



## Clustering and Data Fitting

**Name:** Musawir Hussain

**Student ID:** 21032283

Github Repository Link: [https://github.com/musahussain1/Assignment\\_No\\_3\\_Cluster.git](https://github.com/musahussain1/Assignment_No_3_Cluster.git)

### Abstract

In this study, I have displayed the relationship between the liquid, gas, and solid fuel sources for Carbon Dioxide gas emission and the effect of gas emission on the goods export of a country.

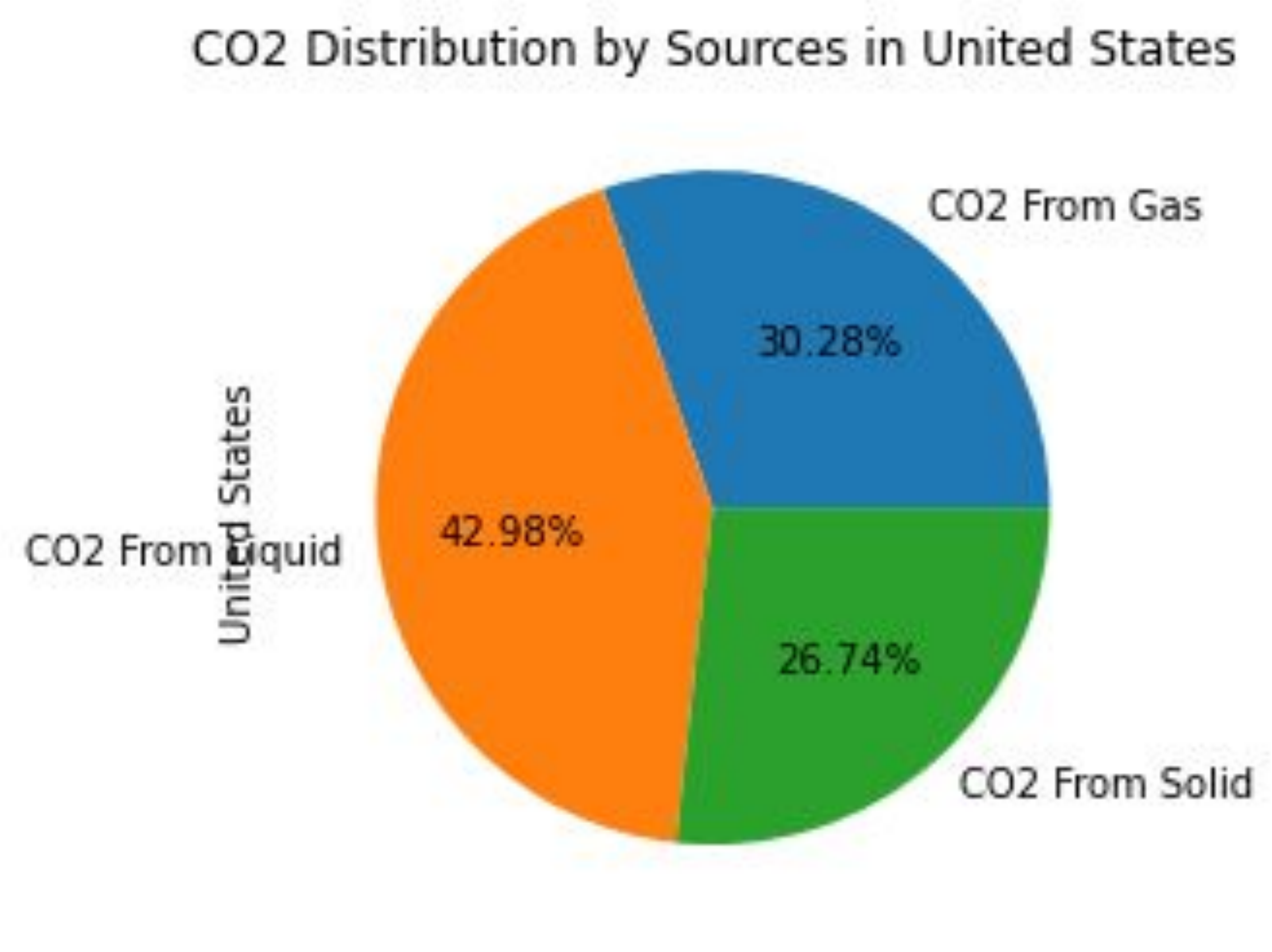


# Carbon Dioxide gas emission from different fuel sources

## Summary

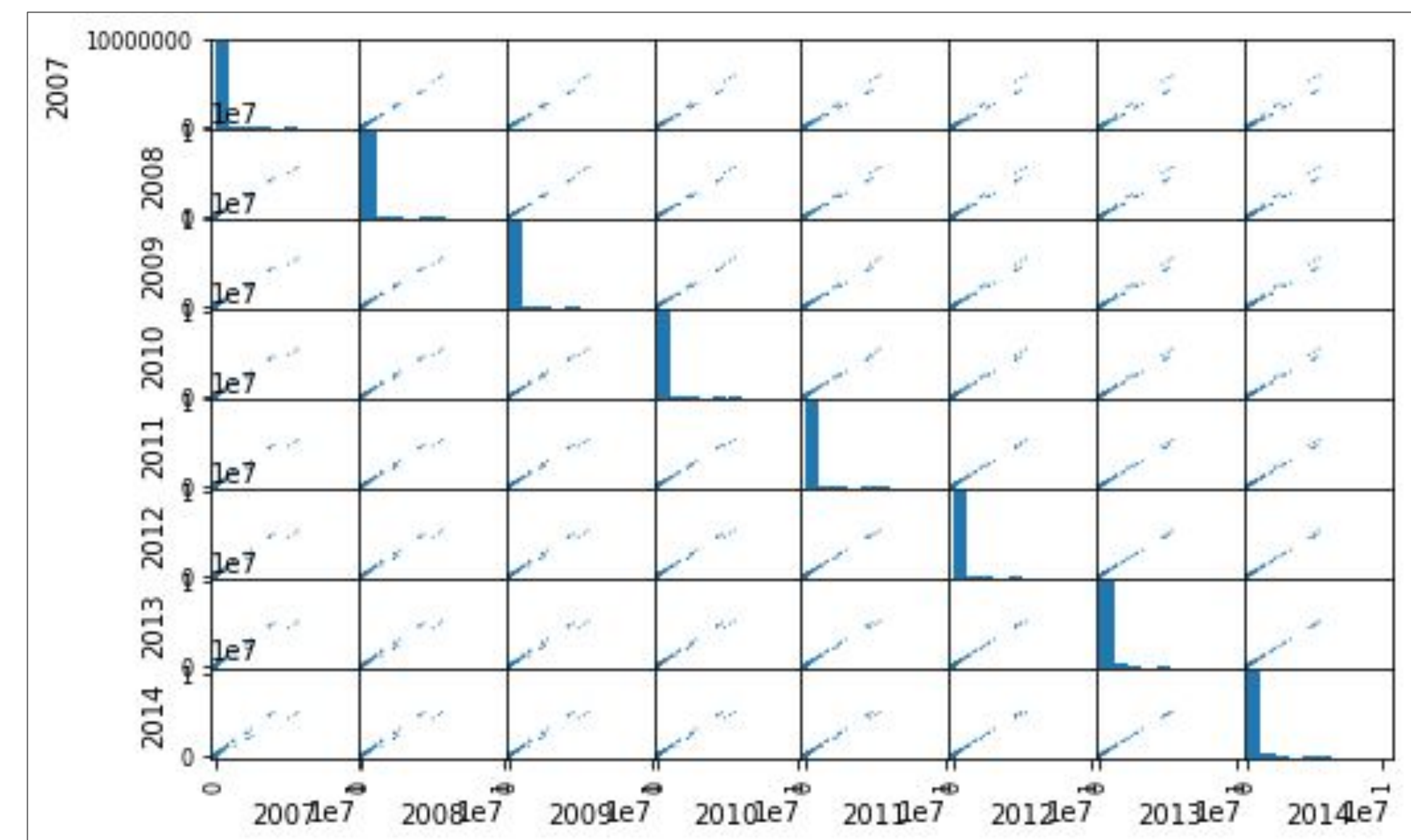
- Global warming is one of the biggest issues of the whole world. It causes the increase in the average temperature. The average temperature of earth has risen by 1.1 C since 1800s<sup>1</sup>.
- The main reason of global warming is burning coal, oil, gas and other materials in order to produce energy.
- There is a main defect of generating energy by burning different fuel resources that is it emits the Carbon Dioxide.
- In this study, I have chosen the datasets for Carbon Dioxide gas emission from different sources of energy.
- These sources can be in the different forms ie, solid, liquid and gaseous forms.
- I have also made some relation between Carbon Dioxide gas emission with exports of goods and services.

