect of students being in special education.

¹⁷ It is noteworthy that very little impact was identified for these tools in general. Many methods show moderate to strong relationships which are not significant. This may be due to the small number of replies in that category. Having a small number of replies means the statistical models cannot differentiate between truly strong relationships and those which falsely appear strong by chance.

School-Level Data and School Survey Data

CREDO used the student-level data from the impact analysis above to produce school-level fixed effects measures of academic progress which were then merged with the school principal survey. Combining school-level data with the survey data provides a slightly different lens through which to view the outcomes. The student-level comparisons provide a wider view of the relationship between the various survey topics and academic growth, but the results can be heavily influenced by the largest schools which will have many more individual student records. By looking at how the survey factors relate to school-level effect sizes, the weight of the relationships is distributed more evenly between the larger and smaller schools.

Because many of the survey questions ask if a school uses a particular practice or does not use that practice, it is possible to use a t-test to estimate the average relationship of that practice to the school's effect size on student growth. This provides additional information beyond that derived from just using a correlation as it provides the reader with additional information on the relative size of the impacts of different educational practices.

Many of the survey questions were grouped around related concepts such as parental roles, factors relating to principal experience and compensation, and factors related to school operational policies. The correlations between these questions and the school-level effect sizes have been grouped by general category below. It is worth noting that the survey data was collected from across the nation and values were weighted for non-response. The data included in the correlations below represents a subset of the survey data as the below data was limited to only those responses which also had school-level coefficient estimates. The use of a restricted survey data set in this section means the aggregated numbers presented here will likely be different from those presented in the descriptive volume of the report. For purposes of any national discussion, the reader should refer to the values from the descriptive volume.

The complete set of correlations between school-level effect sizes and survey responses is provided in Appendix C of this report. The reader should keep in mind that by chance, 5 percent of the correlations will be significant in each subject. To this end, the table in Appendix C includes all of the correlations and their p-values to allow for better interpretation of the significance of the relationship between each condition and the school-level effects.

School-Wide Policies

Students enrolled in online charter schools, especially asynchronous schools, may experience a variety of expectations on their individual participation. The presence or absence of clear-cut policies for student participation could be expected to have a strong relationship with academic growth. The Mathematica survey includes three items relating to student participation. Principals were asked if their school has a school-wide policy spelling out expectations for students in the completion of assignments, class participation, and attendance in synchronous portions of instruction. Only one school in the correlational data did not have school-wide requirements for completion of assignments. Having clearly defined rules for class participation has a positive relationship with academic growth in reading, but the effect was not

significant in math. However, there was a negative correlation in math between school effect sizes and schools reporting they monitored student participation by the pace at which students completed course assignments.

Table 18: School-Wide Policies, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Class Participation	.37*	0.14*	.25	0.13
Attendance in Synchronous Instruction	.24	0.06	.02	0.01
Monitors Pace of Student Completion of Assignments	-.27	-0.13	-.38*	-0.29*

* Denotes significant at the .05 level.

Due to the use of asynchronous instruction in online charter schools, the awarding of course credits based on seat time may not be an appropriate metric. Another means of awarding course credits to students is through the assessment of course content mastery. Schools were asked if students could earn course credits through demonstration of mastery in none, some, or all courses. Table 19 shows a negative correlation exists between holding the policy of allowing mastery based credits in some subjects and school-level effect size in both reading and math.

Table 19 also includes results for correlations between school-level effects and the frequency with which schools assessed students. There was no significant correlation between the frequency of assessment of students and student academic growth in math. There was a moderate correlation in reading between more frequent assessments and academic growth for elementary and middle school students. Frequency of assessment was not correlated with school-level effects for high school students.

Table 19: Course Credits and Assessment Frequency, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Seat Time Credits Only	.12	0.03	-.03	-0.01
Mastery Based Credits in Some Courses	-.35*	-0.09*	-.33*	-0.12*
Mastery Based Credits in All Courses	.04	0.01	.04	0.02
School Participates in Title I	-.36*	-0.08	.03	0.01
Frequency of Assessment Elementary Grades	.49*	n/a	.16	n/a
Frequency of Assessment Middle School Grades	.42*	n/a	.11	n/a
Frequency of Assessment High School Grades	.05	n/a	-.10	n/a

* Denotes significant at the .05 level.

Another set of school-wide policies included in the survey revolved around school funding. The principals were asked if the school received funding based on course completions as opposed to course enrollments, if schools received target funds for providing special education services, and if the school participated in the federal Title I program. Of these factors, only participation in Title I had a significant relationship and only in reading.

One major set of policy decisions which are usually set at the school-wide level is curriculum and instructional practices. The survey included a variety of questions related to the development of curriculum and methods for delivering the curriculum. In reading, receiving curriculum from the management company was associated with positive school effect sizes. Correspondingly, reporting in-house developed curriculum and teachers of record being responsible for developing curriculum was negatively correlated with school effect sizes in reading. None of these policies had significant correlations in math.

Method of delivery for the school's curriculum is another important factor which can impact student academic growth. Among the various delivery methods included in the survey, only one the frequent use of teacher-guided synchronous instruction in 7th grade reading was significantly correlated with school-level effect sizes. The correlation was not significant in math. A more specific breakout of synchronous instruction looked at the number of hours spent in synchronous instruction for each school-level. Most of these correlations were not significant except more hours of synchronous instruction in math was significant and positive for 4th grade students.

Table 20: School-Wide Policies Relating to Curriculum and Instruction, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Some Curriculum Provided by Management Company	.53*	0.17*	.22	0.10
Majority of Curriculum Developed In-House by Individual Course Instructors	-.27*	-0.12*	-.04	-0.02
Teacher of Record Responsible for Developing Curriculum	-.55*	-0.13*	-.24	-0.08
Increased Frequency of Teacher-Guided Synchronous Discussion 4 th Grade	.33	n/a	.25	n/a
Increased Frequency of Teacher-Guided Synchronous Discussion 7 th Grade	.41*	n/a	.10	n/a
Increased Frequency of Teacher-Guided Synchronous Discussion High School	.16	n/a	.07	n/a
Time in Synchronous Instruction 4 th Grade	.10	n/a	.37*	n/a
Time in Synchronous Instruction 7 th Grade	-.02	n/a	.10	n/a
Time in Synchronous Instruction High School	-.25	n/a	.01	n/a

* Denotes significant at the .05 level.

Student Support Activities

One issue in which online charter schools may differ substantially from the typical brick-and-mortar school is in student support activities of the school. The survey included several questions about various student support activities taken on by the school. These included activities common to all schools such as one-on-one interventions, providing guidance counselors, assessing student needs. Online charter schools also have some unique support activities such as tech support for students or provision of internet services.

The first step to providing services to students is assessing what services each child needs. The survey included a question about actions taken by online charter schools to assess student needs when a new student enrolls in the school. Table 21 shows the relationship between many possible types of entry assessments and school effect sizes. Of the steps listed, only assessments of parental or other home supports and the students' learning disabilities have a significant relationship with the school effect size.

Table 21: Entry Assessment for New Enrollees

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Academic Skills	.05	0.02	.01	0.01
English-Language Skills	.27	0.07	.30	0.11
Potential Barriers for Online Learning	.20	0.05	.12	0.04
Parental or Other Home Supports	.27	0.06	.33*	0.10*
Student Learning Disabilities	.11	0.02	.34*	0.10*
Other Disabilities	.11	0.02	.12	0.03
Pull Records from Previous School	-	-	-	-
Phone Call to Household	.17	0.07	-.02	-0.01
Home Visit	-.23	-0.06	-.04	-0.01

* Denotes significant at the .05 level.

One-on-one interventions are practices taken by a school when a teacher, administrator, or parent has concerns that a student requires additional services to achieve academic success. When teachers and students are not physically present in the same location, intervention may look different from the standard classroom. Some online schools have tutors whose sole job is to provide interventions. Other schools expect the teacher to work directly with the students outside of the regular class time. Of course, even online schools are still required to provide special education supports required by the student’s individual education plan (IEP). A series of questions about who provides the one-on-one support show some significant relationships between the provider and student academic growth.

Table 22 shows the relationship between various providers and school-level fixed-effects estimates of academic growth for elementary students. Providing proper special education support for elementary students in online charter schools is correlated with positive academic growth. Further, the use of non-teacher tutors does not seem to provide the same level of academic growth as receiving one-on-one support from the class teacher in reading. The relationship in math is not significant.

The results for middle school and high school students were similar to those for elementary students with regards to the use of tutors and coaches. Unfortunately, the number of schools in the upper grade levels who do not have teacher-provided and special education faculty-provided one-on-one support was too small to compute a value for these relationships at the middle school or high school levels.

Additionally, the amount of time a student spend in one-on-one instruction was not significantly correlated with student achievement for students at any level.

Table 22: Providers of One-on-One Support to Students, Reading and Math

Provider	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
ELEMENTARY				
Teacher	.25	0.08	.03	0.01
Tutor/Coach	-.45*	-0.09*	.11	0.03
Special Education Faculty	.53*	0.10*	.41*	0.10*
MIDDLE SCHOOL				
Tutor/Coach	-.45*	-0.09*	.20	0.05
HIGH SCHOOL				
Tutor/Coach	-.52*	-0.11*	.003	0.001

* Denotes significant at the .05 level.

The survey also contained a variety of questions about other support services provided to students. Most of these programs did not have a significant relationship with the school effect size. Table 23 includes the other support programs which did have a significant relationship with school-level estimates of student growth. The presence in a school of a program for talented and gifted students being associated with stronger growth seems logical. The negative relationships between academic growth and programs to support students who are parents may seem counterintuitive as we would expect those programs to help those students rather than hinder them. However, the fact that students in some schools are dealing with being a parent at a young age while students in other schools may not face that challenge, thus the school does not provide such a program, may explain the negative correlation. Likewise, it is hard to imagine that in-person tech support harms a student’s academic growth. Rather, students from families which have such a low level of computer literacy that they require outside support to set up their computer likely have other challenges which are the actual cause of the negative correlations.

Finally, an increase in the number of guidance counselors serving an online school was correlated with significant positive growth in reading and a non-significant correlation in math.

Table 23: School-Provided Supports

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Talented and Gifted Program	.41*	0.09*	.27	0.08
Programs for Students Who Have Children	-.09	-0.02	-.31*	-0.10*
In-Person Set Up of Computer	-.39*	-0.09*	-.23	-0.08
Guidance Counselors	.39*	n/a	-.01	n/a

* Denotes significant at the .05 level.

School and Family Interactions

In the student-level analysis, several elements of school and family interactions had significant relationships with student achievement. This still holds true in the school-level analysis although the relationships are not all the same. The differences are related to the weighting of the student values which result from looking at the relationships using average school effect sizes instead of individual student values.

For the student-level data, schools in which parents were expected to be actively involved in their child’s instruction have a negative relationship with growth. In the school-level analysis, we again see a negative relationship between schools’ expectation that parents will actively participate in the student’s instruction and academic growth (see Table 24). For the remainder of parental roles, the results were either not significantly related or could not be measured due to the small sample size and a lack of variation in responses.

Table 24: Relationship between Expected Parental Roles and Academic Growth, Reading and Math

Provider	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
ELEMENTARY				
Actively Participate in Instruction	-.42*	-0.08*	.29	0.07
Parent Training Session	.06	0.02	.03	0.01
Verify Seat Time	.02	0.00	.21	0.05
MIDDLE SCHOOL				
Actively Participate in Instruction	-.27	-0.06	.24	0.07
Parent Training Session	-.03	-0.01	-.22	-0.08
Verify Seat Time	-.10	-0.02	.14	0.04
HIGH SCHOOL				
Actively Participate in Instruction	-.21	-0.05	.24	0.08
Parent Training Session	.01	0.00	-.10	-0.03
Verify Seat Time	-.05	-0.01	.08	0.02

* Denotes significant at the .05 level.

Professional Development and Compensation

One of the processes by which schools support teacher improvement is through professional development opportunities. The survey inquired about the frequency and delivery format of professional development within online charter schools. The only format of professional development which had a significant correlation with student academic growth in either math or reading was online-delivered

profession development. There was a negative correlation (-.38) between the increasing frequency of online-delivered teacher professional development and student growth in math. The relationship in reading was not significant. The correlations between the frequency of in-person teacher professional development and student growth was not significant in math nor reading. Schools which report having teachers observed by master teachers or teaching coaches had significantly lower effect sizes in math than those who did not.

One practice which did have a significant positive relationship with school effect sizes was providing teachers with diagnostic test results at the individual student level for purposes of planning instruction. This correlation was .34 in reading, but not significant in math.

Table 25: Teacher Professional Development Activities, Reading and Math

	Reading Correlation	Math Correlation
Frequency of Online Professional Development	-.03	-.38*
Frequency Observed by and Received Feedback from Master Teacher	-.10	-.37*
Frequency Provided with Diagnostic Test Results for Individual Students	.34*	.04

* Denotes significant at the .05 level.

Schools also have a variety of professional development for school leaders. Among those included on the survey, only site visits to other schools had a significant correlation with school-level effect size. In schools where school leaders reported visiting another school for the purpose of improving their own work as a school leader in the past 12 months, the correlation with school effect size was .35 in reading.

Table 26: School Leader Professional Development Activities, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
University Coursework	-.04	-0.01	-.01	-0.00
Visits to Other Schools	.35*	0.08*	.20	0.06
Coaching by Leader of Another School	.16	0.04	-.01	-0.00
Participating in School Leader Network	.20	0.05	.28	0.11
Workshop Presenter	.17	0.04	.07	0.02
Workshop Participant	-.31	-0.10	-.11	-0.05

* Denotes significant at the .05 level.

Teacher incentives are another policy area which varies from school to school. Charter schools have more flexibility in the methods used to compensate teachers than the traditional public schools. The questionnaire included a series of questions about factors that impact teacher salaries for the online charter school. The questions asked if a teacher would be paid more as a result of the factors listed in Table 27 below. Most of the options do not have a significant relationship with growth. The two exceptions were pay based on student growth and on the teacher holding an advanced degree. These two factors were significantly related to student growth in reading. Interestingly, while course completion as an influencing factor on teacher compensation was not significantly correlated with school-level effects, including student course completion was negatively correlated (-.45) with school-level effect size in math.

While not direct compensation per se, tenure can also be an important means of rewarding teachers. We found a significant positive correlation between teachers' ability to earn tenure and school effect sizes in reading but not in math.

Table 27: Influencing Factors for Teacher Compensation, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Teacher Evaluation	.29	0.06	.08	0.02
Student Growth	.41*	0.09*	.30	0.09
Student Proficiency	.08	0.02	.21	0.08
Course Completion Rates	.17	0.06	.26	0.12
Holds Advanced Degree	.39*	0.08*	.05	0.01
Years Experience	.12	0.03	.19	0.06
Multiple Certifications	.11	0.03	.25	0.10
Hard-to-Staff Position	.09	0.02	.13	0.04
Number of Students	-.20	-0.06	.03	0.01
Mentor to Other Teachers	-.10	-0.02	.08	0.03
Teachers Can Earn Tenure	.31*	0.11*	.13	0.06

* Denotes significant at the .05 level.

A similar question relating to compensation for school leaders was also included in the survey (see Table 28). The only compensation factor which had a significant relationship with student achievement level was student proficiency level. The correlation between basing school leader salary on student achievement level was .45. This significant relationship was not present in reading.

Table 28: Influencing Factors for School Leader Compensation, Reading and Math

	Reading		Math	
	Correlation	Effect Size	Correlation	Effect Size
Number of Enrolled Students	-.07	-0.02	-.06	-0.02
Student Achievement Growth	.24	0.05	.22	0.07
Student Proficiency Level	.28	0.06	.45*	0.14*
Course Completion Rates	.05	0.01	.25	0.09
Reenrollment Rates	.18	0.04	.03	0.01
Retention of Teachers	-.31	-0.10	-.11	-0.05
School Profit	.23	0.05	-.17	-0.05

* Denotes significant at the .05 level.

Throughout the various related concepts, we did not find factors which impacted both reading and math. Likewise, we did not find consistent groups of factors within a concept which had significant relationships with school effect sizes. The absence of clear sets of factors which have a relationship with school effect sizes was in itself an interesting finding. The school-level survey did not reveal clear group of mechanisms by which to influence school-level effect sizes.

School leaders have a wide variety of responsibilities in any school. While the school leader of an online charter school has many responsibilities in common with the leader of a brick-and-mortar school, the online school may demand a different balance of responsibilities and that rebalancing may result in different outcomes. While we do not have comparative data, school leaders were asked to report what percentage of their time they spent on a variety of activities. We computed the correlation between the percent of time spent on several activities and the school-level effect size on student academic growth. School leaders spending higher percentages of their time with students, including discipline and academic guidance, was correlated with higher school-level effects in reading. None of the other school leader activities was significantly correlated with school-level effect size.

Table 29: Percent of School Leader Time by Task, Reading and Math

	Reading	Math
	Correlation	Correlation
Internal Administrative Tasks	-.21	-.30
Observing Teachers	.09	.07
Working with Teacher Coaches or Other Instructional Leaders	.04	.13
Developing or Leading PD	-.21	-.01
Reviewing Student Achievement Data	.38*	.30
Student Interactions	-.12	.05
Parent Interactions	-.06	.28

* Denotes significant at the .05 level.

Non-Significant Findings

As part of the school-level analysis, we evaluated the relationships between the survey responses and each individual school’s estimated effect size in both math and reading. The majority of the relationships were not significant. Table 30 contains a partial list of survey response items found to have non-significant correlations with student academic growth. The full set of correlations is provided in Appendix C of this report.

Table 30: Survey Items of Interest with Non-Significant Correlations with Math and Reading Effect Sizes

Survey Item
School monitors synchronous seat time
Percentage of coursework which is self-paced
Average class size
School size

Student Testing Data and Policy Changes

In our US Constitution, education is one policy domain that is relegated to state authority and control. The individual’s right to a free public education is guaranteed in each state’s state constitution. As such, every state has the duty to set the policies which govern the operation of schools within their state. This means education practices permissible in one state, may be banned in another. In fact, several states allow neither online schools nor charter schools at all.

In the second volume of this report, the Center on Reinventing Public Education (CRPE) conducted an analysis of state education policies as they relate to online charter schools (Pazhouh, Lake, and Miller 2015). They found that in those states which do allow online schools, policies governing online charter schools vary. Further, individual states can and do change their policies independently. This leads to a pattern of occasional policy shifts as some states change their policies but others do not; the overall pattern of policy shifts across all the states can be exploited for research purposes. We can use statistical models which allow us to examine the differences in student academic growth which correspond to the existence and changes in an individual state’s online school policies.

In their analysis, CRPE identified education policies which may have a relationship with the academic growth of online charter school students. CREDO then computed correlations between school-level effects and the presence of three of these policies. The three policies included were: authorizer oversight fees, the existence of for-profit online charter schools with state-wide enrollment policies in a state, and if a state had specialized oversight provisions specifically for online charter schools.

Authorizer oversight fees are fees charged to the charter schools by the organizations who authorize and have oversight authority over the charter schools. These fees are usually computed as a percentage of the per-pupil funding received by the charter school. As Pazhouh, Lake, and Miller state in their policy

review, “Fees from large online schools can come to represent a large proportion of agency operating revenues and may create a disincentive to regulate and close consistently low-performing online charter schools.” The second factor, for-profit and state-wide enrollment documents the presence of policies within the state which allow for BOTH the operation of for-profit charter schools and the ability of online charter schools to enroll students from any location within the state. Finally, some state laws include unique oversight and accountability provisions specific to online charter schools. Most of these provisions are partial measures, addressing authorizing entities and processes, special application requirements (i.e., technology plans), or accountability provisions regarding the frequency and manner of reporting.

