This *'ipynb'* file shows the data visualizations of US Presidential Elections in 2020 by County.

```
# connecting to Google Drive
from google.colab import drive
drive.mount('/content/drive')
%cd /content/drive/MyDrive/US Elections 2020 county
```

```
Mounted at /content/drive
[Errno 2] No such file or directory: '/content/drive/MyDrive/US Elections 2020 county'
/content
```

```
import pandas as pd
import numpy as np
import geopandas as gpd
import matplotlib.pyplot as plt
from matplotlib import pyplot as plt
import seaborn as sns
```

```
# Load the dataset
data = pd.read_csv("/content/drive/MyDrive/US Elections 2020 county /2020_US_County_Level_Presidential_Results.csv")
```

```
# Fill empty spaces (NaN values) in the columns with 0
data.fillna(0, inplace=True)

# Save the updated CSV file
output_path = '/content/drive/MyDrive/US Elections 2020 county /2020_US_County_Level_Presidential_Results_filled.csv'
data.to_csv(output_path, index=False)

print(f"File with filled spaces saved to: {output_path}")
```

```
File with filled spaces saved to: /content/drive/MyDrive/US Elections 2020 county /2020_US_County_Level_Presidential_Results_filled.csv
```

```
# load the new dataset
data = pd.read_csv("/content/drive/MyDrive/US Elections 2020 county /2020_US_County_Level_Presidential_Results_filled.csv")
```

```
data.head()
```

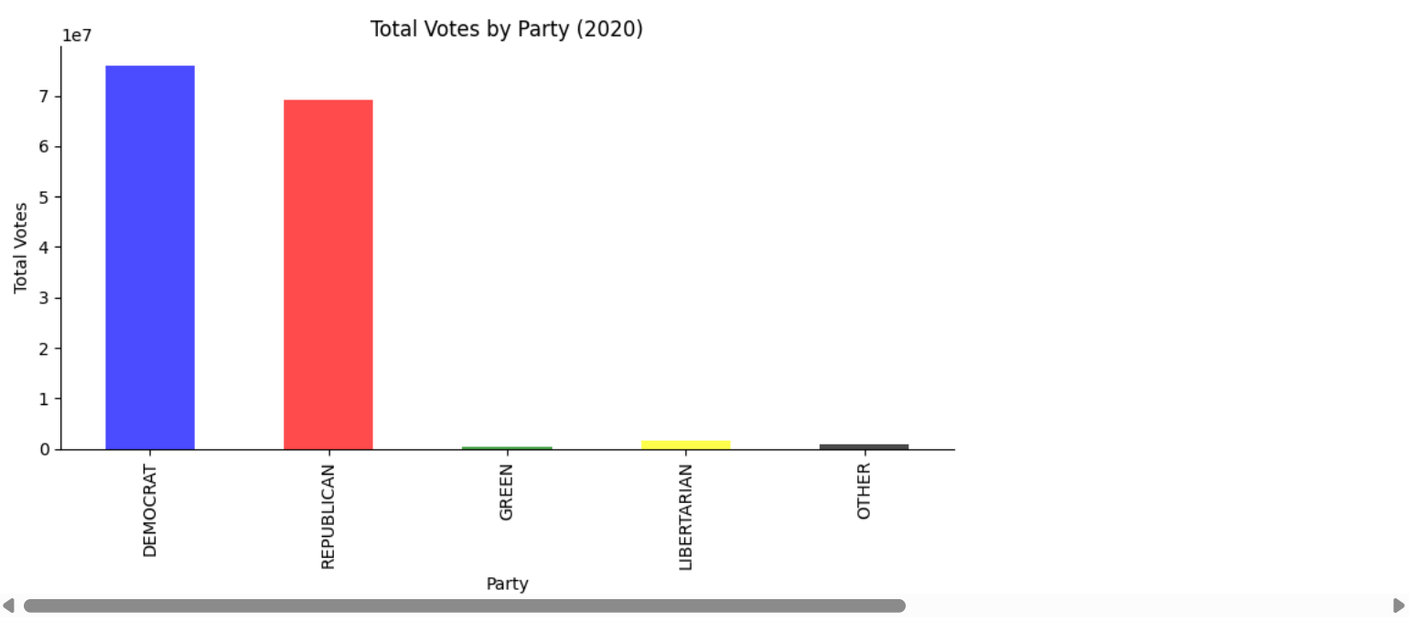
	year	county_fips	county_name	state	totalvotes	DEMOCRAT	GREEN	LIBERTARIAN	OTHER	REPUBLICAN
0	2020	1001.0	AUTAUGA	ALABAMA	27770	7503	0.0	0.0	429.0	19838
1	2020	1003.0	BALDWIN	ALABAMA	109679	24578	0.0	0.0	1557.0	83544
2	2020	1005.0	BARBOUR	ALABAMA	10518	4816	0.0	0.0	80.0	5622
3	2020	1007.0	BIBB	ALABAMA	9595	1986	0.0	0.0	84.0	7525
4	2020	1009.0	BLOUNT	ALABAMA	27588	2640	0.0	0.0	237.0	24711

Next steps: Generate code with data | View recommended plots | New interactive sheet

```
party_vote_columns = ['DEMOCRAT', 'REPUBLICAN', 'GREEN', 'LIBERTARIAN', 'OTHER']
total_votes_by_party = data[party_vote_columns].sum()

# percentage of votes for each party
total_votes = total_votes_by_party.sum()
percentage_by_party = (total_votes_by_party / total_votes) * 100

# Combine the total votes and percentages
results = pd.DataFrame({
    'Total Votes': total_votes_by_party,
    'Percentage (%)': percentage_by_party
})

print("Total Votes and Percentage by Each Party:")
print(results)
```

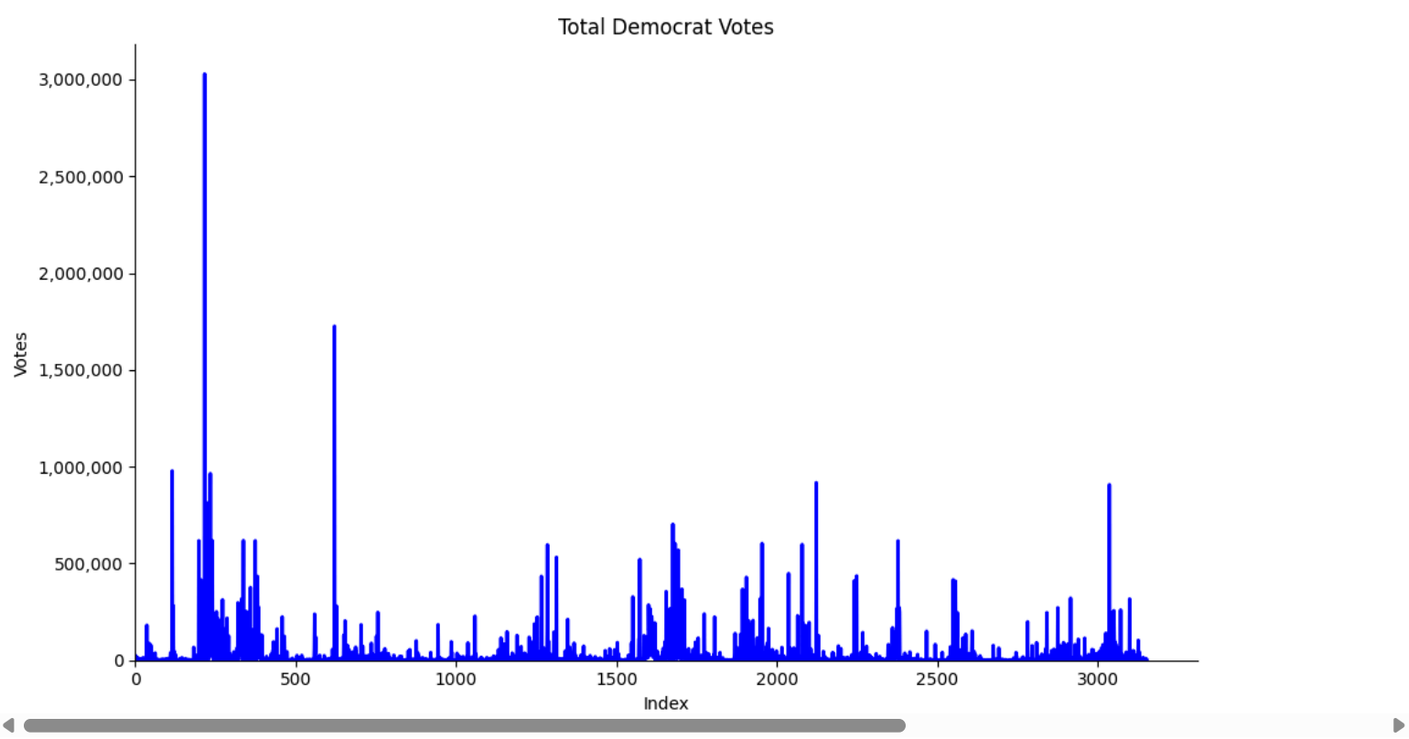
```
Total Votes and Percentage by Each Party:
              Total Votes  Percentage (%)
DEMOCRAT      75955993.0       51.327172
REPUBLICAN    69253025.0       46.797649
GREEN           359519.0        0.242945
LIBERTARIAN    1663258.0        1.123945
OTHER           752187.0        0.508289
```

```
# bar chart showing total votes for each party
plt.figure(figsize=(8, 5))
total_votes_by_party.plot(kind='bar', color=['blue', 'red', 'green', 'yellow', 'black'], alpha=0.7)

plt.title('Total Votes by Party (2020)')
plt.xlabel('Party')
plt.ylabel('Total Votes')
plt.gca().spines[['top', 'right']].set_visible(False)
plt.tight_layout()
plt.show()
```

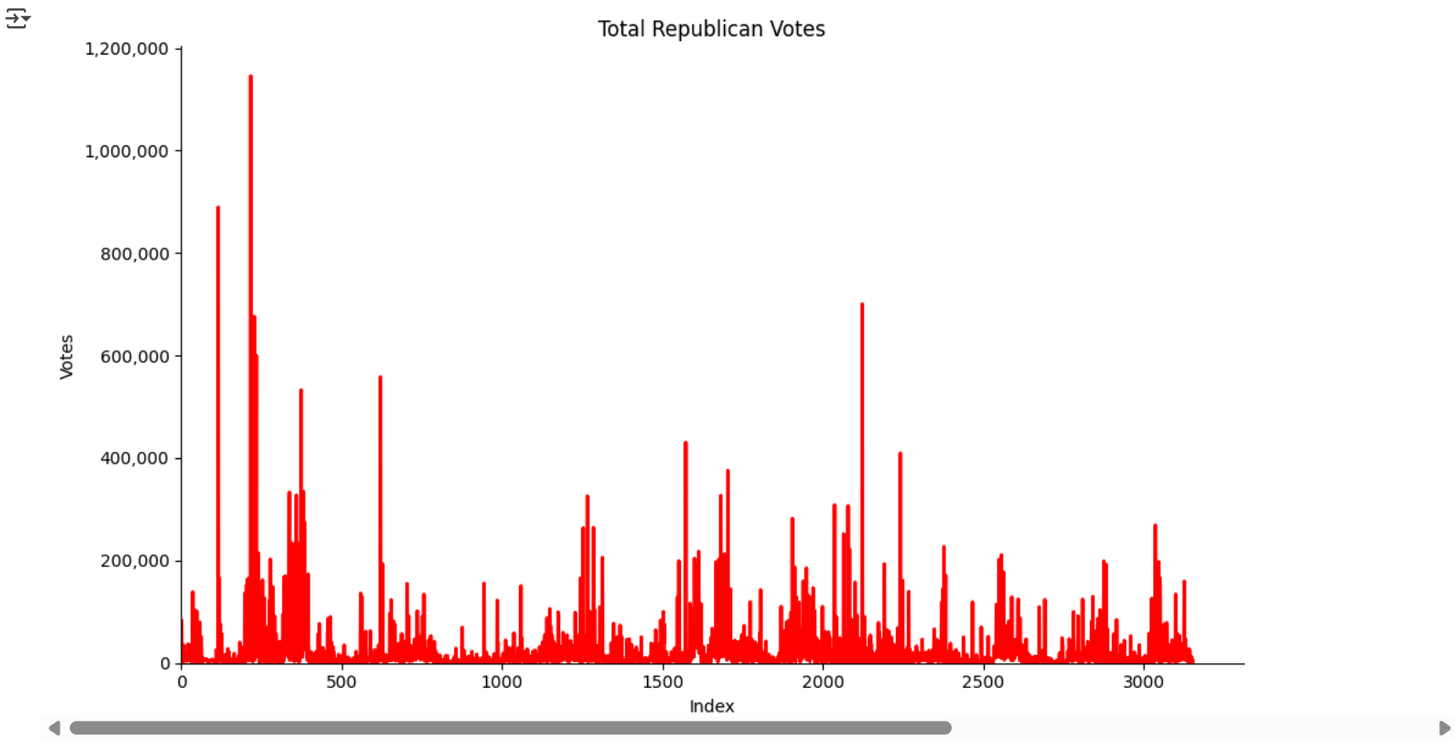



```
import matplotlib.pyplot as plt
from matplotlib.ticker import FuncFormatter
```

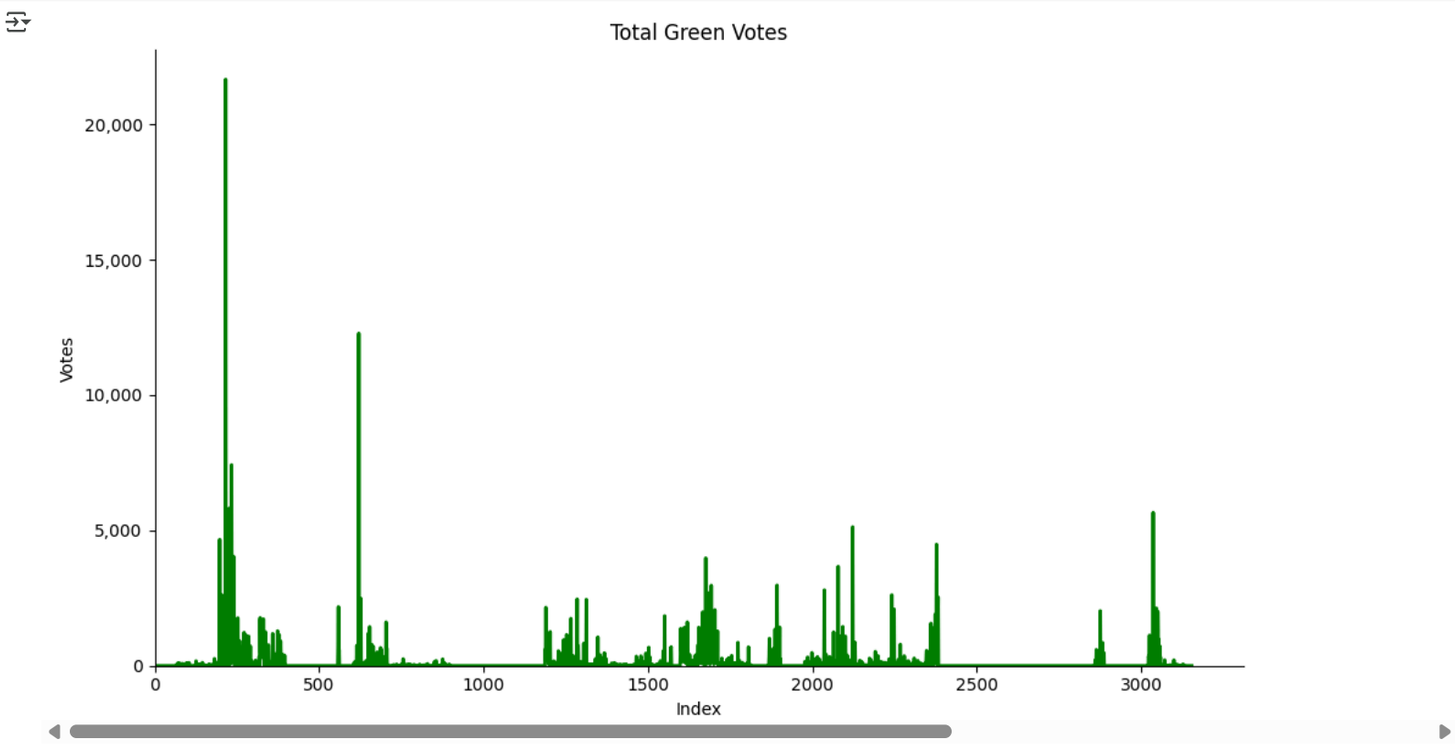
```
# bar graph showing democrat votes in each county
plt.figure(figsize=(10, 6))
plt.plot(data['DEMOCRAT'], color='blue', linewidth=2, label='Democrat Votes')
plt.title('Total Democrat Votes')
plt.xlabel('Index')
plt.ylabel('Votes')

plt.gca().spines[['top', 'right']].set_visible(False)
plt.xlim(0)
plt.ylim(0)
plt.gca().yaxis.set_major_formatter(FuncFormatter(format_ticks))
plt.tight_layout()
plt.show()
```



