

# Addressing Air Quality Concerns for Nashville Residents Living in Public Housing

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## Background

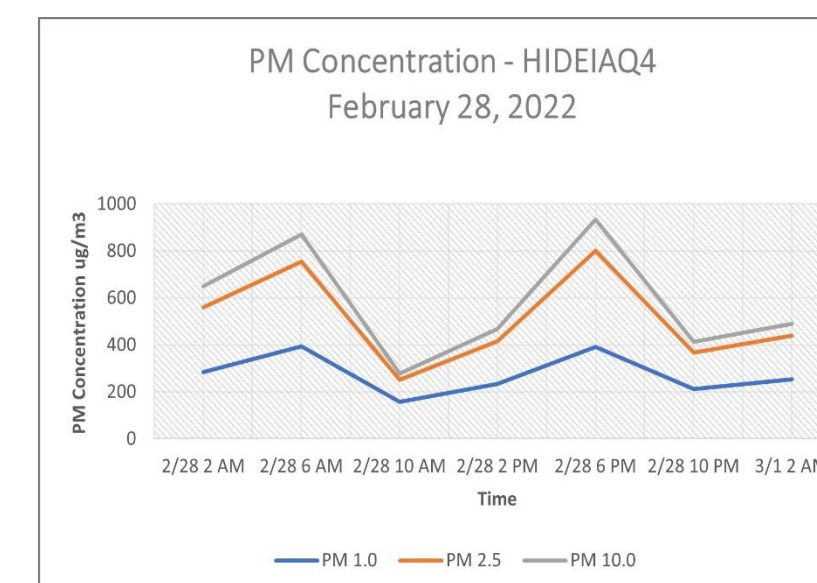
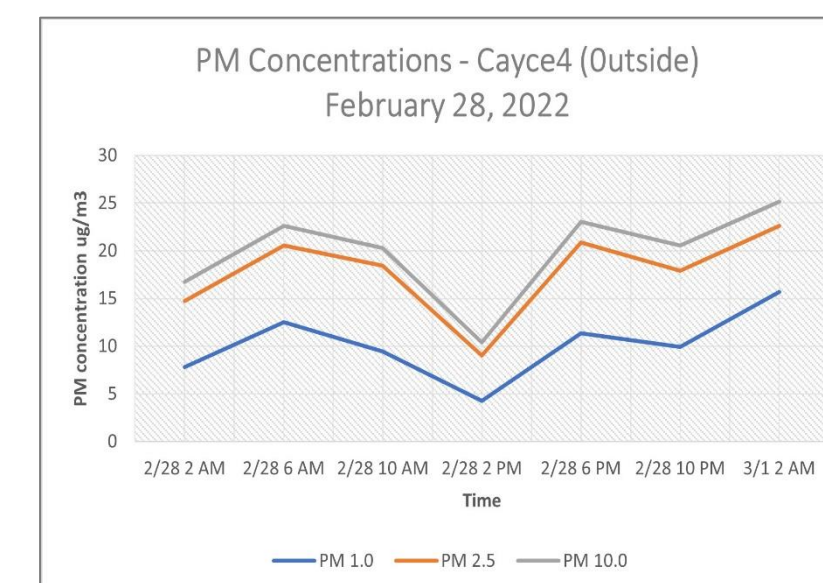
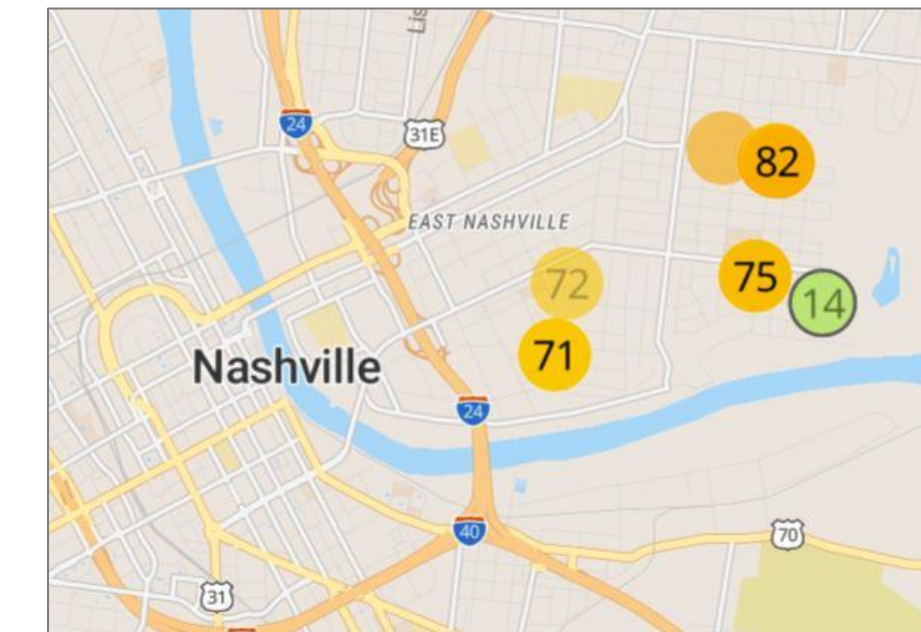
The Cayce Homes development is a majority-black neighborhood that is Nashville's largest subsidized housing property. The neighborhood has been shown to have extremely high rates of asthma, with residents also vulnerable to older housing, neglected maintenance, and nearby industry. The Metropolitan Development & Housing Agency's (MDHA) *Envision Cayce* initiative is also currently subjecting residents to increased construction activity as the neighborhood is redeveloped. These factors overwhelmingly suggest the need for accurate air quality monitoring within the neighborhood, as well as educating residents on air quality and healthy housing issues.

