An Open Letter to the Vermont Agency of Education
July 18, 2021

Dear Vermont Agency of Education,

I am writing this letter in response to the release of the AOE's draft document titled: *BUILDING FOR THE FUTURE VERMONT'S PLAN FOR EDUCATION RECOVERY AND BEYOND DRAFT REPORT*. [1] This letter addresses the AOE's guidance concerning the continued use of face masks.

For over a decade I have provided evidence-based health education in Vermont schools for students in pre-K- 12th grade. During that time I have developed curricula covering subjects such as hygiene, disease prevention, and biology. I have also facilitated tobacco-prevention youth groups and served on my school's Safe and Healthy Schools Team.

Upon hearing my school's plan to implement the use of mandatory face masks for students and staff returning to school last fall, I resigned from my position. Based upon my understanding of biology, hygiene and disease prevention, as well as the impacts this could have on human development for all children, and especially for those with developmental or physical disabilities and experience with trauma, I was very concerned.

Having never before heard of universal mask use practices, I started a statewide survey of Vermonters to gather data about the known health effects from wearing masks, as well as extensive research into the causes of those health difficulties. The results of this research, which confirms that mask use in Vermont is causing all of the expected harms, is published in the Vermont Mask Survey Final Report. [2]

Not only in my opinion, but also that of the World Health Organization[3] and others (examples include: The Lancet[4] and Ontario Civil Liberties Association[5]), before decision-makers consider community face mask policies, the following issues need to be addressed:

- Ongoing data collection of the harms caused by face masks
- An honest cost/benefit analysis of the use of masks

These considerations have not occurred at any level of government.

EVIDENCE-BASED:

In order to conduct a cost/benefit analysis, we need to weigh the quality of the evidence on both sides. Instead of quality evidence, blanket statements without evidence abound, such as this statement in the AOE draft document, page 8:

"The surveillance testing program consistently yielded a very low positivity rate among school ***staff,*** *generally lower than 1%, and* ***demonstrated that the stringent health protocols implemented by local***

1 https://education.vermont.gov/sites/aoe/files/documents/edu-draft-building-for-the-future-vermonts-plan-for-education-recovery-and-beyond.pdf
2 https://vtmasksurvey.com/final-report-2021/
3 https://apps.who.int/iris/handle/10665/332293
4 https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00193-8/fulltext
5 https://ocla.ca/ocla-report-2021-1-ontarios-mandatory-facemasking-and-physical-distancing-law-reg-36420/

education agencies (LEAs) were effective in keeping positivity rates well below the state's already low average *and* ***built confidence in our ability to return to in-person learning***.*"*

This is not a scientific statement because ***correlation*** does not equal ***causation***. First of all, the AOE offers no evidence supporting their conclusion that stringent health protocols lead to low positivity rates. (In fact, there have been high death rates[6] in other states with low positivity rates[7], which is one example demonstrating that these two measurements have no bearing on each other.) Secondly, a number of families and educators have chosen NOT to return to in-person learning due to the stringent health protocols.

The question of mask use in Vermont schools is addressed on page 28 of the AOE draft document:

"LEA plans must include information on whether and how the funds will be used to implement prevention and mitigation strategies in line with current CDC guidance, in order to continuously and safely operate schools for in-person learning."

This implies that funding is tied to a school's adherence to Centers for Disease Control's recommendations. While funding is a serious consideration, it should not be the primary one.

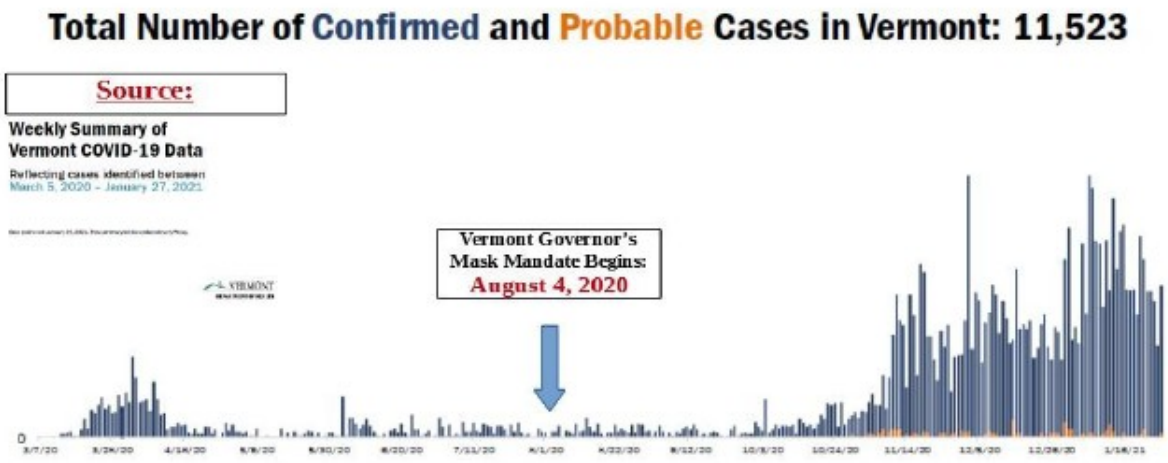
In its brief titled *Guidance for COVID-19 Prevention in K-12 Schools*[8] dated July 9th, 2021, the CDC is recommending the use of masks indoors by everyone who is not vaccinated over 2 years of age. The CDC document also appears to provide an option for schools:

