

Base Question 1 Visualizations and Analysis Report

Base Question:

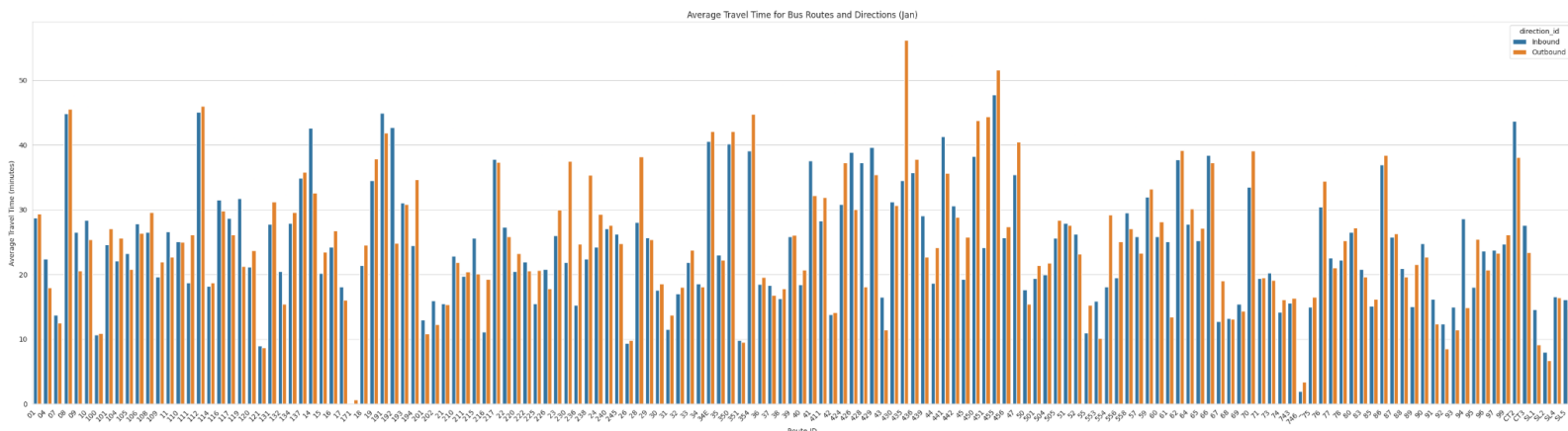
What are the end-to-end travel times for different bus routes?

About our data:

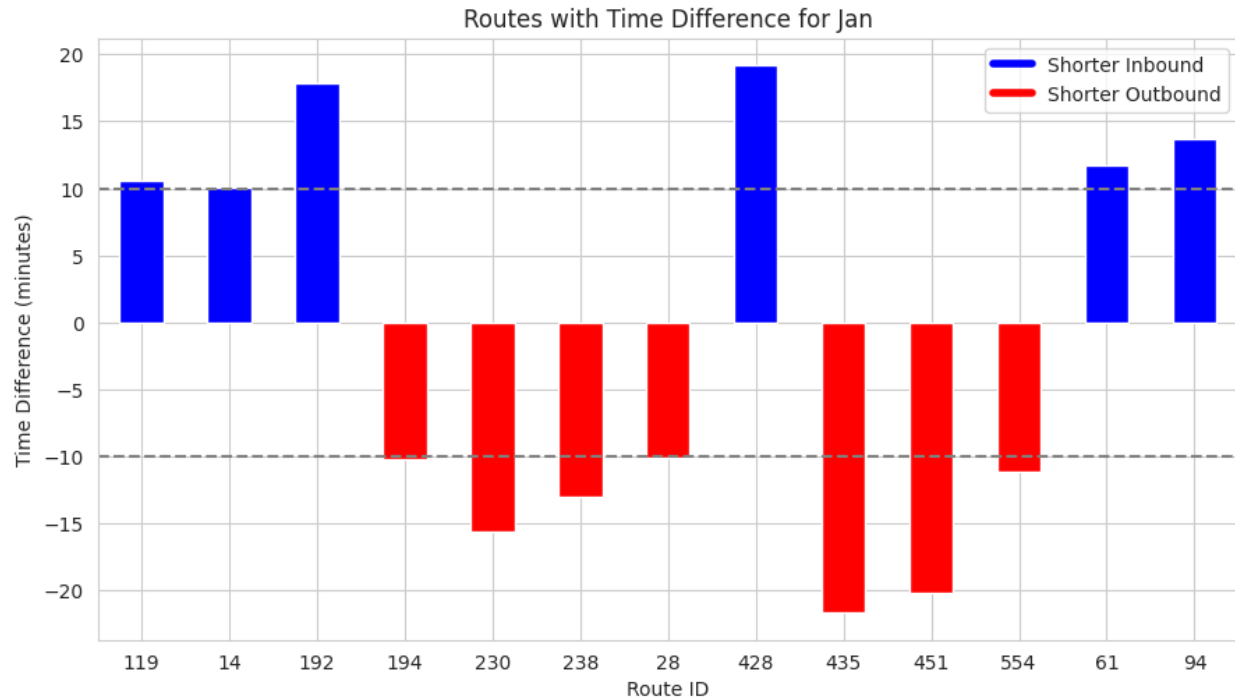
Our data is MBTA departure-arrival data of 2022 focused on the month January. What was primarily used from this dataset were the route_ids as well as the dates and times of the trips taken. We also made use of whether the trips were inbound or outbound, distinguishing the two to properly address the base question.