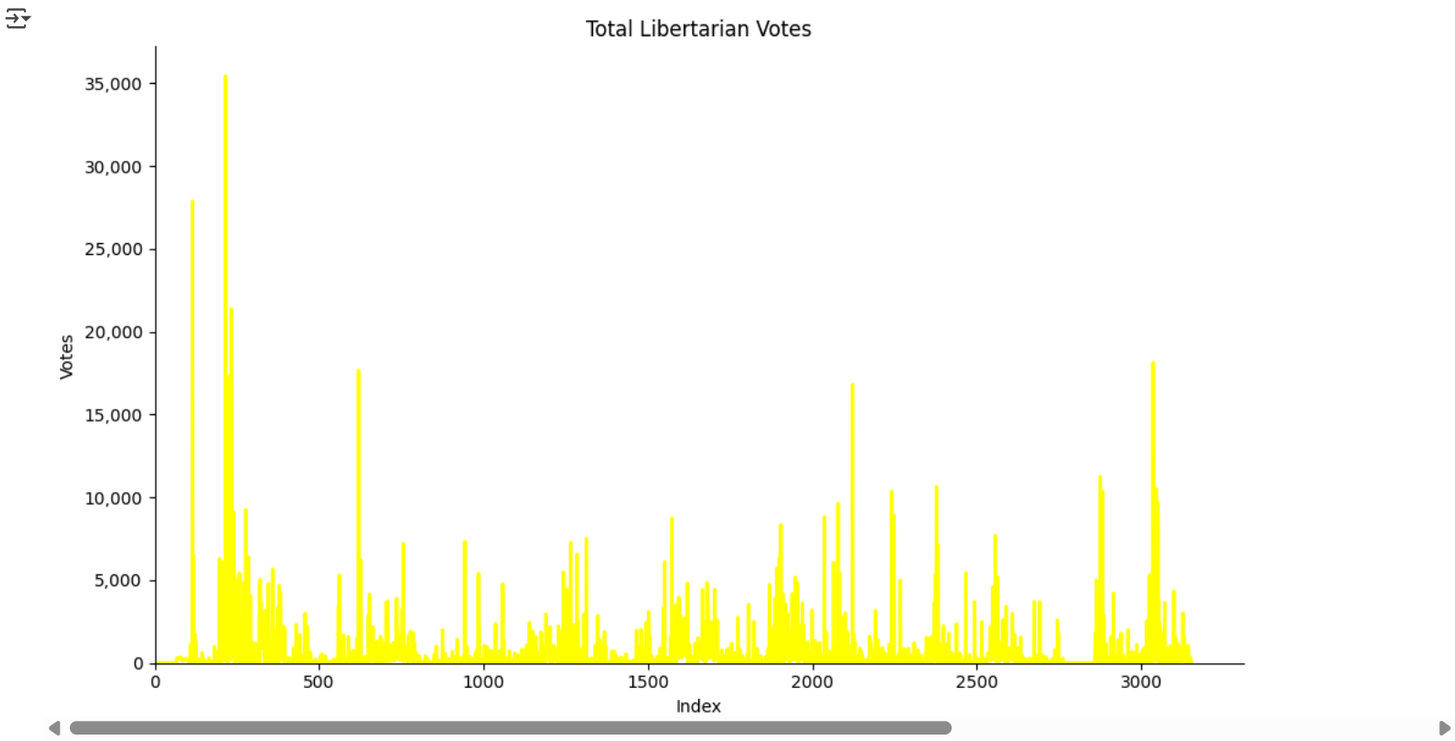

```
# bar graph showing republican votes in each county
plt.figure(figsize=(10, 6))
plt.plot(data['REPUBLICAN'], color='red', linewidth=2, label='Republican Votes')
plt.title('Total Republican Votes')
plt.xlabel('Index')
plt.ylabel('Votes')

plt.gca().spines[['top', 'right']].set_visible(False)
plt.xlim(0)
plt.ylim(0)
plt.gca().yaxis.set_major_formatter(FuncFormatter(format_ticks))

plt.tight_layout()
plt.show()
```



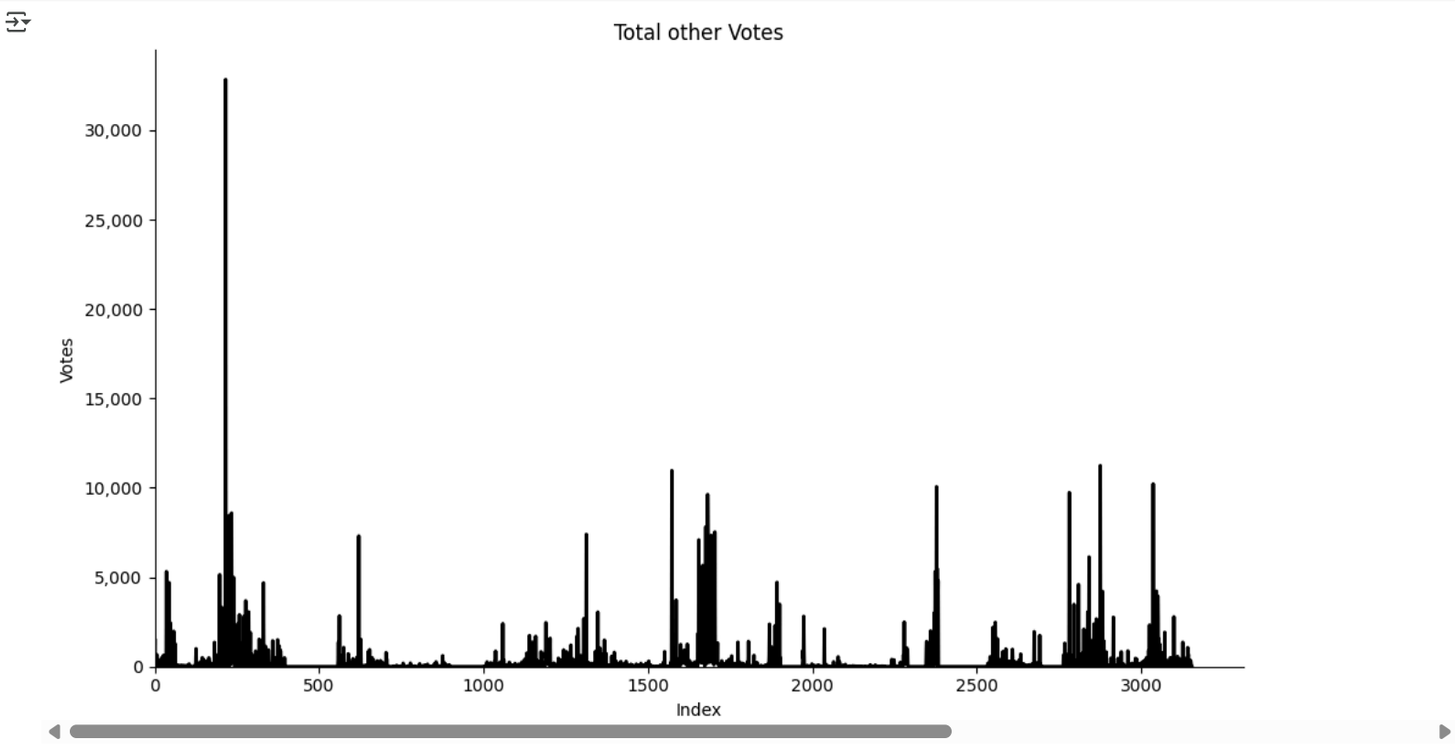

```
# bar graph showing green votes in each county
plt.figure(figsize=(10, 6))
plt.plot(data['GREEN'], color='green', linewidth=2, label='Green Votes')
plt.title('Total Green Votes')
plt.xlabel('Index')
plt.ylabel('Votes')

plt.gca().spines[['top', 'right']].set_visible(False)
plt.xlim(0)
plt.ylim(0)
plt.gca().yaxis.set_major_formatter(FuncFormatter(format_ticks))

plt.tight_layout()
plt.show()
```



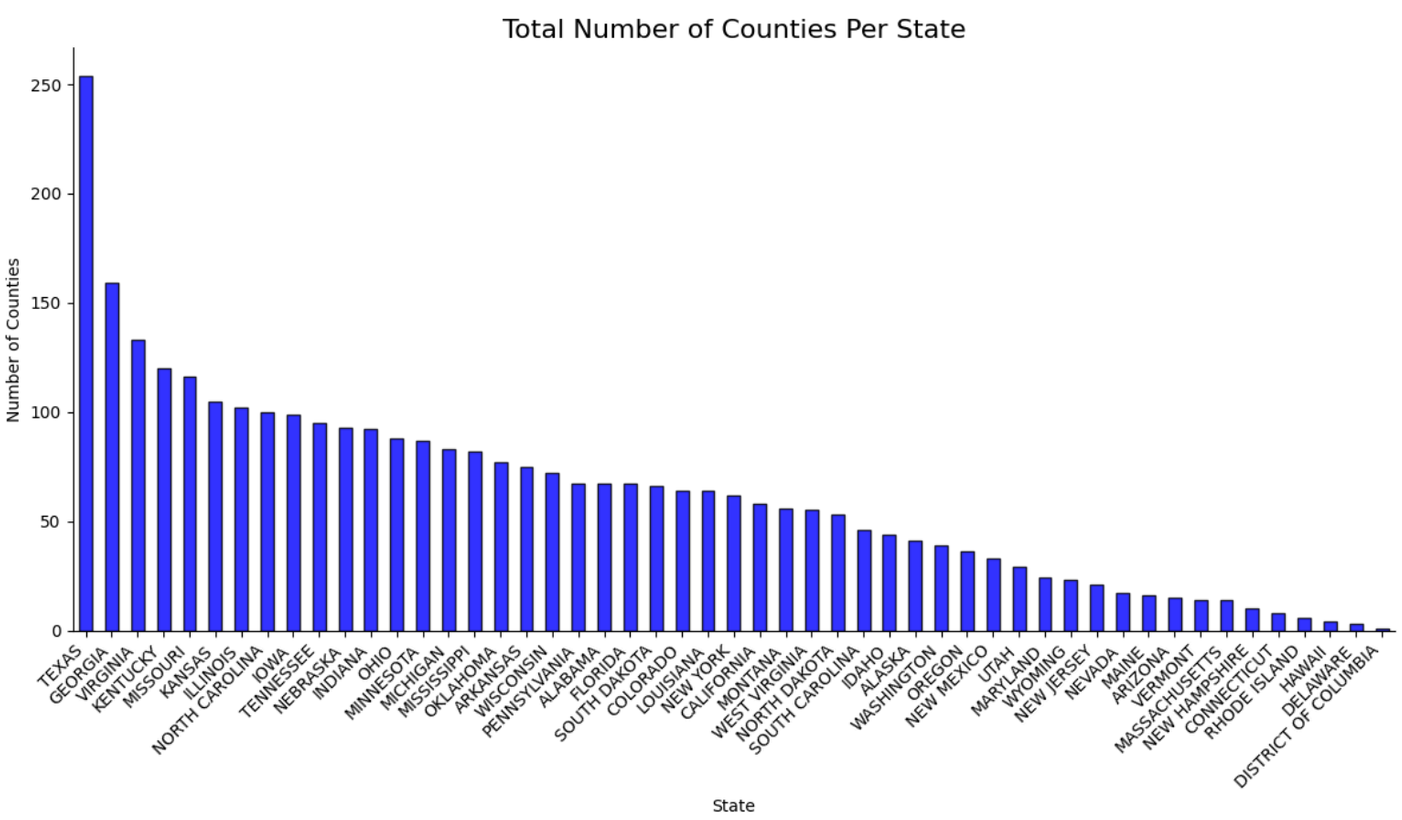

```
# bar graph showing Libertarian votes in each county
plt.figure(figsize=(10, 6))
plt.plot(data['LIBERTARIAN'], color='yellow', linewidth=2, label='Libertarian Votes')
plt.title('Total Libertarian Votes')
plt.xlabel('Index')
plt.ylabel('Votes')

plt.gca().spines[['top', 'right']].set_visible(False)
