Board of Health Meeting
July 13, 2022
4:00 pm

AGENDA

1. Chairperson's Remarks
2. Indoor Air Quality and Ventilation in Boston Public Schools
3. Executive Office Report
4. Acceptance and Approval of Minutes from the June 8th Meeting
5. COVID-19 Update
6. Monkeypox Update
7. Adjourn

Indoor Air Quality and Ventilation in Boston Public Schools

Boston Public Schools

Indoor Air Quality & Ventilation Strategies

July 13, 2022

Brian Forde, Jr.
Executive Director, Facilities Management
Katherine H. Walsh
Sustainability, Energy, & Environment Program Director

BOSTON Public Schools

The oldest public school system in the United States.

School Year 2021–2022

- 121 schools
- 49,261 students
- 10,000+ staff

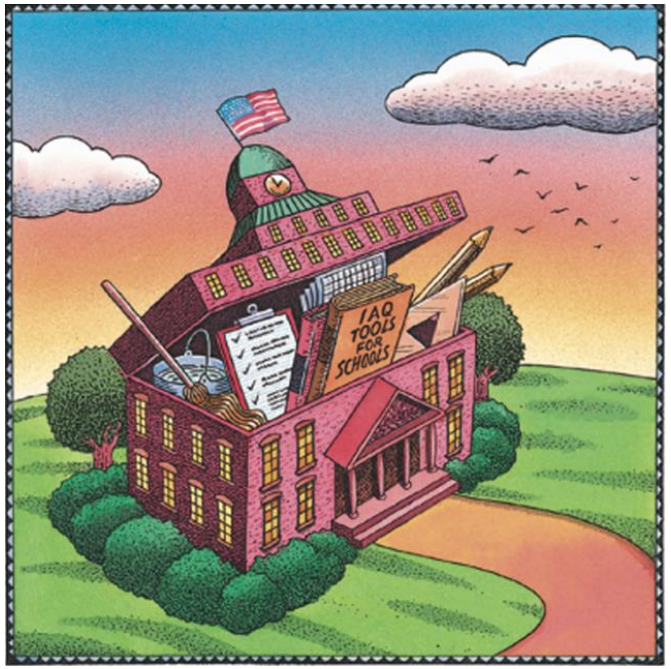
132 buildings

- 59% of built before 1950
- 73% built before 1970

STATUS OF BPS HVAC

- 35 school sites have **Central HVAC** as their primary source of ventilation.
  - 25 do not have operable windows
  - 10 have operable windows
- 96 school sites have **Operable Windows** as their primary source of ventilation.
  - 47 have supplementary/limited mechanical ventilation
  - 49 have no mechanical ventilation

BPS INDOOR AIR QUALITY MANAGEMENT PROGRAM



U.S. EPA's IAQ Tools for Schools

Indoor Air Quality (IAQ) is very important to Boston Public Schools.

> "Good IAQ contributes to a favorable environment for students, performance of teachers and staff, and a sense of comfort, health and well-being. These elements combine to assist a school in its core mission — educating children."
> — U.S. EPA

BPS follows guidance from the **U.S. EPA's "*IAQ Tools for Schools*"** program and implements a **layered risk reduction approach** to its Indoor Air Quality Management program.

The *IAQ Tools for Schools* definition of good indoor air quality management includes:

- Control of airborne pollutants;
- Introduction and distribution of adequate outdoor air; and
- Maintenance of acceptable temperature and relative humidity.

BPS INDOOR AIR QUALITY MANAGEMENT PROGRAM - A LAYERED RISK REDUCTION APPROACH

- Annual School Environmental Audits
  - One conducted by the BPS Environmental Division
  - One conducted by the Boston Public Health Commission
- Preventative Maintenance and Repairs of Buildings
- Operations, Maintenance, Repairs of HVAC Equipment and Systems
- Indoor Air Quality Monitoring and Reporting
  - Indoor Air Quality Sensors and Online Dashboard
- Temperature Monitoring and Control
- Mold and Moisture Control
- Integrated Pest Management (IPM)
- Cleaning
- Chemical Management
- Waste Management
- Anti-Idling
- Tobacco and Nicotine-Free Environment Policy

COVID-19 INDOOR AIR QUALITY & VENTILATION TIMELINE

2020 — March - August

HVAC preventative maintenance and adjustments ongoing; 12,000 filters replaced

Inspection of 27,000 windows underway

2020 — July - August

Receipt of COVID-19 guidance for schools from CDC, DESE, ASHRAE, etc. BPS creates compliance documents.

2020 — September

Indoor Air Quality Testing of School Buildings and release of results

Distribution of 6,437 Fans

2020 — October

Indoor Air Quality Testing of Admin Buildings and release of results

Annual School Environmental Audits commence

2020 — November

Air Exchange Testing of High In Person Priority (HIPP) Schools and release of results

2020 — December

Distribution of 5,164 HEPA Air Purifiers

RFP for Indoor Air Quality Sensors

2021 — February - March

Air Exchange Testing of Remaining Schools

Installations of 4,327 MERV-13 filters completed

2021 — April

Release of ACH Testing results

Needed repairs on 12,500 windows completed

2021 — June

Annual School Environmental Audits completed

2021 — June - August

All HVAC and air purifier filters replaced

2021-2022 — July - March

Implementation of Indoor Air Quality Sensors Initiative

Ongoing analysis of data and responding to elevated levels.

2022 — Future

Expand mechanical ventilation across more schools

BPS has purchased 7500 Medify MA-40 air purifiers for the district. An air purifier is a device that removes contaminants from the air in a room in order to improve indoor air quality.

These air purifiers are installed in spaces where students and staff congregate to reduce particles borne from respiration, a key to slowing the spread of Covid-19.

The air purifier is essentially a motor with a fan that draws the room's air into the unit and forces that air through different filtration layers. The filtered, purified air is then dispersed back into the room, repeating that cycle continuously in order to improve the indoor air quality. These units are specifically designed to capture and reduce ultrafine particles in the air, including airborne virus particles, mold, and bacteria. To supplement the work of the air purifiers, BPS recommends opening windows 2 - 4 inches to increase air circulation, and keeping doors open.

The Medify Air MA-40 uses three levels of filtration.

1. The pre-filter removes hair, fibers, and large particles like dander.
2. The high-efficiency H13 TRUE HEPA filter removes 99.9% of particles down to 0.1 microns. This medical-grade filter easily catches pollen, dust mites, and other tiny airborne particles you can't see.
3. The substantial carbon filter with carbon pellets removes toxic odors, smoke, and formaldehyde.
4. The units clean an area of 850sq ft every 30 minutes.
5. These units increase air exchange rates from between two and two and a half air exchanges per hour.

Filters will be changed by BPS every 6 months.

