

Pizza Restaurant Location

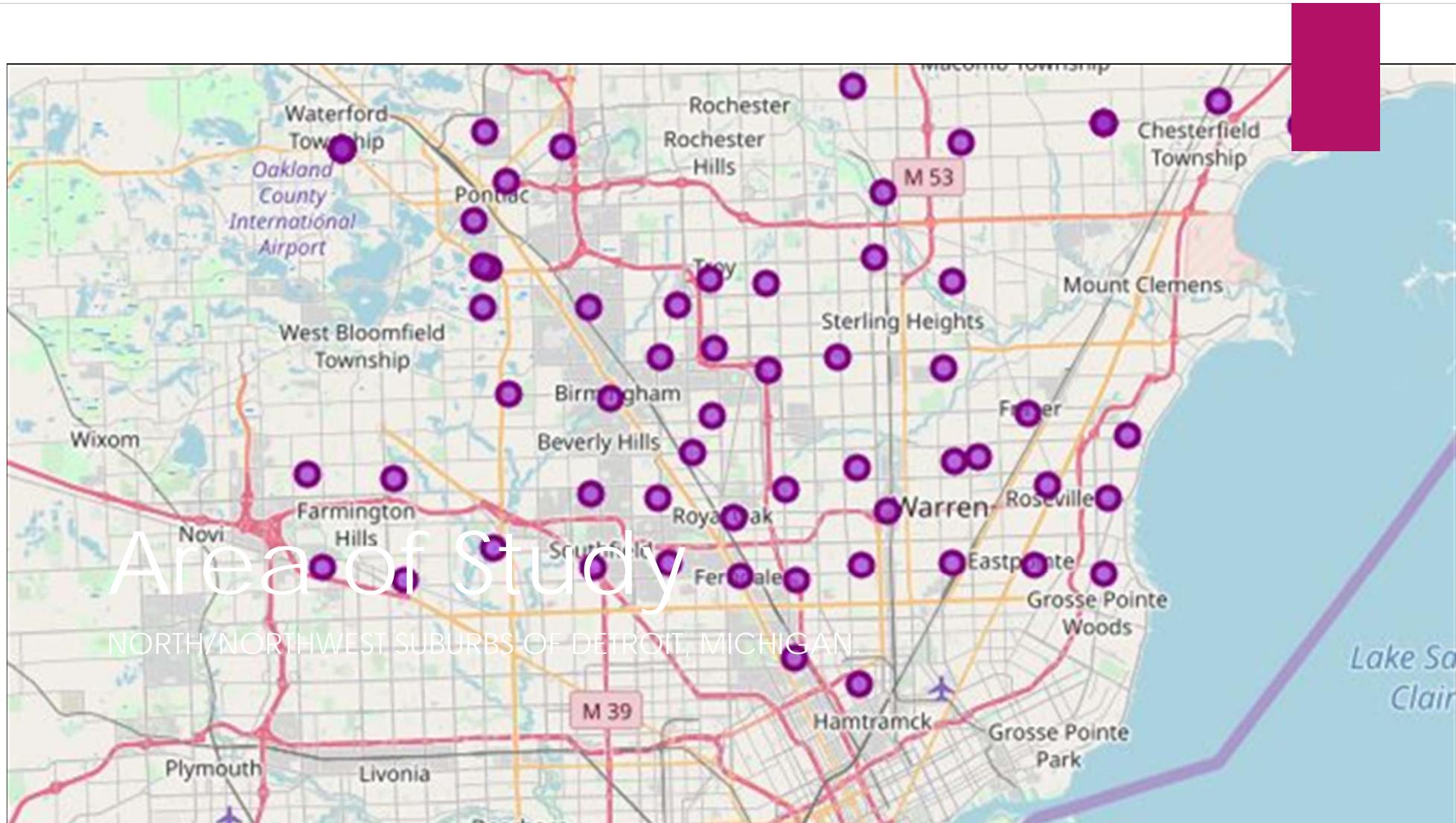
A BEGINNERS DATA SCIENCE STUDY

Introduction

- ▶ Overall goal is to give the new restaurant the best chance of succeeding in the competitive metro-Detroit area.
- ▶ Best location to open a pizza restaurant based on:
 - ▶ Location
 - ▶ Low number of pizza places nearby
 - ▶ Rating
 - ▶ Other venues in the area should have high ratings

Area of Study

NORTH/NORTHWEST SUBURBS OF DETROIT, MICHIGAN.



Data

- ▶ Foursquare API

- ▶ Used to find venue:
 - ▶ Location
 - ▶ Name
 - ▶ ID number
 - ▶ Category
 - ▶ Rating

- ▶ Websites used:

- ▶ Suburb names
 - ▶ <https://guides.lib.umich.edu/c.php?g=283069&p=1885993>
- ▶ County of suburb
 - ▶ https://en.wikipedia.org/wiki/List_of_cities,_villages,_and_townships_in_Michigan
- ▶ Suburb latitude/longitude (csv file)
 - ▶ <https://www.aggdata.com/free/united-states-zip-codes>

Methodology

- ▶ Websites were scraped using BeautifulSoup to create a DataFrame that included suburb name, county, zip code, latitude, and longitude.
- ▶ Folium was used for preliminary data visualization.
- ▶ Foursquare API was used to get venues for each zip code with a limit of 100. All venues that had a pizza place in the top 10 most common venues were removed.
- ▶ The mean venue rating was found for each zip code.

