Segregation and Inequality:
A Reality Snapshot of Toronto's Social Fabric

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Part One

Introduction

If cities – humanities greatest invention, as Harvard's Edward Glaeser argues (Silva, 2011), magnify human strengths by impeding social and spatial distance between people, places and cultures, then what about today's segregated Neoliberal cities that keep people socially and specially isolated? Did we fail in making cities urban hubs that converge our differences and bring people together?

Inequality is one of the major urban challenges, next to climate change, (Hulchanski John David, 2017) that humanity needs to solve in the twenty-twenties decade. Inequality in in North American cities continues to grow and Toronto is leading the way in Canada (Government of Canada, 2017b). Despite Toronto's diversity and multiculturalism; over 200 ethnic groups call it "home" (Geoffrey, 2019), the gap between poor and rich is the largest in Canada (Levine, 2017).

Immigration fuels most of the population growth in Toronto shaping its neighborhoods identity and social dynamic. Most of newcomers to the city has a natural tendency to live close to people similar to their cultural background, making many neighborhoods racially clustered (Borjas, 1992). Although this pattern was observed by some scholars as a "voluntary" concentration, many studies consider it as an outcome of historic discrimination practices (Balakrishnan and Kralt, 1987).

In an attempt to further understand the reality of segregation and inequality in Toronto this paper will investigate city's socio-spatial characteristics. The research will explore Toronto's 44 wards characteristics, and the different segregation trends across them. Leveraging Census Canada data, this paper will examine the racial, income, immigrant-density and educational characteristics and clusters of Toronto's 44 wards and their progress from 2011 to 2016.

Research Objectives

This research aims to achieve the following two main research objectives:

- Explore the characteristics of Toronto's 44 wards in terms of race, income, education and immigrant density in 2016 with reference to 2011
- Investigate the segregation and clustering nature of these wards
- Explore the diversity reflection across poor and rich wards

Methodology

Step1: Data Collection

The analysis of this paper is based on a secondary data collected through The Government of Canada 2016 and 2011 national Census, 25% sample data. The data sets explore the characteristics of the city on ward level by declaring the number of residents and their racial, ethnic, educational, income, and immigration status.
The race and education data are “self-reported” by residents while income and immigration status are based on the Federal Government’s revenue and the Ministry of Immigration records (City of Toronto, 2018a).

Step 2: Data Manipulation

The data has been processed mainly using Microsoft Excel. Different data sets have been extracted based on the key topics that this paper is investigating. Residents with a Bachelor’s degree or above were considered as highly educated, wards with 50% or/and more of White Europeans or Visible Minorities were categorized respectively, Immigrant residents percentage changes were calculated in comparison to 2011. The ward-level average income has been calculated based on the Census data. Both row and clean data sets could be found in the following shared folder.
https://drive.google.com/drive/folders/1IA5atd3cbg9nhWkcQUyxBMRL1DwRxSYI?usp=sharing
(please copy and paste the link to your browser)

Step 3: Data Analysis

3.1 Quantitative Analysis

Arcmap

Arcmap Desktop was leveraged to visualize and analyze the data above producing six different maps. City of Toronto’s 2016 44 wards shape file has been used (currently it has been changed to 25 wards) and the public transportation infrastructure layers have been extracted and plotted from City’s official website. The downtown Toronto’s ward boarder is been marked in red for analysis purposes. Finally six different data sets were joined, plotted and categorized. Various Correlation tools were used but because the data was all on ward level, it didn’t provide further insights then what the paper already produced, hence they were ignored.

ArcGis Online

ArcGis Online platform has been leveraged to create a user-friendly and accessible version of this report. The six maps were exported to the platform which required further adjustments of the outputs and the data. The online maps could be accessed through the following link: https://arcg.is/GGa1P

3.2 Qualitative Analysis

Based on the quantitative outputs, further research has been conducted to investigate the spatial reality of Toronto. The data sets that have been leveraged limited the quantitative outputs especially due to the short time difference between the two data sets (2011, 2016). Therefore further literature review and secondary data were leveraged to fill some of the knowledge gaps and provide better contextual understanding.

Literature Review

Toronto's Social Fabric

In 2016, City of Toronto had ~2.6 million population spread on 44 wards, with 4% increase from 2011 (Government of Canada, 2017b). Despite its racial diversity, the city is often called 'City of Neighbourhoods' describing its spatial and social segregation (Hulchanski, 2011).

Race and Immigration

Compared to 2011, visible minorities in Toronto increased by 2.4% in 2016, making 51.5% of its total population. The percentage of immigrants also increased by 6.1% from 2011-2016, counting 47% of Toronto (Government of Canada, 2017a). This paper wont explore the historical causes or/and factors of segregation, it will examine the spatial concentration of these visible group. The table below shows the population by main visible minority groups.

