FinalProject_MS5_KanaparthiVenkata

March 3, 2022

[1]:
```
# Import all the required libraries
import sqlite3
from sqlite3 import Error
import pandas as pd
import numpy as np
```

[2]:
```
# Function to create database connection
def db_connect(db_file):
    conn = None
    try:
        conn = sqlite3.connect(db_file)
        return conn
    except Error as err:
        print(err)
        if conn is not None:
            conn.close()
```

[3]:
```
dbfile = 'mydata.sqlite'
# Function to insert data into the tables
def data_insert(table_name, csv_file):
    # Calling the db_connect function to connect to a database
    conn = db_connect(dbfile)

    if conn is not None:
        c = conn.cursor()

        # Create table if it is not exist
        c.execute('CREATE TABLE IF NOT EXISTS ' + table_name +
        '(obdb_id VARCHAR,'
        'brewery_name VARCHAR,'
        'brewery_type VARCHAR,'
        'street_name VARCHAR,'
        'addressline_2 VARCHAR,'
        'addressline_3 VARCHAR,'
        'city_name VARCHAR,'
        'state_name VARCHAR,'
        'county_province VARCHAR,'
        'postal_code VARCHAR,'
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        'website_url VARCHAR,'
        'phone VARCHAR,'
        'created_at VARCHAR,'
        'updated_at VARCHAR,'
        'country VARCHAR,'
        'longitude VARCHAR,'
        'latitude VARCHAR,'
        'tags VARCHAR)')

        # Creating a data frame from the csv files

        df = pd.read_csv(csv_file, names = names)

        df.to_sql(name=table_name, con=conn, if_exists='append', index=False)

        conn.close()
        print('SQL insert process finished')
    else:
        print('Connection to database failed')
```

[4]:
```
# Renaming the column names
names = []
with open('column_names.txt', 'r') as f:
    for line in f:
        f.readline()
        var = line.split(":")[0]
        names.append(var)
```

[5]:
```
# Assigning the file names to the variables and passing the csv file to insert␣
 ↪into database
if __name__ == '__main__':
    ms2_csv_file = 'milestone2_data_CSV.csv'
    data_insert('milestone2_CSV_data', ms2_csv_file)
    ms3_web_file = 'milestone3_data_WEB.csv'
    data_insert('milestone3_WEB_data', ms3_web_file)
    ms4_api_file = 'milestone4_data_API.csv'
    data_insert('milestone4_API_data', ms4_api_file)
```

```
SQL insert process finished
SQL insert process finished
SQL insert process finished
```

[6]:
```
# Connecting to the Database
conn = db_connect(dbfile)
# Initializing the variable to execute queries
c = conn.cursor()
# To check the nuber of records from milestone2 table
```

```
rows = c.execute("SELECT count(*) FROM milestone2_CSV_data")
for row in rows:
    print(row)
# To check the nuber of records from milestone3 table
rows = c.execute("SELECT count(*) FROM milestone3_WEB_data")
for row in rows:
    print(row)
# To check the nuber of records from milestone4 table
rows = c.execute("SELECT count(*) FROM milestone4_API_data")
for row in rows:
    print(row)

#Check the common data from milestone2_CSV_data and milestone3_WEB_data
rows = c.execute("SELECT count(*) FROM milestone2_CSV_data a,␣
 ↪milestone3_WEB_data b where a.obdb_id = b.obdb_id")
for row in rows:
    print(row)

#Check the common data from milestone3_WEB_data and milestone4_API_data
rows = c.execute("SELECT count(*) FROM milestone3_WEB_data a,␣
 ↪milestone4_API_data b where a.obdb_id = b.obdb_id")
for row in rows:
    print(row)

#Check the common data from milestone4_API_data and milestone2_CSV_data
rows = c.execute("SELECT count(*) FROM milestone4_API_data a,␣
 ↪milestone2_CSV_data b where a.obdb_id = b.obdb_id")
for row in rows:
    print(row)

#Check the common data from milestone2_CSV_data and milestone3_WEB_data
rows = c.execute("SELECT count(*) FROM milestone2_CSV_data a left join␣
 ↪milestone3_WEB_data b on a.obdb_id = b.obdb_id")
for row in rows:
    print(row)

#Check the common data from milestone3_WEB_data and milestone4_API_data
rows = c.execute("SELECT count(*) FROM milestone3_WEB_data a left join␣
 ↪milestone4_API_data b on a.obdb_id = b.obdb_id")
for row in rows:
    print(row)

#Check the common data from milestone4_API_data and milestone2_CSV_data
rows = c.execute("SELECT count(*) FROM milestone4_API_data a left join␣
 ↪milestone2_CSV_data b on a.obdb_id = b.obdb_id")
for row in rows:
```

```
    print(row)
```

```
(1008,)
(693,)
(738,)
(304,)
(160,)
(271,)
(1008,)
(693,)
(738,)
```

