



# Online Survey

Date: Thursday, September 05, 2019

Project: Vaughan Transportation Plan

To: Chris Tam, P.Eng. – Transportation Project Manager

From: HDR  
Sue Cumming, Cumming+Company

Subject: Online Survey

## Purpose

Building on the approach outlined in the Vaughan Transportation Plan (VTP) Draft Communications and Public Engagement Plan, the online survey will get people thinking about how they get around and why will be used to inform the problem and opportunity phase of the VTP.

The online survey will target the general public and informed observers and seek to:

- Gather input to better understand the community's needs;
- Recognize what would make an impactful difference in their lives; and;
- Garner insights about how people think, what they value, and how this project can help them meet their goals.

## Avoiding Survey Fatigue

HDR is aware that the City of Vaughan and other agencies are doing good outreach through other projects and completed studies. To avoid duplication and survey fatigue, the online survey will be targeted to inform the problem and opportunity phase of the VTP. Survey questions will aim to not duplicate what has already been asked but some questions may overlap with previous studies as we would be interested to see how opinions change over time.

Topics covered by other surveys include:

- Demographics and travel patterns: 2016 Transportation Tomorrow Survey (TTS), 2016 Metrolinx GO Station Access Plan
- Pedestrian and bicycle motivations, barriers, type of users, willingness to make a change: 2017 Pedestrian and Bicycle Master Plan
- Transportation struggles at the local level: 2012 Vaughan TMP, 2019 North Vaughan and New Communities TMP, Secondary Plans
- Transportation struggles at the Regional level: YRT customer satisfaction surveys, 2016 York Region TMP, Metrolinx customer satisfaction surveys, Metrolinx engagement summaries for: GO expansion, Maple GO, Rutherford GO, proposed new station at Kirby Road



HDR is reviewing these materials to inform the problem and opportunity phase.

## **Roles and Responsibilities**

HDR will prepare the content for the survey. The City will manage the survey via the project web page on Vaughan.ca and promote it. HDR will develop content for advertising the survey. HDR will review responses and create a summary report. The City will approve all content.

## **Key Performance Indicator**

To track the success and performance of the online survey, the number of survey completions will be monitored. We will aim to have between 600-800 survey responses. For reference, the PBMP online survey had 650 responses. The survey will be open as long as the problem and opportunity phase of the project is underway and will coincide with pop-ups (i.e. until December 2019).

## **Distribution and Advertising**

To achieve 600-800 survey responses, a distribution and advertising plan was developed. The survey will be promoted by:

- Link to the online survey through the project web page on Vaughan.ca, the Get Involved page, and the online City Calendar;
- Social media posts (Twitter/Facebook/Instagram/Linkedin) with a link to the online survey;
- Emails to the project contact list;
- Distribution a postcard with the web address of the survey at City facilities, other public engagement events, and through pop-up kiosks; and
- iPads and hard copies of the survey at open houses, pop-up kiosks, and other public engagement events to encourage attendees to complete the survey at the event.



# Draft Online Survey Questions

Note: Questions about travel characteristics were not asked to reduce survey fatigue since they can be readily extracted from other surveys such as TTS.

## Part 1: What do you think of travelling in Vaughan?

1. I can navigate the bus network and subway system:
  - a. Never tried/not really
  - b. With a little help
  - c. Sort of
  - d. Pretty well
  - e. Like a pro
2. How do you feel about the following statements?

<b>Driving</b>			
Driving gets me where I want to go quickly.	Disagree	Not sure	Agree
Driving is reliable.	Disagree	Not sure	Agree
Driving is straightforward and easy to do.	Disagree	Not sure	Agree
Driving is safe.	Disagree	Not sure	Agree
Driving is expensive.	Disagree	Not sure	Agree
<b>Transit</b>			
Transit gets me where I want to go quickly.	Disagree	Not sure	Agree
Transit is reliable.	Disagree	Not sure	Agree
Transit is straightforward and easy to use.	Disagree	Not sure	Agree
Transit is safe.	Disagree	Not sure	Agree
Transit is expensive.	Disagree	Not sure	Agree
<b>Cycling</b>			
Cycling gets me where I want to go quickly.	Disagree	Not sure	Agree
Cycling is reliable.	Disagree	Not sure	Agree
Cycling is straightforward and easy to do.	Disagree	Not sure	Agree
Cycling is safe.	Disagree	Not sure	Agree
Cycling is expensive.	Disagree	Not sure	Agree
<b>Walking</b>			
Walking gets me where I want to go quickly.	Disagree	Not sure	Agree
Walking is reliable.	Disagree	Not sure	Agree
Walking is straightforward and easy to do.	Disagree	Not sure	Agree
Walking is safe.	Disagree	Not sure	Agree
Walking is expensive.	Disagree	Not sure	Agree
<b>Parking</b>			
Free parking is important to me.	Disagree	Not sure	Agree
There isn't enough parking at transit stations.	Disagree	Not sure	Agree
If I had to pay for parking at my place of work, I would change the way I get there.	Disagree	Not sure	Agree
I believe on-street parking could be better used for other things like wider sidewalks, patios, or bike lanes.	Disagree	Not sure	Agree

Generated outcome: Use responses to validate hypotheses about perceived notions towards different transportation modes.

## Part 2: How likely are you to make a change?

Before each group of questions a glossary of terms with photos would introduce each concept.

3. How likely are you to...?



Shared Mobility (refers to using a transportation service or vehicle that is not yours. E.g. uber, car2go, bike share)					
Own a vehicle if shared mobility technologies (e.g. uber) were broadly available?	Very unlikely	Unlikely	Not sure	Likely	Very likely
Bike to a transit stop if bikesharing was available?	Very unlikely	Unlikely	Not sure	Likely	Very likely
To get to a bus stop or subway station by Uber, Lyft or taxi instead of your personal car?	Very unlikely	Unlikely	Not sure	Likely	Very likely
Use an e-bike, e-scooter or moped for short trips if they were available to use through a mobile application?	Very unlikely	Unlikely	Not sure	Likely	Very likely
Take transit if more flexible routes and on-demand scheduling was provided to pick you up closer to your home?	Very unlikely	Unlikely	Not sure	Likely	Very likely

4. How do you feel about the following statements?

<b>Vehicle Technology</b>			
I would ride in a driverless vehicle.	Disagree	Not sure	Agree
I would prefer to ride in a driverless vehicle rather than driving myself.	Disagree	Not sure	Agree
I would share a ride with others in a driverless vehicle.	Disagree	Not sure	Agree
Driverless vehicles will give me more free time to do the things I love or be more productive. As a passenger in a driverless vehicle, I would do the things I love or get work done.	Disagree	Not sure	Agree
Driverless vehicles will make travelling significantly safer. I feel safer in a driverless, automated vehicle.	Disagree	Not sure	Agree
Driverless vehicles will worsen traffic congestion.	Disagree	Not sure	Agree
<b>Smart Traffic Signals</b>			
apt to traffic con	Disagree	Not sure	Agree
Information about whether I will make the green light at the next traffic signal is helpful.	Disagree	Not sure	Agree
I support giving transit priority at intersections to make it operate faster and more reliable.	Disagree	Not sure	Agree
I would drive slower if it meant I would hit fewer red lights.	Disagree	Not sure	Agree
<b>Travel Information and Payment</b>			
I would take transit more often if I could pay with a mobile application or my phone.	Disagree	Not sure	Agree
Real-time arrival information for transit would encourage me to take it more.	Disagree	Not sure	Agree
I would be comfortable planning my daily trips on an app if it could reliably show me the time it would take and the cost.	Disagree	Not sure	Agree
I would walk, bike, or take transit to work if my employer provided incentives or extra benefits for me to leave my car at home.	Disagree	Not sure	Agree
<b>Freight and Delivery</b>			
I prefer using delivery apps than going to the store myself.	Disagree	Not sure	Agree
I am interested in the delivery of my packages, food, or other goods by automated technologies such as a drone or driverless vehicle.	Disagree	Not sure	Agree

Generated Outcome: Gain insight into what drives people's behaviours and how willing they are to make a change given advances in technology and transportation disruptions.



## Part 3: What do you value?

1. How do you feel about the following statements?

Transportation influenced where I chose to live.	Disagree	Not sure	Agree
Transportation influenced where I chose to work.	Disagree	Not sure	Agree
Owning a car is important to me.	Disagree	Not sure	Agree

2. I prefer:

- a. Being the driver
- b. Being the passenger

3. I prefer:

- a. Saving time
- b. Saving money

4. Given the choice, I prefer to:

- a. Buy online and get it the next day
- b. Go to the store and get it now

5. Getting around the City, I enjoy the following the most (Choose two):

- a. Being the driver
- b. Exercising
- c. Listening to music, read, or play on my mobile device
- d. Getting work done (e.g. work on my laptop)

6. When new technology comes out:

- a. I buy it right away
- b. I upgrade when it is time
- c. I buy new when my stuff breaks
- d. It's no concern of mine

7. Currently, I move around the City by: (Choose three)

- a. Public transit
- b. Walking
- c. Bike or scooter
- d. Ride/car sharing (such as Uber or Lyft)
- e. Gas vehicle
- f. Hybrid or electric vehicle
- g. Driverless vehicle

8. In 10 years, I would like to move around the City by: (Choose three)

- a. Public transit
- b. Walking
- c. Bike or scooter
- d. Ride/car sharing (such as Uber or Lyft)
- e. Gas vehicle
- f. Hybrid or electric vehicle
- g. Driverless vehicle

9. My transportation choices are based on: (Choose three)

- a. Time
- b. Cost / affordability



- c. Available options
- d. Physical accessibility
- e. Comfort and safety
- f. Reliability
- g. Environmental footprint
- h. Other, please specify:

Generated outcomes: Will inform ‘personas’ and provide insight into: needs, motivations, and how they rank themselves based on tech savviness, attitudes to new technology, and quality of life.

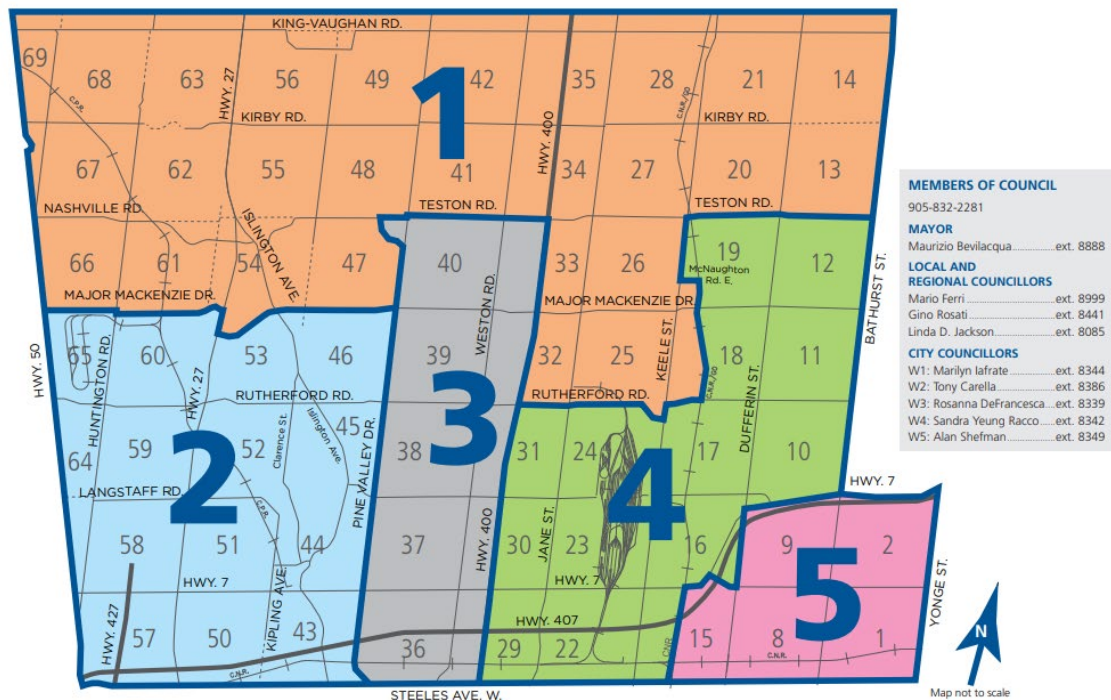
## Part 4: Demographics

Nominal (multiple choice) and numeric questions:

10. I live in:

- Ward 1
- Ward 2
- Ward 3
- Ward 4
- Ward 5
- I do not live in Vaughan

TERM: Dec. 1, 2018 to Nov. 15, 2022



Source: [https://www.vaughan.ca/council/Pages/ward\\_map.aspx](https://www.vaughan.ca/council/Pages/ward_map.aspx)

11. My gender is:



- a. City to provide preferred typical answers
12. My age is:
13. City to provide preferred typical answers
14. I am a (choose all that apply)
- a. Full time worker
  - b. Part time worker
  - c. Full time student
  - d. Part time student
  - e. Home maker



## PEDESTRIAN FRIENDLY STREETS



## BIKE INFRASTRUCTURE, E-BIKES & SCOOTERS



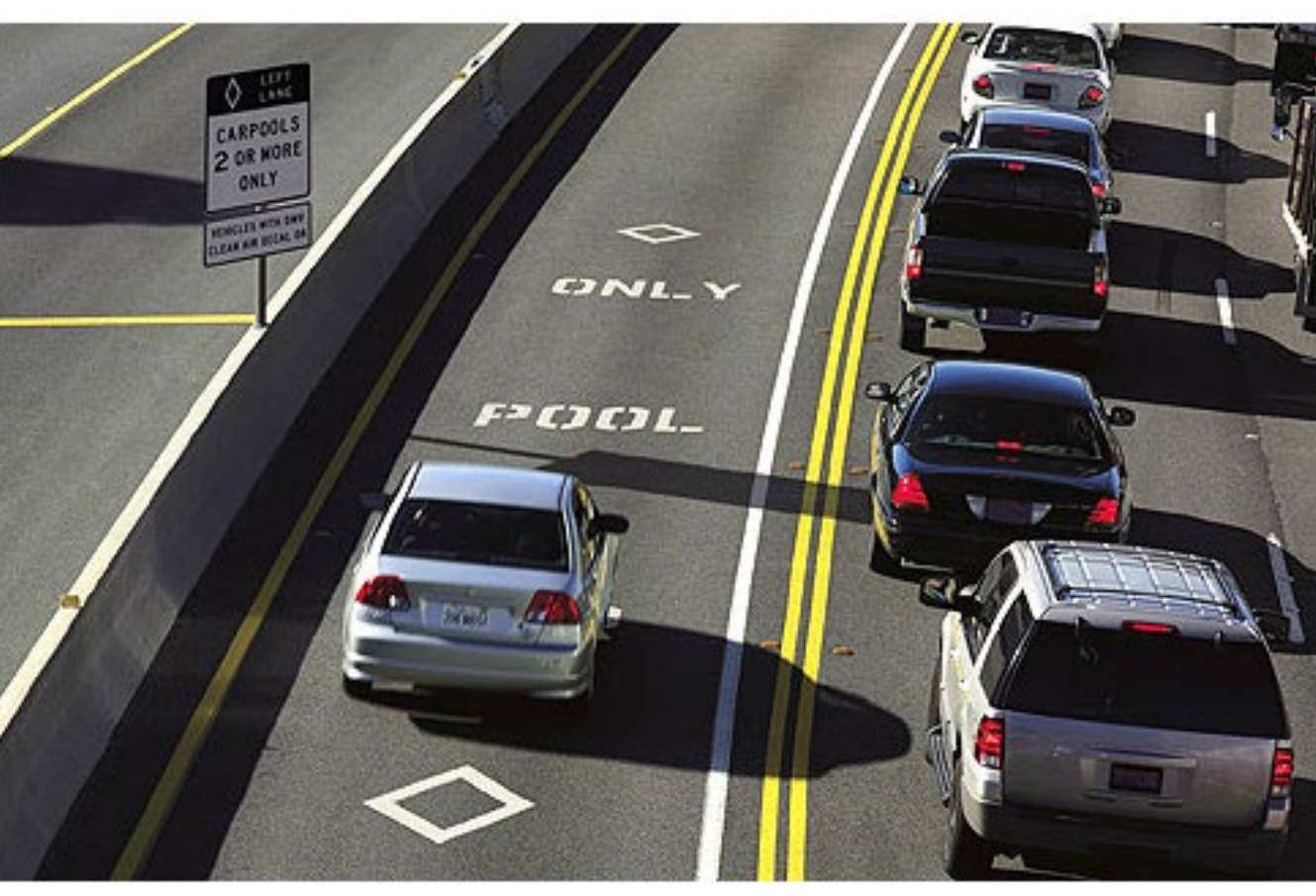
## IMPROVED TRANSIT



## DRIVERLESS CARS & ELECTRIC VEHICLES



## ROADWAYS THAT MOVE PEOPLE



# Why?

Vaughan is a dynamic city that is growing quickly. This means people will need to have more options to get around





Your  
opinion

Vaughan Transportation Plan



Take the online survey!

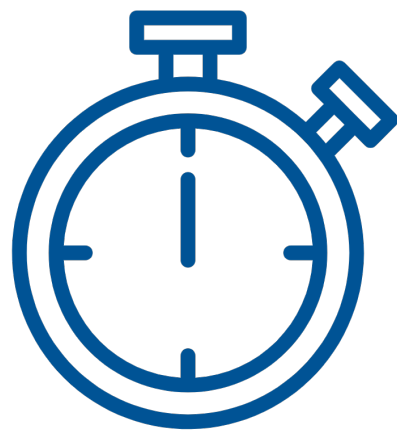
[www.surveymonkey.com/r/vtppsurvey](http://www.surveymonkey.com/r/vtppsurvey)

What is important to you when choosing how to travel?

Put a dot to vote what matters to you



Convenience



Time



Cost



Other

What about travelling in Vaughan would you improve?

Use a sticky note to tell us



Join the conversation!

[vaughan.ca/TransportationPlan](http://vaughan.ca/TransportationPlan)





Did you know?

Vaughan Transportation Plan

# Vaughan is Growing

from:

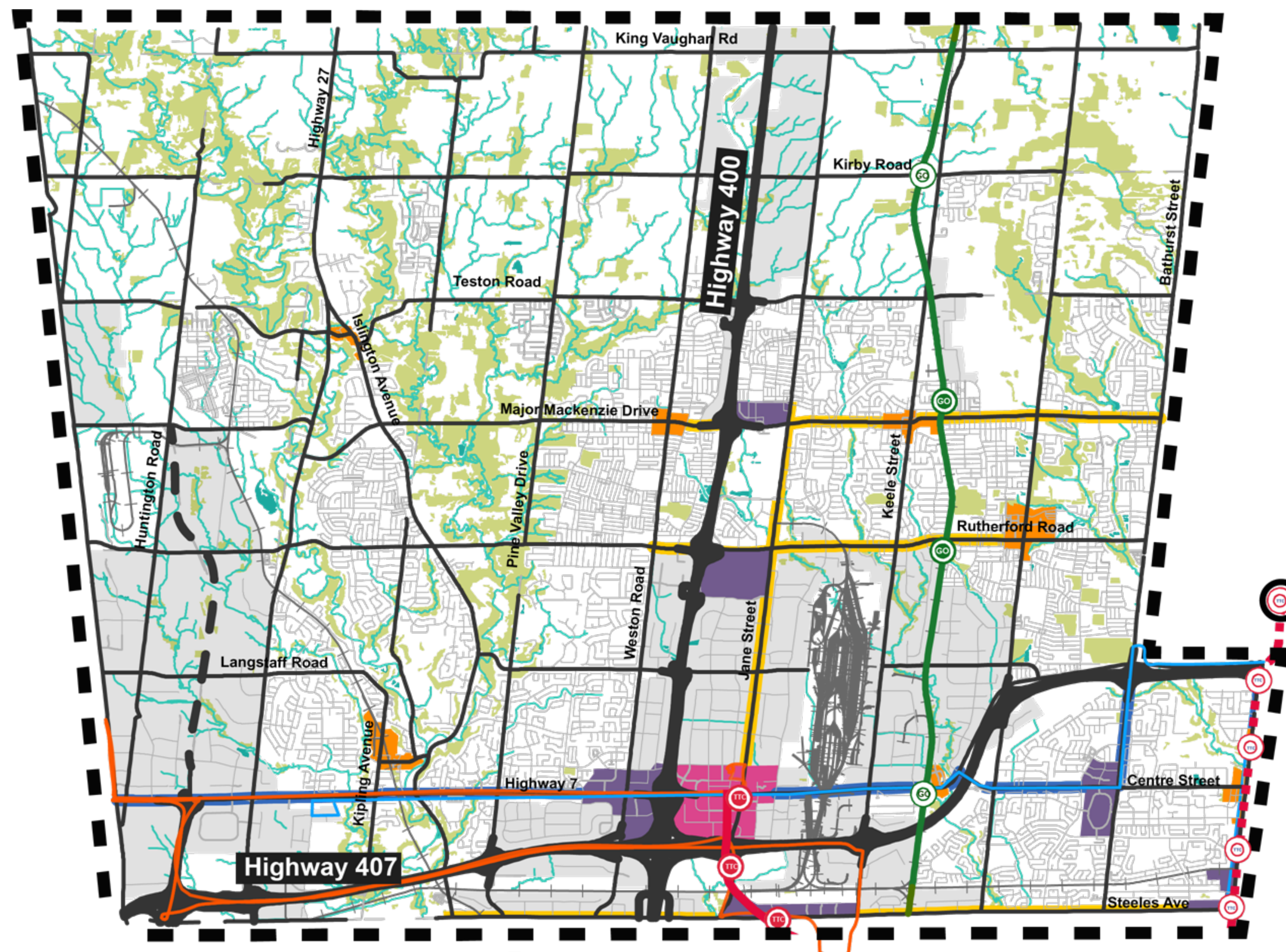
300,000 residents in 2016

170,000 jobs in 2016

to:

497,000 residents in 2041 <sup>(1)</sup>

321,000 jobs in 2041 <sup>(1)</sup>



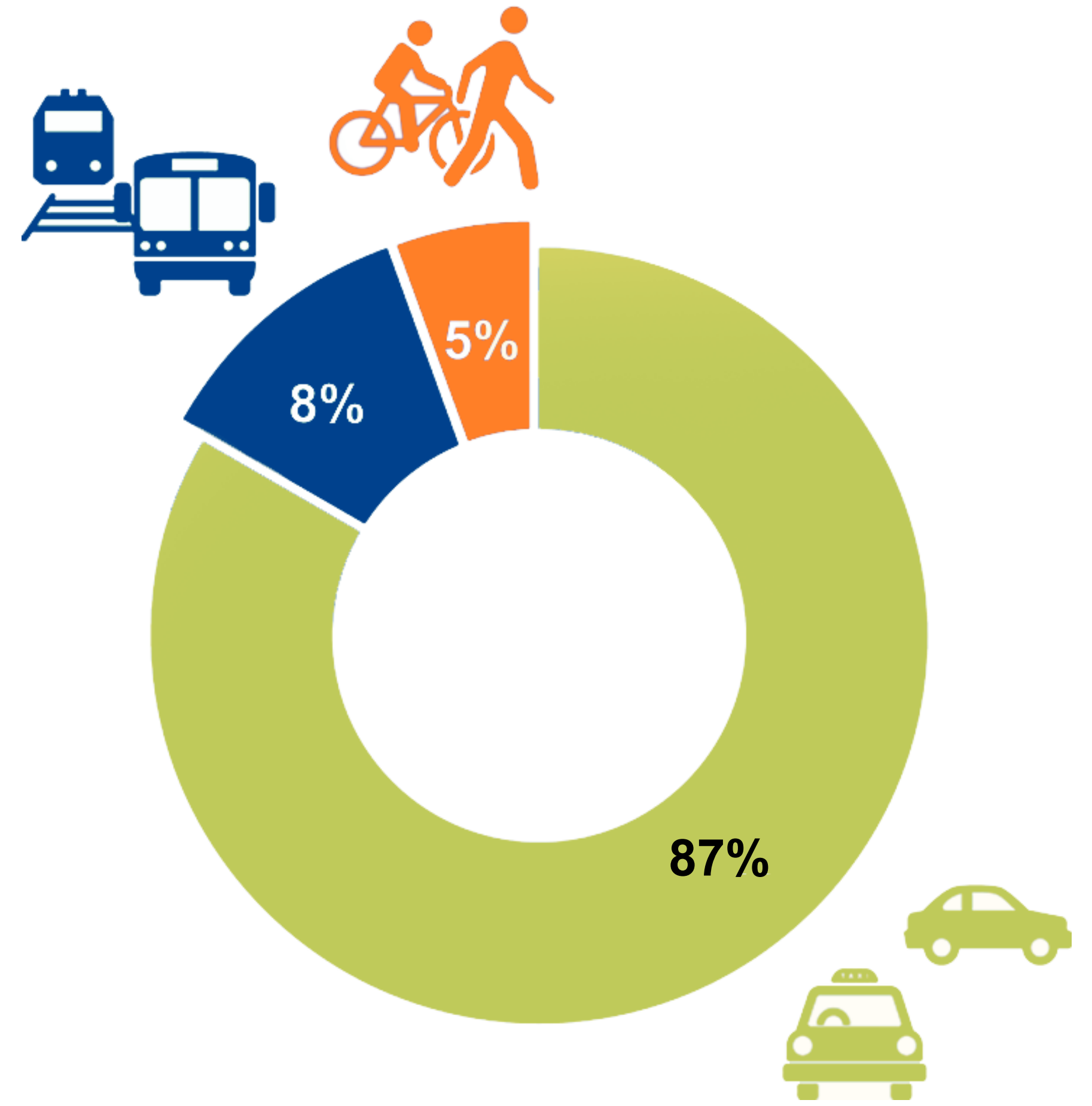
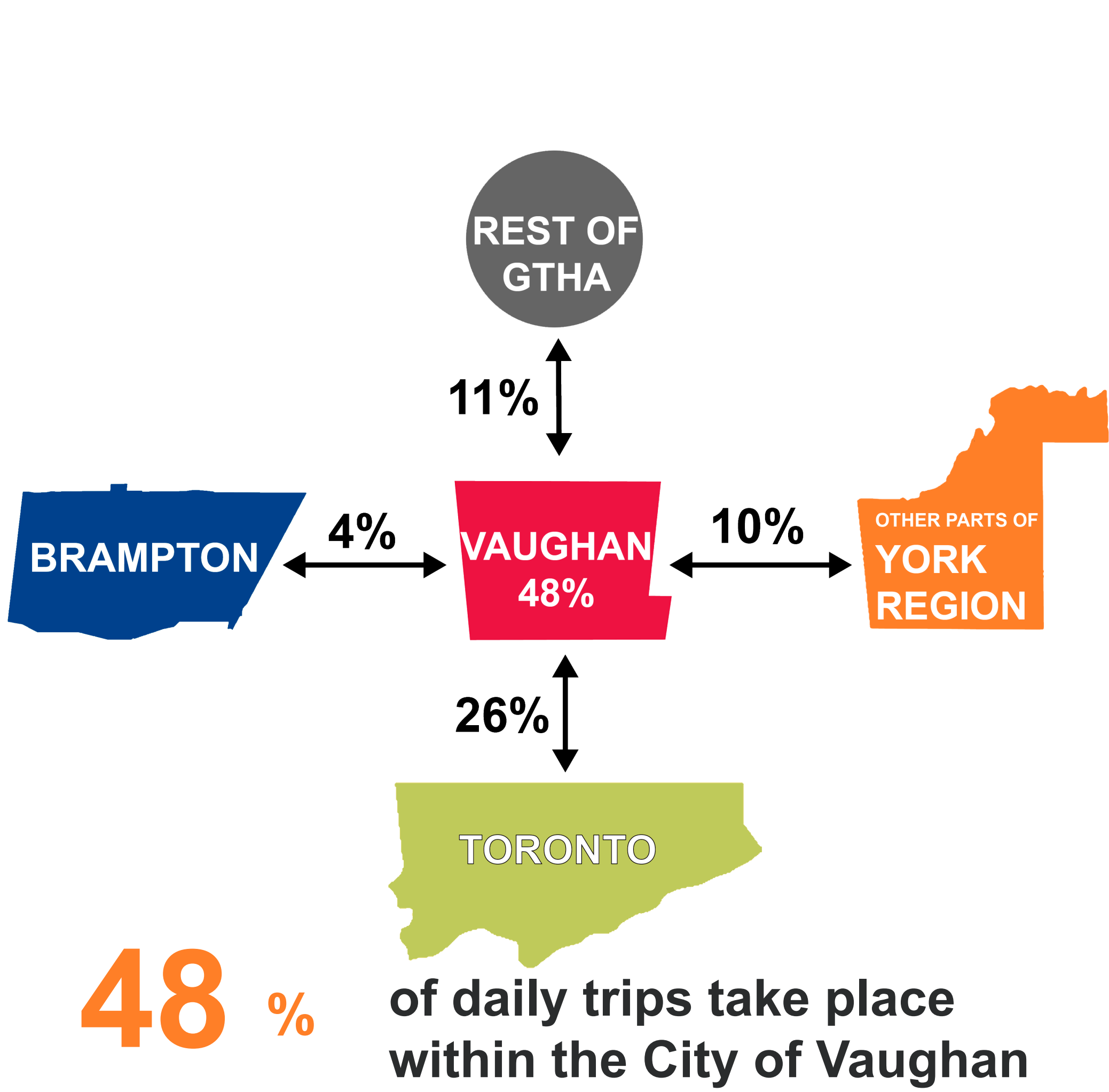
## Quick Facts

- 2 GO Stations with bike parking
- 2 new GO stations are proposed
- 3 TTC Subway stations
- VIVA on Highway 7 is now open
- 17 BRT Stations
- 40 km of cycling trails (60 km more planned) <sup>(2)</sup>
- New subway planned on Yonge Street

# Today's Travel Patterns <sup>(3)</sup>

Almost **90%** of trips are by **CAR** while over **50%** of trips are **under 5km** in length

There are almost **100 thousand** trips that are less than **2km** in length



Sources:  
 (1) York Region 2041 Preferred Growth Scenario  
 (2) Approved Vaughan Super Trail Plan, 2017  
 (3) Transportation Tomorrow Survey, 2016

Develop a plan that will help  
**GOAL** Vaughan respond to the needs of current and future residents and businesses





# Summary of Public Input from Winter 2020 Pop-up Kiosks

## About the Pop-up Kiosks

Pop-up Kiosks were held at the City of Vaughan Winterfest on February 9 and the 2020 Vaughan Business Expo on February 11, 2020. The purpose of the Pop-up Kiosks was to promote awareness of the City’s Transportation Plan Study and to learn about travel behaviours and ideas for improving travel choices within Vaughan. By presenting materials at these two events in locations where the public is already gathering, the Project team was able to have conversations with approximately 225 individuals about travelling in Vaughan.

**Winter 2020 Pop-up Kiosks**

At Winterfest on February 9, from 9 a.m. to 3 p.m. at the Vellore Village Community Centre.

At the 2020 Vaughan Business Expo on February 11, from 8:00 a.m. to 3:00 p.m. at the Terrace Banquet Centre.

The display used at the Pop-up Kiosks is shown at **Figure 1**. It consisted of a 3-panel board that provided information about existing and anticipated future travel patterns in the city, and visual images of innovative ideas that could be considered for improving travel choices by all modes. Two questions were used to prompt input as follows:

- What is important to you when choosing how to travel? Convenience, Cost, Time, Other?
- What about travelling in Vaughan would you improve?

Residents were encouraged to write an idea or concern on a post-it note and place it onto the display. Project team members were available to share information about the study and to discuss ideas with community members. The Project team also distributed project postcards that provided information about how to get informed about the study and how to participate in an ongoing on-line survey through the City’s website.



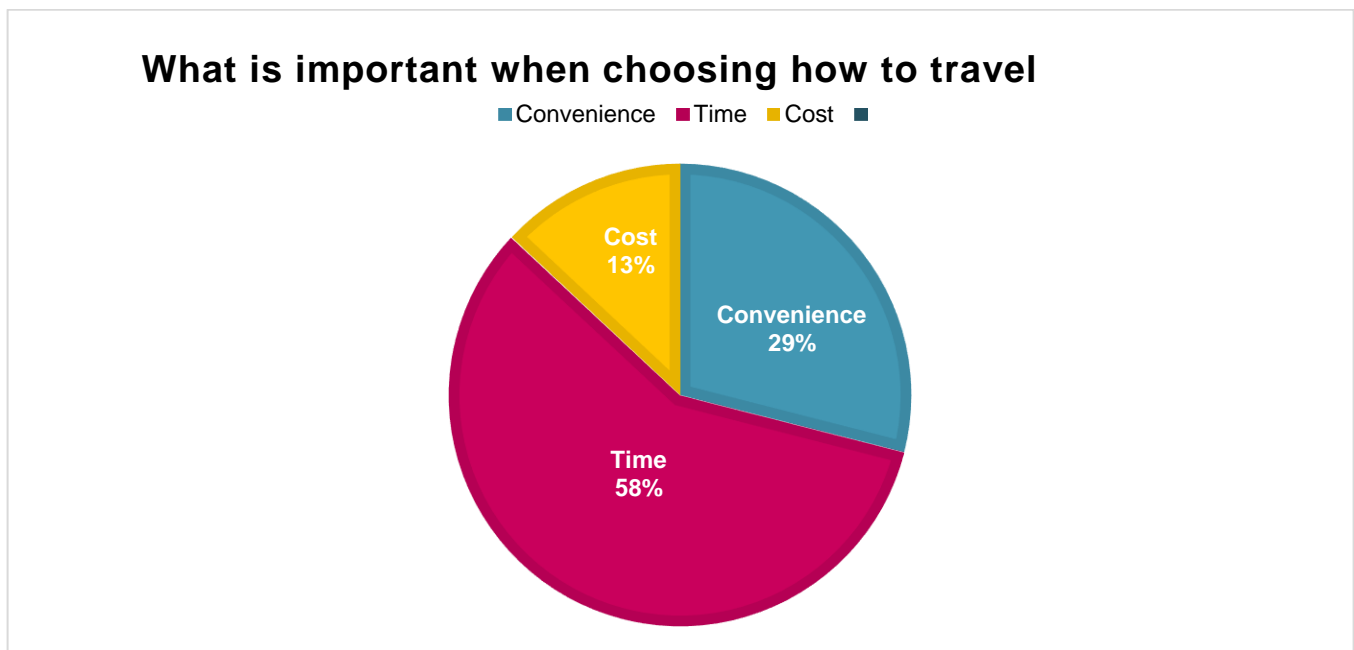
Figure 1 – Pop-up Kiosk Display

## Part 1: Key Messages heard at the Winterfest Pop-up Kiosk

The City's Winterfest event was extremely well attended and the foot traffic at the Transportation Plan Pop-up Kiosk was consistently high throughout the day. Over 180 conversations were held at the Winterfest Pop-up Kiosks. Some involved discussing current travel characteristics and behaviours and others identified potential ideas that residents felt would improve the transportation system. Conversations were held with families with multiple children and older adults. The photos below are of activity at the Winterfest Kiosk.



Residents were encouraged to identify what matters most to them when they are choosing how to travel within the City. They could share their view by placing any colour of dot on the display to indicate the significance of convenience, time, or cost in their decision-making. Many noted that they felt that having family and children limited their opportunity to use transit or other modes of travel and was the primary reason that they used their car daily. **Figure 2** shows the results from this public input exercise.



**Figure 2 – Responses noted for what matters most when choosing how to travel**

The project team recorded 187 individual ideas which were written on post-it notes and placed on the display. These are shown at **Figure 3**.



**Figure 3 – Photo of ideas and concerns noted on post-it notes**

This public input activity was popular, and many residents liked the idea of being able to share a concern or suggestion about how Vaughan’s transportation network could be improved by writing the idea on a post-it note. Several common themes and messages were noted. Five key topics emerged as follows:

Number of times noted on post-it notes	Key topics
69 comments noted	Improving transit with increased frequency and reliability, more convenient bus stop locations, better integration with other modes, and overall ease of use and convenience of the system.
50 comments noted	Addressing traffic congestion with frustration noted about congestion and delays associated with bottlenecks in the existing traffic network and with recurring construction projects.
41 comments noted	A desire to bike more with the hope that the City of Vaughan will provide more expanded and safer bike infrastructure.
14 comments noted	Better walking conditions with more focus on creating pedestrian-friendly streets.
13 comments noted	Ideas about future innovations that could make a difference including opinions about relatively new, or not-yet available services and technologies.

Figures 4 through 8 include the common themes and messages that were noted through the post-it notes received at the Winterfest Pop-up Kiosk.

**Figure 4 – Ideas about improving transit (69 comments noted)**

Common Themes	Key Messages Frequently Noted
<b>Bus service frequency needs to be increased and reliability improved</b>	<p>There are numerous comments related to buses running behind schedule and being unreliable. Examples of wait times ranged from 30 minutes to an hour depending on location.</p> <p>It was noted that many routes buses are infrequent with worse service during evenings and weekends.</p> <p>Residents identified specific concerns with reliability for, direct bus connections to the VMC, to the hospital and along routes 77, 20,165.</p>
<b>Distance between bus stops and poor walking conditions impedes transit use</b>	<p>Residents noted that to take transit they would need to walk long distances and in unsafe conditions (i.e. where there is no sidewalk) to reach a bus stop.</p> <p>Parents noted that poor locations and distance between stops is an impediment and they don't consider it safe for their children to use transit.</p>
<b>Time is a factor for choosing transit over car travel</b>	<p>Transit competitiveness was noted as a challenge, as many residents noted that most transit trips would require numerous connections and would take substantially longer compared to car trips.</p>
<b>Additional improvements are needed for how buses and transit users access the Rapidway</b>	<p>Residents noted that they like the dedicated right of way for transit on Highway 7 and the improved service due to this enhancement.</p> <p>Many comments mentioned that all buses should take advantage of the Rapidway and that the current configuration where some buses use the Rapidway and some use regular stops is confusing for the user. Negative comments were also received about the impracticality of placing the Rapidway in the median, exposing waiting passengers to passing traffic, splashing snow and water, as well as needing to cross multiple lanes of traffic to access the stops.</p>
<b>Additional transit and Rapid Transit are desirable</b>	<p>Residents noted that they would like to see additional rapid transit including improved transit corridors along Rutherford, extending the subway from VMC to the new hospital area and Vaughan Mills, converting Highway 7 to an LRT and developing the 407 Transitway.</p>
<b>Integration with other modes is hampered by lack of car parking, pick-up and drop-off areas and bicycle parking</b>	<p>Parking capacity, at the TTC Subway and GO stations were of concern for many residents.</p> <p>Numerous complaints were noted about the limited availability of parking at VMC and GO stations.</p> <p>The parking infrastructure at the VMC was noted to not be user friendly.</p> <p>Lack of availability of bike parking at GO Stations, and bike infrastructure connecting to those was a frequently cited topic.</p> <p>There is a desire to better integrate the Langstaff/427 Carpool lot with transit.</p> <p>Other residents would like to see better integration of taxi stands/ pick up and drop offs at VMC.</p>
<b>Fare integration between different regional/City networks need to be improved</b>	<p>Fare integration was also mentioned, as many residents travel between York Region and Toronto and must pay double fares. They would like to see more seamless integration of fares between networks.</p>

**Figure 5 – Ideas about improving the road network (50 comments noted)**

Common Themes	Key Messages Frequently Noted
<b>Traffic congestion is a top concern for many residents</b>	Traffic congestion is an issue. Specific intersections and corridors were mentioned, with Rutherford, Weston, Highway 7 and Major Mackenzie being most often referenced. Changes are needed in the overall transportation system management. Better traffic signal coordination and incorporation of lane reversals were two frequently noted suggestions.
<b>Left turning movements need to be better addressed</b>	Residents noted concerns about there being no left turns at certain locations (e.g. Jane and Avro), or taking too long to make left turns (e.g. Centre and New Westminster). Many residents suggested that a second left turning lane is needed. Additional concerns were brought about limited opportunities for left turns when exiting subdivisions.
<b>The impact of construction on traffic congestion requires better coordination</b>	Construction and its impact to traffic congestion was referenced often. Numerous construction-related comments referenced Highway 7 and Yonge Street, as well as suggestions for better coordination between the Region, City and adjacent municipalities to manage the impacts of concurrent construction work.
<b>Traffic calming measures should be explored</b>	Traffic Calming measures were cited by many residents to reduce neighbourhood infiltration and reduce speeds on local areas. Suggestions included roundabouts and speed bumps.

**Figure 6 – Ideas about cycling (41 comments noted)**

Common Themes	Key Messages Frequently Noted
<b>Protected bike lanes are a key priority for residents</b>	Residents mentioned that they don't feel safe riding near traffic. Residents support protected bike lanes. Many would like to have separated bike infrastructure where all family members could feel safe and comfortable riding.
<b>The lack of secure bike parking is impeding transit use</b>	Secure bike parking at GO and subway stations was noted by residents as an obstacle that is keeping them from biking to transit more often.
<b>Better bike connections to destinations and into subdivisions could increase cycling</b>	Residents would like to have better bike connections to community destinations, such as transit stations, the new VMC YMCA, and other community facilities. Better connections into subdivisions were also referenced. The lack of connections was noted as an impediment to cycling.
<b>Better education on bike use, bike routes and safety are important</b>	The need for more bike education for children and adults was frequently noted. Many adults noted that they do not know how to bike and or are not familiar with the network. Many drivers on the other hand mentioned that cyclists do not respect the rules of the road and posted signs.
<b>Residents like being able to take their bike on the bus</b>	Integration with other modes, such as being able to take your bike on buses, was a feature that many residents appreciate. They would like to be able to bike to transit stops and stations and securely park.
<b>There is interest in a bike sharing program</b>	There is interest in a bike sharing program as a desired addition to the available options. Many residents said that they would use bike share to get around and connect to transit. Affordable pricing and straightforward use for adults and children was important.

**Figure 7 – Ideas about walking (14 comments noted)**

Common Themes	Key Messages Frequently Noted
<p><b>More direct walking connections are needed with more sidewalks and better sidewalk conditions</b></p>	<p>Sidewalk availability was a concern for many residents, as they noted that they often don't feel safe walking, or accessing bus stops due to the limited sidewalk availability.</p> <p>Many residents noted that they would like to have more direct connections citing that currently subdivision connections are too circuitous and result in long walking distances.</p> <p>Some residents also expressed the need for wider sidewalks to and around some destinations (e.g. near the Promenade Mall).</p> <p>Sidewalk snow clearing was also mentioned as something that needs improvement in the winter.</p>
<p><b>Improvements are needed to better establish pedestrian friendly environments for improved walking</b></p>	<p>The public realm needs to better plan for and create a pedestrian friendly environment which is greener and more inviting.</p> <p>Residents want to feel more comfortable walking along streets.</p> <p>Weather conditions should also be considered to encourage walking in all weather.</p> <p>Traffic congestion and idling vehicles deters walking for some residents who have health concerns about air quality resulting from the congestion.</p>

**Figure 8 – Ideas about innovation (13 comments noted)**

Common Themes	Key Messages Frequently Noted
<p><b>There is interest in using e-scooters and e-bikes.</b></p>	<p>Residents said that they would use e-scooter and e-bikes and that they found this to be a family friendly activity. They also mentioned that this option would facilitate accessing frequent bus service stops or the VMC from subdivisions.</p> <p>They think that a potential sharing service should be inexpensive and easy to use.</p>
<p><b>Ridesharing is popular</b></p>	<p>Many residents noted that they are comfortable using ridesharing.</p> <p>Many residents said that they switched from transit to ridesharing because it is more convenient, and the cost difference is marginal.</p>
<p><b>Automated vehicles are considered a far-future idea</b></p>	<p>Residents who referenced automated Vehicles consider this to be a far-future idea. Residents indicated that they are unsure about how comfortable they would be riding in an automated vehicle.</p>

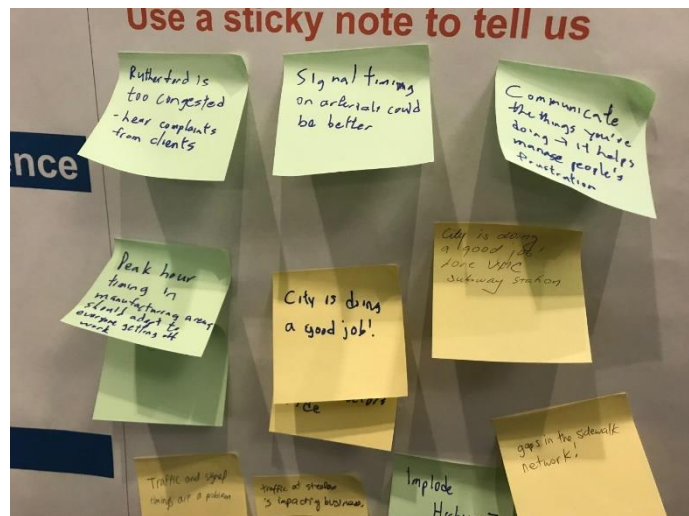
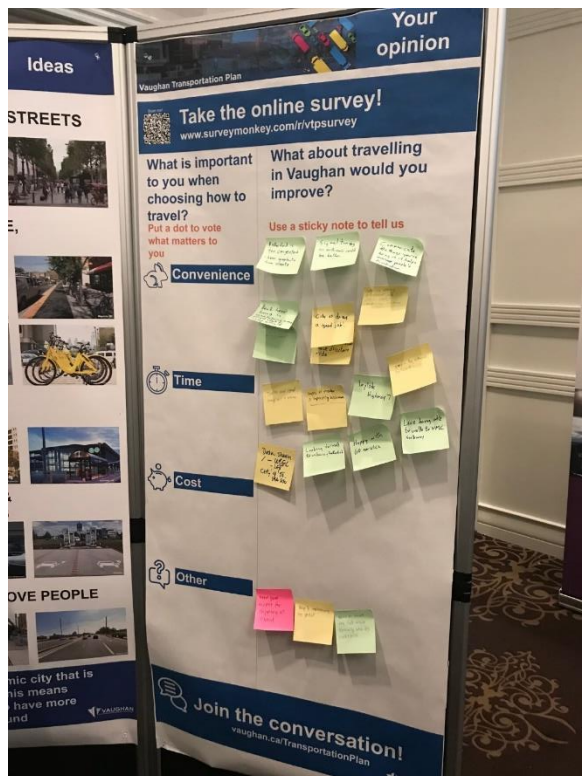


## Part 2: Key Messages from the 2020 Vaughan Business Expo

The City's 2020 Vaughan Business Expo is a popular annual event held with businesses to showcase products and services within a diverse range of business sectors. The event includes presentations, demonstrations and a trade show. The City's Pop-up Kiosk was set up in the trade show area for the day. Over 30 conversations were held. Participation at the Expo provided the ability to undertake direct outreach with companies to inform them about the Vaughan Transportation Plan and to discuss ideas and opportunities. The photos below are of activity at the Business Expo Pop-up Kiosk.



The project team recorded 19 individual ideas which were written on post-it notes and placed on the display. These are shown at **Figure 9**.



**Figure 9 – Photo of ideas and concerns noted on post-it notes and placed on the display**

**Figure 10** include the common themes and messages that were noted through the post-it notes received at the 2020 Vaughan Business Expo. Several business representatives indicated that they felt that the City was taking good steps to address transportation issues. They would like to see more communication about what the City is doing to inform residents and businesses of the progress being made.

**Figure 10 – Ideas about improvement to the transportation system**

Common Themes	Key Messages Frequently Noted
<p><b>Improvements are needed to improve travel along arterial roads and intersection capacity.</b></p>	<p>Traffic at intersections was noted to be a problem.            Signal timing on arterial roads could be better.            There are key problem areas which are noted to be impeding business and impacting customers e.g. along Steeles and along Rutherford and at Jane and Rutherford.            Highway 7 improvements are being effective.            Issues still exist along the Highway 7 corridor.            Widening Rutherford Road is seen as being positive.</p>
<p><b>Goods movement considerations need to be accommodated in transportation planning</b></p>	<p>Need good access for shipping at CP Yard.            Would like to see more focus on transportation for improving goods movement.            Peak hour timing in manufacturing areas should adapt to everyone getting off work.</p>
<p><b>Transit infrastructure improvements are good</b></p>	<p>Love the VMC Subway Station.            Love being able to walk to the VMC subway.            Happy with GO Service.            Should investigate origin and destination data for ridesharing to transit stations (e.g. Uber and Lyft) to better understand where they are dropping people off and to address demand.</p>
<p><b>Would like to see improvement to active transportation</b></p>	<p>Need to address gaps in the sidewalk network.            Bikes on streets can feel unsafe especially when big trucks pass by.            Could have a bike rodeo as a fundraiser and have company directors ride to encourage employees to cycle to work.</p>



# Vaughan Transportation Plan

Internal and External TAC: Gap Analysis  
April 7 & 8, 2021

- 01** Purpose
- 02** Methodology Overview
- 03** Existing Gap Identification
- 04** Existing Gap Prioritization
- 05** Future Gap Prioritization
- 06** Recommended Improvements
- 07** Scenario Evaluation
- 08** Next Steps

# Meeting Purpose

- Present the gap identification and prioritization methodology
- Collect input from TAC members

02

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# Methodology Overview

# Objectives of Gap Identification and Prioritization



Determine **need and justification** for new infrastructure



Consider the gaps for **all modes equally**



Prioritize **areas of greatest need**



Accommodate **future growth**



Create an **adaptable and repeatable** framework

# *The Process*

***Existing  
Conditions  
Gap  
Identification***



***Existing Gap  
Prioritization***



***Future Gap  
Prioritization***



***Recommended  
Improvements***



***Scenario  
Evaluation***



03

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## **Existing Gap Identification**

# *The Process*

*Existing  
Conditions  
Gap  
Identification*

*Existing Gap  
Prioritization*

*Future Gap  
Prioritization*

*Recommended  
Improvements*

*Scenario  
Evaluation*

# Identifying Gaps

Consider the gaps for **all modes equally, network-wide**



## Connectivity Indicators

<b>Road</b>  Link to Node Ratio	<b>Walk</b> <ul style="list-style-type: none"><li>• Link to Node Ratio</li><li>• % of parcels that are linked to sidewalk</li></ul>
<b>Bike</b> <ul style="list-style-type: none"><li>• Link to Node Ratio</li><li>• % of parcels that are linked to cycling</li></ul>	<b>Transit</b>  Transit Network Coverage



## Safety Indicators

<b>Road</b>  Road Collisions	<b>Walk</b>  Pedestrian Collisions
<b>Bike</b>  Cyclist Collisions	<b>Transit</b>  Bus Collisions

# Process – Existing Gap Identification

Establish existing infrastructure for all modes in GIS



Calculate indicators for each mode

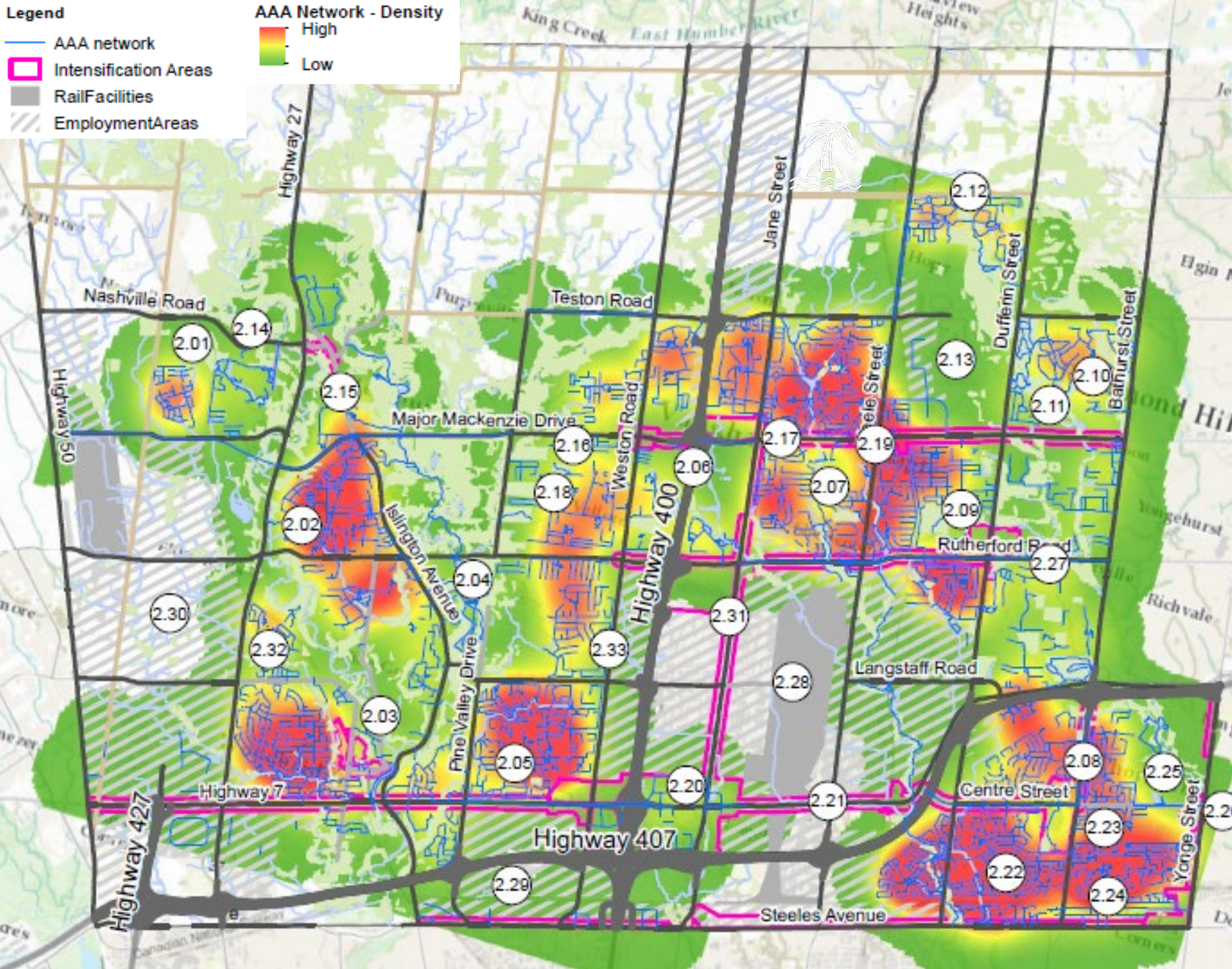


Create heatmaps for relative comparison of indicators city-wide



Prepare list of all areas with existing by each mode: **Long List**

- A **system-level approach** was used, which enabled:
  - Equal consideration of all modes for transportation improvements
  - Full view of the transportation system, addressing systemic gaps rather than localized constraints
- Cycling network identified using a modified NACTO All Ages and Abilities (AAA) framework



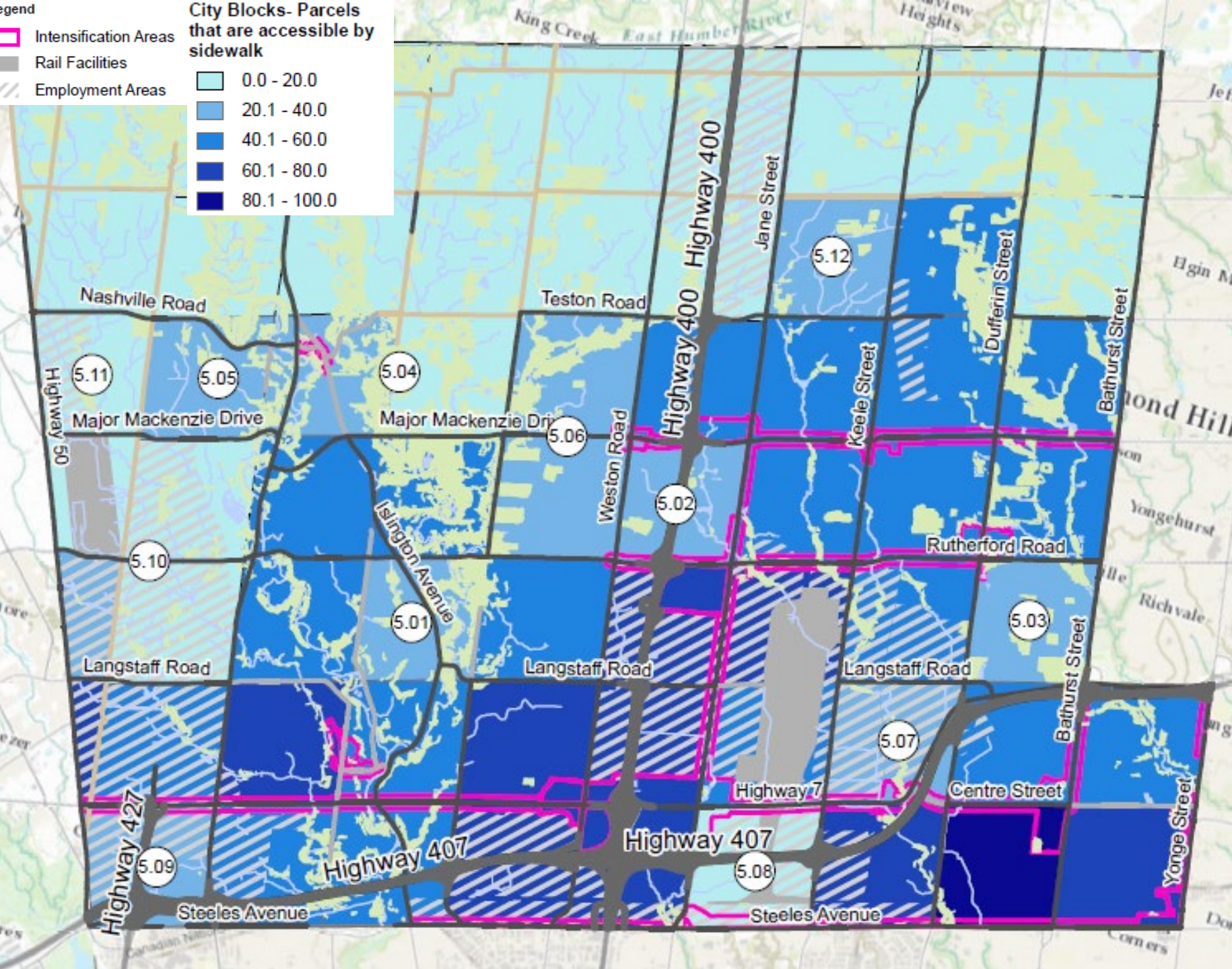
# Network Density

What is it?

- The density of intersections in a given area
- Analysis was done for sidewalks, AAA cycling network, and roads

What does it tell us?

- General coverage of the network
- Areas where there are a lack of connectivity and route options, both within and to/from neighbourhoods



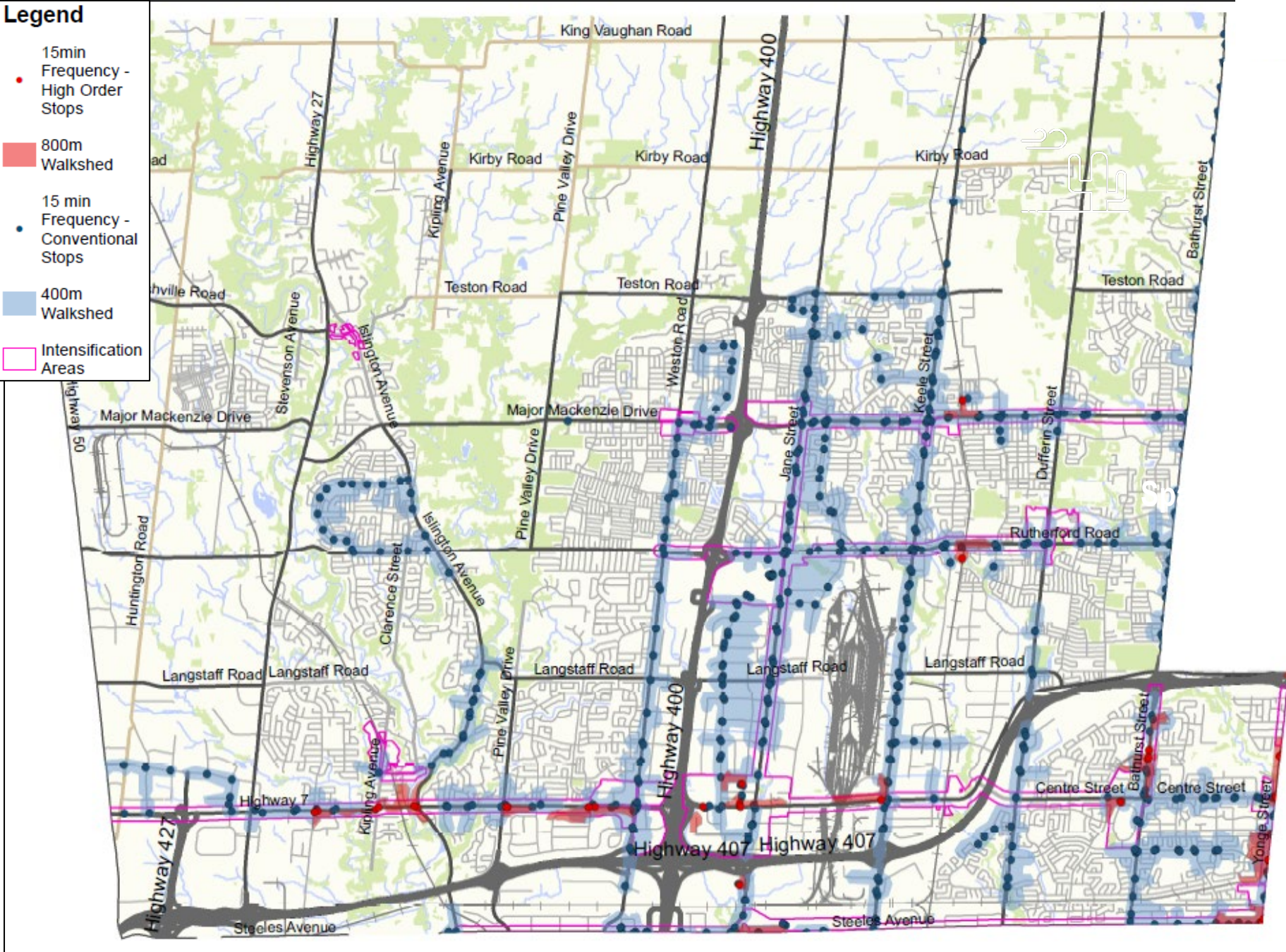
# Parcel Connectivity

What is it?

- Percentage of parcels connected to the network

What does it tell us?

- Whether properties have convenient access to a specific mode
- Areas with lower parcel connectivity may need improvements



# Transit Coverage

What is it?

- 400m / 800m walkshed to frequent conventional / higher order transit

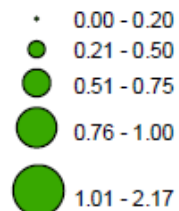
What does it tell us?

- If there is walking access to transit
- Areas outside of walkshed may need pedestrian improvements to transit

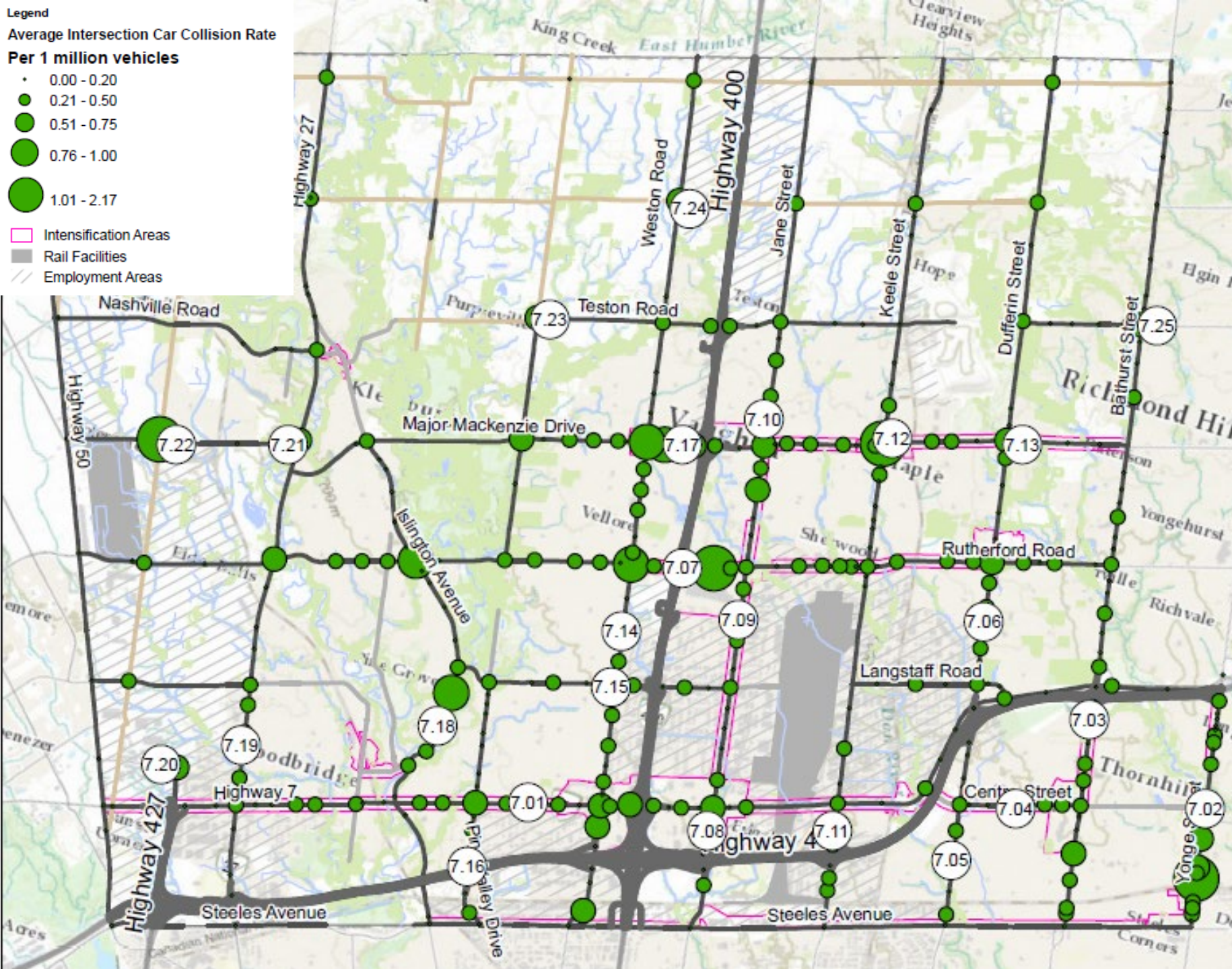
Notes: Analysis conducted on January 2020 transit service (pre-pandemic)

Average Intersection Car Collision Rate

Per 1 million vehicles



Intensification Areas  
Rail Facilities  
Employment Areas



# Collisions

What is it?

- Collision rate at intersections and midblock segments from 2014-2019

What does it tell us?

- Intersections and midblock segments where safety improvements may need to be considered
- Areas / corridors to consider additional protection for vulnerable road users



04

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# Existing Gap Prioritization

# The Process

***Existing  
Conditions  
Gap  
Identification***



***Existing Gap  
Prioritization***



***Future Gap  
Prioritization***



***Recommended  
Improvements***



***Scenario  
Evaluation***

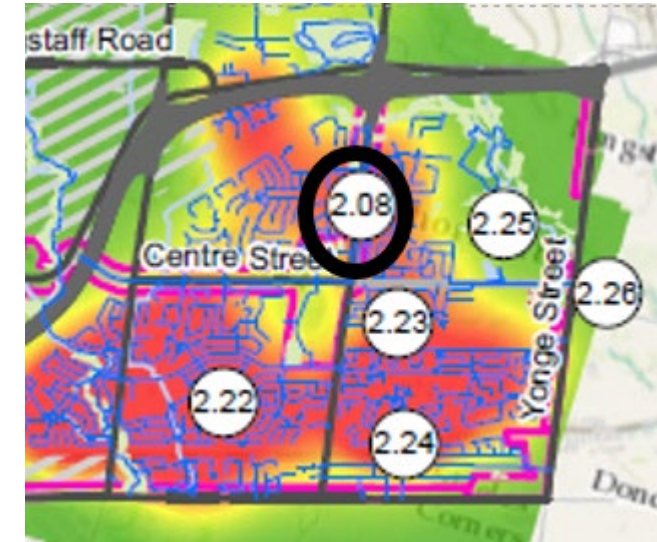
# Gap Prioritization

## Prioritize areas of greatest need

Category	Description of Indicators
<b>Transportation Indicators</b>	<ul style="list-style-type: none"><li>• <b>Mode-Specific Average Travel Time:</b> Average travel time from the gap to nearest Primary Centre, Local Centre, or VMC, by mode.</li><li>• <b>Mode-Specific On-Road to Straight-Line Distance Ratio:</b> Ratio of on-road distance divided by straight-line distance, from the gap to nearest Primary Centre, Local Centre, or VMC, by mode.</li><li>• <b>Presence of a 15-Minute Frequency Transit Stop:</b> Whether a transit stop with 15-minute frequency exists within 400 metres of the gap.</li></ul>
<b>Land Use Indicators</b>	<ul style="list-style-type: none"><li>• Population Density</li><li>• Presence of Employment Area</li><li>• Presence of Intensification Area</li></ul>
<b>Social Equity Indicators</b>	<ul style="list-style-type: none"><li>• Percentage of Low-Income Households</li><li>• Percentage of Seniors</li><li>• Percentage of Immigrant Residents</li><li>• Percentage of Zero-Car Households</li></ul>
<b>Safety Indicators</b>	<ul style="list-style-type: none"><li>• Presence of a School Zone</li><li>• Presence of a Senior Care Centre</li><li>• Severity of Mode-Specific Collision Hotspots</li></ul>

# Prioritization Indicator Calculation – Gap 2.08 Example

Category	Indicator	Score	Avg Score
<b>Transportation Indicators</b>	• Mode-Specific Average Travel Time	4	<b>3.0</b>
	• Mode-Specific On-Road to Straight-Line Distance Ratio	2	
	• Presence of a 15-Minute Frequency Transit Stop	3	
<b>Land Use Indicators</b>	• Population Density	2	<b>2.0</b>
	• Presence of Employment Area	1	
	• Presence of Intensification Area	3	
<b>Social Equity Indicators</b>	• % of Low-Income Households	2	<b>2.0</b>
	• % of Seniors	2	
	• % of Immigrant Residents	2	
	• % of Zero-Car Households	2	
<b>Safety Indicators</b>	• Presence of a School Zone	3	<b>3.0</b>
	• Presence of a Senior Care Centre	3	
	• Severity of Mode-Specific Collision Hotspots	3	



**2.08 – Thornhill:** Internal discontinuity in AAA network, also evident around Promenade Mall

Scores are given by Yes/No or normalized numbers based on calculation

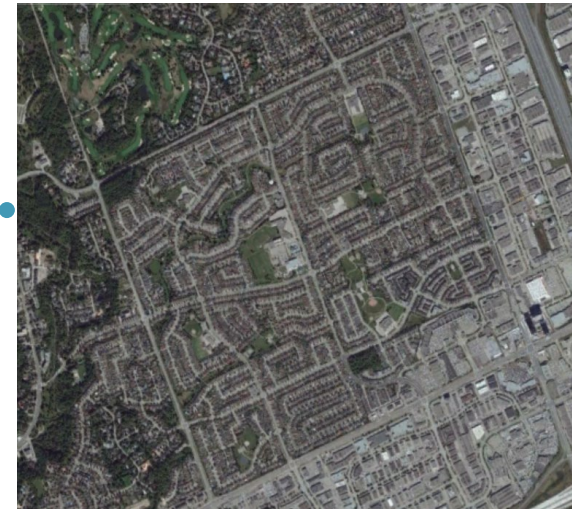
**Weighted Average Score: 2.5**

Four categories are weighted the same

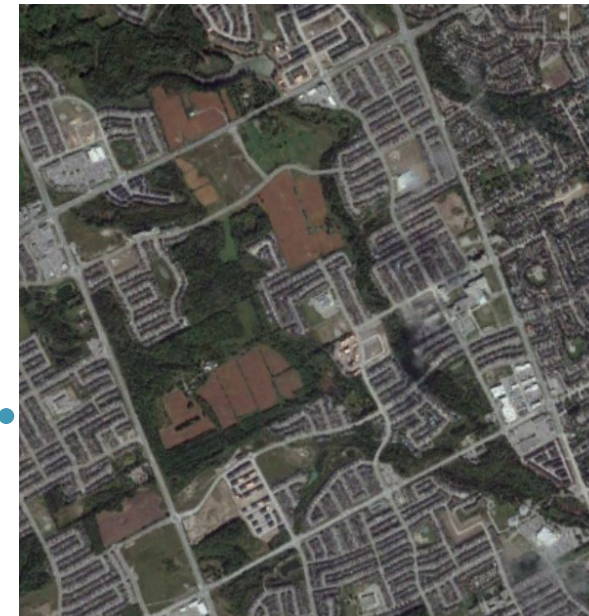
# Feasibility Filter: Road Network Gaps

- **Road network gaps** are subject to the additional “feasibility filter” constraint of where right-of-way is available for widenings or new roads:

Land Use Considerations	Feasibility Filter
<b>Stable</b> , developed residential neighbourhood or significant natural/built barriers	Road improvements infeasible
<b>Developed neighbourhood</b> with some remaining right-of-way or open space for road improvements	Road improvements possible but unlikely
Neighbourhood <b>intensifying / in transition</b>	Significant possibility for road improvements
<b>Undeveloped neighbourhood</b> or open space	Freedom for road improvements

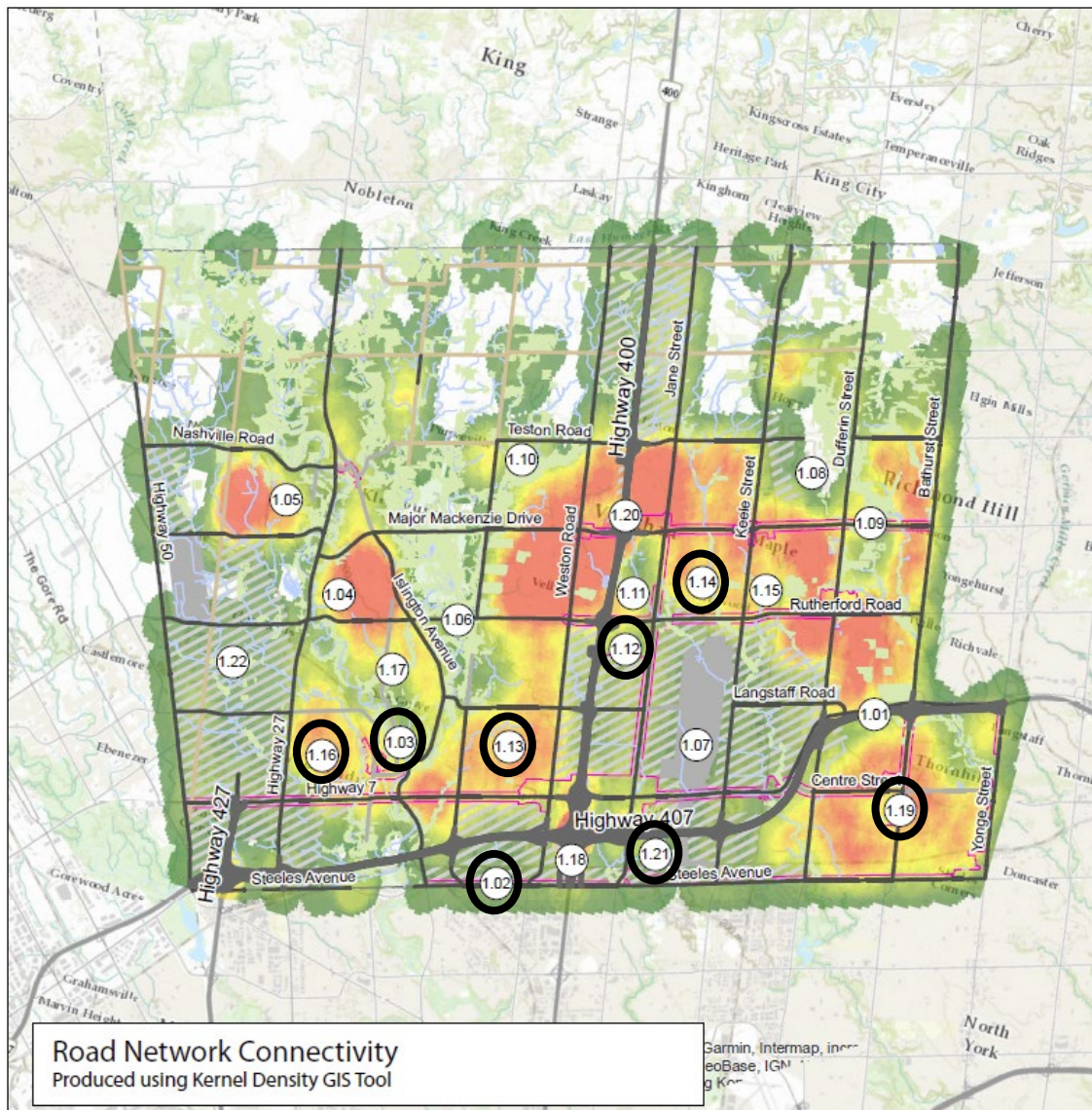


Block 37: Stable, developed neighbourhood; road improvements infeasible



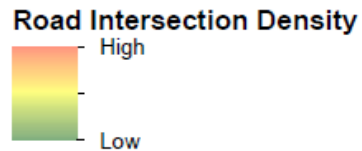
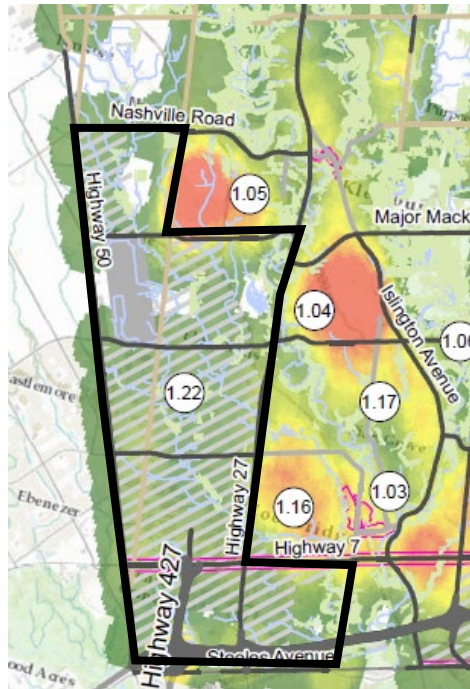
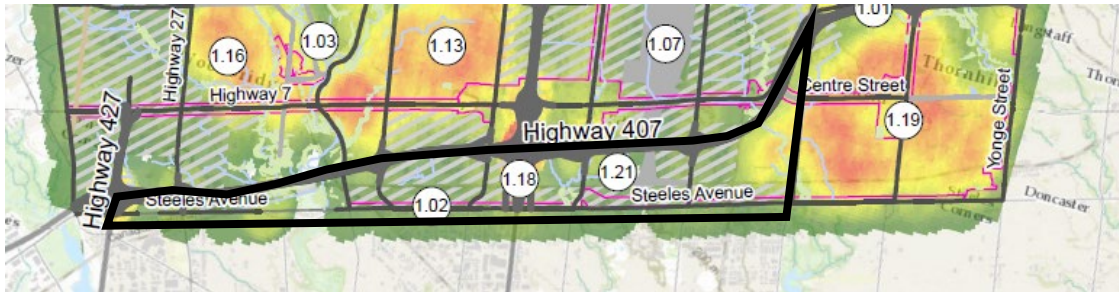
Block 11: Neighbourhood in development; possibility for road improvements remains

# Short List of Road Network Gaps



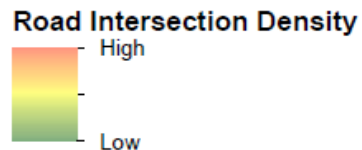
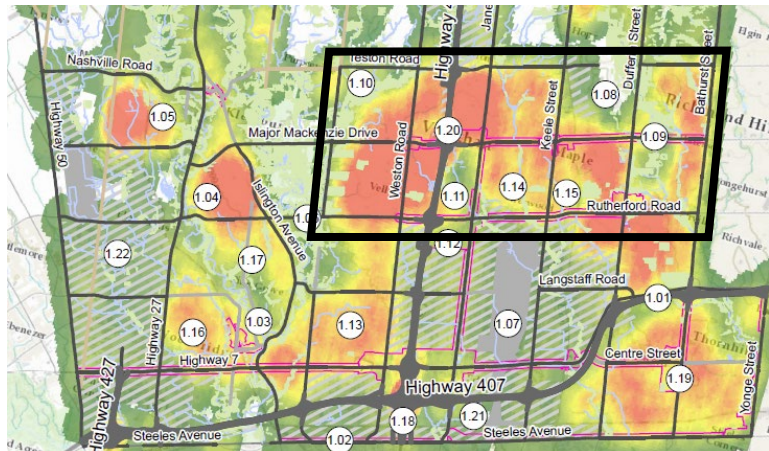
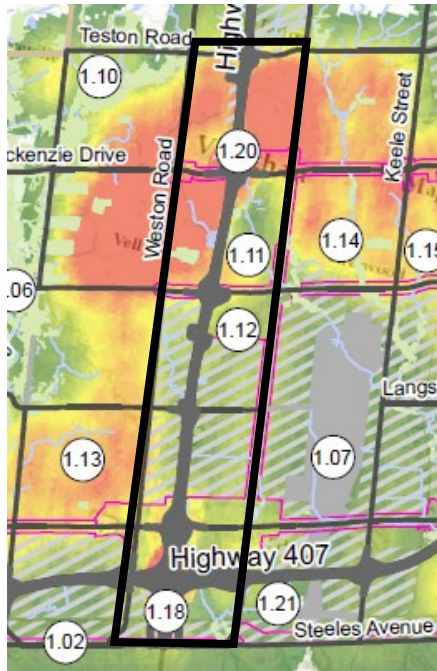
Gap	Type	Weighted Average Score	Transportation Sum	Land Use Sum	Social Equity Sum	Safety Sum
1.02	Road	2.75	3.5	2.7	3.5	1.3
1.19	Road	2.63	3.0	2.0	3.5	2.0
1.21	Road	2.58	4.0	1.7	3.0	1.7
1.03	Road	2.44	3.0	1.3	2.8	2.7
1.16	Road	2.44	3.0	1.3	2.8	2.7
1.13	Road	2.38	3.0	1.3	2.5	2.7
1.12	Road	2.38	3.0	1.7	2.5	2.3
1.14	Road	2.35	3.5	1.7	2.3	2.0

# Revised Short List of Road Network Gaps - Priority Areas



Prioritized Location/Corridor	Gaps	Score	Priority	Feasibility
1 Steeles Avenue West / South Vaughan Employment Area	1.02 – Steeles Ave W	2.8	High	High
	1.21 – South Vaughan Employment Areas	2.6		
	1.18 – Highway 400 / Highway 407 Interchange	2.1		
2 West Vaughan Employment Area	1.22 – West Vaughan Employment Areas	2.1	Medium	High

# Revised Short List of Road Network Gaps - Priority Areas



Prioritized Location/Corridor	Gaps	Score	Priority	Feasibility
3 Highway 400 Corridor	1.20 – Highway 400 Corridor	2.3	Medium	Medium
	1.18 – Highway 400 / Highway 407 Interchange	2.1		
4 Northeastern Vaughan	1.15 – Block 18 Street Design	2.0	Medium	Medium
	1.09 – Dufferin / Major MacKenzie Intersection	1.7		
	1.10 – Pine Valley / Teston Intersection	1.7		
	1.08 – Keele Valley Landfill	1.6		



05

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# Future Gap Prioritization

# The Process

***Existing  
Conditions  
Gap  
Identification***



***Existing Gap  
Prioritization***



***Future Gap  
Prioritization***



***Recommended  
Improvements***



***Scenario  
Evaluation***

# Future Gap Prioritization

## Accommodate future growth

- Based on preliminary results of the Vaughan Travel Demand Model
- Future gaps helped to further prioritize existing gaps, or highlight new gaps which may need to be addressed in the future
- Results are preliminary – based on previous land use forecasts



## Future Growth Indicators

### Road

Travel Time Index

### Bike

Conversion potential  
from auto trips

### Transit

- Crowding
- Population /  
employment  
accessibility

# Future Road Network Priority Areas (2041 AM Peak)

## Areas with High Traffic Congestion

### *Sample Output*

Prioritized Location/Corridor	Description	Existing or New Gap?
21.01 West Vaughan Employment Area & Woodbridge	Highway 50, Highway 27, and connecting east-west roads in the West Vaughan Employment Area and Woodbridge continue to experience congestion.	Existing (further prioritized 1.22)
21.02 Highway 400 Corridor	East-west and north-south roads in the immediate vicinity of Highway 400 continue to experience congestion.	Existing (further prioritized 1.18, 1.20)
21.03 Northeastern Vaughan	East-west and north-south roads east of Highway 400 and north of Highway 7 continue to experience congestion.	Existing (further prioritized 1.09, 1.15)

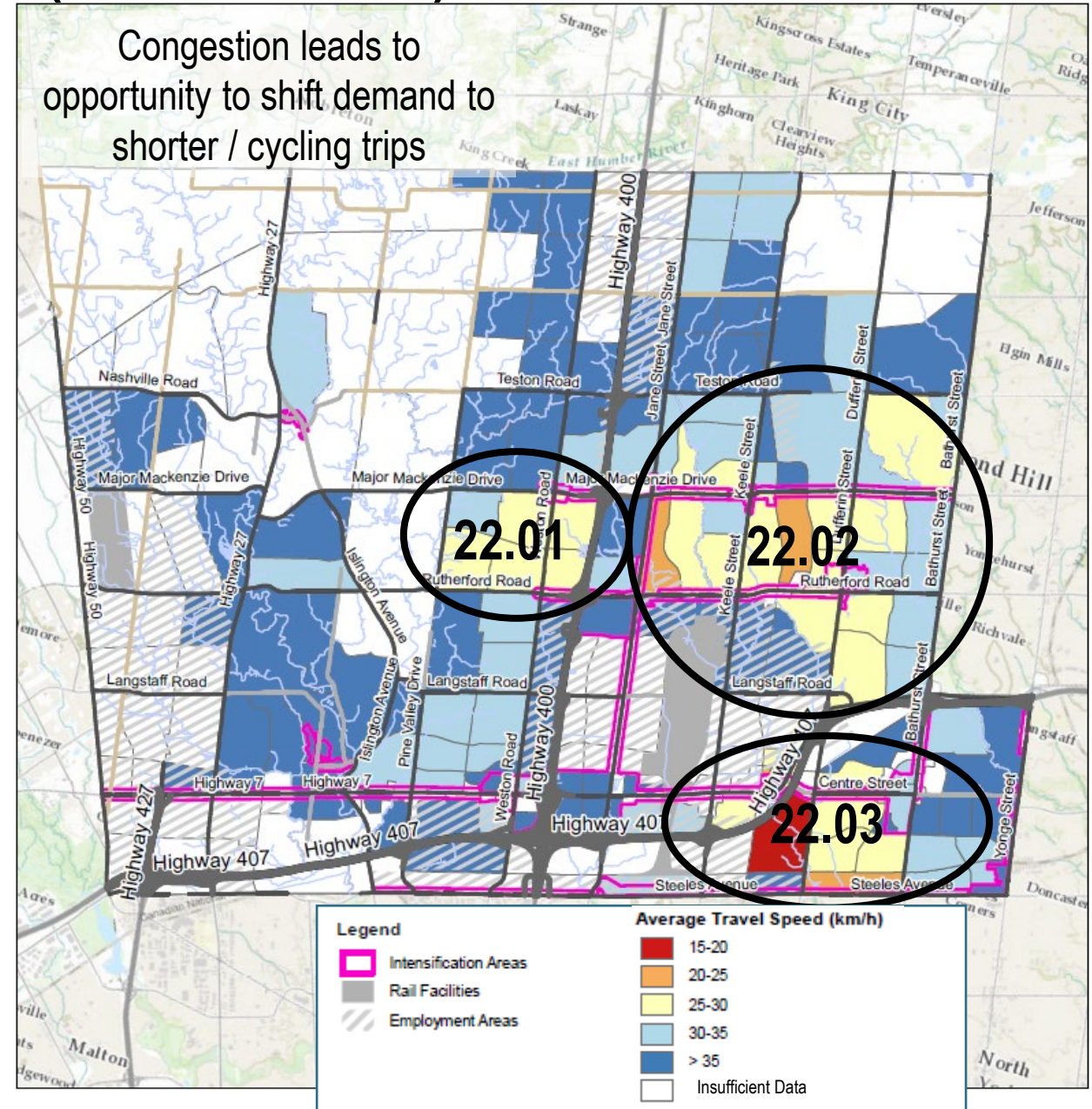


# Future Cycling Network Priority Areas (2041 AM Peak)

## Areas with High Potential for Cycling

### Sample Output

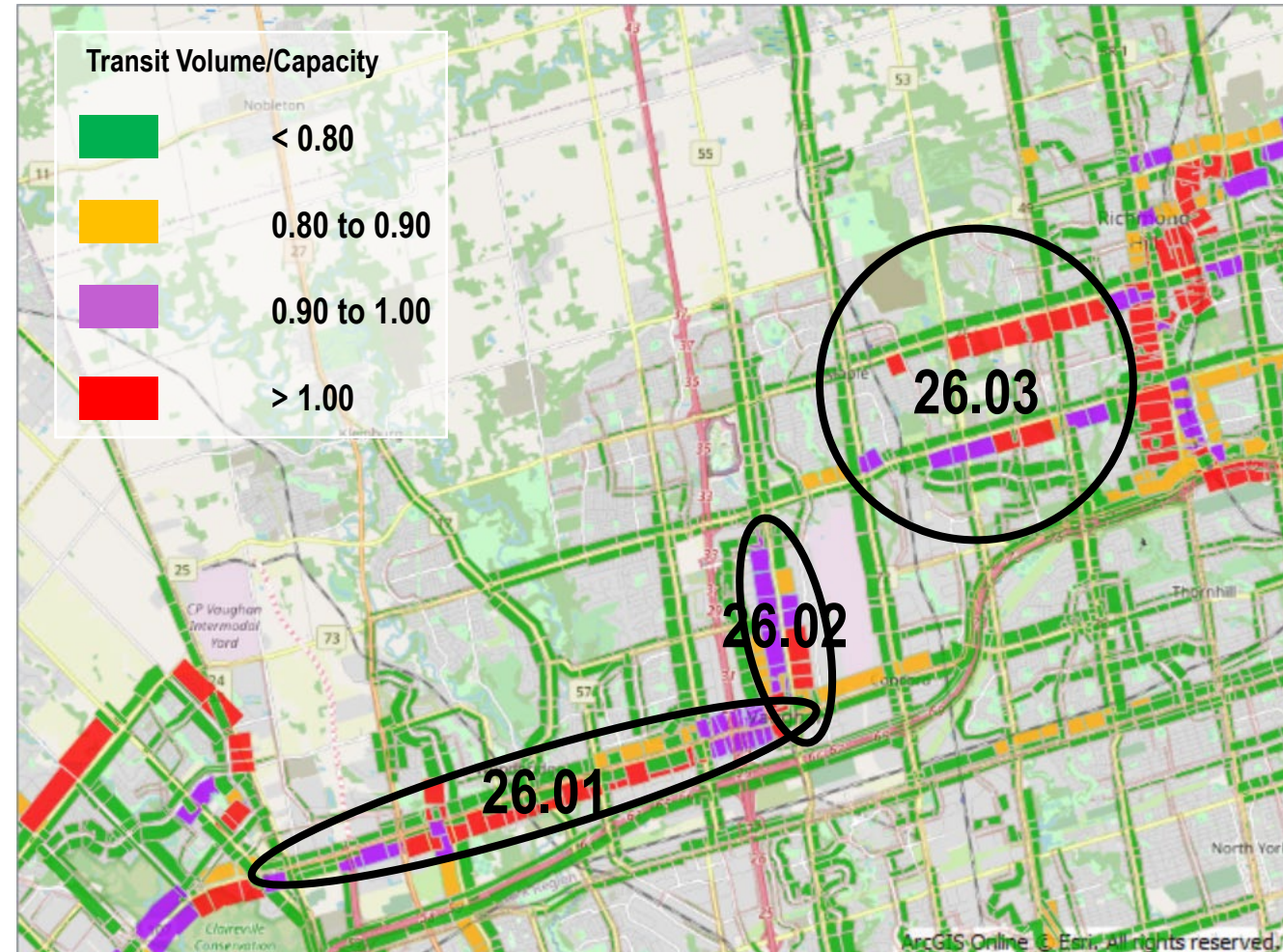
Prioritized Location/Corridor	Description	Existing or New Gap?
22.01 Vellore Neighbourhood	Dense residential neighbourhood with low average travel speed.	Existing (further prioritized 2.16, 2.18, 3.03, 3.04)
22.02 Northeastern Vaughan	Residential neighbourhoods with low average travel speed and high existing transit access.	Existing (further prioritized 2.07, 2.09, 2.17, 2.19, 3.05)
22.03 Southwestern Thornhill	Residential neighbourhoods with low average travel speed and high existing transit access.	Existing (further prioritized 2.22)



# Future Transit Network Priority Areas (2041 AM Peak) High Demand / Capacity Constrained Transit Corridors

## Sample Output

Prioritized Location/Corridor, Major Routes, and Headway	Description	Existing or New Gap?
26.01 Highway 7 <ul style="list-style-type: none"> <li>VIVA Orange (10 min)</li> <li>YRT Highway 7 (10 min)</li> <li>Züm Queen (15 min)</li> </ul>	Capacity constrained areas primarily in the eastbound direction from Highway 50 to Jane, both directions between Jane and Weston.	New
26.02 Jane Street <ul style="list-style-type: none"> <li>YRT Jane (12 min)</li> </ul>	Capacity constrained for both directions between Highway 7 and Rutherford.	New
26.03 Northeastern Vaughan <ul style="list-style-type: none"> <li>YRT Rutherford (14 min)</li> <li>YRT Major Mackenzie (18 min)</li> </ul>	Capacity constrained primarily in the eastbound direction, largely between Keele and Yonge.	New

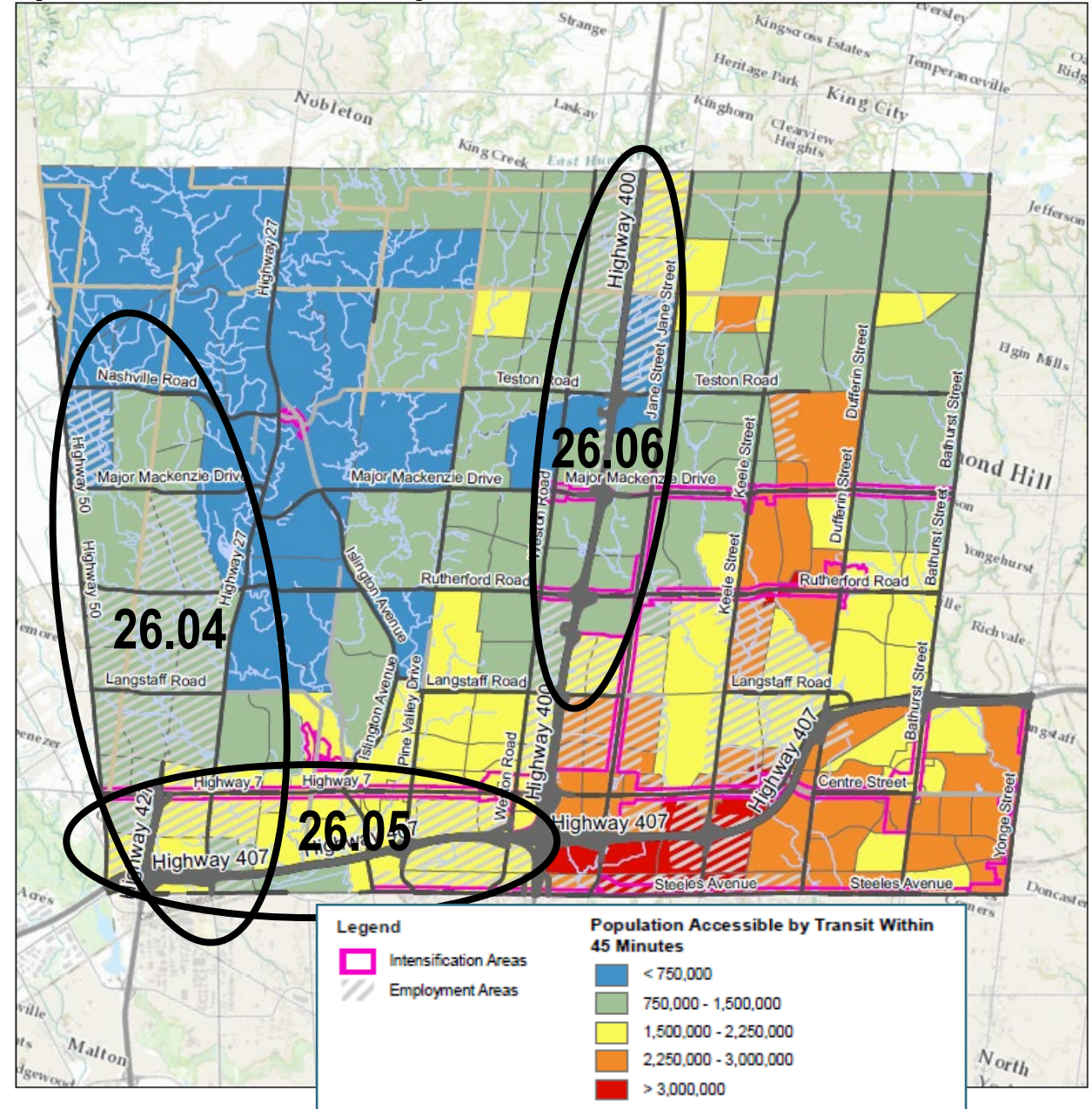


# Future Transit Network Priority Areas (2041 AM Peak)

## Transit Coverage Gaps

### Sample Output

Prioritized Location/Corridor	Description	Existing or New Gap?
26.04 West Vaughan Employment Area	Major employment area with poor population transit accessibility.	Existing* (further prioritized 6.01, 6.05, 6.06, 6.07, 6.08)
26.05 South Vaughan Employment Area	Major employment area with poor population transit accessibility.	New
26.06 Highway 400 Corridor	Employment areas on both sides of Highway 400 with poor population transit accessibility, from Langstaff Road to north City limits.	Existing* (further prioritized 6.09, 6.10)



\* Poor transit access to future employment area has further prioritized this gap.

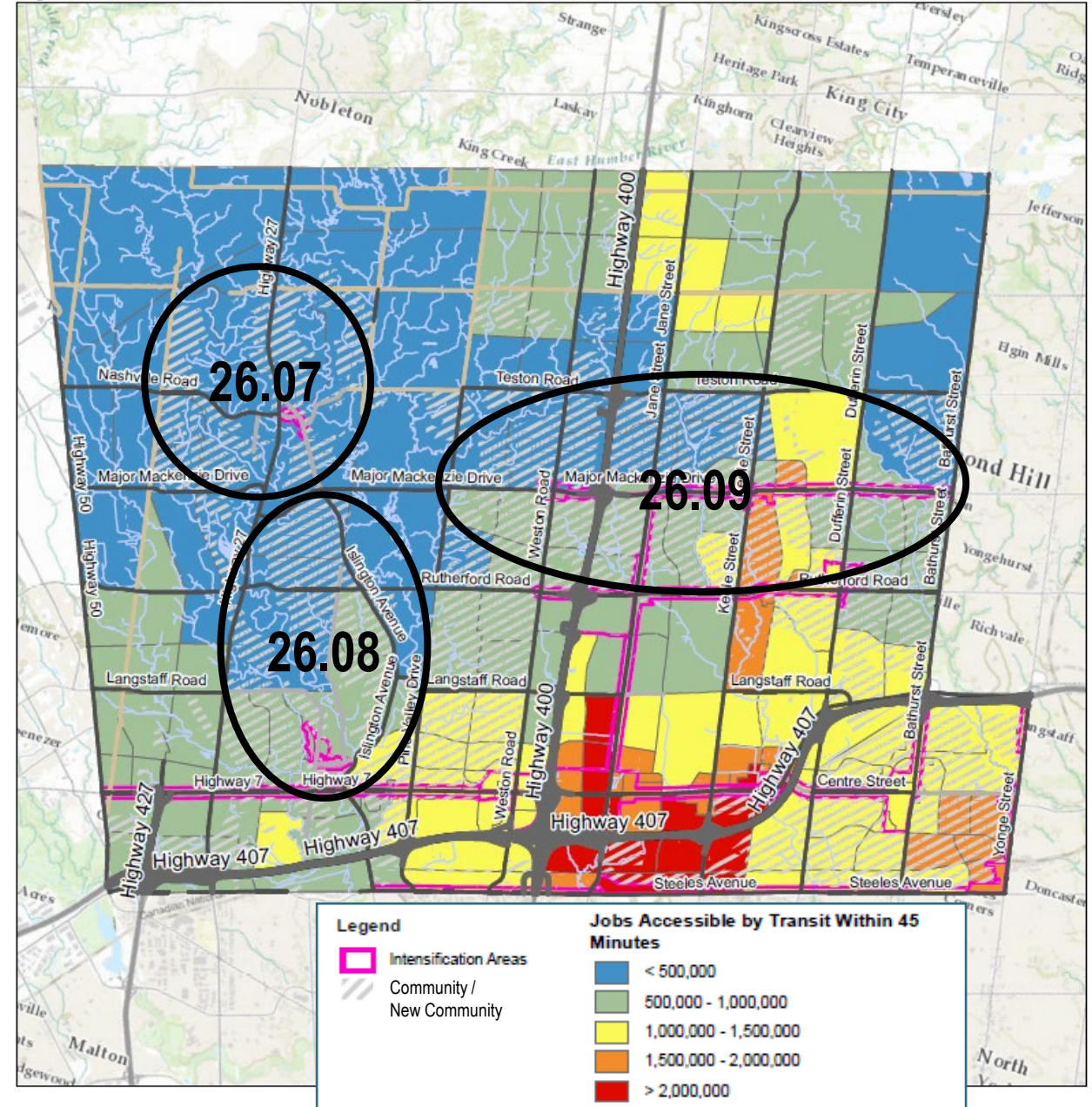
# Future Transit Network Priority Areas (2041 AM Peak)

## Transit Coverage Gaps

### Sample Output

Prioritized Location/Corridor	Description	Existing or New Gap?
26.07 Kleinburg	Major population centre with poor employment transit accessibility.	Existing* (further prioritized 6.04, 6.07, 6.11)
26.08 Woodbridge Centre	Major population centre with poor employment transit accessibility.	Existing* (further prioritized 6.01, 6.06, 6.11, 6.15)
26.09 Northeastern Vaughan	Residential blocks/corridors with poor employment transit accessibility, between Rutherford and Teston.	New

\* Poor transit access to existing/future community areas has further prioritized this gap.





06

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# **Recommended Improvements**

# The Process

***Existing  
Conditions  
Gap  
Identification***



***Existing Gap  
Prioritization***



***Future Gap  
Prioritization***



***Recommended  
Improvements***



***Scenario  
Evaluation***

# Sample Recommendations

- Potential solutions could include:
  - Finer-grained street networks
  - AT facilities
  - Transit service improvements
  - TDM measures
  - Street safety improvements
- Congested road networks (as indicated by travel time index) do not necessarily imply a need for road widening – more effective network solutions may include transit improvements or TDM measures.

# Sample Recommendations

Prioritized Area	Gap Type		Potential Recommendations
Thornhill	AAA Network (Existing and Future)	<b>2.22 – Bathurst/Centre Intensification Area</b>	Completion of bike lanes or cycle tracks along Bathurst Street, Centre Street, New Westminster Drive, Atkinson Avenue, Hilda Avenue, Dufferin Street in the Thornhill neighbourhood. *
		<b>2.08 – Thornhill</b>	
		<b>2.23 – Bathurst/Centre Intensification Area</b>	
		<b>2.24 - CN York Subdivision / major rail corridor barrier</b>	
Highway 400 Corridor	Road Network (Existing and Future)	<b>1.18 – Highway 400/Highway 407 Interchange:</b> Connectivity islands separated by the highway interchange.	<ul style="list-style-type: none"> <li>• Construction of mid-block east-west crossings (Colossus Drive, Bass Pro Mills Drive, Canada Drive/America Avenue, and one crossing in North Vaughan area)**</li> <li>• Establishment of fine-grained street network linking these crossings to congested east-west arterial crossings.</li> </ul>
		<b>1.20 – Highway 400 Corridor:</b> Highway infrastructure forms significant barrier to east-west connectivity. Only one mid-block crossing exists (Portage Parkway), funnelling east-west traffic to major arterial roads.	
West Vaughan Employment Area	Road Network (Existing and Future)	<b>1.22 – West Vaughan Employment Areas:</b> Existing and future employment areas in Blocks 50, 57-60, and 64-66 form barriers to north-south and east-west connectivity, funnelling traffic to major arterial roads only.	Addition of frequent transit service NS and EW, across Brampton and Toronto borders to the West Vaughan Employment Area, improve first/last mile connections to employment areas. ***

\* Recommended in PBMP

\*\* Currently identified mid-block E-W connections

\*\*\* Not identified in YRT/vivaNEXT Plan; Identified in 2016 YR TMP 2041 Frequent Transit Network (i.e. Major Mack, Rutherford, Hwy 50, Hwy 27)

07

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# Scenario Evaluation

# The Process

***Existing  
Conditions  
Gap  
Identification***



***Existing Gap  
Prioritization***



***Future Gap  
Prioritization***



***Recommended  
Improvements***



***Scenario  
Evaluation***

# Scenario Evaluation

- Organize potential recommendations into groups in order to evaluate overall impact to transportation system
- Prepare scenarios for testing within travel demand forecasting model
- Methodology and/or modifications to model for AT improvements still to be determined
- Evaluation to be based on VTP Objectives

# Future Scenario Evaluation Framework

VTP Objective	Metric	Description
<b>Accessibility &amp; Connectivity</b>	System Reach	# of Jobs from Origins in Vaughan within 45 minutes by all modes # of Jobs from Origins outside Vaughan within 45 minutes by all modes
<b>Environmental Stewardship</b>	VKT or equivalent GHG emissions	Estimated GHG emissions based on VKT by mode for residents and employees of Vaughan.
<b>Equitable</b>	Median travel time comparison	Overall median travel time compared to median travel time for Vaughan zones with highest proportions of social equity needs
<b>Financial Sustainability</b>	Relative cost estimate of scenario	Comparison of cost estimates, relatively, for each scenario (e.g. high, medium, low)
<b>Reliability / Resilience</b>	Delays due to congestion	VHT (roads) and lane-km of transit with $v/c > 0.9$
<b>Safety</b>	Inherent to future designs	New infrastructure will be designed to be safe by design, based on best practices of the day.



08

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**Next Steps**

# Next Steps

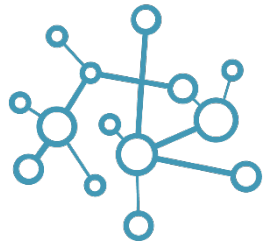
- Gather input from TAC on gap analysis methodology and scenario evaluation metrics
- Revise Future Gap Prioritization once York Region land use is available
- Finalize list of recommended infrastructure
- Determine preferred scenario
- Prepare implementation and costing plan

**Thank you!**

**A**

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**Appendix A**  
**Full Long List of Gaps**



# Long List of Connectivity Gaps

Road Network

# What is considered a gap in the road network?



## Connectivity Islands

*Isolated areas where road connectivity is good, but with few connections to the rest of the City. Often, these islands are bounded by arterial roads, railways, and natural features such as watercourses.*



## Curvilinear Street Design

*Land parcels with long block sizes, i.e. where the road intersection density is low due to industrial roads or curvilinear local streets.*



## Barriers

*Continuous land uses and major facilities such as the CN McMillan Yard or natural features which result in gaps and barriers between areas of road network connectivity.*

**Different types of gaps will help us identify types of solutions**

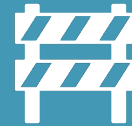
# Long List of Road Network Gaps



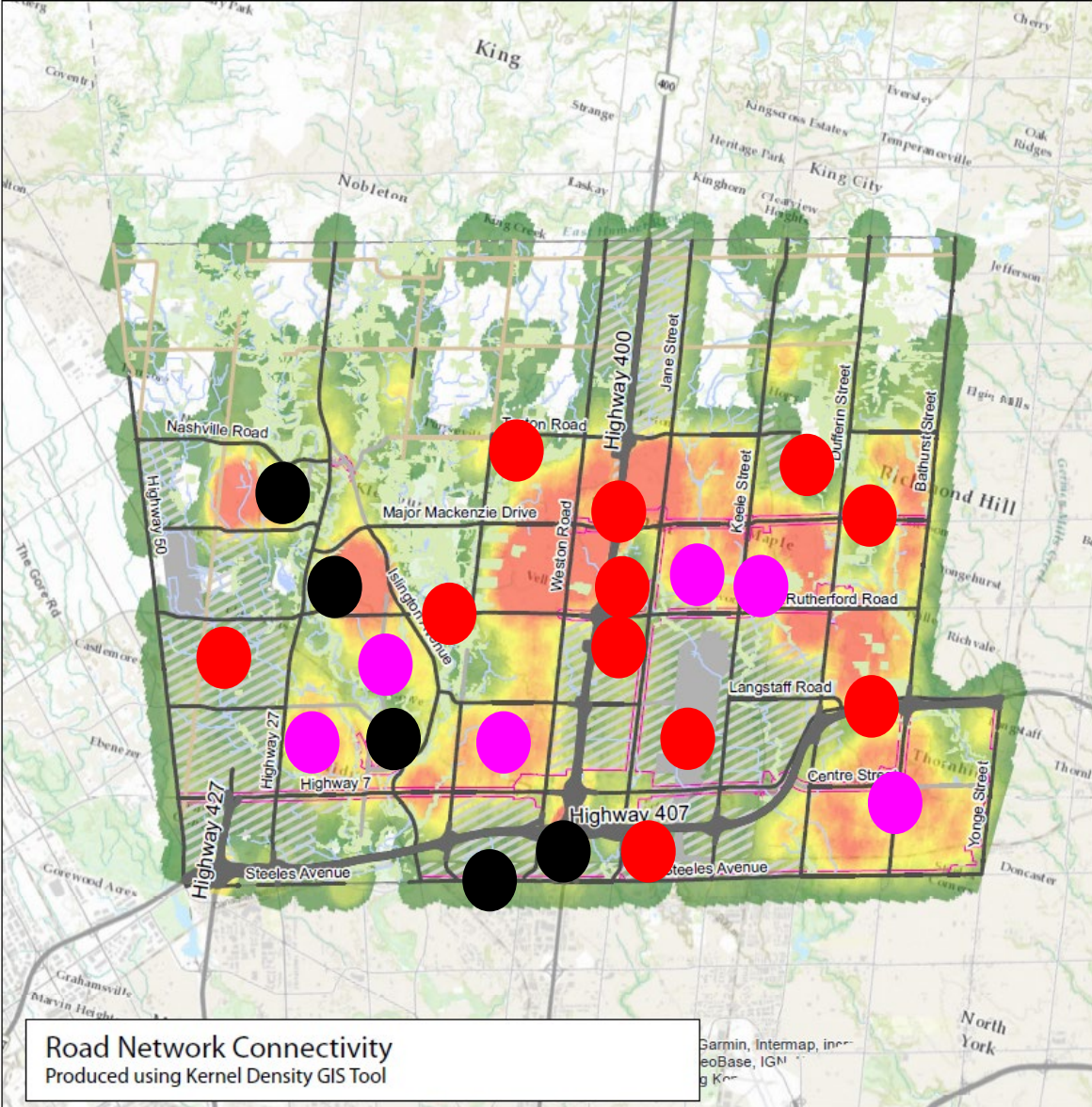
Connectivity islands



Curvilinear street design



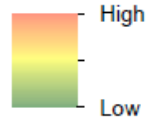
Barrier



## Legend

- Intensification Areas
- Rail Facilities
- Employment Areas

## Road Intersection Density



# Long List of Road Network Gaps (1/2)



## Connectivity islands

- 1.05 – Block 61 West:** Connectivity island separated from the majority of the City; bounded by Huntington Road, Nashville Road, Hwy 27, and Major Mackenzie Drive.
- 1.04 – Napa Valley Community:** Connectivity island separated from the majority of the City; bounded by Hwy 27, Major Mackenzie Drive, Islington Avenue, and the Humber River valley. Langstaff Road is discontinuous across the Humber River valley
- 1.03 – Woodbridge Centre:** Connectivity island separated from the majority of the City; bounded by Hwy 27, Hwy 7, and the Humber River valley.
- 1.18 – Highway 400/Highway 407 Interchange:** Connectivity islands separated by the highway interchange.
- 1.02 – Steeles Ave W:** Poor connectivity. Islands of connectivity surrounding the intersections with Hwy 427, Hwy 27, Kipling Avenue, Hwy 400, and the Dufferin to Yonge Street area.



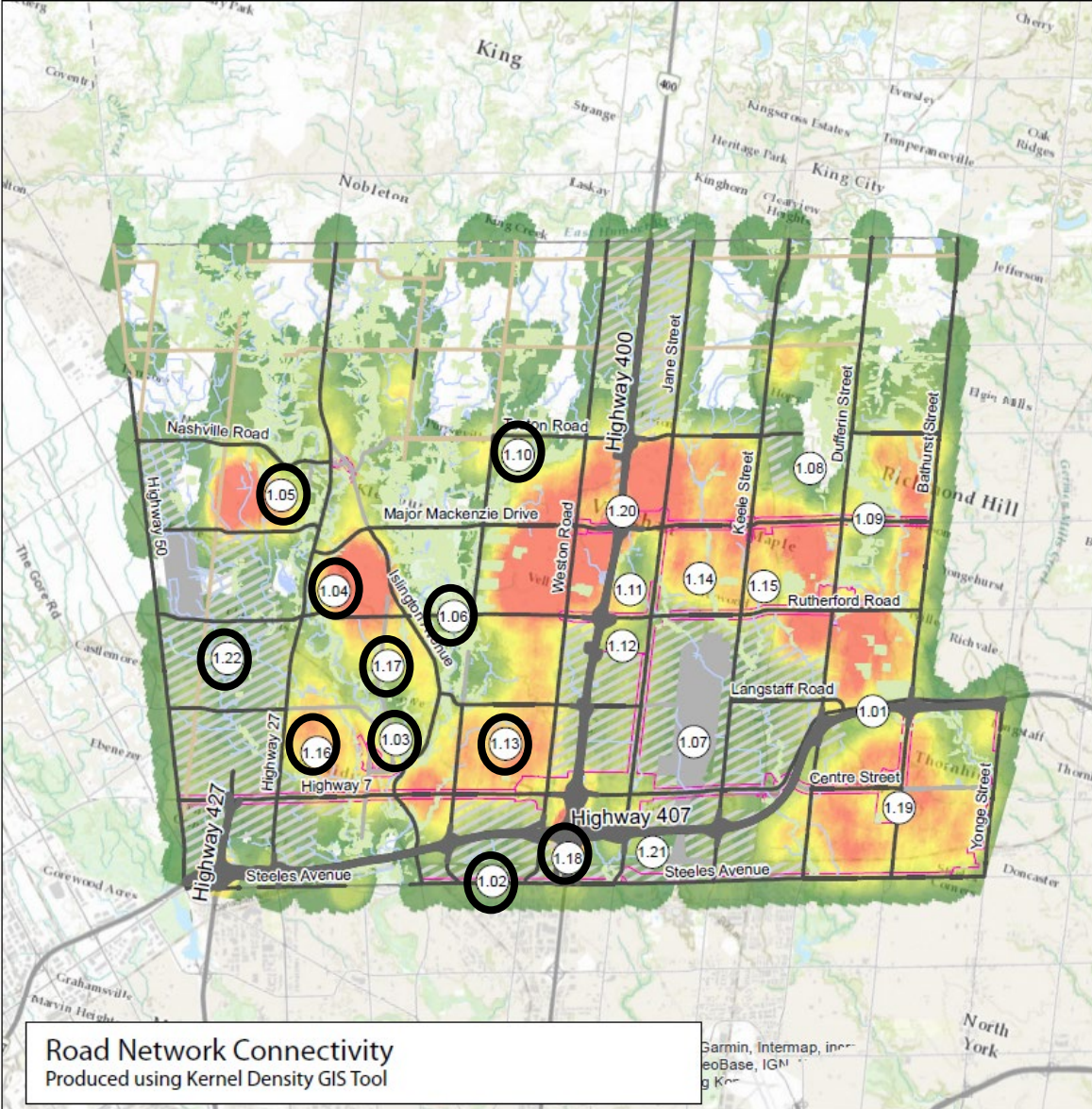
## Curvilinear street design

- 1.17 – Humber River/Islington/Rutherford Parcels:** Poor connectivity due to curvilinear suburban street network.
- 1.16 – Highway 7/Kipling/Langstaff/Highway 27 Parcels:** Poor connectivity due to curvilinear suburban street network.
- 1.13 – Highway 7/Weston/Rutherford/Islington Parcels:** Poor connectivity due to curvilinear suburban street network



## Barrier

- 1.10 – Pine Valley/Teston Intersection:** Undeveloped greenspace forms a barrier to north-south and east-west connectivity.
- 1.06 – Kortright & Boyd Conservation Areas:** Conservation land forms barriers to east-west travel between Woodbridge and the rest of the City. Pine Valley Drive is discontinuous across the conservation areas.
- 1.22 – West Vaughan Employment Areas:** Existing and future employment areas in Blocks 50, 57-60, and 64-66 form barriers to north-south and east-west connectivity, funnelling traffic to major arterial roads only.

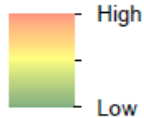


Road Network Connectivity  
Produced using Kernel Density GIS Tool

### Legend

- Intensification Areas
- Rail Facilities
- Employment Areas

### Road Intersection Density





# Long List of Road Network Gaps (2/2)



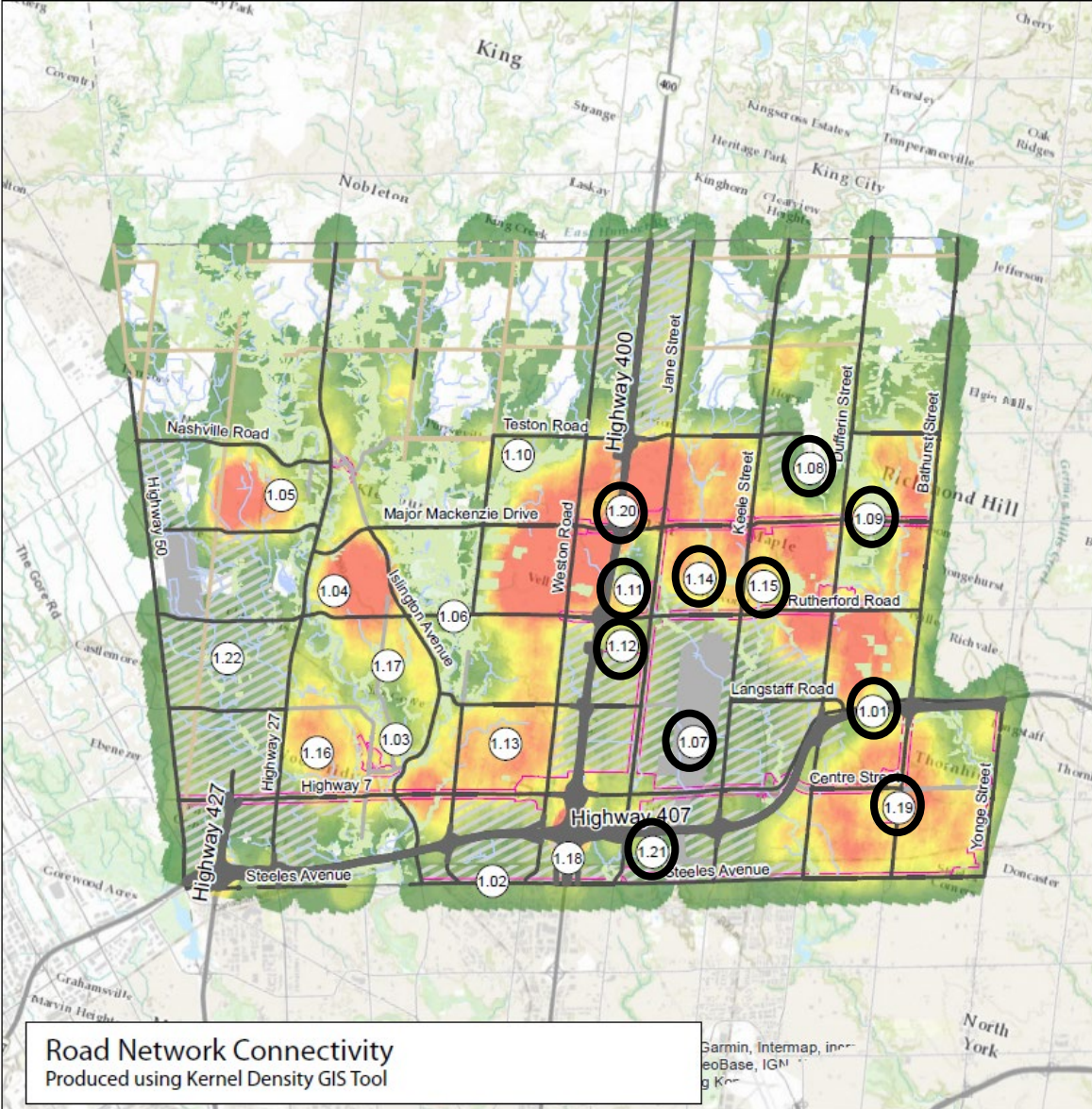
## Curvilinear street design

- **1.19 – Thornhill:** Areas of poor connectivity due to curvilinear suburban street network.
- **1.14 – Rutherford/Keele/Major Mackenzie/Jane Parcels:** Poor connectivity due to curvilinear suburban street network.
- **1.15 – Rutherford/Barrie GO Line/Major Mackenzie/Keele Parcels:** Poor connectivity due to curvilinear suburban street network.



## Barrier

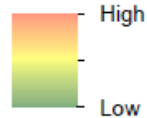
- **1.07 – CN MacMillan Yard & Employment Areas:** Rail infrastructure and associated industrial employment areas form a significant barrier to east-west connectivity north of Steeles Avenue and south of Rutherford Road.
- **1.01 – Highway 407:** Forms a barrier between well-connected communities to the north and south, from Bathurst to Dufferin Streets.
- **1.21 – South Vaughan Employment Areas:** Industrial employment areas south of Hwy 407 and west of Dufferin Street form barriers to north-south and east-west connectivity, funnelling traffic to major arterial roads.
- **1.12 – Vaughan Mills:** Large shopping mall forms a barrier to north-south and east-west connectivity.
- **1.11 – Canada's Wonderland:** Amusement Park forms a barrier to east-west connectivity.
- **1.20 – Highway 400 Corridor:** Highway infrastructure forms significant barrier to east-west connectivity. Only one mid-block crossing exists (Portage Parkway), funnelling east-west traffic to major arterial roads.
- **1.20 – Highway 400 Corridor:** Highway infrastructure forms significant barrier to east-west connectivity. Only one mid-block crossing exists (Portage Parkway), funnelling east-west traffic to major arterial roads.
- **1.08 – Keele Valley Landfill:** Closed landfill forms a barrier to east-west connectivity from Keele Street to Dufferin Street north of Major Mackenzie Drive. Teston Road is discontinuous across the landfill.
- **1.09 – Dufferin/Major Mackenzie Intersection:** Maple Nature Reserve forms a barrier to east-west connectivity in northeast and southeast quadrants.



### Legend

- Intensification Areas
- Rail Facilities
- Employment Areas

### Road Intersection Density





# Long List of Connectivity Gaps

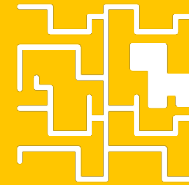
**Cycling** and **Sidewalk** Network

# What is considered a gap in the AAA/Sidewalk network?



## **Connectivity Islands**

*Isolated areas where AAA network/sidewalk connectivity is good, but with few or no AAA/sidewalk network connections to the rest of the City. Often, these islands are bounded by arterial roads, railways, and natural features such as watercourses.*



## **Inner Blocks**

*Blocks or land parcels which feature a discontinuous interior patchwork of AAA/sidewalk network routes.*



## **Barriers**

*Continuous land uses or natural features which result in gaps and barriers between areas of AAA/sidewalk network connectivity.*



## **Missing Connection**

*Individual gaps in the AAA/sidewalk network separating areas of good connectivity from one another or from intensification areas and other major trip generators.*

**Different types of gaps will help us identify types of solutions**

# Long List of AAA Network Gaps



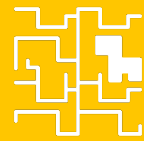
Connectivity Islands



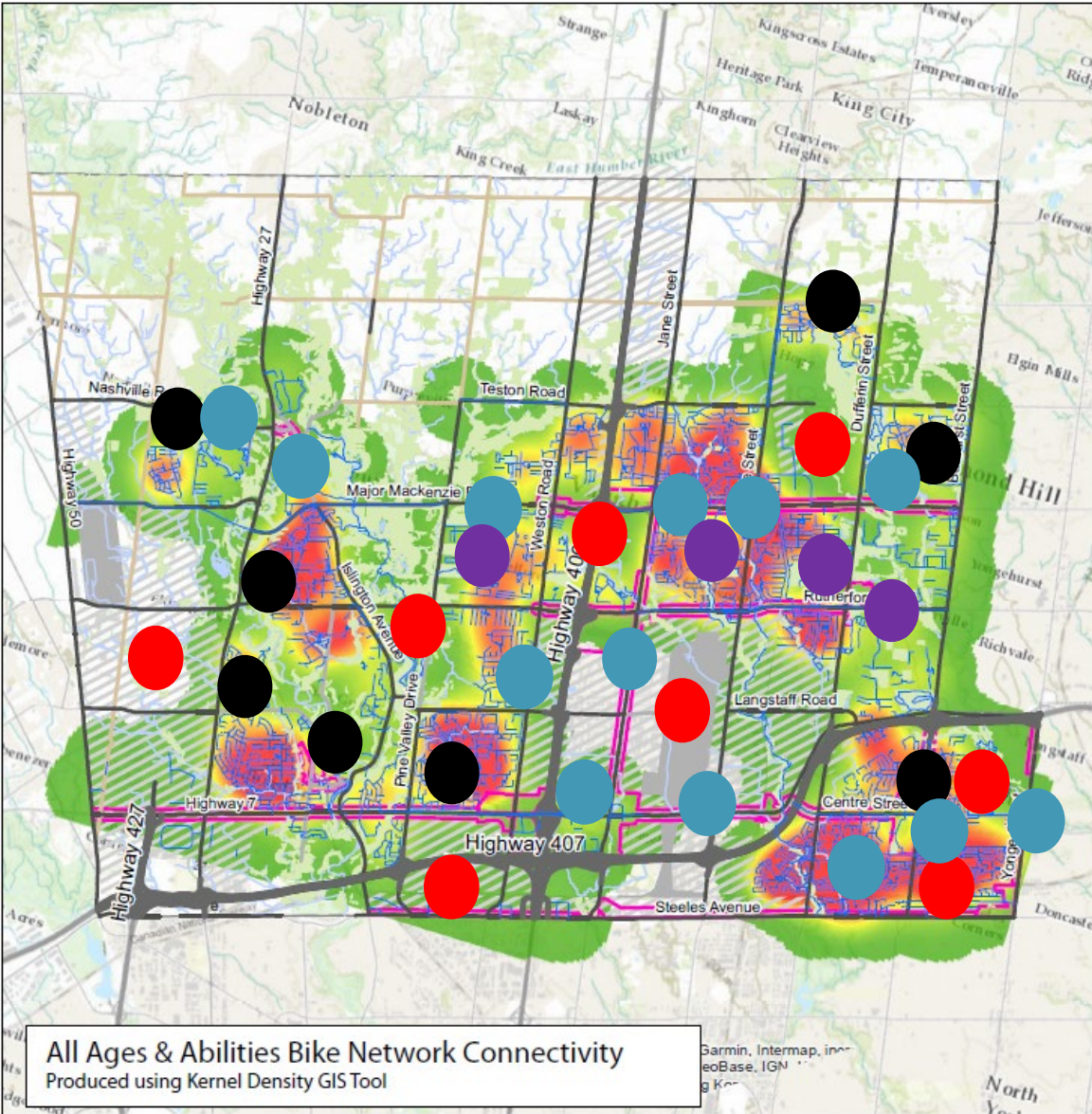
Barriers



Missing Connections



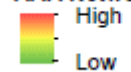
Inner Block

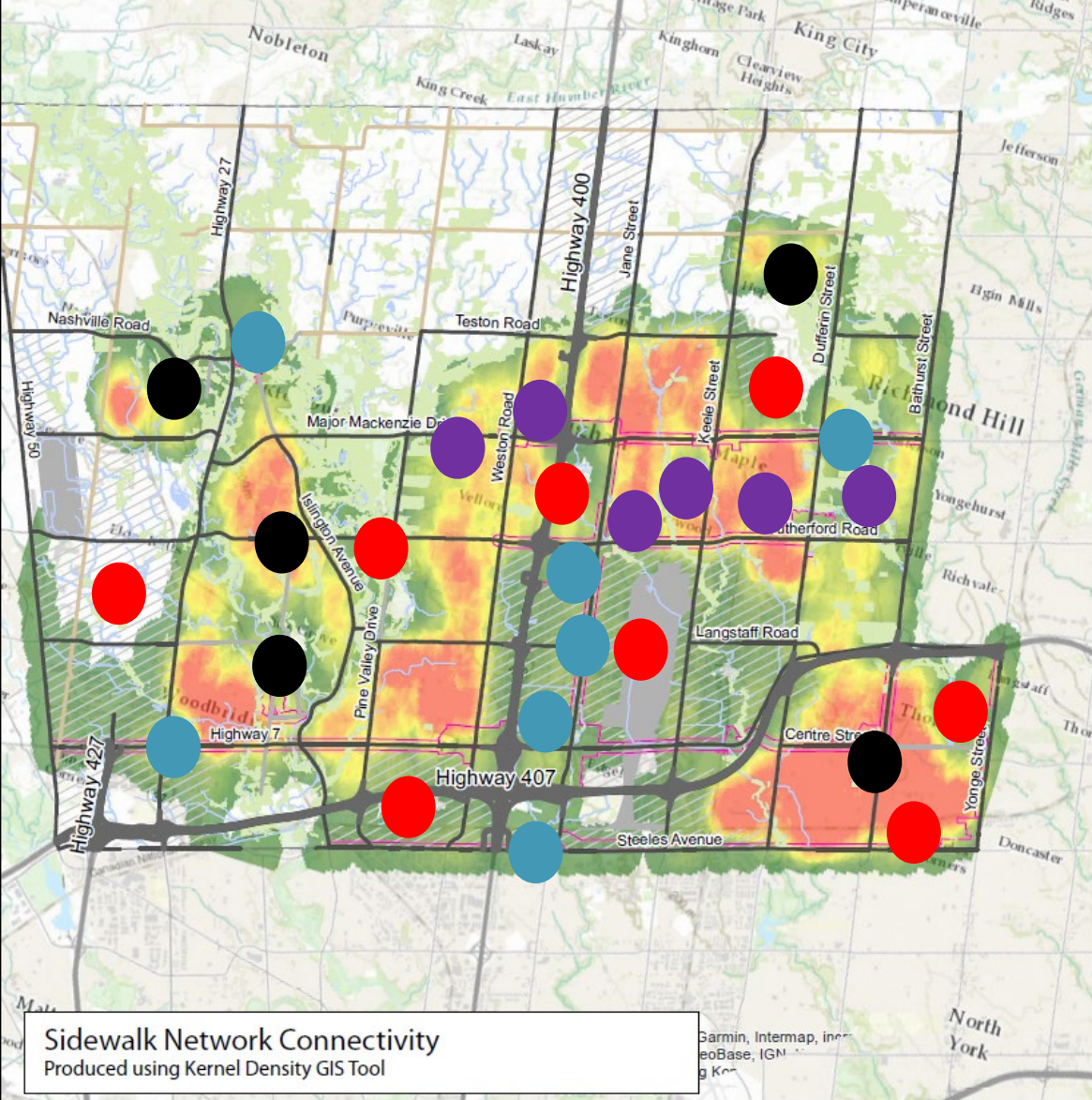


## Legend

- AAA network
- Intensification Areas
- RailFacilities
- EmploymentAreas

## AAA Network - Density





# Long List of Sidewalk Network Gaps



**Connectivity Islands**



**Barriers**

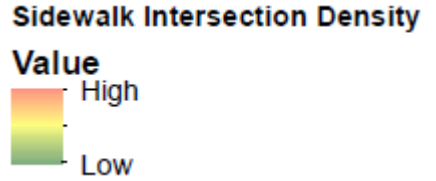


**Missing Connections**

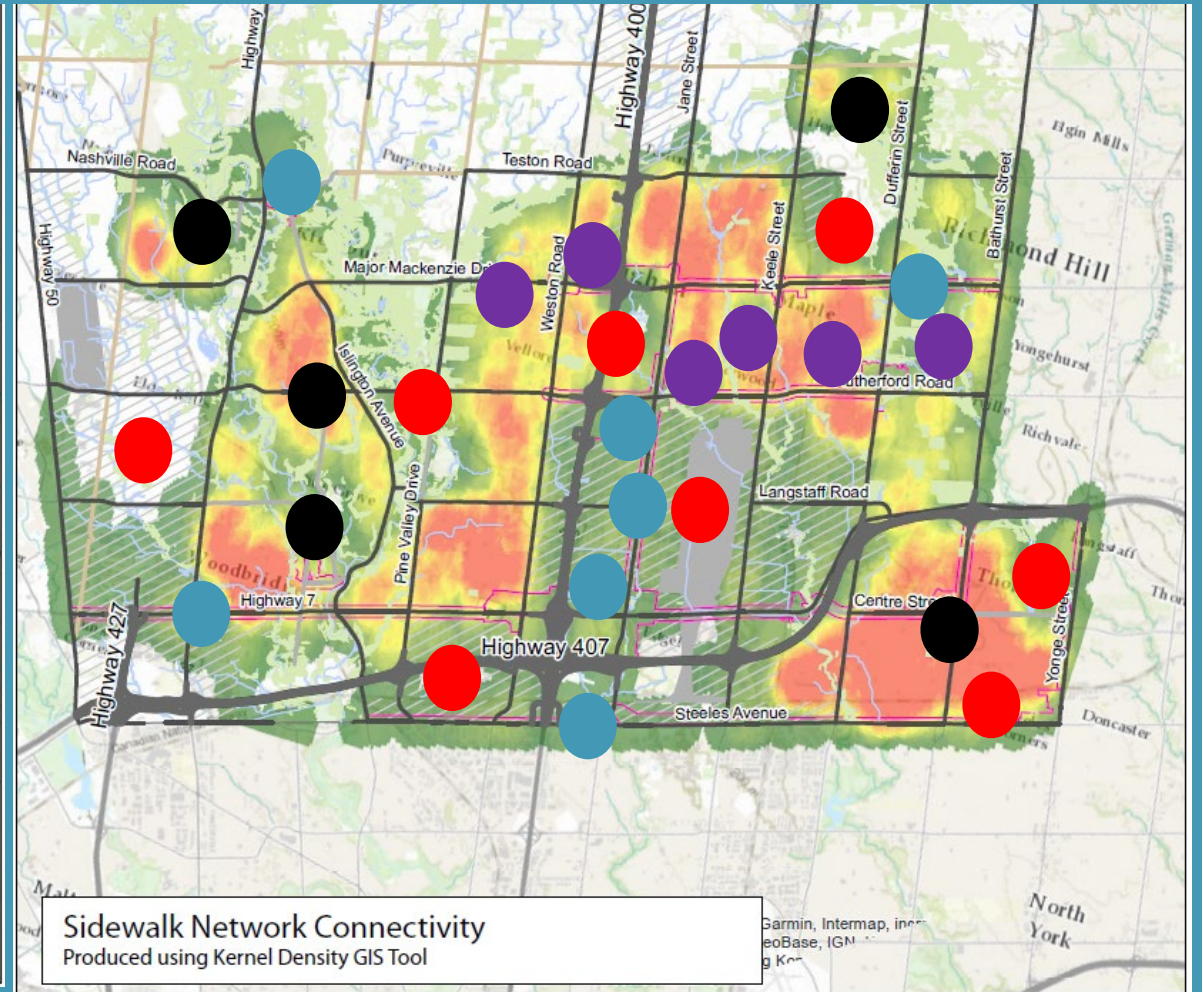
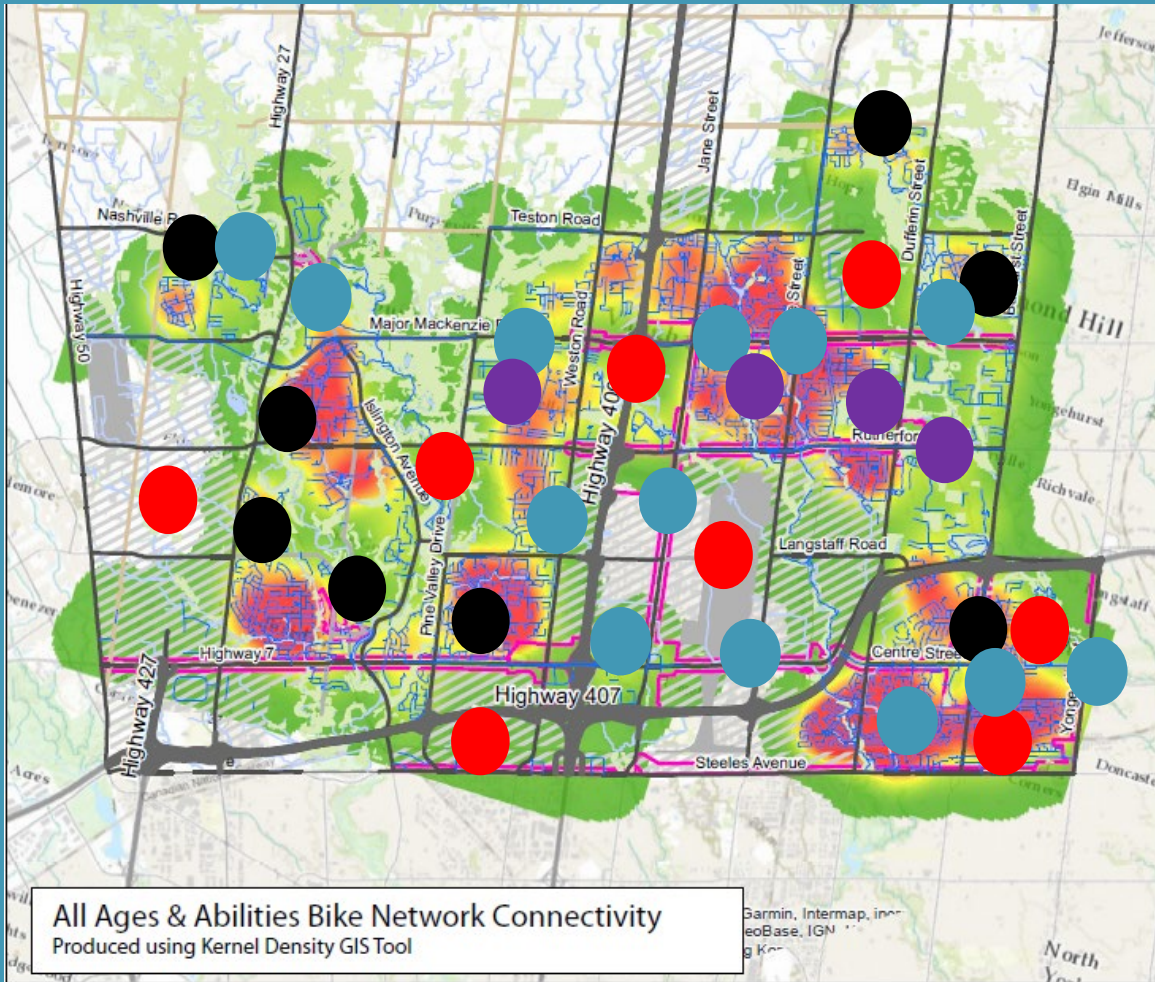


**Inner Block**

- Legend**
- Intensification Areas
  - Rail Facilities
  - Employment Areas



# Overview of AAA Network and Sidewalk Network Gaps



**Legend**

- AAA network
- Intensification Areas
- Rail Facilities
- Employment Areas

**AAA Network - Density**

High  
Low

**Legend**

- Intensification Areas
- Rail Facilities
- Employment Areas

**Sidewalk Intersection Density**

Value  
High  
Low

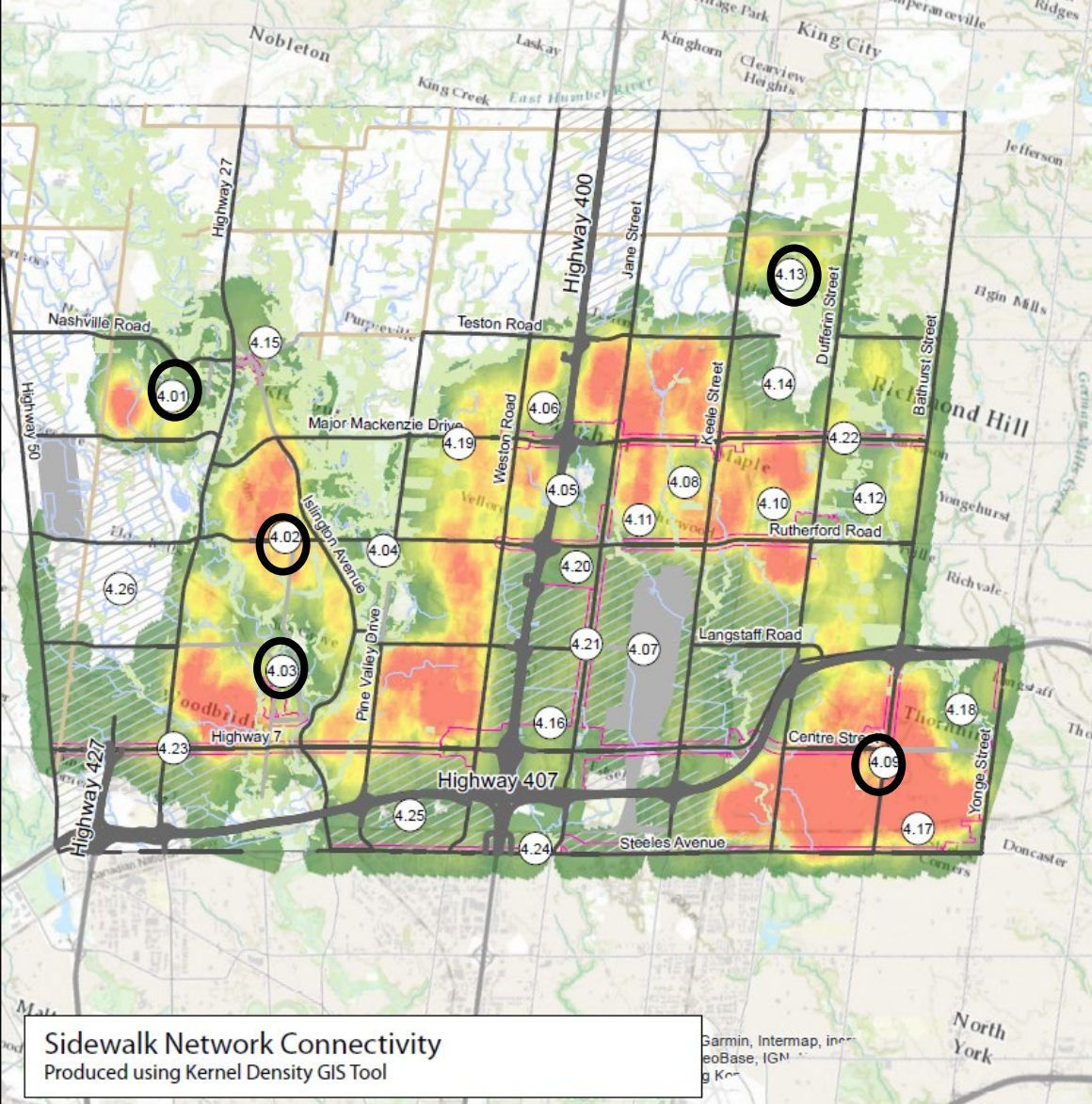
- Connectivity Islands**
- Barriers
  - Missing Connections
  - Inner Block

# Long List of Sidewalk Network Gaps



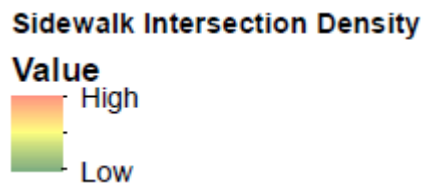
## Connectivity Islands

- 4.01 – Block 61 West
- 4.02 – Napa Valley Community (Block 53)
- 4.03 – Woodbridge Centre (Blocks 51 & 44)
- 4.09 – Thornhill
- 4.13 – Historic Community of Hope



Sidewalk Network Connectivity  
Produced using Kernel Density GIS Tool

- Legend**
- Intensification Areas
  - Rail Facilities
  - Employment Areas

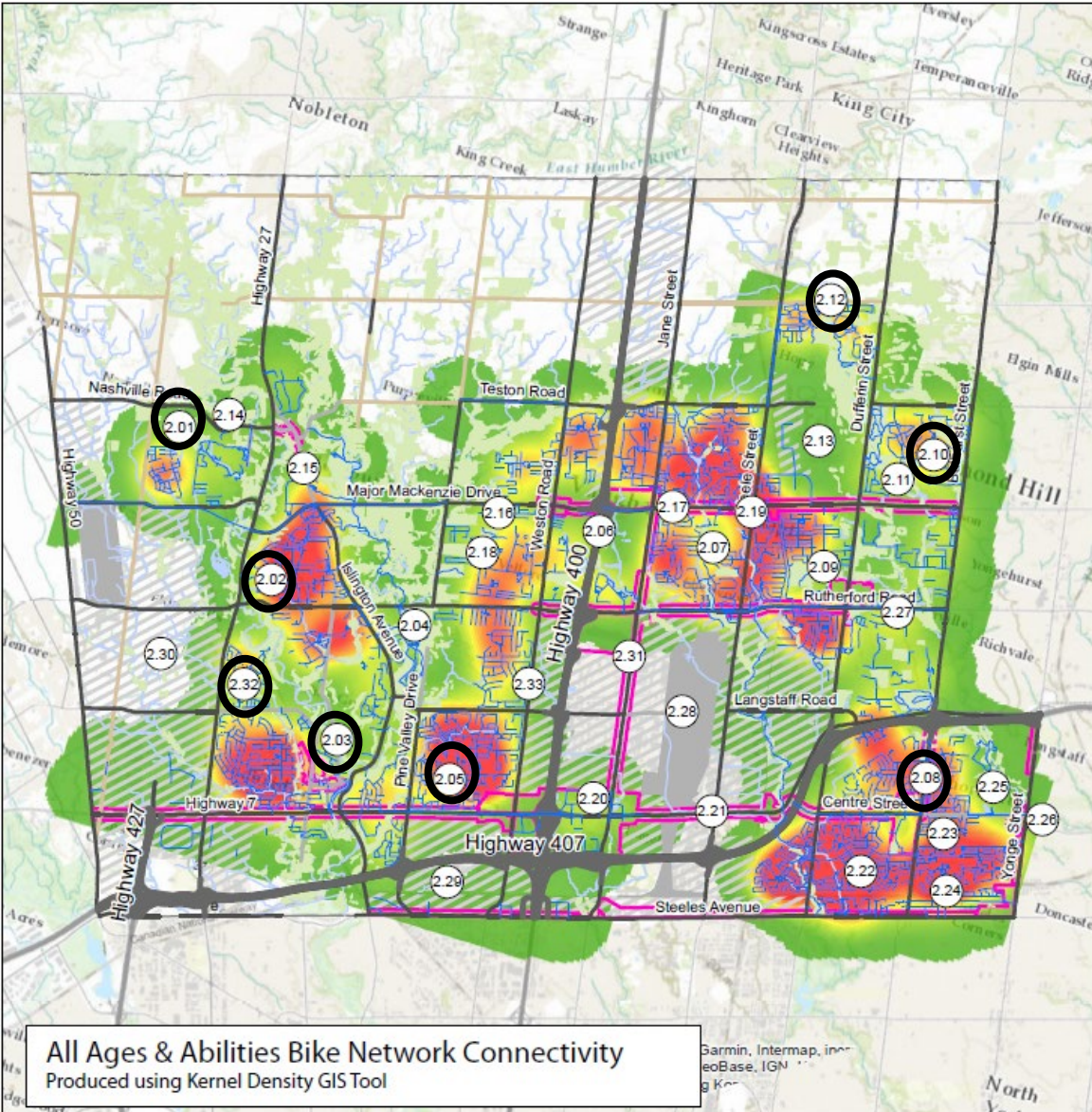


# Long List of AAA Network Gaps



## Connectivity Islands

- 2.01 – Block 61 West
- 2.02 – Napa Valley Community (Block 53)
- 2.32 – Block 52 Southwest
- 2.03 – Woodbridge Centre (Blocks 51 & 44)
- 2.05 – Block 37: New Highway 7 multi-use path is the only current AAA connection to this block
- 2.08 – Thornhill: Internal discontinuity in AAA network also evident around Promenade Mall
- 2.10 – Block 12 Northeast
- 2.12 – Historic Community of Hope



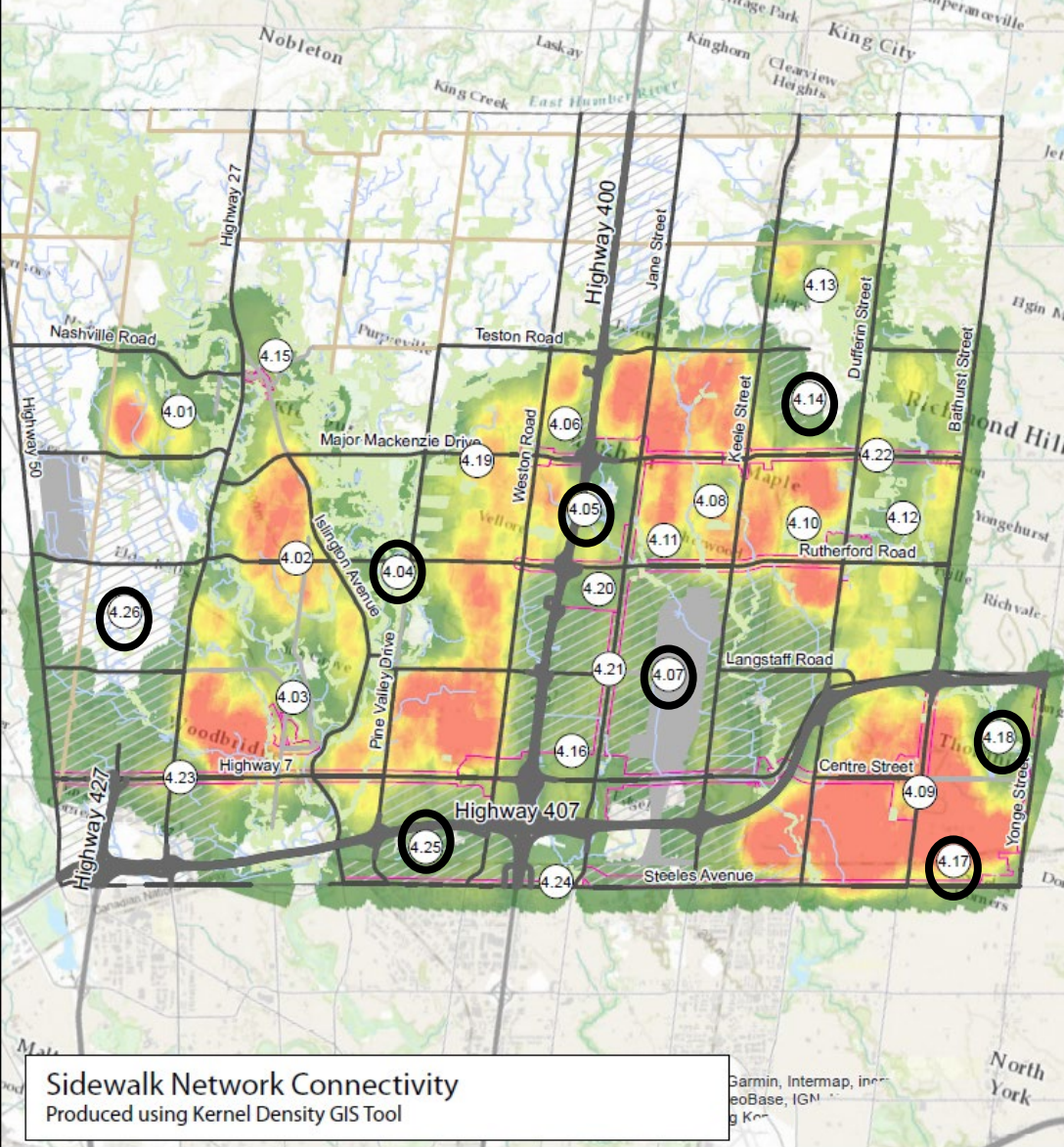
### Legend

- AAA network
- ▭ Intensification Areas
- ▭ RailFacilities
- ▨ EmploymentAreas

### AAA Network - Density





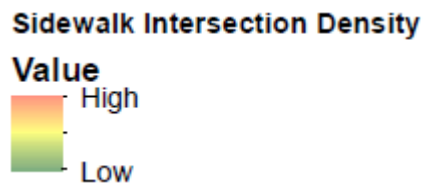


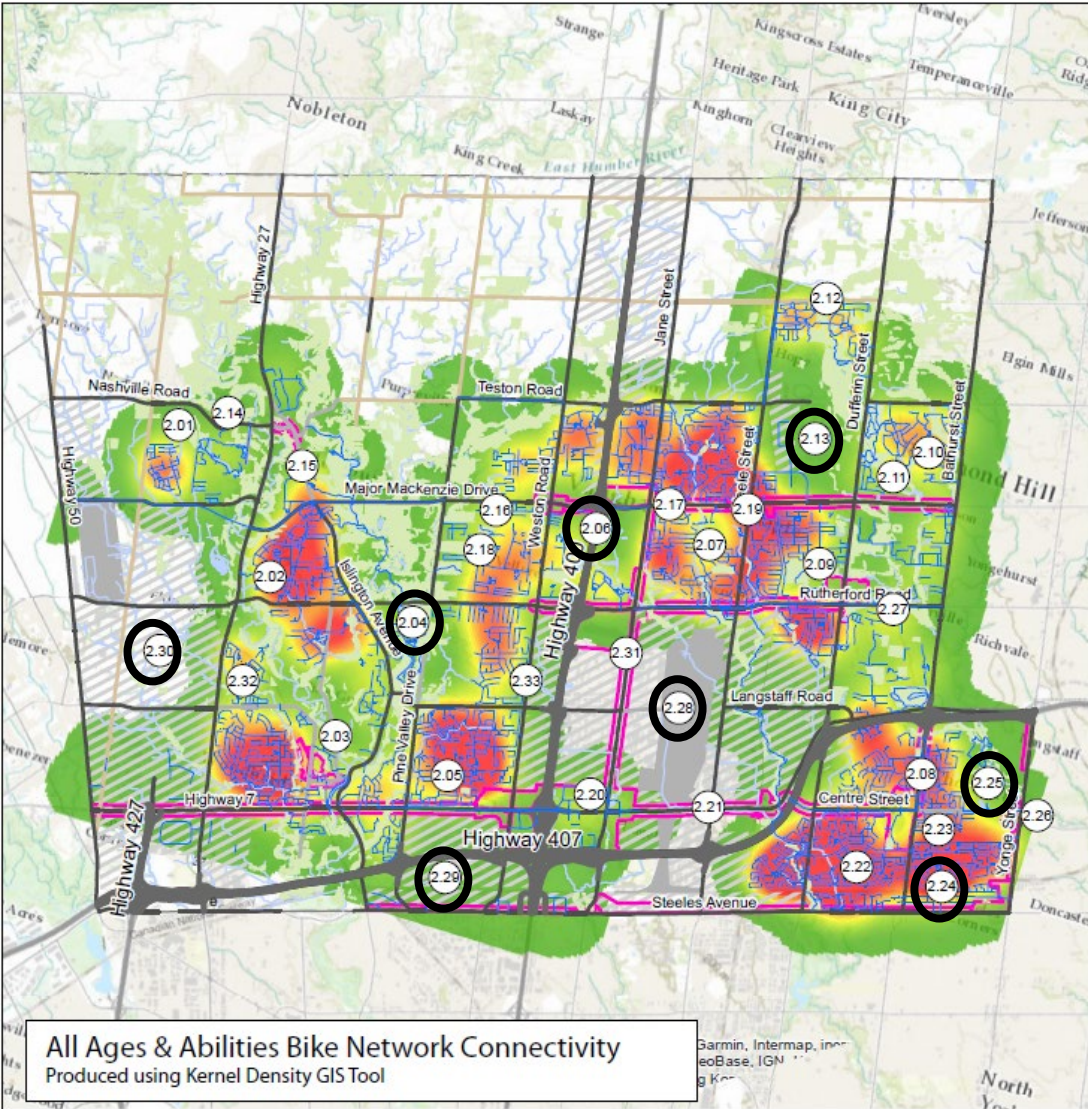
# Long List of Sidewalk Network Gaps

## Barriers

- 4.26 – **West Vaughan Employment Areas:** Existing and future employment areas in Blocks 50, 57-60, and 64-66 form barriers to north-south and east-west connectivity. No significant sidewalk density in these areas.
- 4.04 – **Kortright & Boyd Conservation Areas:** Conservation land forms barriers to east-west travel between Woodbridge and the rest of the City.
- 4.25 – **South Vaughan Employment Areas:** Industrial employment areas south of Hwy 407 and west of Dufferin Street form barriers to north-south and east-west connectivity. No significant sidewalk density in these areas.
- 4.17 – **CN York Subdivision (Yonge-Steeles Intensification Area):** Rail corridor forms a significant barrier to accessing the intensification area from denser areas of Thornhill to the northwest.
- 4.18 – **Block 2:** Golf and country clubs form barriers between central Thornhill and the Langstaff intensification area.
- 4.07 – **CN MacMillan Yard & Employment Areas:** Rail infrastructure and associated industrial employment areas form a significant barrier to east-west connectivity north of Steeles Avenue and south of Rutherford Road.
- 4.05 – **Highway 400/Canada's Wonderland:** Barrier separating dense areas of sidewalk connectivity to the east and west.
- 4.14 – **Keele Valley Landfill:** Closed landfill forms a barrier to east-west connectivity from Keele Street to Dufferin Street.

- Legend**
- Intensification Areas
  - Rail Facilities
  - Employment Areas

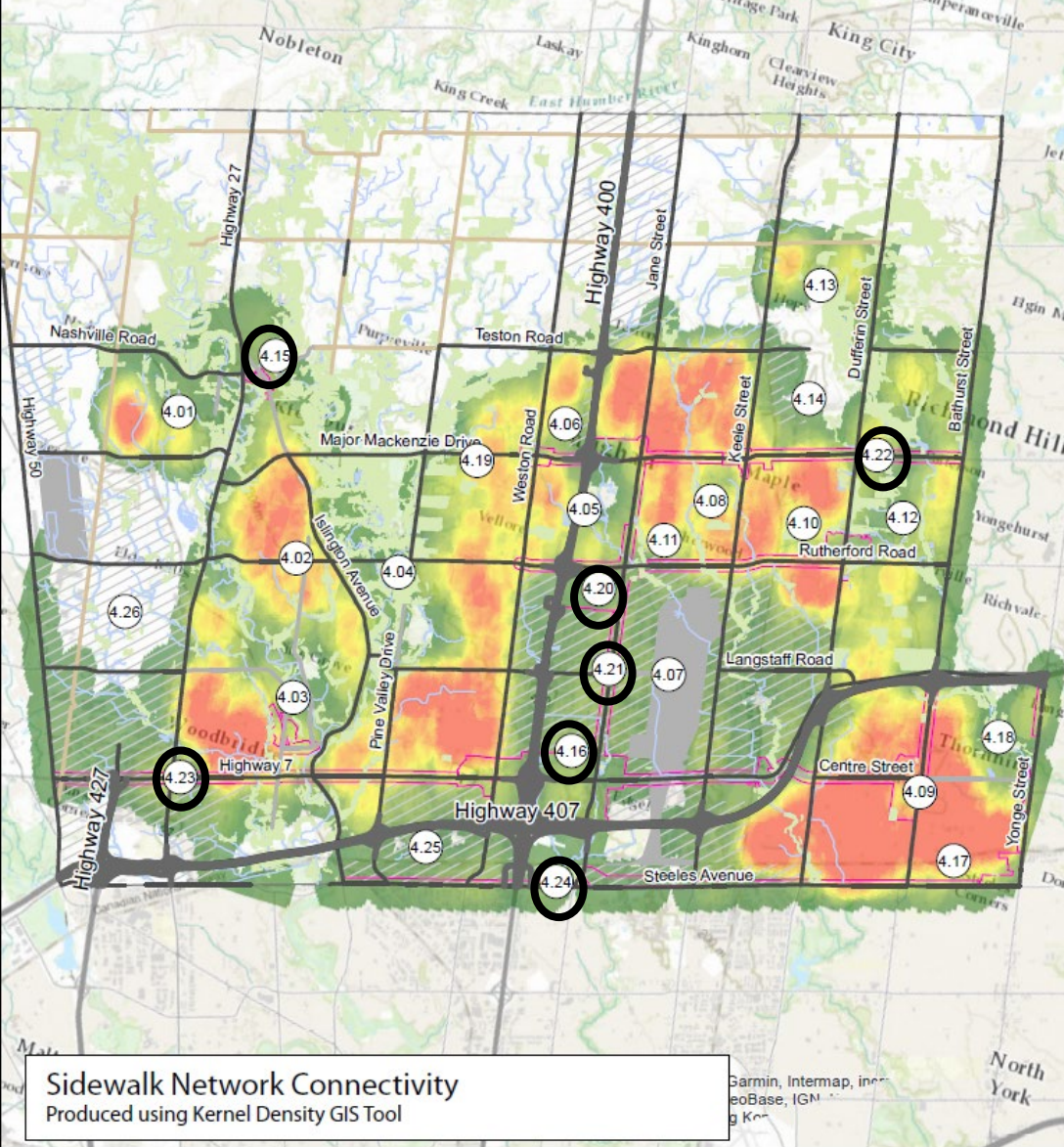




# Long List of AAA Network Gaps

## Barriers

- 2.30 – West Vaughan Employment Areas:** Existing and future employment areas in Blocks 50, 57-60, and 64-66 form barriers to north-south and east-west connectivity. No continuous AAA facilities in these areas.
- 2.04 – Kortright & Boyd Conservation Areas:** Conservation land forms barriers to east-west travel between Woodbridge and the rest of the City.
- 2.29 – South Vaughan Employment Areas:** Industrial employment areas south of Hwy 407 and west of Dufferin Street form barriers to north-south and east-west connectivity. No continuous AAA facilities in these areas.
- 2.24 – CN York Subdivision (Yonge-Steeles Intensification Area):** Rail corridor forms a significant barrier to accessing the intensification area from denser areas of Thornhill to the northwest.
- 2.25 – Block 2:** Golf and country clubs form barriers between central Thornhill and the Langstaff intensification area.
- 2.28 – CN MacMillan Yard & Employment Areas:** Rail infrastructure and associated industrial employment areas form a significant barrier to east-west AAA connectivity north of Steeles Avenue and south of Rutherford Road.
- 2.06 – Highway 400/Canada's Wonderland:** Barrier separating dense areas of AAA network connectivity to the east and west, with no mid-block crossings featuring AAA infrastructure.
- 2.13 – Keele Valley Landfill:** Closed landfill forms a barrier to east-west connectivity from Keele Street to Dufferin Street.



# Long List of Sidewalk Network Gaps

## Missing Connections

- 4.15 – Kleinburg Intensification Area: Missing connections to Kleinburg from other areas of the City.
- 4.23 – Highway 7 Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure, from Islington west to Highway 50, with some sidewalk density around Woodbridge Centre.
- 4.24 – Steeles Avenue Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure, from Dufferin west to Islington.
- 4.16 – Vaughan Metropolitan Centre Intensification Area: Missing connections to VMC area from nearby dense areas of the City, especially Thornhill and Woodbridge.
- 4.21 – Jane Street Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure, from VMC north to Langstaff.
- 4.20 – Vaughan Mills Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure.
- 4.22 – Major Mackenzie Drive Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure, from Keele east to Bathurst.

**Legend**

- Intensification Areas
- Rail Facilities
- Employment Areas

**Sidewalk Intersection Density**

**Value**

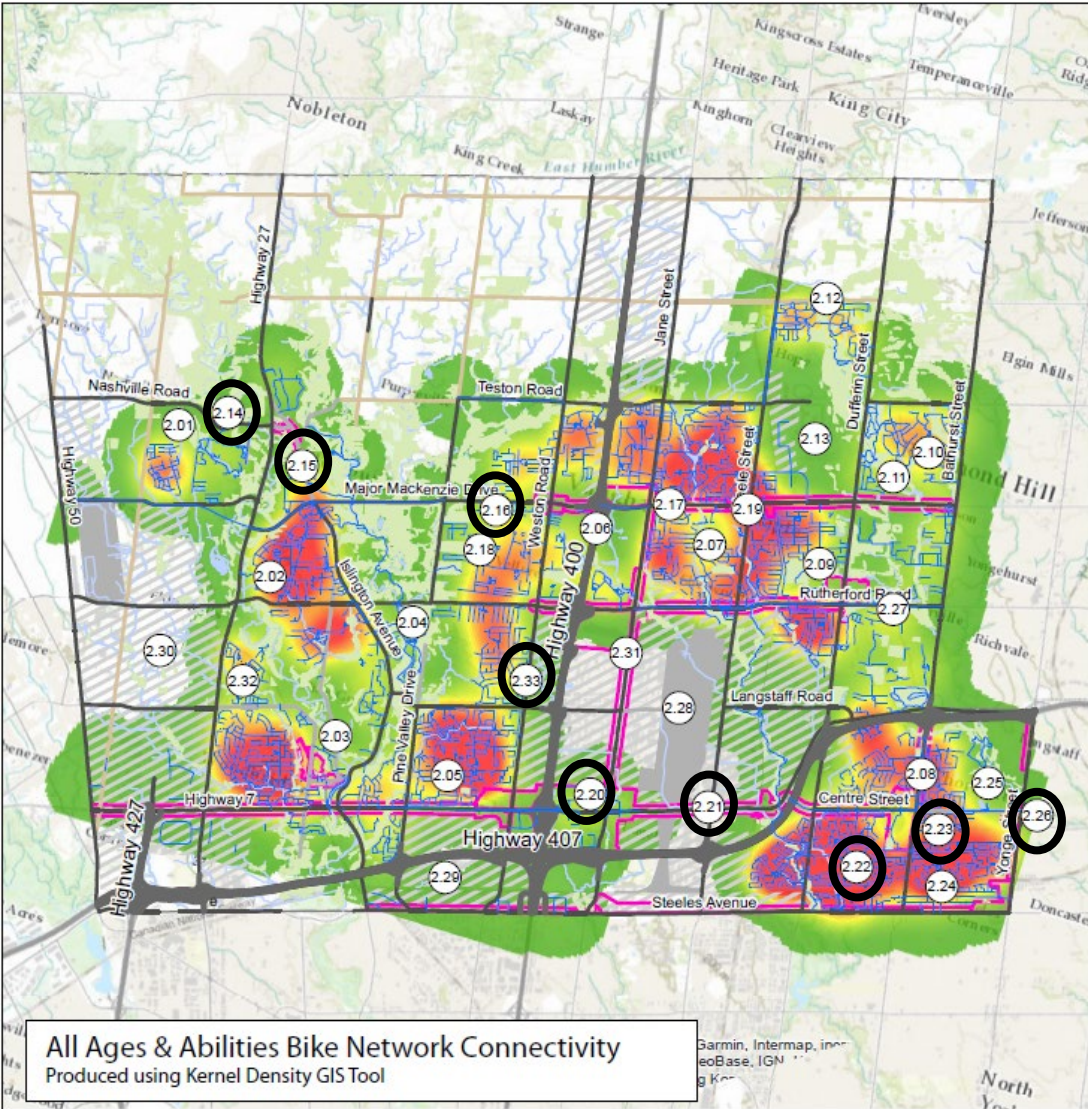
- High
- Low

# Long List of AAA Network Gaps (1/2)

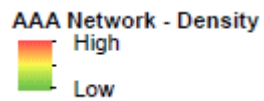


## Missing Connections

- **2.14 – Kleinburg Intensification Area:** Missing connection to Block 61 West along Nashville Road.
- **2.15 – Kleinburg Intensification Area:** Missing connection to Napa Valley Community along Islington Avenue.
- **2.16 – Jane/Major Mackenzie Intensification Area:** Missing connection from west along Major Mackenzie Drive from Pine Valley Drive to Highway 400.
- **2.33 – Weston Road Corridor:** Major arterial corridor without continuous AAA network infrastructure.
- **2.20 – Vaughan Metropolitan Centre Intensification Area:** Missing connection along Hwy 7 from Edgeley Blvd to Jane Street.
- **2.21 – Highway 7 Corridor:** Major arterial corridor without continuous AAA network infrastructure.
- **2.22 – Bathurst/Centre Intensification Area:** Missing north-south connections along Dufferin and Bathurst Streets.
- **2.23 – Bathurst/Centre Intensification Area:** Missing east-west connection along Centre Street.
- **2.26 – Yonge Street Corridor:** Missing north-south connections between Langstaff, Bathurst/Centre, and Yonge/Steeles intensification areas.



