TORONTO

REPORT FOR ACTION

Bloor Street West Bike Lane Pilot Project Evaluation

Date: October 3rd, 2017
To: Public Works and Infrastructure Committee
From: General Manager, Transportation Services
Wards: Ward 19 - Trinity-Spadina, Ward 20 - Trinity-Spadina

SUMMARY

In May 2016, Council approved the implementation of a pilot project to install and evaluate bike lanes on Bloor Street West between Shaw Street and Avenue Road. The design objectives of the pilot were to improve safety and reduce risk for all road users and minimize impacts to curbside operations. The pilot was installed in late August 2016.

Prior to installing the pilot, Bloor Street was a heavily used travel corridor, carrying approximately 24,000 vehicles per day and 3,300 cyclists. With an average of 22 collisions involving cyclists each year in the section between Shaw Street and Avenue Road, this area represented a documented safety concern.

Extensive before and after data was collected to evaluate the performance of the pilot in order to assess the impacts and benefits of the project in the following areas:

- Effect on cycling environment;
- Effect on motoring environment;
- Effect on curbside demands and parking;
- Effect on local business; and
- Public perception and level of support from residents and businesses

Even without cycling facilities in place, Bloor Street was one of the most heavily used cycling corridors in the city due to its location and east-west connectivity. Installation of the pilot has increased cycling use by 49% on Bloor Street (with 25% being new riders) as of June 2017, compared to the baseline from June 2016. When only including cycling counts from within the pilot area, the increase amounts to 56% with an average of 5,220 weekday cyclists, making Bloor Street the second highest bicycle facility by volume in the city.

While currently less than one year of road safety data is available "after" the installation of the bike lanes, preliminary indications show that collision and conflict ("near-miss" collisions) rates have reduced. Based on public opinion surveys, the introduction of bike lanes have significantly increased levels of comfort and safety for both motorists and cyclists. In addition, a strong majority of pedestrians feel their experience walking on Bloor Street with bike lanes installed is about the same or better than it was previously.

Motor vehicle travel times along Bloor Street initially increased immediately following the installation of the cycling facilities, prompting Transportation Services to make operational adjustments to signal timing to mitigate delay to motor vehicles. The increased travel times have since been cut in half.

Regarding curbside demand, the impact of cycling facilities on commercial loading and accessibility was mitigated through the introduction of loading zones, accessible loading zones and curb ramps, designated pick-up/drop-off areas and education to encourage the use of laneways for deliveries, where appropriate.

As a result of the reduced number of on-street parking spaces, there were times when both on-street and off-street parking was at capacity. Although there were fewer paid parkers in the area, the total parking revenue generated remained about the same due to the addition of off-street lot parking spaces and higher utilization in the off-street lots. This can likely be attributed to the Toronto Parking Authority's (TPA) annual rate changes that were implemented in August 2016 as well as additional revenue from the off-street lots where the average transaction amount tends to be higher than on-street.

As directed by Council in May 2016, the City partnered with the Bloor Annex Business Improvement Area (BIA) and the Korea Town BIA on a study that the BIAs had already commissioned in October 2015 on the local economic impact of bike lanes on Bloor Street. Through a door-to-door merchant survey and a pedestrian intercept survey, this study found that most merchants reported an increase in the number of customers, most visitors reported spending more and visiting more frequently, and that vacancy rates are stable.

During the pilot, the City heard from some businesses concerned about impact to their business as a result of the pilot. In order to provide additional insight into the potential effects on local businesses, the City obtained customer spending analysis from Moneris Solutions Corporation, the company with the largest market share of point-of-sale payment processers in Canada. The Moneris data demonstrated that while average per-transaction size has marginally decreased in the pilot area, it is on-trend with other parts of the City. Total customer spending in the Bloor Street pilot area increased more than in the area surrounding the pilot and more than in the Danforth Avenue control area.

Feedback from the over 14,000 responses from the post-installation public opinion survey generally showed support for the pilot project by cyclists, drivers who occasionally bike, pedestrians, and local residents. Cyclists felt safer and cycled more often as a result of bicycle facilities on Bloor Street. Motorists reported to feel more comfortable driving next to cyclists with bike lanes, but raised frustration with traffic delays and reduced parking convenience. Businesses raised concerns about challenges with coordination of deliveries, and reduced parking convenience for customers, while the bike lanes and additional bike parking were appreciated by employees and customers who travel by bicycle.

Based on the findings of this evaluation, Transportation Services recommends that the pilot be made permanent.

RECOMMENDATIONS

The General Manager, Transportation Services recommends that:

1. City Council approve maintaining the eastbound and westbound cycle tracks on Bloor Street West, from Shaw Street to Avenue Road, as a permanent installation, including changes to the current design that will improve safety and operations, as part of 2019 Capital Works on Bloor Street West between Bathurst Street and Avenue Road.

FINANCIAL IMPACT

Should City Council not approve the recommendation to maintain the cycle tracks on Bloor Street West, the estimated cost to remove the pilot project and reinstate the previous roadway configuration would be approximately $425,000. Funding for this is not currently identified in the 2017-2026 Capital Budget for Transportation Services.

