



The TTC's Revenue Protection Strategy

Date: February 11, 2020
To: TTC Audit and Risk Management Committee
From: Deputy Chief Executive Officer - Operations

Summary

Fare evasion happens when people board buses, streetcars or subways without paying, use a concession card for which they do not qualify to pay a reduced fare, or jump over or 'tailgate' through fare gates. Fare evasion contributes to revenue loss. To tackle this loss of revenue, the TTC has set a goal to improve revenue recovery by \$10.2M in 2020.

To achieve this goal on a system with over 215 surface routes and 75 subway stations, in an evolving fare payment environment, the TTC initiated a multifaceted Revenue Protection Strategy in 2019. The majority of initiatives were implemented throughout 2019 and delivered by the last quarter of the year. Key elements include a refreshed, strategic approach to deployment of revenue protection resources with a focus on the streetcar network (described in table 4.0); the mode with the highest rate of fare evasion. It also includes communications campaigns to promote a positive customer culture and 'tap every time' behaviour; fare line equipment improvements; system security enhancements; holding vendors accountable to meet contracted fare payment equipment reliability and availability targets and finally, the establishment of a dedicated Revenue Control and Ridership Analytics team. Measurable revenue recovery as a result of these improvements expected in 2020. These efforts will be informed by our responsibility to ensure that no fare collection or fare enforcement initiative disproportionately impacts any identifiable groups.

In November 2019, the TTC's Audit, Risk and Compliance Department (ARC) partnered with the TTC's Transit Enforcement Unit to conduct a Fare Evasion Study using a stratified random sampling technique. This study confirmed that fare evasion on the TTC network deprives it of approximately \$65.5M annually using the revenue loss estimation method of the City of Toronto's Auditor General and when further estimate refinements were applied by ARC, resulted in an estimate of annual loss due to uncollected revenue of between \$70.3M and \$73.5M.

In February 2019, the City of Toronto Auditor General released a report estimating that the TTC lost \$60.7M in revenue due to fare evasion and an additional \$3.4M due to fare payment equipment malfunction in 2018.

In 2020, ARC intends to support quarterly reporting to the Board on fare evasion, targeting key elements which may include measuring the impact of implemented revenue protection initiatives.

This report provides an update on the TTC's Revenue Protection Strategy and provides an update on the City of Toronto Auditor General's Phase One and Phase Two recommendations relating to the TTC's Revenue Operations in Appendix A. To date, 11 of 27 Phase One and 7 of 34 Phase Two recommendations have been closed and work to close the remainder is ongoing. While there has been progress working with Metrolinx to close recommendations where there is a Metrolinx dependency, work remains to be done. The TTC will continue to report back to the Audit and Risk Management Committee on progress.

As with any significant enterprise level change, ongoing refinement can be expected based on lessons learned and on the evolution of various factors including TTC Fare Policy and the increased availability of data to inform decisions and deployment of fare protection resources. The TTC is confident that the changes described here will have a positive impact, and will measure, track, and communicate the effectiveness of these initiatives in future reports.

Recommendations

It is recommended that the Audit & Risk Management Committee:

1. Receive this progress update with respect to the TTC's Revenue Protection Strategy; and,
2. Forward a copy of this report to the TTC Board.

Implementation Points

This report provides an overview of the revenue protection initiatives implemented in 2019 that have supported the development of an integrated fare protection strategy in 2020. It also provides an update in Appendix A on the recommendations made in the City of Toronto Auditor General's 2019 Phase One and Phase Two audit of the TTC's revenue operations.

Revenue protection achievements in 2019 include locking station fare lines, improving revenue and ridership data quality and availability to support evidence based fare inspection deployment, customer communications campaigns, increasing the TTC's complement of revenue protection resources and developing the plan to strategically deploy these resources to support revenue protection on the mode with the highest evasion rate – streetcar.

Financial Summary

The 2020 passenger revenue budget for the TTC Conventional Service is \$1,246.2M, and covers 62.7% of the TTC's operating costs. Given the importance of this funding source, the TTC actively monitors and manages this revenue stream. This includes daily monitoring and analysis of revenue ridership and revenue collections, consideration of demand on elasticity, impacts of proposed fare changes and monitoring use of pass products through diary studies, surveys, and PRESTO data.

Adoption of PRESTO and corresponding fare policy changes such as the introduction of all-door boarding on streetcar routes, have presented both opportunities and challenges. Recent revenue ridership trends have plateaued despite a continued increase in boardings. This can

be attributed in part to recent fare policy changes such as the introduction of the two-hour transfer and the elimination of legacy pass products, resulting in a shift away from pass products to e-purse transactions and a corresponding decline in measured revenue ridership. Consistent with other major transit systems, fare evasion trends are another contributor to the plateau in revenue ridership.

The Auditor General's report on Revenue Operations, as reviewed by the Audit and Risk Management Committee, estimated annual fare evasion losses at \$60.7M losses due to evasion and an additional \$3.4M due to malfunctioning equipment. ARC reviewed the Auditor General's results to inform the 2019 Fare Evasion Study, which estimated annual losses of \$70.3M. The 2020 customer revenue budget includes a minimum revenue recovery target of \$10.2M, which was based on incremental recovery targets by mode. Of this amount, approximately \$3M will cover the cost of an additional 50 revenue protection resources, to be hired in 2020 to increase the TTC's revenue recovery capacity. This results in a \$7M net revenue increase for 2020.

Revenue protection resource deployment strategies will be informed by data analytics to identify areas of risk for passenger revenue loss. Substantial data completeness is a relatively recent achievement with the elimination of legacy fare media sales, and subsequent closure of fare lines at stations. The use of PRESTO data will provide more robust and statistical insights, that will be used to inform revenue recovery initiatives.

Strategic revenue protection deployment, combined with additional revenue control strategies such as customer and employee awareness campaigns, hardware and software changes to PRESTO equipment and to TTC fare gates in order to improve reliability and availability, are expected to contribute to meeting and exceeding revenue protection objectives.

The TTC believes the strategies detailed in this report will lead to the achievement of the 2020 budgeted revenue recovery objective, which will in turn be built upon in future years.

The Interim Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

The TTC is committed to promoting and supporting diversity and inclusion in all corporate policies, procedures, processes, programs and services in order to reflect and respond to the needs of our employees and customers, and the communities we serve. The TTC also recognizes the impact associated with fare evasion on our customers due to increased transit fares.

As a result, the TTC has introduced a revenue protection strategy that ensures a reliable, safe and inclusive transit service for all our customers and addresses fare evasion. This strategy includes a culture shift that the TTC's Fare Inspectors are embarking on; one from a traditional policing model towards a model based in security and customer service.

As part of this change, the TTC has updated the recruitment and onboarding process for its revenue protection group to promote greater diversity and inclusion, increased focus on customer service, and experience engaging with Toronto's diverse communities.

The TTC's Fare Inspectors are provided extensive training on customer service, including mental health awareness, diversity and inclusion, human rights, and confronting anti-Black racism training aimed to prevent racial bias.

The TTC's revenue protection strategy is guided by the principles of equity and fairness and uses:

- A range of responses including education and tickets that considers the needs of all diverse users, including those who are unable to pay; and,
- A zero-tolerance (no warning) approach for those fraudulently using the wrong concession card (e.g. Child PRESTO card).

The TTC will continue to assess its Revenue Protection Strategy to understand root causes for fare evasion and identifying potential impacts to Toronto's diverse communities, ensuring that there is not a disproportionate impact on any identifiable group. This work is done in recognition of the need to balance the goal of revenue protection with equity impacts.

Decision History

At its February 27, 2019 meeting, the TTC Board accepted all 27 recommendations included in the City of Toronto Auditor General's Report – Review of Toronto Transit Commission's Revenue Operations: Phase One – Fare Evasion and Fare Inspection.

[Auditor General's Report - Review of Toronto Transit Commission's Revenue Operations: Phase One – Fare Evasion and Fare Inspection \(For Action\)](#)

At its October 24, 2019 meeting, the TTC Board accepted all 34 recommendations included in the City of Toronto Auditor General's report entitled Review of Toronto Transit Commission's Revenue Operations: Phase Two – PRESTO/TTC Fare Equipment and PRESTO Revenue.

[Toronto Transit Commission's Revenue Operations: Phase Two – PRESTO/TTC Fare Equipment and PRESTO Revenue \(For Action\)](#)

For a detailed decision history, including the most recent report to the Board on the status of the Auditor General's Phase One Revenue Operations, refer to:

[Revenue Control Strategy – Phase One: Response to the Auditor General Revenue Operations Phase One – Fare Evasion and Fare Inspection Report \(For Action\)](#)

Issue Background

Fare evasion contributes to a loss of revenue. The City of Toronto Auditor General reported that the TTC lost \$60.7M in passenger revenue in 2018 due to fare evasion and an additional \$3.4M in revenue loss due to malfunctioning Metrolinx equipment. The Auditor General's Phase Two report elaborated on revenue equipment performance and on ensuring the capture of revenue transactions by PRESTO's back end systems.

A Fare Evasion Study was conducted in November 2019 by ARC produced similar results, concluding that the TTC’s uncollected revenue is between approximately \$70.3M and \$73.5M annually.

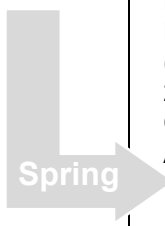
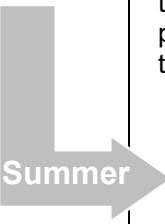

The TTC continues to strengthen controls and data analytics capabilities to improve revenue recovery, to increase the availability and reliability of fare payment equipment, and to place TTC resources appropriately to educate customers and protect the fare base.

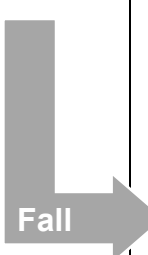


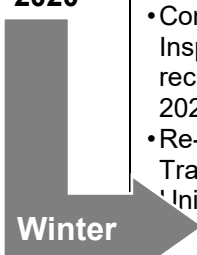
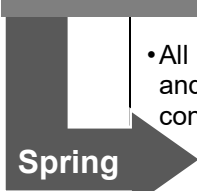
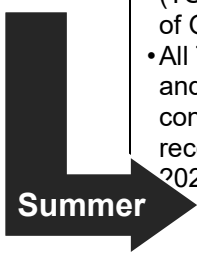

Comments

2019 Preparing for 2020 Revenue Protection Strategy Deployment

The TTC’s focus in 2019 was on preparing for the delivery of a full, integrated fare protection strategy in 2020. Table 1.0 provides a high level overview of 2019 revenue protection achievements. Additional details are provided in the body of this report and in Appendix A.

Table 1.0 2019 Revenue Protection Highlights

	Staffing	Controls in Stations	Customer Communication	Data / Equipment Reliability
 <p>2019</p>	<ul style="list-style-type: none"> 2019 70 Transit Enforcement Personnel approved (45 Fare Inspectors, 22 Transit Special Constables, 3 Administrative/ Supervisory staff) 	<ul style="list-style-type: none"> Initiated replacement program for fare gate industrial computers (complete Q4 2019) Initiated improvements to reduce response times for first line fare gate maintenance 	<ul style="list-style-type: none"> Pay your fare, Pay your share customer communication campaign initiated (ongoing to end of Q4 2019) 	<ul style="list-style-type: none"> Creation of Revenue Control Unit within the TTC’s Finance department to deliver dedicated revenue financial control and ridership analytics
Phase 1 Auditor General Report of TTC Revenue Operations				
 <p>2019</p>	<ul style="list-style-type: none"> Recruitment and training of revenue protection staff ongoing throughout 2019 	<ul style="list-style-type: none"> Ongoing stations transformation including readying for Stop Sell, closing collector booths, etc. 		<ul style="list-style-type: none"> Collaboration with TTC stakeholders to identify data sources, create reports and develop insights to enable accurate Ridership Data and Fare Revenue reporting
Ombudsman’s Report of Incident Involving Transit Fare Inspectors				

	Staffing	Controls in Stations	Customer Communication	Data / Equipment Reliability
2019 	<ul style="list-style-type: none"> • 2019 recruitment paused to make changes to recruitment processes to promote greater diversity and inclusion, and to increase focus on customer service and experience engaging with Toronto's diverse communities • 50 additional Transit Special Constables approved in 2020 	<ul style="list-style-type: none"> • Deployed fare gate software update to enable collection of fare gate event data • Initiated testing of latest fare gate software version with capability to automate fare gate incident reporting (Q2 2020 implementation planned) 		
Phase 2 Auditor General Report of TTC Revenue Operations				
2019 / 2020 	<ul style="list-style-type: none"> • Recruitment reinitiated for all vacant positions • Complete Fare Inspectors (FI) recruitment end of Q1 2020 • Re-organization of Transit Enforcement Unit initiated 	<ul style="list-style-type: none"> • Stop Sell successfully implemented • 20 collector booths closed • Secondary station entrance fare deterrence camera Proof of Concept installed, results to inform deployment at 17 high risk stations (plan to complete by Q1 2021) • Camera Pilot at Yonge/Bloor station - 360 degree views and new Video Management System, pilot results to inform deployment schedule 	<ul style="list-style-type: none"> • Stop Sell Awareness Campaign (Q4 2019) • There are no excuses not to pay your fare / Tap every time campaign (Q1 2020) 	<ul style="list-style-type: none"> • Achievement of some PRESTO card reader performance improvements following Q3 2019 software update • Improvements to TTC processes related to PRESTO equipment incident logging • Implementation of process improvements related to cash collection by Metrolinx vendors including addition of third collection location
	<ul style="list-style-type: none"> • All FI positions filled and resources actively contributing to revenue recovery efforts by Q2 2020 			
2020 	<ul style="list-style-type: none"> • Complete Transit Special Constable (TSC) recruitment end of Q2 2020 • All TSC positions filled and resources actively contributing to revenue recovery efforts by Q3 2020 	<ul style="list-style-type: none"> • Implement latest version of fare gate software (FareGo 3.9) Q2 2020 • 45 collector booths closed 		<ul style="list-style-type: none"> • Leverage ridership and revenue insights for use by key groups within the TTC including to inform fare revenue protection deployment plans • KPI development • Prototype dashboard

- *Improvements to Stations Fare Line Controls*

In 2019, the TTC implemented a number of initiatives to better control fare lines. This was achieved through enhancements to fare gate software and hardware, reduced first line fare gate maintenance response times, piloting fare evasion deterrence cameras at secondary station entrances, and installation of barriers at gaps between fare lines and collector booths. This effectively 'locked' fare lines and created a physical barrier between paid and unpaid areas in stations.

