# The Effectiveness of COVID Risk Mitigation Efforts in Schools

A Survey of Independent Schools

FUSION CELL

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## Survey Overview

During the COVID-19 pandemic, schools were given a great deal of decision-making authority to interpret the guidance from local, state, national, and world-wide organizations and develop a COVID health and safety plan that worked for their community. As a result, plans and approaches have varied from school to school.

Fusion Cell has worked with many schools to design strategies to mitigate risk and curb transmission of COVID-19 in schools. Our efforts focused on implementing Fusion Cell's "Big 6" of COVID interventions, which consist of:

1. Heating, Ventilation, and Air Conditioning System (HVAC) Upgrades
2. Cleaning, Sanitation, and Disinfection
3. Exclusion
4. Physical Distance
5. Masks Use
6. Hand Hygiene

To measure the success of the COVID Big 6 and the customized strategies that schools implemented, we surveyed these schools 3-4 months after they implemented their strategies to see what results they achieved. Our goal is to measure the overall effectiveness of the COVID Big 6 and to understand variations in strategies that either increase or decrease the effectiveness of various risk mitigation strategies so that we can help other schools put together better health and safety plans.

This document summarizes the findings from that survey, which did demonstrate that Fusion Cell's Big 6 of COVID risk mitigation tactics is effective at reducing the transmission of COVID in schools. The complete survey results are included in the Appendix starting on page 5.

## Survey Results

As a health and safety partner, Fusion Cell provided independent schools, including boarding and non-boarding schools, with advice on how to mitigate the risk of COVID for the Fall 2020 school year. In December 2020, Fusion Cell produced a survey for these schools to understand the results they achieved. The survey was completed by nine schools. The population surveyed included 3,895 faculty, staff, and students. Within the nine schools, 25 cases of COVID were noted between August 2020 and December 2020. Of the 25 cases of COVID-19, only 1 case showed a link of transmission within the academic setting.

These data points show that schools were able to handle the challenges of COVID using mostly non-test-based interventions. Socialized interventions revolved around the "Big 6", heating, ventilation, and air conditioning systems (HVAC) upgrades, sanitation practices, exclusion criteria for daily health screenings, physical distance between individuals, mask use, and hand hygiene.

The first case of COVID-19 in the United States was on January 20, 2020. 98 days later, there were 1 million cases. Schools opened after 5 million cases were present in the US. By November 9, there were 10 million cases. At the close of the calendar year, just 53 days later, there were 20 million lab-confirmed cases in the US. External pressures were felt, but the internal health and safety protocols were able to keep school-linked transmission to one incidence over half of a school year (0.05%). The one incidence of school-linked transmission was from a teacher-to-student route.

Our goal is to measure the overall effectiveness of the COVID Big 6 and to understand variations in strategies that either increase or decrease the effectiveness of various risk mitigation strategies so that we can help other schools put together better health and safety plans.

## Case Discussion

The institution with school-linked transmission had a population around 500 individuals and they had made significant upgrades to their health and safety protocols. These included:

### HVAC

The institution had made several modifications to improve the air quality including:

- Increased HVAC filtration to MERV-13 in most areas. It was not attainable in all areas.
- Greater than 10% fresh air was introduced in the HVAC systems.
- iWave Needlepoint Bipolar Ionization was utilized within the HVAC system
- Windows were opened to the maximum tolerable levels
- Internal and external doors also allowed for fresh air in the building.
- HEPA filtration was used in dense spaces.

### Disinfection

High-touch surfaces were cleaned 1-2 times per day. Deep cleaning of the school happened less than once per week. Deep cleaning included the use of foggers and electrostatic sprayers.

### Screening and Exclusion

Screening was completed at school, using software screening tools. Everyone was screened, and anyone with high-suspicion symptoms was excluded and referred for a test.

### Distance

Each classroom maintained a spacing of 6 feet distance, measured desk-to-desk. Distancing was an individual responsibility.

### Masks

2-ply masks were the minimum acceptable standard. Each student was given a mask, and masks could be bought at school and in the community. Mask breaks were completed only outside. Students and staff were expected to wear masks anytime they were not in the cafeteria actively eating or in the music room.

### Hand Hygiene

Hand sanitizing stations were abundant, available at all building and room entrances.

## Comparable Schools

A comparable school had similar processes. In addition to the above-mentioned HVAC strategies of School 1 (the one that experienced school-linked transmission), School 2 added UV-C lights for disinfection of the air. HEPA units were used in most classrooms. High-touch items were disinfected after each use. Deep cleaning was completed at the end of the day. Cleaning was completed with electrostatic sprayers and foggers. Distance was similar, measured person-to-person. Hand sanitizers were abundant, available at all entrances to buildings and classrooms.

School 2 had one case of COVID-19, zero incidence of school-linked transmission.

## Discussion

Differences within the school populations revolve around:

- School 2 had UV-C lights for disinfection, 50% on-campus cohorts, average class size of eight, and additional duties for staff to monitor compliance with distancing.
- School 1 had in-person learning for 100% of the students, average class size of nine, and individual accountability for distancing.

## Conclusion

It was not possible to draw statistically significant conclusion from the data sets. This survey is meant as a retrospective description of the first half of the school year.

Class sizes and most mitigation strategies were similar. School 2 had additional UV-C lights to disinfect the air. School 1 relied on individual choice and accountability for distancing.

School 1 could adopt a more proactive approach in monitoring and enforcing distance requirements. By making it an individual choice, the break could have been linked to both a student and staff member assuming it was safe to be closer together for a short period. Increased accountability on staff could help lower disease transmission.

The article titled "*Data and Policy to Guide Opening Schools Safely to Limit the Spread of SARS-CoV-2 Infection*" from JAMA described two studies of the fall 2020 school semester. In North Carolina, 773 cases were seen in a population of 90,000 students and staff. Of the 773 cases, only 32 were described as school linked.

Wisconsin completed a smaller scale study. There were 191 cases seen in a population of 5,400 students and staff. Of the 191 cases, 7 were described as school linked. Both studies saw most cases as community acquired. Only 4% of NC and 3.6% of WI cases were described as school linked.

Fusion Cell Health and Safety Partners achieved a similar result as those seen in NC and WI. 4% of all cases had a school link. It is noted that one incidence of school linked transmission in a population of 500 people over 5 months is a great achievement. All schools have done a phenomenal job in creating an environment that is safer for the students than most other interactions. Schools only can control a small portion of the student's life. This survey re-emphasizes the role of the long-term mitigation strategies that have been adopted. All Heads of School should be commended in their leadership.

## About Fusion Cell

Fusion Cell's team of board-certified public health epidemiologists and logistics experts are helping numerous schools adapt to the risks of COVID-19. Our consultants are all current and former US military specialists with decades of experience managing pandemics and disease outbreaks in U.S. military bases around the world. We bring the experience and expertise that schools lack and apply a science-based approach that helps schools reduce transmission risk.

Our experts partner with your COVID-19 planning team to help you keep students, faculty, and staff on the campus at the highest possible safety, academic, and quality-of-life levels.

For assistance in creating health and safety plans for your school, contact Fusion Cell at **contact@fusioncell.com**.

All schools have done a phenomenal job in creating an environment that is safer for the students than most other interactions.

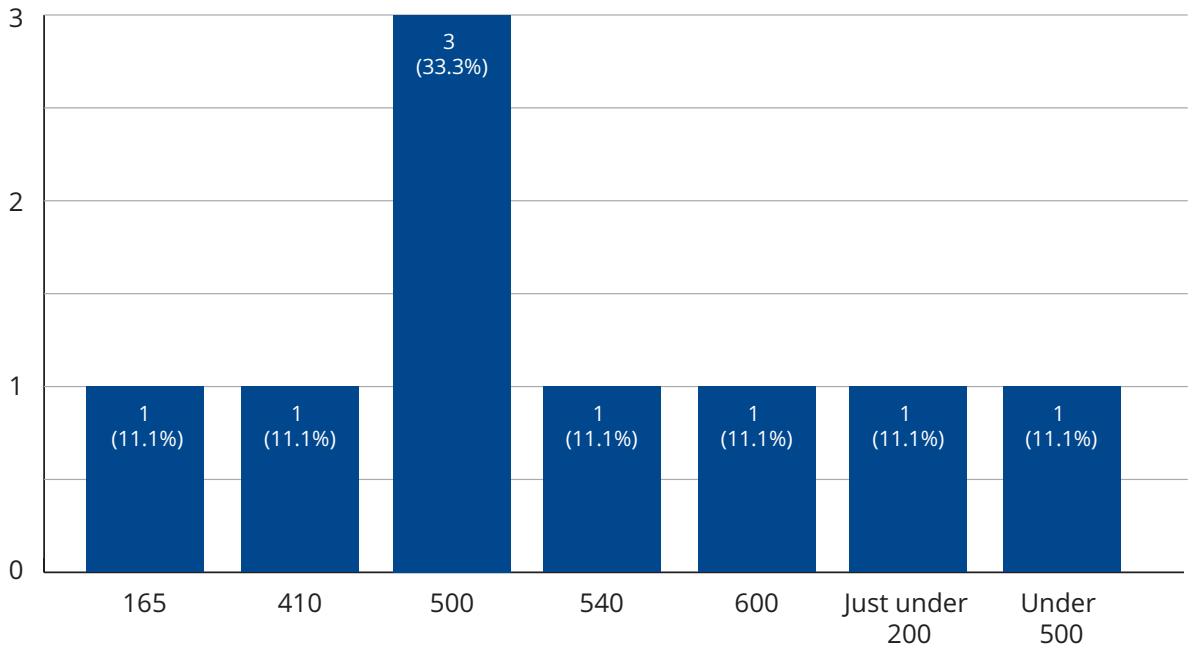
# Appendix

Below is the comprehensive list of survey questions and aggregated responses. The survey was completed by 9 schools. Not every school answered each question.

## School size

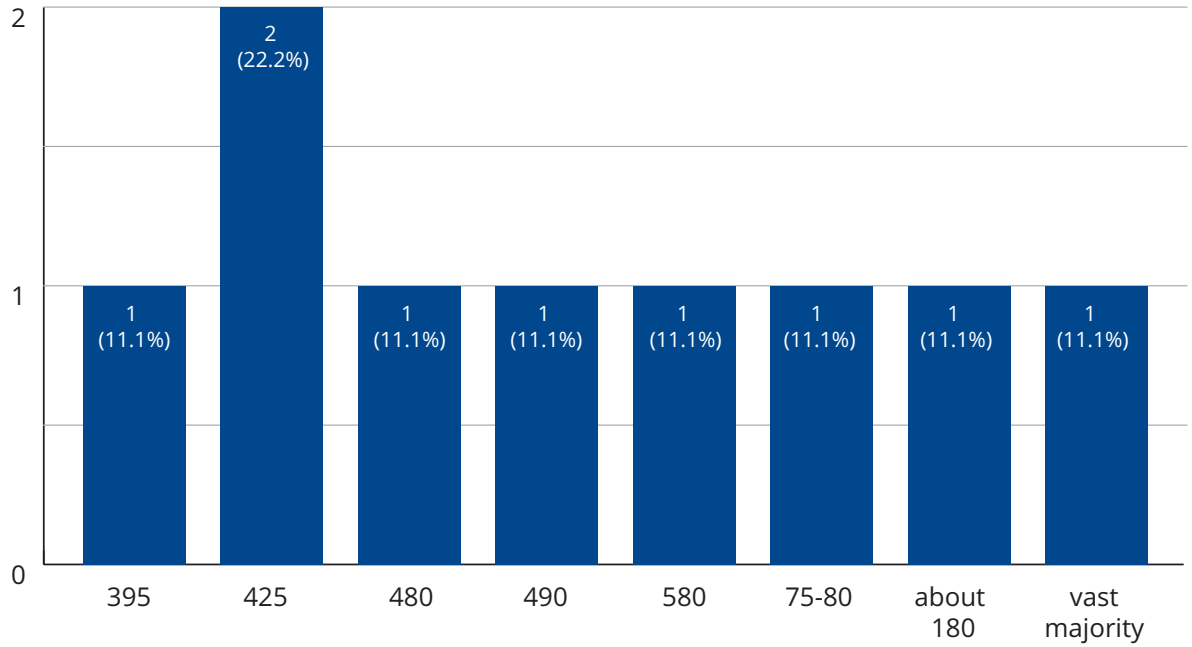
**How many students, faculty and staff are part of your communty?**

