



TORONTO TRANSIT COMMISSION

Service Level Review

Executive Committee Presentation
June 30, 2015



Key Service Levels – 2012 - 2015

Service Levels (Millions)

Service Level Description		2012	2013	2014	2015
TTC Ridership	Approved	503	528	540	545
	Actual	514	525	535	n.a.
Service Hours	Approved	10.317	10.650	10.857	11.054
	Actual	10.231	10.562	10.811	n.a.
Service Kilometres	Approved	227.582	232.540	236.437	239.709
	Actual	221.995	227.468	231.016	n.a.
Wheel-Trans Ridership	Approved	3.144	2.877	3.066	3.246
	Actual	2.946	2.896	3.127	n.a.





Standards, Decision Rules, Processes

Framework

- objective, transparent, quantifiable, reproducible
- grounded in business logic, principles & applied consistently, equitably

Standards, Decision Rules, Processes

- coverage and access
- accessibility
- maximum wait times
- on-board crowding standards
- effects on customers (benefits and inconveniences)
- productivity
- minimum ROI – new services





Service Profile

Overview

- service: 144 bus routes, 11 streetcar routes, 4 rapid transit lines
- peak service vehicles: 1,508 buses, 202 streetcars, 105 rapid transit trains

Service Profile

- % of service within 5 minute walk
- % of service within maximum crowding standards
- % of service within maximum waiting standards
- % accessible -- bus, streetcar, subway service
- demand, service profiles for Wheel-Trans
- demand, outlook for commuter parking lots
- profile of TTC customers





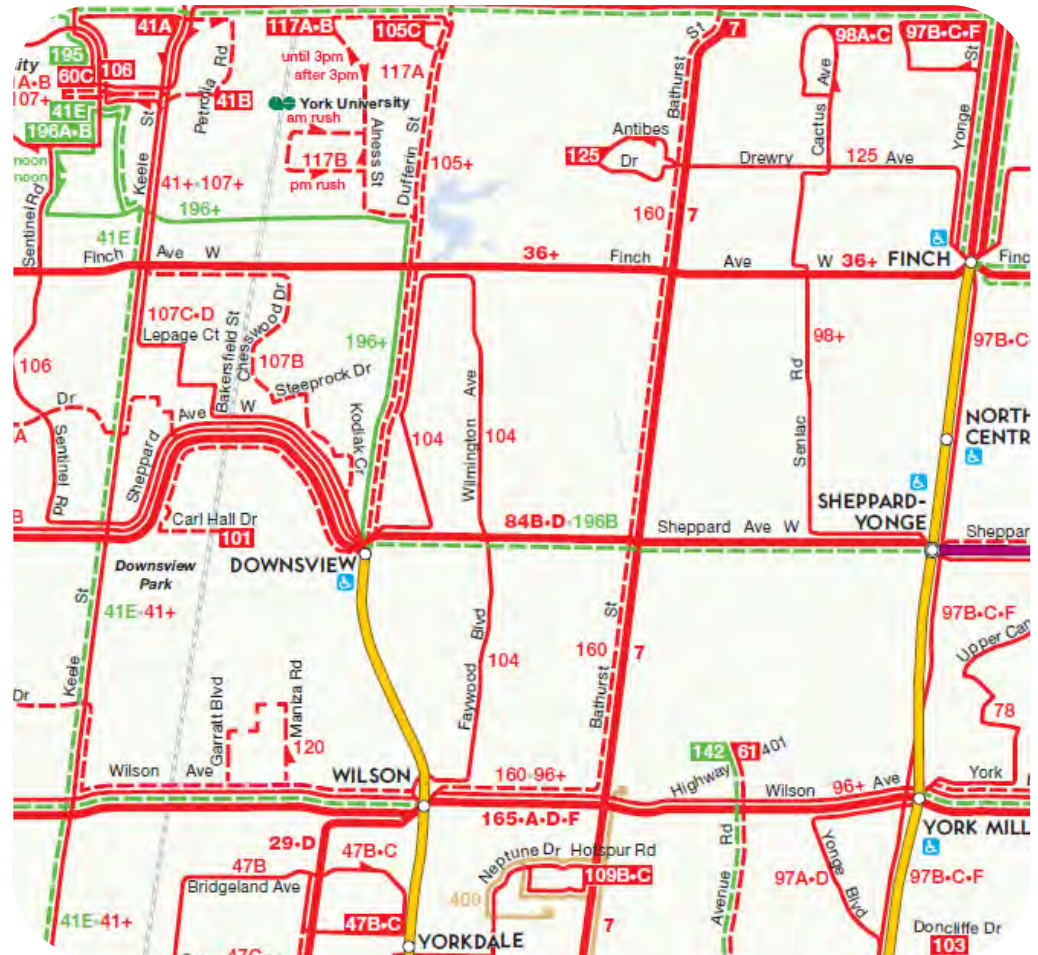
2015 Service Initiatives

- children aged 12 & under ride free
- all-door boarding & proof-of-payment on streetcar routes
- subway service reliability
- bus, streetcar service reliability
- overnight network
- all-day, every-day service
- ten-minute-or-better network
- reduce wait times & crowding (off-peaks)
- new buses, temporary garage
- reduce wait times & crowding (peak periods)
- express bus network (peak periods)



Transit Service

- right....
 - ... service
 - ... amount
 - ... time
 - ... place
- maximize mobility
- maximize quality service
- affordable:
 - users
 - taxpayers



Service: Standards, Decision Rules, Processes



Decision rules, standards for service resources:

- objective, data-, fact-based:
 - ridership
 - origin-destination data
 - travel behaviour research
- grounded in business logic, principles
- transparent, quantifiable, reproducible
- applied consistently, fairly, equitably



Service: Standards, Decision Rules, Processes



System structure and design:

- grid network:
 - exploit Toronto's road-system grid
 - maximize travel choices, combinations
- subway-oriented:
 - fastest service for longer trips
 - most cost-effective mode for high-volume demand
- network connectivity:
 - fullest coverage, access throughout city
 - maximize travel choices, combinations



Service: Standards, Decision Rules, Processes



System structure and design:

- most-direct route possible – no off-route diversions
 - fastest, minimum travel time
- no duplication:
 - best use of available resources
- minimize transfers:
 - consistent, with travellers' behaviour, preferences



Service: Standards, Decision Rules, Processes



Coverage, access:

- design: \leq 10-minute walk to transit
 - \leq 5-minute not eligible for additional service
- overnight:
 - \leq 15-minute walk to transit
- conditional on density, land use to support viable operation
- exceptions:
 - physical, geographical barriers