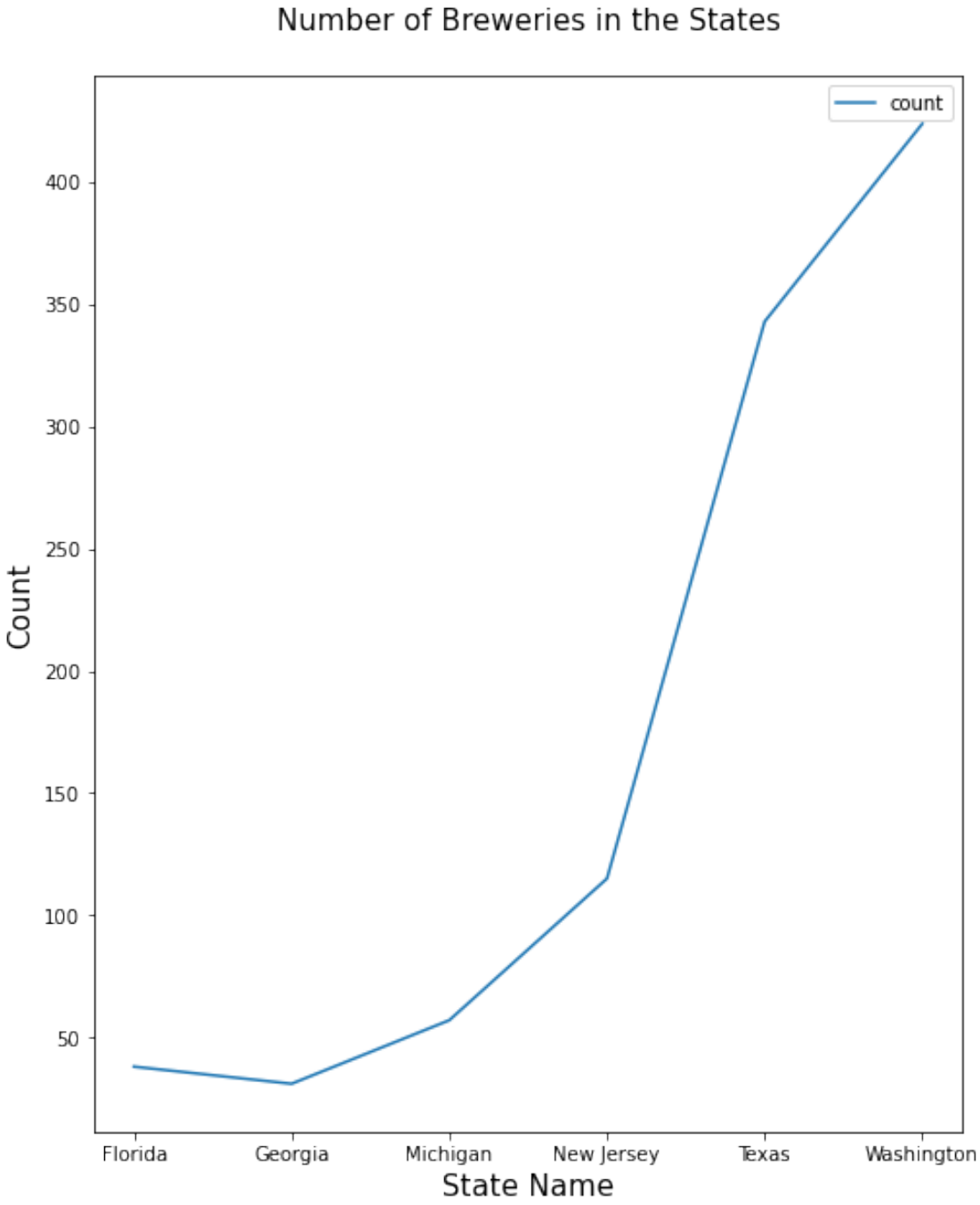
[7]:
```
# Import the plot library
import matplotlib.pyplot as plt
```

