

GL6.31 Attachment 4

June 2019

Executive Summary

The Transportation Impacts of Vehicle-for-Hire in the City of Toronto

Prepared by:

City of Toronto Transportation Services

Big Data Innovation Team

Executive Summary

Introduction

The purpose of this report is to describe how the introduction of Private Transportation Companies (PTCs) in Toronto has changed travel patterns and behaviour in the City, and to understand its impact on the operation of the City's street networks. Specifically, the report responds to the City Council Recommendation 92 in Item LS10.3 “A New Vehicle-for-Hire Bylaw to Regulate Toronto's Ground Transportation Industry” adopted by City Council on May 3 2016, to report on “*the outcome of a study that assesses and measures the impacts of the volume of PTC vehicles and drivers*”. This report will answer the following questions:

1. **What are the trends and patterns in vehicle-for-hire travel in the City?**
2. **How has this travel impacted the transportation network?**
3. **How have travel choices evolved in Toronto?**

These questions are answered primarily using detailed trip data that has been submitted to the City by licensed PTCs covering the period of September 2016 to September 2018.

This study has been completed by the Transportation Services Division's Big Data Innovation team in collaboration with a research team at the University of Toronto Transportation Research Institute (UTTRI).

The complete study is posted on the [Transportation Services Big Data Innovation Team website](#).

Data Sources

This study was based primarily around PTC trip records provided by PTCs as a requirement of the Vehicle-for-Hire (VFH) Bylaw. These records detail the trip origin and destination (to the nearest intersection) of each trip made by a licensed PTC in the City and the times that trips were made. Prior to April 2017, PTCs also provided wait time information for each trip. Trip data used for this study covers the period from September 2016 to September 2018, while summarized aggregate trip totals have been provided up to March 2019.

Taxi brokerages declined participation in the study, and equivalent data on taxi and limousine trip patterns is not available as a form of comparison to the trends and patterns observed with PTC travel. As a result, the content of this report is primarily focused on PTC travel in the City.

This data has been supplemented by a few additional data sources:

- **PTC pick-up and drop-off locations:** Pick-up and drop-off counts at a 10m resolution were acquired using SharedStreets as a broker in partnership with Uber and Lyft.
- **Supplementary aggregate PTC statistics:** On request from the City, Uber provided additional information including the number of PTC vehicles

fulfilling trips for selected days, additional aggregated wait time data (after April 2017). Lyft declined to provide additional data.

- **Bluetooth Sensor Travel Speed Data:** Transportation Services monitors travel times on a number of downtown arterial streets using Bluetooth readers, originally deployed for monitoring the King Street Transit Pilot and other downtown transportation initiatives.
- **PTC Travel Behaviour Survey:** UTTRI commissioned a survey as part of this study to understand the trade-offs and choices that travellers make when choosing to take PTCs.

Methodology

The study has been organized into three main sections. A more detailed background on the technical methodology and data sources used is included in full report and accompanying technical appendices.

1. Understanding PTC trip-making trends and patterns

PTC trip records were aggregated and filtered by location to study overall trends in PTC trip making since the VFH bylaw was enacted. The data was used to answer questions on the types of trips made, how far people travel, where they travel and at what times of day. This analysis also considers equity and demographic indicators, and the relationship with transit services in Toronto.

2. Studying the travel demand and travel choice impacts of PTC travel

The second stage of the study relied on market research undertaken by UTTRI to understand the travel choice trade-offs made by PTC travelers.

