COVID-19 and Schools:
Building Safety: Implementation and Communication

April 22, 2021

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Providing effective energy strategies for buildings and communities

Who We Are

SEDAC
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SEDAC assists buildings and communities in achieving energy efficiency, saving money, and becoming more sustainable.

We are an applied research program at University of Illinois.

Our goal: Reduce the energy footprint of Illinois.

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Extension links local communities to the University, to develop programs, tools, and knowledge that will support needed changes related to:

- health
- community
- food
- environment
- economy

Today's Panel

Dr. Ty Newell

Emeritus Professor of Mechanical Engineering

Co-owner and Co-founder of Build Equinox

Dr. Helen Nguyen

Ivan Racheff Endowed Professor of Civil and Environmental Engineering, UIUC

Shawn Maurer

Senior Energy Engineer
SEDAC, UIUC

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Learning Objectives

1. **Gather data:** Discover resources to a) identify infection rates, b) estimate impact of mitigation measures, and c) verify ventilation levels.
2. **Implement solutions:** Learn about helpful resources to develop an implementation plan.
3. **Communicate:** Learn how to communicate data and mitigation measures with staff and community members.

Help Us Assess the Outcomes of This Webinar!

1. Answer a few **poll questions** during the webinar
2. Take an anonymous **5-minute online questionnaire** at the end of the webinar.
3. Take an **additional 5-minute questionnaire** in 2-3 months to help us understand how the webinar has influenced your building practices.
4. Your participation is **voluntary.**
5. **No identifying information** will be collected.
6. More information about how this information will be used in chat box

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Important Points from Previous Webinar

- **Masking and social distancing** have largest impact on infection risk.
- **Student cohorts** make contact tracing easier and limit outbreak size.
- **Hand hygiene and surface sanitation** limit contact transmission risk.
- **Increase amount of fresh air** in building through ventilation strategies.
- Use minimum **MERV 13 filters** to ensure clean air delivery
- **Monitor fresh air delivery** through CO2 levels: target 800ppm
- **Additional measures** for high-risk situations: In-room air purifiers, UV germicidal irradiation, Ionic air purifiers

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Poll #1 – Prelim Stand alone poll

From our last webinar, which measures must be implemented for other measures to be effective to improve safety during the COVID-19 pandemic? (Pick all that apply)

1. Face masks
2. Social Distancing
3. Sanitation/Handwashing
4. Increasing Ventilation
5. Increasing Filtration Rates
6. Adding Air Purifiers

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Poll #2 – Pre-training check

Which is the optimal location for taking a CO_2 reading?

1. Desk level away from occupants
2. Next to a supply diffuser
3. Next to an open window
4. Center of the room

What is the minimum target air change rate for fresh outdoor air?

1. 3 ACH
2. 4 ACH
3. 6 ACH
4. 10 ACH

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Poll #2 – pre-training check

Which is a good metric for communicating building safety measures to staff, students and communities?

1. School dashboard indicating infected and quarantined counts
2. Weekly newsletter reporting mitigation efforts
3. Links to air quality reports for schools
4. Reporting estimated risk of transmission pre- and post-preparation of facilities for COVID
5. All the above

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Resources to Gather Data

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Gathering Data About Infection Rates

Most schools are keeping track of the basics:

How many people in the building have had positive test results? (by week)

Who have they been in contact with?

How many people have been isolated? How many quarantined?

How many have recovered?

Where are the community levels of infection at?

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Mandatory Testing can Drive More Accurate Results

- Testing at schools can be coordinated through University of Illinois' SHIELD saliva testing program
  - $10-$35 per person for tests through SHIELD
- Can target individuals with symptoms or at higher risk to limit impact on schedules and costs, more common to test all occupants of school
- Overall test numbers can be used to report <u>school safety and relative risk</u>
- Reassure staff/community that illness can be identified and stop outbreaks before they happen

SHIELD ILLINOIS

LOW COST

FAST NOTIFICATION

WIDESPREAD TESTING

EASE OF USE

HIGH ACCURACY

Wastewater Surveillance is a Cost-Effective Option to Estimate Infection Rates

- Increasing community infections may prompt schools to temporarily increase mitigation measures
  - Increase outdoor airflows, or hold outdoor classes
  - Shift some students to home learning to limit class sizes
  - Start individual testing and quarantining
- Testing can be used to communicate on-going effectiveness of mitigation if COVID isn't detected or remains consistently low.

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ILLINOIS
Grainger College of Engineering

Wastewater Epidemiology

Helen Nguyen
Ivan Racheff Endowed Professor of Civil and Environmental Engineering

Department of Civil and Environmental Engineering
Institute of Genomic Biology
Carle Illinois Medical College

4/22/2021

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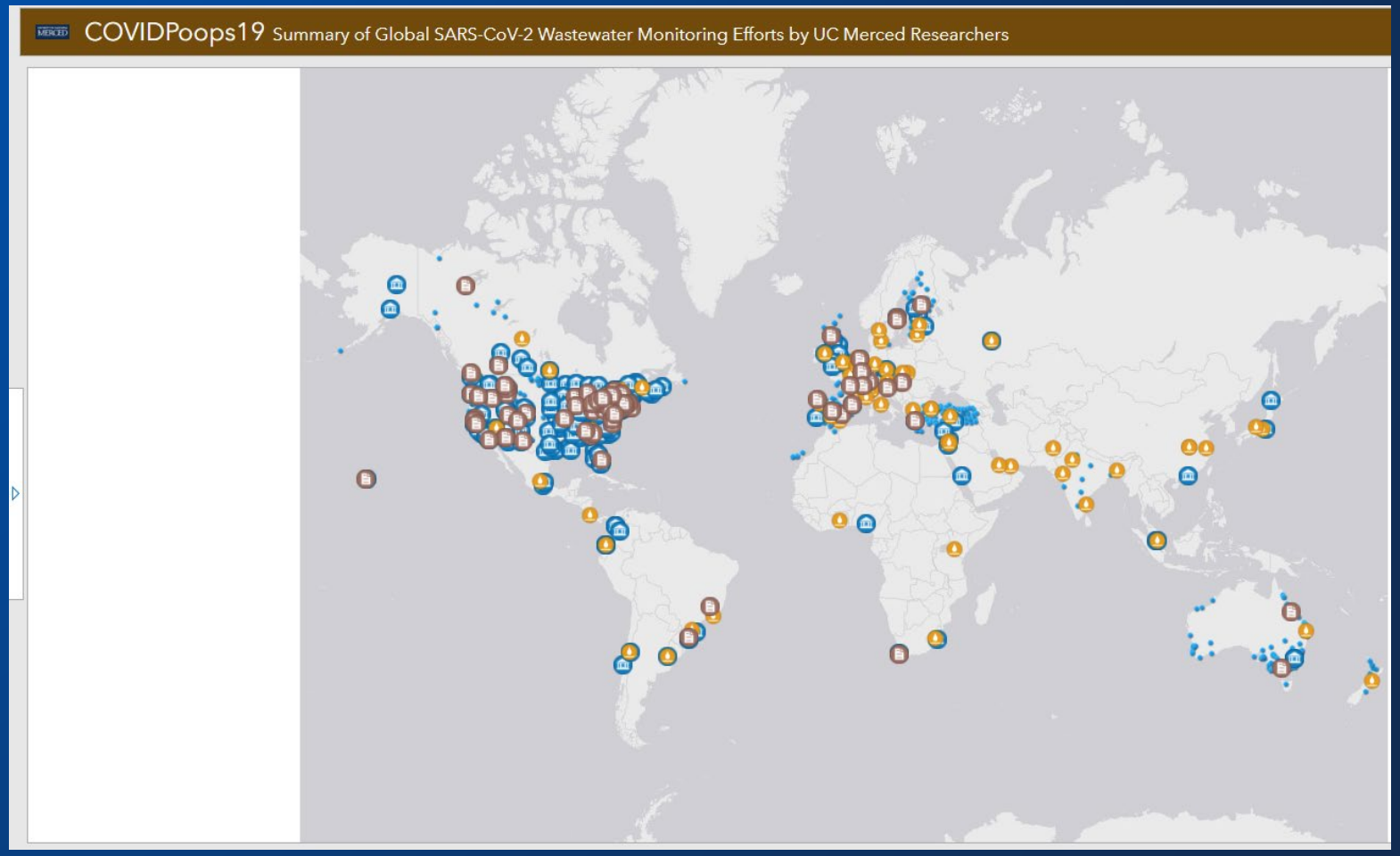
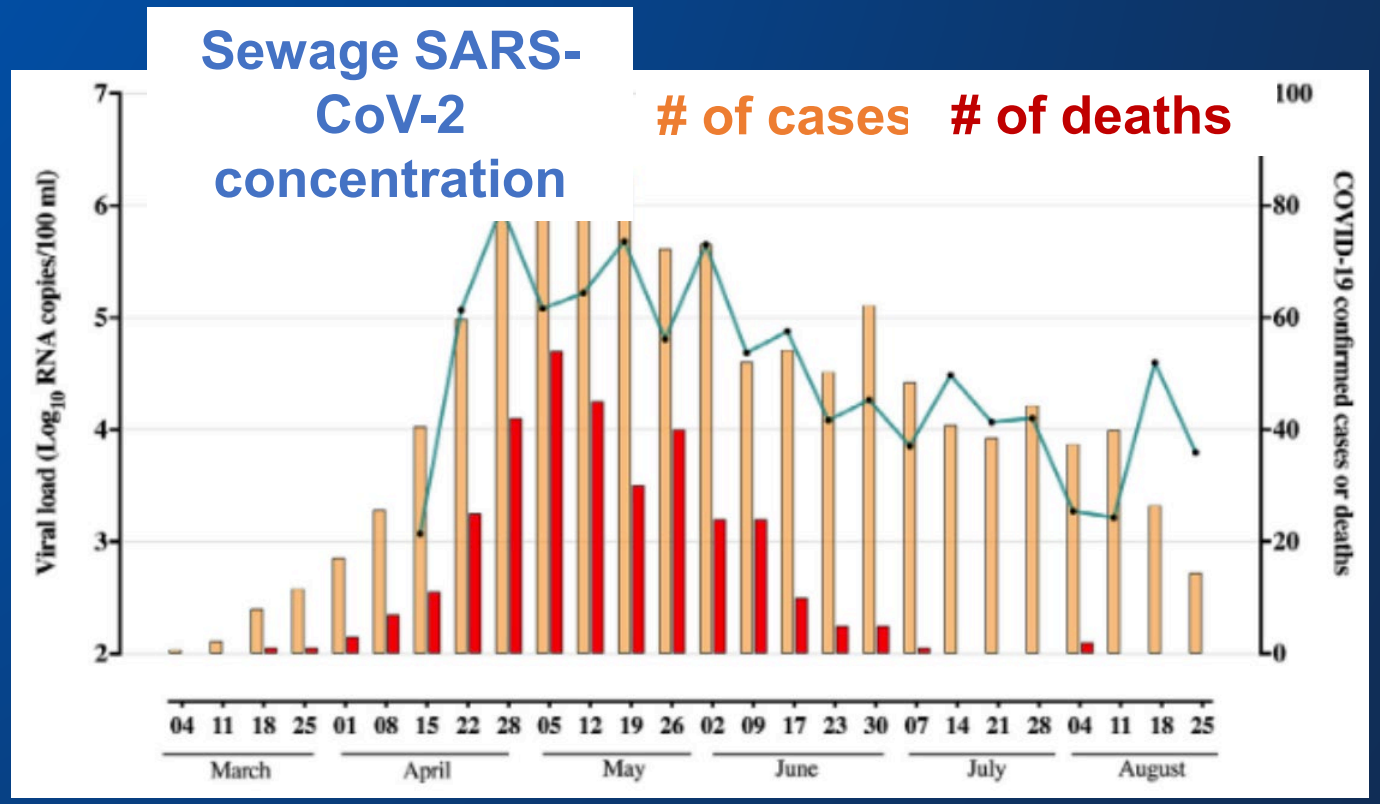
Global network of wastewater monitoring for SARS-CoV2



