COVID-19 US County JHU Data & Demographics

Introduction:

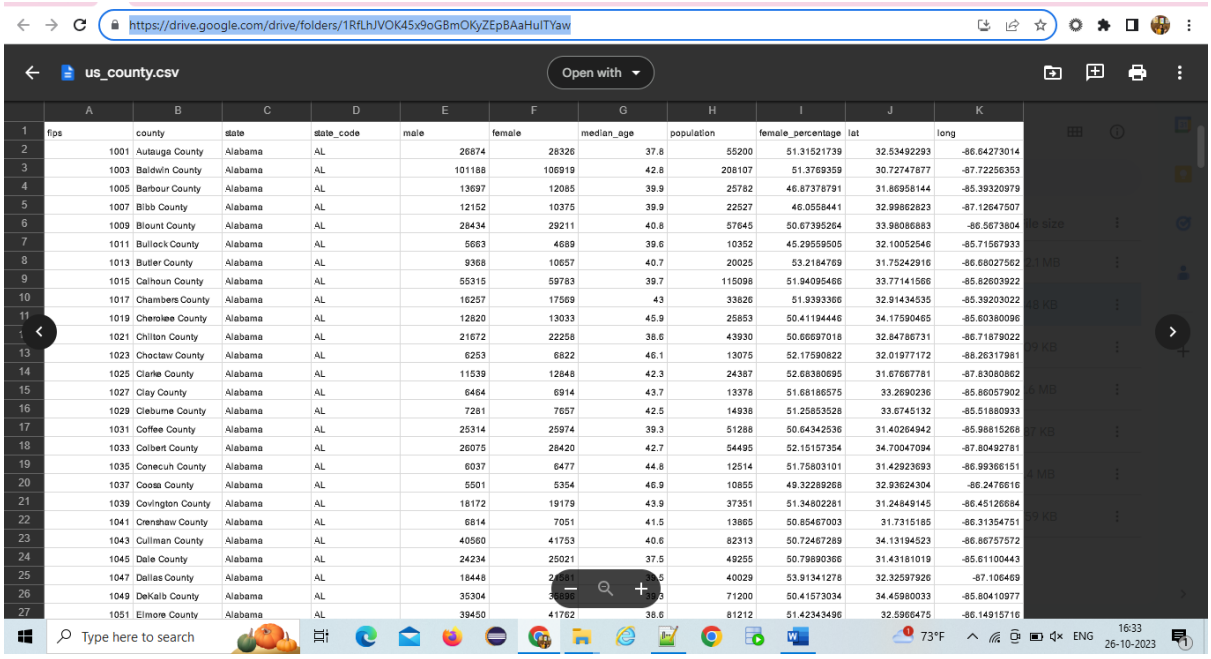
The United States of America has recently, had the most reported COVID-19 cases and this dataset that I have taken gives a piece of detailed information about the country, state, male, female, age group, and demographics information such as latitude and longitude. To perform this research, I used this dataset.

DATASET LINK:

https://drive.google.com/drive/folders/1RfLhJVOK45x9oGBmOKyZEpBAaHuITYaw

US_COUNTY.CSV

The main objective of this analysis is to find out the patterns within the dataset to get a further understanding of the data. I also wanted to leverage it to choose a machine algorithm for predicting the survival rate of patients during the period of COVID-19.

