

# KEY\_Lesson19B\_BarCharts\_Histograms

July 19, 2019

## 1 Bar Charts and Histograms

### 1.1 Bar Charts

Bar charts are used to display how a *categorical* variable relates to a *continuous* variable. In bar charts the *categorical* variable is displayed on the x-axis and the *continuous* variable is displayed on the y-axis.

```
[1]: # import seaborn
import seaborn as sns
```

We will be using the titanic dataset in this example. Let's load and preview it.

```
[2]: # read in titanic data
titanic = sns.load_dataset("titanic")
# preview data
titanic.head()
```

```
[3]:
```

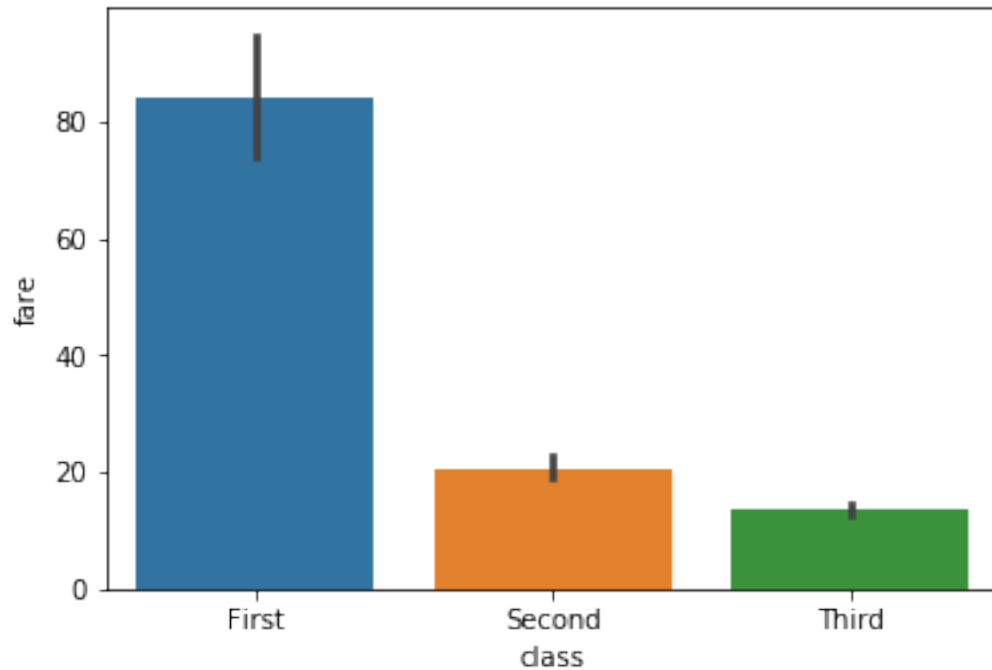
	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	\
0	0	3	male	22.0	1	0	7.2500	S	Third	
1	1	1	female	38.0	1	0	71.2833	C	First	
2	1	3	female	26.0	0	0	7.9250	S	Third	
3	1	1	female	35.0	1	0	53.1000	S	First	
4	0	3	male	35.0	0	0	8.0500	S	Third	

	who	adult_male	deck	embark_town	alive	alone
0	man	True	NaN	Southampton	no	False
1	woman	False	C	Cherbourg	yes	False
2	woman	False	NaN	Southampton	yes	True
3	woman	False	C	Southampton	yes	False
4	man	True	NaN	Southampton	no	True

Let's say we want to compare the mean fare price across the three classes of tickets for all passengers.

```
[3]: # barplot of class vs fare
sns.barplot(x="class", y = 'fare', data=titanic)
```

```
[3]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1d35a470>
```