Table 31 below shows a significant negative relationship between authorizers collecting oversight fees and student academic growth in math. Having online charter specific oversight policies and stronger charter laws in general have a significant and positive relationship with math academic growth. In reading, only the strength of the state’s charter law had a significant relationship with academic growth. These correlations fit the narrative provided by CRPE in the second volume of this report.

Table 31: Correlations between Education Policies and School-Level Effects

	Math	Reading
Authorizer Oversight Fees	-0.21*	-0.12
For-Profit and State-Wide Enrollment	0.19	-0.11
Specialized Oversight Policies	0.20*	-0.19
Strength of Charter Law	0.33*	0.25*
Strength of Charter Law Ranking	0.32*	0.06

* Denotes significant at the .05 level.

During the data window of this study, there were four policy changes which were likely to impact online charter schools. As these changes occurred over time within a state, we used student-level data to estimate a yearly school effect and then compared those school effects before and after the specific policy change. Table 32 shows the average change in academic growth associated with the implementation of each policy. Table 32 also contains a list of topics included in the regulation change. Details on the policy changes are available in the Pazhouh, Lake, and Miller volume of this report. Due to the existence of multiple simultaneous policy changes, it is not possible to disentangle which aspect of each law holds the causal mechanism in relation to student achievement.

Table 32: State-Level Policy Change Description

	State	CO	MN	OH	OH
		HB-11-1277	SF-1528	HB-3660	HB-2301
Effect Size		-0.07	-0.27**	0.16**	0.17*
Policy Topics Contained in Law					
Accountability		X	X		
Oversight/Governance		X		X	X
Authorizing		X	X		
Communication			X	X	X
Quality Review			X		
Funding				X	
Enrollment Processes/Caps				X	X
Teacher Licensure					X
Assessment					X
Equipment/Internet Access					X

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

The policy change in Colorado was not correlated with a significant change in academic growth. The policy change in Minnesota was associated with a large significant negative effect size. Both of the policy changes in OH were associated with stronger academic growth. The difficulty in making an analysis such as this is accounting for multiple policy changes in each law. For example, the list of changes associated with Ohio SB 2301 cover several policies. The positive relationship could be due to more student access brought about by the elimination of the enrollment cap and the requirement for districts to release up to three percent of students to attend online charter schools, or the positive impacts could also be the result of the requirements for teachers to have state-certification. The current data did not allow us to tease out these possibilities. Over more time, comparing multiple changes in multiple states could allow more refinement of which policies are having what impact. Unfortunately, we are limited by the number of changes which took place within the data window of our study.

Summary and Implications

The purpose of this report was to present to online education stakeholders data-based information on the academic impact of attending online charter schools. The report combined student-level data, school-leader survey responses, and state policy data. Using academic data, we compared the growth of students attending online charter schools to that of students in TPS and students in brick-and-mortar charter schools. We also combined student-level data with information from a survey conducted by Mathematica Policy Research. This mixed methods analysis permitted us to examine the relationship

between a variety of online charter school policies and student academic growth. We also included information from the Center on Reinventing Public Education's review of state policies. As online charter schools are a seldom-studied area, this report represents one of the most in-depth examinations of the topic.

Online charter students had weaker growth than their VCRs. While results vary for each student, the data showed the majority of online charter student records had weaker academic growth in both math and reading compared to their VCRs. The pattern of weaker growth remained consistent across racial-ethnic subpopulations and students in poverty. Online charter schools were found to reduce the negative impacts on growth in math for students who were English language learners and special education students relative to their non-ELL and non-SPED peers compared to the size of the negative impacts for the ELL and SPED VCRs to the non-ELL and non-SPED VCRs.

Pre-online mobility is the same for online charter students and their VCRs. The study of student mobility showed students who eventually enroll in online charter schools have pre-online mobility rates similar to those of their VCR comparisons. However, after enrolling in online charter schools, these students tend to become more mobile changing schools at a rate 2 to 3 times higher than their peers. Twenty-two percent of online charter students eventually return to TPS sector with the average time in an online charter school being two years.

Positive growth across a sector is possible. Some online charter schools which were part of multi-school networks had average impacts on academic growth which were stronger than the typical online charter. Online charter schools in Wisconsin and Georgia had academic growth in reading which on average was stronger than their VCRs. These findings show it is possible for online charter schools to produce stronger growth, but it is not the common outcome.

Few school-level practices had a strong relationship with academic growth. A review of the relationship between school practices as reported in the Mathematica survey and student academic growth found mostly insignificant correlations between school practices and growth. Of practices in the survey which had strong positive correlations, attending schools which offered some self-paced classes was the most wide-spread and was found to be consistent across all school levels. The findings on the expected parental roles was also revealing in that placing more instructional responsibilities on parents was strongly correlated with weaker growth across most settings.

Teasing out the impact of state-level policies is difficult. The role of state-level policies matters in online charter education. The state-level policy changes included in the study did have significant relationships with the academic growth of online charter students. With the data included in this analysis, it was not possible to tease out which aspects of the particular policy changes led to the changes in academic growth. This is a critical area for future study.

Being an online school matters more than being a charter school. Finally, the major impacts of attending an online charter school appear to be primarily driven by the online aspect of the schools.

Analyses comparing online charter school students to brick-and-mortar charter students produced results which were nearly identical to the results derived from comparisons of online charter students and TPS students. If the charter aspect of online charter schools or an interaction between the charter and online aspects were the driving factors of online charter school growth, we would have expected to find different results between the brick-and-mortar charter analysis and the TPS analysis. We did not.

Implications

Finding the best means to educate every student will require society to think beyond the bounds of traditional schools. Online schools are a relatively new and rapidly expanding method of providing an alternative to traditional schools. The findings presented in this report establish a starting point for discussing the future implications of attending online charter schools.

1. Current online charter schools may be a good fit for some students, but the evidence suggests that online charters don't serve very well the relatively atypical set of students that currently attend these schools, much less the general population. Academic benefits from online charter schools are currently the exception rather than the rule. Online charter schools provide a maximum of flexibility for students with schedules which do not fit the TPS setting. This can be a benefit or a liability as flexibility requires discipline and maturity to maintain high standards. Not all families may be equipped to provide the direction needed for online schooling. Online charter schools should ensure their programs are a good fit for their potential students' particular needs.

2. Current oversight policies in place may not be sufficient for online charter schools. There is evidence that some online charter schools have been able to produce consistent academic benefits for students, but most online charter schools have not. The charter bargain has been "Flexibility for Accountability" and all charter schools must be held to that concept. Authorizers must step up to their responsibilities and demand online charter providers improve outcomes for students. Authorizers should hold a firm line with those schools which cannot meet their end of the charter bargain.

3. States should examine the current progress of existing online programs before allowing expansion. Online schools have the potential to serve large numbers of students with practically no physical restraints on their expansion. As such, mechanisms which have typically played a role in regulating the growth of brick-and-mortar schools such as facility construction and limited potential student pools do not exert pressure on online schools. Without these natural constraints, online schools have the potential to expand more rapidly than traditional schools. This makes it critical for authorizers to ensure online charter schools demonstrate positive outcomes for students before being allowed to grow and that online charter schools grow at a pace which continues to lead to improved outcomes for their students.

Appendix A: DESCRIPTIVE PROFILE OF ONLINE CHARTER STUDENTS

Table 33 shows the number of students from each state by year included in the study sample. This count represents tested students with at least two years of data who were enrolled fulltime in the identified, wholly online charter schools. As can be seen in Table 33, there was a wide variation in online charter enrollment across the states. Additionally, some states have stable enrollment patterns while others have rapidly increasing enrollment numbers. In some states, the online charter enrollment rate increased ten-fold over the course of three years. The rate at which online charter enrollment is increasing in some states provided emphasis on the need and timeliness of this study.

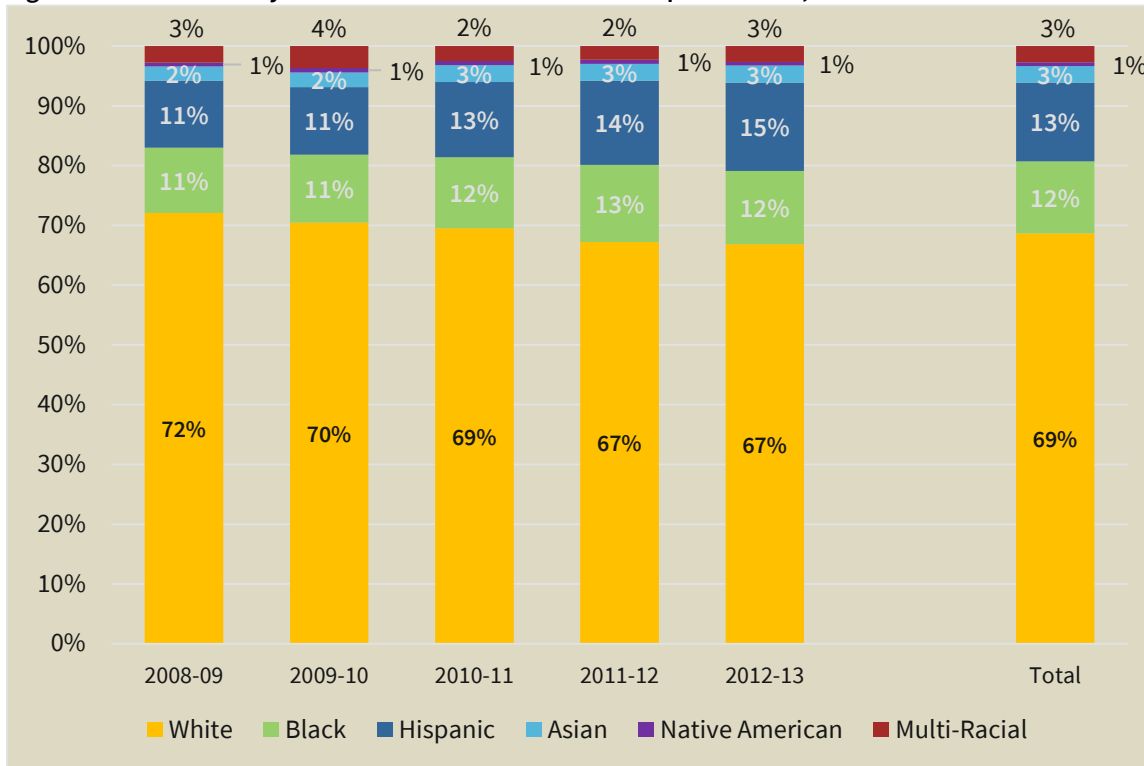
Table 33: Number of Matched Online Charter Students by State and Year, Math

State	2009-10	2010-11	2011-12	2012-13	Total
AR	232	236	235	228	1,166
AZ	3,201	3,240	4,166	4,303	17,118
CA	6,260	7,769	9,519	9,845	38,400
CO	1,456	2,935	3,961	4,043	14,920
DC	14	33	29	27	117
FL	6	6	25	68	107
GA	2,299	2,975	4,676	4,012	15,436
IL	337	389	439	493	1,658
IN	50	191	1,067	1,941	3,269
LA	0	0	467	927	1,394
MI	119	253	466	605	1,552
MN	395	455	477	292	1,905
NV	1,840	2,912	2,743	3,334	11,655
OH	5,309	6,245	6,012	6,582	27,772
OR	1,515	1,600	1,857	1,997	7,887
PA	6,784	7,704	9,011	9,935	39,540
TX	364	802	3,492	5,603	10,269
UT	488	903	1,108	967	3,596
WI	336	439	682	‡	1,466
Total	31,005	39,087	50,432	55,202	199,227

‡2012-13 data was not available for Wisconsin.

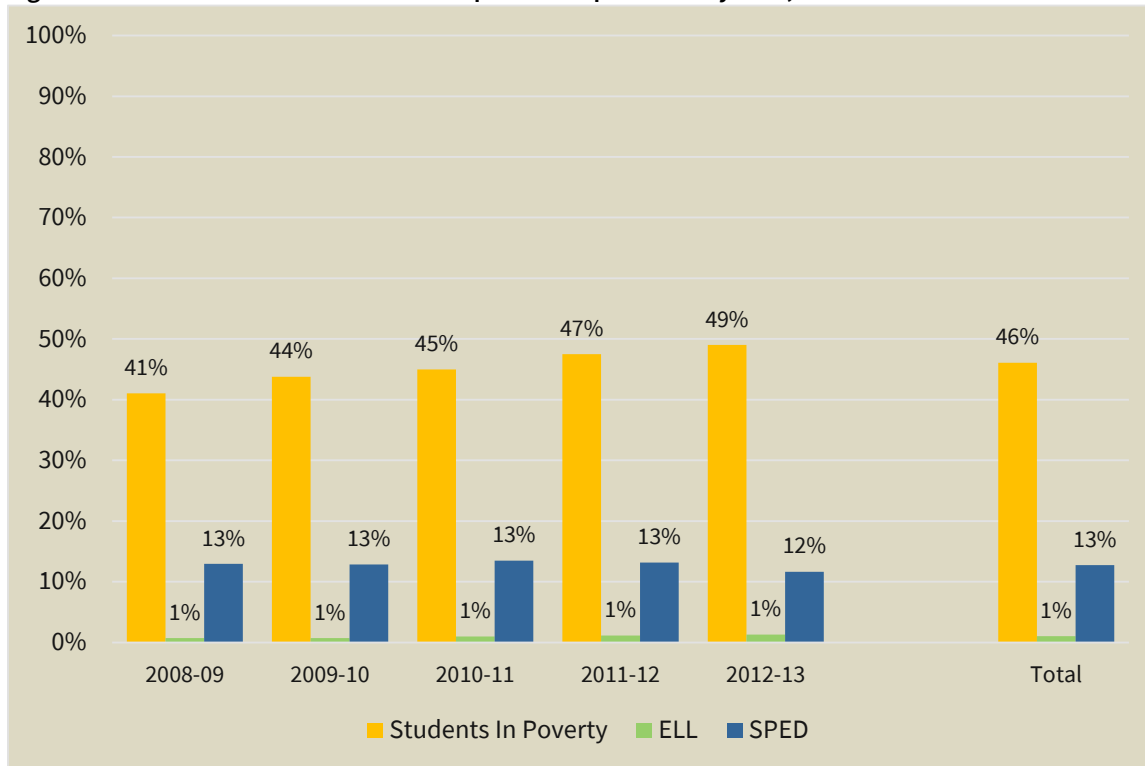
The demographics of the matched sample are similar to the rates shown in Table 2. Figure 18 shows the race-ethnicity of the students in the brick-district VCR matched sample. The matched sample was made up predominantly by White students. One-in-four students in the matched sample were Black or Hispanic with Asian, Native American, Multi-Racial students making up the remainder of the sample. While the online charter demographics differ from those of both brick-and-mortar district and charter schools, they are similar to the demographics of online schools operated by districts.

Figure 18: Race-Ethnicity of Brick-District VCR Matched Sample Data Set, Math



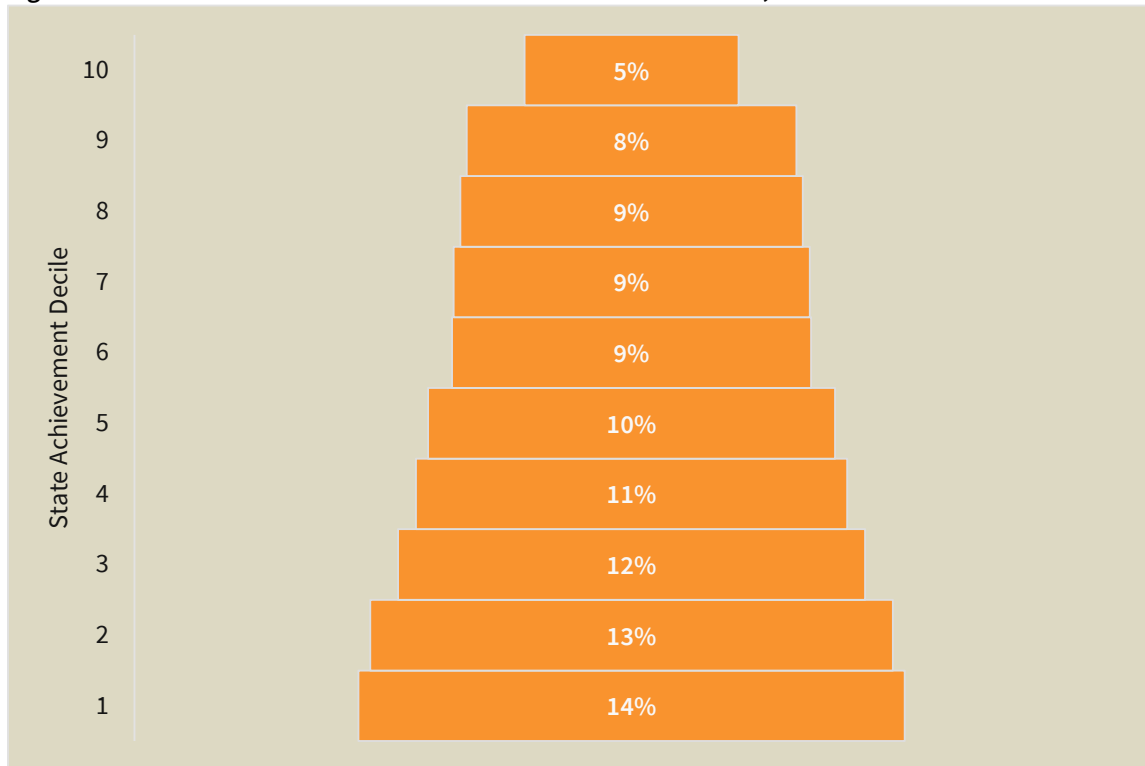
As shown in Table 2 in the main body of the report, the percentage of students in poverty attending online charter schools is lower than that of the feeder schools, but higher than the entire brick-district sector in the studied states. Based on Figure 19, the percentage of students in poverty enrolled in online charter schools has increased over the time of the study. The percentages of ELL students and special education students are steady across the years. As noted previously, the percentage of ELL students enrolled in online schools is much lower than in brick-and-mortar schools. This was true regardless of whether the online school was a district-run or a charter run school.

Figure 19: Brick-District VCR Matched Sample Sub-Populations by Year, Math



The students in online charter schools were more likely to come from the lower deciles of academic achievement than the TPS students. In Figure 20, the width of the block in the beehive graph represents the percentage of students from each decile of achievement on their state’s proficiency exam in the year before the student enrolled in an online charter school. An equal distribution of students across all deciles would produce a cylinder shape in which every band is the same width. The difference in the width of the top and bottom bands indicates higher enrollment of lower achieving students in online charter schools. Fourteen percent of online charter students were in the first (lowest) decile; whereas, only five percent of online charter students were in the highest decile.

