

Particulate Matter in Fruitvale Village, Oakland, California

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Introduction

Particulate matter are basically small particles that are usually the by-products of traffic, factories, construction, smoking and burning, that is carried by the general movement of cars and people. Asthma and bronchitis can be created from high concentration of PM and since everyone has lungs, everyone is vulnerable to it. The most vulnerable people are babies, kids, teens, seniors, and pregnant women, because their immune system isn't as strong as non-elderly adults. The objective of our research project was collect particulate matter counts in Fruitvale Village, located in Oakland, California, in order to access the amount of pollution in the area. The facts that this is a community area, the amount of people, heavy traffic, both pedestrian and vehicle was what made us select this area to collect data in. Data was collected from September 5th till November 14th. Fruitvale Village is a plaza near the Fruitvale Bart Station, a 5 story garage, multiple streets and intersections, and a few bus stops. It's also a community area that contains a high school, library, residential areas, and multiple store fronts. Many festivals are also held there throughout the year.



Figure 1: Locations of 13 Oakland schools

Methods

- Researched Schools: found date school was built, the location of school and picked 13 schools within the Oakland Unified School District to get a wide sample range of locations in Oakland and age of the school.
- Wrote letters to school administrators to ask permission to sample.
- Went to schools to collect samples from water fountains and sinks--5 from each school.

Sample Collection:

1. Filled 500 ml sample bottle with water.
2. Acidified samples with nitric acid solution to preserve sample.
3. Samples taken to LHS and lead dithizone method was used to determine lead

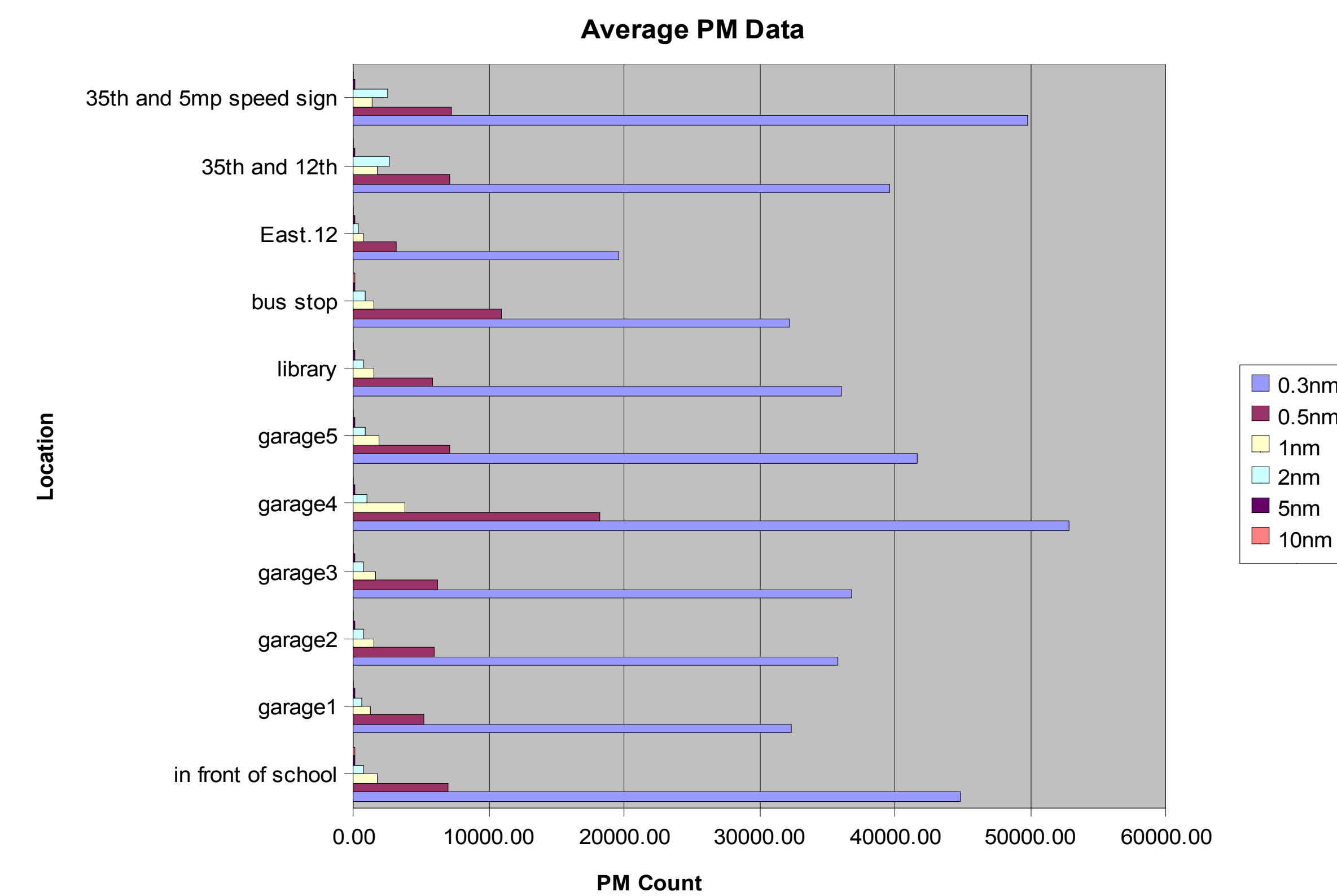


Figure 3: Research student about to measure the lead concentration

Discussion:

The smallest counts of pm are the most dangerous and effective to humans. It can enter the body through the respiratory system which enters the lungs then is sent to the heart and gets distributed throughout the bloodstream. some ailments that are caused by pm consist of back pain, asthma and premature death. Studies have shown that pregnant women can have birth defects in their offspring because pm enters through the maternal body and through the uterus to the fetus, resulting in certain disorders. High concentrations of pm can result in asthma and bronchitis which are pretty much able to affect anyone with lungs in their body. People who are the most vulnerable are babies, kids, teens, seniors, and pregnant women. Their immune systems aren't as efficient or strong as stronger and healthy adults.



Fruitvale bart station: a place with lots of movement

Results:

Our studies have shown that the data of garage 4 has more pm counts than the other sites we've sampled. We believe that the way that the parking structure has been built causes the 4th level of the garage to have less air circulation.

discuss findings in relationship to parking garage. Look at data and talk about how the numbers for parking garage level 4 are consistently higher than any other level in the parking garage. Make sure to elaborate on the architecture of the parking garage that might contribute to the different in numbers. discuss result we got for the running sample and why that might be a more accurate sample than the standing sample