

Initial Email to Client

Dear New York City Maintenance Manager,

It was a pleasure chatting with you at the recent “NY - Smart City” conference! Our team is excited about the opportunity of working together to make the New York MTA Maintenance run more smoothly.

As we discussed, the Diamx Consulting team is equipped with robust data modeling capabilities and we work closely with data specific to each client. In your case, we are delving into MTA’s official turnstile data.

Building up on our discoveries, we can devise strategies that best address any common issues you as a Maintenance Manager encounter.

The team is ready to share their results with you and anyone else you feel should join the conversation. Would this Friday, the 13th, be convenient?

Best,



The Diamx Team

Dongpin, Iris, Alex, Mattie, and Xuan

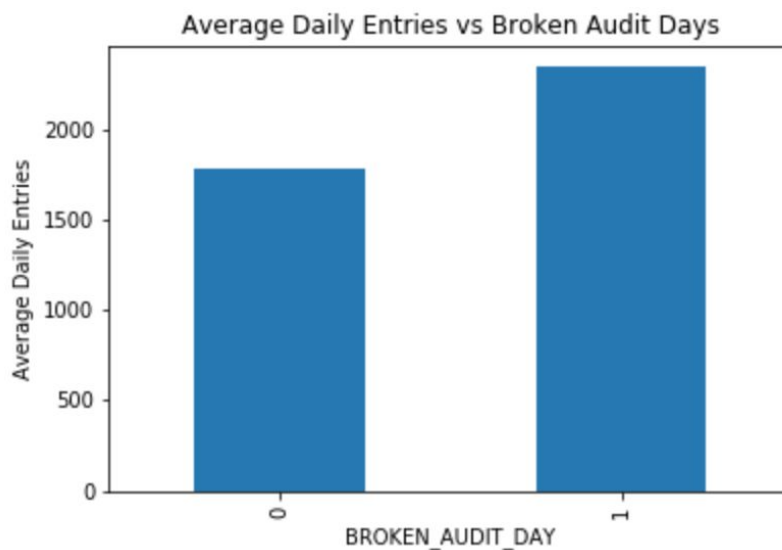
Problem Statement

The New York Subway has a daily ridership numbering in the millions. They are looking for ways to make the journeys more efficient, while working within a limited municipal budget. A broken turnstile at a station can translate into a loss of both revenue and countless hours of commuter time. Getting a team of maintenance workers on site as soon as possible is crucial, in addition to gaining data-driven insights to increase profits and increase efficiency. We will look at failures in the audit system to identify where and when turnstiles break, and use this information to create a predictive model for preventative maintenance.

Question: Why and when are turnstiles breaking, and how can MTA reduce down time of turnstiles?

Preliminary Results

Using MTA's turnstile data, we established that there is a relationship between recovered audits and other features. This lays the groundwork for building a predictive model for preventive maintenance in the future.



The most significant evidence we found to support this relationship is that more foot traffic tended to indicate more recovered audits (seen in the graph above). There were more recovered audits, on average, at busier stations, compared to less busy stations (busy defined as average daily entries and exits).

We also found evidence of a relationship between rate of recovered audits and other features that we engineered, weekday vs. weekend and season. Interestingly, There were higher rates of recovered audits on the weekend versus during the week (seen in the graph on the left above). When we looked at the rates of recovered audits vs. regular audits, we found there were more recovered audits in winter than any other season (seen in the graph on the right above).

The overall picture is that there is a relationship between occurrences of recovered audits and foot traffic (both entries and exits) as well as with other features.

Implications and Future Directions

By analyzing the data, we have established that there is a multi-faceted relationship between occurrences of recovered audits and foot traffic in addition to other features. We will dig further into the relationship between the features to gain a better understanding of why and when recovered audits occur. Working with more granular data will give us a better look at what a broken turnstile is. Access to MTA's current maintenance schedule will allow us to make specific suggestions for improvements to save time and money using a predictive model that we will build.

The flow chart above summarizes our future plan. We are excited to continue working with you to develop a schedule of preventative maintenance based on our data-driven insights.