Finding the perfect spot for a new store of school and office supplies

The owner of a large school and office supplies' chain (WD's Office & School Supplies) is interested in open a new branch in Toronto, Canada. His business plan is already well-established, and the address of new branches is defined according to four main points: 1) Stores are always in the vicinity of elementary- and high-schools (their main clients are young students and their parents); 2) Branches are locations with high average family income (i.e., larger than the population average); 3) Stores are in neighborhoods with a high proportion of young people (10 to 50 years old); 4) The density of people in the neighborhood where the new branch will be open has to be larger than the average of the city. The main goal of this project was to identify the best location in Toronto to open the new branch based on the directions provided by the owner.

I used three datasets from the Open Data portal of Toronto's city (https://open.toronto.ca/) in this study. The first dataset had detailed demographic information (e.g., average family income, percentage of age groups, population density) for each neighborhood of Toronto. The second had the location (geometry data) of each neighborhood. The third dataset had the location of schools throughout the city.

With these datasets, I ranked school locations according to average family income, percentage of age groups, and population density of the surrounding neighborhoods. Each school received a ranking score for each variable of interest (i.e., average family income, percentage of age groups, population density). The rank varied from 1 to the number of unique values in the dataset. Low values were associated with high average family income, high population density and a high percentage of young adults. The ranks of each variable were summed, generating an overall index. This overall index was used to indicate the best school locations according to the attributes desired by WD's Office & School Supplies.

I also plotted the location of each school location in a map and colored them according to the variables of interest (i.e., average family income, percentage of age groups, population density) and the overall ranking score. I also tested the correlation

between average family income, percentage of age groups, and population density to have a better understanding of the data.

I found that the average income was negatively related to population density and the percentage of young individuals. On the other hand, the population density was positively correlated with the percentage of young individuals. Locations near St Simon Catholic Elementary School, Suon Academy St Basil, The Great College School, and Pelmo Park Public School had the lowest ranking scores and are the best options to open the new branch of WD's Office & School Supplies.