

LOCATION SELECTION FOR A CAR RENTAL BUSINESS IN ATLANTA, GEORGIA, USA



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INTRODUCTION

Background

- Atlanta is the growing State Capital and most populous city of Georgia
- Home to historical sites, high end restaurants and leisure activities.
- Shows potential expenditure on transportation.

Problem

- Information on location and security are important factors when starting businesses.
- Current information is general or piecemeal information and may not aid in good decision making.

INTRODUCTION

Interested stakeholders:

- Current and potential investors in care rental business in Atlanta.
- Other data scientists can adopt the methodology used here and refine it to find solutions to similar problems in other areas.
- The Atlanta government can benefit by making decisions based on the findings of this project to attract more investors.

DATA ACQUISITION AND CLEANING

Data sources

- Names of neighborhoods in Atlanta: [ARC's Open Data and Mapping Hub](#)
- Coordinates of neighborhoods in Atlanta: Nominatim API and Googlemaps API
- Places in the neighborhoods of Atlanta: Foursquare's global database
- Crime in Atlanta 2009-2017: [Data World](#)
- Boundaries of Atlanta neighborhoods: [Fulton County, GA](#)

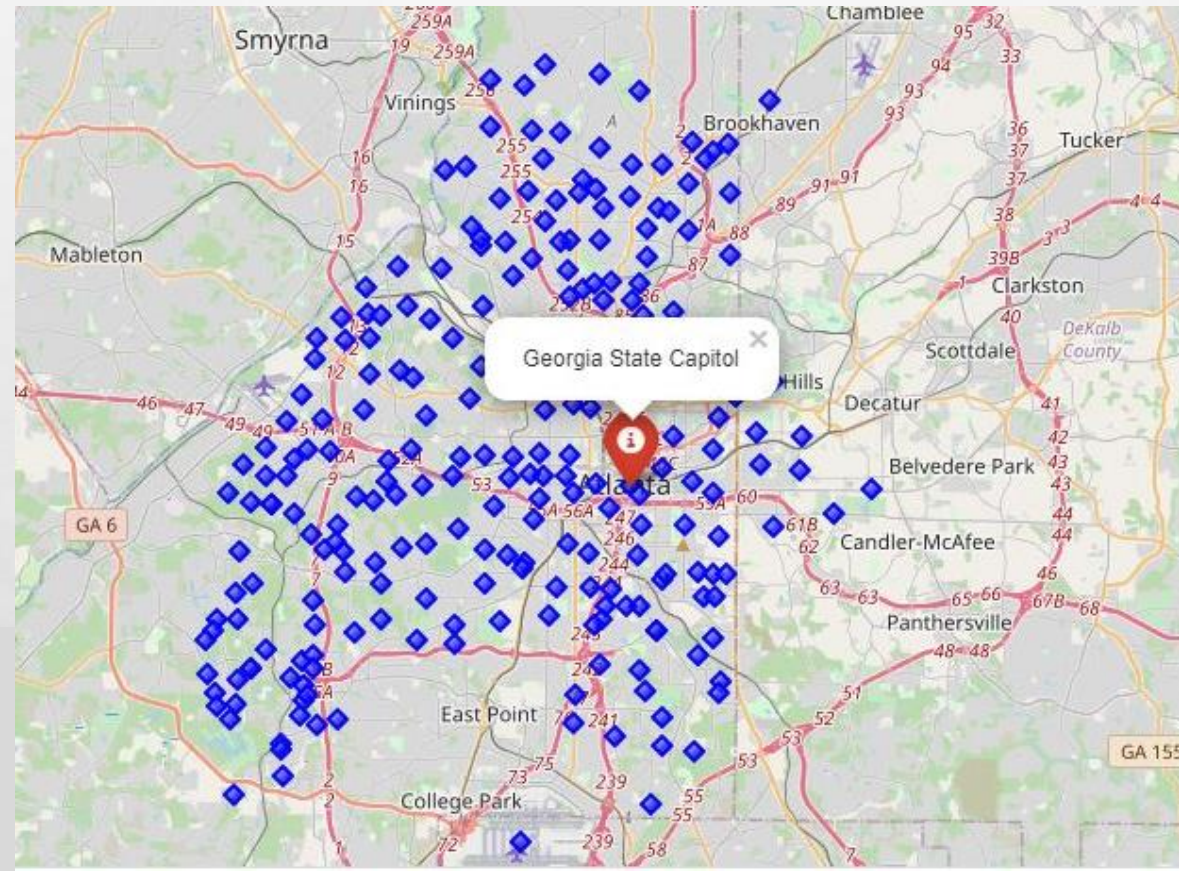
DATA ACQUISITION AND CLEANING

Data cleaning

- Separated grouped data to individual rows
- Data on neighborhood coordinates missing; used Googlemaps to find
- Dropped unnecessary columns
- Manually removed errors from the GeoJSON file
- Inserted necessary rows
- Corrected spelling mistakes

