# K-12 Schools and COVID-19: Update, Winter 2020-21

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1/6/21

# Thank you

- Large volume of data, variable quality: team approach needed
- COVID-19 School and Community Resource Library
  - Team of 24 pediatricians, infectious disease physicians, child/adolescent psychiatrists, and epidemiologists from across MA
- Safer Teachers Safer Students Collaborative
- Public Schools of Northborough-Southborough
  - Greg Martineau, Mary Ellen Duggan RN
- Drs. Lloyd Fisher, Christina Hermos, Safdar Medina, Sandra Nelson, Elissa Perkins



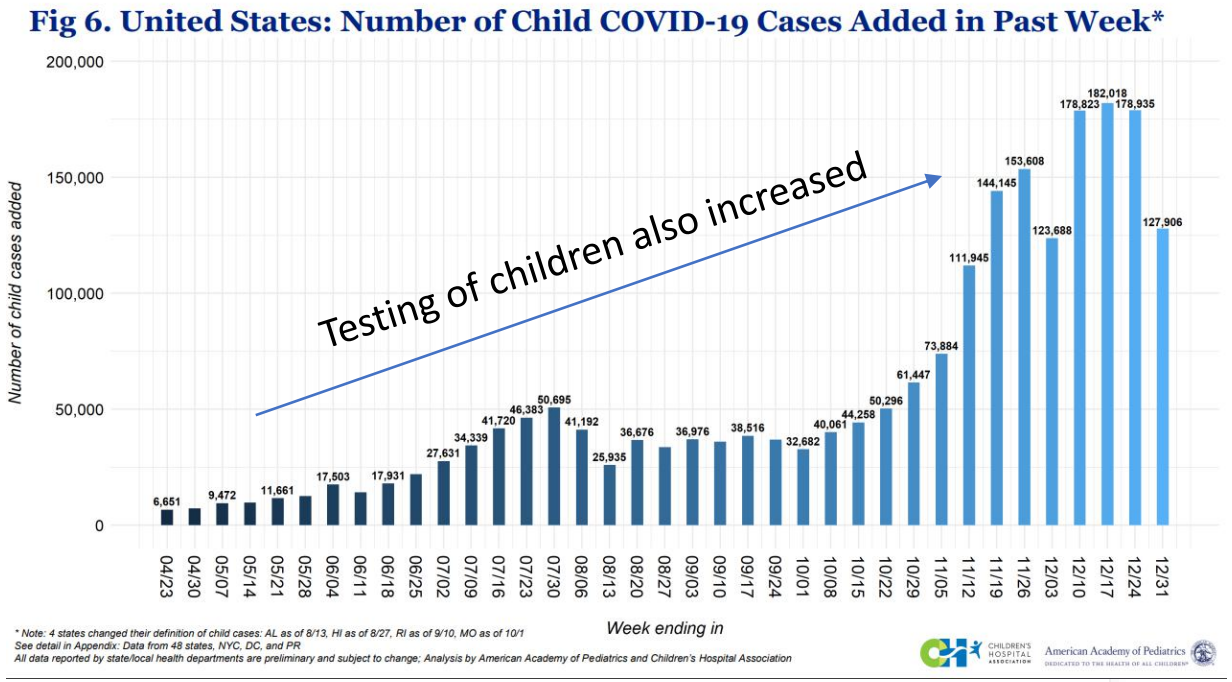
https://globalhealth.massgeneral.org/covidlibrary.pdf

# Take-Aways (Detailed data in Q&A)

- Whether children transmit more / less / equally, compared to adults
  - Difficult to answer from available contact tracing and epidemiologic studies
  - Less relevant than understanding the impact of community transmission rates and mitigation strategies on school safety
- Data from Fall 2020 about in-school transmission
  - Rare when prevention measures are in place, even with high community rates
  - Usually associated with breakdown of prevention measures (e.g. masking)
- Metrics for opening/closing: based largely on expert opinion
  - Differ for infection risk and operational considerations (staffing)
- Testing and screening provide both protection and information

# Health Outcomes for Children

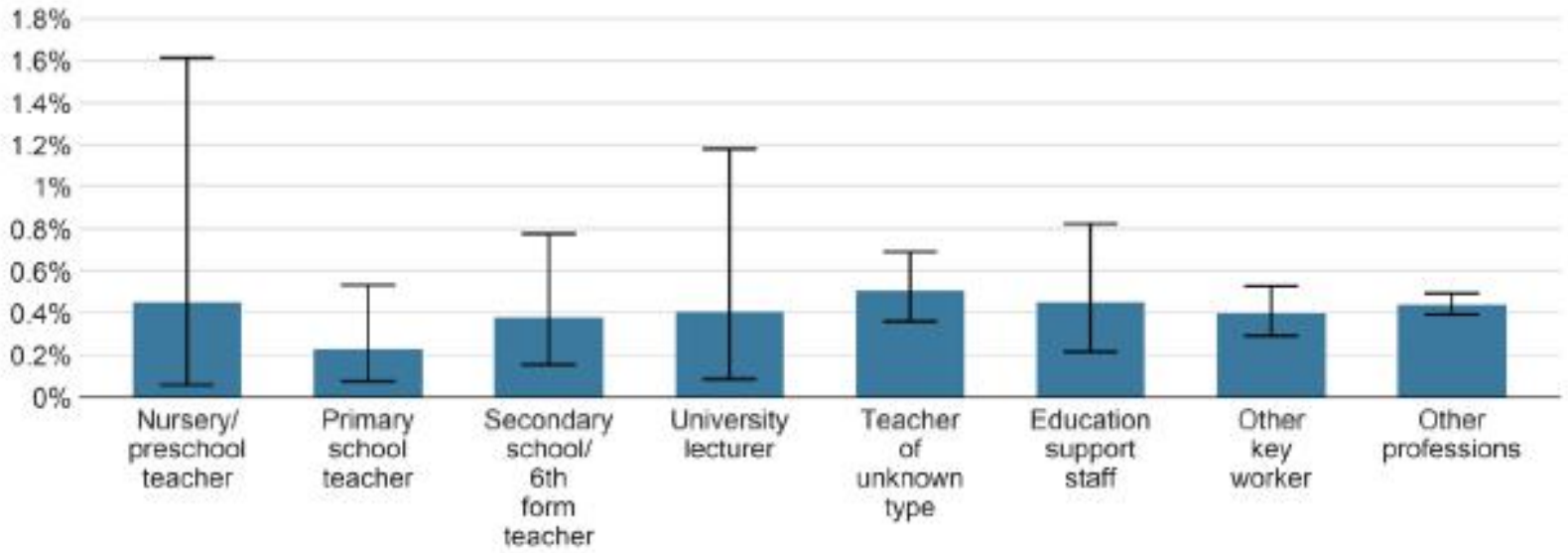
- Children can become infected
- Children become severely ill much less than adults
- Forward transmission from children: still uncertain
- Balance of child health outcomes:
  - Obesity, undernutrition
  - Mental health and substance use
  - Physical and emotional abuse
  - Academic and social/emotional development




Czeilser MMWR 2020; Leeb MMWR 2020; Owens Kaiser Family Fdn 2020; Masonbrink Pediatris 2020; https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/children-and-covid-19-state-level-data-report/

# Educator/Staff Health: Key Priority

- 25-50% of educators: high risk for complications of COVID-19 or high-risk household members
- UK schools, US daycare (variable masks): educator risk similar to other professions
- Sweden (no masks): in-person teaching 2x higher risk than remote teaching

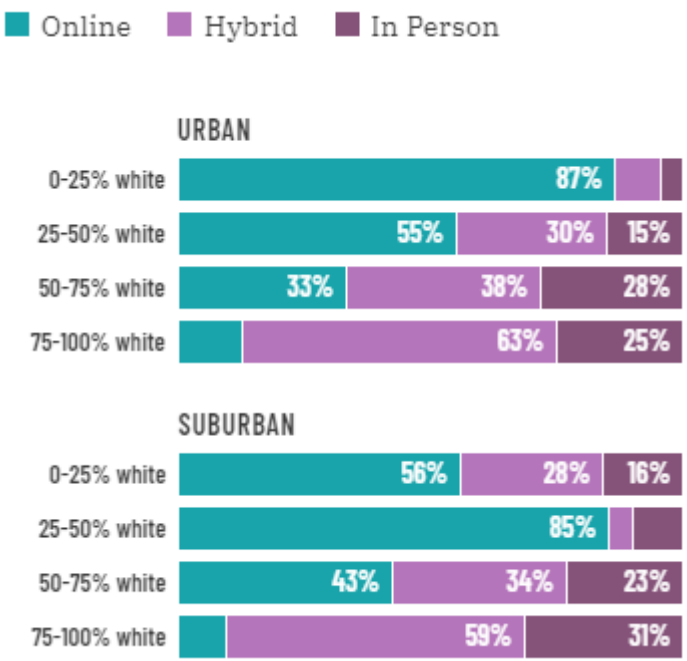



Gaffney, Annals Int Med 2020; Gillam Pediatrics 2020
https://www.medrxiv.org/content/10.1101/2020.10.13.20211359v3; https://www.gov.uk/government/publications/tfc-children-and-transmission-4-november-2020;
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948617/s0998-tfc-update-to-4-november-2020-paper-on-children-schools-transmission.pdf

# Equity Considerations are Critical

- US and MA data:
  - Black, Latinx, and Indigenous communities: higher rates of COVID-19 and severe illness
  - True also of children and educators
- US data:
  - BIPOC students less often have option for in-person school than white students
  - When offered, choose in-person school less often than white families
  - Many factors involved decisions
- Reducing risk of COVID-19 infection can facilitate a more balanced choice based on other factors

Data from 667 districts, Sept 2020:




Bixler MMWR 2020; Lee, JAMA Netrwork Open 2020; Gaffney, Annals Int Med 2020; Chapple https://threadreaderapp.com/thread/1320061447322423298.html; Chalkbeat; Hetchinger Report

# Metrics: How Will We Know When It's Safe?

*Are we putting adults and students at greater risk of COVID by bringing them into the building, compared to their risk if they were not in the building?*

*Can we continue to operate schools without excessive disruption?*

# Metrics: How Will We Know When It's Safe?

*Are we putting adults and students at greater risk of COVID by bringing them into the building, compared to their risk if they were not in the building?*

*Question about health risks*

*Can we continue to operate schools without excessive disruption?*

*Decisions about value of partially interrupted in-school learning vs. fully remote learning*

*Examples of successful approaches (in-building subs, etc)*

# Metrics: How Will We Know When It's Safe?

*Are we putting adults and students at greater risk of COVID by bringing them into the building, compared to their risk if they were not in the building?*

