Introduction to Seaborn

INTRODUCTION TO DATA VISUALIZATION WITH SEABORN

Erin Case
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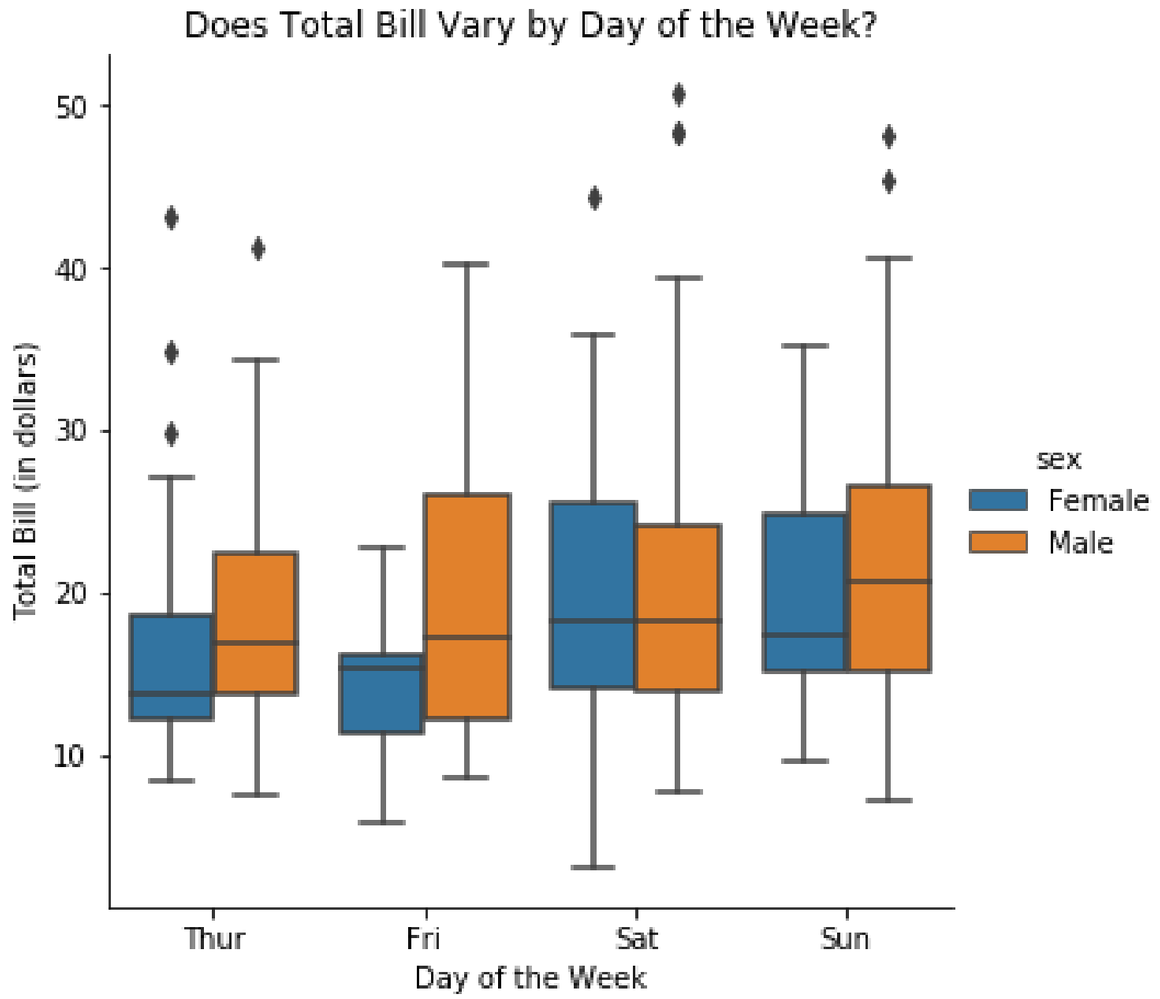
datacamp