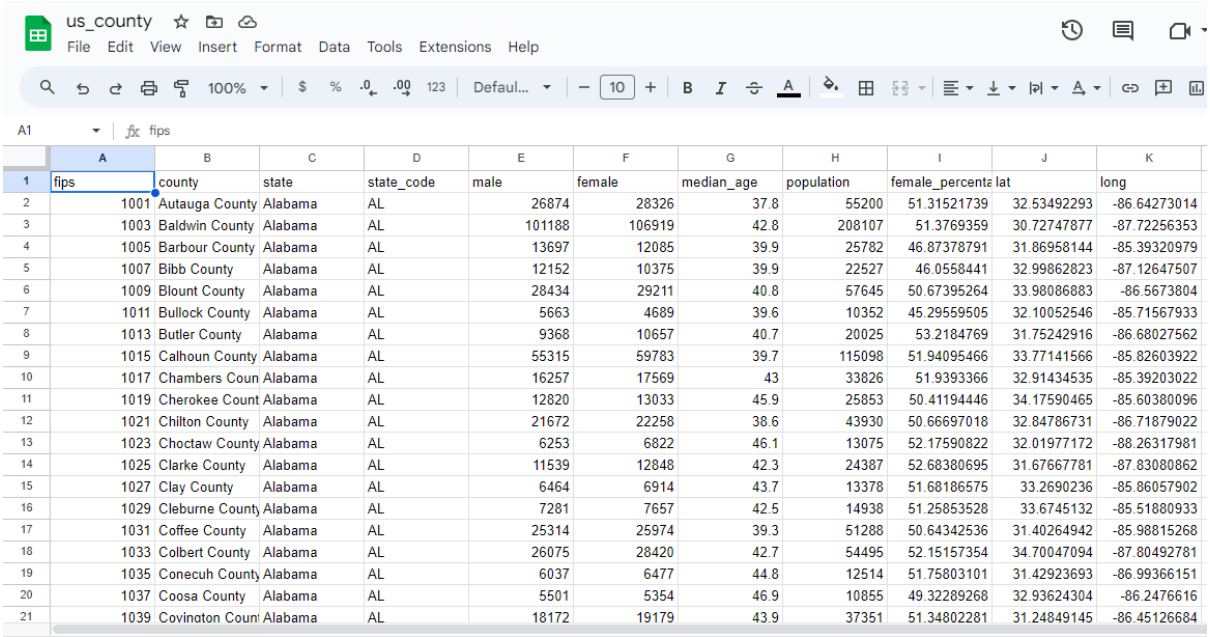


	A	B	C	D	E	F	G	H	I	J	K
1	fips	county	state	state_code	male	female	median_age	population	female_percentage	lat	long
2	1001	Autauga County	Alabama	AL	26874	28326	37.8	55200	51.31521739	32.53492293	-86.64273014
3	1003	Baldwin County	Alabama	AL	101188	106919	42.8	208107	51.3769359	30.72747877	-87.72256353
4	1005	Barbour County	Alabama	AL	13697	12085	39.9	25782	46.87378791	31.86958144	-85.39320979
5	1007	Bibb County	Alabama	AL	12152	10375	39.9	22527	46.0558441	32.99862823	-87.12647507
6	1009	Blount County	Alabama	AL	28434	29211	40.8	57645	50.67395264	33.98086883	-86.5673804
7	1011	Bullock County	Alabama	AL	5663	4689	39.6	10352	45.29559505	32.10052546	-85.71567933
8	1013	Butler County	Alabama	AL	9368	10657	40.7	20025	53.2184769	31.75242916	-86.68027562
9	1015	Calhoun County	Alabama	AL	55315	59783	39.7	115098	51.94095466	33.77141566	-85.82603922
10	1017	Chambers County	Alabama	AL	16257	17569	43	33826	51.9393366	32.91434535	-85.39203022
11	1019	Cherokee County	Alabama	AL	12820	13033	45.9	25853	50.41194446	34.17590465	-85.60380096
12	1021	Chilton County	Alabama	AL	21672	22258	38.6	43930	50.66697018	32.84786731	-86.71879022
13	1023	Choctaw County	Alabama	AL	6253	6822	46.1	13075	52.17590822	32.01977172	-88.26317981
14	1025	Clarke County	Alabama	AL	11539	12848	42.3	24387	52.66380695	31.67667781	-87.83080862
15	1027	Clay County	Alabama	AL	6464	6914	43.7	13378	51.68186575	33.2690236	-85.86057902
16	1029	Cleburne County	Alabama	AL	7281	7657	42.5	14938	51.25853528	33.6745132	-85.51880933
17	1031	Coffee County	Alabama	AL	25314	25974	39.3	51288	50.64342536	31.40264942	-85.98815268
18	1033	Colbert County	Alabama	AL	26075	28420	42.7	54495	52.15157354	34.70047094	-87.80492781
19	1035	Conecuh County	Alabama	AL	6037	6477	44.8	12514	51.75803101	31.42923693	-86.99366151
20	1037	Coosa County	Alabama	AL	5501	5354	46.9	10855	49.32289268	32.93624304	-86.2476616
21	1039	Covington County	Alabama	AL	18172	19179	43.9	37351	51.34802281	31.24849145	-86.45126684
22	1041	Crenshaw County	Alabama	AL	6814	7051	41.5	13865	50.85467003	31.7315185	-86.31354751
23	1043	Cullman County	Alabama	AL	40560	41753	40.6	82313	50.72467289	34.13194523	-86.86757572
24	1045	Dale County	Alabama	AL	24234	25021	37.5	49255	50.79890366	31.43181019	-85.61100443
25	1047	Dallas County	Alabama	AL	18448	[illegible]	[illegible]	40029	53.91341278	32.32597926	-87.106469
26	1049	DeKalb County	Alabama	AL	35304	[illegible]	[illegible]	71200	50.41573034	34.45980033	-85.80410977
27	1051	Elmore County	Alabama	AL	39450	41762	38.6	81212	51.42343496	32.5966475	-86.14915716

The dataset consists of demographic information population information (Such as male and female rates) and age information.

Data attributes: Fips, County, State, State code, male, female, median age, population, female_percentage, lat, long.