How to Use:

1. Unbox the unit.
2. Remove all styrofoam and plastic film from unit.
3. Open back panel. Remove plastic film from filter. Reattach filter and back panel.
4. To ensure proper air circulations, leave at least 10 inches space between wall or furniture and the unit's back air intake.
5. Place the unit in a dry location on a smooth, flat surface.
6. Plug-in the air purifier. Turn on.

BOSTON Public Schools

CLASSROOM STRATEGIES FOR ACHIEVING OPTIMAL ACH

- Leave on the existing mechanical system (if applicable)
- Open one operable window to 4 inches (if applicable)
- Open one corridor-facing door
- Turn on one air purifier

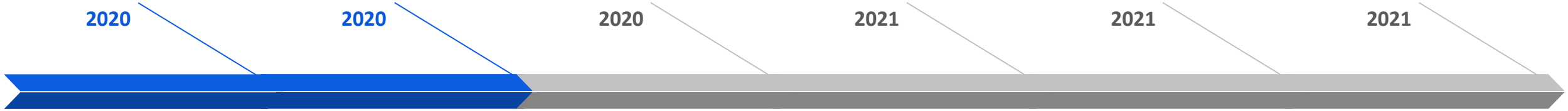
INDOOR AIR QUALITY MONITORING INITIATIVE

Why install Indoor Air Quality Sensors?

Monitoring & Reporting Risk Reduction Layer

- Collect, monitor, measure, and evaluate indoor air quality data in order to take appropriate action and make improvements.
    - Carbon dioxide levels are used as an indicator of adequate ventilation and air exchange rates.
- Communicate and educate about indoor air quality measures.
- Develop community agency, collaboration, and trust around BPS schools' environmental health.

INDOOR AIR QUALITY MONITORING INITIATIVE TIMELINE



2020

August

Conducted market research.

2020

September

IAQ Sensor and Monitoring Proposal made to Supt. Dr. Brenda Cassellius and Mayor Martin J. Walsh.

2020

December

Request for Proposals published.

2021

March

RFP contract awarded.

2021

April - June

Installation planning, preparation, and training with vendor.

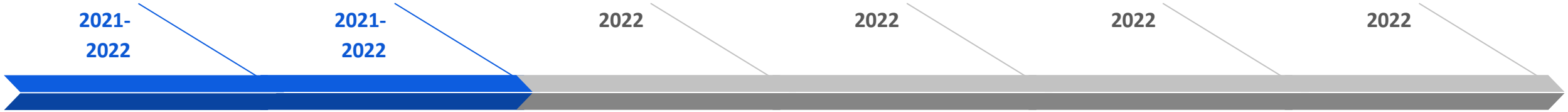
Sourcing of materials.

2021

July - November

Installation of classroom sensors.

Ongoing analysis of data and responding to elevated levels begins.



2021-2022

October - January

Design of public dashboard and user guide.

Development of accompanying IAQ and Ventilation Plan.

2021-2022

October - February

Installation of sensors in Main Offices and Nurses' Office, and any missed classrooms.

Installation of rooftop sensors for outdoor air quality baseline.

2022

March - May

Investigation and fixing of calibration, connectivity, and power issues.

2022

June - August

Annual calibration of all sensors.

Ongoing analysis of data and responding to elevated levels.

2022

August - Beyond

Use data to advocate for investments in mechanical ventilation across all BPS schools.

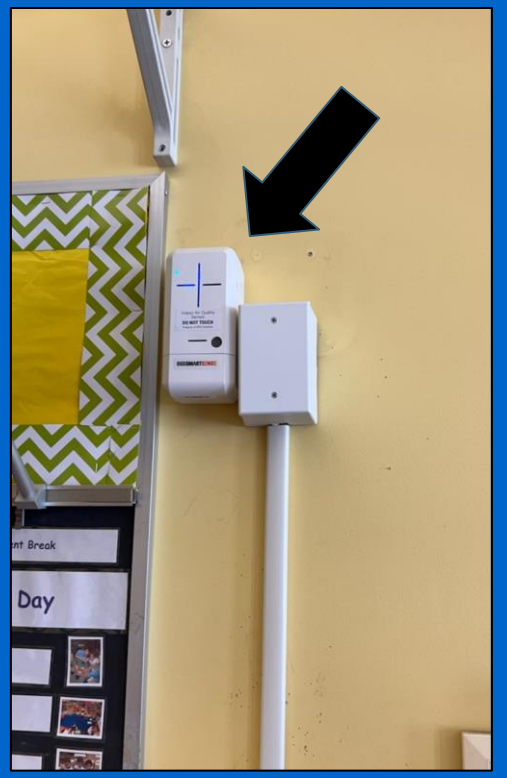
INDOOR AIR QUALITY MONITORING INITIATIVE

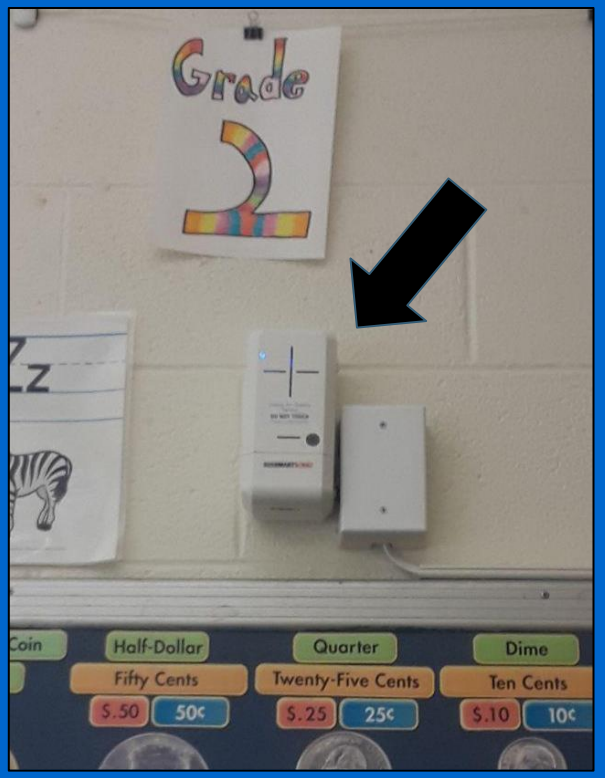
The sensor records the following IAQ measures:

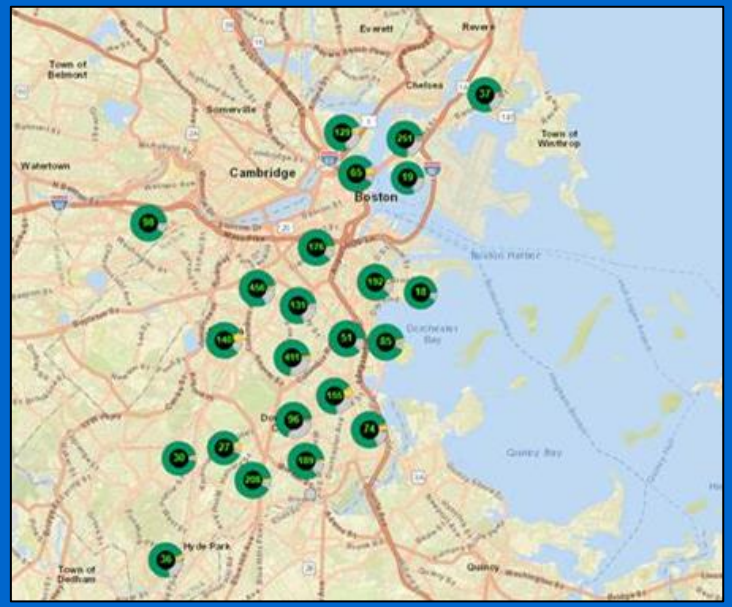
- Carbon Dioxide (CO_2)
- Carbon Monoxide (CO)
- Airborne particulates - Total (PM_{10})
- Airborne Particulates - Respirable ($PM_{2.5}$)
- Temperature (T)
- Relative Humidity (RH%)

The sensor is the vendor's Smart Sensor with:

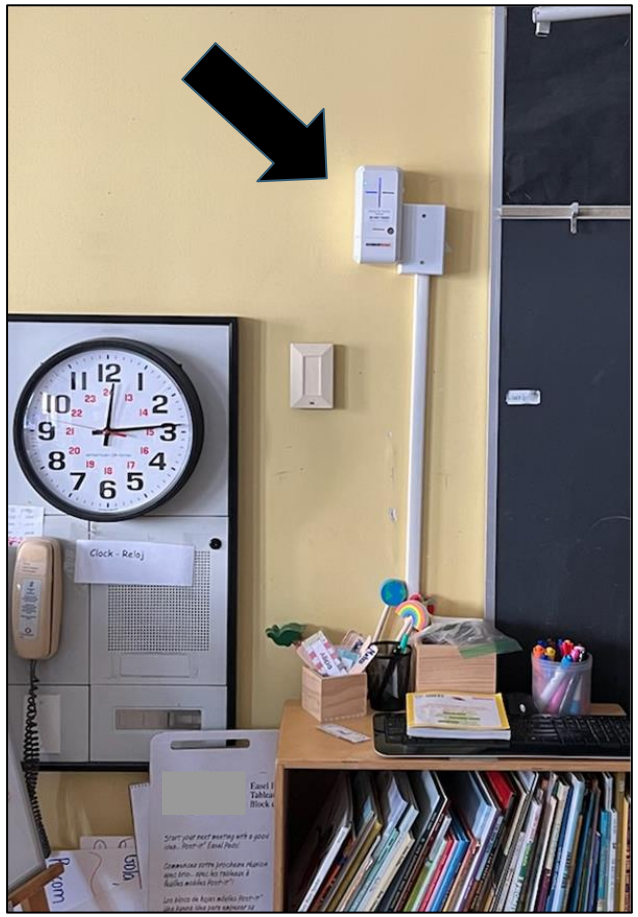
- CO_2 – Alphasense IR sensor
- CO – Alphasense Electrochemical sensor
- PM – TERA NEXT sensor
- T and RH% – TE Connectivity Module



