Safe and Successful Schools

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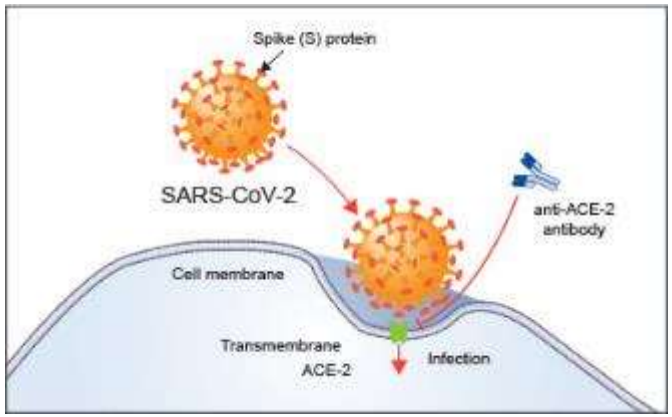
The pathway forward (this…)

The pathway forward (not this…)

We know more than we did in March 2020

Why do children get COVID-19 infrequently with less severe disease?

- ACE2 receptors are the entryway for COVID
- Ability to make ACE2 receptors varies with age
  - Elementary students < middle and high school students < adults

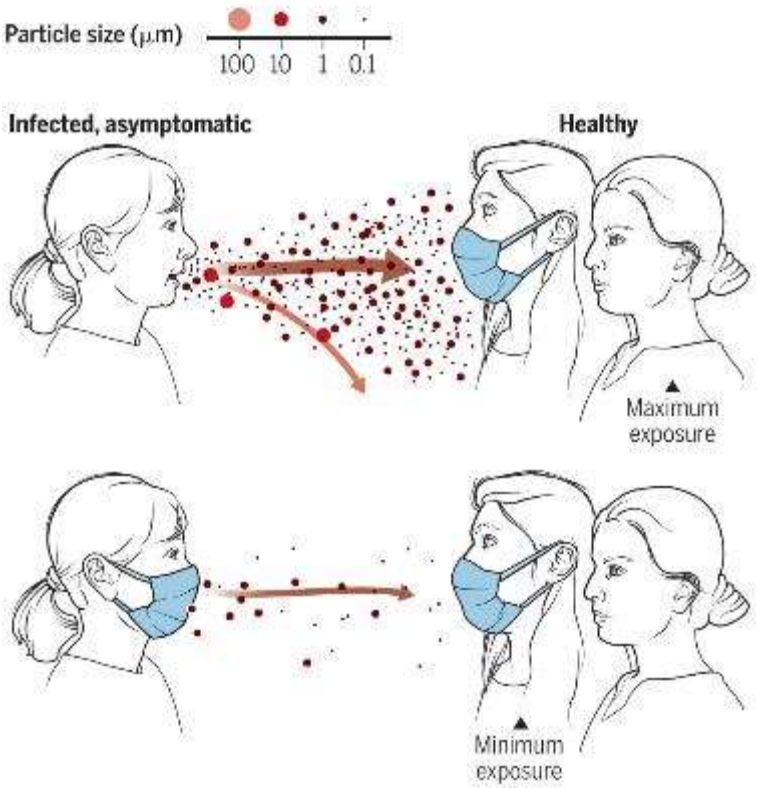


- **Implications: fewer doors → less disease and more mild disease**

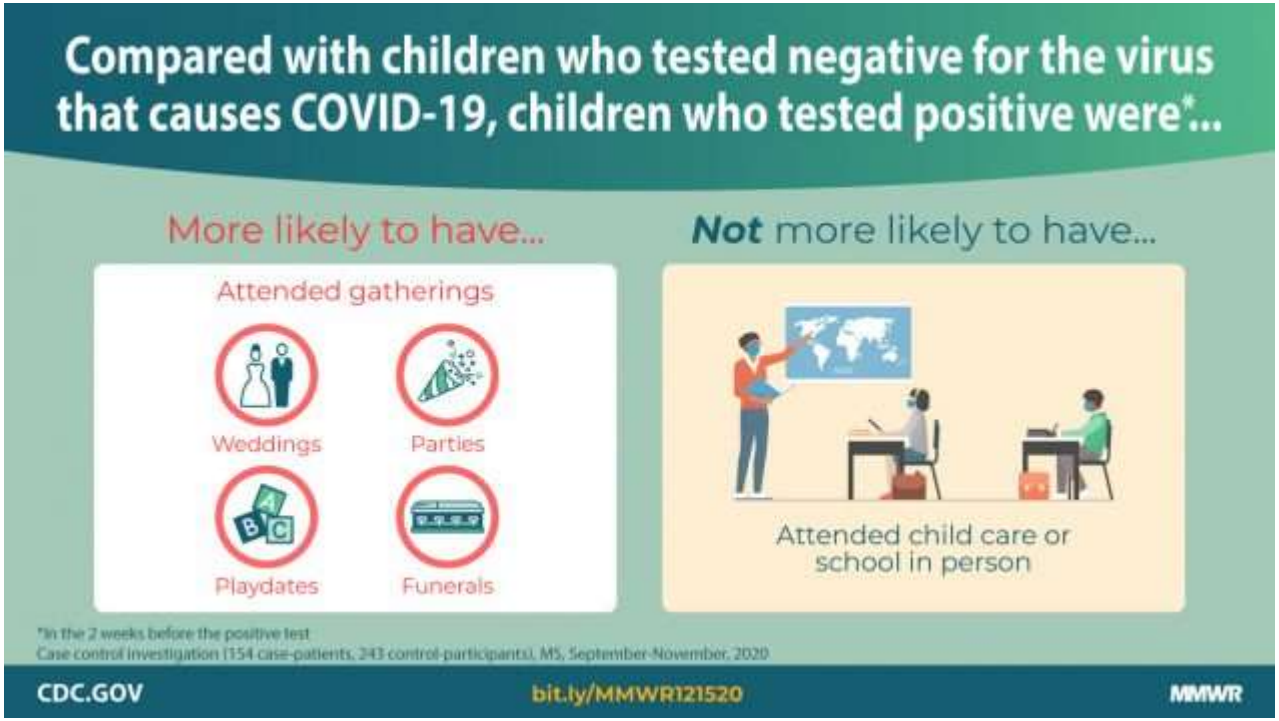
Bunyavanich et al. JAMA 2020

Why don't children transmit as efficiently?

- Practical considerations:
  - **Smaller lungs** → smaller clouds of viral particles
  - **Less severe disease** →less coughing → less spread
  - **Children are shorter than adults** → gravity pulls respiratory droplets down

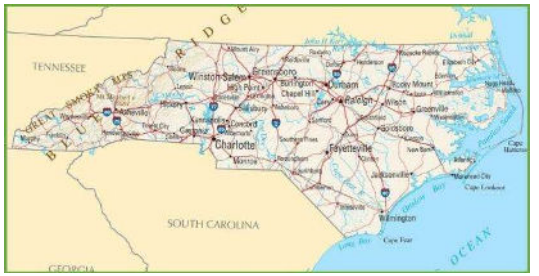


Where are children getting COVID?



Hobbs, et al. Factors Associated with Positive SARS-CoV-2 Test Results in Outpatient Health Facilities and Emergency Departments Among Children and Adolescents Aged <18 Years — Mississippi, September–November 2020. MMWR 2020; ePub: 15 December 2020.

Transmission in schools with high community prevalence (1)



- **Study in North Carolina Sept-Nov 2021**
- **Community rates up to 29 cases/100,000 per day**
- **ABC schools: the 3 Ws (wear your mask, wait 6 feet, wash your hands)**
- **773 community cases, 32 cases of in-school transmission in ABC schools**
  - Three clusters in ABC schools, one due to no masking in pre-kindergarten, 2 in special needs setting, 1 with eating in close proximity.

- **No child-to-adult transmission cases documented**

https://pediatrics.aappublications.org/content/pediatrics/early/2021/01/06/peds.2020-048090.full.pdf

Transmission in schools with high community prevalence (2)

- NC residents with COVID19 infected approximately 1 other individual
- If the same number of transmissions occurred in schools→800-900 cases in the schools
- Other reasons for success: detailed plans for all activities within school, contact tracing with county health departments, public reporting of infections, and **the ability to share lessons learned peer-to-peer**.

