

Car Emission Assessment in East Flatbush

Arias, Roxanne Cameron, Kirk Harvin, Elisha Jones, D'Asia Paterson, Alexis Pierre-Louis, Claudine Prashanth, Nair Squire, Kevin Tosin, Titilayo Williams, Natasha

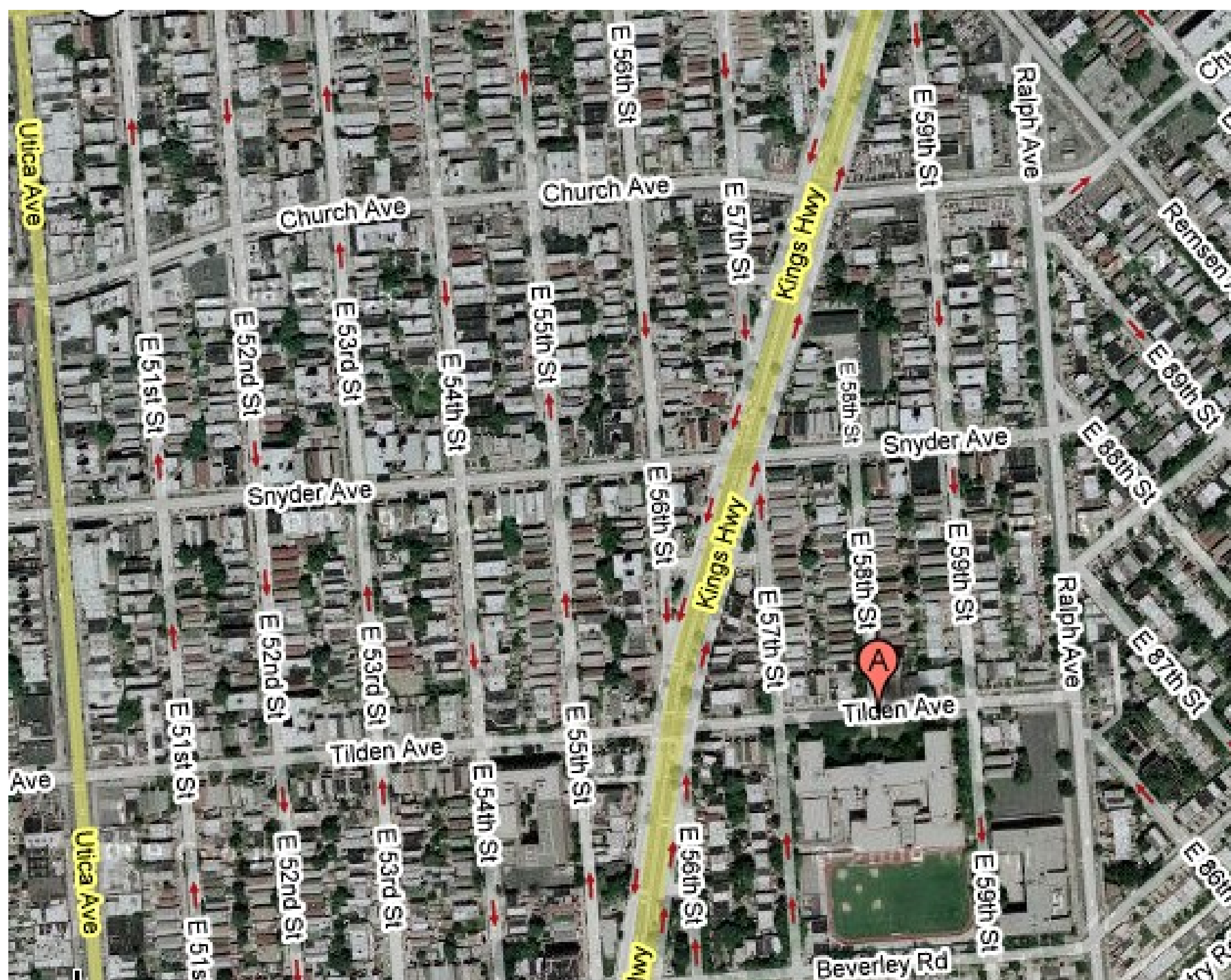


It Takes a Village Academy (ITAVA)

