



CAPSTONE PROJECT

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Introduction

- Currently I live in Amsterdam where is the capital city in Netherlands and everyday I need to drive more than one hour to my work(Rotterdam)where is on the other side of the country. Traffic jams in Netherlands increases during both the morning and evening rush hour as well as during the day. In order to save commuting time, I decide to relocate to a new neighborhood where is also close to my office. The question is: I would like to find a cosy and convenient place similar to my current house. Since I will move together with my family, the new place would be most desirable in the neighborhood with sport center, school supermarkets and restaurants.

Data section

The following data is required for solving this problem:

- List of available houses in Rotterdam with address and price
- List of boroughs and neighbourhood of Rotterdam with its geodata
- Venues of each desired neighbourhood and stations

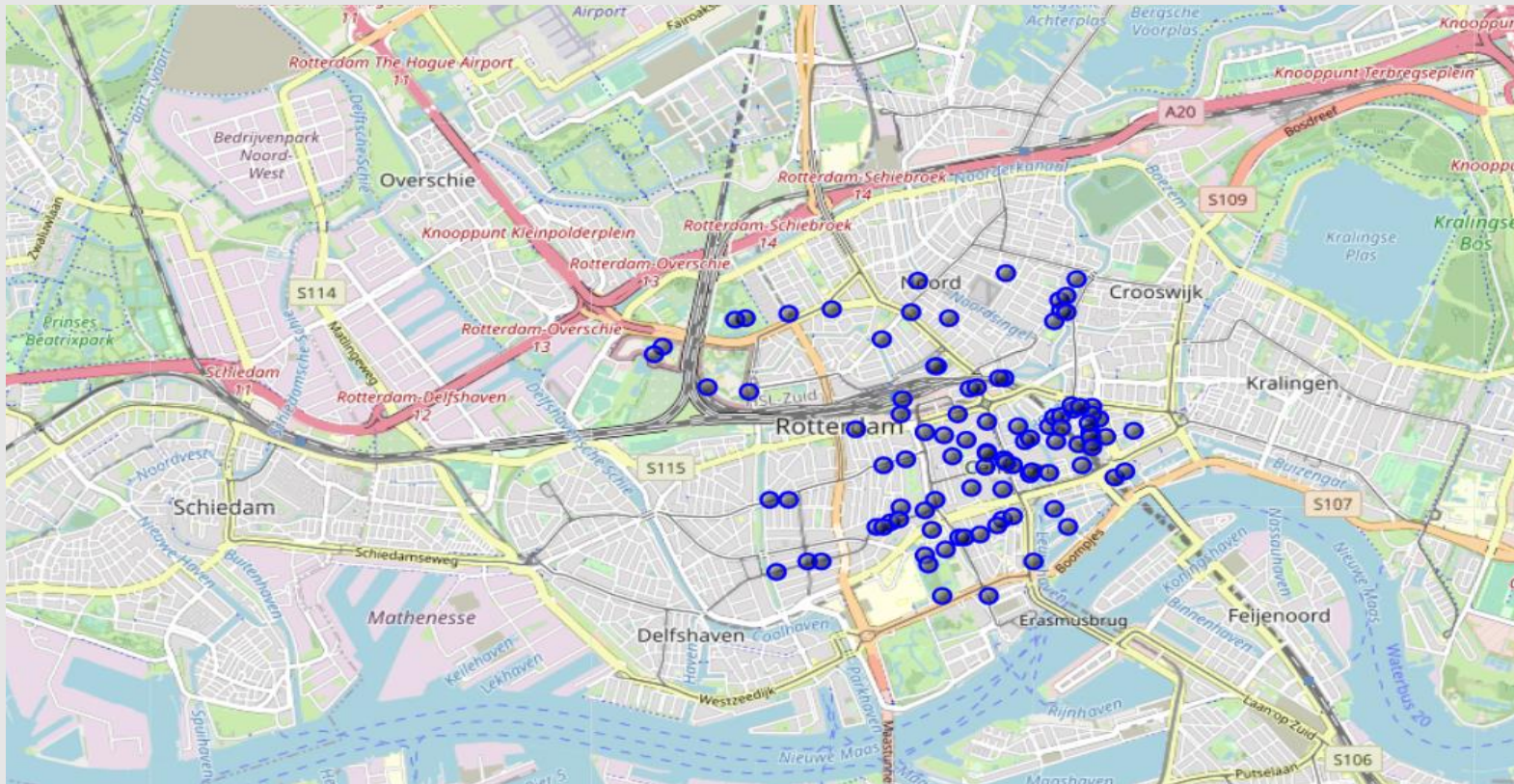
Methodology

How the data can be used to solve the problem

- Use Foursquare and geopy data to map top 10 venues for all Rotterdam neighborhoods and clustered in groups
- Use foursquare and geopy data to map the location of bus stations , separately and on top of the above clustered map in order to be able to identify the venues near each station, or explore each subway location separately
- Use Foursquare and geopy data to map the location of houses.
- Addresses from houses will be converted to geodata(latitude, longitude) using Geopy-distance and Nominatim.

