

gaza scorecard

December 9, 2024

```
[27]: import os
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
[2]: df1 = pd.read_csv('sergio smrithi data.csv')
df2 = pd.read_csv('tariq data2.csv')

combined_table = pd.concat([df2, df1])
combined_table.head()
```

```
[2]:
```

	Motion	Military Aid (Israel)	\
0	**excludable from dataset, as vote did not pe...	0.1	
1	Senator Casey added as a sponsor of a bill to ...	0.1	
2	SRES115. Bill to deny export license for Boein...	-0.6	
3	SRES111. Bill would prevent exports of tank mu...	-0.5	
4	SRES113. Bill would prevent the export of mort...	-0.6	

	Humanitarian Aid (Gaza/Lebanon)	Symbolic Resolutions	Campus Protest	\
0	0.1	0.0	0.0	
1	0.0	0.0	0.0	
2	0.0	-0.2	0.0	
3	0.0	-0.2	0.0	
4	0.0	-0.2	0.0	

	Relations, normalization, and ceasefire	Tommy Tuberville (R-AL)	\
0	0.0	-0.5	
1	0.1	0.0	
2	0.0	-1.0	
3	0.0	-1.0	
4	0.0	-1.0	

	Katie Britt (R-AL)	Lisa Murkowski (R-AK)	Dan Sullivan (R-AK)	...	\
0	-0.5	0.5	0.5	...	
1	0.0	0.0	0.0	...	
2	-1.0	-1.0	-1.0	...	
3	-1.0	-1.0	-1.0	...	

4	-1.0	-1.0	-1.0	...
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	Patty Murray (D-WA)	Maria Cantwell (D-WA)	Joe Manchin (D-WV)	\
0	0.5	0.5	0.5	
1	0.0	0.0	0.0	
2	-1.0	-1.0	-1.0	
3	-1.0	-1.0	-1.0	
4	-1.0	-1.0	-1.0	

	Shelley Capito (R-WV)	Ron Johnson (R-WI)	Tammy Baldwin (D-WI)	\
0	0.5	-0.5	0.5	
1	0.0	0.0	0.0	
2	-1.0	-1.0	0.0	
3	-1.0	-1.0	0.0	
4	-1.0	-1.0	0.0	

	John Barasso (R-WY)	Cynthia Lummis (R-WY)	George Helmy (D-NJ)	\
0	0.5	0.5	0	
1	0.0	0.0	0	
2	-1.0	-1.0	-1	
3	-1.0	-1.0	-1	
4	-1.0	-1.0	1	

	JD Vance (R-OH)
0	NaN
1	NaN
2	NaN
3	NaN
4	NaN

[5 rows x 108 columns]

```
[3]: #perform matrix transformations on df
def vote_data_transform(data):
    data.fillna(0, inplace=True)

    bill_matrix = data.iloc[:, 1:6]
    vote_matrix = data.iloc[:, 6:106]

    bill_matrix_transposed = bill_matrix.T

    result = np.matmul(bill_matrix_transposed, vote_matrix)
    return result

weighted_table = vote_data_transform(combined_table)
weighted_table.head()
```

[3]:	Tommy Tuberville (R-AL) \	
Military Aid (Israel)		1.95
Humanitarian Aid (Gaza/Lebanon)		0.75
Symbolic Resolutions		3.60
Campus Protest		1.50
Relations, normalization, and ceasefire		0.45
	Katie Britt (R-AL) \	
Military Aid (Israel)		3.20
Humanitarian Aid (Gaza/Lebanon)		1.25
Symbolic Resolutions		5.30
Campus Protest		0.60
Relations, normalization, and ceasefire		3.15
	Lisa Murkowski (R-AK) \	
Military Aid (Israel)		1.95
Humanitarian Aid (Gaza/Lebanon)		0.75
Symbolic Resolutions		2.20
Campus Protest		0.60
Relations, normalization, and ceasefire		0.45
	Dan Sullivan (R-AK) \	
Military Aid (Israel)		3.40
Humanitarian Aid (Gaza/Lebanon)		1.45
Symbolic Resolutions		3.30
Campus Protest		0.60
Relations, normalization, and ceasefire		1.20
	Kyrsten Sinema (I-AZ, formerly D-AZ) \	
Military Aid (Israel)		1.65
Humanitarian Aid (Gaza/Lebanon)		-0.85
Symbolic Resolutions		0.10
Campus Protest		0.00
Relations, normalization, and ceasefire		0.00
	Mark Kelly (D-AZ) \	
Military Aid (Israel)		1.65
Humanitarian Aid (Gaza/Lebanon)		-0.85
Symbolic Resolutions		0.10
Campus Protest		0.00
Relations, normalization, and ceasefire		0.00
	John Boozman (R-AR) \	
Military Aid (Israel)		2.05
Humanitarian Aid (Gaza/Lebanon)		1.45
Symbolic Resolutions		4.00
Campus Protest		0.60