- Risk that someone with COVID-19 will enter a school
  - Community rates and out-of-school exposures (calculators)
  - What proportion of people with COVID-19 have symptoms, and how easy do we make it for them to stay home?
- Risk that a person with COVID-19 will transmit in school
  - Mitigation strategies (masking, distancing, cleaning, ventilation, etc.)



https://art-bd.shinyapps.io/school_entry/; https://covid19risk.biosci.gatech.edu/

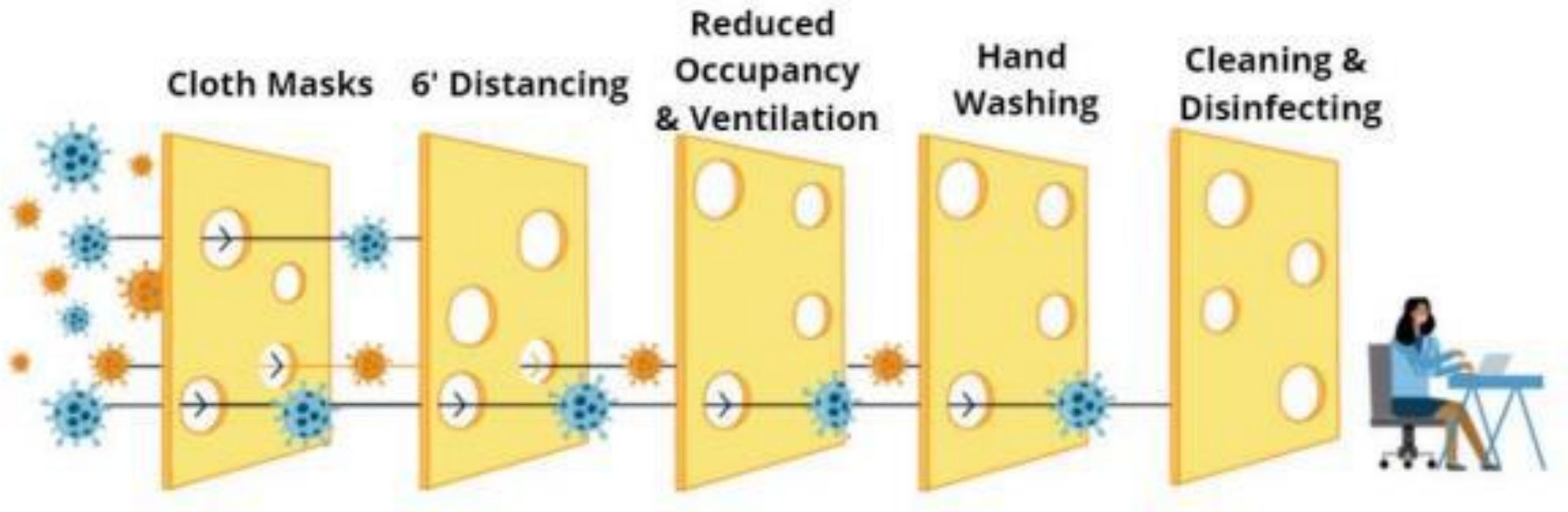
# Metrics: How Will We Know When It's Safe?

*Are we putting adults and students at greater risk of COVID by bringing them into the building, compared to their risk if they were not in the building?*

- Risk that someone with COVID-19 will enter a school
- Risk that a person with COVID-19 will transmit in school

*Ideal school-opening metrics should provide information about these two factors*

# “Swiss Cheese” model: COVID-19 Prevention




*PolicyLab adapted this graphic from the Cleveland Clinic’s “Swiss Cheese Approach to COVID Mitigation”*

# International Data from K-12 Schools

- Summer: Reassuring international data (low community rates)
- Spain, Germany, UK:
  - No clear impact of Fall 2020 school opening on community rates
  - Large numbers of students in school with few outbreaks, even as community rates rose
- UK, Australia, Italy: When a case comes into a school, the risk of transmission varies widely (0-6%) – masking rare

# What Data do We Have from US K-12 Schools?

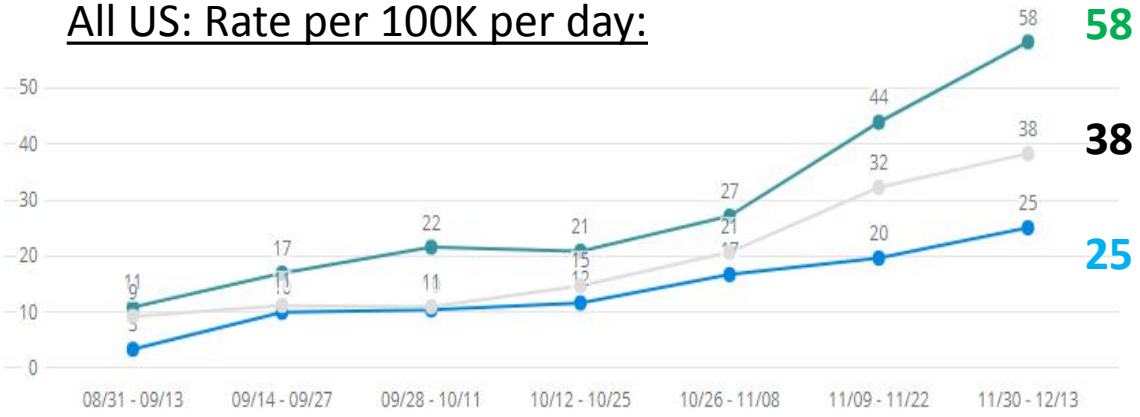
- National:
  - CDC data (single Mississippi study – hope for national data soon)
  - Brown/ASSA dashboard (Dr. Oster)
- State/city:
  - New York City (asymptomatic screening, not total):
    - 156,000 staff and 103,000 students; 1,097 positive
    - 0.42% total, 0.39% staff, 0.46% students
  - Massachusetts DESE (total school-associated cases, completeness not clear):
    - Dec 17-23: 0.53% of staff, 0.12% of students
    - Need additional data from DPH and DESE about in-school transmission
- Local districts - important to support data sharing

https://www.doe.mass.edu/covid19/positive-cases/; https://covidschooldashboard.com/; https://www.schools.nyc.gov/school-year-20-21/return-to-school-2020/health-and-safety/covid-19-testing/covid-testing-results

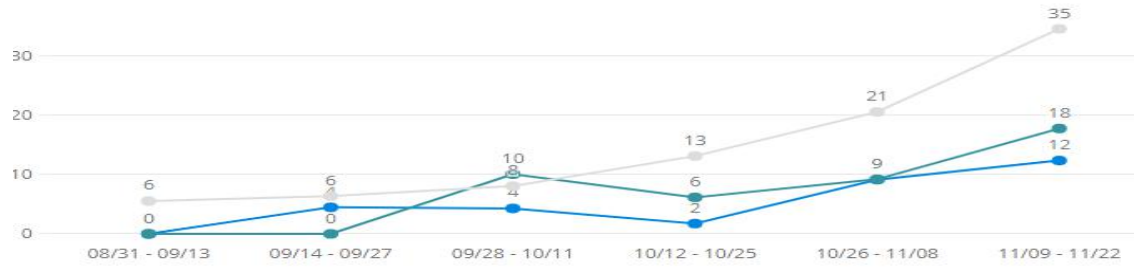
# AASA/Brown Dashboard (1/6/21)

- Limited by voluntary reporting (? direction of bias), no statistical comparison
- School-associated cases, not in-school transmission
- Overall (US) through 12/11/20: 0.52% staff, 0.25% students with COVID-19
- Data on masking, distancing, ventilation; previous data on hybrid vs. remote vs. in-person

All US: Rate per 100K per day:




MA: Rate per 100K per day:



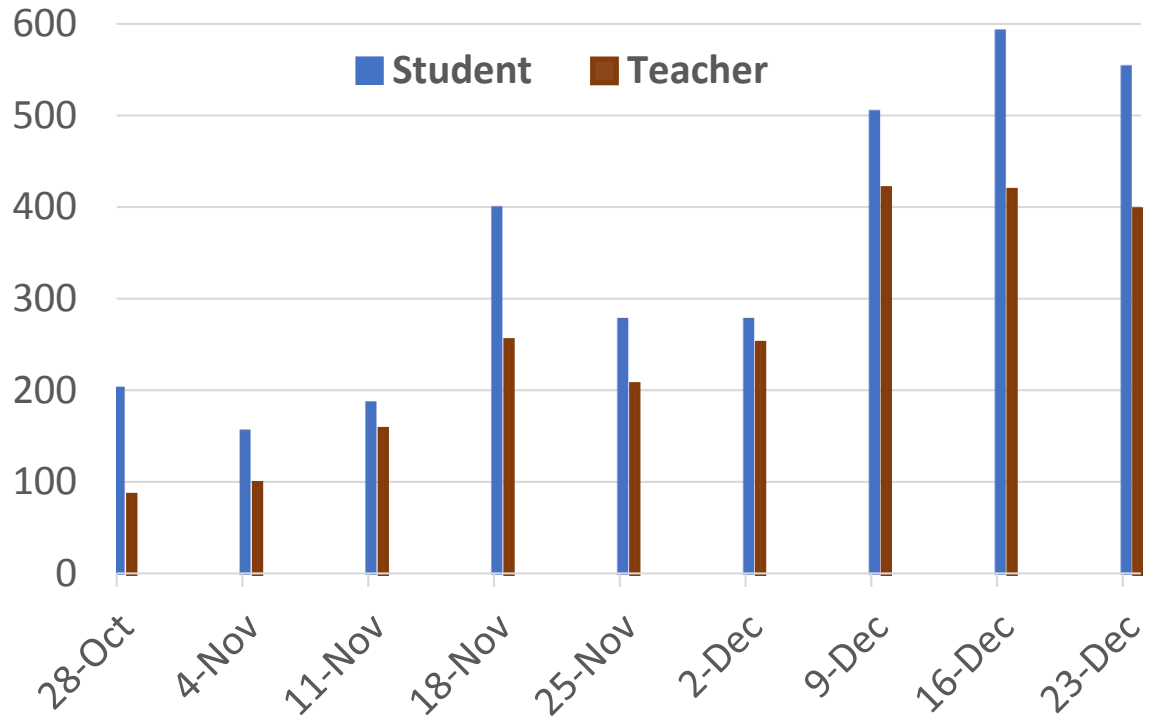

**Staff** **Students** **Community**

https://covidschooldashboard.com/

# Cases Reported in MA Schools (non-remote)

Unanswered Questions:

- Is there in-school transmission?
- How does this compare to remote learning?
- Are there different rates in elementary vs secondary schools?
- Does the model of schooling affect rates?






