

ABC Science Collaborative

A public health initiative that unites science and schools to ensure a safe work and learning environment



THE ABC SCIENCE
COLLABORATIVE

Learning | Informed Decision-Making | Research

Barriers to school return: Multiple pressing questions

PARENTS

How can we keep our children safe and healthy at school?

TEACHERS

How do I keep myself and my students safe?

PRINCIPALS

How do we help teachers and parents feel confident with being in school?

SUPERINTENDENTS

How do we create a safe learning environment, and what do we do if we have COVID-19 cases in our schools?

CHILDREN

Do I matter?

Introducing the ABC Science Collaborative

What Is the ABC Science Collaborative?

A program that pairs scientists and physicians with school and community leaders to help understand the most current and relevant information about COVID-19. Seed funding from the National Institutes of Health.



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The Team

Public health scientists and physicians affiliated with the Duke School of Medicine, the Duke Clinical Research Institute, and the University of North Carolina School of Medicine.



ABC Science Collaborative: A data-driven approach to support decision making

Informing Evidence-Based Decision Making

Delivering Educational Resources for All

Advancing Public Health

- Superintendent support
- Coordination with state and local health departments
- Stakeholder groups

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Learning Resources

Our goal is to provide information help school make informed decisions.

COVID-19 & The Classroom

Why Do We Need Masks or Face Coverings to Prevent Transmission of COVID-19?

Infected person without a mask

Infected person with a mask

El Consejo Científico Asesor para las escuelas presenta:

La COVID-19 y la serie de seminarios web en el aula

Adapted from J. Wu, Y. Li. American Journal of Infection Control 44: 3102-3108

Logos: HAVILL HILL CHARTERS SCHOOLS, WAKE COUNTY SCHOOLS, THE ABC SCIENCE COLLABORATIVE, Duke University School of Medicine, UNC, DURHAM, WAKE COUNTY PUBLIC SCHOOLS SYSTEM, Duke Clinical Research Institute.

9:41

FaceTime, Calendar, Photos, Camera, Mail, Clock, Maps, Weather, Reminders, Notes, Stocks, News, Books, App Store, Podcasts, TV, Home, Wallet, Settings

ABC Science

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Remote COVID-19 Symptom Monitoring to Support a Safe Return to Campus

The scientific community has emphasized that COVID-19 prevention and isolation practices are vital to slow virus spread rates. The new ABC Science Collaborative App is a user-friendly application that is based on state and CDC screening guidelines to conduct a fast, daily, self-reported survey for early identification of potential COVID-19 symptoms and infections to minimize transmission at your school.

APP BENEFITS AT-A-GLANCE

- Resources that students and staff are arriving on campus without COVID-19 symptoms and illness.
- Easy campus check-in of healthy students and staff.
- Identification of students and staff with COVID-19 or COVID-19 symptoms so that the school administration can remove precautions are taken to reduce transmission on campus.
- Links to local resources, like testing sites.
- Automated reminders to use the application.
- Educational content to increase knowledge of COVID-19 transmission and prevention.
- Opportunity to participate in scientific research related to COVID-19 and other topics relevant to students, families and school staff.

FAST, VIRTUAL HEALTH CHECKS

Step 1: Download the app.

Step 2: Create an account.

Step 3: Complete a daily two-minute virtual symptom survey.

Step 4: Receive your daily pass.

Step 5: Show your pass upon entry to school. Green pass? You're off! Red pass? You should probably stay home or seek medical care.

Step 6 (optional): Want to go the extra mile to help your community? Sign COVID-19! Use the app to sign up for research opportunities.

ABOUT THE ABC SCIENCE COLLABORATIVE

The ABC Science Collaborative is a program that pairs scientists and physicians with school and community leaders to help understand the most current and relevant information about COVID-19. The program helps school leaders make informed decisions about returning to school using data from their own communities.

The Duke School of Medicine and the Duke Clinical Research Institute have established the ABC Science Collaborative with funding from the National Institutes of Health.

NEW FEATURES COMING SOON

Dashboard display of de-identified COVID-19 symptom and diagnosis data for students and staff in your school as compared to the school district, local, state and national communities.