To improve fare gate functionality and automate fare gate incident reporting, the newest version of fare gate software (FareGo 3.9) is being tested with a staged implementation planned in Q2 2020. A review of fare gate motors is also underway in partnership with the TTC's fare gate vendor, Scheidt & Bachmann (S&B). A preliminary report has been issued, the recommendations of which are presently being trialed in select stations. Finally, a replacement program of fare gate industrial computers was completed in Q4 2019 to improve fare gate reliability and to increase data logging capabilities, allowing for enhanced troubleshooting.

Between January and November 2019, the TTC also reduced first line fare gate maintenance response times by 45%. This was achieved through reinforcement of prompt fare gate malfunction incident reporting by TTC stations staff and through responsive deployment of fare gate maintenance personnel throughout the system.

As of November 28, 2019, all gaps in TTC station fare lines have been closed. This 'locked' fare line system was achieved through installation of physical barriers in fare lines as part of the TTC's Stations Transformation program. To further tighten controls, fare gate systems were adjusted to maintain gates in a 'closed' position at all times except when TTC staff are present or in the case of emergency.

To tackle fare evasion at secondary station entrances, where fare evasion rates have been identified to be higher, a fare evasion deterrence proof of concept was launched in December 2019. This installation uses bright 2 x 2 public facing TV screens with live station camera views allowing customers to see themselves approaching the fare line, tapping, and entering the station. Installation images are in Appendix B. Success criteria for this project will include increased customer tapping behaviour and a reduced number of incident calls at this location. Preliminary proof of concept results are expected in Q2 2020 with complete deployment planned at 17 secondary entrances identified to be at 'high risk' of fare evasion by Q1 2021.

Early indicators from the ARC's Fare Evasion Study (2019) are favourable, showing fare evasion rates at subway stations at a low of 2.4%, down from 3.7% as was reported in the City of Toronto Auditor General's Q1 2019 report.

- *Improvements to Stations Camera Coverage and System Security*

The TTC's camera strategy in stations took a step forward in December 2019 with a pilot of a 360-degree axis view camera installation at Yonge/Bloor Station connected to an advanced video management system (refer to Appendix C for sample camera views). This is expected to be the new video management system standard in TTC stations with camera feeds connected to key Station 'Hubs' (image in Appendix D) starting in 2020.

The Yonge/Bloor station camera pilot installation provides approximately 90% coverage Yonge/Bloor Station. Pilot objectives include improved station camera coverage, live views for monitoring and emergency management capabilities, and enhanced ability to access and download video for evidentiary and investigative purposes. Preliminary pilot results are expected in Q2 2020 and will inform the expansion schedule at future stations.

- *Revenue Control Improvements Leveraging Fare Revenue and Ridership Analytics*

Formed in March 2019, the TTC's Revenue and Ridership Analytics (RRA) team delivers dedicated revenue control and ridership data analytics within the Finance department. Using PRESTO and non-PRESTO revenue data, the team performs a key reconciliation and control function. As well, the team collaborates with key stakeholders, within and outside of the TTC, to develop reports, analyze data, monitor trends and develop insights to enable accurate Fare Revenue Reporting (Appendix E1) and Ridership Data Analytics (Appendix E2).

Revenue Control

A key responsibility for the Revenue Control team is to ensure the TTC is reconciling and accurately reporting fare revenue. There is a continuous assessment and refinement of RRA's calculation approach to ensure accurate collection calculation and the insertion of financial controls to ensure the TTC is accurately recording PRESTO related revenue, and legacy fare media revenue.

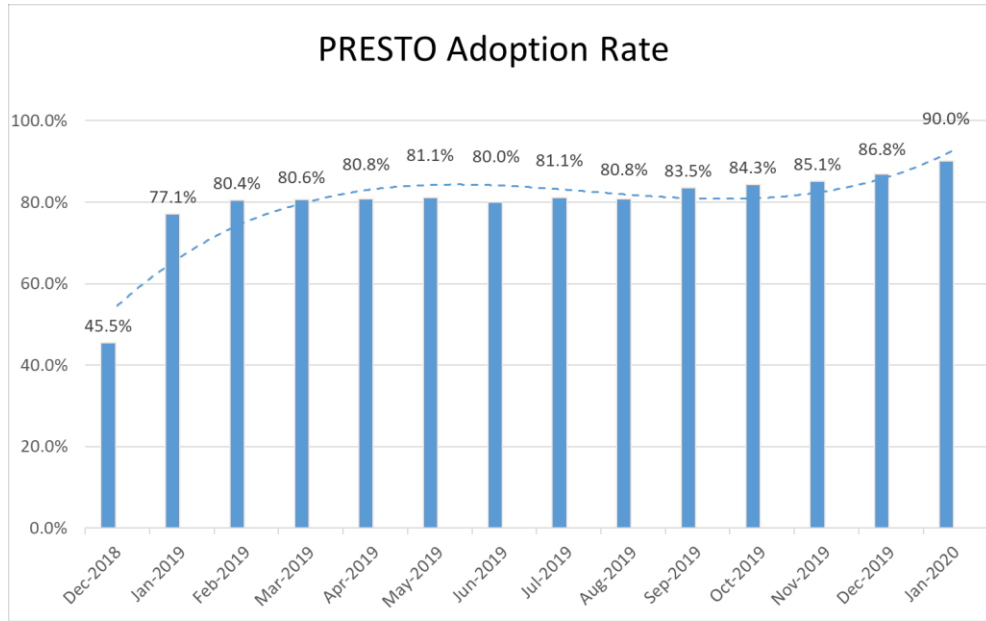
As Metrolinx is responsible for the PRESTO system, they are a key partner in the Revenue Control team's efforts to improve fare revenue controls. Examples of controls being worked on, which are included in the annual CSAE 3416 report, include addressing concerns over completeness of: (1) transactions reported by PRESTO devices, (2) revenue received from PRESTO's third-party network, and (3) monthly pass and PRESTO Ticket sales.

In collaboration with the Farecard Team, the Revenue Control team is also working with Metrolinx to address the lack of device level data and the gaps in PRESTO device availability reporting as identified by the Auditor General's Review of Toronto Transit Commission's Revenue Operations: Phase Two – PRESTO/TTC Fare Equipment and PRESTO Revenue report. Priority is being given to improving data quality and getting device level data uploaded to the TTC's databases to enable more detailed analytics around device availability and its impact on revenue.

Ridership Data Analytics

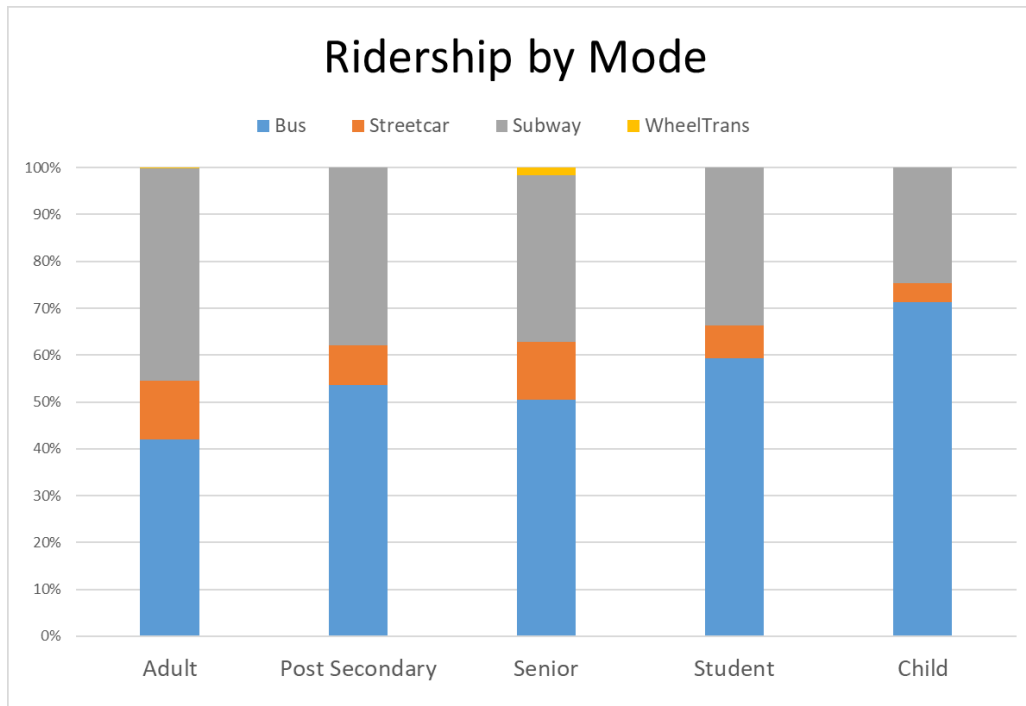
With PRESTO adoption having approached 90% in January 2020, from approximately 45% in December 2018 (Chart 1.0), the TTC has continued its shift away from ridership data gained through diary studies, and physical fare media counts (e.g. weighing tickets, counting tokens) to PRESTO ridership data with over a million revenue data points (e.g. taps) generated daily. Report samples, including data related to the impact of Stop Sell and stations transformation, are in Appendix E3A through E4B.

Chart 1.0 PRESTO Adoption Rate – December 2018 to January 2020



The Revenue Control team can now use this PRESTO data to develop accurate insights on ridership, including but not limited to; ridership by mode, time, location, and concession type. This data can then be used by key groups within the TTC, such as ARC to assist with fare evasion studies; the Revenue Protection department to assist with fare protection resource deployment; the Strategy and Customer Experience department to assist with fare policy initiatives; as well as the Chief Financial Officer for financial monitoring and oversight.

Chart 2.0 Ridership by Mode



In 2020, the RRA team will focus on building on internal competencies to further strengthen financial reporting and controls, business intelligence, and data analytics. This will be accomplished by working with stakeholders to improve data availability and data quality, as well as upgrading existing hardware and software solutions to improve reporting speed. The RRA team will continue to present data in an easy to understand and actionable format through improved visualization and other techniques.

- *Customer Communication Positive Customer Culture and Behavior to ‘Tap Every Time’*

In 2019 and leading into 2020, the TTC invested in customer communications to reinforce a positive customer culture and behavior to ‘tap every time’. Customers will also need to do their part and use concession fare products according to fare policies. Highlights are in Appendix F, including brightly wrapped streetcars operated on routes at high risk of fare evasion.

Table 2.0 Customer Communication – Fare Evasion Impact Awareness

Customer Communication – Fare Evasion Impact Awareness		
Dates	Campaign	Medium/Impressions
Fall 2018	Fare is fair	<ul style="list-style-type: none"> • Digital (TTC.ca, platform video screens and social media), print ads in Star Metro • More than 2M impressions
May – Dec 2019	Pay your fare, pay your share	<ul style="list-style-type: none"> • Digital (TTC.CA, platform video screens and social media), print (3200 ads in vehicles and all 75 stations), Star Metro ads
Jan – present 2020	There are no excuses not to pay your fare/ Tap every time	<ul style="list-style-type: none"> • Digital, print (5000 ads in vehicles), vehicle decals above card readers, three (3) wrapped streetcars, messaging in Ride Guide Lites

- *Increasing Revenue Protection Resources*

In 2019 and 2020, additional funding was approved by City Council for a total of 123 new revenue protection resources, as outlined in table 3.0. Recruitment for 2019 positions was initiated in 2019 but was paused for three months in the second half of the year to promote greater diversity and inclusion, strengthen position requirements, engage in outreach to Toronto’s diverse communities, and to modify hiring, training and evaluation processes to emphasize customer service experience.

With those improvements implemented, recruitment has resumed with all vacancies planned to be filled and new incumbents actively contributing to revenue protection efforts by Q3 2020. This will bring the TTC to a full complement of 111 Fare Inspectors and 72 Special Constables in 2020.

Table 3.0 New 2019/2020 Budgeted vs. Actual/Planned Revenue Protection Resources

New 2019/2020 Budgeted vs. Actual Hiring - Revenue Protection Resources				
	New in 2019 Budget	2019 Hires	New in 2020 Budget	2020 hiring to be complete by Q3
Fare Inspector	45	21*	0	24 2019 vacancies carried over
Transit Special Constable	22	18	50	50 + 4 2019 vacancies carried over
Administrative/ Supervisory	3	3	0	N/A

* Recruitment paused for three months in 2019 to update recruitment and onboarding process to promote greater diversity and inclusion, increased focus on customer service, and experience engaging with Toronto’s diverse communities.

