



# THE FUTURE IS WALKABLE

Annelyse Ross, Rachel Way,  
Riya Sakhrani and Timon Glaesser  
SDA 490 Capstone  
April 11th, 2023



## MEETING THE CHALLENGE

As Vancouver's population continues to grow, the city is facing new challenges to meet the demands and needs of the diverse population. Vancouver's Transportation 2040 Plan seeks to create accessible options of urban mobility for all. The city hopes to do this by reducing its dependency on cars by empowering residents to seek mobility options of walking, biking and transiting before choosing to drive a car. This vision aims to foster a healthy vibrant city that is better connected, promotes the health of residents and meets the diverse needs of its communities. But how can we best address reducing the number of cars on the road while also promoting healthy, vibrant communities throughout the city?

**Our answer is increasing walkability.**

The term walkability seeks to describe how friendly an area is to fostering and promoting walking as the main mode of transportation. High levels of walkability have consistently been shown to be associated with higher qualities of life, lower carbon emissions and a general increase of community health, all while decreasing dependence on cars. Walkable cities consider the people of the city -not their cars- to be the primary focus when building infrastructure and making city improvements.

**So, considering the Transportation 2040 Plan, how can walkability be improved to support Vancouver's projected 2040 population in a way that fosters urban mobility?**

## **Why Walkability?**

Walkability matters for the creation of bustling, inviting cities. But more specifically, there are particular aspects of walkability that directly relate to the Transportation 2040 Plan. First of all, walkability is financially accessible to all, helping to increase equity throughout the city. Additionally, walking undoubtedly impacts individual health and in turn community wellbeing. Walkable cities not only increase the overall health of the community by promoting active lifestyles, but also enhance social interactions within communities. People choosing to walk makes them less dependent on cars. The upside? Not only will road congestion decrease, making commutes more enjoyable no matter the mode of transportation, but less drivers also decreases carbon emissions and thus improves air quality across the city.