Service: Standards, Decision Rules, Processes



Accessibility:

- all vehicles, facilities accessible by 2025:
 - accommodate people using mobility devices
 - barrier-free paths, movement
 - accommodate people with visual and hearing impairments
 - accessible communications / customer service
- specialized service (Wheel-Trans) for physical disabilities



Service: Standards, Decision Rules, Processes



Minimum ROI on new service expenditures:

- determine required resources → gross operating costs
- project new ridership, revenues (new to system)
- calculate net operating costs
- determine new riders gained / net dollar operating cost
- minimum ROI threshold = 0.23 new riders / net dollar cost:
 - eligible for trial implementation
 - subject to budget availability



Service: Standards, Decision Rules, Processes



Productivity standard: boardings per service hour

- minimum productivity threshold = 15 boardings / hour
- productivity of 10-15 allowed if no alternative service within 600 metres (8-minute walk)
- exceptions allowed in accordance with policy objective, budget availability:
 - eg – all-day, every-day: 9 boardings / hour



Service: Standards, Decision Rules, Processes



Changes, expansion to routes:

- decision rule – overall / net improvement for customers
- effects on customers:
 - measured wrt effects on travel time:
 - walk access
 - wait time
 - in-vehicle travel time
 - transfer implications
- weighted by number of customers affected
- weighted by customers' perception of effects:
 - derived from travel behaviour research
- assessment must show net positive results for customers





Travel Behaviour Research – Customer Perceptions

Travel time:

- 1 minute in-vehicle = 1 minute
- 1 minute waiting = 1.5 minutes
- 1 minute walking = 2.5 minutes
- 1 transfer = 10 minutes



Service: Standards, Decision Rules, Processes



Express service:

- existing corridor – characteristics:
 - ridership levels
 - high proportion of long-distance trips
 - concentration of ons / offs at major stops
 - major generators at route ends (subway, college, shopping centre)
- assess for net benefits / disbenefits to customers (customer-minutes)
- net effect must be positive



Service: Standards, Decision Rules, Processes



Additional period of service -- existing route:

- projected ridership:
 - current ridership on route, other nearby routes
- determine cost – service hours, dollars
- assessment based on productivity (boardings / hour) threshold ≥ 10
- subject to budget availability



Service: Standards, Decision Rules, Processes



Earlier start / later finish to service:

- project ridership:
 - current ridership at beginning / end of service
 - related to timing relative to subway start / finish
- determine cost: service hours, dollars
- assessment based on productivity (boardings / hour) threshold ≥ 10
- subject to budget availability



Service: Standards, Decision Rules, Processes



Maximum waiting times / minimum level of service:

- bus, streetcar routes = 30 minutes
- subway = 5 minutes
- customers won't wait longer than scheduled 30 minutes
- minimum required to keep service competitive
- rapid transit must be rapid





On-board crowding standards used to:

- identify overcrowding on routes:
 - increase service
- identify surplus capacity on routes:
 - service reduction when required



Service: Standards, Decision Rules, Processes



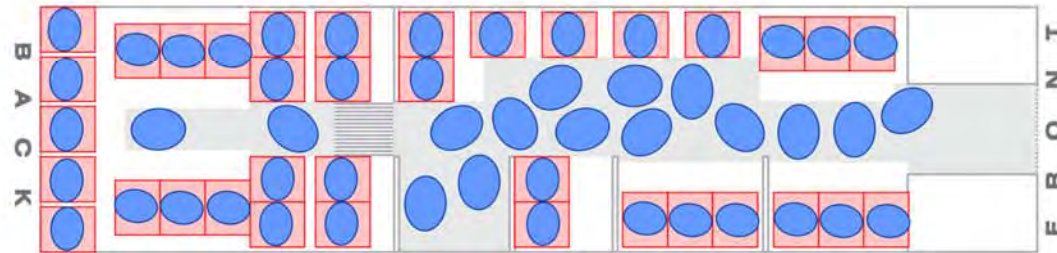
On-board crowding standards:

- “tolerable” crowding / comfort
- move to, from doors
- accommodate surge loading

<u>Vehicle</u>	<u>Peak Crowding Standard</u>
bus	50 to 53
articulated bus	77
streetcar	74
articulated streetcar	108
low-floor streetcar	130

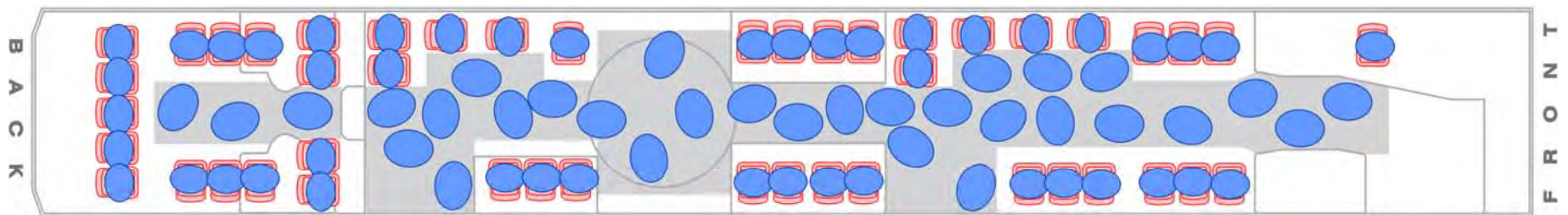


Regular 12 metre Bus



Typical Crowding During Peak Periods
51 People

Articulated 18 metre Bus



Typical Crowding During Peak Periods
77 People

Service: Standards, Decision Rules, Processes



- prevent overcrowding
- prevent customer discomfort, dissatisfaction





University of Melbourne, Australia:

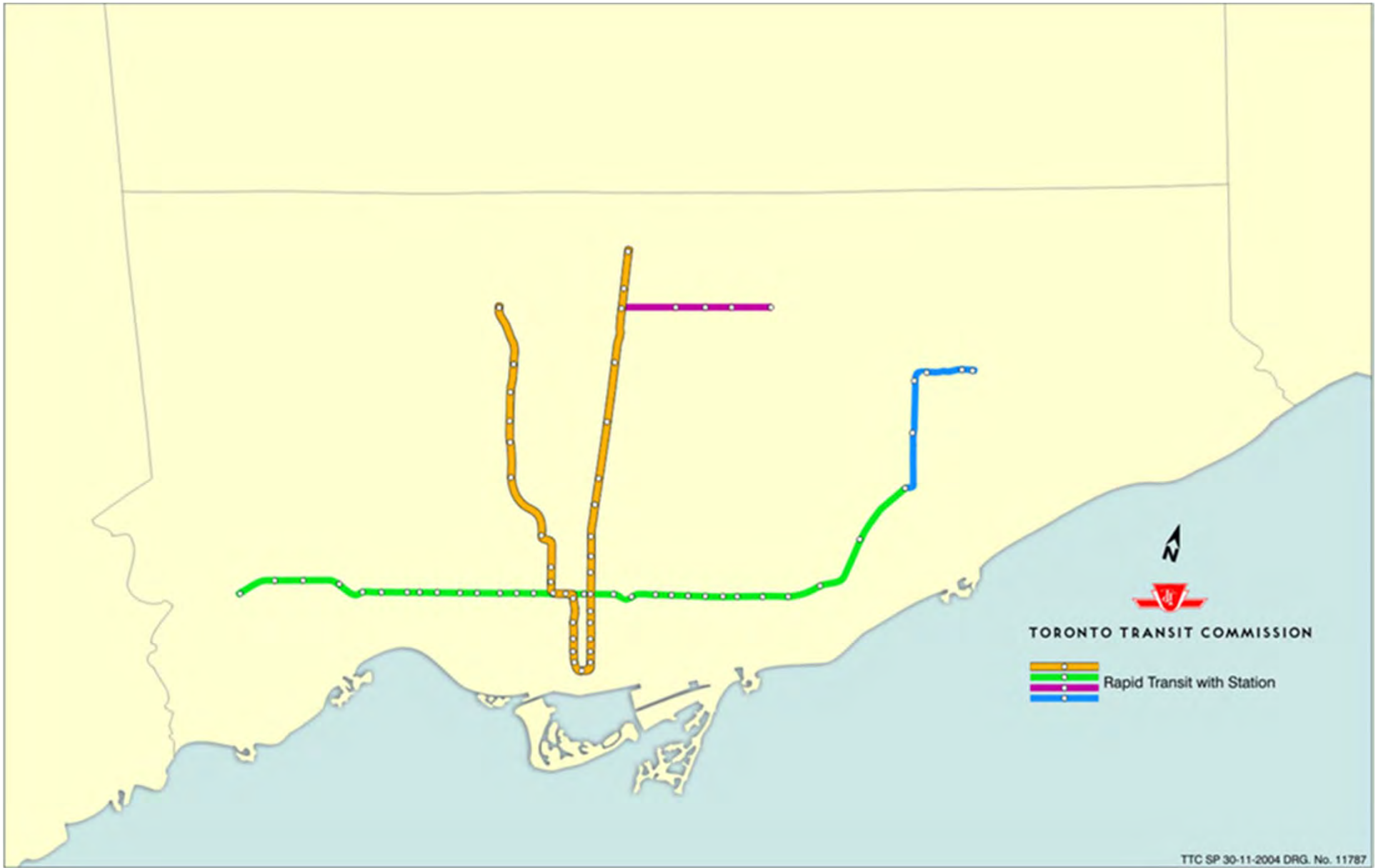
*“...TTC practices are exceptional internationally...
resulting in high occupancy rates by international standards,
and efficient use of staff and vehicles”.*