Implications: Mitigation strategies make a difference, key to prevention especially when high community rates. Data suggest that schools safer than community if mitigation in place

https://pediatrics.aappublications.org/content/pediatrics/early/2021/01/06/peds.2020-048090.full.pdf

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What not to do: An Outbreak in a High School/Middle School in Israel

- Re-open in mid-May
- Outbreak in late May
- >150 infections
- Heat wave a few days after re-opening
- Stopped masking
- Index cases present & symptomatic
- + Air conditioning, closed windows

Stein-Zamir et al. Eurosurveillance Jul 2020

What not to do: A High School/Middle School in Israel

- **Implications**: masks, physical distancing, ventilation are all key. Symptom screening could have potentially helped.

Stein-Zamir et al. Eurosurveillance Jul 2020

We Know More than We Did in March 2020

Masks, masks, masks, masks

Physical Distancing

Stay Home when Sick/Screening

Ventilation

Symptomatic and asymptomatic testing

Small, Stable Groups

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What about kids with asthma?

- Does asthma make a child or adolescent get COVID19 more frequently?
- Do they get more ill?

COVID-19 is not a driver of clinically significant viral wheeze and asthma

Table 1 Breakdown of presentations (viral wheeze and asthma combined) per year

Time frame	Presentations	Admitted (%)	Intensive care admissions
2017 (23/8–20/9)	187	123 (65.7)	1
2018 (30/8–27/9)	290	187 (64.5)	3
2019 (29/8–26/9)	229	139 (60.7)	2
2020 (24/8–21/9)	237	133 (56.1)	1

Emergency department visits in the UK in the first 4 weeks of school each year

In 2020, all admissions tested for SAR-CoV-2. No asthma admissions had a positive COVID test.

Roland D, Teo KW, Bandi S, Lo D, Gaillard EA. COVID-19 is not a driver of clinically significant viral wheeze and asthma. *Arch Dis Child*. 2021;106(4):e22. doi:10.1136/archdischild-2020-320776

Same number of children with asthma in those with a positive and negative test

18,487 children in Mexico epidemiological surveillance database with testing results

Positive test: 3.5% with asthma

Negative test: 3.8% with asthma

Adults: 2.8 vs. 3.7%, statistically different

Implications: Asthma is not a risk factor for having COVID19 in children

Bedolla-Barajas M, Morales-Romero J, Bedolla-Pulido TR, et al. Low prevalence of asthma in Mexican children and adults with a positive rtRT-PCR test for SARS-CoV-2: a cross-sectional study during the 2020 pandemic. *Allergol Immunopathol (Madr)*. 2021;49(3):1-7. Published 2021 May 1. doi:10.15586/aei.v49i3.7

Asthma not associated with COVID hospitalization

979 children and youth (<=21) at Children's hospital of Philadelphia with positive test

Prevalence of asthma 21%, which is the baseline rate in the population

Those with asthma had lower rates of COVID-related hospitalization compared to those without (Odds ratio: 0.40 (0.19-0.84), p=0.02)

Floyd GC, Dudley JW, Xiao R, et al. Prevalence of asthma in hospitalized and non-hospitalized children with COVID-19. *J Allergy Clin Immunol Pract*. 2021;9(5):2077-2079.e2. doi:10.1016/j.jaip.2021.02.038

Implications

Asthma is not associated with risk of infection or with worse disease (severe symptoms or hospitalization) in children and youth.

No additional precautions needed for children with asthma compared to children without.

Equitable Safe Schools

- Communities of color disproportionately impacted
  - Essential workers
  - Overcrowded housing, high density living situations
  - Face barriers obtaining health information
  - Historically low resourced schools

Excess COVID Mortality Among Californians 18-65, by race/ethnicity, March-October 2020

	All races	Asian	Black	Latino	White
All sectors	1.22 (1.20–1.24)	1.18 (1.14–1.23)	1.28 (1.24–1.33)	1.36 (1.29–1.44)	1.06 (1.02–1.12)
Food or agriculture	1.39 (1.32–1.48)	1.18 (1.05–1.33)	1.34 (1.19–1.54)	1.59 (1.47–1.75)	1.16 (1.09–1.24)
Transportation or logistics	1.28 (1.24–1.33)	1.26 (1.12–1.44)	1.35 (1.26–1.46)	1.40 (1.31–1.52)	1.10 (1.02–1.20)
Facilities	1.27 (1.22–1.32)	1.24 (1.08–1.46)	1.25 (1.17–1.34)	1.38 (1.27–1.51)	1.11 (1.04–1.20)
Unemployed or missing	1.23 (1.19–1.27)	1.08 (1.04–1.14)	1.31 (1.22–1.40)	1.31 (1.22–1.41)	1.09 (1.01–1.20)
Manufacturing	1.23 (1.18–1.28)	1.18 (1.06–1.33)	1.13 (1.01–1.30)	1.44 (1.34–1.57)	1.00 (0.92–1.10)
Health or emergency	1.19 (1.17–1.22)	1.40 (1.33–1.49)	1.27 (1.17–1.40)	1.32 (1.18–1.51)	1.02 (0.96–1.10)
Retail	1.18 (1.14–1.23)	1.10 (1.00–1.22)	1.36 (1.21–1.55)	1.40 (1.28–1.55)	1.08 (1.04–1.13)
Government or community	1.14 (1.11–1.18)	1.22 (1.07–1.41)	1.20 (1.09–1.33)	1.42 (1.32–1.53)	0.96 (0.89–1.04)
Not essential	1.11 (1.08–1.14)	1.14 (1.06–1.23)	1.23 (1.15–1.33)	1.29 (1.20–1.41)	1.00 (0.95–1.07)

