

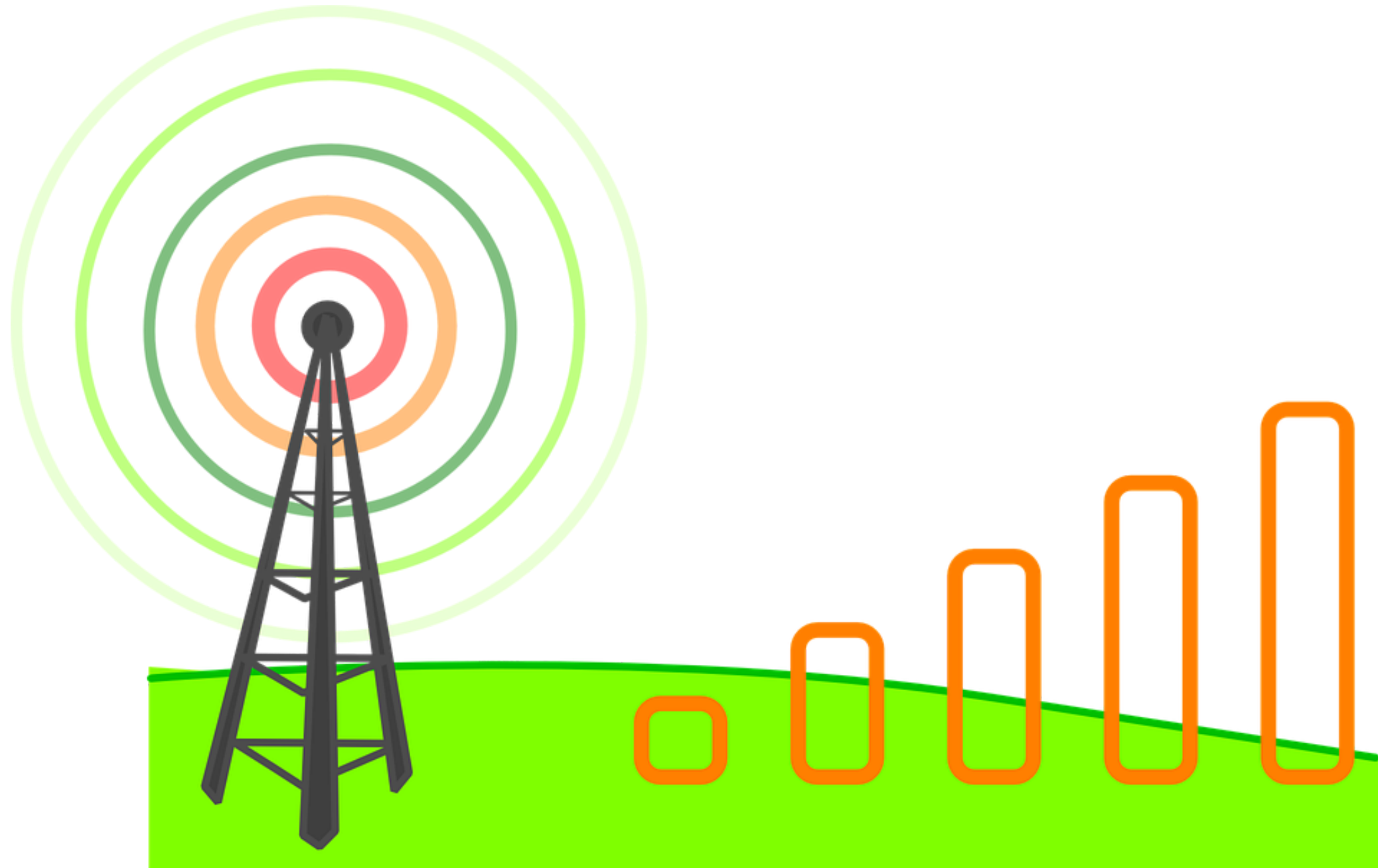
Making a scatter plot

INTRODUCTION TO DATA SCIENCE IN PYTHON

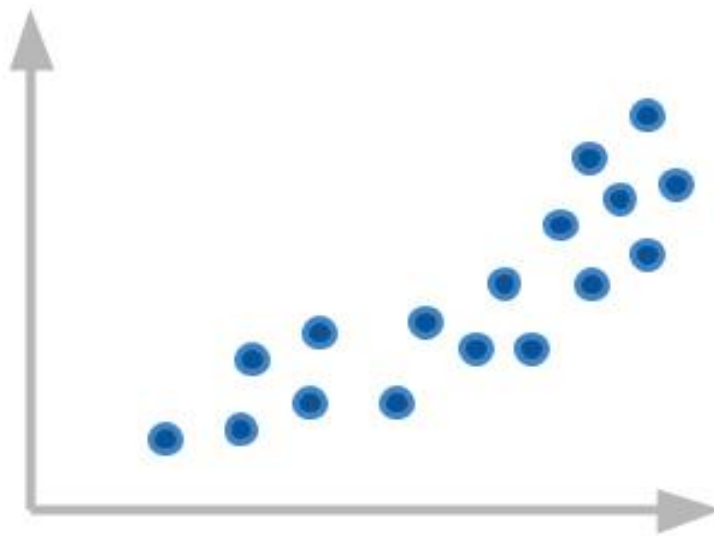
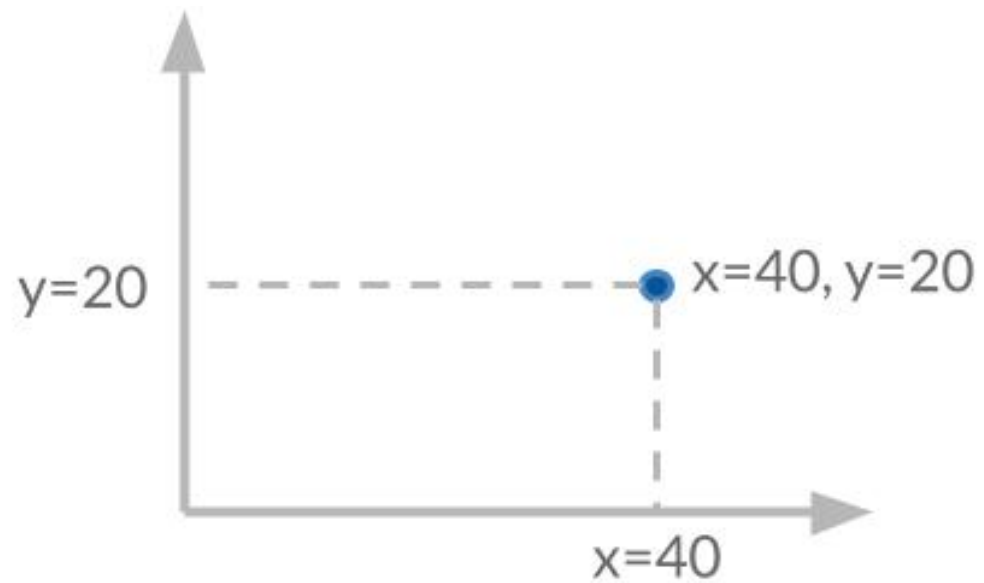


