

ACCESSIBILITY TO SUSTAINABLE TRANSPORTATION AND GREEN SPACES:

A Case-study in Ottawa's Cummings and Vanier North Neighbourhoods
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Introduction

Sustainable cities provide a cleaner environment and a better quality of life for their residents. Sustainable transportation and green spaces are two aspects that contribute to making a city more sustainable and liveable. This research project seeks to determine how the City of Ottawa can become a more sustainable city, by ensuring access to sustainable transportation and green spaces, thus achieving social and environmental justice. To do so, it discovers the potential barriers to the accessibility of sustainable transportation and green spaces in two low-income neighbourhoods in the City of Ottawa, Cummings and Vanier North, to then make recommendations on a larger city-wide scale.

Objectives

This project is under the umbrella of the Healthy Transportation Coalition's (HTC's) Community Engagement for Healthy Transportation Project (2015-2018), with its own individual mandate. The specific objectives for my honours thesis are to:

1. identify restrictions to sustainable transportation in two City of Ottawa neighbourhoods, Cummings and Vanier North;
2. analyze how these restrictions impact residents' access to green spaces in their neighbourhood;
3. determine methods to reduce barriers to sustainable transportation and accessibility to green spaces; and
4. relate these findings to achieving environmental and social justice in these two neighbourhoods, with suggestions relative to a larger, city-wide scale.

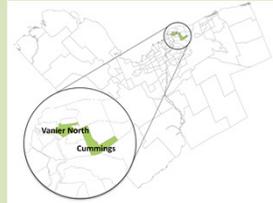


Figure 1: Map of the City of Ottawa and the Cummings and Vanier North neighbourhoods.

Table 1: Overview of the Ottawa Neighbourhood Study's (ONS) profiles for the Cummings and Vanier North neighbourhoods, compared to the City of Ottawa.

Category	Cummings	Vanier North	Ottawa Average
% spending 30% or more of household income on shelter costs	36%	35%	23%
% low-income after taxes	24%	21%	12%
% employed	55%	59%	65%
% using car as mode of transportation to workplace	51%	49%	60%
Neighbourhood area (m ²) per person	313	175	7498
Parks & recreation area (m ²) per person	18	12	56
2014 Walkable Neighbourhood Score (out of 100)	56	53	50

Source: Ottawa Neighbourhood Study, 2016

Literature Review

In contrast to automobiles, **sustainable transportation** methods (walking, biking, and public transportation) decrease polluting emissions and provide healthy, safe, efficient, and low-cost travels. Relatedly, **green spaces** (parks, community gardens, etc.) help to increase physical activity levels, reduce stress, and moderate poor environmental conditions such as air pollution; all of which lead to a better quality of life (Bertram & Rehdanz, 2015; Morar, Raoslav, Spiridon, & Păcurar, 2014).

Justice occurs when people possess equal rights to liberty (Rawls, 1972). Accessibility to sustainable transportation and green spaces can be seen as a question of **justice** from both **social and environmental** perspectives, where a just city would ensure both these services are accessible to all, regardless of one's arbitrary group membership, especially among lower-income individuals. In particular, these services provide all citizens with the means to attend their daily activities, participate in their communities, and benefit from the reduction of polluting emissions from automobiles and from an increased level of physical activity resulting from the use of these services.

Methodology

This research project used a mixed methods approach including:

1. a door-to-door survey;
2. sharing circle(s);
3. a post-sharing circle survey; and
4. walkability audits

Table 2: Overview of each data collection source, the number of participants, and the date completed.

Neighbourhood	Number of participants	Date completed
Door-to-Door Survey		
Cummings	102	2016-07-26
Vanier North	110	2016-07-26
Sharing Circle(s)¹		
Cummings	2	2016-04-07
	13	2016-05-26
	44	2016-07-19
Vanier North	36	2016-06-09
Post-Sharing Circle Survey		
Cummings	28	2016-07-19
Vanier North	33	2016-06-09
Walkability Audit		
Cummings	20	2016-08-13
Vanier North	22	2016-07-09

¹The target number of participants, determined by the HTC, for sharing circles is 20. Since there were too few participants in the first and second sharing circles held in Cummings, a total of three were held.

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Results

The results show that there are many improvements that can be made to ensure that sustainable infrastructure is well maintained in the two neighbourhoods, and to establish connectivity to green spaces.

