

## DSC 640

Inman, Gracie

Weeks 11 + 12

03/02/24

```
In [12]: # import packages
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
from tabulate import tabulate
```

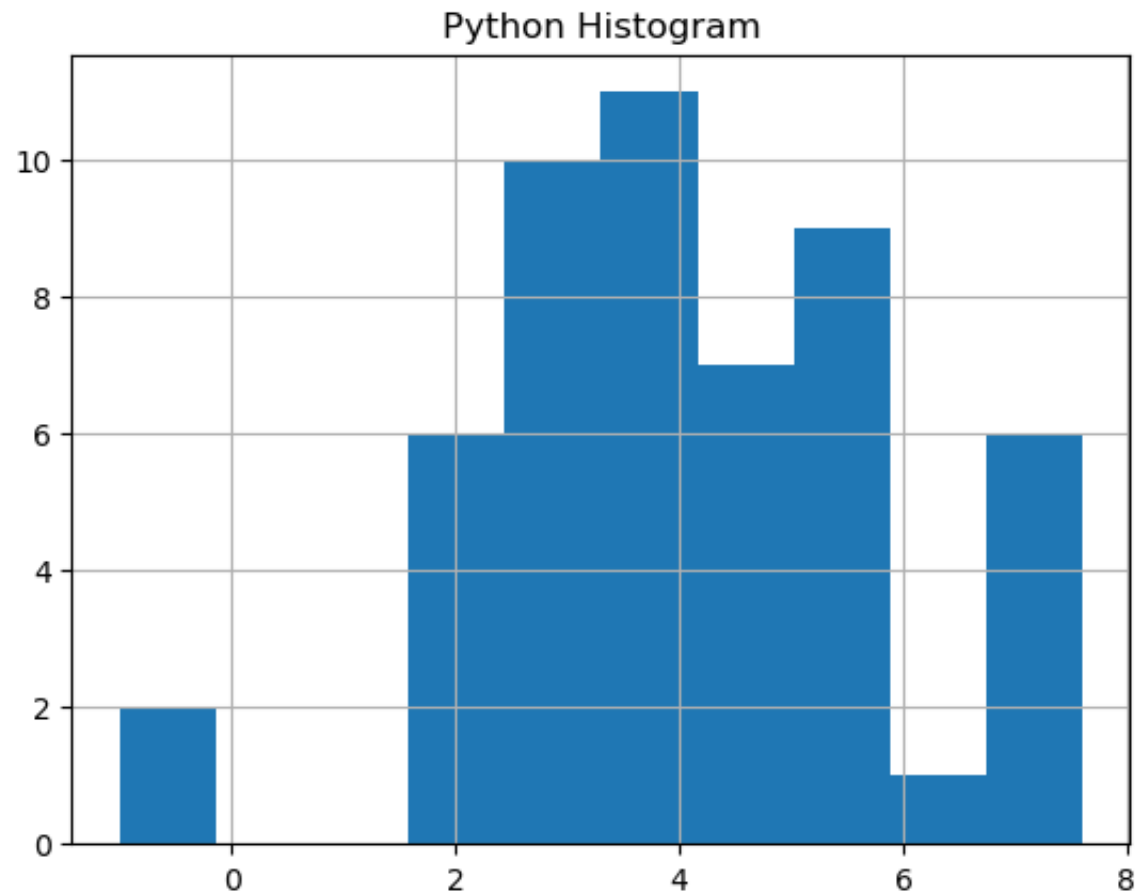
```
In [2]: # load data
df = pd.read_csv("education.csv")
df.head()
```

```
Out[2]:
```

