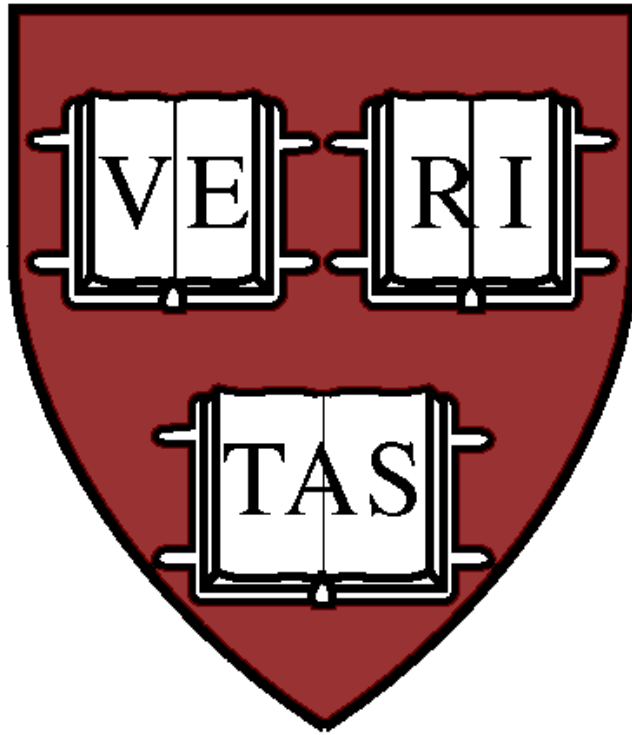


Harvard University



MBTA Capstone

Problem Statement

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Introduction

An Overview

Public Transportation and the Data Wave

Over the past several years, public transit agencies have been collecting enormous amounts of data about their riders. Like many other industries affected by the Data Wave, transforming this data into useful information can be burdensome.

Our goal is to develop analytics for decision-makers that will ultimately be used to improve public transportation services.



Boston Transportation (MBTA)

Using data from the MBTA's fare collection system, we plan to develop predictive models of ridership patterns based on past travel.

This includes both internal patterns (i.e. given the number of people boarding buses, what can we expect for nearby subway ridership?) and the influence of external events (i.e. public events, good vs. bad weather, etc.).

Problem Statement

Focus Questions

Boston's Recent History

This year, Boston has seen unprecedented levels of snow. As expected, it has caused a transportation nightmare between the congestion, delays, and cancellations. It has been so chaotic that the Boston MBTA chief has decided to step down due to public pressure. With such a rare opportunity, we decided that the Boston Blizzards would be a great starting point for our ridership analysis.

Top Down Approach

As with most engineering tasks, it is easiest to start with a high level question and work down until a more elementary one is found. The first high-level question we wanted to answer was:

“How does weather affect MBTA ridership?”

By narrowing our scope, we were able to focus on more relevant subjects, such as:

“How does snow affect ridership on the MBTA?”

Finally, we decided to target the following question:

“How did the ridership during the 2015 Boston Blizzards differ from normal ridership, and ridership during other snow storms?”

Benefits

By analyzing this question, we hope to provide insight into the relationship between weather and ridership on the MBTA. For example, we hope to be able to provide information such as:

- “When there is an accumulation of <X> inches of snow, the MBTA can expect a <Y>% change in ridership at station <Z>.”
- “When there is a blizzard, the MBTA will need a <X>% increase in shuttles in district <Y>.”

- “When a blizzard occurs, the MBTA will need to add <X> trains on the <Z> subway line.”

With this information available, decision makers would be able to properly allocate resources.

Bibliography

There are no sources in the current document.