Toronto Business District Analysis

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1 Introduction

Business district in the part of a city or town where there are many businesses. In many cities, business district is usually the center of economy. For self-employed people who wants to begin his or her own business, it is very essential for them to first find a business district or "potential business district" to begin, which usually have a high customer density and can help them make more money.

However, the reality is, the business districts are usually expensive places. For many new business people, they cannot afford to hold a shop or store at the center of business district. For them, the optimal solution is to find the most cost-effective place that is not very expensive but valuable enough so that could be a good choice to begin.

Usually, these "cost-effective" places are places that are not in the highest-level business area but still have a good economic foundation with potential to be part of the highest-level business area. In other words, they have good developability.

This project will show you how I think about this question. I chose Toronto as the target city. Related analysis was done with Python and FourSquare API.

2 Result and Discussion

First, I collected data from Wiki then washed them and stored them into a pandas dataframe. From the results shown below (**Table 1**), it can be found that there was no geo position provided. So, I then merged this with the dataset that has the latitude and longitude to give the geo position set (**Table 2**).

	Postal code	Borough	Neighborhood
0	M3A	North York	Parkwoods
1	M4A	North York	Victoria Village
2	M5A	Downtown Toronto	Regent Park, Harbourfront
3	M6A	North York	Lawrence Manor, Lawrence Heights
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government

Table 1

	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494

Table 2

With the data in hand, I tried to have more insight into it. It can be easily found that North York and Downtown Toronto have most of the postal codes, which meant they should have most of people. After visualization (**Figure 1**, file "map_toronto"), it could be seen that North York is a big area that leads to lots of related postal codes while Downtown Toronto has a higher density. This made us sure that it was Downtown Toronto that should be analyzed.

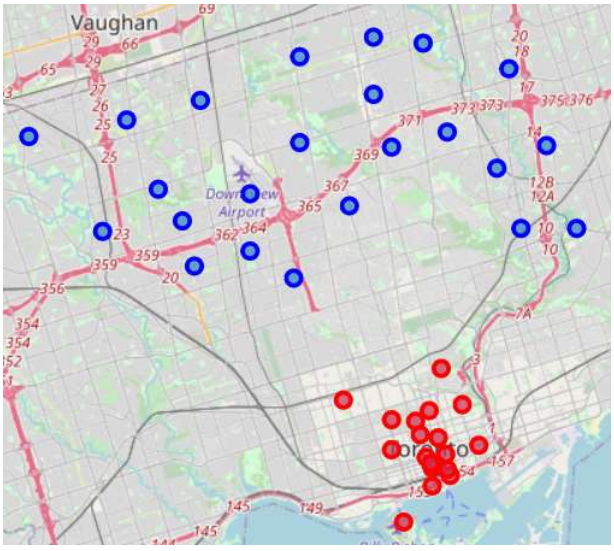

Figure 1 Map of Toronto

The analysis then shifted to the downtown Toronto. From data clustering and visualization, it can be found that this area can be further clustered into “core” and “edge” (**Figure 2**, file “db_map_Downtown_toronto”).

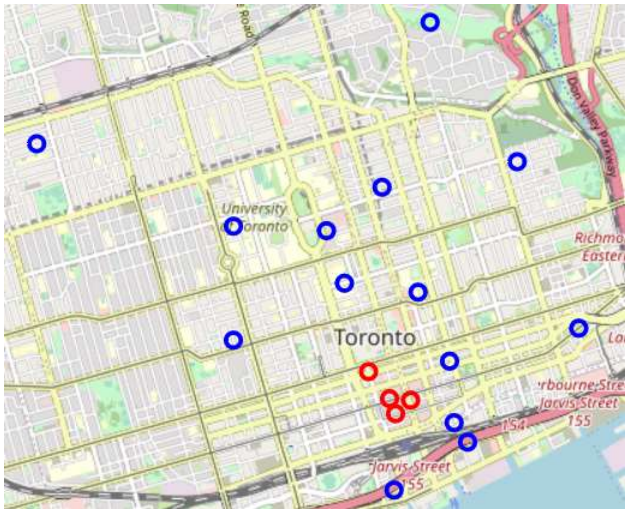

Figure 2 Map of Downtown Toronto

Based on FourSquare API, the places in the core area can be explored (**Figure 3**, file "core_places").