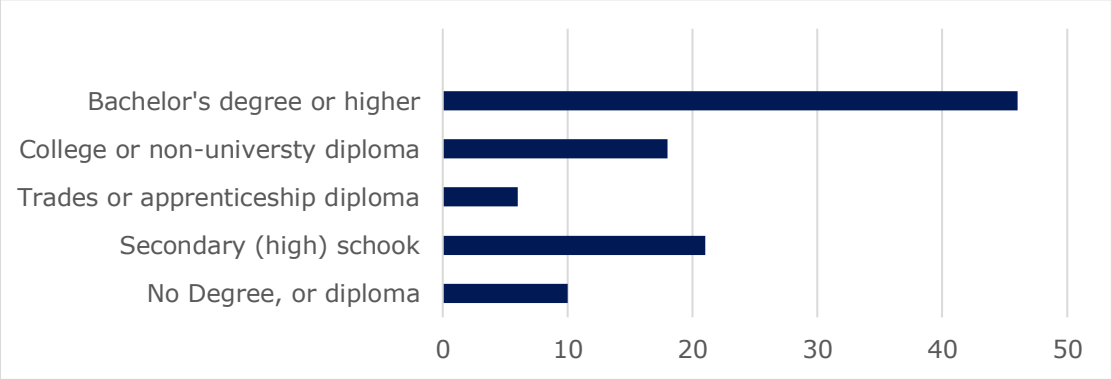
Figure 1 - Toronto ethno-cultural diversity (Census Canada, 2016)

	2011				2016			
	Number	% of the total population	% of the visible minority population	Median age	Number	% of the total population	% of the visible minority population	Median age
Total population	2,576,025	100	..	38.8	2,691,665	100	..	38.9
Visible minority population	1,264,395	49.1	100	34.6	1,385,855	51.5	100	35.2
South Asian	317,095	12.3	25.1	33.1	338,960	12.6	24.5	33.9
Chinese	278,390	10.8	22	39.6	299,460	11.1	21.6	39.6
Black	218,160	8.5	17.3	31.3	239,850	8.9	17.3	32.2
Filipino	132,445	5.1	10.5	36.7	152,715	5.7	11	38
Latin American	71,200	2.8	5.6	34.3	77,160	2.9	5.6	36.4
Others	…	…	…	…	…	…	…	…
Not a Visible Minority	1,311,630	50.9	..	43.4	1,305,815	48.5	..	43.6

Education

Per the table below, almost half of Toronto's population has a Bachelor's degree or higher while only 10% of the population has no certificate or/and degree and the other 40% has a college, secondary, or trade related degree. There are not many literature on education based segregation in Toronto, this research will further investigate spatial concentration trends of highly-educated residents in the city.

Figure 2 – Percentage of Toronto residents with highest level of education[1]



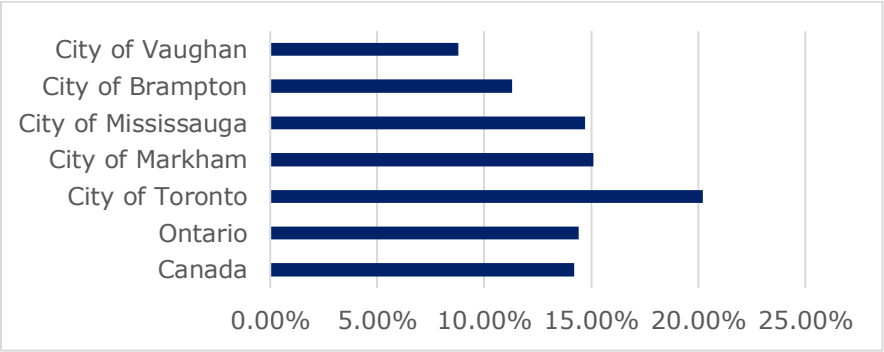
Income

Income inequality and segregation are the most pressing challenges the city is facing today. The average income of its rich wards is 3.5 times more than the poor ones (Hulchanski John David, 2011). This fast growing inequality could be traced to various factors such as gentrification and highly skilled migration that fueled the growth of the city over the past 30 years. Compared to other Canadian major cities, Toronto also has

[1 & 2] Data was leveraged from Census Canada, 2016

the highest poverty rate in the country. This paper will further investigate the spatial patterns of income inequality in Toronto in an attempt to understand how such trends would affect country's political and economic direction.