The Deputy City Manager & Chief Financial officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on May 3, 2016 Toronto City Council adopted the recommendations from PW12.1 "Bloor Street Design Feasibility Study and Bike Lane Pilot Project", for the installation of eastbound and westbound cycle tracks on Bloor Street West, from Shaw Street to Avenue Road, as a pilot project and directed the General Manager, Transportation Services to report back to Public Works and Infrastructure Committee in the third quarter of 2017 on the findings of the Bloor Street West Bike Lane Pilot Project Evaluation:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PW12.1

At its meeting on June 7, 2016, City Council adopted, in principle, the Ten Year Cycling Network Plan which retained proposed Major Corridor Studies currently underway including Bloor-Dupont, between Keele Street and Sherbourne Street, which would be informed by the results of the 2016 pilot project. City Council also directed the General Manager, Transportation Services to bring forward recommendations for the initiation of a Major Corridor Study on Danforth Avenue at the same time as when Council considers the findings on the Bloor Street West Bike Lane Pilot Project:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2016.PW13.11

COMMENTS

Background

Separated bike lanes have been shown to increase cycling and are an important part of an effective bicycle network. Separated bike lanes are generally perceived to be safer, encouraging and increasing active transportation among all potential riders. As well, safe, effective bike routes provide opportunities not just for commuting but to engage in an active, healthy way with the City's vibrant economic, social, and cultural life. In terms of supporting a healthier environment, mode shift away from vehicles has added health benefits associated with reduced air pollution and greenhouse gas emissions, in keeping with Toronto's commitments in TransformTO.

The health benefits from active transportation include are measurable and include helping people to maintain healthy weights, reduced hypertension, improved mental health, and lowered rates of diabetes, heart diseases, and cancers. Creating opportunities for safe active transportation helps to reduce inactivity, as individuals are more likely to meet recommended fitness levels when they have access to a space that encourages cycling. Active transportation initiatives fulfill policies in the City's Official Plan on mobility choice and transportation demand management (Section 2.4) as well as its policies on public realm (Section 3.1.1) which support a complete streets approach.

Bloor Street Pilot
The pilot project for bike lanes on Bloor Street West between Shaw Street and Avenue Road was intended to evaluate and help inform a broader Bloor Street - Dupont Street Bikeway Major Corridor Study on the benefits and impacts of implementing a cycling facility. Key design objectives of the pilot project are to improve safety and reduce risk for all road users and to reduce impacts to curbside uses (e.g., parking, loading, deliveries and waste collection).

Bloor Street was a heavily used east-west connection for motorists, cyclists, and pedestrians prior to the installation of the pilot. Approximately 24,000 vehicles and 3,300 cyclists per day used the corridor in June 2016 when the City conducted "before" counts to inform the pilot project. The pilot area also had documented safety concerns with an average of 22 collisions each year involving cyclists.

Since the pilot segment is one of the busiest and most constrained sections of the Bloor Street corridor, it provides a strong case study to understand the benefits and impacts of implementing separated bicycle facilities and the outcomes of the pilot will help inform the development of future projects.

A continuous cycling facility along Bloor Street would be one of the most significant bikeways in the city cycling network due to the length and location of the corridor and the high levels of bicycle use in this part of the City. The Ten Year Cycling Network Plan adopted by Council identified Bloor Street as a high priority through both cycling impact analysis and public consultation rankings. The cycling impact analysis used geo-spatial planning analysis in eight areas to identify the streets where a cycling network route

would have the most benefit. Each proposed route was scored in terms of how it performed in the areas of current cycling demand, potential demand, population and employment density, coverage, barriers, safety analysis, connectivity and as a trip generator.

There are currently shared-lane pavement markings (sharrows) on Bloor Street between Avenue Road and Church Street, as well as bicycle lanes on Bloor Street East between Sherbourne Street and across the Prince Edward Viaduct to Broadview Avenue. The pilot project segment includes important cycling network connectivity to existing facilities on Shaw Street, Montrose Avenue, Grace Street, and St. George Street.

Design Features
The preferred design for the pilot project, which was implemented in August 2016, provided cycle tracks located continuously next to the curb on both sides of the street. In order to accommodate the cycle tracks, vehicle lanes were reduced to one traffic lane in each direction at all hours with right turn lanes at Bathurst Street and Avenue Road, and left turn lanes at Shaw Street, Montrose Avenue, Christie Street, Manning Avenue, Palmerston Avenue, Walmer Road, Spadina Avenue, Huron Street, St. George Street, Bedford Road, and Avenue Road.

On-street parking, which had been permitted on both sides of the street in off-peak periods and off-peak direction in peak periods, was maintained at all times on one side of the street between the cycle track and the traffic lane. A painted buffer and flexi-post bollards were provided next to the cycle track where possible, including in the "door zone" between parking and the bike lane, as separation elements to discourage motorists from parking, standing, or stopping illegally in the cycling facility.

Performance Evaluation Methodology

The performance evaluation of the pilot project involved the collection of before and after data in order to assess the impacts and benefits of the project in the following areas:

- Effect on the cycling environment;
- Effect on the motoring environment;
- Effect on curbside demands and parking;
- Effect on local business; and
- Public perception and level of support from residents and businesses.