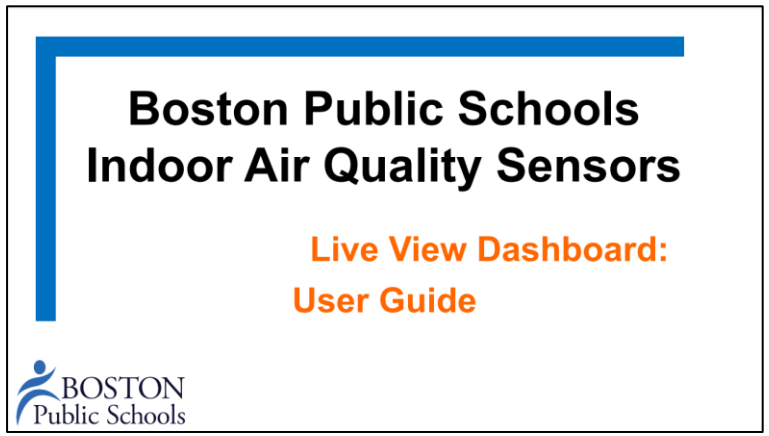


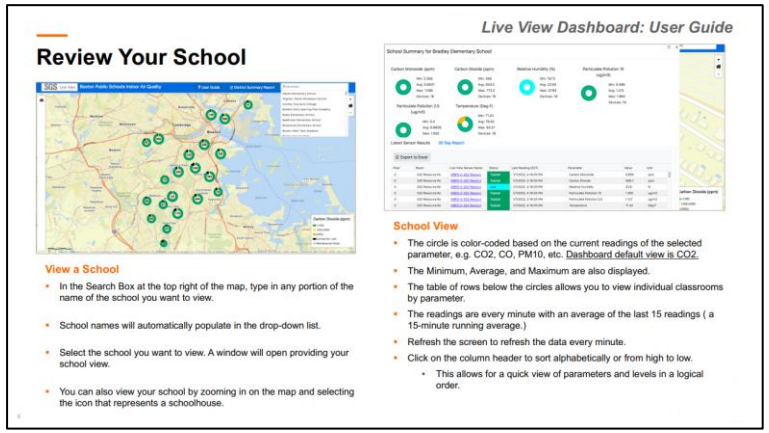


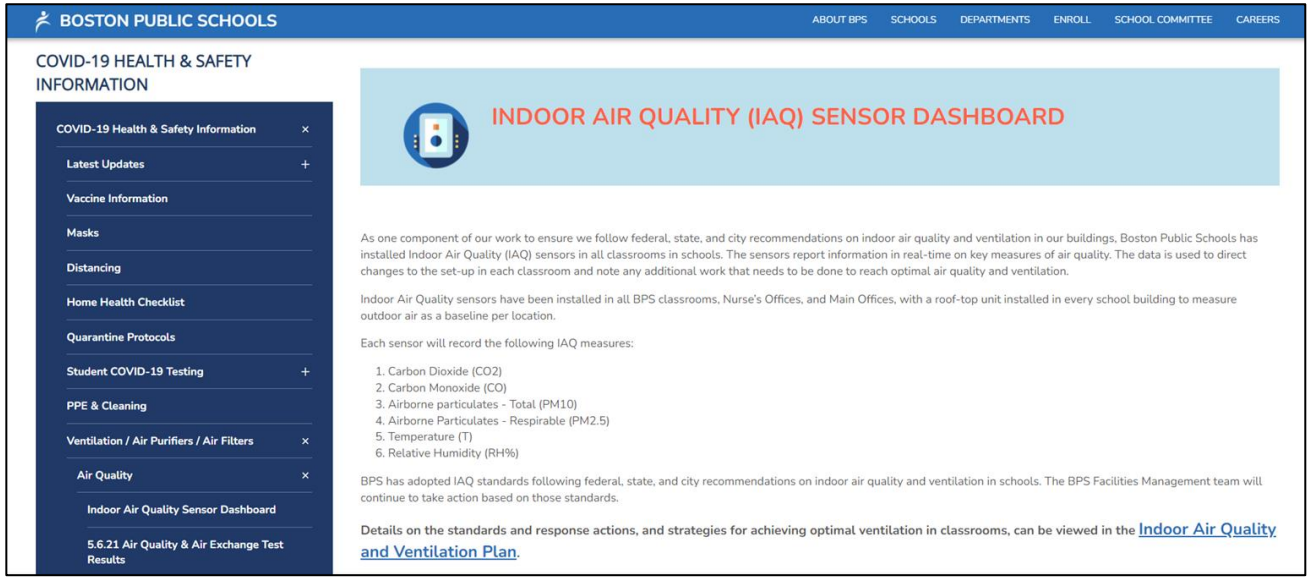
INDOOR AIR QUALITY MONITORING INITIATIVE - INSTALLATION



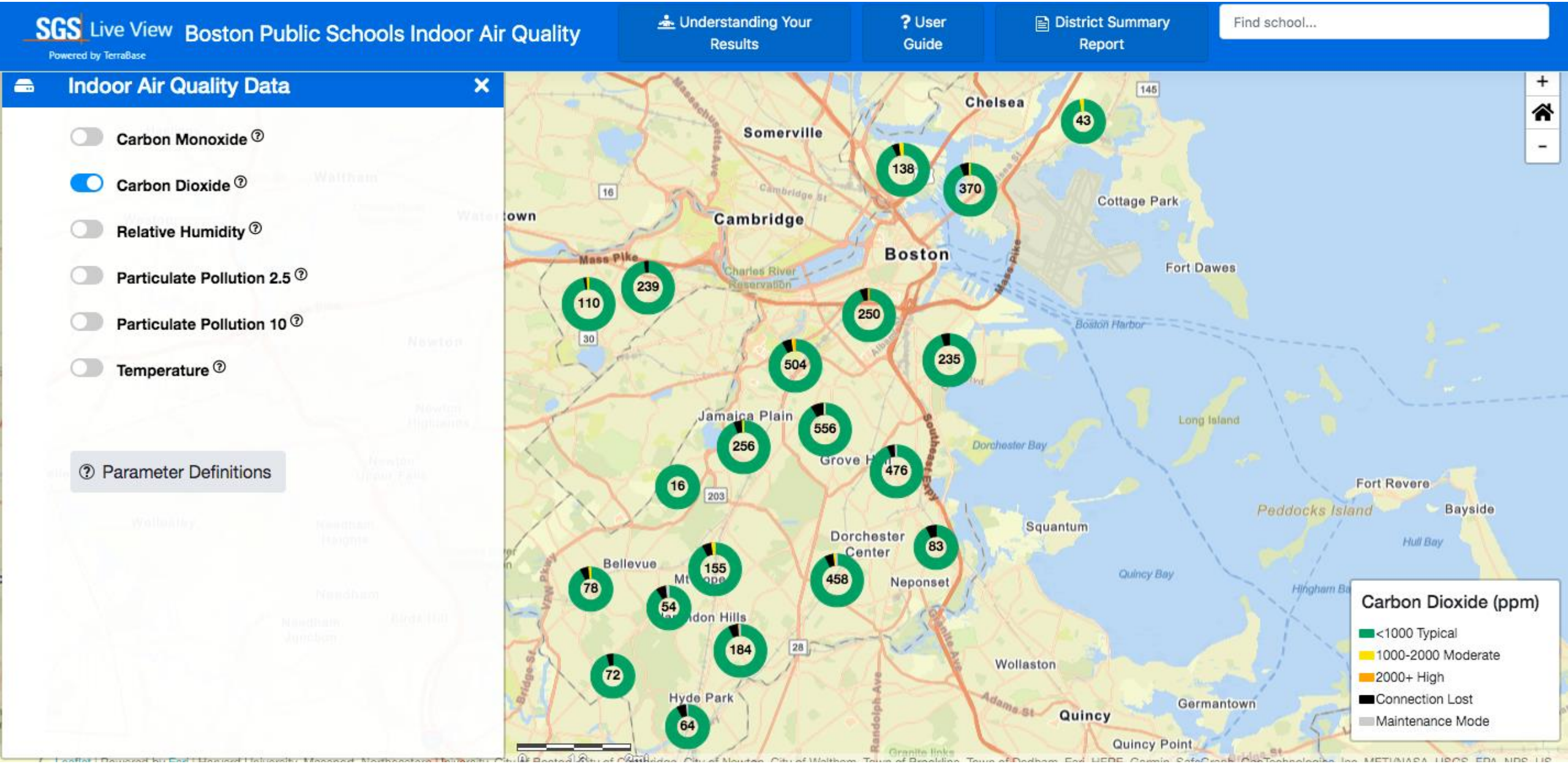
COMMUNICATIONS







- BPS Landing Page
  - COVID-19 Health & Safety Information / Indoor Air Quality Sensor Dashboard
  - Indoor Air Quality and Ventilation Plan
- Letter to School Leaders, Staff, and Families
- Launch of indoorairquality@bostonpublicschools.org
- Public Dashboard Design
  - User Guide


SGS Live View
Powered by TerraBase
Boston Public Schools Indoor Air Quality
Understanding Your Results
User Guide
District Summary Report
Find school...
Indoor Air Quality Data
Carbon Monoxide
Carbon Dioxide
Relative Humidity
Particulate Pollution 2.5
Particulate Pollution 10
Temperature
Parameter Definitions
Chelsea
Somerville
Cambridge
Boston
Cottage Park
Fort Dawes
Jamaica Plain
Grove Hall
Dorchester Center
Neponset
Bellevue
Hyde Park
Wollaston
Quincy
Germantown
Quincy Point
Squantum
Fort Revere
Bayside
Peddocks Island
Long Island
Boston Harbor
Dorchester Bay
Quincy Bay
Hull Bay
Charles River Reservation
Mass Pike
43
138
370
239
110
250
504
235
556
256
476
16
83
458
155
78
54
184
72
64
Carbon Dioxide (ppm)
<1000 Typical
1000-2000 Moderate
2000+ High
Connection Lost
Maintenance Mode

IAQ SENSORS - WHAT'S NEXT

- **Ongoing analysis of data** and **responding to elevated levels** - stay focused on the daily operations of BPS buildings and continuous improvement of BPS indoor air quality.
- Annual **calibration** of all sensors (Summer 2022).
- **Address inaccuracies** in historical data due to calibration, connectivity, and power issues.
- Where possible, connect the sensors to the existing BPS Building Management System to **automate mechanical adjustments** in correlation with indoor air quality levels.
- **Improve communications** with regards to public understanding and use of data, especially given aforementioned inaccuracies.
- Use the data to advocate for **HVAC investments** in BPS buildings.
- Long-term, the data may be used for other research ideas and partnerships related to **public health, student outcomes**, and City of Boston **air pollution and climate change studies**.
    - Recently approved for a research study with Boston University - "Understanding indoor air quality, thermal comfort, and energy use in classrooms, and the impact of SARS-CoV-2 engineering controls, a pilot study."

