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

MATTHEW BRACH, et al.
 Plaintiffs,
 v.
GAVIN NEWSOM, et al.
 Defendants.

Case No.: 2:20-CV-06472-SVW-AFM

**DECLARATION OF DR. JAYANTA
 BHATTACHARYA IN SUPPORT OF
 PLAINTIFFS' OPPOSITION TO
 DEFENDANTS' REQUEST FOR
 JUDICIAL NOTICE**

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



1 Jayanta Bhattacharya declares, pursuant to 28 U.S.C. § 1746:

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

4 2. I previously filed a declaration in this case in support of Plaintiff’s
5 application for a temporary restraining order, and my background and education are
6 detailed in that declaration. *See* Dkt. 28-3 ¶¶ 2–15.

7 3. In support of this declaration, I have reviewed Defendants’ Request for
8 Judicial Notice in Opposition to Application for Temporary Restraining Order, Dkt. 36,
9 and the exhibits attached thereto, and Defendants’ Memorandum of Points and
10 Authorities in Opposition to Application for Temporary Restraining Order, Dkt. 35.

11 **Schools in Israel**

12 4. First, I understand that Defendants believe COVID-19 outbreaks swept
13 through schools two weeks after they reopened in Israel for in-person instruction. *See*
14 Dkt. 35 at 11 n.6 (citing Dkt. 36, Exs. Y & Z). While the Israeli opening of schools is
15 cited by Defendants as a counter-example to the many other studies showing the
16 negligible risk of transmitting COVID-19 by children, the Israeli reports¹ suggest it was
17 a unique circumstance, with children crowded into a small closed space and no
18 precautions taken against disease spread. The *New York Times* story cited above
19 provides two illustrative anecdotes of symptomatic teachers passing the virus to their
20 students. And the primary source of disease spread was a single symptomatic teacher
21 infecting colleagues and students at the Gymnasia Rehavia high school (out of the
22 5,000+ schools in Israel). This finding is consistent with the evidence that children are
23 very unlikely to spread the disease to adults. Schools can be opened safely for in-person
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26 ¹ Isabel Kershner and Pan Belluck (2020) “When COVID Subsided, Israel Reopened Its
27 Schools. It Didn’t Go Well.” THE NEW YORK TIMES (Aug. 4, 2020), available at
28 <https://www.nytimes.com/2020/08/04/world/middleeast/coronavirus-israel-schools-reopen.html>.

1 learning if reasonable precautions – specific to the circumstances of each school – are
2 taken.

3 5. In the Israeli case, as with much of the anecdotal evidence cited, no viral
4 sequencing analysis was conducted to verify the direction of disease spread. A [report in](#)
5 [Science Magazine](#) emphasizes that no causal connection should be inferred from the
6 correlation between Israeli school openings and the rise in cases there: “In Israel,
7 infections among children increased steadily after schools opened. That paralleled a rise
8 in cases nationwide, but it’s not clear whether the country’s rising caseload contributed
9 to the increase within schools or vice versa.”²

10 6. A systematic review³ of evidence in early May concluded that even though
11 it may be possible for children to be infected with the virus and even transmit it,
12 “[o]pening up schools and kindergartens is unlikely to impact COVID-19 mortality
13 rates in older people.”

14 **Schools in South Korea**

15 7. Second, although Defendants do not cite or explain any reports in their
16 Opposition memorandum concerning schools in South Korea, they include studies of
17 these schools in their Request for Judicial Notice. *See* Dkt. 36, Exs. CC.

18 8. A recent South Korean contact tracing study⁴ traced the 59,073 contacts of
19 5,706 COVID-19 patients, confirmed by PCR to be infected. The authors divide up
20

21 ² Jennifer Couzin-Frankel, Gretchen Vogel, Meagan Weiland (2020) “School openings
22 across globe suggest ways to keep coronavirus at bay, despite outbreaks” SCIENCE,
23 [https://www.sciencemag.org/news/2020/07/school-openings-across-globe-suggest-](https://www.sciencemag.org/news/2020/07/school-openings-across-globe-suggest-ways-keep-coronavirus-bay-despite-outbreaks)
[ways-keep-coronavirus-bay-despite-outbreaks](https://www.sciencemag.org/news/2020/07/school-openings-across-globe-suggest-ways-keep-coronavirus-bay-despite-outbreaks) (accessed online Aug. 12, 2020)

24 ³ Jonas Ludvigsson (2020) “Children are Unlikely to be the Main Drivers of the
25 COVID-19 Pandemic – A Systematic Review” *Acta Paediatrica*, DOI:
10.1111/apa.15371 (accessed online Aug. 6, 2020).

26 ⁴ 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.* (Oct. 2020),
28 available at <https://doi.org/10.3201/eid2610.201315> (accessed online July 27, 2020),

1 their patients into 10-year age bins and report the fraction of contacts in each bin who
2 also tested positive. The authors report that among 0-9-year-old cases, 5.3% of
3 household contacts tested positive, while among 10-19-year-old cases, 18.6% of
4 household contacts tested positive (in both groups, only about 1% of non-household
5 contacts tested positive.