9 responses




**How many students and faculty were on your campus during an average week in the Fall of 2020?**

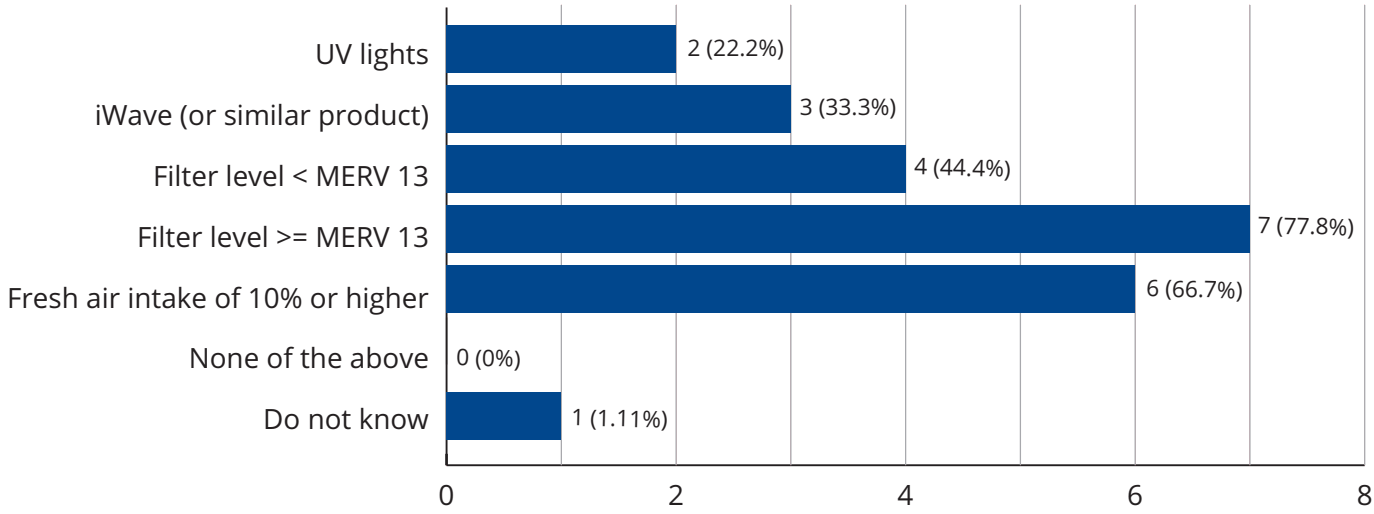
9 responses



## HVAC System

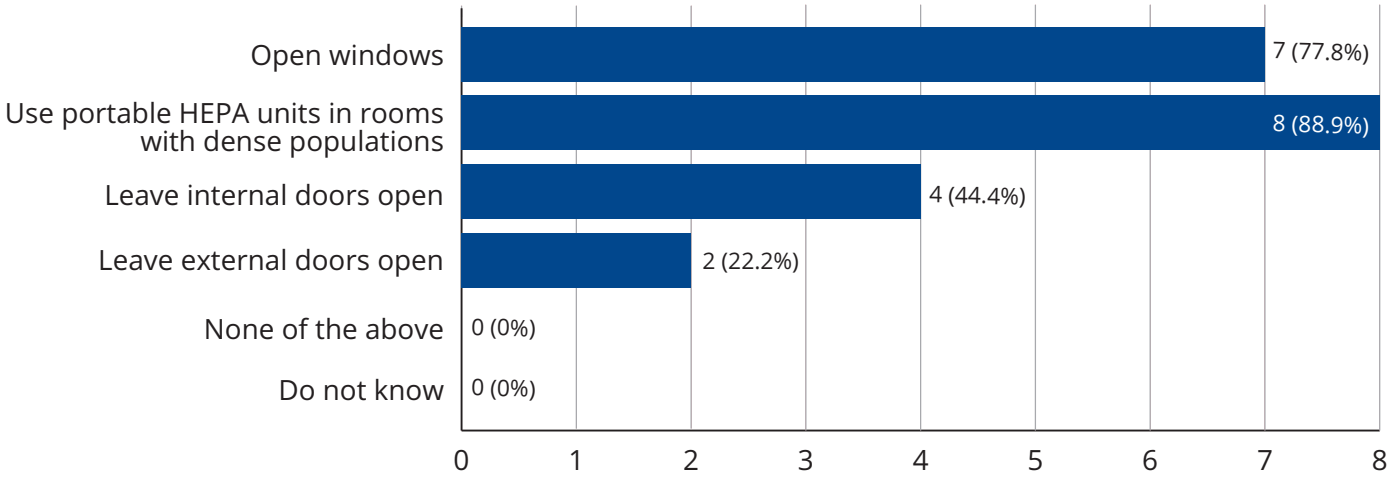
**What capabilities does your central HVAC system currently have? Select all that apply.**