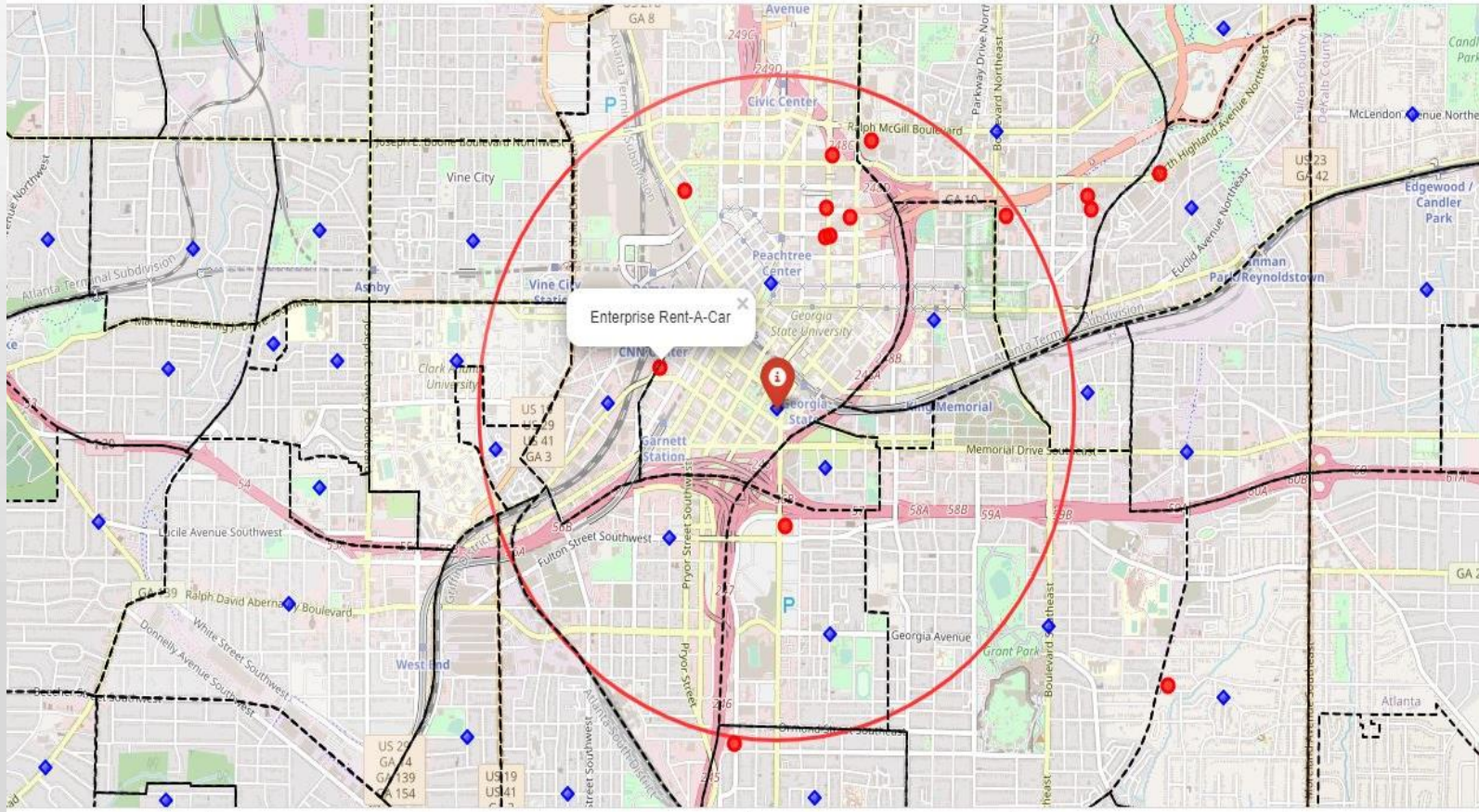
METHODOLOGY

Used of folium library to view the map of neighborhoods in Atlanta



METHODOLOGY

Explored and visualized car rental businesses within ~2km from Capitol



METHODOLOGY

Car rental locations:

- 8 in Downtown, 4 in Old Fourth Ward
- A few located in Midtown, Summerhill, Peopletown and Ormewood.

Neighborhoods with no car rental business (potential neighborhoods):

