dhec

Healthy People. Healthy Communities.

COVID-19

Lancaster School Board
September 21, 2021

Jonathan Knoche, MD, MPH





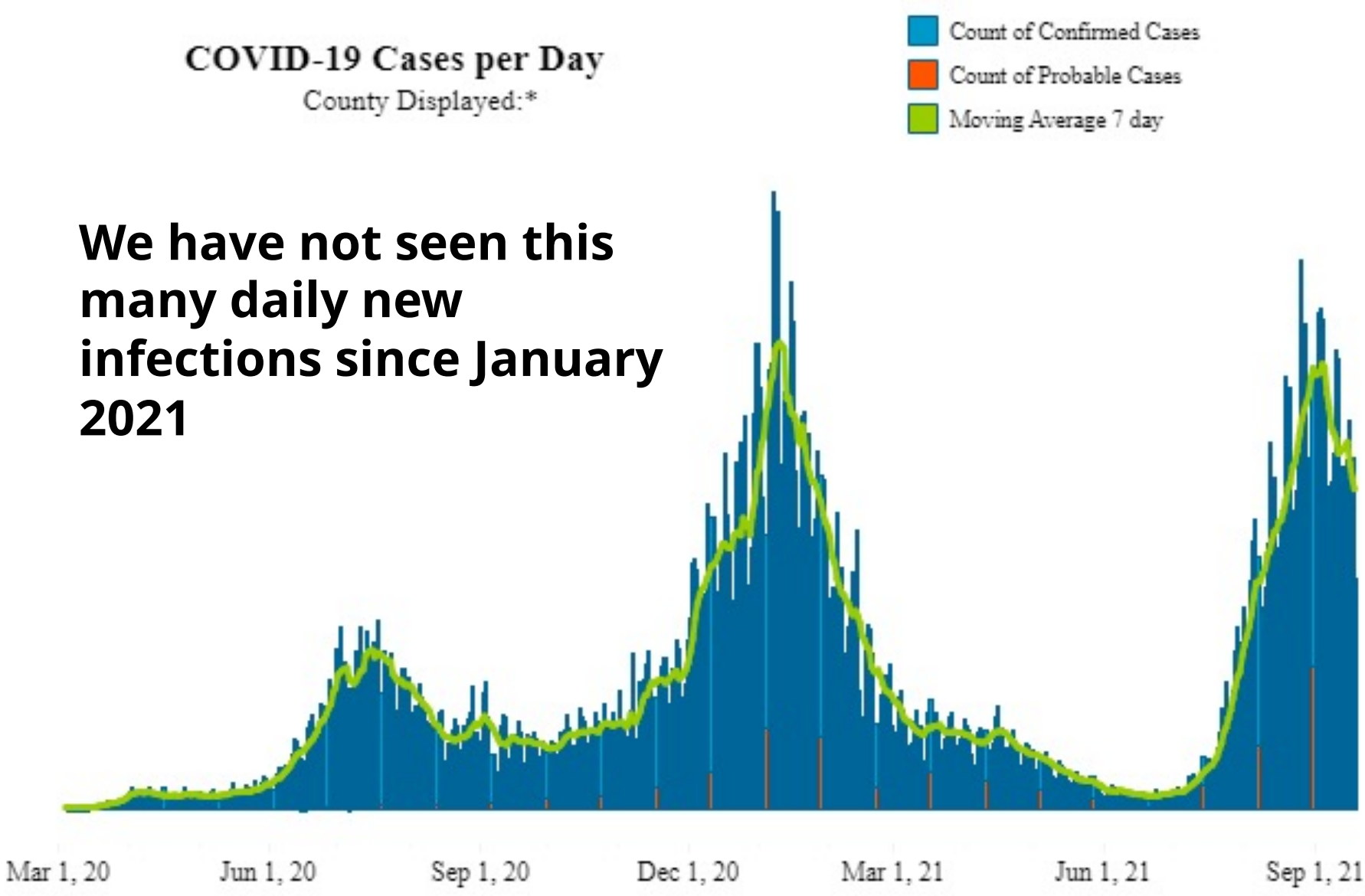






Overview

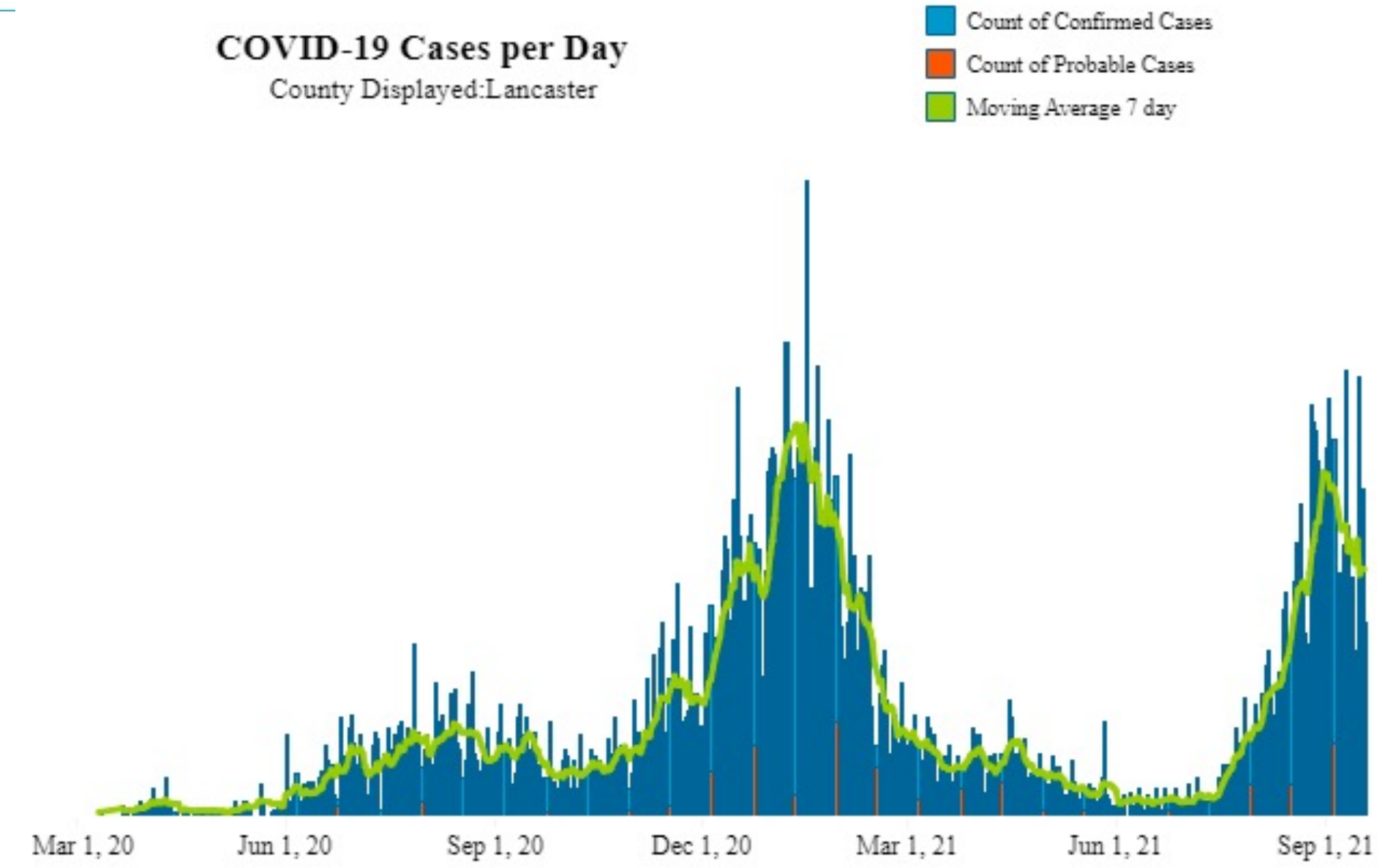
- COVID-19 numbers and trends
- Review protective measures to reduce transmission
- Discussion/Q&A



