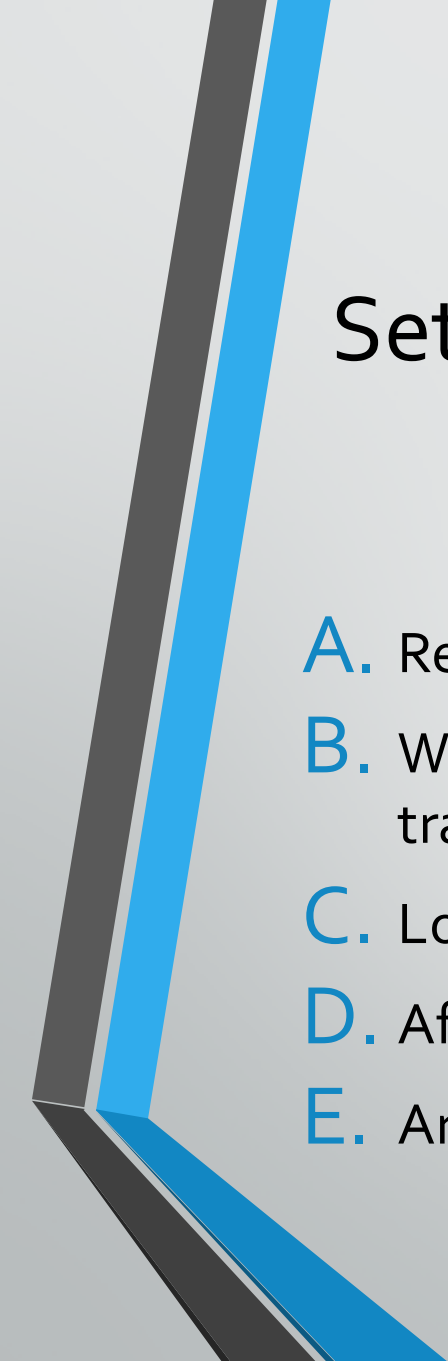# Rotterdam's Best Places to Live

Faisal Irzal

The needs for finding best neighborhoods to live in Rotterdam

- Rotterdam as major logistic and economic center of The Netherlands attracts international people to work and live

- Tough competition between locals and foreigners to look where to best live within the city

- Good guidance for young professionals who have plans to move to Rotterdam but know little of the neighborhoods

- Analysis will be made based on common factors people use when buying a house

Setting up Criteria for Best Neighborhoods

A. Residential area surrounded by nature, e.g. park, forest, lake

B. Within reach to daily essential places, e.g. market places, pharmacies, public transport

C. Lower population density

D. Affordable house price

E. Area with more modern houses; old houses are prone to high maintenance cost

Data Acquisition and Cleaning

- List of neighborhoods in Rotterdam, population density, age of houses in the area and the average house prices are obtained from PDOK, a data platform for accessing geo data sets of Dutch governments https://www.pdok.nl/datasets

- Number of venues, their type and location in every neighborhoods are obtained by using Foursquare API

- Geospatial coordinate of neighborhoods in Rotterdam are obtained by using Geocoder Python package

- In total 93 rows and 147 features in the raw dataset

- Cleaned data contains only 8 features based on the defined criteria

Data Preparation

- Translate criteria A & B to venue selection with category:
  "Park | Forest | Lake | market | Drugstore | Pharmacy | Grocery | Bus | Train | Tram "