THE ABC SCIENCE COLLABORATIVE

LEARN MORE AT: abcsciencecollaborative.org



Piedmont-Triad / District 5

Alamance-Burlington School System
Davidson County Schools
Davie County Schools
Guilford County Schools
Lexington City Schools
Mt. Airy City Schools
Surry County Schools

Thomasville City Schools
Winston-Salem Forsyth Schools
Yadkin County Schools

North Central Region / District 3

Chapel Hill-Carrboro City Schools
Chatham County Schools
Durham County Schools
Edgecombe County Schools
Franklin County Schools
Granville County Schools
Johnston County Schools

Lee County Schools
Nash County Public Schools
Orange County Schools
Vance County Schools
Wake County School
Warren County Schools
Wilson County Schools

Northeast Region / District 1

Bertie County Schools
Elizabeth City-Pasquotank Schools
Gates County Schools
Hertford County Schools
Hyde County Schools
Northampton County Schools
Pitt County Schools
Washington County Schools

Northwest Region / District 7

Alexander County Schools
Ashe County Schools
Caldwell County Schools
Hickory City Schools

Western Region / District 8

Asheville City Schools

Southwest Region / District 6

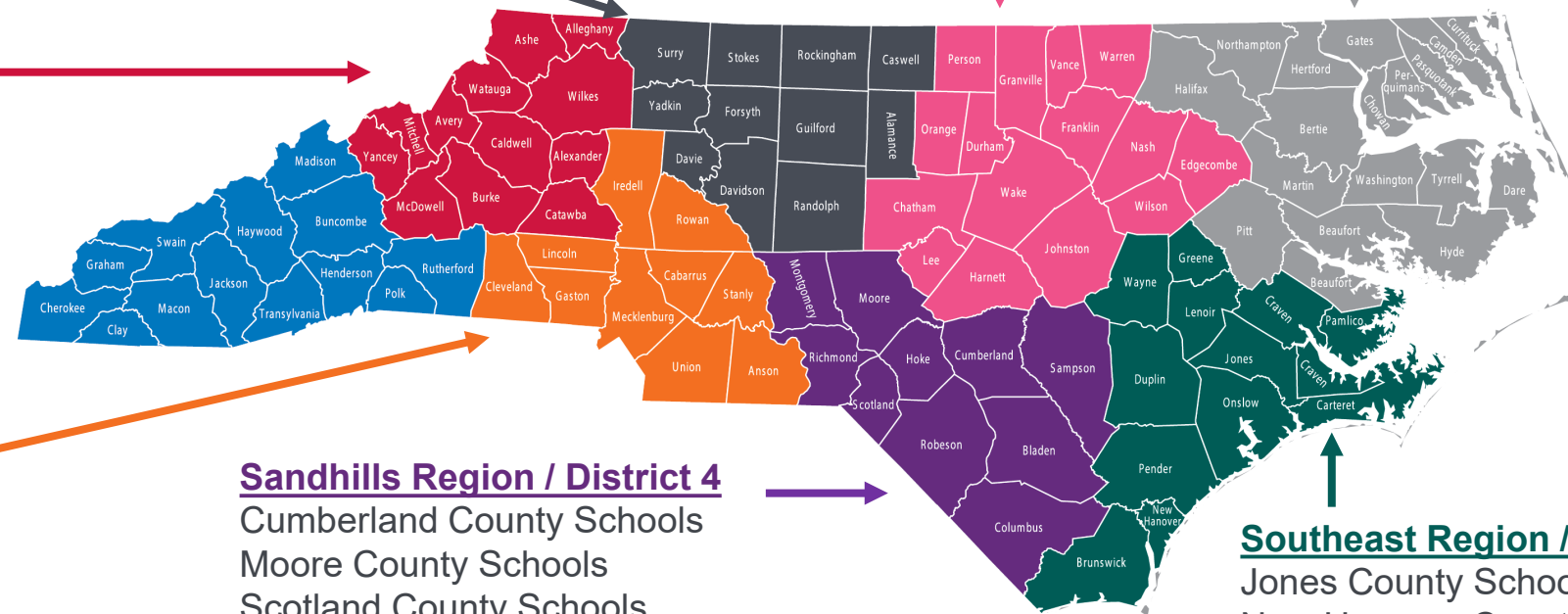
Cleveland County Schools
Gaston County Schools
Iredell Statesville Schools
Kannapolis City Schools
Mooresville Graded School District
Stanly County Schools

