**PyBer Ride-share Analysis:**

**In Python using Jupyter Notebook**

**Overview:**

We have been asked to summarize the ride-share data provide and analyze it across city types (urban, suburban, rural). In addition to the charts and graphs previously created, they want to have us summarize the key metrics by city type and create a multi-lined chart that shows the total fares per week, for the months of January through April.

By used Jupyter notebook, pandas and matplotlib libraries in Python we were able complete the following analysis:

**Results:**

**Summary of “City-type” Result & Analysis:**

This analysis was done by combining two data bases, the ride information coming from the usage database and the city information coming from a city database. By combining the two data bases we could get the number of rides, drivers and fare amounts broken out by city type. Which allowed us to calculate averages to make comparisons.

(See result below)

**Table

Description automatically generated**

As you can see most of the usage is in the urban cities followed by suburban and then rural. Likewise, to support the greater usage the urban cities have the most drivers, followed by suburban and rural. The same trend occurs with the total fares. However, the reverse is true when you look at the averages, with both the average fare per ride and average fare per driver being highest for the rural cities, and lowest for the urban cities.

Things to note:

68.4% of the rides are from urban cities, while 62.7% of the total fares come from urban cities

Average rural fare of, $34.62 per ride, is over $10.00 greater than the average urban fare of $24.53.

For every 1 rural driver, and every 5 suburban drivers, there are 30 urban drivers

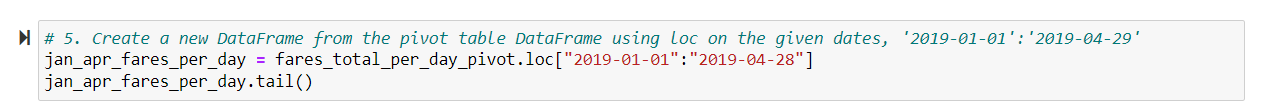
There are 1.48 drivers per ride in the urban cities, vs. only .62 drivers per ride in the rural cities

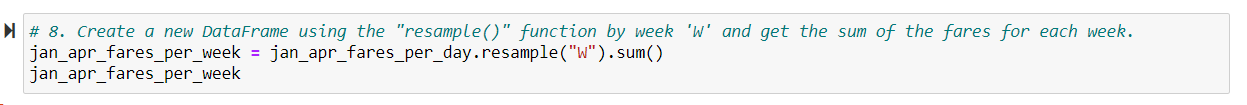
The difference between average fare per ride and average fare per driver by city type:

Urban - 7.96 Suburban 8.53 Rural 20.86

**Summary of “Fares per Week” Result & Analysis:**

To create the multi-line chart for the weekly average total fares we had to get the total fares per day over the required time frame, then use the “reshape” function to get a weekly average, and finally plot the chart using the object-oriented interface method:

(See code below) 

****

****

As you can see in the chart the city types average weekly fare amounts have remarkably similar trends and are consistent in the differences between each city type. As previously noted, the urban (yellow) city type is the highest in fares while the rural (blue) city type is the lowest. Also, you can see the urban average fares show a little more volatility, especially from mid-February to late-March vs. the other two city types. The biggest drop in average fares for any city type over this time frame occurred the last two weeks of February in the suburban type. The other city types both also fell over this same time but by not as much.

**Chart, line chart

Description automatically generated**

**Summary:**

With the data provided it is not possible to do an actuate profitability analysis. Without knowing the costing and pricing structures, along with the demand for rides we can only make recommendation that would close the gaps between the averages across all city types. That said we can make the following recommendations that could be beneficial to the Pyber company.

1. Reduce the number of urban drivers. Currently the ratio of drivers to rides is 1.48 to 1.0. We recommend trying to keep that number at one to one or lower. By lowering the number of drivers, you will increase the fare per driver and could reduce expenses.
2. Increase your urban fare rate. By increasing the fare rate your total fare amount for the same number of rides will increase, causing both your average fare per ride and average fare per driver to increase, bringing them close to the other city types averages.
3. Stimulate more riders in the rural and suburban city types, by reducing fares or increasing ride options. These actions will reduce the average fare per ride and average fare per driver but would increase the total fares percentage from these two city types.