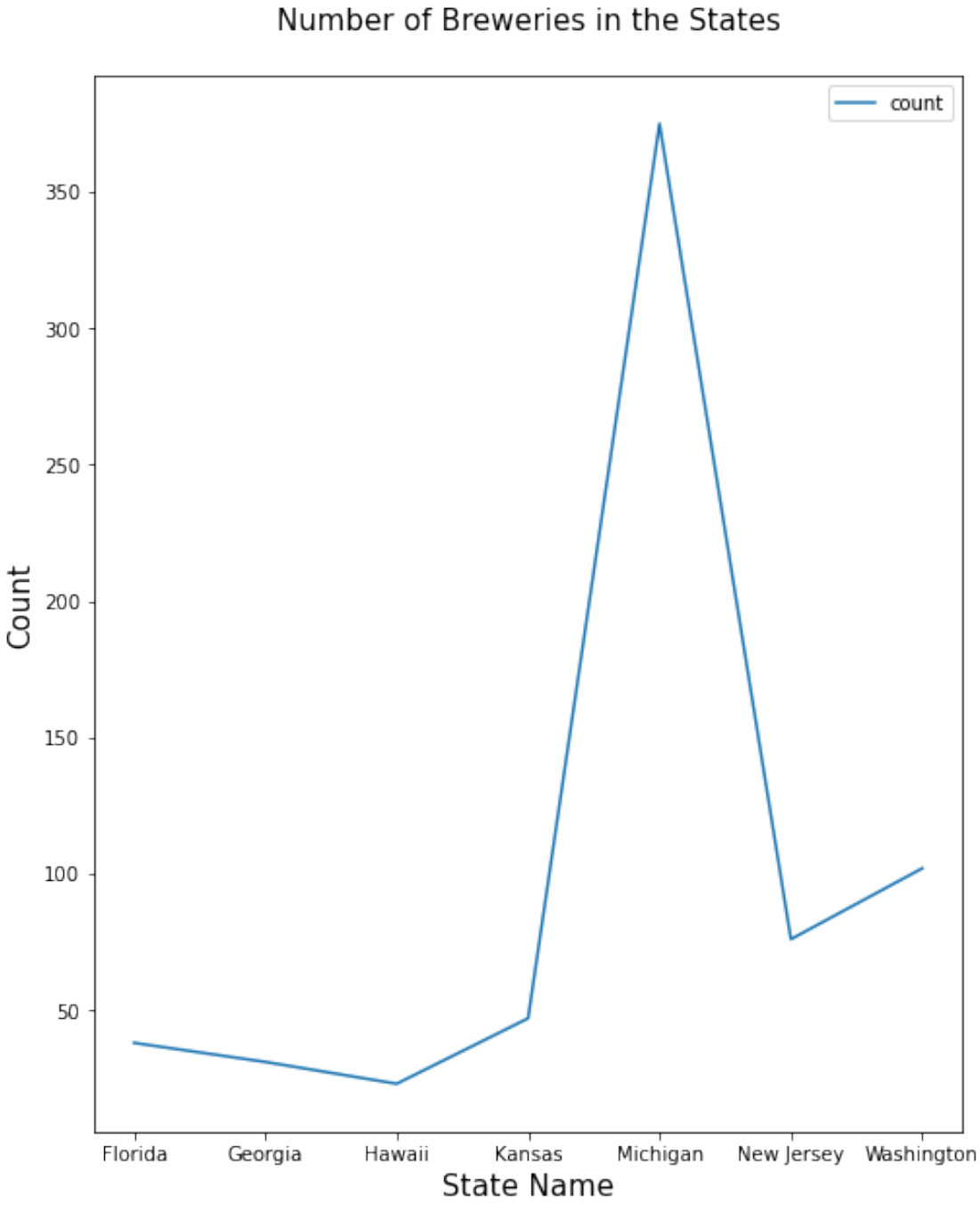
[8]:
```
# Plotting a line using matplotlib
# Create a function to visualize the data
def visualize_data(tblname1, tblname2, graph):
    query = 'SELECT ' + tblname1 + '.state_name,'
    query = query + ' count( '+ tblname1 + '.brewery_type) as count FROM ' +␣
 ↪tblname1 + ' left join '
    query = query + tblname2 + ' on '+tblname1+'.obdb_id = '+tblname2+'.obdb_id'
    query = query + ' where '+ tblname1 + '.state_name is not null group by '
    query = query + tblname1 + '.state_name'

    df = pd.read_sql_query(query,conn)
    #print(df)
    # Plot Line graph if variable passed is LINE
    if graph == 'LINE':
        ax = df.plot(x="state_name", y="count", fontsize=10, figsize=(8,10))
        ax.set_title('Number of Breweries in the States\n', fontsize=15)
        ax.set_xlabel('State Name', fontsize=15)
        ax.set_ylabel('Count', fontsize=15);
        plt.show()
    # Plot BAR graph if variable passed is BAR
    elif graph == 'BAR':
        ax = df.plot(x="state_name", y="count", kind="bar", fontsize=10,␣
 ↪figsize=(8,10))
        ax.set_title('Number of Breweries in the States\n', fontsize=15)
        ax.set_xlabel('State Name', fontsize=15)
        ax.set_ylabel('Count', fontsize=15);
        plt.show()
    # Plot Scatterplot graph if variable passed is SCATPLT
    elif graph == 'SCATPLT':
        ax = df.plot(x="state_name", y="count", kind="scatter", fontsize=10,␣
 ↪figsize=(8,10))
        ax.set_title('Number of Breweries in the States\n', fontsize=15)
```

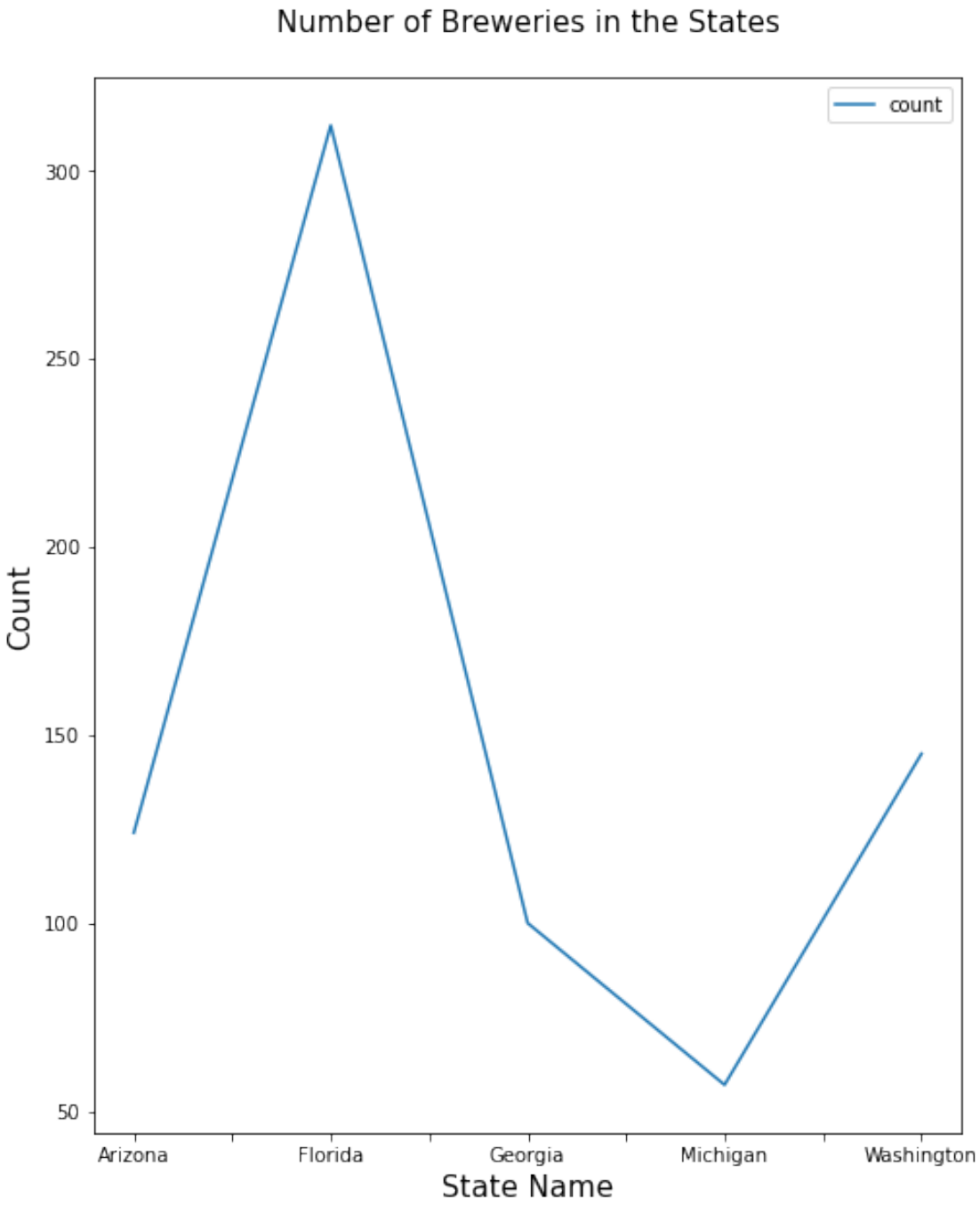
```
        ax.set_xlabel('State Name', fontsize=15)
        ax.set_ylabel('Count', fontsize=15);
        plt.show()
```