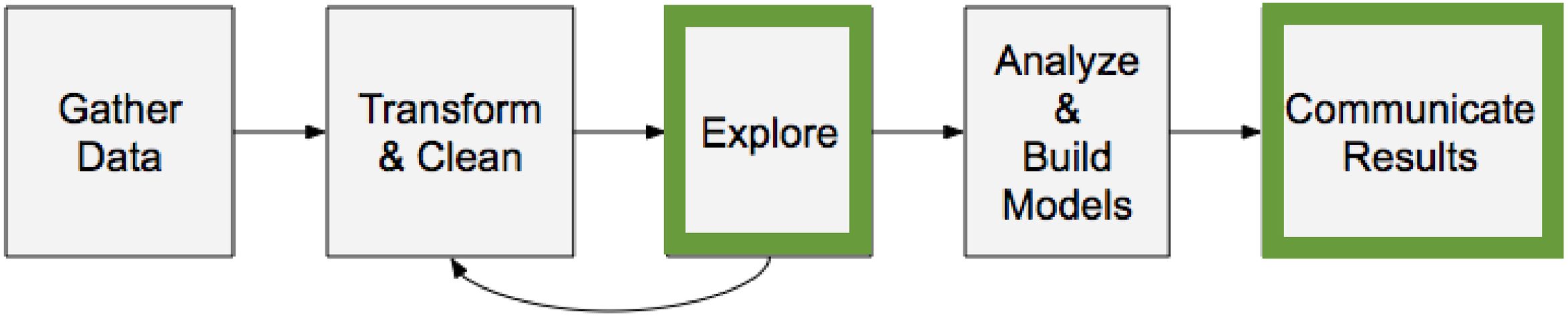
What is Seaborn?

- Python data visualization library
- Easily create the most common types of plots



[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

Why is Seaborn useful?



Advantages of Seaborn

- Easy to use
- Works well with `pandas` data structures
- Built on top of `matplotlib`

Getting started

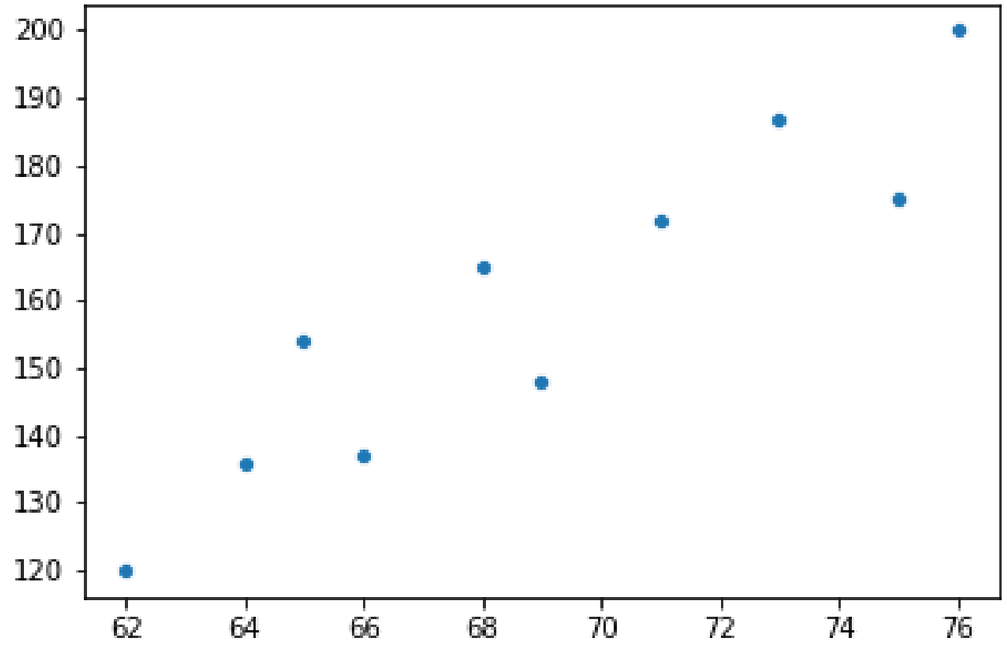
```
import seaborn as sns
import matplotlib.pyplot as plt
```

Samuel Norman Seaborn (`sns`)