Figure 20: Pre-Online Achievement Decile of Online Charter Students, Math



While there are some differences in the populations attending TPS, the TPS which lost students to online charter schools, and online charter schools, the sample used in our analysis uses pairs of students who are matched on observable characteristics which are known to have an impact on educational growth and achievement. The matched groups are identical or near-identical on all the match criteria shown in Figure 1. Due to the high match rate (96%), we can be confident that the sample of matched students is highly representative of the full population of online charter students in the study states. By using test scores from before enrolling in online schools for our online students in addition to the other demographic factors, our matching process has included a proxy for the sum impact of the all the factors, observable and unobservable, which impact the students' educational outcomes. The prior test score represents the sum educational progress of the student before entering an online charter school; thus students who are identical in observable characteristics and have the same prior test score likely have unobservable student characteristics with the same total impact on achievement for the student and their twin at the time the students were matched. This holds true even if those unobservable characteristics are not necessarily identical between the student and their twin. The identical prior test score then functions as a proxy for the unobservable characteristics of the student. This supports the matched data set as a strong and proper counterfactual for the online charter students.

Appendix B: TECHNICAL APPENDIX

After constructing a VCR for each charter student, we then set out to develop a model capable of providing a fair measure of charter impact. The National Charter School Research Project provided a very useful guide to begin the process¹⁸. First, it was useful to consider student growth rather than achievement. A growth measure provided a strong method to control for each student’s educational history as well as the many observable differences between students that affect their academic achievement. The baseline model included controls for each student’s grade, race, gender, free or reduced price lunch status, special education status, English language learner status, and whether they were held back the previous year. The literature on measuring educational interventions¹⁹ found that the best estimation techniques must also include controls for baseline test scores. Each student’s prior year test score is controlled for in our baseline model. Additional controls are also included for state, year, and period (1st year in charter, 2nd year in charter, etc.). The study’s baseline model is presented below.

$$\Delta A_{i,t} = \theta A_{i,t-1} + \beta X_{i,t} + \rho Y_t + \sigma S + \gamma C_{i,t} + \varepsilon_{i,t} \quad (1)$$

where the dependent variable is

$$\Delta A_{i,t} = A_{i,t} - A_{i,t-1} \quad (2)$$

And A_{it} is the state-by-test z-score for student i in period t ; A_{it-1} is the state-by-test z-score for student i in period $t - 1$; $X_{i,t}$ is a set of control variables for student characteristics and period, Y_t is a year fixed effect, S is a state fixed effect; C is an indicator variable for whether student i attended an online charter in period t ; and ε is the error term. Errors are clustered around charters schools and their feeder patterns as well.

In addition to the baseline model above, we explored additional interactions beyond a simple binary to indicate online charter enrollment. These included both “double” and “triple” interactions between the charter variable and student characteristics. For example, to identify the impact of charter schools on different racial groups, we estimate models that break the online charter variable into “online charter_black,” “online charter_hispanic,” etc. To further break down the impact of online charters by race and poverty, the variables above were split again. For example, black students in charter schools are

¹⁸ Betts, J. and Hill, P. et al. (2006). “Key Issues in Studying Charter Schools and Achievement: A Review and Suggestions for National Guidelines.” National Charter School Research Project White Paper Series, No. 2.

¹⁹ Betts, J. and Tang, Y. (2011) “The Effect of Charter Schools on Student Achievement: A Meta-Analysis of the Literature.” National Charter School Research Project.

split further into students that qualify for free and reduced price lunches (“charter_black_poverty”) and those that do not (“charter_black_nonpoverty”).

As part of the study, we conducted additional analyses using alternative model specifications. The purpose of using additional specifications is to ensure the robustness of the results, i.e. ensure the findings were not an artifact of the analytic model chosen. The alternative specifications for this study included completing the analyses using a data set made with VCRs from brick-and-mortar charter school students, conducting two different ordinary least squares (OLS) models on achievement rather than growth using a multi-year panel of student data for all students with test scores in the states included in the study, and a set of OLS comparisons intended to explore how choice related bias might impact the report findings. The model for the OLS comparison (see model 3 below) was similar to model 1 with the exception that the dependent variable was growth. The results of these analyses are included later in this appendix.

$$A_{i,t} = \theta A_{i,t-1} + \beta X_{i,t} + \rho Y_t + \sigma S + \gamma C_{i,t} + \varepsilon_{i,t} \quad (3)$$

We also examined the relationship between student records and responses to the survey administered to school leaders. We assigned the schools’ responses from the survey to the records of students who attended those online schools. We then dropped all students who attended schools which did not have a survey response. This analysis used a model which was a slight variation on model 1 above.

$$\Delta A_{i,t} = \theta A_{i,t-1} + \beta X_{i,t} + \rho Y_t + \sigma S + \eta Q_s + \varepsilon_{i,t} \quad (4)$$

Where Q_s represents the array of responses on the survey for a given online charter school. The other variables were identical to those in model 1 above. The errors were still clustered around charter schools.

Empirical Bayesian Shrinkage

Tables 13 and 14 in the main body of the report include marginal and full estimates of growth by network for students who attended an online charter school which was part of a charter network. One of the reviewers suggested we might need to conduct empirical Bayesian shrinkage to adjust the estimates due to the differences in the number of students included in each group. We computed the estimated coefficients applying empirical Bayesian shrinkage and found the adjusted estimates were similar to the unadjusted estimates. None of the estimates changed the level of significance or changed by a noticeable amount. Table 34 includes the results for both original estimates and the adjusted estimates of network marginal growth relative to non-network online charter schools. The values in Table 34 are comparable to those in Table 13.

Table 34: Empirical Bayesian Shrinkage of Effect Sizes by Network Compared to Independent Online Charter Schools, Reading and Math

	Reading	Reading with EB Shrinkage	Math	Math with EB Shrinkage
Network 1	0.16**	0.13**	0.06	0.06
Network 2	0.08**	0.08**	0.26**	0.26**
Network 3	0.08**	0.07**	0.05	0.04
Network 4	0.04**	0.04**	0.08**	0.07**
Network 5	0.03	0.03	0.19**	0.18**
Network 6	0.03	0.03	0.02	0.02
Network 7	0.00	0.00	0.07	0.06
Network 8	-0.02	-0.02	-0.03	-0.03
Network 9	-0.02	-0.02	0.02	0.02
Network 10	-0.04	-0.04	-0.05**	-0.05**
Network 11	-0.05*	-0.05*	-0.04	-0.03
Network 12	-0.05**	-0.05**	0.03	0.03
Network 13	-0.06	-0.05	-0.04	-0.03
Network 14	-0.06**	-0.06**	-0.01	-0.01
Network 15	-0.07**	-0.07**	-0.07**	-0.07**
Network 16	-0.08**	-0.08**	0.05**	0.05**
Network 17	-0.09**	-0.08**	-0.10**	-0.09**
Network 18	-0.12**	-0.12**	-0.13**	-0.12**
Network 19	-0.17**	-0.16**	-0.26**	-0.25**
Network 20	-0.19**	-0.18**	-0.27**	-0.26**
Network 21	-0.25**	-0.24**	-0.15**	-0.15**

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Alternative Specifications

Brick-and-Mortar Charter School VCR

This section contains information from the statistical models which compared the matched VCRs made up of brick-and-mortar charter schools to online charter students. Table 35 includes the demographic descriptive output for the brick-and-mortar charter school VCR data set.

Table 35: Student Population Demographics by Charter Sector

	All Charters	Charter Feeder Schools	Online Charter Schools
Number of Schools	5,534	906	166
Percent Students in Poverty	51%	49%	48%
Percent English Language Learner Students	9%	7%	1%
Percent Special Education Students	9%	9%	11%
Percent White	33%	42%	69%
Percent Black	30%	21%	13%
Percent Hispanic	29%	27%	11%
Percent Asian/Pacific Islander	4%	4%	2%
Percent Native American	1%	1%	1%
Percent Multi-Racial	3%	3%	4%
Average Total Enrollment per School	344	525	986
Total Enrollment	1,901,109	476,044	163,722

Table 36 includes the effect sizes for attending online charter schools for various subpopulations. The results while slightly different were similar enough to those found in the comparisons between TPS VCRs and online charter students to not merit repeating in the main body of the report. The marginal results are provided here for those with an interest in the results from this second control group.

Table 36: Effect Size by Subpopulations for Online Charter vs. Brick-Charter, Reading and Math

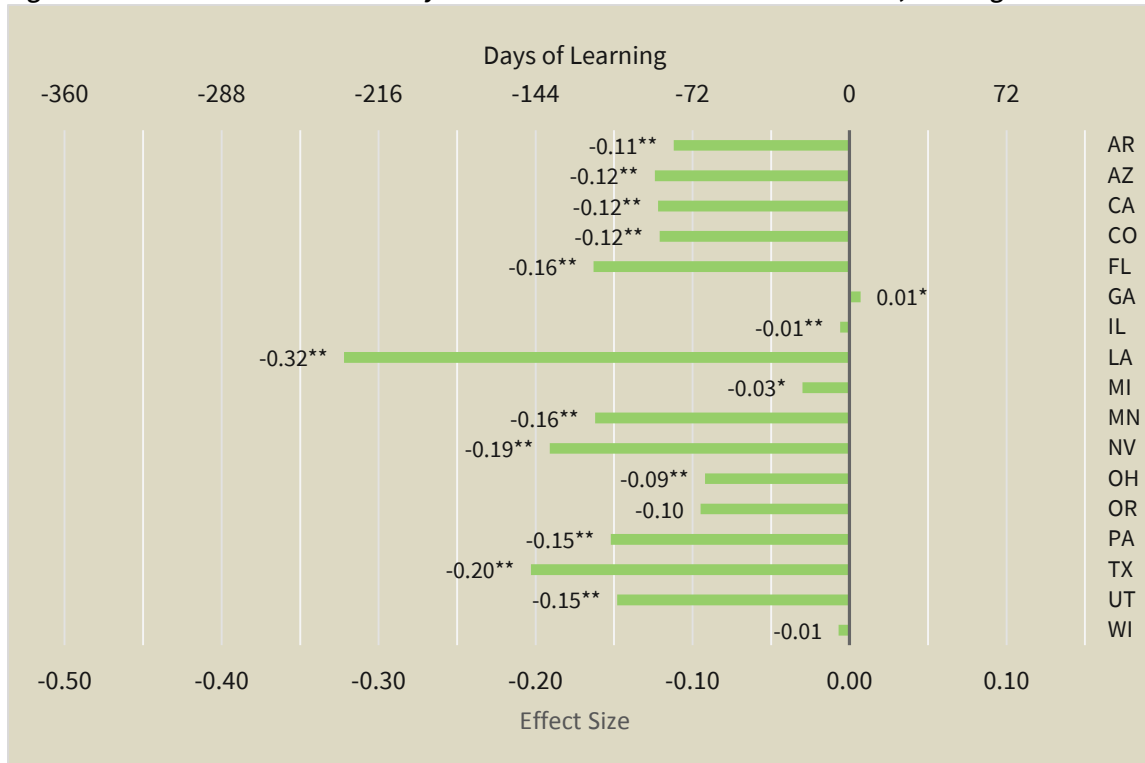
	Reading	Standard Error	Math	Standard Error
Overall	-0.12**	0.01	-0.25**	0.01
White	-0.12**	0.01	-0.23**	0.01
Black	-0.08**	0.03	-0.23**	0.02
Hispanic	-0.13**	0.01	-0.28**	0.02
Asian	-0.08**	0.01	-0.23**	0.02
Native American	-0.07	0.05	-0.32**	0.04

The effects in this table represent the difference between a student of a specific race in TPS and a student of the same race in an online charter.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Figures 21 and 22 contain the effect sizes by state from attending an online charter school for reading and math respectively. Comparing Figures 5 and 21 for reading and Figure 6 with Figure 22 for math shows there is some variation in state effect sizes between the two VCR groups, but in general the effect sizes by state for the TPS VCR comparison in the main body and the effect sizes by state for the brick-and-mortar VCR analysis are of the same direction and a similar magnitude. The similarity in results indicates the online nature of the online charter schools is a much stronger driver of their effectiveness than the charter nature. If the charter aspect had a stronger influence, the effect sizes between online charters and brick-and-mortar charter VCRs would differ more from the effect sizes between online charters and TPS VCRs.

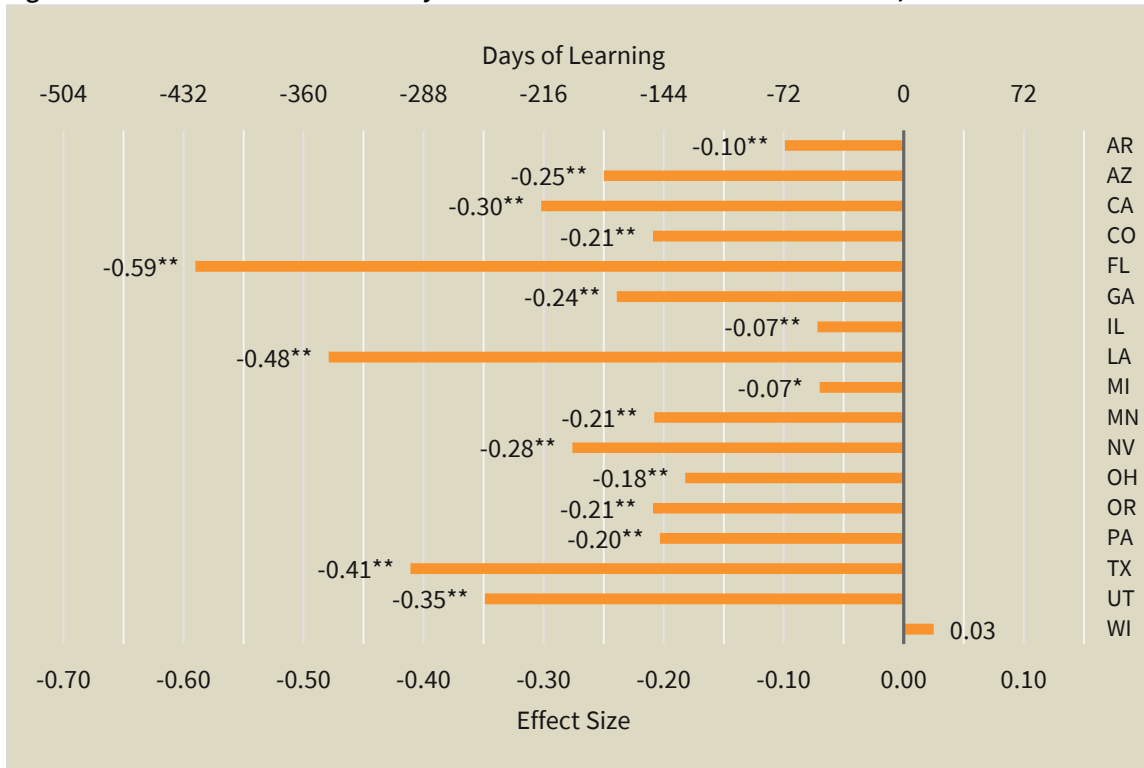
Figure 21: Online Charter Effect Size by State for Online Charter vs. Brick-Charter, Reading



The 0.00 line for this graph represents the average Brick-and-Mortar Charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Figure 22: Online Charter Effect Size by State for Online Charter vs. Brick-Charter, Math



The 0.00 line for this graph represents the average Brick-and-Mortar Charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Generalized OLS Model on Multi-Year Panel Data

For the panel data OLS analysis, we used achievement as the dependent variable. This was done to ensure the findings were not directly related using a growth measure.²⁰ Partial outputs from the OLS regressions are shown in Table 37. The values for state-level and grade-level controls are not included for the sake of space. In reading, attending an online charter school had a significant negative effect size of -0.135, equivalent to 97 days less learning. In math, the effect size for online charter attendance was -0.347, equivalent to 250 days less learning. Growth for students attending an online charter school were significantly weaker than that of brick-and-mortar charter students. These findings support those presented in the main body of this report.

²⁰ The growth measure used was $z_{\text{subj}t1} - z_{\text{subj}t0}$, where z_{subj} was the student's achievement in a given year.

Table 37: Panel Data Unrestricted OLS Regression Output, Reading and Math

	Standard		Standard	
	Reading	Error	Math	Error
z_orig_subj	0.610**	0.000	0.620**	0.000
z_orig_other_subj	0.105**	0.000	0.089**	0.000
charter_brick	0.009**	0.000	-0.011**	0.000
onlinecharter	-0.135**	0.002	-0.347**	0.002
female	0.067**	0.000	-0.024**	0.000
lunch	-0.132**	0.000	-0.128**	0.000
ELL	-0.330**	0.000	-0.149**	0.000
SPED	-0.517**	0.001	-0.488**	0.001
retained	0.053**	0.000	-0.104**	0.000
re_black	-0.150**	0.000	-0.177**	0.000
re_hisp	-0.057**	0.000	-0.052**	0.000
re_asianpi	0.069**	0.000	0.152**	0.000
re_nativam	-0.100**	0.001	-0.097**	0.001
re_multi	-0.015**	0.001	-0.026**	0.001
year_2009	0.012**	0.000	0.016**	0.000
year_2010	0.008**	0.000	0.009**	0.000
year_2011	0.017**	0.000	0.022**	0.000
_cons	0.129**	0.001	0.152**	0.001
Obs	55281185		54030479	
R-Sqr	0.608		0.589	

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Restricted OLS Model on Multi-Year Panel Data

We also analyzed an additional OLS model with a restricted data set. The restrictions to the data set removed all students who did not have a pre-online school observation (they were in an online charter during their first year in the data set) and limited the analysis to the first year in an online charter school. These restrictions allowed us to isolate the specific impact of going to an online charter school, ensuring that estimated effects were not biased by treatment occurring in prior years. This method has been shown to successfully replicate “gold-standard” experimental impact estimates.²¹ Table 38 includes the regression results for this analysis. The results of the restricted analysis showed a stronger negative trend than did the unrestricted OLS analysis. Students who attended an online charter analysis had significantly weaker growth in both reading with an effect size of -0.239, equivalent to 172 days less learning and in math with an effect size of -0.445, equivalent to 320 days less learning.

²¹ Gill, B., Furgeson, J., Chiang, H., Teh, B., Haimson, J., and Verbitsky-Savitz, N. “Replicating Experimental Impact Estimates in the Context of Control-Group Noncompliance.” Statistics and Public Policy, forthcoming.

To examine if the declining achievement for online students was in fact just a continuation of previously declining achievement, we computed the pre-online charter growth trend for the students who would eventually change to an online school. In the year before they entered an online charter school, the future online students had negative academic growth. The change in reading achievement for this group in the year before they entered an online charter school was -0.06 in reading, equivalent to 43 less days of learning, and -0.08 in math, equivalent to 58 days of learning. The conclusion of these analyses was that while it was true students who eventually transferred to online charter schools had negative growth in TSP before transferring, the steep decline in their growth after transferring to an online charter school indicated that the circumstances which lead to pre-online charter trajectory were not likely to be the source of the students' lowered academic achievement found while attending an online charter school.