HVAC - WHAT'S NEXT

- Two **window AC units** are being installed in every BPS classroom in any schools that are not considered Central HVAC schools.

- Plans for a phased approach to **improving HVAC in schools**.
  - **Facilities Condition Assessment** to be completed in 2023 for efficient planning.
  - **MSBA and ARP project submissions** on schools for improving buildings and HVAC.
  - **Capital planning efforts** in coordination with City partners to improve HVAC and indoor air quality.
  - City of **Boston Green New Deal funding** to assist in planning and implementation of HVAC, utilizing our BPS Building dashboard and the Racial Equity Planning Tool.

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Executive Office Report

FY23 Budget Update:

Tim Harrington, Director of Administration and Finance

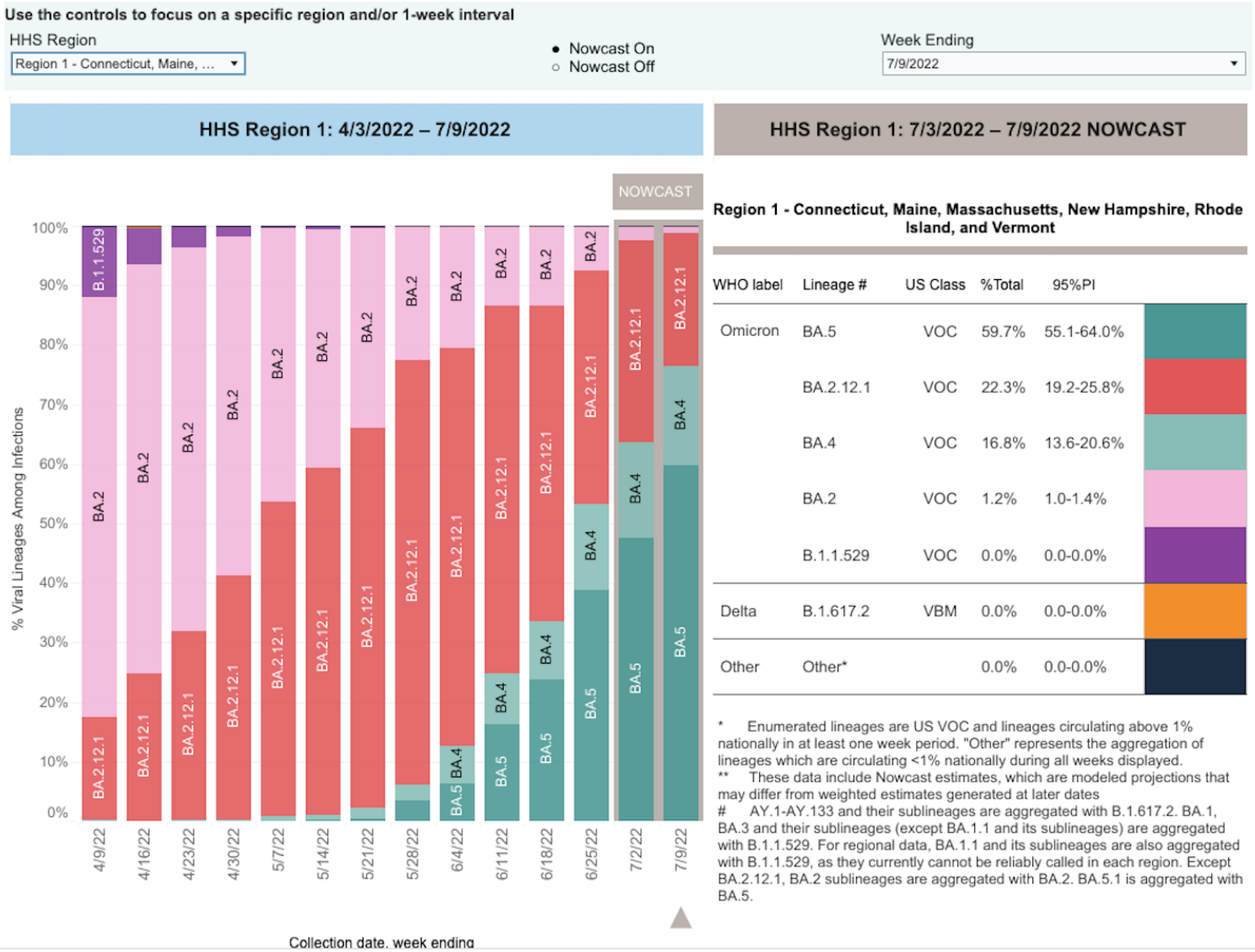
- City Council has approved our FY23 Budget in full ($117,724,076)
  - 41 New FTEs
- Request for additional $38 million in ARPA funds was also approved by the Council this afternoon
  - $20 million for the continued Covid19 response
  - $12 million to support BPHC's Office of Behavioral Health and related mental health work
  - $6 million to support substance use crisis
- Mayor's Office of Budget Management reviews progress on all new investments in the fall and spring of each fiscal year
- BPHC Finance team also meets internally with the programs at that same time to review hiring for new FTEs, vacancy counts and current spending levels
- Next budget update will be in November 2022 regarding the FY22 year end audit

Acceptance and Approval, June 8th Meeting Minutes

BOSTON PUBLIC HEALTH COMMISSION

COVID-19 Update

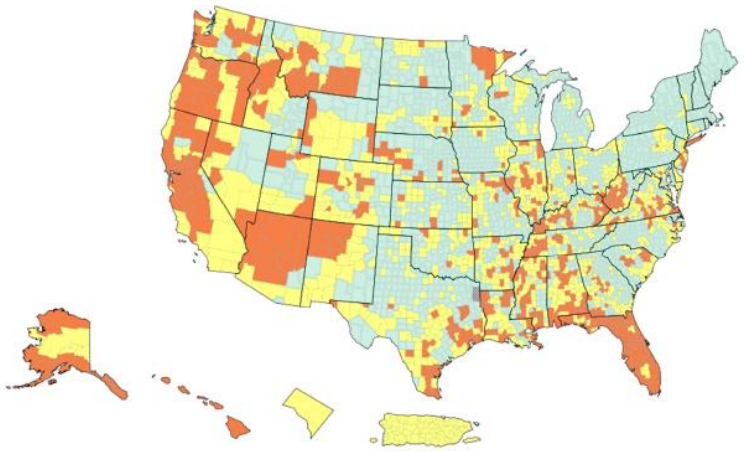
Emerging variants including BA.5 more transmissible



CDC Suffolk County Status

County-level COVID-19 Community Levels

JULY 7, 2022



Over 73% of the U.S. population is in an area with a **medium** or **high** COVID-19 Community Level.