So totally my dataset has 3220 rows * 11 columns with no null values. The columns have a title/heading, which makes them readable.



fips	county	state	state_code	male	female	median_age	population	female_percenta	lat	long
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1037	Coosa County	Alabama	AL	5501	5354	46.9	10855	49.32289268	32.93624304	-86.2476616
1039	Covington Coun	Alabama	AL	18172	19179	43.9	37351	51.34802281	31.24849145	-86.45126684

Observations of the dataset:

- It has all the states in the United States of America.
- The data includes patients whose ages range from 30 to 60.
- The data also contains fips code, latitude, and longitude details for easy understanding of the location details.

Dataset and Code Description:

This data contains the total population, male and female.

Explanation 1: This code helps us to know the total count of males from different states.

```
[10] print(data_frame["male"].value_counts)

<bound method IndexOpsMixin.value_counts of 0        26874
1       101188
2        13697
3        12152
4        28434
         ...
3215     25580
3216      4332
3217     11169
3218     16541
3219     17475
Name: male, Length: 3220, dtype: int64>
```

```
print(data_frame["male"].value_counts)
```

Explanation 2: This code helps us to know the total count of females from different states.

```
[11] print(data_frame["female"].value_counts)

<bound method IndexOpsMixin.value_counts of 0        28326
1       106919
2        12085
3        10375
4        29211
         ...
3215     27791
3216      4439
3217     11824
3218     17608
3219     18964
Name: female, Length: 3220, dtype: int64>
```

Code:

```
print(data_frame["female"].value_counts)
```

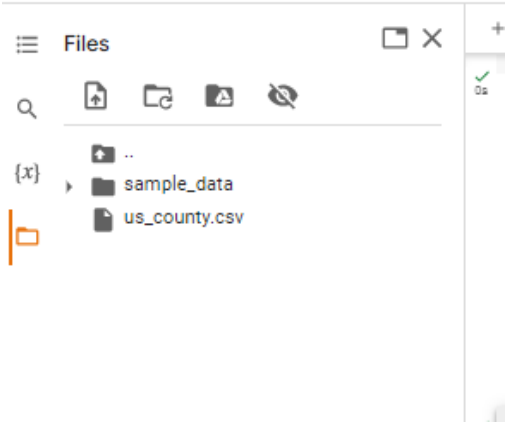
Explanation 3: This code helps us to know the total count of population from different state

```
print(data_frame['population'].value_counts)

<bound method IndexOpsMixin.value_counts of 0        55200
1       208107
2        25782
3        22527
4        57645
         ...
3215     53371
3216      8771
3217     22993
3218     34149
3219     36439
Name: population, Length: 3220, dtype: int64>
```

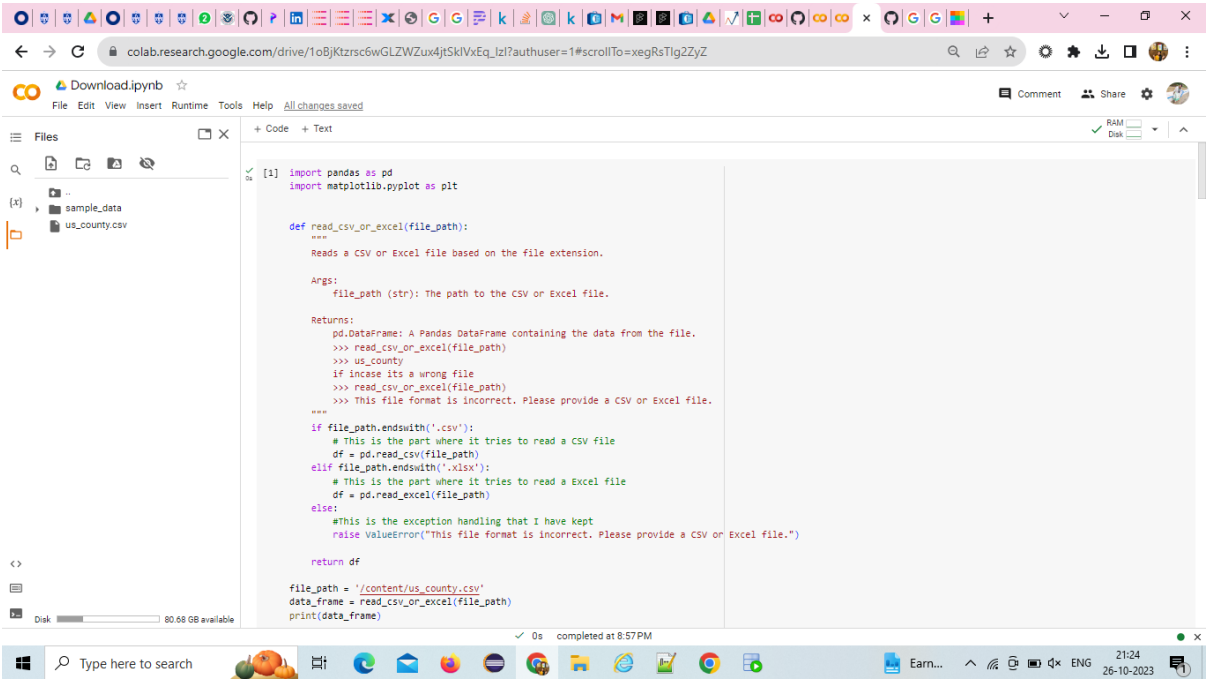
```
print(data_frame['population'].value_counts)
```

Important note:

Before performing this code, we need to down the dataset and upload it in the Google Colab environment.