Table 38: Panel Data Restricted OLS Regression Output, Reading and Math²²

	Standard		Standard	
	Reading	Error	Math	Error
z_orig_subj	0.599**	0.000	0.610**	0.000
z_orig_other_subj	0.188**	0.000	0.172**	0.000
charter_brick	0.028**	0.000	0.000	0.000
onlinecharter	-0.239**	0.003	-0.445**	0.003
female	0.081**	0.000	-0.035**	0.000
lunch	-0.114**	0.000	-0.096**	0.000
ell	-0.273**	0.000	-0.080**	0.000
sped	-0.265**	0.000	-0.235**	0.000
retained	0.123**	0.002	0.137**	0.002
re_black	-0.116**	0.000	-0.135**	0.000
re_hisp	-0.059**	0.000	-0.046**	0.000
re_asianpi	0.048**	0.000	0.132**	0.000
re_nativam	-0.101**	0.001	-0.095**	0.001
re_multi	-0.012**	0.001	-0.022**	0.001
year_2009	0.001**	0.000	0.012**	0.000
year_2010	-0.006**	0.000	0.001*	0.000
year_2011	0.009**	0.000	0.014**	0.000
_cons	0.082**	0.001	0.080**	0.001
Obs	39526810		38278136	
R-Sqr	0.649		0.605	

The 0.00 value for this table represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

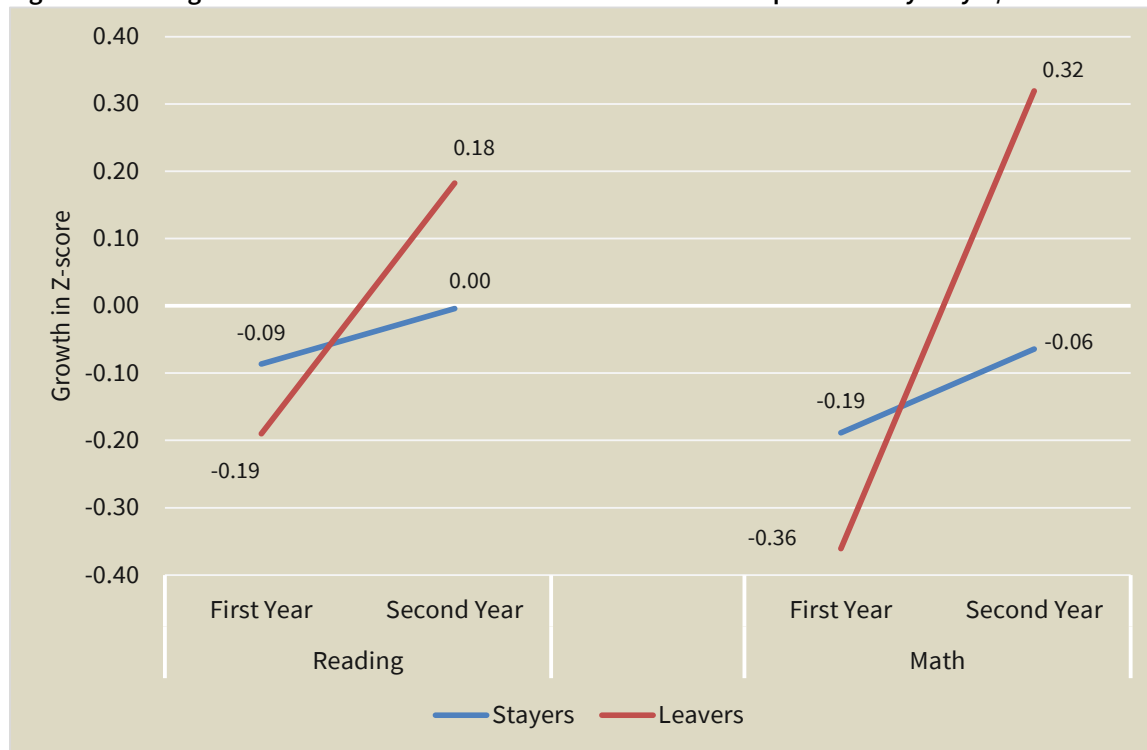
²² Due to data access limitations, Table 30 did not include data for TX or IL; whereas, Table 29 did. We verified the unrestricted panel data coefficients were the same in models with and without TX and IL included.

Online Charter School Choice Analysis

We next explored deeper the impact of enrollment selection using two “chooser-matched” models which included only those students who attended online charter schools. Both of these models included achievement as the dependent variable and included controls for the student demographic characteristics as well as state specific dummy variables to control for mean differences between states.

In the first model, we kept the records for only the students’ first year in an online charter school and the year after the first year in an online charter school regardless if the second year was in an online charter or not. Figure 23 shows that online charter school students had negative growth.²³ Students who would eventually end up staying in an online charter for only one year, leavers, had weaker first-year growth in online charters than those students who would stay at least two years in an online charter school, stayers. Both leavers and stayers had stronger growth in their second year than in their first year in an online charter school; however, the growth in the second year was significantly smaller for those students who spent their second year in an online school, stayers, compared to those students who returned to a TPS in their second year, leavers.

Figure 23: Average Growth for First Year in Online Charter and Subsequent Year by Stayer/Leaver Status



The 0.00 line for this figure represents the average Online Charter Ever-Attending student.

²³ Growth = $A_{i,t} - A_{i,t-1}$

We conducted regressions for both reading and math using the same data set as used for the above graph. We included a variable which indicated if the student remained in an online charter school in the second year or returned to a TPS school. The students who stayed in an online charter school for the second year were represented by the coefficient stayer. Those who returned to TPS were represented by the coefficient leaver. The stayer coefficient is the marginal difference between the students who remained in online charter schools for the second year and the students who returned to a TPS school, leavers. The average change in achievement for the leavers is represented by the coefficient leaver. In reading, the students who left online charter schools after one year had second year growth of 0.33 standard deviations (the equivalent to 238 days of additional learning). The average growth of students who remained in online charter schools lagged behind that of those who left by -0.16 standard deviations (the equivalent of 115 days less learning).

Table 39: Continuing Online Charter Enrollees Compared to One Year Enrollees – Marginal Results, Reading

	Coefficient	se
z_orig_read	0.64**	0.003
z_orig_math	0.18**	0.003
stayer marginal to leaver	-0.16**	0.006
leaver	0.33**	0.006
female	0.09**	0.004
lunch	-0.08**	0.004
ell	-0.15**	0.018
sped	-0.18**	0.008
retained	0.19**	0.012
re_black	-0.06**	0.006
re_hisp	-0.05**	0.006
re_asianpi	0.05**	0.010
re_nativam	-0.07**	0.020
re_multi	0.00	0.011
year_2009	-0.09**	0.006
year_2010	-0.13**	0.006
year_2011	-0.13**	0.008
_cons	0.01	0.011
Obs	107106	
R-Sqr	0.654	

The 0.00 value for this table represents the average Online Charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

In math, the differences between stayers and leavers was even larger. The students who left online charter schools to return to a TPS school had second year growth of 0.55 standard deviations (equivalent to 396 days of learning). Those who remained in online charter schools had growth which was on average -0.39 standard deviations (equivalent to 281 days of learning) less than the students who left online charter schools. The direction and magnitude of the coefficients from this analysis were consistent with those of the other analyses conducted.

Table 40: Continuing Online Charter Enrollees Compared to One Year Enrollees – Marginal Results, Math

	Coefficient	se
z_orig_math	0.60**	0.003
z_orig_read	0.20**	0.003
stayer marginal to leaver	-0.39**	0.006
leaver	0.55**	0.007
Female	-0.06**	0.004
lunch	-0.09**	0.004
ell	0.018	0.017
sped	-0.12**	0.007
retained	0.13**	0.011
re_black	-0.09**	0.006
re_hisp	-0.05**	0.006
re_asianpi	0.12**	0.012
re_nativam	-0.08**	0.019
re_multi	-0.013	0.012
year_2009	-0.08**	0.006
year_2010	-0.15**	0.006
year_2011	-0.11**	0.008
_cons	-0.15**	0.011
Obs	103136	
R-Sqr	0.631	

The 0.00 value for this table represents the average Online Charter, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

The last analysis we conducted was the future online charter choosers analysis. For this analysis, we kept only students who would eventually attend an online charter school but who attended a TPS during their first year in the data set. We then kept their first year in the data set and their first year in an online charter school. We created a variable to indicate their enrollment in an online charter school. The model included student achievement as the dependent variable and student demographic characteristics as

independent variables.²⁴ The regression results in Table 41 show attending an online charter school had a significant negative impact on reading achievement, -0.17 standard deviations (122 days). Likewise the impact on math achievement of attending an online charter school (see Table 42) was -0.34 standard deviations (245 days) compared to the students' first year in the data set.

Table 41: Future Online Charter Choosers, Reading

	Coefficient	se
z_orig_read	0.65**	0.003
z_orig_math	0.17**	0.003
read_missing	-0.22**	0.052
onlinecharter	-0.17**	0.009
female	0.09**	0.004
lunch	-0.07**	0.004
ell	-0.14**	0.016
sped	-0.20**	0.008
retained	0.07**	0.008
re_black	-0.06**	0.006
re_hisp	-0.03**	0.005
re_asianpi	0.06**	0.009
re_nativam	-0.03	0.017
re_multi	0.03*	0.011
year_2009	0.02**	0.008
year_2010	0.03**	0.009
year_2011	0.08**	0.010
_cons	-0.02	0.010
Obs	120376	
R-Sqr	0.622	

The 0.00 value for this table represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

²⁴ State dummy variables and grade-level dummy variables were included in the model, but are not shown in the results table to conserve space.

Table 42: Future Online Charter Choosers, Math

	Coefficient	se
z_orig_math	0.61**	0.003
z_orig_read	0.17**	0.003
math_missing	-2.12**	0.176
onlinecharter	-0.34**	0.009
female	-0.04**	0.004
lunch	-0.07**	0.004
ell	-0.03	0.016
sped	-0.17**	0.008
retained	0.02**	0.007
re_black	-0.09**	0.006
re_hisp	-0.04**	0.005
re_asianpi	0.13**	0.011
re_nativam	-0.06**	0.017
re_multi	0.01	0.011
year_2009	0.01	0.008
year_2010	-0.00	0.009
year_2011	0.07**	0.010
_cons	-0.06**	0.010
Obs	118157	
R-Sqr	0.612	

The 0.00 value for this table represents the average TPS VCR, White, non-poverty, non-ELL, non-SPED student.

* Denotes significant at the .05 level. ** Denotes significant at the .01 level.

Appendix C: CORRELATES OF SCHOOL-LEVEL EFFECTS WITH SURVEY RESPONSES

Appendix C contains correlations between school-level effect sizes and the responses to the survey of online charter school practices conducted by Mathematica. Correlations could not be computed for survey items with inadequate variation of responses. For example, if all the responses to a binary question (yes/no) were the same, a correlation cannot be computed. Items for which a correlation could not be computed are marked with a dash “-“.

Table 43 includes the correlations and p-values for each item with sufficient variation. Those values which are significant at the .05 level are marked with a “*”. Due to the high number of correlations computed, it is likely at least some (5%) will be significant by chance. Based on the statistical principles used in this study, we expect 12 of the significant results in each subject to be the result of chance. To aid the reader in interpreting the results, we have included the p-value for each correlation. A lay explanation of the p-value is that the p-value represents the likelihood a correlation is the result of chance. The lower the p-value; the lower the likelihood that the result is due to chance. The traditional threshold for determining significance is a p-value of .05 or less. Correlations with large p-values should be considered to be due to chance regardless of the strength of the correlation.

The column Response Type in Table 43 provides information on the type of response possible on the survey. The description ‘binary’ means the value of “1” was entered in the field if the practice in the survey question existed at the school and “0” if it did not. This means a positive correlation indicates that the presence of the practice described was related to stronger growth than the average online charter school while a negative correlation indicates the presence of the practice was related to weaker growth. The description ‘ascending’ means the value was dosage-based and coded with a higher number if the condition occurred more frequently. Thus a positive correlation means more of the practice is related to stronger growth. Finally, the description ‘descending’ means the value was dosage-based and coded with a lower number if the practice occurred more frequently. For a descending item, a positive correlation would indicate having less of the practice present in the school is associated with stronger growth. Readers are advised to pay attention to the Response Type as it will have an impact on the interpretation of the results.

For dosage based variables, the correlations were produced using standard Pearson correlations. Correlations between binary variables and school-level effects were computed using a point bi-serial model which produces correlations between a binary and continuous variable equivalent to Pearson correlation.

Table 43: Correlations of School-Level Effects with Survey Responses, Math and Reading