- "The West Wing" television show

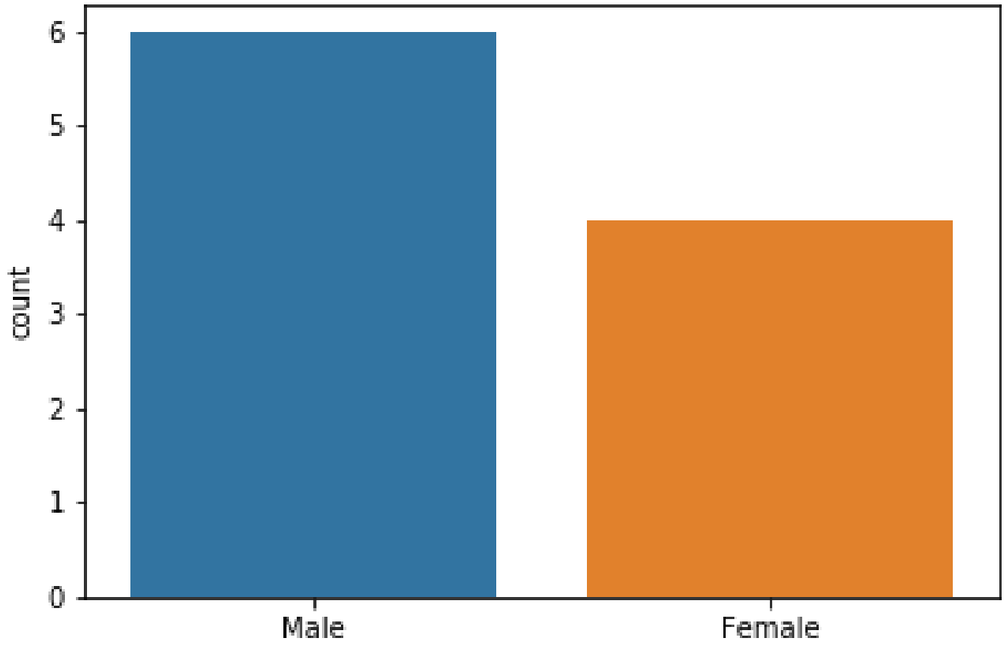
Example 1: Scatter plot

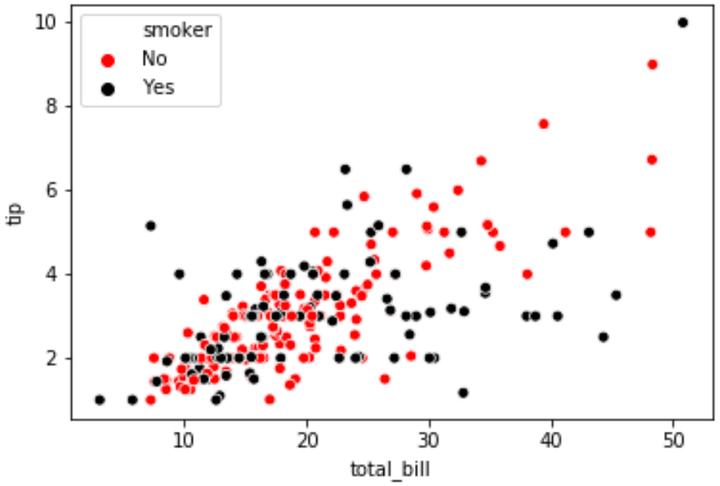
```
import seaborn as sns
import matplotlib.pyplot as plt
height = [62, 64, 69, 75, 66,
          68, 65, 71, 76, 73]
weight = [120, 136, 148, 175, 137,
          165, 154, 172, 200, 187]
sns.scatterplot(x=height, y=weight)
plt.show()
```