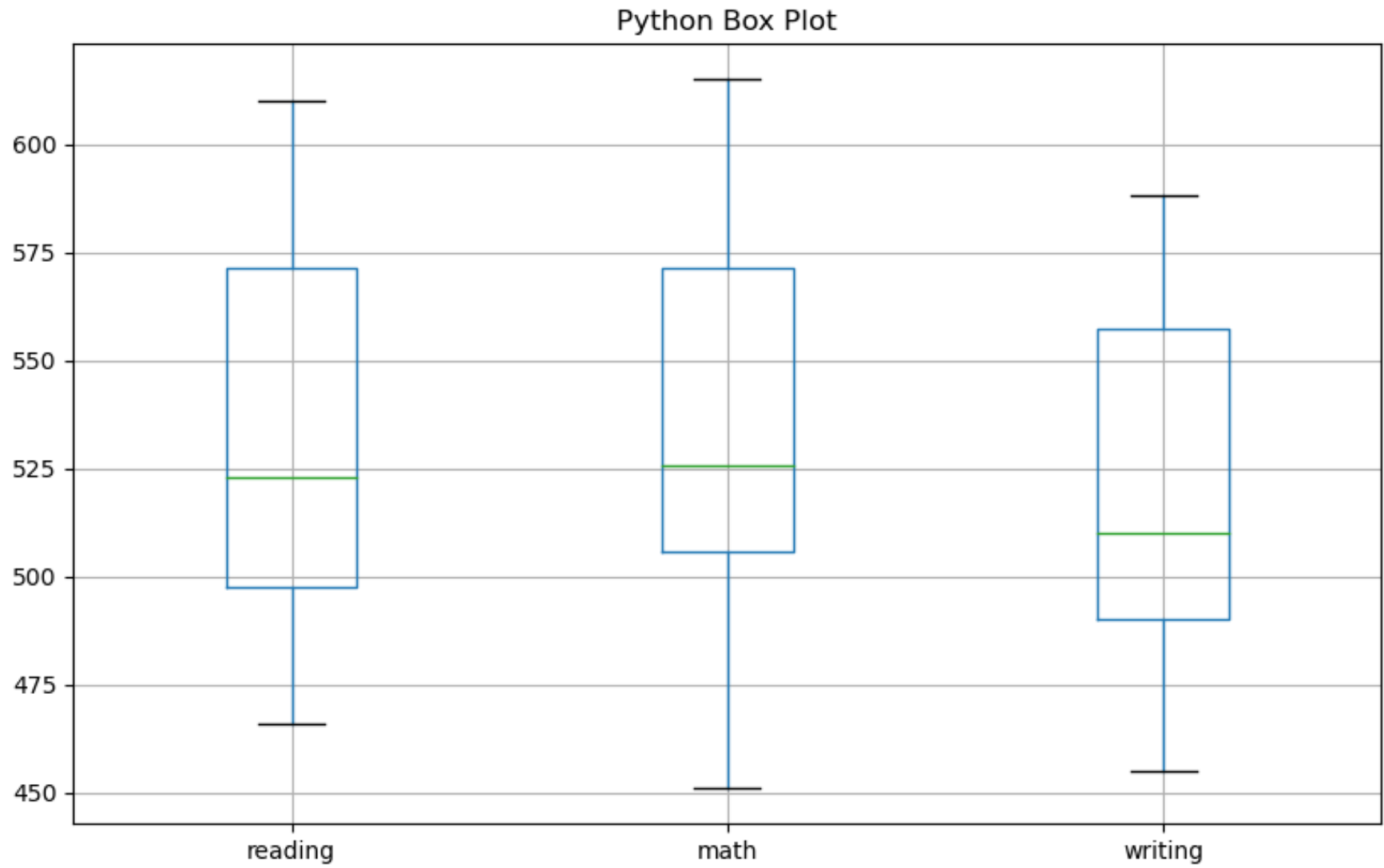
	state	reading	math	writing	percent_graduates_sat	pupil_staff_ratio	dropout_rate
0	United States	501	515	493	46	7.9	4.4
1	Alabama	557	552	549	7	6.7	2.3
2	Alaska	520	516	492	46	7.9	7.3
3	Arizona	516	521	497	26	10.4	7.6
4	Arkansas	572	572	556	5	6.8	4.6

```
In [3]: # Histogram
plt.figure(figsize=(10, 6))
df[['dropout_rate']].hist()
plt.title('Python Histogram')
plt.show()
```

<Figure size 1000x600 with 0 Axes>



```
In [4]: # Box plot
plt.figure(figsize=(10, 6))
df[['reading', 'math', 'writing']].boxplot()
plt.title('Python Box Plot')
plt.show()
```