Relations, normalization, and ceasefire	1.20		
	Tom Cotton (R-AR)	\	
Military Aid (Israel)	3.25		
Humanitarian Aid (Gaza/Lebanon)	1.30		
Symbolic Resolutions	5.35		
Campus Protest	0.60		
Relations, normalization, and ceasefire	3.00		
	Alex Padilla (D-CA)	\	
Military Aid (Israel)	1.65		
Humanitarian Aid (Gaza/Lebanon)	-0.85		
Symbolic Resolutions	0.10		
Campus Protest	0.00		
Relations, normalization, and ceasefire	0.00		
	Laphonza Butler (D-CA)	...	\
Military Aid (Israel)	1.85	...	
Humanitarian Aid (Gaza/Lebanon)	-0.65	...	
Symbolic Resolutions	1.10	...	
Campus Protest	0.00	...	
Relations, normalization, and ceasefire	0.00	...	
	Mark Warner (D-VA)	Tim Kaine (D-VA)	\
Military Aid (Israel)	1.65	-1.75	
Humanitarian Aid (Gaza/Lebanon)	-1.60	-1.60	
Symbolic Resolutions	0.65	-0.85	
Campus Protest	0.00	0.00	
Relations, normalization, and ceasefire	0.15	0.00	
	Patty Murray (D-WA)	\	
Military Aid (Israel)	1.65		
Humanitarian Aid (Gaza/Lebanon)	-1.60		
Symbolic Resolutions	-0.35		
Campus Protest	0.00		
Relations, normalization, and ceasefire	0.00		
	Maria Cantwell (D-WA)	\	
Military Aid (Israel)	1.65		
Humanitarian Aid (Gaza/Lebanon)	-0.85		
Symbolic Resolutions	-0.20		
Campus Protest	0.00		
Relations, normalization, and ceasefire	0.00		
	Joe Manchin (D-WV)	\	
Military Aid (Israel)	1.65		
Humanitarian Aid (Gaza/Lebanon)	0.75		

Symbolic Resolutions	0.10
Campus Protest	0.00
Relations, normalization, and ceasefire	0.00

	Shelley Capito (R-WV) \
Military Aid (Israel)	1.95
Humanitarian Aid (Gaza/Lebanon)	1.35
Symbolic Resolutions	4.15
Campus Protest	0.60
Relations, normalization, and ceasefire	2.55

	Ron Johnson (R-WI) \
Military Aid (Israel)	1.85
Humanitarian Aid (Gaza/Lebanon)	1.25
Symbolic Resolutions	2.80
Campus Protest	0.60
Relations, normalization, and ceasefire	1.20

	Tammy Baldwin (D-WI) \
Military Aid (Israel)	-0.05
Humanitarian Aid (Gaza/Lebanon)	-0.85
Symbolic Resolutions	-0.50
Campus Protest	0.00
Relations, normalization, and ceasefire	0.00

	John Barasso (R-WY) \
Military Aid (Israel)	3.40
Humanitarian Aid (Gaza/Lebanon)	0.65
Symbolic Resolutions	5.55
Campus Protest	1.50
Relations, normalization, and ceasefire	2.55

	Cynthia Lummis (R-WY)
Military Aid (Israel)	3.30
Humanitarian Aid (Gaza/Lebanon)	0.75
Symbolic Resolutions	2.20
Campus Protest	0.60
Relations, normalization, and ceasefire	0.45