The monitoring methodology employed for the Bloor Street pilot project has involved the most comprehensive performance evaluation undertaken for a cycling project in the City of Toronto. In addition to evaluating Bloor Street, the methodology for the Bloor Street Pilot Project also included evaluation of the parallel corridors of Dupont Street and Harbord Street, as well as an assessment of the impact to curbside demands and parking, safety, and local business economic impact.

Baseline data was collected for all metrics in June 2016 as well as follow-up data collection immediately following the installation in October 2016 and again in June 2017.

Motor vehicle travel time data was collected using travel time runs with a GPS tracker on three weekdays per corridor:

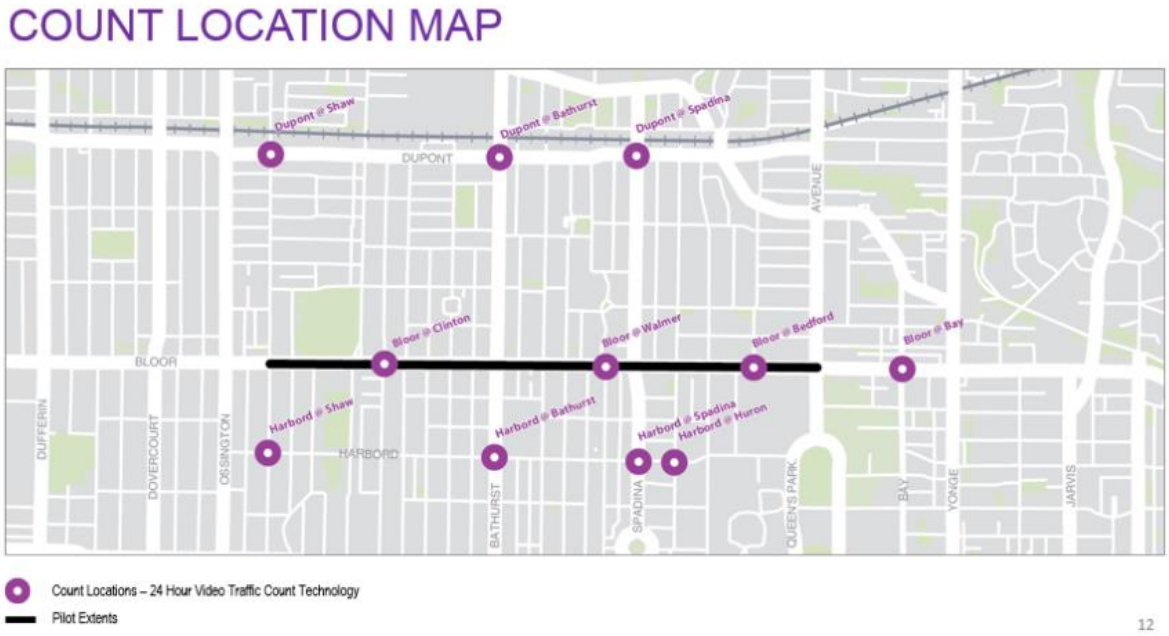
- Bloor Street: from Bay Street to Ossington Avenue;
- Dupont Street: from Avenue Road to Ossington Avenue; and
- Harbord Street: from Queens Park Crescent to Ossington Avenue.

During each collection date, multiple runs were conducted during each of 7 am – 10 am, 11 am – 1 pm, and 4 pm – 7 pm.

Motor vehicle and cyclist volume and mode share counts were conducted using 24 hour video count technology on three consecutive weekdays per corridor:

- Bloor Street at: Bay Street, Bedford Road, Walmer Road, and Clinton Street;
- Dupont Street at: Spadina Avenue, Bathurst Street, and Shaw Street; and
- Harbord Street at: Huron Street, Spadina Avenue, Bathurst Street, and Shaw Street.

Figure 1 - Count Location Map



Effect of Cycling Environment

Cycling Volumes

The introduction of a dedicated cycling facility on Bloor Street resulted in an increased number of people cycling. Table 1 below provides a summary of the average 24 hour bicycle volumes across all three corridors.

Average cyclist volumes on Bloor Street increased by approximately 1,200 riders per day to approximately 4,500 riders per day (+36%) in October 2016 after the initial installation of the bike lanes. In June 2017, average cyclist volumes further increased to approximately 4,900 per day (+49% more than the baseline from June 2016).

When only including cycling counts from within the pilot area (i.e. excluding the count on Bloor Street at Bay Street), the increase amounts to 56% with an average of 5,220 weekday cyclists, making Bloor Street the second highest bicycle facility by volume in the city.

The June 2017 counts provide the best reflection of the change in cycling volumes since the June 2016 to June 2017 comparison would not show any seasonal variation in cyclist volumes. Rain on some of the count days did lower the overall average for the June 2017 counts. When considering only the dry days, cyclist volumes were approximately 5,500 riders per day, an increase of almost 70% from before the bike lanes.

The results of the post-installation public opinion survey also showed that the bike lanes encouraged an increase in cycling:

- 78% of respondents who bike said they cycle more often because of the Bloor bike lanes;
- newer cyclists were more likely to be encouraged to cycle more often by the bike lanes compared to cyclists with more experience; and
- females and cyclists aged 25-44 were most likely to report cycling more often as a result of the Bloor bike lanes[1].