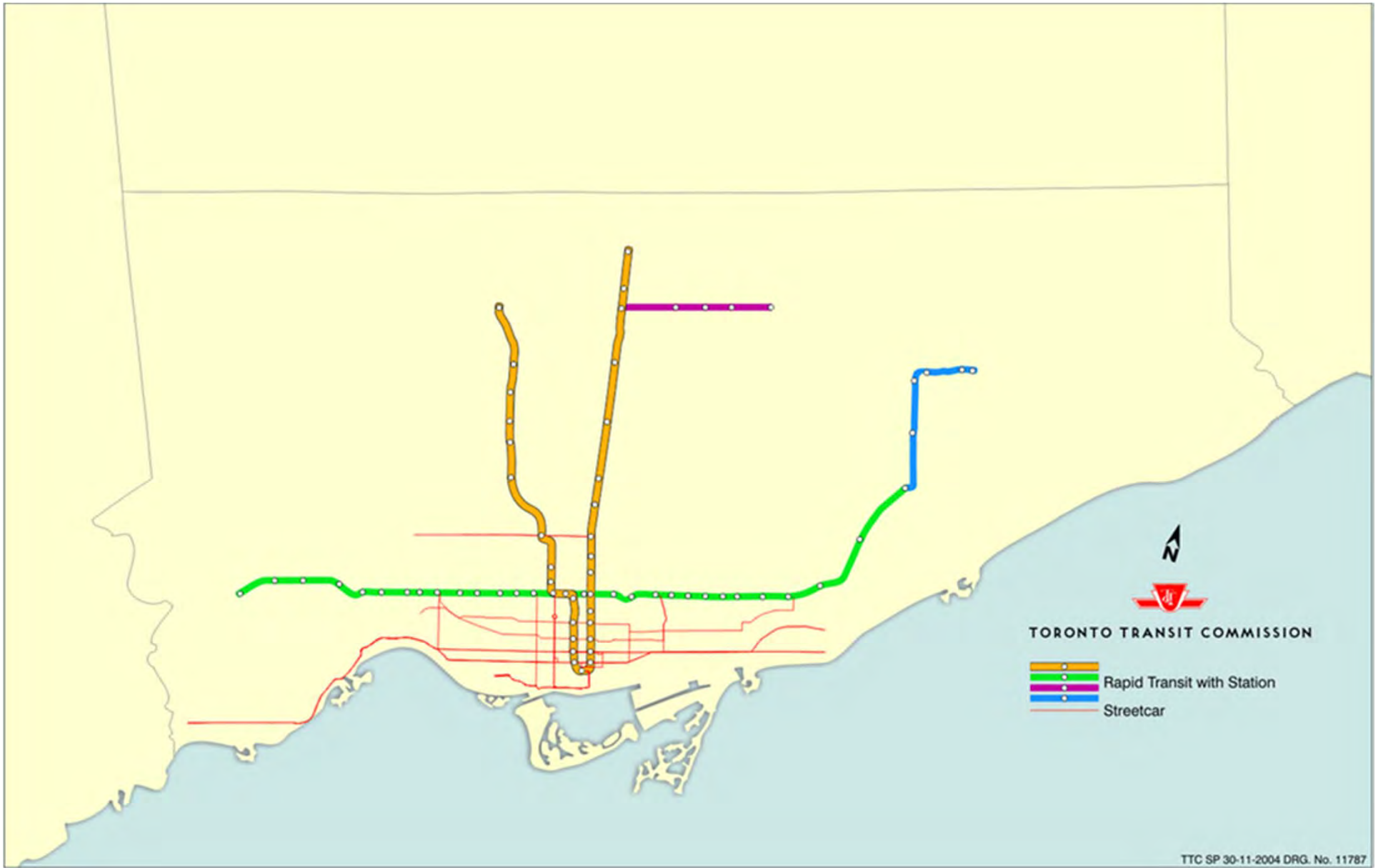


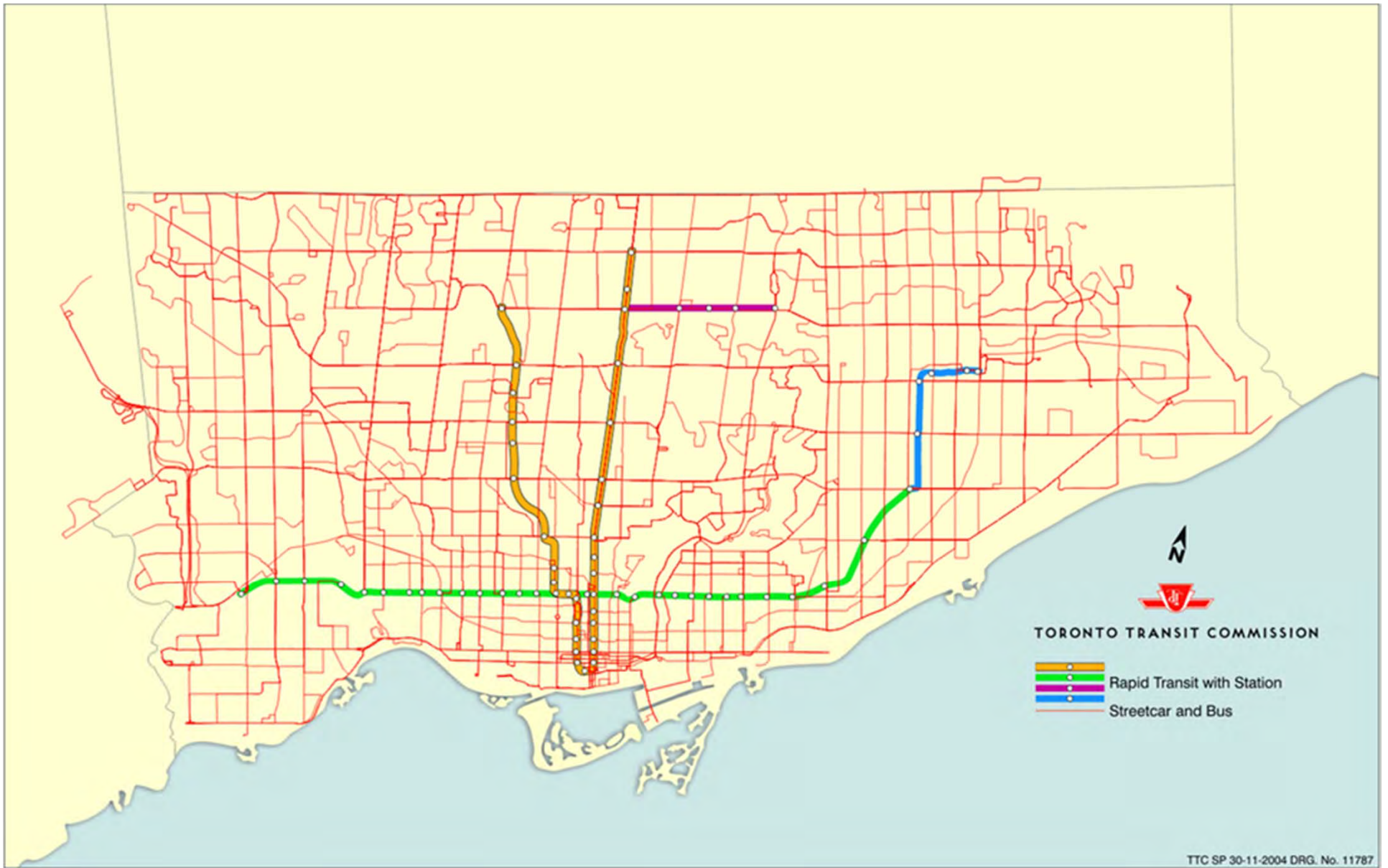


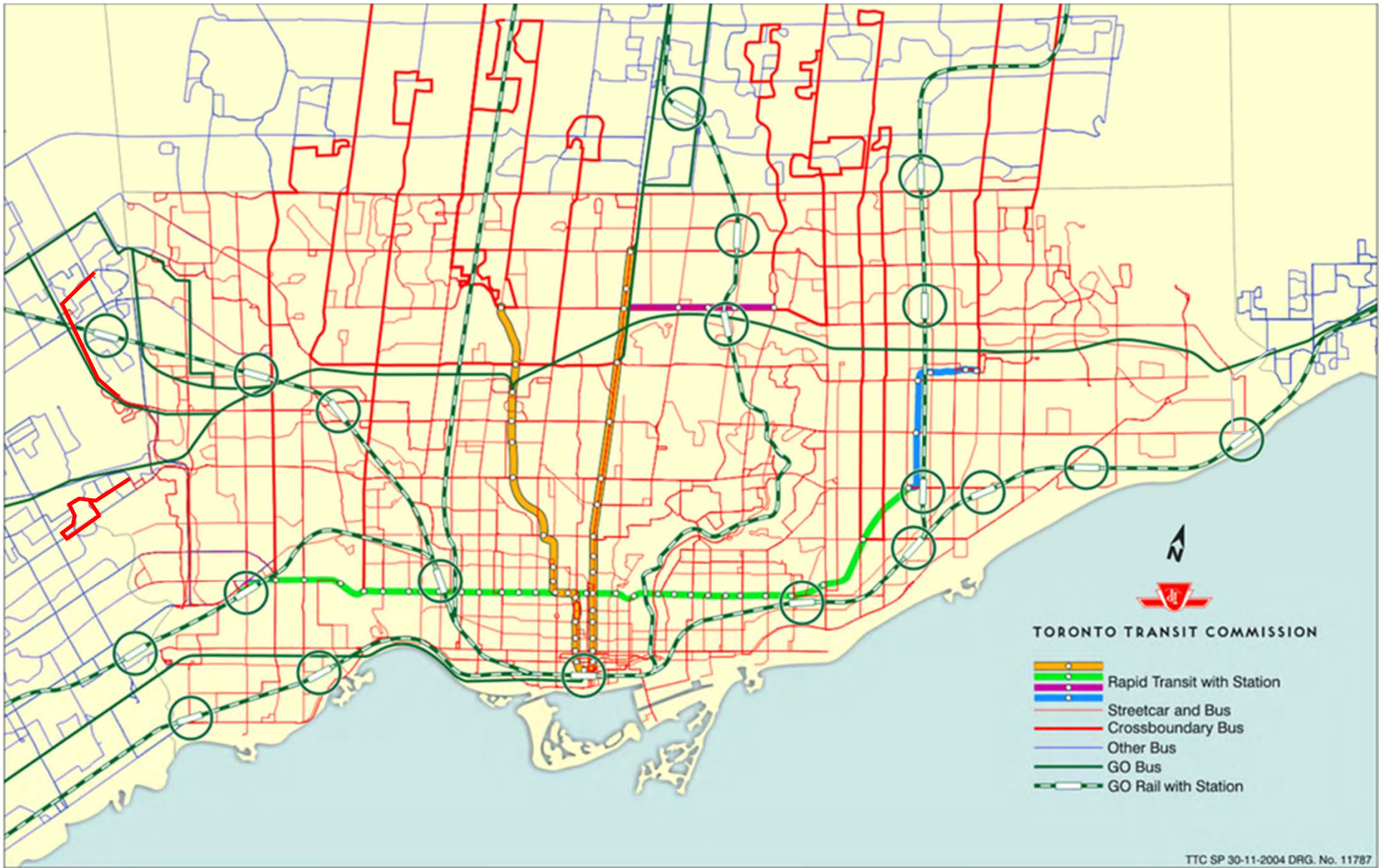
TTC Service Profile