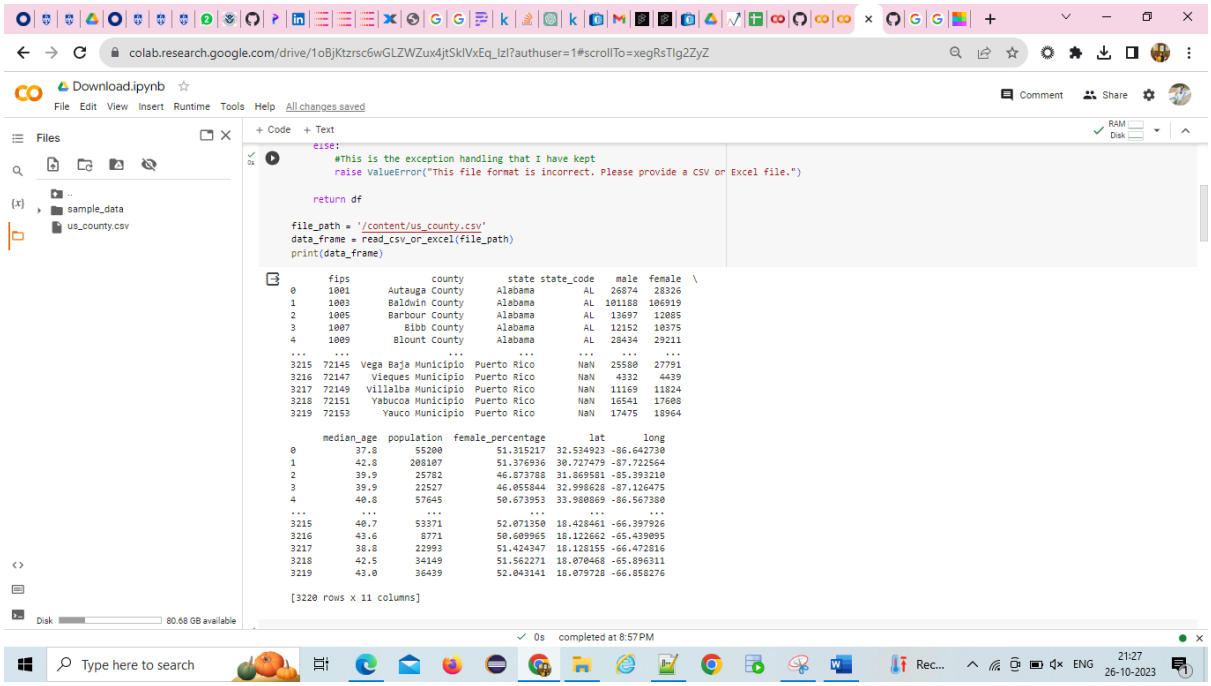
Code: This code helps me to read a CSV or Excel file in order to due EDA




```
import pandas as pd
import matplotlib.pyplot as plt


def read_csv_or_excel(file_path):
    """
    Reads a CSV or Excel file based on the file extension.

    Args:
        file_path (str): The path to the CSV or Excel file.

    Returns:
        pd.DataFrame: A Pandas DataFrame containing the data from the
file.
        >>> read_csv_or_excel(file_path)
        >>> us_county
        if incase its a wrong file
```

```
        >>> read_csv_or_excel(file_path)
        >>> This file format is incorrect. Please provide a CSV or
Excel file.
    """
    if file_path.endswith('.csv'):
        # This is the part where it tries to read a CSV file
        df = pd.read_csv(file_path)
    elif file_path.endswith('.xlsx'):
        # This is the part where it tries to read a Excel file
        df = pd.read_excel(file_path)
    else:
        #This is the exception handling that I have kept
        raise ValueError("This file format is incorrect. Please provide
a CSV or Excel file.")

    return df

file_path = '/content/us_county.csv'
data_frame = read_csv_or_excel(file_path)
print(data_frame)
```