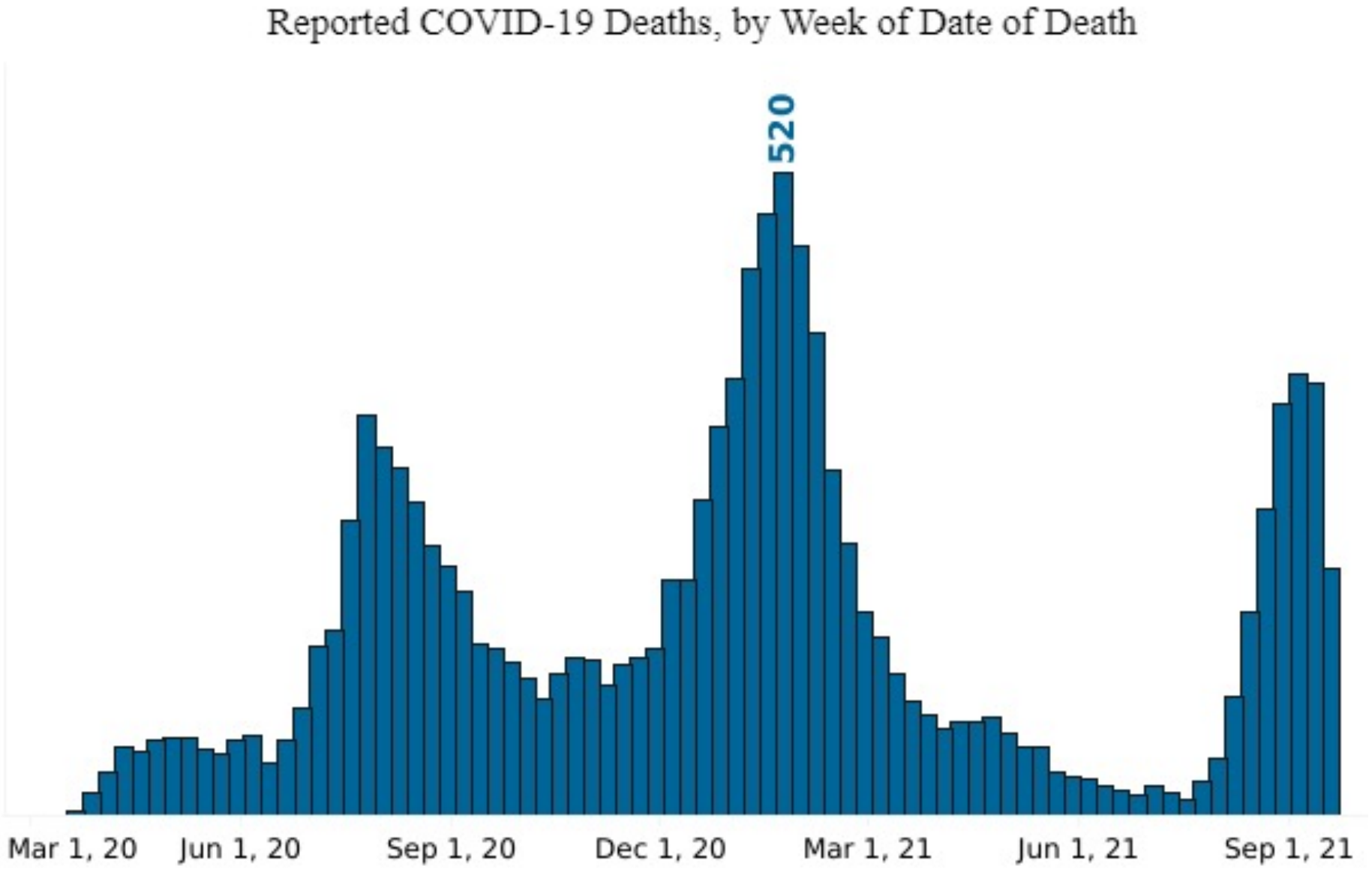
We have not seen this many daily new infections since January 2021

South Carolina Department of Health and Environmental Control

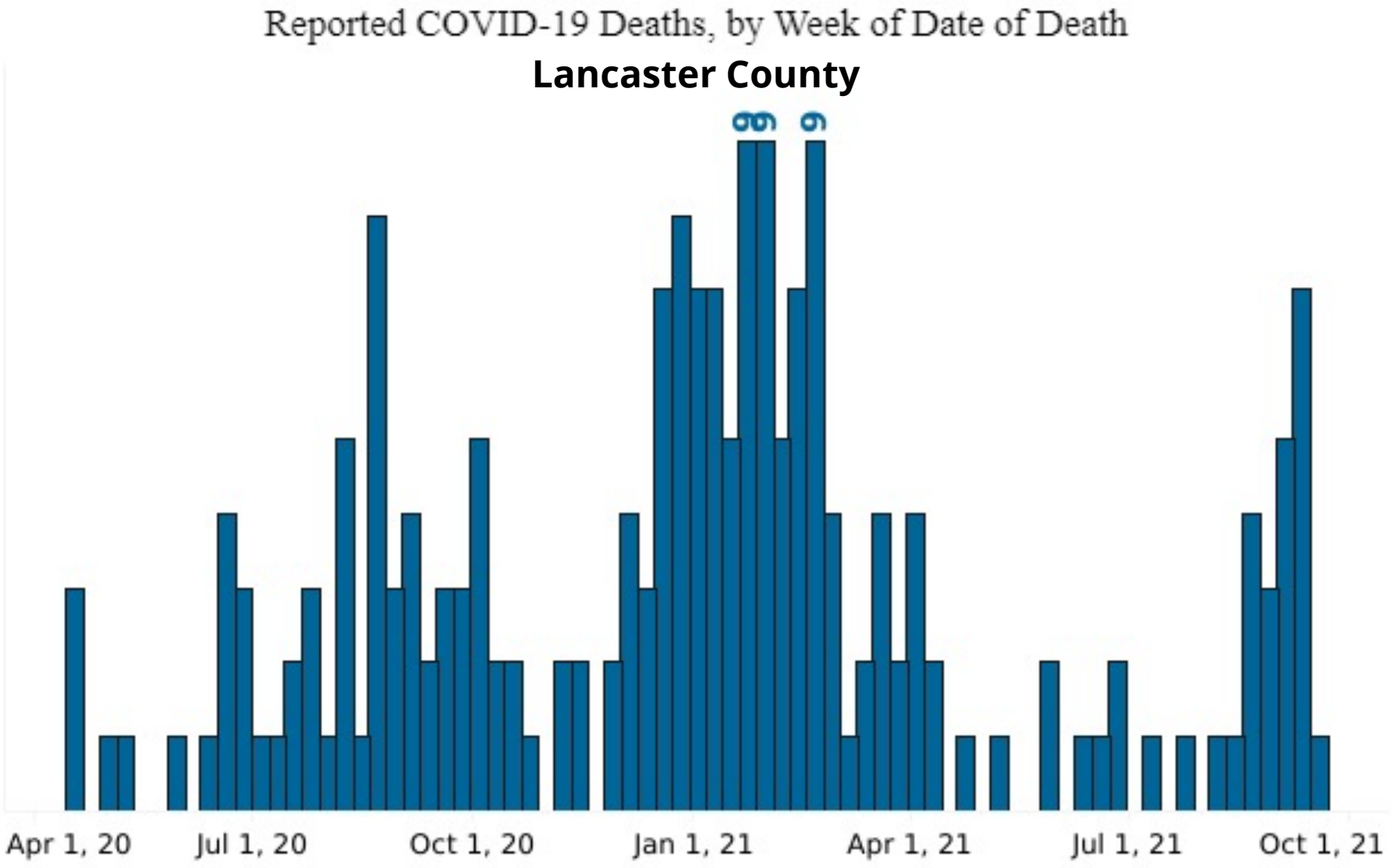
Healthy People. Healthy Communities.