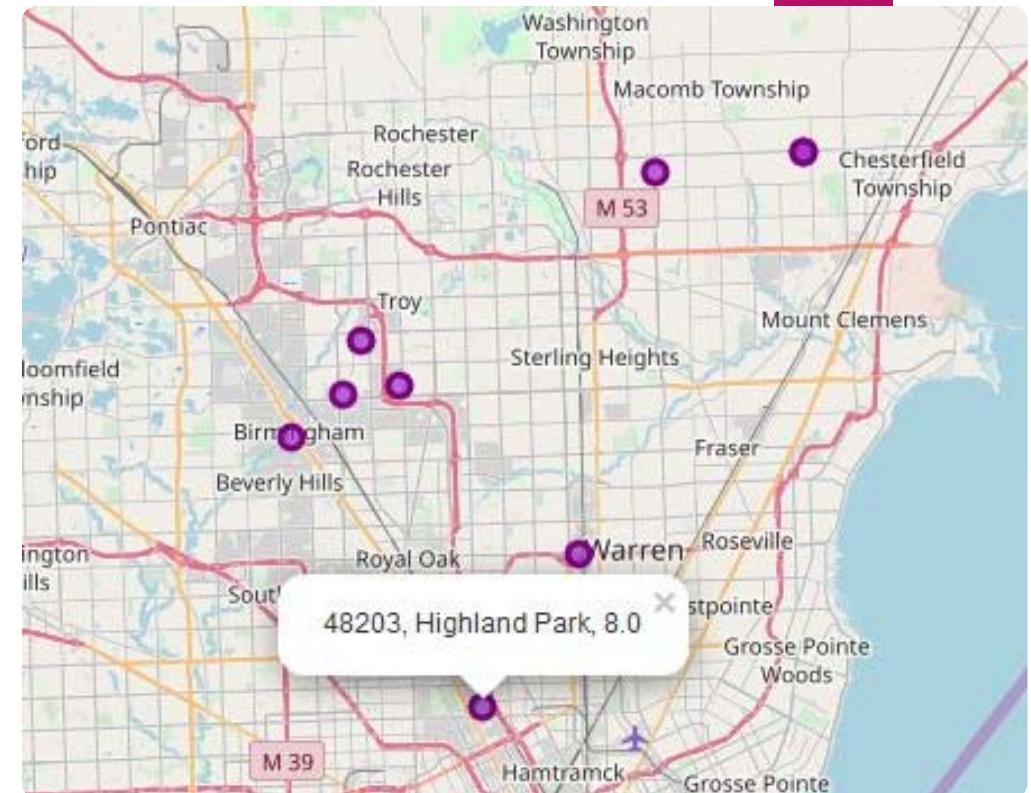
Results

Mean venue rating by zip code order by highest rated to lowest.

Zip Code	Suburb	Rating
48203	Highland Park	8.00
48220	Ferndale	7.63
48315	Utica	7.50
48084	Troy	7.42
48037	Southfield	7.33
48397	Warren	7.00
48090	Warren	7.00
48009	Birmingham	7.00
48099	Troy	7.00
48318	Utica	7.00
48311	Sterling Heights	7.00
48331	Farmington	7.00
48034	Southfield	7.00
48314	Sterling Heights	7.00
48071	Madison Heights	6.93
48051	New Baltimore	6.80
48212	Hamtramck	6.75
48007	Troy	6.70
48301	Bloomfield Hills	6.60
48303	Bloomfield Hills	6.42
48086	Southfield	6.42
48321	Auburn Hills	6.42
48068	Royal Oak	6.42
48332	Farmington	6.42
48333	Farmington	6.42
48343	Pontiac	6.42
48336	Farmington	6.33
48237	Oak Park	6.00
48326	Auburn Hills	6.00
48335	Farmington	6.00
48310	Sterling Heights	5.75

Map of Highest Rated Suburbs

Mean taken of all venue ratings for each area.



Discussion

- ▶ Best individual suburb to open a pizza place in the north/northwest metro Detroit area would be in Highland Park, specifically zip code 48023.
 - ▶ No pizza place in ten most common venues
 - ▶ Highest mean rating
 - ▶ Large number of nicer venues
- ▶ Both Troy and Sterling Heights come up three times on results list.
 - ▶ Troy overall mean: 7.04
 - ▶ Sterling Heights overall mean: 6.58
 - ▶ Large suburbs that are located directly next to one another

Map of Troy and Sterling Heights



Recommendation

- ▶ Open a new pizza restaurant in Troy.
 - ▶ Multiple Troy zip codes have a small quantity of pizza places.
 - ▶ Large area means more customers.
 - ▶ Acceptable mean venue rating in the area.
 - ▶ Neighbor of Sterling Heights
 - ▶ Also a suburb with multiple zip codes that do not have a large quantity of pizza places.
 - ▶ A pizza restaurant in Troy could potentially draw in many pizza wanting customers from this suburb as well.

Conclusion

- ▶ When opening a pizza restaurant, one needs to be very selective.
 - ▶ Metro Detroit is a very competitive area with many dining choices.
- ▶ Through looking at the aspects of location and competing pizza restaurants, the average rating of other venues, and the ability to draw in a large customer base it is thought that a new pizza restaurant in the Detroit suburb of Troy would have the greatest chance of success.