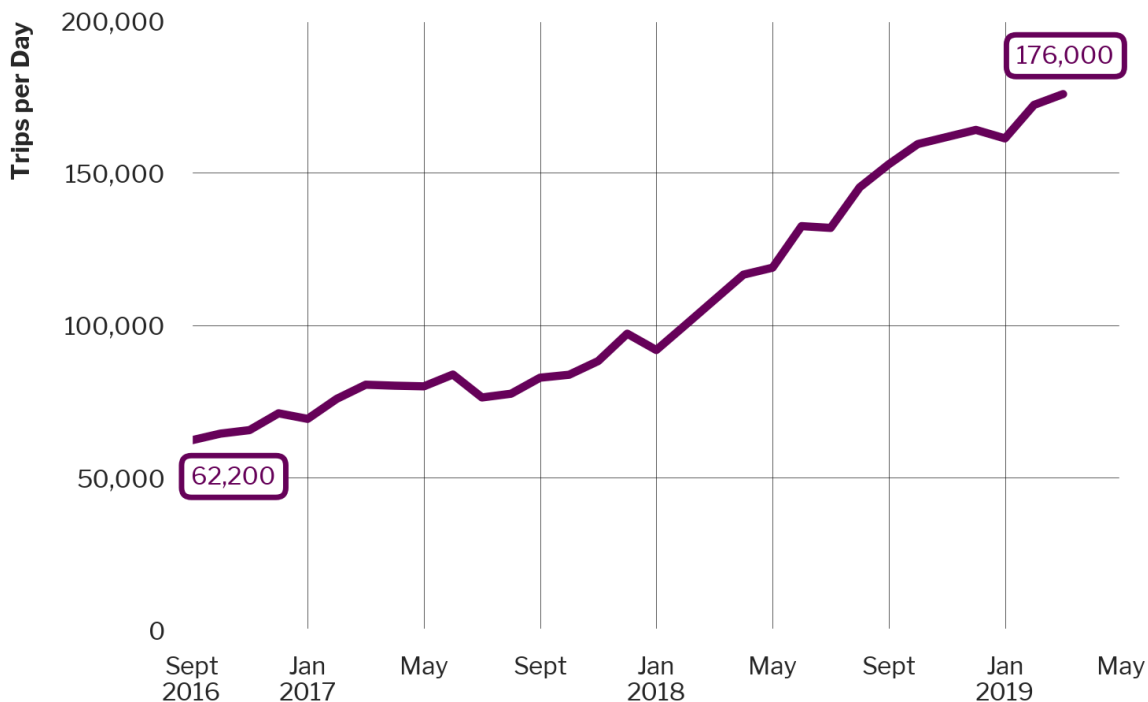
3. Analyzing the impacts of the growth in PTC travel on the transportation network

This part of the study used the PTC trip data to develop estimates of the total amount of PTC travel in the City, the volumes of PTC vehicles by neighbourhood at key times and studied the relationships with changes in travel times on Downtown streets.

PTC trips have grown by 180% in 2.5 years

PTC trips have grown rapidly since September 2016, when the service was first licensed by the City. 176,000 trips were made daily in March 2019, an increase of over 180% since September 2016. As of March 2019, 105 million trips have been completed in the City of Toronto using PTCs.

Exhibit ES-1: Average Daily PTC Trips, September 2016 - January 2019



Trends in comparable North America cities point towards rapid growth in PTC trips

The City of Toronto is still in the early stages of PTC adoption relative to other comparable cities in North America. For context, Chicago, a city of comparable population, experiences approximately 330,400 PTC trips daily, almost twice that of Toronto. While it is impossible to know whether Toronto will reach this same number of daily trips, Chicago has had PTCs operating for 3 years longer than Toronto, and has witnessed consistent growth over the period. While cities can differ greatly in their regulatory context, demographic makeup, and the size and population density of their urban cores, trends in PTC growth and the experience in other jurisdictions suggests that the PTC trip market in the City of Toronto is not saturated and that growth in trips will likely continue for the foreseeable future.

PTC Trips are concentrated downtown and at major transportation hubs

60% of all PTC trips were conducted within Toronto and East York. The vast majority of trip hotspots are located within the downtown core and surrounding areas, including:

- **Within the Downtown Core:** Significant trip hotspots include the major bar and restaurant districts of King West, Ossington Ave, Little Italy, Yorkville and Cherry St (Polson Pier), as well as the Financial and Entertainment Districts surrounding Bay and Wellington.
- **Outside the Downtown Core:** Trips are concentrated around major transit stations, shopping destinations, postsecondary institutions (e.g. York

University, Humber College, University of Toronto Scarborough) and residential developments (e.g. Humber Bay Shores, Liberty Village).

Exhibit ES-2: Average Daily PTC Trips by District, October 2016 vs. September 2018