Figure 3 – Low-income rates in Canada's major cities[2]

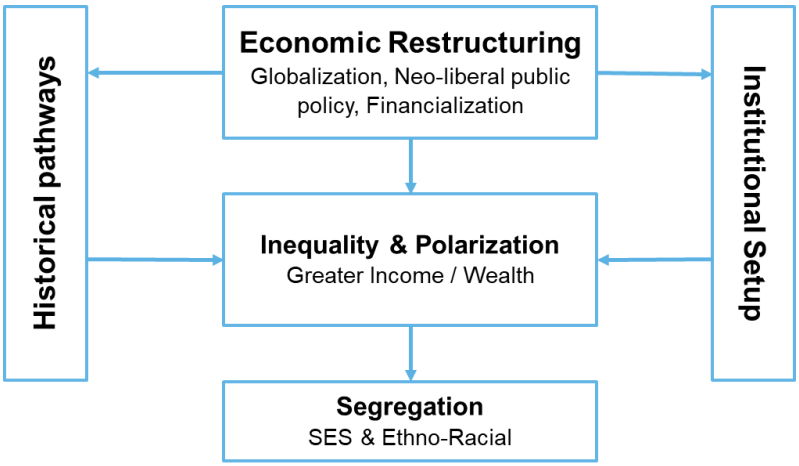


Segregation

It's critical to understand the global, local and historical factors of segregation as highlighted in the figure 4 below (Tammaru *et al.*, 2016). However this paper won't dive into the macro context of Toronto's divisions that could be traced back into privatization, spatial patterns in history, the physical setting, political structure, racism, and many other factors (Hulchanski & Maaranen, 2018).

Segregation is the act of spatial isolation of a social group from the wider population within a city (R. Alan Walks & Bourne, 2019). Resulting to significant difference of its member's spatial distribution from the broader population (Bourne & Walks, 2011). In some cities it's mainly racial, ethnic and religious, while in others it's a result of income or education- based segregation (Greenstein, Sabatini & Smolka, 2000). Regardless if the segregation is "voluntary" or outcome of a discrimination (Qadeer, Agrawal & Lovell, 2010), the higher the degree of segregation, the higher its negative impact on the economic performance of the broader city, in addition to its impact on innovation, stability and the social welfare (Badger, 2013).

Figure 4: The Macro Context for Socio-Economic Segregation



Policy Challenges

Equity, Mobility and Civic Engagement

Currently the segregation is a priority challenge for the city as highlighted in its first ever Resilience Strategy published in 2018. According to the document, Toronto aims to confront segregation and ensure equitable life outcomes for all Torontonians by expanding its public transportation network to low-income neighborhoods, giving “vulnerable” communities leadership roles in the city and integrating equity lens into the City’s strategic planning processes (City of Toronto, 2018b).

Economic and political progress

Segregation is also threating Toronto’s social capital and slowing its political and economic progress. The increased inequalities is already having negative impact on its election participation rate/outcomes, housing price inflation, crime rates, and taxation.

Part Two

Outputs

This paper has produced six key maps in answering this paper's sub-questions. In the analysis section, the maps will be discussed and displayed. Further details about the methodology are in the part one of the paper.

Below links could be accessed to further explore the tools and data sets:

- *GitHub* link that contains the *ArcMap files* and the *data sets*:

https://github.com/npoladian/npoladian.git

- *Google Drive link to access shape files and data sets;*

https://drive.google.com/drive/folders/1IA5atd3cbg9nhWkcQUyxBMRL1DwRxSYI?usp=sharing

(Please copy and paste the link to your browser)

- *ArcGIS Online* link[3] to access the final online interactive maps, *this version is more user-friendly and easy to observe with proper legends*: https://arcg.is/GGa1P

This research could be reproduced by following the key steps below:

1) Data Collection: Getting ward/borough level data around the investigated topics and appropriate city shape file.

2) Data Manipulation: Further details about the calculations and the methods could be observed by reading the "read me" tab in "clean data" excel uploaded in Google Drive.

3) Data Analysis: On ArcMap, the "join" function was used to join the data to the city layer. For data classification, quantile method was used to spread the 44 wards equally across three main categories for comparison and clustering purposes, except for income categories; it was based on the income brackets. Finally, each map separately was exported as shape file with further technical adjustments to make them transferable to ArcGis online software.

[3] After clicking on the "Content" button you would be able to find and select the available maps. Please note that the first two are the transportation lines and Toronto Downtown layers so make sure to keep them selected. If you want to explore a new map, make sure to unselect the previous one.