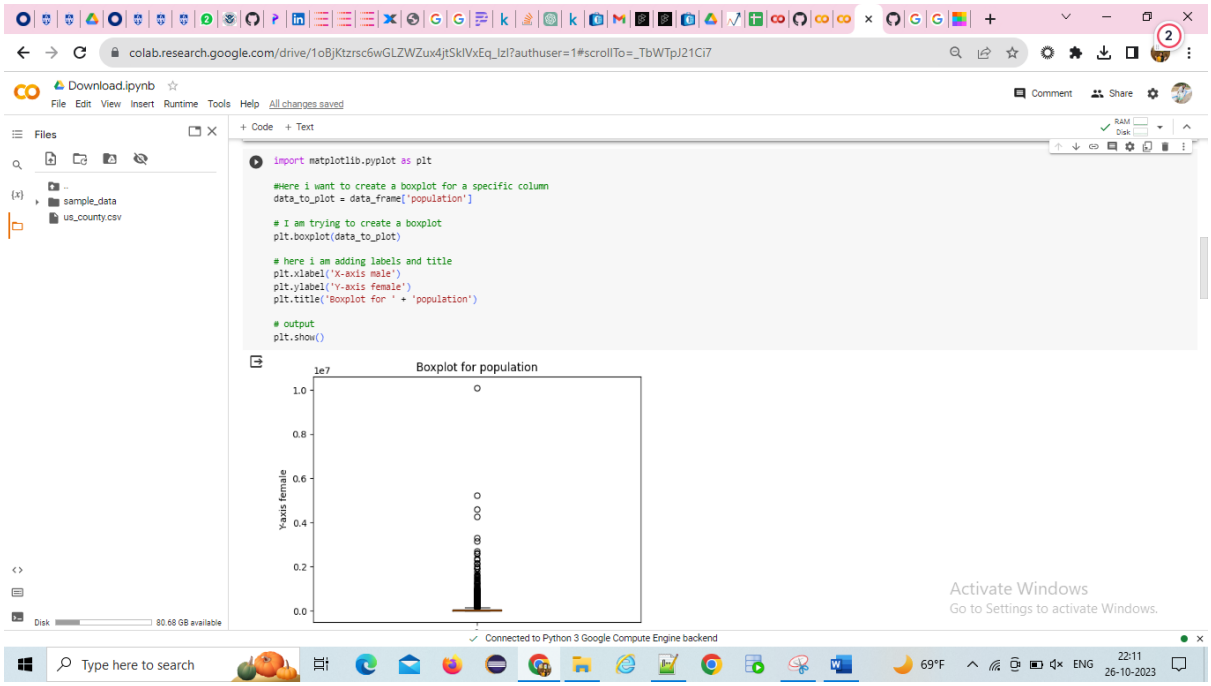
Output:

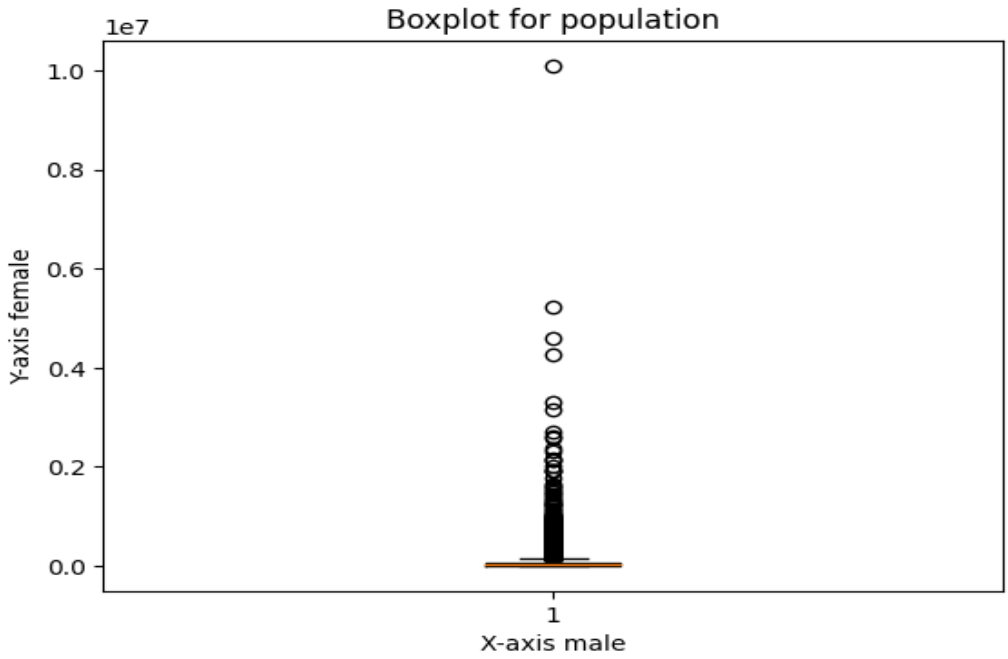


Boxplot Graph:

This graph shows a clear understanding of the male and female ratio

```python
import matplotlib.pyplot as plt

#Here i want to create a boxplot for a specific column
data_to_plot = data_frame['population']

# I am trying to create a boxplot
plt.boxplot(data_to_plot)

# here i am adding labels and title
plt.xlabel('X-axis male')
plt.ylabel('Y-axis female')
plt.title('Boxplot for ' + 'population')

# output
plt.show()
```