[9]:
```
# Assigning Table names
tbl1 = 'milestone2_CSV_data'
tbl2 = 'milestone3_WEB_data'
tbl3 = 'milestone4_API_data'
```

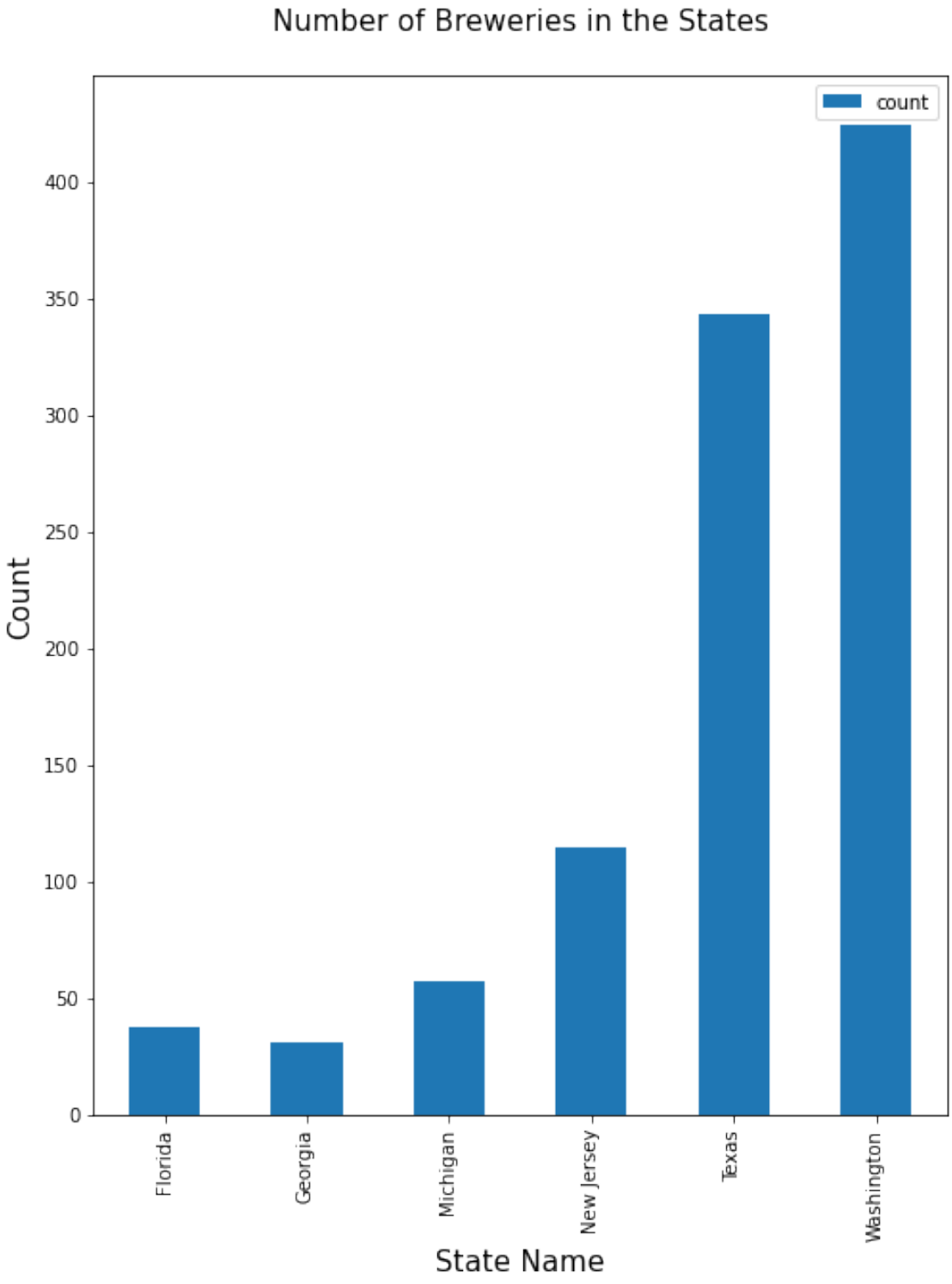
[10]:
```
# Call functions to Plot Line graph by passing LINE
graph = 'LINE'
visualize_data(tbl1, tbl2, graph)
visualize_data(tbl2, tbl3, graph)
visualize_data(tbl3, tbl1, graph)
```