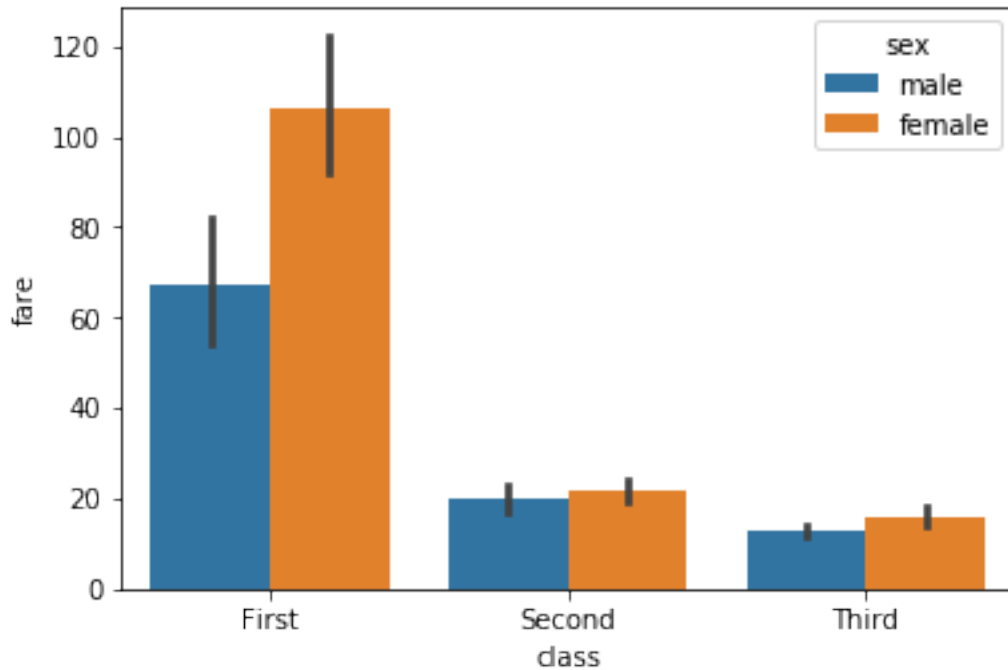


Notice how `seaborn` magically computes the mean fares and generates the plot exactly as we want without us even specifying!

What if we wanted to look at the data more granularly and further *stratify* each class bar by the sex variable? Based on what you know about `seaborn` so far, how do you think we can do that?

```
[4]: # barplot of class vs fare stratified by sex
sns.barplot(x="class", y = 'fare', hue = "sex", data=titanic)
```

```
[4]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1d63fa58>
```



## 1.2 Histograms

Histograms are used to visualize the *distribution* of a *continuous* variable.

Let's say we wanted to see how the fare price was distributed across all passengers in our dataset. We can use the `distplot` function to generate our histogram.

```
[37]: # histogram of age
sns.distplot(titanic['age'].dropna(), kde=False)
```

```
[37]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1f712e10>
```



We can change the number of bins used to plot our histogram to change the *granularity* of our distribution plot.