- *Streamlining System Security and Revenue Protection Functions*

To improve focus on key priorities - transit security and maximizing revenue protection, a re-organization of the Transit Enforcement Unit was initiated in late 2019 and is expected to be complete by mid-2020.

Transit Special Constables - Delivering a safe and reliable service

Transit Special Constables will continue to provide professional, safety-minded security support throughout the system and will continue to support revenue protection activities in uniform and plainclothes capacities including through a specialized unit to support the Fare Inspection team. Transit Special Constables are governed through an agreement with the Toronto Police Services Board.

Revenue Protection - Maximizing revenue

The newly formed Revenue Protection department will continue to deliver a customer focused revenue protection service by promoting increased revenue through more taps, ensuring customers pay the correct fare, and by working with TTC stakeholders to ensure fare payment equipment is available. Fare Inspectors in uniform will act as a deterrent to fare evasion and will continue to inspect, educate, and issue tickets as appropriate.

- *2019 Proof of Concept Revenue Protection Deployments*

In Q3 and Q4 2019, Fare Inspectors and Transit Special Constables completed several concentrated deployment assignments including in the downtown core, in uniform and in plainclothes, to validate inspection tactics (outlined in table 4.0) for use in 2020.

To increase the amount of fare inspection time available, in Q3 2019 secondary duties such as crowd control and incident response were removed from Fare Inspector responsibilities. These safety and security responsibilities will fall within the responsibility of Transit Special

Constables consistent with that group's safety and security mandate. During this period, Fare Inspector deployment was focused on the streetcar network.

In September 2019, Fare Inspectors provided support to ARC in their review of PRESTO trapping behaviour on streetcars through inspections and education while issuing tickets for concession card misuse where appropriate.

In Q4 2019, Transit Special Constables supported execution of ARC's Fare Evasion Study in a plain clothes capacity, using the following mode specific inspection tactics:

- Streetcar – Proof of Payment (POP) inspection (100% sweep)
- Bus – POP inspection (boarding customers)
- Subway – Main entrances (concession only)

A zero-tolerance (no warning) approach was applied for those fraudulently using a concession card for which they did not qualify (e.g. Child PRESTO card).

In Q4 2019 a Proof of Concept aligning fare protection resource deployment with AM and PM peak ridership periods using fare evasion rates and input from in-field observations was initiated. This led to the 2020 Fare Inspection Deployment Strategy.

- *Fare Related Offences*

There are number of sections within TTC By-law No. 1 under which a Fare Inspector or Transit Special Constable can issue a Provincial Offence Notice ("ticket") for a fare related offence. In 2018, 15,216 tickets were filed with the courts for TTC By-Law No. 1 offences related to fare evasion. As a result, 9,628 cases resulted in fines being imposed. In 2019, 20,764 tickets were filed with the courts, resulting in 17,993 cases in which a fine was imposed. Of the fare evasion matters within the court system in 2019, 13% related to Child PRESTO card misuse.

As the TTC continues building toward a positive customer culture around 'tap every time' behaviour, an increase in inspection numbers is expected which is likely to initially result in an increase in number of tickets. The TTC has engaged the City's Court Services division which administers the Provincial Offence Notice process and fine payment, to initiate a review of the end-to-end inspection to court administration process to ensure it is integrated, efficient and effective.

2020 Revenue Protection Objectives

- *2020 Fare Inspection Deployment Strategy*

In summer 2019, fare inspections in stations for customers alighting (internally referred to as 'offboarding') vehicles were dramatically reduced to focus resources on vehicles in the streetcar network. While this offboarding method provided for a high number of inspections (hundreds of customers every 8 -10 minutes), it did not allow for all customers to be easily inspected due to the sheer volume of customers exiting the vehicles, and walking away from inspections.

As was noted in ARC's Fare Evasion Study (2019) report, the streetcar network experiences the highest rate of fare evasion at 15.9%. The 2020 deployment strategy will focus on a concentrated presence of revenue protection resources within the streetcar network to re-

inforce a positive customer culture and ‘tap every time’ behaviour. Transit Special Constables will also be deployed in uniform and in plainclothes. The overarching objective is to increase taps, but revenue protection resources will apply discretion and issue tickets as appropriate.

Fare inspection resource deployment in 2020 will be at locations identified as being at high risk of fare evasion based on relevant revenue data correlated against ridership data. Route 504 King in Appendix E4D is presented as an example. Evidence based deployment will be complemented by in-field observations conducted by TTC frontline supervisors, customer reports, and audits of key fare evasion elements conducted by the TTC’s ARC.

- *Systematic Revenue Protection Deployment*

Fare inspection deployment in 2020 will be systematic in determining the coverage period and fare inspection locations for each route and station location.

Deployment plans will be informed by the identified risk, the number of available resources, the required mix of resources (e.g. Fare Inspectors, Transit Special Constables) and other operational requirements. They may combine one or more risk areas e.g. AM/PM peak coverage, concession card fraud checks, insights from revenue and ridership data, etc. Deployment plans will be developed on a monthly basis and continuously refined as required based on revenue and ridership trends, risks identified in the field, and other operational requirements.

In partnership with CUPE Local 5089, changes to scheduling practices have increased the number of shifts for inspection personnel by 29% over 2019 levels.

In addition, the Revenue Protection Strategy calls for a renewed focus for Transit Special Constable support resulting in the establishment of a Revenue Protection Support Unit which may be deployed in uniform or in plain clothes when conducting fare inspections or supporting Fare Inspectors and will provide incident response to revenue protection assignments within streetcar coverage zones as required.

To identify first hand challenges experienced by customers in relation to equipment reliability, and to understand revenue protection deployment considerations in the context of daily transit operations, senior staff observed fare inspection detail on streetcars in Q1 2020. Lessons learned from these observations, along with 2019 Proof of Concept activities informed 2020 revenue protection deployment plans and tactics as set out in Table 4.0.

Table 4.0 2020 Fare Inspection Deployments by Mode

2020 Fare Inspection Deployment Tactics by Mode		
Streetcar Objective	Tactic	Strategy details
Increasing customer confidence/ Getting to know our customers	Consistent resource assignment	To raise customer confidence around fare inspection, and to encourage a positive customer culture and behavior to tap every time, the same TTC revenue protection resources will be consistently assigned to the same routes, times, days of the week, and zones

2020 Fare Inspection Deployment Tactics by Mode		
Inspection of all customers on a streetcar during peak travel times	“Crush load” inspection	Customers can expect teams of four (4) to inspect fares on streetcars during peak travel times to enable more efficient inspection of all customers
Disturbing customer fare inspection avoidance behaviour	“U-turn” customer inspection	Revenue protection resources in uniform or in plainclothes will be placed on several consecutive streetcars in order to disturb this pattern
Inspection of all customers during off boarding	Offboarding inspection	Multiple revenue protection teams will be assigned to conduct vehicle alighting (off boarding) inspections to enable inspection of all customers
Increasing the probability of encountering revenue protection personnel	Zone assignment	To increase the probability of customers encountering revenue protection personnel on their journey, resource assignment will be zone based
Distributing revenue protection resources proportionally based on ridership	Proportional network coverage	Revenue protection resources will be scheduled to provide proportion coverage across the network. The majority will be focused on high ridership routes, times, and days
Stations Objective	Tactic	Strategy details
Reducing unauthorized entry at secondary station entrances	Increasing uniformed staff at secondary station entrances	Supervisors and Transit Special Constables will be assigned to secondary station entrances when not actively attending to security or safety incidents
Bus Objective	Tactic	Strategy details
Reducing concession card fraud	Focused plainclothes deployment	Transit Special Constable in plainclothes to locations identified to be at high risk for concession card fraud
Leveraging fare dispute data from buses	Responsive assignment on bus routes	Responsive assignment of Transit Special Constables to bus routes based on fare dispute data to support Operators, educate customers on fare payment, and enforce as required

- *Fare Inspection Process Efficiencies*

In addition to scheduling changes, fare inspection processes are being reviewed to increase the number of hours that revenue protection resources are available to perform inspections. This review includes an exploration of options for alternative reporting and break locations, process automation (e.g. court time, report writing, ticket issuance and administration), and continued work with Metrolinx to improve hand held inspection device performance and speed.

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Attachments

Appendix A	Status Update Phase 1 and Phase 2 Toronto Auditor General Recommendations TTC Revenue Operations
Appendix B	Image 1.0 Camera Views - Heath Street Entrance
Appendix C	Image 2.0 Sample Camera Views – Yonge/Bloor Station
Appendix D	Image 3.0 Photo Union Station – Hub
Appendix E1	2019 Toronto Transit Commission Revenue Update
Appendix E2	2019 Toronto Transit Commission Monthly Forecast Ridership Update ('000s)
Appendix E3A	Impact of Stop Sell on PRESTO Adoption
Appendix E3B	Impact on PRESTO Usage and Legacy Media after Stop Sell and Stations Transformation
Appendix E3C	Pre and Post Legacy Media Stop Sell at Transformed Stations
Appendix E3D	PRESTO Ticket Sales Comparisons
Appendix E4A	Ridership Concession Breakdown 2019
Appendix E4B	Concession Breakdown by Time using PRESTO data (2019 system wide)
Appendix E4D	Image 4.0 504 King Streetcar route - Top five (5) stops for PRESTO taps (December 2019)
Appendix F	Image 5.0 Customer Communication Campaign Creatives

Appendix A

Status Update: City of Toronto Audit General recommendations - Phase 1 and 2 review of TTC Revenue Operations

While many of the recommendations below have been met, it should be noted that work to continually improve fare collection methods and revenue loss controls are ongoing to ensure fare revenue collection is maximized.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
1	Set acceptable targets for fare evasion rates (by mode and overall) and develop short and long-term strategies to reduce the fare evasion rates and the resulting revenue loss, while ensuring good customer service	Closed	2020 revenue recovery objective set overall and by mode. Refer to the 2019 revenue protection achievements and 2020 revenue recovery strategy in the body of this report and to Phase 1 recs. 5, 6 and 8. Highlights include focused deployment on the mode with highest rate of fare evasion (streetcars).
2	Raise customer awareness and understanding of the importance of paying the appropriate fare, as well as the PRESTO card payment process, Proof-of-Payment system, and consequences if found evading fare	Closed	Addressed through customer communication campaigns <ul style="list-style-type: none"> • Fall 2018 Fare is fair • May – Dec 2019 Pay your fare, pay your share • Jan 2020 to report date – There is no excuse to not pay your fare Details are provided in the body of this report and highlights are in sample campaign creatives in Appendix F.
3A	Accurately measure and publicly report on the fare evasion rate every year	Closed	The TTC's Audit Risk and Compliance Department (ARC) reported their Fare Evasion Study results to the Audit and Risk Management Committee and the Board in Feb 2020. ARC will report out on any future fare evasion audit work as completed (requested quarterly)
3B	Make reports from Internal Audit on fare evasion study public	Closed	Refer to Phase 1 rec. 3A

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
4A	Adequately train Fare Inspectors on data collection and why this work is important to the TTC	Closed	Initial training on the importance of data collection delivered to all Fare Inspectors and Special Constables. Training will be refreshed upon completion of race based data collection assessment pursuant to the Ombudsman's recommendations
4B	Development of realistic and clear performance expectations with respect to fare inspection	Open	Q4 2019 high level expectations outlined in December employee town halls Q1 2020 new performance management report to be developed for Revenue Protection functions
4C	Implement ongoing monitoring of staff performance and regular review of inspection data	Closed	Q1 2020 EPAs to include increased inspection times, increased number of inspections. Regular review of inspection data will be through performance management reports outlined in Phase 1 rec 4B.
5	Explore system wide options that can help prevent and reduce fare evasion on streetcars with multiple doors and Proof-of-Payment policy	Open	<ul style="list-style-type: none"> • An interim operational deployment plan for the Transit Enforcement Unit was developed for high-risk streetcar lines for "blitz" in Q2 2019. Deployment was based on data from fare dispute key, field observations and PRESTO tap data • Revised 2020 deployment strategy and inspection methodology are described in the body of this report. A more comprehensive strategy to be documented in the Fare Inspection and Collection Framework and associated processes in Q2 2020. Refer also to Phase 1 recs. 5, 6 and 8.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
6	Expand fare inspection program to include buses and develop effective fare inspection methods for buses	Open	<ul style="list-style-type: none"> The current fare inspection program continues to consist of the BUSSTOP program, as was reported to the Board in Q3, 2019, and also includes targeted, responsive deployment based on report of fare evasion by front line Supervisors, reports from customers, and (future plan) use of automatic passenger count boarding data overlaid with PRESTO transaction data to produce fare evasion 'heat maps' Further expansion of the program is conditional upon additional resources or increase revenue collection rates on streetcars sufficient to allow redeployment of resources to focus on bus. Focus is on reducing concession fare fraud and adherence to the inspection methodology for fare inspection on bus
7	Ensure that bus operators and streetcar operators are instructed and trained to press the fare dispute key whenever the appropriate fare is not paid. Data from the fare dispute keys should be routinely analyzed and used to aid in the strategic allocation of fare enforcement resources.	Closed	<p>Bus Operators were instructed to use fare dispute key when observing customers not paying a fare. Streetcar Operator seat orientation does not permit a view of fare payment (tapping).</p> <p>Data from the fare dispute key is being analyzed to support targeted deployment initiatives.</p>
8	Expand its fare inspection program to include coverage of subway station entrances	Closed	As part of their regular patrol in stations, Supervisors and Special Constables will conduct concession card checks near to fare lines when they are not engaged in addressing safety or security incidents. The TTC will continually to evaluate opportunities to improve revenue collection in this area

