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## Exploratory Data Analysis #

## CourseProject 2          #

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## 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?    #
## Use the ggplot2 plotting system to make a plot answer this question.                  #
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## Loading ggplot libraries

library(ggplot2)

## Reads PM2.5 Emissions Data

NEI <- readRDS("./data/summarySCC_PM25.rds")

## Reads Source Classification Code Table

NCC <- readRDS("./data/Source_Classification_Code.rds")

## subsetting and summarizing data accroding to the four type, first type=="ON-ROAD"

## including creating a dataframe with column names

NEIMary <- subset(NEI, fips=="24510")

NEIMaryOR <- subset(NEIMary, type=="ON-ROAD")

t1 <- tapply(NEIMaryOR$Emissions, NEIMaryOR$year, sum)

t1 <- data.frame(Year=as.character(unique(NEIMaryOR$year)),Total=t1[])

t1<- cbind(t1,"ON-ROAD")

names(t1)[3] <- "Type"

## Second type == "NON-ROAD"

NEIMaryNR <- subset(NEIMary, type=="NON-ROAD")

t2 <- tapply(NEIMaryNR$Emissions, NEIMaryNR$year, sum)

t2 <- data.frame(Year=as.character(unique(NEIMaryNR$year)),Total=t2[])

t2<- cbind(t2,"NON-ROAD")
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names(t2)[3] <- "Type"

## Third type == "POINT"
NEIMaryPO <- subset(NEIMary, type=="POINT")

t3 <- tapply(NEIMaryPO$Emissions, NEIMaryPO$year, sum)

t3 <- data.frame(Year=as.character(unique(NEIMaryPO$year)),Total=t3[])

t3<- cbind(t3,"POINT")

names(t3)[3] <- "Type"

## Fourth type == "NONPOINT"
NEIMaryNP <- subset(NEIMary, type="NONPOINT")

t4 <- tapply(NEIMaryNP$Emissions, NEIMaryNP$year, sum)

t4 <- data.frame(Year=as.character(unique(NEIMaryNP$year)),Total=t4[])

t4 <- cbind(t4,"NONPOINT")

names(t4)[3] <- "Type"

## Combining at the four data frames t1,t2,t3 & t4

cMary <- rbind(t1,t2,t3,t4)

## plotting

plot3<- qplot(Year>Total, data=cMary, facets =.~Type)

png("plot3.png")

print(plot3)

dev.off()

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