1,508 buses in peak service

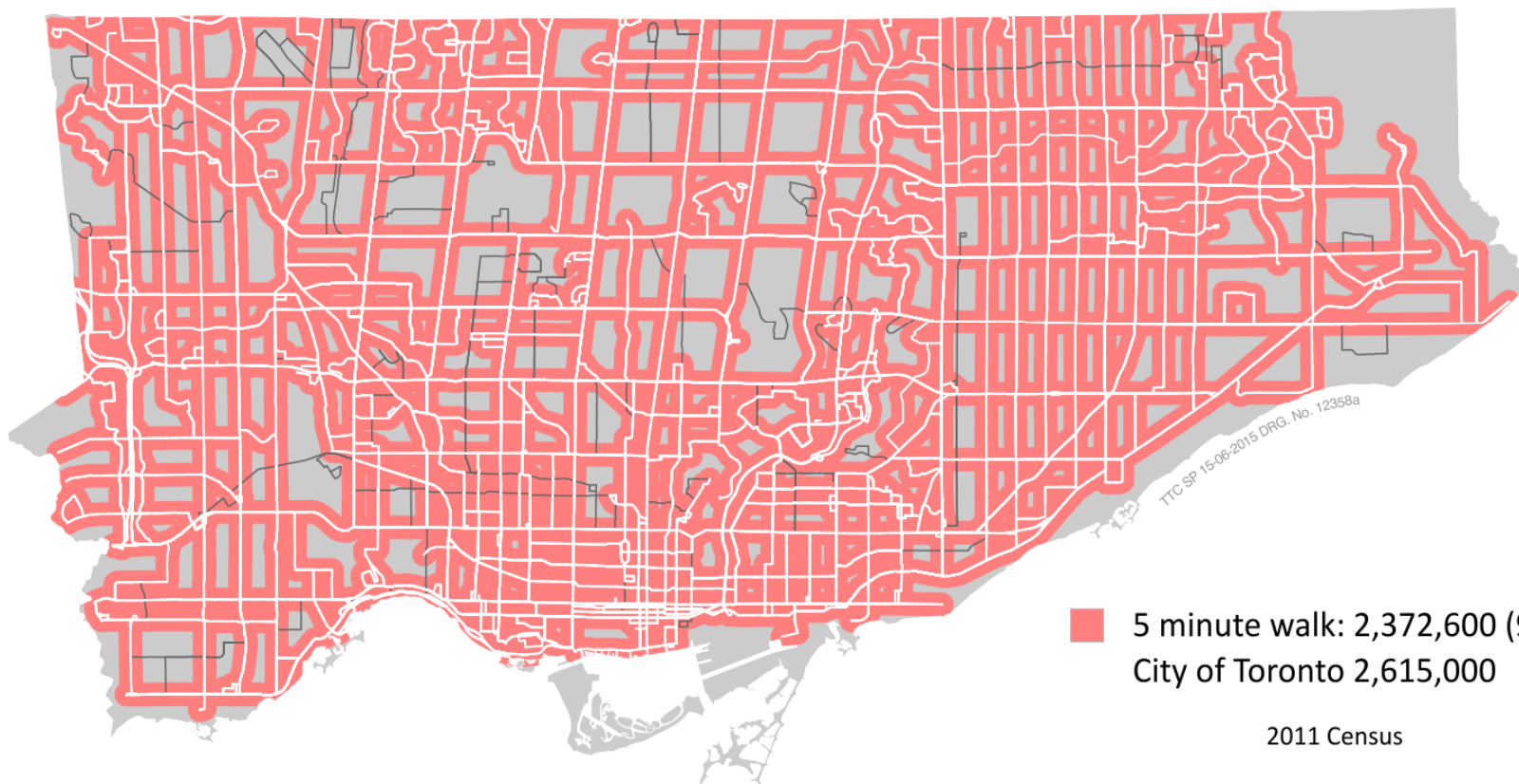


202 streetcars in peak service

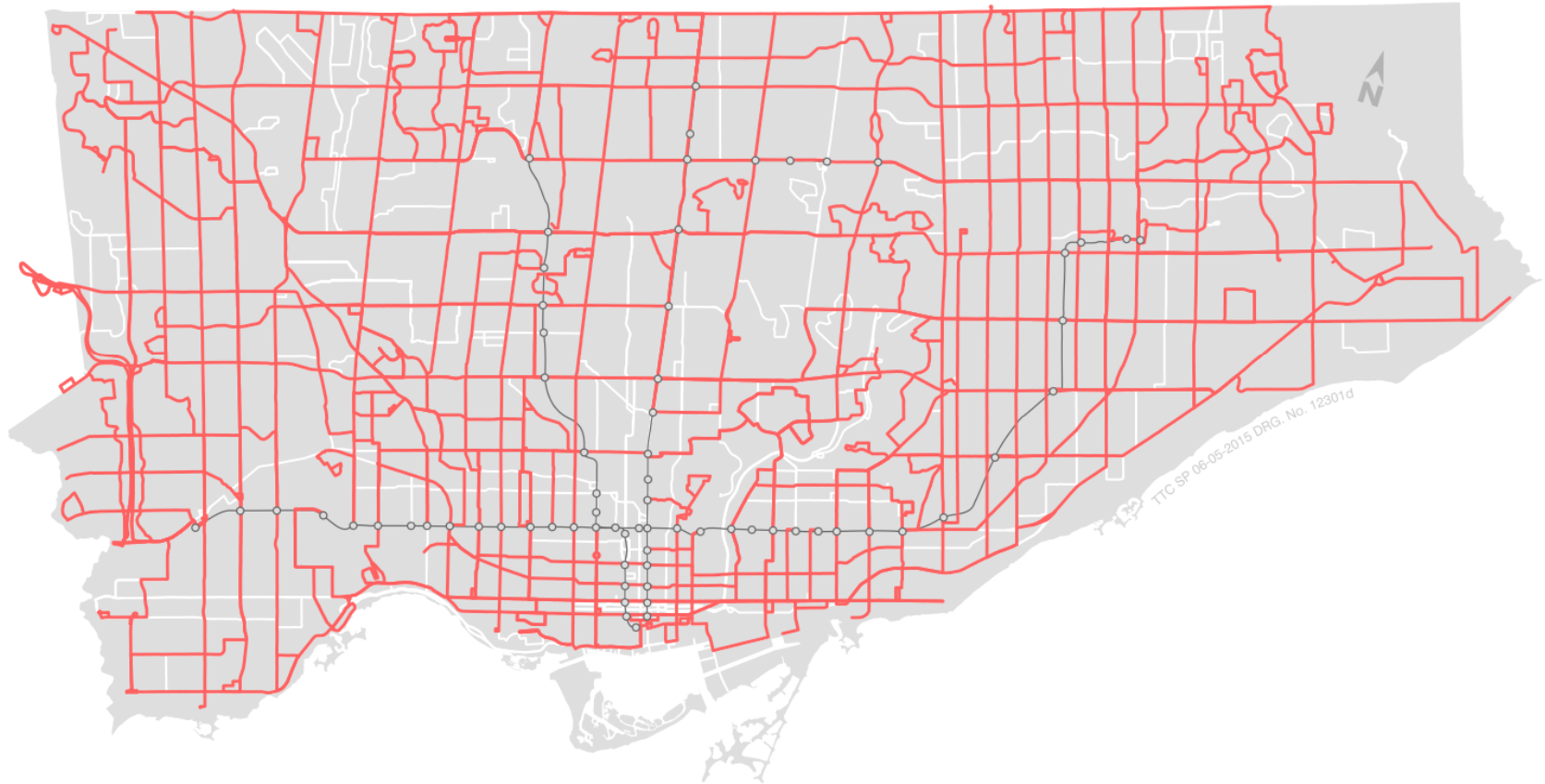


