

Investing in real estate in Helsinki

GitHub link the notebook: <https://github.com/jarikuisma/data/blob/master/Helsinki.ipynb>

NBViewer link to the notebook: <https://nbviewer.jupyter.org/github/jarikuisma/data/blob/master/Helsinki.ipynb>

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Introduction

This report is meant to help real estate investors or anyone who is interested in owning a home that will gain value in the near future. The idea is to find undervalued neighborhoods by clustering neighborhoods and then looking at the average price per square meter of each neighborhood. Downtown Helsinki is the most expensive place to live in Finland, with average prices soaring above 8000 €/m². My aim is to find out what the characteristics of downtown Helsinki are and see if those characteristics can be found in other neighborhoods for less money.

Data

To get started, I need to identify all the different neighborhoods in Helsinki. Neighborhoods are found online on multiple sites, but I will use asuntojenhinnat.fi (a site maintained by Reaktio Solutions Oy). They have scraped the neighborhood data from [Statistics Finland](https://tilastokeskus.fi). The reason I use asuntojenhinnat.fi is that I will also need real estate sales data to find out the average price per square meter of each neighborhood. That data is available at asuntojenhinnat.fi as well. The data is updated quarter-yearly, so the current dataset is of Q2/2019.

An equally important data source for this assignment is Foursquare API. I will be using it to find out what the neighborhoods are like in Helsinki. Neighborhoods will be grouped based on their characteristics.

Finally, I will be using OpenStreetMap data to map Helsinki and its neighborhoods. Nominatim will be used as the search engine to find the coordinates of the neighborhoods.

Methodology

The first thing I discovered was that there are 75 neighborhoods in my dataset. Average price per square meter ranges from 8376 €/m² in Kaivopuisto to 2126 €/m² in Jakomäki.

	Neighborhood	Price		Neighborhood	Price
0	Kaivopuisto	8376	70	Pihlajamäki	2748
1	Kaartinkaupunki	8205	71	Suurmetsä	2728
2	Punavuori	7813	72	Mellunkylä	2477
3	Eira	7765	73	Kontula	2324
4	Ruoholahti	7645	74	Jakomäki	2126

After I had a clean table of neighborhoods with their prices, I used Nominatim to discover the latitude and longitude values for each neighborhood.

	Neighborhood	Price	Location	Latitude	Longitude
0	Kaivopuisto	8376	(Kaivopuisto, Eteläinen suurpiiri, Helsinki, H...	60.156843	24.956721
1	Kaartinkaupunki	8205	(Kaartinkaupunki, Eteläinen suurpiiri, Helsink...	60.165214	24.947222
2	Punavuori	7813	(Punavuori, Eteläinen suurpiiri, Helsinki, Hel...	60.161237	24.936505
3	Eira	7765	(Eira, Eteläinen suurpiiri, Helsinki, Helsingi...	60.156191	24.938375
4	Ruoholahti	7645	(Ruoholahti, Eteläinen suurpiiri, Helsinki, He...	60.162925	24.911497

Armed with neighborhood name and location data I was able to construct my first map of Helsinki using the Python library Folium.



I then used Foursquare API to find out what each neighborhood is like. I searched for venues within 500 meters of each neighborhood’s center. I limited the amount of venues for each neighborhood to 50. I was able to find 1349 unique venues.

```
print(dt_venues.shape)
dt_venues.head()

(1349, 7)
```

I then proceeded to make a table that contains the seven most common venue types of each neighborhood.

	Hood	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
0	Aurinkolahti	Grocery Store	Bus Stop	Park	Bridge	Gym / Fitness Center	Canal	Beach
1	Eira	Scandinavian Restaurant	Park	French Restaurant	Bakery	Boat or Ferry	Café	Italian Restaurant
2	Etelä-Haaga	Chinese Restaurant	Intersection	Grocery Store	Pizza Place	Park	Skate Park	Soccer Field
3	Etelä-Laaajasalo	Bus Stop	Playground	Flower Shop	Zoo	Flea Market	Gastropub	Gas Station
4	Etelä-Vuosaari	Bus Stop	Pizza Place	Discount Store	Grocery Store	Recreation Center	Café	Cafeteria