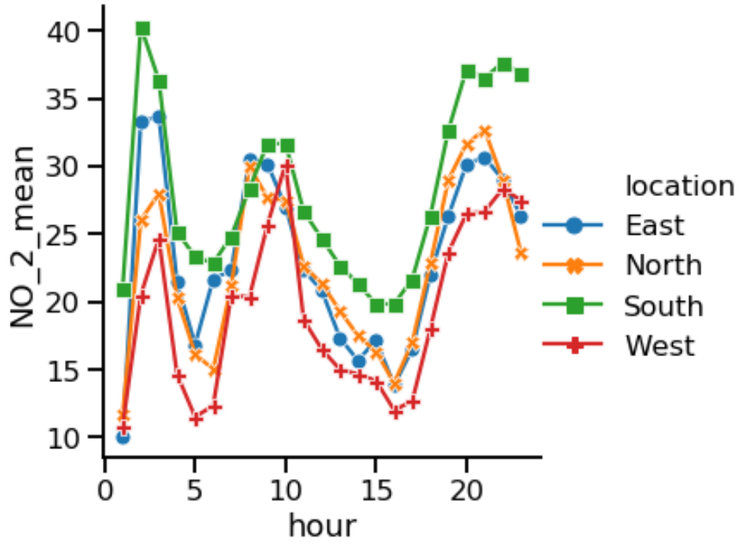


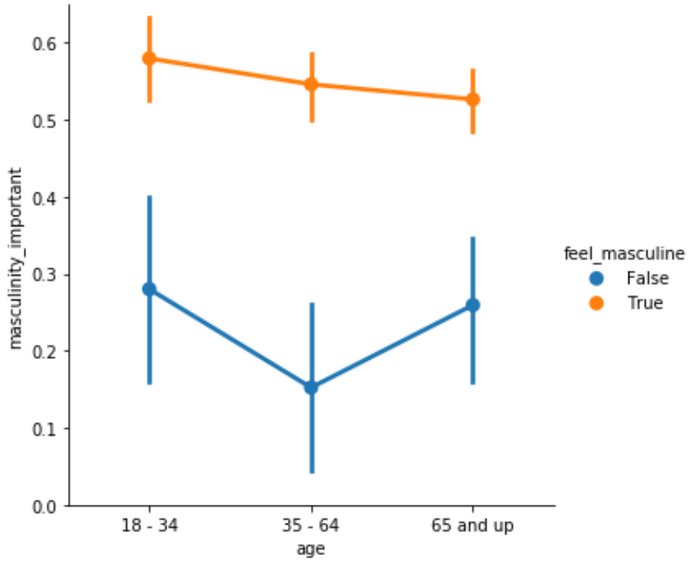
Example 2: Create a count plot

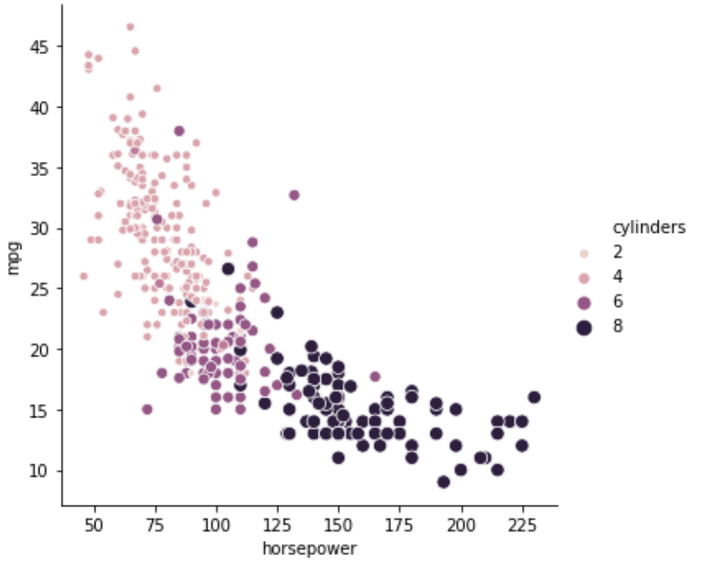
```
import seaborn as sns
import matplotlib.pyplot as plt
gender = ["Female", "Female",
          "Female", "Female",
          "Male", "Male", "Male",
          "Male", "Male", "Male"]
sns.countplot(x=gender)
plt.show()
```











[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

Let's practice!

INTRODUCTION TO DATA VISUALIZATION WITH SEABORN

Using pandas with Seaborn

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What is pandas?

- Python library for data analysis
- Easily read datasets from csv, txt, and other types of files
- Datasets take the form of `DataFrame` objects

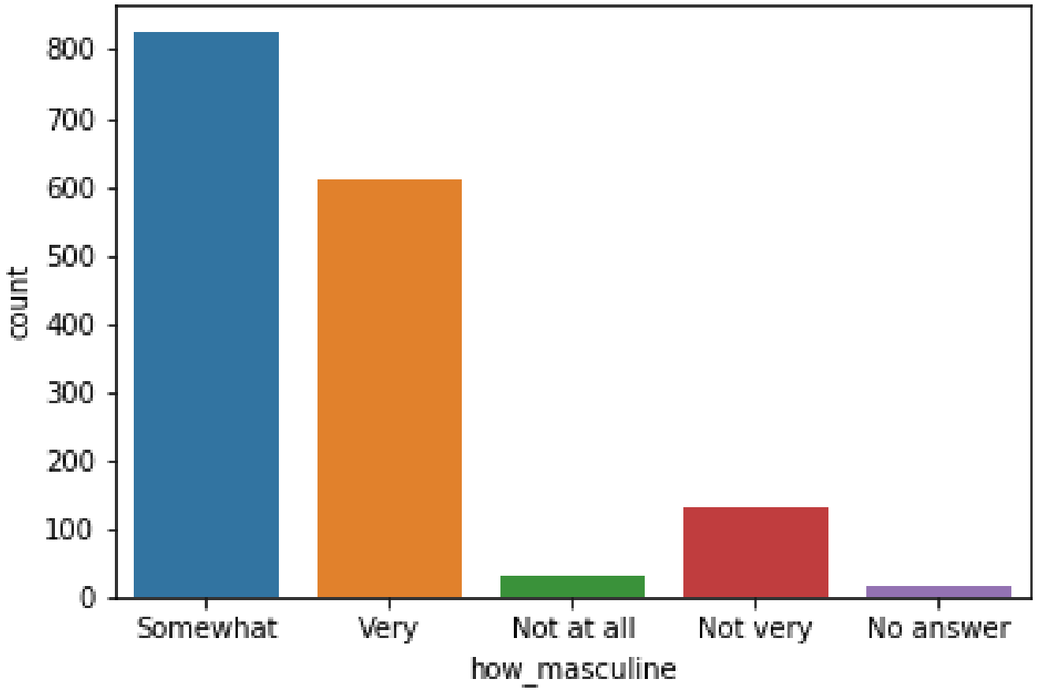
Working with DataFrames

```
import pandas as pd
df = pd.read_csv("masculinity.csv")
df.head()
```