"However, if school administrators decide to remove any of the prevention strategies for their school based on local conditions, they should remove them one at a time and monitor closely (with adequate testing through the school and/or community) for any increases in COVID-19 cases."

The scientific, evidence-based reasons for the CDC's recommendation for "adequate testing" are unknown; the CDC document provides NO REFERENCES for this, or any of their other recommendations.

In fact, there is convincing evidence that there is no link to be found[9] between mask use and low case rates, including this chart on page 53 of the Vermont Mask Survey Final Report[10]:

6 https://datavisualizations.heritage.org/public-health/covid-19-death-rates-by-state/
7 https://coronavirus.jhu.edu/testing/testing-positivity
8 https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/k-12-guidance.html
9 https://rationalground.com/post-thanksgiving-mask-charts-still-no-evidence-that-masks-work/
10 https://vtmasksurvey.com/final-report-2021/



The CDC's Scientific Brief: Community Use of Cloth Masks to Control the Spread of SARS-CoV-2[11] provides a compilation of the evidence supporting the CDC's recommendations around the use of masks. However none of the 45+ references provide the real-world, direct evidence needed to conclude that mask wearing in the community is effective. A full discussion of why the kinds of evidence provided by the CDC are not a substitute for high quality research can be found by following this link[12].

SAFETY:

While there is no evidence of safety, evidence abounds linking mask use to serious potential health impacts, none of which are addressed in the AOE's document, or the CDC's guidance.

As for the safety of mask use in community settings, the CDC *Scientific Brief*[13] includes 9 references. A chart with their findings and credibility can be found by following this link[14]. The only study[15] among these 9 references that addresses mask use by children found that walking for 30 minutes while wearing a mask caused significant increases in respiration and pulse rate, and significant changes in pulse rate and strength. This is not evidence of safety; these are symptoms of O2 and CO2 problems (see below).

11 https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/masking-science-sars-cov2.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fmore%2Fmasking-science-sars-cov2.html

12 https://vtmasksurvey.com/wp-content/uploads/2021/03/CDC-EVIDENCE-LIST-WITH-TYPES-OF-STUDIES-HIGHLIGHTED.4.pdf

13 https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/masking-science-sars-cov2.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fmore%2Fmasking-science-sars-cov2.html

14 https://vtmasksurvey.com/wp-content/uploads/2021/07/CDC-new-evidence.-safety.TABLE_.7.8.21.jpg

15 Assessment of Respiratory Function in Infants and Young Children Wearing Face Masks During the COVID-19 Pandemic | Pediatrics | JAMA Network Open | JAMA Network

Table 2. Respiratory Parameter Measures

	Participants by group, median (IQR)								
	Group A				Group B				
Parameter	At 15 min	At 30 min	At 45 min	At 60 min	At 15 min	At 30 min	At 45 min	At 60 min	After walking test
Sao_2, %	98.0 (97.3-98.0)	98.0 (98.0-99.0)	98.0 (97.0-98.8)	98.0 (97.5-98.0)	98.0 (98.0-98.0)	98.0 (97.0-98.0)	98.0 (97.5-98.0-)	98.0 (97.0-98.0)	98.0 (97.0-98.0-)
P_{ETCO_2}, mm Hg	33.0 (32.5-35.0)	33.5 (32.3-34.8)	33.0 (32.0-34.0)	32.5 (32.0-34.0)	37.0 (34.0-39.0)	36.0 (34.0-38.0)	36.0 (35.0-37.5)	36.0 (34.0-38.0)	36.0 (35.0-37.5)
PR, pulsations/min	128.5 (113.5-140.0)	128.5 (110.5-140.0)	130.0 (118.5-140.0)	130.0 (116.3-140.0)	90.0 (84.0-103.5)	91.0 (80.0-97.0)	90.0 (85.0-98.5)	99.0 (83.0-102.0)	105.0 (100.0-115.0)
RR, breaths/min	30.0 (28.0-31.5)	31.0 (28.0-33.0)	30.0 (26.5-33.8)	31.0 (26.5-32.0)	20.0 (17.5-24.0)	21.0 (19.0-24.5)	22.0 (20.0-25.0)	24.0 (19.0-26.0)	26.0 (24.0-29.0)
PI, %	3.5 (2.6-4.5)	2.9 (2.4-4.3)	3.8 (2.6-4.8)	3.6 (2.6-4.5)	4.6 (2.9-5.8)	4.3 (2.9-6.5)	4.1 (2.6-6.2)	4.3 (2.8-5.9)	3.5 (2.7-5.0)

