Analysis Project Visualization

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#The Goal of the Analysis One of the major problems we are currently facing is the climate change. Carbon dioxide(CO2) play a major role in the climate change. In this Analysis we will find out how CO2 have increased in the past few years and How the increase in CO2 can affect the climate change.

library(tidyverse)

## -- Attaching packages -------------------------------------------------------------------- tidyverse 1.3.0 --

## v ggplot2 3.3.2 v purrr 0.3.4  
## v tibble 3.0.3 v dplyr 1.0.2  
## v tidyr 1.1.2 v stringr 1.4.0  
## v readr 1.3.1 v forcats 0.5.0

## -- Conflicts ----------------------------------------------------------------------- tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(lubridate)

##   
## Attaching package: 'lubridate'

## The following objects are masked from 'package:base':  
##   
## date, intersect, setdiff, union

library(readxl)

co2.file <- file.path("C:","Users","nhewa","Documents","AREC380",  
 "Home Work","Homework data")  
  
read\_excel(file.path(co2.file,"Table\_11.1\_Carbon\_Dioxide\_Emissions\_From\_Energy\_Consumption\_by\_Source.xlsx")  
)->co2.data  
  
print(co2.data)

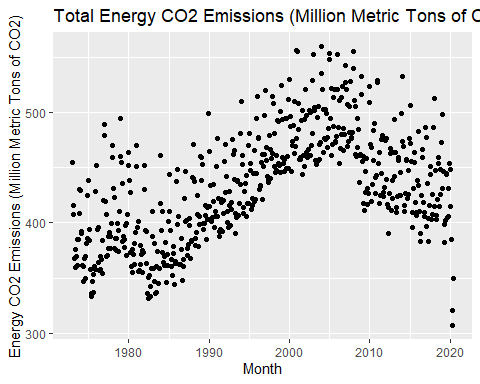
## # A tibble: 570 x 15  
## Month `Coal, Includin~ `Natural Gas, E~ `Aviation Gasol~  
## <dttm> <dbl> <dbl> <dbl>  
## 1 1973-01-01 00:00:00 108. 126. 0.428  
## 2 1973-02-01 00:00:00 97.7 114. 0.432  
## 3 1973-03-01 00:00:00 97.3 108. 0.459  
## 4 1973-04-01 00:00:00 93.1 97.9 0.446  
## 5 1973-05-01 00:00:00 94.3 92.1 0.549  
## 6 1973-06-01 00:00:00 97.7 81.7 0.471  
## 7 1973-07-01 00:00:00 103. 83.0 0.42   
## 8 1973-08-01 00:00:00 105. 84.2 0.668  
## 9 1973-09-01 00:00:00 98.3 81.2 0.462  
## 10 1973-10-01 00:00:00 101. 90.8 0.55   
## # ... with 560 more rows, and 11 more variables: `Distillate Fuel Oil,  
## # Excluding Biodiesel, CO2 Emissions (Million Metric Tons of Carbon  
## # Dioxide)` <dbl>, `Hydrocarbon Gas Liquids CO2 Emissions (Million Metric  
## # Tons of Carbon Dioxide)` <dbl>, `Jet Fuel CO2 Emissions (Million Metric  
## # Tons of Carbon Dioxide)` <dbl>, `Kerosene CO2 Emissions (Million Metric  
## # Tons of Carbon Dioxide)` <dbl>, `Lubricants CO2 Emissions (Million Metric  
## # Tons of Carbon Dioxide)` <dbl>, `Motor Gasoline, Excluding Ethanol, CO2  
## # Emissions (Million Metric Tons of Carbon Dioxide)` <dbl>, `Petroleum Coke  
## # CO2 Emissions (Million Metric Tons of Carbon Dioxide)` <dbl>, `Residual  
## # Fuel Oil CO2 Emissions (Million Metric Tons of Carbon Dioxide)` <dbl>,  
## # `Other Petroleum Products CO2 Emissions (Million Metric Tons of Carbon  
## # Dioxide)` <dbl>, `Petroleum, Excluding Biofuels, CO2 Emissions (Million  
## # Metric Tons of Carbon Dioxide)` <dbl>, `Total Energy CO2 Emissions (Million  
## # Metric Tons of Carbon Dioxide)` <dbl>

#The total CO2 emissions The United state Energy Information Administration or EIA has collected data on Carbon Dioxide Emissions From Energy Consumption from since 1973 January to June 2020

co2.data %>%  
 select(Month,`Total Energy CO2 Emissions (Million Metric Tons of Carbon Dioxide)`)->Only\_total\_emission  
  
print(Only\_total\_emission)

## # A tibble: 570 x 2  
## Month `Total Energy CO2 Emissions (Million Metric Tons of Carb~  
## <dttm> <dbl>  
## 1 1973-01-01 00:00:00 454.  
## 2 1973-02-01 00:00:00 415.  
## 3 1973-03-01 00:00:00 408.  
## 4 1973-04-01 00:00:00 368.  
## 5 1973-05-01 00:00:00 376.  
## 6 1973-06-01 00:00:00 360.  
## 7 1973-07-01 00:00:00 370.  
## 8 1973-08-01 00:00:00 385.  
## 9 1973-09-01 00:00:00 361.  
## 10 1973-10-01 00:00:00 385.  
## # ... with 560 more rows

ggplot()+  
 geom\_point(  
 data = Only\_total\_emission,  
 mapping = aes(  
 x = Month,  
 y = `Total Energy CO2 Emissions (Million Metric Tons of Carbon Dioxide)`  
 )  
 )+  
 labs(  
 title = "Total Energy CO2 Emissions (Million Metric Tons of CO2)",  
 x = "Month",  
 y = "Energy CO2 Emissions (Million Metric Tons of CO2)"  
 )



In the scatter plot diagram we can see in 2020 April and May the Total emission went down. Just to clarify that it does not mean we cut down on energy. The total CO2 emission is down is because Covid-19

## Largest contributer for the Total CO2 Emission

Petroleum is one of the major contributors for CO2 emission.

co2.data %>%  
 select(Month,`Petroleum, Excluding Biofuels, CO2 Emissions (Million Metric Tons of Carbon Dioxide)`)->  
 petroleum\_emission  
  
print(petroleum\_emission)

## # A tibble: 570 x 2  
## Month `Petroleum, Excluding Biofuels, CO2 Emissions (Million M~  
## <dttm> <dbl>  
## 1 1973-01-01 00:00:00 220.  
## 2 1973-02-01 00:00:00 204.  
## 3 1973-03-01 00:00:00 203.  
## 4 1973-04-01 00:00:00 177.  
## 5 1973-05-01 00:00:00 190.  
## 6 1973-06-01 00:00:00 181.  
## 7 1973-07-01 00:00:00 184.  
## 8 1973-08-01 00:00:00 196.  
## 9 1973-09-01 00:00:00 182.  
## 10 1973-10-01 00:00:00 194.  
## # ... with 560 more rows

ggplot()+  
 geom\_point(  
 data = petroleum\_emission,  
 mapping = aes(  
 x = Month,  
 y = `Petroleum, Excluding Biofuels, CO2 Emissions (Million Metric Tons of Carbon Dioxide)`  
 )  
 )+  
 labs(  
 title = "Petroleum CO2 Emissions (Million Metric Tons of CO2)",  
 x = "Month",  
 y = "Petroleum CO2 Emissions (Million Metric Tons of CO2)"  
 )