	Coeffi	p-	Coeffi	p-	Response
	cient	value	cient	value	Type
		Sig		Sig	
Does your school’s program enable students to earn course credits by demonstrating mastery, regardless of “seat time”?					
No, students in all courses must meet seat time requirements	0.12	0.3811	-0.03	0.8143	Binary
Yes, students in <u>any</u> course can earn course credit by demonstrating mastery	0.04	0.7478	0.04	0.7504	Binary
Students in <u>selected</u> courses, subjects, or grades can earn course credit through demonstration of mastery	-0.35	0.0056	*	0.0098	*
Does your school’s program include courses that are <u>entirely self-paced</u>?	0.00	0.9830	-0.12	0.4232	Binary
What percent of your courses are <u>entirely self-paced</u>?	-0.05	0.7699	-0.10	0.5871	Ascending
In <u>total</u>, how much time is spent in synchronous instruction, <u>each week</u>, for an average student in the fourth grade?	0.10	0.5759	0.37	0.0308	*
How many students are involved in a typical fourth-grade <u>math</u> section?	0.37	0.1122	0.07	0.7554	Ascending
How many students are involved in a typical fourth-grade <u>English / Language Arts</u> section?	0.37	0.1122	0.07	0.7554	Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
In an average week, does a typical student in fourth grade spend any time in <u>one-on-one interaction</u> with a <u>teacher or tutor</u> (via chat, phone, tutoring, etc.)?	-0.19	0.3034		-0.30	0.1061		Binary
How much time, on average, does a typical student in fourth grade spend in <u>one-on-one interaction</u> with a <u>teacher or tutor</u> (via chat, phone, tutoring, etc.) per week?	-0.07	0.7214		-0.17	0.4157		Ascending
Who provides one-on-one instructional support to students in fourth grade?							
Teacher of record for the course	0.25	0.2392		0.03	0.8863		Binary
Tutor/Coach	-0.45	0.0255	*	-0.11	0.6152		Binary
[Removed]							Binary
Other instructional staff, not listed above - Specify:	-	-		-	-		Binary
Other teacher	-	-		-	-		Binary
Special education faculty	0.53	0.0076	*	0.41	0.0478	*	Binary
Parent	-	-		-	-		Binary
How frequently are the following instructional method(s) used in fourth grade?							
Lecture	-0.12	0.5693		0.16	0.4331		Descending
Teacher-guided synchronous discussion	-0.33	0.1128		-0.25	0.2294		Descending
Collaborative learning involving two or more students working together	0.07	0.7302		-0.27	0.1895		Descending
Individualized, student-driven independent study	-0.29	0.1611		-0.33	0.1060		Descending
What role, if any, is a <u>parent or guardian</u> expected to play to support the educational program of a student in the <u>fourth grade</u>?							
Make sure the student keeps up with assignments	-	-		-	-		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Actively participate in the student's instruction	-0.42	0.0376	*	0.29	0.1593		Binary
Participate in parent training sessions	0.06	0.7698		0.03	0.9054		Binary
Verify seat time	-0.02	0.9197		0.21	0.3047		Binary
Other role, not listed above - Specify:	-	-		-	-		Binary
In total, how much time is spent in synchronous instruction, each week, for an average student in the seventh grade?	-0.02	0.8937		0.10	0.5566		Ascending
How many students are involved in a typical seventh-grade <u>math</u> section?	0.26	0.2591		0.03	0.8993		Ascending
How many students are involved in a typical seventh-grade <u>English / Language Arts</u> section?	0.27	0.2393		0.03	0.8936		Ascending
In an average week, does a typical student in seventh grade spend any time in <u>one-on-one</u> interaction with a <u>teacher or tutor</u> (via chat, phone, tutoring, etc.)?	-0.23	0.1697		-0.28	0.0834		Binary
In an average week, how much time does a typical student in seventh grade spend in one-on-one interaction with a teacher or tutor (via chat, phone, tutoring, etc.) per week?	-	-		-	-		Ascending
Who provides <u>one-on-one</u> instructional support to students in seventh grade?							
Teacher of record for the course	-	-		-	-		Binary
Tutor/Coach	-0.45	0.0177	*	0.20	0.2870		Binary
[Removed]							Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Other instructional staff, not listed above - Specify:	-	-		-	-		Binary
Other teacher	-	-		-	-		Binary
Special education faculty	-	-		-	-		Binary
Parent	-	-		-	-		Binary
How frequently are the following instructional method(s) used in seventh grade?							
Lecture	-0.19	0.3162		-0.10	0.5929		Descending
Teacher-guided synchronous discussion	-0.41	0.0209	*	-0.10	0.5600		Descending
Collaborative learning involving two or more students working together	0.21	0.2550		0.01	0.9564		Descending
Individualized, student- driven independent study	-0.19	0.3093		-0.19	0.2996		Descending
What role, if any, is a parent or guardian expected to play to support the educational program of a student in the seventh grade?							
Make sure the student keeps up with assignments	-	-		-	-		Binary
Actively participate in the student's instruction	-0.27	0.1392		0.24	0.1779		Binary
Participate in a parent training sessions	-0.03	0.8642		-0.22	0.2145		Binary
Verify seat time	-0.10	0.5810		0.14	0.4393		Binary
Other role, not listed above - Specify:	-	-		-	-		Binary
In total, how much time is spent in synchronous instruction, each week, for an average student in high school?	-0.25	0.1350		0.01	0.9715		Ascending
How many students are involved in a typical high school <u>math</u> section?	0.14	0.5604		0.01	0.9552		Ascending
How many students are involved in a typical high school <u>English</u> section?	0.14	0.5592		0.02	0.9470		Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
In an average week, does a typical high school student spend any time in <u>one-on-one</u> interaction with a teacher or tutor (via chat, phone, tutoring, etc.)?	-	-		-	-		Binary
In an average week, how much time does a typical student in high school spend in <u>one-on-one</u> interaction with a teacher or tutor (via chat, phone, tutoring, etc.)?	-	-		-	-		Ascending
Who provides one-on-one instructional support to students in high school?							
Teacher of record for the course	-	-		-	-		Binary
Tutor/Coach removed	-0.52	0.0030	*	0.00	0.9830		Binary
Other instructional staff, not listed above - Specify:	-	-		-	-		Binary
Other teacher	-	-		-	-		Binary
Special education faculty	-	-		-	-		Binary
Parent	-	-		-	-		Binary
How frequently are the following instructional method(s) used in high school?							
Lecture	-0.25	0.1729		-0.08	0.6406		Descending
Teacher-guided synchronous discussion	-0.16	0.3884		-0.07	0.7145		Descending
Collaborative learning involving two or more students working together	0.25	0.1733		-0.03	0.8594		Descending
Individualized, student-driven independent study	-0.34	0.0593		0.01	0.9396		Descending
What role, if any, is a parent or guardian expected to play to support the educational program of a student in high school?							
Make sure the student keeps up with assignments	-	-		-	-		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Actively participate in the student's instruction	-0.21	0.2477		0.24	0.1681		Binary
Participate in parent training sessions	0.01	0.9637		-0.11	0.5422		Binary
Verify seat time	-0.05	0.7852		0.08	0.6621		Binary
Other role, not listed above - Specify:	-	-		-	-		Binary
Where does the school's curriculum content come from? Please select the response below that best applies to the majority of your school's curriculum.							
Purchased from outside provider(s)	-0.15	0.2514		-0.13	0.3277		Binary
Provided by a school management organization that oversees our school	0.16	0.2347		-0.05	0.6897		Binary
Developed in-house and used by all instructors of the relevant courses	-0.09	0.5100		-0.01	0.9579		Binary
Developed in-house by individual course instructors	-0.12	0.0362	*	-0.04	0.7762		Binary
Who monitors teachers' contact with students and parents?							
Contact is not formally monitored	-	-		-	-		Binary
Principal	-0.16	0.2482		-0.07	0.5890		Binary
Other school administrator	-0.01	0.9178		-	-		Binary
Lead mentor/ teacher	0.01	0.9482		-0.03	0.8233		Binary
Other staff, not listed above	-0.08	0.5708		-0.01	0.9672		Binary
Do you have school-wide policies spelling out expectations for students in terms of ...							
Completion of assignments?	-	-		-	-		Binary
Class participation?	0.37	0.0303	*	0.25	0.1384		Binary
Attendance in synchronous instruction?	0.24	0.1577		-0.02	0.9211		Binary
Does your school monitor attendance or student participation in any of the following ways?							
Pace of student's completion of course assignments	-	-		-	-		Binary
Activity in the online system	-0.27	0.0858		-0.38	0.0097	*	Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Seat time involved in synchronous work with a teacher	0.20	0.2004		0.22	0.1423		Binary
Other measure of completion of course work - Specify:	-	-		-	-		Binary
Below is a list of programs and supports schools can offer to students. For each, please indicate whether your school offers this program or support.							
One-on-one tutoring for struggling learners	-	-		-	-		Binary
Supplemental group instruction for struggling learners	-0.12	0.4924		-0.29	0.0903		Binary
Dropout prevention or dropout recovery program	0.10	0.5664		0.01	0.9369		Binary
Study-skills classes	0.08	0.6694		-0.13	0.4671		Binary
Clubs or activities (e.g., literary magazine, cultural activity groups, pep club)	0.14	0.4254		0.12	0.5030		Binary
Mental/behavioral health services	0.07	0.6747		0.03	0.8526		Binary
Music instruction	0.19	0.2931		-	-		Binary
Fine arts instruction	0.16	0.3574		-0.03	0.8439		Binary
Specialized instruction for English-language learners	0.18	0.3123		0.11	0.5316		Binary
Speech and language therapy or services	-	-		-	-		Binary
Talented/gifted program	0.41	0.0156	*	0.27	0.1150		Binary
Other services for students with IEPs	-	-		-	-		Binary
Please indicate whether your school offers any of the following programs or supports to high school students.							
Advanced Placement Courses	0.10	0.5568		-0.17	0.2763		Binary
International Baccalaureate program	-	-		-	-		Binary
Supports for students who have children of their own	-0.09	0.5986		-0.31	0.0462	*	Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
How many students at this school participate in the <u>dropout prevention or dropout recovery program?</u>	0.03	0.8885		-0.19	0.3620		Ascending
How many students at this school participate in <u>Advanced Placement Courses?</u>	0.29	0.1375		-0.08	0.6758		Ascending
How many students at this school participate in the <u>International Baccalaureate program?</u>	-	-		-	-		Ascending
On average, approximately how often do teachers conduct assessments of students in a typical ...							
4 th grade math section	-0.49	0.0197	*	-0.16	0.4728		Descending
4 th grade English / Language Arts section	-0.49	0.0197	*	-0.16	0.4728		Descending
On average, approximately how often do teachers conduct assessments of students in a typical ...							
7 th grade math section	-0.37	0.0547	*	-0.11	0.5809		Descending
7 th grade English / Language Arts section	-0.42	0.0294	*	-0.14	0.4644		Descending
On average, approximately how often do teachers conduct assessments of students in a typical ...							
High school math section	0.03	0.8825		0.10	0.5685		Descending
High school English section	-0.05	0.7862		0.04	0.7400		Descending
Does the school systematically conduct an entry assessment for students who have just enrolled using any of the following measures or methods?							
Academic skills	0.05	0.7860		0.01	0.9332		Binary
English-language skills	0.27	0.1419		0.30	0.0823		Binary
Potential barriers for online learning	0.20	0.2769		0.12	0.5132		Binary
Level of parent or other home supports for online learning	0.27	0.1290		0.33	0.0539	*	Binary
Learning Disabilities	0.11	0.5338		0.34	0.0495	*	Binary
Any disabilities other than learning disabilities	0.11	0.5564		0.12	0.4990		Binary
Pull student's records from previous school(s)	-	-		-	-		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Phone call to household	0.17	0.3412		-0.02	0.9053		Binary
Home visit	-0.23	0.2044		-0.04	0.8268		Binary
Does this school promote student performance on state assessments in any of the following ways?							
Test preparation embedded in regular courses	0.09	0.6025		-0.09	0.5979		Binary
Separate test preparation course required in relevant grades/ subjects	0.25	0.1557		0.17	0.3340		Binary
Intensive, targeted support for students who may have difficulty achieving proficiency standards on state assessments	0.33	0.0583		0.17	0.3268		Binary
How frequently does your school actively send parents information on their child's progress via email, phone, or postal mail?	0.11	0.4843		-0.05	0.7277		Ascending
Does this progress report for parents include a measure of student engagement or participation?	-	-		-	-		Binary
How does your school respond when students are identified as disengaged?							
Email parent	-	-		-	-		Binary
Personal call to parent(s)	-	-		-	-		Binary
Automated call to parent(s)	0.16	0.3054		-0.07	0.6454		Binary
Visit home	-0.03	0.8655		-0.18	0.2433		Binary
Enlist social services	0.10	0.5260		0.09	0.5592		Binary
Offer student incentive to participate	0.03	0.8628		0.00	0.9868		Binary
Other response, not listed above – specify:	0.33	0.0341	*	0.20	0.1887		Binary
Letter mailed to home	0.21	0.1824		0.21	0.1734		Binary
Are any of the following tools used to support asynchronous instruction?							
Email	-	-		-	-		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Physical (paper) textbooks	0.17	0.3425		0.14	0.4357		Binary
Online textbooks	0.04	0.8443		-0.10	0.5846		Binary
Interactive online exercises	-	-		-	-		Binary
Other websites with instructional focus or content	-0.03	0.8888		0.19	0.2815		Binary
Recordings of lectures	0.06	0.7528		-0.14	0.4373		Binary
Discussion forums or threaded discussion groups	-0.23	0.1970		-0.01	0.9478		Binary
Social media (blogs, wiki)	-0.08	0.6497		-0.01	0.9743		Binary
Other tool not listed above (specify)	-0.24	0.1790		0.02	0.9180		Binary
Are any of the following tools used to support synchronous instruction?							
Video conferencing (Skype, FaceTime, etc.)	-0.14	0.4460		-0.03	0.8802		Binary
Screen sharing/web conferencing	0.01	0.9636		-0.24	0.1785		Binary
Audio conferencing	0.34	0.0551		0.10	0.5689		Binary
Online chat forum	0.02	0.9243		-0.13	0.4793		Binary
Instant messaging (IM) or other one-on-one chats	-0.30	0.0983		-0.14	0.4381		Binary
Phone calls	-0.03	0.8525		-0.03	0.8523		Binary
Text messaging	-0.28	0.1687		-0.07	0.7366		Binary
Other tool not listed above (specify)	0.47	0.0346	*	0.33	0.1431		Binary
What types of technology, if any, does this school provide, without charge, to students?							
Internet connection (e.g. internet service or subsidy for internet service, modem, router, and/or hotspot)	-0.13	0.4555		-0.08	0.6500		Descending
Computer (e.g. laptop or desktop computer, or tablet computer such as iPad)	0.03	0.8607		-0.08	0.6493		Descending
Computer Accessories (e.g. webcam, microphone, head set, cd/dvd drive, printer, or scanner)	0.08	0.6556		-0.02	0.8928		Descending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Assistive Technology for students with disabilities	0.01	0.9780		-0.32	0.0627		Descending
Does the school provide tech support to teachers in any of the following ways?							
No tech support is provided to teachers at this school	-	-		-	-		Binary
Live, personal support (via phone or chat)	-0.11	0.4172		-0.19	0.1542		Binary
Manuals, written guides, or FAQ documents	-0.02	0.8683		-0.17	0.2035		Binary
Other support, not listed above (specify)	-	-		-	-		Binary
When is live, personal tech support available to teachers?							
Weekdays during business hours	-	-		-	-		Binary
Weekday evenings	0.34	0.0557		0.20	0.2507		Binary
Weekends	-0.12	0.4952		0.25	0.1443		Binary
How is tech support provided to students?							
No tech support is provided to students at this school	-	-		-	-		Binary
Manuals, technical guides, FAQ documents	-0.10	0.4596		-0.23	0.0898		Binary
Live phone or chat support	-0.06	0.6775		-0.10	0.4799		Binary
Troubleshooting via remote control of computer	-0.10	0.4830		-0.20	0.1433		Binary
Online ticketing system	-0.19	0.1620		0.23	0.0830		Binary
In-person set up of computer	-0.39	0.0033	*	-0.23	0.0795		Binary
Other support, not listed above (specify)	-	-		-	-		Binary
When is live, personal tech support available to students?							
Weekdays during business hours	-	-		-	-		Binary
Weekday evenings	0.30	0.0580		0.21	0.1827		Binary
Weekends	0.10	0.5213		0.11	0.4786		Binary
In total, how many teachers are currently employed at this school? (full-time)	0.26	0.1020		-0.06	0.7234		Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
In total, how many teachers are currently employed at this school? (part-time)	-0.05	0.7765		0.05	0.7410		Ascending
What is the total number of full-time equivalent (FTE) teachers employed by the school?	0.23	0.1654		-0.07	0.6750		Ascending
How many of the following other instructional and support staff (including those contracted for services) work in this school (in FTE units)?							
Teacher aides/instructional assistants	0.06	0.7362		0.13	0.4602		Ascending
Tutors	-0.06	0.7673		-0.22	0.2590		Ascending
Guidance counselors	0.39	0.0266	*	-0.01	0.9696		Ascending
Other instructional support staff	0.20	0.3043		-0.07	0.7021		Ascending
From the list below, please rank the three most important factors when deciding which candidates to offer jobs.							
Commitment to this school's mission / willingness to work hard	-0.01	0.9152		-0.16	0.2334		Binary
Certification status (holds a valid teaching certificate)	-0.15	0.2465		-0.15	0.2493		Binary
College grade point average (GPA)	-	-		-	-		Binary
College major in content area to be taught	0.08	0.5689		0.04	0.7600		Binary
Score on a test (e.g. Praxis)	-	-		-	-		Binary
Experience teaching courses online	-0.17	0.1823		-0.19	0.1377		Binary
General experience as a teacher	0.04	0.7652		-0.04	0.7379		Binary
Master's degree	-	-		-	-		Binary
Performance in teaching sample class	0.16	0.2099		0.06	0.6566		Binary
Quality of candidate's pre-service teacher training program	-	-		-	-		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Other factor(s), not listed - specify:	-	-		-	-		Binary
Are your school's teachers covered by a collective bargaining agreement?	0.09	0.6093		0.22	0.2049		Binary
Do teachers come to a central location to do most of their online teaching, or do they do most of their teaching from their homes?	-0.18	0.2527		-0.09	0.5722		Binary
Is the teacher of record for a particular class responsible for ...							
Lesson planning?	-0.27	0.1216		-0.05	0.7929		Binary
Developing curriculum?	-0.55	0.0009	*	-0.24	0.1634		Binary
Lecturing?	0.08	0.4679		-0.26	0.1352		Binary
Grading student work?	-	-		-	-		Binary
One-on-one tutoring?	0.21	0.2353		0.03	0.8589		Binary
Identifying struggling learners?	-	-		-	-		Binary
Communicating with parents?	-	-		-	-		Binary
Managing online learning environments (e.g. online forums or discussion boards)?	0.00	0.9845		-0.15	0.1409		Binary
Troubleshooting technical issues?	-0.10	0.5890		-0.05	0.7620		Binary
Other - Specify:	0.05	0.7998		0.14	0.4218		Binary
Which of the following statements best describes the expectation for most 4th grade teachers of core academic subjects (reading, math, science, or social studies)?							
Most 4 th -grade core academic teachers specialize in a subject	-	-		-	-		Binary
Most 4th-grade core academic teachers are generalists, responsible for multiple subjects	0.03	0.8129		-0.10	0.4421		Binary
Approximately how many students, in total, is a full-time 4th grade teacher typically expected to teach?	0.05	0.7952		0.22	0.2648		Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Approximately how many students, in total, is a <u>full-time</u> 7th grade teacher typically expected to teach?	-0.05	0.7558		-0.04	0.7964		Ascending
Approximately how many students, in total, is a <u>full-time</u> high school teacher typically expected to teach?	-0.02	0.8930		0.08	0.6477		Ascending
Approximately how many students, in total, is a <u>part-time</u> 4th grade teacher typically expected to teach?	-	-		-	-		Ascending
Approximately how many students, in total, is a <u>part-time</u> 7th grade teacher typically expected to teach?	-	-		-	-		Ascending
Approximately how many students, in total, is a <u>part-time</u> high school teacher typically expected to teach?	-	-		-	-		Ascending
Does a typical <u>fourth-grade math</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.39	0.0779		0.28	0.2145		Binary
Does a typical <u>fourth-grade English / Language Arts</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.36	0.1029		0.23	0.3035		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Does a typical <u>seventh-grade math</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.31	0.1102		0.17	0.3674		Binary
Does a typical <u>seventh-grade English / Language Arts</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.23	0.2564		0.05	0.7846		Binary
Does a typical <u>high-school math</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.15	0.4445		0.18	0.3192		Binary
Does a typical <u>high school English</u> class include instructional staff in addition to the teacher (e.g. aides, tutors)?	0.14	0.4663		0.03	0.8709		Binary
Does this school provide teachers with paid time for professional development?	-	-		-	-		Binary
During the 2013-2014 school year, how frequently did a typical teacher participate with other teachers from this school in <u>synchronous, online</u> professional development?	-0.03	0.8807		-0.38	0.0263	*	Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
During the 2013-2014 school year, how frequently did a typical teacher participate with other teachers from this school in <u>in-person</u> professional development at a central location?	0.02	0.9206		0.11	0.5423		Ascending
During the 2013-2014 school year, how frequently did a typical teacher participate with other teachers in regular faculty meetings (online or in person) for this school?	-0.18	0.3214		-0.03	0.8671		Ascending
How many times during the 2013-2014 school year did teachers experience the following at your school?							
Observed by and received feedback from a <u>peer</u>	-0.02	0.9206		-0.01	0.9375		Ascending
Observed by and received feedback from a <u>master teacher</u> or someone else who coaches teachers	-0.10	0.5730		-0.37	0.0279	*	Ascending
Observed by and received feedback from a <u>principal</u> , administrator, or someone else who monitors performance	0.19	0.2804		0.13	0.4711		Ascending
Provided with diagnostic test results for individual students to help them determine which topics/skills to focus on	0.34	0.0531	*	0.04	0.8230		Ascending
Asked to submit lesson plans to master teacher, department chair, principal, or other administrator for review	-0.04	0.8407		0.28	0.1069		Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Attended workshops, conferences, or other kinds of group-based training	0.05	0.0784		0.10	0.5682		Ascending
Please rank, in order, the three most important factors considered when evaluating teachers at this school.							
Observations of teacher's instruction	-0.01	0.9328		0.12	0.3776		Binary
Teacher's accessibility to students (e.g. logs of student-teacher communication, response time to student inquiries, time to grade and return assignments)	-0.14	0.2755		0.01	0.9224		Binary
Feedback from other teachers or instructional coaches	0.25	0.0559		0.06	0.6356		Binary
Feedback from students or parents	0.08	0.5290		0.17	0.1866		Binary
Student course completion rate	0.13	0.3215		-0.45	0.0003	*	Binary
Student achievement growth	0.21	0.1101		-0.09	0.4710		Binary
Portfolio of examples of student work (e.g., student essays, lab reports)	-	-		-	-		Binary
Meeting expectations for student engagement	0.00	0.9755		-0.17	0.1869		Binary
Other factor(s), not listed - specify:	-	-		-	-		Binary
Are teachers in your school paid more based on any of the following:							
Teacher evaluation results	0.29	0.1061		0.08	0.6693		Binary
Student achievement growth	0.41	0.0202	*	0.30	0.0901		Binary
Student proficiency levels	0.08	0.6577		0.21	0.2333		Binary
Course completion rates of students	0.17	0.3588		0.26	0.1327		Binary

	Coeffi	p-		Coeffi	p-		Response
	cient	value	Sig	cient	value	Sig	Type
Advanced degrees, such as master's degrees or doctoral degrees	0.39	0.0266	*	0.05	0.7928		Binary
Teaching experience	0.12	0.5041		0.19	0.2763		Binary
Additional certifications	0.11	0.5412		0.25	0.1487		Binary
Filling a hard-to-staff position	0.09	0.6099		0.13	0.4603		Binary
Number of students taught	-0.20	0.2615		0.03	0.8731		Binary
Serving as a mentor or coach to other teachers	-0.10	0.6005		0.08	0.6361		Binary
Can teachers at this school earn tenure?	0.31	0.0501	*	0.13	0.4097		Binary
What opportunities do instructional staff in your school have to take on additional responsibilities to advance their careers?							
Supervise junior teachers (as a department chair or lead teacher)	0.25	0.1668		0.00	0.9964		Binary
Become an instructional coach or master teacher	0.28	0.1185		0.03	0.8650		Binary
Teach more and/or larger classes	-0.19	0.3057		-0.07	0.7014		Binary
Lead professional development for groups of staff	0.25	0.1652		-0.01	0.9591		Binary
Approximately how long do teachers stay with the school on average (months)?	-	-		-	-		Ascending
Approximately how long do teachers stay with the school on average (years)?	-0.13	0.4500		0.27	0.1087		Ascending
Throughout the school year, what percentage of your work week, on average, do you spend on the following tasks in this school?							
Internal administrative tasks, including human resource/ personnel issues, regulations, reports, school budget	-0.21	0.2480		-0.30	0.0772		Ascending
Observing teachers	0.09	0.6113		0.07	0.6988		Ascending