Assumptions made:

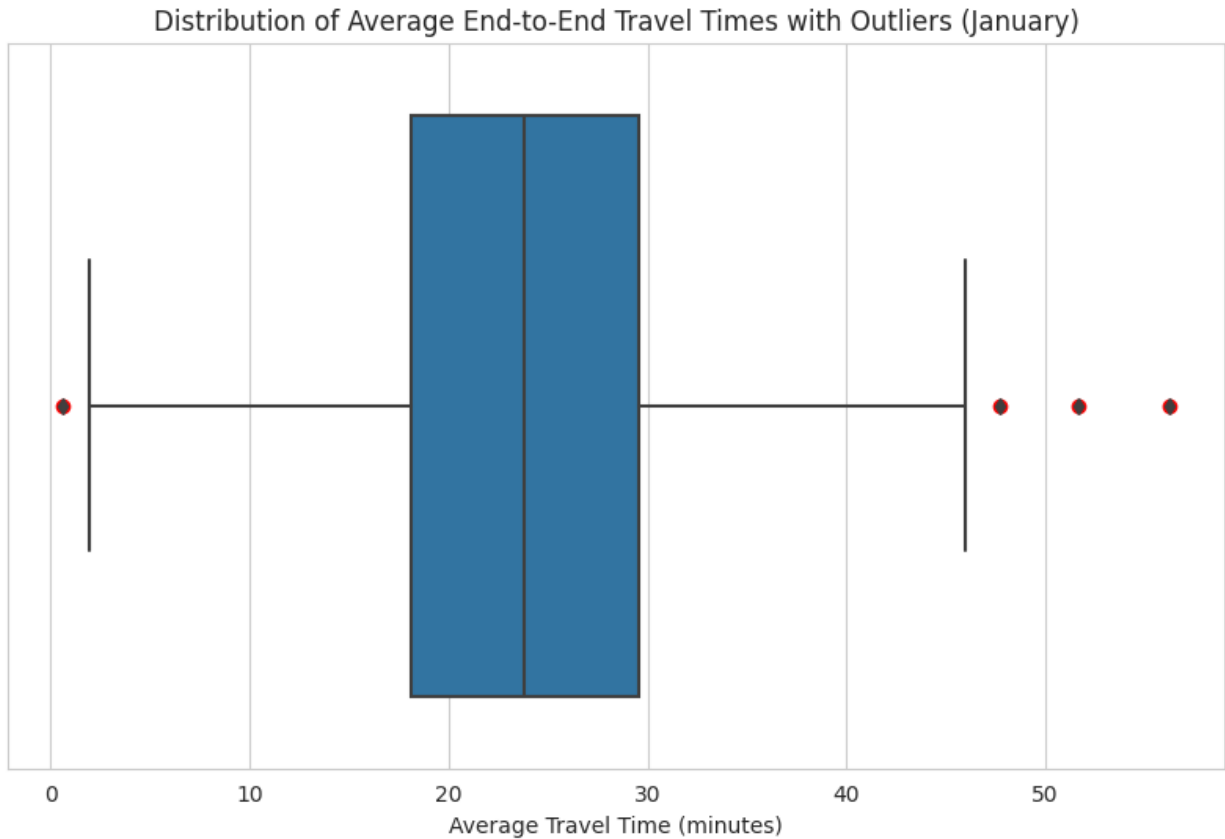
An assumption we made to achieve this graph is that some trips had buses moving from start-points but the expected end-points are not where the buses last stopped. Because there would have been a great influence in the average time if we calculated the time a bus takes for a trip by considering the last stops they made, the stops not corresponding to the last stop in the respective routes.



This graph is a bar graph indicating the average time each route's inbound and outbound trips take to go from one end to the other. Inbound trips are bars in blue, whereas outbound trips are represented by the orange bars. There are certain trips that have significantly longer outbound trips compared to inbound trips. As mentioned in our data explanation, any trips that had inconsistencies in where buses last stop, these trips are the ones which are shown as the blank places in the following bar graphs.



In this graph, route 435's inbound trips are long relative to other long inbound trips, where on average they are just over twenty minutes longer than the outbound trip. Route 428 is the opposite case where the average outbound trip takes about at a high of twenty minutes longer than the inbound trip, the longest difference between inbound and outbound outliers overall. Overall, longer outbound trips are the trips that take more time compared to longer inbound trips, but there are more long inbound trips than there are outbound trips.



This boxplot is indicators of where the median average (per trip) travel time lies, and there is consistency in trips as the median is around 25-27 minutes, but there seems to be a few outliers with an average time ranging from 40 to over 50 minutes.