	participant_id	age	how_masculine	how_important
0	1	18 - 34	Somewhat	Somewhat
1	2	18 - 34	Somewhat	Somewhat
2	3	18 - 34	Very	Not very
3	4	18 - 34	Very	Not very
4	5	18 - 34	Very	Very

Using DataFrames with countplot()

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
df = pd.read_csv("masculinity.csv")
sns.countplot(x="how_masculine",
              data=df)
plt.show()
```



	participant_id	age	how_masculine	how_important
0	1	18 - 34	Somewhat	Somewhat
1	2	18 - 34	Somewhat	Somewhat
2	3	18 - 34	Very	Not very
3	4	18 - 34	Very	Not very
4	5	18 - 34	Very	Very
5	6	18 - 34	Very	Somewhat
6	7	18 - 34	Somewhat	Not very
7	8	18 - 34	Somewhat	Somewhat
8	9	18 - 34	Very	Not at all
9	10	18 - 34	Somewhat	Somewhat

	AMONG ADULT MEN	Unnamed: 1	Adult Men	Age	Unnamed: 4	Unnamed: 5
0				18 - 34	35 - 64	65 and up
1	In general, how masculine or "manly" do you feel?					
2		Very masculine	37%	29%	42%	37%
3		Somewhat masculine	46%	47%	46%	47%
4		Not very masculine	11%	13%	9%	13%
5		Not at all masculine	5%	10%	2%	3%
6		No answer	1%	0%	1%	1%
7	How important is it to you that others see you as masculine?					
8		Very important	16%	18%	17%	13%
9		Somewhat important	37%	38%	37%	32%
10		Not too important	28%	18%	31%	37%
11		Not at all important	18%	26%	15%	18%
12		No answer	0%	0%	1%	0%

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Adding a third variable with hue

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Tips dataset

```
import pandas as pd
import seaborn as sns
tips = sns.load_dataset("tips")
tips.head()
```

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4

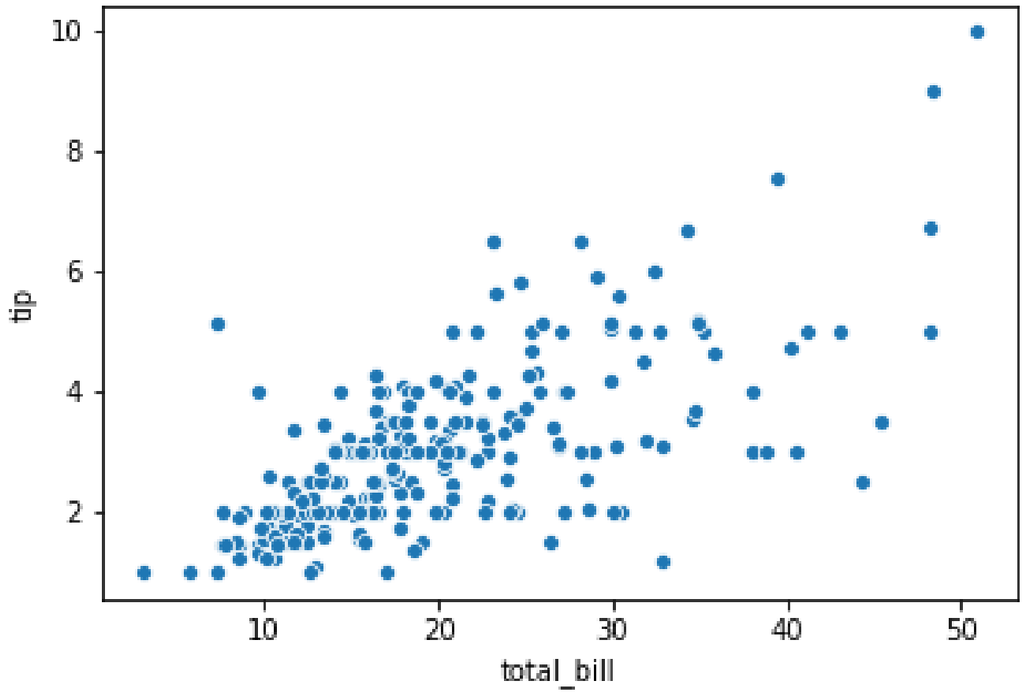
[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

A basic scatter plot

