KEY_Lesson19B_BarCharts_Histograms

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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* varibale 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()
```

```
[2]:    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
```
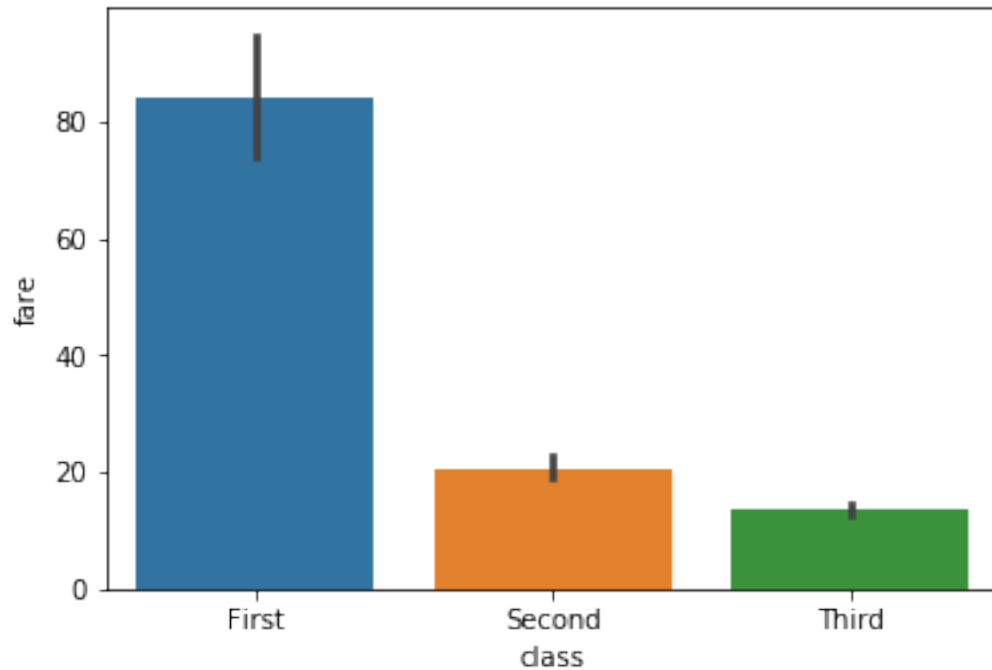
Let's say we want to compare the mean fare price across the three classes of tickets for all passengers.