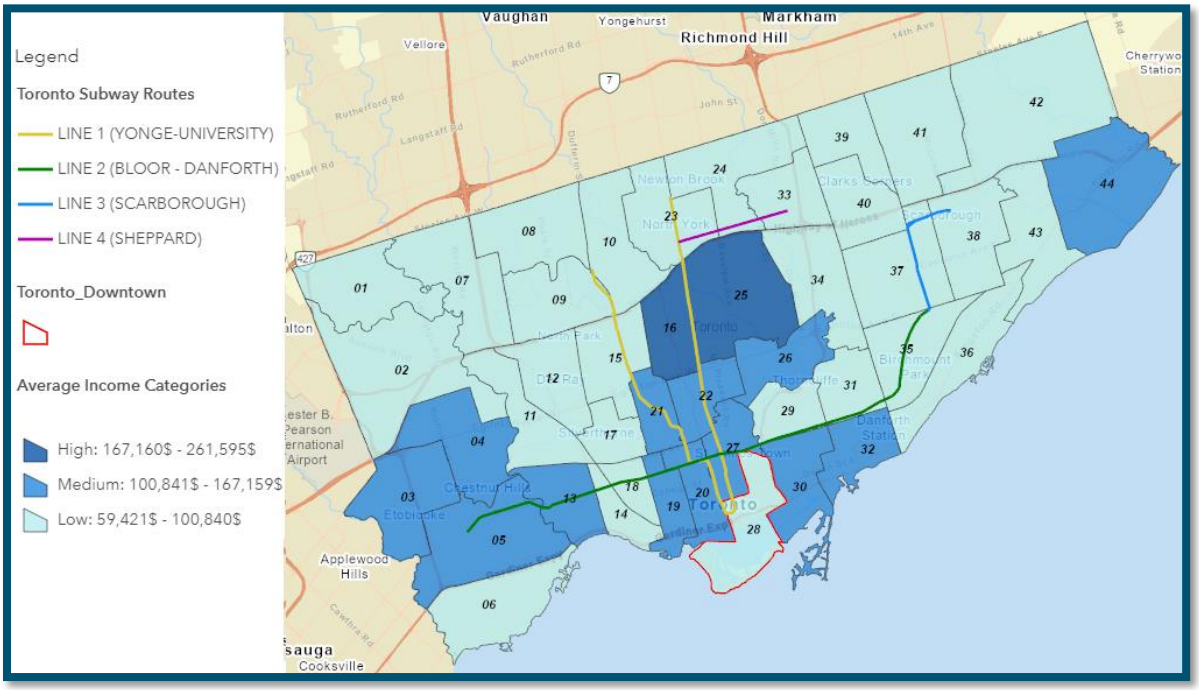
Analysis

Segregation

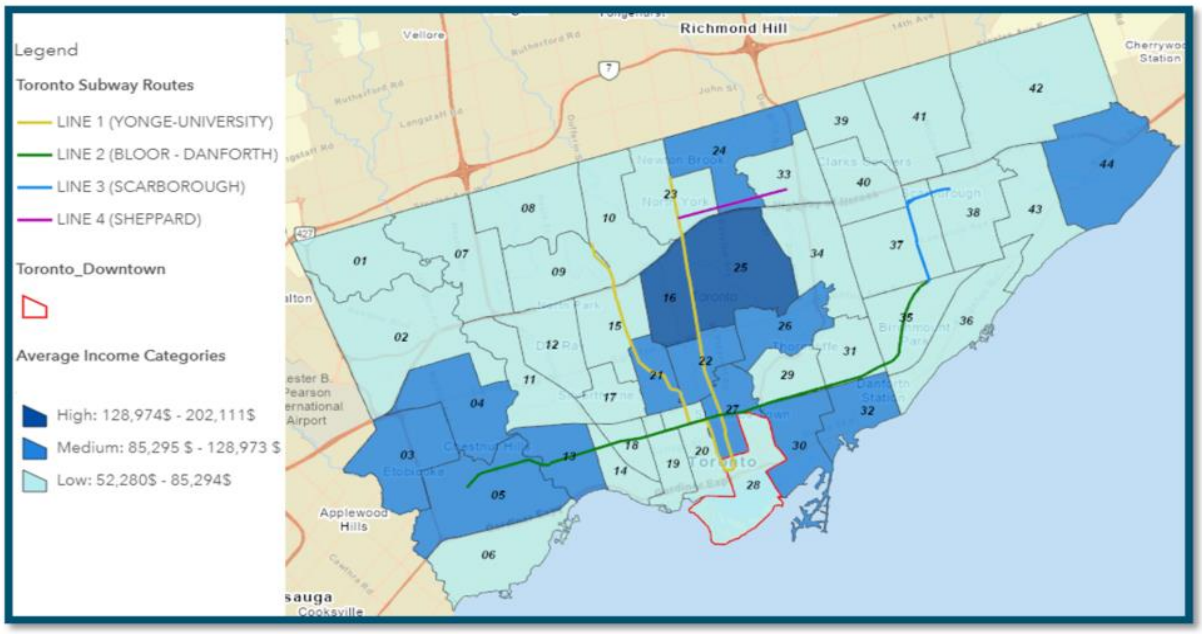
Income Segregation

In map 1, the city is divided into three main clusters based on their average income: low, middle and high income wards. It's obvious that the richest two wards are clustered with very close distance from the spatial center of the city with direct access to public transportation and mid-distance from Toronto's downtown (marked in red). On the other hand, low income wards are in a complete reverse reality, making 90% of the city and they are located the furthest from city's downtown with very poor and almost no access to the main public transportation lines - creating additional barrier for poor people to access corporate opportunities, proper education, public and health related services. Compared to 2011 income distribution in map 2, we can observe two major spatial clustering/segregation changes. Ward number 24's average income decreased to join low income wards, meanwhile two wards close to downtown (20 and 19) entered mid-income bracket making poverty even more clustered in the north of the city and wealth close to the Centre. It was also remarkable to observe that the downtown's ward is in the low income bracket since the ward also is home for poverty and other poor working class residents.