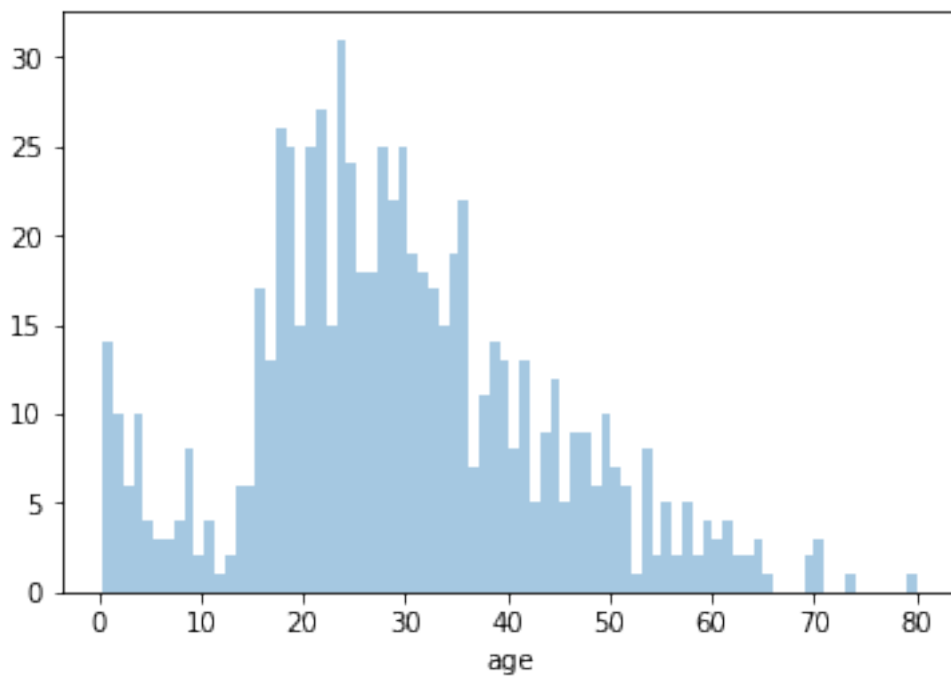
```
[24]: # histogram of age
sns.distplot(titanic['age'].dropna(), kde=False, bins=10)
```

```
[24]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1ea9d358>
```



```
[25]: # histogram of age
sns.distplot(titanic['age'].dropna(), kde=False, bins=80)
```

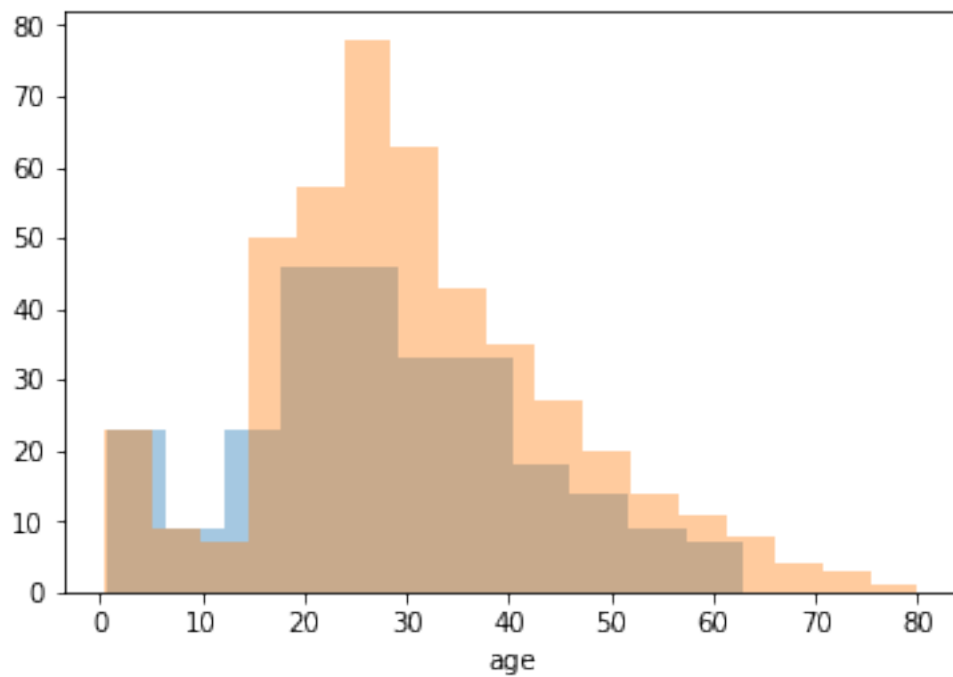
```
[25]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1eb7e0f0>
```



Unfortunately we can't color our histograms by another variable, but we can compare the distributions of certain variables between *subsets* of our DataFrame by *layering* them.

```
[31]: # histogram of age for females
sns.distplot(titanic.query('sex == "female"')['age'].dropna(), kde=False,
             label="F")
sns.distplot(titanic.query('sex == "male"')['age'].dropna(), kde=False,
             label="M")
```

```
[31]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1f1cbc50>
```