```
[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>
```
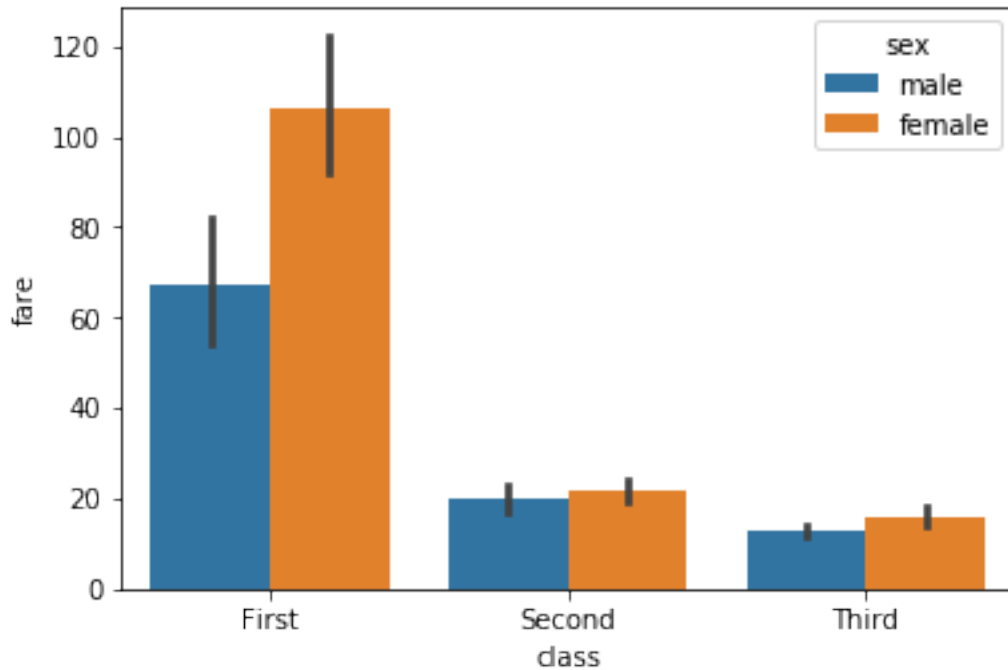
1.2 Histograms

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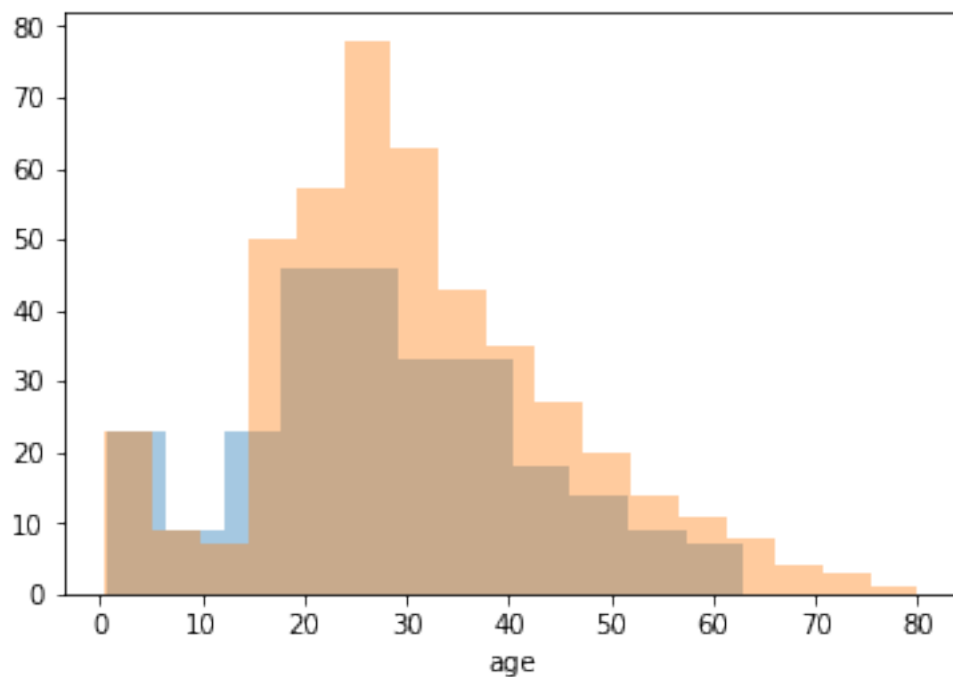
[25]: <matplotlib.axes._subplots.AxesSubplot at 0x1a1eb7e0f0>

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.

```python
[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`.

```python
[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>
```
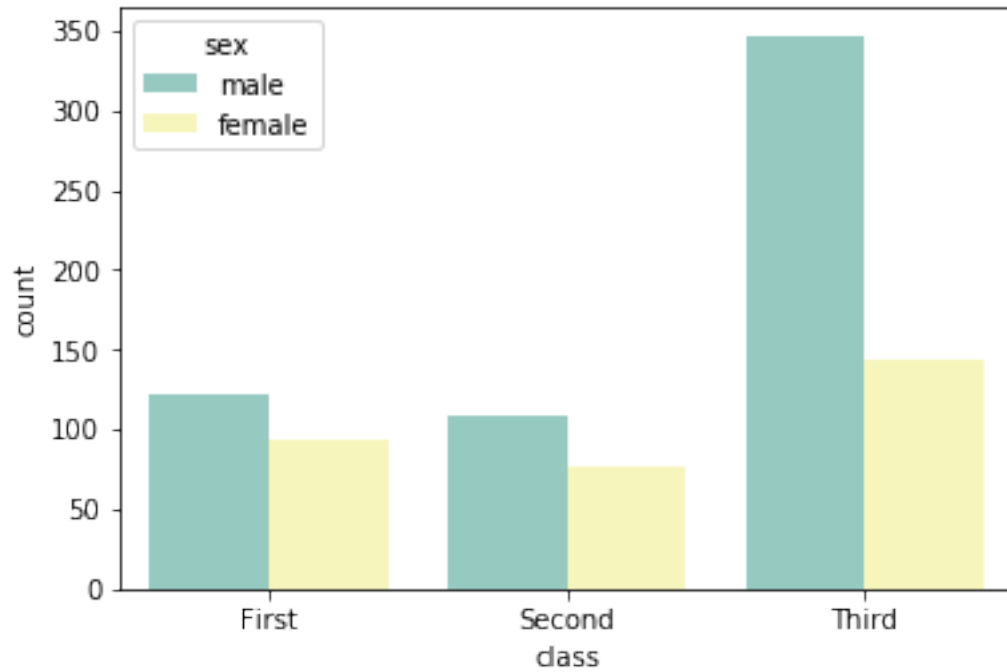
As always we can change the color palette:

```
[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`)