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:
During flooding and abnormal water level increase, subway system get drown. The subway gates and entrances were not design to stop water getting into the subway system. Thus, any torrential rain, or unexpected increase in the water level, have direct negative impact on the subway.

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 coasts 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 entries and exits to find out the damaged stations and effected areas.
- Measure traffic and crowd by looking at stations that have most entries and exits.
- Identify the least busy and peak times of each station to schedule the construction time efficiently to avoid causing congestion.
- Measure the number of lost trips due the stations downtime.

Tools:
Python, sqlite, jupyter notebook
Libraries:
matplotlib, pandas, numpy, seaborn