Project Title: Measuring Effects of Local and National Laws on Air Quality

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Our project will examine whether the passage of local and national laws and ordinances influenced air quality. We will compare two metropolitan cities with similar populations to each other and two smaller cities with similar populations to each other to determine if, for example, one city passed a law that may have affected air quality and saw positive effects of the passage of that law compared to the city that didn’t pass the law.

We will also account for three variables that may have affected air quality – population change in the city, number of registered cars in the city, and number of industrial plants (such as coal and steel plants) in the city.

The research questions we will answer are:

1. What level of impact do local ordinances or national laws have on air quality in a city?
2. How long after the passage of a law does air quality take to improve in a city?
3. Do tax rebates or incentives (such as for purchasing an electric car) affect air quality in a city?
4. Is there a relationship between population change and air quality?
5. Is there a relationship between number of registered vehicles and air quality?
6. Is there a relationship between the number of factories and air quality?
7. Do the effects of population change, number of vehicles, and number of factories cancel out any benefits the passage of a law might have?

The data sets we will use are:

1. Daily air quality data by city (ozone)
   1. aqs.epa.gov
2. Population by year by city
   1. census.gov
3. Number of registered cars by city
4. Number of industrial plants by city

The tasks we will complete are:

1. Find relevant local and national laws (Melissa)
2. Find relevant national air quality data (David)
3. Find relevant census data (Anika)
4. Find numbers of registered cars (Tim)
5. Find industrial plant data (Jessika)
6. Clean all data sets (all)
7. Combine and analyze data as needed (all)
8. Create Matplotlib visualizations (all)
9. Create presentation (all)