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Lead Data Scientist, Looker

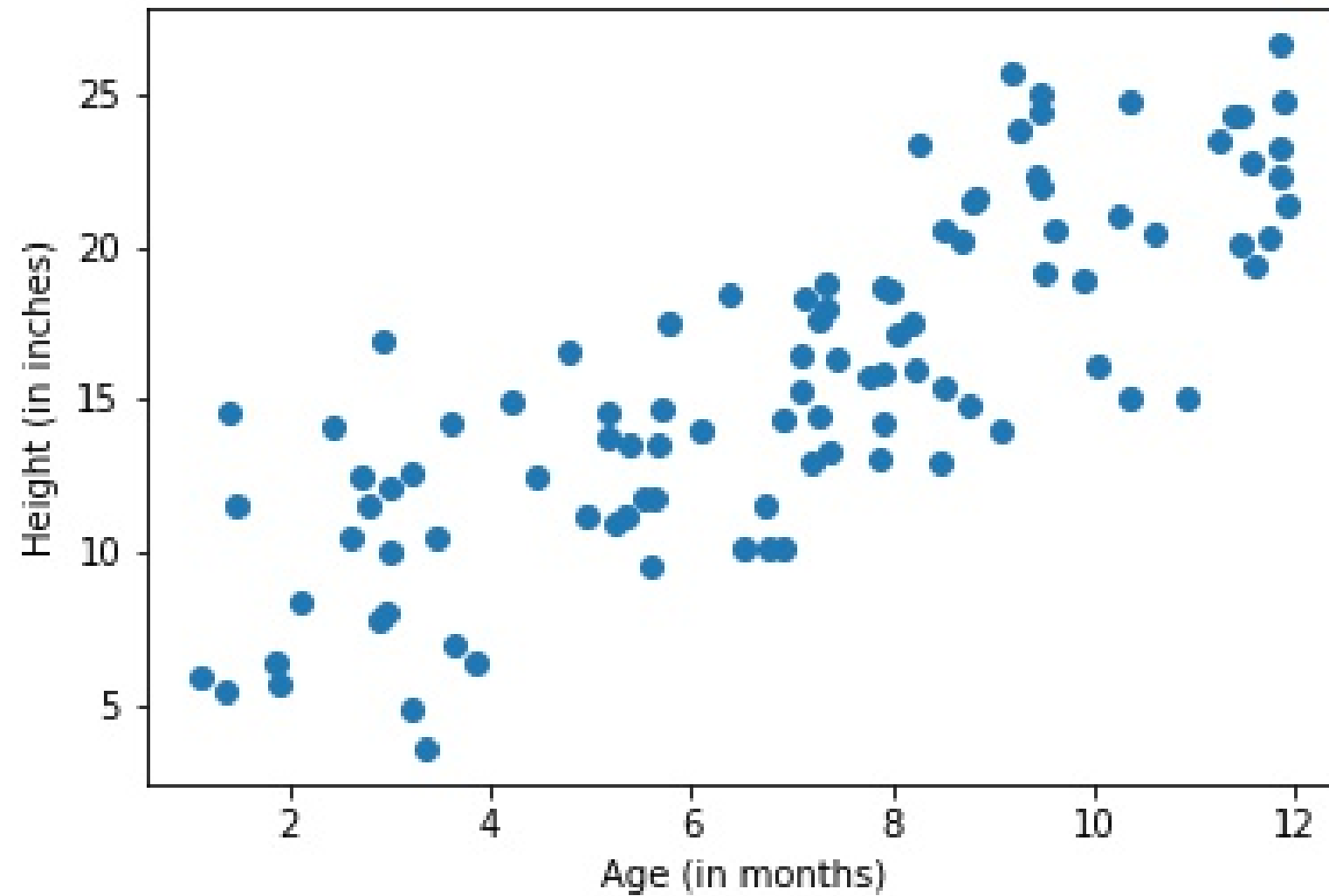
Mapping Cell Phone Signals



What is a scatter plot?



What is a scatter plot?

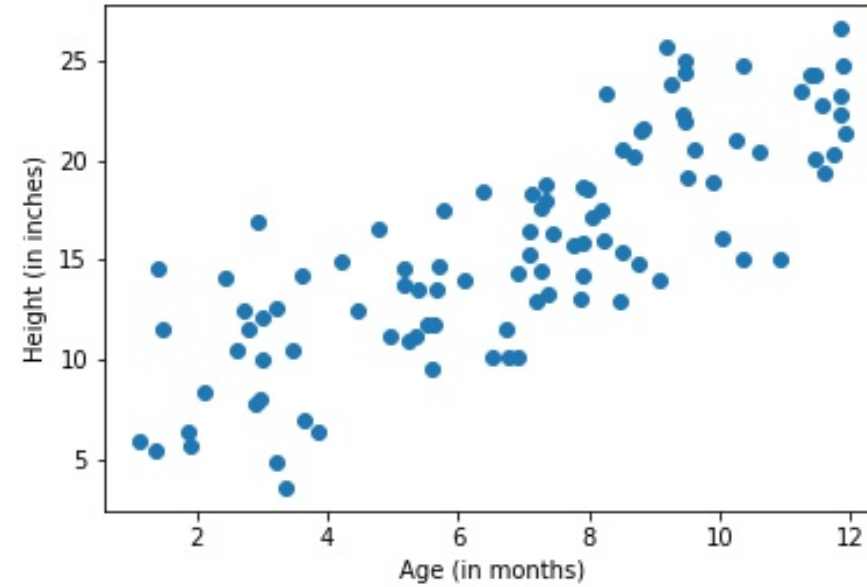


Creating a scatter plot

```
plt.scatter(df.age, df.height)
```

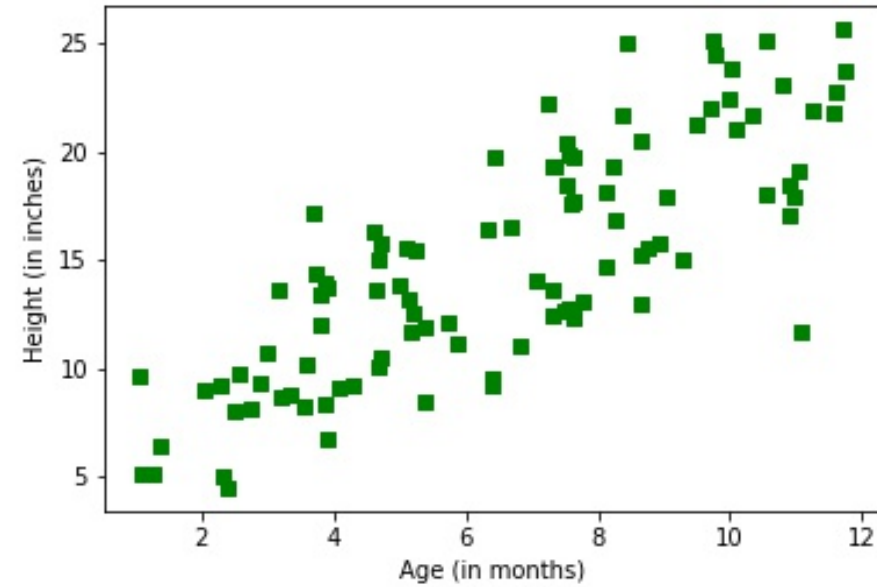
```
plt.xlabel('Age (in months)')  
plt.ylabel('Height (in inches)')
```

```
plt.show()
```

