**Providing Cellular Coverage Underground**

***Abstract***

This analysis will provide information regarding the busyness and whether coverage is available in these stations or not. We will also look into competitors’ coverage throughout the stations as a factor for our analysis. Then, we will give recommendation based on this analysis on where to start implementation of this project. The MTA turnstiles data along with MTA WiFi locations data was used to in this project. The process to reaching results consisted of cleaning the data, aggregating the data and visualizing the data using different techniques.

***Design***

This project if focused around identifying the busy-ness of stations found in the MTA turnstiles data by aggregating the entries and exists. It also looks into the availability of cellular coverage underground. These data are found in the MTA WiFi Locations dataset. The goal of the analysis is to find the busiest stations that aren’t covered by T-Mobile and the busiest stations that aren’t covered by any network provider.

***Algorithms***

Exploratory data analysis and visualization techniques were used to clean, aggregate, and visualize the data. Cleaning data consisted of reformatting the station names in both tables to be able to join them using sqlite and then saving the joined table in sqlite database and connecting the database to Python using SQLalchemy. In addition, missing values were checked using pandas and duplicate rows were deleted. Unnecessary columns were removed from the table. Aggregation of daily entries and daily exits were made using pandas, then the sum of ridership for each unique station was calculated using the sum of entries and exits. For visualization, matplotlib and plotly were used to create bar graphs.

***Tools***

* Pandas for data manipulation
* Sqlalchemy for reading files from the database
* Matplotlib and Plotly for plotting

***Communication***

PowerPoint slides were created to describe the need and visuals of findings were included in these slides.