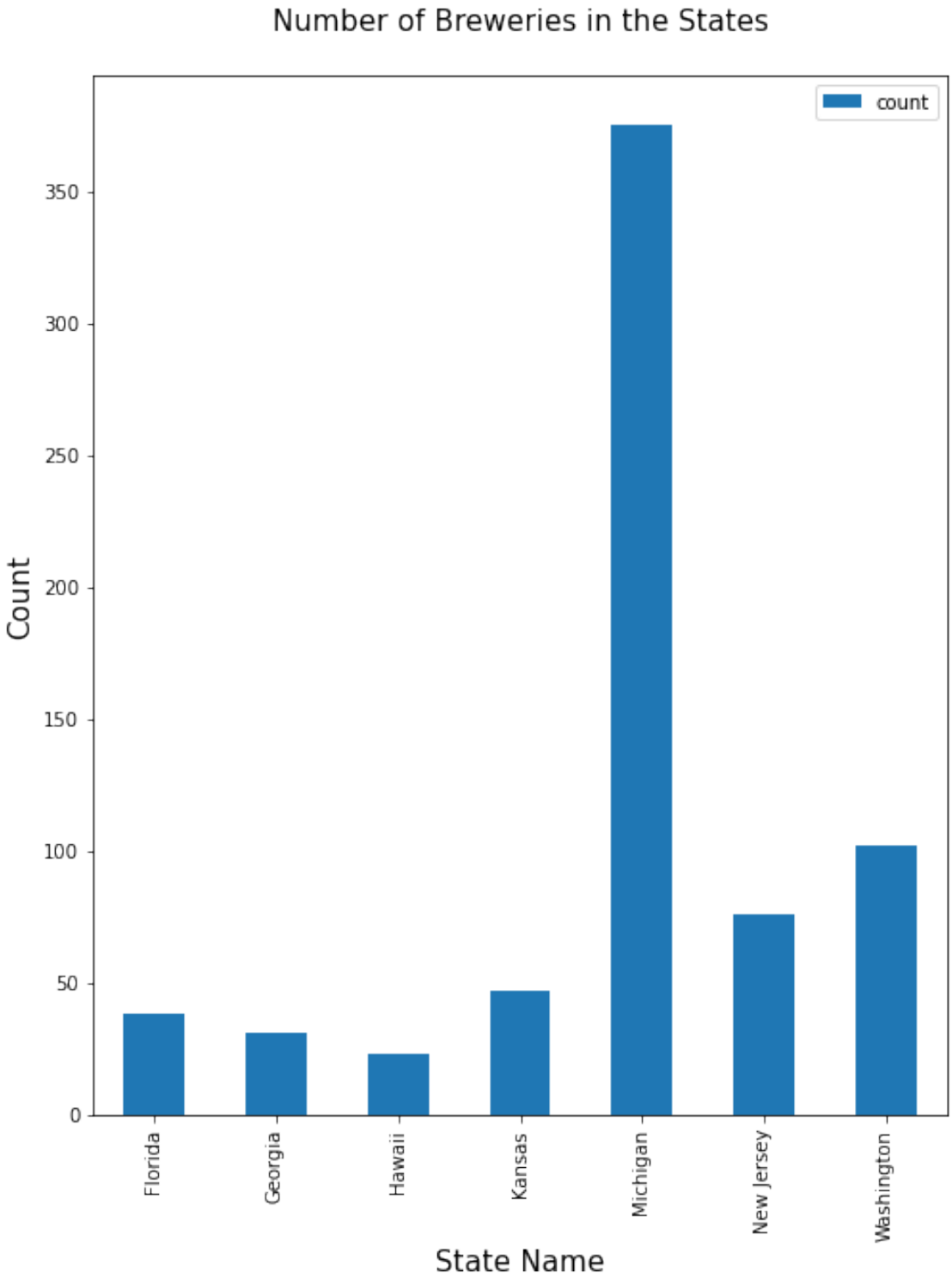

Number of Breweries in the States
count
400
350
300
250
200
150
100
50
Count
Florida
Georgia
Michigan
New Jersey
Texas
Washington
State Name