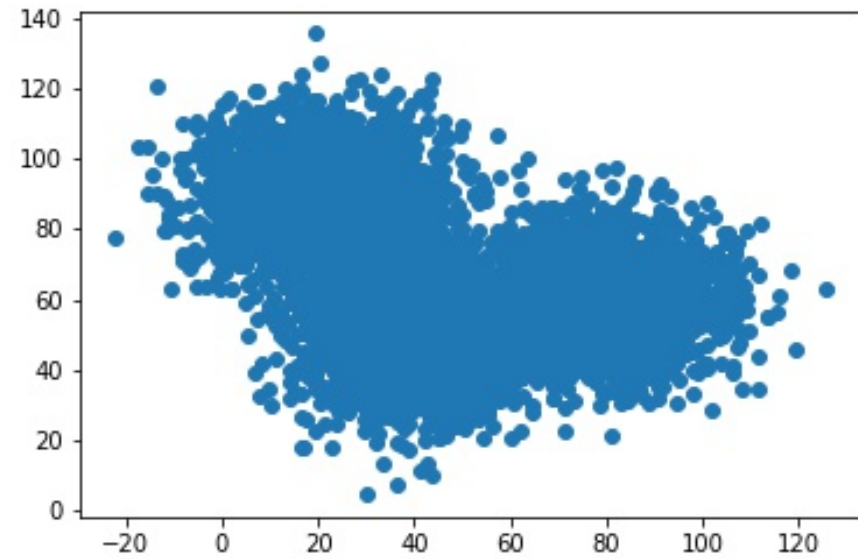


Keyword arguments

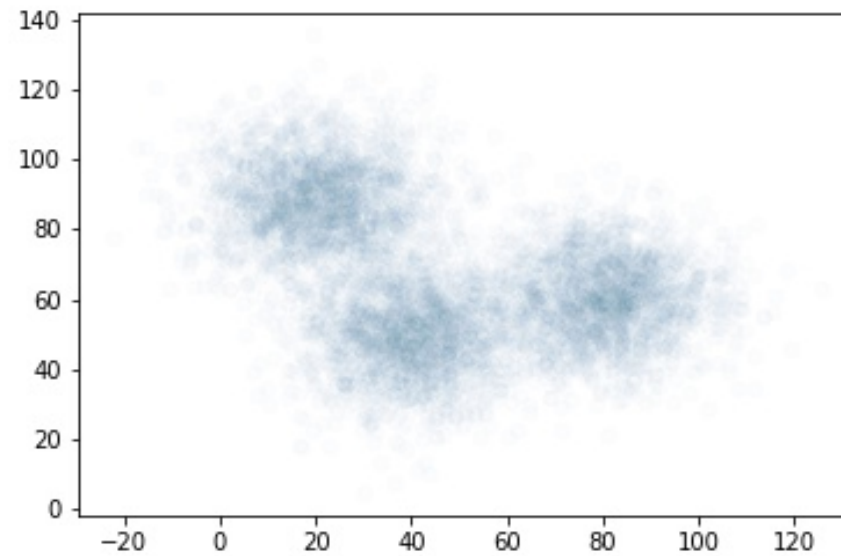
```
plt.scatter(df.age, df.height,  
            color='green',  
            marker='s')
```



Changing marker transparency



```
plt.scatter(df.x_data,  
            df.y_data,  
            alpha=0.1)
```

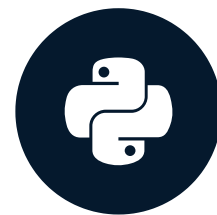


Let's practice!

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Making a bar chart

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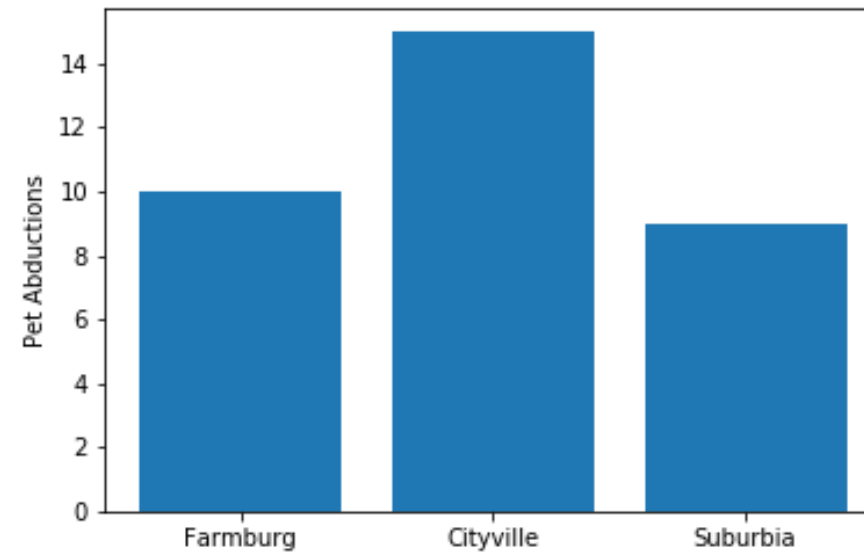


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Comparing pet crimes

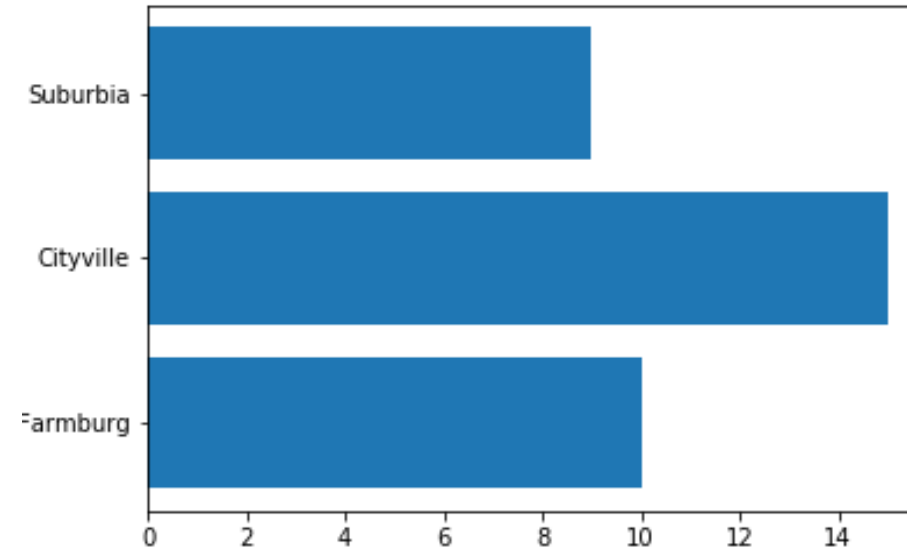
precinct	pets_abducted
Farmburg	10
Cityville	15
Suburbia	9

```
plt.bar(df.precinct,  
        df.pets_abducted)  
  
plt.ylabel('Pet Abductions')  
plt.show()
```



