

## **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)

- Use the date and time to find out how the entries and exits of every station affected.
- Use the time and date to obtain the best time to remodel the station when entries and exits is at the lowest.
- Use the station with the date to know how many days it is affected by knowing the entries and exits.

## **Tools:**

Python, sqlite, jupyter notebook

## **Libraries:**

matplotlib, pandas, numpy, seaborn