Does the City of Mississauga need More Car Pool Lots?

A Geographic Information Systems Analysis using QGIS Software

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Introduction

Traffic congestion is a common issue in many cities across the nation. It is no doubt that the rapidly increasing population and the reliance on automobiles have played a pivotal role in this problem. As Ontario's third largest city, traffic congestion in Mississauga has become a prominent issue. From 2006 to 2011, the city experienced a 6.7% population increase, hence the 2011 population of 713,443 increased by 44,884 residents from 668,559 in 2006 (City of Mississauga). Traffic congestion in the city of Mississauga, as well as other cities have various negative implications for the population, which include environmental, social, and health concerns and thus this report will discuss how this problem can be relieved. Because there are various negative implications as a result of this congestion, the city has taken the appropriate steps in order to tackle this issue. This report will mainly be looking at the addition of carpool lots in order to decrease some of the large amount of traffic within the city.

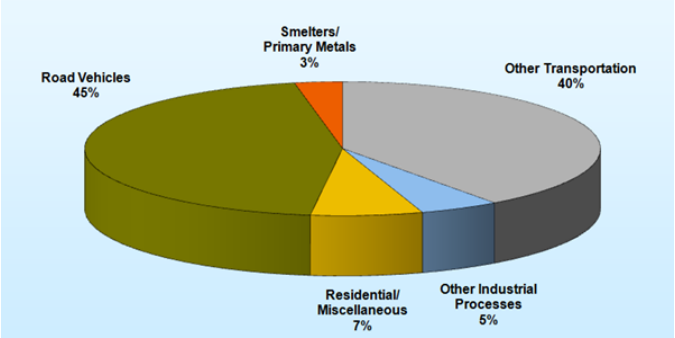
Hypothesis

Implementing additional carpool lots within the city of Mississauga will help relieve traffic congestion, negative environmental effects and further enhance the LRT service. The project will analyze existing growth and traffic trends plus the availability of vacant land. Additionally, we will analyze solutions already put into effect for non-congested road conditions such as, public transportation, bike lanes and the Autoshare Pilot Program.

Environmental Effects

The pollutants emitted from vehicles are rather dangerous for the residents of nearby areas. Some of the main toxins that are responsible for contributing to poor air quality as a result of increased vehicle use are; nitrogen oxide, sulfur dioxide, carbon dioxide, and carbon monoxide (Sanders, 2012). When higher levels of nitrogen oxide are produced from a number of

vehicles, it can prove to be toxic to humans (Sanders, 2012). Nitrogen oxides are produced as a result of the high pressure and temperature conditions in an car engine (EPA, n.d.). This toxin is amongst those which are precursor to the formation of ozone, and also contribute to higher occurrence rate of acid rain (EPA, n.d.). Moreover, sulfur dioxide is another primary cause of acid rain. The third emitted toxin of concern has only in recent years begun to be viewed as a pollution concern. As a matter of fact, the U.S. Environmental Protection Agency has raised awareness on the idea that this product of combustion may be harmful. Carbon dioxide is amongst the greenhouse gases that "traps the earth's heat and contributes to the potential for global warming" (EPA, n.d.). Carbon dioxide contributes to climate change by insulating more heat from the sun (Sanders, 2012). Nonetheless, with the increased occurrence of global warming comes its own set of environmental problems. The final contaminant related to vehicle use is carbon monoxide, which is a product of incomplete combustion and "occurs when carbon in the fuel is partially oxidized rather than fully oxidized to carbon dioxide" (EPA, n.d.). This can pose threat to human life because it reduces the flow of oxygen in the bloodstream. Although, it does not play a primary role in air pollution, carbon monoxide is still partially responsible for poor air quality seeing as "approximately 85 per cent of the CO emitted in Ontario in 2006 came from the transportation sector" (Ontario, 2010).



Social Diseconomies

An increase in the amount of congestion within cities can also have a negative social effect on the individuals that have to travel in such conditions. Firstly, traffic results in a lot of wasted time which can otherwise be used for other activities. In today's day and age, time is very closely correlated with money and as such there is an economic cost of the time that is wasted on busy streets (Robinson, 1984). Although this type of diseconomy is difficult to measure, it can have significant impacts (Robinson, 1984). Another negative impact caused by traffic is the high noise levels (Robinson, 1984). In cities such as Mississauga, where most of area is enclosed by high rise buildings, these noise levels may be further intensified (Robinson, 1984). The final social diseconomy that results due to traffic congestion is vibration. This vibration made by heavy vehicles is very problematic especially for cities because it creates foundation problems (Robinson, 1984). Moreover, in such heavily populated areas, road maintenance costs increase and may not be done as frequently, which may cause further problems such as accidents (Robinson, 1984). Thus, it is clear that traffic congestion brings with it, many social diseconomies.

Health Effects

Although there are no direct health effects of traffic congestion, the significant amount of air pollution caused by this phenomenon plays major role in deteriorating the health of individuals (Levy et al., 2010). Traffic-related air pollutants are associated with many adverse health effects, including mortality, non-allergic respiratory morbidity, allergic illness and symptoms, cardiovascular morbidity, cancer, preterm birth, and decreased male fertility (Zhang, 2010). Many studies suggest that traffic-related air pollutants increase the risk of respiratory symptoms (Levy et al., 2010 & Zhang, 2010). As a matter of fact, poor ozone, which results

from an increase in air pollution can “impair lung function, especially in children and adults with asthma, with a higher number of sufferers resulting in high-traffic urban areas” (Sanders, 2012). Air pollution impairs the lung functions because it adds additional stress to an individual’s heart and lungs, in order to work harder to supply the body with oxygen ("Health Effects", 2015). Furthermore, long term exposure to polluted air can have permanent health effects which include “accelerated aging of the lungs, loss of lung capacity, decreased lung function, development of diseases such as asthma, bronchitis, emphysema, and possibly cancer, and shortened life span” ("Health Effects", 2015). It is also important to note that air pollution is something that certain people are more susceptible to. It may pose as a higher risk problem to individuals with “heart disease – such as coronary artery disease or congestive heart failure, individuals with lung disease – such as asthma, emphysema or chronic obstructive pulmonary disease, pregnant women, outdoor workers, children under age 14, whose lungs are still developing, and athletes who exercise vigorously outdoors” ("Health Effects", 2015).

Why Traffic Congestion Occurs

In order to come up with viable solutions to the problem of traffic congestion, it is important to first understand the root of the cause. Traffic has become an ordinary phenomenon in various cities within Canada. It occurs when there is a large amount of population growth within a region that otherwise was not as prepared for the increase as they could have been. Individuals are generally attracted to regions where there are employment opportunities, and Mississauga is a diverse city that caters to each and every persons desires. Due to the dense population of the city, there are employment opportunities available in any possible job sector. According to the City of Mississauga’s website, due to the “magnitude of the industrial and commercial base located in Mississauga, this city has become one of the most significant

employment growth centers within the GTA; more than 52,000 businesses employ over 425, 000 of which 54.5% commute from Toronto, Brampton, Oakville, and beyond" (City of Mississauga, n.d.). Hence, it is no surprise that people from other cities are travelling to Mississauga each and every day for employment purposes.

Another reason as to why traffic congestion occurs is due to the lack of planning. Cities with larger amounts of local populations should be able to use other modes of transportation to travel to closer locations. With the addition of sidewalks, pathways, and bike lanes, individuals will not be inclined to resort to their personal vehicle when travelling shorter distances. Moreover, with the addition of carpool lots around the city, individuals will find it to be much more efficient and convenient to carpool. Thus, by providing residents with a variety of ways in which travelling can be made possible with ease; it will allow the traffic congestion in the city of Mississauga to settle down.

Solutions

Because most of the individuals travelling to and from the city are probably commuting via a personal vehicle, implementing more carpool lots within the city will help alleviate the traffic problem, as well as provide many other benefits. To begin with, the obvious benefit of carpooling is that it will save individuals money. It allows individuals to "share the cost of gas and parking, cutting expenses by nearly 50% or more, depending on the amount of occupants in the car" (Spence, n.d.). According to the Canadian Automobile Association, the average yearly cost of operating a car can add up to $9,000 a year, roughly $25 a day. As such, sharing vehicles and splitting costs can benefit individuals economically (Trans Canada Carpool, 2010).Not only is carpooling economically beneficial individually, but also socially, as it will help reduce the

costs we as residents pay towards the "construction of new roads, road maintenance and air pollution related health costs" (Spence, n.d.).