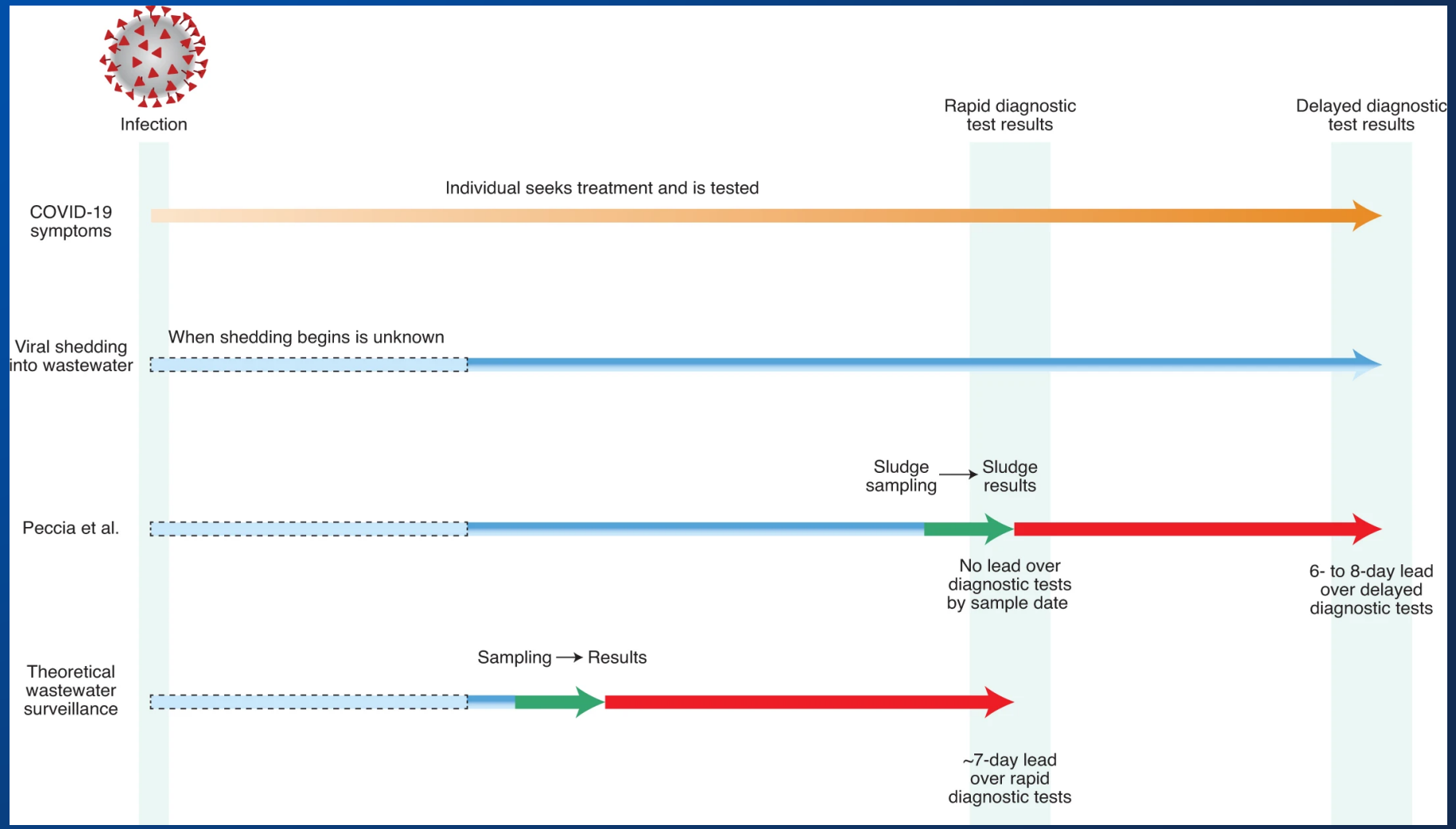
https://ucmerced.maps.arcgis.com/apps/opsdashboard/index.html#/c778145ea5bb4daeb58d31afee389082

Sewage SARS-CoV2 concentration agrees with clinical data



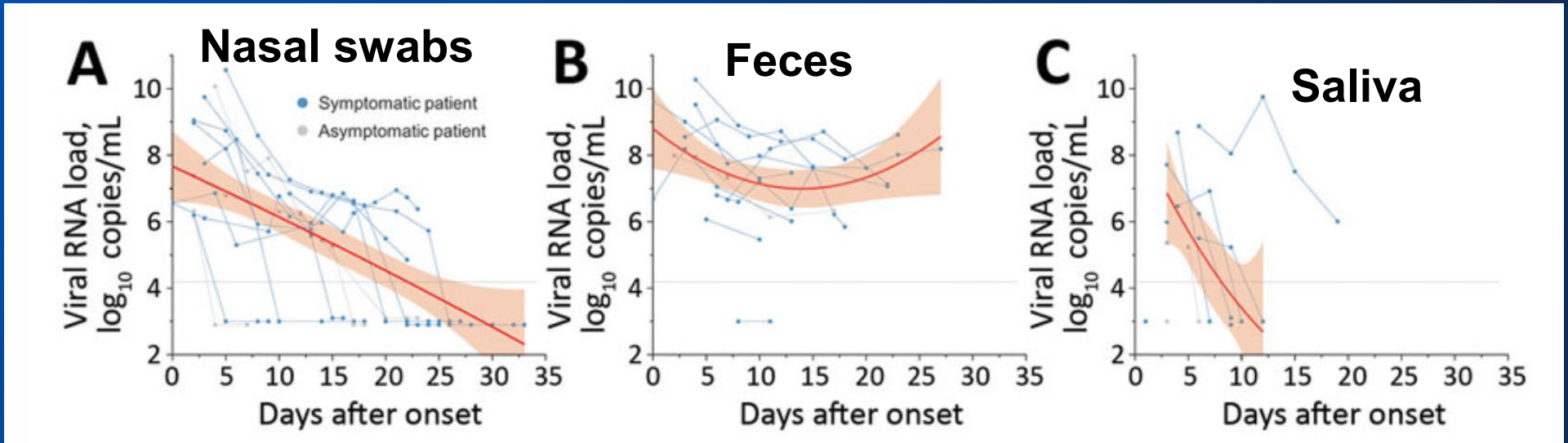
Prado et al. (2021). *Water research*, *191*, 116810.