- Mechanicsville
- Castleberry Hill
- Sweet Auburn
- The Villages at Castleberry Hill

METHODOLOGY

Exploring places in the 4 potential neighborhoods

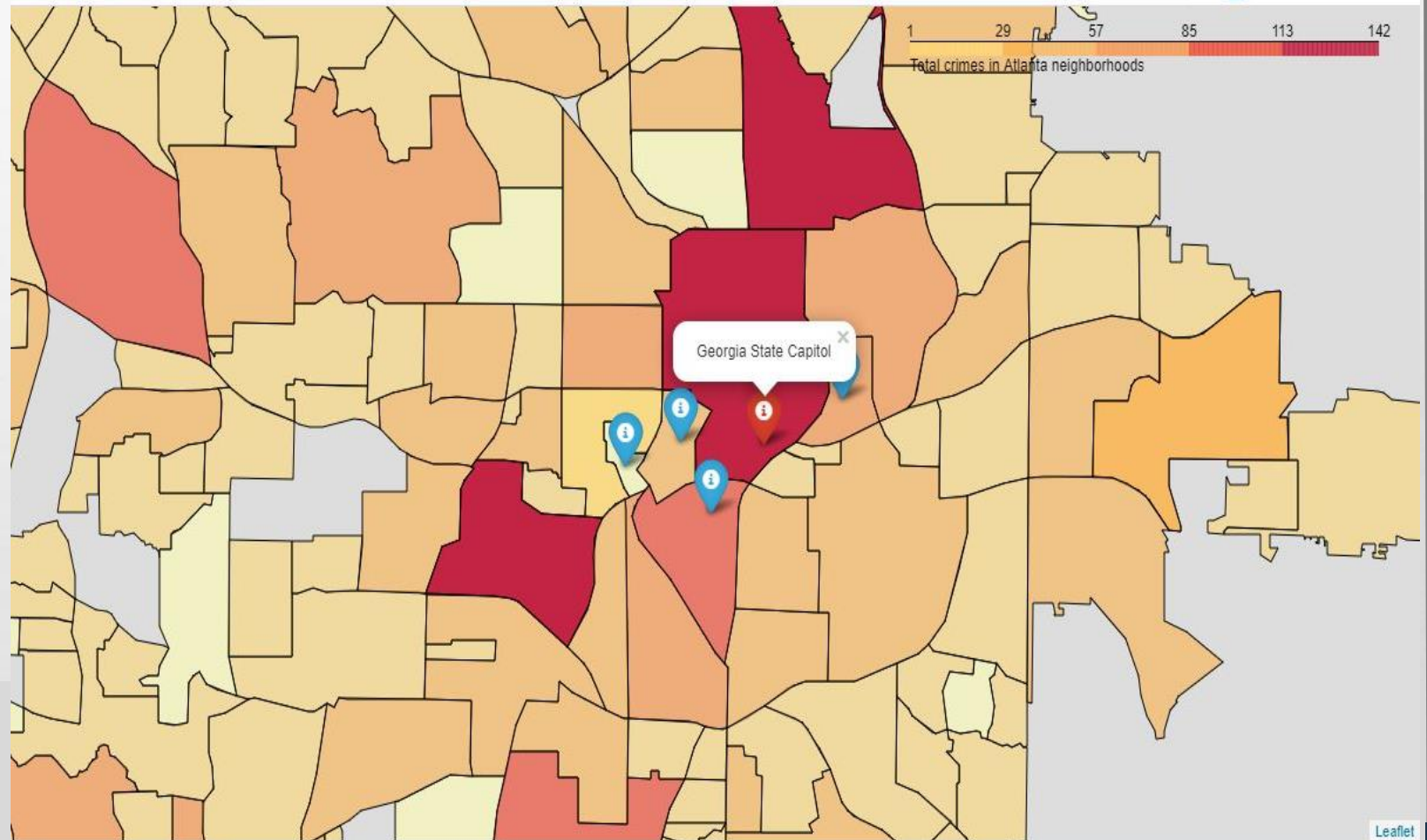
- Clustering of venues done using k-means unsupervised algorithm; clusters=5
- Mechanicsville and Castleberry Hill fell under cluster 3 (restaurants cluster)
- Sweet Auburn and The Villages at Castleberry Hill did not yield results.

Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Castleberry Hill	33.749285	-84.400194	3	Lounge	Art Gallery	Café	Cosmetics Shop	Boutique	Southern / Soul Food Restaurant	Moving Target	Sushi Restaurant	Mexican Restaurant	Strip Club
Mechanicsville	33.741968	-84.395741	3	Recreation Center	Convenience Store	Shipping Store	Sandwich Place	Gas Station	Paper / Office Supplies Store	Flea Market	Fish Market	Fish & Chips Shop	Flower Shop

METHODOLOGY

Atlanta crime analysis

- Choropleth map to view the crime statistics of each neighborhood
- The four potential neighborhood are indicated on map by blue popups

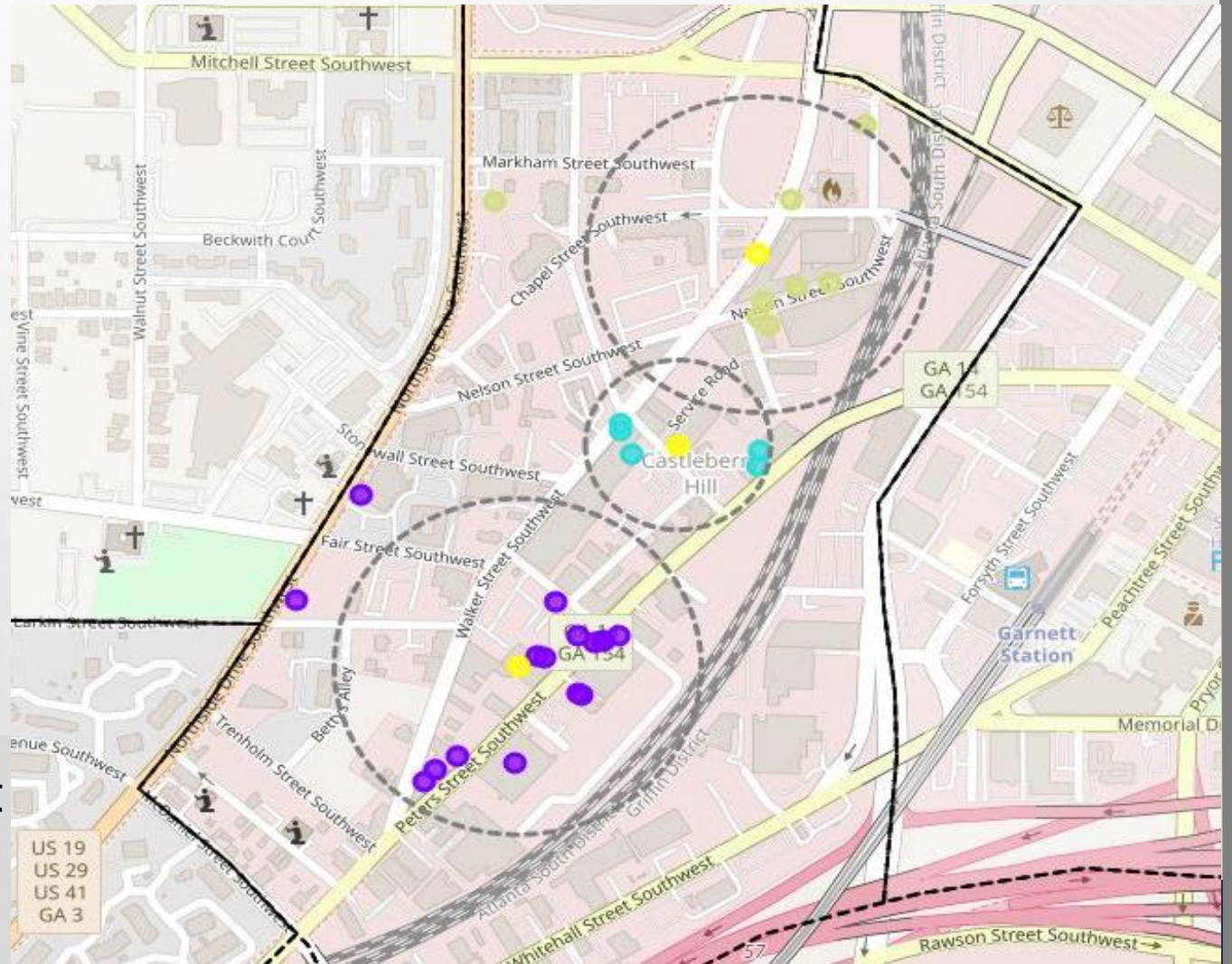


METHODOLOGY

Further narrowing down done by grouping locations of venues in Castleberry Hill.

The final potential locations were therefore identified as:

- i. ~196 m radius from 359 Nelson St
- ii. ~100 m radius from 267 Peters St
- iii. ~185 m radius from 172 Haynes St



DISCUSSION

- Analysis of car rental businesses showed that Mechanicsville, Castleberry Hill, Sweet Auburn and The Villages at Castleberry Hill, did not have any.
- Further analysis of venues in neighborhoods showed that Mechanicsville and Castleberry Hill had significant activity. However, Mechanicsville was less busy as compared to Castleberry Hill.
- Car theft existed in Atlanta and using crime statistics, we observed that Mechanicsville had more car theft numbers than Castleberry Hill.
- Castleberry Hill therefore considered safer and having more human traffic.
- Recommendations made are:

RECOMMENDATIONS

- Potential investors consider the 3 identified potential locations in Castleberry Hill when looking to set up a business.
- They should however keep in mind that car thefts have been recorded in the area. Strategies to prevent car theft should therefore be defined before the business is set up. With the names of the existing car rental businesses, potential investors can carry out research on how the existing businesses operate, what strategies they use in makes their businesses successes and failure points

CONCLUSION

In this project, we have successfully narrowed down and selected locations for car rental businesses in Atlanta.

- We analyzed neighborhoods and locations of present car rental businesses.
- Used k-means on Foursquare location venues data, we clustered venues and identified venue 'hot spots' in neighborhoods.
- Analyzed crime statistics and mapped them onto potential neighborhoods.
- Selected the best neighborhood (Castleberry Hill) for the business.
- By grouping of locations of venues Castleberry Hill, identified 3 potential locations for car rental services.