Table 1. Corridor Average 24 Hour Bicycle Volume Summary

Street	June 2016	October 2016	Change June - Oct		June 2017	Change June 2016 - June 2017	
Bloor St. W	3,309	4,501	+1,192	+36%	4,925	+1,616	+49%
Dupont St.	956	798	-158	-17%	852	-104	-11%
Harbord St.	4,631	3,892	-739	-16%	3,490	-1,141	-25%

While cyclist volumes on Bloor Street increased, there was a decrease in cyclist volumes on the parallel corridors of Harbord Street and Dupont Street, which can be reasonably attributed to cyclists re-routing to Bloor Street.

Cyclists' preference for Bloor Street is likely due to the improved comfort and safety of the separated bike lane (a painted buffer, parked cars and/or flexi-post bollards between the bike lane and the traffic lane, as well as between the bike lane and on-street parking), that it is a more continuous route (Harbord Street does not continue west of Ossington Avenue), and the higher number of destinations such as shops and restaurants located along Bloor Street.

1 Research shows that women are under-represented among people who cycle in cities across North America, likely because of risk aversion and heightened safety concerns (Factors Affecting Bicycling Demand. Dill, J. & Voros K. Transportation Research Record: Journal of the Transportation Research Board, 2031: 9-17.)

Even with this decrease, Harbord Street remains to be one of the most popular cycling routes in the city where cycle facilities exist, as illustrated in Table 2 below. After accounting for re-routed cycling traffic, approximately 25% (371) of the increase would be considered to be new cyclists using the Bloor Street corridor.

Table 2. Top Ten Bicycle Facilities by Volume

Street	Count Date	Average Weekday Volume (rounded)
1. Adelaide St./Richmond St.	June 2016	6,540
2. Bloor St. W.	June 2017	5,220
3. College St.	Sept 2017	4,960
4. Queens Quay	Aug 2016	4,730
5. Bloor St. E. (at Castle Frank)	June 2015	3,750
6. Harbord St.	June 2017	3,490
7. Sherbourne St.	June 2014	3,330
8. Dundas St. E.	July 2016	2,300
9. Simcoe St.	May 2015	1,960
10. Davenport Rd.	Aug 2017	1,390

Safety

Collisions

Prior to the pilot project, Bloor Street had documented safety issues, averaging 22 collisions involving cyclists annually in the pilot area between 2008 and 2012. The most common collision types were dooring (32%), motorists overtaking a cyclist (17%) and motorists accessing on-street parking (8%). Independent peer-reviewed research has shown that the introduction of separated bike facilities reduces the risk of cycling injury (about 9 times lower risk than a major street with parked cars and no cycling infrastructure)[2]. Separated bike facilities can significantly reduce dooring collisions, sideswipe, and rear end collisions as well as reduce safety issues with motor vehicles stopping in the bike lanes.

Typically five years of collision data would be required to demonstrate trends for meaningful comparison. While currently less than one year of data is available "after"

2 Route infrastructure and the risk of injuries to bicyclists: A case-crossover study. Teschke K, Harris MA, Reynolds CCO, Winters M, Babul S, Chipman M, Cusimano MD, Brubacher J, Friedman SM, Hunte G, Monro M, Shen H, Vernich L, Cripton PA. American Journal of Public Health 2012;102:2336-2343

the installation of the bike lanes, preliminary indications show that despite an increase in cycling volume, bike/motorized vehicle collisions seem to have remained about the same, representing a reduced collision rate. In addition, collisions between motorized vehicles seem to have been reduced significantly.

Analysis of Conflicts - "Near-Miss Collisions"
Conflict analysis, an alternative to collision analysis in evaluating safety, allows for a much shorter observation period (days vs years) since conflicts (near-miss collisions) are far more common than collisions. A conflict is defined as "a situation in which two or more road users approach each other in space and time to such an extent that a collision is imminent if their movements remain unchanged." Before/after conflict analysis was conducted by the University of Toronto Transportation Research Institute at three locations Clinton Avenue, Walmer Road, and Bedford Road.

This analysis showed that one of the primary design objectives of the Bloor Street bike lane pilot project – to improve safety and reduce risk for all road users– was achieved. Key findings are as follows:

- the total number of conflicts between all road users decreased by 44%;
- the number of conflicts between motorized vehicles decreased by 71%;
- the number of bike/motorized vehicle conflicts decreased by 61%;
- the number of pedestrian/motorized vehicles conflicts decreased by 55%;
- the number of bike/pedestrian conflicts was found to have increased by 61%, primarily due to midblock "jaywalking" related conflicts. This increase may be caused by the increase in cycling volumes and the location of the bike lane between the parking and the curb.

Public Perception of Safety
In addition, the results of the post-installation public opinion survey also showed that the bike lanes increased levels of comfort and safety for both motorists and cyclists:

- Motorists: Before bike lanes, 14% of respondents reported feeling comfortable driving next to cyclists on Bloor Street compared to 66% after installation.
- Cyclists: 85% of cyclists surveyed feel safe or very safe riding a bicycle on Bloor Street, compared to 3% surveyed before installation.
- Pedestrians: 86% surveyed feel their experience walking on Bloor Street with bike lanes installed is about the same or better than it was before installation.