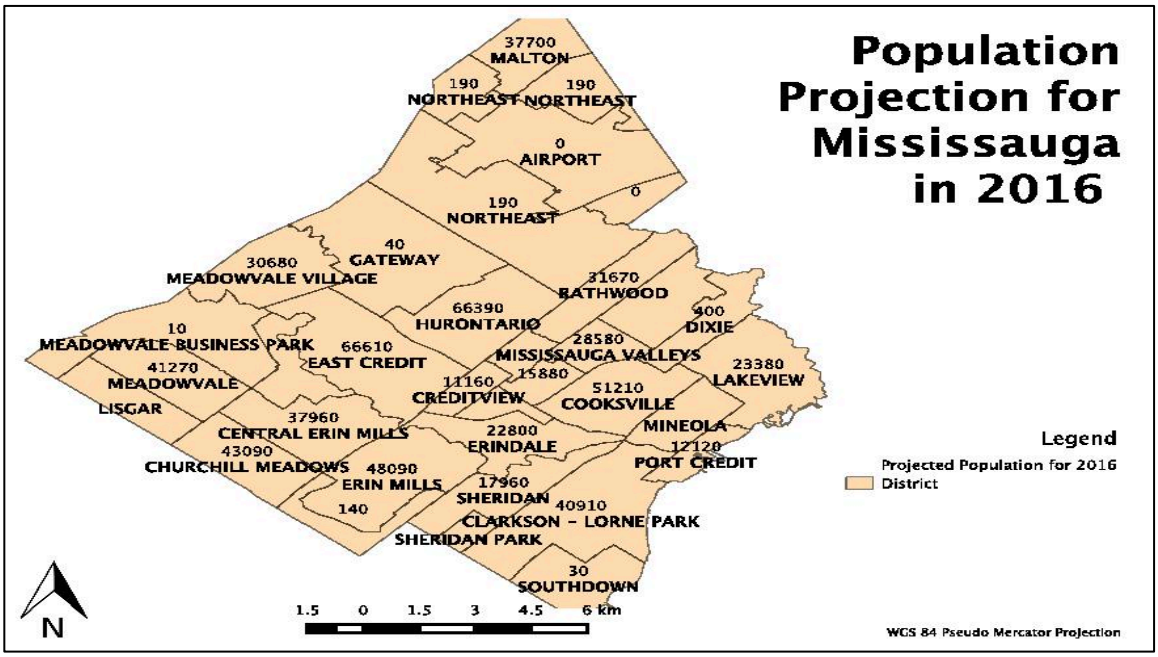
On the note of air pollution, carpooling is extremely beneficial for the environment. Sharing vehicles will regulate and reduce greenhouse gases which will ultimately result in better air quality within the city (Spence, n.d.). Not only does it minimize the amount of air pollution, but it also conserves habitats around the city because of the decrease in demand for new roads and parking lots (Trans Canada Carpool, 2010). Moreover, carpooling can have positive effects on one's health and wellbeing. According to Environment Canada, "air pollution caused by vehicular travel is linked to a number of health concerns including respiratory diseases, cardiovascular disease, allergies and neurological effects", these risks can be avoided by carpooling (Spence, n.d.). Studies also show that carpooling is less stressful than commuting alone and thus benefits one's mental state (Spence, n.d.). Research shows that individuals who commute by means other than a "single-occupancy vehicle demonstrate lower levels of stress, higher morale, and lower blood pressure" (Trans Canada Carpool, 2010). It is clear that there are many benefits associated with carpooling and consequently it is the most viable option for reducing traffic congestion within the city of Mississauga. The program which is currently in tact within the city is called, "The Autoshare Pilot Program". This program is applicable to various divisions of Mississauga, depending on the resident's location. It provides access to cars which are owned by the program and are for the use of residents. The carpool lots for Autoshare allow residents to park and then borrow the Autoshare vehicle with a group of people to car pool together.

Data Acquisition and Map Analysis

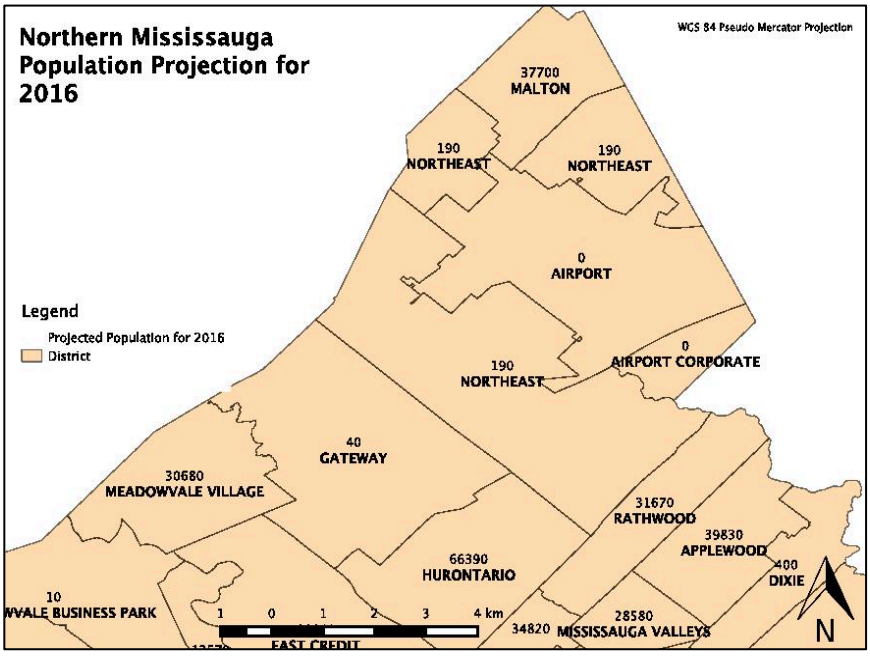
In order to analyze where carpool lots within the City of Mississauga will best assist in alleviating traffic congestion, certain data had to be obtained. The first type of map that needed to be obtained was a base map of the city of Mississauga. This map would then be used to assess where traffic was higher within the city, as well as where existing carpool lots are located. Information that needed to be acquired included existing carpool lots, traffic counts, bus routes, existing pathways and bike lanes, Autoshare locations, and the land use makeup of the city. To access this particular information about the City of Mississauga, open source data was obtained from the City of Toronto website. All of the maps collected and made for this study were reflected in the common projection reference system, World Geodetic System 84 (WGS84)/ UTM zone 17N, EPSG: 32617.

Map 1 through 4; depict the first base map that was used within this study. These maps illustrate the population projection for Mississauga in 2016. This map layer provides the information required to see where traffic is, and will continue to be higher than other wards. Using this information allows us to better select sites for the building of new carpool lots. This map divides the city of Mississauga by the appropriate wards that the city has implemented. As evident in the map, the heart of Mississauga appears to have the largest population and hence the most traffic. Combining this information with other data layers has allowed us to find the most suitable locations for additional carpool lots. The chosen locations are placed in areas such that they will not contribute to any further traffic congestion, rather alleviate it.

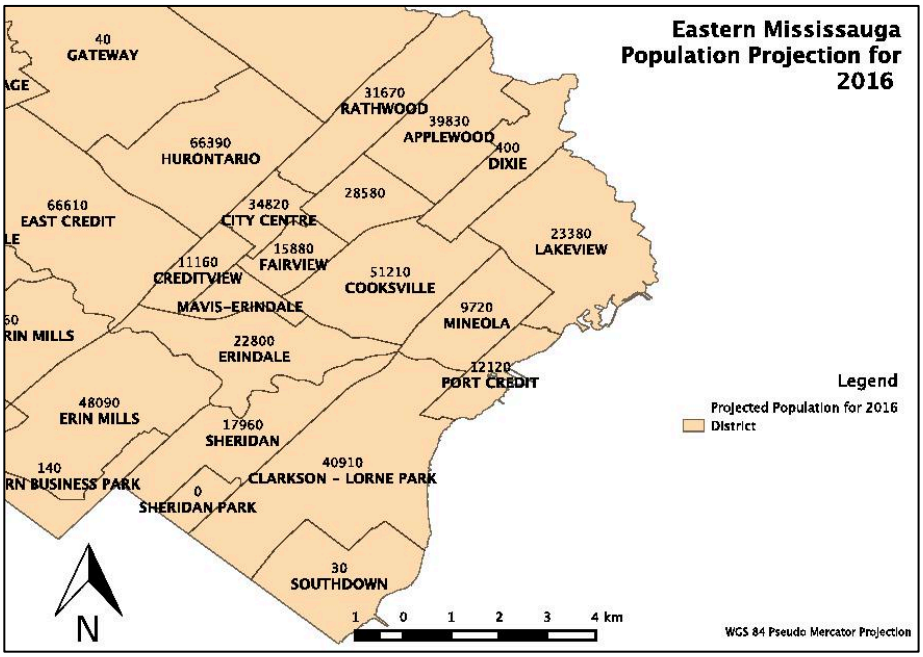
Map 1:


Population Projection for Mississauga in 2016
37700 MALTON
190 NORTHEAST
190 NORTHEAST
0 AIRPORT
0
190 NORTHEAST
40 GATEWAY
30680 MEADOWVALE VILLAGE
31670 RATHWOOD
66390 HURONTARIO
400 DIXIE
10 MEADOWVALE BUSINESS PARK
66610 EAST CREDIT
28580 MISSISSAUGA VALLEYS
23380 LAKEVIEW
41270 MEADOWVALE
11160
15880 CREDITVIEW
51210 COOKSVILLE
LISGAR
37960 CENTRAL ERIN MILLS
MINEOLA
22800 ERINDALE
43090 CHURCHILL MEADOWS
48090 ERIN MILLS
12120 PORT CREDIT
17960 SHERIDAN
140
40910 CLARKSON - LORNE PARK
SHERIDAN PARK
30 SOUTHDOWN
N
1.5 0 1.5 3 4.5 6 km
Legend
Projected Population for 2016
District
WGS 84 Pseudo Mercator Projection

Map 2:


Northern Mississauga Population Projection for 2016
WGS 84 Pseudo Mercator Projection
37700 MALTON
190 NORTHEAST
190 NORTHEAST
0 AIRPORT
Legend
Projected Population for 2016
District
0 AIRPORT CORPORATE
190 NORTHEAST
40 GATEWAY
30680 MEADOWVALE VILLAGE
31670 RATHWOOD
39830 APPLEWOOD
66390 HURONTARIO
400 DIXIE
10 WVALE BUSINESS PARK
1 0 1 2 3 4 km
34820
28580 MISSISSAUGA VALLEYS
EAST CREDIT
N

Map 3:


Eastern Mississauga
Population Projection for
2016
40
GATEWAY
31670
RATHWOOD
39830
APPLEWOOD
400
DIXIE
66390
HURONTARIO
28580
66610
EAST CREDIT
34820
CITY CENTRE
23380
LAKEVIEW
15880
FAIRVIEW
11160
CREDITVIEW
51210
COOKSVILLE
MAVIS-ERINDALE
9720
MINEOLA
22800
ERINDALE
12120
PORT CREDIT
48090
ERIN MILLS
17960
SHERIDAN
140
40910
CLARKSON - LORNE PARK
0
SHERIDAN PARK
30
SOUTHDOWN
Legend
Projected Population for 2016
District
N
1 0 1 2 3 4 km
WGS 84 Pseudo Mercator Projection

Map 4:

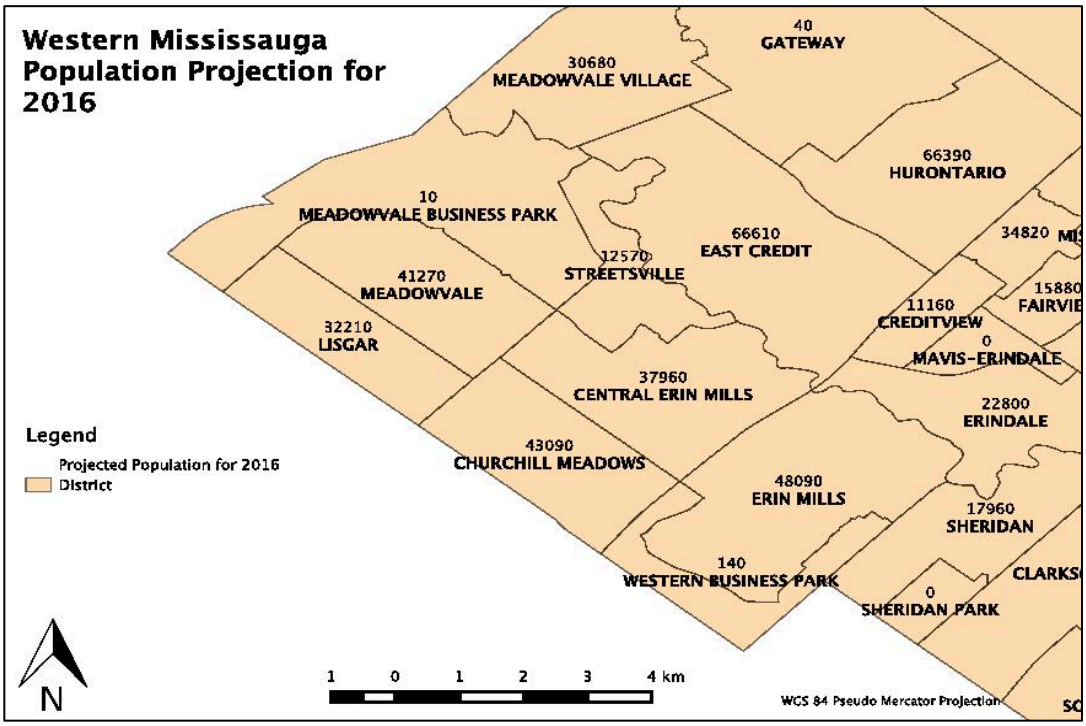
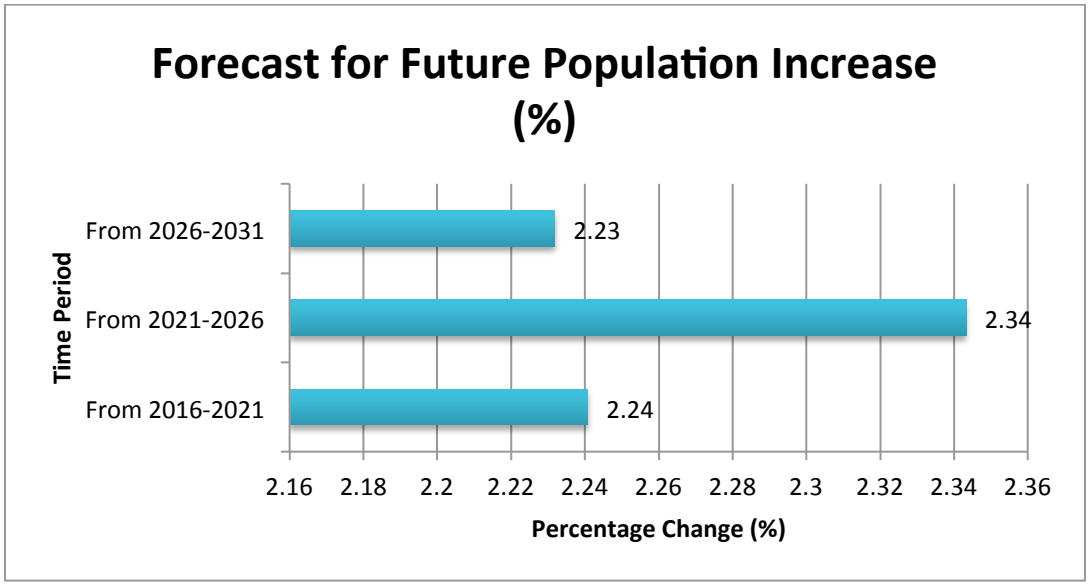
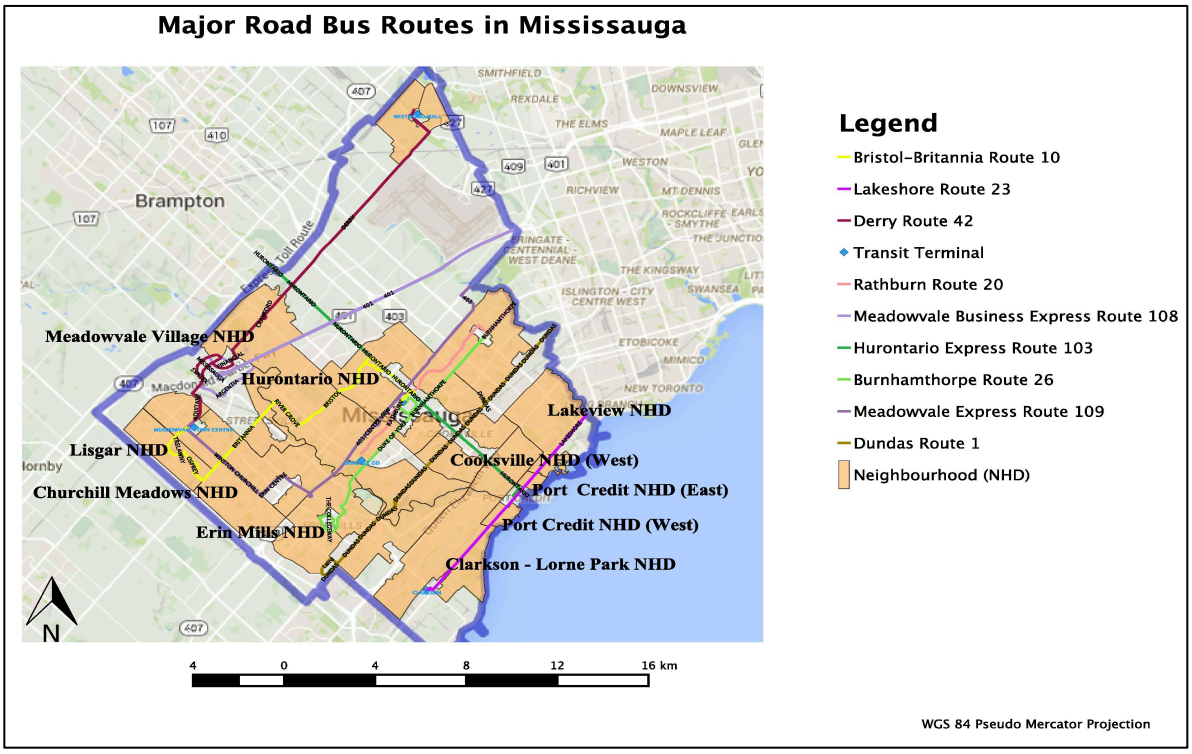