Result

- Living in Rotterdam



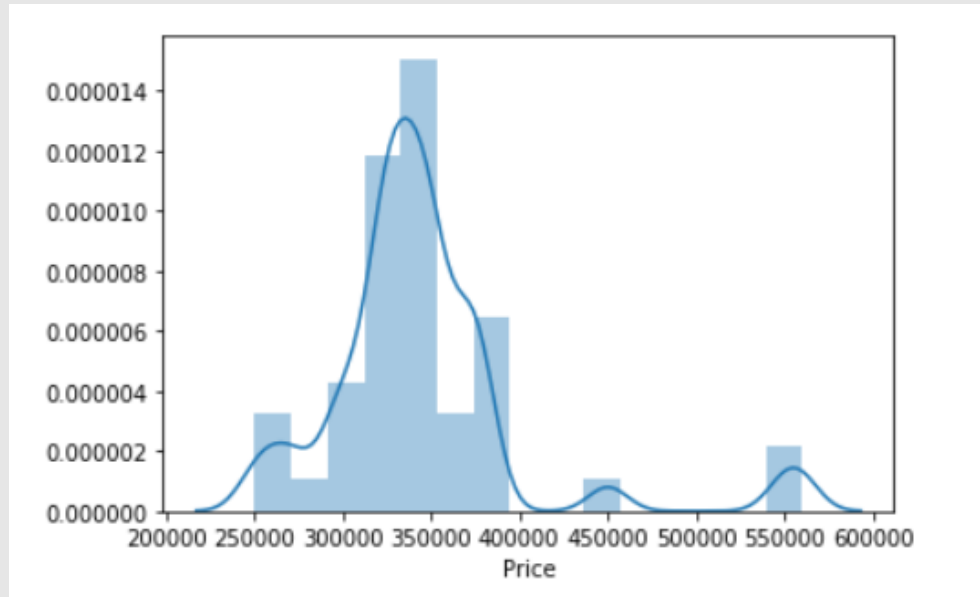
Two houses in Rotterdam

	Borough	Postcode	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
0	Rotterdam	3208 SE	51.976551	4.539340	2	Coffee Shop	Discount Store	Yoga Studio	Steakhouse	Supplement Shop	Tennis Stadium	Shoe Store	Gym	Bank
1	Rotterdam	3053 JE	51.976551	4.455721	2	Chinese Restaurant	Cocktail Bar	Dim Sum Restaurant	American Restaurant	Vietnamese Restaurant	Salon / Barbershop	Noodle House	Bakery	Bubble Tea Shop
2	Rotterdam	3052 KR	51.976551	4.513100	4	Café	Bakery	Mobile Phone Shop	Pizza Place	Sandwich Place	Park	Gym	Latin American Restaurant	Tapas Restaurant
3	Rotterdam	2548 CR	51.976551	4.528790	3	Mexican Restaurant	Lounge	Pizza Place	Café	Wine Bar	Bakery	American Restaurant	Park	Frozen Yogurt Shop
4	Rotterdam	2901 RA	51.976551	4.500312	0	Mexican Restaurant	Coffee Shop	Café	Deli / Bodega	Pizza Place	Liquor Store	Indian Restaurant	Sushi Restaurant	Sandwich Place