[5 rows x 100 columns]

```
[4]: weighted_transposed = weighted_table.transpose().reset_index()
weighted_transposed['index'] = weighted_transposed['index'].str.split('(').
    ↪str[0]
weighted_transposed['index'] = weighted_transposed['index'].str.strip().str.
    ↪replace(r'\s+', ' ', regex=True)
weighted_transposed
```

```
[4]:
```

	index	Military Aid (Israel)	Humanitarian Aid (Gaza/Lebanon)	\
0	Tommy Tuberville	1.95	0.75	
1	Katie Britt	3.20	1.25	
2	Lisa Murkowski	1.95	0.75	
3	Dan Sullivan	3.40	1.45	
4	Kyrsten Sinema	1.65	-0.85	
..	
95	Shelley Capito	1.95	1.35	
96	Ron Johnson	1.85	1.25	
97	Tammy Baldwin	-0.05	-0.85	
98	John Barasso	3.40	0.65	
99	Cynthia Lummis	3.30	0.75	

	Symbolic Resolutions	Campus Protest	\
0	3.60	1.5	
1	5.30	0.6	
2	2.20	0.6	
3	3.30	0.6	
4	0.10	0.0	
..	
95	4.15	0.6	
96	2.80	0.6	
97	-0.50	0.0	
98	5.55	1.5	
99	2.20	0.6	

	Relations, normalization, and ceasefire
0	0.45
1	3.15
2	0.45
3	1.20
4	0.00
..	...
95	2.55
96	1.20
97	0.00
98	2.55
99	0.45


```
[100 rows x 6 columns]
```

```
[5]: demographic_tab = pd.read_csv('demographic data senate1.csv')
demographic_tab.head()
demographic_tab.columns = demographic_tab.columns.str.strip()
demographic_tab['Senator Name'] = demographic_tab['Senator Name'].str.strip().
↳str.replace(r'\s+', ' ', regex=True)
```

```
[13]: pd.set_option('display.max_rows', 10)
merged_senate = pd.merge(weighted_transposed, demographic_tab, left_on='index',
    right_on='Senator Name', how='inner')
merged_senate.head()
```

```
[13]:
```

	index	Military Aid (Israel)	Humanitarian Aid (Gaza/Lebanon) \
0	Tommy Tuberville	1.95	0.75
1	Katie Britt	3.20	1.25
2	Lisa Murkowski	1.95	0.75
3	Dan Sullivan	3.40	1.45
4	Kyrsten Sinema	1.65	-0.85

	Symbolic Resolutions	Campus Protest \
0	3.6	1.5
1	5.3	0.6
2	2.2	0.6
3	3.3	0.6
4	0.1	0.0

	Relations, normalization, and ceasefire	Senator Name	State	Party \
0	0.45	Tommy Tuberville	AL	R
1	3.15	Katie Britt	AL	R
2	0.45	Lisa Murkowski	AK	R
3	1.20	Dan Sullivan	AK	R
4	0.00	Kyrsten Sinema	AZ	I

	Region	Gender	Age	First Inaugurated
0	South	M	70	2021
1	South	F	42	2023
2	West	F	67	2002
3	West	M	60	2015
4	West	F	46	2019

```
[82]: filtered_democrat = merged_senate[merged_senate['Party'].isin(['D', 'I'])]
columns_to_average = filtered_democrat.iloc[:, 1:6]
category_avgsD = columns_to_average.mean()

category_avgsD_df = pd.DataFrame(category_avgsD).reset_index()
category_avgsD_df.columns = ['Bill Category', 'Average Democrat Vote Score']
category_avgsD_df
```

```
[82]:
```

	Bill Category	Average Democrat Vote Score
0	Military Aid (Israel)	0.390
1	Humanitarian Aid (Gaza/Lebanon)	-1.110
2	Symbolic Resolutions	0.084
3	Campus Protest	0.018
4	Relations, normalization, and ceasefire	0.084

```
[81]: filtered_republican = merged_senate[merged_senate['Party'].isin(['R'])]
columns_to_averageR = filtered_republican.iloc[:, 1:6]
category_avgsR = columns_to_averageR.mean()

category_avgsR_df = pd.DataFrame(category_avgsR).reset_index()
category_avgsR_df.columns = ['Bill Category', 'Average Republican Vote Score']
category_avgsR_df
```