6 9. This pattern of evidence does not imply that older children spread the
7 corona virus as much as adults. The authors define an index case as “the first identified
8 laboratory-confirmed case or the first documented case in an epidemiologic
9 investigation within a cluster.” In other words, they cannot tell whether an index case
10 was the first person within a cluster to be infected – just that they were the first to come
11 to the attention of public health authorities. The authors of the South Korean study do
12 not sequence the genome of the viruses identified to document mutation patterns.
13 Consequently, they cannot distinguish whether the index patient passed the virus to the
14 contact or the other way around.

15 10. The authors report that children 0-9 years old represented only 0.5% of
16 their index cases and children 10-19 years old represented only 2.2% of their index
17 cases. The vast majority of their cases were 20 years old or older. The study data
18 collection took place during a period of strict lockdown and school closure in South
19 Korea. It is highly unlikely that these few index children spread the disease throughout
20 their cluster. The authors document that adults are more likely to have contacts outside
21 their household than children during this period. It is far more likely that older members
22 of households were the true index cases and spread the infection to children within the
23 household. Third, the authors report that 7% of household contacts of 20–29 year olds
24 were infected. This is less than the positive case rate for 10–19 year olds. If the higher
25 rate of infections among household contacts of 10–19 year olds is evidence of increased
26 transmissibility, then the low rate of infections among households of 20–29 year olds
27 should be taken as evidence of decreased transmissibility for patients in that age group.
28 A better interpretation is that the study methods of this paper do not permit any

1 inference whatsoever about the relative propensity of children and adults to transmit the
2 disease.

3 11. A follow-on paper on South Korean case study, reanalyzing the same data
4 set, the same patients, and published in the *Archives of Disease in Childhood*, clarified
5 the direction of transmission of disease by focusing only on cases without “shared
6 exposure” to a positive case.⁵ This method focuses the analysis only on situations where
7 contact tracing without confirmatory viral genome analysis may be able to distinguish
8 the direction of disease spread. Using this method, the authors found a single case (out
9 of 107 pediatric index cases and 248 household members who also tested positive) of a
10 child passing on the disease to another household member – another child. They find
11 no instances of a child passing the disease to an adult.

12 12. This reanalysis of the South Korean paper is instructive, and the lesson
13 should be clear. Correlation studies and anecdotes that do not distinguish the direction
14 of spread of disease provide no information whatsoever about the safety (or lack
15 thereof) of school reopening. In every single instance, when a more careful analysis that
16 identifies the direction of spread (such as this South Korean study) is conducted, the
17 analysis finds that children pose a negligible risk of spreading the disease to adults, both
18 at school and at home.

19 **Schools in Georgia and Indiana**

20 13. Next, in the same footnote where Defendants cite the anecdotal Israeli
21 evidence, they also assert that when schools recently reopened for in-person instruction
22 in Georgia and Indiana, both states faced COVID-19 outbreaks. *See* Dkt. 35 at 11 n.6
23 (citing Dkt. 36, Exs. AA & BB).

24 14. The comparison between schools in California, on the one hand, and
25 schools in both Georgia and Indiana, on the other, is not a persuasive indicator of the

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27 ⁵ Kim J, Choe YJ, Lee J, et al., *Role of children in household transmission of COVID-*
28 *19*, ARCHIVES OF DISEASE IN CHILDHOOD (August 7, 2020), available at doi:
10.1136/archdischild-2020-319910

1 success for reopening schools. Exhibit BB, for example, establishes that one middle
2 school student in Indiana happened to have the coronavirus and attend school.
3 Importantly, the news article does not say that same student transmitted the virus or
4 even suffered any adverse effects. Nor is there any evidence of which I am aware
5 suggesting that such transmission occurred. In Georgia, nine people tested positive for
6 the coronavirus at a school, but again the article does not establish how those students
7 received the virus. *See* Ex. AA. Nor does the article suggest that the students
8 transmitted it in school. The Defendants are citing correlational evidence, from which
9 no causal inference should be drawn.

10 15. Defendants also cited articles about the coronavirus and overnight camps
11 in Georgia. *See* Ex. W.⁶ The summer camp anecdote is no analogy for schools. There,
12 the kids were older, they slept together in crowded cabins, and engaged in lots of
13 singing and screaming. Many of the children who developed symptoms did so within
14 two days of arriving at the camp. Since the time between viral exposure and symptom
15 development is typically longer than two days, this suggests strongly that many of the
16 children in the camp were infected prior to their arrival at the camp. Some developed
17 cases more than two weeks after leaving the camp. Since symptom development – if it
18 happens at all – is typically within two weeks of infection, this leaves open the
19 possibility that the campers were exposed at home. Since this outbreak corresponds to a
20 time when community spread was common in Georgia, these are not just theoretical
21 possibilities, and indeed likely. Finally, as with many of the correlational contact
22 tracing studies, there is no indication of whether the transmission was from staff to
23 student, or student to student.

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26 ⁶ A recent article in the Wall Street Journal also misinterpreted this study: *See* Caitlin
27 McGabe, *Latest Research Points to Children Carrying, Transmitting Coronavirus*, THE
28 WALL STREET JOURNAL (Aug. 9, 2020), available at
https://www.wsj.com/articles/latest-research-points-to-children-carrying-transmitting-coronavirus-11596978001?st=4rrxzoyo0jou5ns&reflink=article_email_share.

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.

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5 Dated: August 12, 2020



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

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