105 rapid transit trains in peak service

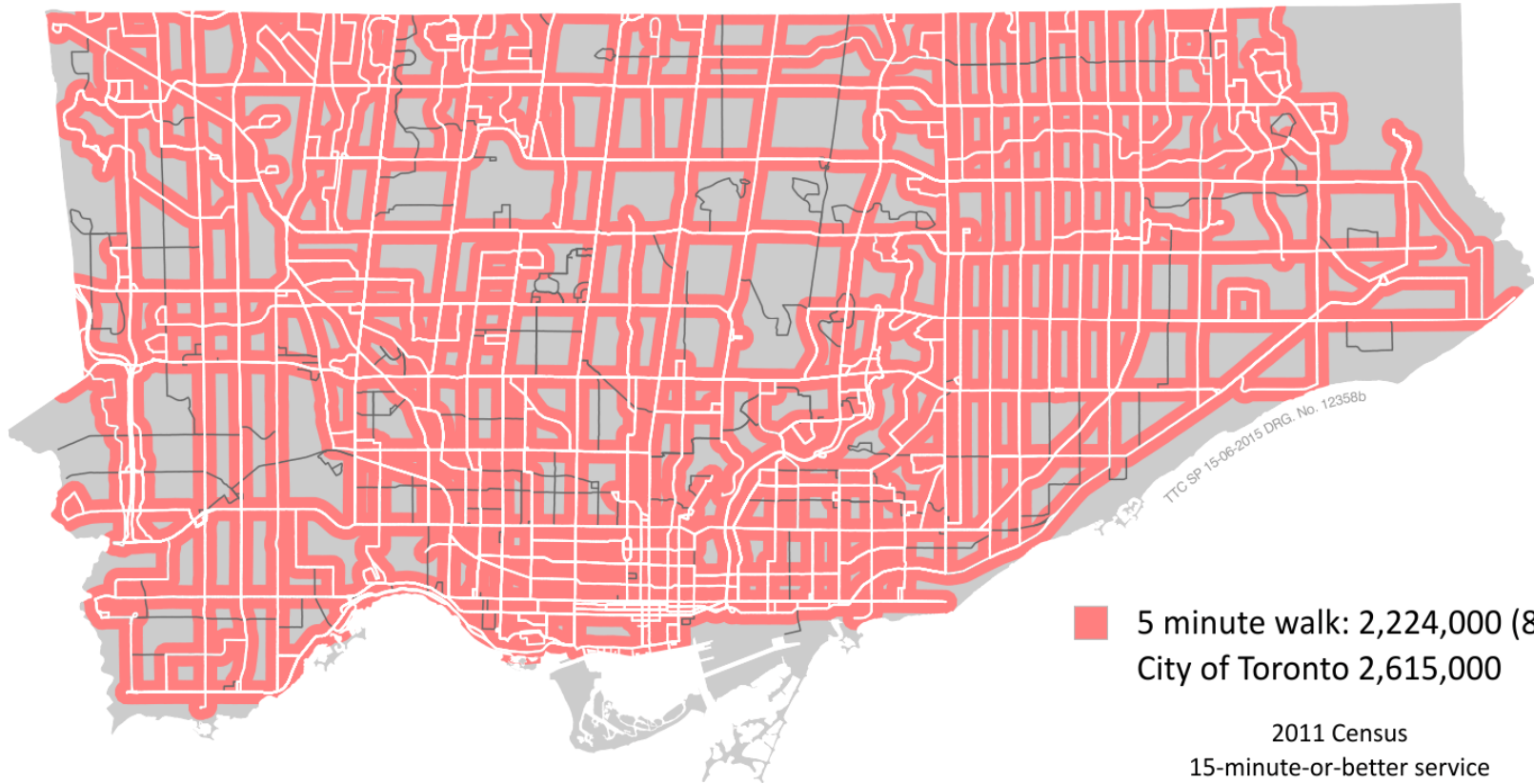
Population Within 5 Minute Walk Monday to Friday Morning Peak Period



