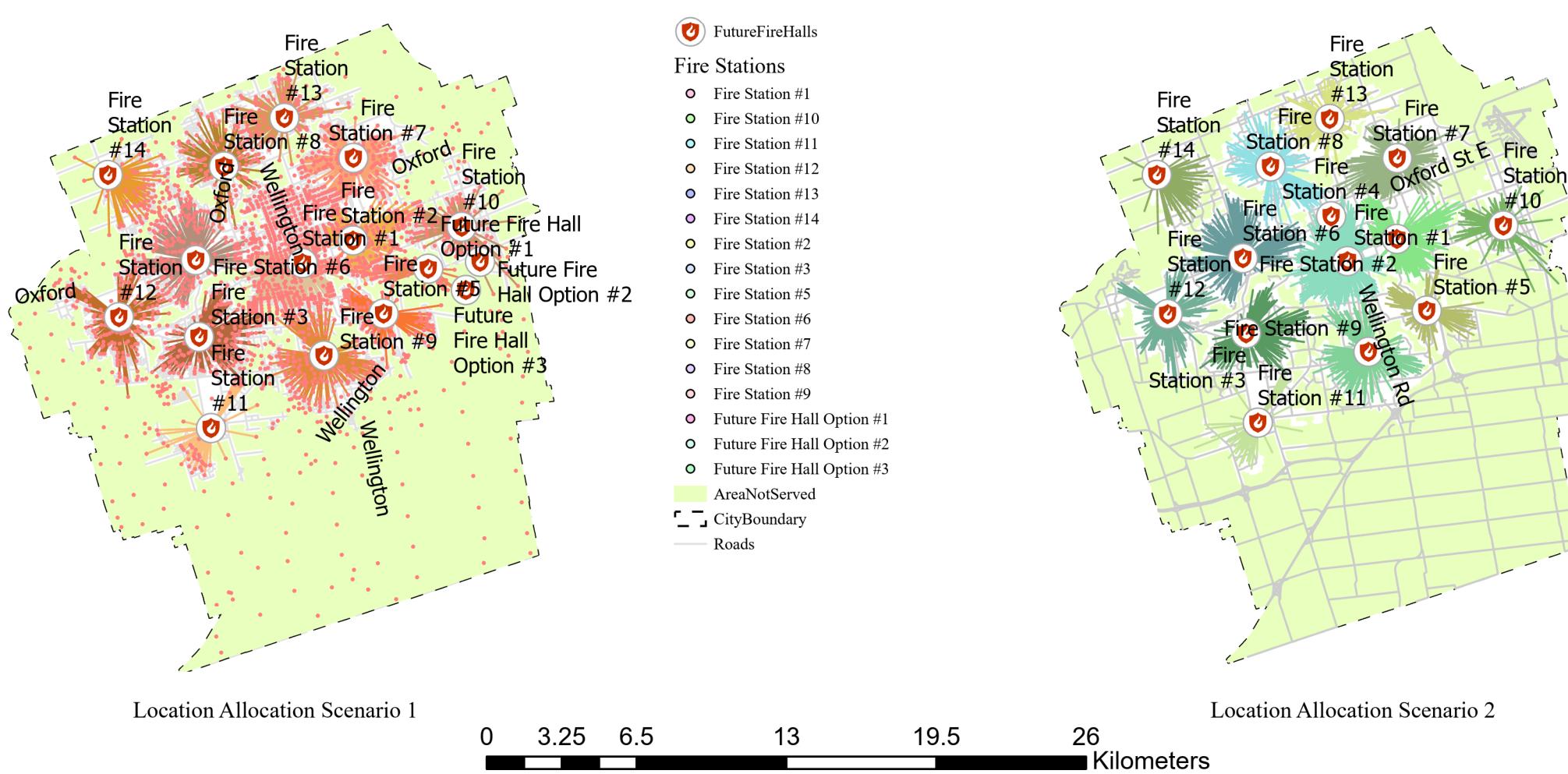
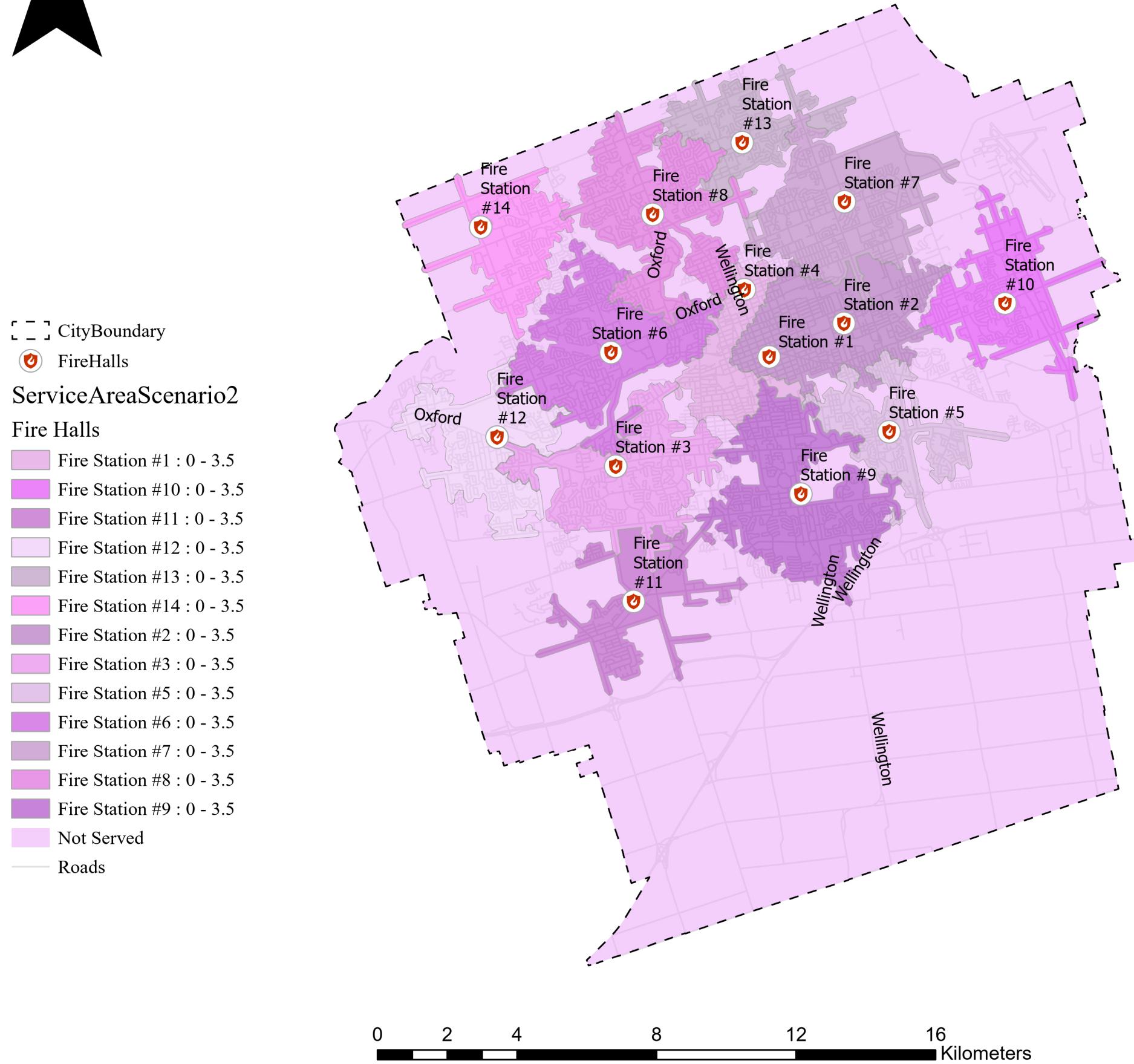


