# SJEQ-D Study Summary for Cohorts 1, 2 & 3

The Social Justice and Environmental Quality – Denver (SJEQ-D) study is working to improve indoor air quality in the Denver communities of Globeville, Elyria-Swansea, Cole, and Clayton. Thank you to the **88 community scientists** from Cohort 1 in winter 2022, the **97 participants** from Cohort 2 in summer 2022, and the **71 participants** from Cohort 3 in Fall 2022!
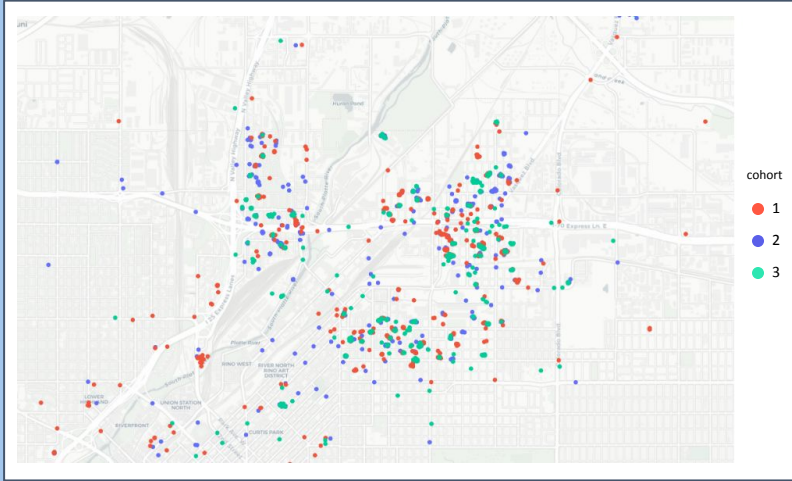
Residents have been submitting answers about daily activities and health/wellbeing through PUREmotion, a smartphone app. This map shows where users have been submitting their entries, which helps our research team understand the effects of air quality both in the neighborhoods of study as well as in comparison to other parts of the Denver Metro area.

Participants have submitted around **2,000 entries per cohort** in PUREmotion! Satisfaction with the environmental quality (0 Dissatisfied - 4 Fully satisfied) is summarized below:

Env. Quality	Cohort 1	Cohort 2	Cohort 3
Air	2.37	2.19	2.61
Odor	2.45	2.31	2.70
Noise	2.45	2.17	2.59

- Car is the most popular transportation choice, followed by walking
- Dustiness was the top reported air quality concern
- Users reported more allergy symptoms during summer than winter

| Emotion	Cohort 1	Cohort 2	Cohort 3
Happy	2.89	2.86	2.76
Irritable	0.85	0.91	0.92
Distressed	0.96	1.01	1.03
Alert/Awake	2.52	2.49	2.47
Lonely	0.84	0.76	0.77

Emotional Index

The table on the left represents the average answer to each emotion reported within the PUREmotion app for each cohort (on a scale where **0** is not at all and **4** is completely). Looking at this information about emotions across different cohorts alongside the reported experiences of construction disruption will help us analyze whether there are any impacts on wellbeing.

# Compare Air Quality from Neighborhood Sensors to Community Scientist Study Data

PM is particulate matter – solid particles found in the air such as dust, dirt, soot and smoke. PM2.5 is a concern because these small particles are easily inhaled and cause health problems. The Environmental Protection Agency's 1-year average concentration standard is 12 ug/m^3 and the 24-hour average concentration standard is 35 ug/m^3. The plots below show the 24-hour average PM2.5 concentration from the Colorado Department of Public Health and Environment's (CDPHE) air monitoring site at I-25 in Globeville during Cohorts 1 & 2. The EPA 24-hour standard was not exceeded. Also:

- In January-February 2022, ten days exceeded the 1-year standard of 12 ug/m^3.
- In May-June 2022, only one day exceeded the 1-year standard of 12 ug/m^3.
- In October-November 2022, three days exceeded the 1-year standard of 12 ug/m^3.

Cohort 3, Average Daily PM2.5 of CDPHE Globeville-I25 Site
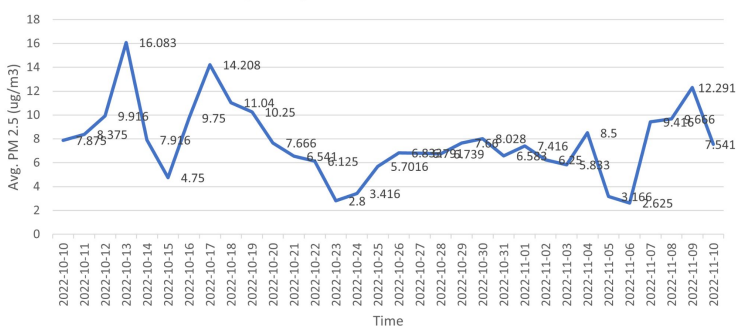
Average Daily PM2.5 Exposure for all Cohort 3 Participants
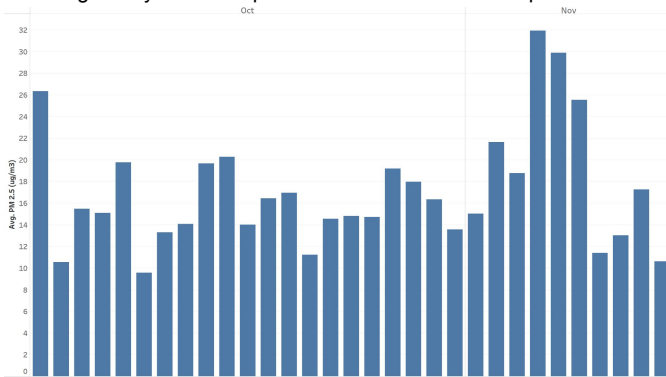
Cohort 1, 2, and 3 Exposure Data from Community Scientists: Average 24-hour PM2.5

This plot shows the 24-hour average PM2.5 for all Atmotube personal exposure data collected by study participants during cohorts 1, 2, and 3. The x-axis shows each day of the month and the y-axis show the average PM 2.5 concentration measured by the Atmotubes. As the plots show the average PM2.5 is lower during cohort 2 and 3 compared to cohort 1.

Average daily PM2.5 for all participants for cohort 1, 2, and 3

https://www.sjeqdenver.com