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Implications

- Some families perceive that Latinx and Black people, including students, are more likely to GET COVID-19, physiologically
- Message to families and schools: Occupation drives much of the higher rates of COVID for people of color and it is not something inherent to them. Decrease fear and stigma
- Policy implications: Resource allocations to schools and school communities to support in-person instruction

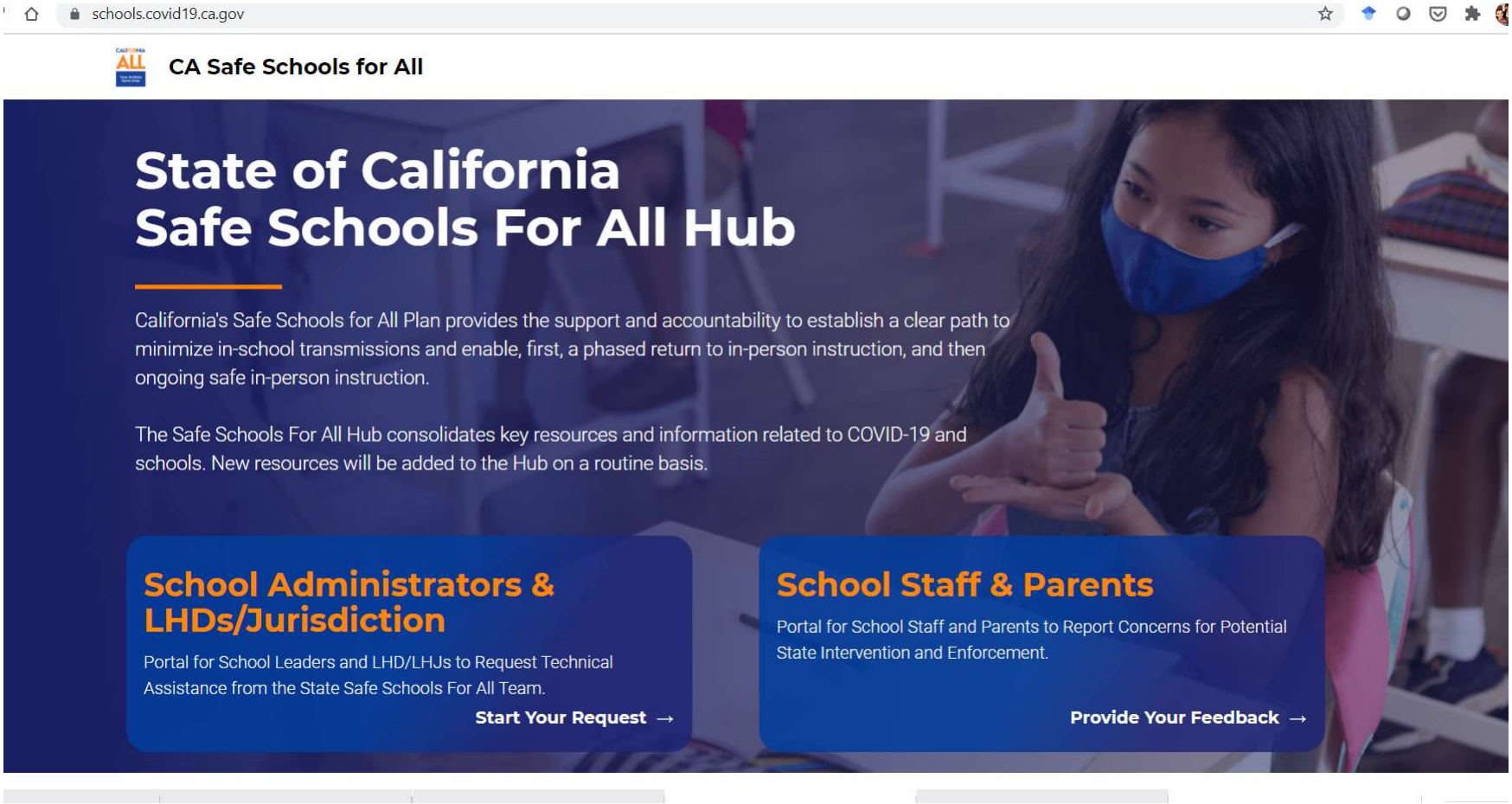
Equitable Safe Schools Plan

- Community Engagement & Communications
  - Target
    - Community Based Organizations
    - Local Education Agencies
    - Parent groups
  - Mechanisms
    - Media outreach
    - Webinars
    - Trainings