	% of Counties	% of Pop.
Low	41.3%	26.4%
Medium	37.8%	41.6%
High	20.7%	31.9%

Percentages do not sum to 100% because of rounding.

Source: U.S. Centers for Disease Control and Prevention (CDC)

328947- FJ

COVID-19 County Check

Find community levels and prevention steps by county. Data updated weekly.

Select a Location (all fields required)

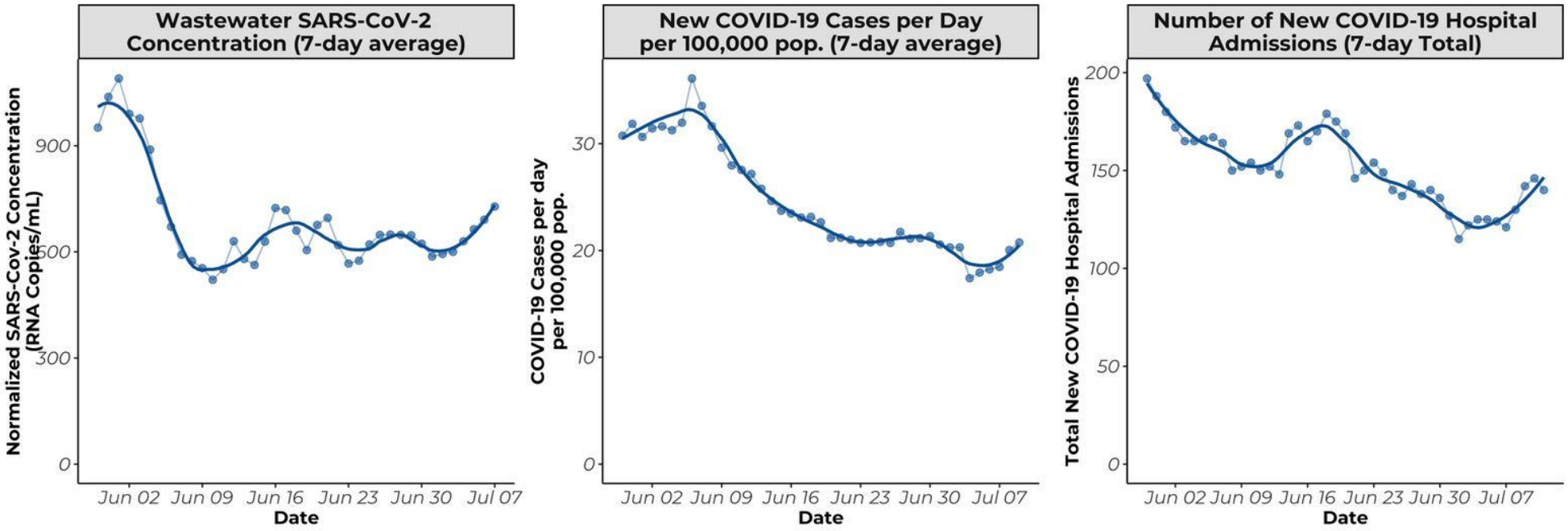
Massachusetts | Suffolk County

< Start Over

Medium

In **Suffolk County, Massachusetts**, community level is **Medium**.

Summary metrics



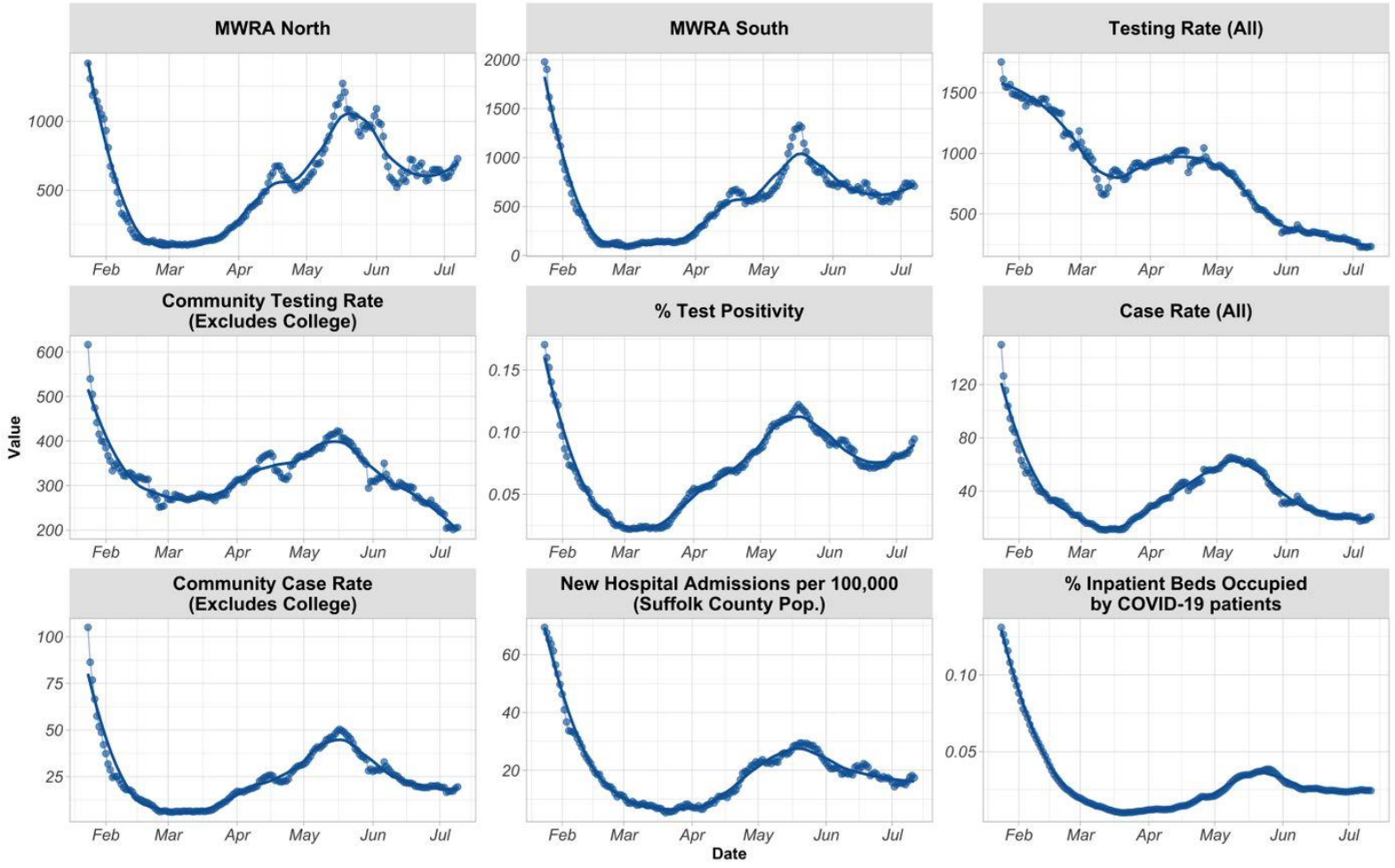
728 *RNA copies/mL*	Data through: **07-July-2022**
7-day trend **Increasing**	**+21.0%** over the past 7 days
14-day trend **Increasing**	**+13.7%** over the past 14 days