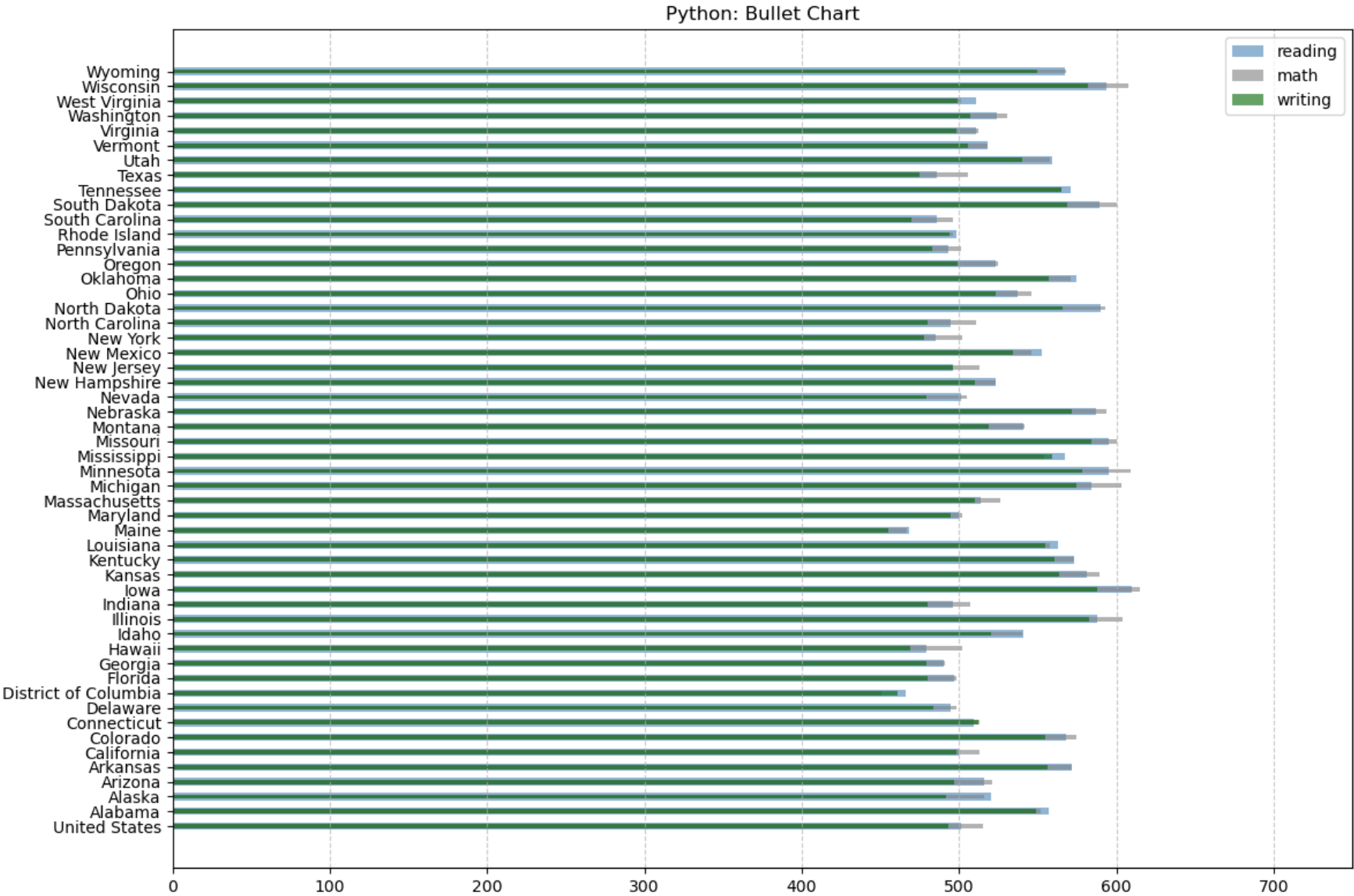
```
In [9]: fig, ax = plt.subplots(figsize=(12, 8))

# Function to plot each bullet
def plot_bullet(category, color, width):
    ax.barh(df['state'], df[category], color=color, height=width, label=category, alpha=0.6)

plot_bullet('reading', 'steelblue', 0.5)
plot_bullet('math', 'grey', 0.3)
plot_bullet('writing', 'darkgreen', 0.3)

# Adjusting layout
ax.set_title('Python: Bullet Chart')
ax.set_xlabel(None)
ax.set_ylabel(None)
ax.set_xlim(0, 750)
ax.grid(True, axis='x', linestyle='--', alpha=0.7)
ax.legend()

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



In [13]: `markdown_table = tabulate(df, headers='keys', tablefmt='pipe', showindex=False)`

`# Add caption`

`markdown_table_with_caption = f"Table: Python - {markdown_table}"`

`# Print the markdown table with caption`

`print(markdown_table_with_caption)`