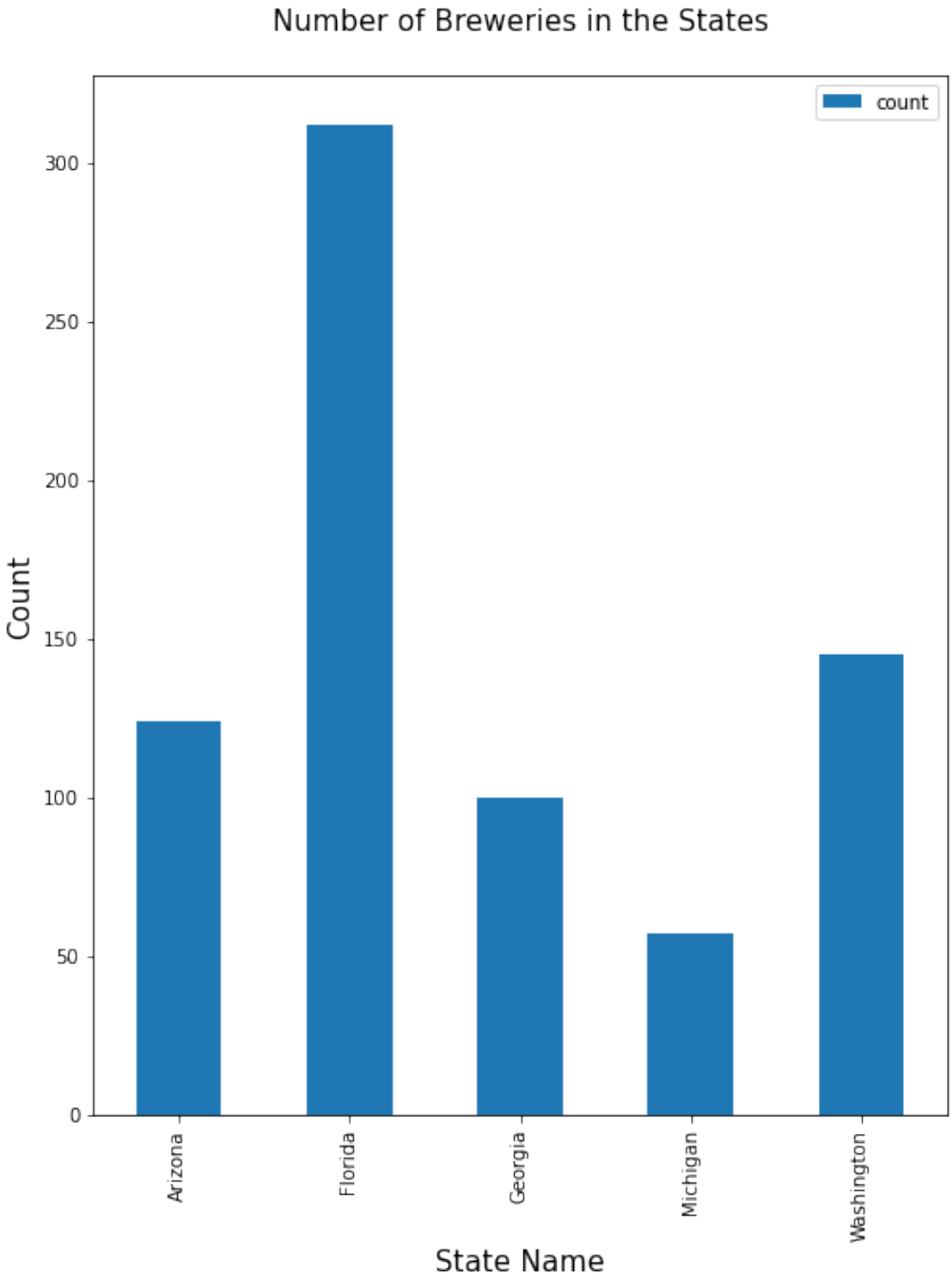

Number of Breweries in the States
count
350
300
250
200
150
100
50
Count
Florida
Georgia
Hawaii
Kansas
Michigan
New Jersey
Washington
State Name



[11]:
```
# Call functions to Plot Bar graph by passing BAR
graph = 'BAR'
visualize_data(tbl1, tbl2, graph)
visualize_data(tbl2, tbl3, graph)
visualize_data(tbl3, tbl1, graph)
```