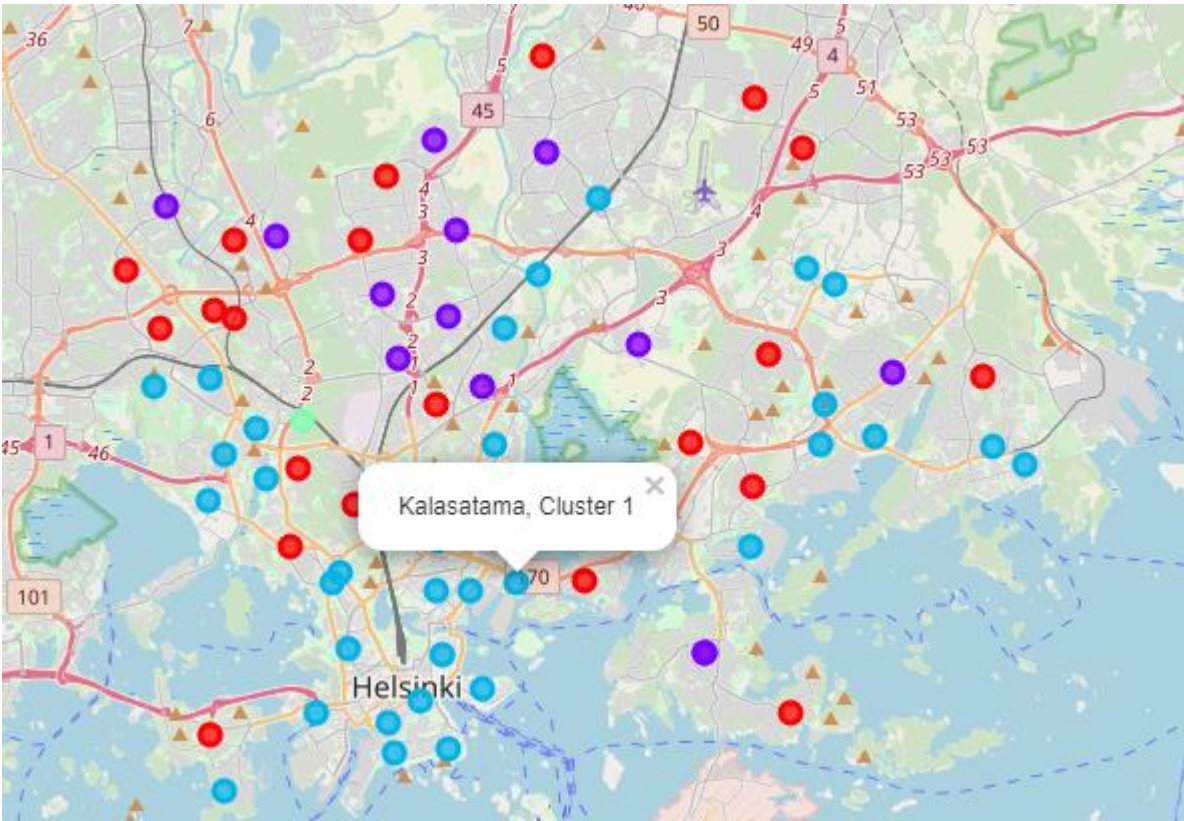
Based on the results of the previous table I clustered the neighborhoods to five clusters. The following picture shows the first three neighborhoods of cluster 4. The common denominator of this cluster is that the most or the 2nd most common venue is a bus stop.

	Neighborhood	Price	Location	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
9	Meilahti	6469	(Meilahti, Lantinen suurpiiri, Helsinki, Helsi...	60.191348	24.902664	4	Bus Stop	Café	Scandinavian Restaurant	Gym / Fitness Center	Bar
16	Lauttasaari	5980	(Lauttasaari, Eteläinen suurpiiri, Helsinki, H...	60.159369	24.875304	4	Bus Stop	Playground	Coffee Shop	Bar	Pizza Place
18	Ruskeasuo	5792	(Ruskeasuo, Lantinen suurpiiri, Helsinki, Hels...	60.204803	24.905621	4	Bus Stop	Garden	Sports Club	Recreation Center	Himalayan Restaurant

At this time, I also checked if all the neighborhoods had been assigned to a cluster. I found out that Kuusisaari-Lehtisaari and Pihlajamäki did not have any venues and therefore were left without a cluster. Because there were only two such neighborhoods out of the original 75 neighborhoods, I decided to just remove these two neighborhoods from the analysis. I could have tried to find new latitude and longitude values for these neighborhoods, ones that would have had venues near them, but I thought the results of this project would not really be affected by the removal of these two.

