City of Boston 311 Service Tracker

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Link To Recording: https://youtu.be/eFCeftY7WVk

Project Goals:

The primary goal of this project is to establish a comprehensive historical database for the City of Boston's 311 program.

Project Motivations:

- Improve Efficiency
- Assess and Address Equity Issues
- Facilitate Informed Decision-Making

Workflow

Team Workflow

1) Split the base project into pipelines
   a) Preliminary Analysis
      i) Laerk, Gersian
   b) Base Questions
      i) Raul, Rohan
   c) PowerBI Report
      i) Mahdi

2) Weekly 1-2 hours meetings and weekly 15-minute checkups.

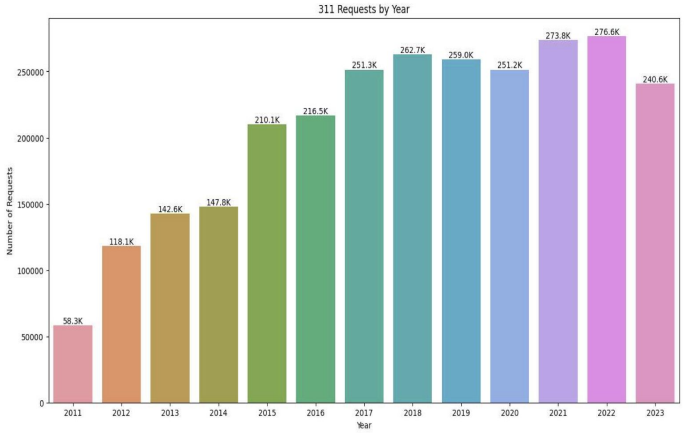
Data Workflow

1) Picked a base question
2) Took the data
3) Modified the data
4) Used the modified data
5) Visualized

Base Questions

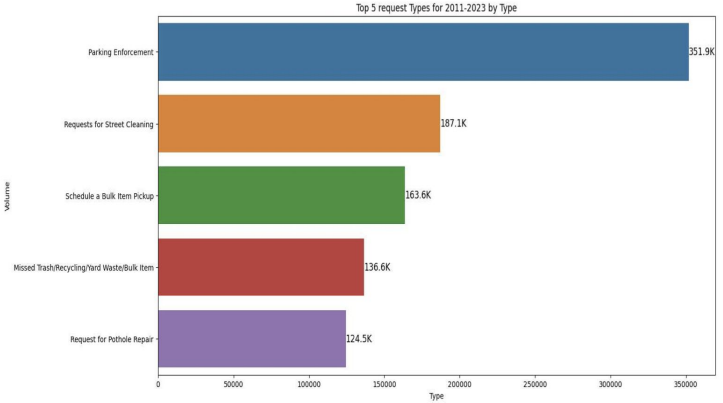
1 **Volume of Requests**

- Trending upwards
- 240k requests as of November
- Average for last 5 years ~ 260k



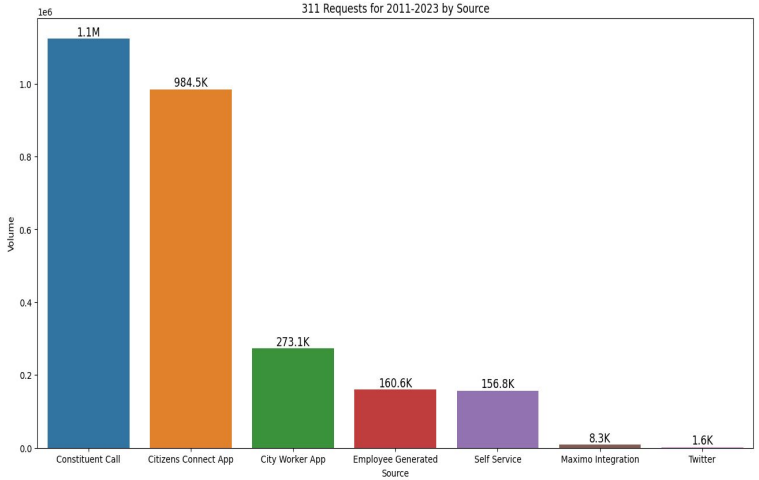
5 **Volume of Top 5 Requests**

- Parking Enforcement ~ 351k
- Street Cleaning ~187k
- Bulk Item Pick Up ~ 163k
- Missed Trash/Waste ~136k
- Pothole Repair ~ 124k



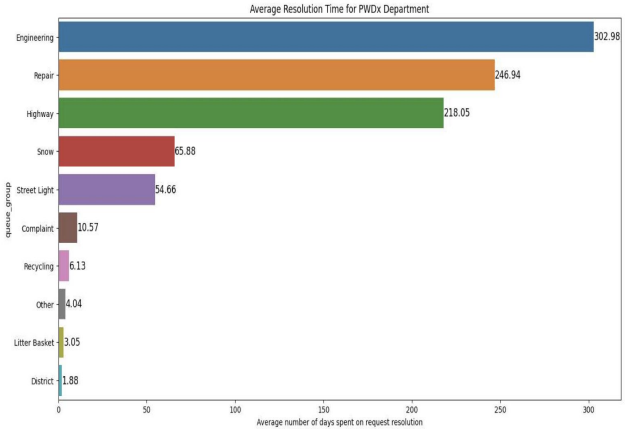
3 Case Volume Change by Submission Channel Source

- Constituent call is most commonly used
- Followed by Citizens Connect App



6/7 **Avg Goal Resolution Time by Queue (& Neighborhood)**

- Highest - engineering projects, repairs
- Lowest - trash, recycling
- Neighborhood reflects resolution time distribution



Challenges Along The Way

R — M — L — G — R

Raul

Grouping queues due to lack of readability on visualizations.

Mahdi

Zip Codes: 600k were empty despite lat and long locations, and a reverse geocoding API was used to fill out empty zip codes.

Reason description was very wordy, used dictionary of reasons to clean text.

Laerk

Inconsistency of complete data. There were a lot of null or empty values while retrieving and processing the data.

Gersian

Selecting the appropriate data analysis techniques, algorithms, and models for specific problems was challenging. Choosing the right visualization techniques for different types of data and results.

Rohan

Formatting data for preliminary analysis, transitioning from static to interactive graphs.

Conclusion So Far

- Requests per year slowly rose, stagnated at 260k
- Most common channel is calling/app
- Requests: parking enforcement, street cleaning, item pickup
- Engineering tasks = greater time, labor = less time
- Equitability has not been an issue from our investigation so far, but will need more exploration in extension.
- Efficiency, can be put into question by comparing median completion time, and warrants more exploration in extension.

Extension Project Proposal

We wanted to split extension effort into two streams to tackle the first three suggested extension projects. One that handles the comparison with the social vulnerability index. One that handles the exploration of closure rates.

Extension Pitch: Using the social vulnerability index, to support our data.
Rationale: This piece is crucial in understanding the question of equitability of the service.
Questions: Same base questions but comparing them across low/high vulnerability index regions.
Datasets/Sources: Original + Social vulnerability dataset.
Data Visualizations: Similar to what we have in our notebooks/PowerBI.

Extension Pitch: Rate of closure exploration (NEIGHBORHOODS, CITY COUNCIL DISTRICTS, NEIGHBORHOOD SERVICES DISTRICT, ZIP CODE).
Rationale: Finding discrepancies between response times can lead to more equitable service between neighborhoods
Questions: Is there a correlation between lower response times and more affluent neighborhoods?
Datasets: original + income distribution of boston
Data Visualizations: Map of grouped response times, map of grouped income ranges