9 responses



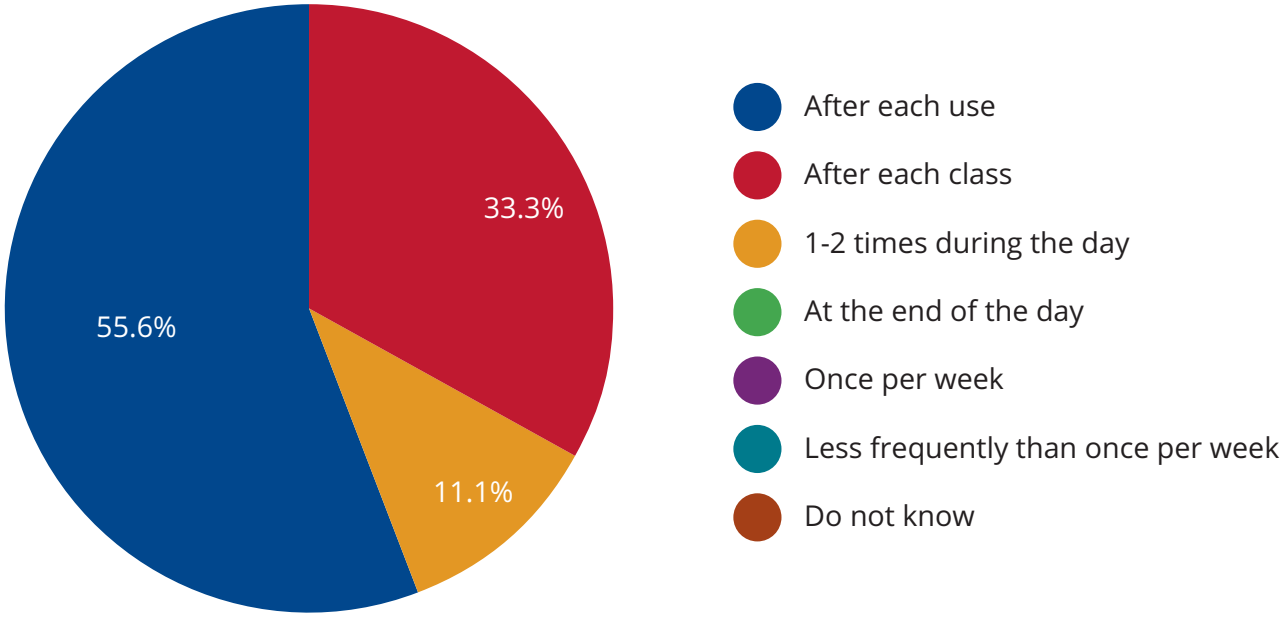

**What HVAC augmentation do you use on a regular basis? Select all that apply.**

9 responses

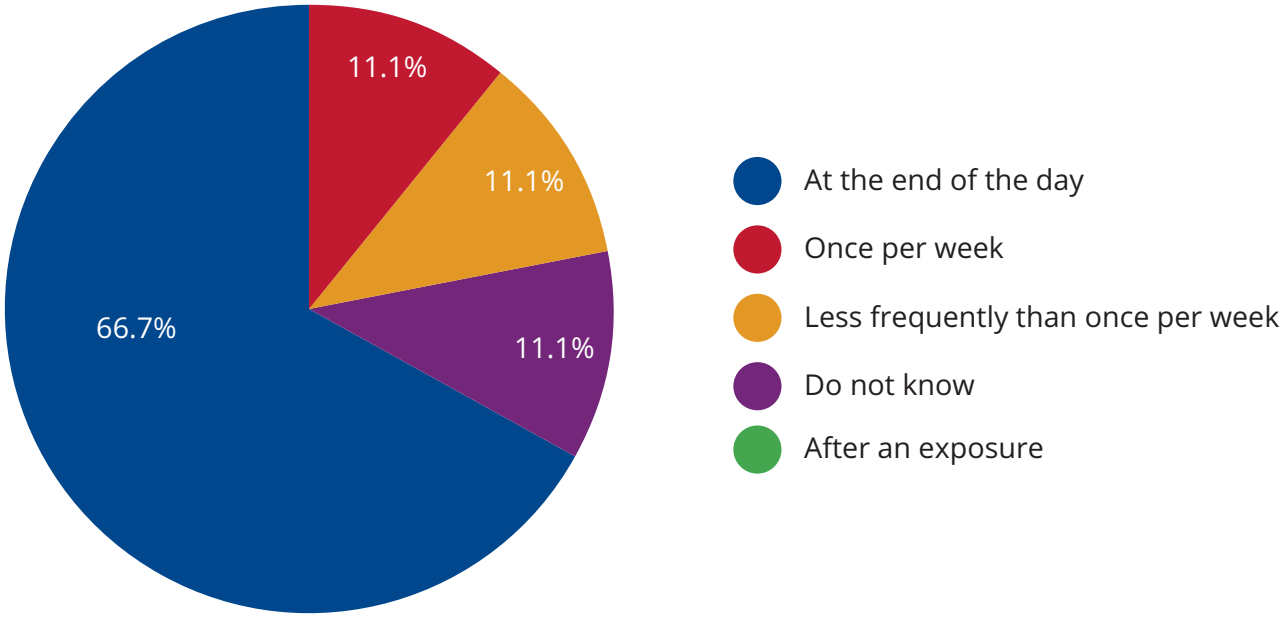


## Sanitation

**How often do you clean high-touch items?**
9 responses

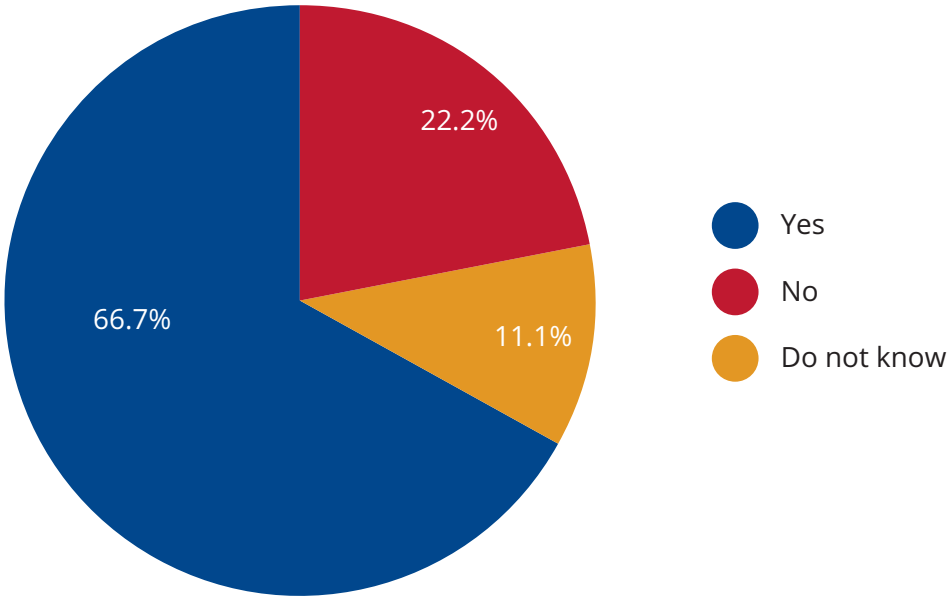



**How often do you deep clean the school?**
9 responses

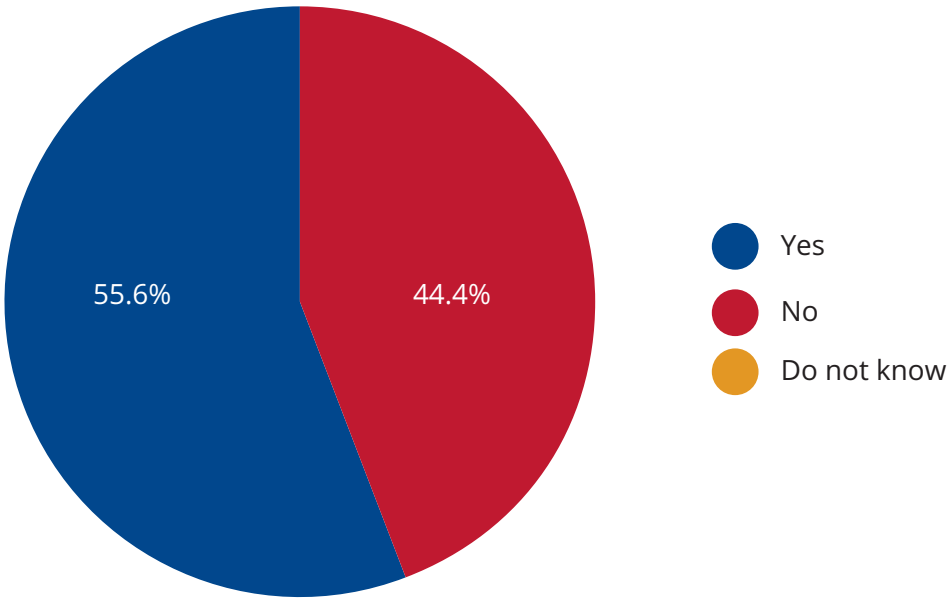


## Sanitation (continued)

**Do you use electrostatic sprayers?**
9 responses



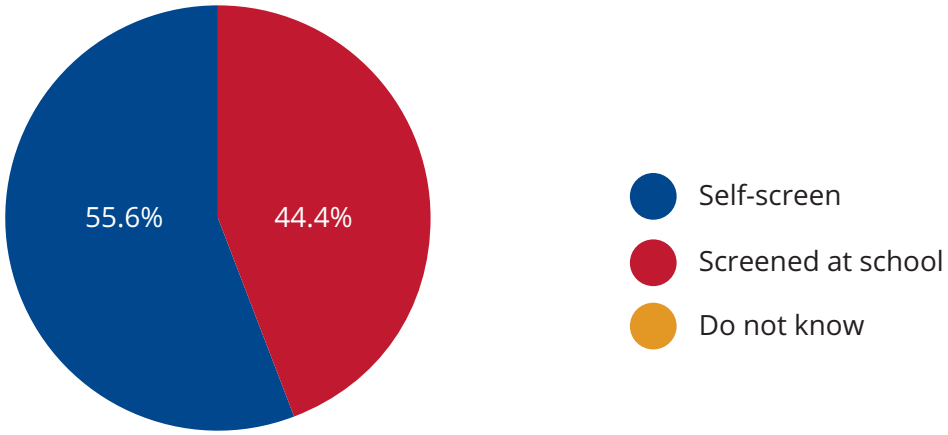

**Do you use foggers?**
9 responses



## Exclusions

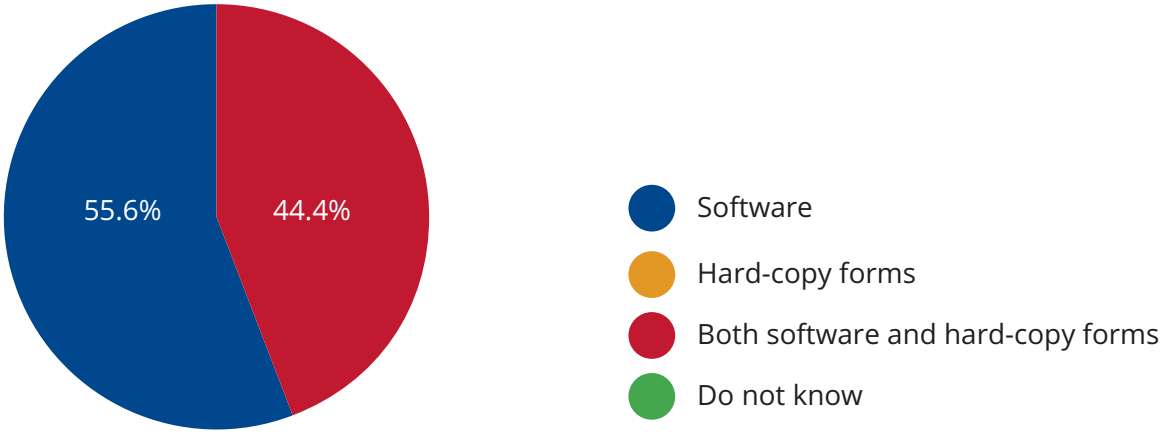
**Are faculty, students and staff self-screening or screened in-person on campus?**

9 responses



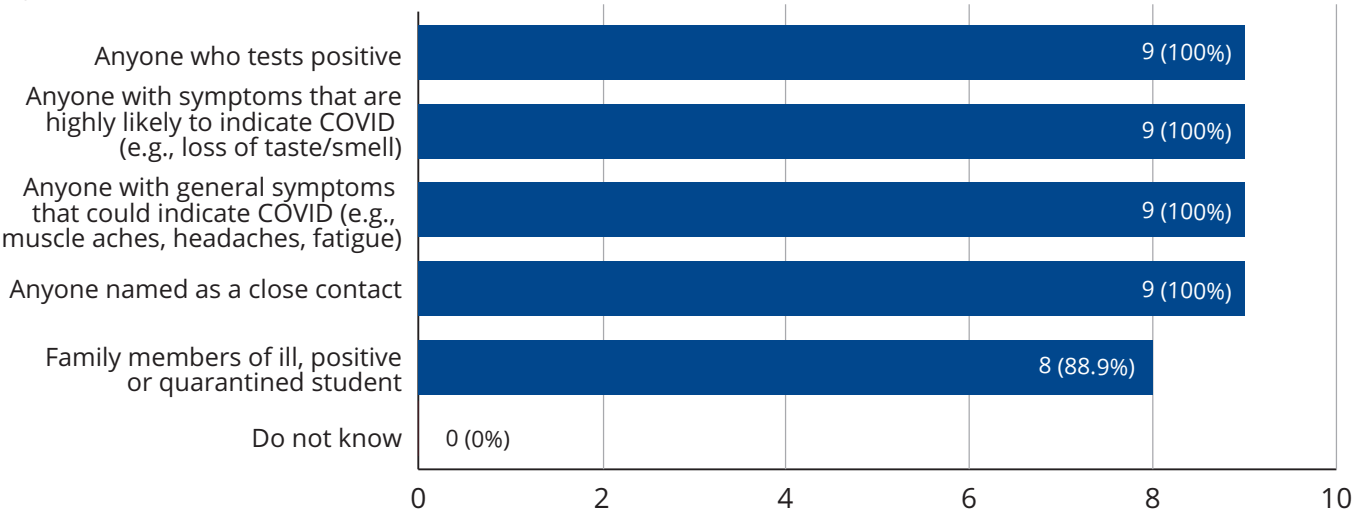

**How do you screen for symptoms?**

9 responses




**Who do you exclude? Select all that apply.**

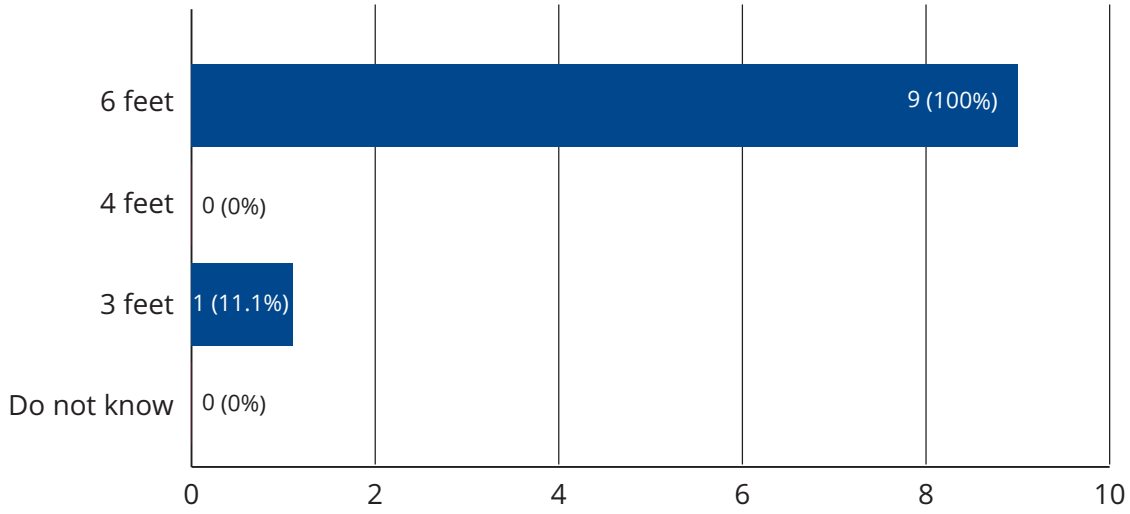
9 responses



## Distance

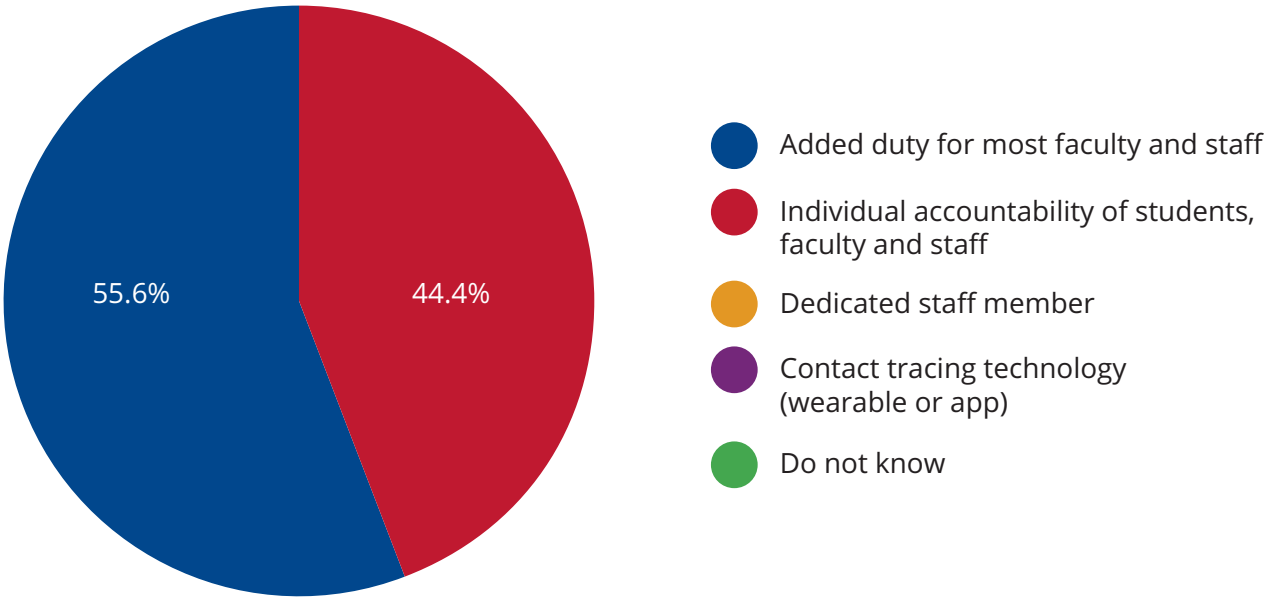
**What distance do you use to separate people? Select all that apply.**