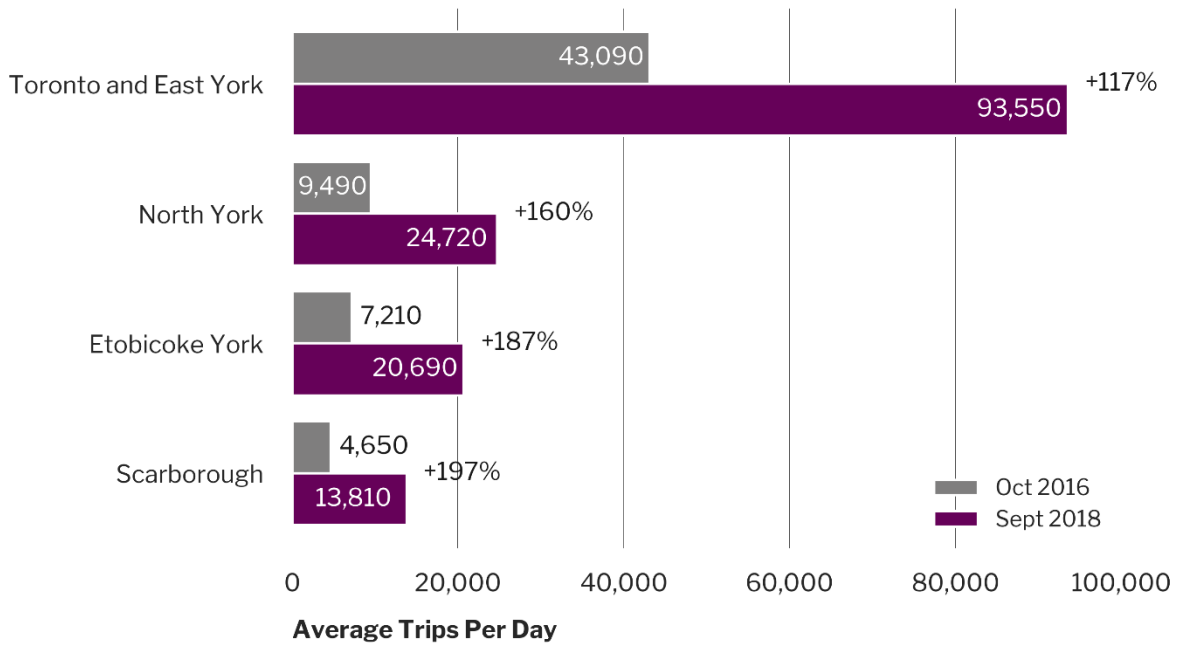


Exhibit ES-3: Daily PTC Drop-Offs by nearest Intersection in Downtown, September 2018

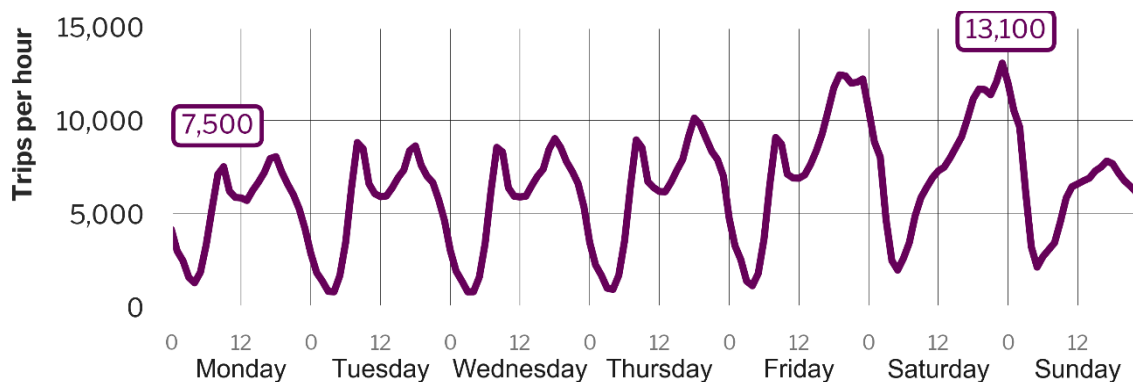


Nighttime economy and commuter travel are the largest trip markets

PTC trip-making peaks are observed in two distinct time periods:

- **Friday and Saturday Nights:** the busiest period by far for PTC travel is Friday and Saturday nights, peaking at an average 13,100 trips per hour at midnight on Sunday morning. This time period is typically associated with nightlife activity, which is reflected in the dominance of trips in the downtown Entertainment District during this time.
- **Weekday Commuting Periods:** PTCs are heavily used in the morning and afternoon peak periods, typically associated with the times during which the road network experiences the most traffic. This trip market has increased over the past two years.