Design Modifications to Improve Safety
While approximately 90% of the responses to the survey from people who bike preferred the current configuration with parking separated bike lanes next to the curb, there were concerns raised by both cyclists and motorists with the design and right turn conflicts at intersections, especially at locations with parking on the approaches. Generally, the concern was with visibility of cyclists behind parked cars to motorists turning across the cycle track. Although the setbacks for parking to provide proper sight lines for turning vehicles were designed to accepted standards for this type of facility, this issue will be reviewed further as part of the completion of the City of Toronto's On-Street Bikeway Design Guidelines that is currently underway. Any changes to the design as result of this review would be considered as pavement adjustments (such as introduction of green pavement markings) and will be implemented if the pilot cycling facilities on Bloor Street West were to be made permanent.

Effect on Motoring Environment

Motor Vehicle Volumes

With the installation of the cycle tracks, the average total traffic volumes on Bloor Street West decreased from approximately 24,300 per day prior to the bike lane to 20,000 per day (-18%) after the initial installation and remained relatively unchanged throughout the pilot with a similar decrease shown in June 2017 (-16%). The reduction in traffic volumes occurred primarily in the peak periods in the peak direction. Traffic volumes in the off-peak periods and off-peak directions remained about the same since the number of vehicle lanes at these times effectively did not change.

Table 3 below provides a summary of the average 24 hour vehicle volumes across all three corridors. Traffic volumes on Dupont Street and Harbord Street have modestly increased by 1,467 (7%) and 584 (4%) respectively from June 2016 to June 2017. This would indicate that some traffic on Bloor Street has diverted to these parallel corridors with the net total traffic across the three corridors decreasing by only 3%.

Table 3. Corridor Average 24 Hour Vehicle Volume Summary

Street	June 2016	October 2016	Change June - October		June 2017	Change June 2016 - June 2017	
Bloor St. W	24,322	19,919	-4,403	-18%	20,434	-3,888	-16%
Dupont St.	20,491	21,155	+664	+3%	21,958	+1,467	+7%
Harbord St.	13,502	13,316	-186	-1%	14,086	+584	+4%

Concerns were raised that some traffic was diverting away from Bloor Street to Barton Avenue and Lowther Avenue. After conducting field observations and consulting with local residents and the local Councillor's office, mitigating measures to help reduce traffic diverting onto these streets were introduced. This includes an advisory turn prohibition for southbound left turns on to Barton Avenue from Christie Street in the A.M. peak period as well as an eastbound through prohibition at the intersection of Barton Street and Bathurst Street in the A.M. peak period.

Travel Time

In the adjustment period immediately after initial installation, the average travel times to cross the corridor between Bay Street and Ossington Avenue increased by approximately four (4) minutes in the eastbound direction in the morning peak period and by approximately 8.5 minutes in the westbound direction in the afternoon peak period. Variation in travel times during the peak periods on Dupont Street and Harbord Street was also minimal with changes (+/-) of around a minute or less.

As a result of this data and follow up field observations, signal timing adjustments were implemented to optimize traffic operations along the corridor. This helped to reduce by half the increases in the peak period peak direction travel times. The increase in the eastbound direction in the morning peak period was reduced to approximately two (2)

minutes and the increase in the westbound direction in the afternoon peak period to just over four (4) minutes. Table 4 below summarizes the changes to the average travel times on Bloor Street West.

Table 4. Bloor Street Travel Time Summary (in minutes)

Street	June 2016	October 2016	June-October Change	June 2017	June-June Change
AM Peak					
Bloor Eastbound Bloor Westbound	0:10:01 0:07:32	0:14:13 0:08:41	+ 0:04:12 + 0:01:09	0:12:01 0:08:04	+ 0:02:00 + 0:00:32
PM Peak					
Bloor Eastbound Bloor Westbound	0:11:47 0:11:14	0:12:52 0:19:39	+ 0:01:05 + 0:08:25	0:12:36 0:15:29	+ 0:00:49 + 0:04:15

While motor vehicle travel times along Bloor Street initially increased immediately following the installation of the cycling facilities, the increased travel time has since been cut in half through operational adjustments to mitigate delay to motor vehicles.

Design Modifications to Improve Traffic Flow
Extensive field observations indicate that the vehicle throughput and travel times on Bloor Street are significantly affected by heavy right turn movements. When multiple right turning vehicles are queued at an intersection waiting for gaps in cycling and pedestrian traffic, they can block the through movement for the entire green phase of the traffic signal for that direction. This was noted specifically in the westbound direction at the intersections of Bedford Road and Bloor Street and Christie Street and Bloor Street. Changes to the traffic signal design at these intersections, which may affect parking supply, would be considered if cycling facilities on Bloor Street West were to be made permanent.

Effect on Curbside Demands and Parking

Loading and Deliveries

The effect of the cycling facilities on commercial loading was raised as a concern by local businesses, particularly small businesses located midblock. Site visits were conducted on request with local businesses to review loading issues. Some businesses have access to side or rear laneways and some businesses have adjusted their delivery schedules to when there is more available parking.

