

CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS (VILNIUS APARTMENT MARKET)



INTRODUCTION/BUSINESS PROBLEM

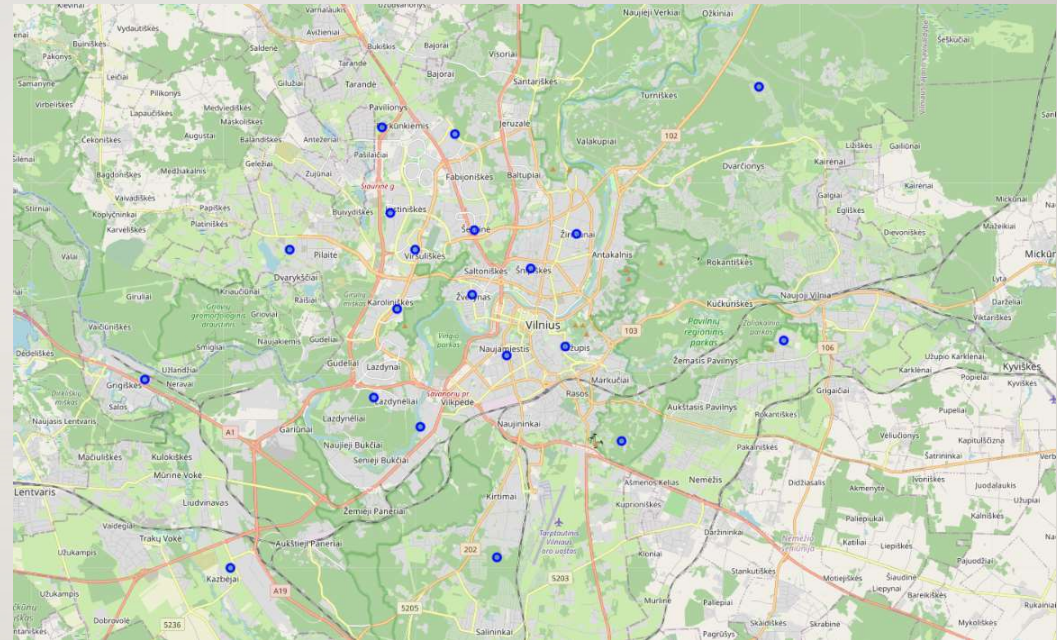
- Vilnius is the capital city of Lithuania. It produces ~50% of Lithuania GDP and attracts largest amount of newcomers from smaller towns around the country.
- **The goal of this assignment** will be to analyze all 21 Vilnius districts in order to find the most attractive areas to buy apartment for newcomers coming to this city.
- The **target audience** for such tool could be divided into 3 groups:
 1. **Vilnius city residents** who are searching for new opportunities for reallocation in better parts of the city.
 2. **Lithuanian residents** who searching for a new job opportunity in Vilnius and also for long term settlement in capital city of Lithuania
 3. **Foreigners** who are planning long term investments into real estate market in Vilnius or planning to reallocate into Lithuania's capital.

DATA

- For data section we will use data from **3 main sources**:
- **Vilnius Municipality open API**
- **Biggest real estate portal in Lithuania** www.Aruodas.lt
- **Foursquare data of Vilnius city events**

VILNIUS DISTRICTS

Vilnius consist of 21 districts with total number of 544 38 inhabitants according to Wikipedia. For this data we use Vilnius Municipality open API, which also contains geographical data of Vilnius districts.