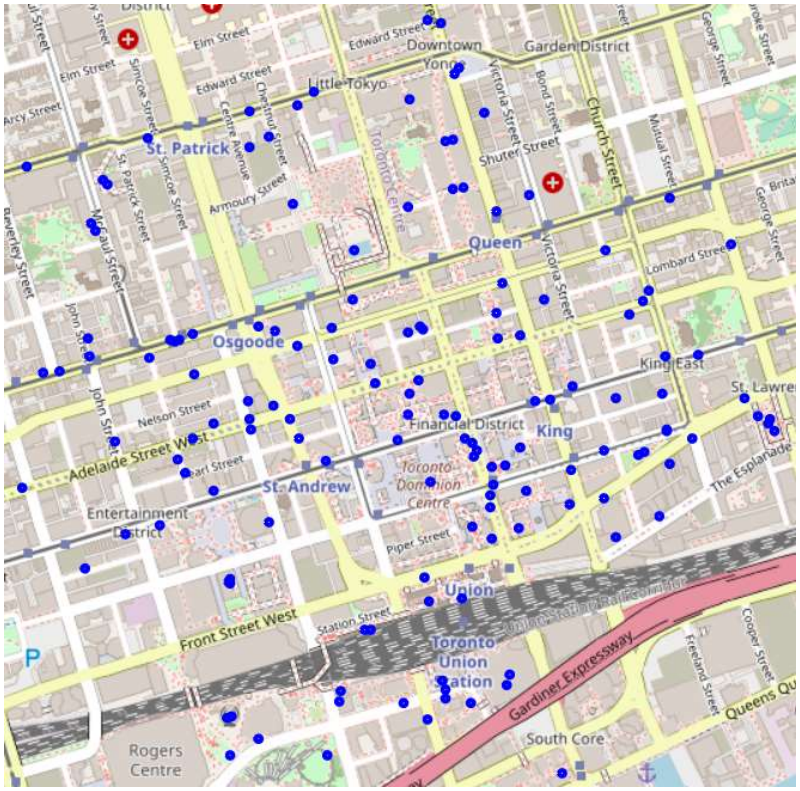

Figure 3 Map of the Core of Downtown Toronto

Then I have done the clustering with different factors, which meant different levels of requirement, file “clst_map”s. There were many maps generated, so I would not put them in this report. All maps should be available in my GitHub.

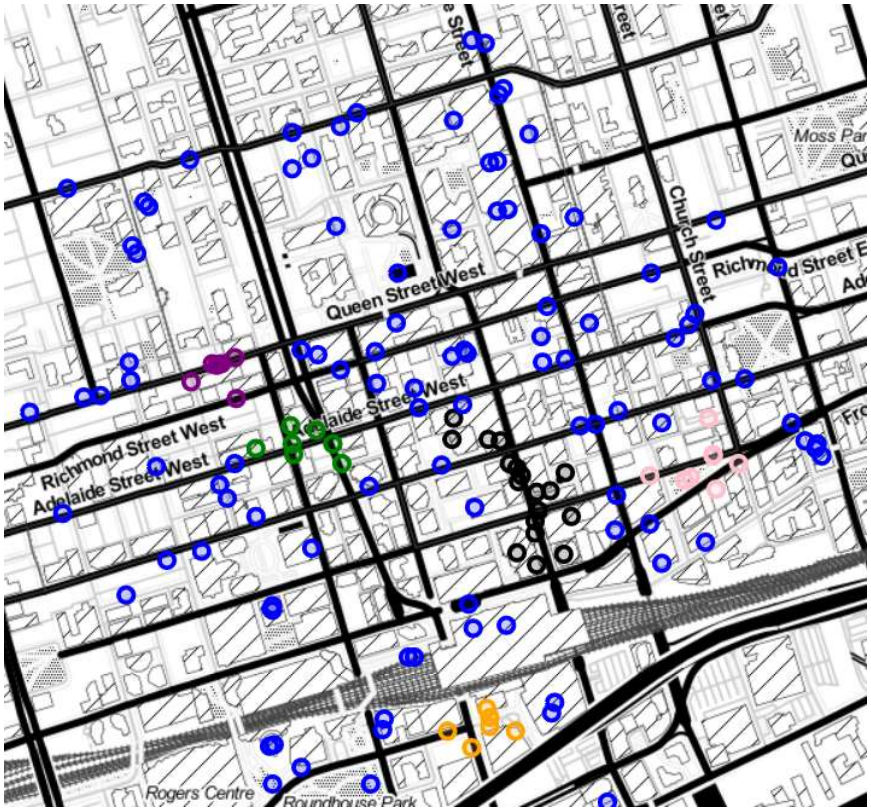

Figure 4 One Map of Clustered Core of Downtown Toronto

Now, the analysis has been done. From the result of clustering, we can clearly find the tendency of the growth of business district in downtown Toronto.

When we gradually reduce the clustering standard of the business district, we can find the direction their growth. More and more parts could be considered as districts. In some ways, the level of clustering could be considered as the level of business district.

Overall, there was a "core" district, which existed only in the highest-level requirement. And many related small districts. There was no doubt that the price of the center would be very high, however, there might also be more chance to make money.

Personally, I would suggest self-employed people to make their business near the core business area or, if the price at that place is too high, near the core area of other small

business district. Compared with other places, those places are more potential

3 Conclusion and Outlook

In this work, I have done the data analysis of the center of downtown Toronto. The business district of the downtown has been analyzed with FourSquare API.

From the distribution of shops, restaurants and other places in the downtown area, it can be found that the distribution is not even but could be clustered into several business districts according to different levels.

Based on the result of analysis, suggestion for self-employed people could be given on how to choose a place to do business. Places near the center of business district would be good choices.

In further research, I want to collect and analyze the data at different times. That can give us clearer picture about the change of downtown Toronto. With data based on time and distribution together, more helpful could be given for business people.