plt.xlim(0)
plt.ylim(0)
plt.gca().yaxis.set_major_formatter(FuncFormatter(format_ticks))

plt.tight_layout()
plt.show()
```




```
# bar graph showing other votes in each county
plt.figure(figsize=(10, 6))
plt.plot(data['OTHER'], color='black', linewidth=2, label='other Votes')
plt.title('Total other Votes')
plt.xlabel('Index')
plt.ylabel('Votes')

plt.gca().spines[['top', 'right']].set_visible(False)
plt.xlim(0)
plt.ylim(0)
plt.gca().yaxis.set_major_formatter(FuncFormatter(format_ticks))

plt.tight_layout()
plt.show()
```




```
# Total Number of Counties in each State
counties_per_state = data.groupby('state')['county_name'].count()

counties_per_state = counties_per_state.sort_values(ascending=False)

plt.figure(figsize=(12, 7))
counties_per_state.plot(kind='bar', color='blue', edgecolor='black', alpha=0.8)

plt.title('Total Number of Counties Per State', fontsize=16)
plt.xlabel('State')
plt.ylabel('Number of Counties')
plt.xticks(rotation=45, ha='right')
plt.gca().spines[['top', 'right']].set_visible(False)
plt.tight_layout()
plt.show()
```

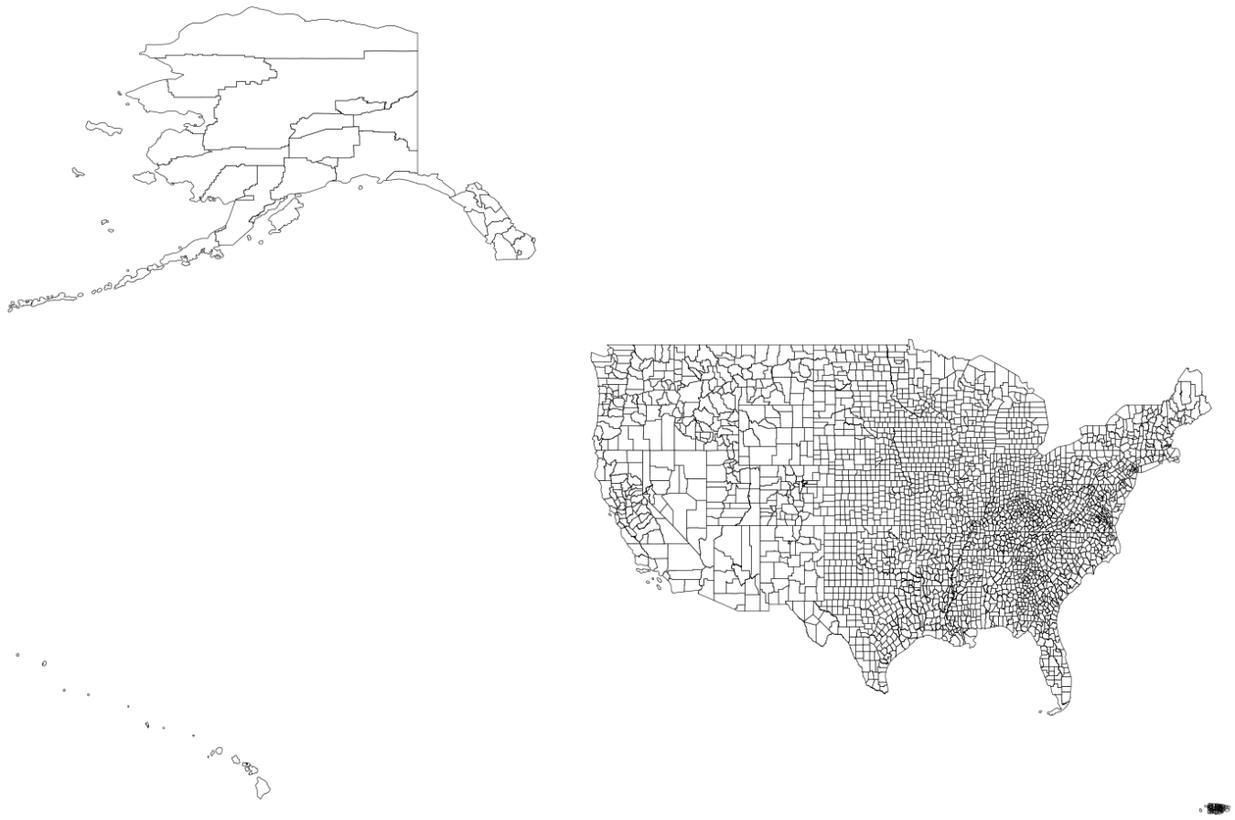



```
print(counties_per_state)

# total number of counties
total_counties = counties_per_state.sum()