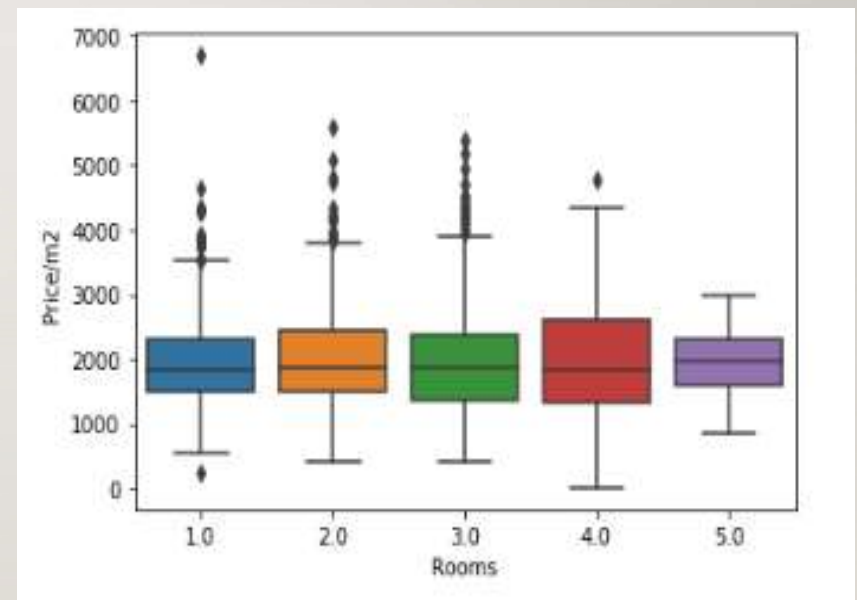
WEB SCRAPPING

Using BeautifulSoup we web scrapping data from largest real estate portal in Lithuania aruodas.lt. For next analysis we use data of apartments on sale for last 30 calendar days

# of rooms	# of appartments on sale
2.0	678
3.0	625
1.0	313
4.0	228
5.0	45
6.0	5
7.0	1
20.0	1

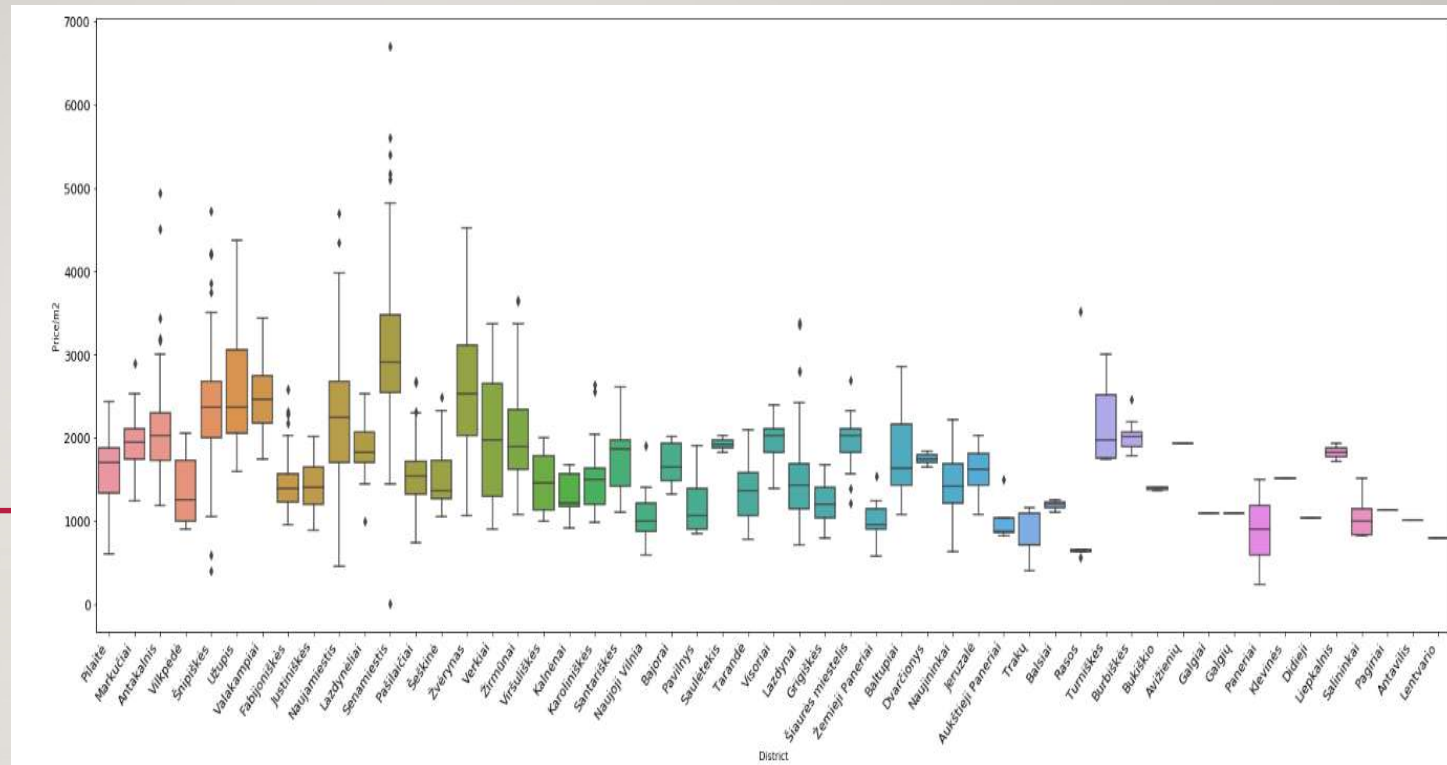
PLOTTING CHARTS / APARTMENT DATA ANALYSIS