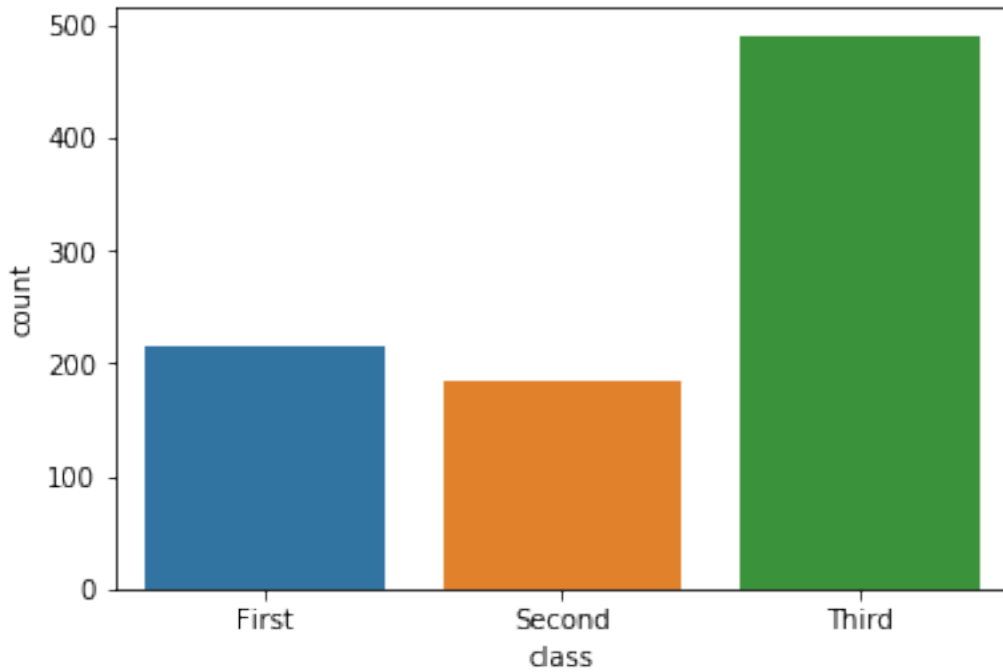
### 1.3 Count Plots

Count plots can be thought of as histograms for categorical variables.

Let's say we wanted to visualize how many passengers there were in each class.

```
[32]: # count plot of class
sns.countplot(x="class", data=titanic)
```

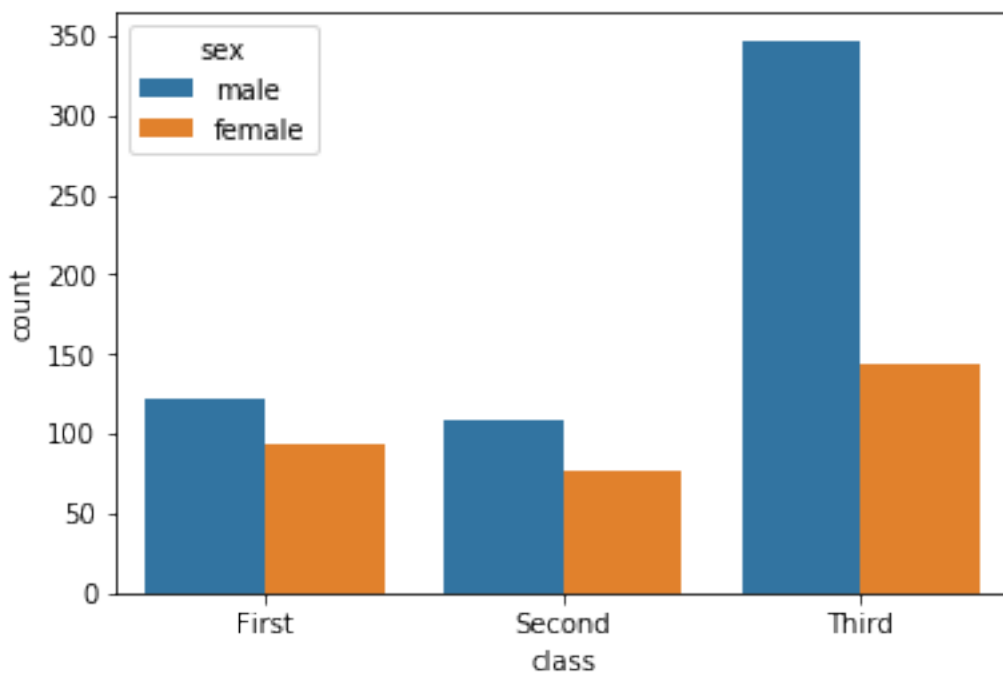
```
[32]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1f2d1550>
```