- Legend**
- AAA network
  - Intensification Areas
  - Rail Facilities
  - Employment Areas

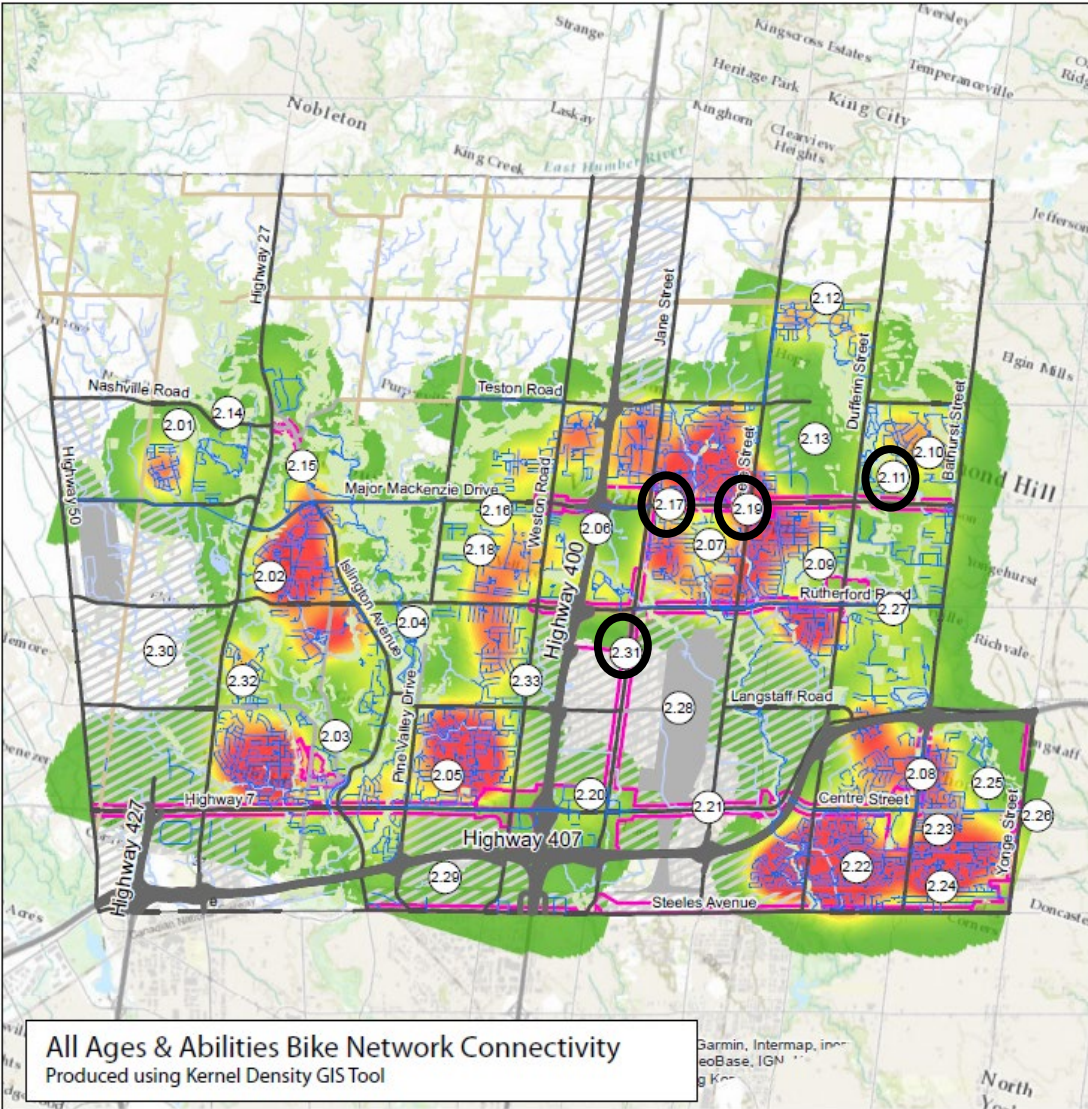


# Long List of AAA Network Gaps (2/2)



## Missing Connections

- **2.31 – Jane Street Corridor:** Major arterial corridor without continuous AAA network infrastructure
- **2.17 – Jane/Major Mackenzie Intensification Area:** Missing connection from north and south along Jane Street and east along Major Mackenzie Drive.
- **2.19 – Keele/Major Mackenzie Intensification Area:** Missing connection from all directions along Keele Street and Major Mackenzie Drive.
- **2.11 – Dufferin/Major Mackenzie Intersection:** Missing AAA connection in northeast quadrant to Major Mackenzie Intensification Area due to Maple Nature Reserve barrier.



- Legend**
- AAA network
  - Intensification Areas
  - Rail Facilities
  - Employment Areas

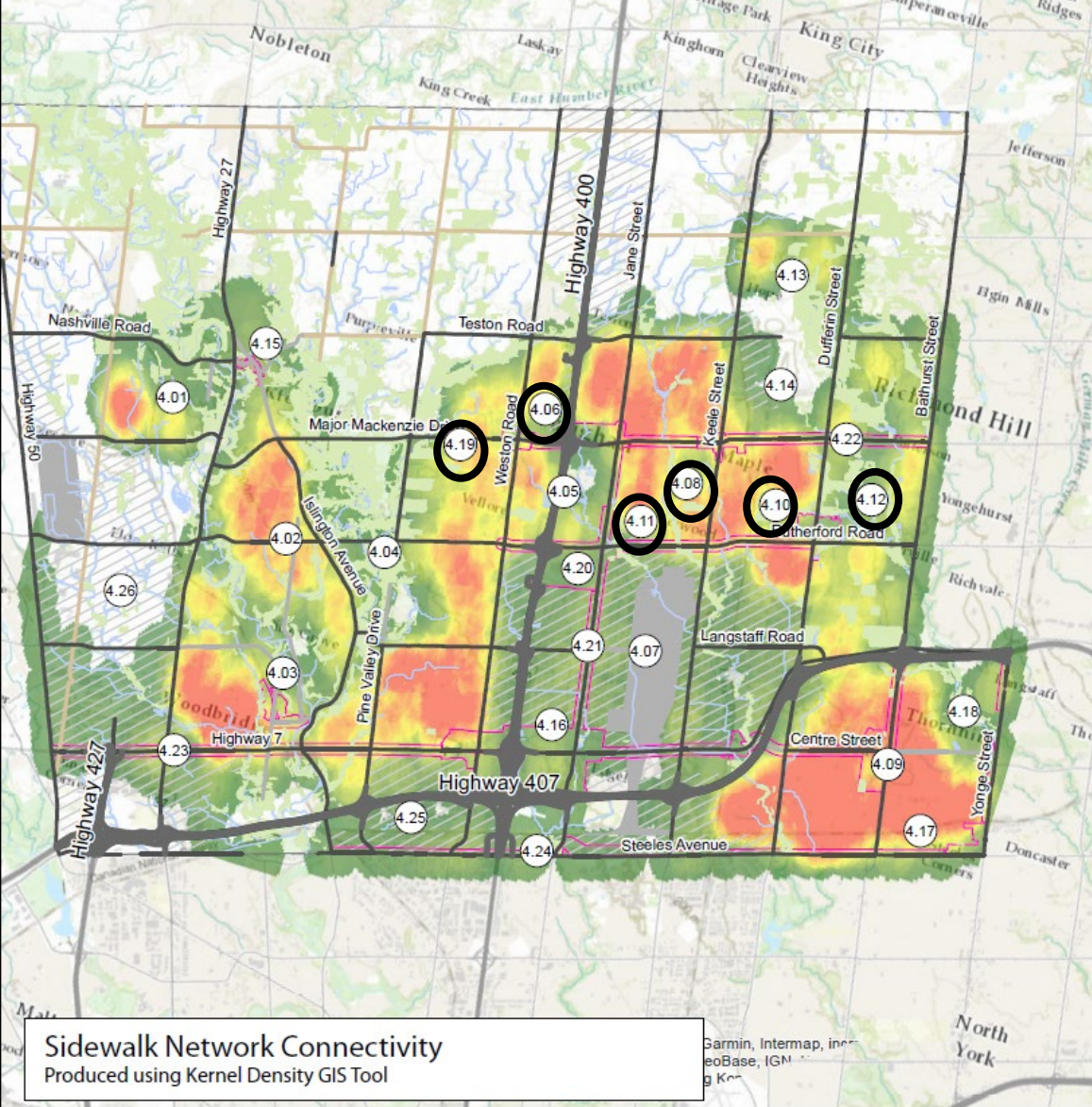
- AAA Network - Density**
- High
  - Low

# Long List of Sidewalk Network Gaps



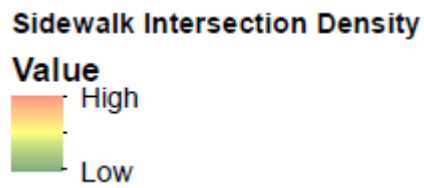
## Inner Block

- **4.06 – Highway 400/Major Mackenzie Interchange:** Commercial area in northwest quadrant forms a gap in sidewalk connectivity.
- **4.19 – Blocks 39 & 40:** Poor connectivity to west and north of blocks.
- **4.11 – Jane/Rutherford Intersection:** Parkland, Vaughan Operations Centre, and CN rail tracks form barriers to connectivity.
- **4.08 – Historic Maple Village (Southwest quadrant of Keele/Major Mackenzie Intersection):** Discontinuity due to rural-profile roads.
- **4.10 – Dufferin/Rutherford Intensification Area:** Undeveloped greenspace and collector roads form barriers to connectivity.
- **4.12 – Blocks 10-12:** Patchwork of internal connectivity, with undeveloped greenspace and parkland forming internal barriers.

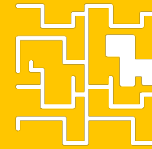


Sidewalk Network Connectivity  
Produced using Kernel Density GIS Tool

- Legend**
- Intensification Areas
  - Rail Facilities
  - Employment Areas

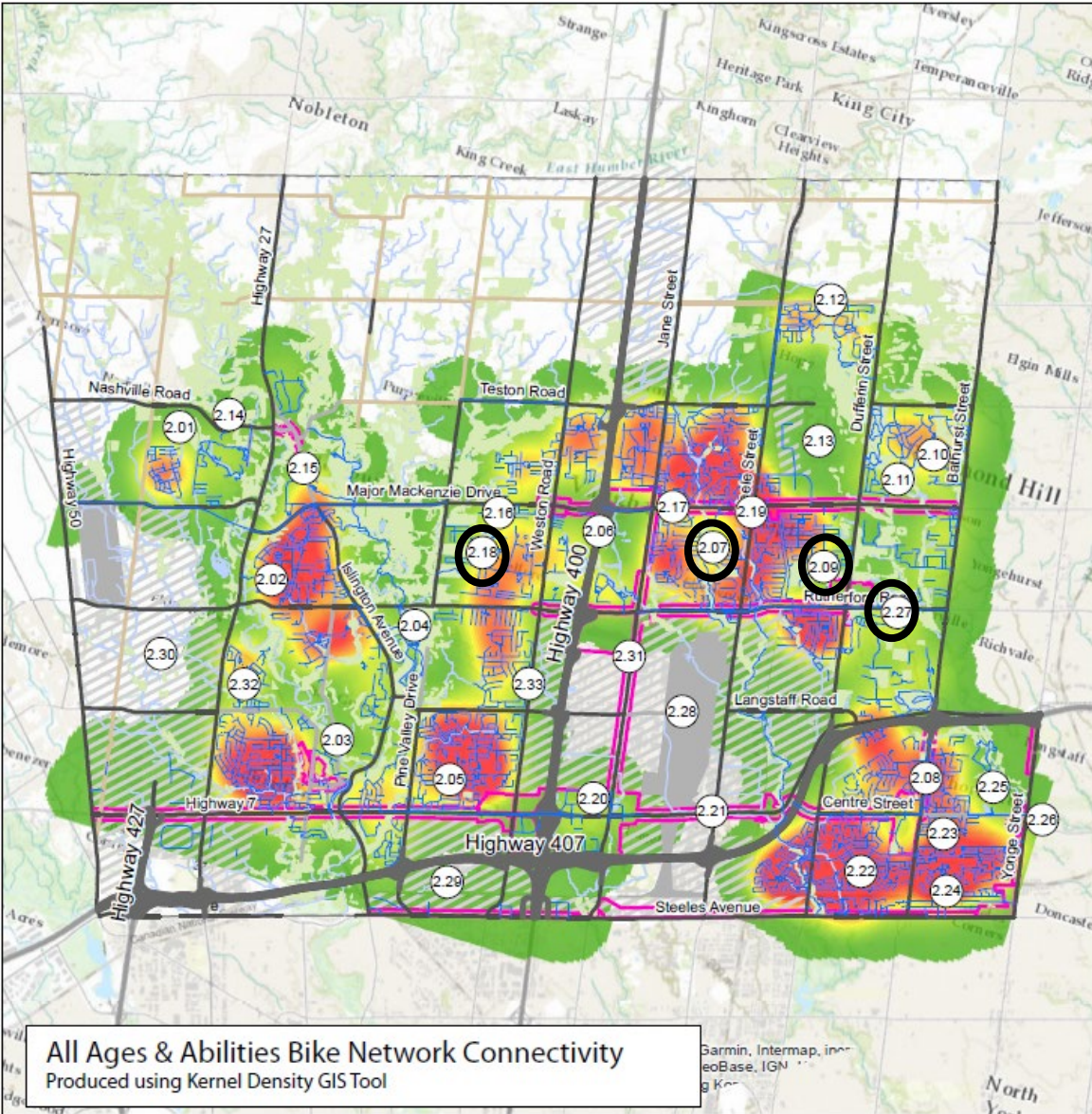


# Long List of AAA Network Gaps



## Inner Block

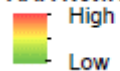
- 2.18 – Block 39
- 2.27 – Blocks 10 & 11
- 2.09 – Dufferin/Rutherford Intersection: Undeveloped greenspace and collector roads in the northwest quadrant form internal barriers to north-south and east-west connectivity.
- 2.07 – Historic Maple Village (Southwest quadrant of Keele/Major Mackenzie Intersection): Discontinuity due to rural-profile roads.



### Legend

- AAA network
- ▭ Intensification Areas
- ▭ Rail Facilities
- ▭ Employment Areas

### AAA Network - Density

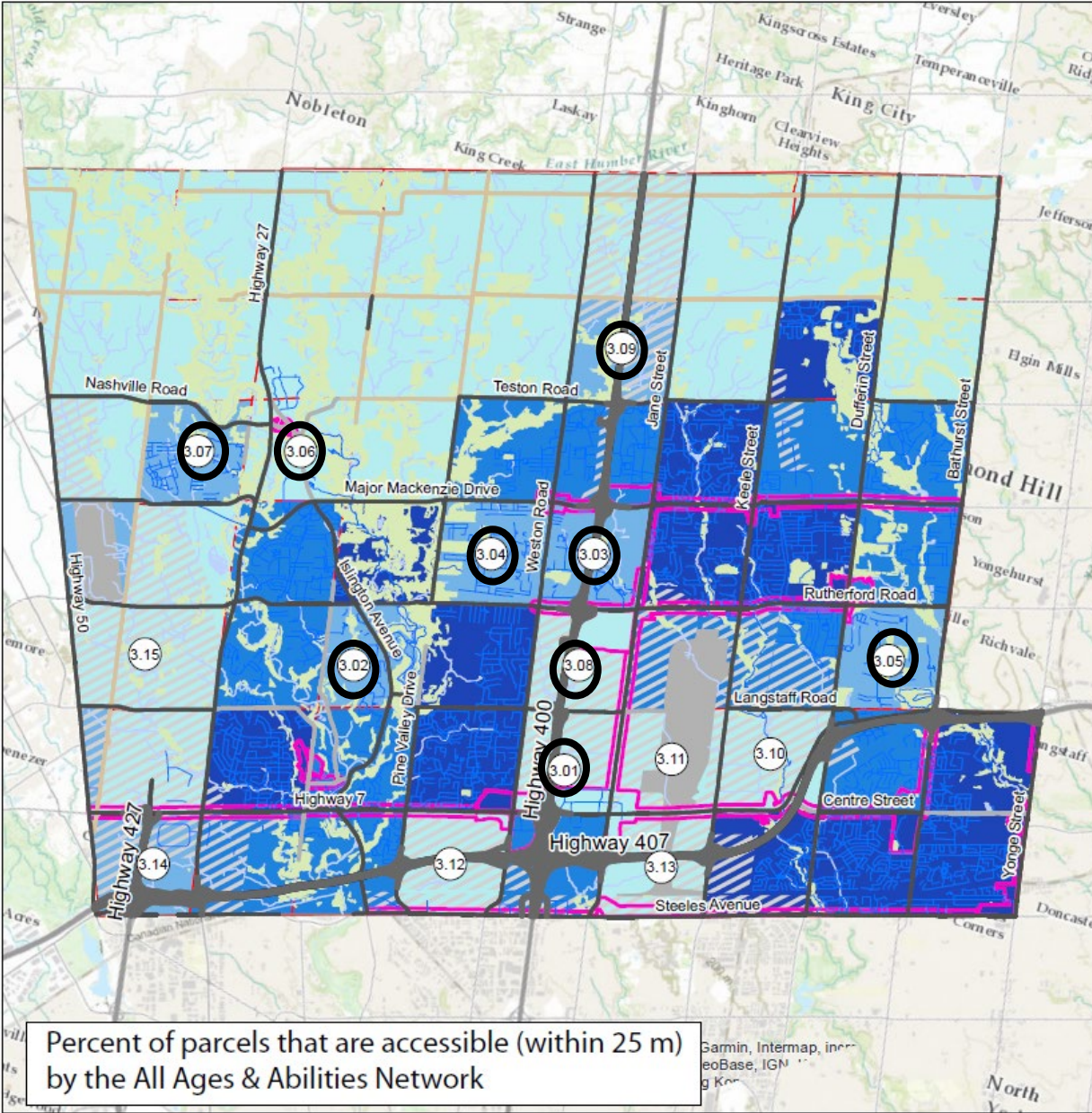


# What else is considered a gap in the AAA/sidewalk network?

*A “gap” in this map is defined as a block with less than 40% of parcels accessible by sidewalk/AAA network. All rural/undeveloped blocks located to the north of those listed here have less than 20% of parcels accessible*



# Percent of Parcels that are accessible by AAA network



## Land Uses within Block

Gap	Land Uses within Block							
	Residential	Commercial	Industrial	Parkland	Recreational	Highway	Railway	Open Space
3.01	Block 30	✓	✓	✓		✓		
3.02	Block 45	✓			✓	✓		
3.03	Block 32	✓				✓		
3.04	Block 39	✓			✓			
3.05	Block 10	✓			✓			
3.06	Blocks 47 & 54	✓			✓			✓
3.07	Block 61	✓						
3.08	Block 31		✓	✓		✓		✓
3.09	Block 34	✓				✓		✓
3.10	Block 16			✓		✓		
3.11	Block 23			✓			✓	
3.12	Block 36			✓		✓		
3.13	Block 22			✓			✓	✓
3.14	Block 57			✓		✓		✓
3.15	Blocks 58-60, 64, & 65			✓			✓	✓

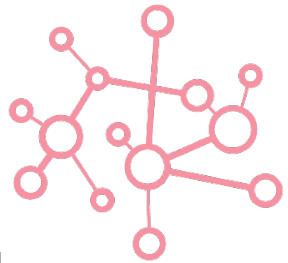
### Legend

- AAA network
- Intensification Areas
- RailFacilities
- EmploymentAreas

### City Blocks - Parcels that are accessible by AAA network

- 0% - 20%
- 20.1% - 40%
- 40.1% - 60%
- 60.1% - 80%
- 80.1% - 100%



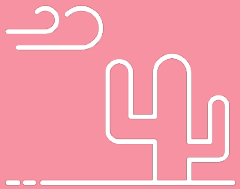


# Long List of Connectivity Gaps

Transit Network

# What is considered a gap in the transit network?

*A “gap” in the transit network is defined as a major arterial corridor without frequent transit service during the AM peak*



## **Undeveloped areas**

*Major arterials without high frequency transit service during the AM. Locations may be considered unsuitable for transit service from a land use perspective (industrial lands, undeveloped areas).*



## **Sparse stops**

*Distance between consecutive stops is long or service along the corridor stops. Extending the service would benefit surrounding communities (frequent service would connect to developed residential areas and commercial lands).*



## **First Mile/Last Mile**

*Inner blocks are not well connected to major arterials that have high frequency service*

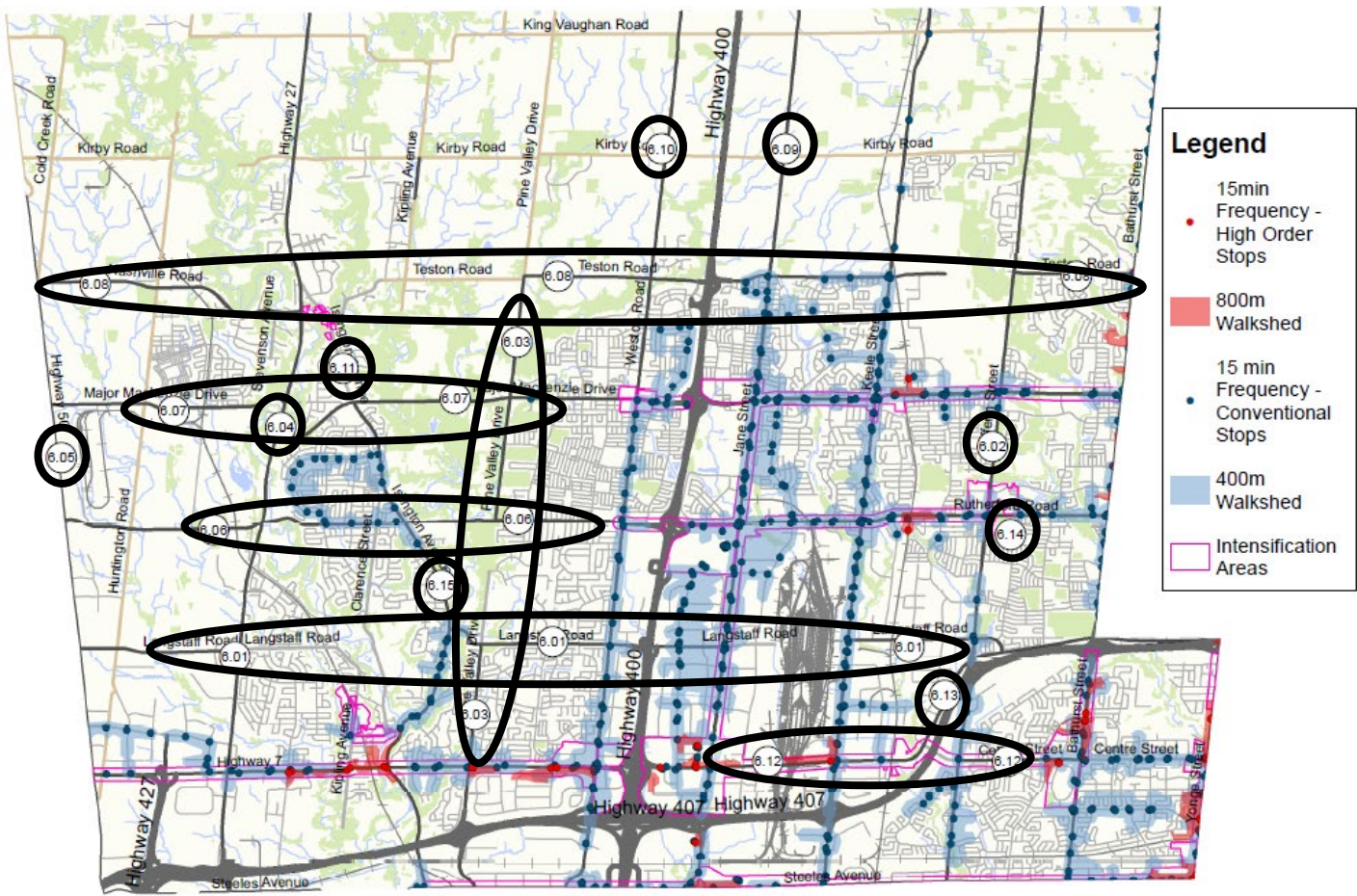
# Long List of Transit Network Gaps

## Undeveloped lands

- 6.10 – Weston Road: From Major Mackenzie Drive to north City limits
- 6.09 – Jane Street: From Teston Road to north City limits
- 6.08 – Teston Road/Nashville Road: From east City limits to west City limits, excluding five stops from Keele Street to Highway 400
- 6.03 – Pine Valley Drive: From south City limits to north City limits, including one major discontinuity
- 6.04 – Highway 27: From south City limits to north City limits
- 6.05 – Highway 50: From south City limits to north City limits

## Sparse stops

- 6.11 – Islington Avenue: From Napa Valley Avenue to Highway 27
- 6.07 – Major Mackenzie Drive: From Weston Road to west City limits
- 6.06 – Rutherford Road: From Weston Road to west City limits, excluding four stops west of Islington Avenue
- 6.15 – Islington Avenue: From Langstaff Road to Rutherford Road; long stop spacing/discontinuities in walkshed
- 6.01 – Langstaff Road: From Dufferin Street to west City limits, including two major discontinuities in Langstaff
- 6.14 – Rutherford Road: From Dufferin Street to Bathurst Street; long stop spacing/discontinuities in walkshed
- 6.02 – Dufferin Street: From Langstaff Road to north City limits, excluding two stops north of Langstaff and south of Major Mackenzie
- 6.12 – VIVA Orange (Highway 7/Centre Street/Bathurst Street): From Highway 7/Weston Road to Highway 7/Bathurst Street; long stop spacing/discontinuities in walkshed
- 6.13 – Highway 7: From Keele Street to Bathurst Street; long stop spacing/discontinuities in walkshed



**First mile/last mile issue remains, with large blocks and long walking distances to access transit services on major arterials**

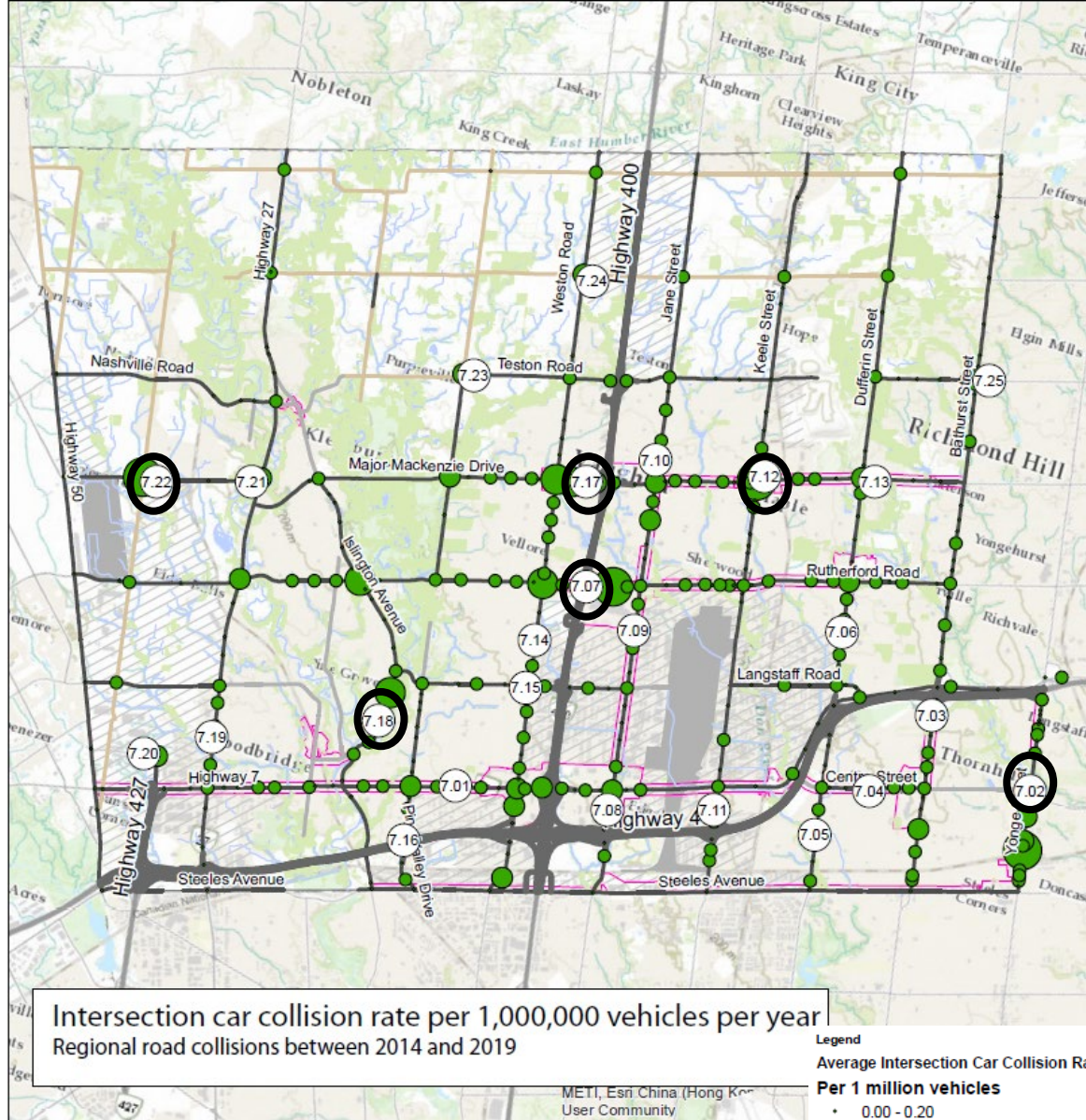
**23% (4% in the off peak) of people are within walking distance of high frequency transit stop**  
**28% (5% in the off peak) of jobs within walking distance of high frequency stops**



# Long List of Safety Gaps

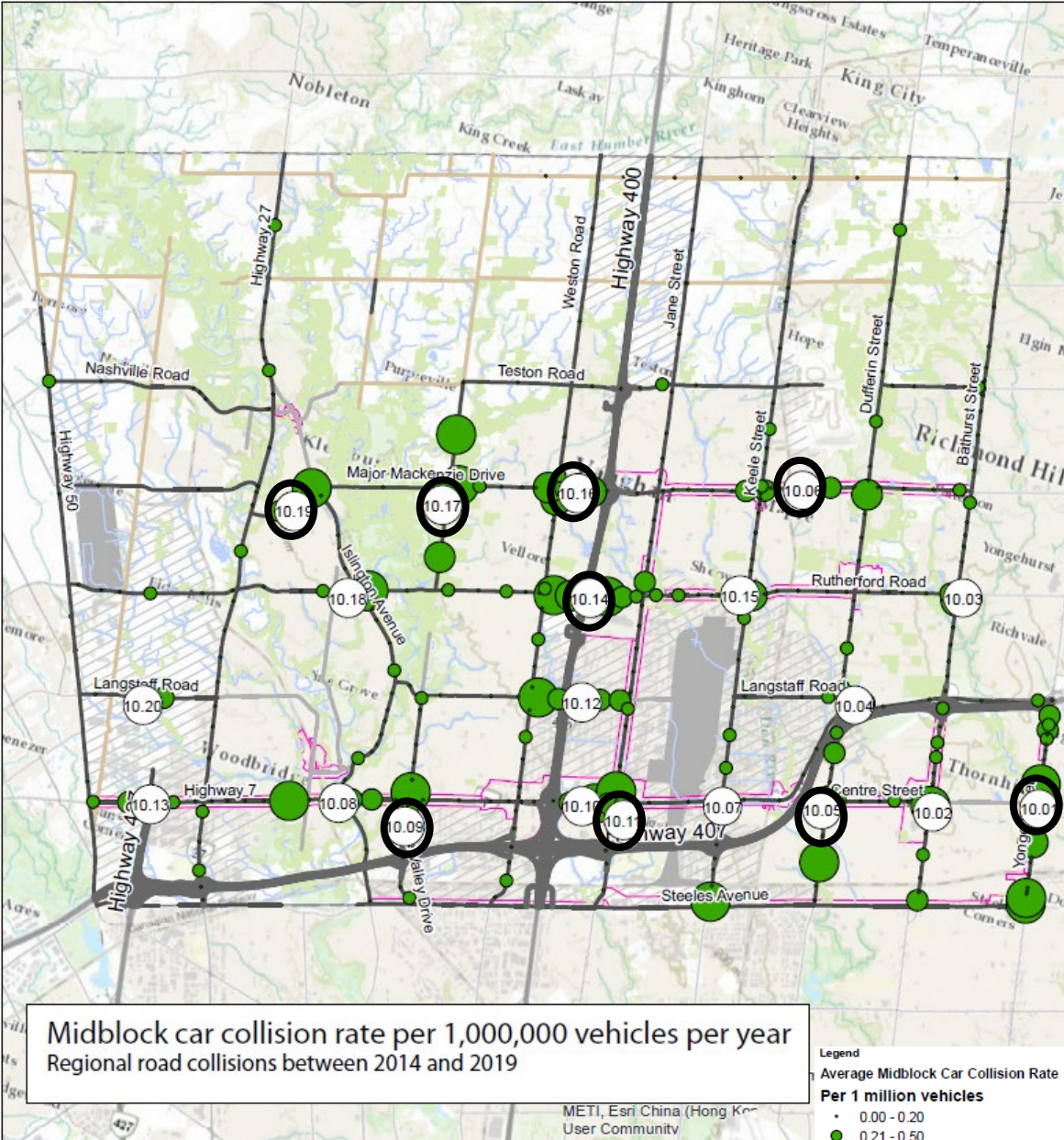
Car Collision Hotspots

# Long List of Car Collision Hotspots at Intersections



- 7.22 - Major Mackenzie Drive / Huntington Road
- 7.18 - Islington Avenue: From Woodbridge Avenue to Langstaff Road
- 7.02 - Yonge Street: From Steeles Avenue to Highway 7
- 7.07 - Rutherford Road: From Bathurst Street to Highway 27
- 7.17 - Major Mackenzie Drive: From Dufferin Street to Pine Valley Drive
- 7.12 - Keele Street: From Barrhill Road to McNaughton Road
- 7.01 - Highway 7: From Highway 27 to Creditstone Road
- 7.03 - Bathurst Street: From Steeles Avenue to Lebovic Campus Drive
- 7.04 - Centre Street: From Bathurst Street to Highway 7
- 7.05 - Dufferin Street: From Steeles Avenue to Centre Street
- 7.06 - Dufferin Street: From Langstaff Road to Rutherford Road
- 7.08 - Jane Street: From Snidercroft Road to Administration Road
- 7.09 - Jane Street: From Langstaff Road to Rutherford Road
- 7.10 - Jane Street: From Canada's Wonderland to Teston Road
- 7.11 - Keele Street: From Ronrose Drive to Rivermede Road
- 7.13 - Dufferin Street: From Valley Vista Drive to Major Mackenzie Drive
- 7.14 - Weston Road: From Steeles Avenue to Major Mackenzie Drive
- 7.15 - Langstaff Road: From Jane Street to Islington Avenue
- 7.16 - Pine Valley Drive: From Steeles Avenue to Highway 7
- 7.19 - Highway 27: From Highway 27 to Langstaff Road
- 7.20 - Highway 427 / Zenway Boulevard
- 7.21 - Major Mackenzie Drive / Highway 27
- 7.23 - Pine Valley Drive / Teston Road
- 7.24 - Weston Road / Kirby Road
- 7.25 - Bathurst Street / Teston Road