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
9A	Perform a cost-benefit analysis of continuing to keep the automatic entrances open, whether to install high gates in high-risk entrances at subway stations, and whether to station Toronto Transit Commission staff at some of these entrances to reduce illegal entries	Closed	<ul style="list-style-type: none"> • Secondary entrances are required to remain open for Fire and Emergency Evacuation egress and will not be closed or converted to 'EXIT' only • A cost benefit analysis was conducted which identified 17 locations at risk of illegal entry. This information is being used to inform staff deployment at these stations. • A fare evasion deterrence proof of concept is underway at St Clair West station secondary entrance (Heath Street) with fare line camera feeds visible to customers upon entry. Fare line photos and camera views are in Appendix B.
9B	Complete work on fare gate sensors and fare gate event data reporting, so that information can be used to determine the rate of illegal entries at subway stations and to strategically allocate fare inspection resources	Closed	<ul style="list-style-type: none"> • A fare gate software update was deployed in Q3 2019 to enable the collection of fare gate event data • Information from this update will be used to help determine the rate of illegal entries at subway stations and to strategically allocate fare inspection resources.
9C	Ensure security camera video is monitored on a regular basis	Open	<ul style="list-style-type: none"> • Stations cameras will feed live views to 'hubs' at key station locations in a phased implementation planned to start in Q2 2020. A pilot installation is in place at Yonge/Bloor Station. Refer to Appendix C and D for sample pilot camera views and an image of the Station Hub at Union Station.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
10	Ensure the contracted service requirements are upheld regarding functionality of Metrolinx Single Ride Vending Machines and PRESTO Card Readers, and recover from Metrolinx lost passenger revenue	Open	<ul style="list-style-type: none"> • Despite numerous efforts to finalized these with Metrolinx, PRESTO Service Level Agreements are not in place • The TTC will bring these before the PRESTO Joint Executive Steering committee in Q1 2020. If SLAs are not finalized through the JEC, the TTC will refer these to the Expert Panel as described in the Operational Services Agreement. Refer also to Phase 2 recs. 19 and 20 • Efforts are also ongoing to recover lost revenue from Metrolinx related to malfunctioning PRESTO equipment. Refer to Phase 2 rec. 22
11	Review current TTC fare gate functionality issues, and develop and implement short and long-term strategies to improve fare gate functionality to reduce revenue loss	Closed	<ul style="list-style-type: none"> • The TTC's roadmap for fare gate software and hardware improvements is updated on an ongoing basis to reflect changing TTC business requirements. Q4 2019 is the most recent roadmap update. • The TTC also works closely with its fare gate vendor to identify and resolve issues and holds its vendor accountable to meet contracted service level requirements
12	Instruct and train crash gate staff on Toronto Transit Commission (TTC) policy, to request the fare collector to close the TTC fare gate when unattended by TTC staff, and to ensure fare collectors are trained in this task	Closed	Additional training was developed and implemented for Collectors, Customer Service Agents and Customer Service Representatives on crash gate policies and procedures. All non-essential crash gate crews and crash gate event extras were cancelled except at Kipling Aukland and Eglinton South Station entrances. These entrances are required to accommodate customers requiring an accessible entrance paying with TTC legacy fare media (tickets, tokens or cash).

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
13	Reassess whether there is a critical need to issue Child PRESTO cards, balancing provision of good customer service with the risk of fraudulent use of the Child Cards	Open	The TTC will address this recommendation in the 5-year Fare Policy & 10 Year Collection Strategy. An update to the Board is planned in Q4 2020.
14	Do NOT distribute promotional Child PRESTO cards until appropriate controls are in place	Closed	Promotional Child PRESTO cards are not being distributed

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
15	Explore ways to provide a Child PRESTO Card that is visually different from an Adult PRESTO card, including further negotiation with Metrolinx to issue visually different PRESTO cards for adults and children aged 12 and under	Open	<p>As of the date of this report, Metrolinx has not provided a formal response to indicate whether it will provide TTC with Child Concession Cards that are visually distinct.</p> <ul style="list-style-type: none"> • Feb 27, 2019 rec 15 reported to the TTC Board • Jul 15, 2019 The TTC issued a Notice of Contract Change Request for visually distinct PRESTO Child cards to Metrolinx • Oct 29, 2019 Toronto City Council adopted a recommendation from the Audit Committee that City Council direct the TTC to (as part of the Joint Executive Committee ('JEC') agenda) explore ways to provide a Child PRESTO card that is visually different from an Adult PRESTO card, including further negotiations with Metrolinx to issue visually different PRESTO cards for adults and children 12 and under • Dec 6, 2019 Metrolinx proposed a pilot for visually distinct Child PRESTO cards using card-wrap stickers. The card wrap design and colour would be defined by the TTC. The TTC rejected this proposal and reconfirmed a requirement for a permanent solution. • At a Dec 16, 2019 meeting of the PRESTO scheme governance committee, the TTC advised other transit agencies from the GTA and Ottawa of the TTC's direction to proceed with visually distinct child cards with other transit agencies related to the TTC's request for visually distinct PRESTO Child cards • In a Dec 20, 2019 meeting with Metrolinx, the TTC presented the direction of City Council and reiterated the TTC's request for visually distinct Child PRESTO cards • Further discussions have been held at the executive level and the TTC is awaiting a formal response from Metrolinx.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
16A	Make the necessary changes to the Child PRESTO cards so that bus and streetcar operators can spot inappropriate use of PRESTO concession cards including negotiate with Metrolinx to provide a different light and sound on PRESTO card readers for Child PRESTO cards from other concession types	Open	<ul style="list-style-type: none"> • Jul 15, 2019 the TTC issued a Request for Contract Change Notice to Metrolinx to provide a different light and sound on PRESTO card readers • Metrolinx is committed to implement these changes and has provided a draft proposal to the TTC • The proposal is currently under review by the TTC with a decision expected in Q1 2020 • Metrolinx is expected to provide a revised schedule based on the TTC's response to the proposal
16B	Make the necessary changes to the Child PRESTO cards so that bus and streetcar operators can spot inappropriate use of PRESTO concession cards including perform a cost benefit analysis and consider making change to TTC revenue vehicles to include display of the PRESTO concession type for bus and streetcar operators	Open	This item will be addressed in the TTC's 5-year Fare Policy & 10 Year Collection Strategy. An update to the Board is planned in Q4 2020.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
17	Ensure adequate controls are in place and consistently applied in the issuance of Child PRESTO cards by Distributors	Closed	<ul style="list-style-type: none"> • Jul 15, 2019 the TTC issued a Request for Contract Change Notice to Metrolinx • Sep 17, 2019 Metrolinx responded with updated training material for Shoppers Drug Mart which includes consistent application of controls for the sale and issuance of PRESTO cards and concession setting including verification of age by government issued ID or TTC photo ID • Dec 13, 2019 Metrolinx responded with confirmation of ongoing random compliance audits to be implemented. This proposal is currently under review by TTC's Revenue Control (Finance) and Customer Development groups
18	Find ways with Metrolinx to either seize or obtain confirmation of deactivation for Child PRESTO cards found to be fraudulently used	Closed	<ul style="list-style-type: none"> • The TTC has a zero tolerance policy for Child PRESTO cards found to have been fraudulently used. Special Constables and Fare Inspectors have the authority to confiscate cards in these cases to prevent future fraudulent use • TTC staff record seized or confiscated Child PRESTO cards and these are 'hot listed' (blocked) for deactivation by Metrolinx to prevent future misuse
19	Work with Metrolinx to determine the feasibility of temporarily suspending the Child PRESTO cards on the TTC until appropriate controls are in place	Open	This item will be addressed in the TTC's 5-year Fare Policy & 10 Year Collection Strategy. An update to the Board is planned in Q4 2020.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
20	Conduct a cost-benefit analysis of Transit Fare Inspectors vs. Transit Enforcement Officers with a view to improving the effectiveness and efficiency of the fare inspection program	Open	<ul style="list-style-type: none"> • As of January 2020, the TTC's Transit Enforcement Unit (TEU) department was reorganized in to the Special Constable Service and the Revenue Protection department. By mid-2020, the re-organization of these departments will be complete and will include a review of roles and responsibilities, authority levels, tools and uniforms, all of which will be subject to stakeholder consultations • The efficiency reviews of the fare inspection program are ongoing • With the addition of 50 Special Constables in 2020, the TTC will complete a cost benefit analysis in Q1 2021
21	Review the level of authority, tools and uniform provided to Transit Fare Inspectors to ensure they can carry out their duties in a safe and effective manner	Closed	Benchmarking with industry peers on fare inspection program structure including types of resources used for revenue protection, tools, and uniform is complete and has helped to inform the re-organization of the Transit Enforcement Unit.
22A	Take steps to improve the speed, reliability, and functionality of PRESTO hand-held devices for fare inspections including improving tracking and reporting of the functionality and repairs of the handheld devices	Closed	Refer to Phase 1 rec 22C related to the speed, reliability and functionality of PRESTO hand-held devices for fare inspection. A process has been developed for tracking status, actions and reporting tool for HHPOS devices

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
22B	Take steps to improve the speed, reliability, and functionality of PRESTO hand-held devices for fare inspections including finalizing the Service Level Agreement with Metrolinx, which should specify a level of speed and functionality for the hand-held devices that meets the TTC's business requirements	Open	<ul style="list-style-type: none"> • Refer to Phase 1 rec 22C related to the speed, reliability and functionality of PRESTO hand-held devices for fare inspection. • The TTC will table the matter of SLAs related to HHPOS devices before the JEC in Q1 2020. If the matter is not resolved at the JEC, the TTC will refer the matter to the Expert Panel for final resolution as described in the Operational Services Agreement
22C	Take steps to improve the speed, reliability, and functionality of PRESTO hand-held devices for fare inspections holding Metrolinx accountable for its contracted service requirements on the speed, reliability and functionality of the hand-held devices supplied to the TTC	Open	<ul style="list-style-type: none"> • The TTC formally engaged Metrolinx over the past three (3) years to improve the speed, reliability and functionality of HHPOS devices • Jul 15, 2019 The TTC issued a Notice of Contract Change request to Metrolinx related to HHPOS speed, reliability and functionality • Dec 16, 2019 Metrolinx proposed this requirement be satisfied with new improved software and hardware • Further design discussions are scheduled with Metrolinx for Q1 2020.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
23	Improve the effectiveness of the off-boarding inspection process to minimize the number of passengers walking away from fare inspection, including measures such as installation of temporary or permanent physical barriers where feasible, and assigning a sufficient number of Transit Fare Inspectors and Transit Enforcement Officers for the off-boarding inspection	Open	<ul style="list-style-type: none"> Alighting (internally referred to as 'offboarding') inspections in stations were dramatically reduced in order to focus the team on the streetcar network. While this method, provided for a high number of inspections, (e.g. hundreds of customers every 8-10 minutes) it exposed the team to the risk of not being able to inspect all customers due to the sheer volume. As revenue protection resources increase in 2020, this inspection tactic will be revisited.
24	Provide Transit Fare Inspectors with efficient access to the previous fare evader database during inspections	Open	<ul style="list-style-type: none"> A new records management software application to track offenses has been procured Interim report regarding race based data collection pursuant to the Ombudsman's recommendations will not be available until the end of Q1 2020, access to previous fare evader database during inspections expected by Q2 2020
25A	Improve the effectiveness and consistency of the scheduling practices of its fare inspection program to ensure the route and timing coverage is risk-based and strategic	Closed	<ul style="list-style-type: none"> Evidence based deployment based on data analyzed by TTC stakeholders including the TTC's Revenue Control section are being used to inform fare inspection scheduling practices e.g., based on fare dispute keys usage, fare gate event data, PRESTO ridership data, etc. Scheduling adjustments put in place over the last couple of months have increased the inspection hours during high ridership times (e.g., AM and PM peak service). As fare inspection and collection processes are reviewed for further efficiencies, additional adjustments will be made. Additional details are provided in the body of the report.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
25B	Improve the effectiveness and consistency of the scheduling practices of its fare inspection program to increase the use of plain clothed Transit Fare Inspectors as it enables a more accurate assessment of fare evasion rates and a more effective inspection program	Closed	<ul style="list-style-type: none"> • In accordance with the Revenue Protection Deployment strategy, Special Constables will be deployed to support revenue protection efforts in plainclothes. Capacity to expand plainclothes deployment will be evaluated as additional resources are added in 2020.
26A	Explore ways to increase actual inspection time by Transit Fare Inspectors including automating the manual ticketing process and the recording and reporting of fare inspection results	Open	<ul style="list-style-type: none"> • Inspection time by revenue protection resources will be increased per the 2020 deployment strategy (refer to the body of report) • Data entry processes around ticketing and reporting of fare inspection results are under review, with an update expected at the end of Q1 2020
26B	Explore ways to increase actual inspection time by Transit Fare Inspectors including assessing the feasibility of establishing an internal fare evasion ticket appeal process, similar to Metrolinx (GO Transit)	Open	<ul style="list-style-type: none"> • Benchmarking with industry peers on fare inspection appeal process is complete. Further research to be completed with findings subject to stakeholder review. • Administrative processes related to fare evasion ticket appeal process to be discussed and confirmed with the City. An update is expected in Q2 2020.