	Neighborhood	Price	Location	Latitude	Longitude	Cluster Labels	1st Most Common Venue
35	Kuusisaari-Lehtisaari	4374	(Lehtisaari, Bennäsvägen, Pedersöre, Pietarsaa...	63.608082	22.774918	NaN	NaN
70	Pihlajamäki	2748	(Pihlajamäki, Kuusiokuntien seutukunta, Länsi-...	62.626649	23.294745	NaN	NaN

I then proceeded to map the neighborhoods again, this time color-coding them based on their cluster.

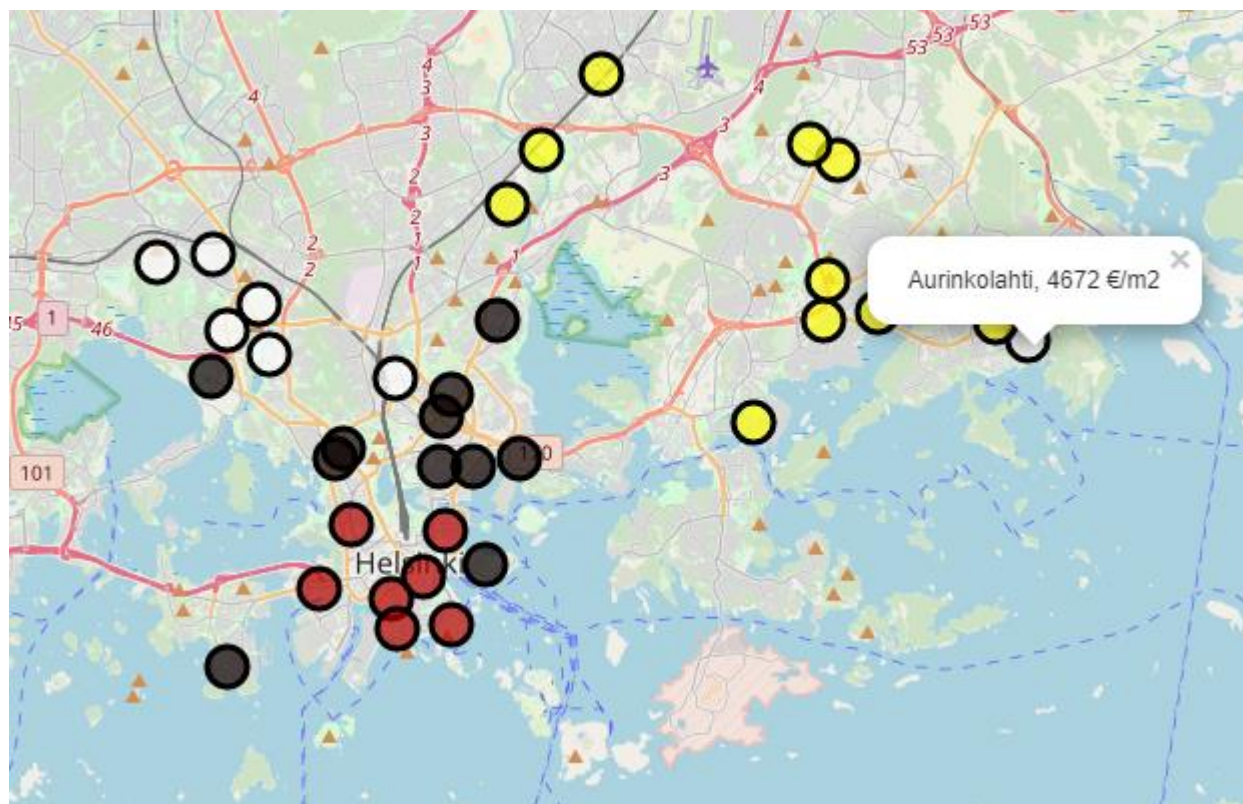


Because the aim of this study is to find neighborhoods that are like the ones in downtown Helsinki, I excluded all the clusters except cluster 1. The following picture shows the top three most expensive neighborhoods of cluster 1 (Kaivopuisto, Kaartinkaupunki, and Punavuori). This table “placetobe” contains only cluster 1 neighborhoods, and the average price per square meter is roughly 5300 €. You can clearly see how expensive these three neighborhoods are compared to other similar neighborhoods.

```
placetobe["Price"].mean()  
5299.861111111111
```