Wastewater surveillance as an early warning system for infectious disease outbreak



Larsen and Wigginton, 2020, Nature Biotechnology, https://doi.org/10.1038/s41587-020-0690-1

SARS-CoV2 RNA have been found in asymptomatic children



Han et al., https://wwwnc.cdc.gov/eid/article/26/10/20-2449-f1

Sewage monitoring complements human testing

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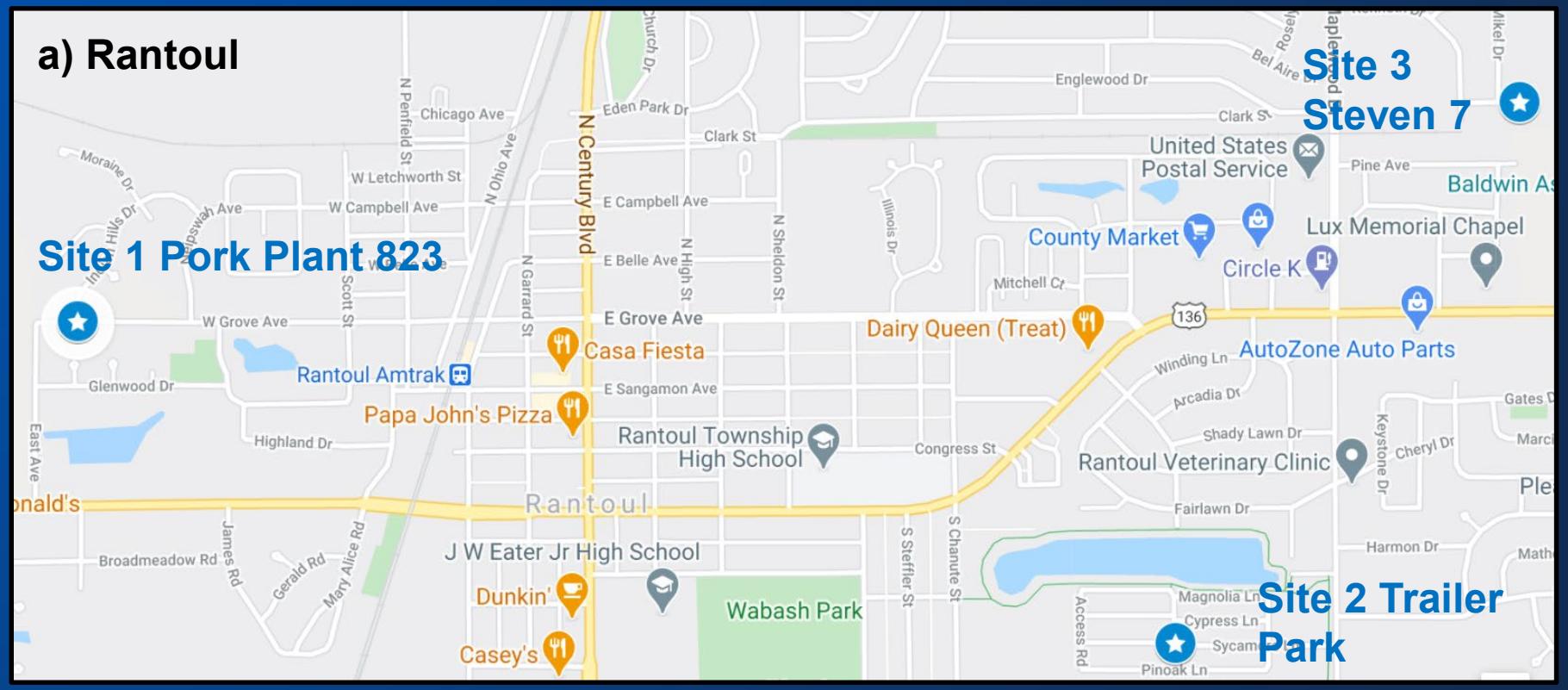
Sewer monitoring at neighborhood level in Rantoul



Sewer monitoring at neighborhood level in CU

Sewer monitoring at neighborhood level in Rantoul and CU can detect COVID-19 circulation in communities since Jan. 2021

Sewer monitoring can be done at schools where frequent human testing is not available

Safe Space Calculator

Dr. Ty Newell will discuss a calculator he's developed that estimates the % probability of infection in an occupied space.

Calculator is still in development

Interested in working with school building operators to understand calculator and use to document mitigation measure impacts on transmission risk.

Link to calculator and training videos can be found at https://www.buildequinox.com/files/covid/CovidSafeSpace.pdf

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Use Data-Driven Tools to Estimate Impact of Mitigation Measures

Use COVID Safe Space Calculator to see how risk of infection for susceptible people decreases with implemented measures.

- What's the baseline? What is the probability of being infected if no mitigation measures are implemented?
- How does the probability decrease as each new measure is implemented?

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Use data-driven tools to estimate impact of mitigation measures

COVID Safe Space Calculator also Estimates the Benefits beyond COVID:

- How might improved ventilation reduce the number of staff and student sick days?
- How might improved ventilation enhance cognition and academic performance?

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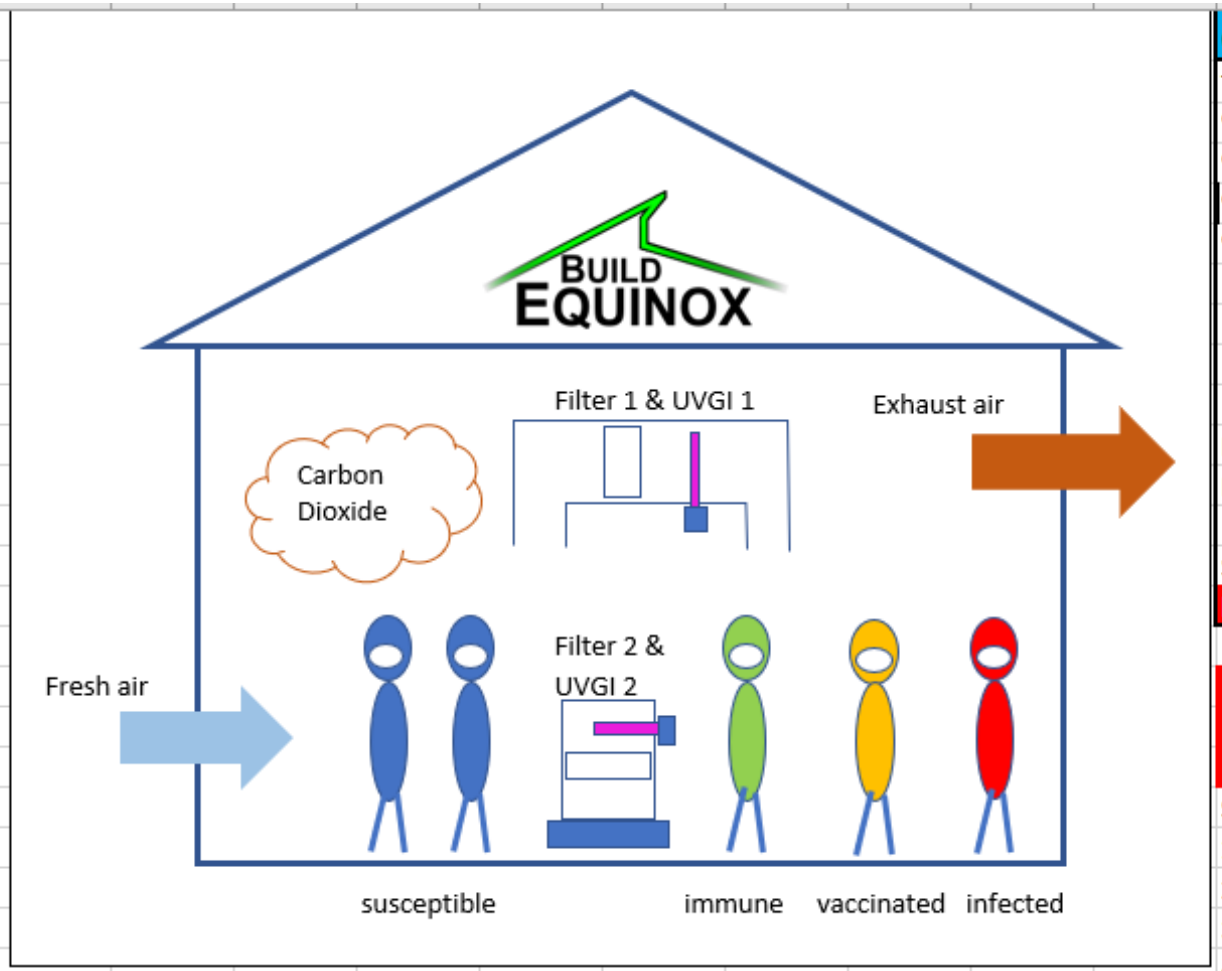
Safe Schools During Covid-19: Implementation & Communication

Is My School Safe?