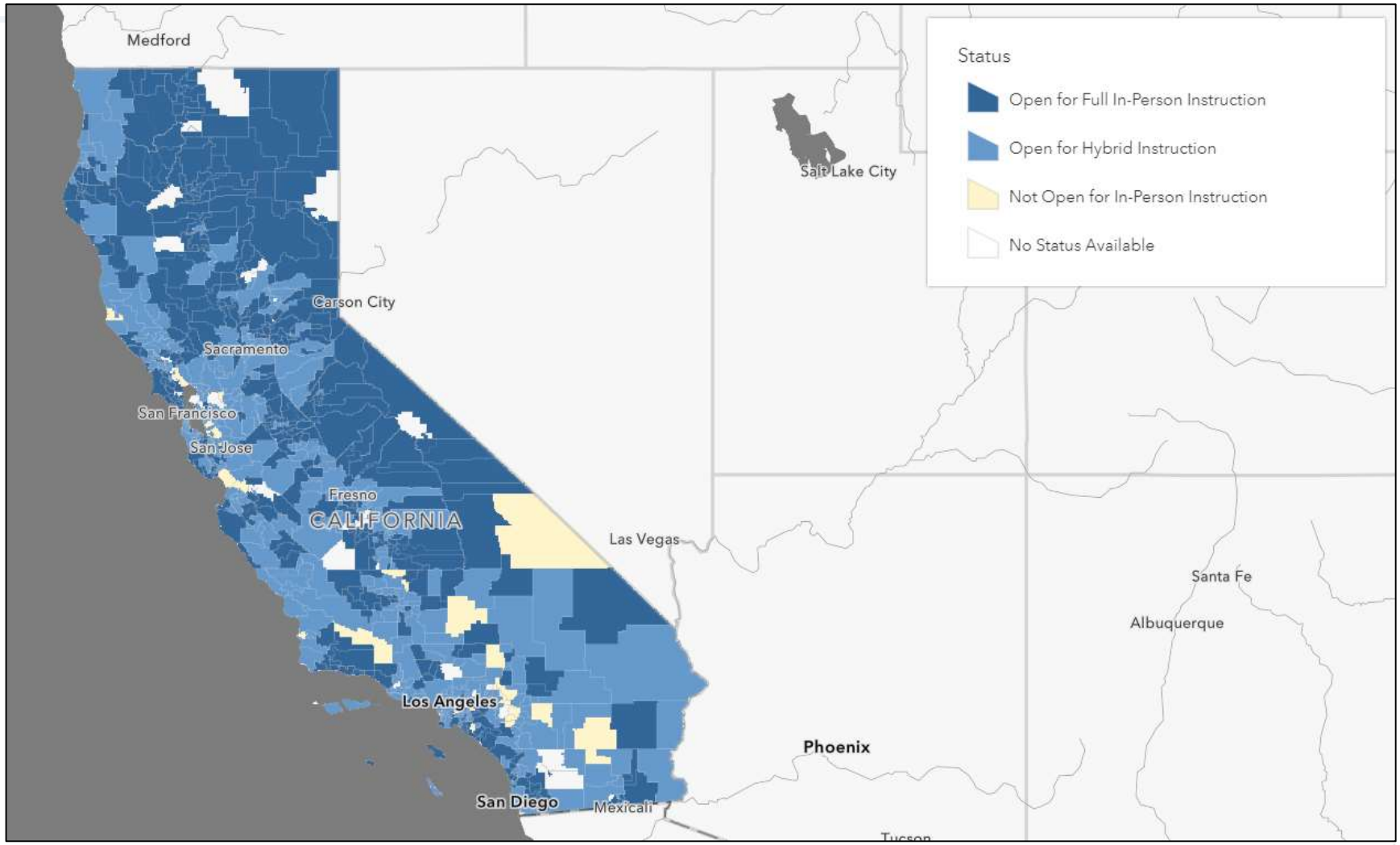
Equitable Safe Schools Plan

- Targeted Technical Assistance
  - Degree of in-person instruction
    - Target school districts without or low in-person instruction
  - Title 1 Schools
- High percent (>%60)of free and reduced lunch
- High community case rates

Equitable Safe Schools Plan



Equitable Safe Schools Plan



The current path

The data are necessary but not sufficient—in-person instruction pathway is about hearts and minds