9 responses




**How do you monitor compliance with distancing?**

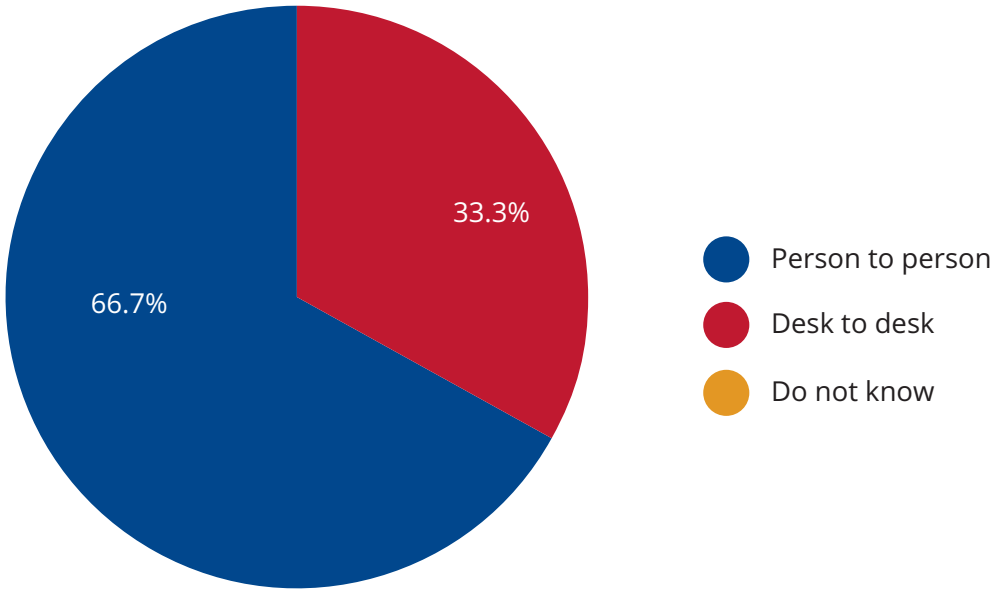
9 responses



## Distance (continued)

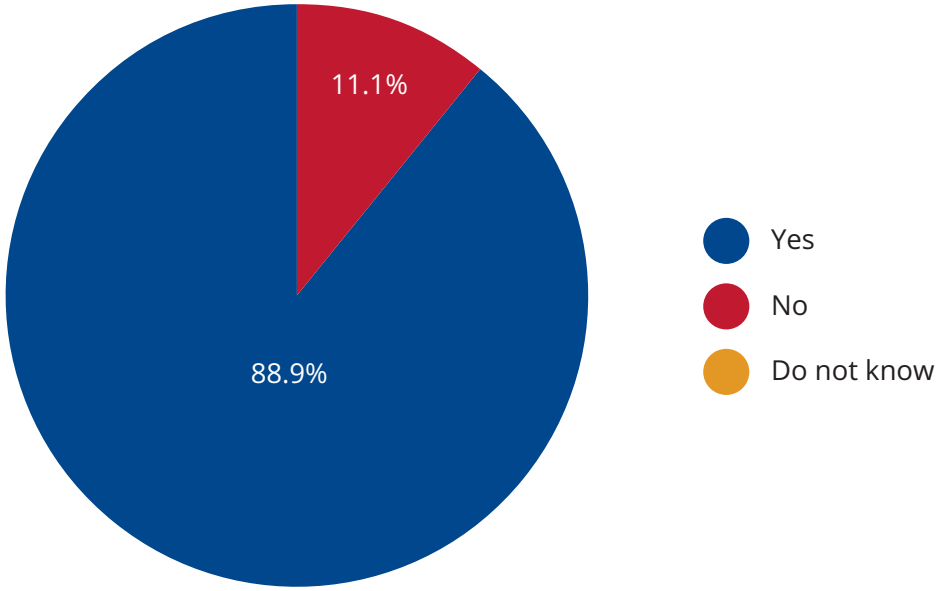
**In general, how do you measure distance?**

9 responses




**Do you mark the floor where chairs and desks should be for a visual verification of spacing compliance within academic rooms?**