```
import matplotlib.pyplot as plt
import seaborn as sns

sns.scatterplot(x="total_bill",
                y="tip",
                data=tips)

plt.show()
```

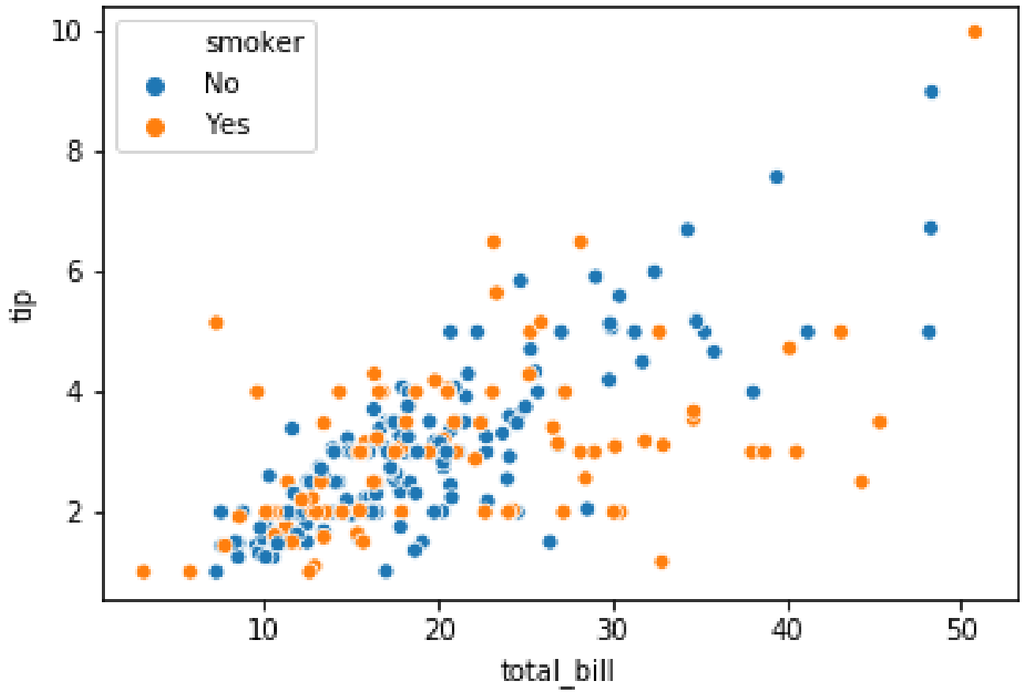


[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

A scatter plot with hue

```
import matplotlib.pyplot as plt
import seaborn as sns

sns.scatterplot(x="total_bill",
                y="tip",
                data=tips,
                hue="smoker")
plt.show()
```

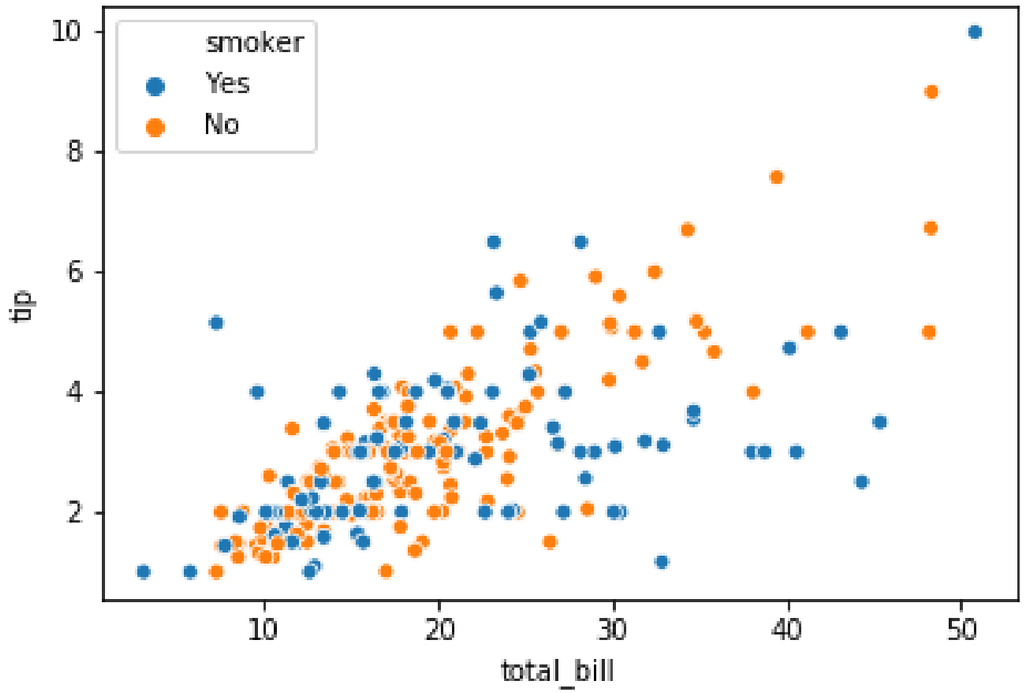


[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

Setting hue order