South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.



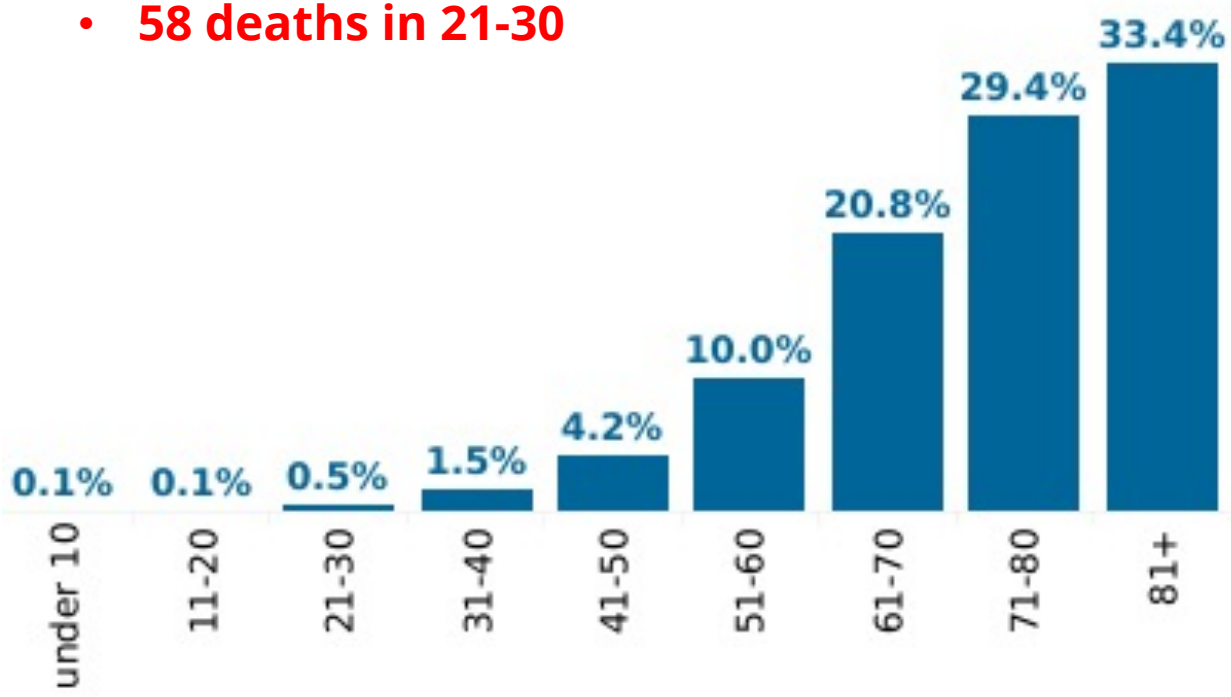
South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.



South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

Reported COVID-19 Cases, by Age Group & Age Related Information

- **19 deaths in age 0-20**
  (6 deaths <10, 13 deaths 11-20)
- **58 deaths in 21-30**



Minimum Age	**0 years**
Median Age	**75 years**
Maximum Age	**106 years**
Average Age	**73.4 years**

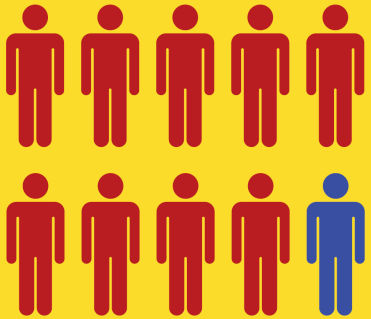
Who's getting COVID-19 now?