Slide: Dr. Sandy Nelson; https://www.doe.mass.edu/covid19/positive-cases/#weekly-report

# Northborough-Southborough Data

- Two towns (populations 10K and 15K) with rising COVID rates (Dec 31):
  - Northborough 62/100K (4.4% positivity)
  - Southborough 48/100K (4.5% positivity)
  - *Somerville: 39/100K (2.2% positivity)*
- 10 schools, 4100 students, 800 educators/staff, phased-in hybrid Sept/Oct
- 121 total cases (25 staff, 96 student)
- 448 in-school contacts, all quarantined and most tested: 2 positive
- 2 possible in-school transmissions (both also had outside contacts)
  - PE class: shared stations, <6' while exercising, frequent mask/water breaks
  - Elementary moderate-needs student (4-day schedule), close teacher contact all day, student not feeling well and struggling to keep mask on
  - Deeper dive → possible routes of transmission, what protocols can be changed or reinforced
- Public dashboard



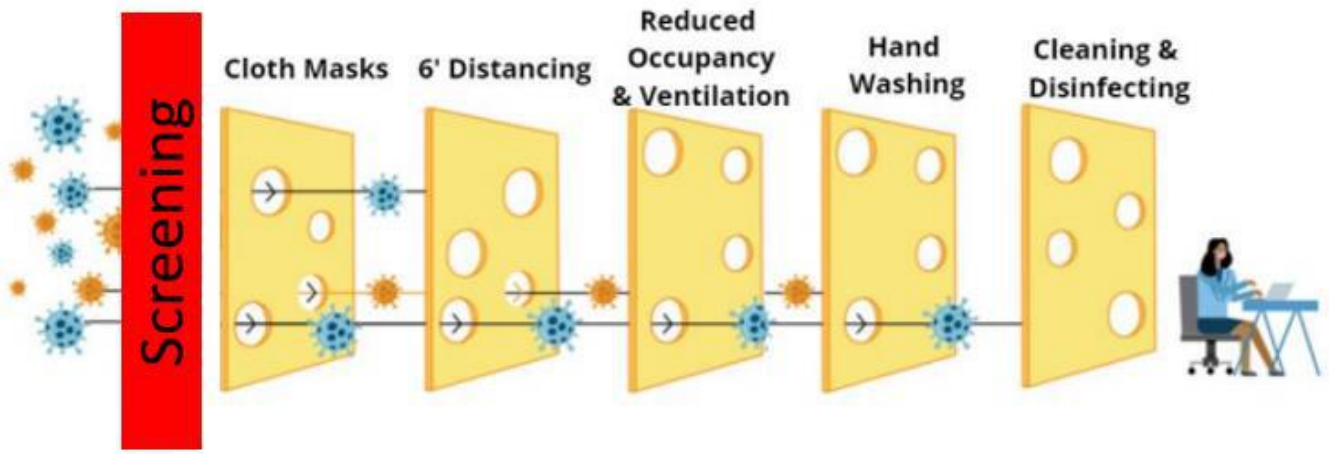
Shared with district permission; https://www.nsboro.k12.ma.us/cms/lib/MA02216193/Centricity/Domain/4/DISTRICT%20DASHBOARD%2012_27_1_2.pdf

# Testing and Screening

- Testing for people with symptoms
  - If positive: rapid confirmation of need to isolate, identification of contacts
  - If negative (most will be): rapid return to work/learning
  - Makes it easier and less daunting for people to report symptoms
- Screening for people without symptoms
  - Provides protection
  - Provides information

# Screening Asymptomatic Students and Staff

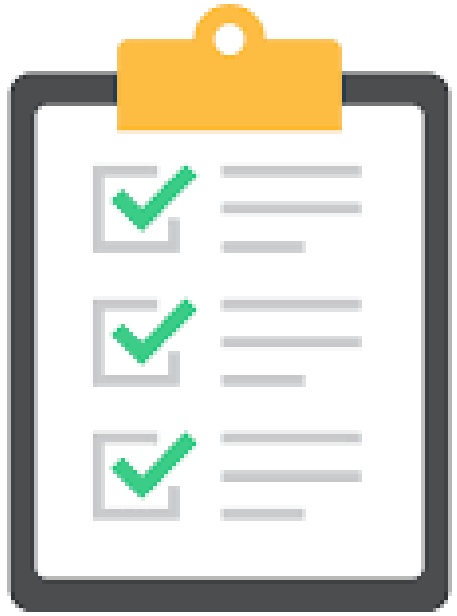
- Another layer of protection PLUS a key source of information




- Widely implemented in many colleges and universities, K-12 private schools in MA
- Computer models: screening may permit full-time in-person at risk = hybrid
  - Especially with high community transmission rates
- K-12 public schools piloting weekly screening: MA Safer Teachers Safer Students Collaborative

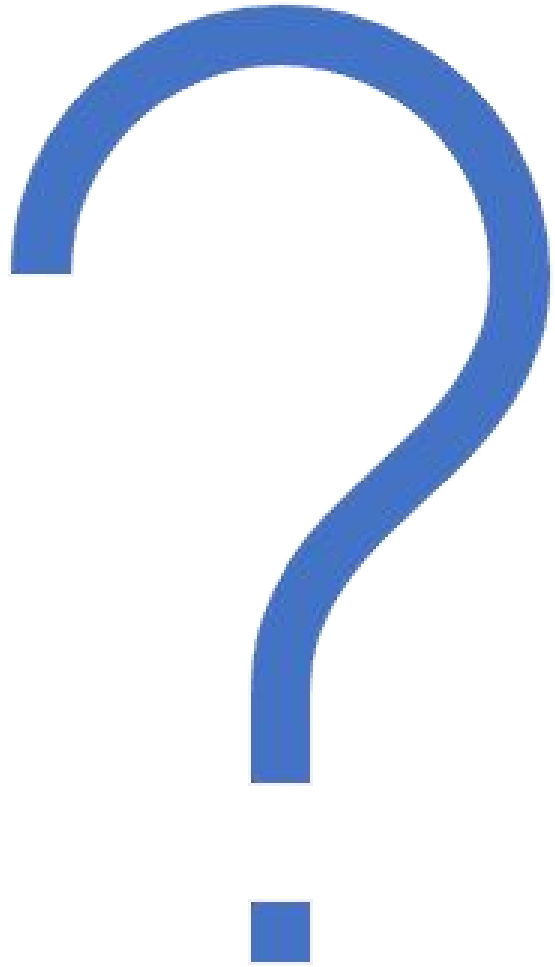
# Checklist for Safer School Opening

- Masks, distancing, ventilation, cleaning, handwashing
- Medical/public health advisory team
- Clear protocols for students and staff with symptoms
  - Testing, isolation, identification of contacts
  - Contacts → quarantine and testing
- System-based support for staying home when sick or exposed
  - Sick leave policies, back-up childcare plans, staffing plans
- Spaces for eating and drinking with distance and ventilation
- Transparent process for sharing outcomes



# Thank You

Questions?



# Data from K-12 Schools

# Italy: Reggio Emilia (September-October)

- Surgical masks only mandatory in secondary schools
  - Removed when seated at desks, replaced when speaking
  - Desks 3’ apart
- In-school transmission rare in primary, more common in secondary schools

Table 2. Secondary attack rates by the level of educational facility

| Type of educational setting | N of index cases | N of secondary cases | N of contacts* | Attack rate |
|---|---|---|---|---|
| Infant-toddler centres and preschools | 6 children and 2 teachers | 0 | 156 | 0 |
| Primary school | 14 children | 1 | 266 | 0.44% |
| Secondary school | 23 children+5 teachers/personnel | 38 | 572 | 6.64% |
| Total students | 43 | 39 | 994 | 3.9% |
| Teachers/personnel | 5 | 0 | 199 | 0 |

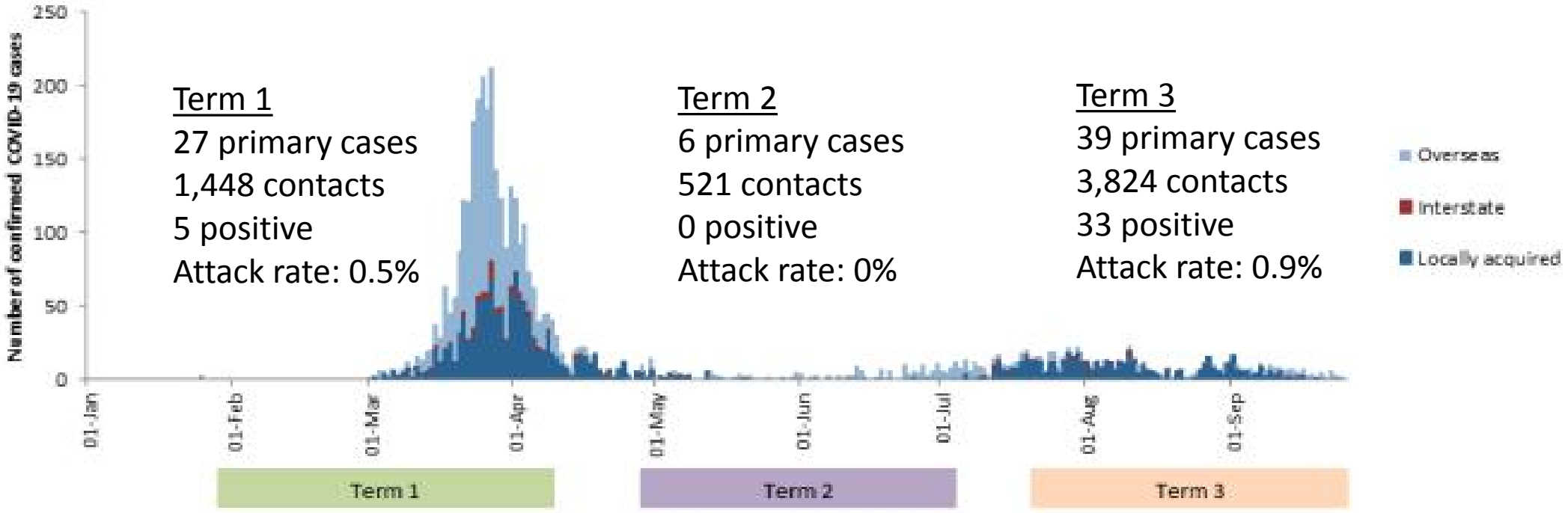


https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.49.2001911

# Australia (New South Wales)

- Hand washing, distancing, cleaning; masks “encouraged”
- Number of cases is for entire province (population 8.1 million)