Horizontal bar charts

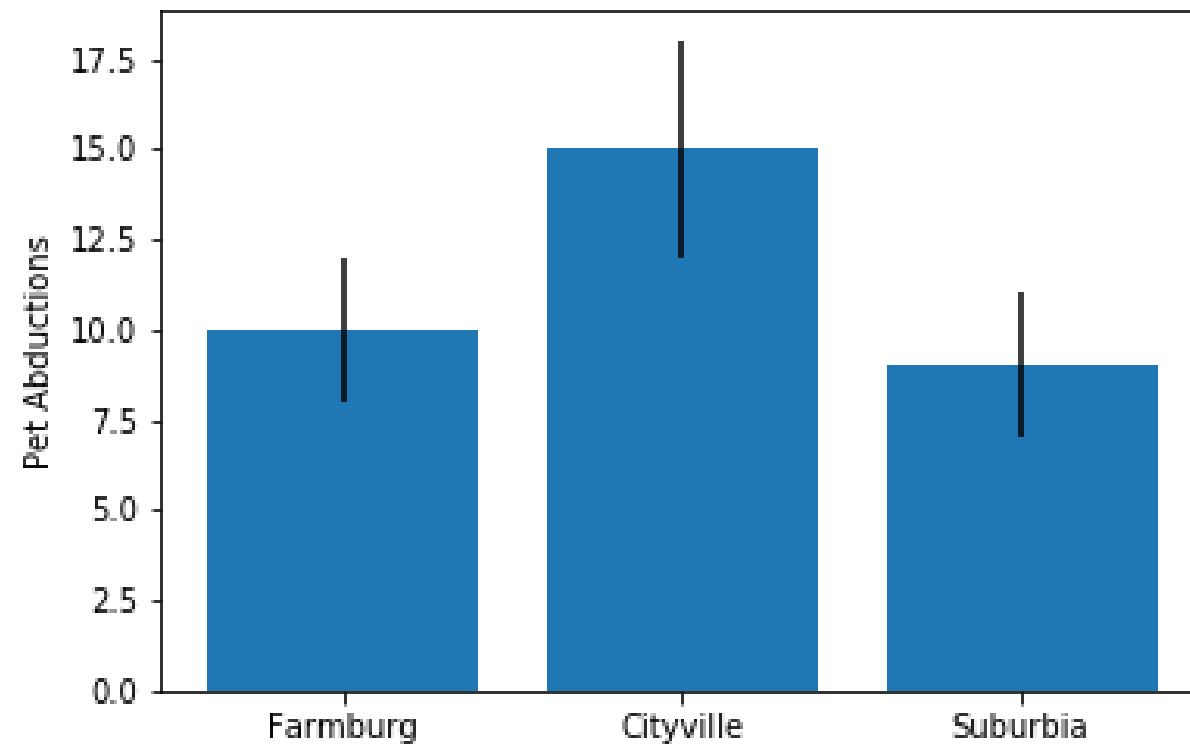
```
plt.barh(df.precinct,  
         df.pets_abducted)  
  
plt.ylabel('Pet Abductions')  
plt.show()
```



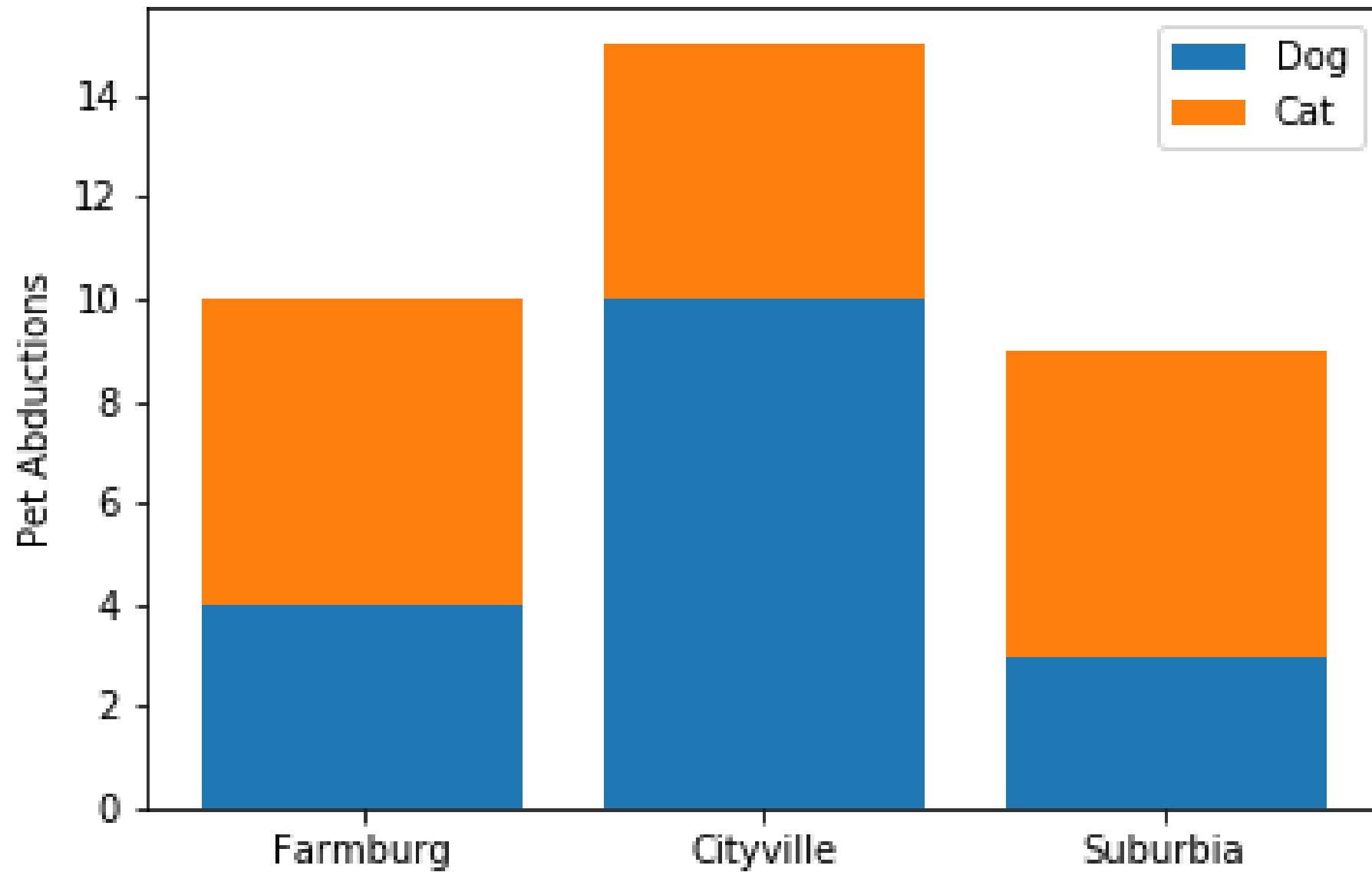
Adding error bars

```
plt.bar(df.precinct, df.pet_abductions,  
        yerr=df.error)
```