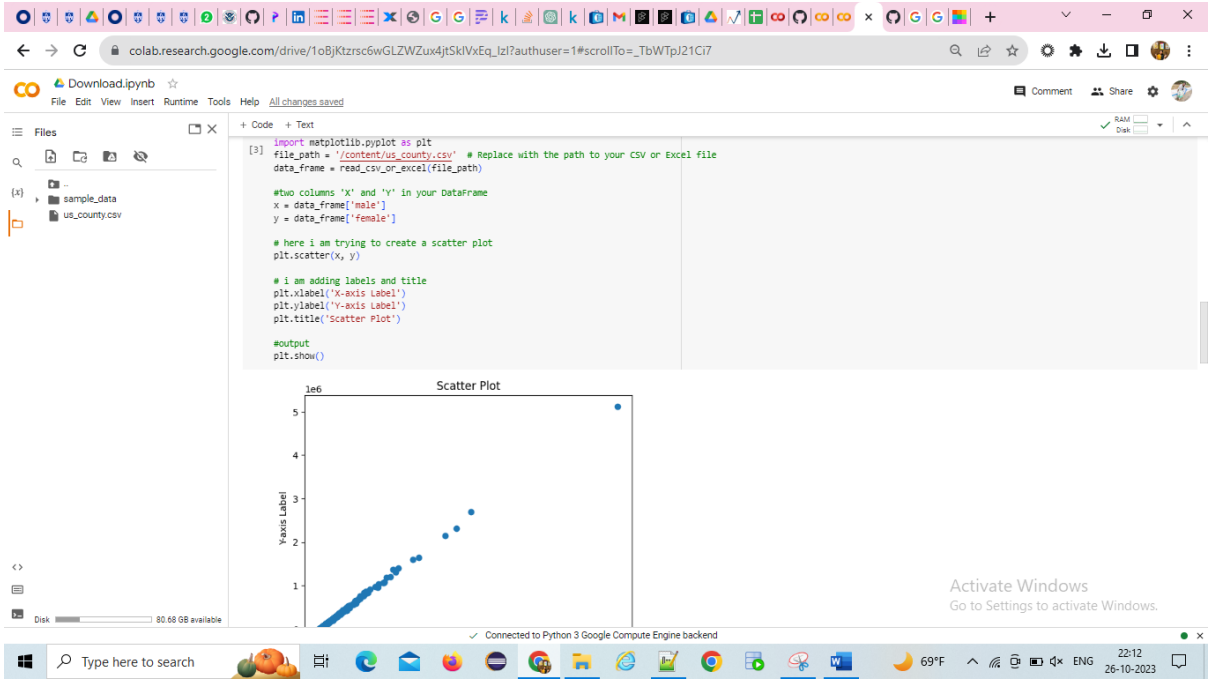


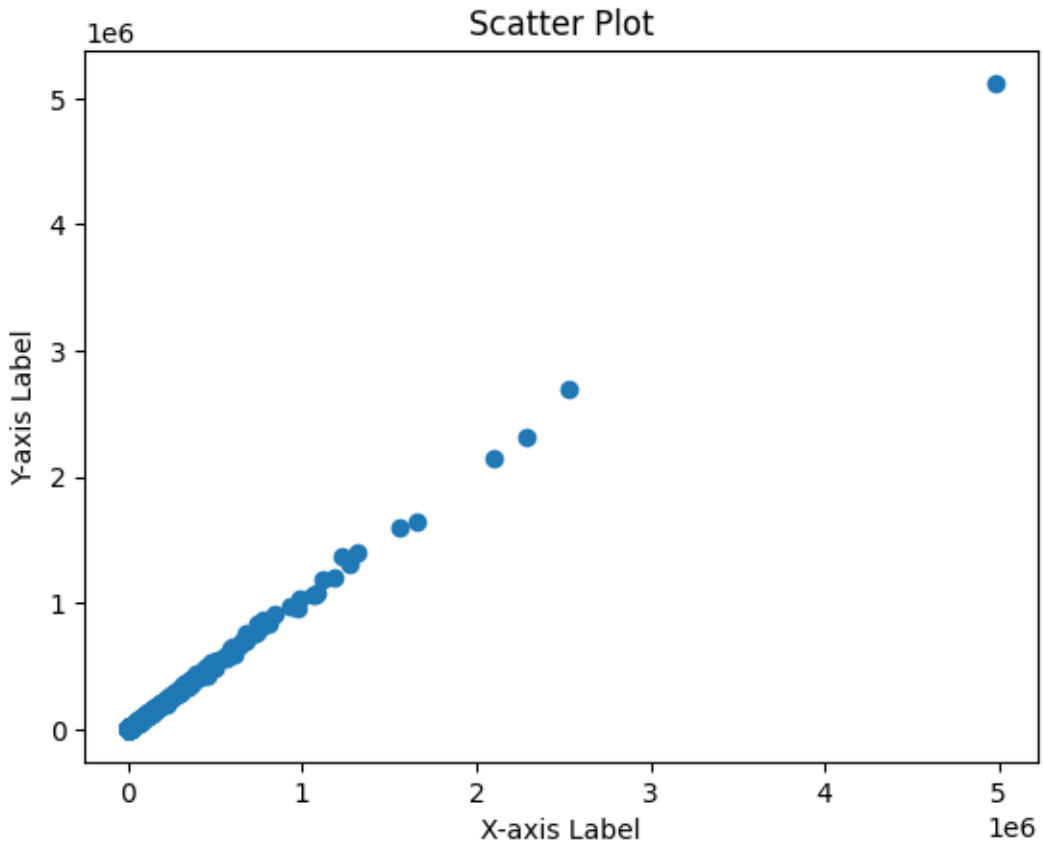


Scatterplot:

This graph shows a clear understanding of the male and female ratio.

```
import matplotlib.pyplot as plt
file_path = '/content/us_county.csv'  # Replace with the path to your
CSV or Excel file
data_frame = read_csv_or_excel(file_path)

#two columns 'X' and 'Y' in your DataFrame
x = data_frame['male']
y = data_frame['female']

# here i am trying to create a scatter plot
plt.scatter(x, y)

# i am adding labels and title
plt.xlabel('X-axis Label')
plt.ylabel('Y-axis Label')
plt.title('Scatter Plot')

#output
plt.show()
```



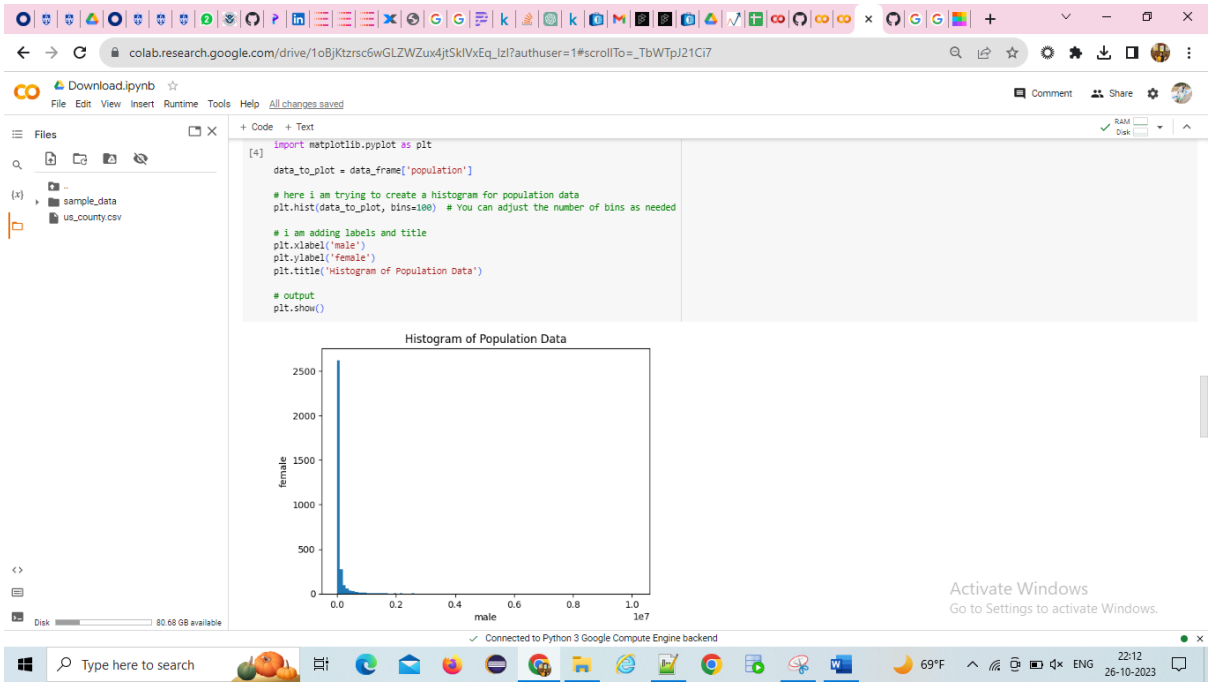


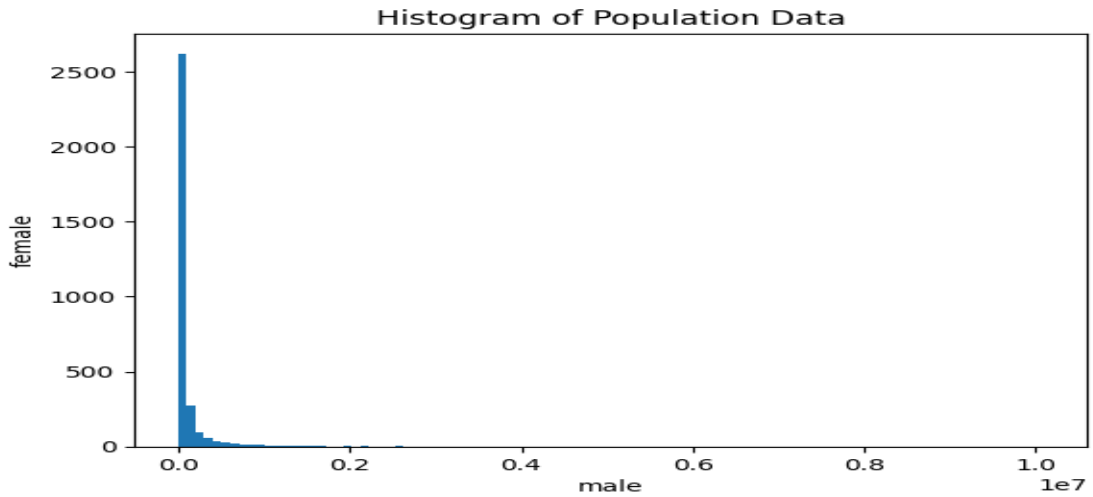
Histogram:

This graph shows a clear understanding of the male and female ratio

```
import matplotlib.pyplot as plt
```

```
data_to_plot = data_frame['population']

# here i am trying to create a histogram for population data
plt.hist(data_to_plot, bins=100)  # You can adjust the number of bins
as needed

# i am adding labels and title
plt.xlabel('male')
plt.ylabel('female')
plt.title('Histogram of Population Data')

# output
plt.show()
```





Important Links:

Dataset Link:

https://drive.google.com/drive/folders/1RfLhJVOK45x9oGBmOKyZEpBAaHuITYaw

https://docs.google.com/spreadsheets/d/1OVgcN0T2npE5nRc9RTND8tUP9znStHVZJwMrOthtqDo/edit#gid=1650272371

GitHub Link:

https://github.com/santhiya-hds5210/ORES-5160-EDA

Drive Link:

https://drive.google.com/drive/folders/1W8AiXxbgTYK-HOXSPKjee9qGdj_Ari1O

Appendix:

- https://www.google.com/search?q=what+is+eda+in+data+science&oq=what+is+EDA+inn&gs_lcrp=EgZjaHJvbWUqCQgBEAAYDRiABDIGCAAQRRg5MgkIARAAGA0YgAQyCQgCEAAYDRiABDIJCAMQABgNGIAEMgkIBBAAGA0YgAQyCQgFEAAYDRiABDIJCAYQABgNGIAEMgkIBxAAGA0YgAQyCQgIEAAYDRiABDIJCAkQABgNGIAE0gEJMTE4MjhqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8