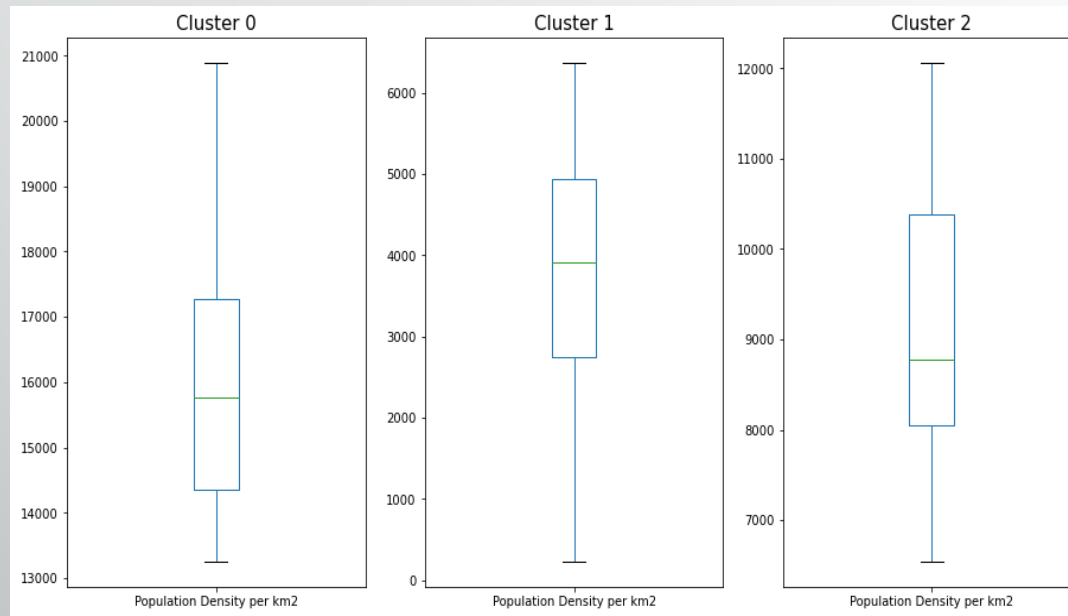|	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
51	Stadsdriehoek	51.917657	4.488733	De Groene Passage	51.923774	4.488295	Organic Grocery
84	Stadsdriehoek	51.917657	4.488733	Gimsel	51.924053	4.488687	Organic Grocery
95	Stadsdriehoek	51.917657	4.488733	Tramhalte Leuvehaven	51.912818	4.482041	Tram Station
154	Cool	51.917812	4.475448	Museumpark	51.913762	4.471629	Park
158	Cool	51.917812	4.475448	Amazing Oriental 東方行	51.920560	4.469794	Supermarket