- From the chart we see that median price of apartment in Vilnius is 1850 EUR/m². There are no big differences between apartment types. The lowest quartile end at around 1440 EUR/m², while the top quartile starts at 2400 EUR/m². So the general range of apartment prices in Vilnius fluctuates between 1400-2400 EUR/m².



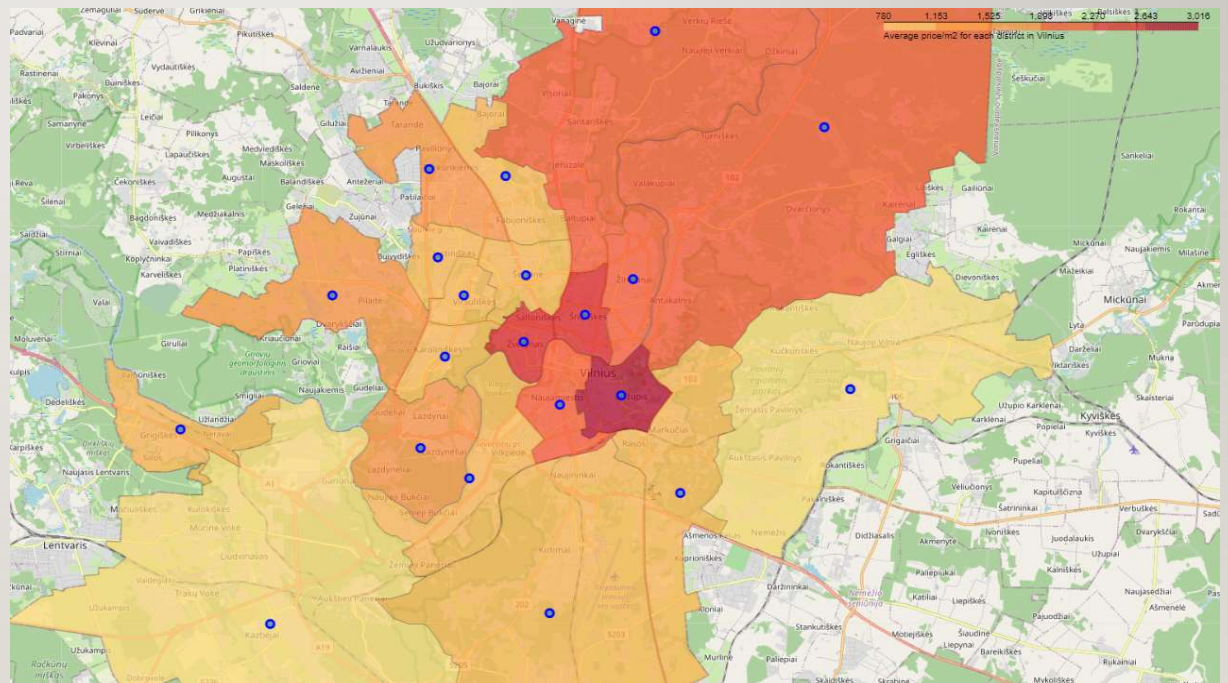
PRICES IN DISTRICTS OF VILNIUS

From this chart we see that Senamiestis (Old Town) and Zverynas are most expensive parts of the city, those are the most centrally located districts.



MAP OF APARTMENTS MARKET IN VILNIUS

The data shows already previously presented information, that most expensive part of the city is Old Town and nearby located districts such as Zverynas and Snipiskes. But the New Town (Naujamiestis) seems a cheaper alternative as well as Zirmunai.