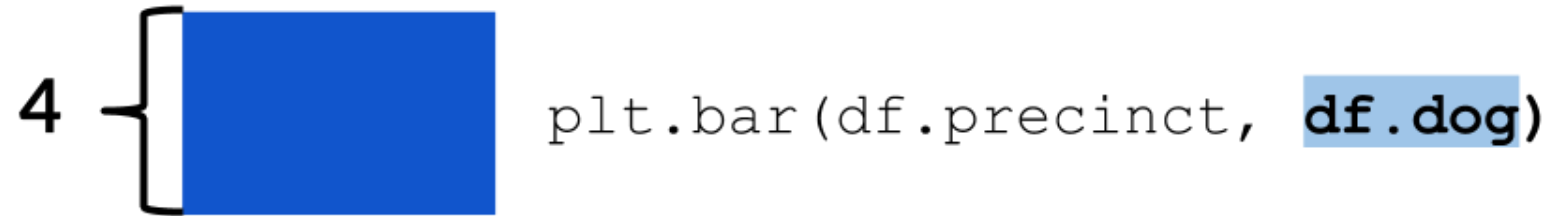
```
plt.ylabel('Pet Abductions')  
plt.show()
```



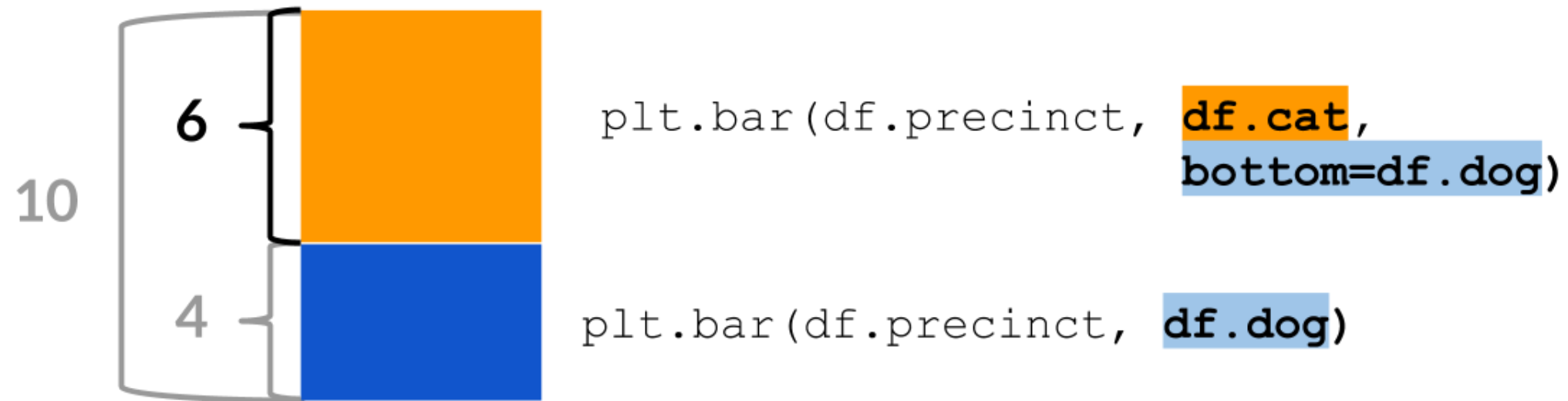
Stacked bar charts



Stacked bar charts

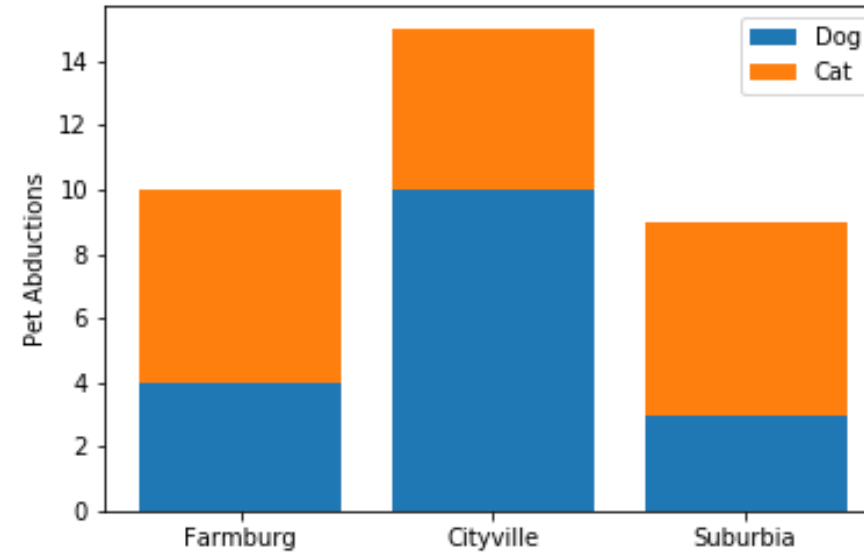


Stacked bar charts



Stacked bar charts

```
plt.bar(df.precinct, df.dog,  
        label='Dog')  
  
plt.bar(df.precinct, df.cat,  
        bottom=df.dog,  
        label='Cat')  
  
plt.legend()  
plt.show()
```

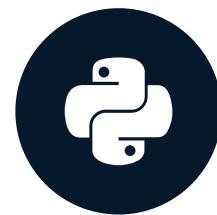


Let's practice!

INTRODUCTION TO DATA SCIENCE IN PYTHON

Making a histogram

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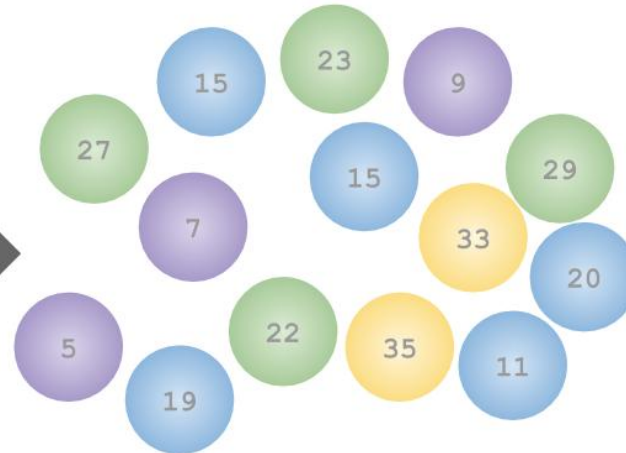
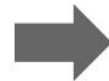