print(f"Total Number of Counties Across All States: {total_counties}")
```

```
state
TEXAS                 254
GEORGIA               159
VIRGINIA              133
KENTUCKY              120
MISSOURI              116
KANSAS                105
ILLINOIS              102
NORTH CAROLINA        100
IOWA                   99
TENNESSEE              95
NEBRASKA               93
INDIANA                92
OHIO                   88
MINNESOTA              87
MICHIGAN               83
MISSISSIPPI            82
OKLAHOMA               77
ARKANSAS               75
WISCONSIN              72
PENNSYLVANIA           67
ALABAMA                67
FLORIDA                67
SOUTH DAKOTA           66
COLORADO               64
LOUISIANA              64
NEW YORK               62
CALIFORNIA             58
MONTANA                56
WEST VIRGINIA          55
NORTH DAKOTA           53
SOUTH CAROLINA         46
IDAHO                  44
ALASKA                 41
WASHINGTON             39
OREGON                 36
NEW MEXICO             33
UTAH                   29
MARYLAND               24
WYOMING                23
NEW JERSEY             21
NEVADA                 17
MAINE                  16
ARIZONA                15
VERMONT                14
MASSACHUSETTS          14
NEW HAMPSHIRE          10
CONNECTICUT             8
RHODE ISLAND            6
HAWAII                  4
DELAWARE                3
DISTRICT OF COLUMBIA    1
Name: county_name, dtype: int64
Total Number of Counties Across All States: 3155
```

```
# Load the shapefile of US county map
shapefile_path = "/content/drive/MyDrive/US Elections 2020 county /county.geo.json"
us_map = gpd.read_file(shapefile_path)

fig, ax = plt.subplots(figsize=(20, 20))
```

```
us_map.plot(ax=ax, color='white', edgecolor='black', linewidth=0.4)

ax.set_xlim(-180, -50)
ax.set_ylim(10, 80)
ax.axis('off')

plt.show()
```



```
# Load the shapefile
shapefile_path = "/content/drive/MyDrive/US Elections 2020 county /county.geo.json"
us_map = gpd.read_file(shapefile_path)

# Load the dataset
data_path = "/content/drive/MyDrive/US Elections 2020 county /2020_US_County_Level_Presidential_Results_filled.csv"
election_data = pd.read_csv(data_path)

us_map['GEOID10'] = us_map['GEOID10'].astype(int).astype(str).str.zfill(5)

election_data['county_fips'] = election_data['county_fips'].fillna(0).astype(int).astype(str).str.zfill(5)