AG Rec #	Phase 1 Revenue Operations - Fare Evasion and Fare Inspection	Status	Comments
26C	Explore ways to increase actual inspection time by Transit Fare Inspectors including exploring ways to reduce travel time by Transit Fare Inspectors between their reporting and lunch locations and assigned routes	Open	<ul style="list-style-type: none"> • Shift assignments have been modified to increase coverage related to high ridership periods • Reporting locations and assignments remain under review • Investigation of new reporting locations will be conducted in Q2 2020
27	Finalize updating the TTC By-law No.1 and enhance the Fare Inspection Policies and Procedures manual to ensure they are up to date and include sufficient details to facilitate consistent fare inspections	Open	The TTC expects to bring an update to TTC By-Law No.1 to the Board in Q3 2020. If approved by the Board, the by-law will undergo further review and will be subject to further approvals by the Province and the regional senior judge.
28	The Board forward this report to City Council for information through the City's Audit Committee	Complete	

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
1A	Work together with Metrolinx and its vendors to identify the root cause for frozen and intermittent PRESTO card readers	Open	<ul style="list-style-type: none"> • The TTC formally engaged Metrolinx over the previous three (3) years to review and resolve deficiencies in PRESTO card reader availability, functionality, and reliability. This has resulted in some improvements. In 2019, the TTC with Metrolinx (and system vendors) established a joint Continuous Improvement forum and process to better manage the development and delivery of enhancements to address deficiencies • A software update was completed for all PRESTO card readers during Q3 2019 which resulted in some performance improvement • In December 2019 the TTC and Metrolinx conducted a detailed review of the recommendations (1B, 1C, 2, 3A, 3B, 4A, 4B, 4C, 5A, 5B, 6A, 6B, 10A, 10B, 10C, 11, and 12) made by the Auditor General that relate to PRESTO equipment. Metrolinx has committed to provide the TTC with a formal schedule and plan prior to the end of Q1 2020, to address the Auditor General recommendations and the system performance deficiencies TTC has identified.
1B	Work together with Metrolinx and its vendors to develop a method to detect above issues in the device monitoring software tool	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
1C	Work together with Metrolinx and its vendors to ensure frozen and intermittent readers are included in the PRESTO card reader availability calculation	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
2	Work together with Metrolinx to determine the best method to capture complete and accurate information on in-service vehicles for the PRESTO card reader availability calculation, including assessing TTC's Vision system for this purpose	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
3A	Work together with Metrolinx to explore ability to have more frequent pinging while ensuring impact on device performance and customer experience is minimized	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
3B	Work together with Metrolinx to discuss using the most frequent device status during an interval instead of the latest event for the availability rate calculation	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
4A	Work together with Metrolinx to ensure missed devices in the device monitoring software tool are identified by PRESTO and communicated to TTC	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
4B	Work together with Metrolinx to determine and address the underlying issue for missed devices in the device monitoring software tool	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
4C	Work together with Metrolinx to obtain back-up for the weekly card reader availability rate calculations	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
5A	Continue discussions with Metrolinx to obtain the daily PRESTO card reader availability spreadsheet for all seven days of the week, including weekends and holidays in Canada;	Open	<ul style="list-style-type: none"> • Jul 2019 a meeting held with Metrolinx • Metrolinx has advised the TTC of contract negotiations with Metrolinx’s vendors related to the TTC’s request that it be provided with daily PRESTO card reader availability spreadsheet for all seven days of the week, including weekends and holidays in Canada • Refer to Phase 2 rec 1A, third bullet
5B	Continue discussions with Metrolinx to ensure that TTC's availability calculation includes holidays in the country of PRESTO's vendor	Open	<ul style="list-style-type: none"> • Jul 2109 meeting held with Metrolinx • Partially completed for one Metrolinx vendor (Accenture) • Metrolinx has advised the TTC that remaining vendor compliance is pending contract negotiations (S & B) • Refer to Phase 2 rec 1A, third bullet
6A	Ensure the availability calculation of PRESTO vending machines includes all out-of-service incidents, including the status when the coin box is full and the machine is not available for the customer to pay by coins	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
6B	Provide TTC with the detailed back-up data/information that supports the weekly availability rate	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
7	Work together with Metrolinx to restore the contracted deliverable of the credit and debit card fare payment method on the new streetcars, with estimated timing provided by Metrolinx	Open	The TTC and Metrolinx have not achieved agreement on this recommendation. The TTC will formally table it at the JEC.
8A	Work together with Metrolinx to ensure that PRESTO's vendor's monitoring team is consistently logging tickets for all out-of-service card readers, even if able to successfully recover remotely	Closed	Metrolinx has implemented a formal process to address this recommendation
8B	Work together with Metrolinx to regularly receive a log of devices that successfully re-boot	Closed	Metrolinx has implemented a formal process to address this recommendation
9A	Provide training and communication to TTC forepersons for them to log all tickets in PRESTO's incident management system (ServiceNow) for PRESTO issues identified by TTC staff, including TTC operator sign-in sheets	Closed	Forepersons have been provided access to the "ServiceNow" application for and logging incidents Monthly meetings are scheduled to ensure adherence to this process

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
9B	Require TTC technicians to maintain a log of PRESTO devices reset, including whether the reset was successful or not in resolving the PRESTO issue, and provide this to TTC forepersons and PRESTO repair staff	Closed	<p>TTC maintenance staff now adhere to the process below.</p> <p>A. If a PRESTO device reset does not resolve a PRESTO device issue, a work order is opened in the TTC’s work order system (IFS)</p> <p>B. If, through the device reset, the issue ‘self resolves’, no worker order is not opened by TTC staff since it is too difficult to determine if an actual fault was present causing the reset. Creating a TTC work order may in fact present a false defect.</p> <p>C. The TTC receives daily incident reports from Accenture.</p>
10A	Discuss with Metrolinx enabling data extraction from the device monitoring software tool in a usable format	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
10B	Discuss with Metrolinx consideration of updating to a new version of device monitoring software tool that includes reporting capability	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
10C	Discuss with Metrolinx the ability to maintain and obtain data logs for greater than 60 days from the device monitoring software tool	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
11	Request Metrolinx to regularly provide a running list for all swapped devices, including the device IDs for both the original and swapped devices and mapping to the vehicle	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
12	Request Metrolinx to ensure that for all PRESTO card readers, an inventory log is regularly provided to TTC, including mapping by device IDs to the vehicle numbers	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec 1A, third bullet
13A	Ensure the TTC Bus Transportation department reiterates the importance to TTC Operators to sign in all PRESTO issues, even if they are a daily or intermittent occurrence	Closed	The TTC’s Bus Transportation department produces communications on a quarterly schedule reminding operators to sign in all PRESTO issues
13B	Ensure the TTC Bus Transportation department evaluates the need for additional communication and/or training for TTC Operators on the sign-in process	Closed	<p>The TTC’s Bus Transportation department started a ‘PRESTO On Pull Out’ initiative described below.</p> <ul style="list-style-type: none"> A. During morning and afternoon pullouts, a supervisor is situated at the gate B. The supervisor will tap their TTC employee ID card on the front PRESTO reader to ensure that it is operational C. PRESTO reader equipment issues are tracked and inputted into the PRESTO service portal. When opening an incident, a PRESTO screen description is included along with time and vehicle number
13C	Ensure the TTC Bus Transportation department implements a process that reconciles all vehicles to the sign-in sheets to ensure all are signed in, and for any not signed in, a separate list is maintained which includes the reason for not being signed in and whether there were any issues	Open	A TTC working group will determine a process to reconcile sign in sheets and ensure all defects are identified at sign in of the vehicle.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
14	Ensure the TTC Bus Maintenance department provides an accurate listing of "bus out-of-service greater than seven days" to PRESTO	Open	The TTC tracks the status and location of all vehicles. The TTC will convene a Working Group to develop a list of “buses out of service greater than seven days” leveraging current processes
15	Run daily reporting on warnings for the coin box being full or 75 per cent full, and ensure those streetcars, at a minimum, are made available for the nightly coin collection	Closed	Metrolinx began providing a daily report of warnings for coin vaults that are full or 75% full in Q4 2019. The TTC continues to improve the processes for providing vehicles for nightly repair and cash collection by Metrolinx vendors.
16	Work together with Metrolinx to evaluate whether coin collection needs to occur more frequently for new streetcar vending machines	Closed	The TTC has worked with Metrolinx to review the current process for daily collection of coins/tokens from streetcar vending machines. In partnership with Metrolinx, a third coin collection location was added in Q4 2019. Coin collection activities were also expanded to include the all areas of the collection location facility.
17A	Work together with Metrolinx to establish a governance framework that addresses the governance gap, by re-starting and continuing the Joint Executive Committee as envisioned in the Operational Services Agreement	Closed	The TTC has clarified with Metrolinx its expectations around governance as described in the contract. The TTC-Metrolinx Joint Executive Committee will resume on February 13, 2020 with further meetings scheduled monthly on March 26 and April 24, 2020.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
17B	Work together with Metrolinx to formalize that the TTC’s contractual and operational issues are appropriate to address directly with Metrolinx at the Joint Executive Committee (‘JEC’) table, and includes regular status, service and planning review meetings	Open	<ul style="list-style-type: none"> • The purpose and function of the JEC are described in the contract between the TTC and Metrolinx. To ensure the JEC continues to achieves the objectives set out the in contract around contractual and operational issue governance, the TTC proposed refreshed JEC terms of reference to Metrolinx in December 2019 • Metrolinx verbally indicated that a response will be provided
18	Request a schedule and plan from Metrolinx for the remaining contracted deliverables of TTC	Open	A schedule and delivery plan for remaining contracted deliverables were requested in a Nov 22, 2019 letter from the TTC’s CEO to the CEO of Metrolinx. The TTC and Metrolinx have jointly agreed to arbitrate disputes arising out of the contract including in relation to outstanding contracted deliverables. The TTC provided Metrolinx with a Notice of Arbitration on November 22, 2019. Discussions are also ongoing at an executive level to achieve a schedule and plan related to contracted deliverables.
19	Work together with Metrolinx to identify and agree upon outcome areas and targets, and to measure and monitor those areas	Open	In the absence of finalized Service Level Agreements (refer to Phase 1 rec. 10), the TTC will submit a Notice of Referral to table the SLA issues at the Joint Executive Committee in Q1 2020.
20	Work together with Metrolinx to agree upon and finalize the Service Level Agreement, and to utilize an Expert Panel as outlined in the Operational Services Agreement if needed	Open	In the event SLAs are not finalized following referral of these to the JEC (refer to Phase 2 rec. 19), the TTC will evaluate options to fully and finally resolve these, which will include standing up the Expert Panel as outlined in the Operational Services Agreement.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
21	Work together with Metrolinx to obtain the required information to refine their estimate of revenue loss due to malfunctioning PRESTO fare equipment	Open	<ul style="list-style-type: none"> • The TTC has formally engaged Metrolinx over the past three (3) years to refine the methodology to calculate revenue loss • In January 2020, the TTC’s CFO wrote a letter to the CFO of Metrolinx on the need to work together on revenue losses due to malfunctioning PRESTO fare equipment and inviting a call or a meeting to discuss this as soon as possible • Awaiting Metrolinx’s response to the TTC’s request to for information to refine the estimate of revenue loss due to malfunctioning PRESTO fare equipment
22	Work together with Metrolinx to come to an agreement on a methodology for the revenue loss claim acceptable to both parties, and leverage its contractual governance framework of the Expert Panel if needed	Open	<ul style="list-style-type: none"> • Refer also to Phase 1 rec. 21. • In October 2019, the TTC invoiced Metrolinx for revenue loss due to malfunctioning PRESTO fare equipment for all outstanding amounts up to Period 6, 2019 for a total of \$1.4M • On Oct 2, 2019, the TTC’s CFO wrote to the CFO of Metrolinx requesting reimbursement for related lost revenues and highlighting the urgency of concluding discussions on the TTC's lost revenue calculation • On Nov 22, 2019 the TTC referred this issue and others for resolution through the contract dispute resolution mechanism (Notice of Arbitration) • In January 2020 the TTC issued a further invoice for \$1.17M for periods 7 to 11, 2019 • On Jan 10, 2020, the TTC’s CFO wrote to the CFO of Metrolinx of the need to reach an agreement on our revenue losses as soon as possible • Revenue loss related to Metrolinx equipment was \$2.3M in 2019, and \$7.8M for the three (3) years ending December 31, 2018. Metrolinx has been invoiced for these amounts. The TTC is awaiting payment.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
23	Make necessary changes to require proper approval sign-off by the TTC for Metrolinx to be able to withdraw amounts from TTC’s revenue bank account	Open	<ul style="list-style-type: none"> • Metrolinx made withdrawals without authorization from the TTC’s PRESTO revenue bank account • The TTC put a stop payment on the transaction • On Oct 7, 2019 Metrolinx withheld from the TTC’s gross revenue receipts an amount equivalent to funds that had been withdrawn without authorization - \$587,600 (5 x \$117,500) and has continued to improperly withhold from the TTC’s gross revenue receipts \$117,500 monthly • The TTC has written to Metrolinx to immediately stop this and requesting that Metrolinx adhere to financial and commercial management first principles by providing a detailed invoice
24	Work together with its vendor, to continue to make improvements to the functionality of fare gates, and to hold its vendor accountable to meet the target availability rate for TTC fare gates	Closed	The TTC’s fare gate vendor S & B has complete a review of gate motors and provided an initial report in Q4 2019, preliminary report recommendations being trialed on a number of stations.
25	Consider refining its fare gate availability calculation methodology to better account for partially available fare gates	Closed	In September 2019, the TTC and S&B implemented “patch 3” on fare gates without incident. This will allow the TTC to update fare gate availability reporting. The two (2) defects specifically noted in the report of “amber light” and “frozen wait screen” are addressed in the patch. The TTC expects significant reduction in incidents.
26	Continue efforts in expediting the implementation of FareGo 3.9 in order to streamline the fare gate incident management process	Open	A software upgrade to the fare gate operating system (FareGo 3.9) will be implemented in Q2 2020 to provide the ability to receive automatic maintenance notifications when a fare gate goes ‘out of service’.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
27	Identify fare gate incident priorities in TTC's work order management system and track targets for second line maintenance by its vendor based on those incident priorities	Closed	To identify fare gate incident priorities (critical, high, moderate, low, or information request), a drop-down for fare gate work orders moved to second line maintenance ('SLM') has been implemented in the TTC's work order tracking system ('MAXIMO')
28	Negotiate with the TTC's vendor to receive all relevant data and information regarding calculation of the fare gate service credit	Open	Discussions are ongoing with the TTC's fare gate vendor (S&B) to receive all relevant data and information regarding calculation of the fare gate service credit
29A	Work together with Metrolinx to ensure the required controls are both sufficiently and clearly covered in the CSAE 3416 report or through another mechanism(s)	Open	<ul style="list-style-type: none"> • As PRESTO adoption has increased, the TTC communicated in 2017, 2018, and 2019 the need to close gaps in controls to Metrolinx. The response from Metrolinx indicated that in their view, the revenue streams were either immaterial (2017) or existing controls were sufficient (2018). The TTC raised these concerns with Metrolinx again in 2019. • The TTC will formally escalate concerns to ensure gaps are addressed through the appropriate contractual mechanism • The TTC, Metrolinx and City of Toronto Auditor General staff met on Dec 3, 2019 to better understand the Auditor General's findings relating to the 2019 CSAE 3416 audit. Metrolinx agreed to continued dialogue and will provide feedback after discussing the TTC requirements with Metrolinx's auditor