Map1: Average Ward-Level Income in Toronto, 2016



Map2: Average Ward-Level Income in Toronto, 2011

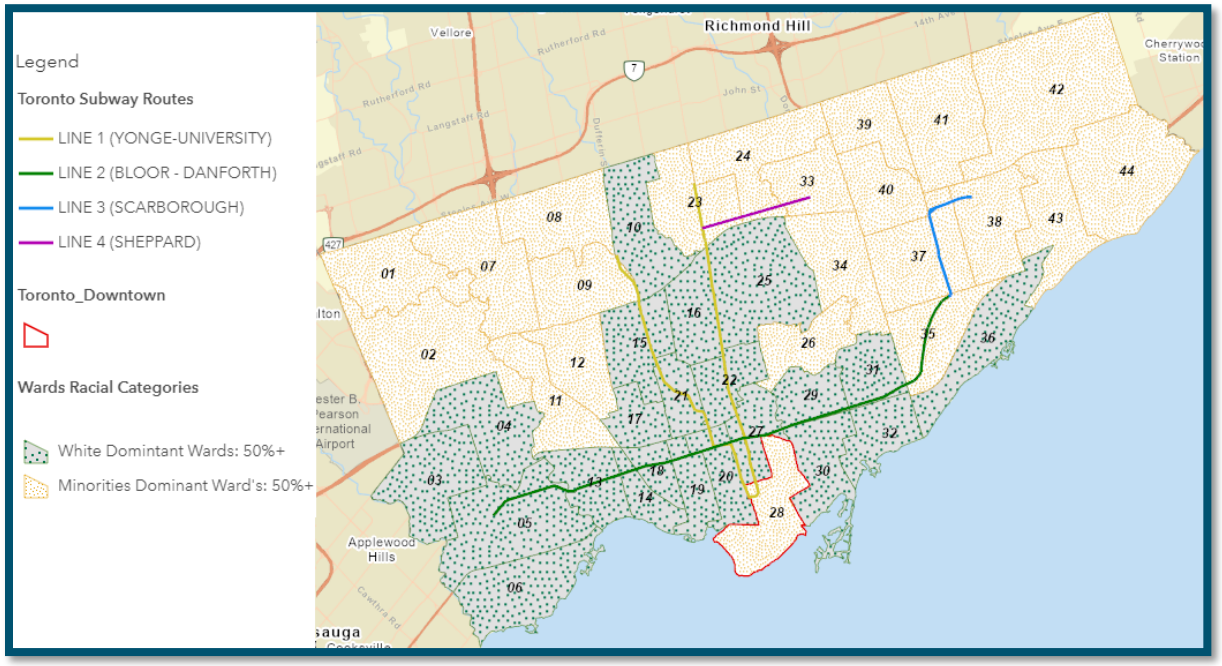


Racial Segregation

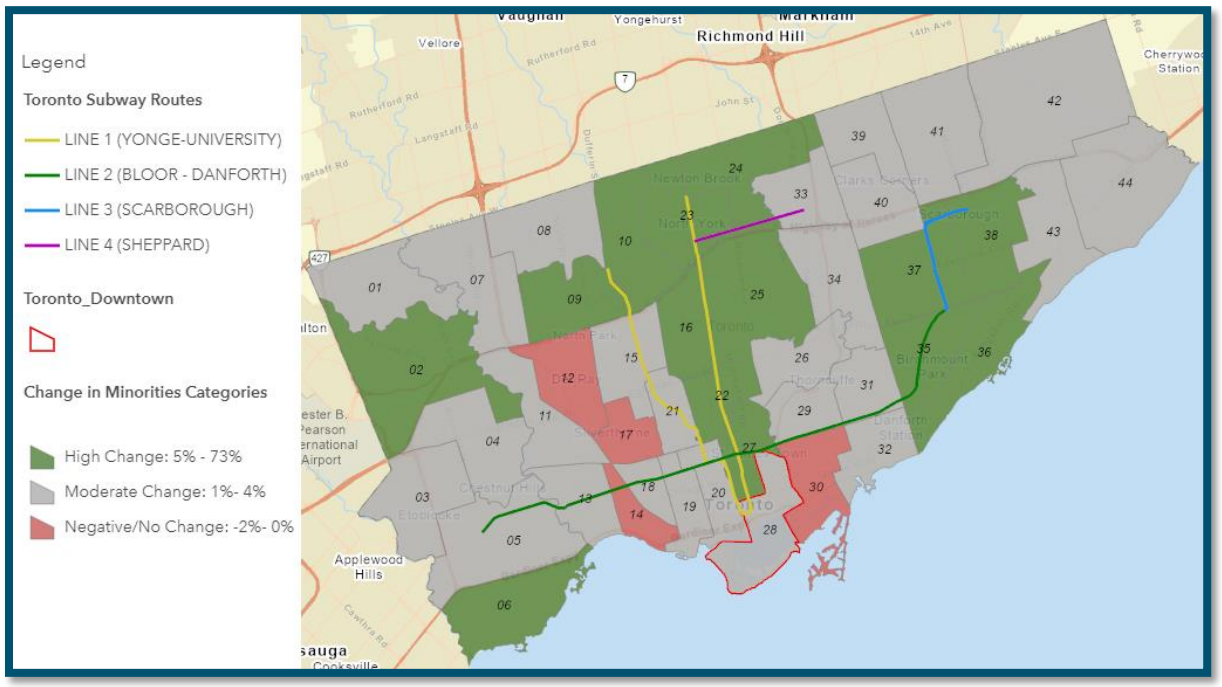
Map 3 shows the distribution of Visible Minorities' dominant wards[4] compared to White European majority wards with clear segregation/clustering. The spatial distribution of White wards (in green) is clustered at the center of the city and correlated with the public transportation major lines. The Minority wards are clustered North-East and North-West with poor or no access to the public transportation. Compared to map 1, we can also observe a correlation between rich wards and White ones. In fact ***the richest ten wards are all white dominants and the poorest ten wards are all visible minority wards***. This fact didn't change from 2011-2016, the dominance type remained the same with minor changes in perctages. As map 4 outlines there was not a clear trend in term of where minorities have been moving within the city.