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

VACCINATION STATUS AND COVID-19

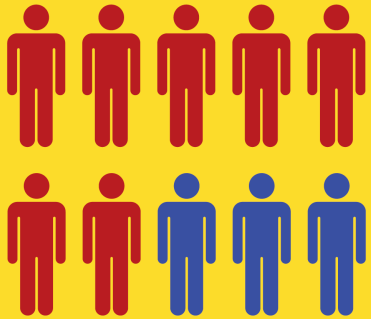
AUGUST 1–AUGUST 31, 2021

Out of 27,201 Reported Cases



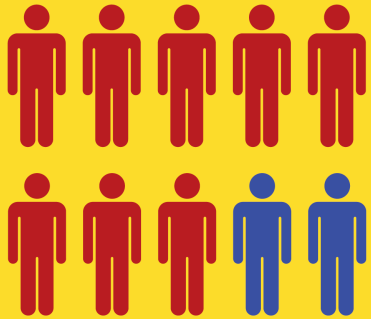
85%
NOT FULLY VACCINATED

Out of 1,522 Hospitalizations



71%
NOT FULLY VACCINATED

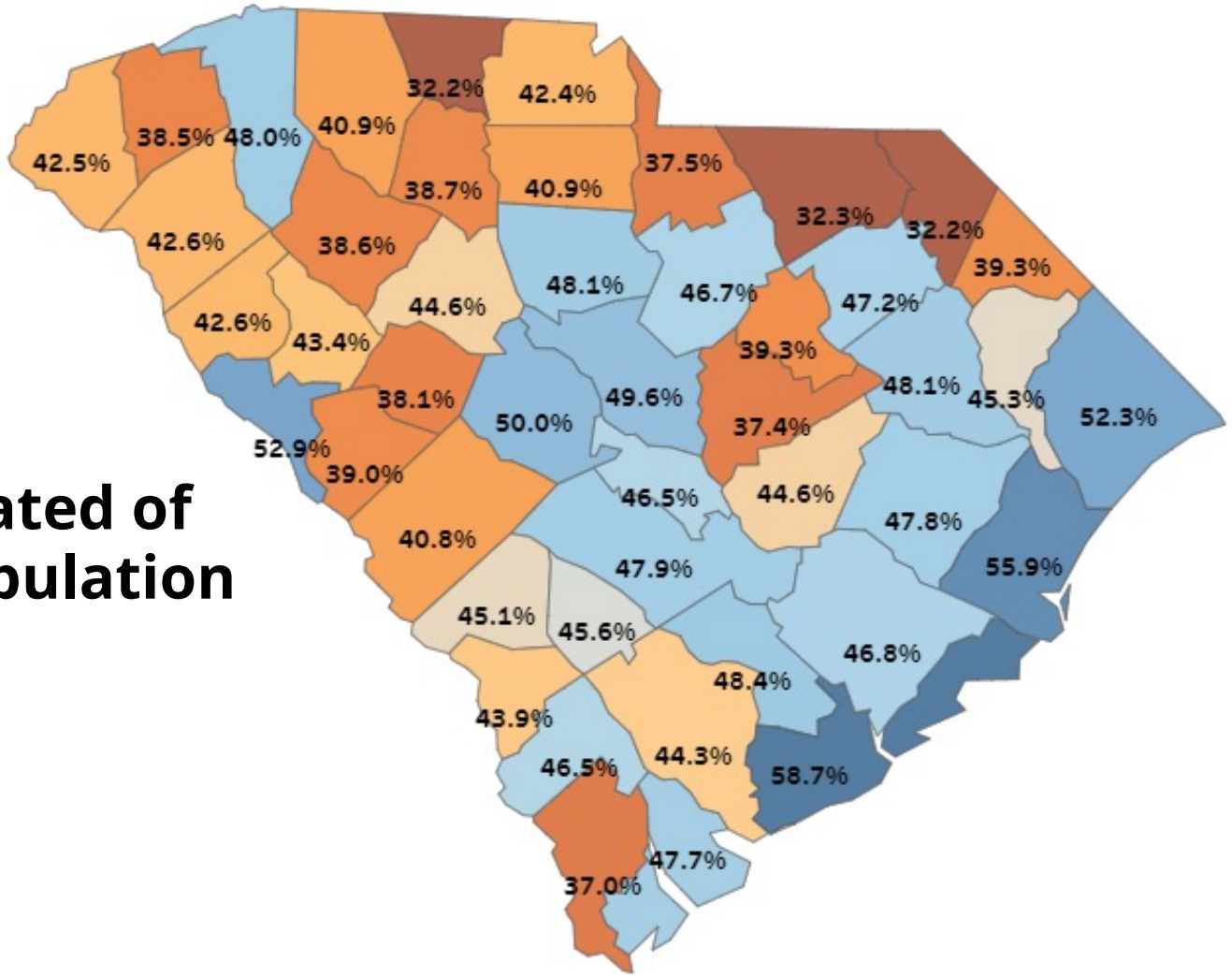
Out of 611 Deaths



75%
NOT FULLY VACCINATED

All data are provisional and subject to change.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.



% fully vaccinated of the overall population age 12 and up

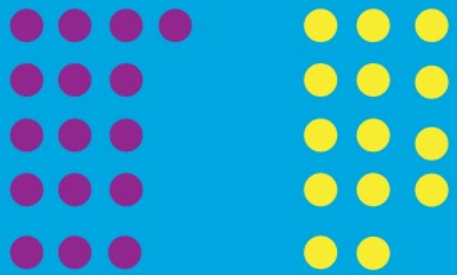
https://scdhec.gov/covid19/covid-19-data/vaccine-reach-local-vulnerability

COVID-19 Update
Tuesday, September 21, 2021

South Carolina Children's Hospital Collaborative

All hospitalized children are unvaccinated.

Children hospitalized with a COVID-19 diagnosis



30

- = UNVACCINATED and > 12 years of age
- = UNVACCINATED and < 12 years of age
- = VACCINATED and > 12 years of age

COVID-positive children in critical care

9

- = UNVACCINATED and > 12 years of age
- = UNVACCINATED and < 12 years of age

COVID-positive children on a ventilator

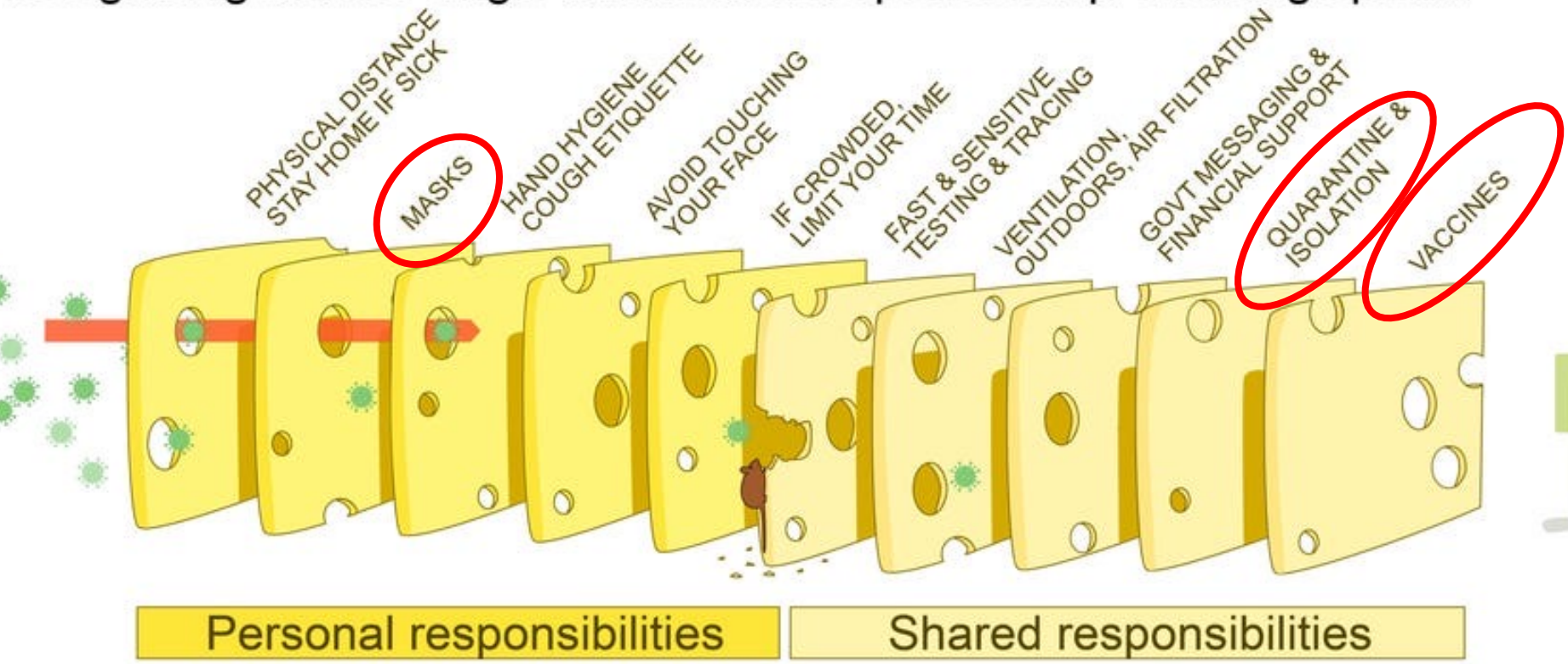
5

- = UNVACCINATED and > 12 years of age
- = UNVACCINATED and < 12 years of age

Prevention Strategies

Swiss Cheese Respiratory Virus Pandemic Defence

recognising that no single intervention is perfect at preventing spread



Each intervention (layer) has imperfections (holes).
Multiple layers improve success.

Vaccines

How good are the vaccines?

- Currently authorized vaccines have high effectiveness against COVID-19 hospitalization, but effectiveness against new cases appears to have declined in recent months, coinciding with the Delta variant's increase from <2% to >80% in the U.S.