```
import matplotlib.pyplot as plt
import seaborn as sns

sns.scatterplot(x="total_bill",
                y="tip",
                data=tips,
                hue="smoker",
                hue_order=["Yes",
                           "No"])
plt.show()
```

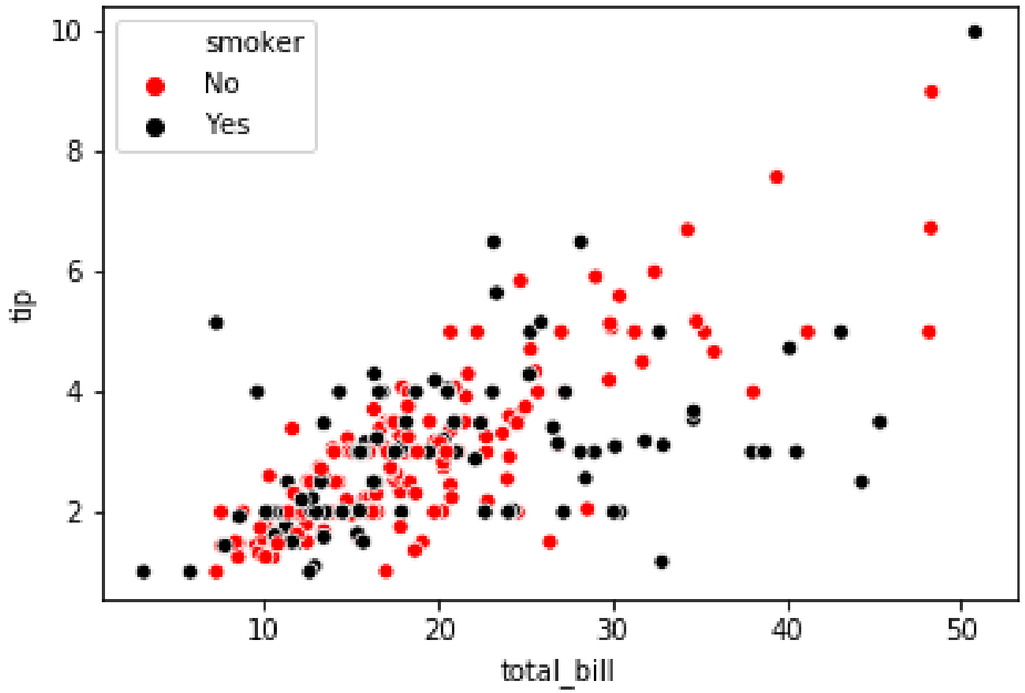


[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

Specifying hue colors

```
import matplotlib.pyplot as plt
import seaborn as sns
hue_colors = {"Yes": "black",
              "No": "red"}
sns.scatterplot(x="total_bill",
                y="tip",
                data=tips,
                hue="smoker",
                palette=hue_colors)