Network Analysis: Fire Service Coverage Study

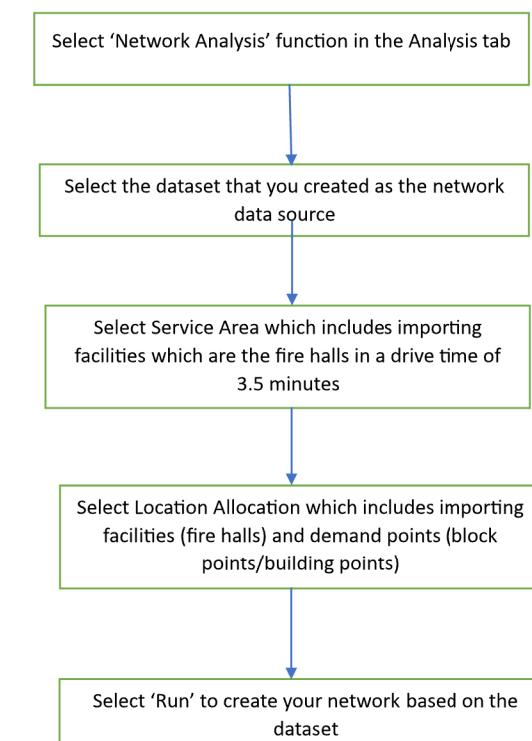


Introduction:

The study of the interaction between people, dwellings and buildings is network analysis. This project is focused on using network analysis to investigate how many people, dwellings and buildings could be served by each of the fire halls in London, Ontario. A particular scenario in the project highlights the use of network analysis techniques where one of the fire halls were removed to check how many people would be affected in 3.5 minutes.

Methods:

There were two methods in particular, for network analysis that were used for this project; service area and location allocation. The service area depicts the polygon area that are serviced by each fire hall within 3.5-minute distance. On the contrary, the location allocation technique selects the optimal fire hall that it to be assigned to each demand point which are buildings and blocks in this scenario. Given below are the steps that were used to attain the required result of the project.



Discussion and Results:

Following results in a tabular format depict the output of the network analysis. Table 1 shows the number of people, dwellings and the buildings for all the fire stations and the three options as well in both the scenarios. Three more options were obtained in the Scenario 1 for the substitution of Fire Station #4. Scenario 2 shows the redundant fire hall being eliminated from the network.

Fire Halls	Population		Number of dwellings		Number of buildings	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Fire Hall #1	54396	54396	33437	33437	28310	28310
Fire Hall #2	39909	39909	22968	22968	24522	24522
Fire Hall #3	37261	37261	17144	17144	14002	14002
Fire Hall #4	N/A	N/A	N/A	N/A	N/A	N/A
Fire Hall #5	21279	21279	9086	9086	11642	11642
Fire Hall #6	45283	45283	22376	22376	16156	16516
Fire Hall #7	31121	31121	13932	13932	24350	24350
Fire Hall #8	22709	22709	10597	10597	13000	13000
Fire Hall #9	40585	40585	16697	16697	19798	19798
Fire Hall #10	18114	18114	7523	7523	11251	11251
Fire Hall #11	6289	6289	2593	2593	4703	4703
Fire Hall #12	25508	25508	10323	10323	13262	13262
Fire Hall #13	26497	26497	9751	9751	14151	14151
Fire Hall #14	10755	10755	3856	3856	6975	6975
Option #1	18888	N/A	8332	N/A	15060	N/A
Option #2	16309	N/A	6516	N/A	9955	N/A
Option #3	2494	N/A	1035	N/A	2538	N/A

Scenario	Not Served POP	Not Served PTDWELL	Not Served Building
1	66833	28129	24350
2	72188	30896	24350

