Park Safe Chicago

W209 Data Visualization, Summer - 2021

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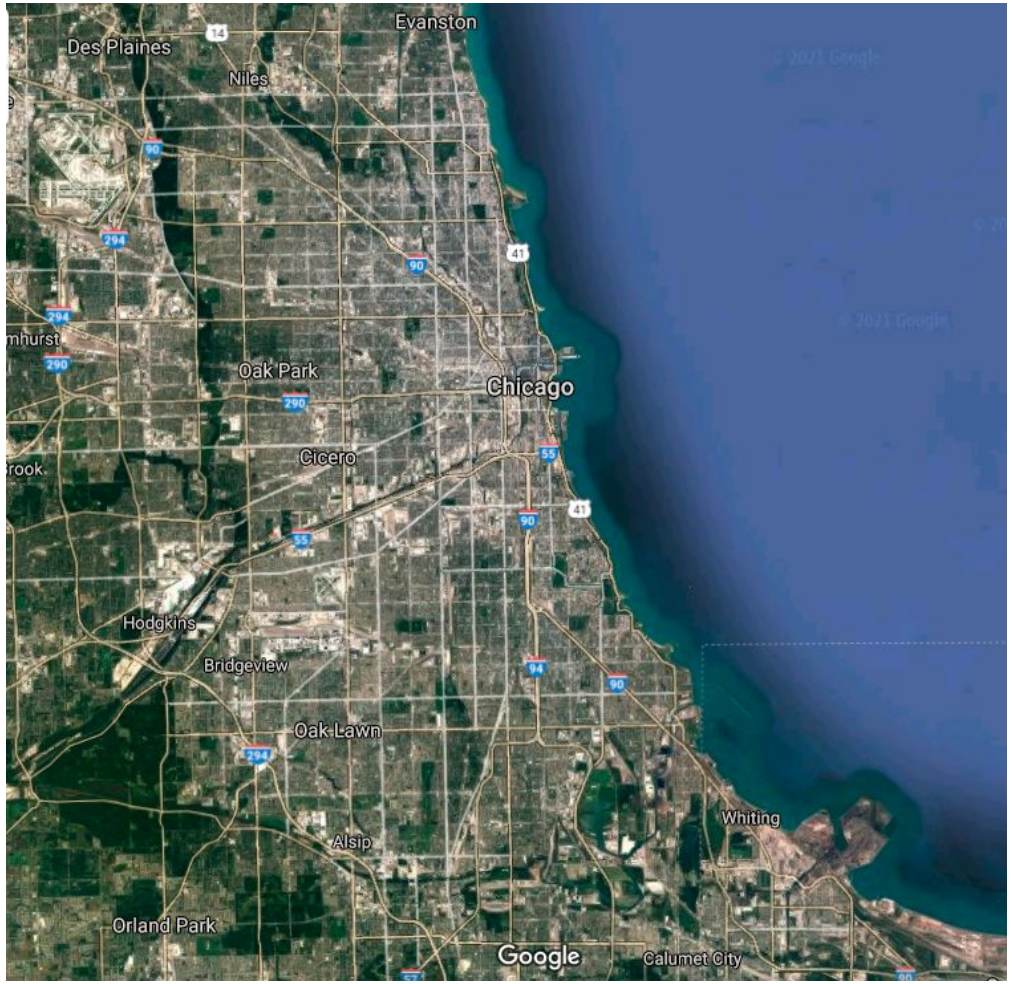
Recap

About

Where is a safe place to park my car?

- Our **goal** is to create an interactive visualization that lets users analyze auto theft data for any location in Chicago.
- Following the mantra "*Overview first, zoom & filter, then details on demand**," the visualization allows users to see auto thefts for the entire city of Chicago over time.
- Users can zoom and filter on neighborhood(s) or year(s).
- Finally users can get detailed auto theft information on any specific address in the city.



* Quote by Ben Schneiderman

Users & Tasks

Actions
Targets

- **Users:** Any driver comfortable with common interactive maps (e.g., Google maps) where maps and data are displayed simultaneously

- **Tasks**:
  - (1) Driver **discovers** (trends and features) on how safe a neighborhood in Chicago is to park in by seeing auto theft data for all neighborhoods in Chicago as well as any ones they select while interacting with the map and charts.
  - (2) Driver enters a specific address to **identify** location-specific trends and features in the surrounding local area of the address.

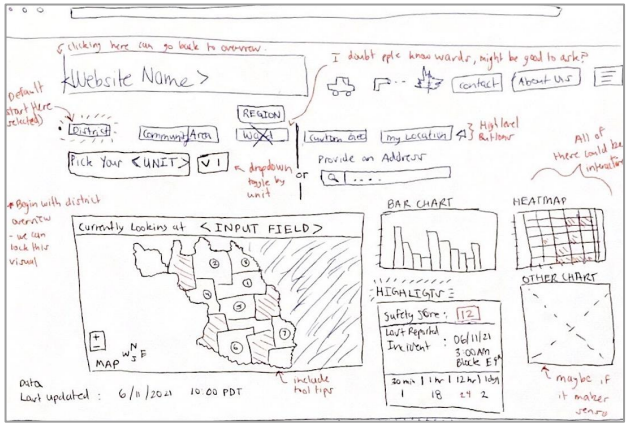
Dataset

- Our dataset contains reported crimes in the City of Chicago from 2001 to present (excluding the most recent seven days)

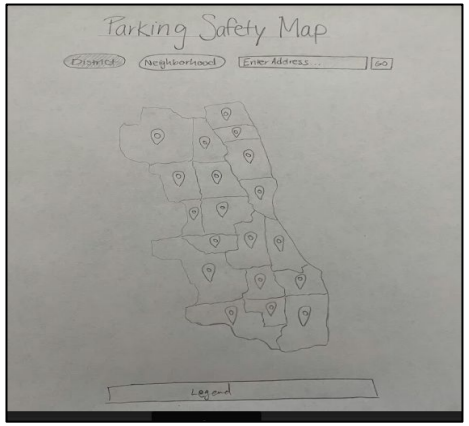
- Data is extracted from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system and is provided to us via Google BigQuery

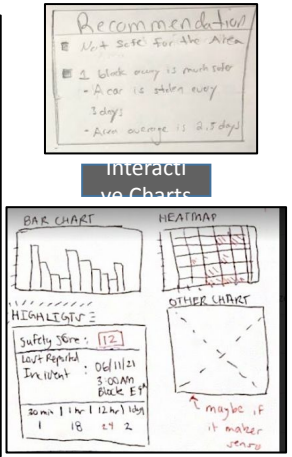
Iterations continued after Mid-term presentation