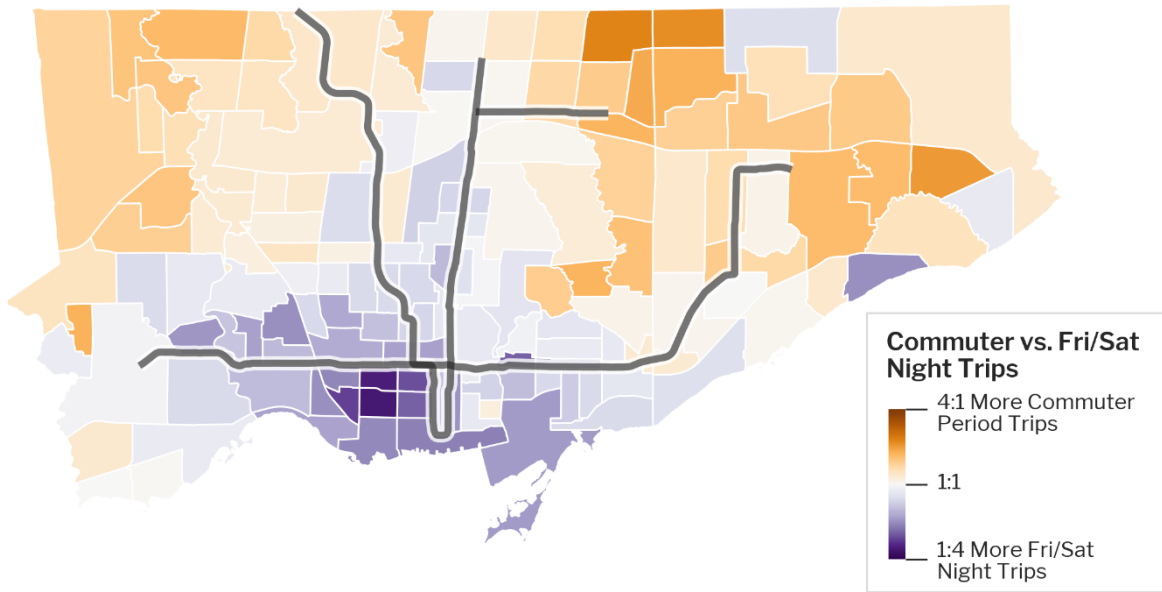
Exhibit ES-4: Trips by Time of Day and Day of Week, September 2018



PTCs are more commuter-focused outside of Downtown

Commuter trips are emerging as a major trip market that are being increasingly captured by PTCs. This is illustrated in Exhibit ES-5, which shows a landscape with two distinct geographies. Downtown neighbourhoods generally see more than two Friday and Saturday night trips for every weekday commuter period trip while the opposite is true in the suburbs where trips are much more commuter-focused.

Exhibit ES-5: Comparison of Commuter Trips vs Friday/Saturday Night Trips, September 2018

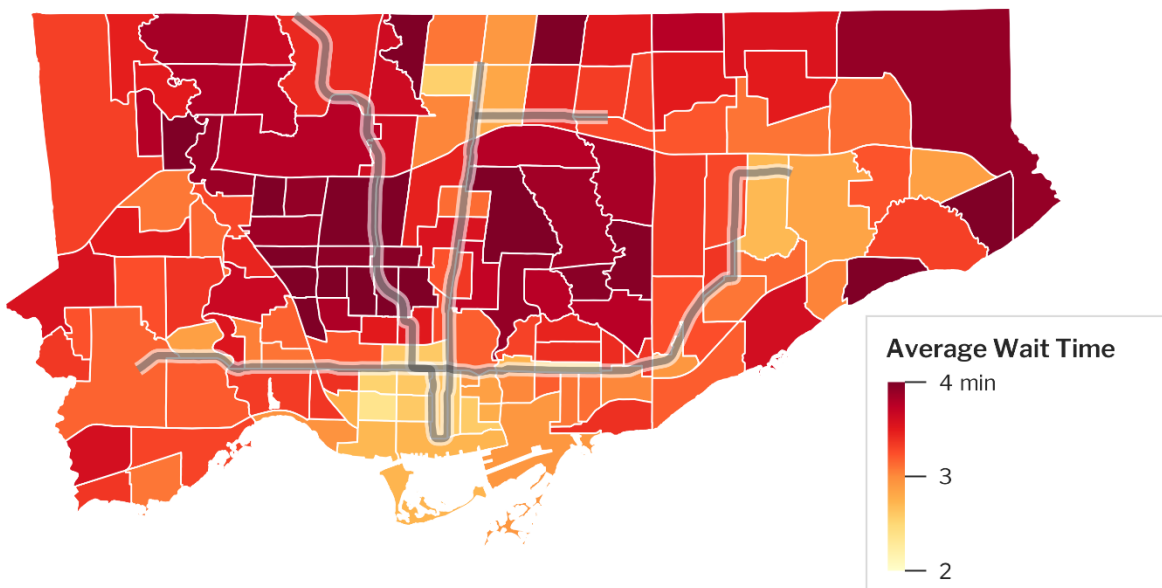


Average wait times are under 4 minutes City-wide

Understanding the wait times for PTC users is key to understanding how PTC service levels have evolved, both over time and across the city. Average wait times provide important context for understanding spatial inequities and the competitiveness of PTCs with public transit.