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Working with instructional coaches, grade leaders, departmental leaders, or other instructional leaders in your school	0.04	0.8397		0.13	0.4558		Ascending
Developing or leading professional development activities for staff	-0.21	0.2522		-0.01	0.9429		Ascending
Student interactions, including discipline and academic guidance	0.38	0.0298	*	0.30	0.0799		Ascending
Student interactions, including discipline and academic guidance	-0.12	0.5016		0.05	0.7578		Ascending
Parent interactions	-0.06	0.7322		0.28	0.1083		Ascending
Other task not listed above, specify	-	-		-	-		Ascending
Other task not listed above, specify	-	-		-	-		Ascending
Other task not listed above, specify	-	-		-	-		Ascending
Other task not listed above, specify	-	-		-	-		Ascending
Are student test score <u>growth</u> or student test-score <u>levels</u> included as a criterion in the evaluation of your performance?							
Student test-score <u>growth</u> is included in my performance evaluation	0.21	0.2504		0.05	0.7813		Binary
Student test-score <u>levels</u> are included in my performance evaluation	0.10	0.5961		0.21	0.2281		Binary
Is your compensation as leader of this school, including salary and bonuses, affected by any of the following...							
Number of enrolled students	-0.07	0.7068		-0.06	0.7168		Binary
Students' achievement <u>growth</u> on standardized assessments (or the school's value added)	0.24	0.1752		0.22	0.2017		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Students' test-score levels on state assessments	0.28	0.1194		0.45	0.0073	*	Binary
Student course completion rates	0.05	0.7751		0.25	0.1403		Binary
Reenrollment of current students across school years	0.18	0.3269		0.03	0.8699		Binary
Retention of teaching staff	-0.31	0.0748		-0.11	0.5334		Binary
School's operating profit or loss	0.23	0.1962		-0.17	0.3168		Binary
Other (specify)	-	-		-	-		Binary
In the past 12 months, have you participated in the following kinds of professional development activities as the leader of this school?							
University course(s) related to your role as leader of this school	-0.04	0.8437		-0.01	0.9463		Binary
Visits to other schools designed to improve your own work as leader of this school	0.35	0.0504	*	0.20	0.2577		Binary
Mentoring, peer observation, or coaching by or for a leader of another school	0.16	0.3757		-0.01	0.9470		Binary
Participating in a school leader network (e.g., a group of school leaders organized by an outside agency or through the internet)	0.20	0.2765		0.28	0.1054		Binary
Workshops, conferences, or training in which you were a presenter	0.17	0.3559		0.07	0.6936		Binary
Other workshops or conferences in which you were not a presenter	-0.31	0.0748		-0.11	0.5334		Binary
Have you (the leader of this school) participated in a principal training program?	0.12	0.5046		0.21	0.2385		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Prior to the 2013-2014 school year, how many years did you serve as the leader of <u>this</u> school	0.08	0.6011		0.08	0.6060		Ascending
Do you have prior experience as principal at another school?	0.19	0.2275		-0.06	0.7222		Binary
Was your previous experience at a conventional brick-and-mortar school, a virtual/online school or a combination of both?							
Conventional brick-and-mortar	0.00	0.9824		0.07	0.5910		Binary
Virtual/on-line school	-0.22	0.0905		-0.20	0.1187		Binary
Both	-0.13	0.3209		-0.01	0.9522		Binary
How long were you a principal at the previous school(s)?	-0.15	0.5453		0.07	0.7665		Ascending
Before you became a school leader, how many years of elementary or secondary teaching experience did you have, if any?	-0.31	0.0808		-0.12	0.4954		Ascending
How many years of teaching experience have you (the leader of this school) had in a <u>virtual/online</u> school?	-0.18	0.3198		-0.11	0.5180		Ascending
Is this school its own LEA (Local Education Agency)?	-0.08	0.6279		0.02	0.8913		Binary
A school's funding can be impacted by a number of factors. Is the school's funding impacted by the total number of courses <u>completed</u>?	-0.13	0.4149		0.02	0.9204		Binary
Does your school participate in the federal Title I program?	-0.36	0.0394	*	0.03	0.8667		Binary

	Coeffi cient	p- value	Sig	Coeffi cient	p- value	Sig	Response Type
Does your school receive designated funding for special education services?	-0.03	0.8817		-0.21	0.2464		Binary
Does your school’s authorizer monitor any of the following student outcomes in your school							
State test results	-	-		-	-		Binary
Attendance rates	-0.23	0.1910		-0.05	0.7573		Binary
Re-enrollment rates	0.27	0.1272		0.15	0.4044		Binary
Course completion rates	-0.03	0.8825		0.25	0.1515		Binary
Is your school affiliated with a school management organization that provides curriculum or instructional support services?	0.30	0.0569		0.04	0.7785		Binary
Does the management organization’s central office provide your school with any of the following?							
Curriculum and Instructional Materials	0.53	0.0098	*	0.22	0.2909		Binary
Access to instructional coaches?	-0.10	0.6521		-0.08	0.7098		Binary
Professional development for teachers, such as workshops and in-service training programs?	-	-		-	-		Binary
A system of diagnostic or formative student assessments and results?	0.15	0.4919		-0.17	0.4215		Binary
Technical assistance, support, or resources in areas in which student test scores are weak?	0.15	0.4888		-0.02	0.9218		Binary
In your opinion, do state or local laws or policies impose constraints on your school’s growth?	-0.03	0.8695		-0.27	0.1156		Binary

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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF GEENA BURGESS
IN SUPPORT OF APPLICATION FOR
TEMPORARY RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, GEENA BURGESS, declare as follows:

24 1. My name is Geena Burgess. I am a Seventh Grade English Language Arts
25 (“ELA”) teacher at Inland Leaders Charter School (“Inland Leaders”). I have personal
26 knowledge of the facts stated in this Declaration and, if called as a witness, I could and
27 would testify competently to each fact.

28 2. I graduated from California Baptist University in Riverside, CA in 2003
with a Bachelor’s degree in English and Human Development and earned my teaching



1 credential in 2012. I have completed 7 years of teaching 7th grade students after an
2 additional 6 years working in various support capacities in the classroom.

3 3. Inland Leaders is a highly successful brick and mortar independent charter
4 school program in Yucaipa, California, serving more than a thousand students in
5 Transitional Kindergarten through Eighth Grade every year. During the summer of
6 2020, the administration of Inland Leaders surveyed teachers and parents multiple times
7 and spent a great deal of time deliberating, weighing options, crunching numbers,
8 collaborating, and innovating. Inland Leaders had resolved to allow our students the
9 three options of returning to class in person, learning remotely, or a hybrid of on and
10 off-site learning. Less than 10% of my students elected hybrid or remote learning for
11 this upcoming year, with over 90% of my students electing in person instruction.

12 4. I was excited to get back in my classroom and our families were excited to
13 return to our beloved school campus. The Governor's closure of in-person schools will
14 cause a significant disadvantage to our students, teachers, families, and communities.

15 5. Getting to know my students is the most important part of each new school
16 year. My teaching philosophy is centered on the proven concepts of relationship and
17 connection. In my classroom, I spend as much effort helping my students understand
18 why they want to learn the 7th grade ELA standards as I do helping them master them
19 because student buy-in is the key to authentic learning. I get to know my students and
20 learn what their passions, troubles, strengths, and trepidations are. I know how to
21 weave the interests of a distracted student into a discussion on the fly to regain their
22 attention and show them I'm aware of them, know them, and care about them. I engage
23 my students in the material and they learn because they want to. They learn my 7th
24 grade ELA standards because they conclude that they want to be able to share their
25 thoughts and ideas as well as the accomplished authors we enjoy reading in our class.
26 Because I get to know them, I can help them see that they too have a story to tell and a
27 message to share with the world and that the concepts that I teach in my class are meant
28 to help them do that in an impactful way.

1 6. As I get to know my students in the classroom, I pay close attention to
2 their energy. Many of my students come into class with burdens and anxiety causing
3 stressors. I work hard to help them unburden themselves a bit while at school. I learn
4 which student needs eye contact and a smile to help them stay on-task and which
5 student needs me to come to sit near them for a bit. I know who needs a few moments
6 to connect and chat about their cat before they can work effectively and which students
7 really just need me to explain the concept, my expectations, and give them time and
8 space to try it themselves.

9 7. This past spring, as Inland Leaders immediately implemented remote
10 instruction (we did not miss a single instructional day), I lost this crucial connection
11 with many of my students. I was devastated.

12 8. Only about thirty percent (30%) of my students consistently showed up to
13 attend our live zoom lesson and discussions. As impressive as the technology is, it was
14 a struggle to engage and interact with the students over Zoom. A couple of students
15 refused to speak or show their faces and a few would do one but not the other.
16 Knowing my students the way I did, I understood their choices and would encourage
17 them but not push them. I encouraged my students to attend live meetings, offering
18 raffles for gift cards at my own expense and always tried to give them some time for
19 much needed social interactions.

20 9. About twenty percent (20%) of my students were so driven and
21 independent that they were requesting my videos and assignments ahead of schedule
22 and were motivated to get their work and lessons finished as quickly as possible, on
23 their own, without attending the valuable and enriching discussions. I knew these kids
24 well and wanted so badly to challenge them to share their ideas in the discussion and to
25 listen and respond to the thoughts and ideas of others the way we would have in class.
26 My driven, determined, focused students often need this kind of class time to help them
27 develop social leadership and effective communication skills. They were not getting
28 this with distance learning.

1 10. About forty-five percent (45%), were hit-or-miss with work and meeting
2 attendance. I had a very gracious late work policy, partially because of the statewide
3 policy that students' grades could increase but not decrease during distance learning,
4 but mainly because of the extraordinary and often traumatic circumstances these kids
5 were now dealing with. Many of the students that I contacted about their missing
6 assignments expressed feelings of loneliness, depression, and anxiety and shared that
7 they had just procrastinated and fell too far behind to feel like they could catch up.
8 Most of the students in this group had no parent in the home during the day. I worked
9 many long hours trying to help students organize themselves, set goals, strategize,
10 empathize, and problem solve, but these tasks are made significantly more difficult
11 without in person contact. Despite my best efforts, many students turned in half-
12 hearted work, plagiarized work, or no work in the end. I firmly believe these students
13 would have performed exponentially better and learned significantly more in my
14 classroom with in person instruction than they did with distance learning.

15 11. About six percent (6%) of my students disappeared from my sphere of
16 influence entirely. I reached out to all of my students and parents and tried to help
17 motivate them. Most said they would start attending but never did. Our administration
18 conducted welfare checks. Inland Leaders supplied Wifi and Chromebooks and still
19 could not engage these students at all.

20 12. I consider the 2020 distance learning quarter to be failure. Because of the
21 significant challenges, I was unable to cover all of the standards I usually do. Looking
22 back, I cannot identify any additional steps that I could have taken to be more effective
23 with keeping the crucial connection and relationship with my students using online
24 learning. I often worked 15 hour days to create new engaging lessons and materials,
25 track my students down when they failed to attend class, and work one-on-one with
26 them over zoom, phone, and by text. I mailed cards and bought gift cards to motivate
27 my students, and I would stay on zoom after class to just talk to students because they
28

1 were lonely. Although I did my best in unprecedented circumstances, I failed. I am
2 heartbroken over it.

3 13. If I am required to continue distance learning in Fall 2020, I will have an
4 even more difficult time creating the connection and relationship that is crucial to
5 effective teaching. I expect that my students' education and experience will continue to
6 be detrimentally impacted by distance learning in Fall 2020.

7 14. I know that there are many teachers like me, working at innovative and
8 determined schools like mine. Inland Leaders works to serve students and prove its
9 value in our community every day. My school, our staff, and our families recognize the
10 importance of in-class learning for the vast majority of our students and we all just want
11 the opportunity to serve our community the best way we know.

12
13 I declare under penalty of perjury under the laws of the United States of America
14 that the foregoing is true and correct.

15 Executed on this 27th day of July 2020, at Yucaipa, California.

16
17 DocuSigned by:
18 *Geena Burgess*
19 Geena Burgess
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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

DECLARATION OF COLLEEN M. CUNNINGHAM IN SUPPORT OF APPLICATION FOR TEMPORARY RESTRAINING ORDER

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, COLLEEN M. CUNNINGHAM, declare as follows:

24 1. I am a teacher of English Literature at Polytechnic High School in
25 Riverside, California (“Poly HS”). I have personal knowledge of the facts stated in this
26 Declaration and, if called as a witness, I could and would testify competently to each
27 fact.

28 2. I received a BA in English Literature and a Single Subject Teaching
Credential in 1995 and a MA in Education/Curriculum Leadership in 1997, both from



1 University of Redlands in Redlands, CA. In 2018, I completed the coursework to
2 obtain a Preliminary Administrative Services credential through the Association of
3 California School Educators. I have a certificate in Teaching Advanced Placement
4 from UC Riverside, where I also completed coursework in College Admissions
5 Counseling. I have completed additional post-graduate coursework at Harvard
6 Graduate School of Education, University of San Diego, and UC San Diego. I have
7 been a high school teacher for 25 years, the past 20 of which I have taught English,
8 ELD, and AVID at Polytechnic High School in Riverside, CA. I have served as an
9 International Staff Developer for AVID Center. I was selected as High School Teacher
10 of the Year for Riverside Unified School District in 2016.

11 3. I taught English from March 13, 2020 through the end of the school year
12 on May 22, 2020 at Poly HS using a distance learning model. I taught 5 English
13 classes, with approximately 33 students in each class for a total of 165 students.

14 4. I observed significant detrimental impact on my students from the closure
15 of physical schools and transition to distance learning.

16 5. First, the student participation rate in my online classes was extremely low.
17 At the beginning of distance learning in March, I had 42% participation by my students;
18 by the end, I had 4 total students participate, or 2%. Many of my students lacked
19 sufficient access to wifi and computers to be able to participate in distance learning.
20 Although the district offered to loan devices to students who needed them, the offer and
21 sign-up form came via email, to which many students, especially students in low
22 income families, lacked access. Several of my students who were actively trying to
23 obtain devices were never able to obtain them. Many other students did not attempt to
24 obtain the devices they needed to participate in classes. I believe that my experience is
25 typical of other high school teachers in Riverside and California. I anticipate similar
26 low participation rate by my students if we return to distance learning in the fall.
27 Students simply cannot learn if they do not or cannot attend classes.

28

1 6. Second, the connection and relationship between myself and my students
2 was detrimentally impacted. Teaching requires a relationship of trust and respect
3 between the students and the teacher, which I strive to create every day in my classes. I
4 found it incredibly difficult to continue the relationships I had already developed via
5 distance learning, when at best I could see a video of my student's face – nearly all non-
6 verbal communication was cut off. As a result, my students were much less likely to
7 ask questions, participate in class, and simply were less likely to learn. Moreover,
8 students who did participate in distance learning were often ashamed or afraid to turn
9 on their cameras as they did not want their teachers and classmates to see where they
10 lived. In those cases, I had literally almost no way to foster the connection and
11 relationship necessary for effective teaching. This lack of connection and relationship
12 will be significantly worse at the beginning of the school year, when I am attempting to
13 form a new relationship and connection with students I have never met.

14 7. Third, distance learning places significant additional burdens on students
15 and their parents to manage their schedule, perform work independently that would
16 otherwise be performed in class, and pay attention to the class. I spend a significant
17 amount of time in any high school class making sure that the right students are in the
18 right classroom and that they are doing their work instead of falling prey to distractions
19 such as their phones or devices. These functions are essential to students learning. It is
20 impossible for me to perform these functions online. In my experience, students have
21 significant additional distractions at home – from video games to chores to caring for
22 younger siblings or family members – that make it extremely difficult for students to
23 learn online.

24 8. Fourth, I observed a significant detrimental impact on my students'
25 emotional health, which made it hard for those students to learn. Many of my students
26 expressed to me a marked increase in feelings of depression, isolation, and anxiety.
27 Two students were so impacted by the school closures, they were having difficulty
28 getting out of bed in the morning. Those are the students who responded to me. I don't

1 know how many students were also suffering but did not reach out for help. The only
2 assistance we could offer was a phone consultation with a school counselor. Students
3 were cut off from speech therapy, tutoring services, language support, mental health
4 counseling, and other services provided by the school system. The students most
5 greatly impacted by the shutdown were not the middle and upper class students, but the
6 lower income and minority students who already suffer from an ever-widening
7 achievement gap. I expect these problems to continue and worsen if we continue to
8 utilize only distance learning.

9 9. In addition, teachers have not been well equipped to make distance
10 learning effective.

11 10. In March, when the announcement came that schools would remain closed
12 for the duration of the school year, I was given limited guidance and sample lessons; the
13 only training I received was directly related to distance learning technology, not
14 methodologies or best practices. I believe that my experience was typical of other high
15 school teachers in Riverside and California.

16 11. I am now two weeks from starting the 2020-2021 school year online, and
17 teachers in my district are only now being offered limited, optional, online professional
18 development to support our work in distance learning. This support consists primarily
19 of training in the use of various platforms, not models for successful student
20 engagement. Despite my desire to provide a rigorous education for my students this
21 year, I am unprepared to meet the demands. Students in our district have been told they
22 will not be able to pick up textbooks or necessary devices until after the start of the
23 school year. Students will be required to participate in synchronous digital learning, but
24 have not been taught how to effectively utilize the tools or manage their learning
25 environment to fully benefit from whatever material is presented during that time. I
26 have no training in best practices for engaging students – especially students I have
27 never met – through a digital platform. John Hattie, through his work in Visible
28 Learning, identifies Collective Teacher Efficacy as the most powerful factor in

1 advancing student achievement. He defines this as “the collective belief of the staff of
2 the school/facility in their ability to positively affect students.” ([https://visible-
3 learning.org/2018/03/collective-teacher-efficacy-hattie/](https://visible-learning.org/2018/03/collective-teacher-efficacy-hattie/)).

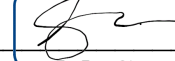
4 12. In my experience, teachers do not believe they have the ability to affect
5 student learning through an online only model to anywhere near the degree needed.
6 The longer the school closures persist, the more dramatic the impact on student learning
7 will be.

8 13. Under these circumstances, I believe that my students will suffer at least
9 the same problems with distance learning and detrimental impact on their education as
10 they experienced in Spring 2020.

11
12 I declare under penalty of perjury under the laws of the United States of America
13 and the State of California that the foregoing is true and correct.

14
15 Dated: July 26, 2020

DocuSigned by:



16
17 Colleen M. Cunningham
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13 **UNITED STATES DISTRICT COURT FOR**
14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

18 v.

19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF FR. DAMIEN
GIAP IN SUPPORT OF APPLICATION
FOR TEMPORARY RESTRAINING
ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, FR. DAMIEN GIAP, declare as follows:

24 1. I am a citizen of the United States. I have personal knowledge of the facts
25 set forth in this declaration. If called as a witness, I would testify competently to the
26 matters set forth herein.

27 2. I am the school chaplain at St. John the Baptist School in Costa Mesa. I
28 graduated from UC Irvine, where I majored in biology. I obtained my master's degree
from the University of St. Thomas in Rome, Italy. I have five years of teaching
experience: from 2007-12, I taught religion at JSerra Catholic High School in San Juan

1 Capistrano. I have thirteen years of experience working in Catholic education as a
2 chaplain for St. Anne School in Laguna Niguel and also as a chaplain at JSerra, from
3 2007-18. I'm also in administration at St. John the Baptist School in Costa Mesa. I
4 have extensive experience working in the Diocese of Orange; the entirety of my
5 priesthood thus far (13 years) has been in private Catholic education.

6 3. I firmly believe that the Governor's mandate will harm children, because it
7 will deny them the necessary social interactions they require in order to develop
8 emotionally, psychologically and spiritually. This kind of interaction is instrumental
9 for one's social, emotional and cognitive formation. Furthermore, I don't believe that
10 online learning should be imposed on every family, especially if intelligent and
11 discerning parents have elected to send their children back to an in-person teaching
12 model.

13 4. One's character is formed by interacting with others. Forcing children to
14 learn online and sending them home deprives them of the opportunities and necessary
15 interactions to form this character. For a child, I don't think virtues are acquired by
16 sitting in front of a computer screen. I strongly believe that the Governor's order does
17 not address any of these scenarios.

18 5. The reopening of schools must occur to foster and allow for social
19 interaction between children and not deprive them of these necessary interactions. Such
20 interaction is vital for a child's social, psychological and spiritual development.
21 Requiring schools to be closed will only further harm children and deny children the
22 necessary interactions for proper development.

23
24 I declare under the penalty of perjury under the laws of the United States of
25 America and the State of California that the foregoing is true and correct.

26
27 Dated: July 25, 2020



28 Fr. Damien Giap

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13 **UNITED STATES DISTRICT COURT FOR**
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15 **MATTHEW BRACH**, an individual,
16 *et al.*,

17 Plaintiffs,

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19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
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22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF MICHELLE
GERST IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, MICHELLE GERST, declare as follows:

24 1. I am a citizen of the United States and a resident of Riverside County. I
25 have personal knowledge of the facts set forth in this declaration. If called as a witness,
26 I could and would testify competently to the matters set forth herein.