**Figure 1: COVID-19 cases by likely infection source and notification date, NSW 2020[2]**




Term 1
27 primary cases
1,448 contacts
5 positive
Attack rate: 0.5%

Term 2
6 primary cases
521 contacts
0 positive
Attack rate: 0%

Term 3
39 primary cases
3,824 contacts
33 positive
Attack rate: 0.9%



https://www.ncirs.org.au/reports

# Australia (New South Wales)


Siblings

Out-of-school retreat
In-school music group

Siblings
Unknown

Siblings
Unknown

1 secondary case a sibling
Others unknown

Unknown

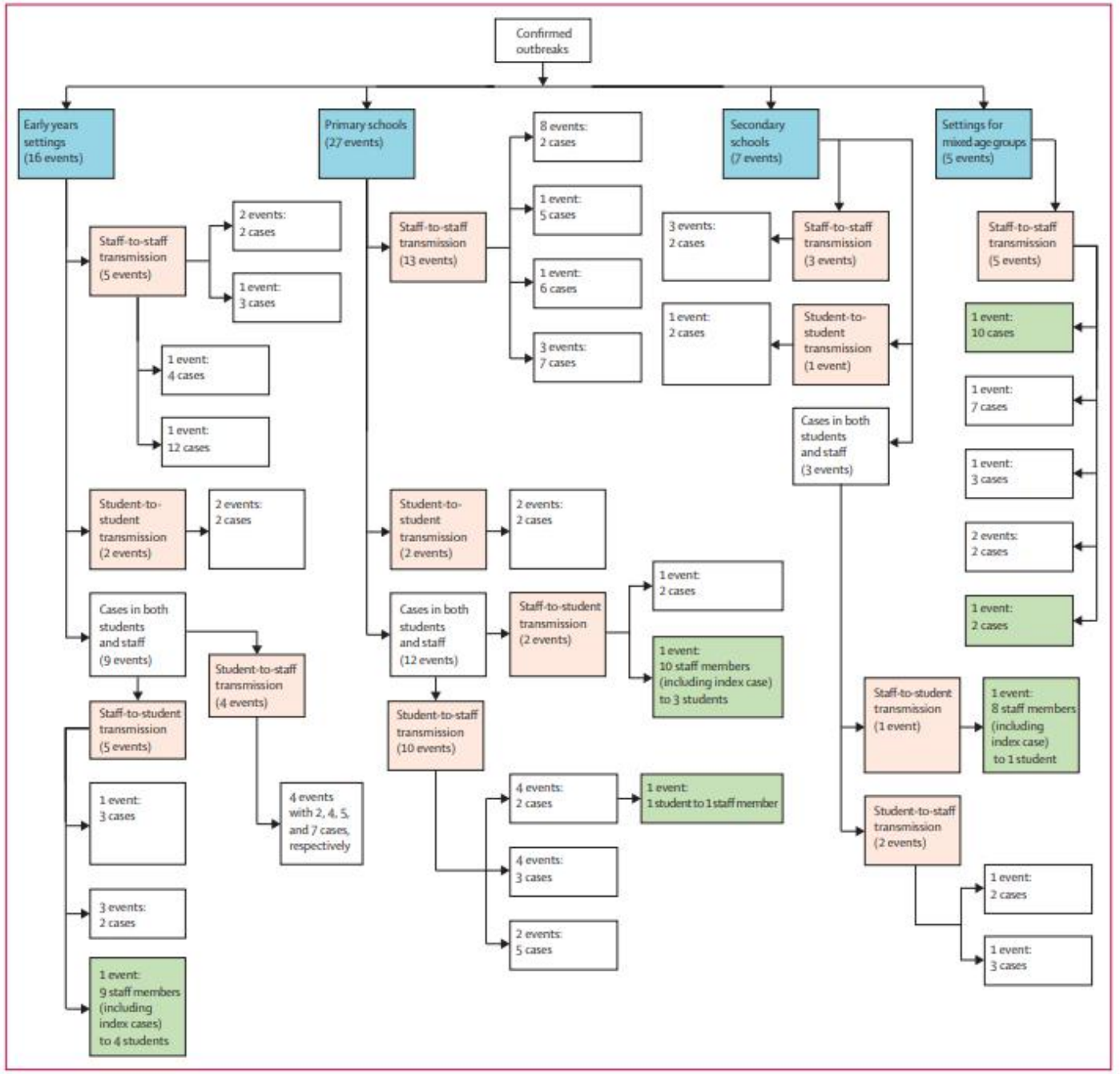
Siblings



https://www.ncirs.org.au/reports

# UK Experience

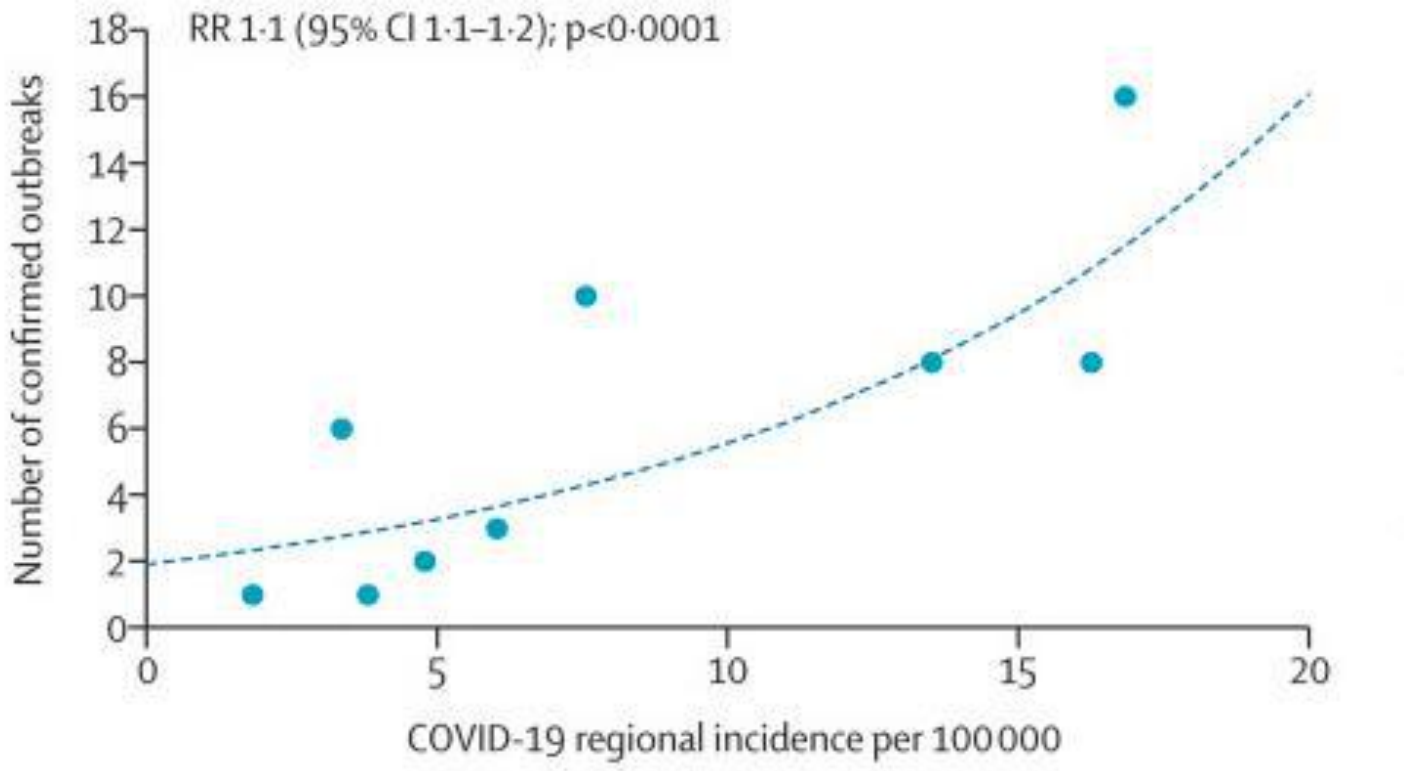
- 928,000 students:
  - 113 single cases
  - 9 co-primary cases
  - 55 outbreaks (2+) – 53% only 2 cases
- 55 outbreaks:
  - 0.17% of 15,600 primary schools
  - 0.04% of 38,000 early year schools
  - 0.17% of 4,000 secondary schools
- No universal masking
- Staff to staff (pink)
- Student to student (pink)
- Student to staff (green)
- Staff to student (green)




https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30882-3/fulltext

# Association of outbreak risk with community rates: UK June-July 2020

- Risk of outbreak associated with community rates (outbreak = 2+ cases)
- Risk increased by 72% for every increase of 5/100K in daily community incidence



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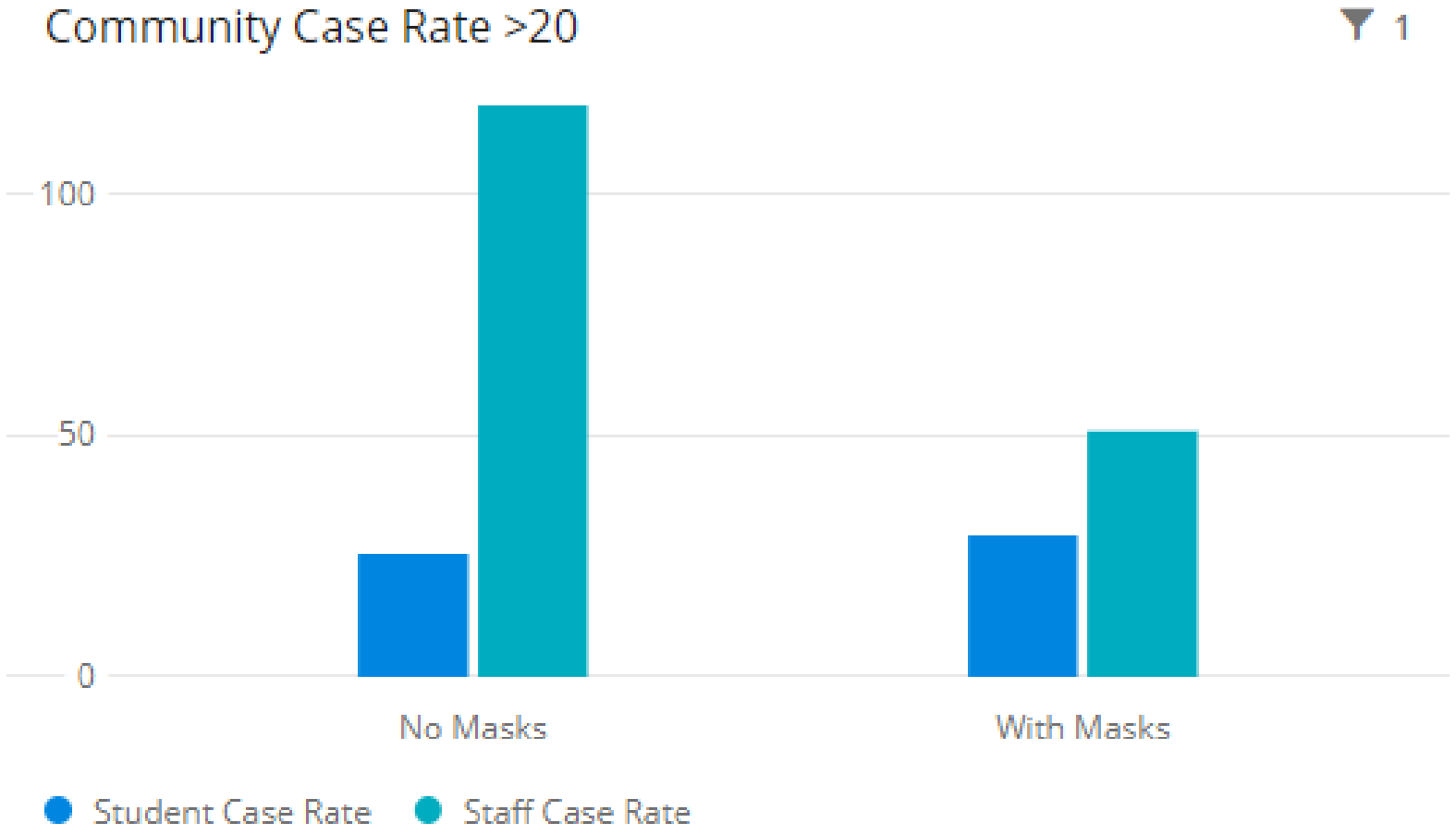
# AASA/Brown Data Dashboard (1/6/21): Masks