Sandhills Region / District 4

Cumberland County Schools
Moore County Schools
Scotland County Schools

Southeast Region / District 2

Jones County Schools
New Hanover County Schools
Carteret County Public School System



**Additionally
12 charter schools**

Changing landscape: vaccinations, variants, outbreaks

- Communities question: are vaccines safe, why should we get vaccinated, and when will teachers & students get vaccinated?
- How will vaccinations impact school years 2020-21, 2021-22, and 2022-23?
 - 2020-2021 (some districts re-open)
 - Late spring 2021, most school staff vaccinated
 - 2021-2022 (most districts will re-open and most in hybrid)
 - August 2021, ~10% of school population vaccinated
 - Spring 2022, most students vaccinated
 - 2022-2023 (schools largely open if they can provide safe environment)
 - Successfully dealing with variants that impact vaccines
 - Hot spots will continue to emerge

Existing partnerships

- School Districts
 - Over 60 school board meetings to provide expertise and answer questions
 - Hundreds of faculty-to-school district leadership calls over past 20 weeks
 - Everything from activities (band, lunch, sports) to review of science (virology and epi 101)
 - On-site visits to special needs classrooms to understand masking
 - Ten districts with district-wide staff meetings
 - Dozens of meetings with community members
 - Nightly calls with school leadership teams throughout the state
- Stakeholder organizations
 - NCDHHS
 - National Institutes of Health
 - Local members of AAP
 - North Carolina Association of Educators
 - National Educators Association

Immediate impact

- Successful return to in-person learning environment
 - Developed methods and a process for quality improvement at scale
 - Developed educational materials and cycle of learning at scale
- CDC meetings
 - prioritization of schools (first to open, last to close)
 - JAMA editorial
- 12 principles for reopening
- School-specific metrics to evaluate school/district performance
- Developed trust with community leaders to conduct research

Research Project #1 Secondary transmission in schools

- In spring 2020, conventional wisdom was that closing schools is an effective and obvious mitigation strategy to prevent spread of infectious diseases
- By summer 2020, conventional wisdom was that in context of low community transmission, schools were not driving community spread
- Fundamentally a question of infection control: secondary transmission in schools is the key marker for whether or not schools can keep students and staff safe and if schools contribute to increases in community transmission
- 11 ABC districts agreed to track incidence and secondary transmission of SARS-CoV-2
- Local health department staff adjudicated secondary transmission
- ***Superintendents met weekly with ABCs faculty to share lessons learned and develop prevention methods***

ABC-11 School Districts

District	Staff	Students in Person	Hispanic ¹	African American	Asian	White	Multiple Races ²	* Community Cases per 100,000 per 14 days as of Jan 26
1	967	3,972	11	4	1	78	5	882
2	626	2,163	12	<1	<1	82	4	584
3	1,073	5,068	15	7	1	72	5	878
4	3,847	19,434	15	22	2	54	7	1,083
5	727	2,835	26	19	5	40	10	1,025
6	3,399	16,523	14	14	3	63	6	1,247
7	254	628	11	35	<1	47	7	902
8	1,733	8,815	14	14	1	63	7	920
9	330	1,024	21	8	1	64	6	870
10	4,228	12,700	12	44	1	35	6	884
11	1,000	4,284	26	3	<1	66	4	935

* Manuscript reported Aug-Oct time frame but these districts continue to be successful despite the winter surge

¹North Carolina reports ethnicity as a separate category within race.

²Races with <1% for all districts listed include Native American and Pacific Islander.

