# Toronto housing problem

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## Introduction

**Problem background**

The city of Toronto is facing a housing problem as it is extremely difficult for young people to find affordable flat shares in the places that they would like to live. Out of all the borough they generally like to live in a couple because the facilities in those area suit their needs very well (think of bars, shops and other facilities).

**Problem description**Currently a lot of people have a hard time finding a suitable/ affordable place which makes it unattractive for people to move to Toronto. Obviously, the city of Toronto would like to welcome these people as it will contribute to the city. They also have some more unknown and unexplored neighbourhoods that are not very popular amongst the people of Toronto. To solve these 2 problems, creating more housing for younger people in their preferred places and upgrading neighbourhoods to make the city more attractive they would like to know what facilities the ‘popular’ boroughs already have and what boroughs might be suitable to invest in in order to solve the two issues described above.

**Target Audience**

This project will be led by myself and the deliverable will be a report for the city of Toronto where suggestions based on the findings in the data will be made that can be further used as input for their long-term strategy on urban restructuring.

**Success Criteria**

The success criteria of this report are finding the boroughs that will be suitable for restructuring. Note that this report is based on facility data and can be used as input for the problems of the city of Toronto. There are more things important besides facilities but other areas are out of the scope of this project.

## Data

For this project multiple data sources are needed. First an overview of the boroughs of Toronto along with details such as postcode has to be created. This can be scraped from an internet page with the complete information. This information will be used in the Foursquare API to pull information about facilities in each Borough.

## Methodology

In this project various clustering techniques will be used to segment the boroughs. Clustering techniques that will be applied: k-means, hierarchical and density based. The results of these analysis will be used to explore the groups and their features further to find the suitable neighbourhoods.

## Results

The final results are 3 maps where different clusters are shown based on the different algorithms used in the analysis.



Figure DBSCAN clustering



Figure Agglomerative clustering



Figure K-means clustering

## Discussion

The clustering techniques show different results. The DBSCAN method doesn't even find clusters. It is unclear what neighbourhoods are really similar. A possible reason for this could be that most basic facilities are in all of the boroughs, therefore there is no big difference.

## Conclusion

This can be used as input meaning that more research has to be done in other characteristics such as house prices, public transport and more. The research hasn’t found clear differences in facilities, therefore as previously mentioned, it will be important and it is recommended to start researching more characteristics. By doing this the city of Toronto will be able to make a better decision on what boroughs to renovate and promote for young people.