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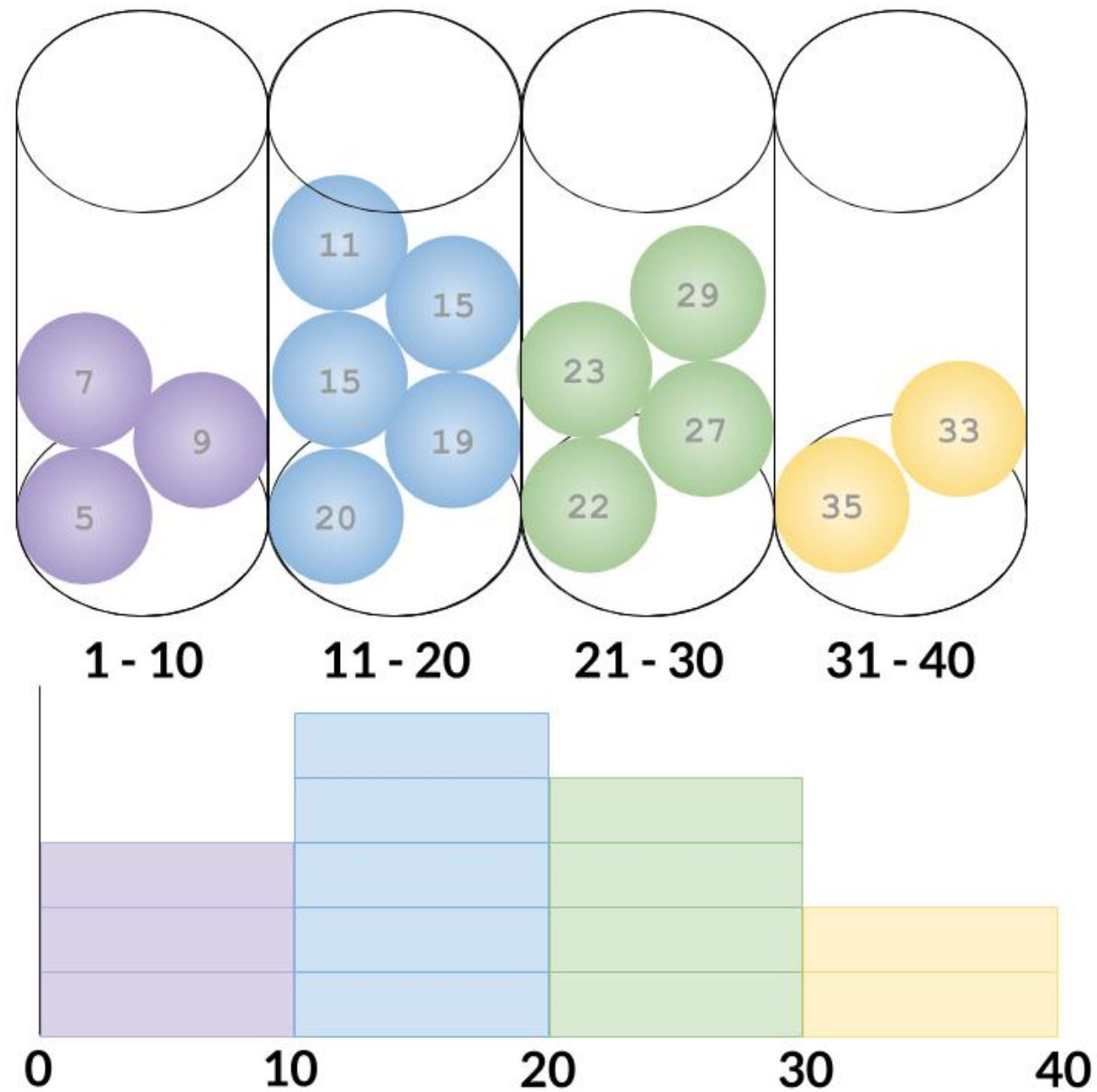
Tracking down the kidnapper



Gravel Radius (mm)
5
17
7
20
42
35
21
...



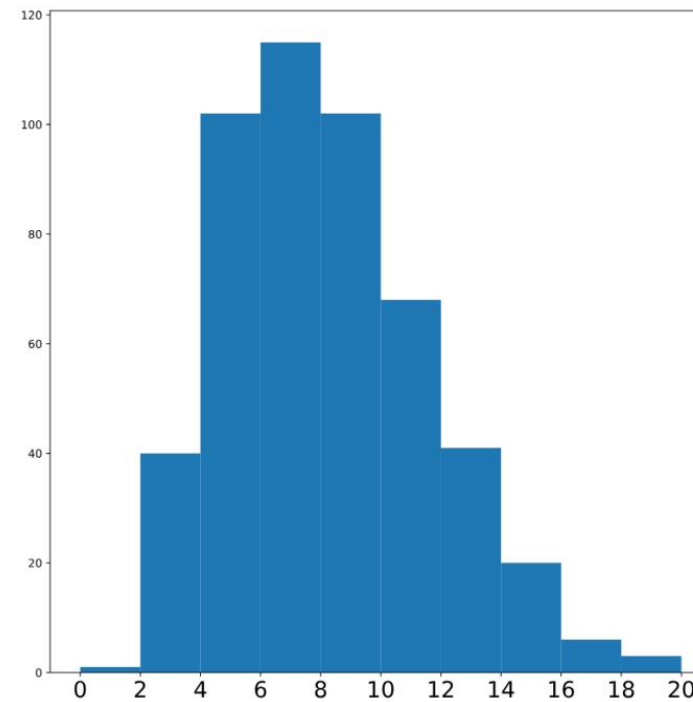
What is a histogram?