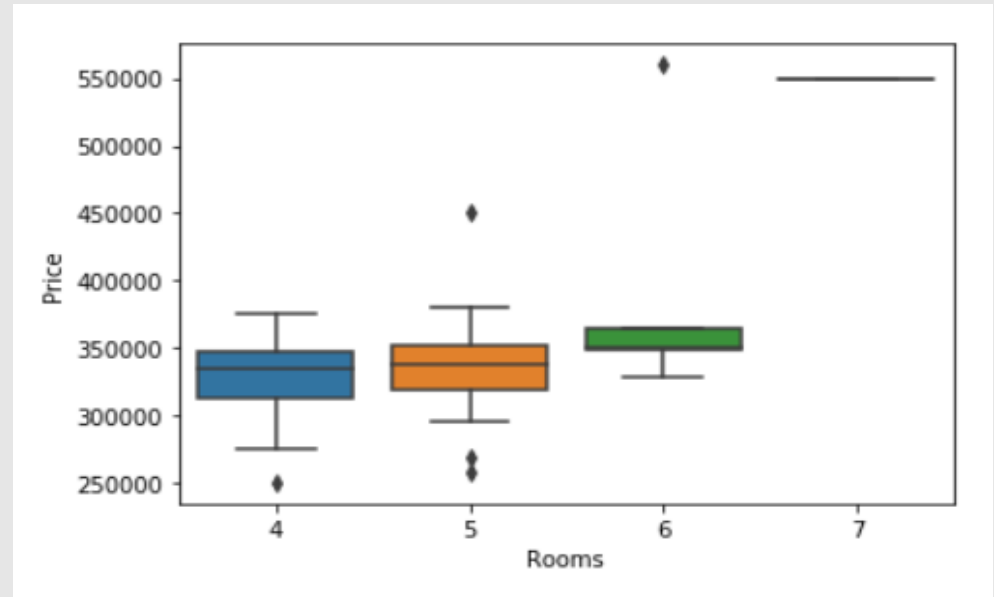
	Postcode	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Unnamed: 15	Unnamed: 16
0	3208 SE	Coffee Shop	Discount Store	Yoga Studio	Steakhouse	Supplement Shop	Tennis Stadium	Shoe Store	Gym	Bank	Seafood Restaurant	NaN	NaN
1	3053 JE	Chinese Restaurant	Cocktail Bar	Dim Sum Restaurant	American Restaurant	Vietnamese Restaurant	Salon / Barbershop	Noodle House	Bakery	Bubble Tea Shop	Ice Cream Shop	NaN	NaN
6	3191 GM	African Restaurant	Seafood Restaurant	French Restaurant	American Restaurant	Cosmetics Shop	Chinese Restaurant	Event Space	Liquor Store	Beer Bar	Gym / Fitness Center	NaN	NaN
9	3025 BJ	Coffee Shop	Gym	Bar	Italian Restaurant	Sushi Restaurant	Pizza Place	Mexican Restaurant	Deli / Bodega	Japanese Restaurant	Pub	NaN	77.95
14	2641 LK	Theater	Italian Restaurant	Coffee Shop	American Restaurant	Gym / Fitness Center	Hotel	Wine Shop	Spa	Gym	Indie Theater	NaN	NaN
23	3208 SH	Clothing Store	Boutique	Women's Store	Shoe Store	Men's Store	Furniture / Home Store	Italian Restaurant	Mediterranean Restaurant	Art Gallery	Design Studio	NaN	NaN
26	2992 KK	Coffee Shop	American Restaurant	Park	Bookstore	Pizza Place	Sandwich Place	Burger Joint	Café	Deli / Bodega	Tennis Court	NaN	NaN
34	3124 CN	Gym / Fitness Center	Italian Restaurant	Furniture / Home Store	Indian Restaurant	Dessert Shop	American Restaurant	Bakery	Juice Bar	Boutique	Sushi Restaurant	NaN	NaN
39	3131 ES	Coffee Shop	Italian Restaurant	Hotel	Theater	American Restaurant	Café	Gym / Fitness Center	Thai Restaurant	Restaurant	Gym	NaN	NaN

House price in Rotterdam

House price



Rooms



Selection

- Using the map above, I was able to explore all possibilities since the popups provide the information needed for a good decision. House 1 rent cost is ER340.000 slightly below the EU350.000 budget. Venues for this apt are as of Cluster 2 and it is located in a fine district in the East side of Rotterdam.
- House 2 cost is EU325.000, a bit cheaper than house 1 but also a bit smaller. Venues for this apt are as of Cluster 3.
- Based on current Amsterdam venues, I feel that Cluster 3 type of venues is a closer resemblance to my current place. That means that House 1 is a better choice since the extra house cost is worth the conveniences it provides.

Conclusion

- I feel rewarded with the efforts, time and money spent. I believe this course with all the topics covered is well worthy of appreciation. This project has shown me a practical application to resolve a real situation that has impacting personal and financial impact using Data Science tools. The mapping with Folium is a very powerful technique to consolidate information and make the analysis and decision thoroughly and with confidence. I would recommend for use in similar situations.