Ty Newell, PhD, PE; Build Equinox, University of Illinois

UI SEDAC Webinar
April 22, 2021

Covid-19 Safe Space Calculator	
Input	
Indoor Carbon Dioxide (ppm)	1200
Exposure Time (min)	480
Infection Status of Occupants	
Infected People	1
Susceptible People	10
Immune (Covid Recovered) People	0
Vaccinated People	0
Vaccine Effectiveness (%)	95
Masks & Usage	
Mask Wearers (%)	0
Exhalation Efficiency (%)	50
Inhalation Efficiency (%)	50
Activity Level (see chart below)	
Metabolism	1.5
Air Circulation System 1	
Air Flow (cfm per person)	20
MERV Filter (input 8, 11, 13, or 16)	8
UVGI (input y or n)	n
Air Circulation System 2	
Air Flow (cfm per person)	20
MERV Filter (input 8, 11, 13, or 16)	8
UVGI (input y or n)	n
Advanced	
Infectiousness (quanta/hr-person)	100
Ambient Carbon Dioxide (ppm)	400



Output	
Total Occupants	11
% Infected	9.1
% Susceptible	90.9
% Immune (Covid Recovered) People	0.0
% Vaccinated	0.0
Fresh Air Flow (cfm)	222
Fresh Air Flow per Person (cfm/person)	20
Recirc Air Flow (cfm) - System 1	220
Recirc Air Flow (cfm) - System 2	220
Susceptibles Infection Probability (%)	72.1
Infection Multiplier	**7.21**

Find conditions that reduce Infection Multiplier below 1!

Steps to Reduce Infection Multiplier

1) Reduce Indoor Carbon Dioxide (800ppm recommen
2) Increase % mask usage & mask efficiency!!
3) Recirculate air through MERV13 filter
4) Consider UVGI (ultraviolet irradiation)
5) Recirculate ~20 to 40cfm per person through filters

Making a Covid Safe Space

Many Factors

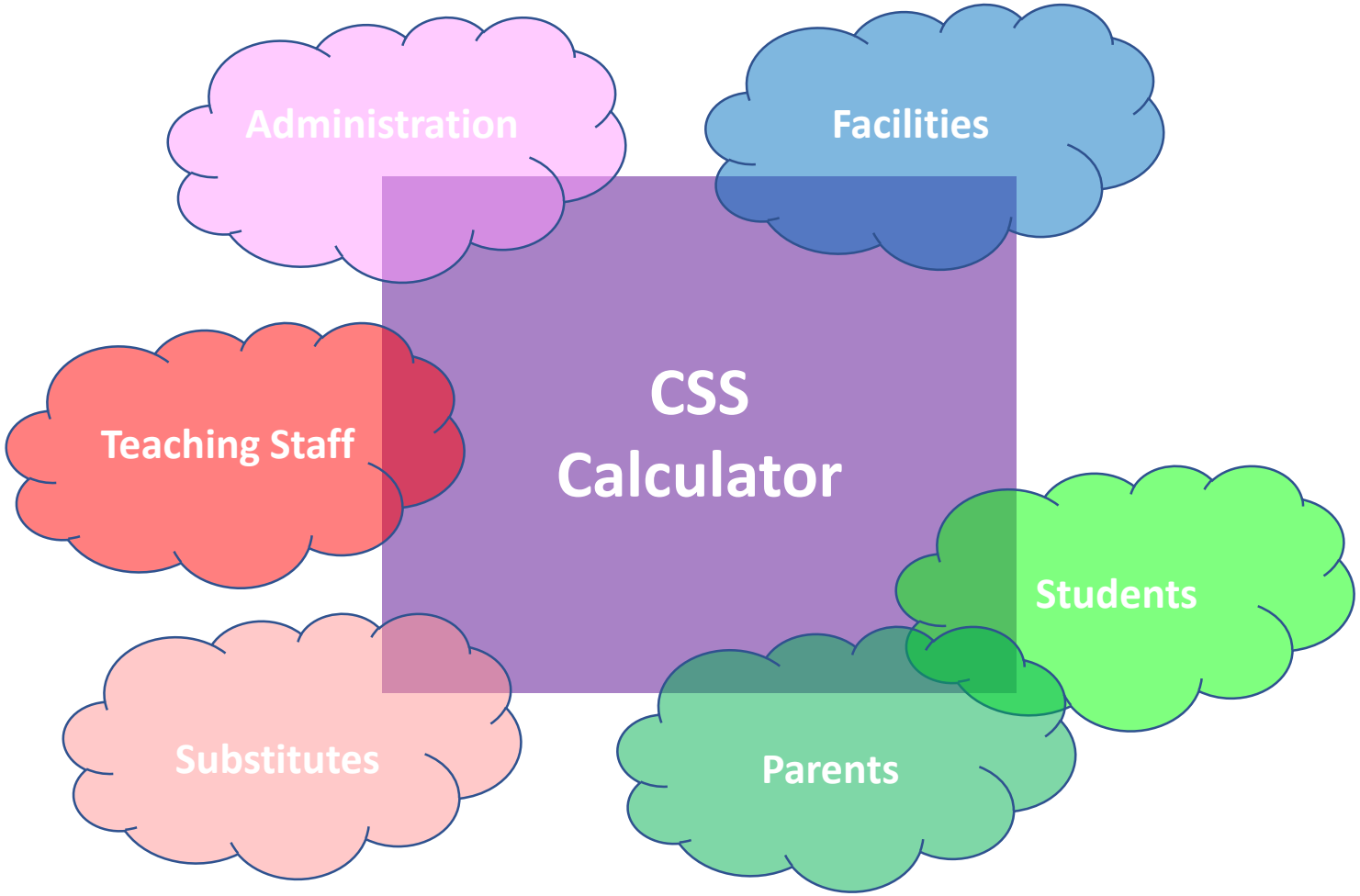
- Occupancy
- Occupant activity
- Exposure time
- Fresh air ventilation
- Air filtration
- Air sanitation
- Immunization
  - Vaccination
  - Infection-acquired
- BEHAVIORs
  - Face Mask Usage
  - Face Mask Efficiency
  - Distancing
  - Surface sanitation

=

Two Results

- Infection Probability
- Infection Multiplication (Want IM < 1)

CSS calculator - School



Teachers, students and substitutes (often elderly, retired teachers) do not want to return until they feel safe

Facility Safety:

- Fresh air (800ppm CO2)
- Filtration (MERV 13)
- Occupant Density

Personnel Safety

- Face masks
- Vaccination

Classroom Example - 20 Students, 1 Teacher
Covid Safe Space (worksheet #1)

- Standard Conditions
  - 420 minute exposure
  - 1 Infectious
  - 1200ppm CO2
    - 20cfm/person
  - MERV 8 filters
    - 40cfm/person
  - No masks

		Immunity		
		0%	50%	75%
Standard Conditions	Infect Probability %	44	44	44
	Infection Multiplier	8.9	4.9	2.9
800ppm CO_2 40cfm/person	Infect Probability %	25	25	25
	Infection Multiplier	5.1	2.8	1.7
MERV 13 filter 40cfm/person	Infect Probability %	14	14	14
	Infection Multiplier	2.9	1.6	**0.9**
50% Mask Use 20% Mask Eff	Infect Probability %	12	12	12
	Infection Multiplier	2.4	1.3	**0.8**
80% Mask Use 80% Mask Eff	Infect Probability %	2	2	2
	Infection Multiplier	**0.4**	**0.2**	**0.1**

Classroom Example - 20 Students, 1 Teacher
Covid Safe Space (worksheet #1)
-Poor Mask Usage & Variants

- What if students wear low efficiency, high leakage masks?
- Teachers, staff and others can be protected by wearing good fitting, high efficiency masks
- Assume low exhalation efficiency (10%) and high inhalation efficiency (90%)
- Still safe with virus variants?
  - 60% Vac eff (from 90%)
  - 200 quanta/h (from 100 q/h)

		Immunity 0%	50%	75%
Standard Conditions	Infect Probability %	44	44	44
	Infection Multiplier	8.9	4.9	2.9
100% Mask Use 10%/90% Mask Eff	Infect Probability %	5	5	5
	Infection Multiplier	1.0	**0.6**	**0.3**
800ppm CO_2 40cfm/person	Infect Probability %	2.5	2.5	2.5
	Infection Multiplier	**0.5**	**0.3**	**0.2**
MERV 13 filter 40cfm/person	Infect Probability %	1.5	1.5	1.5
	Infection Multiplier	**0.3**	**0.2**	**0.1**
Virus Variants 60% Vac; 200 Q/h	Infect Probability %	2.7	2.7	2.7
	Infection Multiplier	**0.6**	**0.4**	**0.3**

School Summary

- Improved ventilation, filtration and mask usage reduces Infection Multiplier from 9 to 0.4, with a decrease of Infection Probability from 44% to 2%
- School staff can effectively protect themselves by wearing snug (leak free) high efficiency (N95, KN95) masks even though others may wear leaky, low efficiency cloth masks
- Virus variants that spread more quickly and reduce vaccine efficacy can be managed with good masking combined with building operation practices
- See “Is My School Healthy” (sick days & productivity) and “Is My School Energy & Cost Efficient” for additional information

Gather Data to Verify Enough Fresh Air

Two options:

- CO_2 levels: People exhale CO_2 when they breathe. Schools want to make sure that enough fresh air is being brought in so that they don't have levels of CO_2 that are too high. If they are high, this also means that there are greater levels of airborne virus particles.
- Air changes per hour (ACH): The number of times the entire volume of air is exchanged with fresh/cleaned air each hour.