## Objectives

- ✓ Quantitatively monitor air quality to better understand pollutant characteristics and patterns
- ✓ Provide residents with knowledge and tools to better navigate air quality issues
- ✓ Establish a program that will raise awareness and get residents to consider air quality in their daily routines
- ✓ Examine ways for under-resourced public housing communities to deal with environmental health concerns

## Methods




*PurpleAir* hyper-local, community-focused air sensors were installed at the homes of volunteers in the Cayce neighborhood. Six outdoor monitors and 4 indoor monitors were connected to *PurpleAir's* real-time, publicly accessible map.



Pollutant concentrations were monitored with a focus on Particulate Matter (PM). Readings could be examined along with qualitative information such as weather, construction activity, and indoor resident routines.

Workshops were held to provide participating residents with further air quality/healthy homes information. Healthier domestic products were provided to attendees such as safer kitchenware, cleaning products, and cosmetics.

An Air Quality Index (AQI) flag program was established to provide residents with a visual representation of each day's air quality.

	US AQI Level	PM2.5 (µg/m³)
	Good 0-50	0-12.0
	Moderate 51-100	12.1-35.4
	Unhealthy for Sensitive Groups 101-150	35.5-55.4
	Unhealthy 151-200	55.5-150.4
	Very Unhealthy 201-300	150.5-250.4
	Hazardous 301+	250.5+

## Outcomes

- ✓ Through 3 workshops with 20+ plus participants and an AQI Flag kickoff event with 80+ attendees, the community is now more aware of air quality issues and more likely to stay engaged.
- ✓ Many residents are now using health-minded routines in the home with safer products.
- ✓ Installed monitors will provide ongoing pollutant data. Over 13 months of data have been captured on some monitors.
- ✓ Flag program will remind residents to consider air quality in planning activities.

## Discussion

Cayce's original buildings date back to the 1940's and 50's. Gas stoves, old HVAC systems, lack of windows, few bathrooms, and mold are a few issues residents face. The *Envision Cayce* plan will eventually phase out this older housing, but air quality issues may increase in the meantime. The neighborhood is also located close to a highway, a mulching plant, and a light industrial corridor. Residents have expressed frustration with air quality due to smells, construction, and plant activity.

The workshops and air monitoring initiatives have given residents a chance to engage with the issue and learn more about steps they can take. Workshops touched on how to interpret the AQI; safer ways to cook & clean; how to better ventilate/purify air in homes; and much more. Participants with indoor monitors were able to see how stove-top cooking and using certain cleaners produced irritants. This experience will help them better protect their families.

## Takeaways

This project revealed the uphill battle urban, public housing residents face in terms of environmental health. Through outreach, education, and data collection, residents were able to get a better handle on how to navigate air quality issues. Low-cost, citizen-scientist driven projects may be effective in highlighting and combatting similar environmental health concerns.