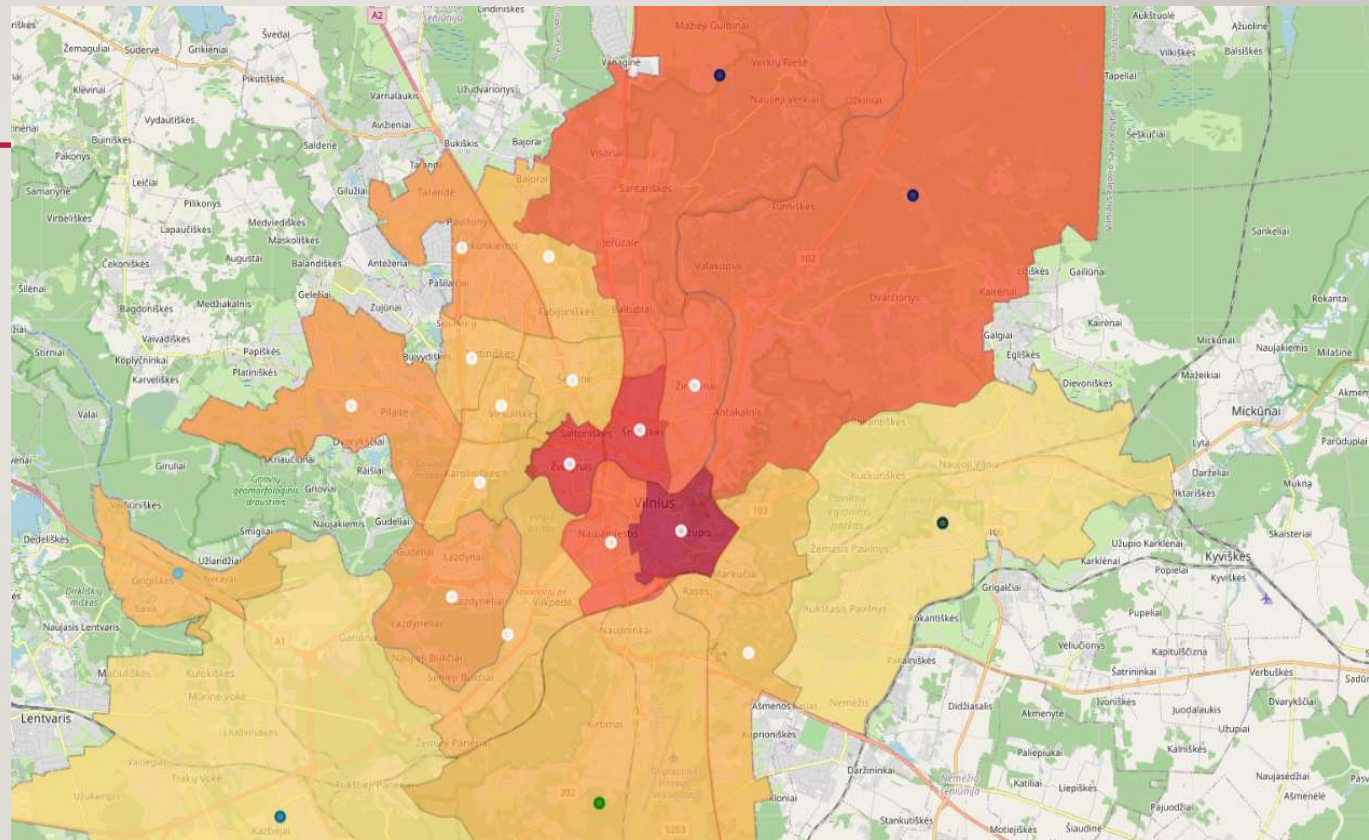
FOURSQUARE API DATA

Using Foursquare API we get Vilnius venues on each district. From the table listed below we see that most venues (we take maximum limit of 100 venues in API) are in districts Senamiestis, Naujamiestis, Seskine, Zirmunai, Zverynas and Snipiskes.

	District Latitude	District Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
District						
Antakalnis	6	6	6	6	6	6
Fabijoniškės	57	57	57	57	57	57
Grigiškės	7	7	7	7	7	7
Justiniškės	46	46	46	46	46	46
Karoliniškės	51	51	51	51	51	51
Lazdynai	24	24	24	24	24	24
Naujamiestis	100	100	100	100	100	100
Naujininkai	6	6	6	6	6	6
Naujoji Vilnia	9	9	9	9	9	9
Paneriai	8	8	8	8	8	8
Pašilaičiai	22	22	22	22	22	22
Pilaitė	17	17	17	17	17	17
Rasos	23	23	23	23	23	23
Senamiestis	100	100	100	100	100	100
Verkių	6	6	6	6	6	6
Vilkipėdė	19	19	19	19	19	19
Viršuliškės	47	47	47	47	47	47
Šeškinė	100	100	100	100	100	100
Šnipiškės	100	100	100	100	100	100
Žirmūnai	100	100	100	100	100	100
Žvėrynas	100	100	100	100	100	100

RESULTS

As the final result of this analysis we provide map of Vilnius city districts and 6 clusters which are spread across the town.



DISCUSSION AND CONCLUSIONS

- **Several conclusions** can be done from clustering analysis.
