

Background

Subway stations in New York were inundated with water following heavy rain on Sept. 1, 2021. Over the last year we have seen similar images in other countries.

In New York over the last month or so we have had three subway floods.

Company information

When the subway was initially built in New York starting in 1904, no one was thinking of sea level rise or torrential rains. And so the fundamental design of the underground system did not take those phenomena into account.

RA architecture company build – rebuild – design –execute the design.

Problem statement:

The openings in the subway systems where people go in and out allows the water to get in the subway system.

Questions:

What is the most affected stations?

What needs to be done to stop underground station flooding?

What time/date is affected the most?

When is the best time to start the constructions at every station?

The benefit:

To protect the city subway system from flooding to avoid the high costs of repairs after the damage is done.

Dataset:

From MTA data

There is 209737 rows * 11 columns (C/A, UNIT, SCP, STATION, LINENAME, DIVISION, DATE, TIME, DESC, ENTRIES, EXITS)

characteristics we need to work with (date, time, entries, exits, station, linename)

- Find out how the entries and exits of every station affected after it get damaged.
- Best time to remodel the station when entries and exits are at the lowest.
- Who many days every station is affected by knowing the entries and exits.

Tools:

Python, sqlite, jupyter notebook

Libraries:

matplotlib, pandas, numpy, seaborn