- Early research from the U.K. suggests that, after full vaccination, the Pfizer vaccine is 88% effective at preventing symptomatic COVID-19 virus caused by the delta variant.
  - 96% effective at preventing severe disease with the COVID-19 virus caused by the delta variant.
- Early research from Canada suggests that, after one dose, the Moderna COVID-19 vaccine is 72% effective at preventing symptomatic COVID-19 virus caused by the delta variant.
  - One dose of the vaccine is also 96% effective at preventing severe disease with the COVID-19 virus caused by the delta variant.
- The Janssen/Johnson & Johnson COVID-19 vaccine is 85% effective at preventing severe disease with the COVID-19 virus caused by the delta variant, according to data released by Johnson & Johnson.

I know people who were vaccinated, but still got COVID-19.
Why should I (or my child) get a vaccine that doesn't work?

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

No vaccine is 100% effective.
Main goals: prevent death and hospitalization

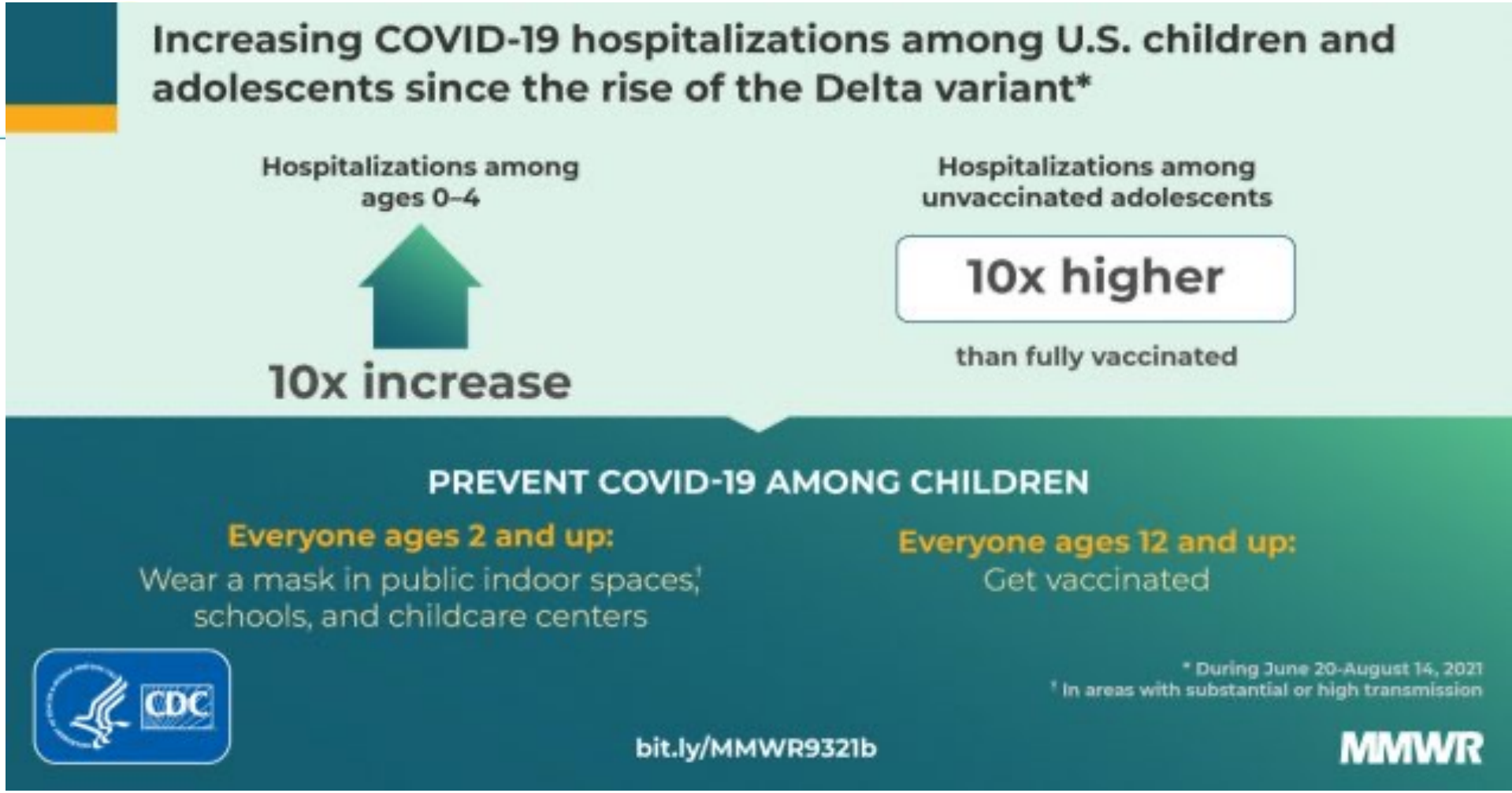
Total breakthrough cases*¥	Total breakthrough hospitalizations and/or deaths*§	Total breakthrough hospitalizations*§	Total breakthrough deaths*§
9,074	**807**	**779**	**215**

Percent of Fully Vaccinated People who have a Breakthrough Infection	Percent of Fully Vaccinated People who were Hospitalized and/or Died due to COVID-19	Percent of Fully Vaccinated People who were Hospitalized due to COVID-19	Percent of Fully Vaccinated People who Died due to COVID-19
0.4204%	**0.0374%**	**0.0361%**	**0.0100%**

* Data as of September 14, 2021; all data are provisional.

South Carolina Department of Health and Environmental Control

Healthy People. Healthy Communities.



The proportions of hospitalized children and adolescents with severe disease were similar before and during the period of Delta predominance

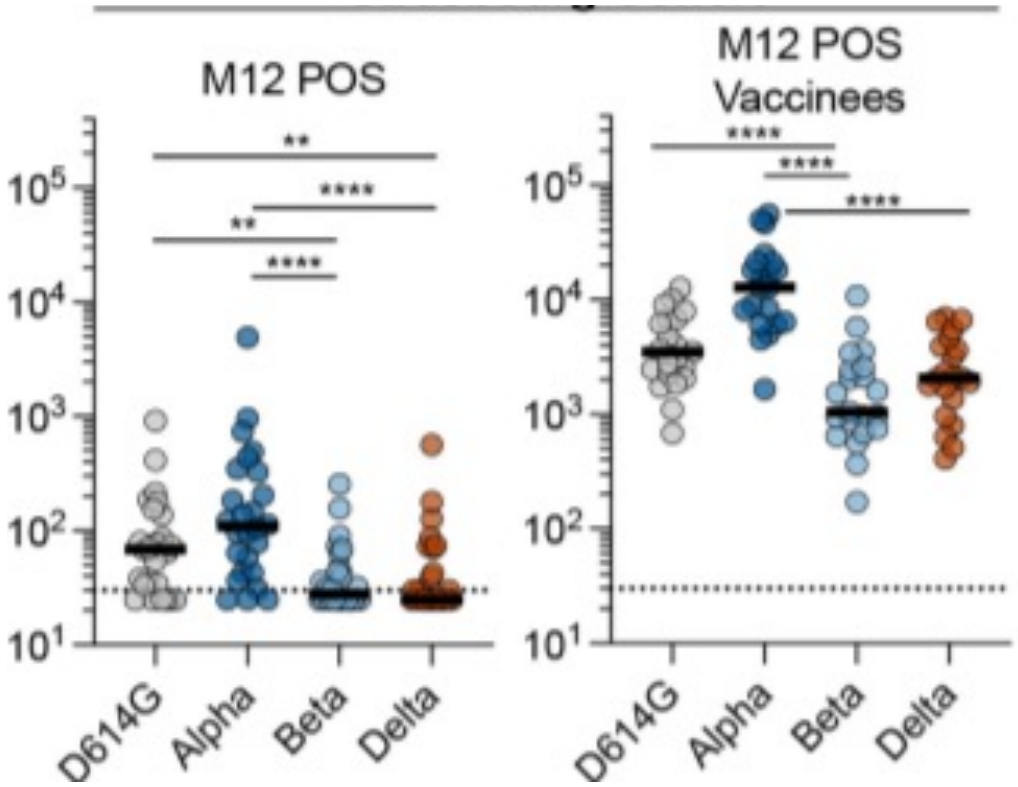
Household transmission

- A recent report in JAMA Pediatrics found that when children were the first/index case of COVID-19 in a home **about 27% of the children spread the infection to household members.**

https://jamanetwork.com/journals/jamapediatrics/fullarticle/2783022

I and my kids already had COVID-19, so why should we get vaccinated; we're already protected?

