

# How To Use the shiny app

## The dataset

In this shiny app I use the sample dataset of the Fine particulate matter (PM2.5) ambient air pollutant from Environmental Protection Agency. The dataset is also being used in the Exploratory Data Analysis Course of Coursera.

Because the original data is huge and take a lot of time to load into system. In order to increase the speed, I've made some pre-processing and split the dataset into 3 smaller sets with fewer columns: summaryPM25\_1999.csv, summaryPM25\_2002.csv, and summaryPM25\_2005.csv. Each file contain air pollutant data of the certain year.

## The columns

```
##   fips Emissions  type
## 1 9001    15.714 POINT
## 2 9001   234.178 POINT
## 3 9001     0.128 POINT
## 4 9001     2.036 POINT
## 5 9001     0.388 POINT
## 6 9001     1.490 POINT
```

As shown above. There are 3 columns in each file:

fips: A five-digit number (represented as a string) indicating the U.S. county

Emission: Amount of PM2.5 emitted, in tons

type: The type of source (point, non-point, on-road, or non-road)

## The app

**##Please be awarea that the app need some time to load the dataset when first time running**

There are 2 variables that users can change in this app:

**fips:** users can select the target city based on the fips code (i.e. 24510 = Baltimore City). The related code for each city can be found in: <http://www.epa.gov/enviro/html/codes/state.html>

**source type:** There are four source type of air pollutant users can choose:

Point: Fuel Comb, Electric Generation, Coal, etc

Non-point: Stationary Fuel Comb, Residential, Wood, etc

On-road: Mobile, Gasoline, Heavy Duty Vehicles, etc

Non-road: Airplane, Ship, etc

Once users decide the target city and the source type, they can press the process button. The app will calculate and show the total emissions of each year, with a plot to show the tendency of the three years.

## The function

The functions in this app is very simple. First we get fips and type from ui.R, than summarize the emission of each year based on the variables. and show the results.