Histograms with matplotlib

```
plt.hist(gravel.mass)
```

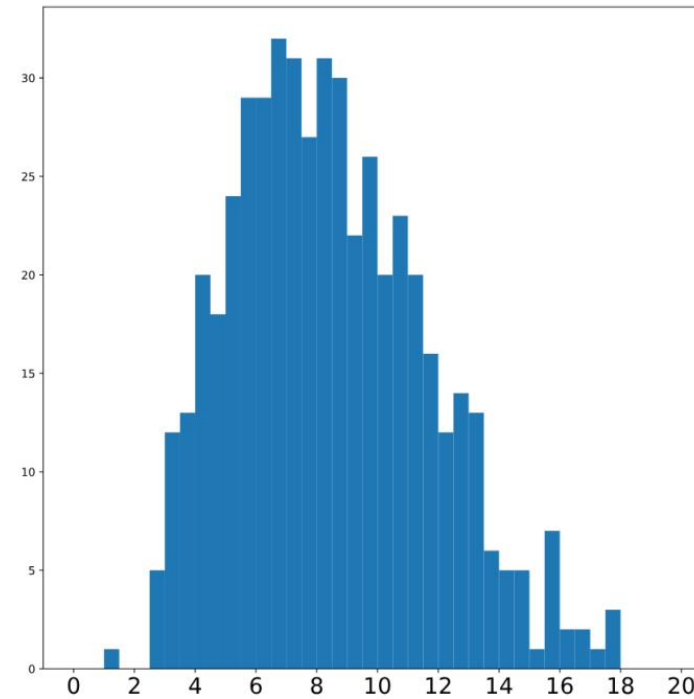
```
plt.show()
```



Changing bins

```
plt.hist(data, bins=nbins)
```

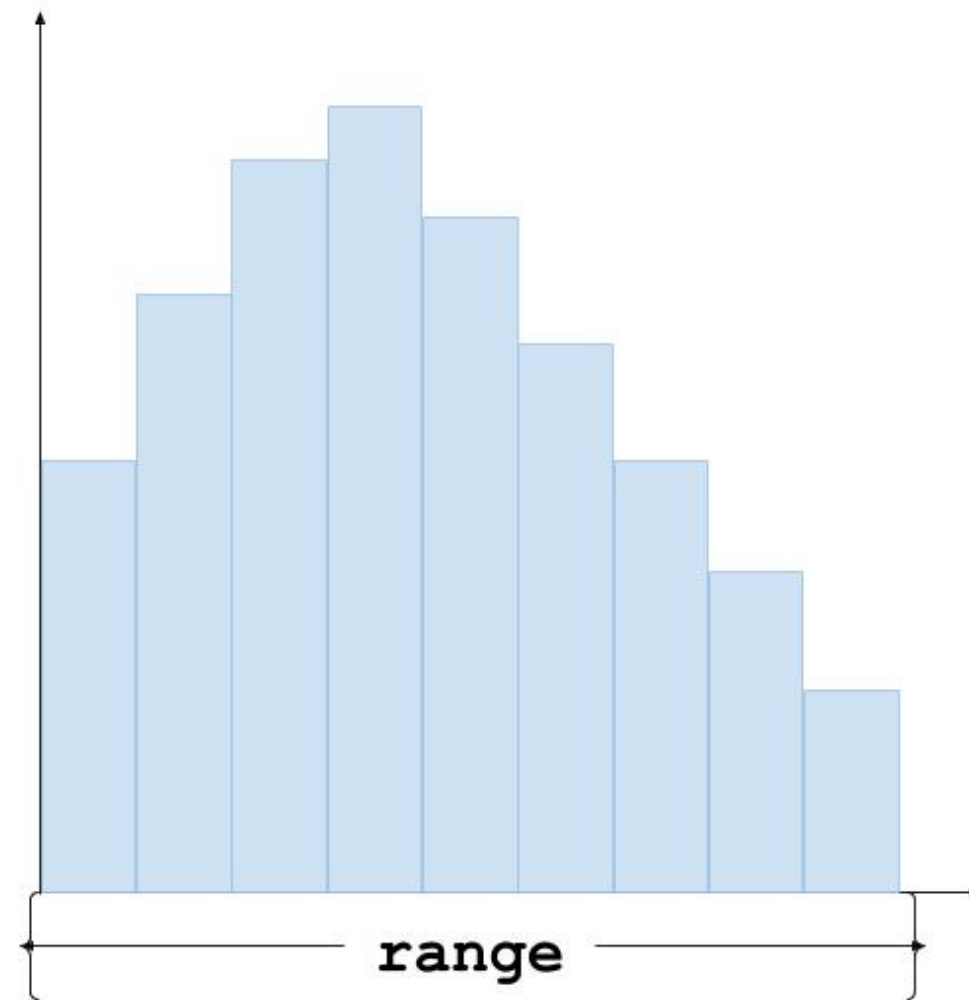
```
plt.hist(gravel.mass, bins=40)
```



Changing range

```
plt.hist(data,  
         range=(xmin, xmax))
```

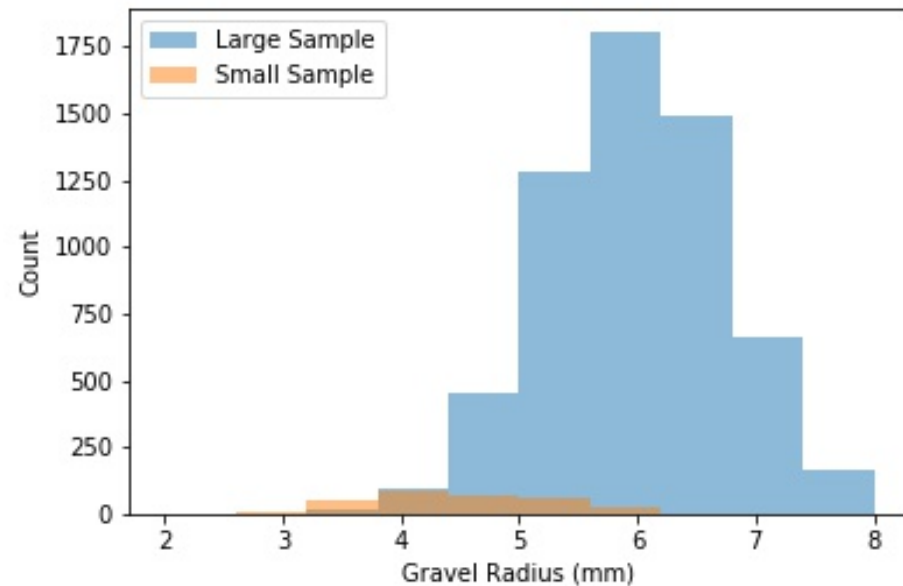
```
plt.hist(gravel.mass,  
         range=(50, 100))
```



Normalizing

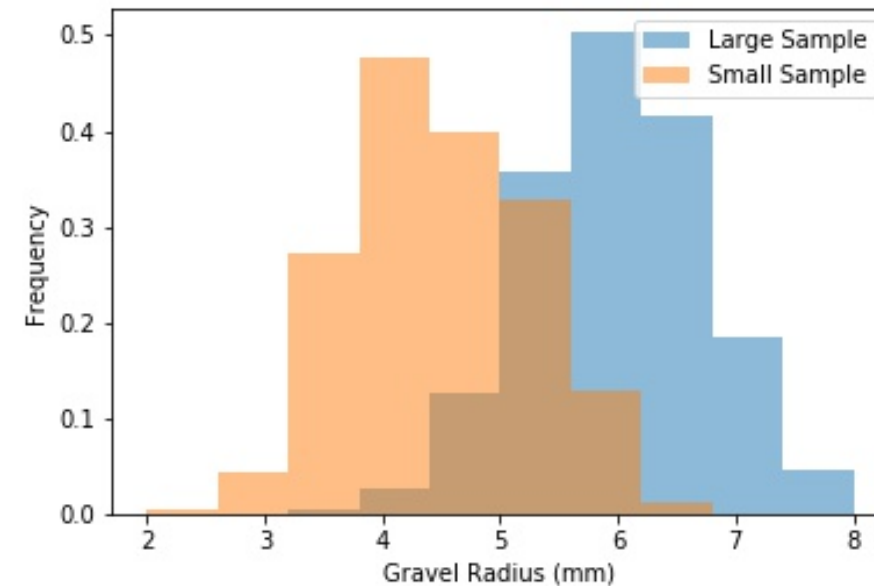
Unnormalized bar plot

```
plt.hist(male_weight)  
plt.hist(female_weight)
```



Sum of bar area = 1

```
plt.hist(male_weight, density=True)  
plt.hist(female_weight, density=True)
```



Let's practice!

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Recap of the rescue

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You did it!



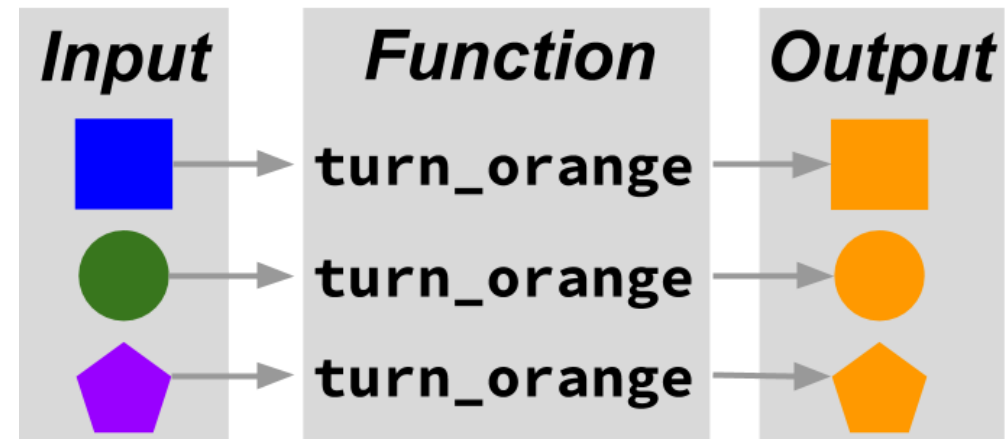
Modules and variables

- Modules group functions together
- Add a module using `import`
- `import` happens at the beginning of a script file
- Variables store data: strings or floats

```
import pandas as pd  
import numpy as np
```