Western Mississauga
Population Projection for
2016
40
GATEWAY
30680
MEADOWVALE VILLAGE
66390
HURONTARIO
10
MEADOWVALE BUSINESS PARK
66610
EAST CREDIT
34820
12570
STREETSVILLE
41270
MEADOWVALE
15880
11160
CREDITVIEW
32210
LISGAR
0
MAVIS-ERINDALE
37960
CENTRAL ERIN MILLS
22800
ERINDALE
Legend
Projected Population for 2016
District
43090
CHURCHILL MEADOWS
48090
ERIN MILLS
17960
SHERIDAN
140
WESTERN BUSINESS PARK
0
SHERIDAN PARK
N
1 0 1 2 3 4 km
WGS 84 Pseudo Mercator Projection

Chart 2.



The second base map that was used was a street map obtained from Google images, which shows the streets and major highways in the city. This map allowed us to illustrate layers with various different features on them in order to show the information we collected. Map 5 depicts a map of the existing major bus routes that operate in the city. Seeing where the major bus routes run throughout the city gives us a better understanding of where there is a lot of human and car traffic. As from the population projection map, the bus routes also illustrate that the heart of the city has the most traffic that needs to be dispersed. Knowing where the major bus routes are has provided us with additional information on where to locate our carpool lots. This is because people may want to meet up near a major bus route in order to carpool with other people, as it makes it easier to reach the location rather than a secluded carpool lot. Furthermore, we have placed additional carpool lots near major bus routes because there is a higher flow of traffic near such areas.

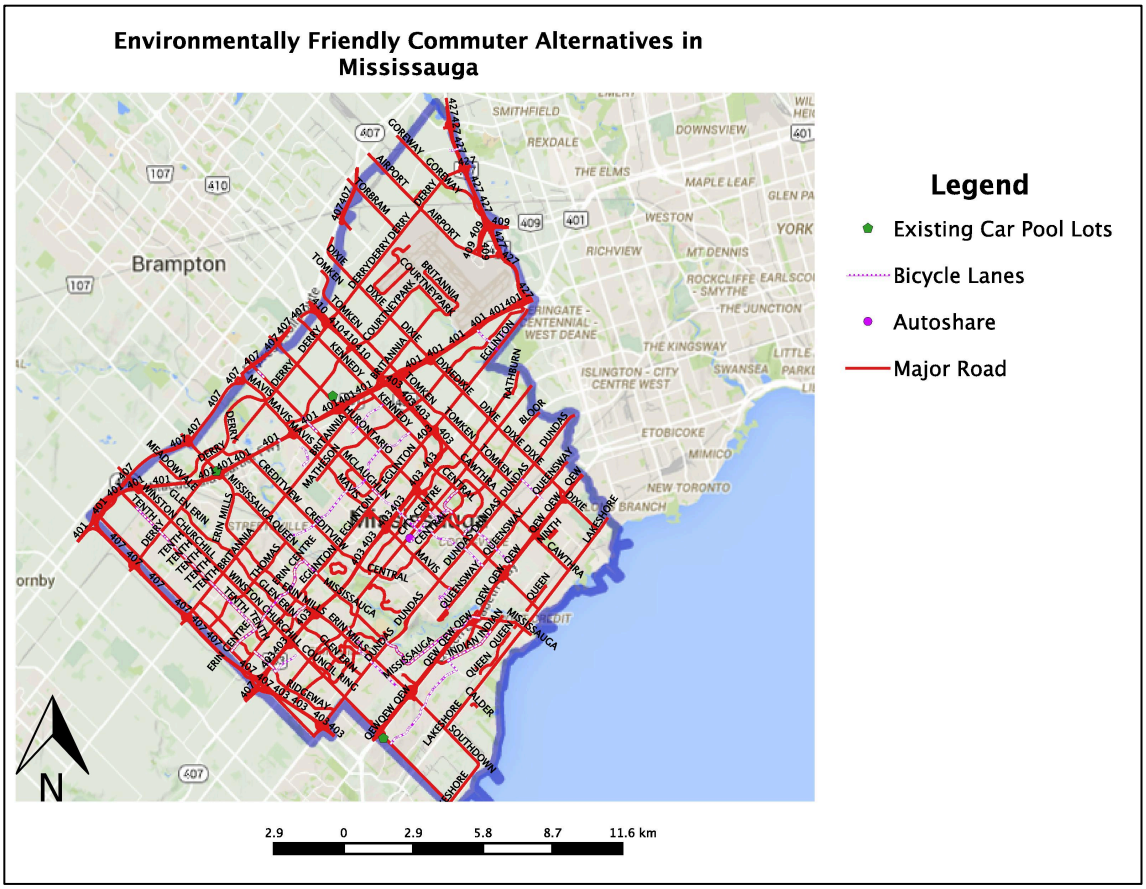
Map 5:



Using the previous base map of Missisuaga, we were able to construct additional maps with varying features. Map 6 illustrates the existing carpool lots in the city, as well as where there is vacant land for new lots. These lands include un-built areas that can be used to build new carpool lots. However, there are also locations in Mississauga, such as malls and bus terminals that can also be used for carpool lots, given the right permits are used. Using these vacant lands will allow for the building of a bigger carpool lot and hence we will choose a carpool lot in one of these locations as well. In this map, we have also chosen to illustrate already existing carpool lots. This allows us to better spread out the lots in order for an optimal decrease in traffic congestion. As shown, the city of Mississauga only has 3 carpool lots and given the amount of traffic within the city, there is immense need for a few more. Next, this map also shows AutoShare locations in Mississauga along with **Environmentally Friendly Commuter Alternatives in Mississauga** in map 6. Autoshare is a city-established car sharing pilot program.

We will further examine whether or not this pilot program appears to be successful and as such will implement more locations for car sharing. The alternative methods include bicycle lanes. Understanding where there are existing bike lanes allows us to see where there is a lot of pedestrian traffic and as such implementing future carpool lots in such locations will be effective. Lastly, this map shows the major roads within the city of Mississauga, which is an important component to include in any analysis being done for a city. Roads provide us with a sense of areas where there is existing traffic.

Map 6:



The final map that was created illustrates the locations in the city where traffic is counted. These traffic count stations allow city officials and planners to appropriately provide for the existing population by implementing what needs to be added. In this case, these traffic count stations allow us to obtain specific attribute data that allows us to identify locations of higher traffic density. Map 8 shows the locations where these traffic count devices are installed.