A memo making businesses aware that areas for loading off of Bloor Street are available within "No Parking" corner restriction areas on side streets was circulated to business owners in December 2016. In May 2017, these areas were highlighted with "loading" zone pavement markings installed in nine locations.

Transportation Services also offered to provide designated or time of day loading zones in the parking areas on Bloor Street. As a result of stakeholder engagement during the design process prior to installation, a loading zone was established for the UPS store near Christie Street. At the request of the Royal Ontario Museum, the design of the cycle track was modified to provide a designated pick-up/drop-off area for events at the facility. While no additional businesses have wanted to proceed with this approach to date, should the pilot project be made permanent requests would continue to be considered going forward**.**

Accessibility

As with any separated bicycle facility, the separation treatment that prevents vehicles from entering into the bike lane also limits access to the curb for persons with accessibility needs. The public consultation prior to the installation helped to identify locations where the cycle track design might need to accommodate access to the curb, such as the accessible loading zone provided in front of Trinity-St Paul's Centre. Accessible needs were also addressed on a reactive basis after installation, including the provision of an accessible curb ramp at the lay-by east of Huron Street at 341 Bloor Street West. The On-Street Bikeway Design Guidelines currently under development will further address the issue of incorporating accessible needs in cycle track design.

Parking

With the installation of cycling facilities on Bloor Street, on-street parking, which had been permitted on both sides of the street in off-peak periods and off-peak direction in peak periods, was reduced to one side of the street, however, the hours were extended to be available at all times. Inclusive of Toronto Parking Authority (TPA) and privately-operated off-street lots, the total number of paid parking spaces available in the study area was reduced by 10% as a result of the pilot project.

Table 5 below shows how the number of Toronto Parking Authority (TPA) spaces were impacted in the pilot project study area.

Table 5. Impacts on Parking Space Count around/on Bloor Street

	Shaw - Bathurst			Bathurst - Spadina			Spadina - Avenue			Overall		
	On-Street	Off-Street	Total	On-Street	Off-Street	Total	On-Street	Off-Street	Total	On-Street	Off-Street	Total
Before	159	143	302	85	195	280	59	522	581	303	860	1163
After	86	140	226	36	214	250	45	522	567	167	876	1043

The TPA monitored parking in the pilot project area to determine the impacts on the following:

- number of paid parkers in the pilot project area;
- impacts on revenue;
- parking utilization; and
- impacts on side streets.

A summary of the TPA's findings are as follows:

- With the loss of 136 on-street spaces, the carparks were able to accommodate more parkers during non-peak parking times. However, the overall area experienced net loss of parkers by -5.95% or 63,700 less parkers per year to the area in both the on- and off-street parking programs.
- A general benchmark for level of service of usage is 85% for both on- street and off-street. Anything greater than 85% is considered over capacity. During the pilot, during peak parking times, usage exceeded 85% meaning that motorists can experience difficulty locating a parking space both on-street and off-street.
- Examining the on-street program, there was a revenue loss of $436,919.05 (-36.10%). On an annual basis, this represents a loss of $476,639, which is less than the estimated loss of $840,000 annually that was originally projected. Total revenue generated by both on-street and off-street programs in the study area stayed about the same with a slight increase of $44,300 (less than +1%). This can likely be attributed to TPA's annual rate changes that were implemented in August 2016 as well as additional revenue from the off-street lots where the average transaction amount tends to be higher than on-street because people can park for as long as they choose (e.g., no 3 hour limit). To determine whether there was an impact on residential permit parking on the side-streets, TPA surveyed the cars parked by ratio of residential parking permits (RPPs) to cars parked who did not possess an RPP during the midday and in the evening, from Shaw Avenue to Spadina Avenue. Overall, there was a marginal variance of 2% in ratio (RPPs vs non-RPPs), therefore minimal impacts to the side-streets were observed.

Effect on Business - Economic Impact Evaluation

In October 2015, the Bloor Annex BIA and the Korea Town BIA commissioned a study on the local economic impact of bike lanes on Bloor Street to be carried out by the Toronto Centre for Active Transportation (TCAT) in partnership with the University of Toronto (Department of Human Geography, Dalla Lana School of Public Health, and the School of the Environment), with support from the Metcalf Foundation.

On May 3, 2016, Council directed Transportation Services and Economic Development and Culture to work with the Bloor Annex BIA and Korea Town BIA to conduct an economic impact study, and as such, the City became a partner in this study which was already underway.

The study involved a door-to-door merchant survey of business owners or managers, a pedestrian intercept survey with random selection as well as storefront vacancy analysis before and after the pilot. The study was conducted in the Bloor Street pilot area as well as a control area on Danforth Avenue where no bike lane was installed. Within the

Korea Town BIA area, Korean translation was available for all merchant surveys and pedestrian intercept surveys.