Version 1

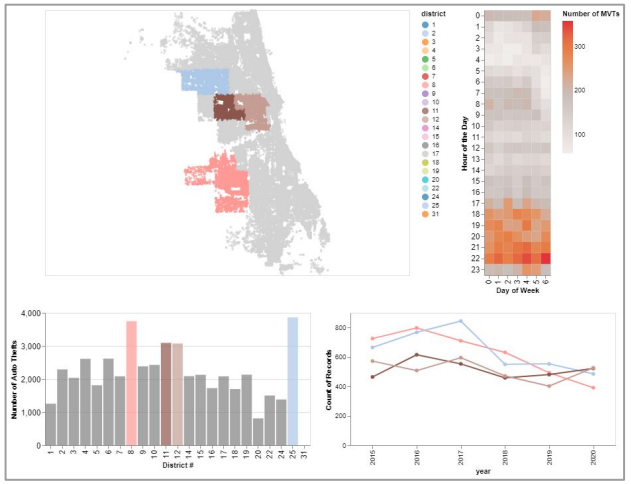


Version 2

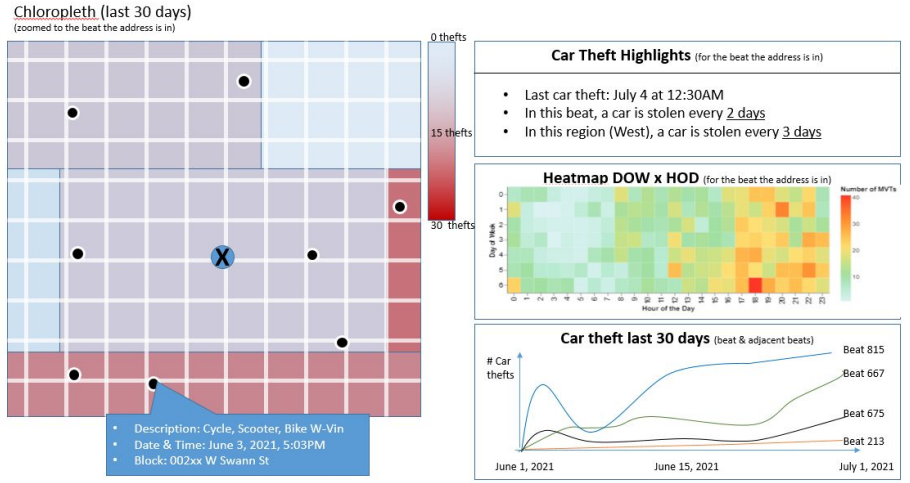




Version 3 (with Figma prototype tool)



Version 4 (section 2)

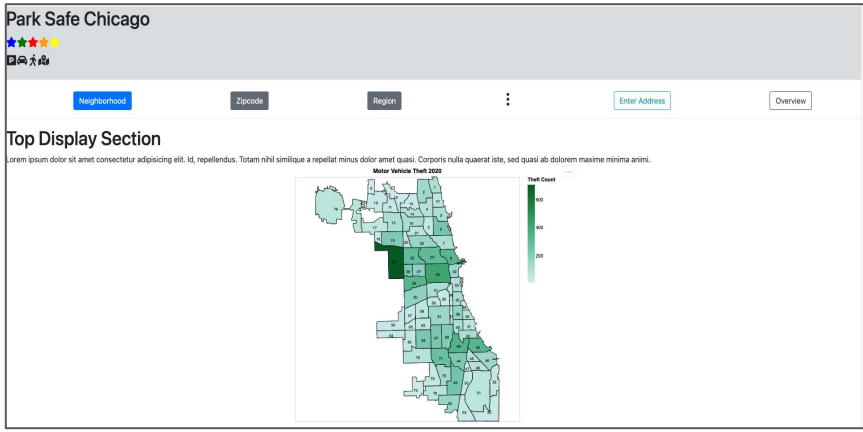


Usability study

Format

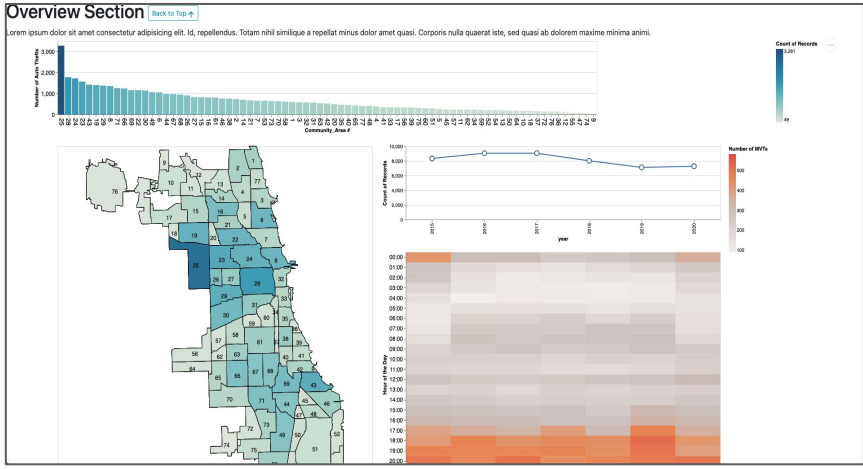
- 12 subjects (live on zoom)
- 11 tasks for user covering all 3 sections (e.g., “Find the name of the most dangerous community area”)
- Observed user ability to complete task and interactions
- Timed users for each task
- Compiled Tasks: Must have, Should Have, Could Have, Will not have

Section 1
(high level overview)



Section 2
(user specifies address)

Section 3
(detailed overview)