# Long List of Car Collision Hotspots Midblock



- 10.16 - Major Mackenzie Drive: From West of Weston Road to Highway 400
- 10.14 - Rutherford Road: From East of Weston Road to East of Jane Street
- 10.01 - Yonge Street: From Steeles Avenue to Highway 7
- 10.06 - Major Mackenzie Drive: From West of Keele Street to Dufferin Street
- 10.19 - Major Mackenzie Drive: From Highway 27 to Islington Avenue
- 10.17 - Pine Valley Drive: From North of Rutherford Road to North of Major Mackenzie Drive
- 10.09 - Pine Valley Drive: From North of Highway 7 to Highway 407
- 10.11 - Jane Street: From Highway 407 to North of Highway 7
- 10.05 - Dufferin Street: From North of Steeles Avenue to North of Langstaff Road
- 10.02 - Bathurst Street: From Steeles Avenue to Highway 407
- 10.03 - Bathurst Street / Rutherford Road
- 10.04 - Langstaff Road / Highway 7
- 10.07 - Keele Street: From Steeles Avenue to South of Langstaff Road
- 10.08 - Highway 7: From West of Kipling Avenue to Pine Valley Drive
- 10.10 - Highway 7: From Highway 400 to East of Jane Street
- 10.12 - Langstaff Road: From East of Weston Road to West of Jane Street
- 10.13 - Highway 7: From Highway 50 to West of Highway 27
- 10.15 - Keele Street / Rutherford Road
- 10.18 - Rutherford Road: From West of Clarence Street to East of Islington Avenue
- 10.20 - Langstaff Road: From Huntington Road to Highway 27





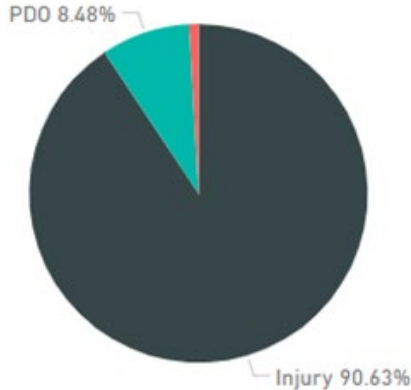
# Long List of Safety Gaps

**Pedestrians** and **Cyclist** Collision Hotspots

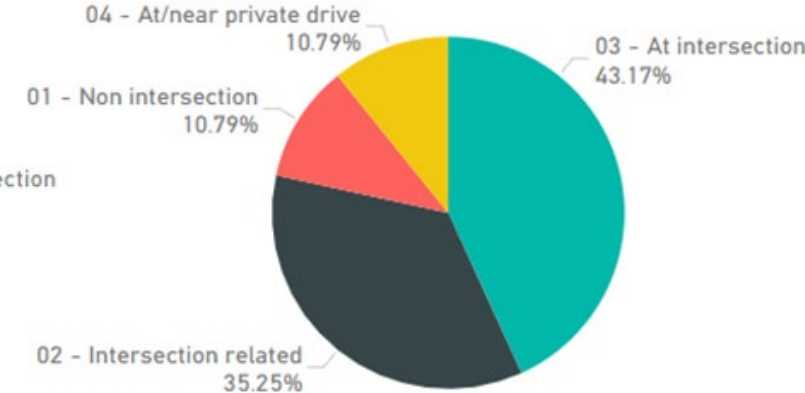
# Collision Data

- Used average for collisions on regional roads between 2014-2019
- For pedestrian/cyclist collisions used fatalities or seriously injured

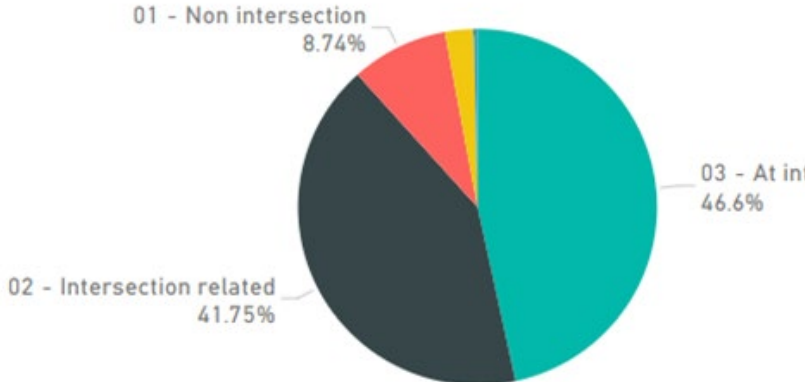
Collision by Type for Pedestrian and Cycling Modes



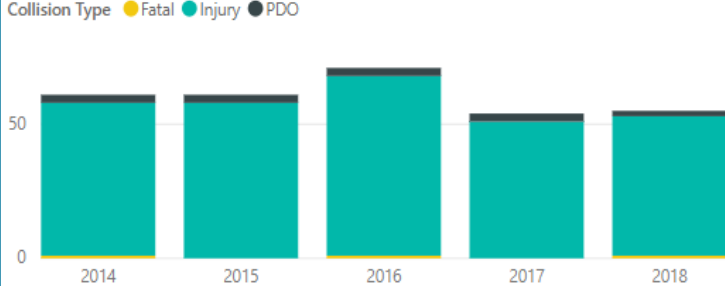
Accident Location of Cyclists



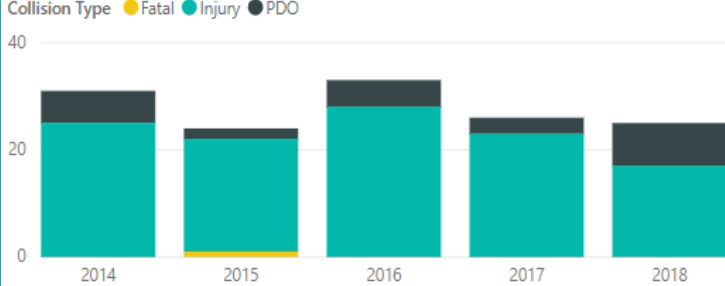
Accident Location of Pedestrians



Pedestrian Collisions by Year and Type

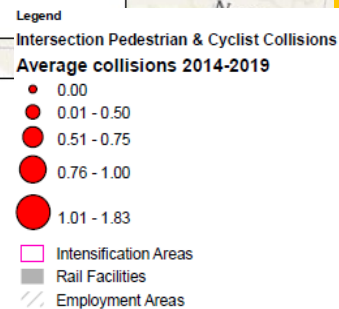
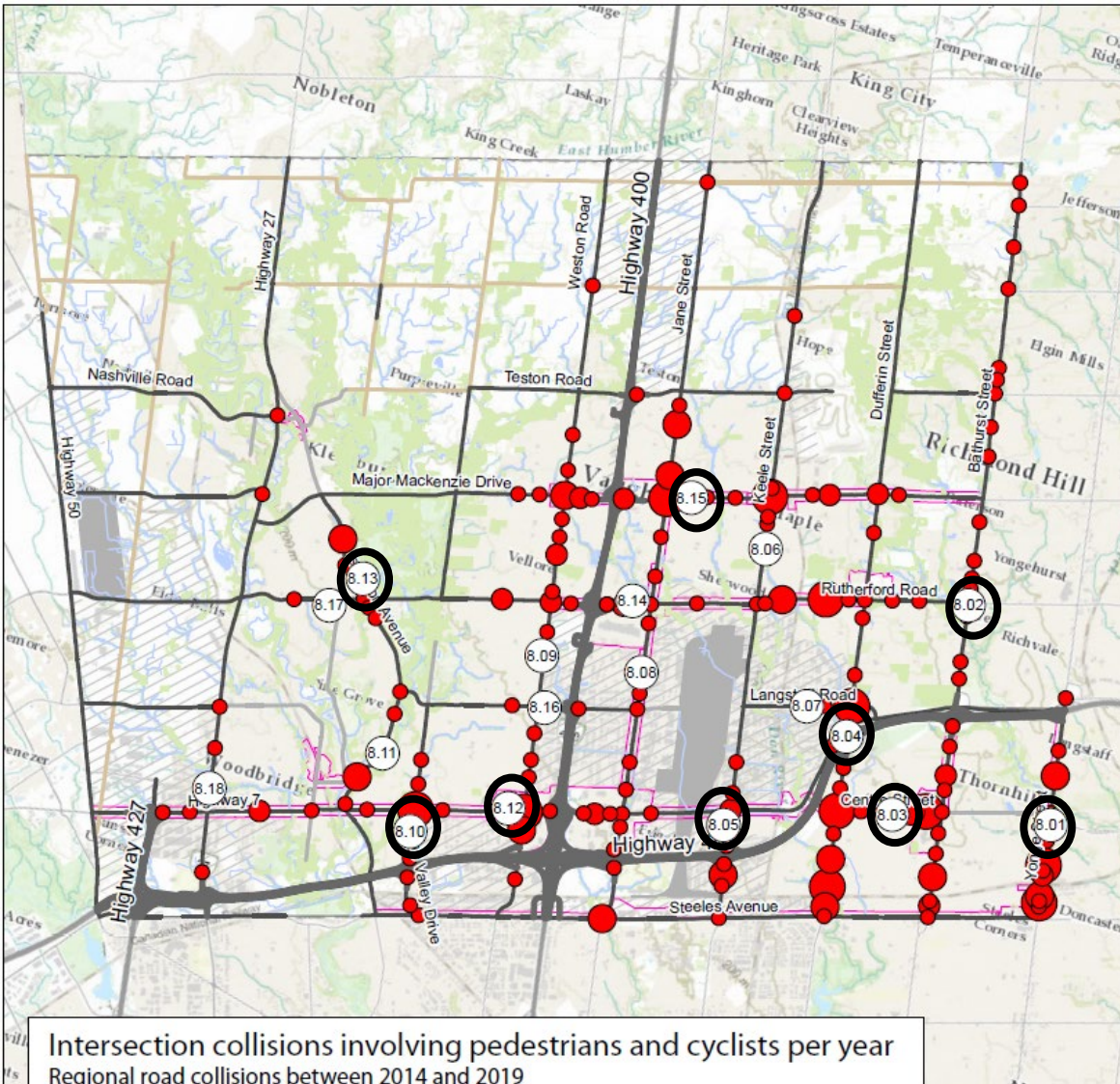


Cyclist Collisions by Year and Type



# Long List of Pedestrian & Cyclist Involved Collision Hotspots at Intersections

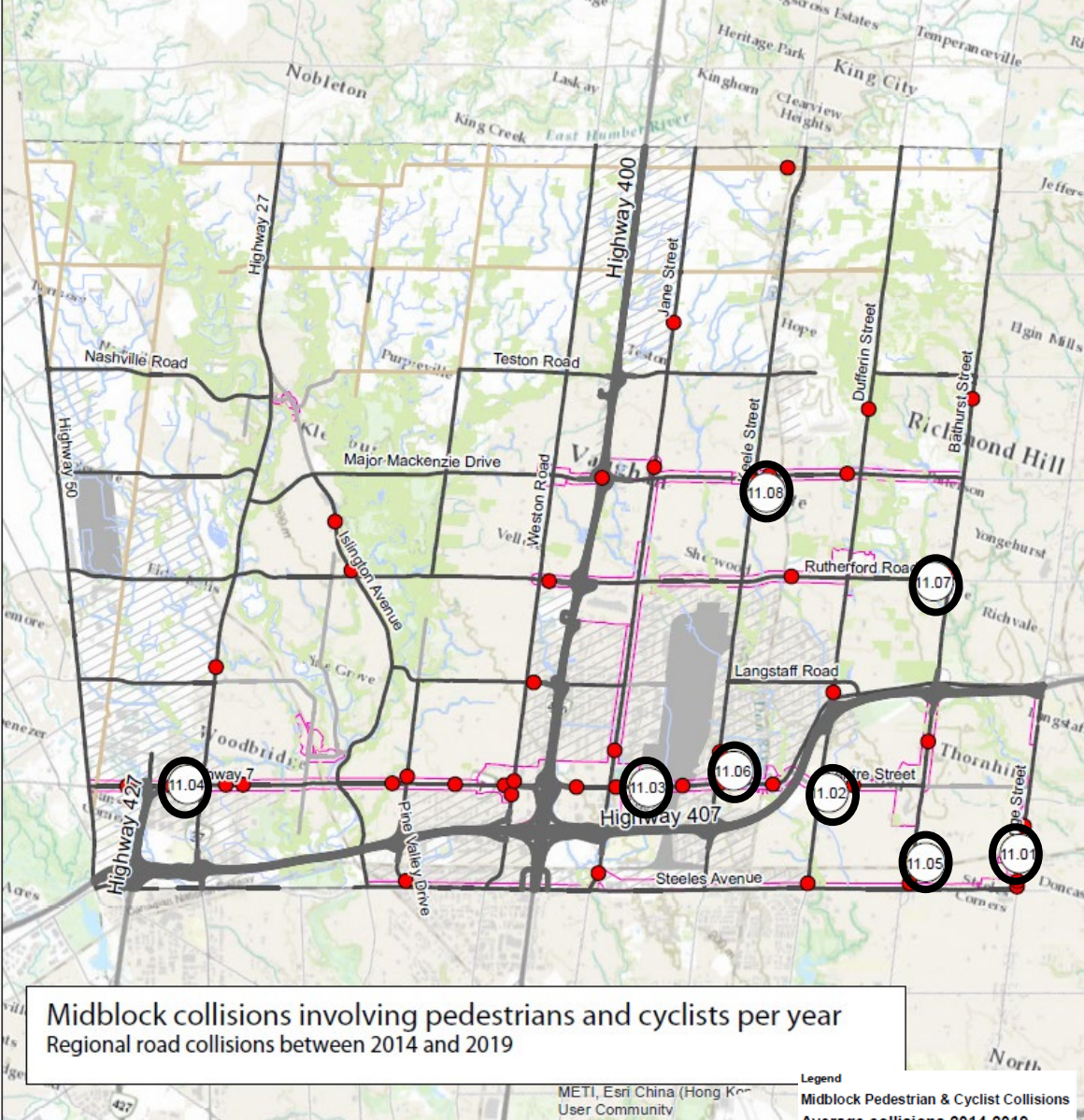
- 8.13 - Islington Avenue: From Wycliffe Avenue to Napa Valley Avenue
- 8.10 - Pine Valley Drive: From Steeles Avenue to Chancellor Drive
- 8.12 - Highway 7: From Highway 427 to Keele Street
- 8.07 - Langstaff Road: From Dufferin Street to Spinnaker Way
- 8.03 - Centre Street: From Bathurst Street to Dufferin Street
- 8.01 - Yonge Street: From Steeles Avenue to Highway 7
- 8.04 - Dufferin Street: From Steeles Avenue to Major Mackenzie Drive
- 8.02 - Bathurst Street: From Steeles Avenue to King Vaughan Road
- 8.15 - Major Mackenzie Drive: From Vellore Avenue to Sir Benson Drive
- 8.05 - Keele Street: From Steeles Avenue to Rivermede Road
- 8.06 - Keele Street: From Rutherford Road to Major Mackenzie Drive
- 8.08 - Jane Street: From Steeles Avenue to Ahmadiyya Avenue
- 8.09 - Weston Road: From Aviva Park Drive to Stanton Avenue
- 8.11 - Islington Avenue: From Highway 7 to Langstaff Road
- 8.14 - Rutherford Road: From Velmar Drive to Thornhill Woods Drive
- 8.16 - Langstaff Road: From Forest Hill Road to Highway 400
- 8.17 - Rutherford Road: From Islington Avenue to Napa Valley Avenue
- 8.18 - Highway 27: From Toronto RV Road to Langstaff Road



METI, Esri China (Hong Kong)  
User Community

# Long List of Pedestrian & Cyclist Involved Collision Hotspots Midblock

- 11.01 - Yonge Street: From Steeles Avenue to South of Centre Street
- 11.02 - Centre Street: From West of Dufferin Street to East of Dufferin Street
- 11.03 - Highway 7: From West of Pine Valley Drive to West of Centre Street
- 11.04 - Highway 7: From West of Highway 427 to East of Highway 27
- 11.05 - Dufferin Street: From Steeles Avenue to North of Steeles Avenue
- 11.06 - Keele Street: From Highway 7 to North of Highway 7
- 11.07 - Rutherford Road: From Bathurst Street to West of Bathurst Street
- 11.08 - Major Mackenzie Drive: From Keele Street to East of Keele Street



**B**

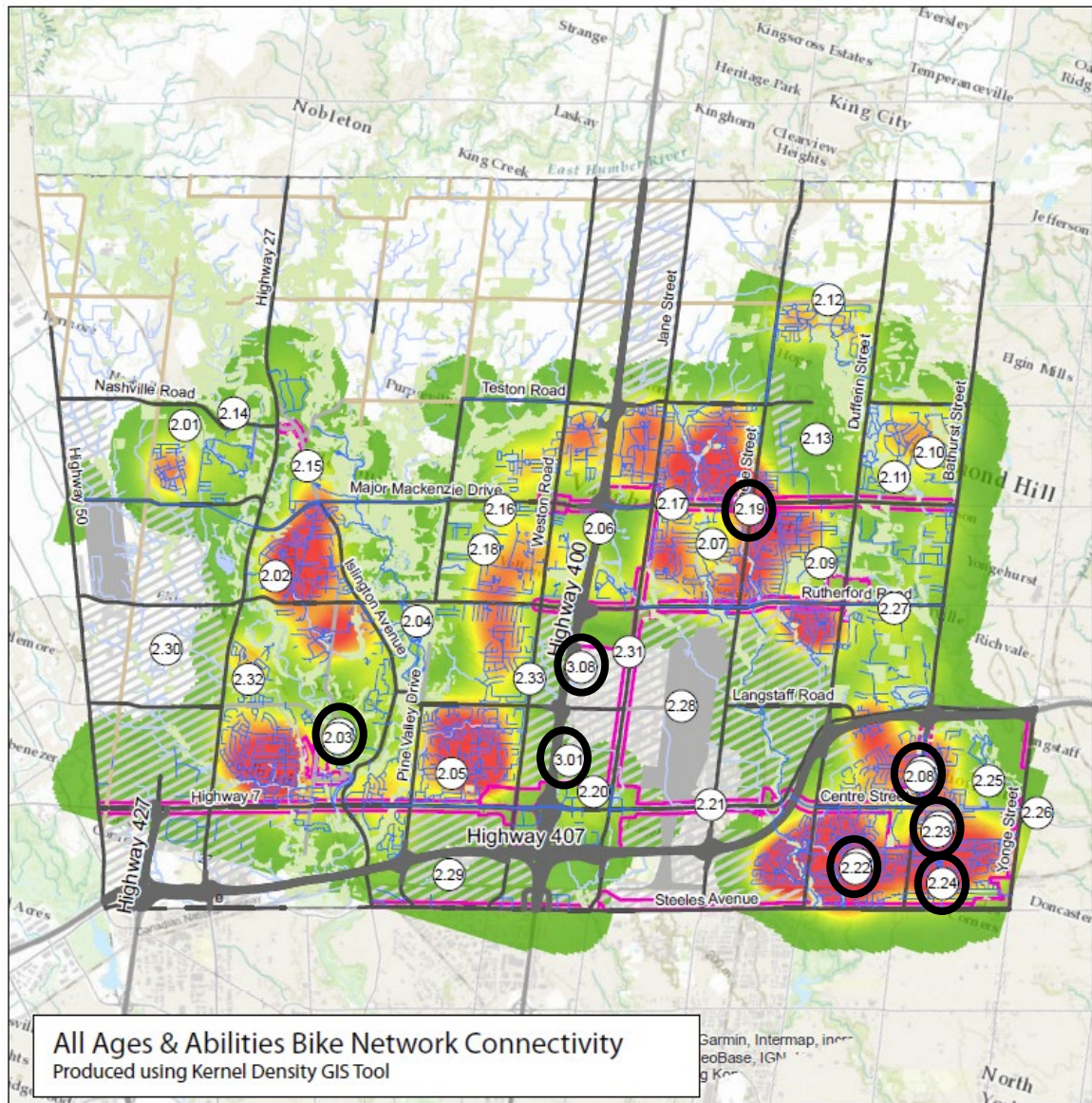
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**Appendix B  
Gap Prioritization  
(The Ordered List)**

# Gap Prioritization – Gap Prioritization Calculations

1. **Indicators** – assign a score to each indicator:
  - **Discrete indicators** (ex. “Presence of...”): Score of 1 or 3 based on Yes/No
  - **Continuous indicators** (ex. “Percentage of...”): Score from 1 to 4, based on the indicator’s magnitude relative to the City-wide average (greater or less than one standard deviation above or below the average)
2. **Category Sum Score** – average the scores of all indicators in each category to produce a Category Sum (ex. Transportation Sum, Land Use Sum,...)
3. **Weighted Average Score** – apply the relative weights of each category to produce a Weighted Average Score that averages the Category Sums
4. **Feasibility Filter** – for road network gaps only, consider the constraint of how feasible addressing a gap is, given the right-of-way available

# Short List of AAA Network Gaps



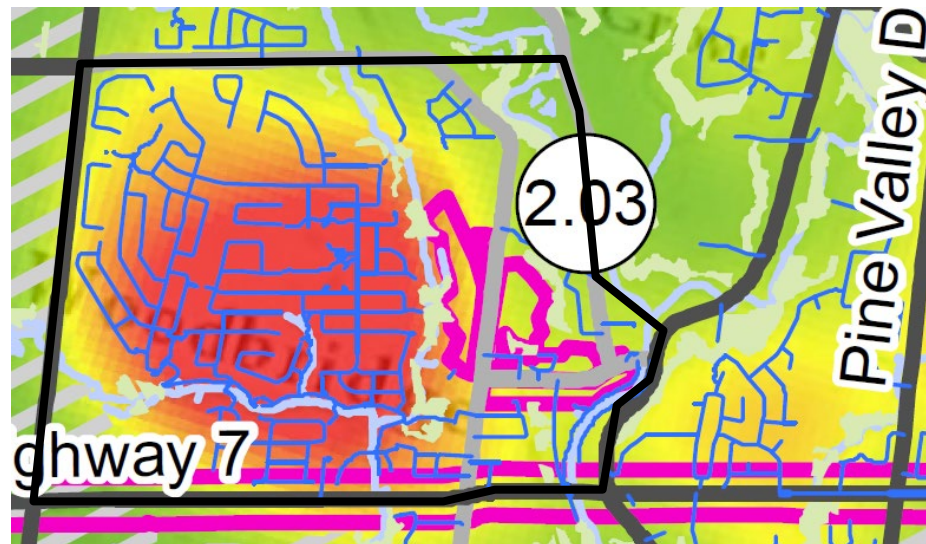
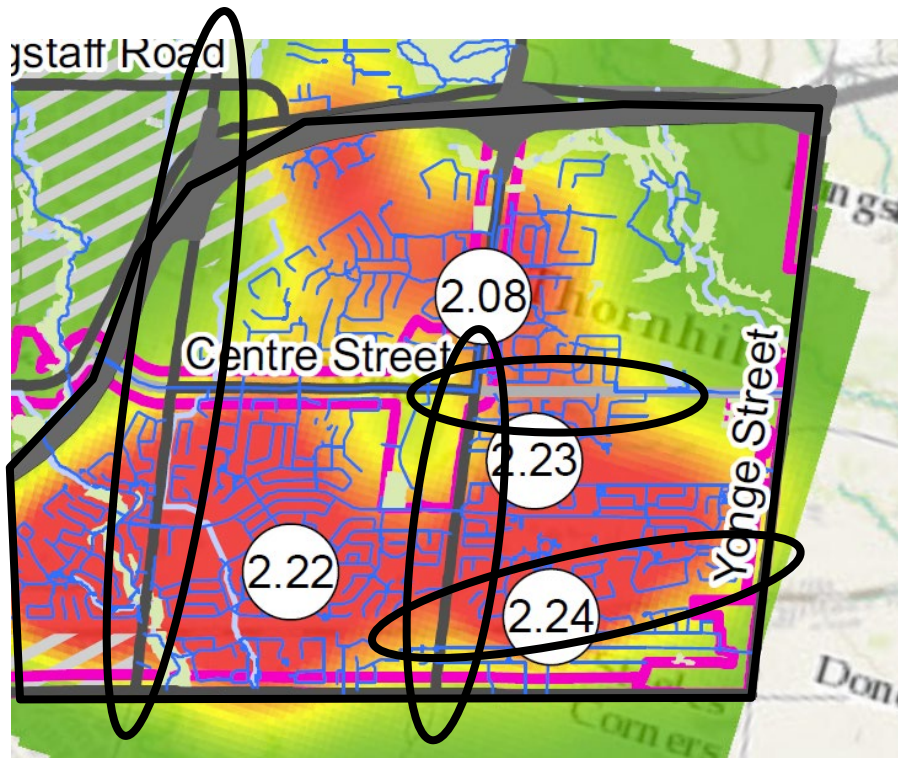
Gap	Type	Weighted Average Score	Transportation Sum	Land Use Sum	Social Equity Sum	Safety Sum
2.22	AAA Network	3.27	3.7	2.7	3.8	3.0
2.03	AAA Network	2.75	3.3	2.0	3.0	2.7
2.08	AAA Network	2.50	3.0	2.0	2.0	3.0
2.23	AAA Network	2.50	3.0	1.7	3.0	2.3
3.01	AAA Network	2.50	2.7	2.0	3.0	2.3
2.24	AAA Network	2.44	1.7	1.7	3.8	2.7
3.08	AAA Network	2.44	3.0	2.3	2.8	1.7
2.19	AAA Network	2.38	2.3	1.7	2.5	3.0

- Legend**
- AAA network
  - Intensification Areas
  - RailFacilities
  - EmploymentAreas

**AAA Network - Density**





- High
- Low

## Short List of AAA Network Gaps



Prioritized Location/Corridor	Short List of AAA Network Gaps	Score
6 Thornhill	2.22 – Bathurst/Centre Intensification Area: Missing north-south connections along Bathurst and Dufferin Streets.	3.27
	2.08 – Thornhill: Internal discontinuity in AAA network; also evident around Promenade Mall. Bounded by Steeles Avenue, Yonge Street, Highway 407, and the Barrie GO Corridor.	2.50
	2.23 – Bathurst/Centre Intensification Area: Missing east-west connection along Centre Street.	2.50
	2.24 - CN York Subdivision (Yonge-Steeles Intensification Area): Rail corridor forms a significant barrier to accessing the intensification area from denser areas of Thornhill to the northwest.	2.44
7 Woodbridge Centre	2.03 – Woodbridge Centre (Blocks 51 & 44): Significant connectivity islands.	2.75

### Legend

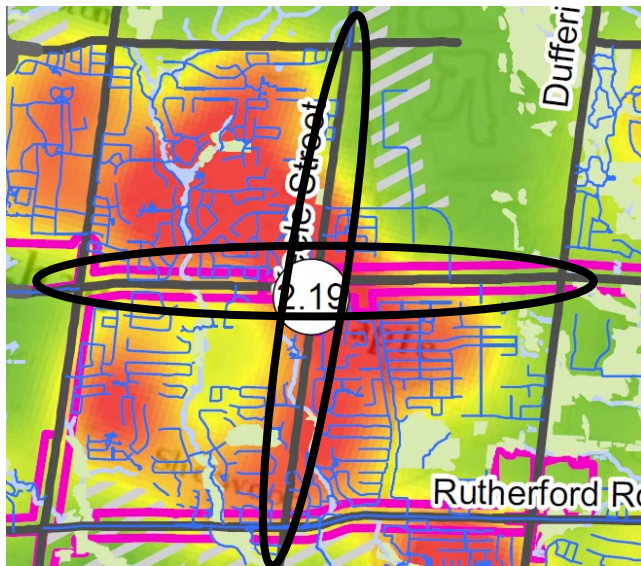
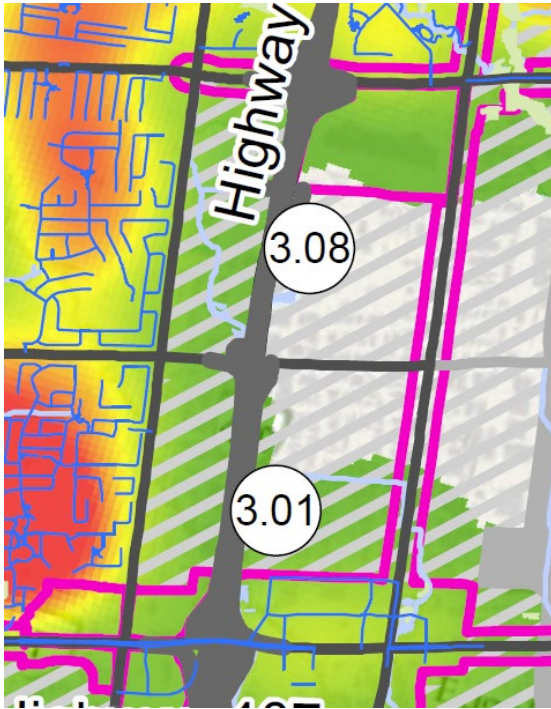
-  AAA network
-  Intensification Areas
-  RailFacilities
-  EmploymentAreas

### AAA Network - Density









# Short List of AAA Network Gaps



Prioritized Location/Corridor	Short List of AAA Network Gaps	Score
8 Between Jane and Weston, Highway 7 to Rutherford	3.01 – Block 30: Parcel with low AAA network density.	2.50
	3.08 – Block 31: Parcel with low AAA network density.	2.44
9 Keele and Major Mackenzie	2.19 – Keele/Major Mackenzie Intensification Area: Missing connection from all directions along Keele Street and Major Mackenzie Drive.	2.38