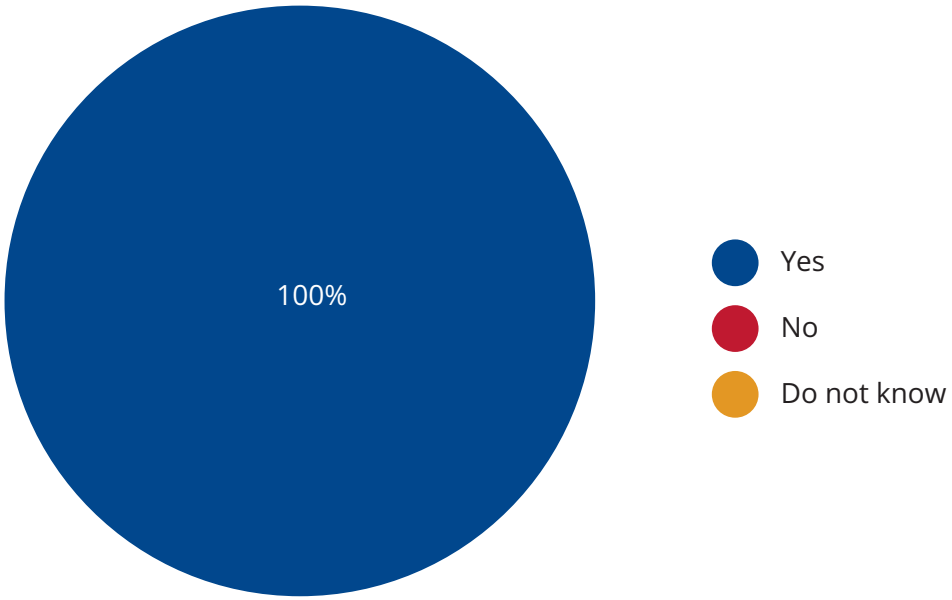
9 responses



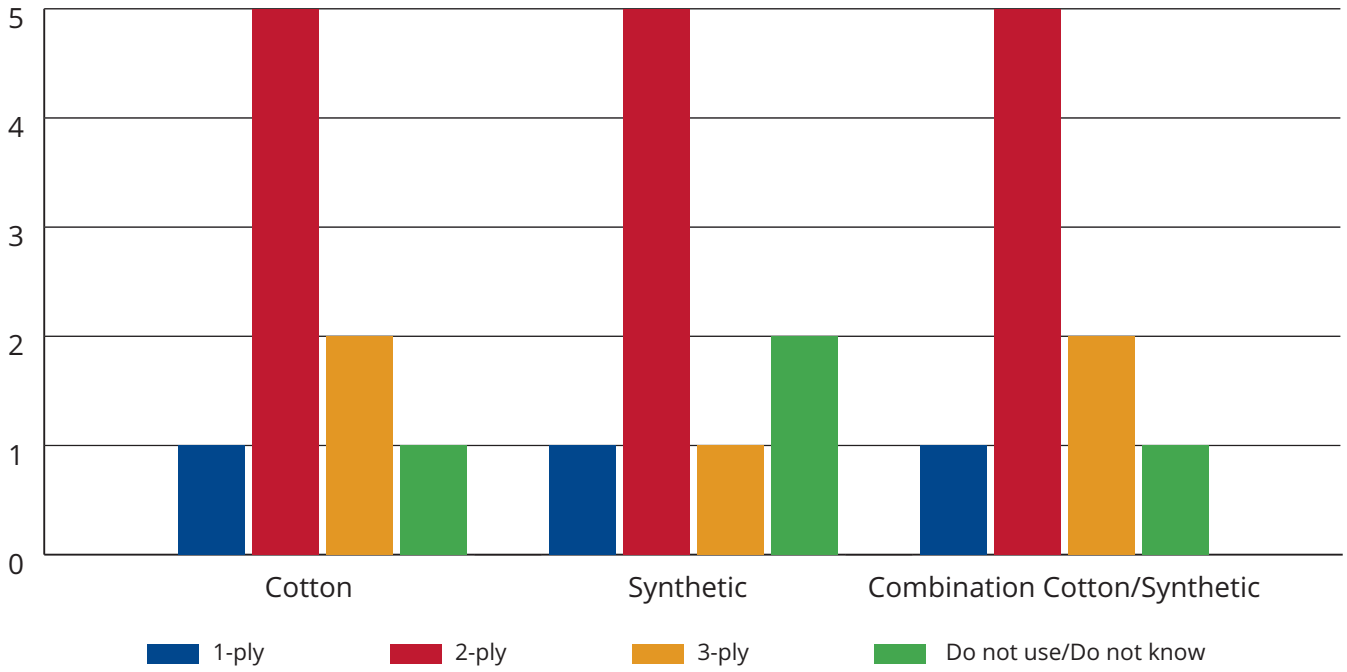
## Masks

**Are mask standards communicated?**

9 responses



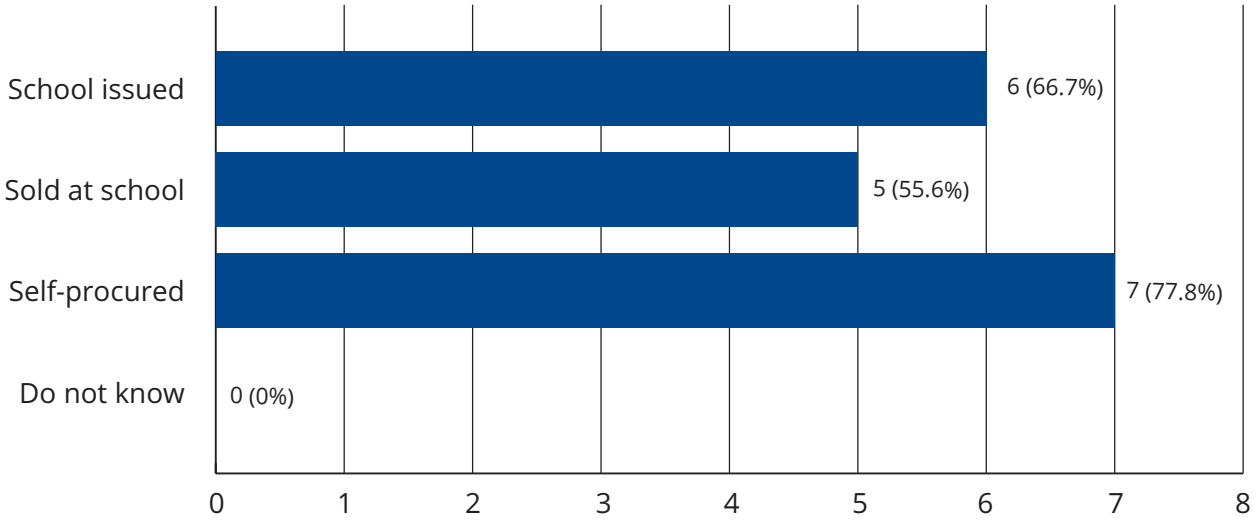

**What mask standard do you use?**



## Masks (continued)

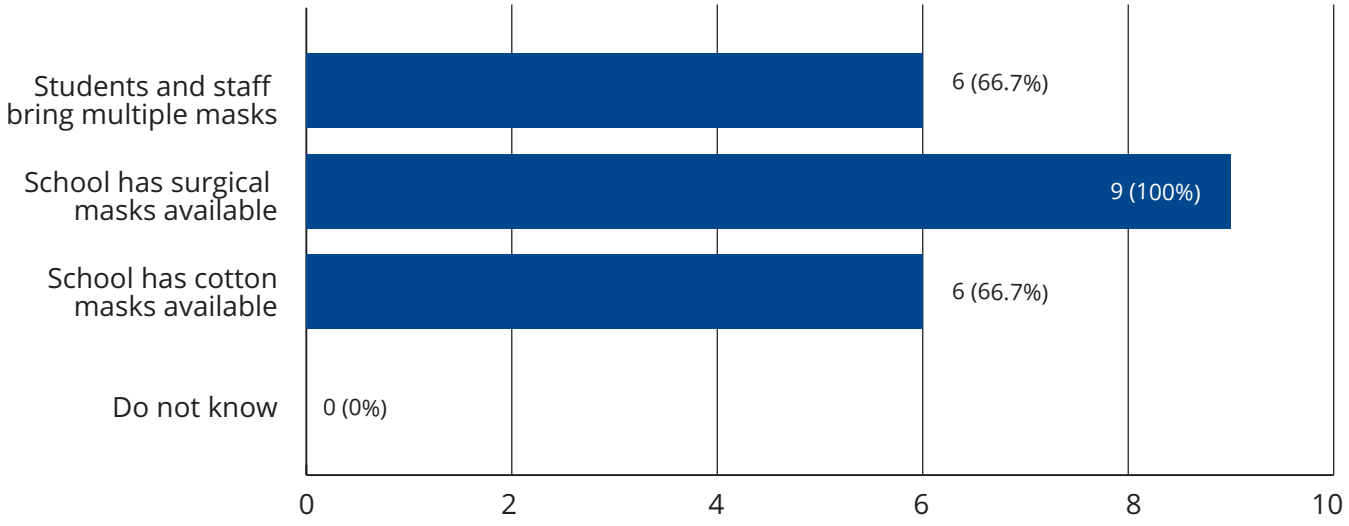
**Are masks school-issued or self-procured? Select all that apply.**