- Criteria C,D & E are already provided by dataset of PDOK

- Put the data into a data frame

Data Analysis – k means Cluster

- Perform Clustering Analysis for selected criteria with optimal k = 3 calculated from k-Elbow method
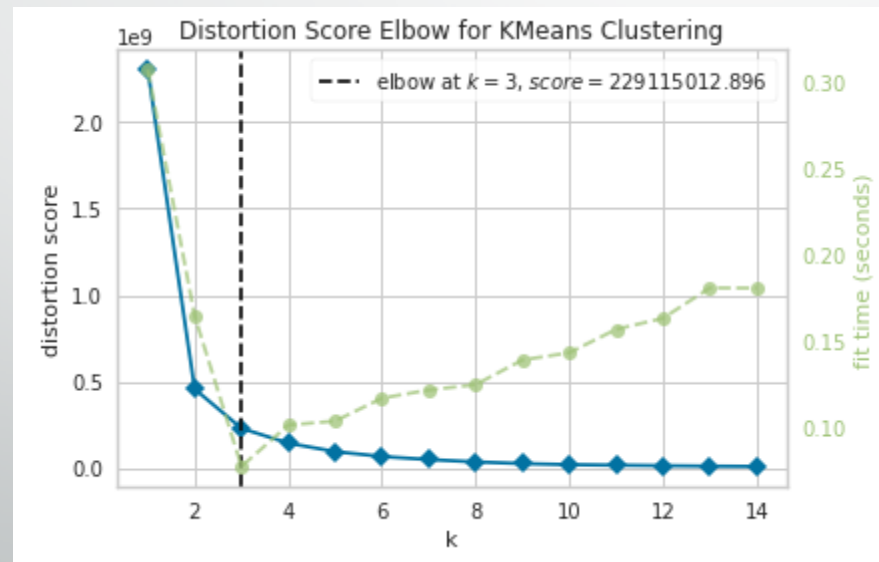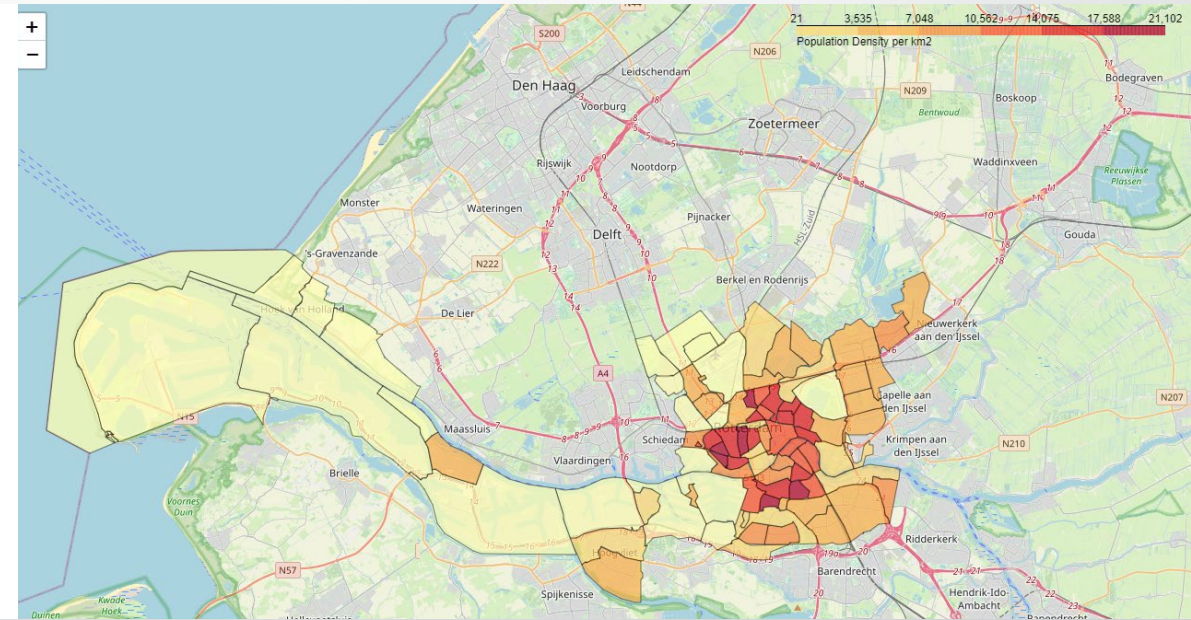
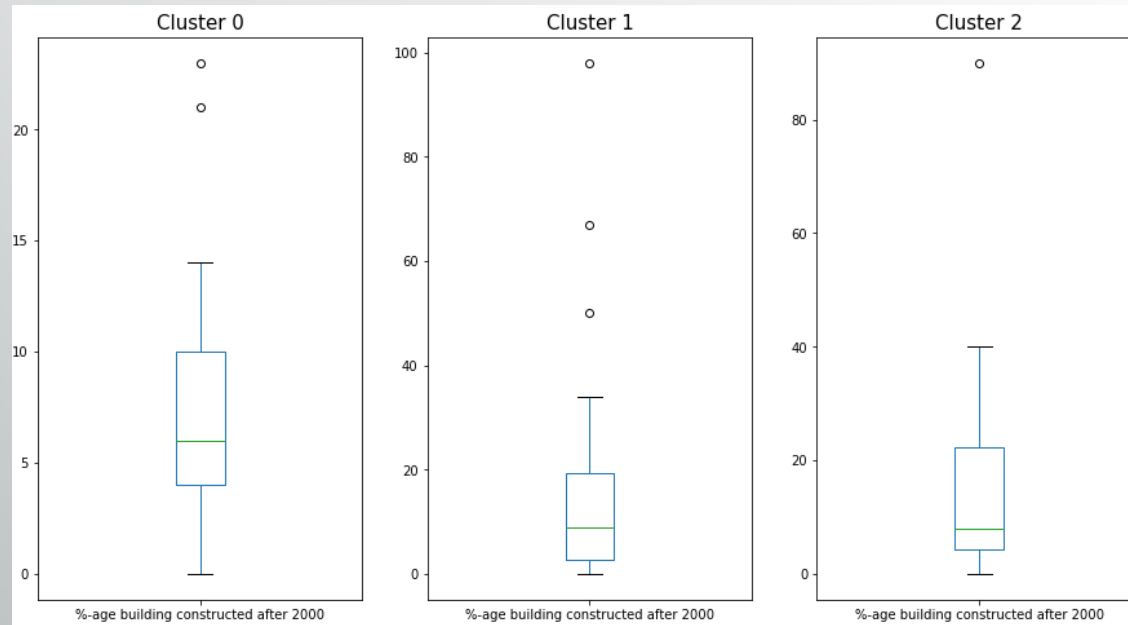# Data Analysis – Population Density