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Gathering Proper data with CO_2 Sensors

Central automation may have wall or duct-mounted sensors for CO_2

If no central automation system, use quality hand-held sensor for readings

Best reading is from room return duct with BAS system

With handheld:

- Make sure to get reading away from occupants to avoid false high readings.
- Avoid reading by windows or fresh-air vents to avoid false low readings.
- Desktop a few feet away from occupant is ideal.

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Gathering Data with CO_2 Sensors

Initial data gathering may need to be multiple times per day to ensure proper ventilation.

Once baseline is established, may reduce to 1-2x's times per week.

Check during peak occupancy/activity periods, as that is when most ventilation is needed.

Target minimum fresh air rate is 4 ACH, typically about 800ppm (assumes 25 students/1,000 sqft design).

Intersperse readings with readings outdoors (1st reading and every few rooms) to ensure handheld sensor is calibrated

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Another Option: Identify Air Changes per Hour

Each air change per hour (ACH) is the entire volume of air being exchanged for fresh/cleaned air each hour.

Some ACH recommendations for schools are in 6-12 ACH range, equivalent to hospital waiting rooms.

Straightforward calculation:

$$ACH = \frac{60\frac{min}{hr} \times \left(CFM_{ventilation} + CFM_{purifiers}\right)}{Floor\ Area \times Ceiling\ Height}$$

Ventilation to rooms is available in school plan drawings, or can be measured by consultant

Purifier airflow is reported as a clean air delivery rate (CADR) , reported in CFM or m^3/hr (1 m3/hr = ~0.6 CFM)

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3-4 Air Changes is Optimal for Outside Air Rate

Pantelic and Tham plotted air change rate vs infection risk assuming well-mixed air and various rates of infectious particle emission (quanta).

Note at low emission rates, little impact from ventilation.

At higher emission rates, curve flattens out between 3 and 4 ACH

COVID quanta rates estimated between 2 (sitting breathing) and 65 (standing, speaking loudly) quanta per hour in typical classroom by Jimenez et al.

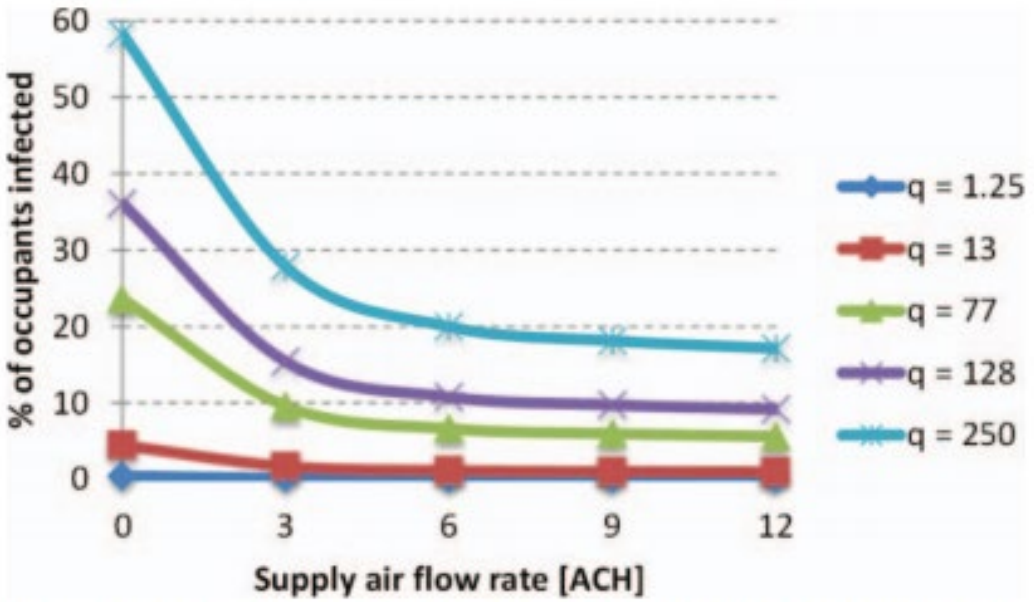

Figure 4. Percentage of occupants infected for different air supply flow rates at several values of quanta generation rate for 8-h exposure period (color figure available online).

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ASHRAE Standard 62.1 Air Change Rate Example

K-12 classroom for 30 students + teacher

Room is 750 sf, with 8 ft ceiling height.

- OA for 31 occupants = 10*31 = 310 cfm
- OA for floor area = 0.12*750 = 90 cfm

Volume of classroom is 750sf*8ft = 6,000 cu.ft.

Air change per hour minimum OA requirement is thus ((310+90)*60)/6000 = 4 ACH

	People Outdoor Air Rate R_p		Area Outdoor Air Rate R_a	
Occupancy Category	**cfm/ person**	**L/s· person**	**cfm/ft^2**	**L/s·m^2**
Educational Facilities				
Daycare (through age 4)	10	5	0.18	0.9
Daycare sickroom	10	5	0.18	0.9
Classrooms (ages 5–8)	10	5	0.12	0.6
Classrooms (age 9 plus)	10	5	0.12	0.6
Lecture classroom	7.5	3.8	0.06	0.3
Lecture hall (fixed seats)	7.5	3.8	0.06	0.3
Art classroom	10	5	0.18	0.9
Science laboratories	10	5	0.18	0.9
University/college laboratories	10	5	0.18	0.9
Wood/metal shop	10	5	0.18	0.9
Computer lab	10	5	0.12	0.6
Libraries	5	2.5	0.12	0.6
Media center	10	5	0.12	0.6
Music/theater/dance	10	5	0.06	0.3
Multiuse assembly	7.5	3.8	0.06	0.3

Panel Discussion Break

1. What kinds of data are most schools using?
2. What is your advice for collecting this data and using these tools?
3. How can this data be used in the decision-making process?

Develop a Data-Driven Implementation Plan

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Developing a Plan to Implement Building Safety Measures

- Plan should be **responsive to data: infections, risk level and ventilation rate.**
- Plan should address **when** the measures will be implemented, **how**, and **who** will implement them
- The plan should address **quality control** and how to evaluate the **effectiveness** of measures
- The plan should address **cost and energy impact**
- The plan should address **how compliance will be enforced**
- The plan should address **how the efforts should be communicated**

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Make your Implementation Plan Data-Driven

Infection data can help you decide if your school needs to be more proactive, going beyond the basic strategies to adopt other things like air purification or UVGI. It can help you determine when the measures should be implemented, or when the school should be open.

Solution impact estimations can help you identify the solutions that will have the greatest impact on reducing the risk of virus transmission

Ventilation data can help you determine whether your current ventilation strategies are working, or if you need to make modifications.

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Implementation Resources are Available for Schools

UIUC Shield K-12 Playbook

https://shield-k12-playbook.ncsa.illinois.edu/

- Checklists
- Strategies
- Targeted resources

K-12 SHIELD PLAYBOOK

Shield K-12 Playbook

A playbook app to help K-12 schools and administrators make decisions related to COVID-19, access targeted resources and make plans for implementation. To generate a useful checklist of strategies to use, select a module and answer the questions.