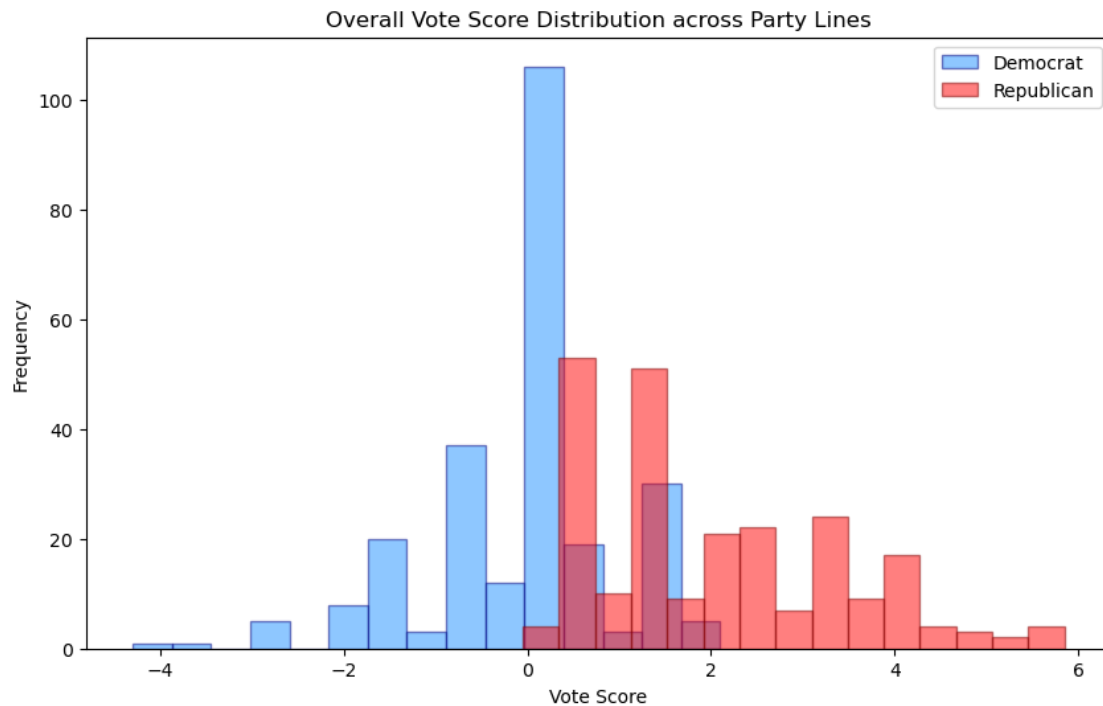
```
[81]:
```

	Bill Category	Average Republican Vote Score
0	Military Aid (Israel)	2.612500
1	Humanitarian Aid (Gaza/Lebanon)	1.115625
2	Symbolic Resolutions	3.821875
3	Campus Protest	0.787500
4	Relations, normalization, and ceasefire	1.875000

```
[57]: valuesD = filtered_democrat.iloc[:, 1:6].values.flatten()
valuesR = filtered_republican.iloc[:, 1:6].values.flatten()

plt.figure(figsize=(10, 6))
plt.hist(valuesD, bins=15, alpha=0.5, label='DataFrame 1', color='dodgerblue',
         edgecolor='navy')
plt.hist(valuesR, bins=15, alpha=0.5, label='DataFrame 2', color='red',
         edgecolor='maroon')
plt.xlabel('Vote Score')
plt.ylabel('Frequency')
plt.title('Overall Vote Score Distribution across Party Lines')
plt.legend(['Democrat', 'Republican'])
```