The average wait time for completed trips in the City of Toronto has dropped from 4.2 minutes in September 2016 to 3.1 minutes in September 2018. Wait times are quite consistent across the City with wait times ranging from 2.8 min in Toronto and East York up to 3.5 minutes in North York.

Exhibit ES-6: Wait times by neighbourhood, September 2018

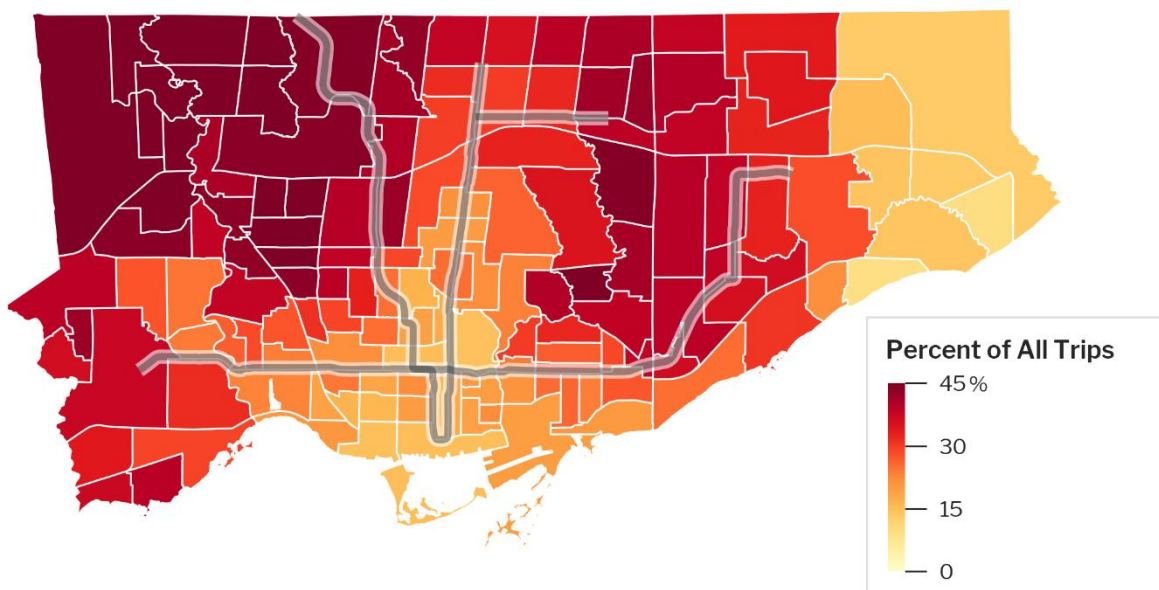


A quarter of overall PTC trips use shared ride services

Shared ride services, such as Lyft Line and Uber Pool, are unique offerings that make up a portion of the overall PTC trip market. These services work by matching passengers with others heading on similar paths. Shared trip requests have grown from about 6,900 trips/day in September 2016 to 28,400 in September 2018 and now account for 26% of all PTC trips. Outside the core, in particular in large sections of Etobicoke and North York, users are much more likely (up to 45% of all trips) to order shared ride services.

While shared trip services are increasingly popular with PTC users, 82% of these trips are being completed without matching riders with additional passengers. In September 2018, only 5,200 of the total 28,400 daily shared ride trips made more than one distinct pick-up.

Exhibit ES-7: Proportion of shared ride trips requested by neighbourhood, September 2018