 1. Cluster No.0 is the most attractive cluster out of all 6 clusters. Top 3 districts that are most expensive are in this cluster (Senamiestis, Zverynas and Snipiskes). However this cluster has more alternatives that are close to the city center and are cheaper alternatives. The best comparing to mentioned 3 districts is Naujamiestis which has 15 perc. cheaper price and the same proximity as the most expensive alternatives.
 2. In south-west part of the city we can find even more cheaper alternatives like Seskine, Virsuliskes, Karoliniskes that are also lie in the same cluster. Those parts of the city prices are 60 perc. lower than Vilnius central part.
 3. The cheapest alternative lie in cluster No. 2 (Naujoji Vilnia) which has lowest prices and has average availability of venues.
- Taking everything into account that alternatives mentioned in conclusion No. 2 are the best choices looking from price and convenience perspective considering new apartment acquisition in Vilnius.

FURTHER DISCUSSION

1. Analysis was done during the Covid-19 crisis and there are possibilities for price correction in real estate market due to consequences in economy.
2. Analysis did not separated newly constructed and old apartments, this would definitely give more insights into real estate market in Vilnius.
3. Also this analysis have been done only taking apartment sector and not analyzing house market which sometimes can be as attractive alternative.
4. For further analysis it would be logical to take historical price development in Vilnius, also there can be done alternative analysis taking other amount of clusters.