

# KEY\_Practice14\_Intro\_Stats\_I

July 14, 2019

## 1 Practice with Statistics!

**Remember:** \* The mean of an array can be calculated by `np.mean` and medians can be calculated with `np.mean`. \* Means and medians are different types of central tendency measures, which tell you about how the average of a dataset behaves.

First, import numpy and pandas:

```
[ ]: # load numpy and pandas
```

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

```
[ ]: # mount Google Drive
```

```
from google.colab import drive
drive.mount('/content/gdrive')
path = '/content/gdrive/My Drive/SummerExperience-master/'
```

Load in the sample data from the Lesson:

```
[ ]: # load the csv file 'Lessons/SampleData/iris.csv'
```

```
data_table = pd.read_csv(path + 'Lessons/SampleData/iris.csv')
```

Now print out the table to see what other columns you can look at for practice:

```
[ ]: # Print the data_table array
```

```
data_table.head()
```

```
[ ]:      sepal_length  sepal_width  petal_length  petal_width  species
0              5.1           3.5           1.4           0.2   setosa
1              4.9           3.0           1.4           0.2   setosa
2              4.7           3.2           1.3           0.2   setosa
3              4.6           3.1           1.5           0.2   setosa
4              5.0           3.6           1.4           0.2   setosa
```

Pick one of the metrics other than `sepal_length` and subset this column into three different numpy arrays, one for each species ('setosa', 'versicolor', and 'virginica'):

```
[ ]: # Load one of the parameters above into three numpy arrays, based on species
# Hint, you can use the pandas query function to filter the arrays
```

```
petal_setosa = data_table.query('species == "setosa")['petal_length']

petal_virginica = data_table.query('species == "virginica")['petal_length']

petal_versicolor = data_table.query('species == "versicolor")['petal_length']
```

Calculate the means of each of the species arrays:

```
[ ]: # Calculate the means of the three arrays you generated above
```

```
means = [
    np.mean(petal_setosa),
    np.mean(petal_virginica),
    np.mean(petal_versicolor)
]

means
```

```
[ ]: [1.4620000000000002, 5.552, 4.26]
```

Calculate the medians of each of the species arrays:

```
[ ]: # Calculate the medians of the three arrays you generated above:
```

```
medians = [
    np.median(petal_setosa),
    np.median(petal_virginica),
    np.median(petal_versicolor)
]

medians
```

```
[ ]: [1.5, 5.55, 4.35]
```

Compare the means and medians for each of the species, are the means and medians similar to each other? Do different species have different means?

```
[ ]: # Calculate the differences between the means you calculated above:
```

```
print(means[1] - means[0])
print(means[2] - means[1])
print(means[2] - means[0])
```

```
4.09
-1.2919999999999998
2.7979999999999996
```

What can you infer about each of the three different iris species based on this result?  
Nice job! You just practiced:

- Calculating mean and medians using numpy
- Interpreting the results from these basic statistics