Informing teachers, staff, and families about the science on safety layers and that they allow for safe schooling, AND building trust (transparency, accountability)

Goal: Teachers and families who have a sense of control and confidence that the school is a safe learning and workplace environment

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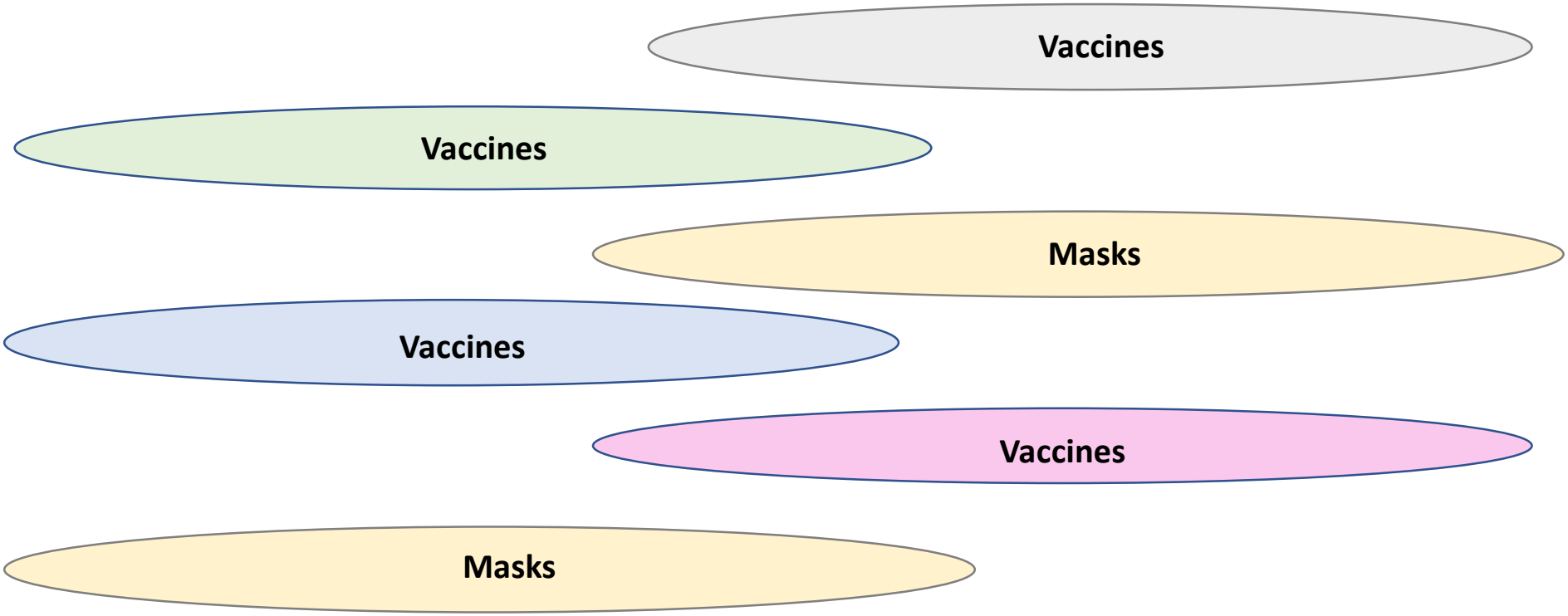
Planning for Fall 2021



Vaccines to all staff, adults living with staff, adults living with students, and all students 12+.