Overview Dashboard

Mid -Term First Draft

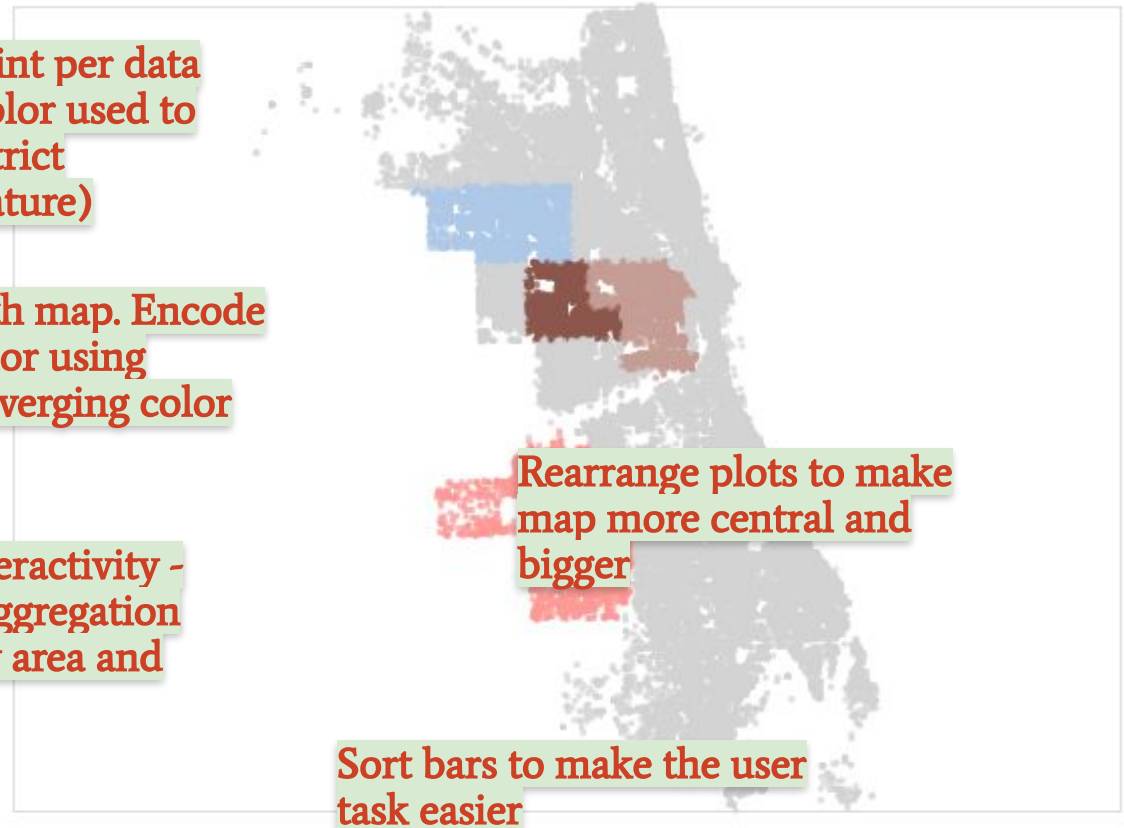
Simple 'one point per data point' plot - color used to encode the district (categorical feature)

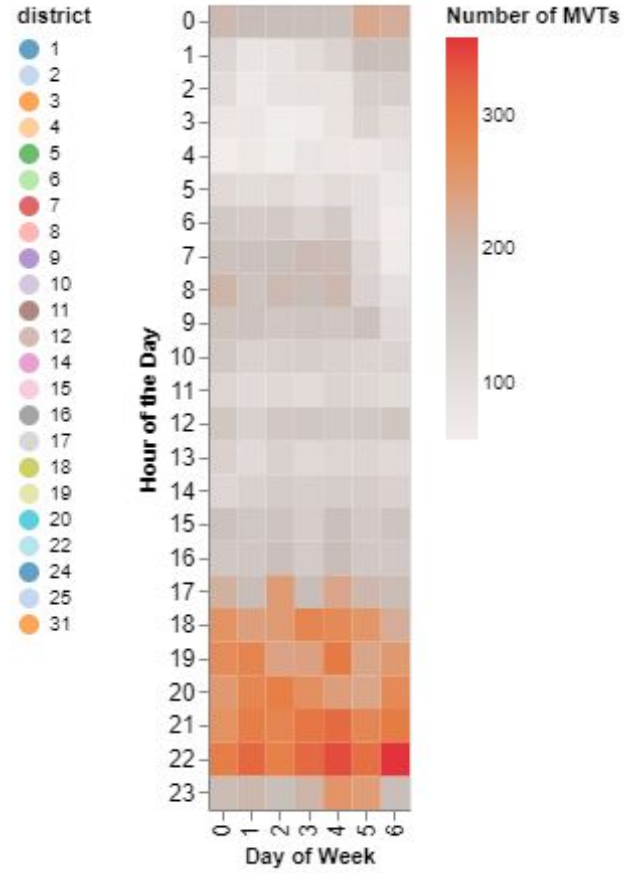
Add choropleth map. Encode count with color using continuous, diverging color map

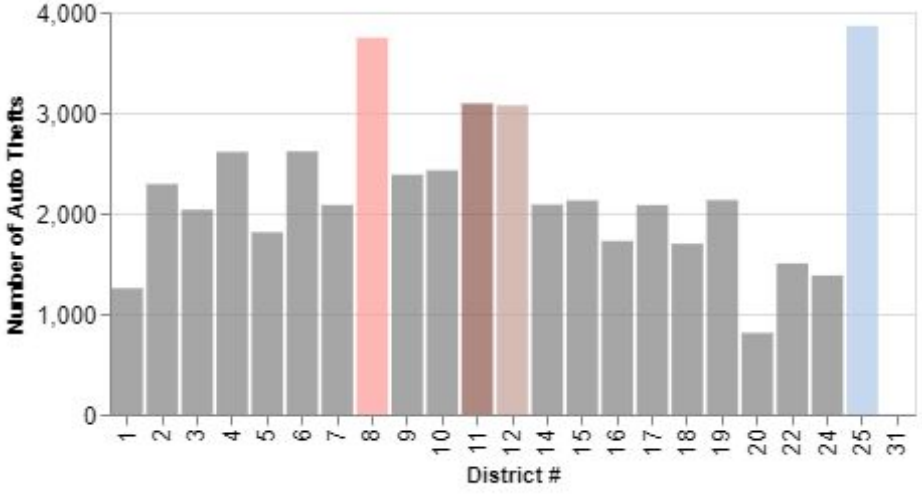
Additional interactivity - filtering and aggregation by community area and year

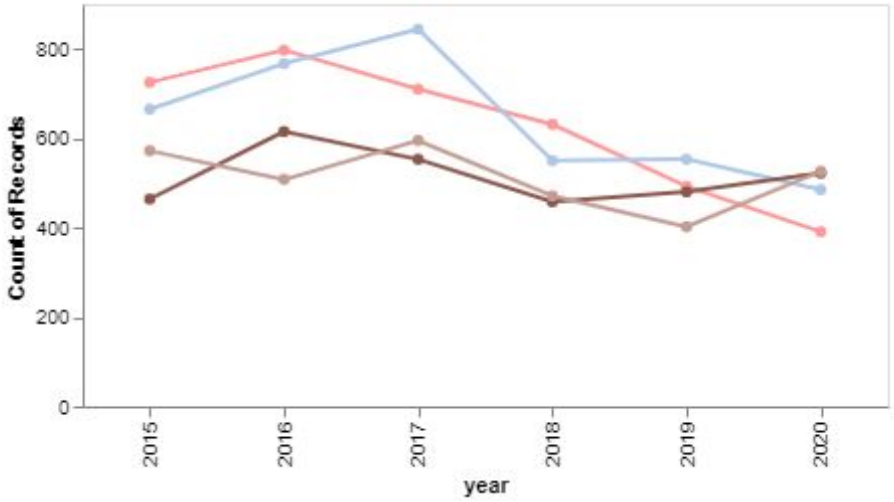
Rearrange plots to make map more central and bigger