Key findings include the following:

- merchants on Bloor Street reported growth in the number of customers. Merchants in the Danforth Avenue control area also reported this growth, and the increase appears to be stronger than on Bloor Street
  - In 2015, the number of merchants who reported 100 or more customers on a Saturday was 46% and grew to 62% in 2017 on Bloor Street, while this number showed stronger growth on Danforth Avenue from 25% in 2015 to 81% in 2017.
- visitors reported coming to Bloor Street three days more per month after the bike lane was installed and increases in frequency occurred across all transportation choices, while on Danforth Avenue, visit frequency was unchanged
- visitors reported that their monthly spending on both Bloor Street and Danforth Avenue increased at a similar rate
  - In 2015, 44% of visitors to Bloor Street reported spending at least $100 on Bloor Street in the last month and this number grew to 53% in 2017
  - In 2015, 57% of visitors to Danforth Avenue reported spending at least $100 on Danforth Avenue in the last month and this number grew to 70% in 2017
- 90% of visitors arrived on Bloor Street without using a car and among those coming to shop, car use was lower at 9%. The percentage of visitors cycling to Bloor Street more than doubled from 7% to 18%.
- visitors who drove reported that difficulty in finding convenient parking increased on both streets
  - the percentage of visitors arriving by car who had difficulty finding parking increased from 8% to 33% on Bloor Street and from 14% to 25% on Danforth Avenue, although Danforth Avenue did not have any of the on-street parking removed
- vacancy rates held steady at 7% on Bloor Street. On Danforth Avenue, the vacancy rate declined from 10% to 7%

Some business owners in both the Bloor Annex BIA and the Korea Town BIA have expressed concerns with how the pilot project has impacted their business and have circulated their own surveys to collect feedback on the opinions of local business about the economic impact of the pilot.

Customer Spending Analysis based on Point of Sale Data

In order to provide additional insight into the potential effect of the pilot project on local businesses, the City obtained customer spending analysis from Moneris Solutions Corporation, the company with the largest market share of point-of-sale payment processers in Canada. Trend data on customer spending from Moneris merchants can be used to provide an independent and more fulsome understanding of economic trends. Aggregated point-of-sale transactional trend data for businesses in the following areas was obtained:

- the pilot area, on Bloor Street between Shaw Street and Avenue Road
- the area surrounding the pilot, with postal codes starting with M6H, M6G, M5R and M5S (Control A)

- a control area with similar characteristics, Danforth Avenue between Broadview Avenue and Chester Avenue (Control B); and
- all businesses within the City of Toronto (Control C).

When comparing the year before the pilot to the year of the pilot, key findings are as follows:

- transactional volume (value of customer spend) has grown across all industries over the previous year, in the pilot area, and across all control areas. Transactional volume has grown in the pilot area by more than on Danforth Avenue and the area surrounding the pilot, but less than the city-wide trend:
  - 4.45% growth in the pilot area
  - 3.73% growth in the area surrounding the pilot (Control A)
  - 2.21% growth on Danforth Avenue (Control B)
  - 4.96% growth city-wide (Control C)
- average per-transaction size has marginally decreased across all industries. Average per-transaction size in the pilot area has declined less than on Danforth Avenue and slightly less than the area surrounding the pilot, but more than the city-wide trend:
  - -3.6% in the pilot area
  - -3.8% in the area surrounding the pilot (Control A)
  - -4.5% on Danforth Avenue (Control B)
  - -2.8% city-wide (Control C)

The Moneris data demonstrated that while average per-transaction size in the pilot area has marginally decreased, it is on-trend with other parts of the City. Total customer spending in the Bloor Street pilot area increased more than in the area surrounding the pilot and more than in the Danforth Avenue control area.

Public Perception and Level of Support

Public opinion on the Bloor Street bike lanes was primarily measured through an online feedback survey carried out from December 13, 2016 to May 4, 2017.

The survey was promoted through 30,000 flyers (distributed by Canada Post Unaddressed Ad Mail service in the area of Dufferin Street to Yonge Street and from Dupont Street to Harbord Street), sharing on social media (Facebook, Twitter), a project email list of 1,400 contacts, a local business email list with over 190 contacts, direct emails to local Business Improvement Area (BIA) representatives, and the project stakeholder list and local Councillors.

The public online survey received over 14,000 completed responses. The survey data was reviewed for validity as a reasonable public opportunity sample, and was not undermined by a large number of repeat submissions from single individuals.

Survey Participants

While the majority of respondents were people who bike, under the age of 45, a full range of adults and road users participated, including approximately 900 respondents age 55 or over. Furthermore, almost half of the respondents were drivers and

approximately 64% (9,000) respondents identified as customers of Bloor Street businesses.

Level of Support
Feedback from the over 14,000 responses from the post-installation public opinion survey generally showed support for the pilot project by cyclists, drivers, pedestrians, and local residents. The main question about project support asked respondents if they "*support or accept that the bike lanes on Bloor Street provide a safer and more comfortable environment for cyclists, with acceptable trade-offs in motorist traffic flow and parking convenience*":

- Of 10,200 responses from people who bike on Bloor Street (including 6,600 who also drive), 92% agree and an additional 2% are neutral.
- Of 770 respondents who drive and sometimes bike on Bloor Street (once a week or less), about 77% agree and an additional 3% are neutral.
- Of 2,700 respondents who drive and do not bike, 57% disagree and an additional 6% are neutral.
- Of 1,000 respondents who walk (and do not bike or drive), 78% agree and an additional 4% are neutral.
- Of 3,800 respondents who live near-by, 74% agree and an additional 3% are neutral.
- Of 700 respondents over the age of 55 who live near-by, whom more drive than bicycle, 65% agree and an additional 4% are neutral.
- Of 140 responses from local business representatives, 51% disagree and an additional 4% are neutral.