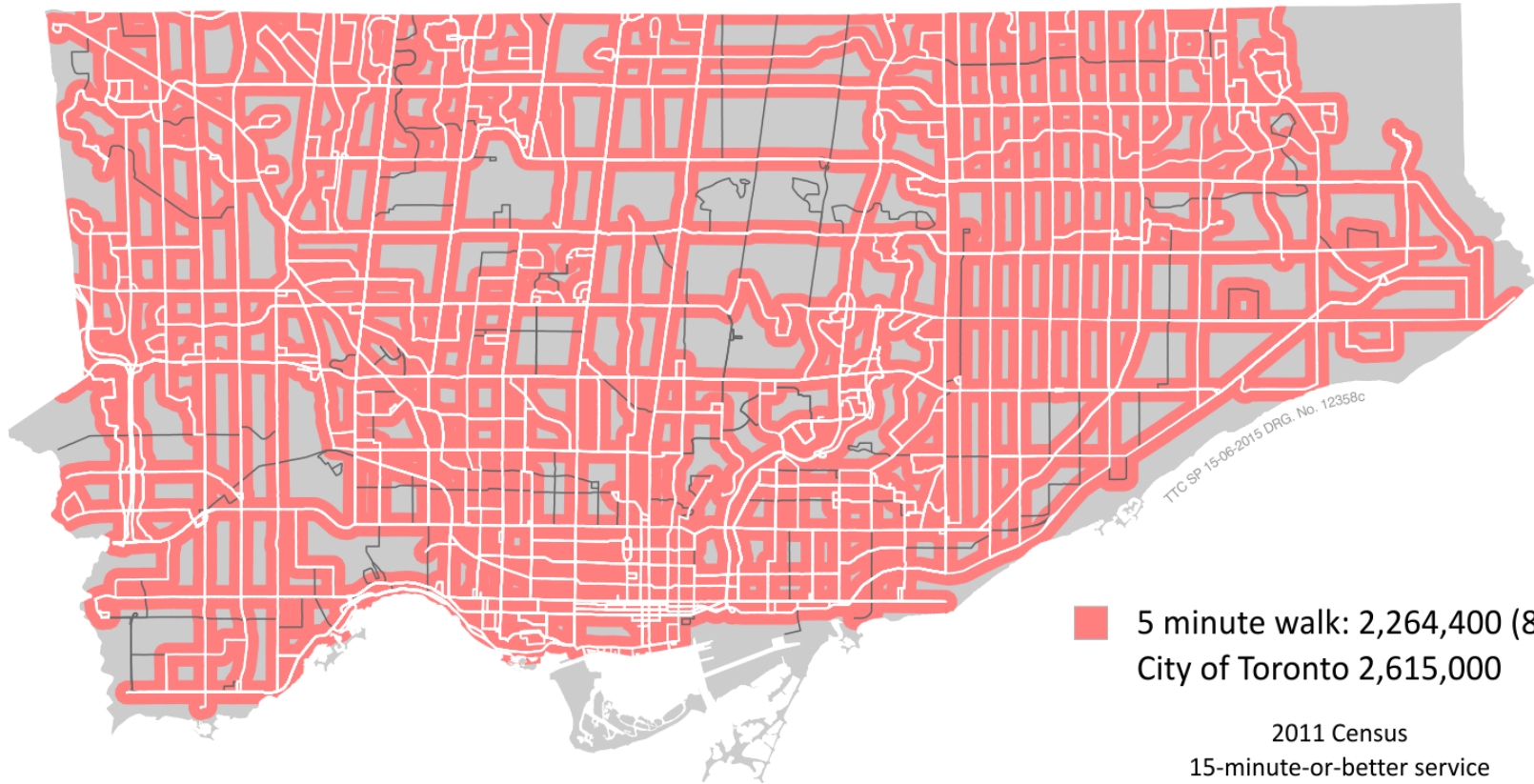
Current Off-Peak Coverage



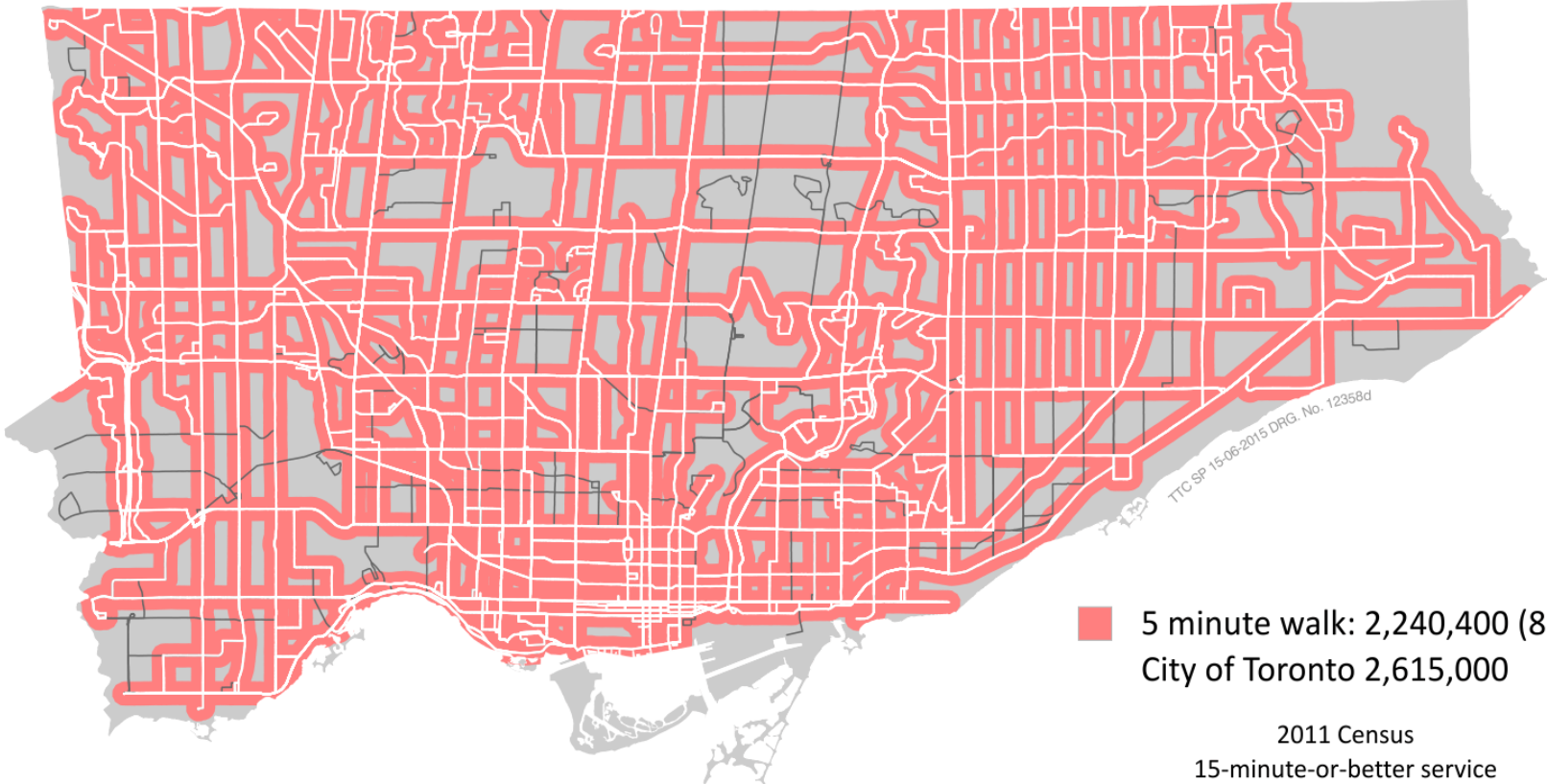
Population Within 5 Minute Walk Monday to Friday Midday Period