Sort bars to make the user task easier



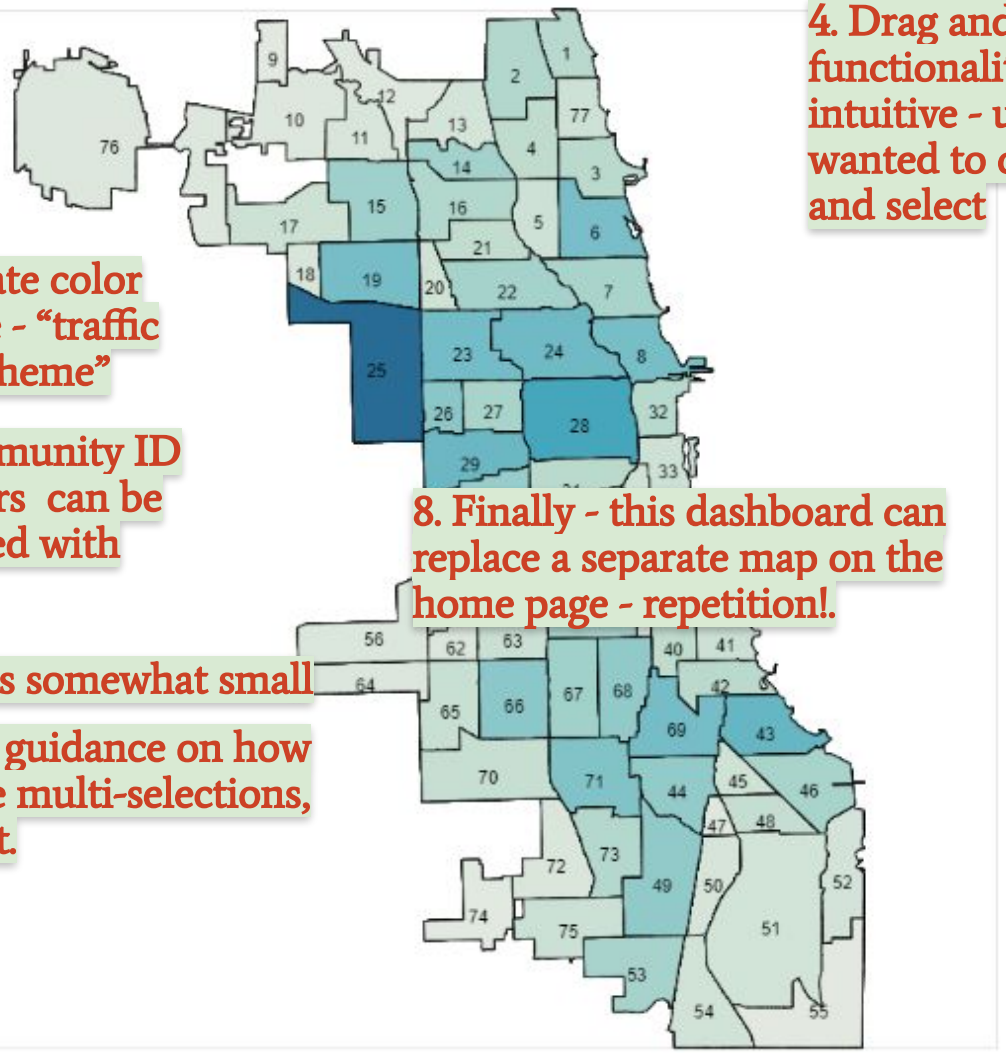






Pre - Usability Study Version

1. Make map more prominent on the dashboard - Use the entire height



2. Update color scheme - "traffic light scheme"

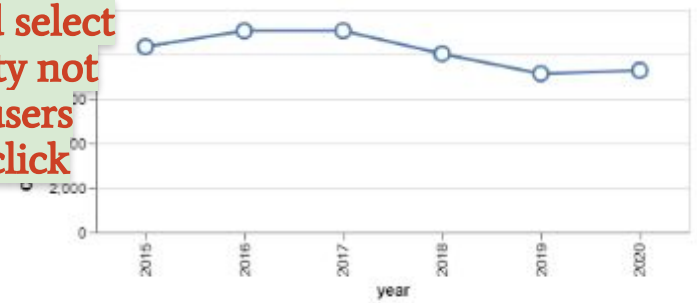
3. Community ID numbers can be confused with counts