plt.show()
```



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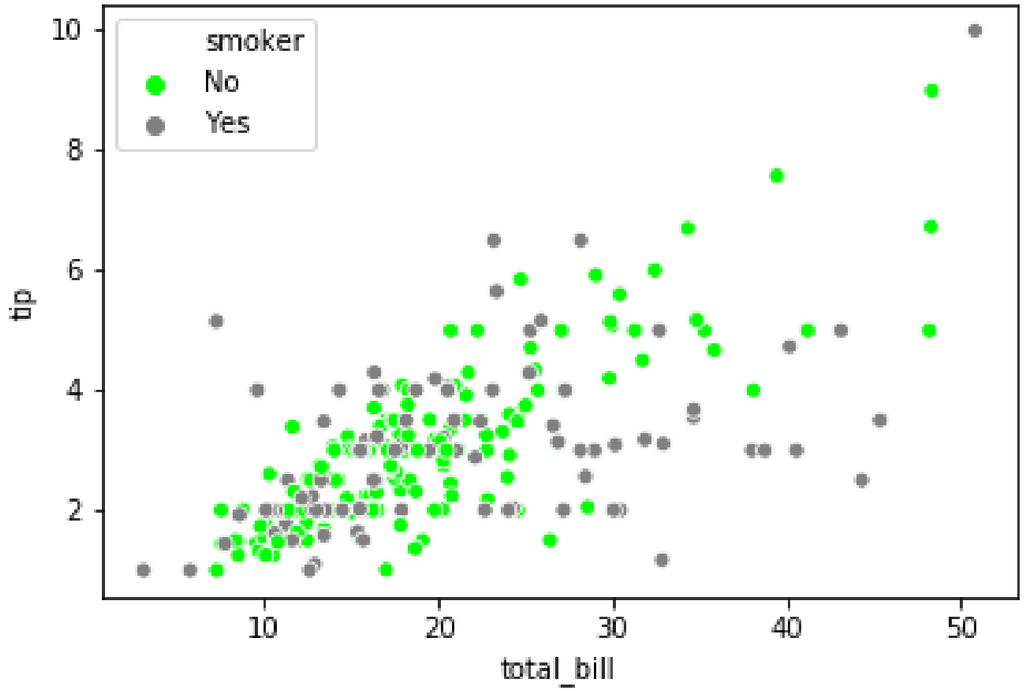
	Color	Matplotlib name	Matplotlib abbreviation	HTML color code (hex)
	blue	"blue"	"b"	#0000ff
	green	"green"	"g"	#008000
	red	"red"	"r"	#ff0000
	green/blue	"cyan"	"c"	#00bfbf
	purple	"magenta"	"m"	#bf00bf
	yellow	"yellow"	"y"	#bfbf00
	black	"black"	"k"	#000000
	white	"white"	"w"	#ffffff

Using HTML hex color codes with hue

```
import matplotlib.pyplot as plt
import seaborn as sns

hue_colors = {"Yes": "#808080",
              "No": "#00FF00"}

sns.scatterplot(x="total_bill",
                y="tip",
                data=tips,
                hue="smoker",
                palette=hue_colors)
plt.show()
```

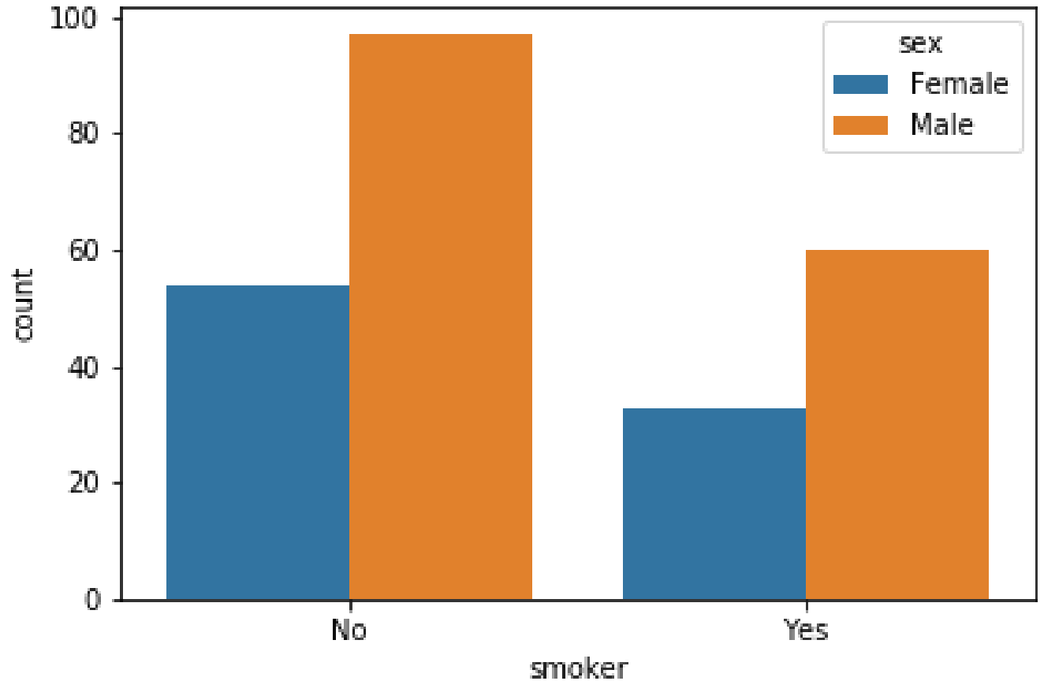


[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

Using hue with count plots

```
import matplotlib.pyplot as plt
import seaborn as sns

sns.countplot(x="smoker",
              data=tips,
              hue="sex")
plt.show()
```



[1] Waskom, M. L. (2021). seaborn: statistical data visualization. https://seaborn.pydata.org/

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