9 responses



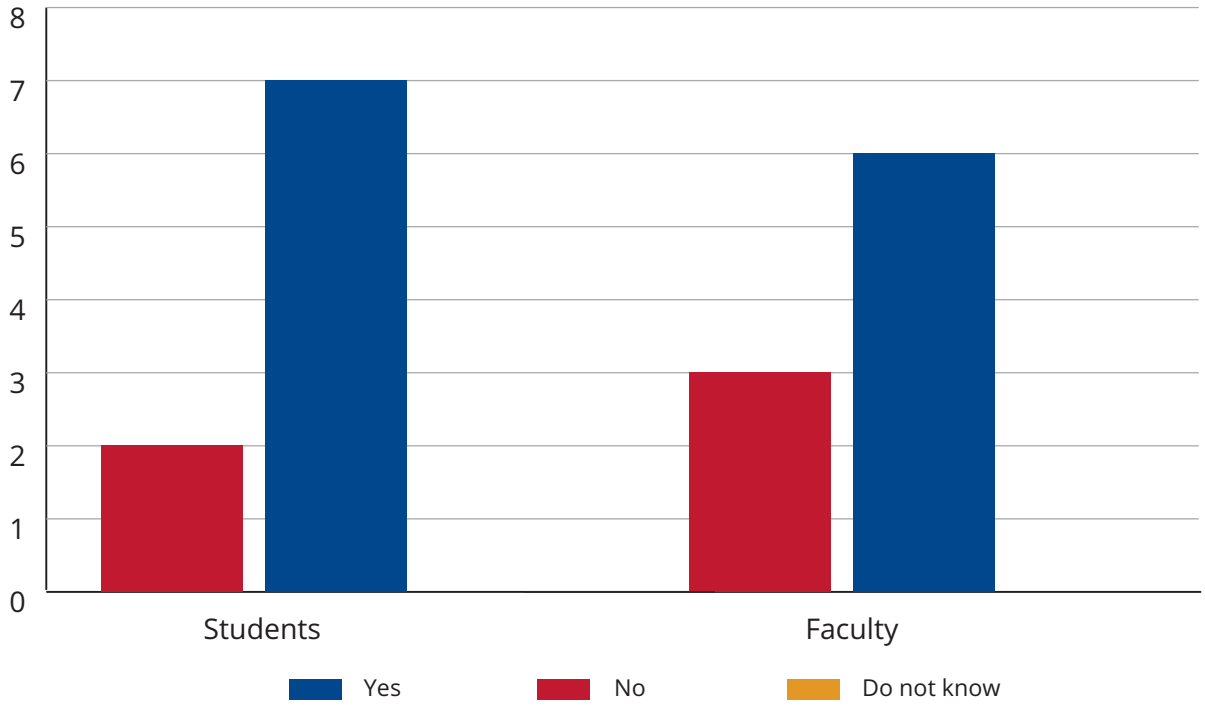

**Policy for lost or soiled masks? Select all that apply.**

9 responses

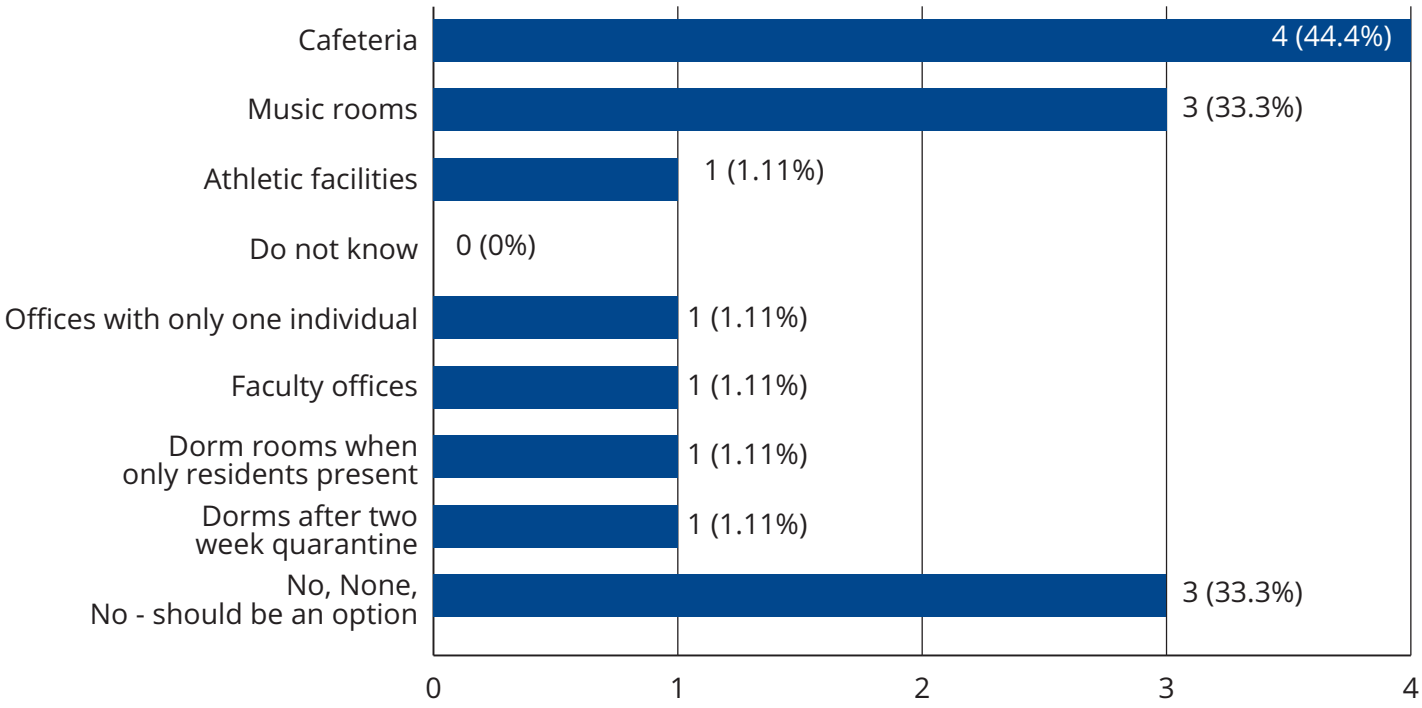


## Masks (continued)

**Can students or faculty remove a mask indoors (other than when eating)?**



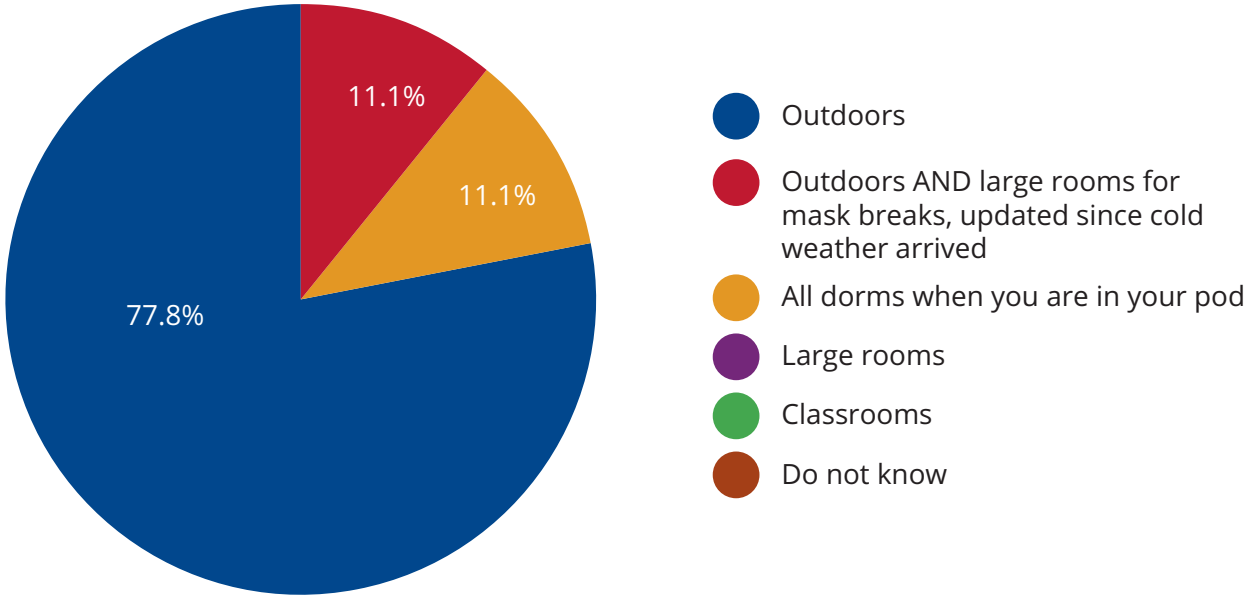

**Are there any places indoors where masks are not worn? Select all that apply.**



## Masks (continued)

**Where do you have mask breaks?**

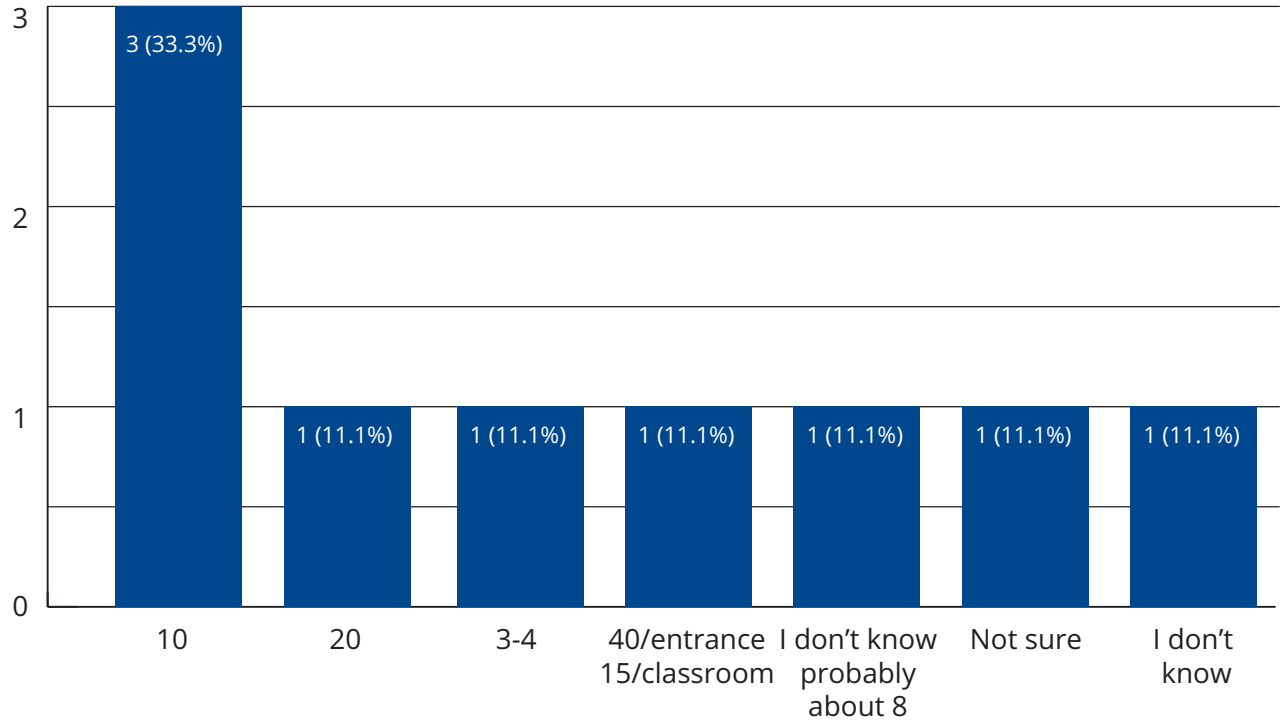
9 responses



## Hand Hygiene

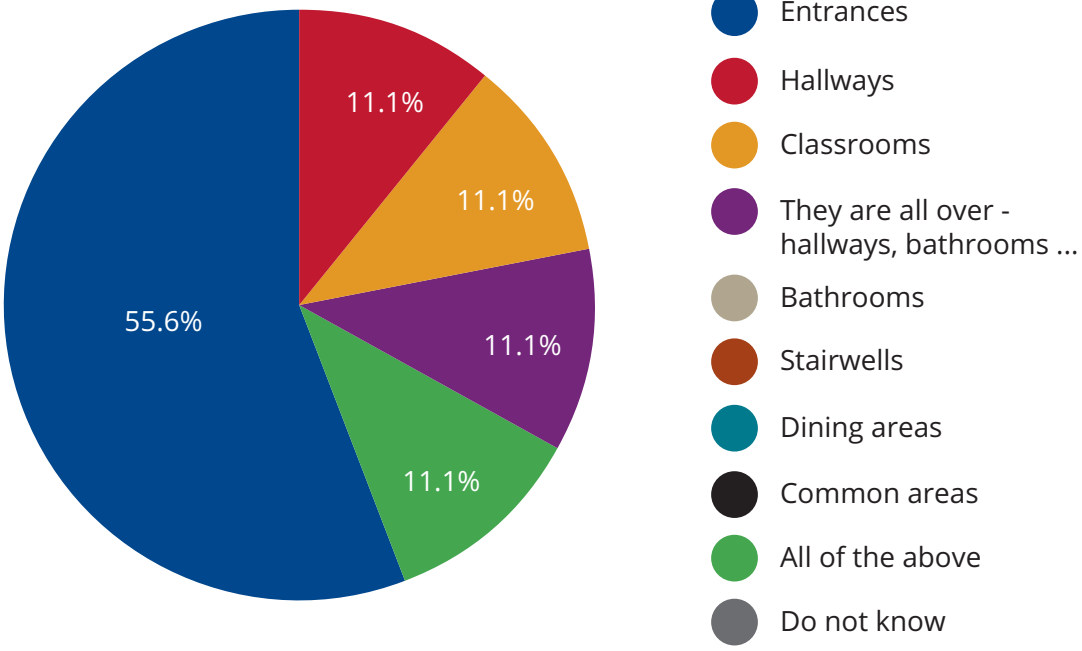
**Approximately how many people do you have on campus for each hand hygiene station? i.e. people per hand hygiene station.**