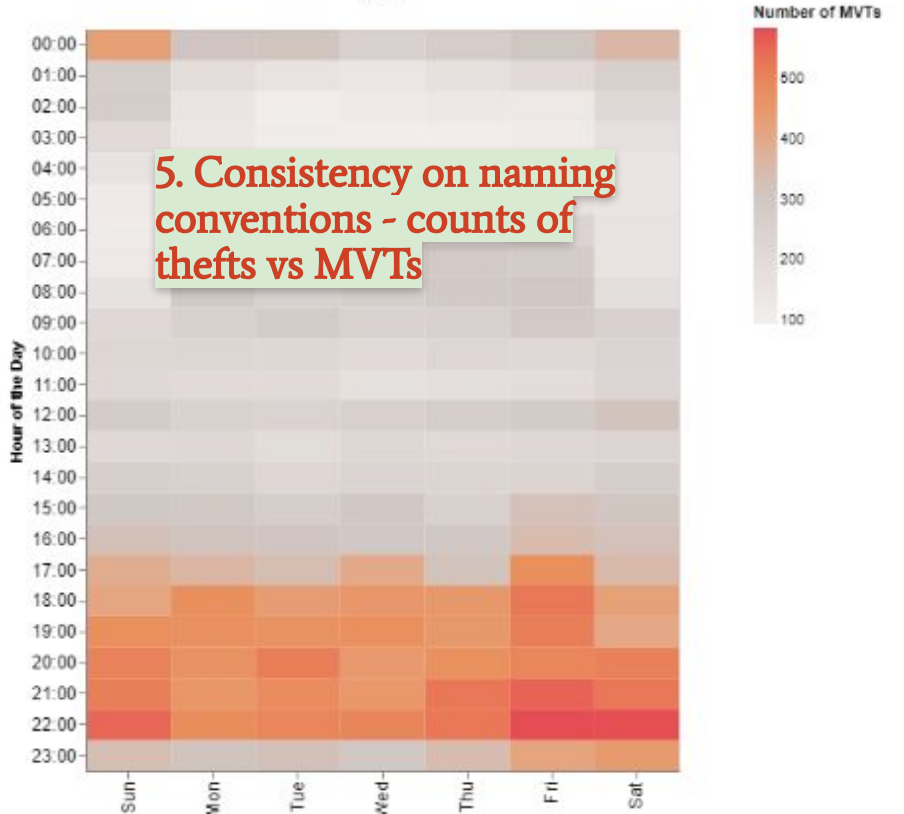
6. Labels somewhat small

7. Need guidance on how to make multi-selections, unselect.

8. Finally - this dashboard can replace a separate map on the home page - repetition!.

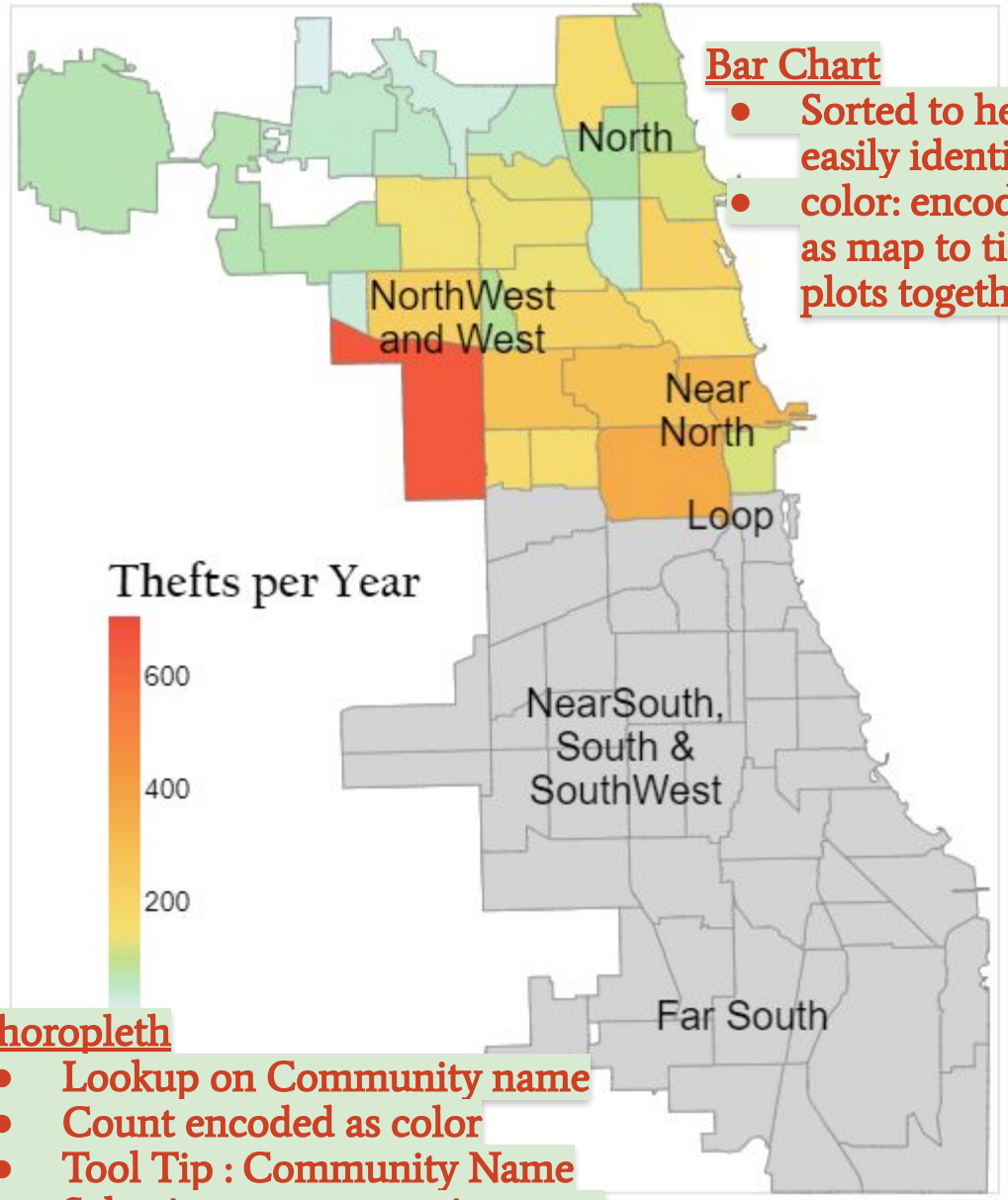
4. Drag and select functionality not intuitive - users wanted to click and select