High   Low   Moderate

- Neighborhoods around central Station and high streets Rotterdam have high population
- South & North East Rotterdam neighborhoods have moderate population
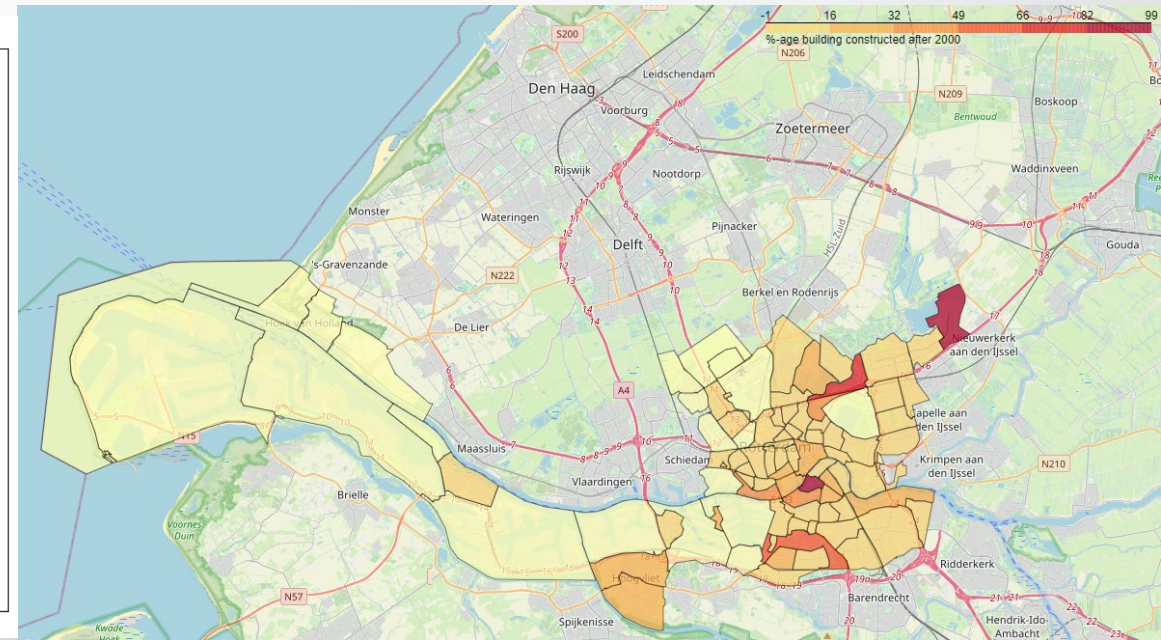- Neighborhoods along the river Rotter and near harbor have low population due to industrial areas