Secondary transmission in schools: results

- More than 90,000 students and staff attended school in-person for the first 9 weeks of instruction
- 773 community-acquired SARS-CoV-2 infections were documented by molecular testing
- Through contact tracing, NC health department staff determined an additional 32 infections were acquired within schools
- No instances of child-to-adult transmission of SARS-CoV-2 were reported within schools

Secondary transmission: Conclusions

- On average, NC residents infected with SARS-CoV-2 infected ~1.1 other individuals during these 9 weeks
- If secondary transmission were as common in schools as in the community, we would anticipate up to 900 secondary infections of SARS-CoV-2 within schools (not 32)
- Enforcing SARS-CoV-2 mitigation policies such as masking, physical distancing, and hand hygiene, resulted in
 - minimal clusters of SARS-CoV-2 infection
 - diminished secondary transmission in schools
 - No increase in community infection burden
- **Successful return to in-person school**
 - Defined by strong leadership
 - Defined by adherence to mitigation strategies
 - Not defined by community transmission



StrongSchoolsNC Public Health Toolkit (K-12)

INTERIM GUIDANCE
PUBLISHED JUNE 8, 2020 • UPDATED DECEMBER 4, 2020



Learnings from the field

- School district access to healthcare professionals is variable
 - Questions of equity
- School specific data are key
 - Transparency to build and cultivate a culture of safety and trust
 - Case management increasingly complicated
 - Regular data analysis necessary to evaluate progress
- Rapid, consistent, transparent contact tracing and access to testing are important
 - Quickly identify in-school exposures
 - Effects of quarantine on staff availability
 - School staff from counties outside school district
- Adherence to mitigation strategies (masking) is increasingly important
 - Coronavirus variants

School-specific metrics

Cluster Event	Action Taken
Rapidly* increasing number of infections that are linked epidemiologically within a school	Rapidly increasing number epidemiologically linked across a school district
Substantial secondary transmission** within a school	Substantial secondary transmission** in a school district
District leadership discusses the safety benefits of remote learning for the individual school with the school board, an independent body, local health department, and key stakeholders.	District leadership discusses the safety benefits of district-wide remote instruction with the school board, an independent body, the local health department, and key stakeholders.
District leadership discusses the safety benefits of remote instruction for the individual school with the school board, an independent body, local health department, and key stakeholders.	District leadership discusses the safety benefits of district-wide remote instruction with the school board, an independent body, the local health department, and key stakeholders.

* Rapidly increasing number of infections for a school is defined as ≥ 15 linked cases within a two-week period

** Substantial secondary transmission: defined as > 5 cases of COVID-test positive, within-school transmission per 1,000 students/week

12 Principles for safe schools

1

BE TRANSPARENT

Report all primary COVID-19 cases by week, by school.

2

MAKE A ROAD MAP FOR CONTACT TRACING AND TESTING

The school district and local health department(s) should make available publicly who will do what in a successful contact tracing.

3

DEVELOP A DASHBOARD

A pandemic management dashboard should include primary cases, secondary cases, testing rates, and comparisons to county-wide data.

4

IMPLEMENT LESSONS LEARNED

School leadership should work with staff to understand secondary transmissions and to implement lessons learned.

5

WORK WITH A TRUSTED THIRD PARTY TO ANALYZE DATA

For example, partner with the ABC Science Collaborative.

6

LEVERAGE SCHOOL-BASED METRICS

Secondary transmission per 10,000 students and number of clusters per 10,000 students are metrics that are preferable to county data because the crucial element of managing schools is to prevent spread within schools.



12 Principles, cont.

7

FIGHT PANDEMIC FATIGUE

Target >99 percent adherence to masking by all mainstream curriculum students, teachers, and staff on school property at all times (except for eating and drinking). Use an anonymous hot line or web portal to report non-compliance or a simple daily walkthrough to check that all masks are over the nose, mouth, and chin.

8

MAKE A DETAILED SCHEDULE

Customize the schedule for each school. Examples for elementary, middle, and high schools are available from the ABC Science Collaborative. *The Toolkit is especially important here.*

9

CONSIDER EXTRACURRICULARS

In addition to a detailed plan for the general school day, develop a detailed plan for all extracurricular and school-sponsored activities such as sports and the arts.

10

CONSIDER SPECIAL NEEDS

This group of teachers and students need additional precautions. Plans should be developed locally, and these groups should receive allocation of extra resources because masking is not always possible.