5. Consistency on naming conventions - counts of thefts vs MVTs

Overview of Auto Thefts in Chicago Communities

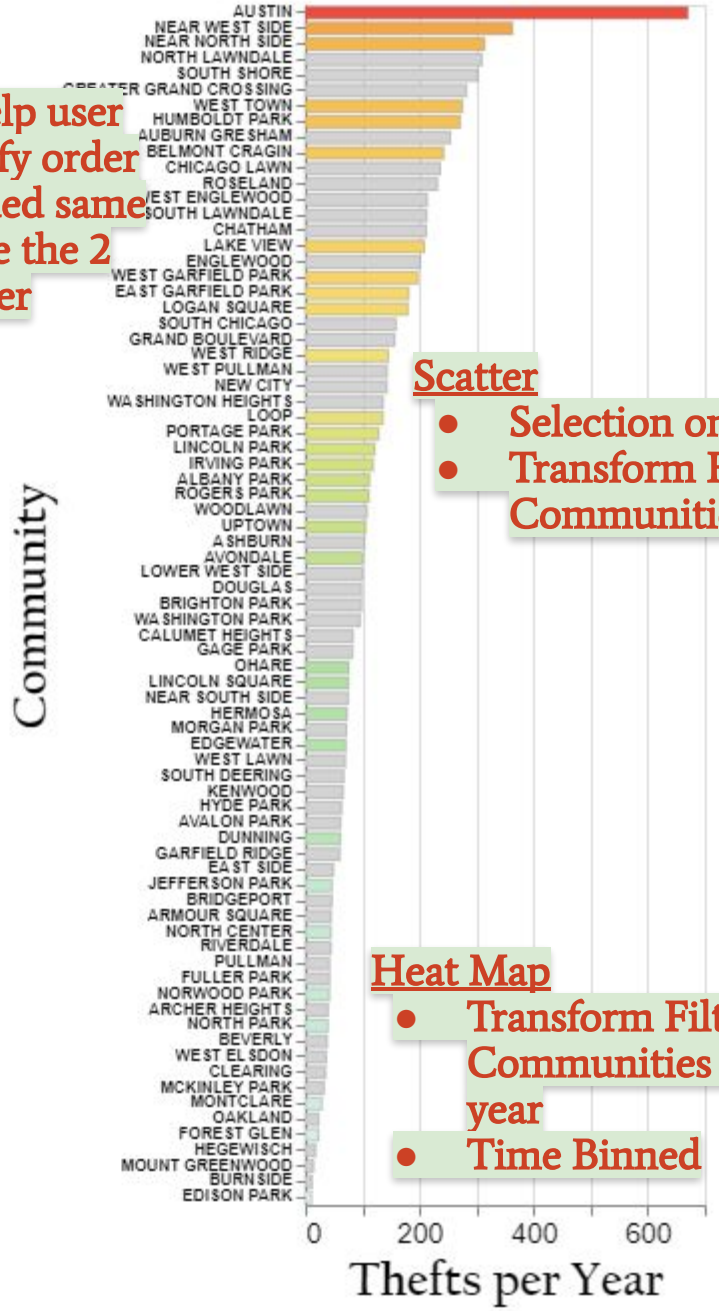


Choropleth

- Lookup on Community name
- Count encoded as color
- Tool Tip : Community Name
- Selection on community name
- Transform Filter on Year

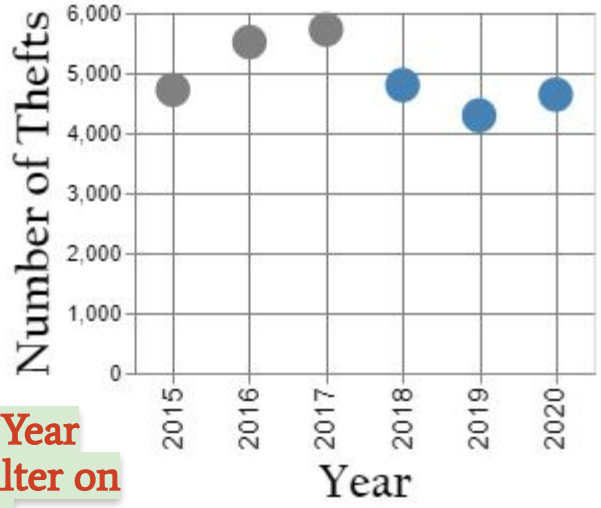
Bar Chart

- Sorted to help user easily identify order
- color: encoded same as map to tie the 2 plots together



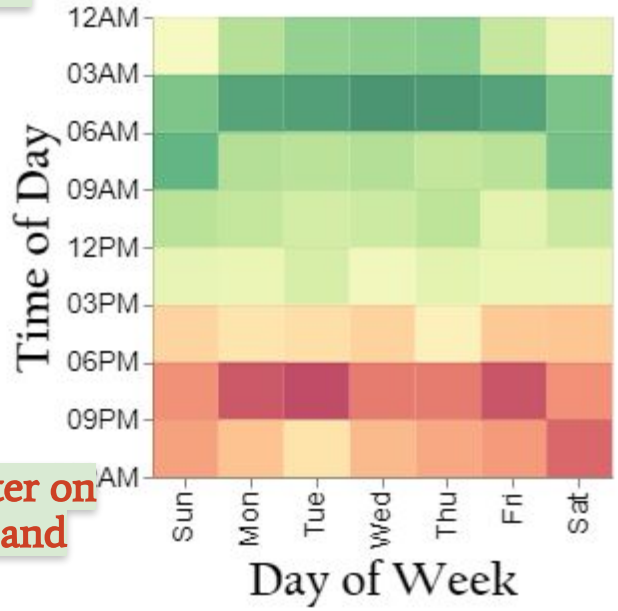
Scatter

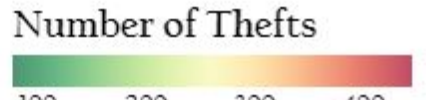
- Selection on Year
- Transform Filter on Communities



Heat Map

- Transform Filter on Communities and year
- Time Binned





User Address

Pre - Usability Study Version

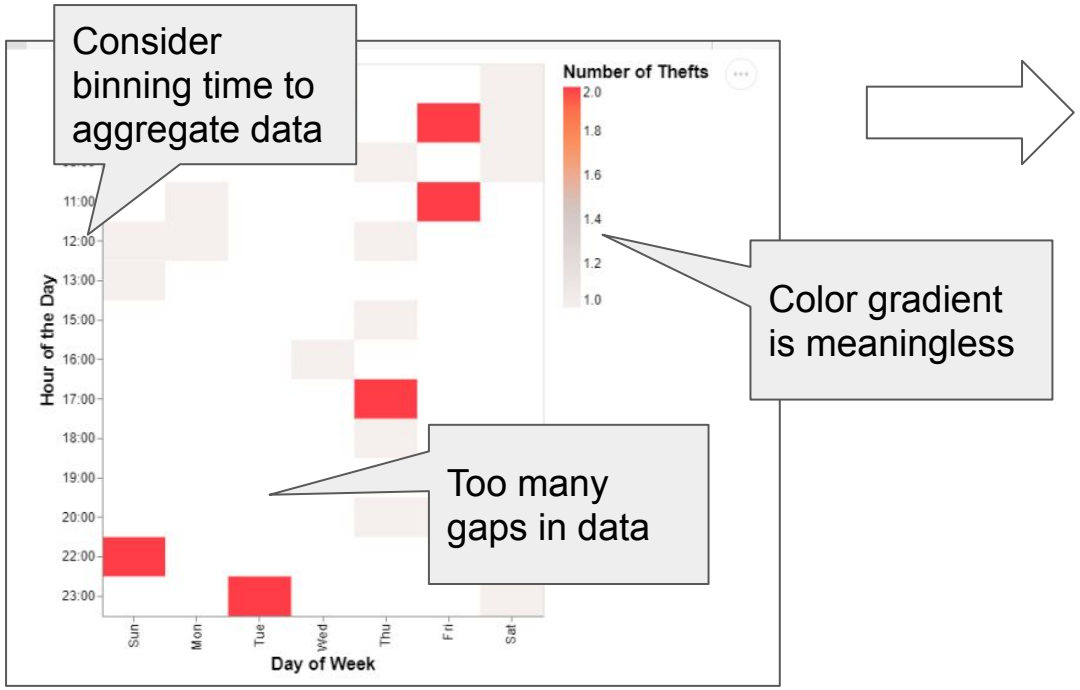
Bare bones section - users entered address and received auto theft data