9 responses




**Where are most of the hand hygiene stations located?**

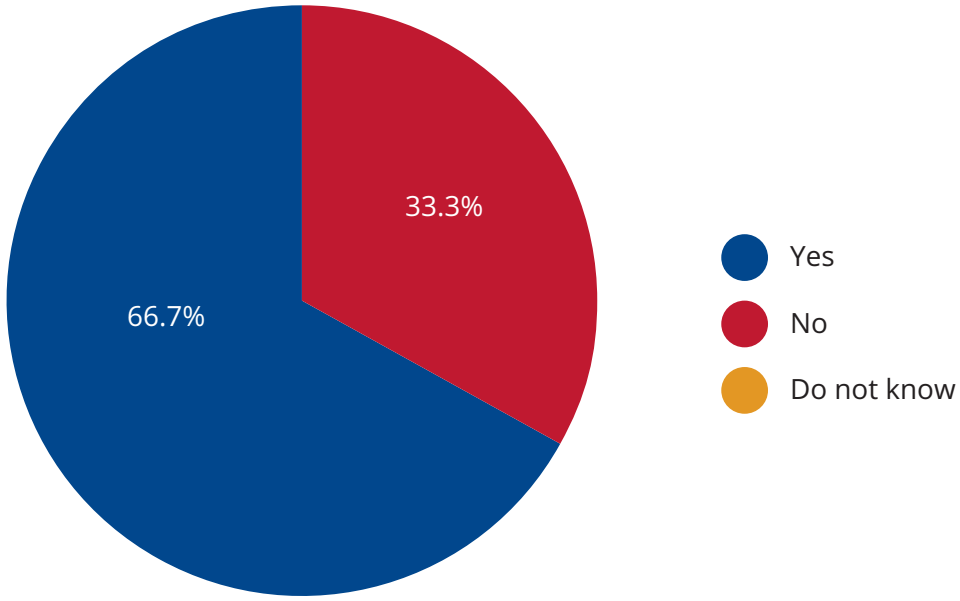
9 responses



## Testing

**Do you test?**

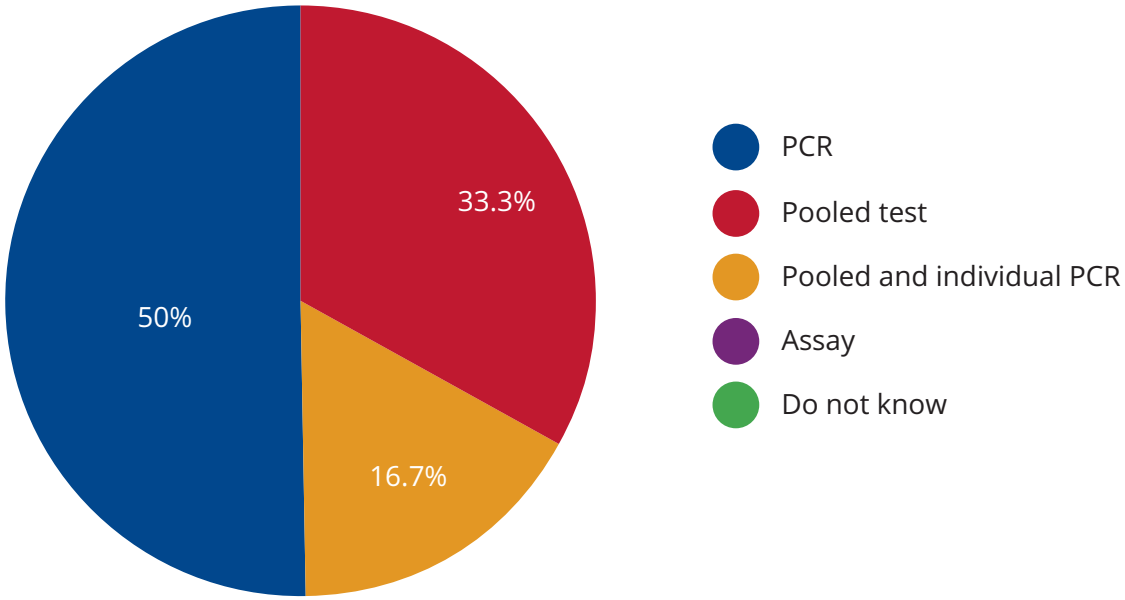
9 responses



## Testing Description

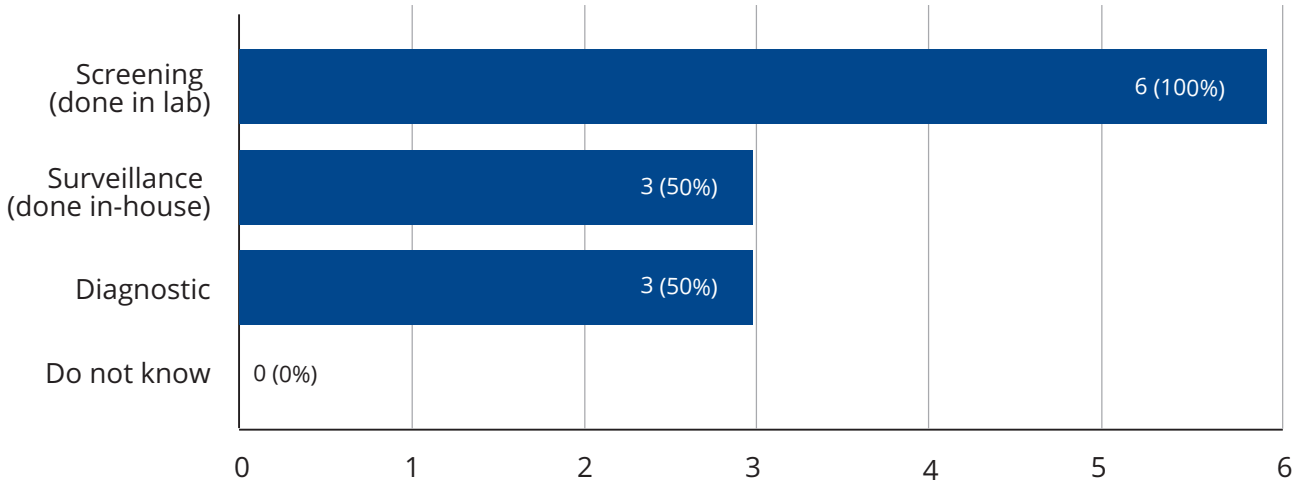
**What type of test do you use?**

6 responses




**What is the purpose of the testing? Select all that apply.**

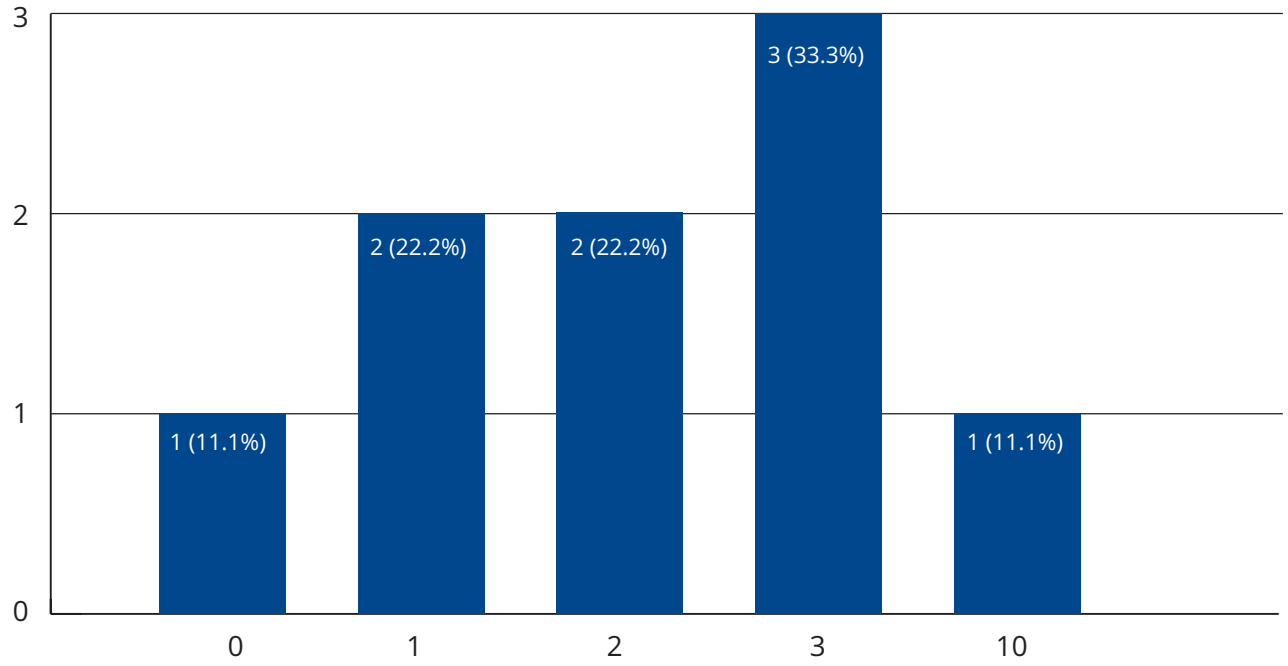
6 responses



## Cases

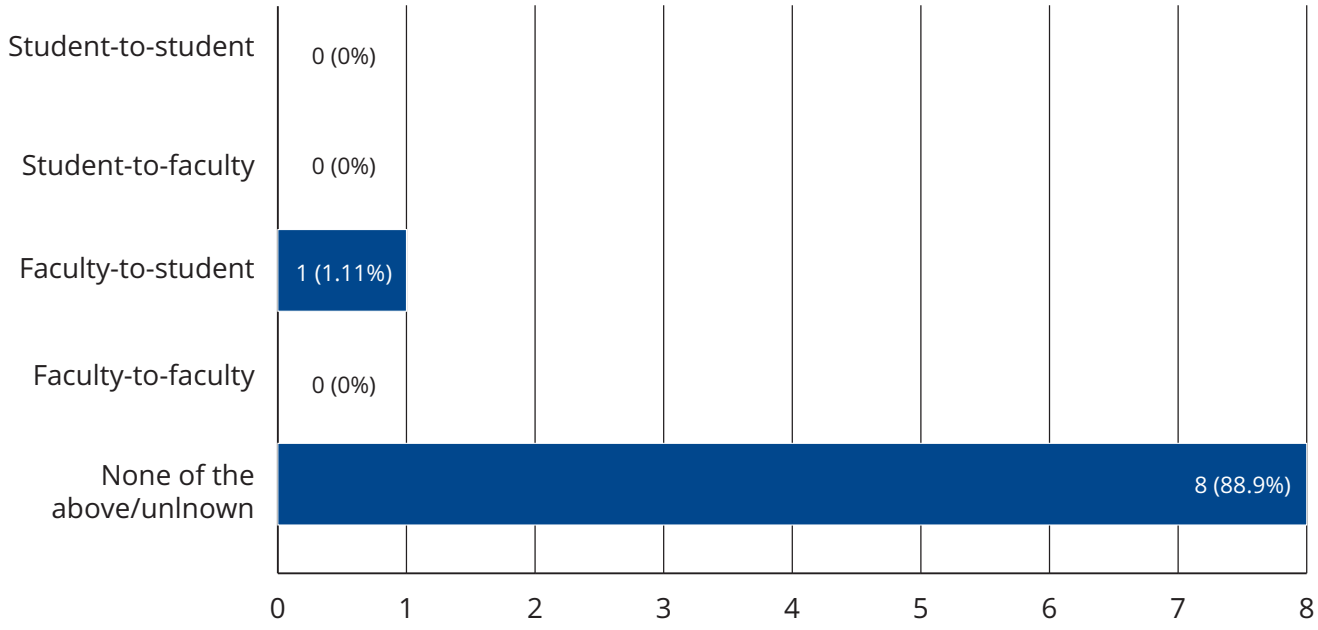
**How many cases have you had in school (students, staff, faculty) since the start of the school year?**

9 responses



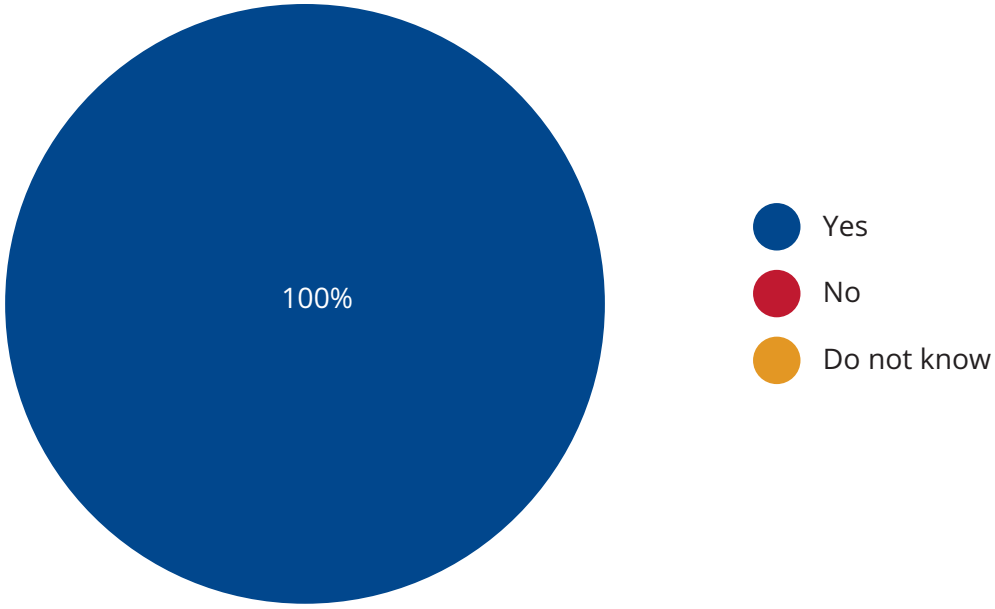

**Have you had school-linked transmission (determined by Health Department/ Public Health Professionals)?**

9 responses



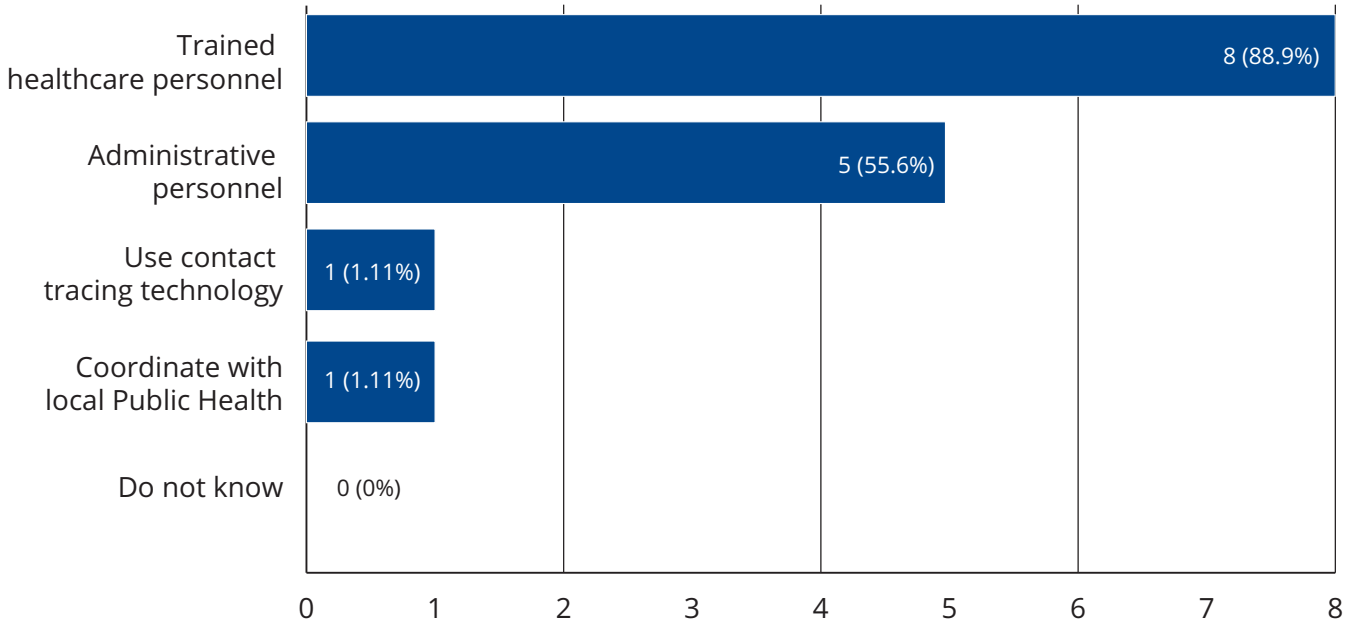
## Contact Tracing

**Do you complete contact tracing internally to support public health activities?**
9 responses




## Contact Tracing Description

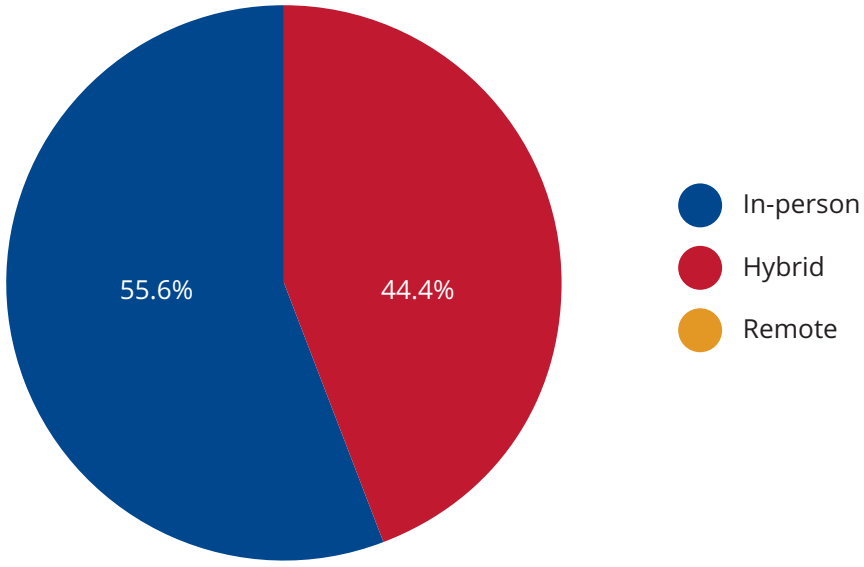
**Who completes contact tracing? Select all that apply.**
9 responses