20.8 *cases per 100,000*	Data through: **09-July-2022**
7-day trend **Stable**	**+2.4%** over the past 7 days
14-day trend **Decreasing**	**-11.9%** over the past 14 days

140 *hospital adm.*	Data through: **11-July-2022**
7-day trend **Increasing**	**+18.6%** over the past 7 days
14-day trend **Stable**	**+0.6%** over the past 14 days

Updated: 12-July-2022 | **Wastewater data:** MWRA North, source: https://www.mwra.com/biobot/biobotdata.htm | **Case Data:** MDPH MAVEN | **Hospitalization Data:** MDPH data, self-reported by Boston hospitals

While wastewater remains high testing and thus cases appear to be low



Wastewater
North: 81st percentile
South: 77th percentile

Testing
1st percentile
7th lowest day since July of 2020

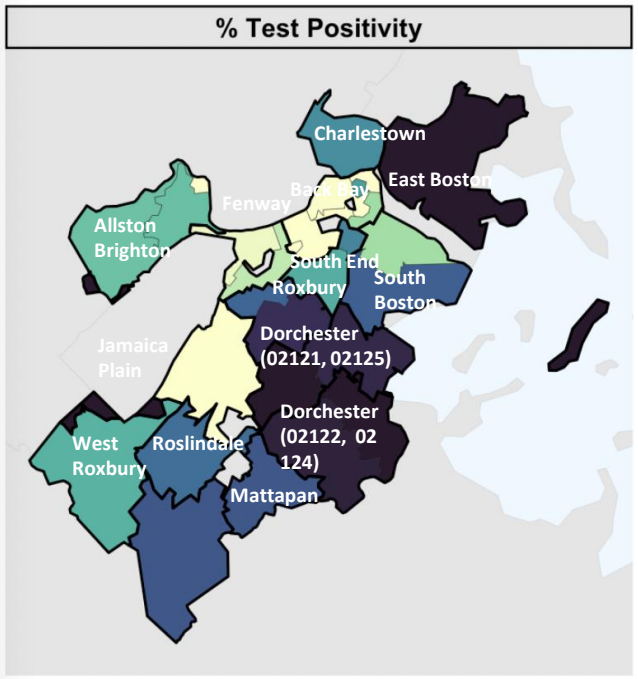
Test Positivity
90th percentile

Case rate
47th percentile

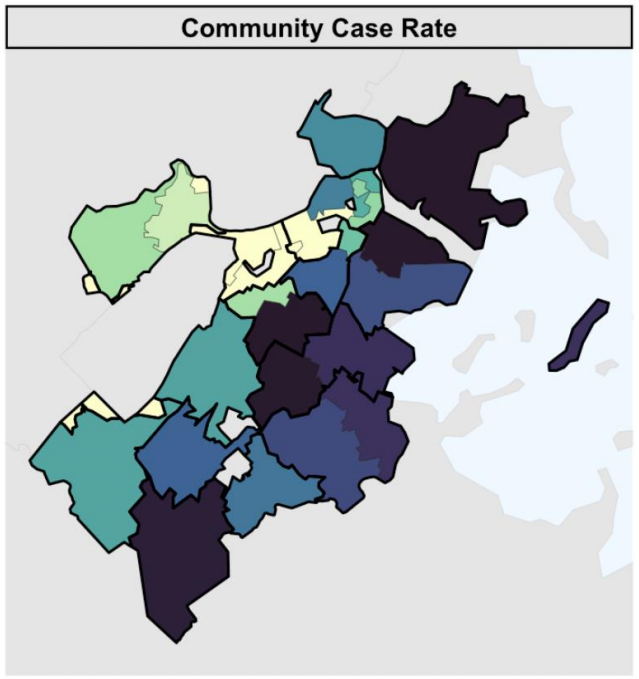
New Hospitalizations
58th percentile

% Inpatient
67th percentile

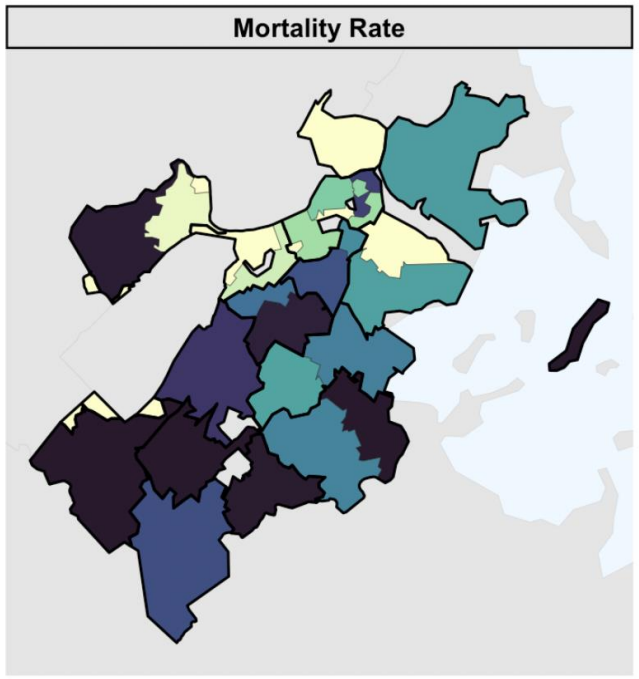
Disproportionate cases and deaths across Boston 2020-present



- Under conditions of low testing, test positivity can be a useful metric.
- High test positivity is driven by balance between high cases and low testing access and can be an indicator of COVID-19 heath inequity.
- Highest rates are in DOT, MAT, Rox and EB suggest health inequities are persisting.