Key changes - Section 2

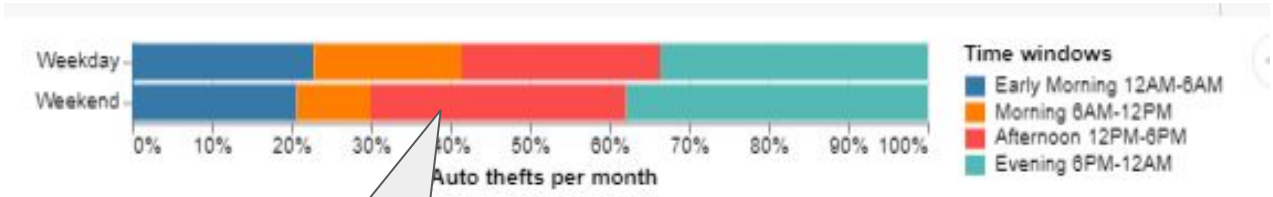
- Include an interactive map at the zoomed in level based on the user's entered location.
- Don't *mock the user* if the wrong address is inputted. Make sure validation error messages are easily understood and respectful.

Iteration of auto theft time/day chart Section 2

Heatmap of sparse data

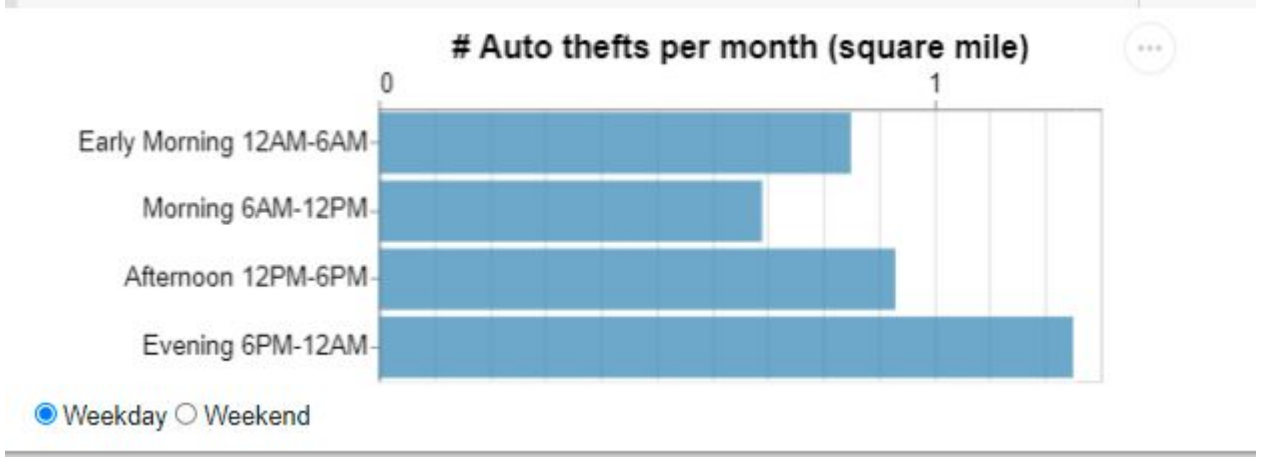


Normalized bar chart



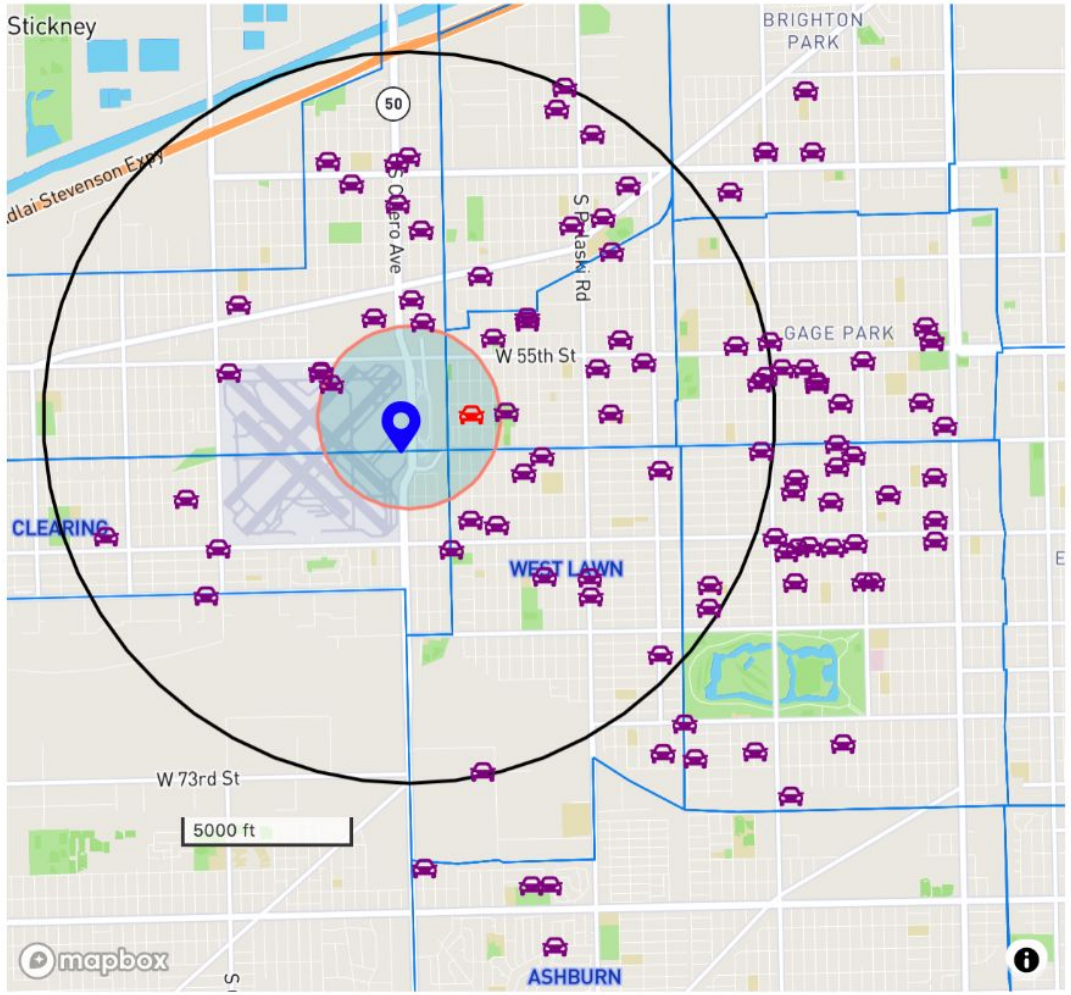
Difficult to compare time bins

Horizontal bar chart with selection