Now, let's stratify each class by the sex variable using color. By now you're an expert in this!

```
[33]: sns.countplot(x="class", hue = "sex", data=titanic)
```

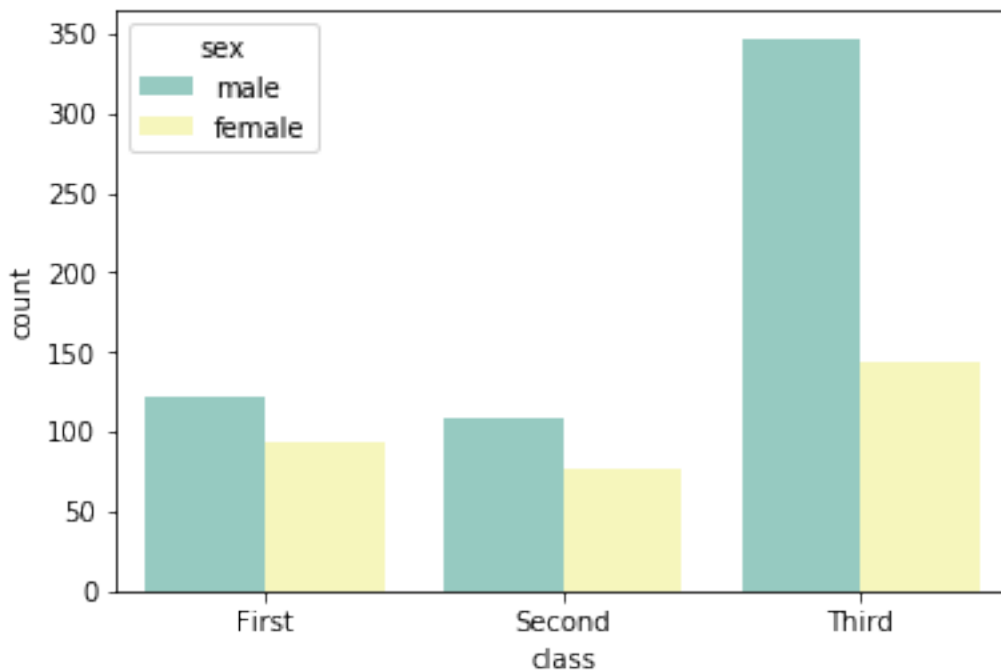
```
[33]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1f3a4eb8>
```



As always we can change the color palette:

```
[40]: sns.countplot(x="class", hue = "sex", palette = "Set3", data=titanic)
```

```
[40]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1f98a780>
```



In this lesson you learned: \* How to create barplots in seaborn \* How to stratify barplots by another variable using color (hue) \* How to create histograms in seaborn \* Changing the granularity of the histograms (bins) \* How to create count plots in seaborn \* How to stratify count plots by another variable using color (hue)