- Limited to PCR testing and thus are not currently a reliable measure of community transmission.



- Highest rates are in DOT, MAT, Rox and EB suggest health inequities are persisting.
- High rates in WR and Ros related age of this population.

BOSTON PUBLIC HEALTH COMMISSION

Boston Residents with At Least 1 COVID-19 Vaccine Dose, Partially Vaccinated, Fully Vaccinated, and Boosted, Dec. 15, 2020 - July 5, 2022

	Number of Boston Residents	Percentage of Boston Total Population
At Least 1 Dose[1]	598,364	88.1%
Partially Vaccinated[2]	96,342	14.2%
Fully Vaccinated[3]	502,022	73.9%
Booster[4]	280,097	41.2%

Boston Children Ages 5-11 Years Old with at Least One Dose of COVID-19 Vaccine					
28-Jun-22		5-Jul-22		Week-to-Week Increase	
# at least one dose	% at least one dose	# at least one dose	% at least one dose	#	% Point
22,683	56.1%	22,783	56.4%	100	0.3

Monkeypox Virus (MPV) Update

BPHC's MPV public health response

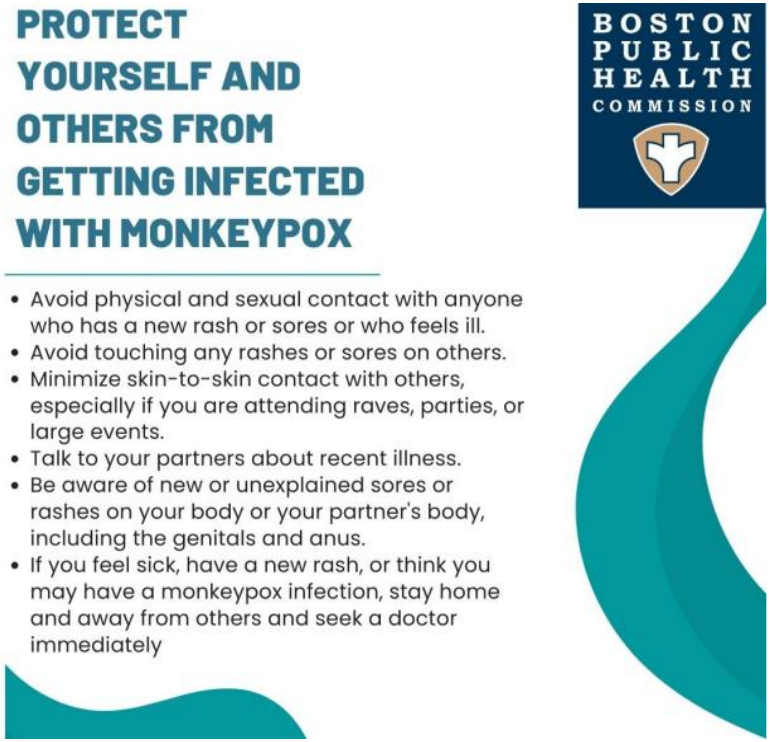
- Perform case investigations and contact tracing for Boston residents
- Provide timely, multilingual health education on MPV to our diverse Boston residents
- Engage our LGBTQ+, including Black and Latinx, communities on effective strategies to avoid stigma and raise awareness on MPV symptoms, prevention, and treatment, including vaccination
- Advocate for a non-stigmatizing public health response

BPHC's MPV public health response

- Perform case investigations and contact tracing for Boston residents
    - Daily follow up calls to infected individuals to gauge symptom and rash improvement, clear from isolation (~7-14 days)
    - Daily calls to contacts for symptom monitoring, 21 days
    - Referrals to post-exposure (PEP) vaccination for individuals at high risk in collaboration with MDPH

BPHC's MPV public health response

- Provide timely, **multilingual** health education on MPV to our Boston residents, including through infographics and earned media

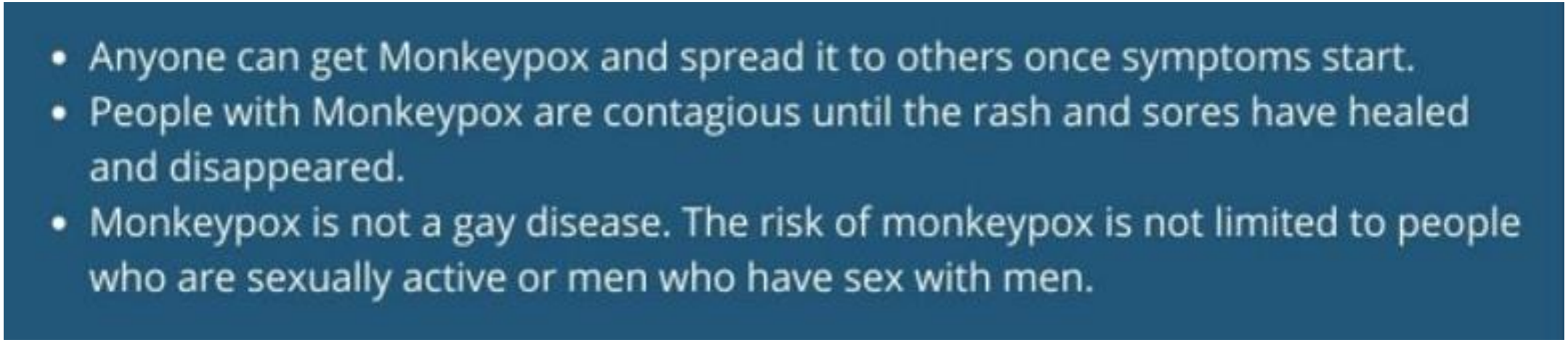


BPHC's MPV public health response

- Engage our LGBTQ+, including Black and Latinx, communities on effective strategies to avoid stigma and raise awareness on MPV symptoms, prevention, and treatment, including vaccination
    - Community provider meetings
        - Info session IDB CBOs, 6/28/22 (past)
        - Info session for CBOs (Spanish) - 7/19/22 (scheduled)
        - Info session for LGBTQ+ bars and venues (TBD)
    - Communications and social media strategies
        - LGBTQ+ dating apps
        - Infographics on social media
        - Engage bars and venues on ideas for materials (ex. coasters!)

BPHC's MPV public health response

- Advocate for a **non-stigmatizing** public health response
  - Press release 6/27/22
  - Engaging with our partners and residents on strategies to reduce stigma
    - Language on modes of transmission, nomenclature
    - Raising awareness of current epidemiology while naming that this is **not** a gay disease



BPHC's MPV public health response

Acknowledgements

- IDB
- OPHP
- Communications and Media Relations
- EO
- CIB and Mayor's Health Line
- MDPH

Questions?

Discussion