HOSPITAL LOCATION RECOMMENDATION CAPSTONE PROJECT

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INTRODUCTION

Hospitals are a major part of any city as maintaining citizen health is vital to a thriving community. For this project, a fictional private company is looking to found a new hospital in Toronto. They are looking for help to decide where to establish the new hospital and health center.

There are a variety of things to consider when answering this question. First, the company is interested in equal access to heath care across the city. Therefore, they would like to know what the average population is around the hospitals that already exist in the city and want to find places where hospitals would be needed.

Additionally, the company recognizes that the health of a community is not only indicated by hospitals located there. The company would also like to consider health-oriented venues like gyms, spas, pharmacies, and more in different communities to truly pinpoint where in the city the most health assistance is needed.

By the end of this project, I will identify key areas in the city that would benefit most from the addition of a new hospital.

DATA

Location Data

Information about the neighborhoods in Toronto has been previously provided by the client. This data set gives the different neighborhoods and their respective latitude and longitudes. This will allow us to build a descriptive map of Toronto.

Health Venue Data

There are a variety of sources we can use to determine hospital locations in Toronto. For this project, I will use both Wikipedia's page on hospitals in Toronto and the Google Maps API to get more information for each location.

Additionally, I will use the Foursquare API to find axillary health venues like gyms, health food stores, and more. This data will help build a broader picture of the health needs of the various communities in Toronto.

METHODOLOGY

Data Wrangling

There was a variety of data used for this project:
- Hospitals in Toronto data from Wikipedia and the Google Maps API
- Toronto population data from the Canada Census website
- Health related venue data from the Foursquare API

Building the Map

The hospitals in Toronto were mapped using Folium. The data was first collected from Wikipedia and addresses, latitudes, and longitudes were assigned to each hospital with the Google Maps API. These were mapped with blue Hospital logos on the overall map of Toronto.
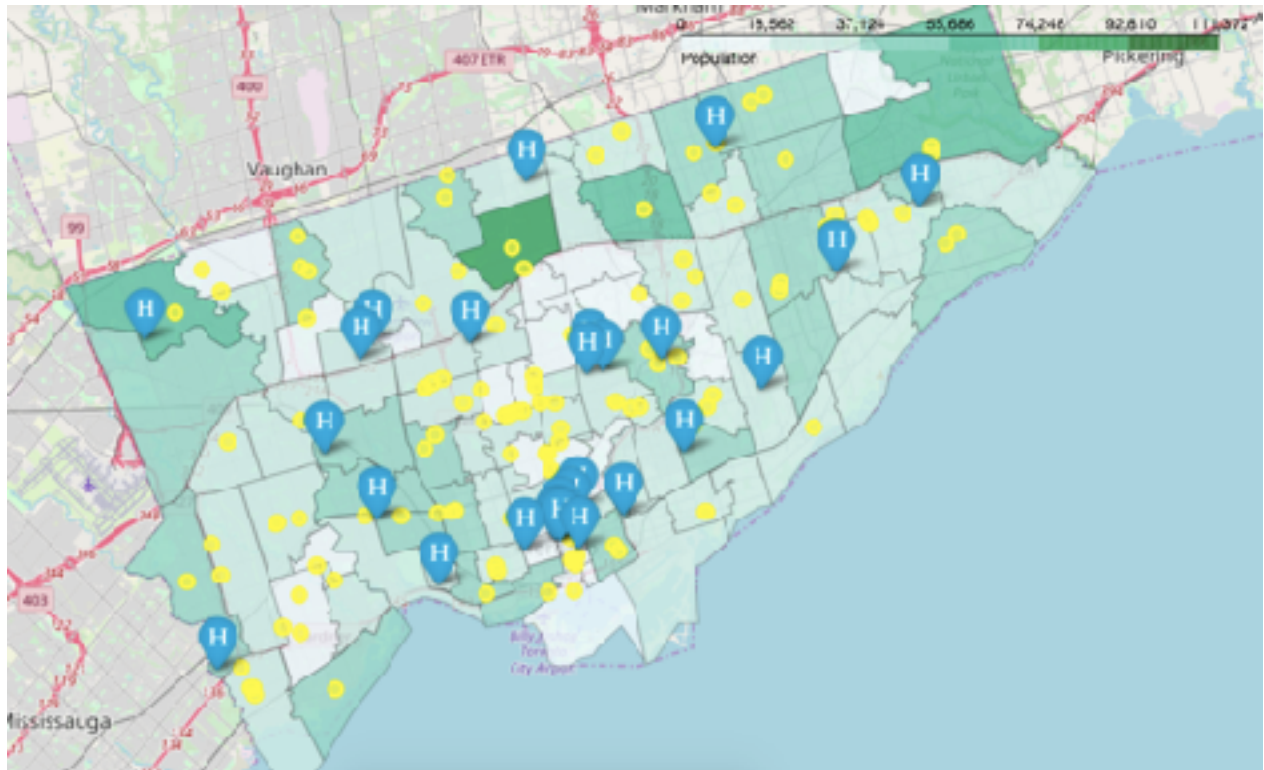
Then, using Canadian census data, I overlaid a population density map. This allows an easy way to visualize the relationship between hospital locations and the population of the area.

Finally, I mapped health-related venues taken from the Foursquare API to see if there was any correlational data between these venues, hospitals, and population of the city.

RESULTS

In this map, blue H markers represent the location of hospitals while yellow circle markers are health-related venues (gyms, pharmacies, and assorted fitness centers).

We can see that there is a clear grouping of hospitals in the Downtown Toronto area with a lower concentration of hospitals in the north and north-east sections of Toronto. Interestingly, the greatest population density is in areas with the lowest density of hospitals.

Health-related venues seem to be evenly distributed throughout the city and do not have a correlation with population or hospital location.

Therefore, it is recommended for the city to build a new hospital in the north or north-east sections of Toronto as these areas have the largest population with the lowest density of hospitals.

DISCUSSION

This project can be expanded by looking at each of the hospitals included and sorting out speciality hospitals like children hospitals or those geared towards cancer patients, for example.

Additionally, the population data can be expanded to include income data. There may be stronger correlations between hospital location and socioeconomic indicators, which this data could not reveal.

Finally, similar projects can be expanded to other cities or the country as a whole.

CONCLUSION

Ultimately, through the use of data scraping, wrangling, analysis, and mapping, I was able to conclude that the best location for a new hospital in Toronto is in the north or north-east districts. This is solely based on the density of existing hospitals, population data, and analysis of health-related venues, which may limit the applicability of the results.