## Distribution of CO2 Sources



- The above pie plot displays the distribution of Carbon Dioxide gas emission from different sources in United States of America.
- We can observe that most of the gas is emitted from the liquid fuel sources.
- It can be obvious because most of the vehicles use liquid form of fuel ie, petroleum.

## Scatter Matrix for Liquid Sources



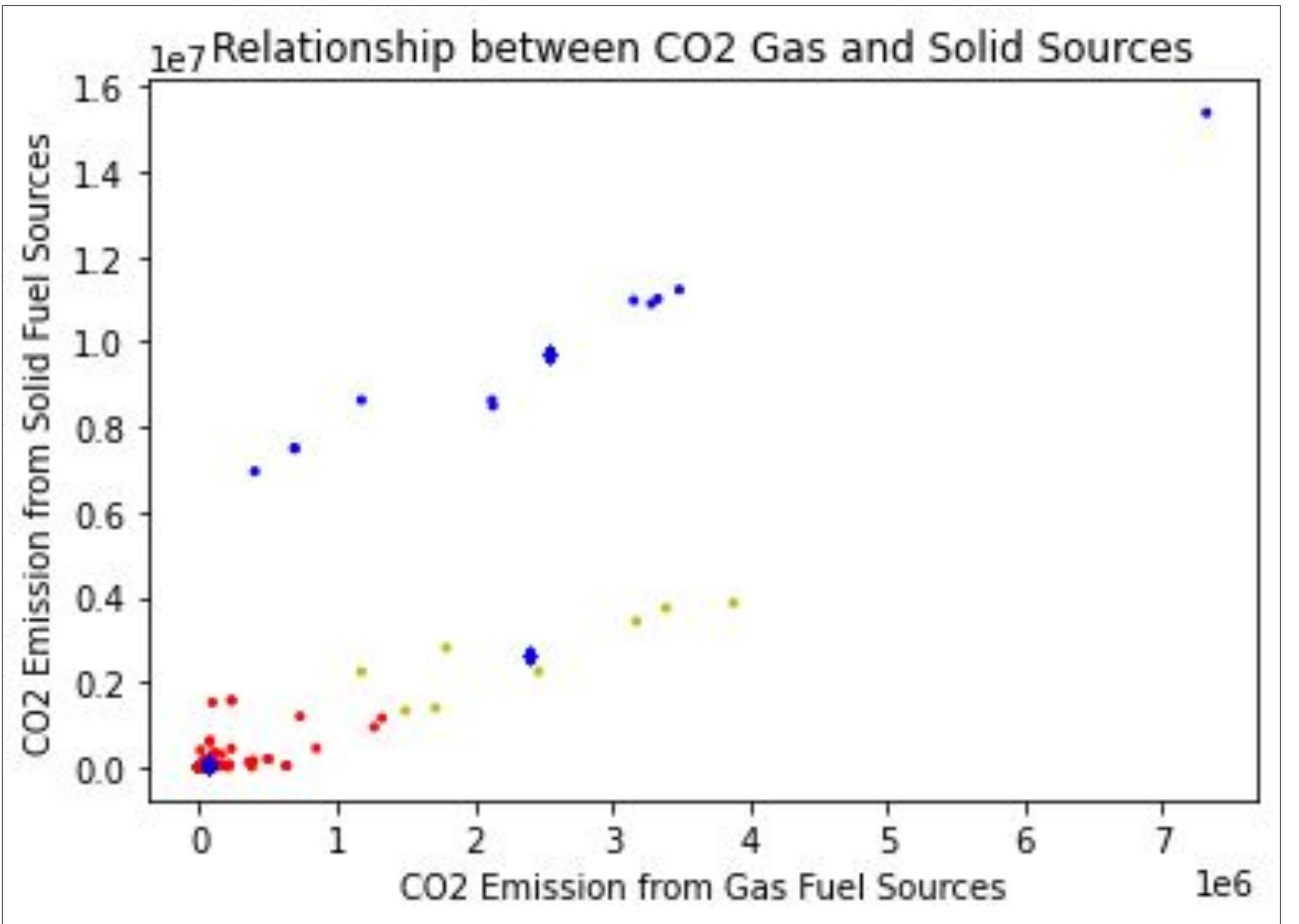
- The above plot represents the scatter plot for the emission of carbon dioxide gas from liquid sources.
- This matrix scatter plot display the data of gas emission from the year 2007 to 2014.