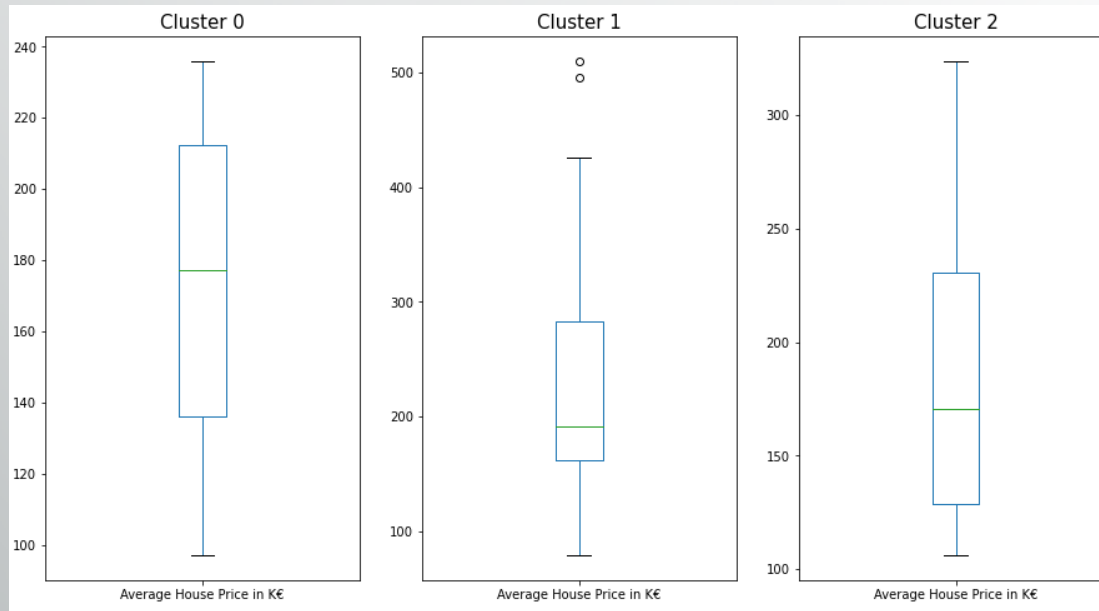# Data Analysis – Percentage of new buildings

Low | High | Moderate

- New residential buildings are concentrated in few areas in the North East of Rotterdam
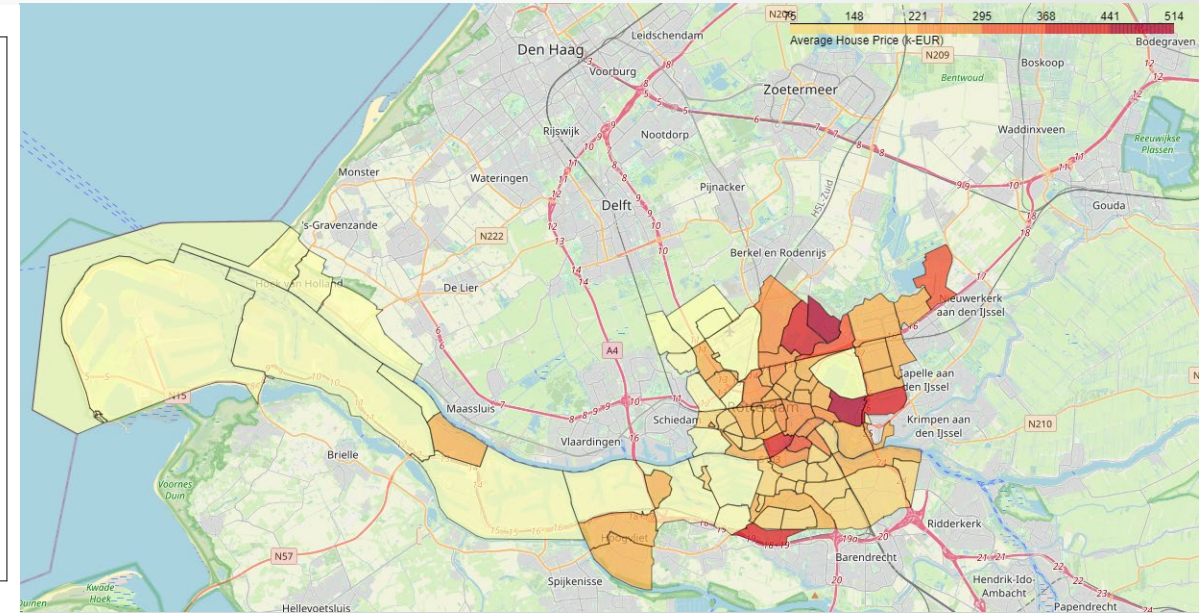- Moderate numbers of new buildings are spread in the center of Rotterdam