27 2. I am a substitute teacher for grades K-12 who has been working in
28 education for the past four years. I have worked in both socioeconomically advantaged

1 and disadvantaged school districts. I have completed all the state teaching exams for
2 the State of California, and I will complete my master's in education in October 2020.

3 3. As a teacher, we are heavily dependent on differentiation in education. We
4 focus on choice, collaboration, communication, critical thinking, and creativity. We are
5 student-focused, not teacher-focused; we are taught to put the children's needs before
6 our own and their learning needs are our top priority. Teachers no longer impose their
7 specific learning techniques on children or tell them how they "must" learn; rather,
8 teachers take an individualistic approach because all students learn differently. Because
9 of this, education can never be a "one-size-fits-all" approach.

10 4. I am deeply concerned about what I am witnessing in our schools. On
11 March 13, 2020, I was in a disadvantaged high school and saw students who were
12 visibly upset when they learned that they would not be in school for a month due to the
13 lockdown. The students had various extracurricular activities scheduled that they
14 worked hard for and were excited about, yet they were now being taken from them. For
15 example, a dance team fundraised all year after earning a spot to dance at Disneyland
16 and for most of these students, it was a once in a lifetime opportunity that they earned.
17 For children who grow up in troubled neighborhoods and low-income communities, the
18 school offers them hope and opportunity for a better future.

19 5. Toward the end of March parents in the more social advantaged school
20 districts began to approach me to tutor their children. The parents were financially able
21 to pay for a tutor. These children I worked with are intelligent and rank toward the top
22 of their class. However, they struggled with online learning at home. Their morale was
23 down they missed the important social interactions with their friends.

24 6. My role as a tutor is to help students stay focused, work with them as if we
25 are in the classroom, offer structure to them, and ensure their engagement and
26 interaction. All of this cannot be done as well through distance learning. Ordinarily, as
27 I would sit with the students during in-person tutoring lessons, they would become
28 distracted by video games. If I was not there to supervise, the students would have

1 engaged in other activities, rather than completing their schoolwork. The students I
2 helped brought their grades up and finished with A's in all of their classes.
3 Unfortunately, without that same level of supervision, as is the case with distance
4 learning, I expect that these distractions will detract from the students' abilities to learn.

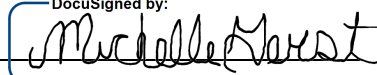
5 7. As a result of the recent shut down of schools, I have numerous parents
6 reaching out to me, seeking a tutor for their child. Most are from socioeconomically
7 advantaged schools in grades K-12. The parents are all stressed, concerned, confused,
8 and frustrated, as they work and some have multiple children in different grades. The
9 parents I am assisting work from home, but they cannot sit down with their kids and
10 work simultaneously. Some parents are forming groups to gather at one parent's home
11 so that all the children can be tutored at once. My tutoring provides these parents some
12 relief; however, not every parent can afford to pay for a tutor such as myself.

13 8. When I see the children struggling with distant learning, even though they
14 come from a more affluent household, I can only assume that those children in
15 disadvantage, low-income households are sinking without a life raft.

16 9. The one-size-fits-all approach employed by the State of California is
17 harming children and taking away their right to a proper education. The underserved,
18 low-income households bear the brunt of these negative consequences. The reopening
19 of schools is necessary to ensure that every child, no matter how poor or disadvantaged,
20 receives the proper education that they are entitled to under California law.

21
22 I declare under penalty of perjury under the laws of the United States of America
23 and the State of California that the foregoing is true and correct.

24 Dated: July 26, 2020

DocuSigned by:

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Michelle Gerst

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13 **UNITED STATES DISTRICT COURT FOR**
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16 *et al.*,

17 Plaintiffs,

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19 **GAVIN NEWSOM**, in his official
20 capacity as the Governor of California,
21 *et al.*,

22 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF RACHELLE
GOLDEN IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10A

23 I, RACHELLE TAYLOR GOLDEN, declare as follows:

24 1. I am an attorney licensed to practice law in the State of California and all
25 Districts Courts within California. I am also licensed to practice law in the District of
26 Columbia, Washington. I am a mother of two amazing step children, and am also Court
27 Appointed Special Advocate (CASA”) in which I have appointed by Fresno
28 Superior Court to represent the best interests of a child in the foster care system. The
following facts are personally known to me and if called, I would and could competently
testify.



1 2. My responsibilities as a CASA are that I appear on behalf of the child so
2 that I can ensure that the voice of the child is heard in the judicial system as it relates to
3 whether they should or should not be reunited with their biological parent(s), or whether
4 they should or should not continue being placed within the foster care system, or with a
5 certain foster care parent(s). As a CASA, I am essentially the liaison between the court
6 system, the social worker, the probation officer (if there is one), the foster parent(s), the
7 biological parent(s), attorney, and the teacher. (Collectively referred to herein as “Team
8 Members.”) Coordinating all of these key Team Members is critical to ensure that the
9 child does not slip through the cracks of the system.

10 3. I am also responsible to ensure that the foster child obtains appropriate
11 medical care, housing, and education. As foster children can be placed in many different
12 homes, it is my responsibility to ensure that there is no interruption in the continuity of
13 that child’s physical, emotional, and educational needs. I am responsible to ensure that
14 cohesive information, as obtained from all of the child’s Team Members, are correctly
15 conveyed to the court system so that the court can ensure that the child’s needs are met.

16 4. From my experience, I understand that the foster care system is
17 overburdened and often times a foster child will primarily rely on their social worker
18 assigned to their case in order to obtain proper services for that child. While social
19 workers play an incredible role in the child’s life, they typically are overburdened with
20 case loads and are unable to ensure that the basic needs of the child are met as they do
21 not have the time to investigate the child’s circumstances to help define the child’s best
22 interests. That social worker does not have the time to ensure that the child receives
23 proper education, and certainly cannot ensure that the child is engaging in a remote
24 learning environment from their home or foster placement. Children within the foster
25 care system are quite literally left behind.

26 5. At school, the environment for these children are stable, the children are
27 nourished with food by the school often several times per day, the children obtain
28 physical exercise, and most importantly the children are with safe adults. Furthermore,

1 many foster children have an Individualized Educational Program (“IEP”) as a result of
2 issues developed in utero and/or early childhood due to the parent(s) substance abuse,
3 physical, emotional and/or sexual abuse they’ve endured. In order to maintain success
4 in their education, these children must have hands-on, in-person instruction. Without
5 participating in a hands-on environment at school, there is no way to ensure that these
6 children with an IEP are able to obtain any education whatsoever.

7 6. Often times a child within the foster system experiences or has experienced
8 abuse, whether it be emotional, physical or sexual, which can cause the child to run away
9 from their environment, and essentially leaves them homeless. That child’s school is the
10 only safe place that the child can go to receive basic care.

11 7. I am aware that some of my fellow CASA advocates who are employed by
12 the education system are concerned for these children because teachers are often the first
13 line of defense in reporting abuse that they observe by being around the children on a
14 daily basis. Without the physical presence of a teacher, who knows, sees that child on a
15 daily basis, and cares for that child, the children are unable to be adequately protected
16 from domestic abuse because the teacher is unable to see the signs of abuse via Zoom,
17 that is if the child even has been attending the remote teaching sessions. Schools are an
18 essential element for these children to be safe from their incredibly difficult
19 circumstances. Without school re-opening, these children who are already so far behind
20 in life, will further be held back from becoming educated, contributing adults to our
21 society. Physical attendance in the classroom is the only way to ensure that these
22 precious children can have a chance to succeed.

23 I declare under penalty of perjury of the laws of the State of California and the
24 United States, the foregoing is true and correct.

25 Executed on July 26, 2020

26 By: 
27 RACHELLE TAYLOR GOLDEN
28



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12 *Attorneys for Plaintiffs*

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15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
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18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

20 **DECLARATION OF**
 21 **MATTHEW BRACH IN**
 22 **SUPPORT OF APPLICATION**
 23 **FOR TEMPORARY**
 24 **RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
 Courtroom: 10A

25 I, Matthew Brach, declare:

- 26 1. I am a resident of Rancho Palos Verdes, Los Angeles County, California. I
 27 am bringing suit individually.
- 28 2. By way of background, I am a Governing Board Member of Palos Verdes
 Unified School District.
3. I want the schools in Palos Verdes Unified School District to physically
 open for the 2020-2021 school year.



1 4. Palos Verdes Unified School District has 10 Elementary Schools, 3
2 Intermediate Schools, 2 Traditional High Schools, and 1 Alternative High School.

3 5. There are approximately 11,000 students in the Palos Verdes Unified
4 School District.

5 6. I am a father and have two children, a daughter aged 13 and a son aged 16.

6 7. My daughter is entering 8th grade at Palos Verdes Intermediate School and
7 I have witnessed that her isolation from school is creating mental health issues, as she is
8 struggling to identify with “what is normal.” I have witnessed her fears and
9 compulsions since schools were closed in March.

10 8. My son will be a senior and I have witnessed that he is extremely
11 adversely impacted by the lack of social interaction, and lack of positive teacher role
12 models. He is a student that benefits from discussion and interaction with peers and
13 teachers. Without the ability to return to class, I worry that he will become more
14 detached from school, and his academic future will suffer.

15 9. As a Governing Board Member of Palos Verdes Unified School District, I
16 have firsthand knowledge of the steps that our district has taken to be able to safely
17 reopen our sixteen schools for the upcoming 2020-2021 school year.

18 10. Palos Verde Unified School District has established Reopening
19 Committees, comprised of 40 Staff Members, 45 Medical Professional members, 30
20 Elementary Parents, and 39 High School Parents.

21 11. Smaller subcommittees were also established to address the specific needs
22 of Special Education Students.

23 12. Palos Verde Unified School District has also purchased and implemented a
24 personal protective equipment (PPE) and Mitigation Strategy, which includes: (1)
25 Staggered arrival time; (2) Designated entrance and exit routes; (3) No Touch
26 Thermometers; (4) Requiring masks/face shields for teachers and students like N95,
27 cloth, and disposable masks; (5) Individual water filling stations and discontinuing
28 communal drinking fountains; (6) a Lunchtime grab/go model; (7) Plexiglass serving

1 and cashier stations; (8) Investigation of HVAC system to support air circulation if
2 windows are closed and HEPA filters; (9) Increased signage (one-way hallways,
3 direction guides, handwashing reminders, etc.); (10) Handwashing stations with foot
4 pedal; (11) Touch-free sanitizing; and (12) Specialized protocol for high touch areas.

5 13. A survey was conducted recently and an overwhelming amount (65%) of
6 parents in my district supported returning the students to school, for in-person learning.

7 14. Parents have also reported challenges with the emergency distance learning
8 such as: (1) keeping children engaged in learning virtually; (2) parent challenges with
9 having to work from home and also supervising children; (3) communicating with the
10 classroom teacher; (4) supporting their child with academic needs; (4) struggling with
11 their child's emotional health; and (5) establishing a home learning space.

12 15. Over 60% of parents also reported that the amount of "face-to-face"
13 teaching was "not enough."

14 16. To be clear, our school district has purchased and will abide by all
15 restrictions imposed by Governor Newsom in his July 17, 2020 framework for
16 reopening California schools, but I also share many concerns about the reopening
17 restrictions as our superintendent, Alex Cherniss, Ed.D., recently outlined in a letter he
18 co-signed to Governor Newsom and President Donald Trump.

19 17. I agree with Superintendent Cherniss that we need to have operational
20 "procedures in place that allow for flexibility in reopening our schools safely and with a
21 healthy dose of common sense."

22 18. I also share the concerns of Superintendent Cherniss, along with ten other
23 superintendents across the state of California, that the state is "now projecting a \$54
24 billion dollar deficit, much of our citizenry is out of work, and many school districts are
25 preparing for massive certificated and classified layoffs and budget reductions. School
26 districts are also experiencing major student mental health issues as well as learning
27 loss, despite the efforts of our teachers, staff, students and parents."

28 19. Our schools need to reopen physically, which can certainly be done safely.

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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 27th day of July 2020, at Los Angeles County, California.

DocuSigned by:
Matthew Brach
Matthew Brach



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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
 14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

20 **DECLARATION OF JESSE**
 21 **PETRILLA IN SUPPORT OF**
 22 **PLAINTIFFS' APPLICATION FOR**
 23 **A TEMPORARY RESTRAINING**
 24 **ORDER**

Judge: Hon. Stephen V. Wilson

25 I, Jesse Petrilla, declare:

- 26 1. I am a resident of Mission Viejo, Orange County, California.
- 27 2. I live in the Saddleback Valley Unified School District.
- 28 3. August 17, 2020 is the first day of school for the Saddleback Valley

Unified School District.

4. I am the father of a young boy, who is set to start 1st grade for the 2020-



1 2021 school year.

2 5. My son was in kindergarten for the 2019-2020 school year, which was
3 moved to a distance learning model for several months due to the statewide shutdown
4 order.

5 6. As a young child, he is entering into critical stages of development, where
6 it is essential to meet certain learning goals. I was amazed how much he was learning
7 by being in his class at school, in-person.

8 7. I strongly believe that being in school is an important socialization
9 component of life, and when my son was in regular school, I noticed a significant
10 improvement in his discipline.

11 8. As distance learning in the spring of 2020 dragged on, he began to exhibit
12 restlessness and behavioral issues.

13 9. I also noticed my son's enthusiasm for learning had rapidly declined,
14 which was very different than before distance learning began.

15 10. After the schools shut down, my wife took time off of work to help my son
16 with school—since he is so young, of course he cannot participate in distance learning
17 by himself.

18 11. My wife and I were looking forward to my wife being able to return to
19 work, as the time off has had an an adverse impact financially on our family.

20 12. I have investigated private schools, but I was quoted approximately
21 \$10,000 per year. This cost is in addition to daycare expenses for our other, younger
22 child.

23 13. I recently received a flyer from the Saddleback Valley Unified School
24 District that advertised for \$700 per month, my child could have “a full day program”
25 where they would have “distance learning support.” This child care is located at a
26 “convenient school site.” Enclosed as Exhibit 16 is a true and correct copy of the
27 advertisement.

28 14. I do not understand why I should have to pay \$700 per month for my child

1 to obtain distance learning support at a public school building when my tax dollars have
2 already been used to pay for that same school and were supposed to pay the salary of
3 the teachers to educate my child.

4 15. I am very worried about the lifelong negative effects that the shut down
5 and distance learning will have on my young child, as he is not able to be exposed to
6 the social aspects of school and the structured education that is so needed at a tender
7 age.

8 I declare under penalty of perjury under the laws of the United States of America
9 that the foregoing is true and correct and is executed this 2nd day of August 2020, at
10 Orange County, California.

DocuSigned by:

Jesse Petrilla

Jesse Petrilla

1AA9833580BA452...

EXHIBIT 16

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT



RATE SHEET

Child Care for the 2020/2021 School Year During the Distance Learning Phase

We know the key to a child’s success is when we work together, which is why we’re excited to partner with families as we navigate a new type of school year. Child Care Services is pleased to offer **TLC All Access**, a full day program, Monday through Friday, during the distance learning phase. Located at several convenient school sites, TLC All Access grants families unlimited child care with scheduled distance learning and the traditional fun of TLC!

WITH TLC ALL ACCESS, YOU GET IT ALL!



Full unlimited access to child care Monday - Friday, 7:30am - 5:30pm



Access to school WiFi, quiet space, and distance learning support¹



Recreation, sports, arts and crafts activities daily led by friendly and qualified staff

Program Rate

- Unlimited care, Monday - Friday, 7:30am to 5:30pm
- Distance Learning Support¹
- All Traditional TLC Programming Included
- Two Daily Snacks Provided

\$700 PER MONTH²

First month fees are non-refundable. After enrollment, families will be billed via their Child Care Services Portal account. TLC All Access includes full care for the month, Monday - Friday. The rate is the same whether the child is absent or on vacation.

¹Children participating in distance learning will have access to school WiFi and a quiet working space. Staff will not replace your child’s school day teacher but will be available to provide generic support and assistance with login.

²Program monthly rate must be paid in full. Hourly, daily, and weekly, payments are not accepted.

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13 **UNITED STATES DISTRICT COURT FOR**
 14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

20 **DECLARATION OF LACEE**
 21 **BEAULIEU IN SUPPORT OF**
 22 **APPLICATION FOR**
 23 **TEMPORARY RESTRAINING**
 24 **ORDER**

Judge: Hon. Stephen V. Wilson
 Courtroom: 10A

25 I, Lacey Beaulieu, declare:

- 26 1. I am a resident of La Jolla, San Diego County, California.
- 27 2. I have two children, a teenage girl and a ten-year old boy.
- 28 3. My daughter will be entering 9th grade at a private school, and my son will be entering 5th grade in the San Diego Unified School District.
4. Distance learning has been challenging - my son was only provided with a weekly written schedule that he was expected to follow, along with various websites



1 and passwords to log in.

2 5. It is unrealistic to expect a ten-year old to follow a daily/weekly schedule
3 on his own.

4 6. I run my own business, and I was constantly having to monitor what he
5 was doing time-wise, telling him when to switch from one subject to the next, and then,
6 after his lessons were done, I would have to explain every online lesson with him. If I
7 was tied up with work, he was unable to proceed with his lesson plans since I had to
8 assist him all the time.

9 7. My son received far less instruction from his teachers during distance
10 learning, which was done via Zoom. He received 90 minutes per week from his primary
11 teacher, 30 minutes per week from his Spanish teacher, 30 minutes per week from his
12 PE teacher, and 30 minutes per week from an enrichment program (which was an extra
13 program that I paid for).

14 8. It is extremely concerning that my son received no Zoom instruction at all
15 from his math teacher the entire time that the school was closed.

16 9. In contrast, my daughter, through her private school, received much more
17 interaction from her teachers via Zoom.

18 10. However, even though my daughter received more instruction via Zoom,
19 she still had difficulty turning in assignments on time.

20 11. My daughter also had difficulty with the lack of one-on-one, face-to-face
21 interaction with her teachers. This type of individualized and personal attention was one
22 reason I chose to send her to private school.

23 12. As a parent, I am also aware of the numerous studies done and medical
24 advice that children and teens should limit time on electronic devices.

25 13. Doctors recommend not spending more than 2 hours a day on devices, and
26 due to distance learning, my children were spending much more time on their devices
27 than this, since instruction was online, but also assignments and homework.

28 14. Due to being on devices too much, I am concerned about my children's

1 brain development and long-term effects of so much screen time.

2 15. I have noticed a difference in my children since the schools have switched
3 to distance learning – they are both depressed, sleep schedules are difficult to manage,
4 and their discipline in completing school assignments has decreased.

5 16. I also see how my children are suffering as they continue to be deprived of
6 personal contact with their peers, which is so important for social skills and
7 development, and which helps prepare them for their future.

8 I declare under penalty of perjury under the laws of the United States of America
9 that the foregoing is true and correct and is executed this 28th day of July 2020, at San
10 Diego County, California.

11 DocuSigned by:

12 

13 Lacey Beaulieu
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13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

**DECLARATION OF ERICA
SEPHTON IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson

20
21
22 I, Erica Sephton, declare:

- 23 1. I am a resident of Murrieta, Riverside County, California.
24 2. I have two children, and one of my children (4½ years old) was set to
25 attend transitional kindergarten this Fall (Fall of 2020) at a private school.
26 3. I also have a toddler to take care of, and I know that I cannot properly
27 provide the proper educational setting and attention for my 4 ½ year old, since I must
28 also attend to my toddler.