Variant sensitivity to neutralizing antibodies



- Convalescent sera from individuals having prior wild type infection (12 months post onset of symptoms) did not neutralize Beta and Delta variants
- Convalescent sera from prior infection, later vaccinated, did

https://www.nature.com/articles/s41586-021-03777-9

Face Masks

55 people attended indoor wedding reception: led to 177 cases (secondary and tertiary transmission) and 7 deaths

https://www.cdc.gov/mmwr/volumes/69/wr/mm6945a5.htm

Hendrix MJ, Walde C, Findley K, Trotman R. Absence of Apparent Transmission of SARS-CoV-2 from Two Stylists After Exposure at a Hair Salon with a Universal Face Covering Policy — Springfield, Missouri, May 2020. MMWR Morb Mortal Wkly Rep 2020;69:930-932.
DOI: http://dx.doi.org/10.15585/mmwr.mm6928e2external icon.

Masks do work

http://dx.doi.org/10.15585/mmwr.mm7004e3external icon

Masks do work

- January–May 2021, Saint Louis University protocol that considered mask use when determining which close contacts required quarantine among an almost entirely unvaccinated student population
- 265 students with positive SARS-CoV-2 test result
  - These students named 378 close contacts
- Compared close contacts in which one or both were not wearing a mask vs. both wearing masks
- If one or both unmasked, 4.9 times higher chance of infection
- Any additional exposures were associated with a 40.0% increase in odds of a positive test result

http://dx.doi.org/10.15585/mmwr.mm7036a3external icon.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

COVSIM

COVID-19 Simulation Integrated Model (*COVSIM*) to Inform Local Decision-Making

COVID-19 Modeling Projections for Schools
Part 1: Model Background

School-level COVID-19 Modeling

- Model that illustrates COVID-19 spread in a hypothetical school
  - Mask usage, incoming protection, testing policy
  - Delta more transmissible than previous year

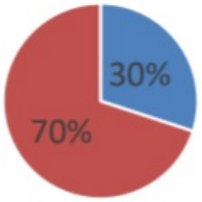
- Children <12yo do not have an option for vaccination yet, so they are at particular risk for both acquiring and spreading disease.

https://covsim.hosted-wordpress.oit.ncsu.edu/school-level-modeling-results/

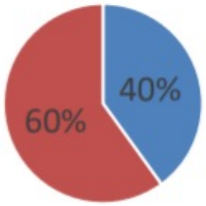
Imagine a school…

- Student population: 500
- 2-3 students begin infected with COVID-19 at the start of the semester
- Some students have either already had COVID-19 or have received the vaccine ("**incoming protection**"), or are susceptible to becoming infected

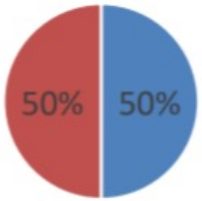
Elementary School Setting



Middle School Setting



High School School Setting



Incoming Protection Susceptible

Modeling Outcomes

- Without masks or regular testing, 90% of students would be infected by the end of the semester.
  - Frequent quarantines and transmission
- Masking and testing can prevent 80% of new infections
  - Masks reduce infections 50%
- Infections extend beyond schools—exposed students can bring the virus home to infect younger siblings, pregnant mothers, grandparents, and immunocompromised family.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

Masks are Safe for Children

- Do **not** cause low O_2 levels, high CO_2 levels, or respiratory distress
- Allow O_2 and CO_2 molecules to move through and around them but block droplets containing virus particles
- No data that wearing a mask weakens immune system, increases risk of infection with another germ, nor has any other negative impact on children's physiology

https://scdhec.gov/sites/default/files/media/document/Evidence-For-Mask-Use-K-12-Schools.pdf

A randomized clinical trial to evaluate the safety, fit, comfort of a novel N95 mask in children

- 2016 randomized study of 106 healthy children 7-14yo in Singapore evaluated safety of a pediatric N95 mask
- Measured the level of CO_2 exhaled by while wearing the mask compared to without the mask
- Demonstrated that even a pediatric N95 mask is safe for use by healthy children by showing the children were not building up CO_2 in their lungs

Sci Rep. 2019;9(1):18952. doi: 10.1038/s41598-019-55451-w

Notice of retraction. Walach H, et al. Experimental assessment of carbon dioxide content in inhaled air with or without face masks in healthy children: a randomized clinical trial

- Now-retracted study in *JAMA Pediatrics* in June 2021 widely cited masks were dangerous for children because they caused them to breathe in higher amounts of CO_2
- Reported high levels of CO_2 measured on inside surfaces of masks worn by children
- Methods and assumptions criticized; article retracted by journal just 16 days later
  - Used device to measure CO_2 levels that was known to have large margin of error when used in open setting rather than incubators
  - Made assumption that the air just on the inside of the mask was the only source of air being inhaled; would have been mixture of the air there and the air around the child with lower CO_2 level

JAMA Pediatr. Published online June 30, 2021. doi: 10.1001/jamapediatrics.2021.2659

Quarantine & Isolation

Isolation:

separate people infected with the virus (those who are sick with COVID-19 and those with no symptoms) from people who are not infected. They must remain at home or the place they were told to isolate and avoid contact with other people until their isolation period is over. This includes avoiding contact with those in their household as much as possible.

Quarantine:

separate people who are close contacts of someone with a contagious disease, like COVID-19, from others for a period of time to see if they become sick. This is a method to prevent the spread of disease. When someone is quarantining, they should stay home and avoid contact with other people until the quarantine period is over. This includes people in their household as much as it is possible