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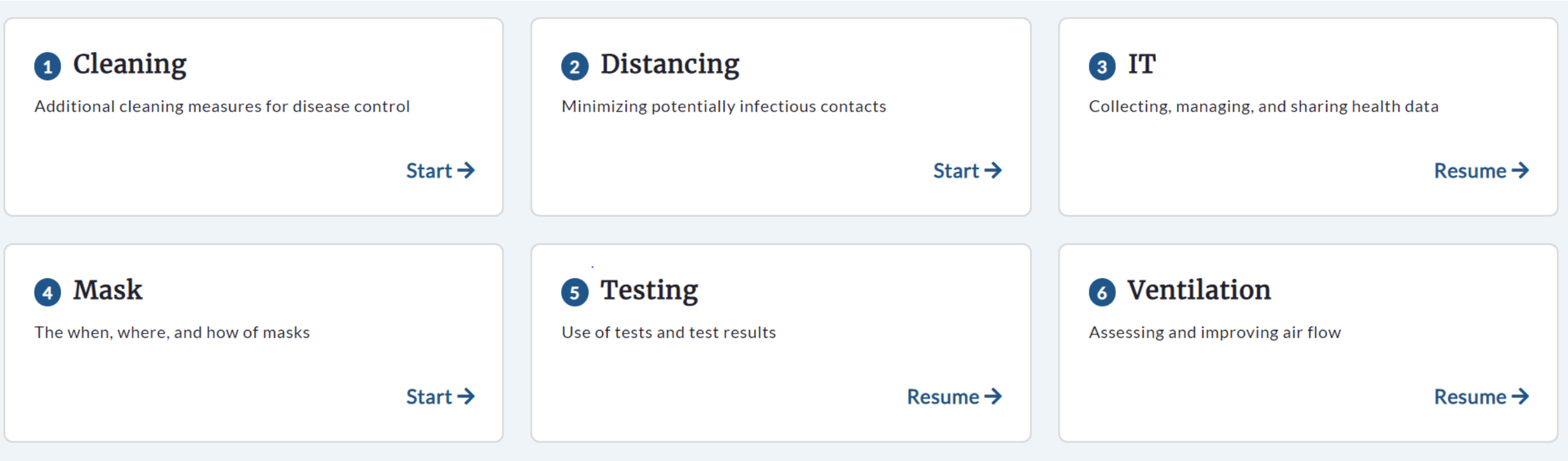
Shield Modules Provide Useful Guide for Implementation

- Modules invite you to answer questions and make a series of decisions about your COVID response
- Shield uses your responses to generate a checklist or report with recommended actions and resources, tailored to your needs



Example: Ventilation Module

Preliminary Questions

What is the ventilation rate in each of the following areas?

A Classrooms

How will you improve ventilation in deficient areas?

A Open windows

B Increase outdoor air intake

C A filtration system

D Portable air cleaners

E Empty time

Checklist of Actions

Activities To Complete

- [ ] Calculate base air change rate in each room/area
  https://schools.forhealth.org/ventilation-guide/
- [ ] Assessment of rooms requiring increased ventilation
  https://docs.google.com/spreadsheets/d/1NXGvgRi0CeRP25rI-O3iyQyZ2nmZAcyeXQUWP-CydVk/edit?usp=sharing
- [ ] Check that all windows can be opened and remain open safely
  https://docs.google.com/spreadsheets/d/1NXGvgRi0CeRP25rI-O3iyQyZ2nmZAcyeXQUWP-CydVk/edit?usp=sharing
- [ ] Set central ventilation system to maximize outdoor air intake
  https://www.ashrae.org/technical-resources/filtration-disinfection#mechanical
- [ ] Check with your HVAC team if your system can the airflow impact of a MERV 13 filter
  https://www.epa.gov/indoor-air-quality-iaq/what-merv-rating-1

Funding for K-12 Available Through Multiple Acts

ESSER I (CARES Act)	ESSER II (CRRSA Act)	ARP ESSER (ARP Act)
• May be used for pre-award costs dating back to March 13, 2020, when the national emergency was declared. • Available for obligation by State Educational Agencies (SEAs) and subrecipients through September 30, 2022.	• May be used for pre-award costs dating back to March 13, 2020, when the national emergency was declared. • Available for obligation by SEAs and subrecipients through September 30, 2023.	• May be used for pre-award costs dating back to March 13, 2020, when the national emergency was declared. • Available for obligation by SEAs and subrecipients through September 30, 2024.

https://www.isbe.net/Documents/Learning-Renewal.pdf

Illinois State Board of Education

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ESSER Funds Can Be Applied to Multiple Uses

Uses of ARP ESSER Funds Allocated to LEAs

- 20% to address learning loss and impact of COVID on under-represented student groups.
- Remaining 80% applied to:
  - Preparedness coordination with public health depts.
  - Sanitation training and supplies
  - Improve IAQ through repairs and upgrades
  - Planning and implementation for long-term closures, including school meals and access to on-line classes
  - Purchasing technology to facilitate remote learning
  - Provide mental health services, support, and hire counselors
  - Addressing learning loss, summer school, & supplemental learning

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ESSER Fund Application Process

- Local education agencies apply to State Education Department for funds
- State allocates funds to local districts using Title 1 Subpart A allocation
  - local districts access the allocated funds when they apply for the grants.
- Applicants register and pre-qualify for funding through https://grants.illinois.gov/portal/
- https://www.isbe.net/Documents/ESSER-Step-by-Step-App-Webinar-Presentation.pdf
  - Step-by-step application process for ESSER funding from ISBE

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Panel Discussion Break

1. What are some of the key things that schools should be thinking about when developing or updating their building safety plan?
2. What is your advice for finding ways to fund and implement measures when staffing and budgets are low?

Communicating Data and Mitigation Measures

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Communicating Rates of Infection, Quarantined Students

COVID-19 Metrics Dashboard

COVID-19 Dashboard : Data

New Positive Tests - Past 14 Days

SCHOOL	STAFF	STUDENTS	TOTAL
ECC	0	0	0
Chesak	0	1	1
Conley	1	0	1
Leggee	0	4	4
Mackeben	0	1	1
Martin	0	2	2
HMS	0	3	3
MMS	1	5	6
HHS	0	10	10
District Office	0		0
			28

Current District-wide Isolation and Quarantine

STAFF		STUDENTS	
Isolation	Quarantine	Isolation	Quarantine
7	6	53	201
		As of	4/15/2021

Isolation and Quarantine (14-day Rolling Average)

STAFF		STUDENTS	
Isolation	Quarantine	Isolation	Quarantine
4	5	50	165

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Huntley School District

Why?

- Reassure parents/staff
- Increase transparency
- Help administrators make decisions about opening.

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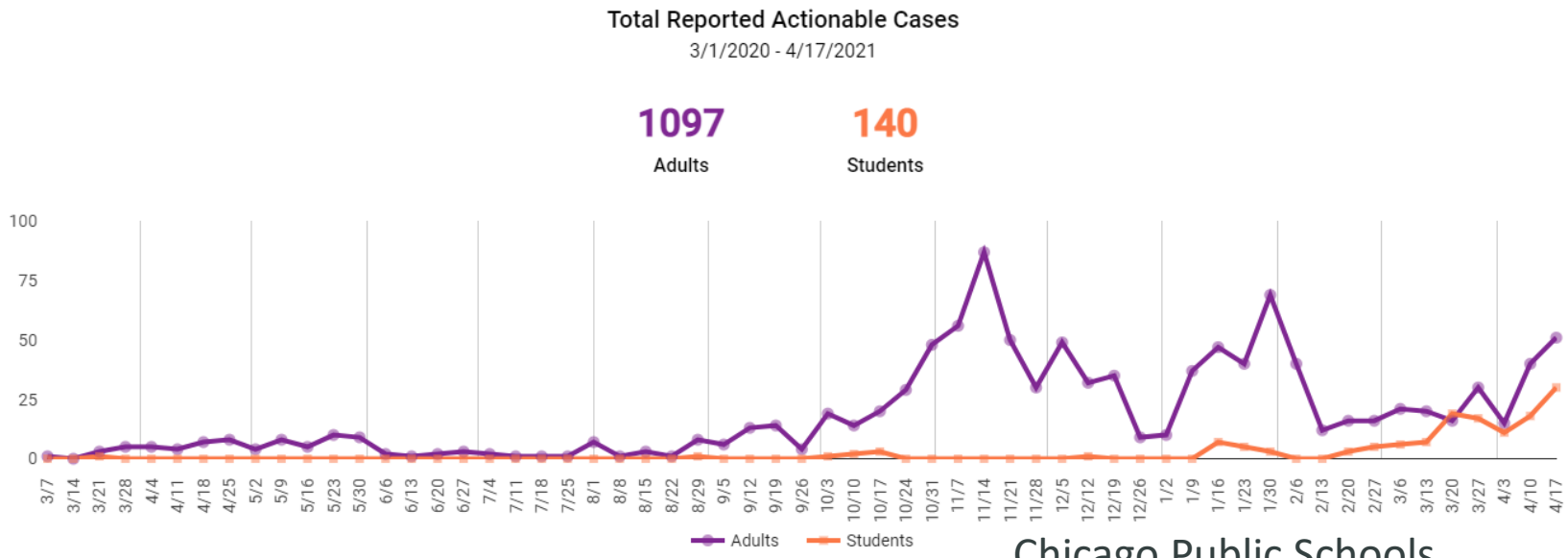
Communicating Rates of Infection, Quarantine, and Active Cases

Some ways to communicate infection rates:

- Website dashboard
- Weekly letters
- Social media

Many of the dashboards we surveyed were not updated regularly, or were hidden on the websites



Chicago Public Schools

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Tip 1: Communicate How Mitigations Measures can Reduce Probability of Infection

Use COVID Safe Space Calculator to communicate how risk of transmission for susceptible people decreases with implemented measures.

- Show what happens if no mitigation measures are implemented
- Show how the probability decreases as each new measure is implemented.