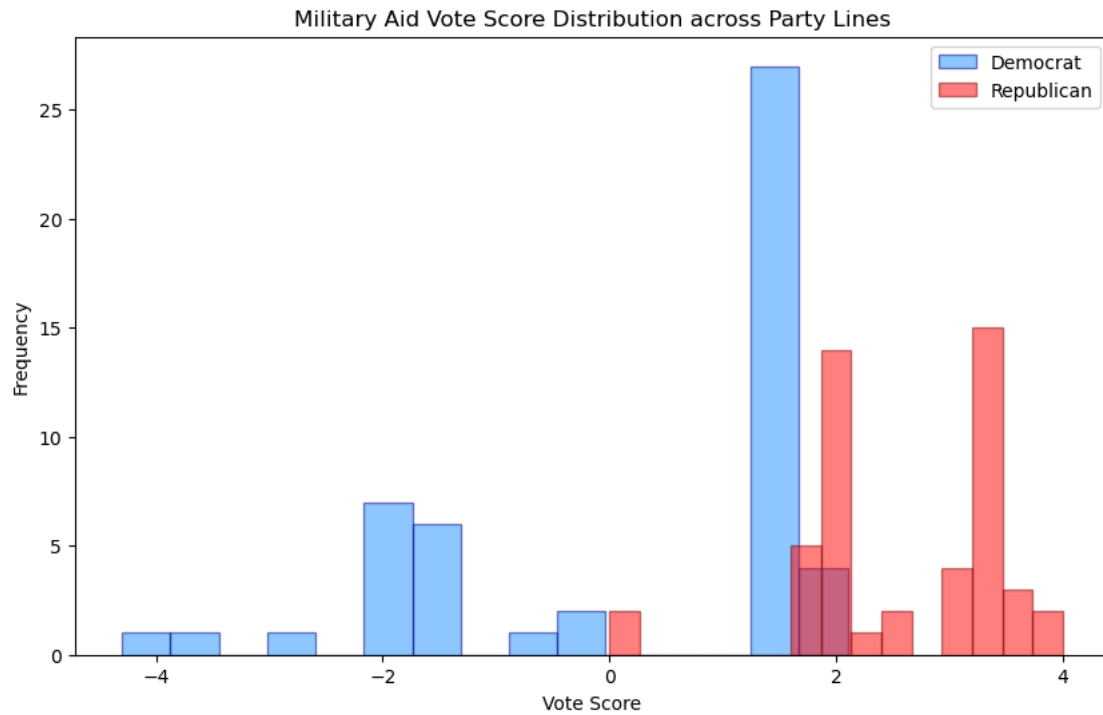
```
[57]: <matplotlib.legend.Legend at 0x79bd1f4494d0>
```

```
[66]: valuesD_military = filtered_democrat.iloc[:, 1]
      valuesR_military = filtered_republican.iloc[:, 1]

      plt.figure(figsize=(10, 6))
      plt.hist(valuesD_military, bins=15, alpha=0.5, label='DataFrame 1',
               color='dodgerblue', edgecolor='navy')
      plt.hist(valuesR_military, bins=15, alpha=0.5, label='DataFrame 2',
               color='red', edgecolor='maroon')
      plt.xlabel('Vote Score')
      plt.ylabel('Frequency')
      plt.title('Military Aid Vote Score Distribution across Party Lines')
      plt.legend(['Democrat', 'Republican'])
```