Other insights from the survey and public consultation include the following:

- people who drive and never bike on Bloor are most concerned with rush hour traffic flow, making right turns, loading and finding convenient parking.
- just over half of local businesses responses noted concerns about decreased convenience of deliveries and motor vehicle parking for their customers.
- strong support was heard from employees and customers who bike to local businesses.
- people who mostly walk reported that the pedestrian experience was about the same or slightly better, with some concerns about getting in and out of vehicles next to the bike lane.
- people with mobility disabilities raised concerns about challenges for accessible loading at some locations.

Further details on the survey data results are included in Attachment 2.

Public Consultation

During the pilot phase of the study, the City hosted a public consultation event on June 5, 2017 at Trinity-St. Paul's Centre. Over 330 participants attended and shared their opinions and experiences with City staff. The City received 309 comments on the draft project design drawing, including many suggestions for locations where some design improvements could be investigated if the bike lanes were to be made permanent. Over

160 comment forms were received providing feedback that mirrored opinion trends in the online survey.

City staff also participated in meetings with local community and business association groups including:

- Bloor Annex BIA - May 3, 2017
- Korea Town BIA - October 4, 2016 and July 10, 2017
- Palmerston Area Residents Association - June 12, 2017
- Annex Residents Association - June 8, 2017
- Harbord Village Residents Association - July 18, 2017
- Mirvish Village BIA - July 20, 2017

Public Consultation staff documented and responded to over 400 emails and phone calls from residents and business representatives. One-on-one meetings, including several on site meetings, were conducted with local businesses on request.

Next Steps

As a result of the pilot project, the number of people cycling on Bloor Street has increased to a level that has made Bloor Street West one of the most well-travelled corridors in the city for cycling with a broad level of support for the facility from cyclists, drivers, pedestrians and those who live in the area. The associated impact to motorist traffic flow and parking convenience has been reduced during the pilot through amendments. Furthermore, one of the primary design objectives of the Bloor Street bike lanes pilot project – to improve safety and reduce risk for all road users – was achieved.

If cycling facilities on Bloor Street West were to be made permanent, modifications would be made to the design to further improve cyclist and pedestrian safety and motor vehicle traffic flow. This would include, but not be limited to, green area markings in conflict zones, left turn bike boxes and traffic signal and/or intersection modifications for right turns at Bedford Road and Christie Street. The planned 2019 Capital Works on Bloor Street West between Bathurst Street and Avenue Road also provides the opportunity to install a greater degree of separation than a painted buffer with bollards as used in the pilot project.

The Ten Year Cycling Network Plan, as adopted in June 2016, contained a number of already initiated Major Corridor Studies including Bloor-Dupont, between Keele Street and Sherbourne Street, which would be informed by the results of this pilot project.

The pilot project has demonstrated that a cycling facility can be successfully implemented on one of busiest and most constrained sections of Bloor Street and should be considered for the full length of the Bloor/Danforth corridor. Further study, consultation, design and Council approval would be required for other sections of Bloor Street and Danforth Avenue.

It is proposed that the evaluation and design for cycling facilities on Bloor Street East between Church Street and Sherbourne Street be co-ordinated for installation as part of the Capital Works scheduled for this section of roadway in 2019. This would provide a continuous cycling facility from Shaw Street to Broadview Avenue (including the section

with painted sharrows between Avenue Road and Church Street). Council approval of these cycling facilities would be sought prior to installation.

In June 2016, City Council also directed Transportation Services to bring forward recommendations for the initiation of a Major Corridor Study on Danforth Avenue at the same time as when Council considers the findings on the Bloor Street West Bike Lane Pilot Project.

Following the completion of the Ten Year Cycling Network Plan, the federally-funded Public Transit Infrastructure Fund (PTIF) program was announced in August 2016 and endorsed by Council in December 2016. The PTIF program has an aggressive schedule and has provided the City with the opportunity to significantly advance or accelerate projects identified to support transit and links to active transportation through 50% federal funding for projects that were otherwise unfunded or planned for the future.

As a result of the PTIF program, in addition to already programmed work, staff resources are fully-committed in 2017 and 2018/2019.

The initiation of a Major Corridor study for Danforth Avenue, between Broadview Avenue and Danforth Road, as previously identified in the Ten Year Cycling Network Plan, would provide the framework for Council's consideration of the benefits and impacts of extending the facility further east. It is proposed that as part of the Council-directed review of the Ten Year Cycling Network Plan in 2018, staff would include a recommendation at that time about the appropriate timing to undertake a Danforth Avenue Major Corridor Study.

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ATTACHMENTS

Attachment 1 - Performance Evaluation Summary Table

Attachment 2 - Summary of Public Opinion Survey Results