Map 8:

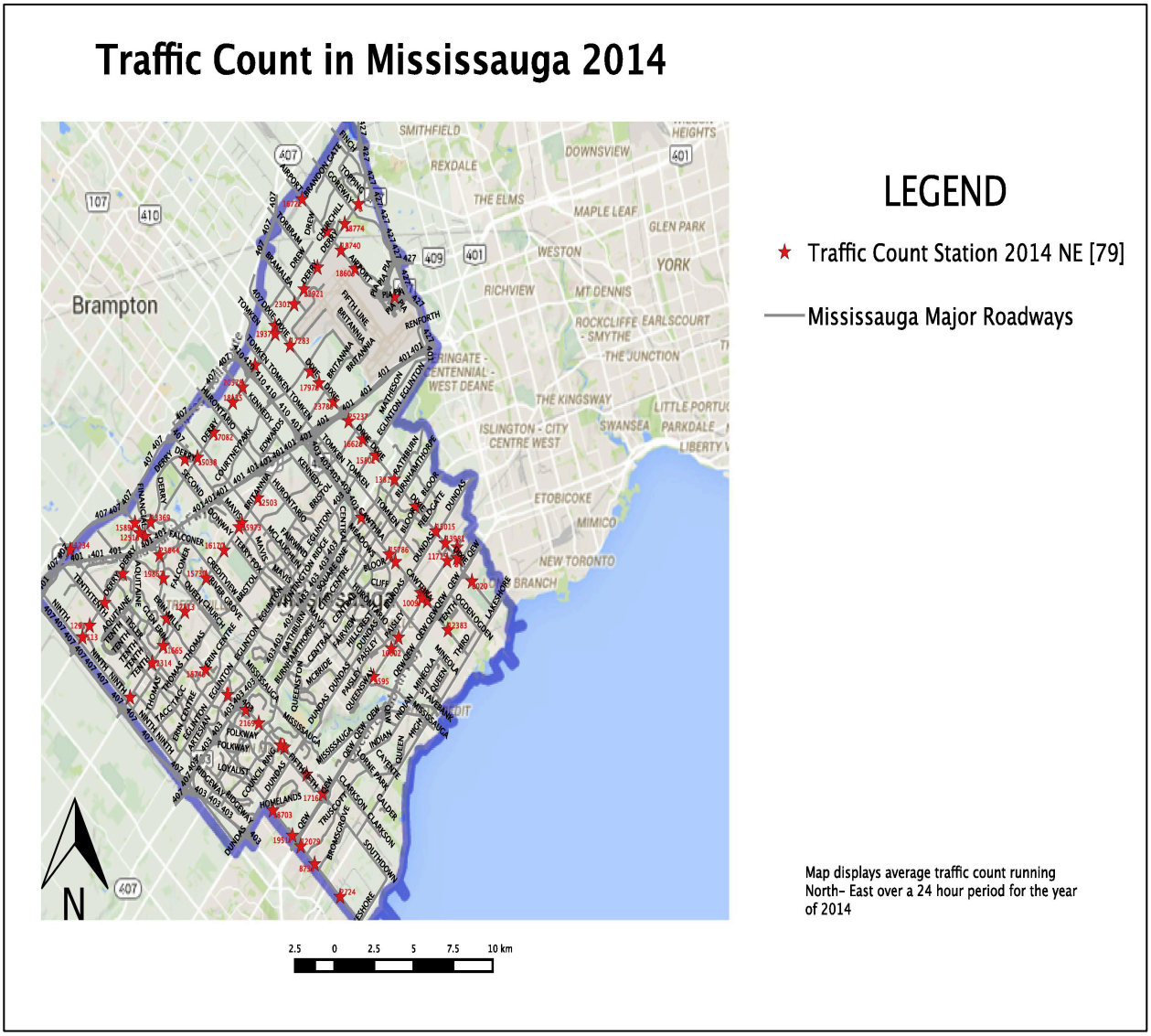


Chart Analysis

Statistical and aspatial data was also obtained in regards to the population density in Mississauga. Chart 1 shows the traffic change from 2012 to 2014 in the various major regions of the city. The 'difference' column shows whether or not the change was positive or negative in the area. Chart 2 illustrates the figures in chart 1 in a bar graph format, comparing the traffic count from the years 2012 and 2014. The final diagram (chart 3), which is a pie chart, illustrates the population growth from 2012 to 2014 in Mississauga also depicted in Table 1. Unlike the previous data, this is not showing traffic increase, but rather population increase. Because population density is closely correlated with an increase in traffic, it is important to assess both. This information allows us to computationally select areas that have more traffic and further allows for analysis on where the carpool lots will be most efficient.

Chart 1: Summary of Traffic Count:

Road	2014	2012	Difference
Erin Mills Pkwy	316075	323553	-7478
Mississauga Road	119468	86741	32727
Britannia Road	237636	237937	-301
Dixie Road	440884	408356	32528
Derry Road	579164	396462	182702
Airport Road	174184	165497	8687
Cawthra Road	187778	174623	13155
Winston Churchill Boulevard	142704	143405	-701
Queensway	154445	138256	16189

Chart 2:

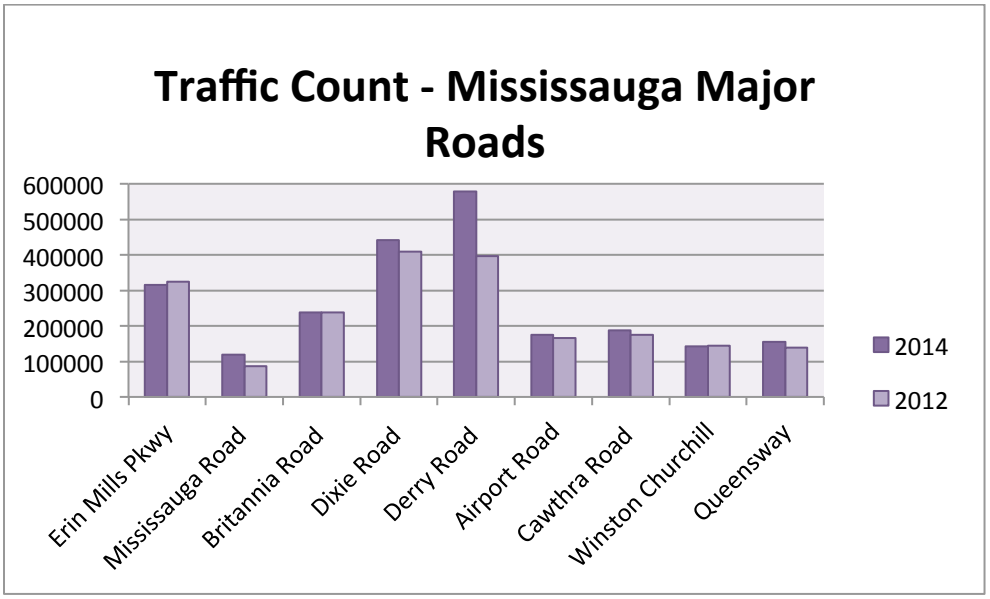
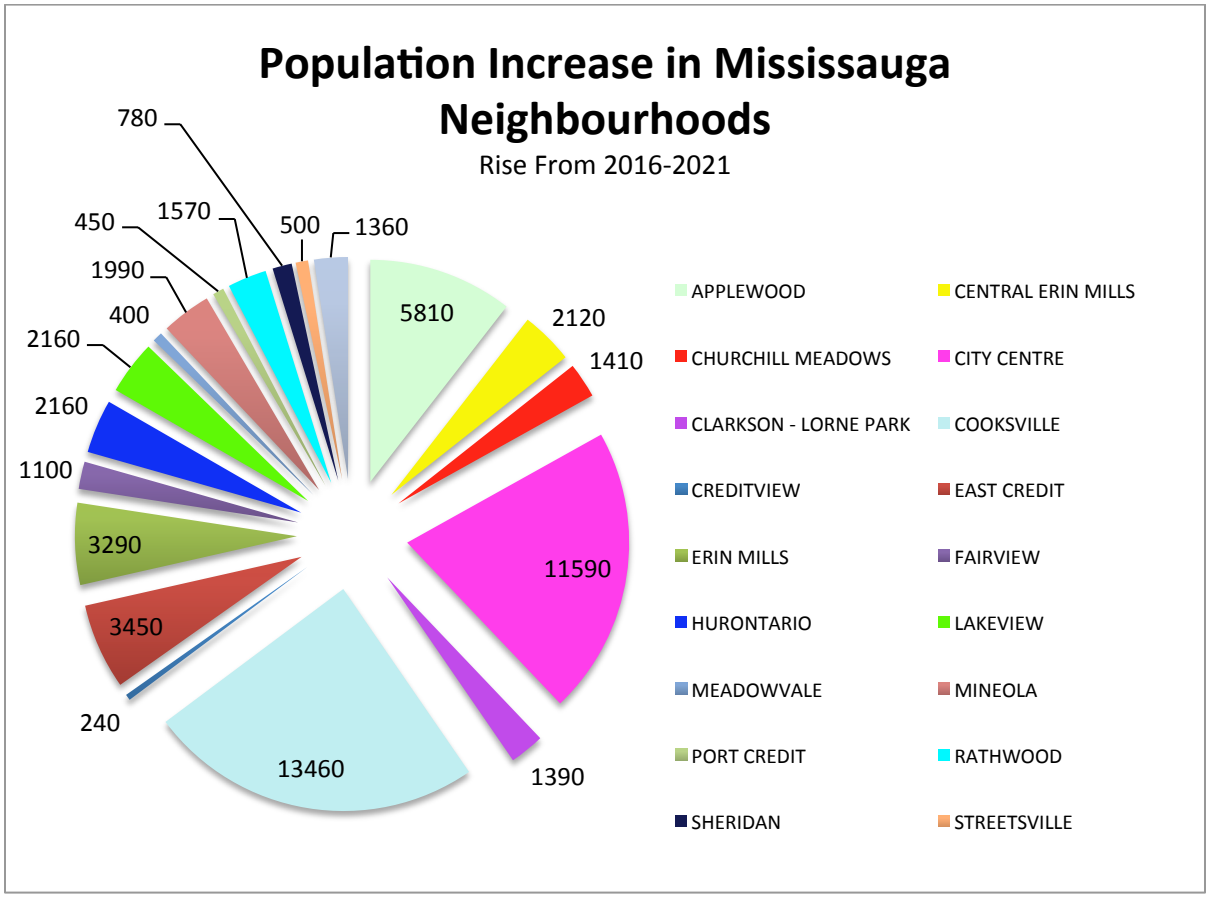