11

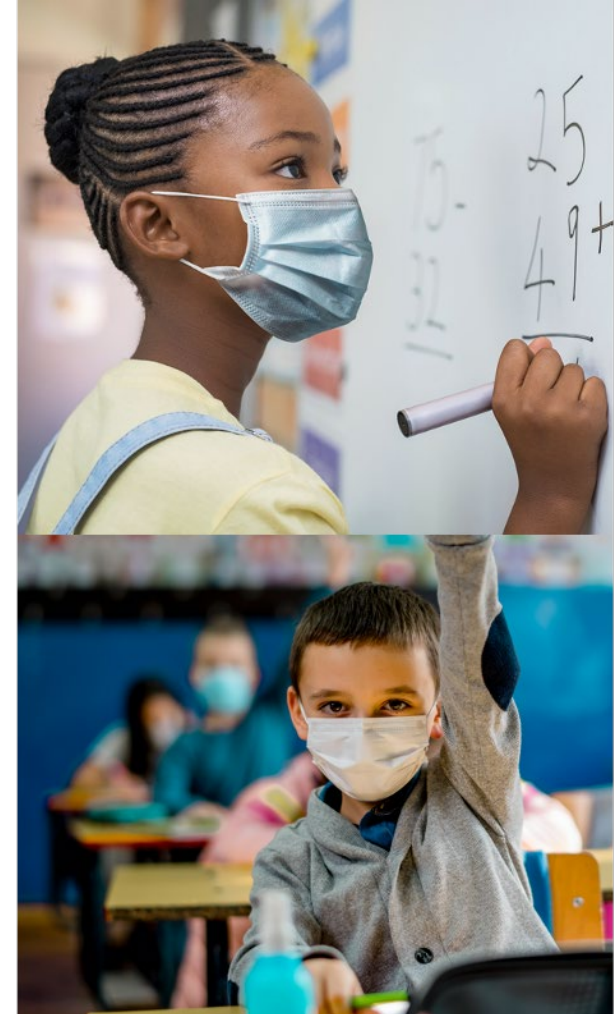
DEVELOP A COMMUNICATION PLAN

How will districts communicate, with whom, and when? Develop a communication plan that is detailed, but that can be revised as new data and insights come to light.

12

WALK, THEN RUN

A defined return to in-person learning (for example, in a hybrid model) can give everyone a chance to adapt to new procedures and policies.



The importance of research to navigate the future

- Incidence of secondary transmission (changing class sizes, community rates, different age groups)
- When we talk about ‘community metrics’ to re-open, what is the ‘community’
 - The country, the state, the county, the hospital catchment area, *the school*
- Effect of quarantine on school staff availability
- Adherence to masking within school buildings
- Educational effects of COVID-19
- Incidence of long-haulers syndrome in children
- Mental health effects of COVID-19 on school-age children
- Vaccine uptake and long-term effects