## Goods Export (% of GDP)

- After studying the data for Exports of goods and services (% of GDP), I noticed that this indicator depends on the Carbon Dioxide gas emission.
- More the Carbon Dioxide gas emission in a country, larger the export of goods will be in that country.

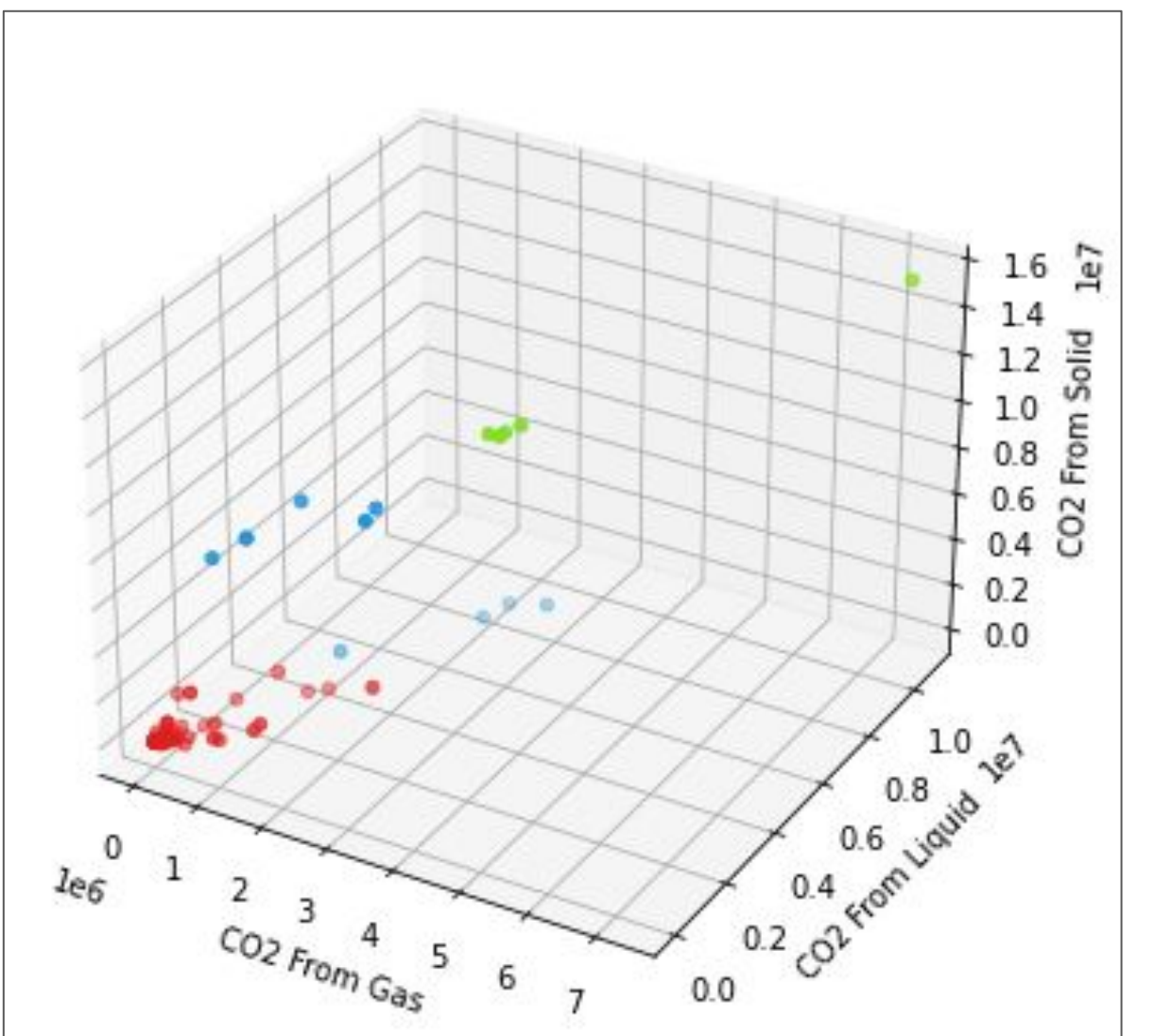


## Clustering of CO2 Sources



- I have created the above cluster against CO2 emission from gas fuel sources and solid fuel sources.
- The following scatter plot displays the relationship between all of the sources of Carbon Dioxide gas emission.

- The plot on right displays the 3d cluster for the Carbon Dioxide gas emission for Solid, liquid and gas sources.



## References

- <sup>1</sup> <https://www.un.org/en/climatechange/science/key-findings>