

The Downfall of Taxis?

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Think of the last time you were out and needed to get home. Maybe you were at a party where you didn't know anyone, maybe you looked down at your phone and it was 3 a.m., or maybe the night had simply ended and all you wanted was to be in bed. You didn't drive, it's cold, and you want to get home fast. How do you get home? Did you call a taxi? No, you probably ordered an Uber or Lyft.

In recent years, ride-sharing companies have taken over the transportation industry, nearly wiping out their main competition: taxis. While taxis may still have a loyal following in larger cities, in smaller cities, most people turn to ride-sharing apps. So the question is: how can taxis turn things around and compete with Uber and Lyft? One of the main reasons Uber and Lyft are outperforming taxis is their use of data analytics and real-time decision-making tools to improve service [2]. Taxis need to catch up and leverage similar technologies if they want to stay relevant and avoid being completely pushed out of the industry.

This project looks at taxi ridership data from Chicago, a major city, to see how many riders taxis are currently picking up. The goal is to create a time series model based on one month of data (October) and use it to predict ridership numbers in the following months. Specifically, we aim to predict how many riders taxis are picking up each hour. By gaining insights into these patterns, taxis could potentially use the data to better compete with ride-sharing companies.

You will access this data from the Chicago Transportation Data Portal, specifically the dataset titled **Taxi Trips (2013-2023)**. You will choose two different time series models (SARIMA and BSTS), compare their performance, and determine which one provides the best predictions. Alongside building these models, you will also create graphs showing ridership trends throughout the month, identifying patterns such as peak times of day and days of the week when taxi usage is highest.