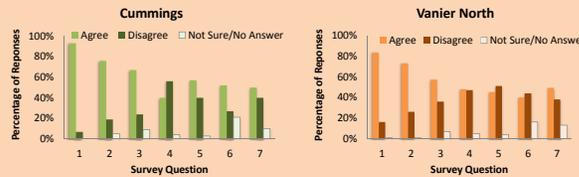


Figure 2: Results from the *door-to-door survey* in Cummings and Vanier North. The full survey questions are listed below:

1. It is within a 10-15 minute walk to a transit stop (such as bus or train) from my home
2. There are sidewalks on most of the streets in my neighbourhood.
3. There are facilities to bicycle in or near my neighbourhood, such as special lanes, separate paths or trails, shared use paths for cycles and pedestrians.
4. There is so much traffic on the streets that it makes it difficult or unpleasant to walk in my neighbourhood.
5. The sidewalks in my neighbourhood are well maintained (paved, with few cracks) and not obstructed.
6. Places for bicycling (such as bike paths) in and around my neighbourhood are well maintained and not obstructed.
7. There is so much traffic on the streets that it makes it difficult or unpleasant to ride a bicycle in my neighbourhood.

Table 3: Results from the *walkability audit* in Cummings and Vanier North, showing the number of routes with passing scores per category, as listed below. No dots indicate there are no routes with passing scores for the corresponding category.

Walkability Audit Categories:

1. Safety
2. Accessibility
3. Convenience and Connectedness
4. Comfort and Attractiveness

Category	Cummings					Vanier North						
	Number of passing routes (≥ 50%)	1	2	3	4	5	Number of passing routes (≥ 50%)	1	2	3	4	5
1	*	*					*					
2	*	*	*	*	*		*	*	*	*	*	*
3	*	*	*	*	*		*	*	*	*	*	*
4	*	*	*	*	*		*	*	*	*	*	*

Discussion

Table 4: Analysis of all data sources through triangulation. Results below show the needs for improvement in Cummings and Vanier North.

WALKABILITY	BIKABILITY	PUBLIC TRANSPORTATION	GREEN SPACES
<ul style="list-style-type: none"> ○ widen sidewalks ○ fix cracks ○ mark cross walks ○ repair blind-aids at cross walks ○ change signals to favour pedestrians at cross walks ○ lower cross walk buttons to be reachable by a person in a wheel chair 	<ul style="list-style-type: none"> ○ fill potholes in bike lanes and on roads ○ add lighting along bike paths ○ add signage to indicate bike lanes ○ install bike lanes on busy roads 	<ul style="list-style-type: none"> ○ install more designated waiting areas at bus stops ○ install more shelters and benches at bus stops ○ improve bus reliability ○ lower transit costs? 	<ul style="list-style-type: none"> ○ yield traffic around green spaces ○ ensure sustainable transportation infrastructure connects to green spaces ○ create more green spaces ○ install more benches and picnic tables, shade trees, multi-use equipment, and way-finding signs

² On November 9, 2016 the low-income bus pass for the City of Ottawa was approved in the municipal budget. The new "EquiPass" will cost \$57 per month, compared to the standard \$113 (effective April 2017).

Recommendations

Two main recommendations can be made based on the findings shown in the results and discussion sections:

1. improve existing infrastructure; and
2. implement more infrastructure for sustainable transportation methods.

These suggestions will not only increase the use and accessibility of sustainable transport modes, but will also make it easier for residents to reach green spaces in their neighbourhoods.

Conclusions

Achieving environmental and social justice is important because everyone deserves the right to the same quality of life without prejudice from arbitrary factors of identity. In particular, those with lower income typically have a lesser quality of life because they are unable to access good quality services that people with higher incomes living in other parts of the city would receive, such as sustainable transportation and connection to green spaces. The inequality in the access to sustainable transportation methods and receiving the benefits of green spaces means that those with lower-incomes acquire a lower quality of life than those living in higher income neighbourhoods.

In Cummings and Vanier North, two low-income neighbourhoods in the City of Ottawa, there is a lack in the infrastructure necessary to ensure sustainable transportation is easy to use and enable the accessibility of local green spaces. The implementation of the two recommendations listed above would lead to a more socially and environmentally equitable Ottawa, by allowing all residents to access these services. The benefits from sustainable transportation and green spaces will contribute to creating a more sustainable city, augmenting the quality of life for all residents.

References

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