## Teaching Model

**Was your plan executed with a 100% in-person, 100% remote, or hybrid learning model?**

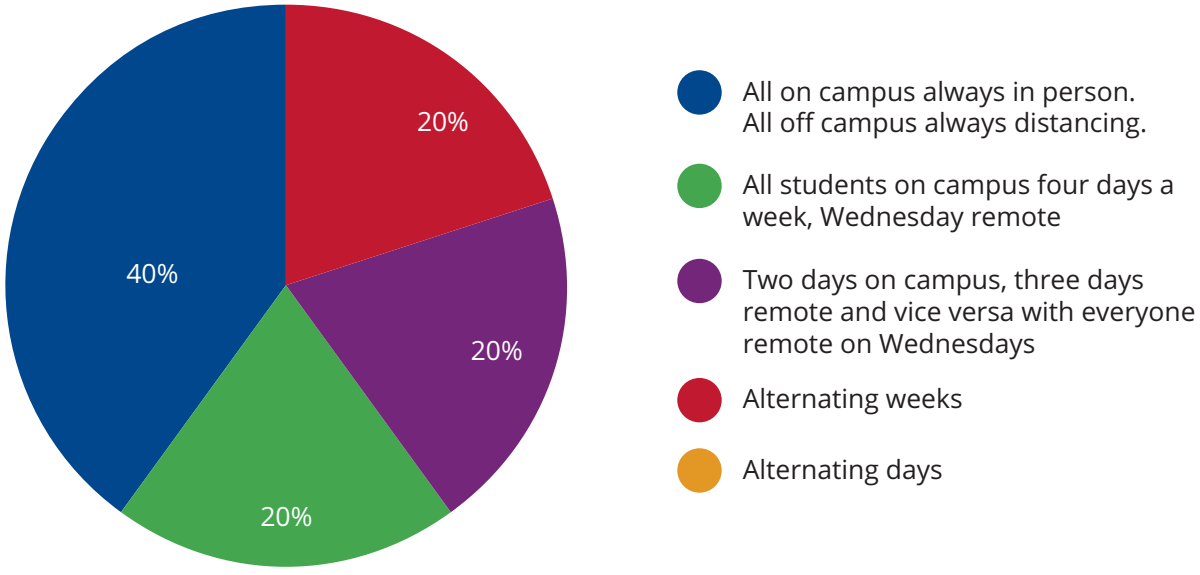
9 responses




## Hybrid Cohorts

**How were your hybrid cohorts organized?**

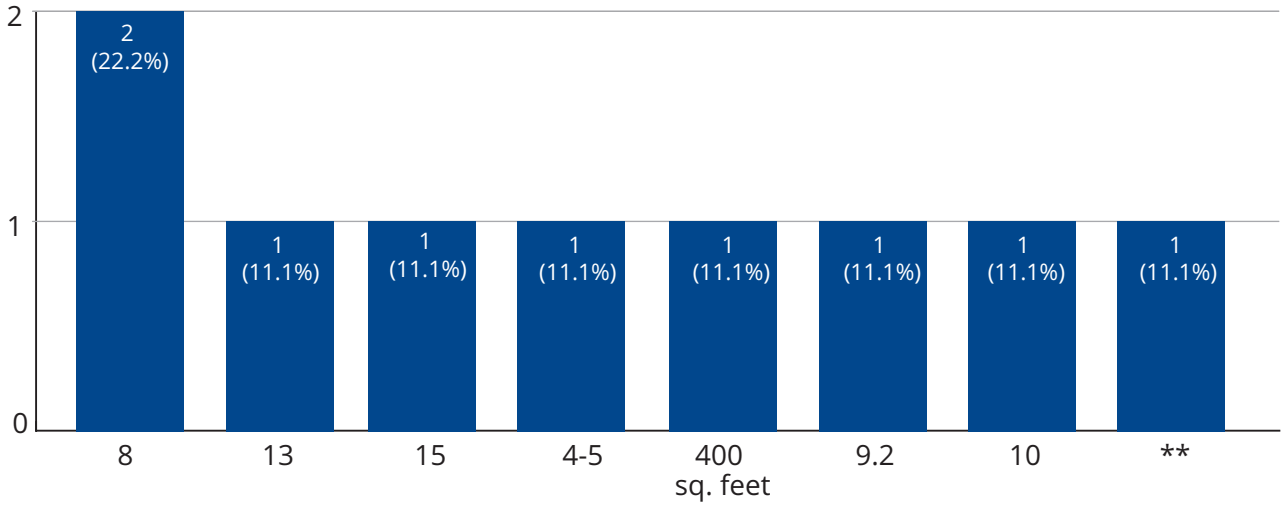
5 responses



## Related School Information

### What was the average in-person class size?

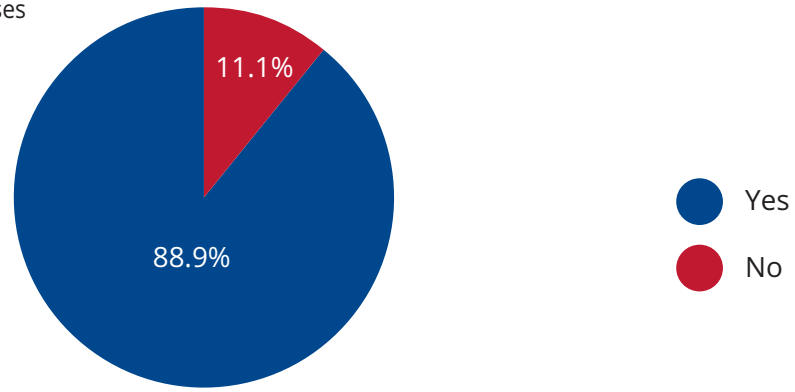
9 responses




** Kids were in satellite classroom if they didn't fit the main one, 30 students attended virtually and 4-6 teachers taught from home with teaching assistants on campus.

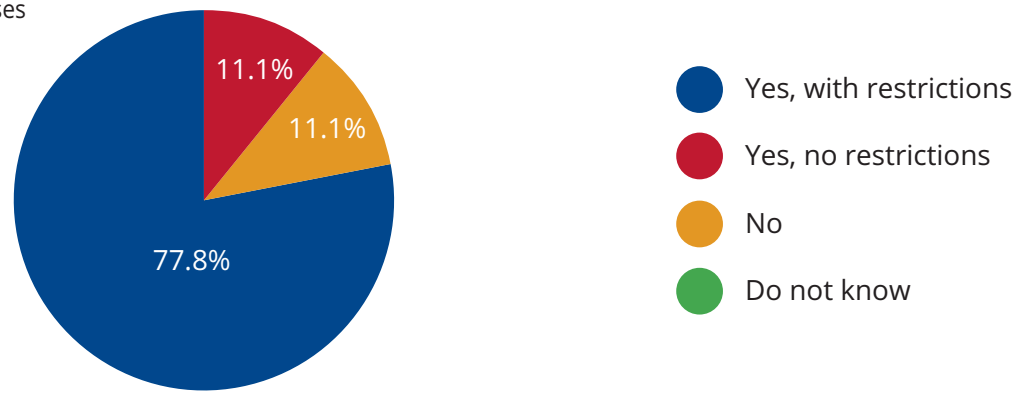
### Did you complete the semester without going fully remote?

9 responses




### Were sports offered by your school?

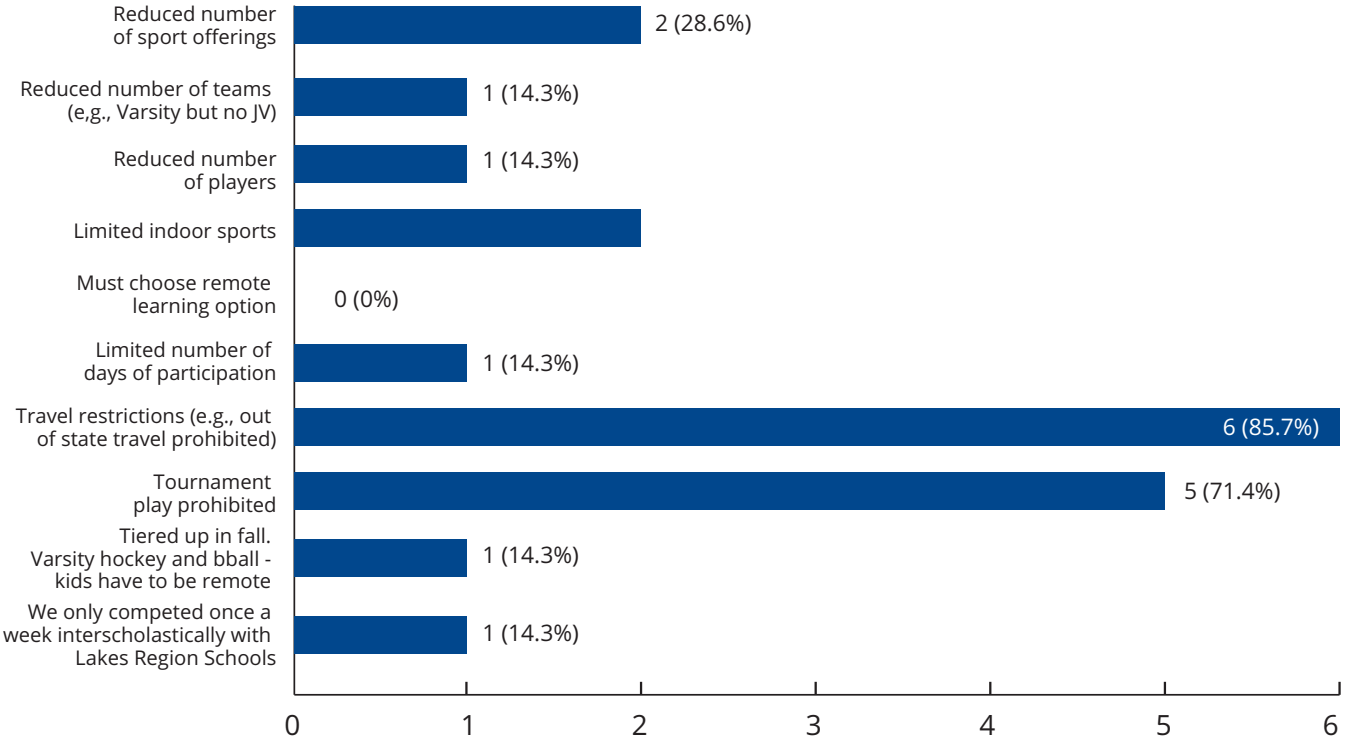
9 responses



## School Sports Restrictions

**What restrictions did you impose on school sports?**

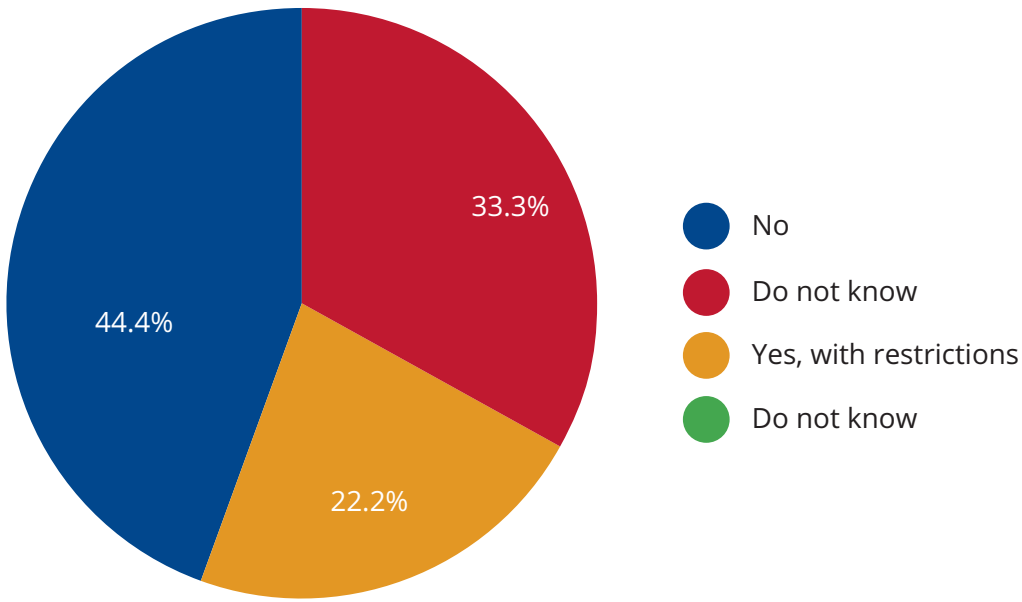
7 responses




## Club Sports Policy

**Was participation in club sports allowed?**

9 responses



## Club Sports Restrictions

**What restrictions did you impose on club sport participation?**

2 responses