Masks interleaved as mitigation because some staff may chose not to get vaccinated, and younger students will not be vaccinated.

How do vaccines change the school decision-making and considerations?

Original rational for closing schools:

Prevent outbreaks and community spread

Pandemic costs of closing schools:

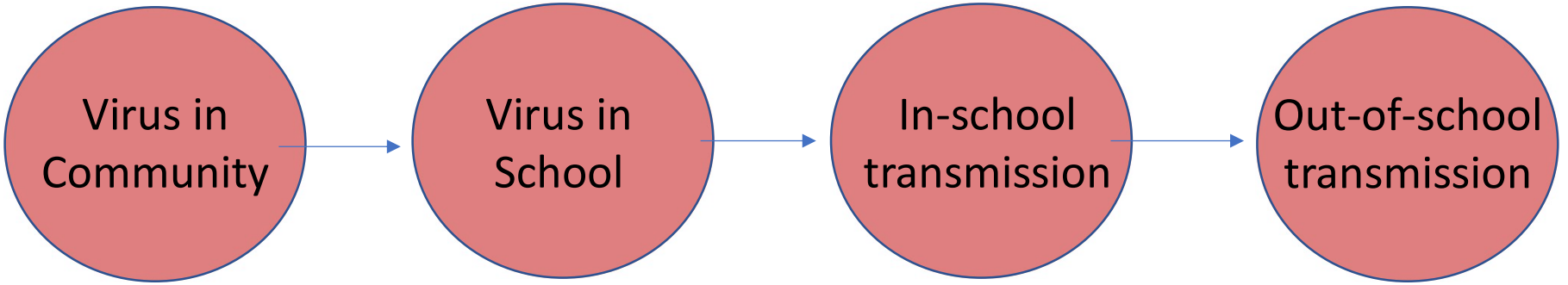
Substantial educational losses, inequity, social and emotional consequences

How do vaccines change the school decision-making and considerations?

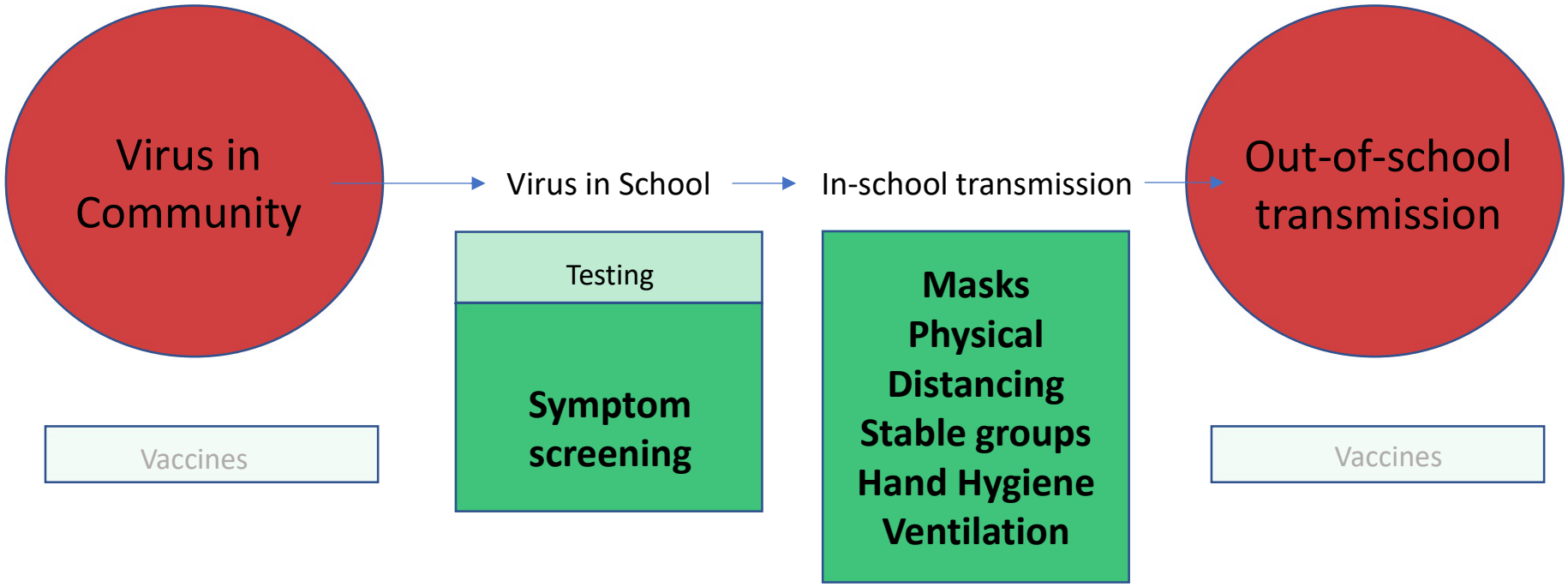
Fall Forecast: HS and 12 and older have been offered vaccine since early summer