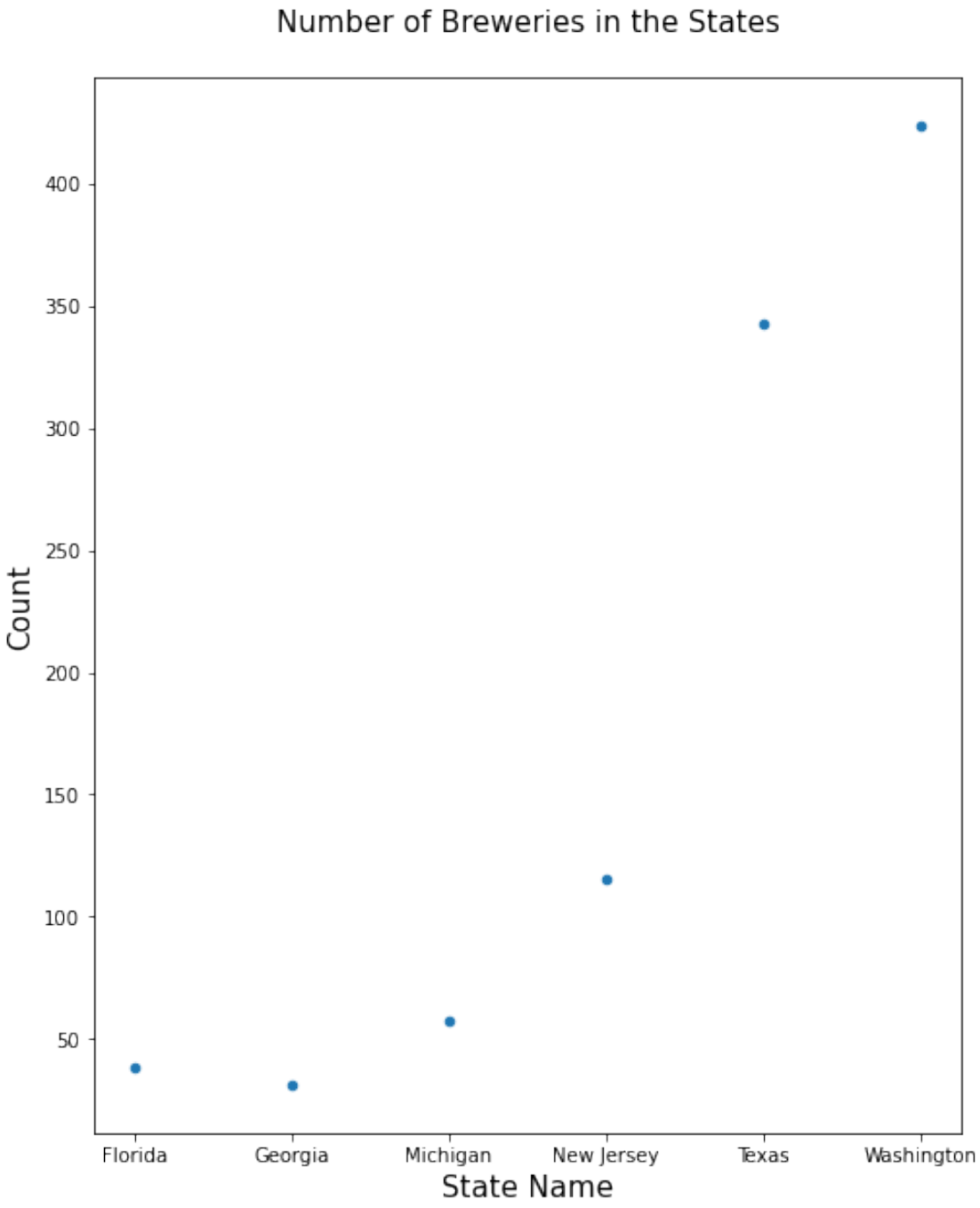

Number of Breweries in the States
count
Count
0
50
100
150
200
250
300
350
400
Florida
Georgia
Michigan
New Jersey
Texas
Washington
State Name