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
29B	Work together with Metrolinx to ensure the assurance specifically includes that the interface controls between the device level and subsystems are adequately designed and operating effectively	Open	Refer to Phase 2 rec. 29A above
30	Continue to pursue the receipt of device level data (revenue related transaction and error event logs) from PRESTO in accordance with its Master Agreement with Metrolinx	Open	<ul style="list-style-type: none"> • The TTC has requested device level data from Metrolinx since at least 2011 • As a result of the TTC’s 2019 requests, an improved dialogue has begun with Metrolinx over the provision of device level logs from bus and streetcar fare card readers • The TTC, Metrolinx and Auditor General staff met on Dec 3, 2019 and the TTC emphasised the Auditor General's recommendation around this assurance under 3416 reporting or another mechanism. Metrolinx has agreed to continue the dialogue after discussing the TTC’s requirements with Metrolinx auditors.
31	Ensure that there are transactions reported from all in-service vehicles and fare gates by doing a reconciliation against transactions received from PRESTO's central system	Open	<ul style="list-style-type: none"> • The TTC has developed reporting to identify PRESTO fare equipment (including card readers on fare gates, buses and streetcars) for which revenue transactions have not been received for an extended period • The TTC will perform further analysis on this data and will align resources in 2020 in preparation for the 2021 budget process to best identify areas of improvement as needed • The TTC is also refining its existing reporting capability and upgrading its IT infrastructure (RAM and server upgrades) to allow for more reliable reporting (e.g. related to Metrolinx data)

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
32	Improve controls that verify whether there were transactions reported from offline devices when they reconnect back to the network	Open	<ul style="list-style-type: none"> • The TTC has identified resources and infrastructure, including new servers with improved performance to implement this control • Once the TTC’s additional infrastructure is in place, the control will be addressed through working with Metrolinx to obtain and investigate device level data
33	Regularly follow-up with PRESTO on the results of their internal investigation regarding monthly discrepancies between the subsystem and central system, and perform validation to confirm the receivables of the missing transactions in the central system	Open	<ul style="list-style-type: none"> • The TTC has implemented the control for 2019 as all material discrepancies noted on PRESTO’s monthly reconciliations are now inventoried monthly and followed up with PRESTO on a quarterly basis to ensure an acceptable resolution has been reached and any funds owed have been remitted. • It should be noted that PRESTO’s monthly reconciliations and the Incident Management are processes that are included in Metrolinx’s CSAE 3416 report where assurance over their effectiveness is provided by an independent 3rd party. Furthermore, any revenue that is subsequently received due to investigations into discrepancies would be identified and reconciled as apart of the TTC’s existing monthly reconciliation processes.

AG Rec #	Phase 2 Revenue Operations – PRESTO/TTC Fare Equipment and PRESTO Revenue	Status	Comments
34A	Request Metrolinx to include controls related to the retailer network in next year's CSAE 3416 report or obtain a separate CSAE 3416 report from its vendor for the retailer network	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec. 29 as it relates to the TTC's requests to Metrolinx for improvements to controls. The TTC is awaiting Metrolinx's response. • The TTC, Metrolinx and City Auditor General staff met on Dec 3, 2019 where the TTC raised the need for assurances over third party sales; either through the CSAE 3416 report or another mechanism. • Once the TTC's additional infrastructure to support the development of the missing product sales report and analysis is in place (refer to Phase 2 rec. 32), a mechanism to follow up with Metrolinx for settlement will be implemented, as required.
34B	Request to receive a reconciliation from Metrolinx of retailer sales transaction receipts listing with the sales extract report from PRESTO's central system, to monitor potential missing revenues	Open	<ul style="list-style-type: none"> • Refer to Phase 2 rec. 34A above • In addition, Metrolinx has agreed to update Shoppers Drug Mart training materials to explicitly require checks on authorized government issued ID for concession sales
35	The Board forward this report to City Council for information through the City's Audit Committee	Closed	

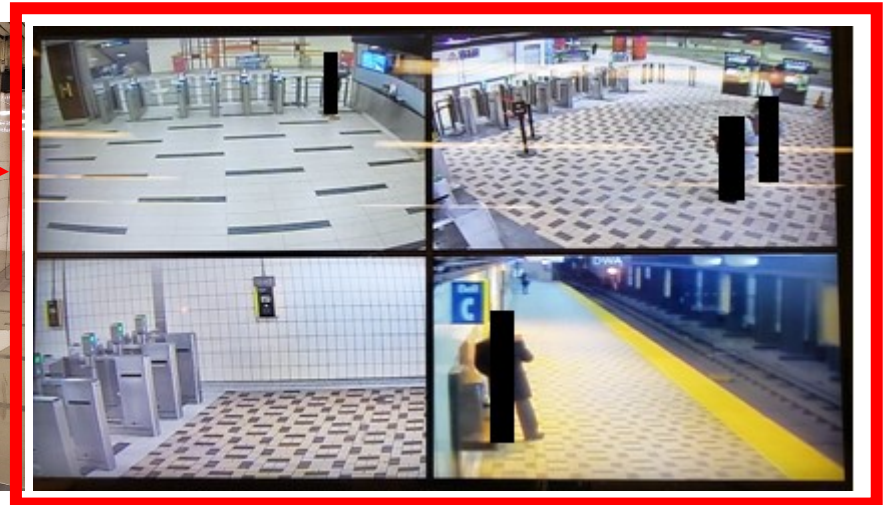
Appendix B

Image 1.0 Fare Evasion Deterrence Proof of Concept – Installation at St Clair West Station Heath Street Secondary Entrance

Heath Street secondary entrance fare line



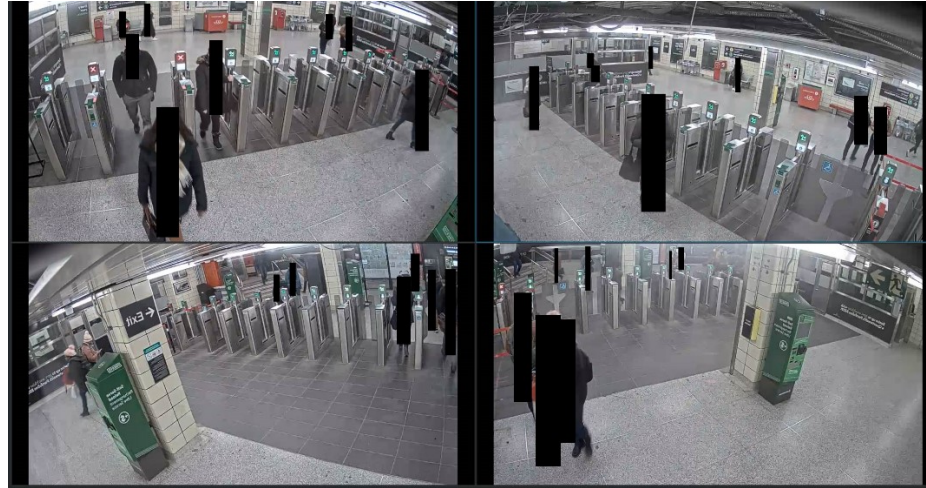
Live Heath Street Secondary Entrance Station Views



Appendix C

Image 2.0 Sample 360 Degree Camera Views – Yonge/Bloor

Yonge/Bloor Station Sample View 1



Yonge/Bloor Station Sample View 2



Appendix D

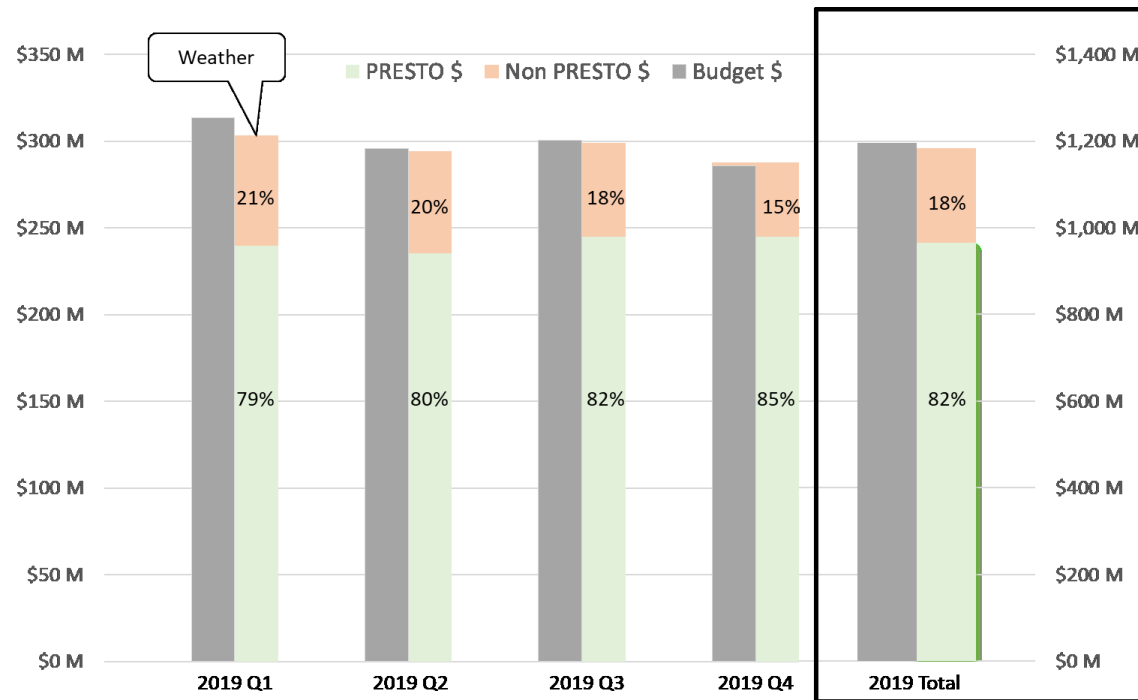
Image 3.0 Hub at Union Station



Appendix E1

2019 Toronto Transit Commission Revenue Update

Chart E1 2019 Toronto Transit Commission Revenue Update

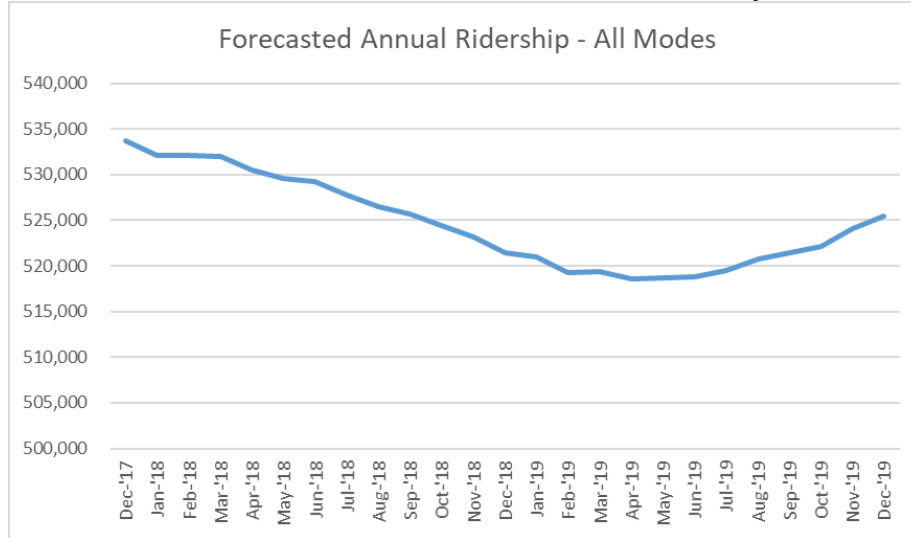


- The TTC’s 2019 revenue (preliminary) is \$1.184B. This is 1% (\$11.7M) lower than budgeted revenue of \$1.195B.
 - The year end figure for 2019 is preliminary and is subject to year-end adjustments
- The following “key” events contributed to variances between budget and actual results:
 - 2019 Q1 was affected by higher than expected inclement weather days in January and February
 - Delay in Legacy Media Stop Sell from August to November impacted PRESTO Adoption
- Revenue from PRESTO related media increased steadily throughout the year from 79% in Q1 to 85% in Q4.