SHIELD Toolkit also has a section on communication with helpful templates and ideas for staff, student and community focuses

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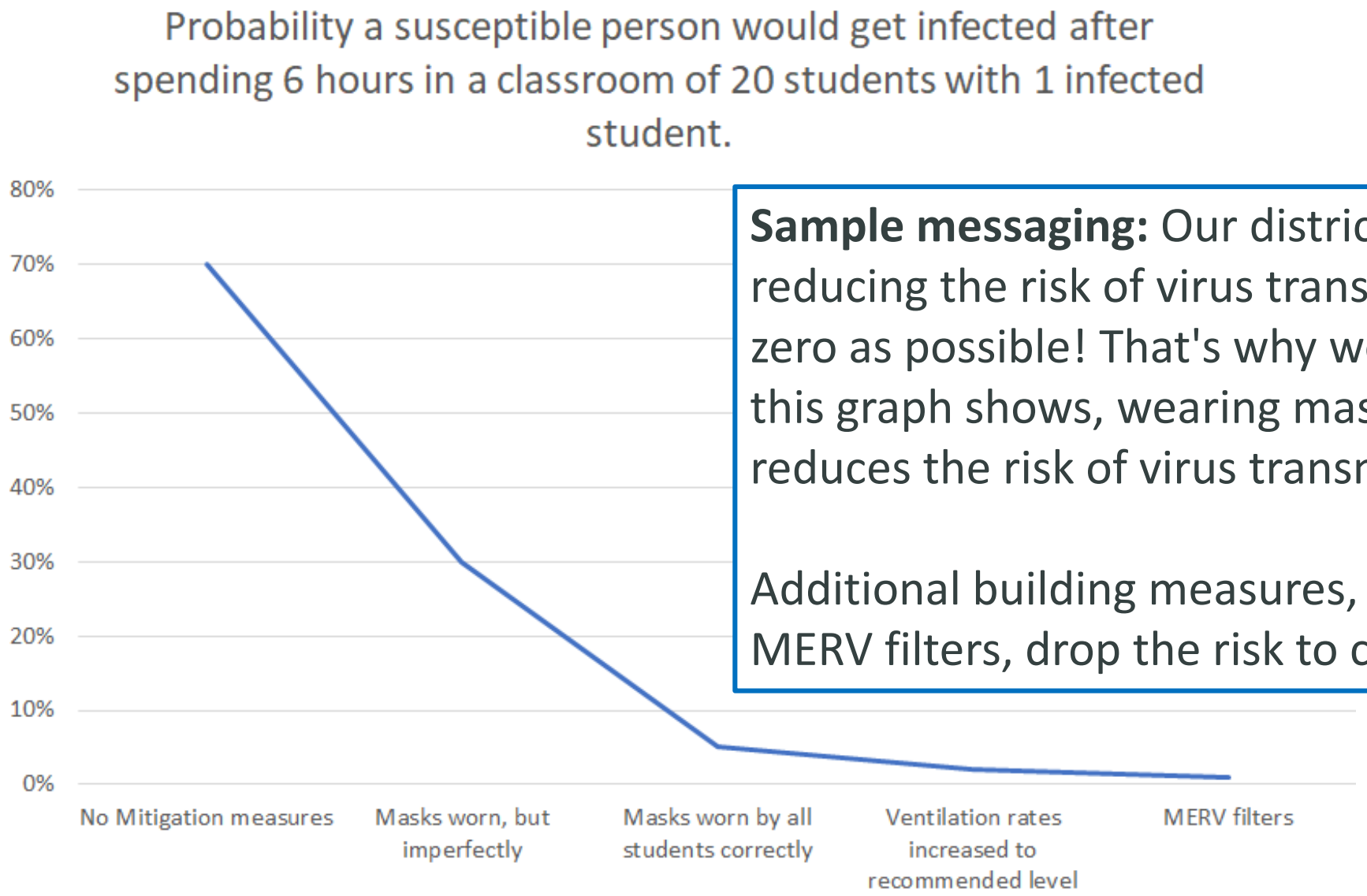
Communicate Effectiveness Visually



Sample messaging: Our district is committed to reducing the risk of virus transmission to as close to zero as possible! That's why we require masks. As this graph shows, wearing masks correctly drastically reduces the risk of virus transmission to about 5%.

Additional building measures, such as ventilation and MERV filters, drop the risk to close to zero.

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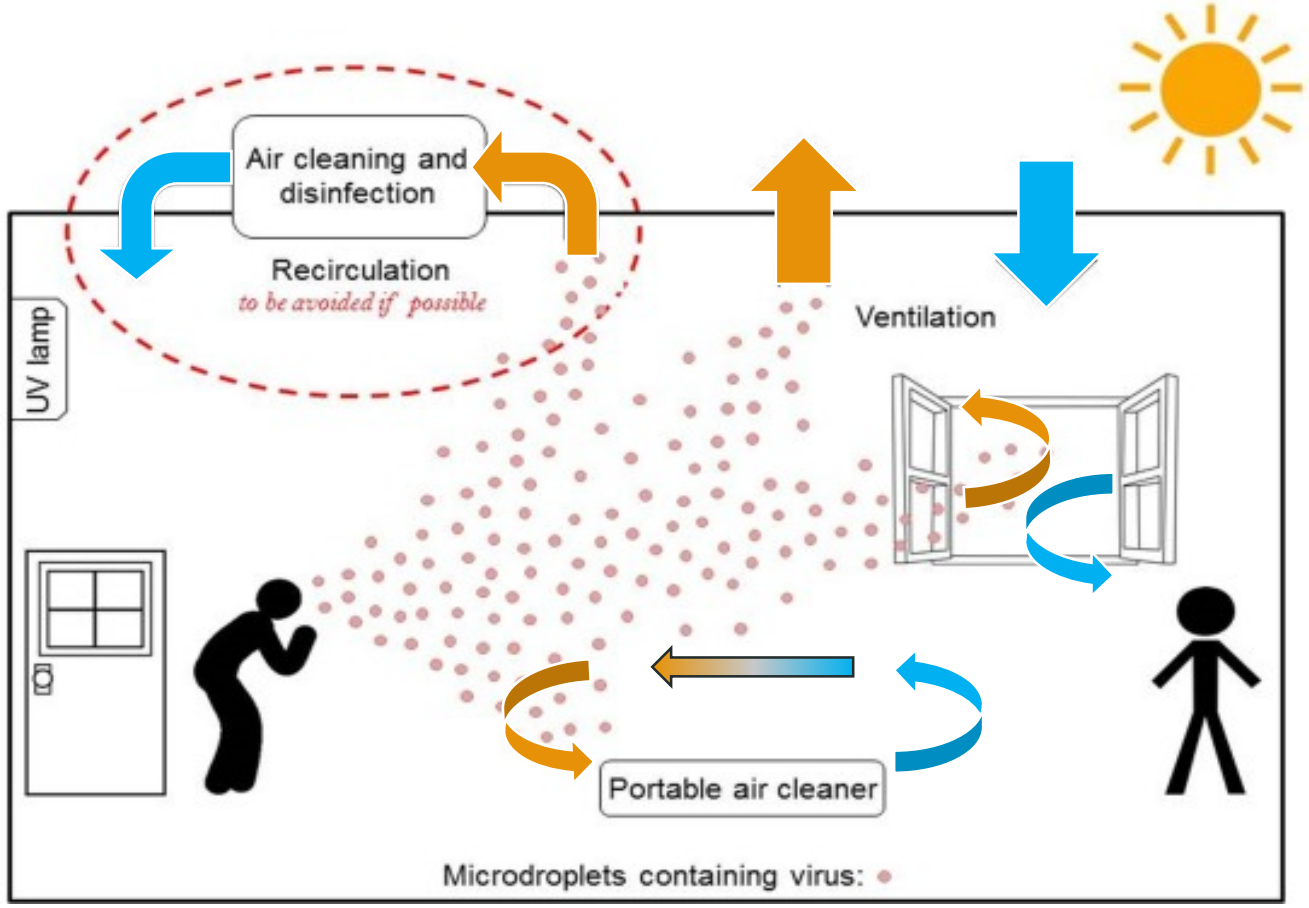
Communicate the Effectiveness of your Ventilation Efforts

Help them understand how the virus is spread

- Airborne transmission in a range of droplet and particle sizes is primary mode of transmission!
- Outbreaks happen indoors when:
  - People are in close proximity
  - There is not enough clean air
  - Air is recirculated, but not cleaned