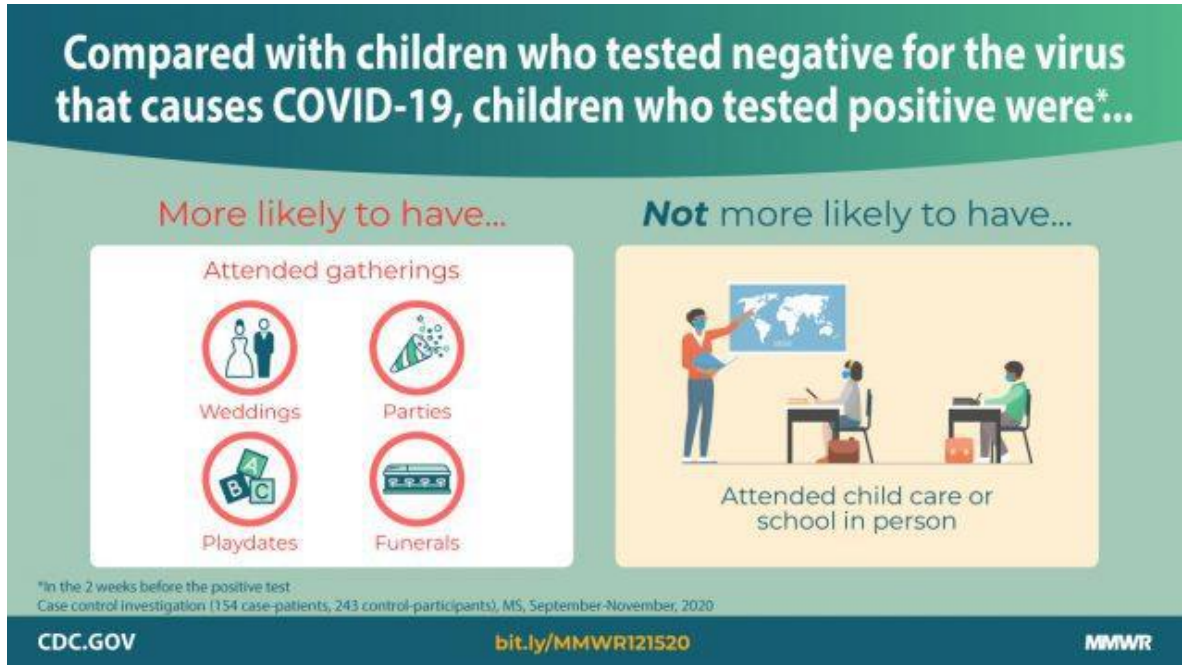


# AASA/Brown Data Dashboard Learning Model (no longer included)

- Trends from September through November, 2020:

| | All US, full in person | All US, full remote | All US, hybrid |
|---|---|---|---|
| **Staff** | **10 → 49 / 100K** | **5 → 12 / 100K** | **16 → 26 / 100K** |
| **Students** | **8 → 17 / 100K** | **7 → 97 / 100K** | **5 → 16 / 100K** |

# Mississippi, September 1 – November 5




- Case-control study: 397 children and adolescents testing positive (cases) or negative (controls)
- Testing positive NOT associated with being in school or childcare in 14 days prior
- Among 236 children in school or childcare, masking by all students and staff reduced risk of testing positive by 60%
- Testing positive WAS associated with:
  - Close contact with someone with COVID-19 (3x risk)
  - Attending a social function with someone outside household (2x risk)
  - Attending activities with children outside household (3x risk)
  - Having visitors in the home (2x risk)



https://www.cdc.gov/mmwr/volumes/69/wr/mm6950e3.htm

# What can we learn when transmissions occur?

- Day care centers in UT: 3 facilities with in-facility transmission
  - Students mostly unmasked (young)
  - Staff unmasked, worked while household contacts were ill with COVID-19
- Lincoln, NE public schools (anecdotal, lay press): 4 examples, 9 individuals
  - 2 HS students (1 each lunch in school, lunch outside)
  - 2 staff members without student contact, shared offices without masks
  - 5 staff members, lunch together without masks
- Israeli middle/high school: large outbreak (crowding, no masks)
- Sweden, March – July:
  - Teachers of 17-year-olds in online schools had risk = median community rates
  - Teachers of 16-year-olds in open schools had 2-fold higher risk
  - No masks, no class size reduction, handwashing and distance encouraged
- State dashboards: “clusters” of 2+ cases at a site – no further info

# Data from Non-School Settings

# Relevant data from non-K-12 settings

- Survey of 57,000 childcare workers who worked or did not work in childcare during pandemic
  - Risk of COVID-19 not associated with working vs. not working
  - Risk was lower for providers who followed distancing and masking in or out of work; higher for providers in high-incidence communities
- Rhode Island childcare centers
  - 4 of 66 centers with in-center transmission (10 of >19,000 people)
  - Despite adult masking; movement between cohorts of children

# Access to In-person Learning

# Remote learning in Massachusetts

| Number of Students by Current Instructional Mode and School Type 12/1/20 | | | | |
|---|---|---|---|---|
| | In-person | Hybrid | Remote | Total |
| **Elementary** | 25,580 (6.4%) | 164,777 (41.0%) | 211,838 (52.7%) | 402,266 (100%) |
| **Middle** | 4,097 (2.2%) | 95,201 (51.4%) | 85,828 (46.4%) | 185,153 (100%) |
| **Secondary** | 5,913 (1.8%) | 136,758 (42.2%) | 181,284 (55.9%) | 324,013 (100%) |
| **Total** | 35,590 (3.9%) | 396,736 (43.5%) | 478,950 (52.5%) | 911,432 (100%) |

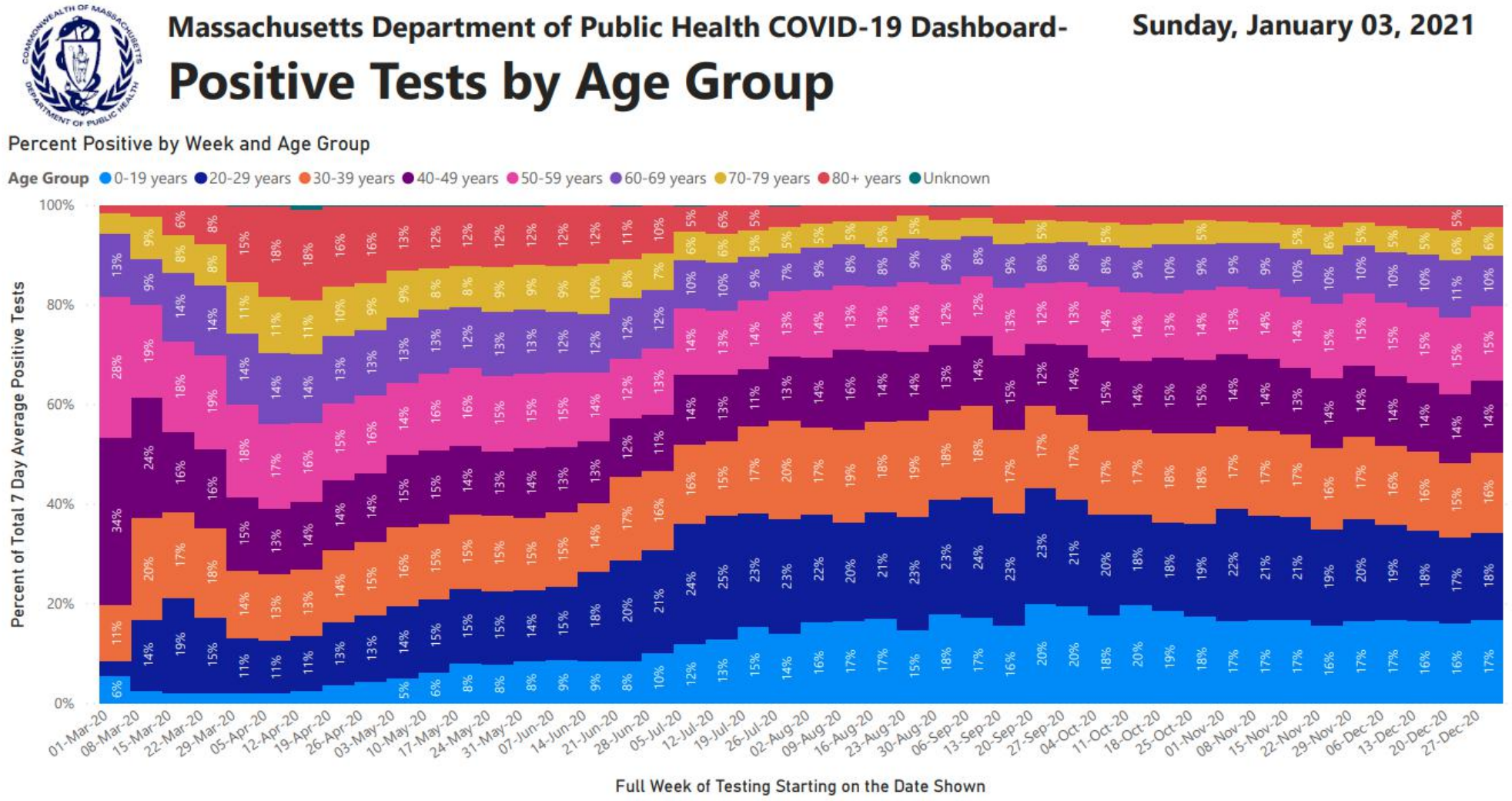
Nationally: September 76% of schools fully remote, October 37% fully remote