Appendix E2

2019 Toronto Transit Commission Monthly Forecast Ridership Update ('000s)

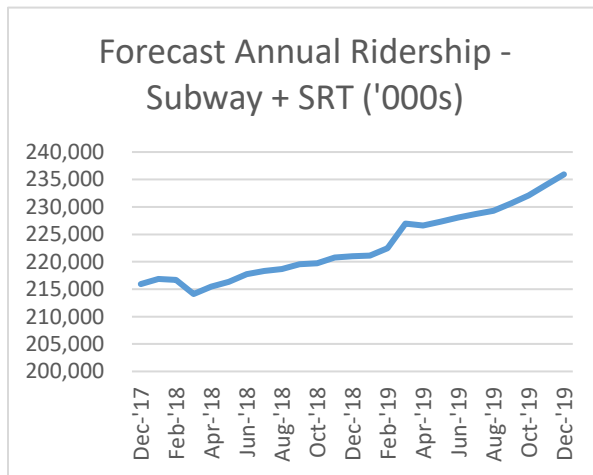
Chart E2A 2019 Toronto Transit Commission Monthly Forecast Ridership Update ('000s)



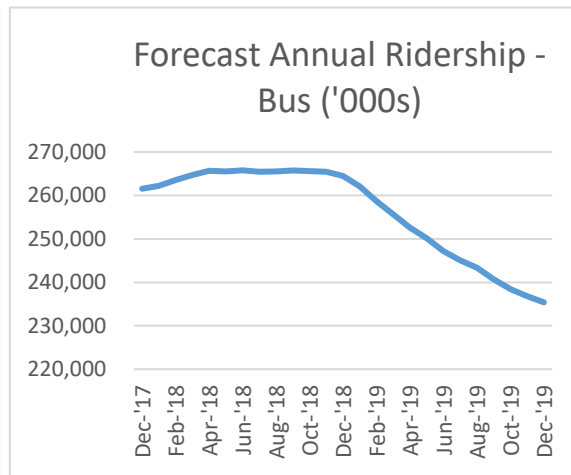
- 2019 ridership forecasts since 2018 show an overall declining trend until June 2019
- Factors contributing to this trend include:
 - fare policy changes e.g. two-hour transfer
 - fare evasion
 - fare media mix e.g. transition from Metropass to PRESTO
 - congestion during peak hours, limiting growth.
- Ridership growth has trended positively since June 2019 as adoption improved, encouraging use, along with increased employment rates.

Forecasts and actual PRESTO data can be segmented by mode

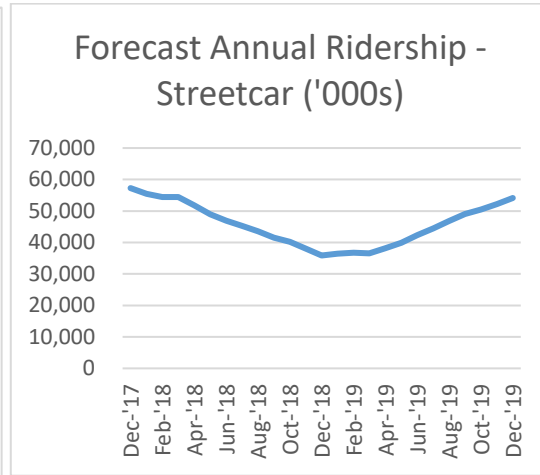
**Chart E2B Annual Ridership
Subway and SRT ('000s)**



**Chart E2C Annual Ridership
Bus (000's)**



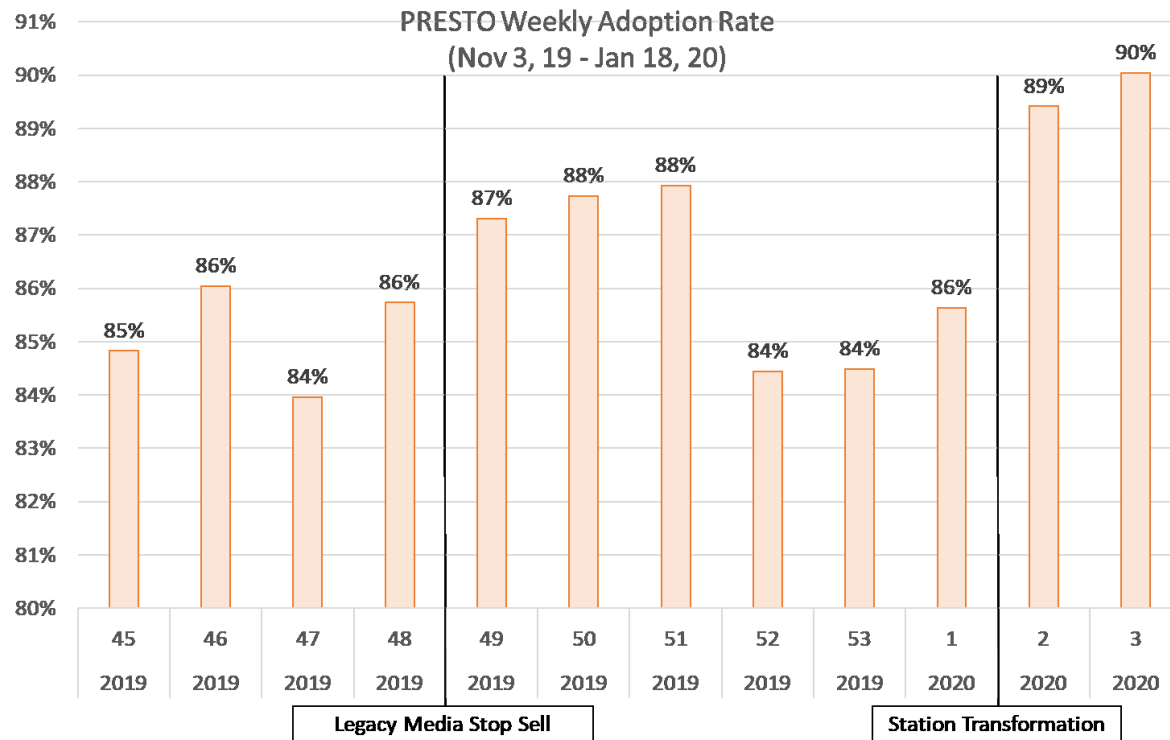
**Chart E2D Annual Ridership
Streetcar ('000s)**



Appendix E3A

Impact of Stop Sell on PRESTO Adoption

Chart E3A Impact of Stop Sell on PRESTO Adoption



- PRESTO adoption, as of January 18, 2020 is at 90%, with the decision to stop selling legacy media enabling improved PRESTO adoption.
- PRESTO adoption **increased immediately after the legacy media stop sell** event from 86% to 87%.
- A second increase in PRESTO adoption **was observed after the Station Transformation** from 86% to 89%.
- PRESTO adoption growth was lower from the second last week of 2019 (week 52) to the first week of 2020 due to seasonal holidays.

Appendix E3B

Impact on PRESTO Usage and Legacy Media after Stop Sell and Stations Transformation

Chart E3B Changes (%) in TTC Fare Media usage since week of October 5-12, 2019 (Week 41)

% below shows fare media growth from the prior period

TTC Fare Media		Before Legacy Media Stop Sell Announcement	Before Legacy Media Stop Sell	After Legacy Media Stop Sell	After Station Transformation
		Oct 5 - 12, 19	Nov 17 - 23, 19	Dec 8 - 14, 19	Jan 5 - 11, 20
Legacy	Cash (\$)	\$672,476	\$576,548 -14.3% ▼	\$542,457 -5.9% ▼	\$458,719 -15.4% ▼
	Legacy Ticket	114,355	97,117 -15.1% ▼	57,361 -40.9% ▼	37,946 -33.8% ▼
	Token	178,446	158,748 -11.0% ▼	79,292 -50.1% ▼	47,279 -40.4% ▼
PRESTO	PRESTO Ticket	68,923	64,085 -7.0% ▼	76,837 19.9% ▲	76,509 -0.4% ▬
	PRESTO ePurse	2,453,205	2,613,087 6.5% ▲	2,623,526 0.4% ▬	2,529,187 -3.6% ▬
	PRESTO Period Pass	1,433,567	1,454,956 1.5% ▬	1,259,509 -13.4% ▼	1,283,385 -1.9% ▬
	PRESTO 2-Hours Transfer	488,901	553,783 13.3% ▲	576,784 4.2% ▬	540,586 -6.3% ▼

Legacy Media Stop Sell and Station Transformation increased use of PRESTO ticket fare media:

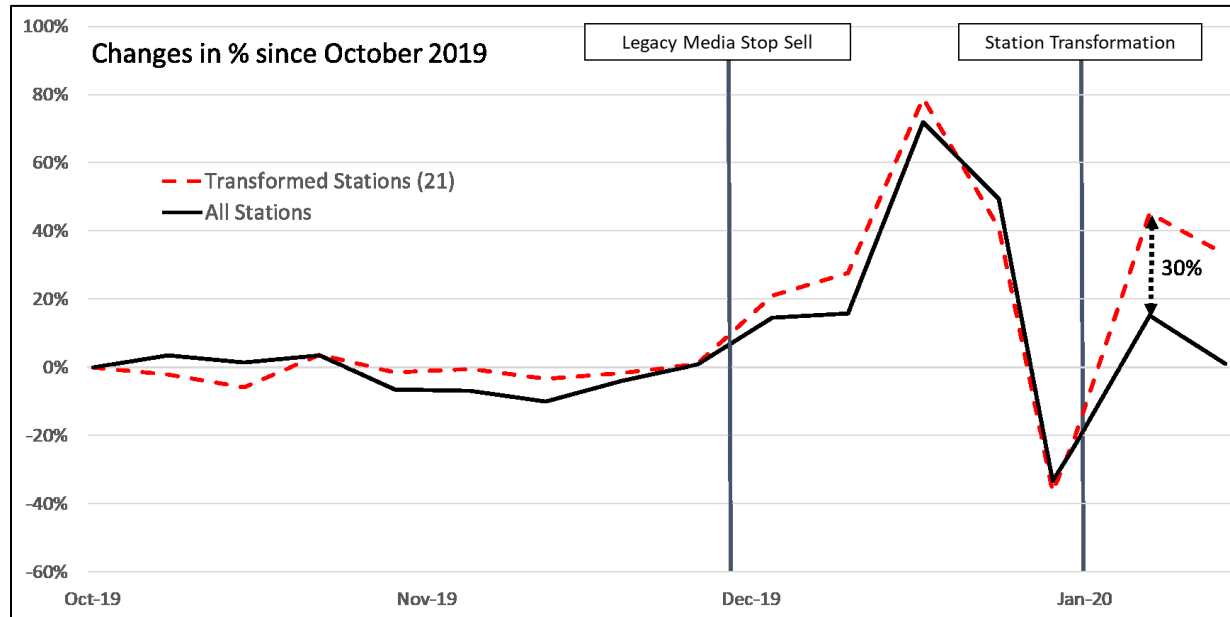
1. Token and Legacy ticket use growth dropped significantly between November and December 2019 and again between December 2019 and January 2020

PRESTO ticket usage growth increased significantly after the legacy stop sell (December 2019) and then stabilized.