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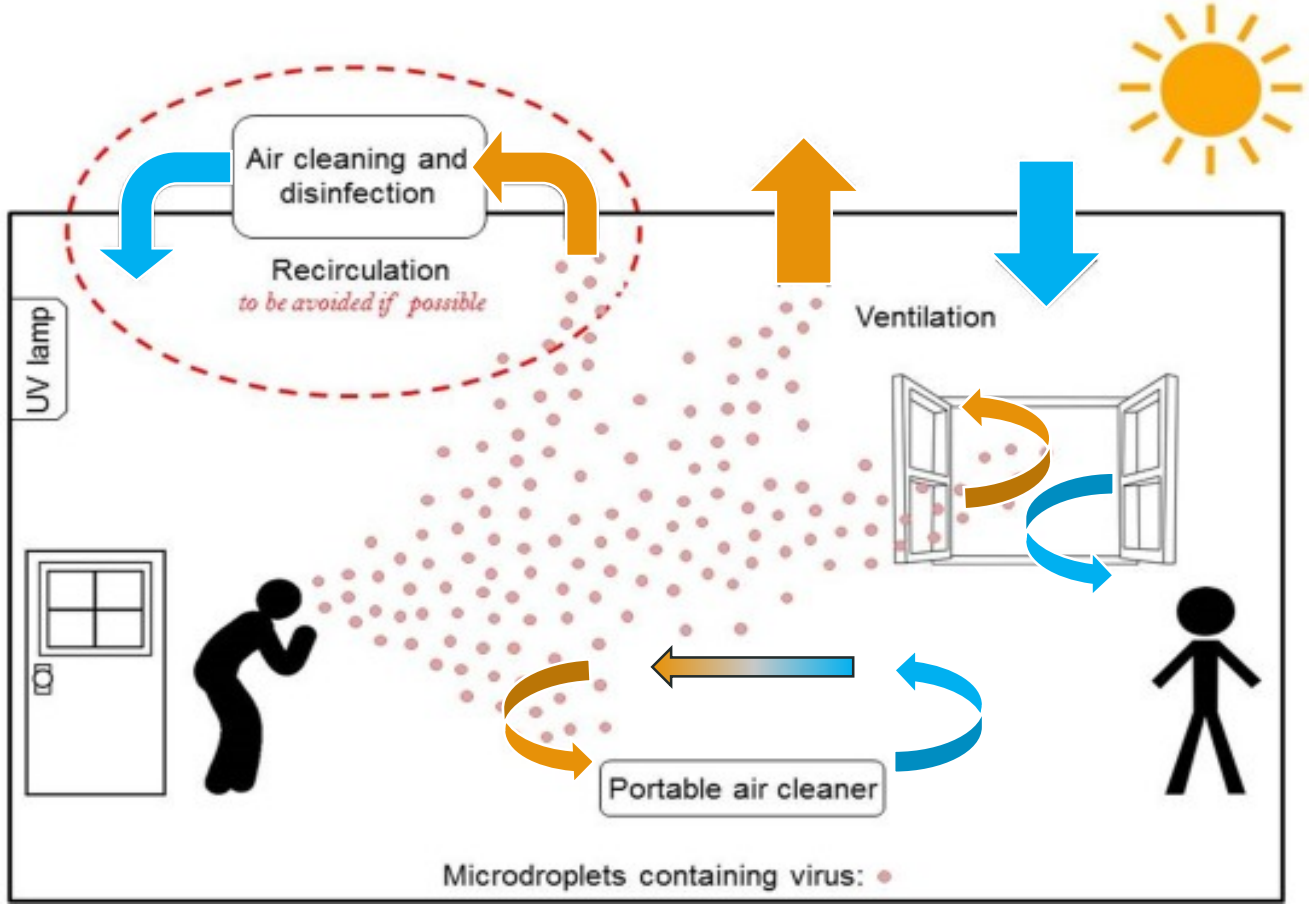
Communicate the Importance of Good Ventilation

Communicate how to get more clean, fresh air.

There are two basic ways to get more clean air:

- Increase outside air through HVAC ventilation system or opening windows
- Clean the air with filters and air purification systems.



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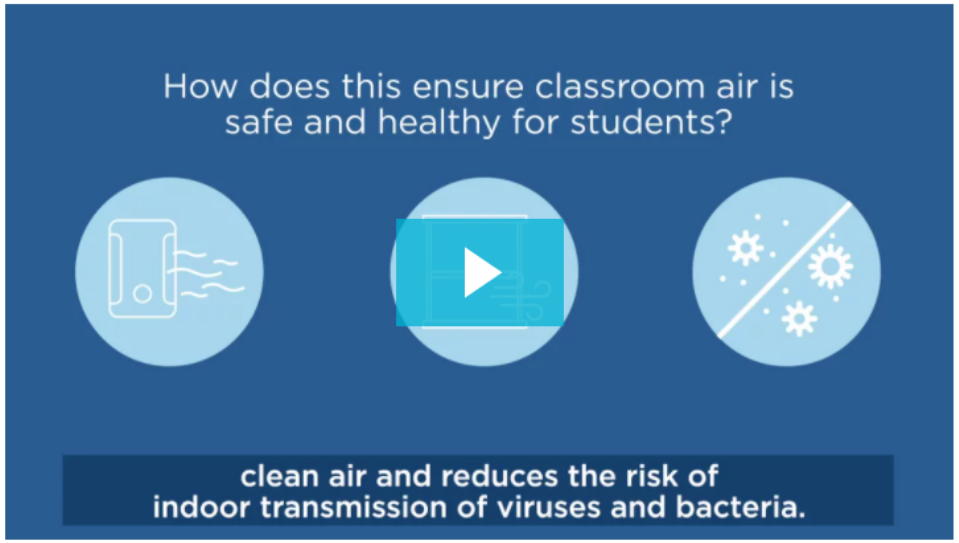
Communicate What Your School Has Done to Provide Enough Clean, Fresh Air

Ventilation and Indoor Air Quality Assessment

As we have committed to you and your family throughout our response to COVID-19, the health and wellness of our school communities is paramount.

To ensure school buildings are prepared for a return to in-person instruction, we worked to ensure every classroom has a working window or a mechanical ventilation system to dilute air particles that may have viruses or bacteria and allow old air to move out of the classroom.

We also hired independent state-certified environmental specialists to conduct indoor air quality assessments.



From Chicago Public Schools

Ventilation Assessment

Every classroom will have a functioning ventilation system. Any classroom that does not have a functional ventilation system will be repaired before students and staff can return.

For a classroom to be ready for students and staff, it must have either:

- An operating mechanical ventilation system including both an air supply and exhaust; or
- At least one operating window and a HEPA air purifier, which the district is providing for all classrooms as part of an $8.5 million investment.

SEARCH FOR YOUR SCHOOL'S VENTILATION AND INDOOR AIR QUALITY REPORT

ENTER SCHOOL NAME

Communicate That You Have Enough Fresh Air

Example Messaging: We’ve got enough fresh air in our building!

Experts suggest that ventilation is adequate if **CO_2 levels are below 800 ppm**.

We've measured CO_2 levels in each classroom in our building when students are present. The good news: All rooms are between 600 and 800 ppm! This suggests that our ventilation systems are working effectively to remove virus particles from our classrooms.

Ventilation is keeping our students and teachers safe and healthy!

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Communicate That You Have Enough Fresh Air

Example Messaging: Ventilation Monitoring

Good ventilation greatly reduces the risk of virus transmission.

Did you know that our school performs weekly checks to see if we have enough ventilation in our classrooms?

We do this by measuring CO_2 levels and increasing fresh air as needed.

Check out our CO_2 classroom dashboard!

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Tip 3: Communicate the Long-Term Health Benefits of the Measures You are Implementing.

Are we being overly cautious with these building measures? We don't think so!

Research has shown that increasing ventilation rates and improving filtration brings the following benefits:

- Fewer sick days
- Increased productivity
- Better sleep
- Improved cognition
- Happier students

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Panel Discussion

What tips do you have to communicate **why** the mitigation measures are necessary?

What tips do you have to communicate the positive impact of the mitigation measures?

Wrap-Up

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Poll #2 – Post-training check

Which is the optimal location for taking a CO_2 reading?

1. Desk level away from occupants
2. Next to a supply diffuser
3. Next to an open window
4. Center of the room

What is the minimum target air change rate for fresh outdoor air?

1. 3 ACH
2. 4 ACH
3. 6 ACH
4. 10 ACH

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Poll #2 – post-training check

Which is a good metric for communicating building safety measures to staff, students and communities?

1. School dashboard indicating infected and quarantined counts
2. Weekly newsletter reporting mitigation efforts
3. Links to air quality reports for schools
4. Reporting estimated risk of transmission pre- and post-preparation of facilities for COVID
5. All the above

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Summary

Recommended Process

1. Gather data
2. Make a plan to implement and fund building measures
3. Communicate results

Summary

What solutions should you focus on?

Masks give you the most bang for the buck, followed by social distancing and hygiene measures.

Beyond that, focus on **Ventilation & Filtration.**

Ventilation and Filtration improvements:

- Are fundable
- Are measurable
- Have communicable results
- Have long-term benefits

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Learn more: COVID-19 Resources

- SEDAC Covid-19 Resources - https://smartenergy.illinois.edu/covid-19-resources/
- University of Illinois COVID-19 Toolkit – questionnaire to help develop checklists and plan for implementation https://shield-k12-playbook.ncsa.illinois.edu/
- CDC - https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html
- Illinois Dept. of Public Health - https://www.dph.illinois.gov/covid19/community-guidance/school-guidance
- IL State Board of Education - https://www.isbe.net/Pages/covid19.aspx

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Questions and Survey

Do you have a question about building strategies to reduce virus transmission? Ask our building engineers!

During the Q&A, **please take 5 minutes to complete our survey** by scanning this QR Code:

A link to the survey is provided in the chat box as well.

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Need Assistance?
Contact us

sedac-info@illinois.edu
800-214-7954