INTRODUCTION

Carbon Monoxide gas (CO) is well known for its ability to impair the health of those who inhale significant concentrations of it over a short period of time. In addition, it has many detrimental effects on our outdoor environment. The greatest contributor of CO to our outdoor environment is car exhaust [1]. Kings Highway is an example of a major roadway that intersects many residential areas and lies not too far from various schools. As a result, we have decided to survey the traffic of Kings Highway to assess what type of effect the heavy traffic in the area may have on the immediate environment and whether or not motorists can make improvements.

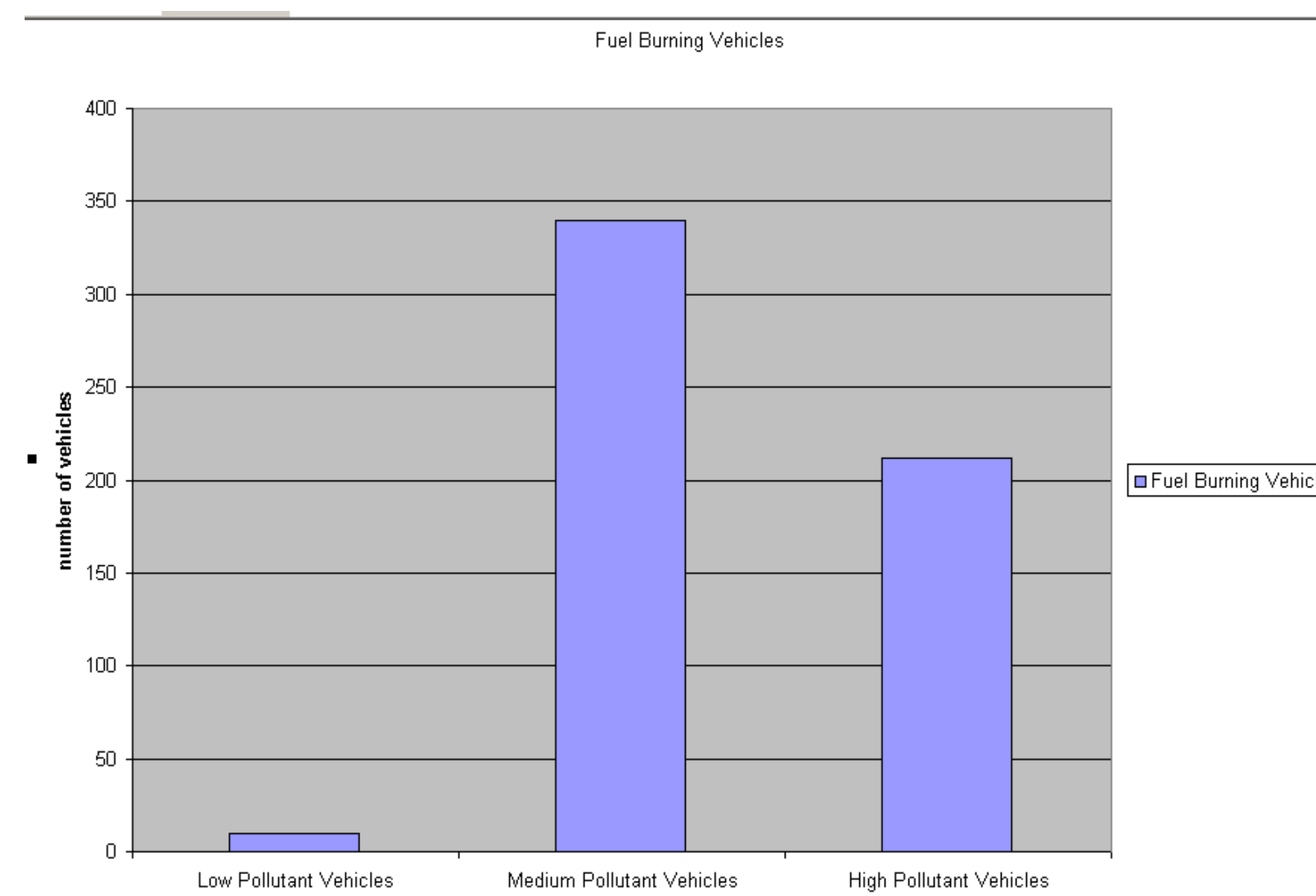
We strongly suspect that the damage to our environment that we hear about in the media is due to most drivers driving cars that are relatively high polluters. By way of factors such as fuel efficiency, aerodynamic design, and overall size and weight of the machine, we can estimate whether a vehicle is a low, average, or high polluter. We think that the number of high polluting vehicles that travel large roads such as Kings Highway may outnumber the amount of vehicles in any other category.