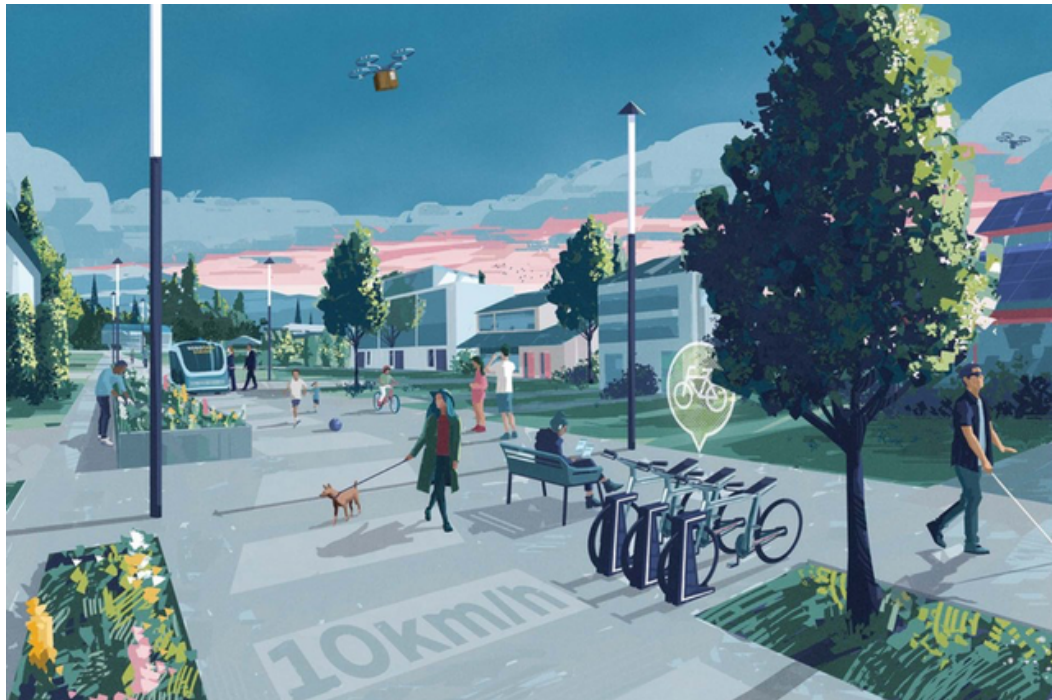


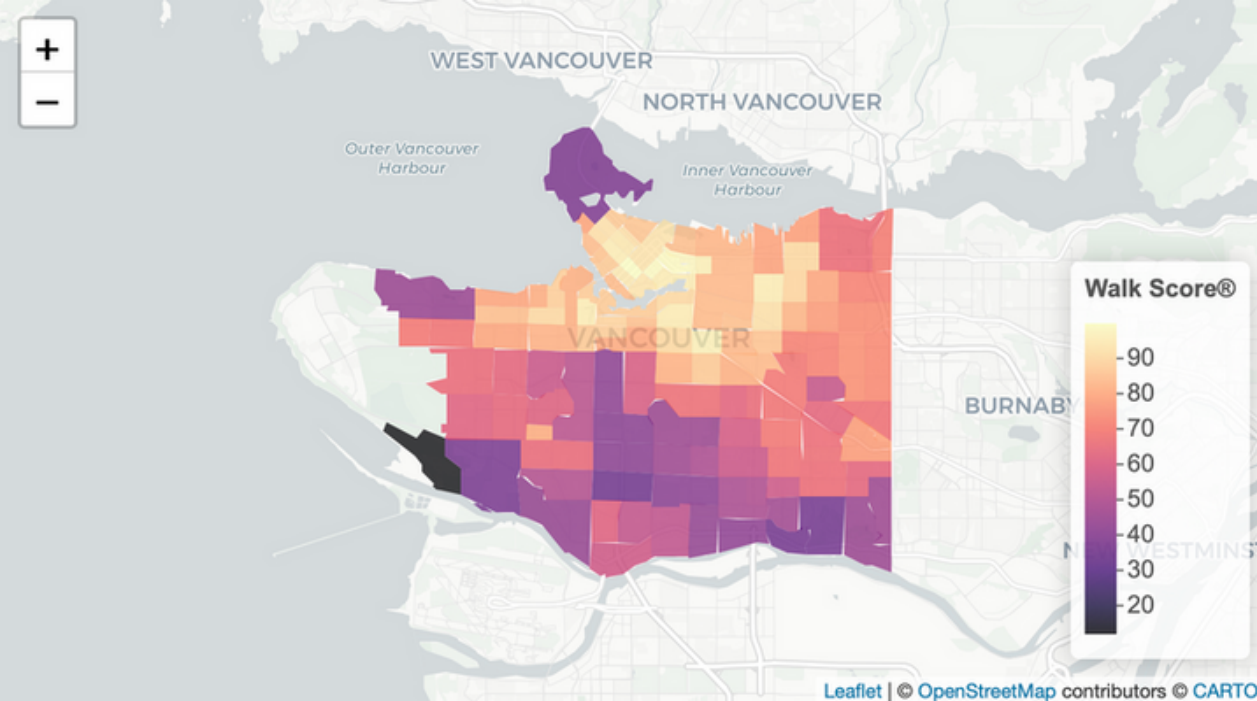
## 27% REDUCTION IN CAR USAGE

The changes in car usage we expect to observe in more walkable cities aren't insignificant either. When comparing areas with high and low walkability rankings, areas with a high Walk Score® were observed to have a nearly 27% reduction in car usage. With an ever increasing population, this reduction in car use is incredibly important for the City of Vancouver to reach their 2040 Vision Goal.

## REDUCATION OF 97,000 METRIC TONNES OF CARBON EMISSIONS

Of course, not only does this reduction in car use clear up roads, it also has a significant environmental impact, helping Vancouver move towards a greener future. From this reduction, we determined that if all of the City of Vancouver had a walkability ranking of over 75, total carbon emission could have been reduced by 97,000 metric tons in 2021.