Address: 5700 S Cicero Ave, Chicago, IL 60638 X

Today's Date: 8/2/2021, 4:36:20 PM CDT



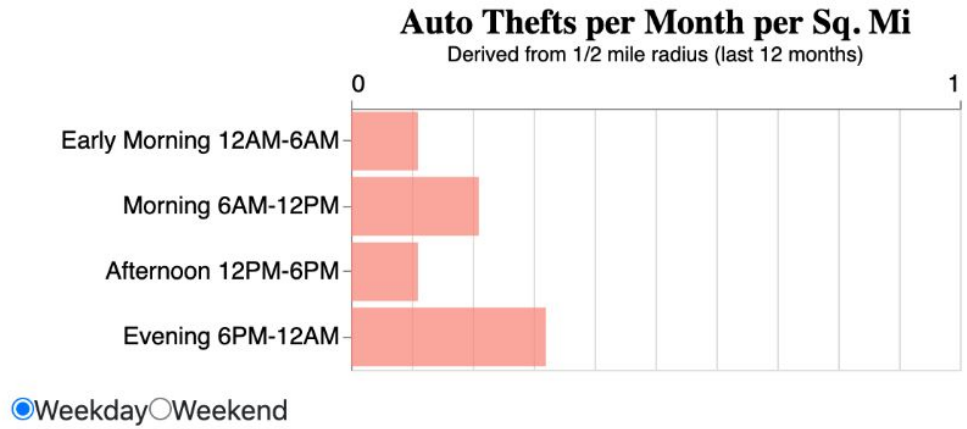
Data shown from last 90 days

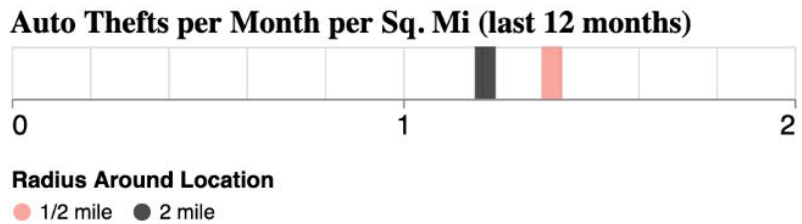
Highlights

Current Community: WEST ELSDON

Most Recent Car Theft Near Your Location

- **Date:** 5/8/2021, 8:00:00 PM CDT
- **Distance:** 0.31 miles





Website Design

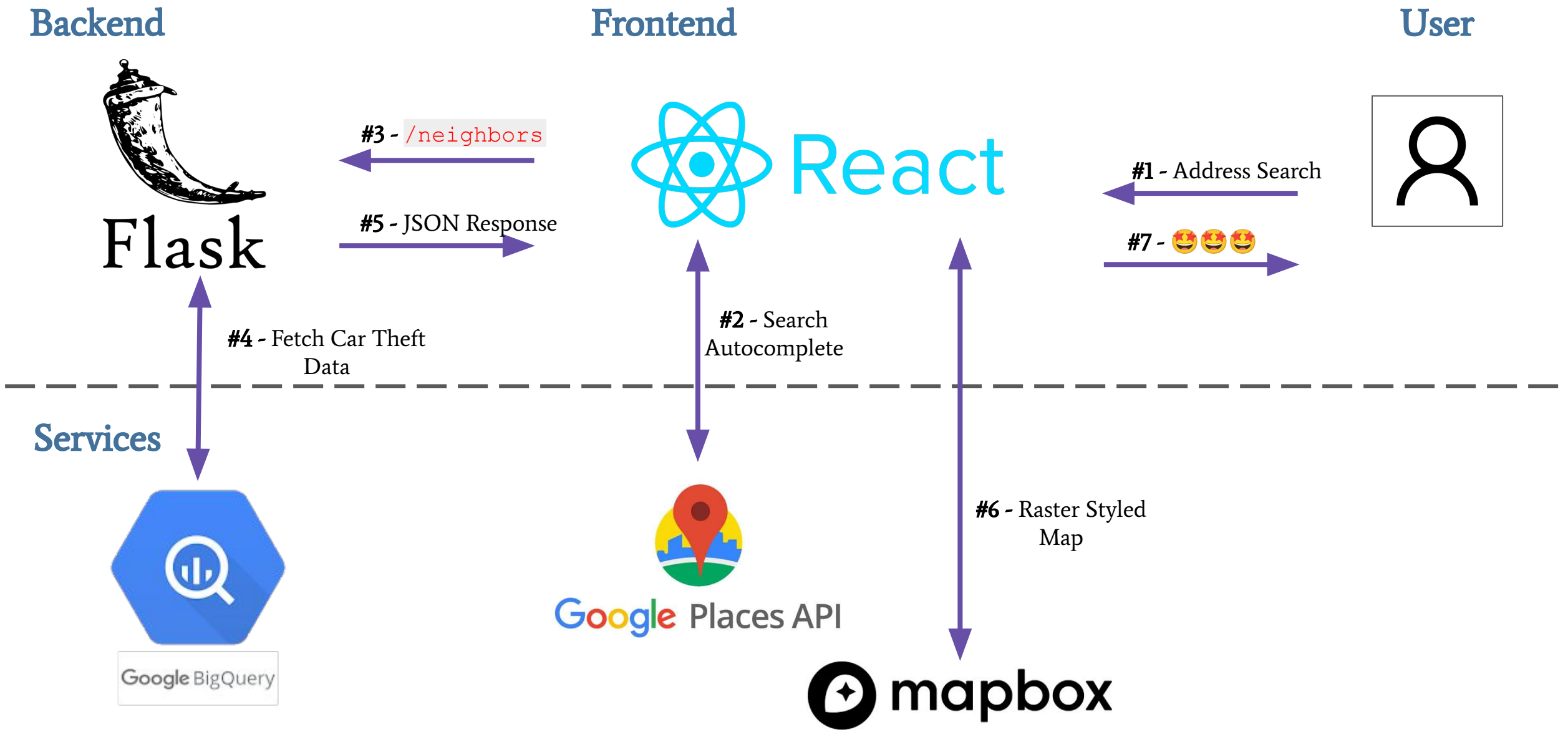
Technologies Used

Frontend

Backend

Services

User Address Workflow



Demo

Thank You!