[4] Dominant wards refer to the wards with more than 50% of its residents either visible minority or White European

Map 3: Visible Minorities and White Europeans Dominance wards, 2016



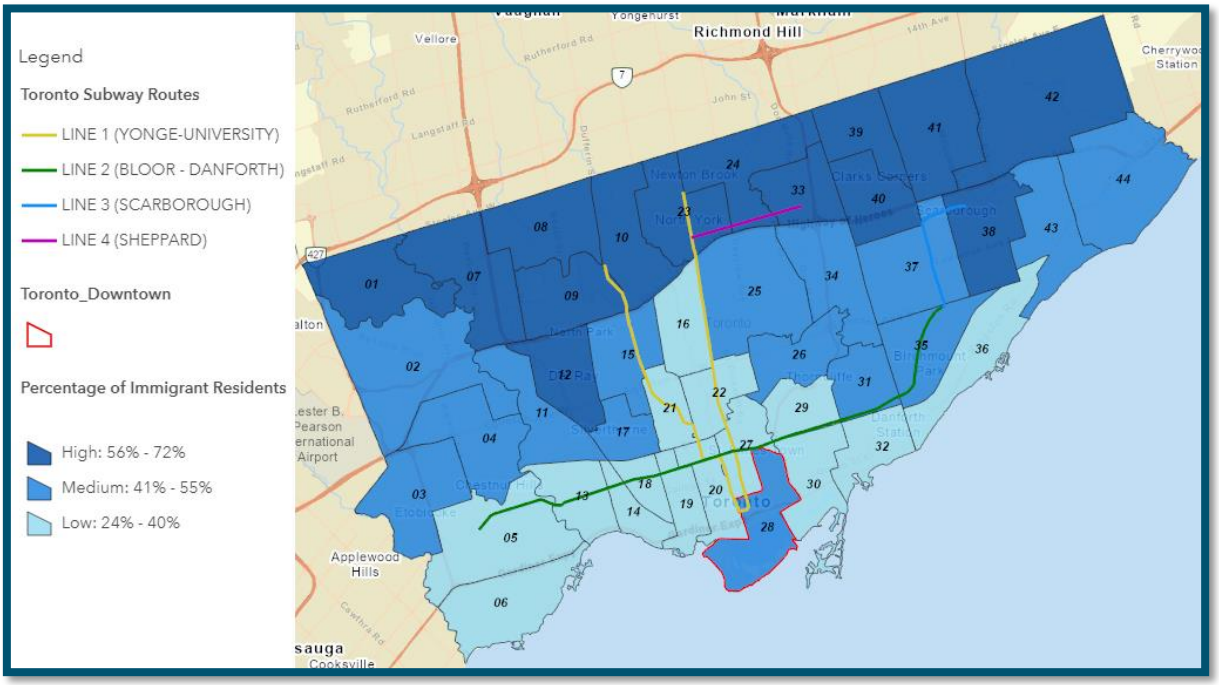
Map 4: Percentage Change in Visible Minorities per Ward, 2011-2016



Immigration and Segregation

Map 5 below illustrates density of immigrants in the total population of the city. Immigrants dominated wards with 50-72%, are clustered in the North and far from the city center in what is called “Toronto Suburbs”. This distribution is obviously correlated with the poor and Minority wards. As we get closer to the center the number of immigrants gradually decrease. Similar to the case of poor wards, these wards have minimum or no access to major public transportation system.

