The Battle of the Neighborhoods

Capstone Project.

Introduction: Business Problem

Toronto, Canada

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In this project we will try to find an optimal location for a restaurant. Specifically, this report will be addressed to interested parties interested in opening an **electronics store** in **Toronto**, Canada.

As there are many electronics stores in Toronto, we will try to detect places that are not yet full of stores. We are also especially interested in areas without nearby electronics stores. We also prefer that we have found as close as possible to the city center, assuming that the first two conditions are met.

Methodology:

In this project, we will direct our efforts to detect areas of downtown Toronto that have low store density, particularly those with a low number of stores of electronics. We will limit our analysis to the area ~ 6 km around the city center of Toronto.

In the first step, we have collected the required data: location and type (category) of each restaurant less than 6 km from the center of Toronto. We have also identified stores (according to the Foursquare categorization).
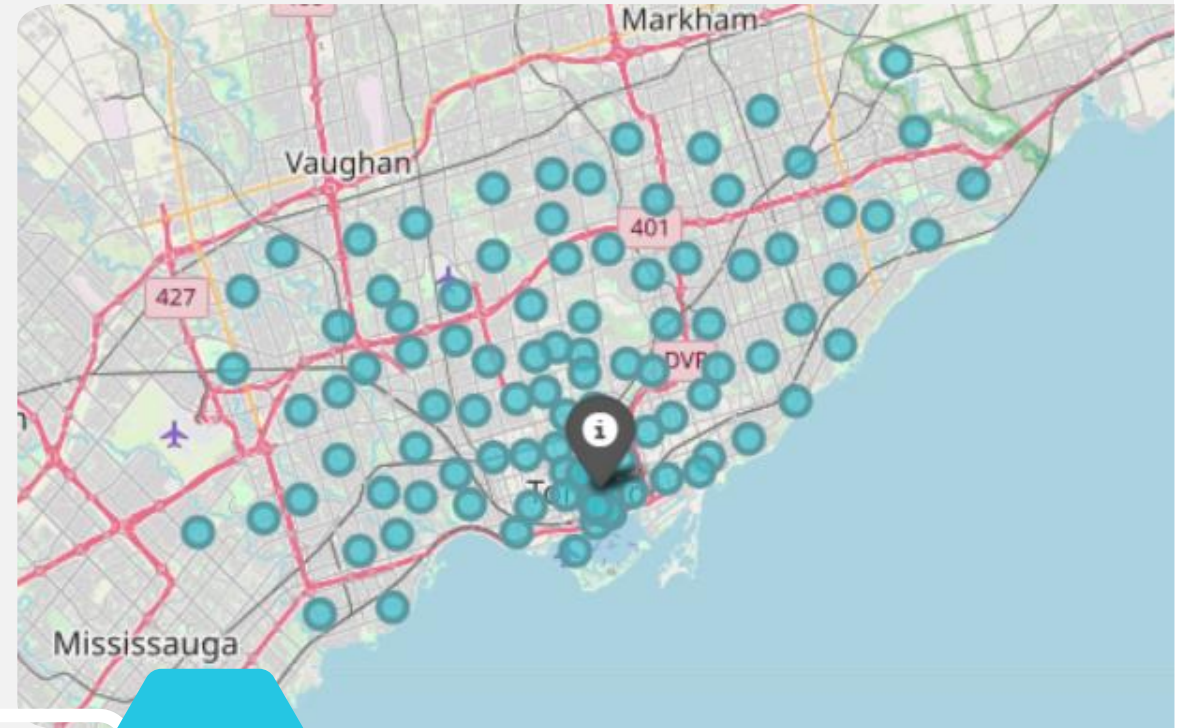
Analysis

We will create a grid of cells covering our area of interest which is aprox. 12x12 killometers centered around Berlin city center (Downtown Toronto).