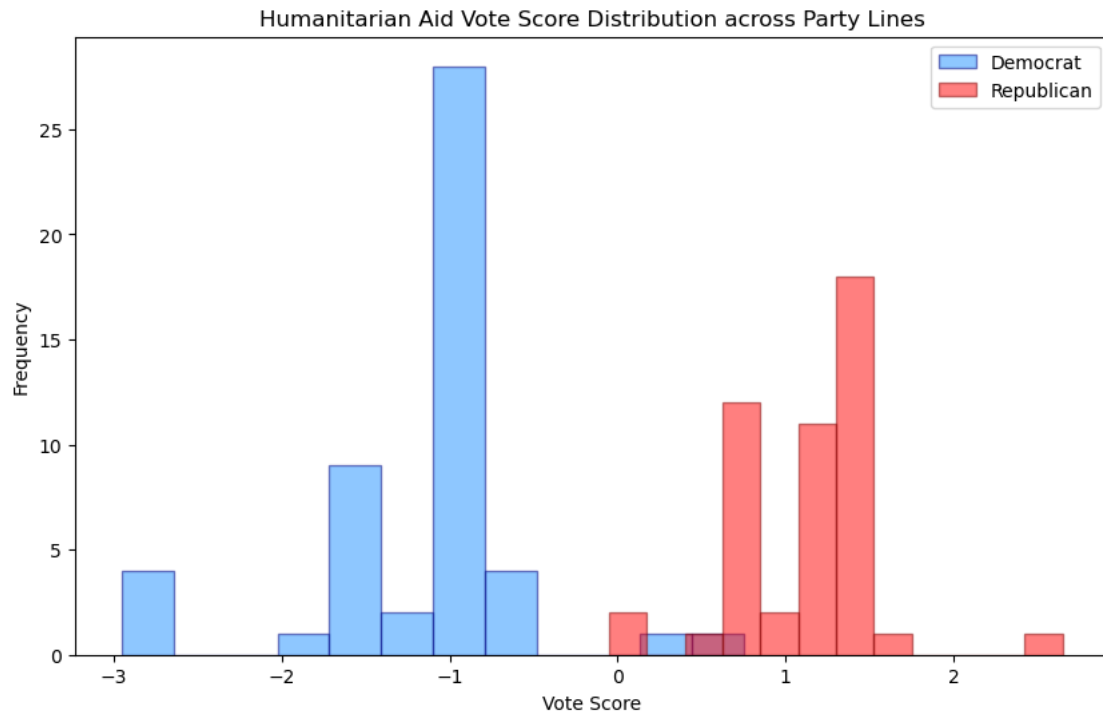
```
[66]: <matplotlib.legend.Legend at 0x79bd1ef0d2d0>
```



```
[64]: valuesD_humanitarian = filtered_democrat.iloc[:, 2]
      valuesR_humanitarian = filtered_republican.iloc[:, 2]

      plt.figure(figsize=(10, 6))
      plt.hist(valuesD_humanitarian, bins=12, alpha=0.5, label='DataFrame 1',
               color='dodgerblue', edgecolor='navy')
      plt.hist(valuesR_humanitarian, bins=12, alpha=0.5, label='DataFrame 2',
               color='red', edgecolor='maroon')
      plt.xlabel('Vote Score')
      plt.ylabel('Frequency')
      plt.title('Humanitarian Aid Vote Score Distribution across Party Lines')
      plt.legend(['Democrat', 'Republican'])
```

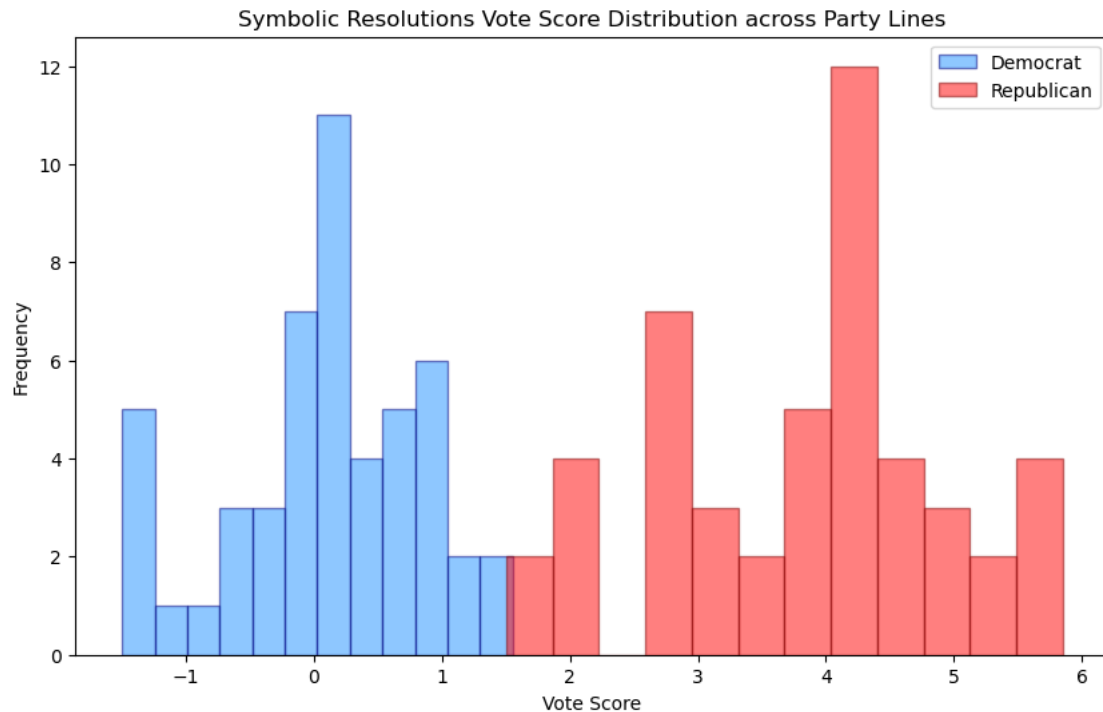
```
[64]: <matplotlib.legend.Legend at 0x79bd1f2d2490>
```



```
[63]: valuesD_resolutions = filtered_democrat.iloc[:, 3]
      valuesR_resolutions = filtered_republican.iloc[:, 3]

      plt.figure(figsize=(10, 6))
      plt.hist(valuesD_resolutions, bins=12, alpha=0.5, label='DataFrame 1',
               color='dodgerblue', edgecolor='navy')
      plt.hist(valuesR_resolutions, bins=12, alpha=0.5, label='DataFrame 2',
               color='red', edgecolor='maroon')
      plt.xlabel('Vote Score')
      plt.ylabel('Frequency')
      plt.title('Symbolic Resolutions Vote Score Distribution across Party Lines')
      plt.legend(['Democrat', 'Republican'])
```