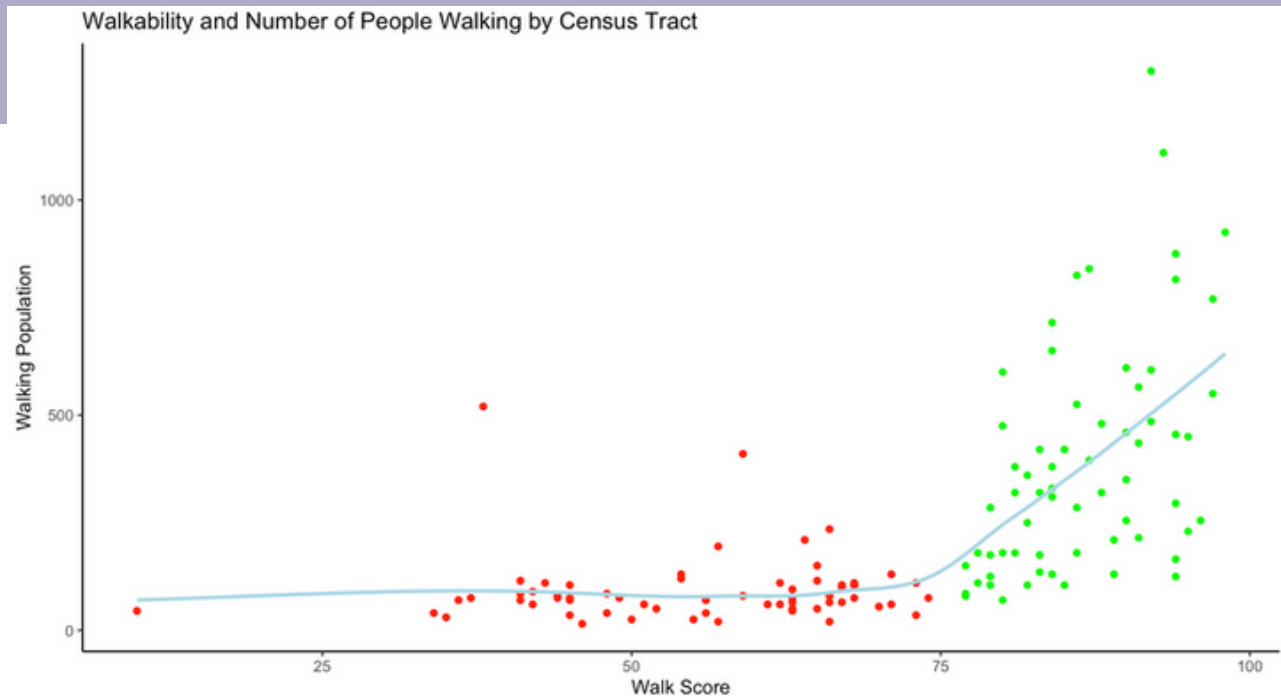




# WALKSCORE RANKING ACROSS THE CITY OF VANCOUVER

To better understand what walkability looks like around the City of Vancouver we've used a popular Walk Score® metric. This score reflects an area's proximity to amenities essential for daily errands like grocery stores, cafes, and restaurants. These are all important factors for people when deciding the mode of transportation they choose for daily life.

By visualising these scores, we can see clearly which areas of Vancouver are and aren't walkable. To little surprise the downtown core is incredibly walkable with scores all above 75, while many parts of suburban Vancouver lag behind significantly. As we'll go on to discuss, these low walkability scores are an important and impactful metric for visualising barriers to entry for greater walkability within communities.