PTC users' second choice of mode is most often transit or taxi

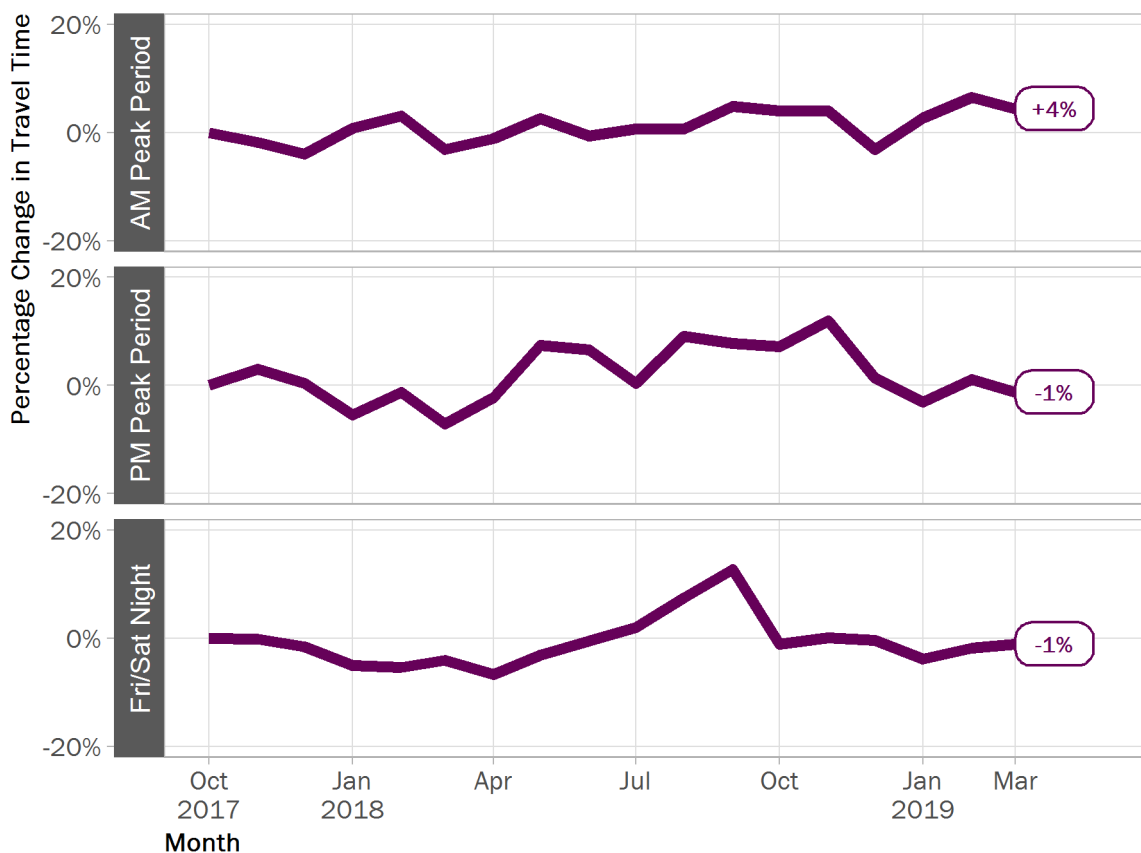
UTTRI conducted a survey of City of Toronto residents in May 2019 to determine the factors that influence residents' choices of when they use PTC services in the City. Survey participants were asked a series of questions that reflected real or hypothetical decisions to identify, in part, which modes were directly competing with PTCs.

49% of the respondents stated that they would have taken public transit in the absence of PTCs for their most recent PTC trip, while 33% would have taken a taxi. The remaining 18% would have driven, been driven by someone, walked, biked, or would have not made the trip at all. When looking only at commuting trips, 58% of respondents would have taken transit in the absence of PTCs and 20% would have taken a taxi.

Downtown travel times have been stable over 18 months while PTC trips increased by 96%

The City of Toronto collects car travel time data on most major streets in the downtown core, the area of the City where PTC trip concentrations are highest. This data shows marginal changes in travel times over the last 18 months in the downtown core. Between October 2017 and March 2019, downtown travel times on major streets has increased by 4% in the morning peak hour (7 to 10 a.m.), and decreased by 1% in both the afternoon peak period (4 to 7 p.m.) and Friday and Saturday nights (10 p.m. to 1 a.m.). This same period is associated with a 96% increase in PTC trips city-wide, from 83,800 to 164,000 daily trips. These findings are consistent with the recently-completed evaluation of the impacts of the King Street Transit Pilot which showed no significant changes in travel times on downtown streets over the Pilot period.

Exhibit ES-8: Changes in Travel Time in the Downtown Core, October 2017 to March 2019