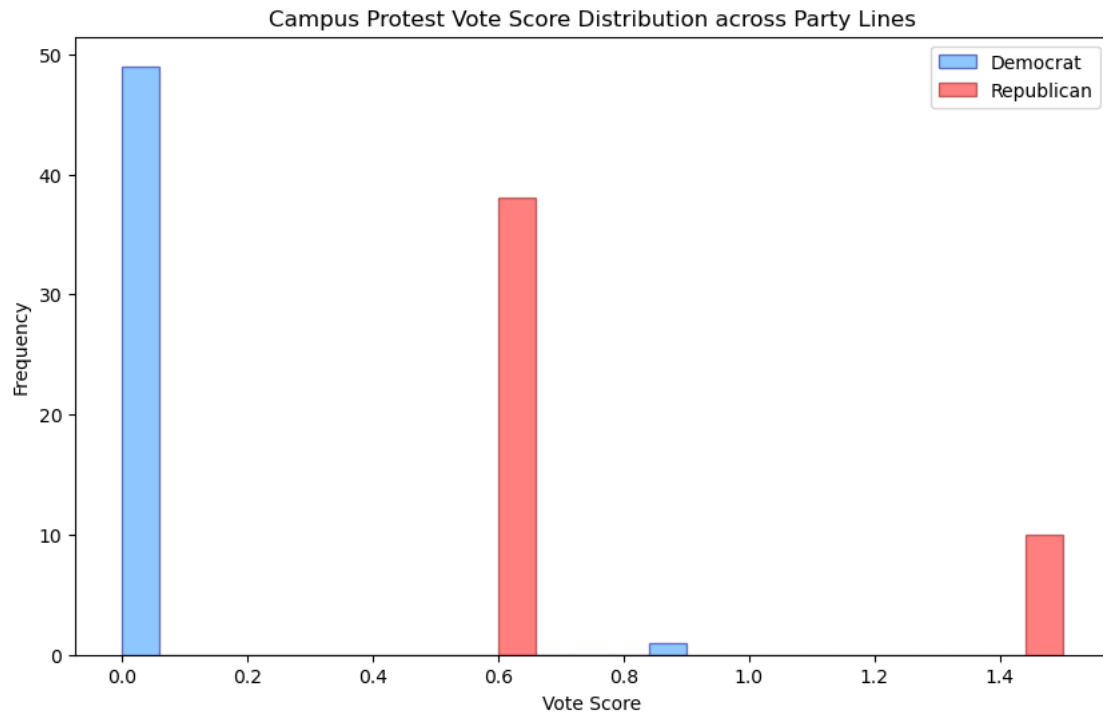
```
[63]: <matplotlib.legend.Legend at 0x79bd1f2f2490>
```



```
[71]: valuesD_campus = filtered_democrat.iloc[:, 4]
      valuesR_campus = filtered_republican.iloc[:, 4]

      plt.figure(figsize=(10, 6))
      plt.hist(valuesD_campus, bins=15, alpha=0.5, label='DataFrame 1',
               color='dodgerblue', edgecolor='navy')
      plt.hist(valuesR_campus, bins=15, alpha=0.5, label='DataFrame 2', color='red',
               edgecolor='maroon')
      plt.xlabel('Vote Score')
      plt.ylabel('Frequency')
      plt.title('Campus Protest Vote Score Distribution across Party Lines')
      plt.legend(['Democrat', 'Republican'])
```