Table 1:

DISTRICT	MID_2016	MID_2021	MID_2026	MID_2031
APPLEWOOD	39830	40260	41030	41950
CENTRAL ERIN MILLS	37960	40150	42090	43770
CHURCHILL MEADOWS	43090	43690	44120	44500
CITY CENTRE	34820	41140	44580	46410
CLARKSON - LORNE PARK	40910	41300	41770	42300
COOKSVILLE	51210	53820	58880	64670
CREDITVIEW	11160	11270	11340	11400
EAST CREDIT	66610	67770	68920	70060
ERIN MILLS	48090	48890	50040	51380
ERINDALE	22800	22700	22760	22900
FAIRVIEW	15880	15890	16450	16980
HURONTARIO	66390	67480	68130	68550

LAKEVIEW	23380	24120	24860	25540
LISGAR	32210	31900	31720	31640
MALTON	37700	37270	37020	36910
MEADOWVALE	41270	41200	41360	41670
MEADOWVALE VILLAGE	30680	31450	32070	32670
MINEOLA	9720	9800	9970	10170
MISSISSAUGA VALLEYS	28580	28550	28620	28750
PORT CREDIT	12120	12590	13140	13690
RATHWOOD	31670	31750	32040	32450
SHERIDAN	17960	17990	18200	18460
STREETSVILLE	12570	13020	13490	13930
Population Totals	757800	775170	793770	811890
Percentage Change	From 2016-2021	From 2021-2026	From 2026-2031	
	2.240798793	2.343248044	2.231829435	

Chart 3:



GIS Techniques for Site Selection

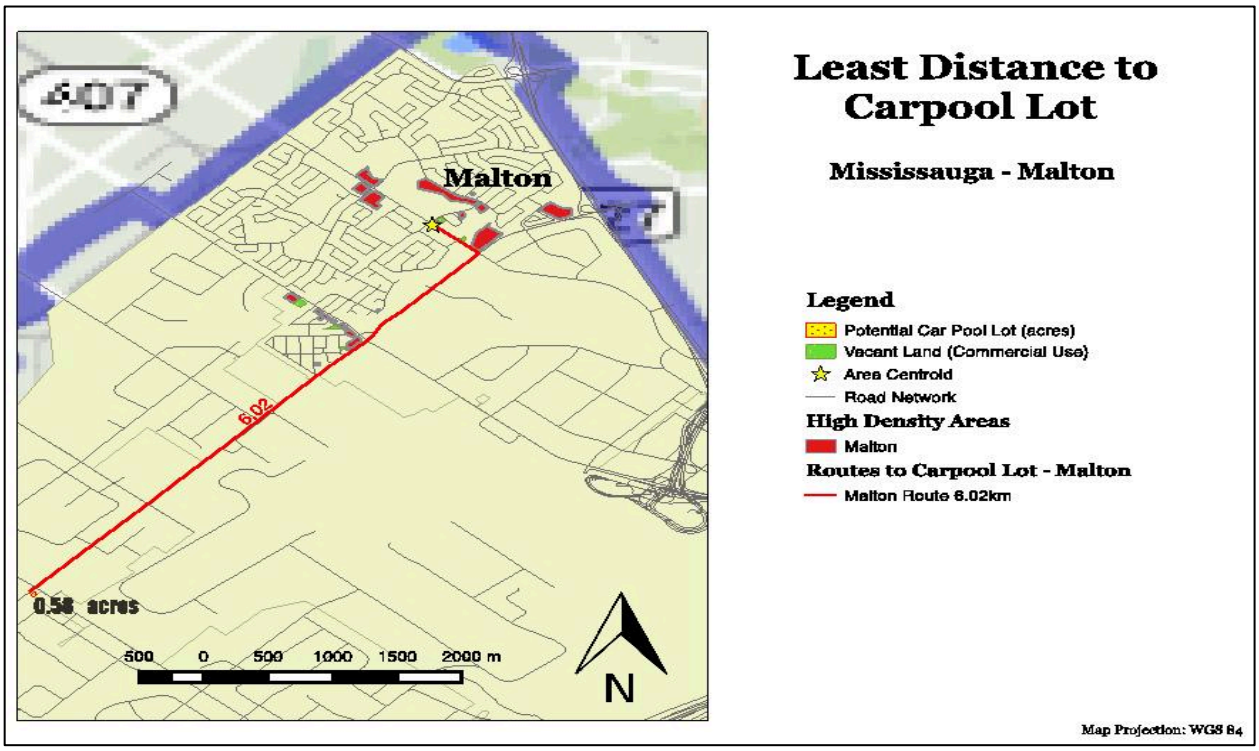
With the collection of data and map, in order to further assess where to place carpool lots within Mississauga, QGIS was used in order to implement various tools and techniques. A complete Cost Analysis was implemented for the project. The first step that was taken to find a suitable location based on the population density was to obtain a dataset of the population from the City of Mississauga open data website. The dataset was a shape file that had polygons depicting what areas were high in residential density. Because polygons were separate based on buildings or townhouse complexes and we were looking for area clusters, a spatial join was conducting, dissolving those polygons within the same region, as one. Next, centroids were made for each of

the dissolved residential regions. The creation of centroids pinpoints the center most part of that specific residential area. Using the previously constructed map of vacant land available in Mississauga, we assessed the lot that would be most effective in catering to a large population but would also have enough room for a spacious carpool lot. After selecting the site most suitable for this purpose, the road graph plugin on QGIS was used in order to obtain the shortest route from each neighborhood to that specific carpool lot. The maps shown below (Maps 9-14) show high density neighbourhoods and their assigned carpool lots. In implementing carpool lots in the city along with a program such as Autoshare, it is important that specific lots are assigned or designated to residents of certain areas, as shown in the maps below. All of the densely populated areas have a carpool lot located within 6 km distance of the area centroid making the program relieve congestion on major traffic routes and alleviate pollution from high traffic areas. To finish the analysis, cost is applied. Assuming that each person will drive themselves to the carpool lot location many factors were input into the analysis. The first factor being vehicle fuel efficiency. Each person drives various vehicle types, whether an SUV, smart car, hybrid or a V6 V4 or V8 engine on an automatic or manual transmission. Depending on their car specs, gas consumptions varies and for this an average was required. A readily available summary of these specs was available on the website of the U.S. Department of Energy known as the "Fuel Economy Data File". This was appropriate to use as Canadian and U.S. residents have common vehicle makes. This dataset communicated an average the average miles per gallon for a vehicle to be 26.73 miles per gallon which converted to 11.4 kilometers per liter. (U.S. Department of Energy, 2016) Chart 4 below demonstrates the findings from the cost analysis.

