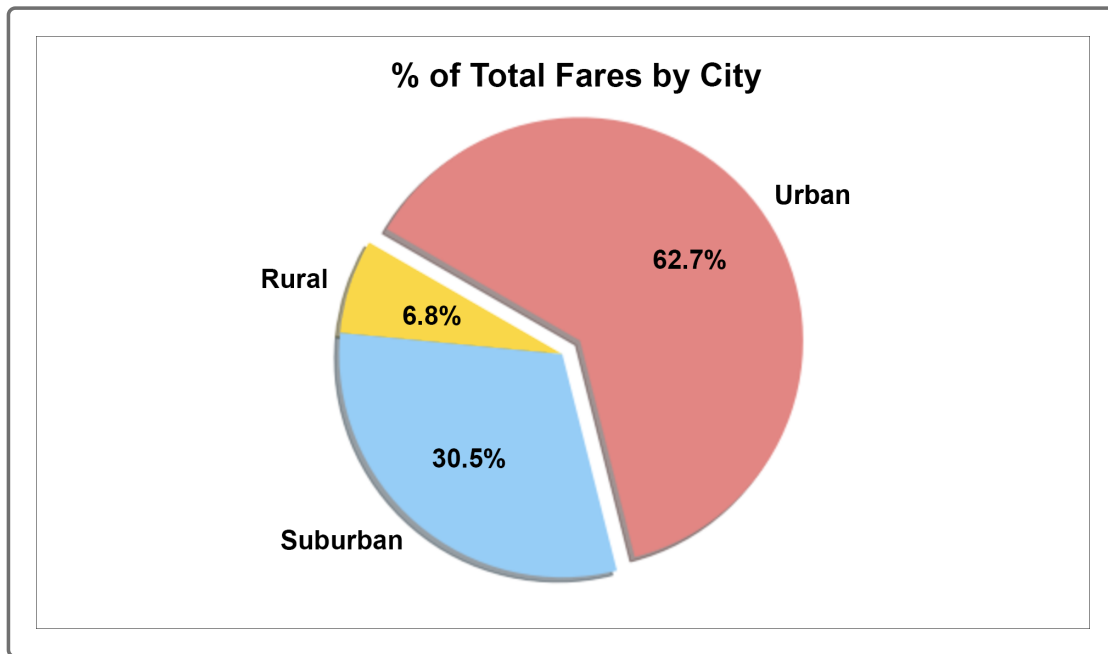


## 5.5.1 Get the Percentage of Fares for Each City Type

**As** you are working on the final pieces of your presentation, you hear from Sasha that V. Isualize has a habit of asking presenters for alternate visualizations in meetings, and you are going to be ready with all the possibilities. You know pie charts aren't as common, but they are a good way to show percentages. So you get to work on creating a pie chart that showcases the percentage of fares for each type of city.

To showcase the percentage of the overall fares for each type of city, where each pie wedge will represent the percentage of total fares for each city type, the pie chart should look like this.



To create this pie chart, we will need to do the following:

1. Get the total fares for each city type.
2. Get the total for all the fares for all the city types.
3. Calculate the percentage of the total fares for each city type.

To get the total fares for city type, we need to create a Series where the index is the type of city on the `pyber_data_df` DataFrame and the column is the sum of the fares for city type.

## REWIND

To create a Data Series with one of the columns in a DataFrame, we can use the `groupby()` function and add the column inside the parentheses.

To calculate the percentage of the total fares for each city type based on the total fares, we will:

1. Use the `groupby()` function on the `pyber_data_df` DataFrame and group by the `type` of city column so the type of city is the index.
2. Apply the `sum()` method on the `fare` column to get the Series with the total number of fares for each city type.
3. Divide the total fares for each city type by the total of all the fares and multiply by 100.

We will create a Series using the `groupby()` function on the `pyber_data_df` DataFrame that has the type of city as an index. Then we'll apply the `sum()` method to the Series for each type of city and select the fare column.

Add the following code to a new cell and run the cell.

```
# Get the sum of the fares for each city type.  
sum_fares_by_type = pyber_data_df.groupby(["type"]).sum()["fare"]  
sum_fares_by_type
```

The output is a Series with the sum of the fares for each type of city:

```
type  
Rural          4327.93  
Suburban      19356.33  
Urban         39854.38  
Name: fare, dtype: float64
```

Next, we'll get the total fares by using the `sum()` method on the fare column of the `pyber_data_df` DataFrame.

Add the following code to a new cell:

```
# Get the sum of all the fares.  
total_fares = pyber_data_df["fare"].sum()  
total_fares
```

When you run the cell, the output is 63538.64, or \$63,538.64, which is the sum of the fares for all the city types.

```
# Get the sum of all the fares.  
total_fares = pyber_data_df["fare"].sum()  
total_fares  
  
63538.64
```

Next, we can calculate the percentage of total fares for each city type by dividing the `sum_fares_by_type` Series by the `total_fares` Series and multiplying by 100, like this:

```
# Calculate the percentage of fare for each city type.  
type_percents = 100 * sum_fares_by_type / total_fares  
type_percents
```

As you become more adept at programming, you can perform the calculation in one line of code, as follows:

```
# Calculate the percentage of fare for each city type.  
type_percents = 100 * pyber_data_df.groupby(["type"]).sum()["fare"] / pyber_  
type_percents
```

Executing the code will give us the following percentages:

```
type  
Rural          6.811493  
Suburban       30.463872  
Urban          62.724635  
Name: fare, dtype: float64
```

Now we are ready to create our pie chart!