	Neighborhood	Price	Location	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Kaivopuisto	8376	(Kaivopuisto, Eteläinen suurpiiri, Helsinki, H...	60.156843	24.956721	1	Coffee Shop	Grocery Store	Ice Cream Shop
1	Kaartinkaupunki	8205	(Kaartinkaupunki, Eteläinen suurpiiri, Helsink...	60.165214	24.947222	1	Scandinavian Restaurant	Cocktail Bar	Hotel
2	Punavuori	7813	(Punavuori, Eteläinen suurpiiri, Helsinki, Hel...	60.161237	24.936505	1	Coffee Shop	Bakery	Park

Finally, I assigned all the neighborhoods to bins based on their price. The red neighborhoods are the most expensive ones: 7286 – 8376 €/m². The black ones are 5580 – 6823 €/m². The whites are 4407 – 5170 €/m². Finally, the yellow ones are 2324 – 3569 €/m².



Results

The final map shows that the price range of neighborhoods that have similar characteristics as downtown Helsinki is really big. The cheapest neighborhood, Kontula, costs only 2324 €/m², whereas the most expensive one, Kaivopuisto, costs 8376 €/m². This means that Kaivopuisto is 260 % more expensive than Kontula.

It is also worth noting that proximity to downtown Helsinki seems to be a great indicator of the price of a neighborhood. Seven of eight “red” neighborhoods are downtown. And, almost all the most remote neighborhoods are “yellow”. The big exception here Aurinkolahti, which is also highlighted in the previous picture.

Of course, there is more to a neighborhood than just its most common venues, so one cannot conclude that real estate investors should only target the “yellow” neighborhoods, and expect their investments to flourish. In the next chapter I will discuss this topic in more detail.

Discussion

As mentioned earlier, Aurinkolahti is a clear outlier, because of its relatively high price (considering the location). But, being from Helsinki myself, I know that Aurinkolahti is a new neighborhood. The first apartments were built in the early 2000s, so it is safe to say that this is the major reason why the neighborhood is more

expensive than, for example, Etelä-Vuosaari, which is right next door. Knowing this, Aurinkolahti is not as expensive as it seems at first glance.

The other outlier is the only “black” neighborhood that is in downtown Helsinki, Katajanokka. Katajanokka costs only 6215 €/m². The second cheapest neighborhood downtown costs over a 1000 €/m² more, so Katajanokka would be on the top of my list of neighborhoods to target.

Another one to consider is Itä-Pasila. It is the southernmost “white” neighborhood on the map, located very near more expensive neighborhoods. Again, Itä-Pasila is about 500 €/m² cheaper than its nearest neighbors. Additionally, one of the biggest malls in Finland is opening in Pasila in October 2019. The effect of this is clearly not yet seen in the prices of apartments in Itä-Pasila.

Conclusion

The population of Helsinki is rapidly rising in the next few years. In 2018 it was 650 000, and in 2025 it will already be 700 000. This makes Helsinki a great city to invest in. After deciding to invest in Helsinki, the next question is in which neighborhood should I invest in? Downtown Helsinki is the most expensive place to live in Finland, so this report aimed at finding neighborhoods that would provide an investor same types of neighborhoods for less money. The idea being, that these cheaper neighborhoods have even more room for growth in terms of apartment prices.

The study identified two potential neighborhoods to target. These are Katajanokka (6215 €/m²) and Itä-Pasila (5015 €/m²). Both are located near more expensive neighborhoods, and there really is no justification why these two neighborhoods are cheaper. I expect these two neighborhoods to gain more value in the coming years than any other neighborhood in Helsinki.