Won't this all go away? Think about the seasons of COVID

2020 Spring: Children are super spreaders, close schools

Data, they're not super spreaders^{1,2,3}

2020 Summer: we need low community transmission, close schools

Data, widespread community transmission, schools can be safe^{2,3,4,5}

2020-2021 Fall/Winter: Surge is coming/surge is here, close schools

Data, in high incidence communities, schools can be safe^{6,7,8,9}

2021 Spring: vaccinate the adults, close schools

Despite vaccination, schools continue to stay closed¹⁰

2021 Summer: well, it's summer, good thing schools are closed

2021 Fall: we need to vaccinate children, we should close schools¹¹

2021 Winter: another winter surge is coming, we should close schools

2022 Spring: new variants that evade vaccine, we should close schools

2022 Summer: whew, it's summer, good thing schools are closed

2022-2021 School year, see above

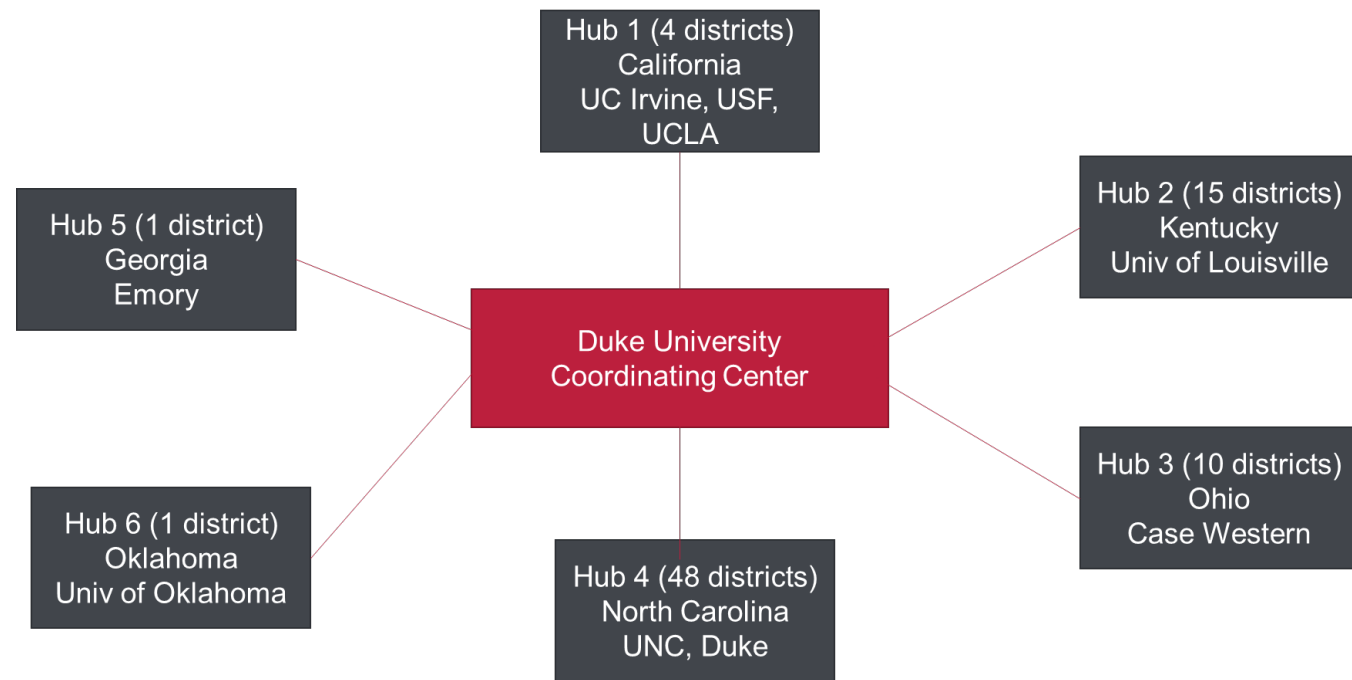
- 1) European CDC, 2020
- 2) NCIRS, Australia, 2020
- 3) Dub, et al., 2020
- 4) Danis et al., 2020
- 5) Yung, et al., 2020
- 6) Hobbs et al 2020
- 7) Zimmerman et al 2021
- 8) Falk et al 2021
- 9) UNICEF Quarterly Report, 2020
- 10) New Jersey Schools, 2021
- 11) Fairfax Schools, 2021

Expansion Concept

1) National infrastructure

2) Scientific support for communities

3) Research Data: COVID-19 and its impact on children and families



- **Coordinating center:**

- Duke University
- “Playbook” and customized support for interaction with local stakeholders
- Resource for hubs: educational materials, policies, communications specialists
- Data management
- Resource allocation

- **Hubs:**

- CA, GA, KY, MO, MI, NC, OH, OK, WI
- Faculty leadership
- Local interaction with school districts, local stakeholders
- Recruit for research studies

- **Sites:**

- local districts

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- 2) NCIRS Australia, 2020 https://ncirs.org.au/sites/default/files/2020-04/NCIRS%20NSW%20Schools%20COVID_Summary_FINAL%20public_26%20April%202020.pdf
- 3) Dub, et al., 2020 (<https://www.medrxiv.org/content/10.1101/2020.07.20.20156018v1.full.pdf>)
- 4) Danis et al., 2020 (<https://pubmed.ncbi.nlm.nih.gov/32277759/>)
- 5) Heavey, et al., 2020 (<https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.21.2000903>)
- 6) Yung, et al., 2020 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7337629/>)
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- 11) New Jersey Schools <https://www.nj.com/education/2021/01/vaccinating-teachers-wont-be-enough-to-fully-open-all-nj-schools-heres-why.html>
- 12) Fairfax County Schools <https://reason.com/2020/10/20/fairfax-teachers-union-schools-closed-vaccine/>

Thank you.



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