**PyBer Challenge Analysis**

*Using Matplotlib*

**Part 1 – Overview of Project**

Throughout this module, we used Pandas and Matplotlib to find out what the total weekly fares are for each city type (rural, suburban, and urban), and furthermore how the ride sharing data differs by city type.

We are telling a visual story with the data, which allows our audience to absorb information quickly and for us to detect patterns, trends, correlations, and outliers that are difficult to observe in a large table. This will aid PyBer in making the decision process more efficient.

In the module, we completed an exploratory data analysis in very large a series of charts that showcase the relationship between:

* The type of city & the number of drivers/riders
* Percentage of total fares, riders, and drivers by type of city

This analysis aims to help key decision makers at PyBer improve access to ride sharing services and determine affordability for under deserved neighborhoods.

**Part 2 – Explanation of Results**

The line chart below depicts the total sum of fares by city type.

Chart, line chart

Description automatically generated

From this chart it’s evident that urban areas have the highest number of fares, while rural towns have the lowest. Suburban geographies lie in the middle of the two. Furthermore, this indicates that the highest demand for car sharing services is in urban areas, because the sum of fares is the highest (indicating more usage).

This narrative makes sense, because urban and suburban areas typically house various corporations and facilities where people work and operate, while rural areas are further out and don’t have the same level of infrastructure. Therefore, the demand for car sharing in a rural geography is not nearly as high.

**Part 3 – Summary & Recommendations**

Based on the insights from this project, there are three recommendations that I would implement to help PyBer deliver value to the right customers while also catering to all geographies.

**Recommendation #1:**

Offer a points/discount tier system that will allow riders to accumulate points based on how much one uses the ride sharing app. Implementing this will ensure that higher demand geographies can get the most value. For example, PyBer could have 3 rider tiers: Silver, Gold and Platinum. Each level could come with certain discounts and or perks, and the rider level would depend on how many rides were completed in a certain time frame. This program could also be measured on miles ridden and or drive time. Using the mileage strategy would make it applicable for people who live in all geographies. Urban geographies, while one may be riding a shorter distance, riders would potentially be taking a higher number of shorter rides. On the opposite end of the spectrum, rural riders may not use the service as often; however, for the nuanced cases of people who live in rural areas making a daily commute to the city, they would be able to accumulate points/discounts, allowing their rides to become cheaper over time as they unlock higher tiers.

**Recommendation #2:**

Have a pricing system that will price higher in areas that are lower demand. In this case, people in rural areas are less likely to use ride sharing. Please note that there is a margin of error here because we don’t know the ratio of where the majority of PyBer drivers reside. It’s my hypothesis that more drivers are likely to reside in urban and suburban areas, making it less convenient in terms of time and resources to cater to rural areas. Chances are that most drivers who are serving rural areas are going out of their way, hence why the prices for rural areas should run the highest. Then prices can fluctuate down, with urban geographies being the cheapest overall.

**Recommendation #3:**

PyBer should sponsor additional subsidies for low-income riders with streamline eligibility verifications using proof of public assistance or residency in public housing (or similar). The key is long term value, so an overall discount of a certain percentage could be applied to the riders’ account. This piece working alongside the ride share loyalty tier program would give lower income residents the opportunity to take advantage of ride sharing.