Unpublished data: DESE; Dr. Sandra Nelson, Harvard Medicine Grand Rounds Dec 2020; https://www.reachcentered.org/publications/the-effects-of-school-reopenings-on-covid-19-hospitalizations

# Pediatric COVID

# Pediatric COVID in Massachusetts






https://www.mass.gov/doc/covid-19-dashboard-january-3-2021/download

# UK Variant B.1.1.7

# UK data: Total cases by age (before B.1.1.7)

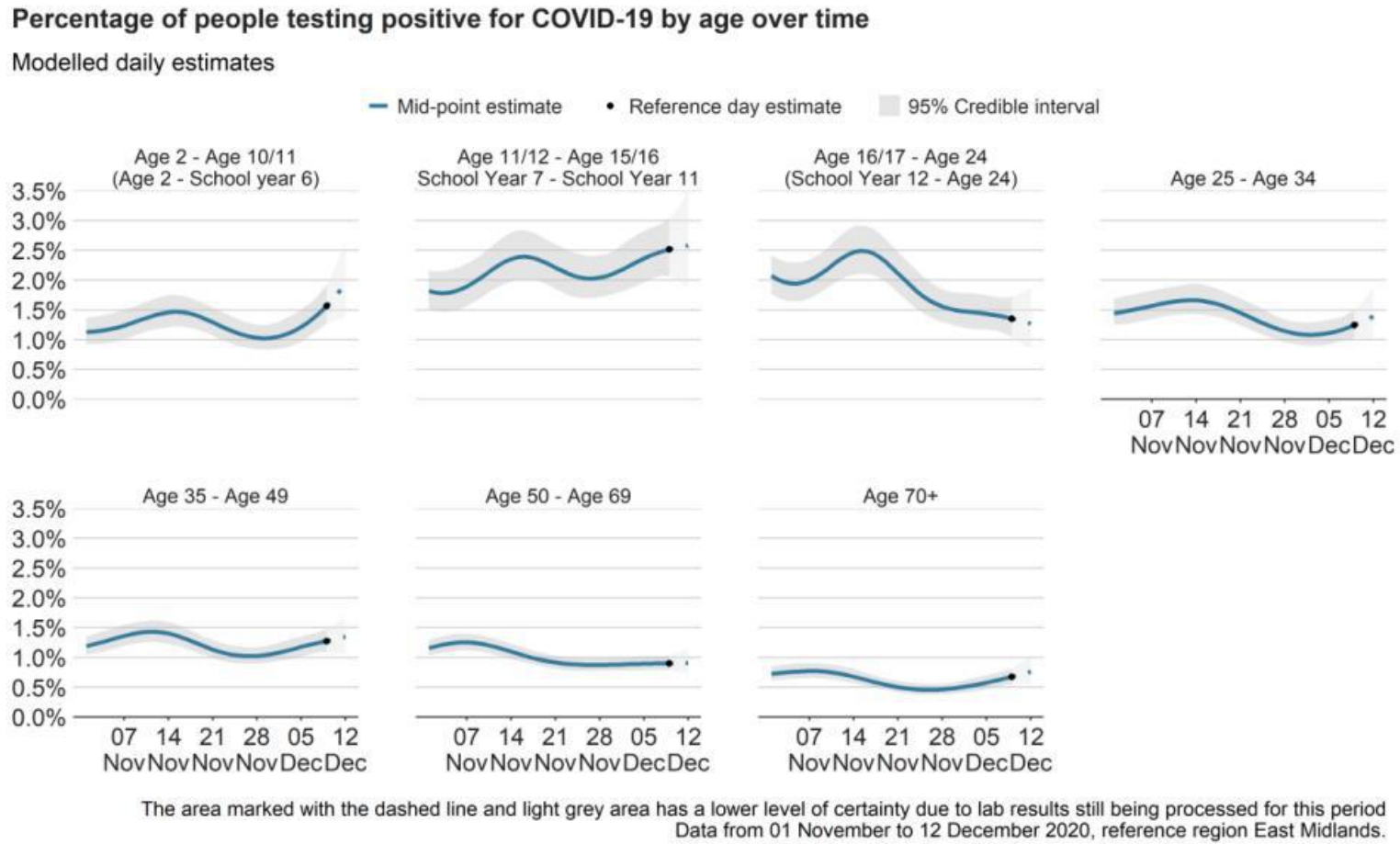


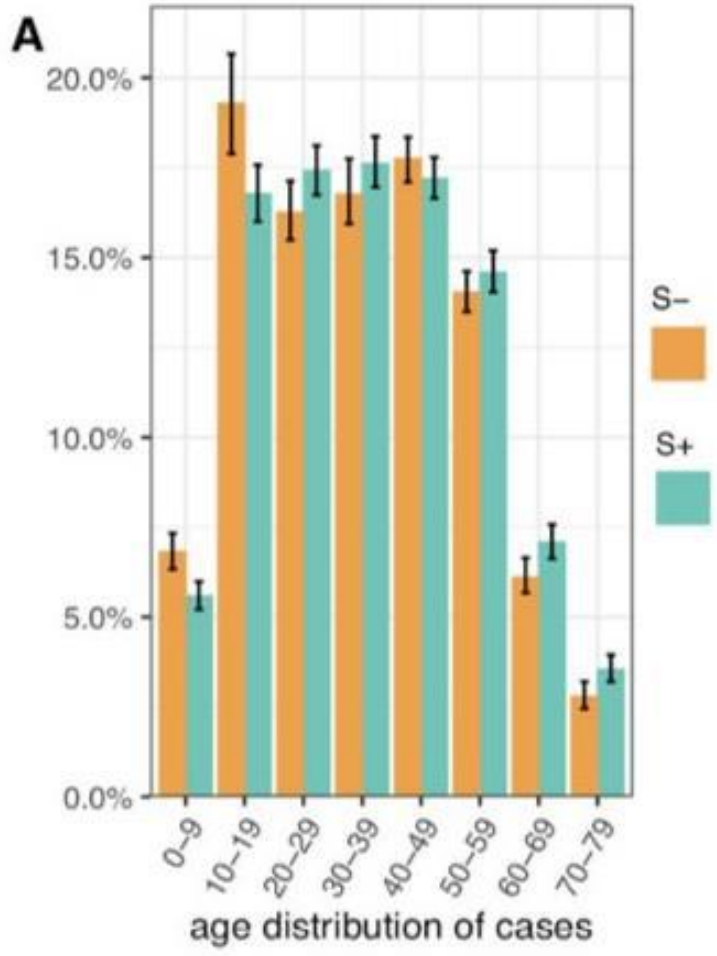

*Figure 1: ONS CIS - percentage of people testing positive for COVID-19 by age over time*

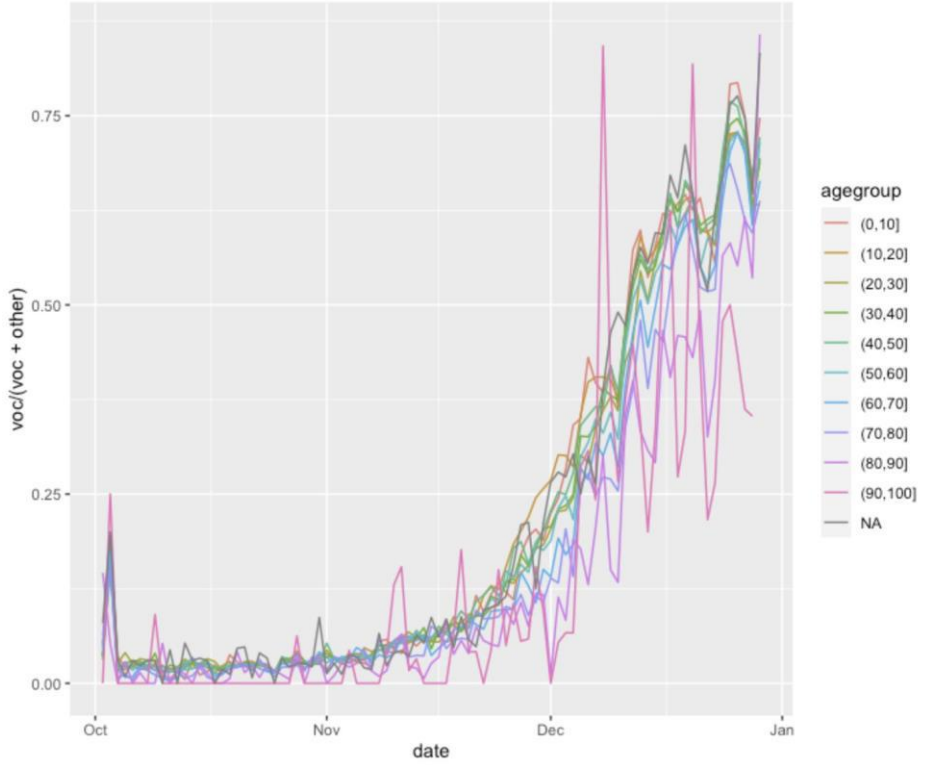


https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948617/s0998-tfc-update-to-4-november-2020-paper-on-children-schools-transmission.pdf

# UK Variant: B.1.1.7

- S- indicates new variant
- First noted to be increasing in 0-19 during Nov lockdown (schools open)
- Then found to be increasing similarly in all ages
- Dr. Muge Cevik (UK DOH NERVTAG): New variant has the same age-related transmissibility as other variants. Imperial data showed age share of the variant is higher in 0-19, but this is a transient effect of lockdown






https://www.imperial.ac.uk/media/imperial-college/medicine/mrc-gida/2020-12-31-COVID19-Report-42-Preprint-VOC.pdf; https://threadreaderapp.com/thread/1341094836682838021.html

# Mental Health Outcomes (Dr. Safdar Medina)

# Concerns

In the clinical setting, we are seeing a rise in the already high rates of:

- Depression
- Anxiety
- Suicidal Behavior
- Eating Disorders
- Obesity

# Local Clinical Experience October 15th to December15th 2020

400 patient visits (all ages from birth through young adult)

49 visits:  worsening ADHD

36 visits: depression without suicidal ideation, new diagnosis or worsening symptoms

36 visits: Expression of  suicidal ideation

17 visits: New onset or worsening  anxiety

2 new diagnoses of eating disorders

11 visits for new onset or worsening substance use

# School is Vital

- School connections are important for children with mental health disorders
- Positive school connections are associated with increased self esteem, lower rates of anxiety, depression and high risk behavior
- For many vulnerable children, school is their safe place
- School is most often the place where mental health concerns are first noticed

# Mental Health Conditions--Data

Study in the Journal, *Pediatrics*, 2020 (based on a national survey):

**27%** of adults reported an increase in mental health conditions

**14%** reported worsening mental health in their children

**11%** reported worsening food insecurity

# Mental Health Conditions--Observations

Summary of Findings by School Psychologists in California (*EdSource, May 2020*)

- More students are reporting mental health needs
- Many students with mental health needs are going unnoticed, whose  symptoms would have been recognized if they were in school.