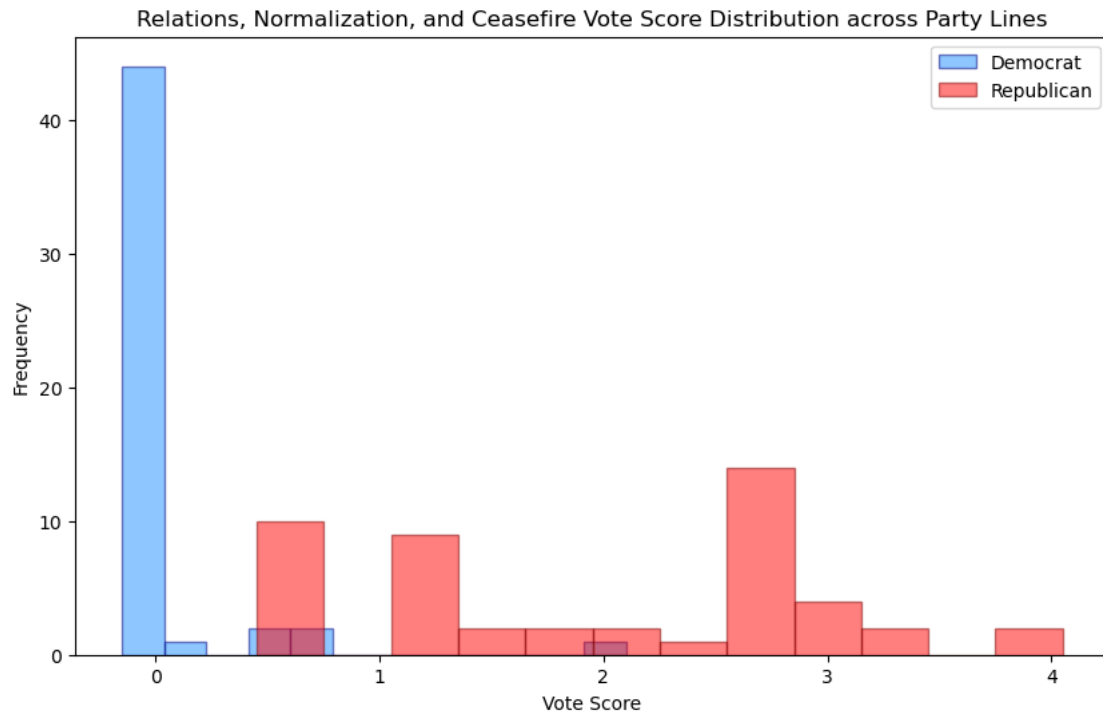
```
[71]: <matplotlib.legend.Legend at 0x79bd1ed25b90>
```



```
[73]: valuesD_relations = filtered_democrat.iloc[:, 5]
      valuesR_relations = filtered_republican.iloc[:, 5]

      plt.figure(figsize=(10, 6))
      plt.hist(valuesD_relations, bins=12, alpha=0.5, label='DataFrame 1',
               color='dodgerblue', edgecolor='navy')
      plt.hist(valuesR_relations, bins=12, alpha=0.5, label='DataFrame 2',
               color='red', edgecolor='maroon')
      plt.xlabel('Vote Score')
      plt.ylabel('Frequency')
      plt.title('Relations, Normalization, and Ceasefire Vote Score Distribution
               across Party Lines')
      plt.legend(['Democrat', 'Republican'])
```

```
[73]: <matplotlib.legend.Legend at 0x79bd1edaa490>
```



[]: