Gentrification in Amsterdam

Who is next? – An Analysis by Annika Bhatti

Gentrification – Who is Next?

This analysis seeks to establish which districts of Amsterdam are currently likely to be in the early stages of gentrification.

Who Needs to Know This?

- Investors and property developers
  - Investing in property during the early stages of gentrification gives a high return on investment.
  - Knowing which areas are likely to gentrify soon, decreases the risk of the investment.
- Political parties, social activists and other social society groups
  - Gentrification produces winners and losers. Politicians and groups representing the grievances of those who are adversely affected by gentrification, need to know which areas to focus on to be able to intervene on time.

Underlying Theory and Assumptions

- The kind of venues in an urban area are an indicator for the degree of gentrification of that area

- The degree of gentrification is positively correlated with property prices

- During the early stages of gentrification, there will be moments when the venues in the area are starting to resemble those of gentrified areas, while the property prices will not, yet, have caught up with property prices in gentrified areas

Data and Data Sources

- Coordinates of the 22 districts of Amsterdam
  - Map provided by city of Amsterdam, coordinates found via Google Maps
- FourSquare for venue categories in the districts of Amsterdam
  - FourSquare data queried via FourSquare API, based on coordinates and district specific radius
- Property values in each district of Amsterdam
  - csv file from the data service of the city of Amsterdam

Methodology

- Average frequency of venue categories of each district
  - One hot encoding to create dummies (for clustering)
- K-Means clustering
  - To group similar districts together (based on their venue types and frequency thereof)
- Correlation cluster label and average property value
  - Based on the assumption that venues are correlated with gentrification and gentrification is correlated with property value, the cluster label should be correlated to the property value
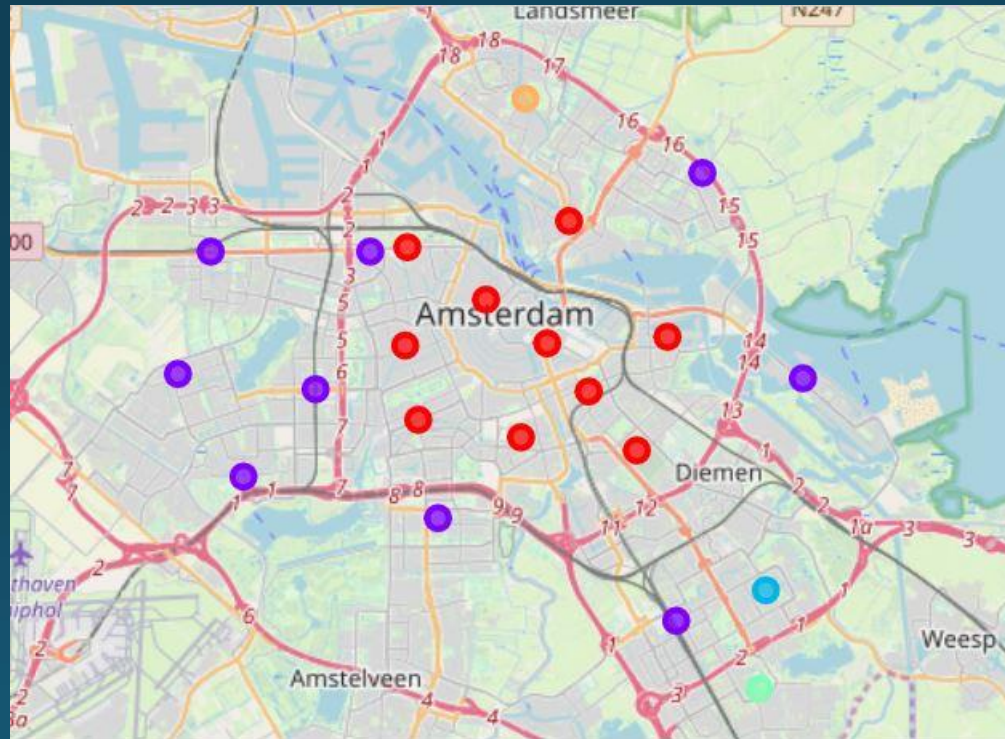
Analysis - Clustering

- Elbow Method to determine the number of clusters

The Elbow Method showing the optimal k
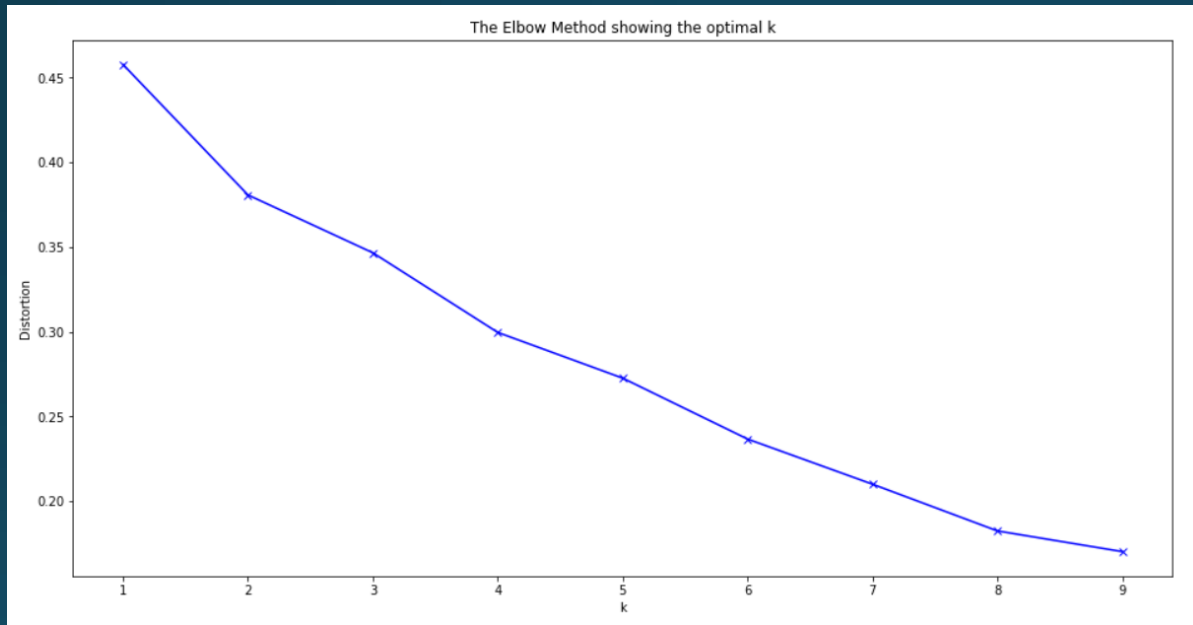
- K=5 is chosen, as 3 seems too small for the purpose of finding sufficient clusters for the different stages of gentrification

Analysis - Clustering

- Visualization of the 5 clusters on the map (found through k-Means)

The Gentrified Centre Cluster

- Cafés, restaurants, coffee shops, bars, hotels
- Some yoga, gym, gastropub, vegetarian/vegan restaurant

	District	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
0	DX01 Centrum-West	Bar	Hotel	Café	Marijuana Dispensary	Gift Shop	Coffee Shop	French Restaurant	Dessert Shop	Boutique	Bistro
1	DX02 Centrum-Oost	Bar	Hotel	Restaurant	French Restaurant	Coffee Shop	Zoo Exhibit	Pizza Place	Breakfast Spot	Bagel Shop	Theater
2	DX03 Westerpark	Coffee Shop	Restaurant	Bar	Nightclub	Café	Italian Restaurant	Bakery	Hotel	Indonesian Restaurant	Brewery
4	DX05 Oud-West, De Baarsjes	Coffee Shop	Restaurant	Yoga Studio	Bar	Italian Restaurant	Grocery Store	Middle Eastern Restaurant	Indonesian Restaurant	Café	Pizza Place
9	DX10 Oud-Zuid	Restaurant	Hotel	Bakery	Italian Restaurant	Coffee Shop	Bistro	Ethiopian Restaurant	Pizza Place	Café	Bar
11	DX12 De Pijp, Rivierenbuurt	Japanese Restaurant	Italian Restaurant	Coffee Shop	Breakfast Spot	Pizza Place	Café	Ice Cream Shop	Indonesian Restaurant	Deli / Bodega	Restaurant
12	DX13 Oud-Oost	Restaurant	Bar	Hotel	Italian Restaurant	Café	Coffee Shop	Bakery	Gym / Fitness Center	Vegetarian / Vegan Restaurant	Turkish Restaurant
13	DX14 Indische Buurt, Oostelijk Havengebied	Coffee Shop	Café	Plaza	Bakery	Italian Restaurant	Restaurant	Fish Market	Supermarket	Grocery Store	Park
14	DX15 Watergraafsmeer	Hotel	French Restaurant	Soccer Field	Café	Restaurant	Park	Italian Restaurant	Coffee Shop	Bakery	Cafeteria
17	DX18 Oud-Noord	Restaurant	Café	Coffee Shop	Bar	Hotel	Park	Scenic Lookout	Gastropub	Lounge	Theme Park Ride / Attraction

The Gentrifying Periphery

- Supermarkets, parks, hotels, restaurants, gyms
- More residential

	District	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
3	DX04 Bos en Lommer	Hotel	Restaurant	Supermarket	Bakery	Sandwich Place	Indonesian Restaurant	Mediterranean Restaurant	Coffee Shop	Fast Food Restaurant	Bar
5	DX06 Geuzenveld, Slotermeer, Sloterdijken	Hotel	Turkish Restaurant	Supermarket	Park	Furniture / Home Store	Drugstore	Train Station	Soccer Field	Coffee Shop	Dessert Shop
6	DX07 Osdorp	Supermarket	Turkish Restaurant	Grocery Store	Restaurant	Hotel	Gym / Fitness Center	Park	Dessert Shop	Indonesian Restaurant	Drugstore
7	DX08 De Aker, Sloten, Nieuw-Sloten	Park	Bus Stop	Hotel	Soccer Field	Café	Flower Shop	Playground	Chinese Restaurant	Restaurant	Resort
8	DX09 Slotervaart	Supermarket	Coffee Shop	Sandwich Place	Hotel	Asian Restaurant	Gym	Pharmacy	Tram Station	Chinese Restaurant	Plaza
10	DX11 Buitenveldert, Zuidas	Hotel	Restaurant	Gym	Breakfast Spot	Supermarket	Gym / Fitness Center	Bookstore	Bakery	Park	South American Restaurant
15	DX16 Ijburg, Zeeburgereiland	Harbor / Marina	Park	Restaurant	Coffee Shop	Bakery	Pizza Place	Farmers Market	Shopping Mall	Supermarket	Italian Restaurant
18	DX19 Noord-Oost	Supermarket	Clothing Store	Park	Plaza	Soccer Field	Gym / Fitness Center	Discount Store	Drugstore	Sports Club	Bus Stop
19	DX20 Bijlmer-Centrum, Amstel III	Hotel	Soccer Field	Platform	Office	Café	Music Venue	Concert Hall	Coffee Shop	Soccer Stadium	Auto Dealership

Bijlmer-Oost

- Bakery, supermarket, gym
- Public transport options to commute elsewhere
- Commuters town

	District	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
20	DX21 Bijlmer-Oost	Bakery	Supermarket	Gym / Fitness Center	Burger Joint	Bus Stop	Metro Station	Shopping Mall	Drugstore	Park	Grocery Store

Gaasperdam, Driemond

- Metro station, coffee shop, soccer field, supermarket
- Commuters town with coffee shops

	District	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
21	DX22 Gaasperdam, Driemond	Metro Station	Coffee Shop	Soccer Field	Supermarket	Park	Chinese Restaurant	Gym	Grocery Store	Shopping Mall	Pharmacy

Noord-West

- Steakhouse, restaurants and soccer field
- Also café, bistro and gastropub
- New-build gentrification in progress

	District	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
16	DX17 Noord-West	Steakhouse	Restaurant	Soccer Field	Department Store	Grocery Store	Motorcycle Shop	Café	Sandwich Place	Bistro	Gastropub

Property Prices and Cluster Label

- Pearson's correlation between property prices and cluster label indicates that the clustering actually measures what was expected
- p<0.01

	Cluster Labels	avg property price 2019
Cluster Labels	1.000000	0.543346
avg property price 2019	0.543346	1.000000

	Cluster Labels	avg property price per sqm 2019
Cluster Labels	1.000000	0.543346
avg property price per sqm 2019	0.543346	1.000000

Property Prices

- Average property prices per cluster
- Based on venue data in combination with property prices, cluster 1 and 4 are gentrifying
- Cluster 2 and 3 are commuters towns, cluster 0 is already gentrified

Cluster Labels	avg property price 2019
0	435974
1	303757
4	280830
2	215199
3	211503

Cluster Labels	avg property price per sqm 2019
0	5703
1	3665
4	3416
3	2613
2	2444

Property Prices of Gentrifying Clusters

- Depending on preferred return on investment and waiting time until that return is potentially achieved, investors can chooseto invest in districts from the lower or upper part of the list

- Political groups can equally use the data for their decision making

District	Cluster Labels	avg property price 2019
DX11 Buitenveldert, Zuidas	1	434370
DX16 Ijburg, Zeeburgereiland	1	417221
DX08 De Aker, Sloten, Nieuw-Sloten	1	363093
DX04 Bos en Lommer	1	303575
DX19 Noord-Oost	1	281950
DX17 Noord-West	4	280830
DX09 Slotervaart	1	277565
DX07 Osdorp	1	244801
DX06 Geuzenveld, Slotermeer, Sloterdijken	1	232065
DX20 Bijlmer-Centrum, Amstel III	1	179169

District	Cluster Labels	avg property price per sqm 2019
DX04 Bos en Lommer	1	4929
DX11 Buitenveldert, Zuidas	1	4709
DX16 Ijburg, Zeeburgereiland	1	4072
DX09 Slotervaart	1	3757
DX17 Noord-West	4	3416
DX08 De Aker, Sloten, Nieuw-Sloten	1	3379
DX19 Noord-Oost	1	3312
DX06 Geuzenveld, Slotermeer, Sloterdijken	1	3284
DX07 Osdorp	1	2978
DX20 Bijlmer-Centrum, Amstel III	1	2562

Conclusion

- Cluster 1 and Cluster 4 are the most likely to be gentrifying at the moment
- Cluster 1 contains existing urban districts that are gentrifying
- Cluster 4 contains a district under construction in close proximity to a gentrified district and new urban transport links (new-build gentrification)
- Property prices in the districts of Cluster 1 and 4 differ somewhat with the most expensive districts almost reaching the average of the gentrified centre-cluster
- The cheaper districts within Cluster 1 and 4 can be expected to be in early stages of gentrification

Outlook and Further Research

- This research can be seen as an initial exploratory research based on which further in-depth research can be conducted in the selected districts of Amsterdam

- The data and methods used in this analysis are rather inexpensive and quick and provide a good overview of the overall situation.

- Follow-up research can focus on causes and mechanisms of gentrification as well as the various effects of gentrification on different groups within the urban population.