RA

Project Proposal

GATES REMODLING PROJECT PROPOSAL

OUR COMPANY

Since 1997, RA Architecture has been providing architectural and design services nationwide. Our hallmark is providing clients the best service achievable. We believe in finishing each project in a way that exceeds our clients' expectations while remaining with the budget and time constraints.

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.

THE AIM

Redesign gates for the most affected five stations.
Make the subway tunnels flood-proof by adding sliding doors.

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

The dataset used is provided by the NYC Metropolitan Transportation Aut-ority (MTA) from Jul to Sep 2021.
There is 209737 observation * 11 fields (C/A, UNIT, SCP, STATION, LINENAME, DIVISION, DATE, TIME, DESC, ENTRIES, EXITS)
fields we need to work with (date, time, entries, exits, station)

Field Description:

Field Name	Description
C/A	Control Area (A002)
UNIT	Remote Unit for a station (R051)
SCP	Subunit Channel Position represents an specific address for a device (02-00-00)
STATION	Represents the station name the device is located at
LINENAME	Represents all train lines that can be boarded at this station
DIVISION	Represents the Line originally the station belonged to BMT, IRT, or IND
DATE	Represents the date (MM-DD-YY)
TIME	Represents the time (hh:mm:ss) for a scheduled audit event
DESC	Represent the "REGULAR" scheduled audit event (Normally occurs every 4 hours)
ENTRIES	The comulative entry register value for a device
EXITS	The cumulative exit register value for a device

DATASET USAGE

- 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