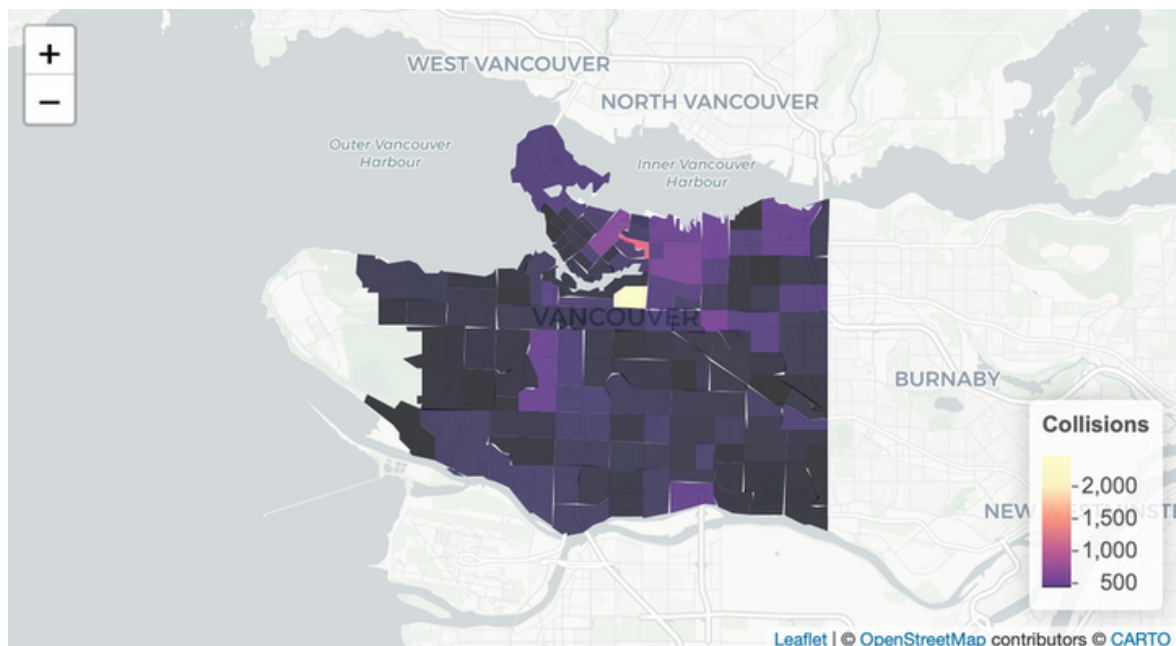
Could higher Walk Scores® influence people's decision to choose walking as their primary mode of commuting? We found that when communities reach a walk score of 75 or higher, there is a significant increase in the number of people who choose walking as their main mode of commuting. This relationship was examined using the following plot.

The plot demonstrates the relationship between Walk Scores® and the proportion of people walking in each census tract. This proportion was determined from the 2021 Canadian Census, which reported residents' primary mode of commuting. Each point on the plot represents a census tract in the city. A strong correlation exists between the two variables when the walk score is 75 or higher. This relationship is clearly illustrated by the steep incline of the slope of the grey line. When census tracts have a walk score of over 75, residents become more likely to choose walking as their primary method of commuting. This confirms pre-existing theories about 15 minute cities where most daily errands can be accomplished by foot and where residents are able to easily access amenities such as grocery stores, restaurants, schools, and parks without needing a car.

# VEHICLES COLLISIONS & INFRASTRUCTURE SAFETY

For a city to be walkable, pedestrians need to feel safe throughout their commute. As a part of Vancouver's Transportation 2040 plan, the city hopes to reach 0 annual traffic fatalities.

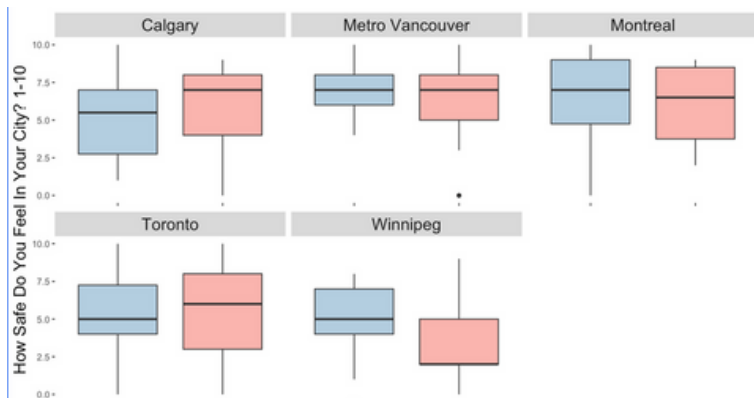
By collecting data from the Vancouver Police Department we were able to create a map that shows the number of traffic incidents involving cars that resulted in either injury or death, as well as where they occurred. This data can be used to better understand which intersections and streets can be improved to decrease the number of incidents and increase the safety of commuters. Measures such as traffic calming, wider sidewalks and controlled intersections can help to reduce the frequency of vehicle collisions. Ultimately, improvements to these problematic areas will enhance safety for everyone and foster an improved culture of walking and biking.



