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Timothius Prajogi

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This is the abstract

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1 Introduction

The main source public transportation of public transportation in the city of Toronto is the TTC (Toronto Transit Commission). The most common methods of this public transportation is subways and buses. For people who frequently use these methods, delays are common and expected (Westoll 2023). So much so that leaving early is leaving on time.

With the delays getting worse and service becoming more inconsistent (Katie Daubs 2023), it is important to analyze potential causes and therefore enable the TTC to explore potential solutions. One of such factors is the tight coupling of the subway and bus systems. When issues occur with the subway, the overflow is sent to buses, either from detoured commuter

*Code and data supporting this analysis is available at: https://github.com/prajogt/ttc_analysis.git

traffic, or resource reallocation in the form of converting regular route buses to shuttle buses (Larsen 2023).

Within this paper we will analyze the correlations between the delays occurring on the subway and the delays that occur for buses. In particular, the correlation between mechanical or security issues on the subway, which tend to shut down a portion of the track, and with diversion and other external issues (here after labeled "Miscellaneous") that occur for buses. A logical correlation was made above, and a correlation shown in data would go to further a cause and effect relationship.

Later we will see the general affects of the commuter load on the transit system and how the system can be better optimized and fail-safed to prevent such frequent delays. The paper will show the trends of the amount of delays for both systems as a function of day and time. It was found that work days put additional load on both systems, the total amount of delays during weekdays being significantly higher than on other days.

The datasets used for this analysis are described in the Data section, as well as the process that was done to clean the data into comparable datasets.

2 Data

Cite the packages used here.

Datasets used: subway data (Data 2023b), bus data (Data 2023a)

3 Results

4 Discussion

5 Conclusion

Reference

Data, Toronto Open. 2023a. "TTC Bus Delay Data, 2023." https://open.toronto.ca/dataset/ttc-bus-delay-data/.

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Katie Daubs, Andrew Bailey. 2023. "Attention TTC Passengers: The Delay You're Experiencing on the Subway Is Longer Than Ever. Here's Why." https://www.thestar.com/news/gta/attention-ttc-passengers-the-delay-you-re-experiencing-on-the-subway-is-longer-than-ever/article_ca54f6e9-db07-5f8b-800e-3cdfe616257b.html.

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Westoll, Nick. 2023. "TTC Receives 'b' Grade for Service and Reliability, but How Accurate Is the Ranking?" https://toronto.citynews.ca/2023/07/06/ttc-buses-streetcars-subway-reliability/.