Using functions

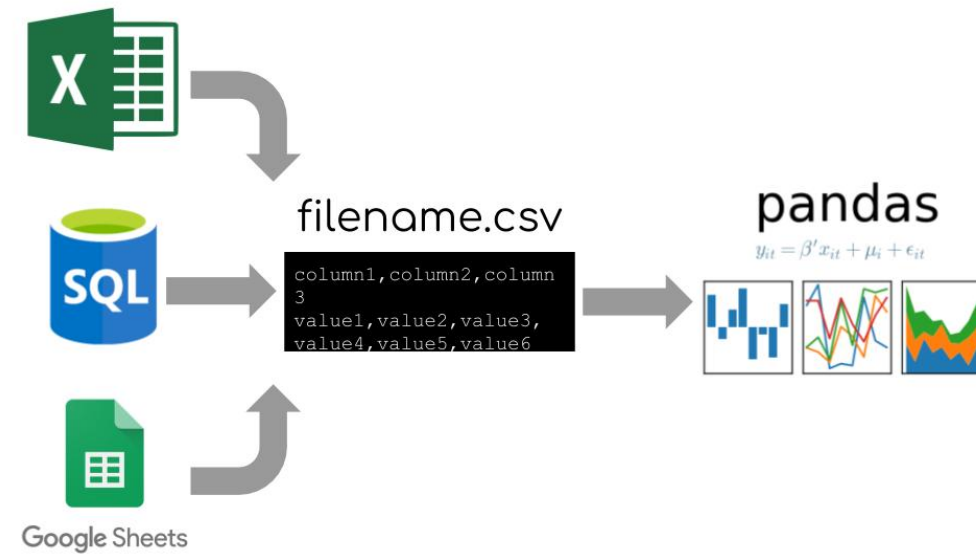
- Perform a task
- Positional arguments
- Keyword arguments



Working with tabular data

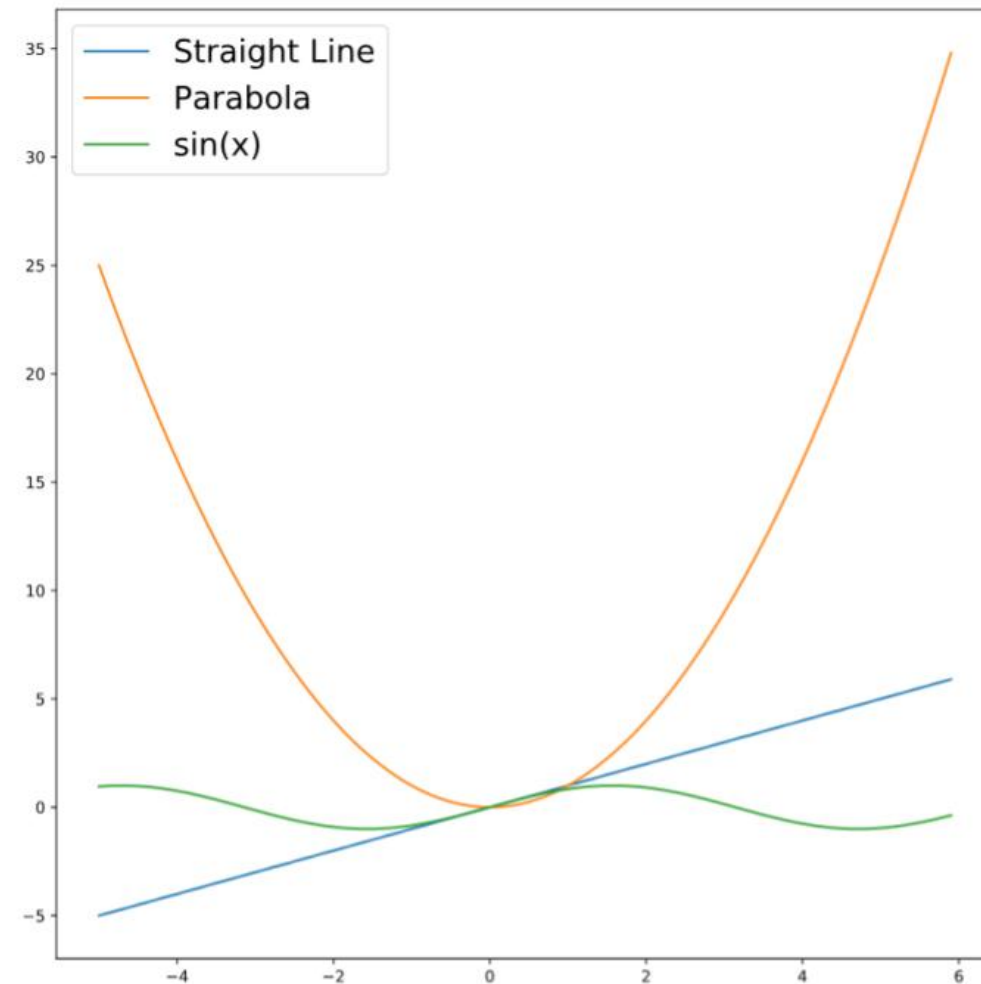
- `import pandas as pd`
- DataFrames store tabular data
- Inspect data using `.head()` or `.info()`
- Select rows using logic

```
credit_reports[  
    credit_report.suspect ==  
    'Freddy Frequentist']
```



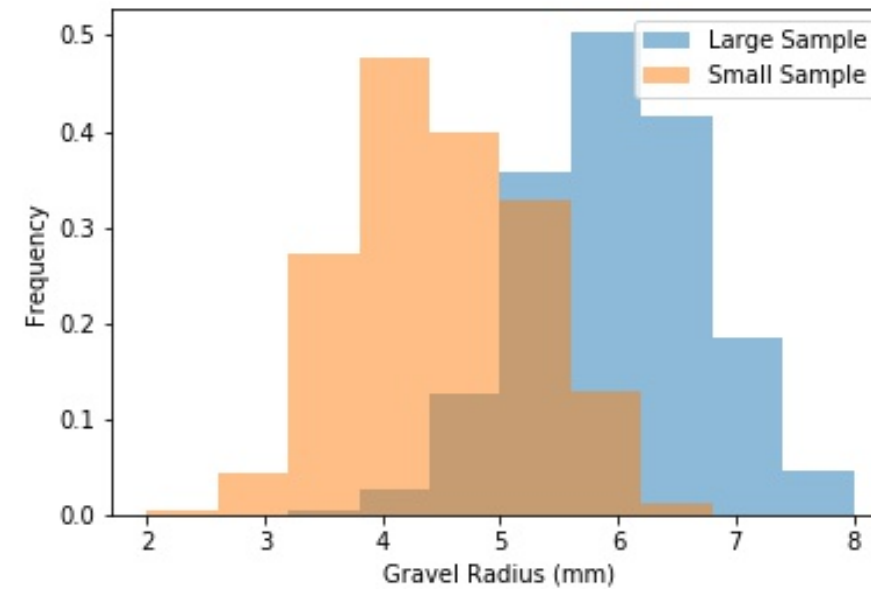
Creating line plots

- `from matplotlib import pyplot as plt`
- Use `plt.plot()` to create a line plot
- Modify line plots with keyword arguments
- Add labels and legends



More plot types

- `plt.scatter()` shows individual data points
- `plt.bar()` creates bar charts
- `plt.hist()` visualizes distributions



Great job!

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