Data Analysis – Average Housing Price

- High price houses are located in the north of Rotterdam; places surrounded by nature (forest, lake)
- Low price houses are located along the canal and harbor due to industrial areas / no residential areas

# Data Analysis – Venue Types in Neighborhoods

Cluster 0:
- Rotterdam busiest neighborhoods where highstreets located with lots of available daily essential stores
- Easy access to public transport
- Not surrounded by nature

Cluster 1:
- Rotterdam residential areas with available daily essential stores within reach of the houses
- Easy access to public transport
- Moderately surrounded by nature (park)

Cluster 2:
- Rotterdam residential areas quite far from hustle-bustle areas with moderate number of essential stores
- Less access to public transport (tram)
- Surrounded by nature (park)
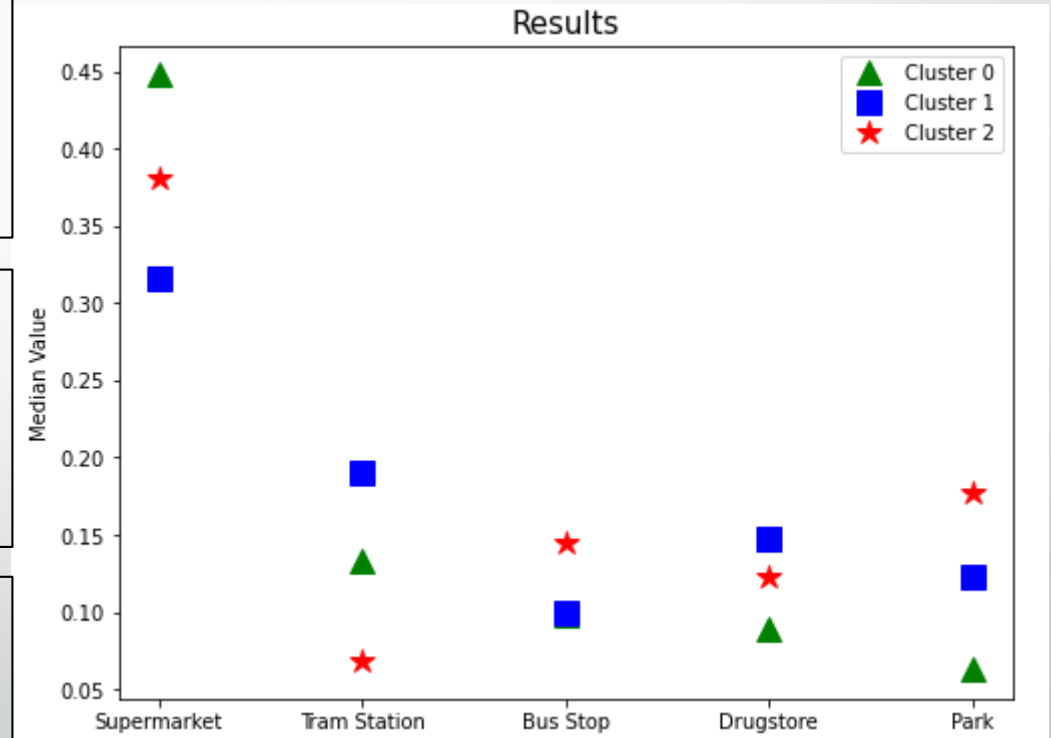
Results & Conclusion

- Data have been acquired to build a guideline of finding best neighborhoods to live in Rotterdam

- Criteria have been set for the neighborhood selection

- Cluster analysis has been conducted to analyze neighborhoods based on the selection criteria (location, population density, average house price, percentage of new houses in the area)

- From the analysis we conclude that neighborhoods in Cluster 2 may be the best fit for the given criteria because:
  - affordable house price
  - moderate availability of new building
  - not that densely populated
  - close vicinity to nature

- Neighborhood's examples from Cluster 2 are Hillegersberg Zuid, Agniesebuurt and Oosterflank.