Abbreviations: IQR, interquartile range; P_{ETCO_2}, partial pressure of end-tidal carbon dioxide; PI, perfusion index; PR, pulse rate; RR, respiratory rate; Sao_2, oxygen saturation.

According to the OSHA standards, less than 19.5% of O2 is considered oxygen deficient, and more than 0.5% CO2 is considered abnormal. A pilot study[16] found the air under an N-95 mask (which is made to be as breathable as possible) contained only 16.6% O2, and CO2 levels were 2.9%. The authors note:

"...breathing-environment CO2 greater than 3% has been associated with detrimental physiological effects, and prolonged breathing of CO2 at greater than the atmospheric level can cause symptoms (eg, headache, anxiety, confusion) and the additional physiological stress of compensatory mechanisms."

J. A. Pritchard, author of the first OSHA manual[17] for supervising respiratory protection (such as ½ face dust masks) warned that many of the early symptoms of oxygen deprivation may not be noticeable, and can include increased heart rate, impaired thinking, and impaired coordination.

Our blood levels of O2 and CO2 do not usually change, even when we engage in physical activity which requires increased exchanges of those gases in order to fuel our muscles. This is why blood levels of O2 and CO2 are not an indicator of oxygen deprivation at a cellular level. For example, a study of nurses in 2013[18] found that: "Although physiologic measures of heart rate, O2, and CO2 did not reflect a difficulty with gas exchange, nurses reported feeling more short of breath the longer they wore respiratory protection."

Due to the breathing resistance, the dead-air volume in the lungs, dangerously high CO2 levels and a 16.6% O2 level under the mask, there is going to be less O2 and more CO2 building up inside the lungs.

The CDC's NIOSH blog[19] writers note that long-term use of respirators by health care workers can effect CO2 levels in the body:

16 https://www.researchgate.net/publication/43344996_Physiological_impact_of_the_N95_filtering_facepiece_respirator_on_healthcare_workers

17 https://books.google.com/books?hl=en&lr=&id=W30_K_lcjksC&oi=fnd&pg=PR7&ots=MBt1bIlBSK&sig=rtS99QakRq0Z9HYYcpEbUoLqp9U#v=onepage&q&f=false

18 https://www.ajicjournal.org/article/S0196-6553(13)00592-0/fulltext

19 https://blogs.cdc.gov/niosh-science-blog/2020/06/10/ppe-burden/

"Some of the known physiological effects of increased concentrations of CO2 include:

1. Headache;
2. Increased pressure inside the skull;
3. Nervous system changes
4. Increased breathing frequency;
5. Increased "work of breathing", which is result of breathing through a filter medium;
6. Cardiovascular effects (e.g., diminished cardiac contractility, vasodilation of peripheral blood vessels);
7. Reduced tolerance to lighter workloads."

The first randomized cross-over study assessing the effects of surgical masks and N95 masks on cardiopulmonary and cardiac capacity of healthy adults[20] was published in December, 2020, in the midst of COVID-19 mask mandates. The authors note:

"From our data, we conclude that wearing a medical face mask has a significant impact on pulmonary parameters both at rest and during maximal exercise in healthy adults…. Increased breathing resistance [caused by surgical and N95 masks] *requires more work of the respiratory muscles... leading to higher oxygen consumption."*

OSHA[21] has been careful to clarify that this new category of "cloth face masks" is NOT considered PPE because they are not effective protection, and therefore the Vermont Department of Labor[22] has clarified that employers requiring face masks in response to COVID-19 do not need to follow existing OSHA worker protection standards[23] as they relate to the use of respirators. However, these legal gymnastics do not change the fact that people have been experiencing the same symptoms of unhealthy levels of O2 and CO2 as one would expect when breathing is restricted with OSHA-approved respirators. In fact, due to the tighter fit and moisture-retention materials used, "face masks" may create even more hazards than those regulated by worker protections.