MATERIALS AND PROCEDURES

We decided to use the size of the vehicle as a convention for classifying its status as a low, medium, or high polluter. We came to this conclusion based on the fact that larger vehicles in general are less gas efficient than their smaller counterparts. However, in the event that we were able to recognize a hybrid vehicle, we would automatically consider it to be a low polluter regardless of its size. Motorcycles and similar vehicles were considered to be low polluters as well.

We visited the area of Kings Highway indicated on the accompanying map a mere few blocks away from ITAVA High School (the marker placed on the map). To accurately record the location where our data was taken, we used GPS devices to provide us with exact latitude and longitude coordinates. For approximately two hours, we tallied the composition of the traffic that came from the direction of Church avenue and passed the high school. After counting the number of high, medium, and low polluters we saw, we then recorded our results electronically and made a chart of our findings.

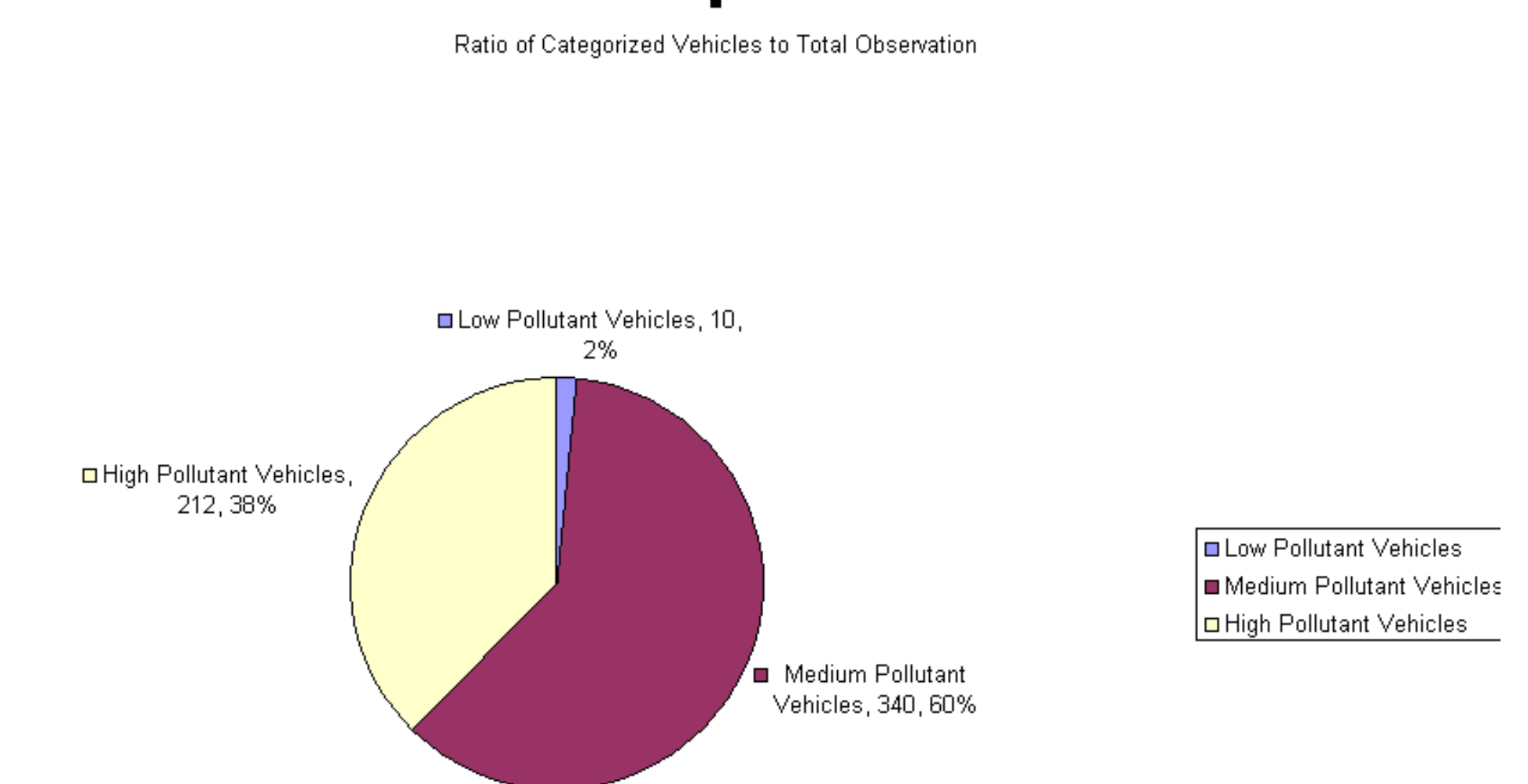


REFERENCES

1. "Air Emission Sources: Carbon Monoxide". *Environmental Protection Agency*. 12 May 2009. <<http://www.epa.gov/air/emissions/co.htm>>.
2. "Air Trends: Carbon Monoxide". *Environmental Protection Agency*. 12 May 2009. <<http://www.epa.gov/airtrends/carbon.html>>.
3. "Carbon Monoxide Questions and Answers". *Consumer Product Safety Commission*. 12 May 2009. <<http://www.cpsc.gov/CPSPUB/PUBS/466.html>>.
4. Singer, S.F. *The Changing Global Environment*(pp.89-90). N.p. 1975

RESULTS