# Determine the party with the most votes in each county
election_data['winner'] = election_data[['DEMOCRAT', 'REPUBLICAN', 'OTHER']].idxmax(axis=1)
election_data['winner_color'] = election_data['winner'].map({
    'DEMOCRAT': 'blue',
    'REPUBLICAN': 'red',
    'OTHER': 'black'
})

# Merging shapefile data with the election results
us_map = us_map.merge(
    election_data[['county_fips', 'winner_color']],
    left_on='GEOID10',
    right_on='county_fips',
    how='left'
)

# Filling the NaN values in 'winner_color' with the most common winner color instead of gray
most_common_winner = election_data['winner_color'].mode()[0]  # Find most common winner
us_map['winner_color'].fillna(most_common_winner, inplace=True)  # Fill missing counties

fig, ax = plt.subplots(figsize=(20, 20))
us_map.plot(ax=ax, color=us_map['winner_color'], edgecolor='black', linewidth=0.2)

ax.set_xlim(-180, -50)
ax.set_ylim(10, 80)
ax.axis('off')
```

```
plt.show()
```

```
<ipython-input-58-a0c0122bac3f>:31: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an i
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting values always behav

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value) ins


  us_map['winner_color'].fillna(most_common_winner, inplace=True)  # Fill missing counties
```