YOUTH:

The effects of prolonged mask use by youth has not been studied due to the danger involved in conducting such a study. However, over the past year the following high-quality studies of the impacts on children have been published:

- In June, 2021 the only Randomized Clinical Study of children and masks[24], originally published in *JAMA Pediatrics*, found that the CO2 levels under the masks were 6 times the unacceptable levels after just 9 minutes. Authors concluded: *"We suggest that decision-makers weigh the hard evidence produced by these experimental measurements accordingly, which suggest that children should not be forced to wear face masks."*

20 https://doi.org/10.1007/s00392-020-01704-y
21 https://www.osha.gov/coronavirus/faqs
22 https://labor.vermont.gov/sites/labor/files/doc_library/Understanding face masks and respirators FACT _VTupdates.pdf
23 https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134
24 https://jamanetwork.com/journals/jamapediatrics/fullarticle/2781743#pld210019t1?appId=scweb

- In the fall of 2020, a survey in Germany[25] collected over 20,000 surveys parents in two weeks describing the effects of masks on their children. Half of the students in the survey were experiencing headaches and difficulty concentrating, over a third reported drowsiness, and over a quarter of them felt short of breath and dizzy.

Numerous social and emotional effects are also described in the German survey. The authors conclude by expressing concern that there is no previous research on the safety of the materials, or the long-term use of masks on children:

"Based on our data, it can be said that the effects of compulsory masks on the quality of life and presumably also on the health of individual children should not be ignored by politics and society...

"Looking at the symptom spectrum of the complaints, 66.1% of the interviewees show a clear and broadly diversified burden of complaints, both in the physical (rashes, headaches, etc.), as well as in the mental (fears, irritability, etc.) and intellectual (concentration disorders) areas in the children of the interviewees…

"Families are currently free to choose their children's mask type according to the thickness of the material and thus there is still a margin between breathable and multi-layer, rather airtight models, yet the problem remains that parents, regardless of whether or not they themselves approve of the corona protection measures, can overburden their children through ignorance or fear of infection by using masks that are inappropriate for their child. A benefit-risk analysis is therefore called for."

Evidence of mental/behavioral harm that Vermont students are suffering is suggested on page 12 of AOE's Draft *BUILDING FOR THE FUTURE VERMONT'S PLAN FOR EDUCATION RECOVERY AND BEYOND*, where it states that schools reported "*a significant rise in anxiety and stress"*:

"*47% of districts reported an increase in students' anxiety, stress, or internalizing behavior, and 49% reported an increase in the need for school counseling, mental health counseling and/or family supports.*"

While correlation does not equal causation, existing research linking the possibility[26] that these effects could be caused by masks abound, and certainly warrants investigation.

There is no research establishing that prolonged use of masks by children is effective in preventing the spread of viruses. In fact, research continues to emerge confirming that youth are not likely to spread the virus to others, including a study conducted by Vermont's Health Commissioner in 2020[27], where the authors state: "*We found that seeing more children per day **does not increase** the probability of getting COVID-19.*"

In the fall of 2020 the World Health Organization (WHO) issued advice for mask use among youth[28] that contradicted much of the advice given to Vermont schools. Based on evidence of the low-risk youth pose, the WHO suggested that masks should only be used by youth in areas with widespread transmission, (Vermont boasts a 1% positivity rate), and even then not by children 5 years old and

25 https://doi.org/10.21203/rs.3.rs-124394/v1
26 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7417296/
27 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3676570
28 https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-children-and-masks-related-to-covid-19

younger. It also suggested that masks should *not* be worn during physical activity, and decisions about mask use be made in consultation with other professionals and parents.

CONCLUSION:

Normally, we would want to shield children from the frightening parts of life. Instead, with masks, we have asked them to be on the front lines. The reasons why the CDC, AOE, Department of Health, local school boards, and others are choosing to ignore the serious health impacts of mask use is unknown, since there is no evidence of safety, and mounting evidence of harm.

We do know that the *Vaccine or Mask* policy used in health care settings has been described as a form or coercion[29] in order to convince more staff to receive the annual flu vaccines. Do the staff at the AOE feel comfortable expanding the use of this coercive policy to schools, where they are impacting children, who have no choice whatsoever?

We need to consider whether the additional funding provided is worth the risk of complying with health practices which have no quality evidence of safety or effectiveness.

I hope we can work together to protect the mental, physical, and social health of our students and staff.

I welcome the opportunity to discuss how we can address the need for ongoing data collection and a fair cost/benefit analysis.

Sincerely,

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29 https://www.ona.org/wp-content/uploads/ona_kaplanarbitrationdecision_vaccinateormask_stmichaelsoha_20180906.pdf