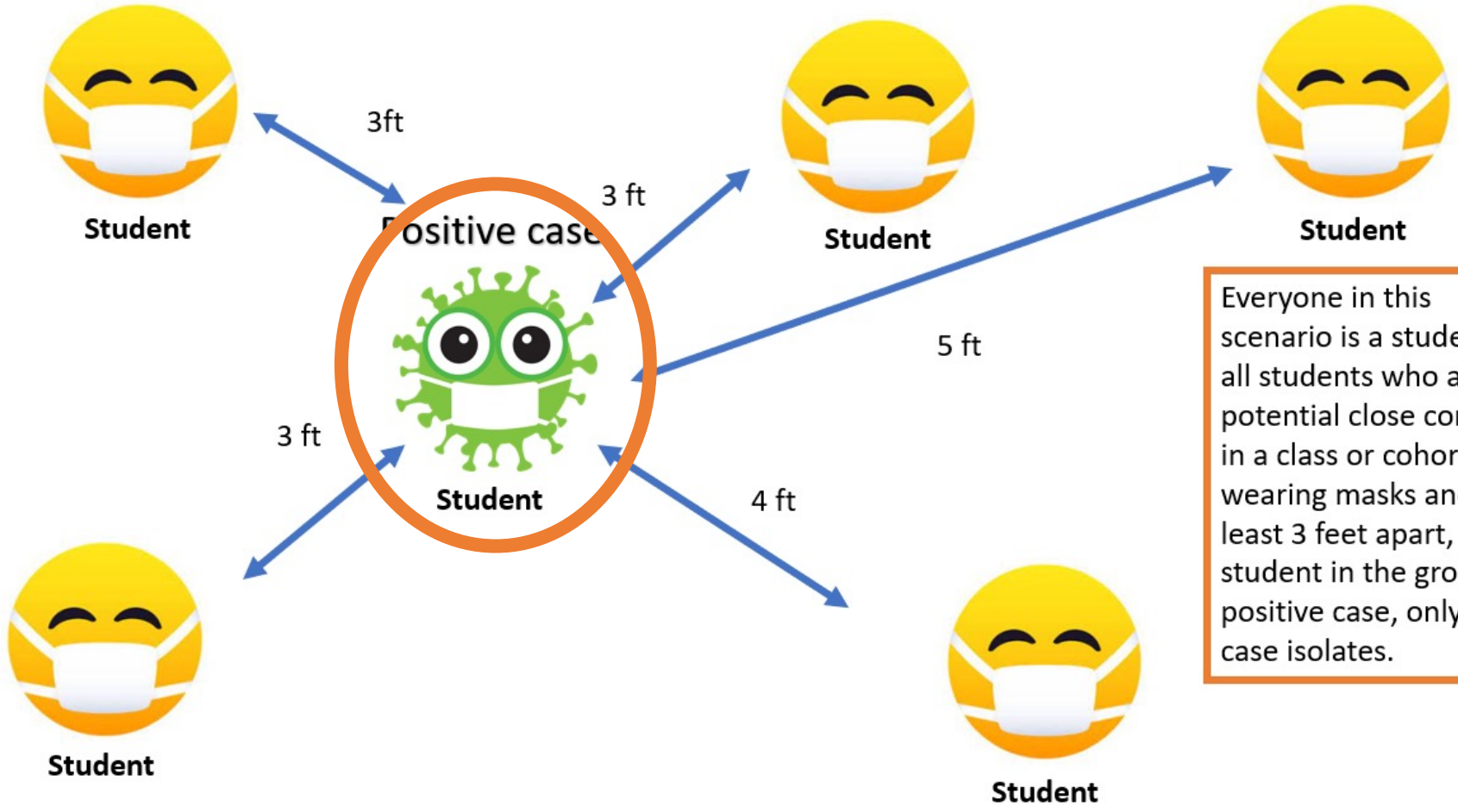
https://scdhec.gov/sites/default/files/media/document/2021.2022-School-Guidance-Booklet-09.10.21.pdf

Close Contacts

- DHEC aligns with CDC **close contact guidance**
- CDC defines a close contact as someone who was within 6 feet of an infected person (laboratory-confirmed or a clinically compatible illness) for a cumulative total of 15 minutes or more over a 24-hour period (for example, three individual 5-minute exposures for a total of 15 minutes).
- In the K–12 schools, the close contact definition excludes students who were within 3 to 6 feet of an infected student (laboratory-confirmed or a clinically compatible illness) if **both** the infected student and the exposed student(s) wore masks during the exposure time. This exception does not apply to teachers, staff, or other adults in the indoor classroom setting.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

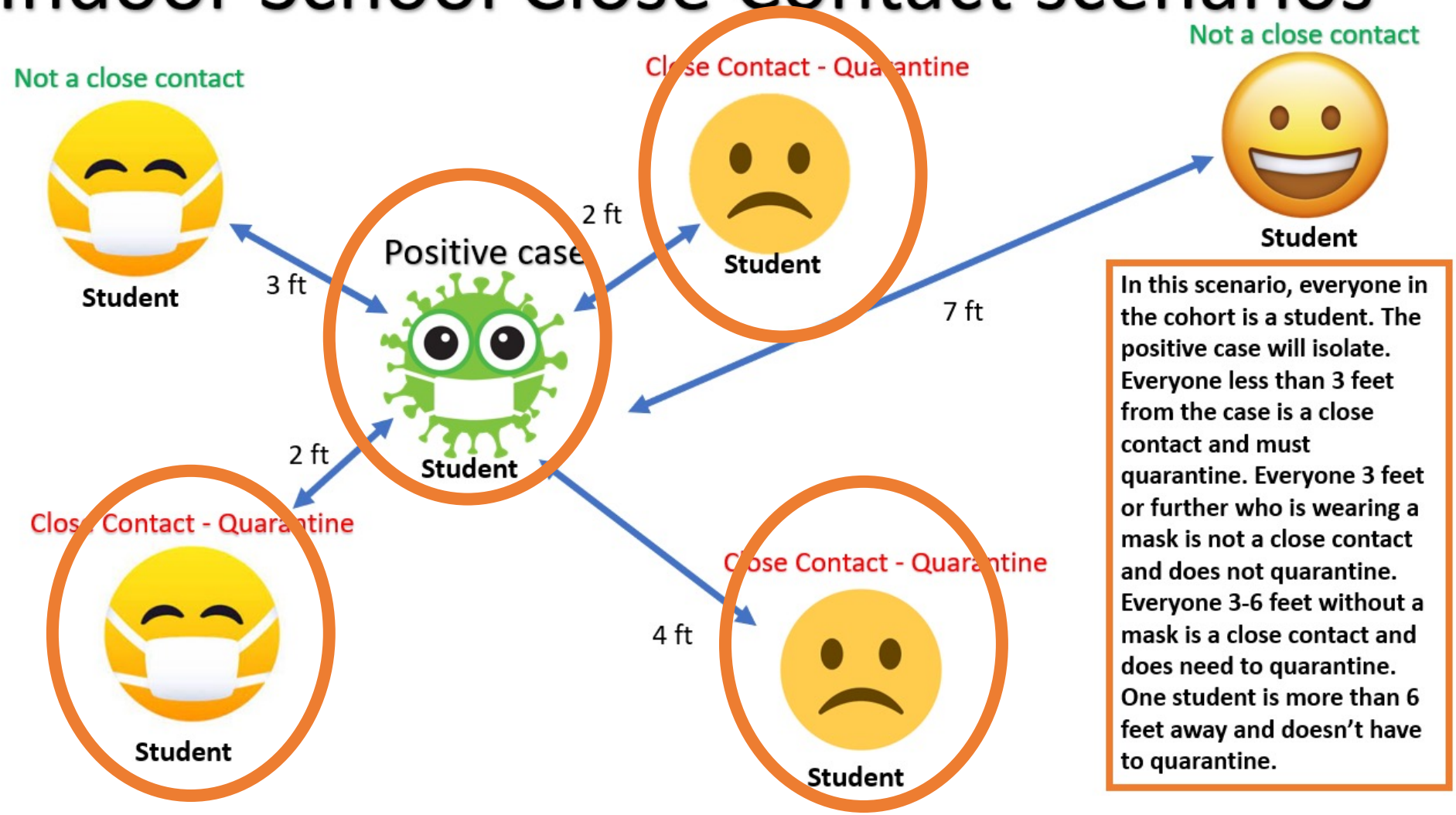
Indoor School Close Contact scenarios



Everyone in this scenario is a student. If all students who are potential close contacts in a class or cohort are wearing masks and at least 3 feet apart, and a student in the group is a positive case, only the case isolates.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