When all the required data is ready, we will begin to analyze the data based on the category of the place to explore the most popular stores in Toronto; First, the category of related headquarters in each neighborhood was grouped by "Neighborhood."
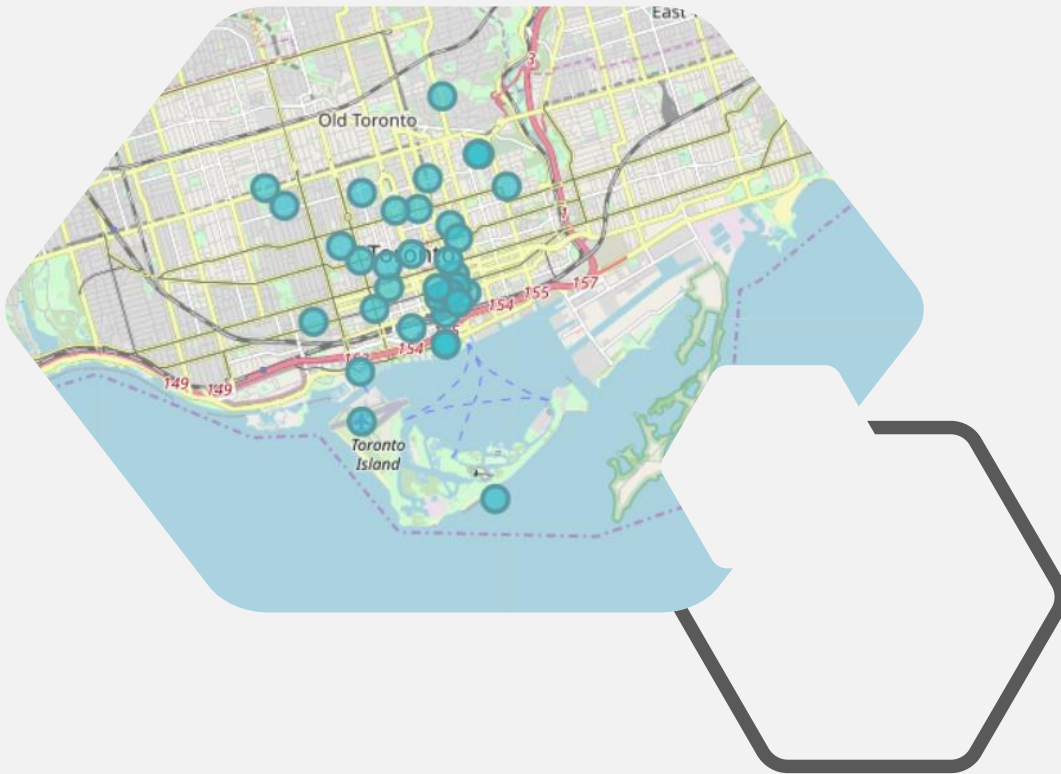
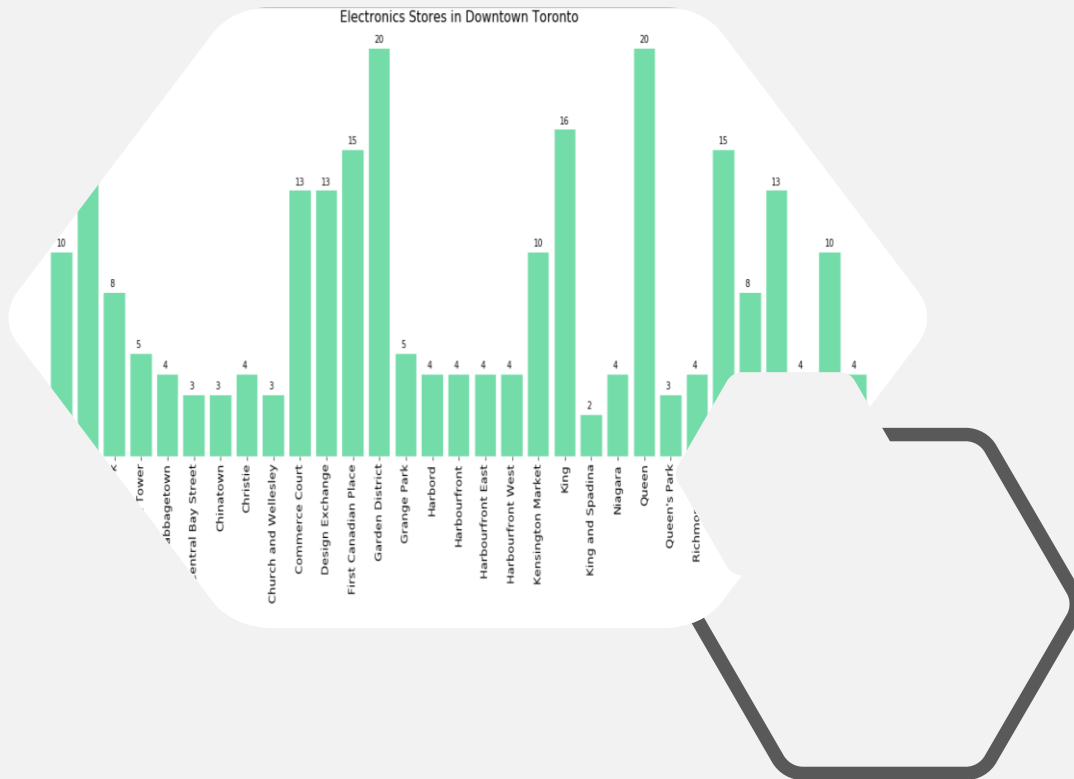# Heat map for stores (General) in downtown Toronto:

A heat map is a two-dimensional representation of data in which the values are represented by colors. A heat map provides a visual summary of the information we want to represent. Thus heat maps allow to understand quite complex data sets.

Electronics Stores in Downtown Toronto
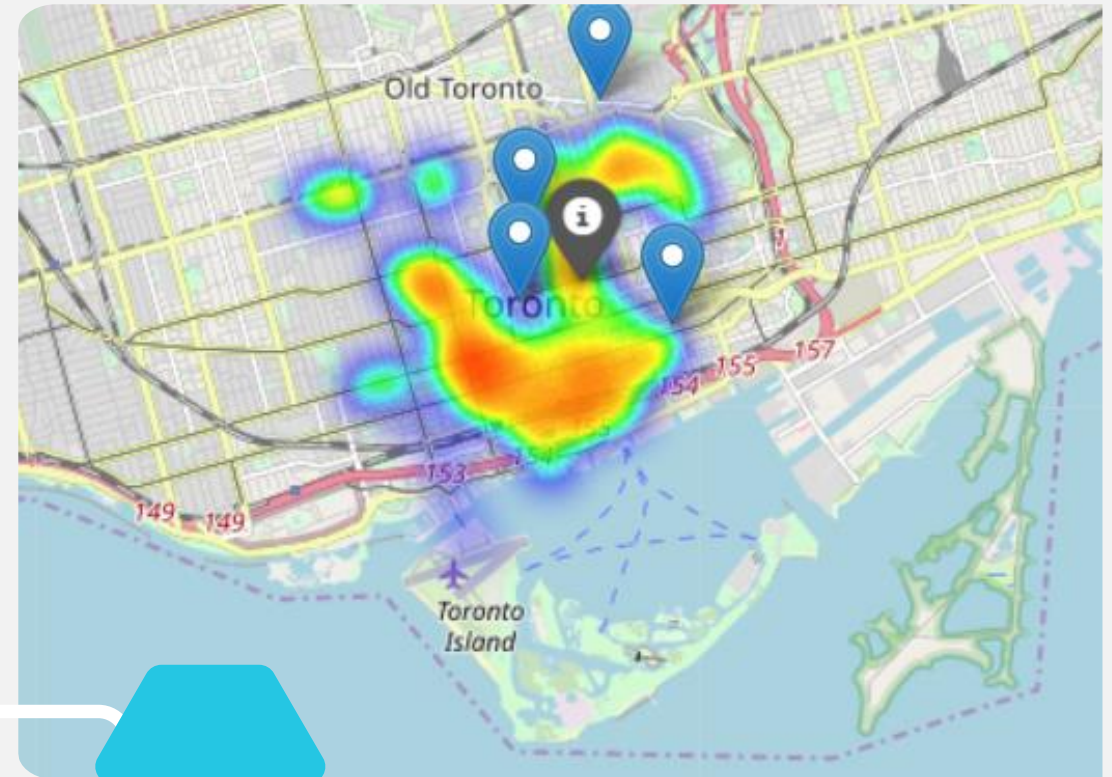
Analyze Each Neighborhood

Next, let's group rows by neighborhood and by taking the mean of the frequency of occurrence of each category. Let's print each neighborhood along with the top 5 most common venues; First, let's write a function to sort the venues in descending order.

A bar graph is made to identify the neighborhood with the least number of electronic stores and thus be able to rule out candidates.

Explore Neighborhoods in Downtown Toronto (Electronic Store):

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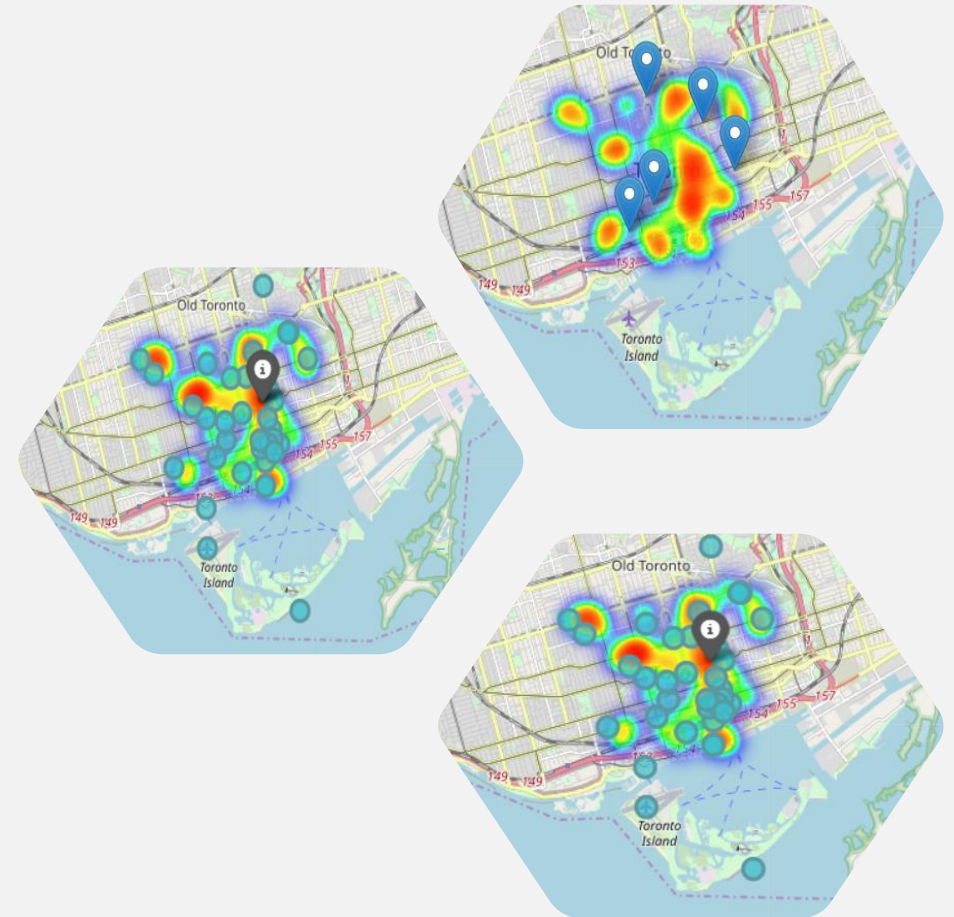
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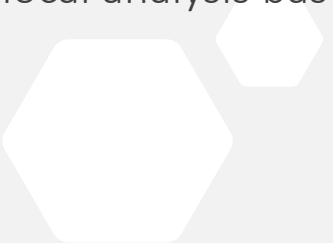
Results and Discussion

After directing our attention to this narrowest area of interest (covering approximately 5x5 km south of the center), restaurants were first obtained near the center; those locations were filtered so that those with more than two stores within a radius of 150 m and those with an electronic store within 500 m were removed.

Those placement candidates were grouped together to create areas of interest that contain the largest number of placement candidates. The addresses of the centers in those areas were also generated using reverse geocoding to be used as markers / starting points for a more detailed local analysis based on other factors.

Conclusion

The objective of this project was to identify the areas of Toronto near the center with a low number of stores (particularly electronics stores) to help interested parties reduce the search for an optimal location for a new electronics store.

When calculating store density distribution from Foursquare data, we first identify general districts that warrant additional analysis (Rosedale and Niagara), and then generate a wide collection of locations that meet some basic requirements with respect to existing nearby stores .

Thanks