We are observing this pattern in practice.

# Suicidal Ideation

In a study out of China,  of students from grades 4 through 8, a rise in symptoms of depression as well as non-suicidal self-harm, suicidal ideation, suicide plans and suicide attempts were all observed.

# LGBTQ Youth

- Reported increased self-isolation, increased online risky behavior (*Survey by Boston University, June 2020*)
- School connections are vital; GSA

# Therapy Is Difficult

- Many adolescents cannot have confidential discussions via virtual visits in homes where others can listen. They rely on talking in person with their clinicians at school.
- Younger children have difficulty in communicating effectively via virtual visits

# A Crisis

Compared with 2019, the proportion of mental health–related visits for children aged 5–11 and 12–17 years increased 24% and 31%, respectively (CDC, 2020)

Lack of available child psychiatry inpatient beds has meant waits up to 7 days in Emergency Departments

# Eating Disorders

**Eating Disorders occur when:**

- Children feel a lack of control
- They have more unstructured time to think about food and their weight
- More time on social media
- Observing an increase in practice
- Data from Australia: 104% increase in hosptilzations for Eating Disorders in 2020

# ADHD

Remote Learning is very challenging for children with ADHD

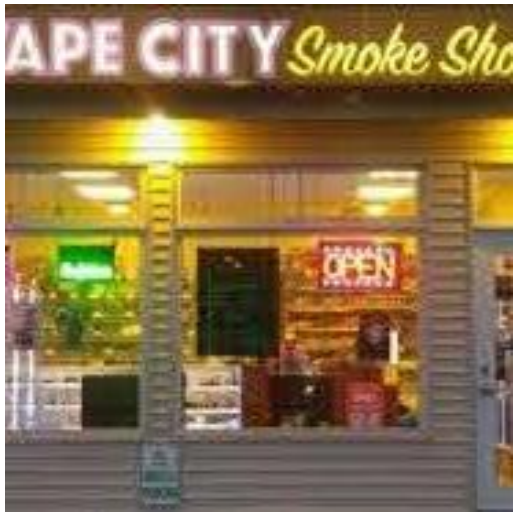
This is leading to other conditions such as depression and anxiety

Study of the Journal of Adolescent Health: More parents of teens with ADHD reported difficulties in remote learning than those without ADHD  (49% vs 4%).

# Substance Use.

## THE PERFECT STORM:

- More time on social media
- Rise in depression and anxiety
- Continued Availability of Vaping Products (Nicotine and THC)


# Substance Use

**Journal of Adolescent Health, July 2020:**

**Survey of over 1,000 adolescents in Ontario, pre-Covid and 3 weeks into lockdown:**

**Number using substances decreased, but amount used by those using increased (alcohol and marijuana)**

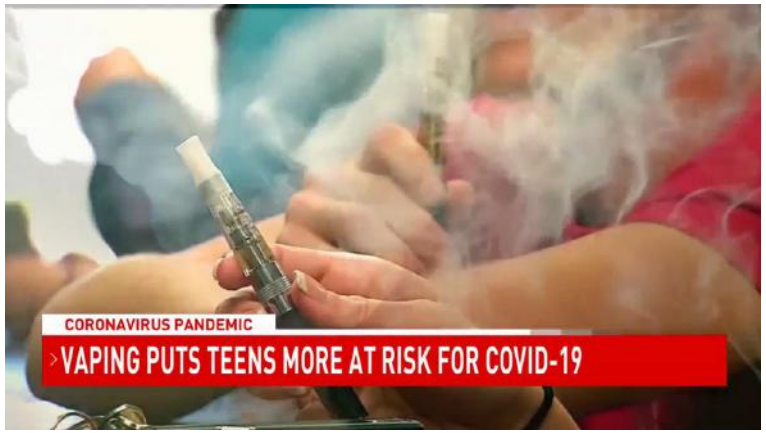
**More reported using alone**

**Online parties with alcohol and cannabis use**

# Vaping

A national online survey of >4,000 teens and young adults (Journal of Adolescent Health, July 2020)

- Those who vape nicotine and/or THC are 5x more likely to contract and become ill from COVID-19
- Due to the direct effect on lungs and sharing of devices



# Domestic Violence/Abuse

- Increased risk of domestic violence and child abuse in homes during COVID-19 (*SAMHSA, Substance Abuse and Mental Health Services Administration*)
- Factors: Parental Stress, Lack of Support Services
- Reports have decreased
- Abuse going unnoticed
- Schools are often the first place neglect and abuse is noticed

# Rise in Obesity

- Seeing rising BMI values in children in practice
- Study in Italy (April 2020, *Obesity*) tracked school aged children through lockdown:
  - Increased intake of unhealthy foods (chips, sweet drinks)
  - Increased Screen Time
  - Decreased Physical Activity

# Masks

# Masks: Selected data on effectiveness

| Epidemiologic and observational studies showing the effectiveness of masks in reducing COVID-19 transmission* | | |
|---|---|---|
| **Setting** | **Exposure of interest** | **Effect** |
| **USS Theodore Roosevelt aircraft carrier** | Face coverings during an outbreak | Service members who wore face coverings had lower infection rate than those who did not (55.8% versus 80.8%) |
| **Hair salons in Missouri** | Two masked hair stylists infected with COVID-19 exposed 139 clients all masked | None of the 139 clients developed symptoms with 67 testing negative for SARS-CoV-2 |
| **Boston health care settings** | Institution of universal surgical masking with provision in hospitals | Significantly lower rate of SARS-CoV-2 positivity among health care workers after masking |
| **Arizona during summer surge** | Mask mandates, limiting large crowds, social distancing | Transmission rates were up by 151% prior to these measures and then stabilized and decreased by 75% with continued application |
| **Kansas counties during summer surge** | State mask mandate with option for counties to opt-out in Kansas | COVID-19 incidence decreased in 24 counties with mask mandates after July 3, but continued to increase in 81 counties without mask mandates[4] |
| **Tennessee counties** | Mask requirements | Areas with mask requirements had a slower growth rate in hospitalizations for COVID-19 (without controlling for cases) than those without mask requirements[8] |
| **States in the U.S.** | Mask mandates in 15 states and Washington DC over summer | Reduction in COVID-19 transmission rates in states mandating face mask use in public compared to those without mandates |
| **Germany** | Regional mandates for mandatory mask wearing in public transport and shops | Face masks reduced the number of new COVID-19 infections 45% (between 15% and 75%) over a period of 20 days after the mandates[5] |



https://www.cell.com/med/fulltext/S2666-6340(20)30072-6

# Masks

- N95: highest filtration effectiveness
  - Uncomfortable, limited supply
- Most effective types of masks for community shown
  - Suggested for schools




https://www.cell.com/med/fulltext/S2666-6340(20)30072-6

# Ventilation

# Ventilation

- Crucial to have HVAC experts on the COVID-19 task force
- Assess and improve both ventilation and filtration

Harvard/CU Boulder calculator: https://docs.google.com/spreadsheets/d/1NEhk1IEdbEi_b3wa6gI_zNs8uBJjlSS-86d4b7bW098/edit#gid=1882881703

Lay summary: https://theconversation.com/how-to-use-ventilation-and-air-filtration-to-prevent-the-spread-of-coronavirus-indoors-143732

https://schools.forhealth.org/

# Isolation and Quarantine

# Symptom and quarantine protocols

- Transparent process for developing and sharing protocols
- List of symptoms (DESE, CDC)
- Support for staying home when symptomatic
- Rapid access to PCR testing with short turnaround time (site?)
- Definition of close contacts (6’ x 15 min, whole class)
- Quarantine and testing plan for contacts
  - Test all contacts to assess possible in-school transmission (site?)
  - 3 quarantine options (CDC, Mass DPH)
  - May differ from travel quarantine/testing protocols

https://www.doe.mass.edu/covid19/on-desktop/protocols/;
https://www.mass.gov/guidance/information-and-guidance-for-persons-in-quarantine-due-to-covid-19;
https://www.cdc.gov/coronavirus/2019-ncov/more/scientific-brief-options-to-reduce-quarantine.html