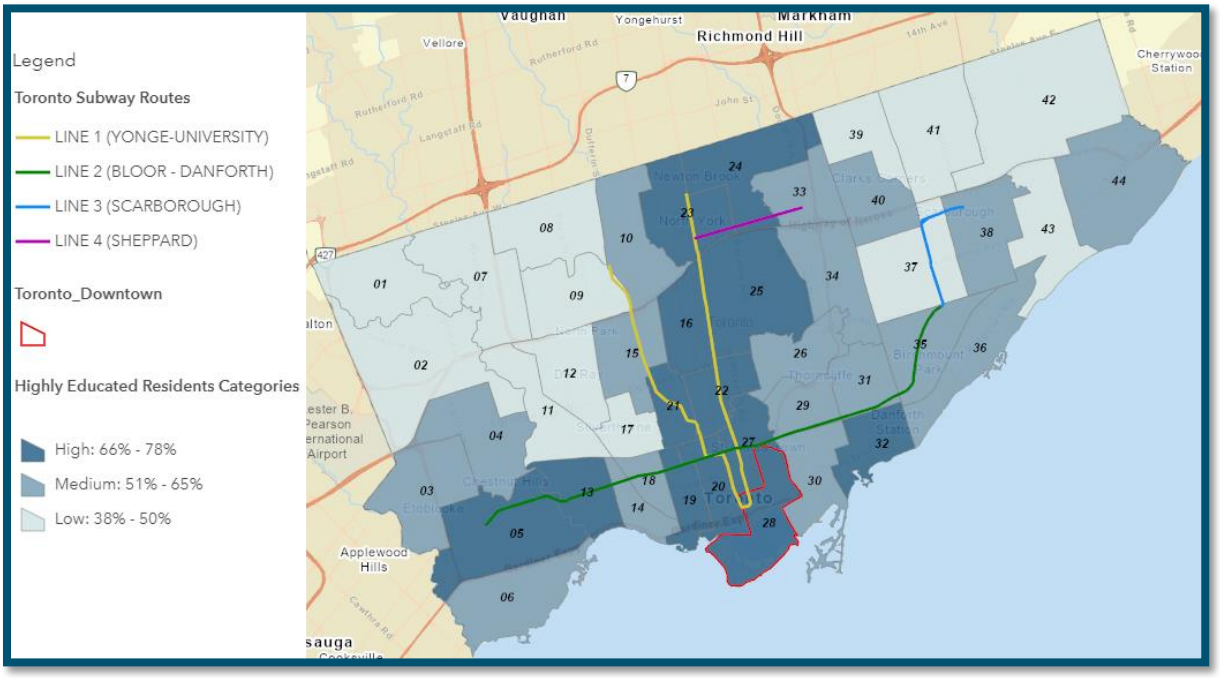
Map 5: Percentage of Immigrant Residents per Ward, 2016



Education-Based Segregation

Similar pattern could be observed here in map 6, the public transportation access and the distance from the city center have a significant role in determining the presence or the absence of specific social group. The wards with public transportation access have the highest percentage of highly educated residents (50-78%).The more we get further from the city center or/and transportation lines the percentage of highly educated residents decrease.