PTCs in Downtown Toronto make up 5-11% of total traffic

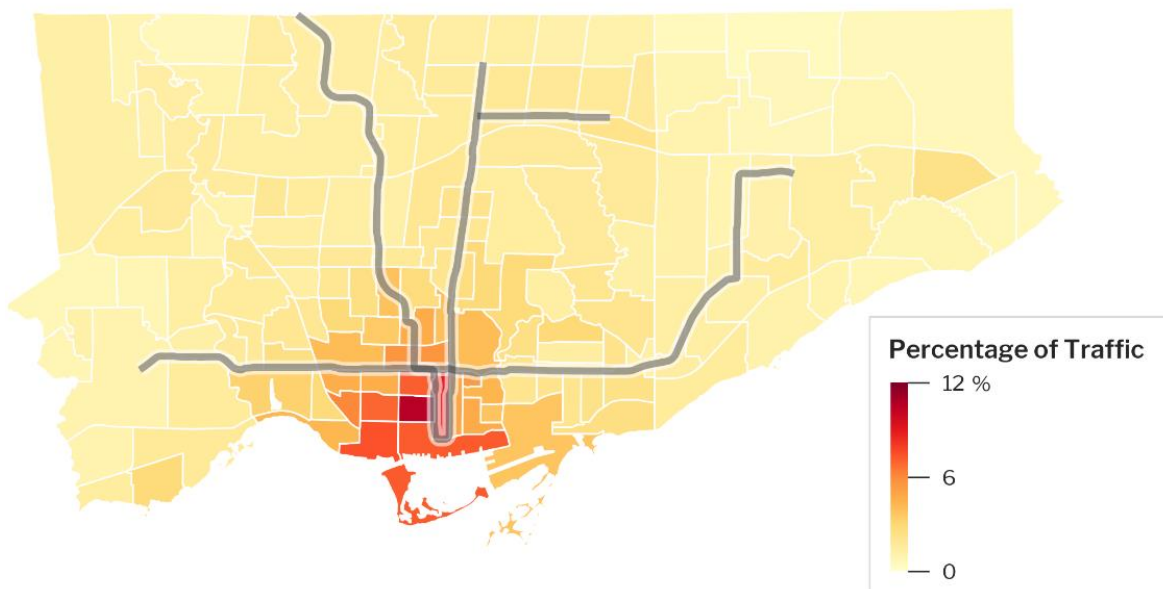
The impact of PTCs on the transportation network is largely a function of the amount of driving its vehicles are adding on to the City's road network, measured in vehicle-kilometers travelled (VKT). Outside of any potential impacts on traffic congestion, additional VKT can also directly affect the City's ability to meet its climate change goals under the TransformTO Climate Action Strategy. Increased VKT has also been found to have adverse impacts

on air quality, health, safety, and noise. PTC vehicles contribute to total VKT on City streets in two distinct ways:

- **In-Service Trips:** Distances travelled by vehicles carrying passengers; and,
- **Deadheading:** Distances travelled by vehicles either cruising for passengers or en route to pick-up a passenger

The largest volumes of PTCs are concentrated downtown where a conservative estimate of PTC volumes shows that PTCs now account for between 5 and 11% of overall daily traffic in Downtown Neighbourhoods. The busiest neighbourhood is Kensington-Chinatown, bordered by Bathurst St, College St, University Ave and Queen St.

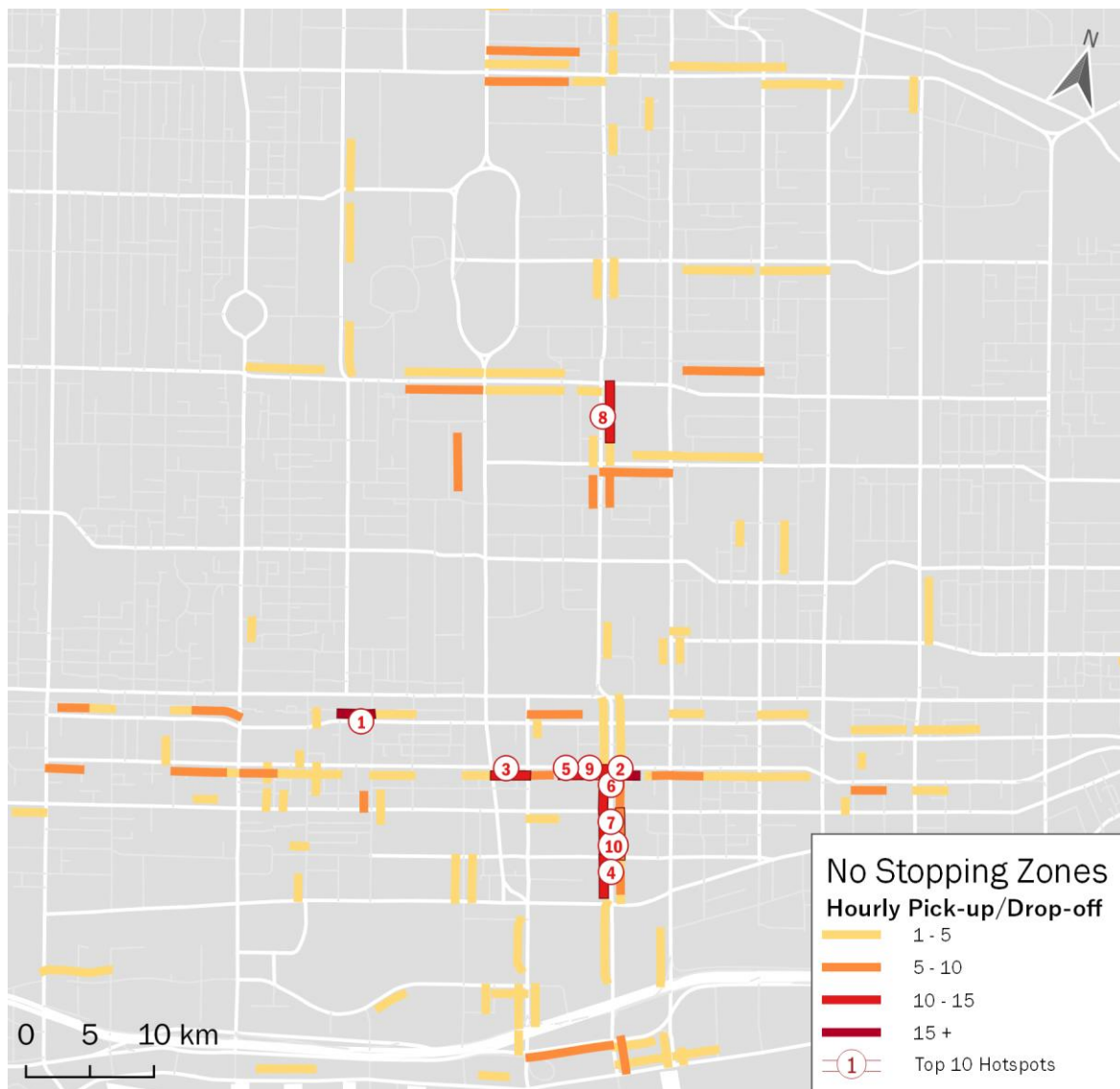
Exhibit ES-9: Proportion of PTC VKT by neighbourhood, September 2018



Pick-up and drop-off data highlight conflicts with no-stopping zones and bike lanes

The introduction of PTCs, a mode of transportation heavily dependent on access to the curbside, raises important questions on the continued effectiveness of the City's curbside traffic and parking regulations. A detailed look at pick-up/drop-off data has shown hotspots during the morning commute period where pick-up and drop-off activity is occurring in no-stopping zones. The largest hotspots are found on Bay St and Adelaide St in the Financial District. A similar analysis of pick-ups and drop-offs along bike lanes is also included in the full report to highlight areas that could benefit from additional separation between bike lanes and vehicular traffic.

Exhibit ES-10: Hotspots of Pick-up/Drop-off activity in no-stopping areas (7 to 10 a.m.)



Next Steps & Recommendations

This study has looked at what is most-likely the first wave of disruptions from new mobility-as-a-service (MaaS) businesses. Trip growth is not anticipated to slow in the upcoming years, and whether these trips have resulted in increased travel times on City streets to date or not, these services will likely create traffic and operational changes throughout the City in the future. In addition, increased VKT can negatively impact the City reaching its climate goals and provide other impacts. However, PTC services have been immensely popular with Toronto residents as evidenced by the rapid growth in trips. PTC services now play an important role in many residents' daily travel patterns including an increasing role in daily commuter travel.

The goal of the Transportation Impact Study has been to build a deeper understanding of these new services and to pave the way for future work and studies to keep in front of these rapidly changing trends. This will allow

the City to define policy to support the benefits of PTC services while minimizing adverse impacts to traffic, to the environment and to the equity of mobility services.

As a result of the work to date, it is recommended that:

1. Transportation Services to build a monitoring program as part of the Congestion Management Plan to monitor the impacts of Vehicles-for-Hire on VKT, traffic congestion and GHG emissions and to better-understand the relationship with traffic congestion trends in the city
2. Transportation Services to continue to study the impact of Vehicles-for-Hire on the Curbside Management plan and related policies.
3. Transportation Services to investigate whether there is a road safety impact of Vehicles-for-Hire and to collaborate with MLS and the Toronto Police Service to collect appropriate data.
4. In order to be able to continuously monitor and evaluate the impact of vehicles-for-hire on the transportation network, changes are required to the data currently being collected to include information on PTC volumes, wait times, trip cancelations, deadheading and curbside activity.