We found that sixty percent of the vehicles tallied were, in fact, medium polluters, while high polluting vehicles were not quite as common, as they made up 38% of the traffic observed. Approximately 2 percent of vehicles were low polluters, which was due mostly to energy efficient New York City Transit buses. The accompanying chart contains the actual number of cars observed as well as the categories they belonged to.



CONCLUSION AND DISCUSSION

While there are fewer high polluting vehicles than we originally thought, there is still quite some room for improvement. Only 2 percent of vehicles were low polluters, many of which belonged to New York City, not individual customers. In addition, almost 2 in 5 vehicles were indeed high polluters, which, although not being an awful situation isn't exactly ideal either. One question that may arise from the data we collected is whether or not the sheer number of medium polluting vehicles could do significant damage to the nearby environment all by itself.

On a good note, the average concentration of CO in the environment has decreased roughly 67% in the U.S. over the past 20 years [2]. How much more so would that figure improve if more people utilized cleaner forms of transportation? While prolonged exposure to indoor CO levels at 150-200 part per million is enough to kill a person over time, that doesn't mean that our outdoor air quality can be neglected [3]. A few decades ago, outdoor samplings of air quality returned readings of 100-200 ppm in the central business area of Mexico City and 235 ppm in downtown London [4]. What's more is that CO is only one of several toxic substances released into the environment by car exhaust. Hence, it is important that we make responsible choices, individually and as a community, when it comes to transportation and the environment.