

Comparing Subway Ridership Traffic during/pre Pandemic Period in NYC

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Abstract

The goal of this project was to investigate change in ridership(total entries) throughout different commuting time frames. The MTA turnstile data used in this project specifically used during/pre covid data from January to April. This project mainly focused on comparing the change in ridership every 8 hours. The top 10 busiest stations from 2021 and 2018 were selected and visualized into 3 different time intervals.

Design

The backstory scenario of this project is that MTA wants to know the busiest stations by different time of the day so they can effectively allocate the free masks and hand sanitizers throughout different stations.

Data

This project uses the Turnstile Data provided by Metropolitan Transportation Authority(MTA). The January to April dataset from 2021 consists of 2,718,462 observations and the dataset from 2018 consists of 2,579,945 observations. These data were grouped into stations by differing time intervals to ultimately investigate the total number of entries(ridership) in each unique station.

Algorithms

Data cleaning was the main focus in this exploratory data analysis, where it consisted of removing duplicate rows, taking care of irregular observations and most importantly calculating the total entries. The entries column in the original data is cumulative, so it was crucial to get the daily entries using the cumulative entry data provided. Furthermore, for the inaccurate data recorded for the entry due to the machine resetting, the minimum value from the previous record was considered.

Tools

- SQL (sqlite3) was used to store the initial database
- Sqlalchemy was used for initial data exploration
- Numpy, Pandas Library for data manipulation
- Seaborn, Matplotlib for data visualization
- Urllib.request to retrieve the raw data from MTA website

Communication

With accompanying PPT slides and visuals, the project was shared with METIS Data Science workgroup and posted on Github.