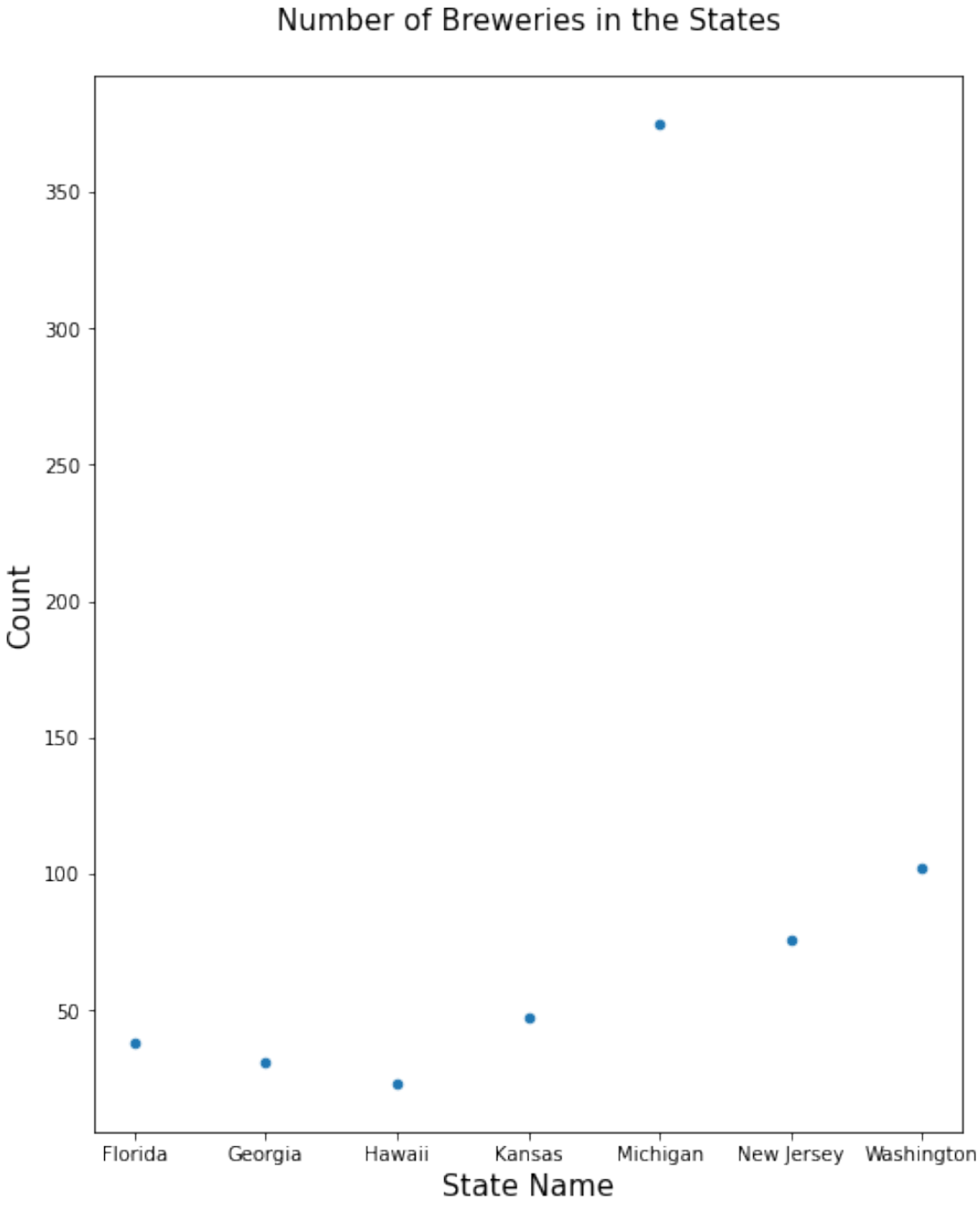

Number of Breweries in the States
count
Count
350
300
250
200
150
100
50
0
Florida
Georgia
Hawaii
Kansas
Michigan
New Jersey
Washington
State Name

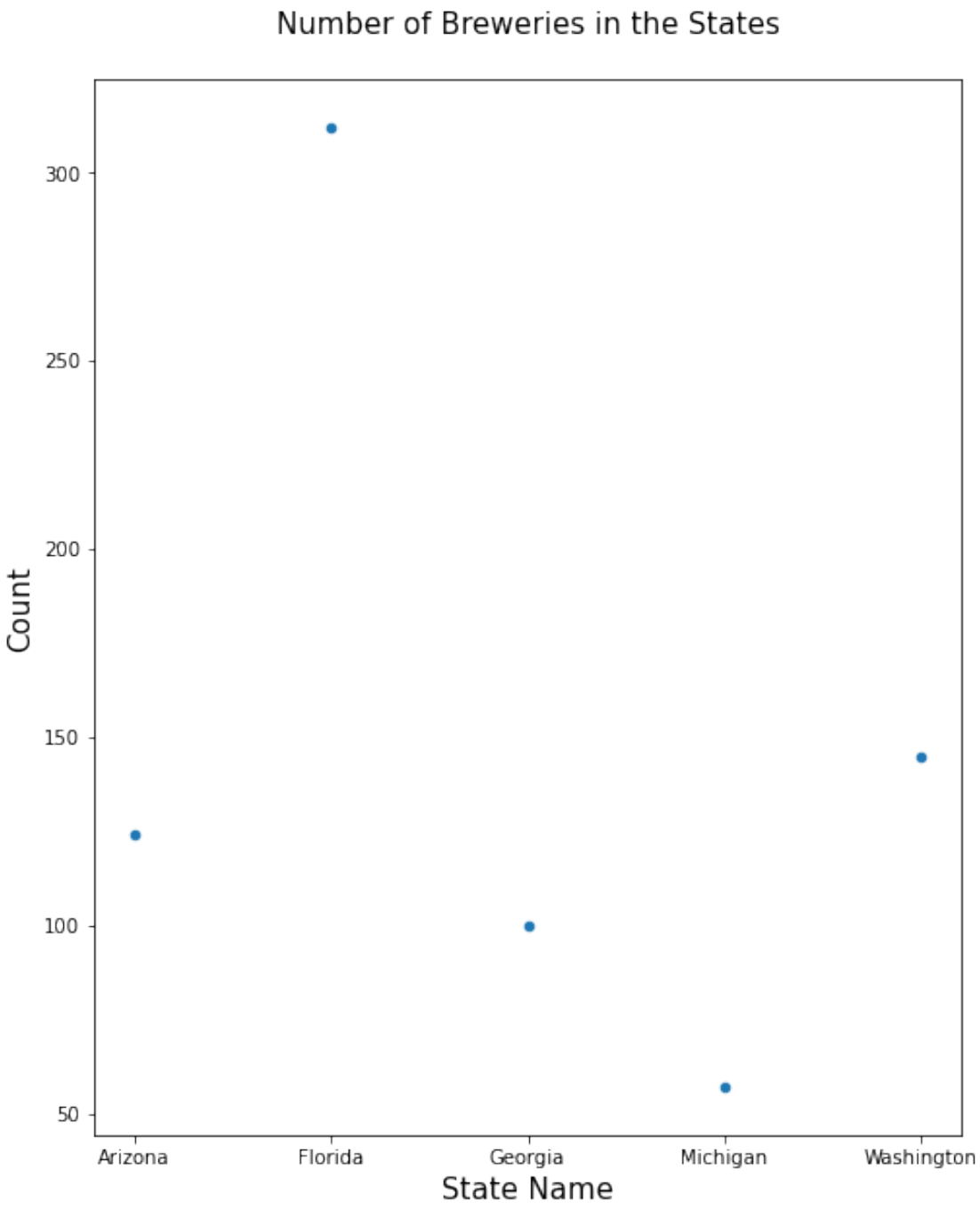


[12]:
```
# Call functions to Plot Scatter Plot graph by passing SCATPLT
graph = 'SCATPLT'
```

```
visualize_data(tbl1, tbl2, graph)
visualize_data(tbl2, tbl3, graph)
visualize_data(tbl3, tbl1, graph)
```




Number of Breweries in the States
Count
350
300
250
200
150
100
50
Florida
Georgia
Hawaii
Kansas
Michigan
New Jersey
Washington
State Name



[13]:
```
# Dropping the tables once the plots are completed
data=c.execute('''drop table milestone2_CSV_data''')
data=c.execute('''drop table milestone3_WEB_data''')
data=c.execute('''drop table milestone4_API_data''')
```