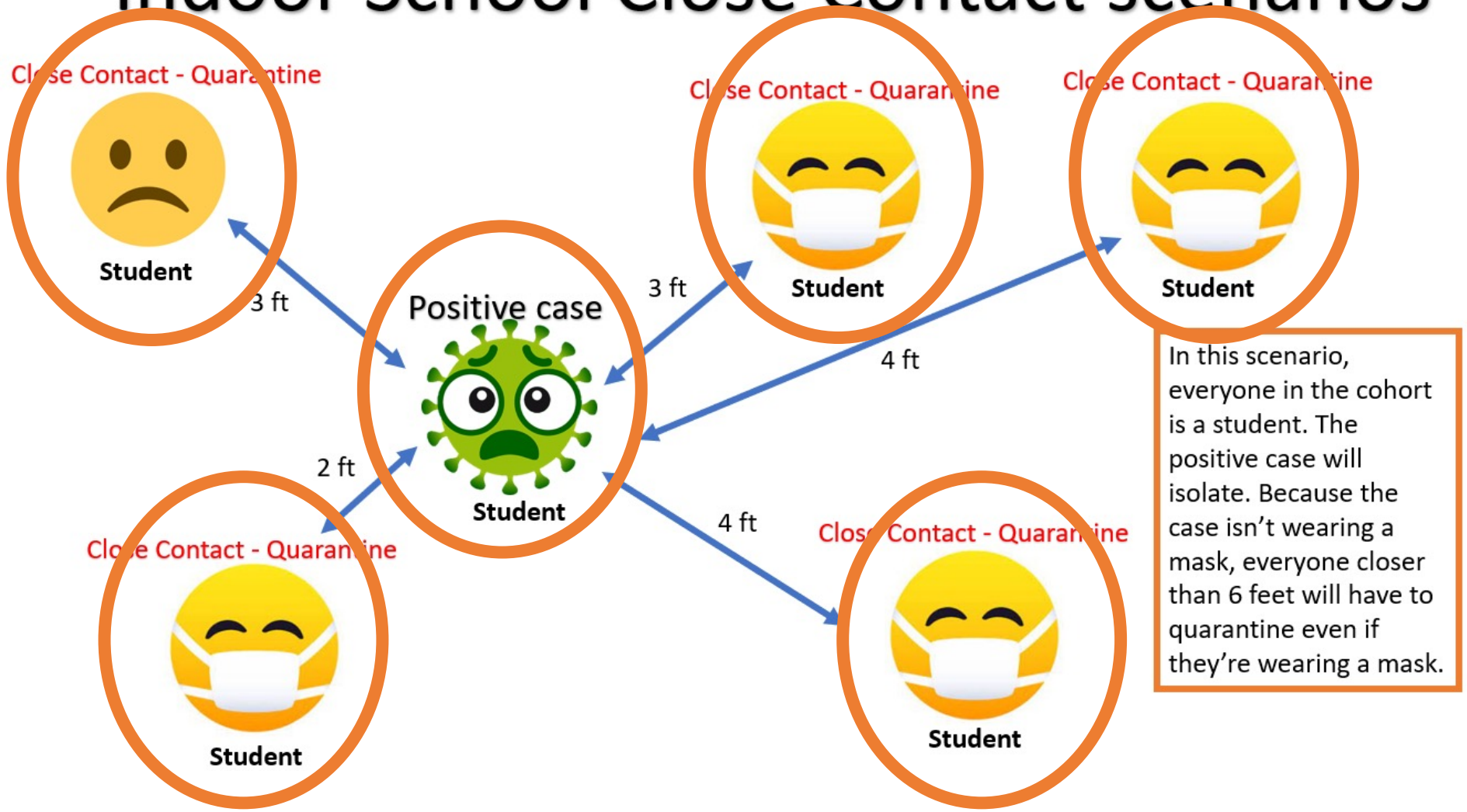
Indoor School Close Contact scenarios



In this scenario, everyone in the cohort is a student. The positive case will isolate. Everyone less than 3 feet from the case is a close contact and must quarantine. Everyone 3 feet or further who is wearing a mask is not a close contact and does not quarantine. Everyone 3-6 feet without a mask is a close contact and does need to quarantine. One student is more than 6 feet away and doesn't have to quarantine.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

Indoor School Close Contact scenarios



In this scenario, everyone in the cohort is a student. The positive case will isolate. Because the case isn't wearing a mask, everyone closer than 6 feet will have to quarantine even if they're wearing a mask.

CDC continues to recommend quarantine for 14 days after last exposure. However, there are options to reduce the duration of quarantine in either of the following two scenarios, which DHEC strongly recommends schools implement:

10 days of quarantine have been completed and no symptoms have been reported during daily at home monitoring.

7 days of quarantine have been completed, no symptoms have been reported during daily at home monitoring, and the individual has received results of a negative antigen or PCR/molecular test that was taken no earlier than day 5 of quarantine.

A close contact who is ending quarantine early (less than 14 days) and returning to the school environment should wear a mask and in order to return to in-person learning. The individual should also continue to monitor for symptoms through 14 days after the date of last exposure.

Conclusion

- Delta variant is more transmissible leading to more cases among adults and children
- Large majority of COVID-19 cases and hospitalizations are among the unimmunized
- Vaccines are the safest and most effective way to prevent COVID-19 and its negative health outcomes
- Getting eligible child vaccinated now protects them and their family and friends/classmates around them.
- Adherence to face mask use and quarantine/isolation procedures mitigate the spread of COVID-19

Thank you!

How could we reduce the number of students that have to quarantine?

Would universal masking in schools reduce the number of required quarantines?

CHILDREN'S HEALTH

San Francisco Schools Have Had No COVID-19 Outbreaks Since Classes Began Last Month

September 10, 2021 · 2:24 PM ET

There have been no COVID-19 outbreaks in San Francisco schools since students and educators went back into classrooms on Aug. 16, the San Francisco Department of Public Health announced Thursday, noting that about 90% of children ages 12 to 17 are fully vaccinated.

While the department reported there have been 227 COVID-19 cases — out of 52,000 students and nearly 10,000 staff — the "vast majority" of those cases are occurring outside of schools.

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.

San Francisco Department of Public Health

Guidance

Guidance for TK-12 Schools for School Year 2021-2022

September 10, 2021

This guidance was developed by the San Francisco Department of Public Health (SFDPH) for local use. It will be posted at https://sfcdcp.org/school

Wear face masks indoors.

Face masks can keep infection from spreading, by trapping respiratory droplets and aerosols before they can travel through the air. They are an essential prevention strategy in indoor spaces.

For this guidance, face masks includes cloth face coverings that cover the mouth and nose. Face masks must not have an exhalation valve.

- Face masks are required indoors for everyone 24 months and older, even if they have been fully vaccinated for COVID-19. **Staff and volunteers must wear a face mask even when children and youth are not present.**
- Masks must be well-fitted and cover the mouth and nose. Scarves and other loose face coverings are not allowed.
- Keep a supply of face masks for people who forget to bring their own.
- Schools must develop protocols to enforce face mask requirements. Schools should offer alternative educational opportunities for students who are excluded from campus because they will not wear a face mask. Schools are not required by CDPH to exclude students who refuse to wear face masks.