```
Table: Python - | state | reading | math | writing | percent_graduates_sat | pu
pil_staff_ratio | dropout_rate | :-----: |-----: |-----: |-----: |-----:
|-----: |
| United States | 501 | 515 | 493 | 46 | 7.9
| 4.4 |
| Alabama | 557 | 552 | 549 | 7 | 6.7
| 2.3 |
| Alaska | 520 | 516 | 492 | 46 | 7.9
| 7.3 |
| Arizona | 516 | 521 | 497 | 26 | 10.4
| 7.6 |
| Arkansas | 572 | 572 | 556 | 5 | 6.8
| 4.6 |
| California | 500 | 513 | 498 | 49 | 10.9
| 5.5 |
| Colorado | 568 | 575 | 555 | 20 | 8.1
| 6.9 |
| Connecticut | 509 | 513 | 512 | 83 | 6.6
| 2.1 |
| Delaware | 495 | 498 | 484 | 71 | 7.9
| 5.5 |
| District of Columbia | 466 | 451 | 461 | 79 | 6.3
| 7.1 |
| Florida | 497 | 498 | 480 | 59 | 8.1
| 3.8 |
| Georgia | 490 | 491 | 479 | 71 | 7
| 4.6 |
| Hawaii | 479 | 502 | 469 | 58 | 8.3
| 5.4 |
| Idaho | 541 | 540 | 520 | 18 | 10
```

	2.6							
Illinois			588	604	583		6	9.9
	4							
Indiana			496	507	480		63	7.5
	2.7							
Iowa			610	615	588		3	6.8
	2.3							
Kansas			581	589	564		7	8.6
	2.7							
Kentucky			573	573	561		7	6.6
	3							
Louisiana			563	558	555		7	6.8
	7.4							
Maine			468	467	455		90	4.9
	5.3							
Maryland			500	502	495		69	7.2
	3.8							
Massachusetts			514	526	510		84	7.8
	3.8							
Michigan			584	603	575		5	8.1
	7.4							
Minnesota			595	609	578		7	7.7
	3							
Mississippi			567	554	559		4	6.9
	4.3							
Missouri			595	600	584		5	6.9
	3.7							
Montana			541	542	519		22	7.4
	3.7							
Nebraska			587	594	572		4	6.7
	2.8							
Nevada			501	505	479		42	12.1
	4.5							
New Hampshire			523	523	510		75	6.2
	3.2							
New Jersey			496	513	496		76	6.9
	2							
New Mexico			553	546	534		11	7
	6.1							

New York	5.3	485	502	478	85	7.4
North Carolina	5.7	495	511	480	63	7.3
North Dakota	2.3	590	593	566	3	6.2
Ohio	4.5	537	546	523	22	7.5
Oklahoma	3.5	575	571	557	5	7.4
Oregon	4.6	523	525	499	52	8.8
Pennsylvania	-1	493	501	483	71	7.1
Rhode Island	5.8	498	496	494	66	8.4
South Carolina	3.9	486	496	470	67	10.8
South Dakota	3.9	589	600	569	3	7.1
Tennessee	3.1	571	565	565	10	7.6
Texas	4	486	506	475	51	7.4
Utah	3.1	559	558	540	6	11.9
Vermont	-1	518	518	506	64	4.9
Virginia	2.6	511	512	498	68	6
Washington	5.1	524	531	507	53	9.9
West Virginia	4	511	501	499	18	7.4
Wisconsin	2.2	594	608	582	5	8.3
Wyoming	5.1	567	568	550	5	5.6



In [ ]: