Project: Exploratory Data Analysis

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Project Overview

Project source

Assignment from Exploratory Data Analysis

Data

Downloading data

PM2.5

How to import

Using `readRDS()`

```
NEI <- readRDS("/Users/kuoyaojen/Downloads/exdata_NEI_data/
SCCode <- readRDS("/Users/kuoyaojen/Downloads/exdata_NEI_da
```

The top 6 rows of NEI data

```
head(NEI)
```

```
##     fips      SCC Pollutant Emissions  type year
## 4  09001 10100401  PM25-PRI    15.714 POINT 1999
## 8  09001 10100404  PM25-PRI   234.178 POINT 1999
## 12 09001 10100501  PM25-PRI     0.128 POINT 1999
## 16 09001 10200401  PM25-PRI     2.036 POINT 1999
## 20 09001 10200504  PM25-PRI     0.388 POINT 1999
## 24 09001 10200602  PM25-PRI     1.490 POINT 1999
```

The top 6 rows of SCCode data

```
head(SCCode)
```

```
##        SCC Data.Category
## 1 10100101          Point
## 2 10100102          Point
## 3 10100201          Point
## 4 10100202          Point
## 5 10100203          Point
## 6 10100204          Point
##
## 1                    Ext Comb /Electric Gen /Anthracite C
## 2 Ext Comb /Electric Gen /Anthracite Coal /Traveling Gra
## 3       Ext Comb /Electric Gen /Bituminous Coal /Pulveri
## 4       Ext Comb /Electric Gen /Bituminous Coal /Pulveri
## 5                    Ext Comb /Electric Gen /Bituminous C
## 6                    Ext Comb /Electric Gen /Bituminous C
##                                    EI.Sector Option.Group Op
## 1 Fuel Comb - Electric Generation - Coal
```

Variable information in NEI data

- fips: A five-digit number (represented as a string) indicating the U.S. county
- SCC: The name of the source as indicated by a digit string (see source code classification table)
- Pollutant: A string indicating the pollutant
- Emissions: Amount of PM2.5 emitted, in tons
- type: The type of source (point, non-point, on-road, or non-road)
- year: The year of emissions recorded

Using ggplot2 or any other plotting system to answer the following questions

Question 1

Have total emissions from PM2.5 decreased in the United States from 1999 to 2008? Make a plot showing the total PM2.5 emission from all sources for each of the years 1999, 2002, 2005, and 2008.

Question 2

Have total emissions from PM2.5 decreased in the Baltimore City, Maryland(`fips == '24510'`) from 1999 to 2008? Make a plot answering this question.

Question 3

Of the four types of sources indicated by the type(point, nonpoint, onroad, nonroad) variable, which of these four sources have seen decreases in emissions from 1999–2008 for Baltimore City? Which have seen increases in emissions from 1999–2008? Make a plot answer this question.

Question 4

Across the United States, how have emissions from coal combustion-related sources(`SCC$EI.Sector`) changed from 1999–2008?

Question 5

How have emissions from motor vehicle sources(`SCC$EI.Sector`) changed from 1999–2008 in Baltimore City?

Question 6

Compare emissions from motor vehicle sources in Baltimore City with emissions from motor vehicle sources in Los Angeles County, California(`fips == '06037'`). Which city has seen greater changes over time in motor vehicle emissions?