# COMMUNITY SAFETY

When vulnerable groups do not feel safe in their communities or while using transit, it can result in reduced mobility, decreased access to opportunities, and diminished quality of life for these individuals, in turn affecting the overall health and vibrancy of the community.

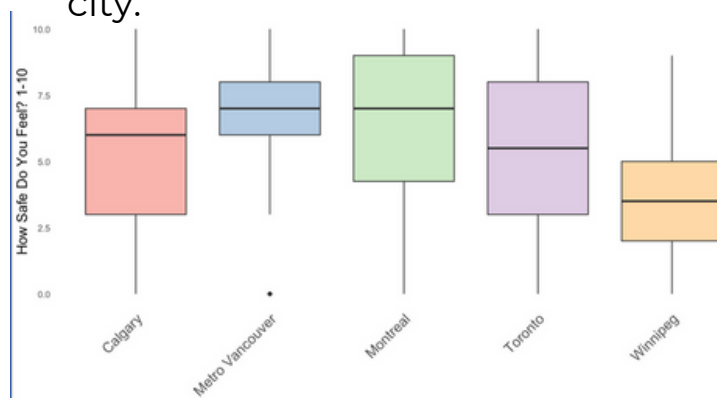
To create a more walkable city, we can employ measures to prioritise the safety of residents, especially those who are more vulnerable. This could include measures such as Vancouver's clean streets initiative, Vancouver's Vision 0, increased presence of police and social workers, and community engagement initiatives to create a safer environment for everyone. By addressing the safety concerns of vulnerable groups, the city of Vancouver can ensure that all residents can safely and confidently be mobile and participate in their communities, leading to a more equitable, vibrant and walkable city.



Community safety is a large part of the urban mobility experience. To investigate safety and urban mobility in Vancouver, data from the Crestview Strategy survey conducted in 2023 was used to evaluate individuals' perception of safety. We looked at subsets of this data like Metro Vancouver and Toronto which had 68 and 135 respondents respectively.

By comparing Metro Vancouver to other major cities around Canada we can see how perceptions of safety compare across the country. We can also see that Vancouverites, on average, rate transit safety as a 7 out of 10 and feel that the safety of the city has fallen.

Furthermore, youth, seniors, and women, who are often more vulnerable to safety risks, reported feeling less safe in their city.