The balance changes between the known damage associated with distance learning and the low risk of schools driving community transmission or leading to illness in school communities

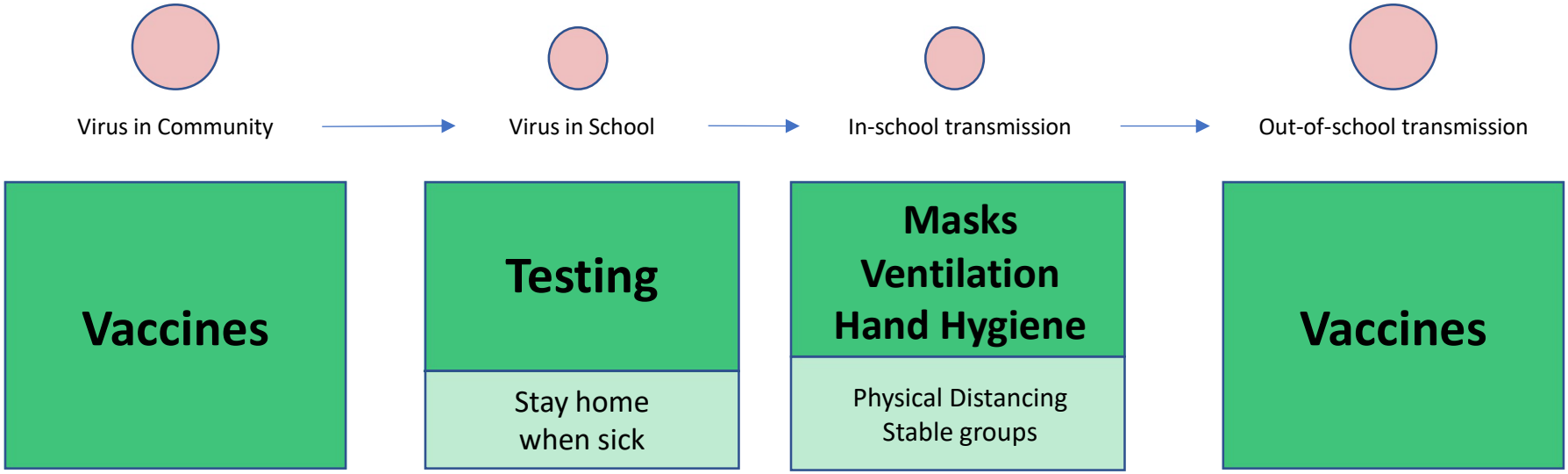
Transmission in K-12 Schools (and all indoor environments)



Relationships in Fall 2020 and Winter 2021



Relationships in Fall 2021



Addressing Trust, Social-Emotional effects, Mental health

Trust regarding vaccines, school safety

Transparency

Communications

Partnership with CBOs, schools, Public health

Social-emotional curriculum, trauma-informed education, mental health supports

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Questions and Answers

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UK study

- Risk of a type 2 error of interpretation due to the relatively small sample size, but the complete absence of positive results lead the authors to believe this is unlikely.
- Presumes a similar asthma severity phenotype each year that the authors believe is a reasonable assumption due to the very similar numbers of presentations and outcomes across years.

US study

- Retrospective study design, thus not able to determine causality.
- For children who only presented to the ED or inpatient setting, could not ascertain past asthma encounters to primary care outside of this network and thus asthma in hospitalized children could be undercounted.

Mexico study

- More than 10% of rtRT-PCR-SARS-CoV-2 tests results were missing during the data analysis
- Study sample is not representative of the entire Mexican population as it was limited to people tested by rtRT-PCR to detect the SARS-CoV-2 virus
- The open database had no diagnostic certainty of asthma, allergic sensitization, and the survey research may have human errors.

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