Appendix E3C

Pre and Post Legacy Media Stop Sell at Transformed Stations

Chart E3C PRESTO Ticket Sales Grew faster in Transformed Stations



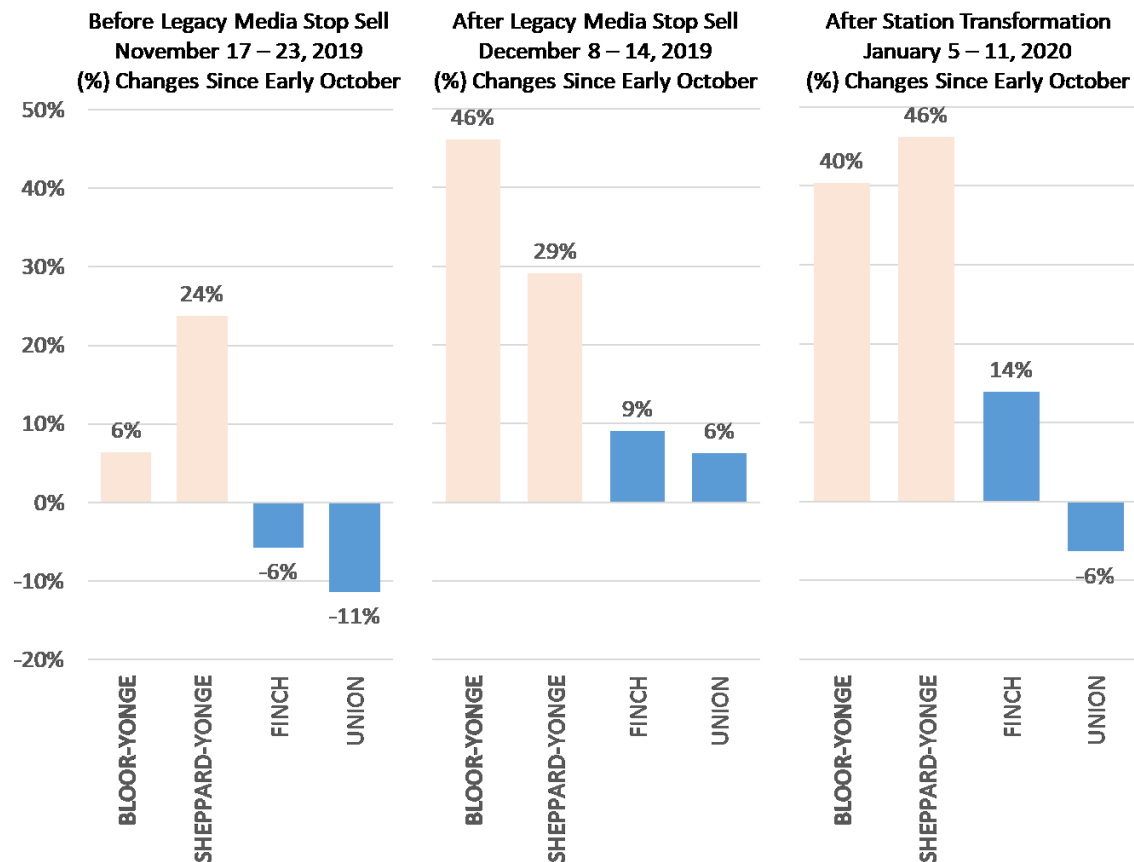
- The % change in PRESTO Ticket sales was 30% greater at transformed stations vs non-transformed stations
- When combined with improved customer service presence, it is possible that some of the riders whose previous method of choice was to use the open fare lines, may have migrated to fare cards
- With station transformation and collectors on premise, people are moving to ticket sales as it is the most convenient choice
- As gate data and fare vending machine data become more available, this will enhance the TTC's revenue recovery capabilities

Appendix E3D

PRESTO Ticket Sales Comparisons

Chart E3D compares legacy media and PRESTO ticket growth (%) at four (4) key stations since October 5, 2019

Transformed Stations	Non-Transformed Stations
BLOOR-YONGE	FINCH
SHEPPARD-YONGE	UNION



- Since October 5, 2019 (week 41), ticket sales increased in transformed vs non-Transformed Stations.
- Legacy Media Stop Sell increased PRESTO tickets sales across all four (4) stations (from 46% for YONGE/BLOOR, to 6% for UNION)
- Tickets sales at transformed stations (YONGE/BLOOR, 40% and SHEPPARD-YONGE, 46%) grew significantly higher compared with non-transformed stations (FINCH, 14% and UNION, - 6%)
- The impact from Legacy Media stop sell and station transformation has migrated more riders onto PRESTO
- Union Station shows a reduction of 6% in PRESTO ticket sales in January, which could be seasonal
- This has increased the TTC's ability to realize revenue, ensuring all fares are accurately captured and recorded.

Appendix E4A

Ridership Concession Breakdown in 2019

Chart E4A1 below illustrates the breakdown of concessions used by TTC riders based on a combination of diary studies, field researches, PRESTO data and others. As PRESTO adoption increases, the TTC can better understand its customer base. Chart E4A2 below shows the concession breakdown using PRESTO data. With increased data capability, it is now possible to separate data between senior and student riders.

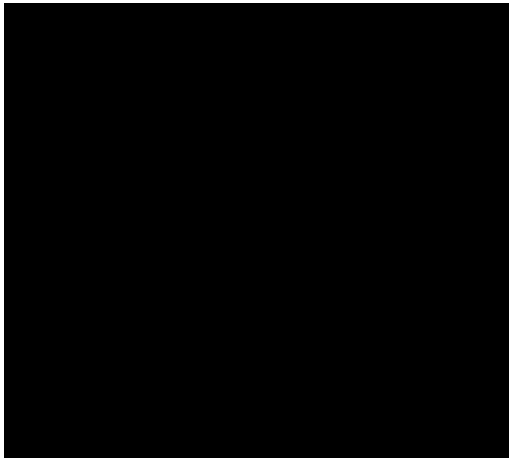


Chart E4A1 Concession Breakdown using historical method

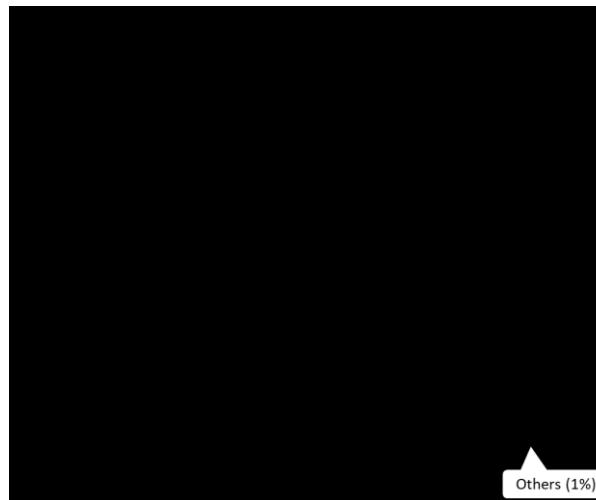


Chart E4A2 Concession Breakdown using PRESTO data

Table E4A3	
Concession	Taps (#)
Adult	368 M
Child	10 M
Senior	28 M
Student	31 M
Post-Secondary	57 M
Others (PRESTO Tickets & SRVMs)	3 M

Table E4A3 details the overview of Presto Taps by concession type for all of 2019

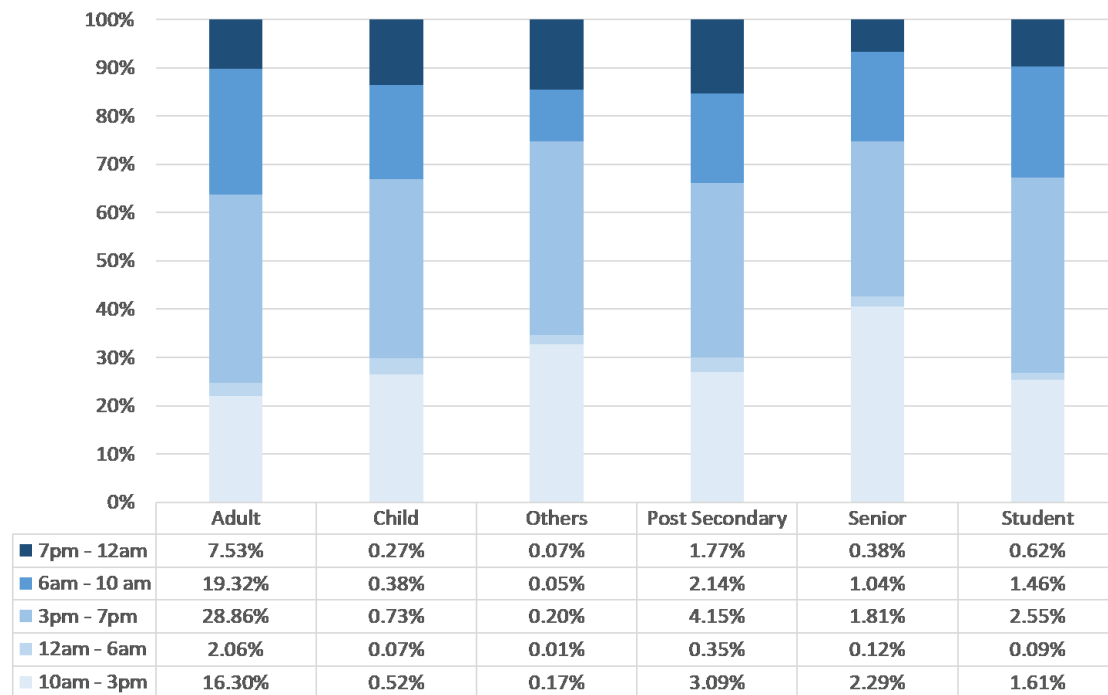
Note: PRESTO data includes ePurse, 2-Hours transfer, Period Passes, PRESTO Tickets and PRESTO Single Rider Vending Machine LUMs

Appendix E4B

Concession Breakdown by Time using PRESTO data (2019 system wide)

Chart E4B is an example of how PRESTO data availability allows analysis and monitoring. The chart compares time-of-day usage among concession cards. Usage in abnormal hours, e.g. 7 p.m. to 12 a.m. and 12 a.m. to 6 a.m. for Child PRESTO cards for example, helps the TTC understand risk areas and target further analysis by mode and location.

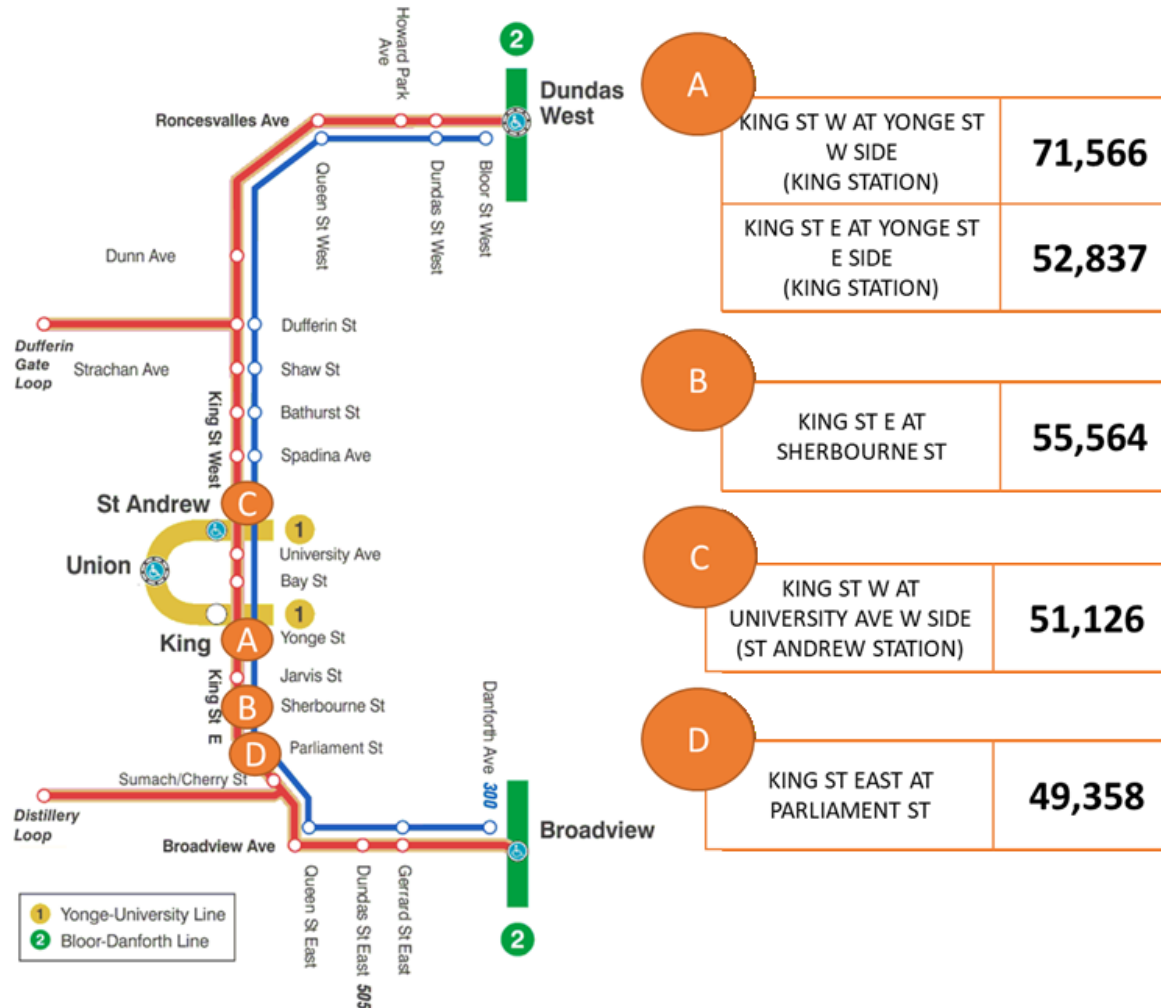
Chart E4B Concession Breakdown by Time using PRESTO data (2019 system wide)



Appendix E4D

504 King Streetcar route - Top five (5) stops for PRESTO taps (December 2019)

Image E4D provides an example of how the TTC uses PRESTO data to understand service utilization by location. Analyses such as this one provides PRESTO tap data for streetcar routes and stops. These can help Revenue Protection, Service Planning, Policy Development and Station Operations staff in developing revenue protection deployment, service planning, policy development and service deployment needs and strategies respectively.



Appendix F

Image 5.0 Sample Customer Communication Campaign Creatives 2020 Campaign - There are no excuses not to pay your fare

Streetcar Wrap There are no excuses not to pay your fare




Advertisement 35" x 11"
There are no excuses not to pay your fare

Detailed Message - Low Floor Light Rail Vehicle Map Panel
Tap Every Time


Fare is fair.

If you don't pay your fare, you can be fined \$425.



Tap every time

You must tap your PRESTO card or PRESTO Ticket every time, even if you pay your fare as-you-go, or have a monthly pass loaded on your card.



Learn more at ttc.ca/presto