- https://www.kaggle.com/datasets/headsortails/covid19-us-county-jhu-data-demographics?select=us_county.csv
- https://stackoverflow.com/questions/18039057/pandas-parser-cparsererror-error-tokenizing-data
- https://chat.openai.com/c/8da6a9dc-bee7-4983-9bf9-7530b2178d31
- https://www.kaggle.com/code/masoudfaramarzi/basics-of-accesing-data-from-urls-using-pandas
- https://www.forefront.ai/app/chat/new
- https://www.numbeo.com/quality-of-life/rankings_by_country.jsp
- https://www.analyticsvidhya.com/blog/2022/03/exploratory-data-analysis-with-an-example/
- https://docs.google.com/spreadsheets/d/1OVgcN0T2npE5nRc9RTND8tUP9znStHVZJwMrOthtqDo/edit#gid=1650272371
- https://canvas.slu.edu/courses/45377/assignments/343230
- https://colab.research.google.com/drive/1Yr_FH_rjTCW7741e1rArixu4ZWL02FGC#scrollTo=ZfIbVsMyiqOI
- https://github.com/santhiya-hds5210/ORES-5160-EDA
- https://www.google.com/search?q=scatter+plot&oq=scatter&gs_lcrp=EgZjaHJvbWUqDQgBEAAYgwEYsQMYgAQyDwgAEEUYORiDARixAxiABDINCAEQABiDARixAxiABDIKCAIQABixAxiABDINCAMQABiDARixAxiABDINCAQQABiDARixAxiABDIKCAUQABixAxiABDINCAYQABiDARixAxiABDIHCAcQABiABDIKCAgQABixAxiABDINCAkQABiDARixAxiABNIBCDMzOTdqMGo3qAIAsAIA&sourceid=chrome&ie=UTF-8
- https://www.google.com/search?q=boxplot&oq=boxpl&gs_lcrp=EgZjaHJvbWUqDAgBEAAYQxixAxiKBTIGCAAQRRg5MgwIARAAGEMYsQMYigUyDwgCEAAYQxiDARixAxiKBTIKCAMQABixAxiABDIJCAQQABhDGIoFMgcIBRAAGIAEMgkIBhAAGEMYigUyCQgHEAAYQxiKBTIJCAgQABhDGIoFMgcICRAAGIAE0gEIMzEwNmowajeoAgCwAgA&sourceid=chrome&ie=UTF-8