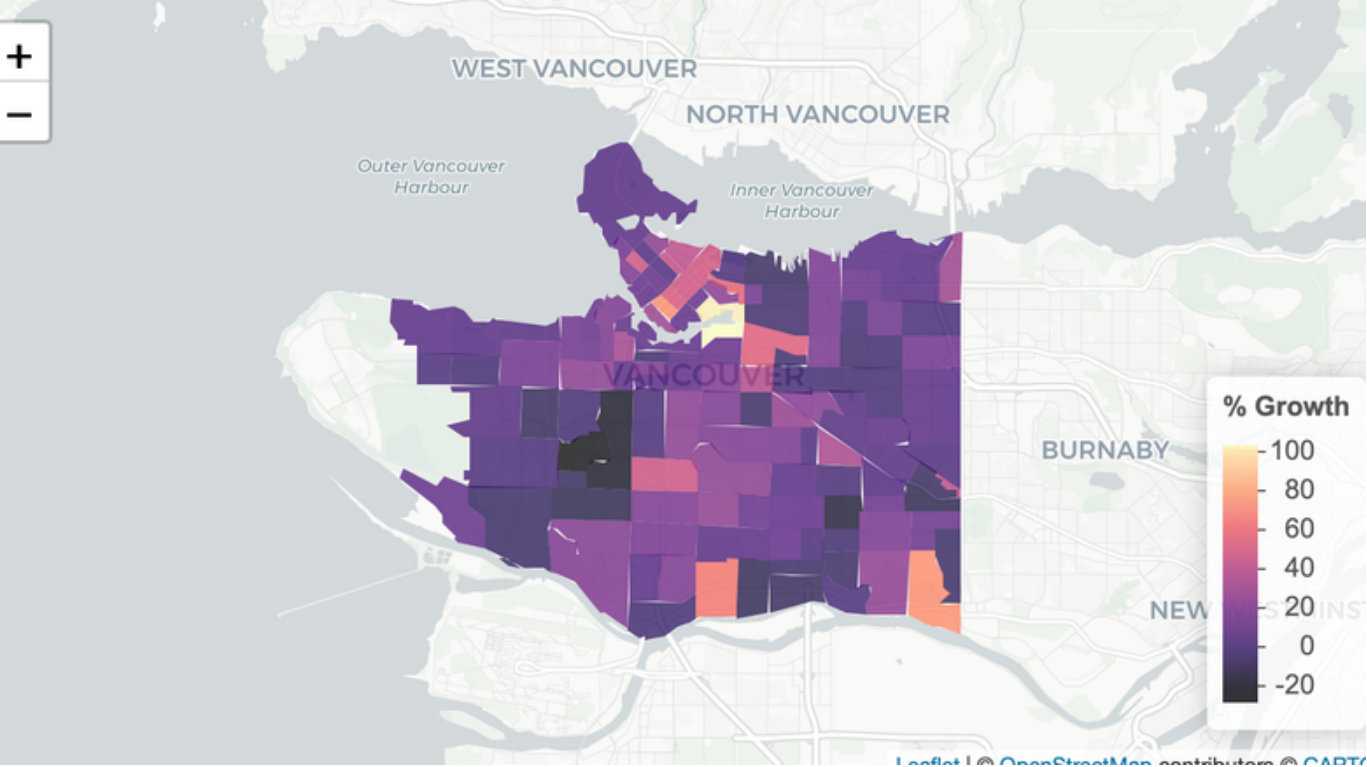




# CONNECTING COMMUNITIES THROUGH TRANSIT

We now understand how walkable census tracts can be created and how they will change our communities for the better. But if the only way to access these walkable communities is by car, have we really increased the overall walkability of the city? The answer is no, accessible transit is essential for making walkability more cohesive throughout the city, connecting one walkable community to another and allowing for the health and social benefits of walkability to be spread. To realise the full potential benefits of walkability, commuters should be able to easily access transit to start and end their journeys on foot, allowing for walkable communities to work as a cohesive network.





# POPULATION GROWTH PROJECTION FOR THE CITY OF VANCOUVER



By looking at past trends in population growth for different areas within the City of Vancouver, we can predict which areas are likely to experience most of this growth over the next 20 years. From this, we can easily identify specific areas like False Creek, as well as the downtown core as a whole and some communities along the Fraser River that will experience a significantly greater growth.

When looking at where to begin improving walkability, we believe starting with these areas will provide the greatest benefit as we continue moving toward the future.



# RECOMMENDATIONS

Reaching the goals set out in the Transportation 2040 Plan can be best realised by increasing walkability across the city. In order to do this we suggest the following recommendations.

- Effective change involves the consultation of community members, experts, residents and businesses on how to create walkable communities that meet their unique needs.
- The city should then consider rezoning areas to allow for more mixed use buildings, enhancing accessibility and in turn increasing Walk Scores®.
- Incentivizing these developments can also help the city achieve this vision sooner.
- All of this cannot be done without ensuring safe pedestrian infrastructure is in place to ensure that urban mobility is equitable for everyone.
- The final piece of the puzzle involves implementing accessible transportation to connect walkable communities together, creating a cohesive, truly walkable city.



1. Consult Community



2. Rezone Areas



3. Incentivize Developments



4. Ensure Safe Pedestrian Infrastructure

**With these recommendations, let's step into the future.**