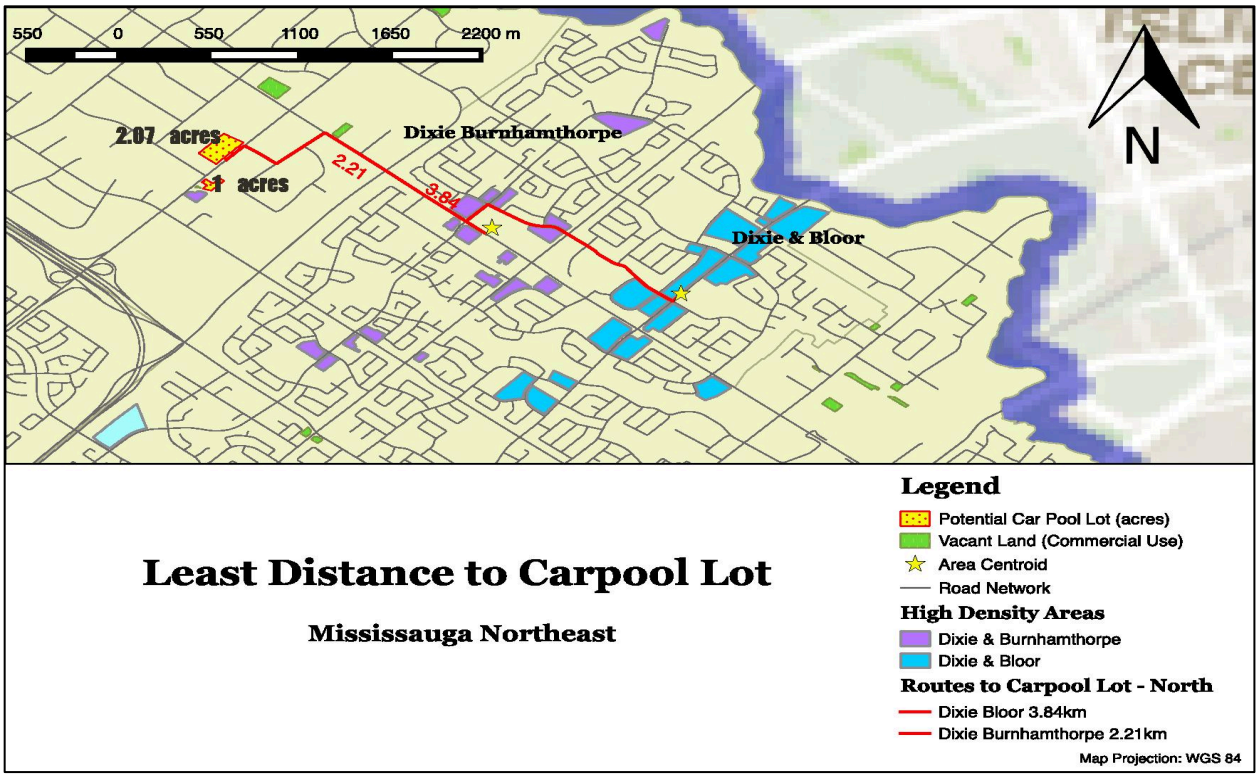
Chart 4:

Region	Route	Kilometers	One Side Cost ($)	Round Trip Cost ($)	One Week Cost ($)
Mississauga South	Lakeshore Hurontario	4.99	0.481491228	0.962982456	2.40745614
	Lakeshore Southdown	5.925	0.571710526	1.143421053	2.858552632
	Erin Mills Sheridan Park	4.38	0.422631579	0.845263158	2.113157895
	Winston Eglington	6	0.578947368	1.157894737	2.894736842
	Dundas-Misssissauga	4.99	0.481491228	0.962982456	2.40745614
	Dundas-Erindale	1.77	0.170789474	0.341578947	0.853947368
Mississauga Northeast	Dixie-Bloor	3.84	0.370526316	0.741052632	1.852631579
	Dixie-Burnhamthorpe	2.21	0.213245614	0.426491228	1.06622807
Mississauga West	Queen-Thomas	5.8	0.559649123	1.119298246	2.798245614
	Brittania-Glen Erin	5.4	0.521052632	1.042105263	2.605263158
	Glen Erin-Battleford	3.62	0.349298246	0.698596491	1.746491228
Malton	Malton	6.02	0.580877193	1.161754386	2.904385965
Downtown core	Dundas-Cawthra	4.28	0.412982456	0.825964912	2.064912281
	Hurontario-Dundas	3.2	0.30877193	0.61754386	1.543859649
	Absolute, Elm, Kannef	1.44	0.138947368	0.277894737	0.694736842
	Hurontario-Eglington	1.58	0.15245614	0.304912281	0.762280702
	Burnhamthorpe-Confederation	0.77	0.074298246	0.148596491	0.371491228

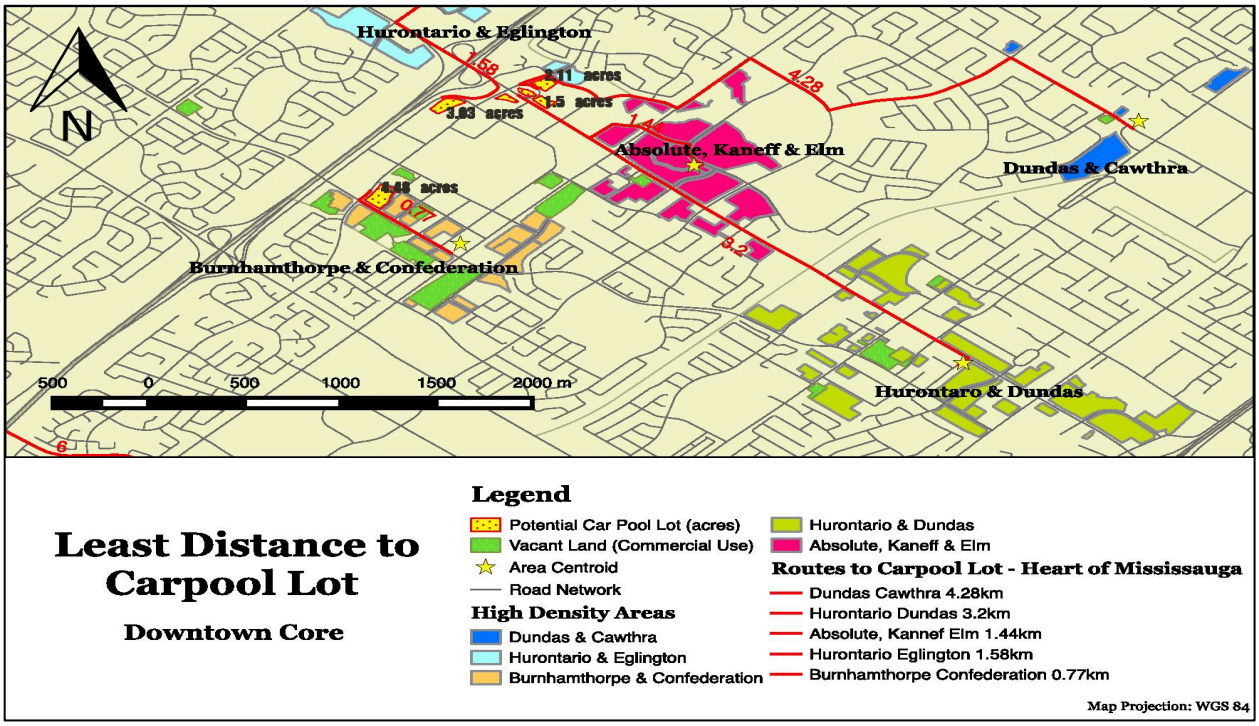
Map 9:


407
Malton
6.02
0.58 acres
500 0 500 1000 1500 2000 m
N
Least Distance to Carpool Lot
Mississauga - Malton
Legend
Potential Car Pool Lot (acres)
Vacant Land (Commercial Use)
Area Centroid
Road Network
High Density Areas
Malton
Routes to Carpool Lot - Malton
Malton Route 6.02km
Map Projection: WGS 84