1 4. I know my daughter wants to be in school and being present in a physical
2 school setting is best.

3 5. Due to her young age, the distance learning mode is really no education at
4 all.


5 6. I am aware of the risks of Covid-19, and I believe that proper safeguards
6 can be in place so that children can attend physical school.

7 7. I do not agree that my chosen school should not be allowed to open
8 because of other parts of the county or state. My chosen school does not pose a
9 substantial risk.

10 8. I also do not understand why my daughter can spend all day in daycare, but
11 not spend all day in school, learning.

12 9. As a taxpaying Californian, I also am concerned that I am paying taxes, but
13 receiving no benefit at all.

14 I declare under penalty of perjury under the laws of the United States of America
15 that the foregoing is true and correct and is executed this 28th day of July 2020, at
16 Riverside County, California.
17

18
19 DocuSigned by:

20 Erica Sephton
415412088500

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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
 14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**
 16 Plaintiffs,
 17 v.
 18 **GAVIN NEWSOM, et al.**
 19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

20 **DECLARATION OF**
 21 **KENENTH FLEMING IN**
 22 **SUPPORT OF APPLICATION**
 23 **FOR TEMPORARY**
 24 **RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
 Courtroom: 10A

25 I, Kenneth Fleming, declare:

- 26 1. I am a resident of Long Beach, Los Angeles County, California.
- 27 2. My daughter is a high-achieving student athlete heading into her senior
28 year of high school.
3. She will need to rely on scholarship monies to attend college.
4. Grades and activities are very important factors considered by colleges in
order to obtain the best college scholarship.
5. As a result of the requirement to move schools to distance learning, my



1 daughter’s school chose to use a credit/no credit grading system instead of a normal
2 grading system.

3 6. This negatively impacts her grades because instead of scoring points
4 towards an “A” (or another letter grade), she has lost her chance to increase her GPA in
5 order to be a better and more competitive candidate.

6 7. Standardized testing has also been cancelled by the Governor, and my
7 daughter is concerned she will not be able to assess her progress in school. She will
8 need to take the SAT and ACT and she is unsure how prepared she is for these very
9 important tests.

10 8. Additionally, she takes AP classes and is unsure how these advanced
11 classes will be impacted by distance learning.

12 9. To obtain the best scholarship, she will need to be well-rounded in her
13 education and participate in extracurricular activities and sports. Due to distance
14 learning, many of these activities, including sports, have been cancelled.

15 10. Cancelling these types of programs will also negatively affect her
16 scholarship chances.

17 11. My daughter has worked tirelessly to be the best well-rounded student she
18 can be, so that she can attend her dream college.

19 12. With the negative effects of distance learning such as no grades, no
20 opportunities for advancement in sports, and no effective standardized testing markers,
21 my daughter and I are very worried about her future as the schools are not preparing her
22 academically (or athletically, since it important to be well-rounded to obtain
23 scholarships to college.)

24 I declare under penalty of perjury under the laws of the United States of America
25 that the foregoing is true and correct and is executed this 28th day of July 2020, at Los
26 Angeles County, California.

27  DocuSigned by:
Kenneth Fleming

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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

**DECLARATION OF JOHN
ZEIGLER IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson

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21
22 I, John Ziegler, declare:

23 1. I am a resident of Ventura County, California.

24 2. I am the father of an eight-year old girl enrolled in public school.

25 3. As a result of my daughter's school moving to distance-learning, I
26 witnessed that my daughter has fallen behind in schooling and is not prepared for her
27 upcoming second grade school year.

28 4. Starting a new grade level, completely online also does not allow for



1 proper bonding and engagement with her teachers.

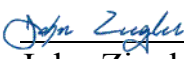
2 5. Additionally, the Zoom system is technologically not very sound and
3 suffers from several glitches.

4 6. My wife is a school teacher but she will be unable to return to teaching due
5 to distance learning and taking care of our daughter. Our daughter is too young to be
6 home alone. This leaves us with only one income.

7 7. While my wife is a school teacher, she gets paid to teach at the local
8 school, she won't receive her income by staying at home and teaching our young
9 daughter.

10 8. Only one income is a financial hardship for our family, and on top of my
11 daughter not receiving an adequate education from our local public school, the hardship
12 and worry for our family is compounded.

13 I declare under penalty of perjury under the laws of the United States of America
14 that the foregoing is true and correct and is executed this 28th day of July 2020, at
15 Ventura County, California.

16 DocuSigned by:
17 
18 John Ziegler



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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR**
 14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**
 16 Plaintiffs,
 17 v.
 18 **GAVIN NEWSOM, et al.**
 19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

20 **DECLARATION OF ALISON**
 21 **WALSH IN SUPPORT OF**
 22 **APPLICATION FOR**
 23 **TEMPORARY RESTRAINING**
 24 **ORDER**

25 Judge: Hon. Stephen V. Wilson
 26 Courtroom: 10A

27 I, Alison Walsh, declare:

- 28 1. I am a resident of Orange County, California.
- 29 2. During the 2019-2020 school year, my two children were enrolled in and
 30 attended local public school.
- 31 3. The school moved to online learning after an extended Spring Break, due
 32 to the shutdown orders.
- 33 4. But when the school was shut down and education was moved to distance



1 learning, what was provided was not learning in any sense of the word, as the school
2 did not provide live or recorded online instruction, only work packets that the student
3 had to complete and submit.

4 5. It seemed that the students were supposed to teach themselves.

5 6. Both my husband and I work full time and we are not able to provide the
6 education that our children need. We need the school to provide the education, not us.

7 7. As a result, our children have fallen behind for the 2019-2020 school year.

8 8. My husband and I had to make a hard choice to enroll our children in
9 private school, at a significant financial hardship in order to make sure our children are
10 in an effective learning environment for the upcoming year.

11 9. Now, due to Governor Newsom's orders that apply to private schools, our
12 children are at risk yet again of not having proper instruction.

13 10. I believe that access to live education is an essential right and our state is
14 denying our children of this right.

15 I declare under penalty of perjury under the laws of the United States of America
16 that the foregoing is true and correct and is executed this 28th day of July 2020, at
17 Orange County, California.

DocuSigned by:


Alison Walsh



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12 *Attorneys for Plaintiffs*

13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF ROGER
HACKETT IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen v. Wilson
Courtroom: 10A

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22 I, Roger Hackett, declare:

- 23 1. I am a resident of Ventura County, California.
24 2. I am a parent of a soon-to-be 6th grader that attends a private school.
25 3. I have reviewed Governor Newsom’s July 17 framework and have
26 concerns that it unfairly lumps all schools together, county-wide, when determining risk
27 rates and school closures.
28 4. For example, under Newsom’s orders, a school in a lesser populated area



1 of Los Angeles county is treated the same as a school in a very densely populated area,
2 like downtown Los Angeles.

3 5. So, even though my son’s school is in Westlake Village (very few Covid-
4 19 positive cases), we are treated the same as Los Angeles County as a whole and Los
5 Angeles City in particular.

6 6. Also, the orders don’t take into account each individual school when
7 determining school closures, which is unfair since some schools, like my son’s school,
8 are going above and beyond, making huge investments of effort and money to comply
9 with the CDC and health directives, so that the children can safely attend school in
10 person – which is something that students, parents, and teachers at my son’s school
11 desire.

12 7. I also think it is unfair that the waiver process allows for elementary
13 schools to apply for a waiver, but not a high school for example.

14 8. Governor Newsom’s orders also interferes with my right to parent my
15 child and determine how best he should be educated. My son would best benefit from
16 in-person instruction. This is best for his emotional health and also best education-wise.

17 I declare under penalty of perjury under the laws of the United States of America
18 that the foregoing is true and correct and is executed this 28th day of July 2020, at
19 Ventura County, California.

DocuSigned by:

Roger Hackett

Roger Hackett

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13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

**DECLARATION OF CHRISTINE
RUIZ IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson

20
21 I, Christine Ruiz, declare:

- 22 1. I am a resident of Los Angeles County, California.
23 2. We are a minority family and my sons attend public school.
24 3. Both of my sons in school have special needs. They both suffer from
25 autism.
26 4. My middle son's autism is severe. He has an individualized education
27 program (IEP) that requires a dedicated team of educated and credentialed staff,
28

1 working one-on-one, and are hands-on with him the entire school day.

2 5. Since school was shut down, he has not been provided with any of his
3 services that are required by his IEP.

4 6. Due to his disabilities, ZOOM classes are a useless form of education for
5 my son. He cannot sit still and he does not have the ability to understand commands
6 through an online format.

7 7. As a parent who does not have a degree in education, much less special
8 education, I was at a loss on how to teach my son at home during the school closure.

9 8. It is mandated that my son receive a free, appropriate public education
10 (FAPE) – this is the law.

11 9. As a result of this denial of his FAPE, I have had to pay out of pocket for
12 assistance and services to make sure he was being educated.

13 10. It is a burden on my family to find the finances for these added expenses,
14 especially when we pay taxes which go towards education.

15 11. My youngest son has autism also, and he is in a mild to moderate special
16 education class.

17 12. In my youngest son's class, there are aides to assist the main teacher, plus
18 a smaller teacher to student ratio.

19 13. Since the schools were shut down in March of this year, the online classes
20 that were supposed to take the place of my youngest son's usual (in person) classes are
21 nothing more than a link to watch a video, lasting around a half hour per day. This is
22 not learning.

23 14. I felt no choice but to hire a tutor to help my youngest son.

24 15. Due to both of my son's disabilities, they need a specially trained team to
25 help them meet the requirements of the IEPs.

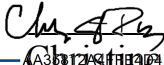
26 16. My sons are not being provided an education by the school.

27 17. The regression of my sons, as special education students, is very real and
28 very worrisome.

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18. Autistic children’s futures are always precarious due to the nature of the disability, but now, with the lack of education and no team support, my sons will be at an even greater disadvantage than before. This is unacceptable.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at Los Angeles County, California.

DocuSigned by:

Christine Ruiz

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13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

**DECLARATION OF MARIANNE
BEMA IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson
Courtroom: 10 A

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22 I, Marianne Bema, declare:

- 23 1. I am a resident of Los Angeles County, California.
24 2. I have three school-aged children.
25 3. I am very concerned about the format and quality of education that is
26 present during distance learning.
27 4. My children were not very attentive to the online learning format, which is
28 certainly normal for teenage boys and young children.

1 5. Online classes were only a few hours a week instead of the usual school-
2 length day.

3 6. During the online classes, the student's attention was minimal and on one
4 occasion, the teacher became frustrated and quit the online session early.

5 7. The online classes were not very safe, and were subject to hacking.

6 8. Additionally, the internet connection at my house is very spotty
7 (sometimes it works and sometimes it doesn't) which causes problem when relying for
8 school to be conducted solely online.

9 9. I am originally from Cameroon, Africa and even though I speak several
10 languages, there is small language barrier, and it is difficult to fully teach my children
11 like a trained teacher would be able to.

12 10. It is best for my children to be in school, paying attention, with trained
13 teachers.

14 11. My eleven-year old's distance learning schedule consisted of logging onto
15 virtual class, three times per week; this is not an education.

16 12. Also my children have IEPs, which were haphazardly implemented (even
17 before the shutdown). This is another concern for me.

18 13. My boys are very active and used to being involved with sports; this is
19 another thing that has been taken away from them.

20 14. Children at home are exposed to dangerous social media interactions and
21 can be easily tracked by predators if they are forced to be online for so many hours, due
22 to distance learning.

23 15. Children build their personality from their interactions with other children.

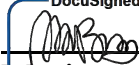
24 16. I also believe that parents are not professional educators,

25 17. Teachers are trained to be watchful - education is also eyes and
26 movements. Teachers can easily define if a child is doing well or not by observing the
27 child's actions in class.

28 18. Nothing good for children will come from keeping them out of school.

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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at Los Angeles County, California.

DocuSigned by:

Marianne Bema

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13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case No.: 2:20-cv-06472 SVW (AFMx)

**DECLARATION OF ASHLEY
RAMIREZ IN SUPPORT OF
APPLICATION FOR TEMPORARY
RESTRAINING ORDER**

Judge: Hon. Stephen V. Wilson

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23 I, Ashley Ramirez, declare:

- 24 1. I am a resident of San Diego County, California.
25 2. I have three school-aged children, ages 10, 8 and 4.
26 3. We were all infected with Covid, but have recovered.
27 4. Even with having personally experienced Covid, I still advocate for my
28 children to return to school.



1 5. Schools can be opened safely.

2 6. Due to the school shutdowns, I have been trying to find a remote job so I
3 can feed my family while watching my boys, this job search has proven difficult.

4 7. On top of searching for work, I have had to become a teacher for my
5 children due to the mandatory school closures in Spring of 2020.

6 8. My oldest son has an IEP.

7 9. Due to his diagnosis, he cannot tolerate distance learning and he basically
8 shut down.

9 10. We have also struggled with behavior problem for my youngest child.

10 11. As a concerned parent, I try to limit my children's screen time because of
11 the negative and addictive affects.

12 12. Distance learning encourages screen time, which causes problems in trying
13 to limit screen time outside of distance-learning.

14 13. My oldest two have attended camp in-person and my youngest is in
15 daycare.

16 14. If it is safe to attend these things in-person, then why are the schools not re
17 opening?

18 15. My children also benefit from the free breakfast and lunch program. This
19 helps our finances and is necessary for our family.

20 16. COVID 19 shutdowns have been negatively impacting our health
21 emotionally, physically, mentally, and now we may be going into severe financial
22 trouble which will make the ones I listed before worse.

23 17. I believe the shutdown is way worse than the virus itself from our
24 experience as a family (except for those that have underlying conditions and elderly).

25 18. I think we need to open schools.

26 19. My children want to go to school.

27 20. We can open schools safely and take precautions.

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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at San Diego County, California.

DocuSigned by:
Ashley Ramirez
Ashley Ramirez



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13 **UNITED STATES DISTRICT COURT FOR**
 14 **THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

DECLARATION OF TIFFANY
MITROWKE IN SUPPORT OF
APPLICATION FOR
TEMPORARY RESTRAINING
ORDER

Judge: Hon. Stephen V. Wilson
 Courtroom: 10A

20 I, Tiffany Mitrowke, declare:

- 21 1. I am a resident of San Diego, California.
- 22 2. I am a single mother of a seven-year old boy.
- 23 3. When my son’s school went online in the Spring of 2020, the teachers
- 24 simply sent homework packets for him to complete through the week.
- 25 4. No one from the school called or reached out to check on his progress.
- 26 5. Besides not being taught in any sense of the word, he is suffering daily



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from the isolation.

6. I hear him crying in the shower because he misses his friends at school and is worried about them.

7. I have repeatedly reached out to the school for answers about what will happen next year but the school has no specific response.

8. No one knows how to plan or what to expect.

9. I would like to pay someone to homeschool my son, but I have heard estimates that the cost is \$20 per hour. I can't afford this.

10. The school receives funds for school yet they are not providing him with an education.

11. My child desperately wants to return to school.

12. I want the schools to open up in the Fall 2020.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at San Diego County, California.

DocuSigned by:
Tiffany Mitrowke
Tiffany Mitrowke



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13 **UNITED STATES DISTRICT COURT FOR
14 THE CENTRAL DISTRICT OF CALIFORNIA**

15 **MATTHEW BRACH, et al.**

16 Plaintiffs,
17 v.

18 **GAVIN NEWSOM, et al.**

19 Defendants.

20 Case No.: 2:20-cv-06472 SVW
21 (AFMx)

22 **DECLARATION OF ADEBUKOLA
23 ONIBOKUN IN SUPPORT OF
24 APPLICATION FOR
25 TEMPORARY RESTRAINING
26 ORDER**

27 Judge: Hon. Stephen V. Wilson
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I, Adebukola Onibokun declare:

1. I am a resident of Santa Clara County, California.
2. Even though I am a neurosurgeon, I am bringing this suit in my individual capacity.
3. I have two school-aged children.
4. They attend a private, parochial school and their school has applied for a waiver so that regular classes can begin soon.
5. My children’s school provided distance learning as a result of the shut-down in March.
6. Distance learning is not comparable to attending school in-person, with other students and teachers.
7. Just one or two online sessions of instruction per day is not adequate for a proper education.
8. The quality, intensity, and diversity of the instruction kids are receiving has been negatively impacted by distance learning. The depth of the distance learning via Zoom is nowhere close to what kids were receiving during in-class sessions.
9. Teachers are very important as instructors and can provide immediate feedback- this type of interaction is absent from online instruction.
10. My children went to summer camp recently and returned much happier- the social interaction they had with other children was vital to their well-being.
11. If camps are safe to attend, then schools should be open.
12. My children want to return to school in-person.
13. I think it is safe for them to return to in-person school.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at Santa



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Clara County, California.

Dated: July 28, 2020

DocuSigned by:
Adebukola Onibokun
Adebukola Onibokun



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15 **MATTHEW BRACH, et al.**
 16 Plaintiffs,
 17 v.
 18 **GAVIN NEWSOM, et al.**
 19 Defendants.

Case Number: 2:20-CV-06472-SVW-AFM

20 **DECLARATION OF BRIAN**
 21 **HAWKINS IN SUPPORT OF**
 22 **APPLICATION FOR**
 23 **TEMPORARY RESTRAINING**
 24 **ORDER**

Judge: Hon. Stephen V. Wilson
 Courtroom: 10A

25 I, Brian Hawkins declare:

- 26 1. I am a resident of San Jacinto, Riverside County, California.
- 27 2. I have two children, an eight-year old girl and a seven-year old boy.
- 28 3. I am a proud African American father and pastor of a church.
4. My son has an IEP in place.
5. He suffers from ADHD and needs special assistance with staying focused on tasks and he must be prompted to concentrate and complete his school-work.
6. His IEP specifies that he is to have a special aide in the class to help him



1 throughout the entire school day.

2 7. He also receives special services, outside of the regular classroom, several
3 hours per week.

4 8. I am concerned that my son is spending too much time by himself now,
5 and not going back to in-person learning will negatively affect him socially and
6 emotionally (which is also something of a concern due to specifics in his IEP).

7 9. After the shut down in March of 2020, his school only provided him with
8 distance learning, the plan was for him to log into “Class Dojo” which was supposedly
9 to substitute for classroom learning.

10 10. None of his IEP services can properly be implemented through distance
11 learning.

12 11. Due to his ADHD, the online format was difficult for him to follow and to
13 comprehend, and he struggled a lot.

14 12. My daughter will be entering the third grade in the Fall of 2020.

15 13. She is extremely social and talkative, however she reports to me that she is
16 angry.

17 14. She tells me that she is “mad about not going to school,” “wants to make
18 new friends,” and wants to “learn to write in cursive.”

19 15. I have also seen physical symptoms manifest as a result of her anxiousness
20 in not attending school, not having interactions with classmates, and being isolated in
21 the distance learning environment.

22 16. I am a full-time pastor and my children have been forced to go to my office
23 with me – this is not an appropriate classroom environment.

24 17. I have personally spoken with many individuals in my community and
25 have counseled parents and kids who are depressed and suicidal.

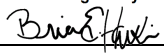
26 18. We need to get our children back in the classroom.

27 19. It is harmful to let the school shutdowns continue.

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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and is executed this 28th day of July 2020, at Riverside County, California.

DocuSigned by:

Brian Hawkins