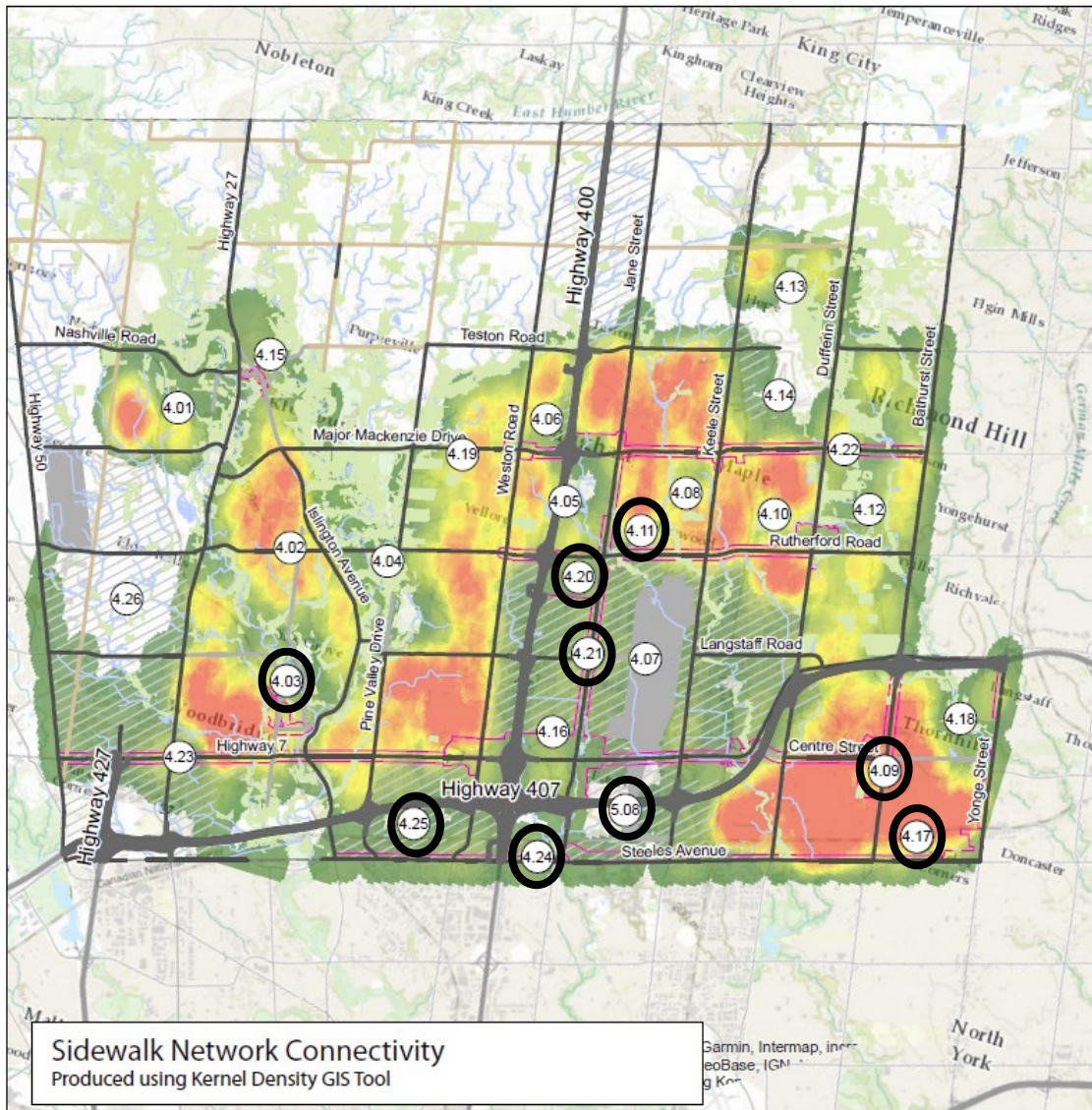
### Legend

-  AAA network
-  Intensification Areas
-  RailFacilities
-  EmploymentAreas

### AAA Network - Density

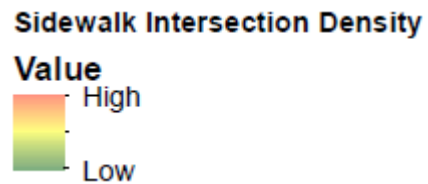


# Short List of Sidewalk Network Gaps

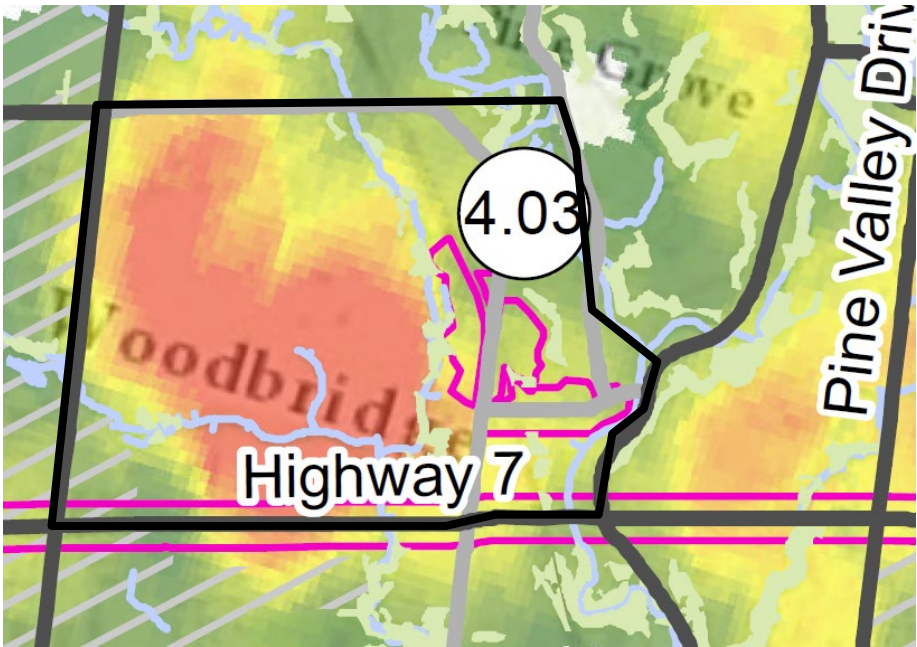
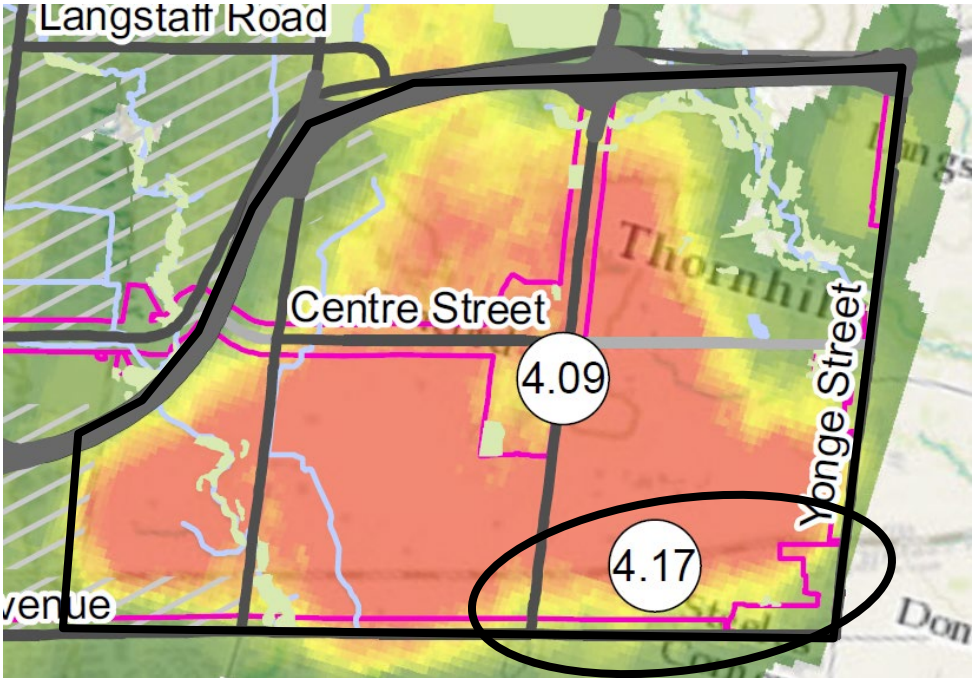


Gap	Type	Weighted Average Score	Transportation Sum	Land Use Sum	Social Equity Sum	Safety Sum
4.09	Sidewalk	2.94	3.0	3.3	3.8	1.7
4.21	Sidewalk	2.79	3.0	3.0	3.5	1.7
4.03	Sidewalk	2.75	3.3	2.0	3.0	2.7
4.24	Sidewalk	2.54	3.7	2.3	2.5	1.7
4.17	Sidewalk	2.44	1.7	1.7	3.8	2.7
4.20	Sidewalk	2.38	3.0	1.7	2.5	2.3
5.08	Sidewalk	2.38	3.7	1.7	2.5	1.7
4.25	Sidewalk	2.33	3.0	1.7	3.0	1.7
4.11	Sidewalk	2.33	2.3	1.7	3.0	2.3

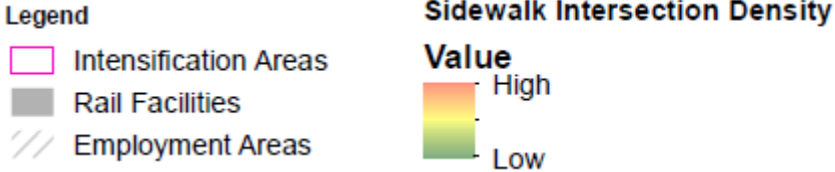
- Legend**
- Intensification Areas
  - Rail Facilities
  - Employment Areas



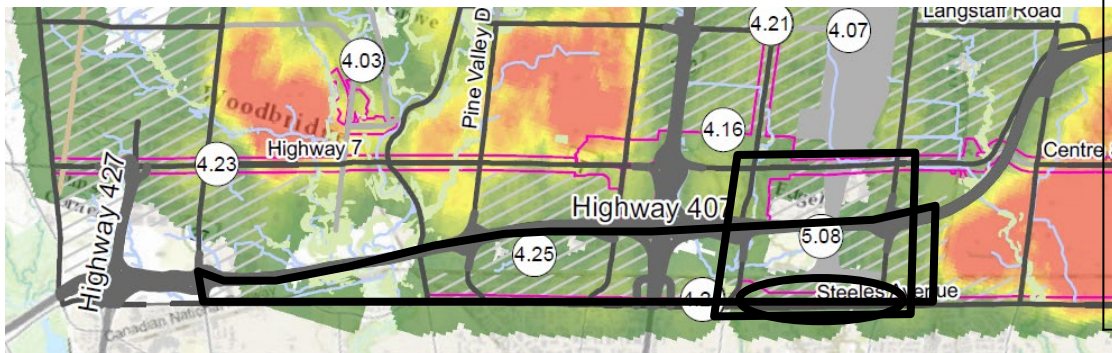
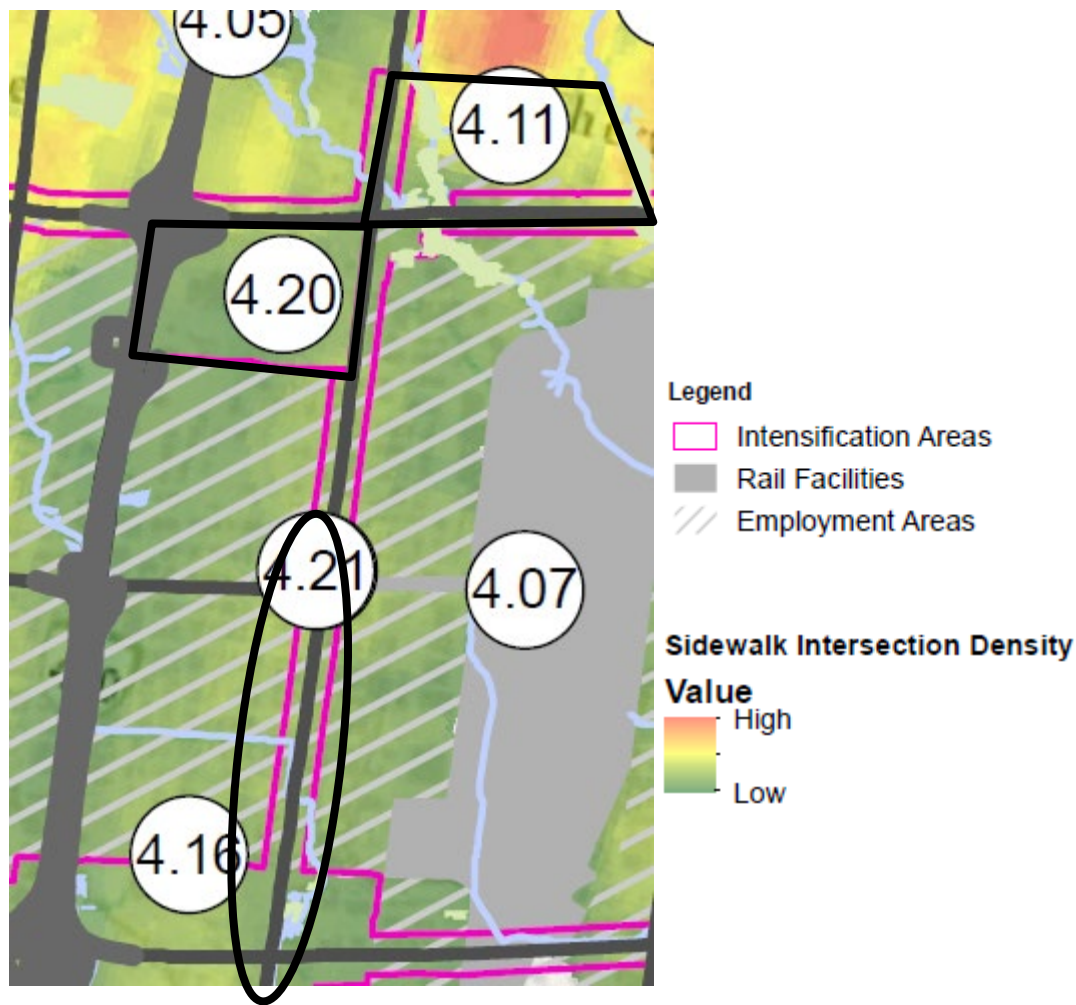
# Short List of Sidewalk Network Gaps



Prioritized Location/Corridor	Short List of Sidewalk Network Gaps	Score
10 Thornhill	4.09 – Thornhill: Significant connectivity island. Bounded by Steeles Avenue, Yonge Street, Highway 407, and the Barrie GO Corridor.	2.94
	4.17 – CN York Subdivision (Yonge-Steeles Intensification Area): Rail corridor forms a significant barrier to accessing the intensification area from denser areas of Thornhill to the northwest.	2.44
11 Woodbridge Centre	4.03 – Woodbridge Centre (Blocks 51 & 44): Significant connectivity islands.	2.75

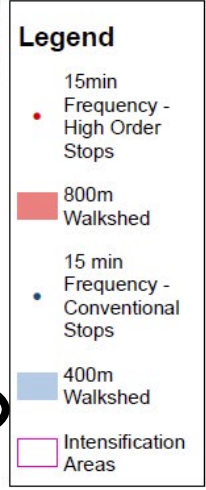


## Short List of Sidewalk Network Gaps



Prioritized Location/Corridor	Short List of Sidewalk Network Gaps	Score
12 Jane, from Highway 7 to north of Rutherford	4.21 – Jane Street Intensification Area: Continuous intensification corridor without significant sidewalk density, from VMC north to Applewood Crescent.	2.79
	4.20 and 4.11 – Vaughan Mills Intensification Area: Parkland, Highway 400, Vaughan Operations Centre, and CN rail tracks form barriers to pedestrian connectivity to major centre.	2.38 2.33
13 Steeles Avenue West	4.24 – Steeles Avenue Intensification Area: Continuous intensification corridor without significant sidewalk infrastructure, near York University.	2.54
	4.25 – South Vaughan Employment Areas: Industrial employment areas south of Hwy 407 and west of Dufferin Street form barriers to north-south and east-west connectivity. No significant sidewalk density in these areas.	2.33
	5.08 – Block 22: Parcel with low sidewalk network density.	2.38

# Short List of Transit Network Gaps



Gap	Type	Weighted Average Score	Transportation Sum	Land Use Sum	Social Equity Sum	Safety Sum
6.02	AM Transit	3.04	2.7	3.3	3.5	2.7
6.01	AM Transit	2.92	3.7	2.3	3.0	2.7
6.03	AM Transit	2.85	3.7	2.3	2.8	2.7
6.14	AM Transit	2.85	2.7	3.3	2.8	2.7
6.12	AM Transit	2.81	2.3	2.7	3.3	3.0
6.07	AM Transit	2.58	3.3	2.3	2.0	2.7
6.11	AM Transit	2.58	2.7	3.0	2.0	2.7
6.15	AM Transit	2.56	3.7	2.3	2.3	2.0

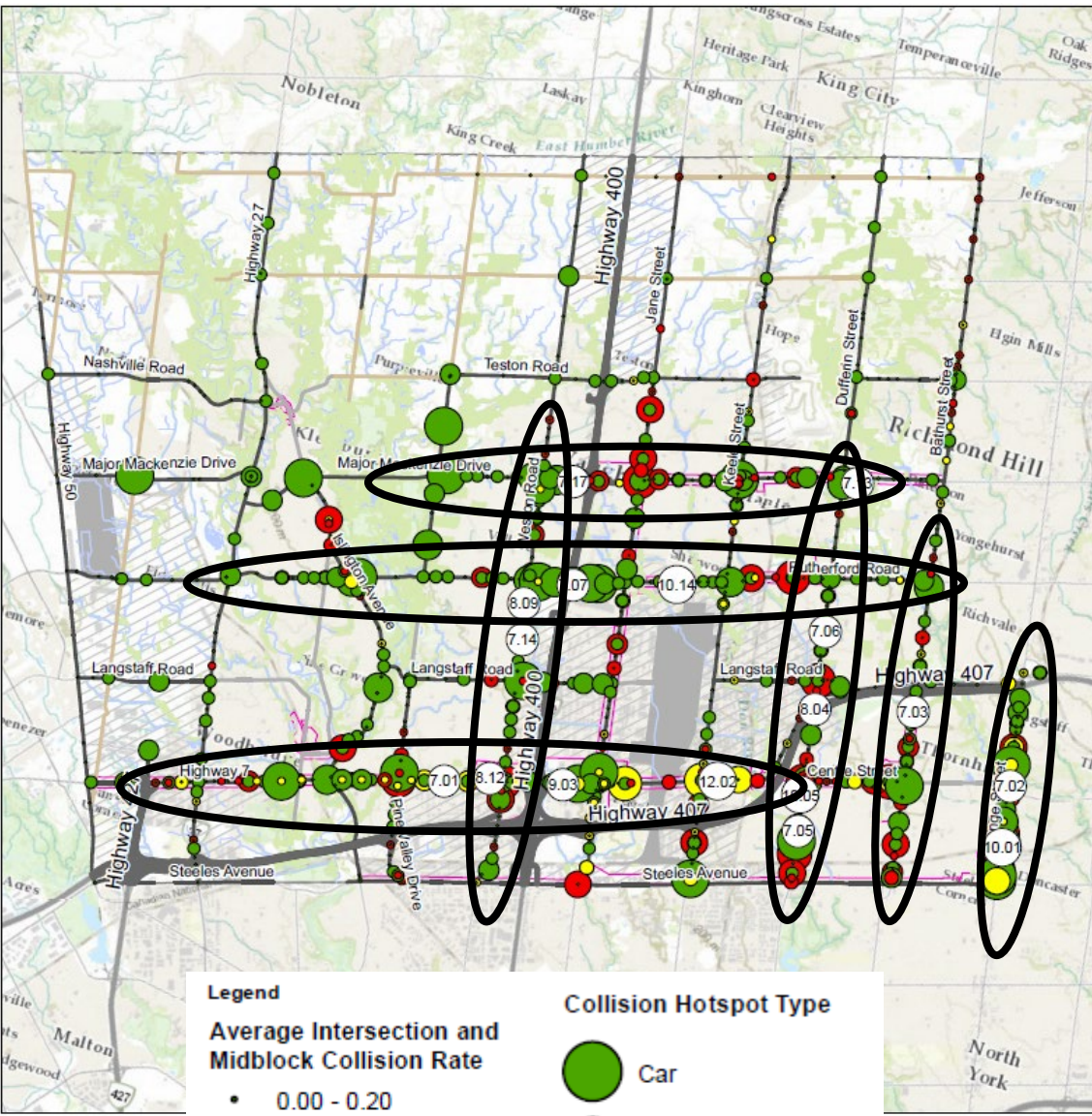
# Short List of Transit Network Gaps



	Prioritized Location/Corridor	Short List of Transit Network Gaps	Score
14	Dufferin, from Langstaff to north City limits	6.02: Major corridor without frequent service, excluding two stops north of Langstaff and south of Major Mackenzie.	3.04
15	Langstaff, from Dufferin to west City limits	6.01: Major corridor without frequent service, including two major discontinuities.	2.92
16	Pine Valley, from south to north City limits	6.03: Major corridor without frequent service, including two major discontinuities.	2.85
17	Rutherford, from Dufferin to Bathurst	6.14: Long stop spacing / discontinuities in walkshed.	2.85
18	VIVA Orange	6.12: Long stop spacing / discontinuities in walkshed, from Highway 7/Weston to Highway 7/Bathurst.	2.81
19	Major Mackenzie, from Weston to west City limits	6.07: Major corridor without frequent service.	2.58
20	Islington Avenue	6.11: Major corridor without frequent service, from Napa Valley Avenue to Highway 27.	2.58
		6.15: Long stop spacing/discontinuities in walkshed from Langstaff Road to Rutherford Road	2.56

# Short List of Collision Hotspots

Prioritized Location/Corridor		Short List of Collision Hotspots
21	Rutherford, from Bathurst to Highway 27	7.07: Car intersection collision hotspot
		10.14: Car midblock collision hotspot
22	Yonge, from Steeles to Highway 7	7.02: Car intersection collision hotspot
		10.01: Car midblock collision hotspot
23	Major Mackenzie, from Dufferin to Pine Valley	7.17: Car intersection collision hotspot
24	Highway 7, from Vaughan Valley to Rivermede	7.01: Car intersection collision hotspot
		8.12: Pedestrian/cyclist intersection collision hotspot
		9.03: Bus intersection collision hotspot
		12.02: Bus midblock collision hotspot
25	Bathurst, from Steeles to Lebovic Campus	7.03: Car intersection collision hotspot
26	Weston, from Steeles to Stanton	7.14: Car intersection collision hotspot
		8.09: Pedestrian/cyclist intersection collision hotspot
27	Dufferin, from Steeles to Major Mackenzie	7.05: Car intersection collision hotspot
		7.06: Car intersection collision hotspot
		7.13: Car intersection collision hotspot
		8.04: Pedestrian/cyclist intersection collision hotspot
		10.05: Car midblock collision hotspot





# Meeting Minutes

Project: Vaughan Transportation Plan

Subject: Technical Advisory Committee Meeting – External

Date: Thursday, April 08, 2021

Location: Microsoft Teams

<p>Attendees:</p> <ul style="list-style-type: none"> <li>John Fantin, City of Brampton</li> <li>Brian Lakeman, City of Brampton</li> <li>Soheil Nejatian, City of Brampton</li> <li>Henrik Zbogor, City of Brampton</li> <li>Kumar Ranjan, Brampton Transit</li> <li>David Stowe, Brampton Transit</li> <li>Loy Cheah, City of Markham</li> <li>Samson Wat, City of Markham</li> <li>Diane Ho, City of Toronto</li> <li>Arthur Lo, City of Toronto</li> <li>Andrew Au, City of Toronto</li> <li>A.J. Takarabe, TTC</li> <li>Suzanne Bevan, TRCA</li> <li>Manirul Islam, TRCA</li> <li>Aslam Shaikh, Metrolinx</li> <li>Margaret Mikolajczak, MTO</li> </ul>	<ul style="list-style-type: none"> <li>Vi Bui, Region of York</li> <li>Lauren Crawford, Region of York</li> <li>Keri Hyde, Region of York</li> <li>John Kazilis, Region of York</li> <li>Bhakti Rathod, York Region Transit</li> <li>Nicole Ratti, York Region Transit</li> <li>Kant Chawla, Town of Caledon</li> <li>David Van Veen, Township of King</li> <li>Robert Jay, Region of Peel</li> <li>Harry Persaud</li> <li>Selma Hubjer, City of Vaughan</li> <li>Vince Musacchio, City of Vaughan</li> <li>Christopher Tam, City of Vaughan</li> <li>Jonathan Chai, HDR</li> <li>Yunfei Zhang, HDR</li> <li>Andrew Larter, HDR</li> </ul>
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<i>Topic</i>	<i>Action Items</i>
<p>1 Introduction &amp; Background (Chris Tam)</p> <ul style="list-style-type: none"> <li>• CT opens the meeting at 9:04 and introduces the project team</li> <li>• CT gives background on the VTP and emphasizes the project's vision, objective, and goals</li> <li>• CT also outlines tasks that have been completed and are scheduled to support each of the project's goals                             <ul style="list-style-type: none"> <li>○ Provides background on consultation that has occurred up to this point, including gap during switch from in-person to virtual events due to COVID</li> <li>○ Work today focuses on Infrastructure Delivery Process Review – Gap Analysis task</li> <li>○ Next steps and Future Actions tasks are discussed</li> </ul> </li> <li>• DVV questions how CoV is aligning its TMP with neighbouring municipalities' (such as King); BL also questions whether the TMP will factor in the Metrolinx RTP (especially projects spanning municipal borders)                             <ul style="list-style-type: none"> <li>○ CT explains how thorough document review has taken place to consider neighbours' TMPs in the VTP development process, and that all RTP projects have been considered. Various scenarios will also be tested, including combinations of infrastructure projects</li> </ul> </li> </ul>	



- AS questions whether different scenarios will be shared with stakeholders, which could be to the benefit of neighbouring municipalities. Additionally, questions to what degree the Region's MTSAs will be accounted for/covered in the VTP
  - CT responds that the VTP will follow a strong emphasis on policies that encourage active transportation, beyond simply those identified in MTSAs and on street networks
  - AS also explains that there has been some emphasis on providing evidence of why active transportation connections at GO stations are necessary/important – ridership at stations with at-capacity parking facilities continues to increase, indicating demand for other modes of station access
  - BL requests that CoV share its planning on active transportation networks
  - JC specifically responds to how MTSAs have been incorporated into the gap analysis process – the opportunity to provide connections is an aspect of the gap analysis that has been particularly emphasized
- HZ explains how Brampton municipal council has been challenging traditional traffic-based metrics of infrastructure improvement to instead give increased and prioritized focus to active transportation
  - CT highlights that the VTP gap analysis is moving away from traditional “V/C-based” analysis and instead focus on user experience
- AA indicates that CoT is undertaking modelling of its own and highlights areas of potential collaboration, especially with TTC regarding surface transit. AA also indicates interest in collaboration and sharing ideas on business outreach and equity strategies
  - CT agrees with potential for collaboration and side conversation on strategy-sharing

**CT to share  
Vaughan's  
Pedestrian & Bike  
Master Plan**

## 2 Gap Analysis – Identification (Jonathan Chai)

- JC presents the purpose and objectives of the Gap Analysis process – determine new practices that determine need and justification for infrastructure, considering gaps for all modes equally, without limiting ourselves to commuter-based peak hour data, as well as creating an adaptable/repeatable process
- JC presents gap analysis measures and overviews the existing gap identification process – a geospatial, system-wide analysis. Displays maps used in the gap identification process
- BL questions whether CoV has set a mode share target for sustainable modes as part of the plan
  - CT explains that they have not, but that they may – ongoing discussion
- DVV questions whether CoV has examined goods movement routes for potential bottlenecks outside of the City of Vaughan (ex. Keele & King Road)
  - CT explains it is to be captured in forthcoming Goods Movement Strategy component

3 Gap Analysis – Prioritization, Recommended Improvements, Scenario Evaluation, Next Steps (Yunfei Zhang)

- YZ describes process used to prioritize a long list of gaps into a short list of gaps. Highlights the prioritization indicators used to identify areas of greatest need, categorized by transportation, land use, social equity, and safety
- YZ also presents the future gap prioritization process, highlighting that results are preliminary and based on “old” land use – most updated York Region land use forecasts were only received recently
  - Results presented for future automobile, cycling, and transit networks
  - **HDR to update future model results based on most recent land use forecasts by York Region**
- YZ presents potential improvements that could result from the gap identification and prioritization process, highlighting sample prioritized areas across the road, active transportation, and transit gaps
- YZ presents potential future scenario evaluation framework, including specific metrics which match the previously-presented objectives of the VTP itself
- BL expresses interest in the results of the transit accessibility gap process, since many Bramptonians use transit to access employment in Vaughan
  - YZ indicates connection between Vaughan and Brampton is a key consideration, since access for Brampton residents to Vaughan jobs was mentioned repeatedly in the employer stakeholder engagement process
- BR questions the headways listed in the transit gap section for the future model – where are these sourced from, and can they be updated?
  - CT replies that these are in the base GTA model, and that the future model shown is a proof-of-concept – an updated 2051 model is forthcoming
  - **HDR to confirm headways in future model**
- AJT (TTC) questions whether the transit model assumed fare integration with TTC, and if so what the impact might be
  - YZ explains that fare integration was not assumed (modelling assumption, due to no concrete plans for integration)
  - JC points out that one of the outcomes of this study could be to highlight the opportunity for increasing transit trips and making transit a more competitive mode through addition of fare integration through sensitivity analysis in scenario evaluation
- AL (CoT) questions use of VKT metric for environmental aspect of scenario evaluation – how do we factor in free-flow conditions having lower emissions, etc.

**HDR to update future model results based on most recent land use forecast by York Region**

**York Region to provide latest future transit network plan; HDR to update headways in future model**



- YZ indicated the GHG analysis will be based on VKT and with the consideration of travel time & GHG emission rates
- CT replies that the question of how to address congestion effects and increases in transit and AT trips is an ongoing/open one
- KR questions whether the Brampton Transit/Zum Queen BRT was included in the model
  - YZ, CT, AL confirm that this was included, but the headway may be revised (as previously discussed)

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4 Adjournment (Chris Tam)

- CT adjourns the meeting at 10:59.



# Meeting Minutes

Project:	Vaughan Transportation Plan	
Subject:	Technical Advisory Committee (TAC) #1 Meeting – Internal	
Date:	Wednesday, April 07, 2021	
Location:	Microsoft Teams	
Attendees:	Christopher Tam, CoV Selma Hubjer, CoV Vince Musacchio, CoV Rob Bayley, CoV Christina Bruce, CoV Jennifer Cappola-Logullo, CoV Margie Chung, CoV Brianne Clace, CoV Rudi Czekalla-Martinez, CoV Pirooz Davoodnia, CoV Musa Deo, CoV Teresa Fazari, CoV Fausto Filipetto, CoV Zincia Francis, CoV Michael Frieri, CoV Paul Grove, CoV	Michael Habib, CoV Tony Iacobelli, CoV Pasquale Lupia, CoV Carmine Mainella, CoV Alan Pacheco, CoV Nelson Pereira, CoV Amy Roots, CoV Warren Rupnarain, CoV James Steele, CoV Frank Suppa, CoV Christopher Tam, CoV Martin Tavares, CoV Catherine Vettese, CoV Tong Wang, CoV Jonathan Chai, HDR Yunfei Zhang, HDR Andrew Larter, HDR

	<i>Topic</i>	<i>Action item</i>
1	Introduction & Background (Chris Tam) <ul style="list-style-type: none"> <li>• CT opens the meeting at 9:05 and overviews the agenda</li> <li>• CT gives background on the VTP and emphasizes the project’s vision, objective, and goals</li> <li>• CT also outlines tasks that have been completed and are scheduled to support each of the project’s goals                             <ul style="list-style-type: none"> <li>○ Provides background on consultation that has occurred up to this point, including gap during switch from in-person to virtual events due to COVID</li> <li>○ Work today focuses on Infrastructure Delivery Process Review – Gap Analysis task</li> <li>○ Next steps and Future Actions tasks are discussed</li> </ul> </li> <li>• MT expresses enthusiasm for Parks &amp; Open Spacing Planning applications of the presentation</li> <li>• ZF describes internal discussions regarding a “Data for Equity” project, similar to that of the City of Toronto – describes potential for regular collection of data and harnessing of other data sources for equity purposes</li> </ul>	

- JC elaborates on question of equity that arose in stakeholder meetings. Stakeholder (logistics company) highlighted transit service not serving workers' needs, who often come from other municipalities (Brampton, northwestern Toronto)
- ZF describes how a source of municipal data for equity may also be useful for stakeholders themselves, such as being able to consult with the City for where a most accessible childcare location might be
- TI inquires regarding scope of the Transportation Data white paper
  - CT elaborates on both present-day data collection and future data sources focuses – two-pronged white paper
  - JC further highlights gaps in current data sources (ex. data on short trips, active transportation trips) as well as new data sources such as smart cameras
- TI also inquires about whether an ongoing work-from-home scenario (ex. some days per week at home, some days in office) is possible to capture within the model
  - CT discusses how the model focuses more on the behaviour behind work-from-home trends, and how the current pandemic situation is in flux and we are unsure whether we even have the data to accurately capture that behaviour
  - Studies are currently underway, especially by UoFT, to study those trends and behaviours

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2 Gap Analysis – Identification (Jonathan Chai)

- JC presents the purpose and objectives of the Gap Analysis process – determine new practices that determine need and justification for infrastructure, considering gaps for all modes equally, without limiting ourselves to commuter-based peak hour data, as well as creating an adaptable/repeatable process
- JC presents gap analysis measures and overviews the existing gap identification process – a geospatial, system-wide analysis. Displays maps used in the gap identification process
- MD questions whether collision gap analysis took into account volume of traffic on a road when considering collisions – JC indicates yes, we used collision rates rather than raw numbers

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3 Gap Analysis – Prioritization, Recommended Improvements, Scenario Evaluation, Next Steps (Yunfei Zhang)

- YZ describes process used to prioritize a long list of gaps into a short list of gaps. Highlights the prioritization indicators used to identify areas of greatest need,



categorized by transportation, land use, social equity, and safety

- YZ also presents the future gap prioritization process, highlighting that results are preliminary and based on “old” land use – most updated York Region land use forecasts were only received recently
  - Results presented for future automobile, cycling, and transit networks
  - **HDR to update future model results based on most recent land use forecasts by York Region**
  
- YZ presents potential improvements that could result from the gap identification and prioritization process, highlighting sample prioritized areas across the road, active transportation, and transit gaps
  
- YZ presents potential future scenario evaluation framework, including specific metrics which match the previously-presented objectives of the VTP itself
  
- TI questions Northeastern Vaughan transit gap centred around Major Mackenzie – if there is a BRT planned for Major Mackenzie, why is it listed as a transit gap?
  - CT explains that the transit network only includes committed projects
  
- MD questions why percentage of one-car households (rather than zero-car) was not included as a social or equity indicator
  - CT and YZ indicate that the existing framework is meant as a first step that will give the most key inputs to equity
  - JC agrees with the sentiment raised by MD – many families in York Region may own a single car but be able only to afford one car, since they feel they need to own a car to get by in Vaughan
  - **HDR and CoV to consider either percentage of single-car households, or a ratio of number of cars to number of adults per household, as modifications to this indicator**

**HDR to update future model results based on most recent land use forecasts by York Region**

**HDR and CoV to consider either percentage of single-car households, or a ratio of number of cars to number of adults per household, as modifications to this indicator**

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- 4 Adjournment (Chris Tam)
- CT adjourns the meeting at 10:38.