# Metrics: Community Incidence

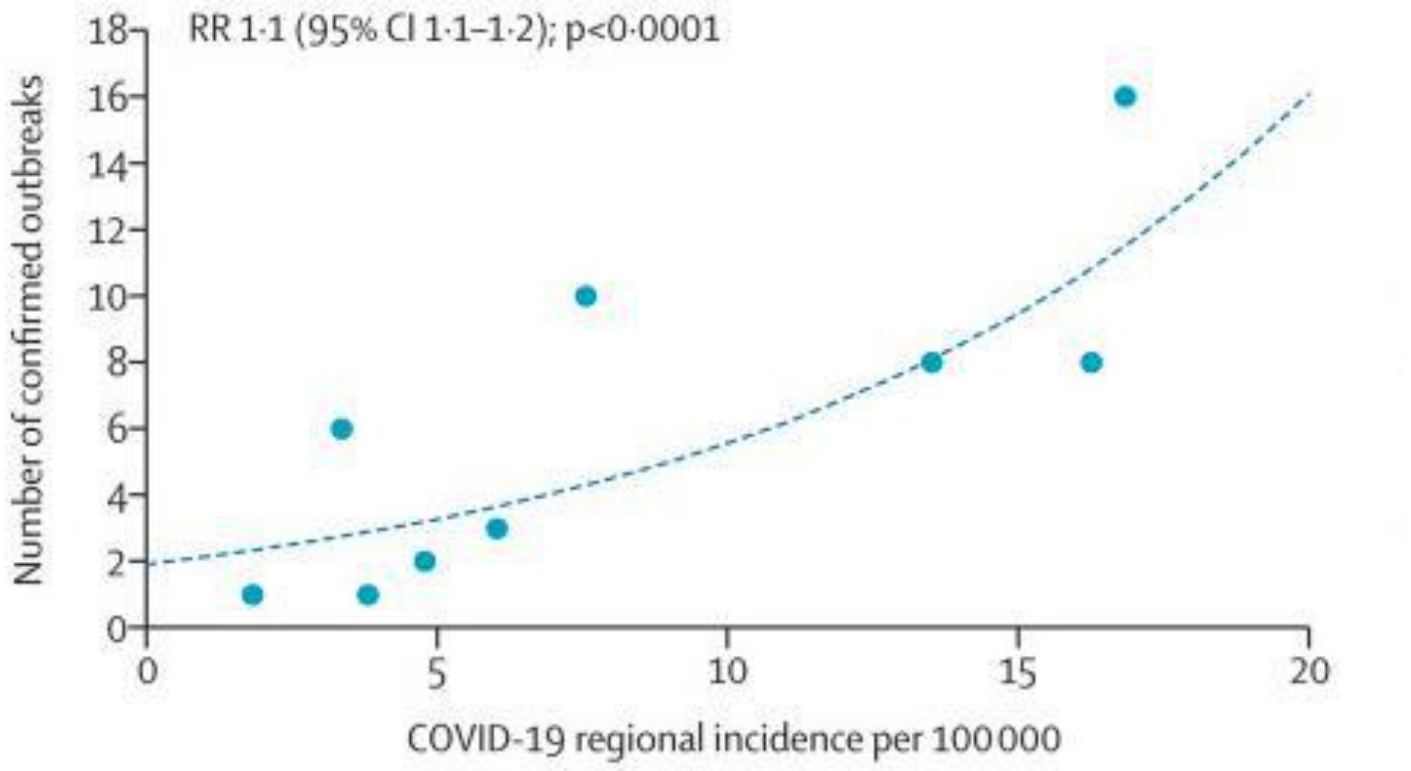
# Previous thresholds for remote learning: community rates

| District, state, or organization | Stated threshold/100K (interval) | ~ Per day/100K |
|---|---|---|
| Oklahoma | 14-25 (not stated) | 14 - 25 |
| Harvard Global Health Institute | 10-25 (daily) | 10 - 25 |
| CDC | 5, 20, 50, 200 (over 2 weeks) | <1 - 14 |
| Oregon | 50, 100, 200 (over 2 weeks) | 3.6-14 |
| Arizona | 100 (weekly) | 14 |
| Washington | 75 (weekly | 5 |
| Children's Hospital of Philadelphia | 5 (daily) | 5 |
| Massachusetts (summer 2020) | 4 - 8 (daily) | 4-8 |

- Test positivity rates also "considered," usually <5% (CHOP, NYC 9%)
- Massachusetts:
  - 10/22: continue in-person learning at >8/100K if no in-school transmission
  - 11/6: prioritize in-person learning at all levels unless in-school transmission

# Association of outbreak risk with community rates: UK June-July 2020

- Risk of outbreak associated with community rates (outbreak = 2+ cases)
- Risk increased by 72% for every increase of 5/100K in daily community incidence






https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30882-3/fulltext

# Children's Hospital of Philadelphia Policy Lab

- Strong school safety plans have mitigated risk for transmission, even within communities with moderate incidence (>35 cases/100K)
- Although mitigation strategies (masking, distancing, ventilation) can withstand higher community incidence, the tipping point is unknown
  - Recent blog update: if rapidly accelerating cases, consider remote MS/HS (Philadelphia)
- Most school-associated transmission has occurred outside of school or because of poor adherence to masking protocols
  - Student gatherings outside of school
  - Shared meals among staff (in school and out of school)
  - Youth sports (mostly off the field of play: sidelines, locker rooms, meals, parties)
- Teachers, staff, caregivers more likely to become ill and to transmit
  - Flexible sick leave and adequate space for breaks/eating are needed

# European CDC

- The decision to close schools to control the COVID-19 pandemic should be used as a last resort. The negative physical, mental health and educational impact of proactive school closures on children, as well as the economic impact on society more broadly, would likely outweigh the benefits.
- This report does not consider the epidemiology of COVID-19 in relation to new variants of SARS-CoV-2, for which robust evidence on the potential impact in school settings is not yet available, such as one recently observed in the United Kingdom.
- School closures can contribute to a reduction in SARS-CoV-2 transmission, but by themselves are insufficient to prevent community transmission of COVID-19 in the absence of other non-pharmaceutical interventions (NPIs) such as restrictions on mass gathering.
- The return to school of children around mid-August 2020 coincided with a general relaxation of other NPI measures in many countries and does not appear to have been a driving force in the upsurge in cases observed in many EU Member States from October 2020. Trends in case notification rates observed since August 2020 for children aged 16-18 years most closely resemble those of adults aged 19-39 years.
- Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools. Incidence of COVID-19 in school settings appear to be impacted by levels of community transmission. Where epidemiological investigation has occurred, transmission in schools has accounted for a minority of all COVID-19 cases in each country.
- Educational staff and adults within the school setting are generally not seen to be at a higher risk of infection than other occupations, although educational roles that put one in contact with older children and/or many adults may be associated with a higher risk.
- Non-pharmaceutical interventions in school settings in the form of physical distancing that prevent crowding as well as hygiene and safety measures are essential to preventing transmission.



https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-in-children-and-the-role-of-school-settings-in-transmission-first-update_0.pdf

# DESE/DPH metrics (11/6/20)

| Population | | | |
|---|---|---|---|
| **Group** | **Under 10k** | **10k - 50k** | **Over 50k** |
| **Grey** | Less than or equal to 10 total cases | Less than or equal to 10 total cases | Less than or equal to 15 total cases |
| **Green** | Less than or equal to 15 total cases | <10 avg cases/100k AND >10 total cases | <10 avg cases/100k AND >15 total cases |
| **Yellow** | Less than or equal to 25 total cases | ≥10 avg cases/100k OR ≥5% pos rate | ≥10 avg cases/100k OR ≥4% pos rate |
| **Red** | More than 25 total cases | ≥10 avg cases/100k AND ≥5% pos rate | ≥10 avg cases/100k AND ≥4% pos rate |

**Prioritize in-person learning in all categories unless in-school transmission**

**Fully remote only as last resort (reopen after mitigation strategies)**

Fully in-person if feasible; hybrid only if mitigation strategies not possible at 100% capacity
*(Phase III, Step II opening)*

Hybrid; maximize in-person time for high-needs students
(*Phase III, Step I opening*)

# Testing and Screening

# Types of Testing

- Diagnostic testing
  - For people with symptoms possibly due to COVID-19
- Screening
  - For people without symptoms, to detect asymptomatic infection and stop transmission
- Surveillance
  - For groups of people, to detect infection in a setting (e.g., wastewater)
  - Individual results not identified, but positive signal → individual screening

# Testing for symptomatic students and staff

- Anecdotal data: access to testing and time to result-return highly variable across MA and US
- Suggest use of lab-based PCR over rapid tests
- Helps ensure accurate reporting of symptoms if easy and quick
- Facilitates timely return to school/work if negative, isolation and contact tracing if positive

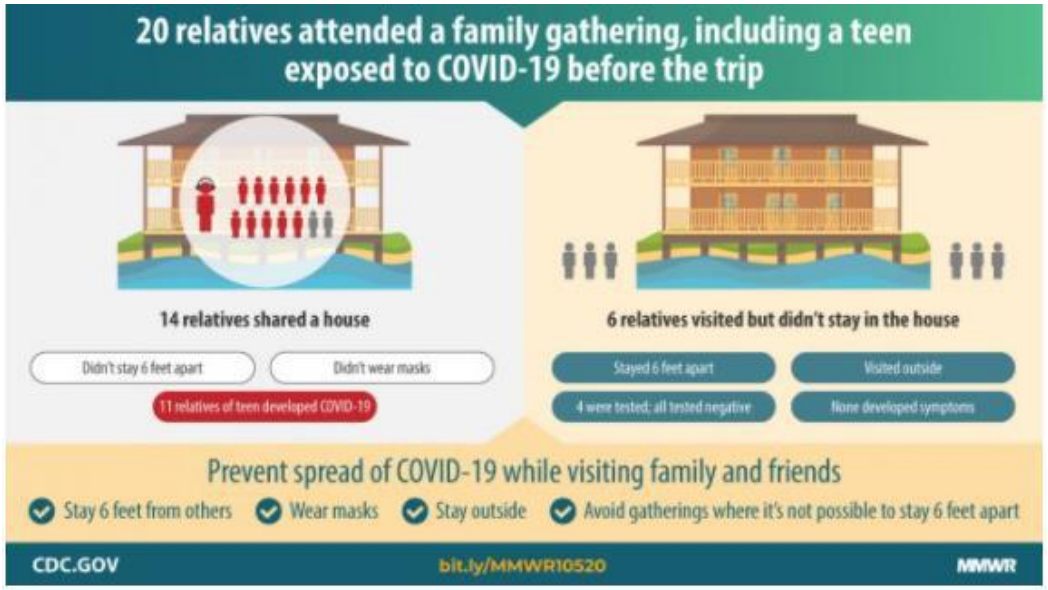
# Screening of asymptomatic students and staff

- Also provides key information: e.g., Wellesley screening experience
  - Weekly screening of staff, then staff + middle & high-school students
  - First week, few positives
  - Second week, new positives at HS (~13 in 11 days) → remote learning x 2 weeks
    - "Majority adults with strong evidence of in-school transmission" (main office)
    - 0 positives at middle school → remained open
- Staff-to-staff transmission consistent with other clusters in previously low-risk settings (MA hospitals, NE schools)
  - Breakrooms, eating together, working with very mild symptoms ("allergies")
  - Need safe, distanced, ventilated spaces for mask breaks and eating/drinking
  - Need policies that support staying home when symptomatic

# Social Gatherings: Risk Reduction

# Safer gathering suggestions

- Major holidays → surges in cases → hospitalizations & deaths
  - Family reunion: one exposed person (neg test) → 11 + family members
  - One wedding in ME → 177 cases, 7 deaths (none attended)




# Safer gathering suggestions

- Avoid: indoors and unmasked with non-household members
  - Outdoors safest – blankets, fire pits, heat lamps, etc.
  - If indoors, open at least 2 windows
- Eating, drinking, sleeping in shared spaces are highest risk
  - Stagger eating and drinking
  - Keep households >>6’ apart while eating
- Travel: shrinking list of low-risk states per MA guidelines
  - Masks, sanitizer; airplanes riskiest at gate (AC off) and mealtimes
- Testing: continue all precautions regardless of negative tests