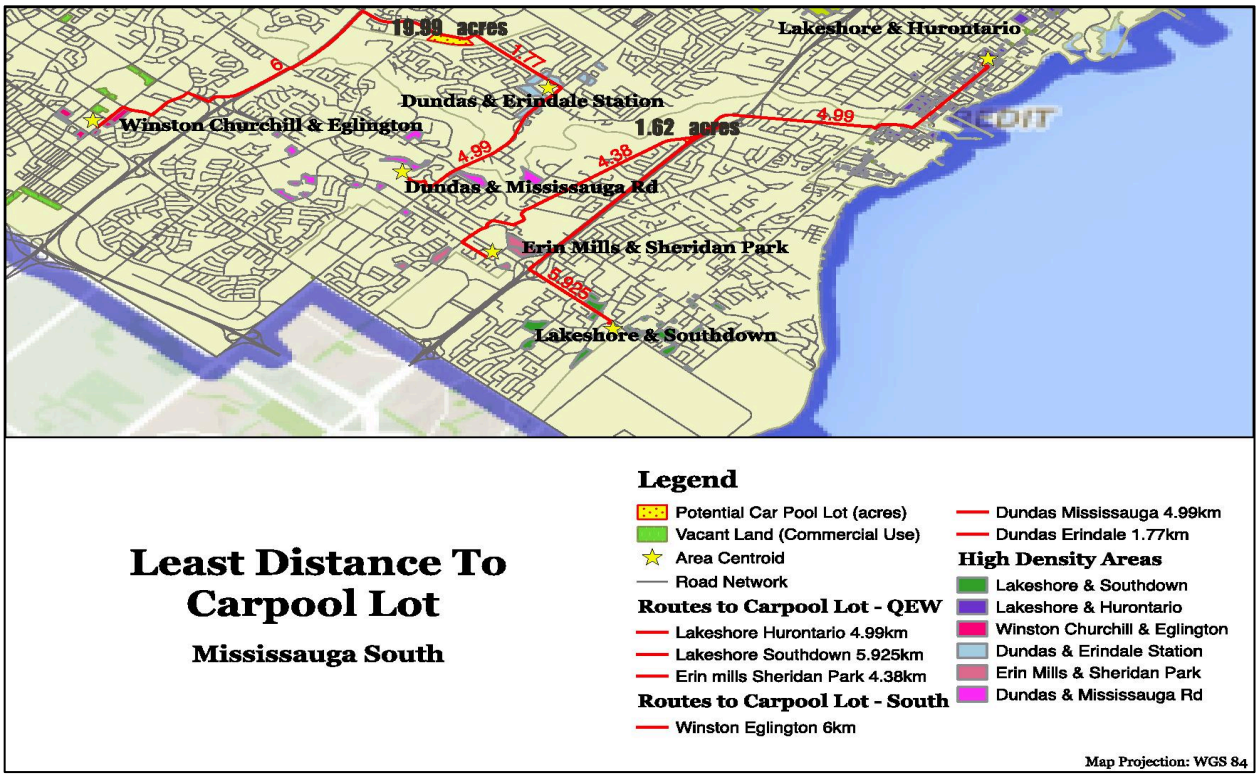
Map 10:


550 0 550 1100 1650 2200 m
2.07 acres
2.1 acres
2.21
3.84
Dixie Burnhamthorpe
Dixie & Bloor
N
Least Distance to Carpool Lot
Mississauga Northeast
Legend
Potential Car Pool Lot (acres)
Vacant Land (Commercial Use)
Area Centroid
Road Network
High Density Areas
Dixie & Burnhamthorpe
Dixie & Bloor
Routes to Carpool Lot - North
Dixie Bloor 3.84km
Dixie Burnhamthorpe 2.21km
Map Projection: WGS 84

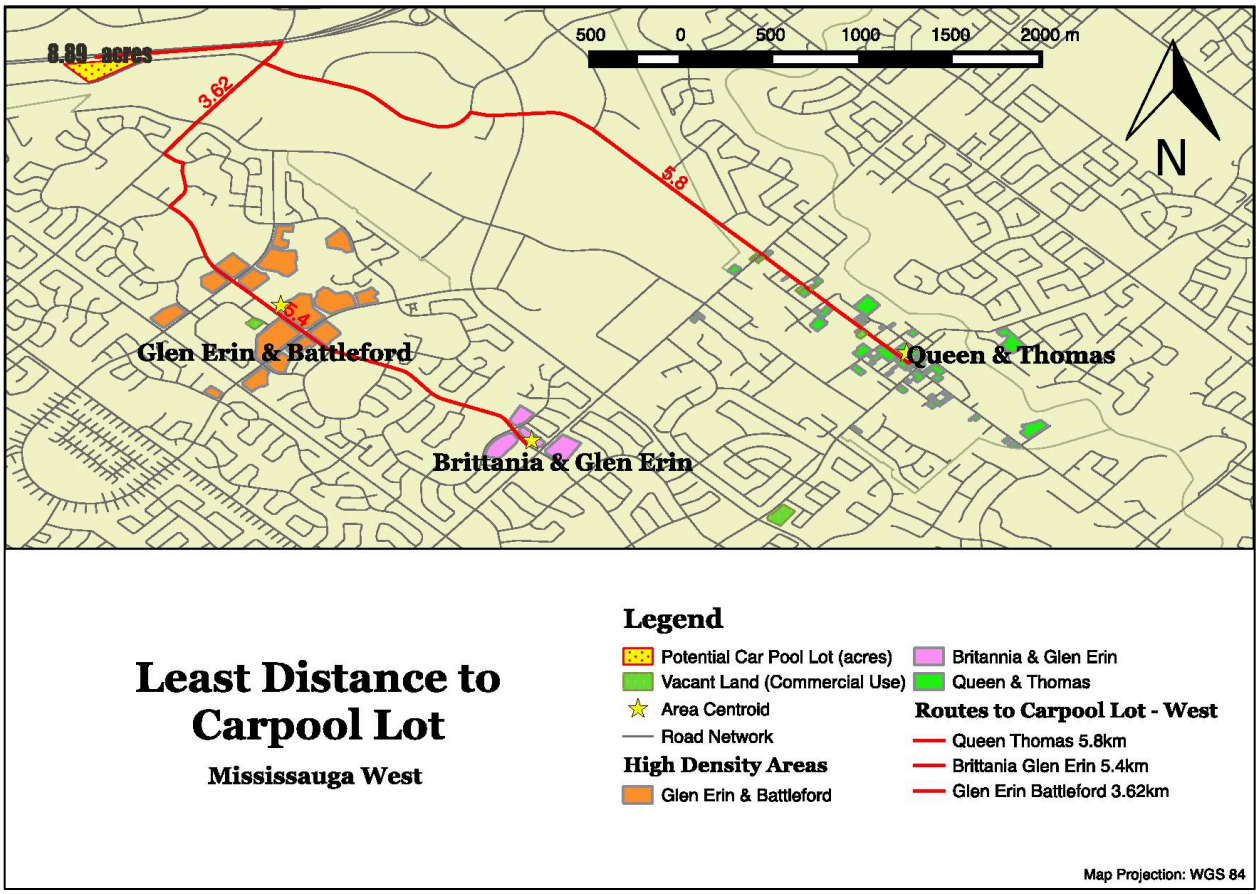
Map 11:


Hurontario & Eglington
1.58
2.11 acres
1.5 acres
3.03 acres
1.44
4.28
Absolute, Kaneff & Elm
Dundas & Cawthra
0.48 acres
0.77
3.2
Burnhamthorpe & Confederation
500 0 500 1000 1500 2000 m
Hurontaro & Dundas
N
Least Distance to Carpool Lot
Downtown Core
Legend
Potential Car Pool Lot (acres)
Vacant Land (Commercial Use)
Area Centroid
Road Network
High Density Areas
Dundas & Cawthra
Hurontario & Eglington
Burnhamthorpe & Confederation
Hurontario & Dundas
Absolute, Kaneff & Elm
Routes to Carpool Lot - Heart of Mississauga
Dundas Cawthra 4.28km
Hurontario Dundas 3.2km
Absolute, Kannef Elm 1.44km
Hurontario Eglington 1.58km
Burnhamthorpe Confederation 0.77km
Map Projection: WGS 84

Map 12:


19.99 acres
Lakeshore & Hurontario
Dundas & Erindale Station
Winston Churchill & Eglington
1.62 acres
4.99
4.38
Dundas & Mississauga Rd
Erin Mills & Sheridan Park
5.925
Lakeshore & Southdown
Least Distance To Carpool Lot
Mississauga South
Legend
Potential Car Pool Lot (acres)
Vacant Land (Commercial Use)
Area Centroid
Road Network
Routes to Carpool Lot - QEW
Lakeshore Hurontario 4.99km
Lakeshore Southdown 5.925km
Erin mills Sheridan Park 4.38km
Routes to Carpool Lot - South
Winston Eglington 6km
Dundas Mississauga 4.99km
Dundas Erindale 1.77km
High Density Areas
Lakeshore & Southdown
Lakeshore & Hurontario
Winston Churchill & Eglington
Dundas & Erindale Station
Erin Mills & Sheridan Park
Dundas & Mississauga Rd
Map Projection: WGS 84

Map 13:


8.89 acres
3.62
5.8
5.4
500
0
500
1000
1500
2000 m
N
Glen Erin & Battleford
Brittania & Glen Erin
Queen & Thomas
Least Distance to Carpool Lot
Mississauga West
Legend
Potential Car Pool Lot (acres)
Vacant Land (Commercial Use)
Area Centroid
Road Network
High Density Areas
Glen Erin & Battleford
Britannia & Glen Erin
Queen & Thomas
Routes to Carpool Lot - West
Queen Thomas 5.8km
Brittania Glen Erin 5.4km
Glen Erin Battleford 3.62km
Map Projection: WGS 84