Map 6: Percentage of Highly-Educated Residents per Ward, 2016



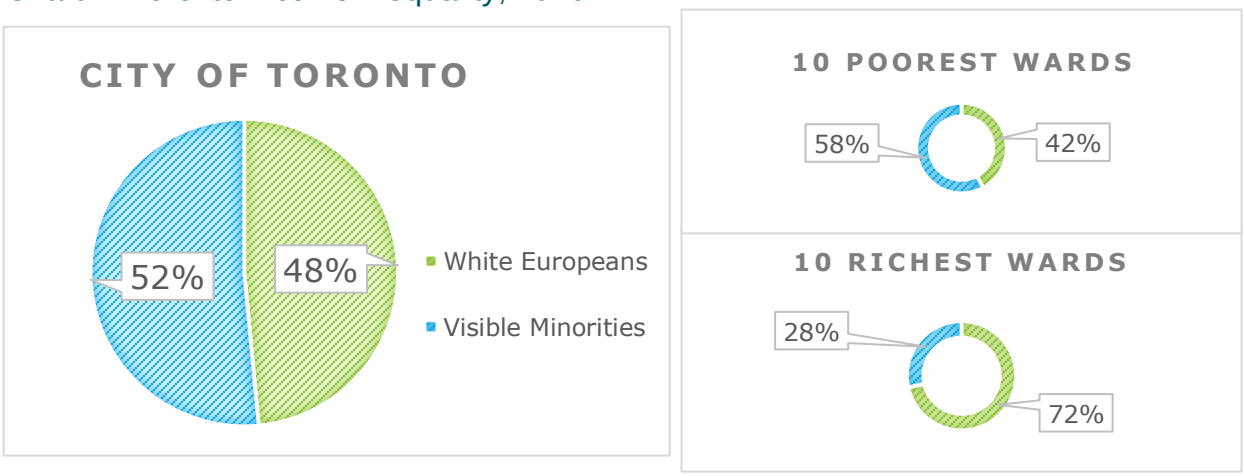
Key Insights and Policy Implications

Insight #1: Diversity is not equally reflected in Toronto's wards

As briefly discussed in the section above, White Europeans count 71.6% of the richest ten wards in Toronto while they make 48.5% of the city. The same is true for Visible Minorities, they make 68.6% of the ten poorest wards in Toronto, 17% above their percentage of the population in the broader city.

Immigrants also have high representation in poor wards, they count 58% of poorest 10 wards with 10% above their population representation. On the opposite side highly-skilled residents have lower representation, counting for 45% of these wards marking 13% below their weight to the population across the city.

Chart 1: Toronto Income Inequality, 2016



Insight #2: The income segregation is in increase from 2011-2016; the ten poorest wards are Minority dominant while the ten richest wards are White Europeans dominant.

Policy Implication: Many factors and institutions contribute to the increasing inequality in the city. Hence, there is an increased need for cross government collaboration and Public-Private Partnerships across the following four policy pillars.

- *Taxation Policies:* Hulchanski claims that the start of income polarization in the city could be traced back to 1990s when the government decreased taxes and provided cut to Toronto's social assistance programs (Hulchanski John David, 2011). Therefore adopting more progressive taxation approach will provide additional resources for the government to invest in the community and also decrease the inequality levels between Toronto's poorest and richest wards.

- *Educational Policies:* Education has a major impact on vulnerable youth. Progressive and equitable policies that aim to bring equal access to education for poorer wards will also impede the rising segregation and inequality in the city.

- *Employment Policies:* Equitable Wage policies, anti-discrimination, inclusive hiring and incentivizing corporations to invest and recruit from low-income wards would have major impact in bringing more prosperity to the wards who left behind.

- *Affordable Housing policies:* Under-regulated housing market is one of the major factors of segregation in Neoliberal cities. The city should invest more money and find creative ways in building affordable units in high income wards. Regulating the real estate market is critical as well, from 2009-2012 the average apartment price went up by 27% times in Toronto, making it impossible to low and middle income families to own home (LALAINE, 2019)

Insight #3: Access to public transportation plays major role in determining the spatial distribution of poverty, race and highly skilled immigrants.

Policy Implication:

- *Infrastructure and Inclusion Policies:* City of Toronto and its transportation agencies should invest more into low-income wards by expanding their transit infrastructure. In addition to the many social and financial barriers that residents face in these wards, mobility should not be a concern.

- *Housing Policies:* Increasing the quota of adorable housing nearby public transportation hubs making it easier for low-income residents to get access to the broader city.

- *Equitable Planning and Engagement:* Increasing the percentage of vulnerable population in transportation planning boards. This would lead to more inclusive planning and public engagements strategies adding equitable lenses to city's transportation plans and make poor wards at the core of their planning strategies.

Current Limitations and Roadmap

Segregation and inequality are multidisciplinary urban topic across aboard range of political, economic and social factors. This research only leveraged Census Canada 2011 and 2016 data and examined the changes of Toronto's wards across four main aspects. The data gave partial understanding of segregation and inequality trends. It also limited the analysis without going into detailed quantitative observation for relevant changes in specific time slots. The fact that the data was on ward level also limited this research accuracy, further individual (doted) data is needed in investigating the topic. When it comes to transportation access, the paper didn't investigate the reasons of such spatial distribution and/if its discrimination outcome. The next step would be to deep dive into one type of segregation, get individual (doted) data, generate segregation indices and provide further literature context about the causes and outcomes of each major changes in the socio-spatial character of the city considering its historical progress and context.

Conclusion

This research untapped the increasing segregation reality in Toronto by exploring its relationship with race, income, education and immigration. This paper found that diversity is not equally reflected across poor and rich neighborhoods and direct access to public transportation has a major impact on Toronto's wards financial well-being. This reality is not unique only for Toronto as cities across North America are facing similar income inequality challenges fueled by social and spatial segregation. Per this paper's recommendation, governments need new creative and cross-sectorial tools and policies in impeding wealth and social isolation across the seven policy pillars that were highlighted above. As Richard Wilkinson perfectly elaborated in his book, the impact of inequality, "Inequality promotes self-interested, less affiliative, often highly antisocial, more stressful and likely to give rise to higher levels of violence, poorer community relations and worse health." (Richard, 2006). Hence if we want to build peaceful and sustainable planet for the next generation, we need to empower those who history left behind.

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