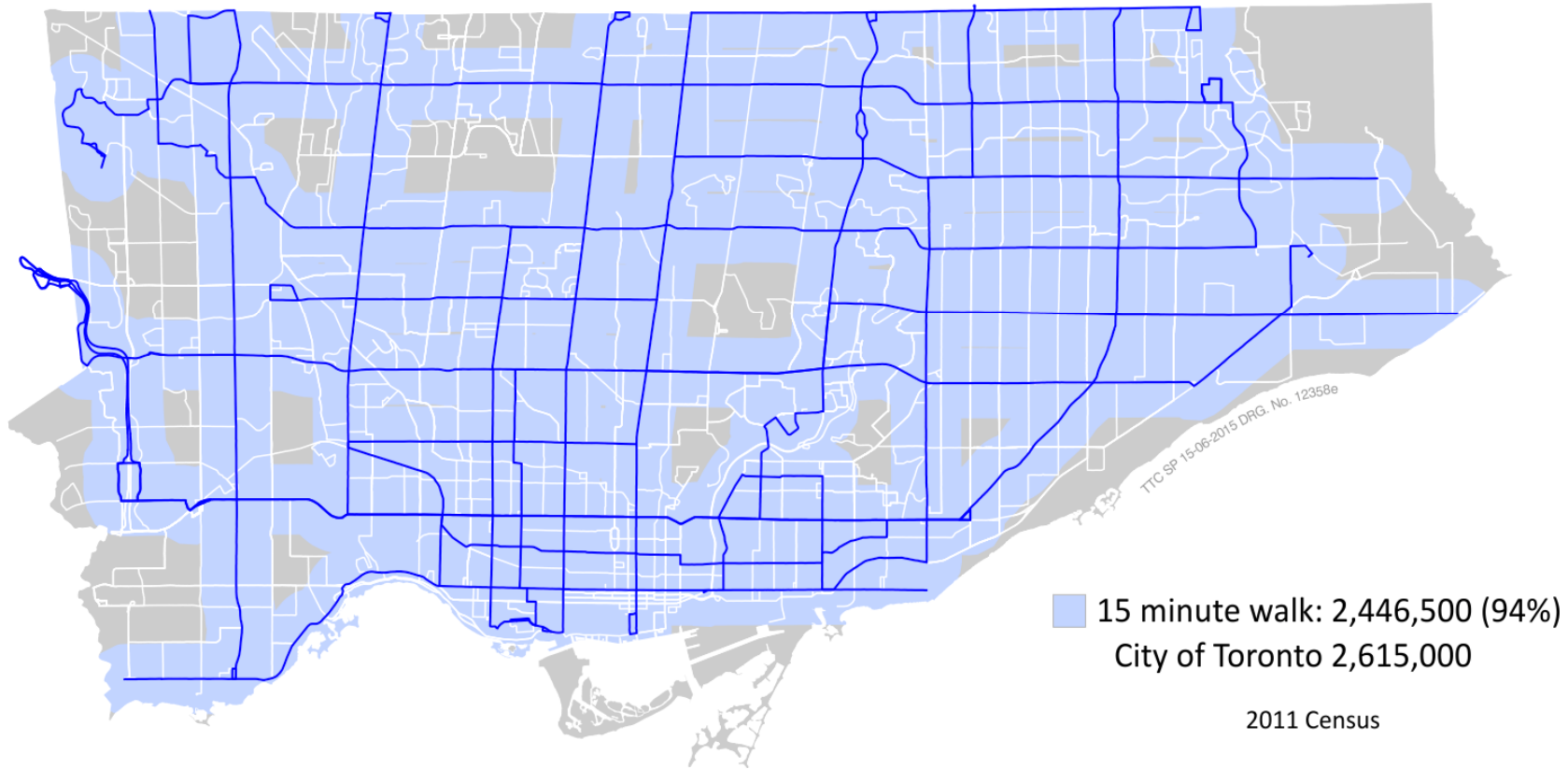
Population Within 5 Minute Walk Monday to Friday Early Evening Period



Population Within 5 Minute Walk Saturday Afternoon Period



Population Within 15 Minute Walk Overnight Bus Network



On-Board Crowding – Peak Bus Service



- existing crowding standard (50 to 53 avg. per bus):
 - 5% of peak bus service is overcrowded;
14 routes: 15 periods of operation
- approved crowding standard (47 to 50 avg. per bus):
 - 15% of peak bus service is overcrowded;
34 routes: 40 periods of operation



Maximum Wait-Time Standards – Status



- peak-period service:
 - 100% within standard (338 of 339 periods of operation)
- off-peak service:
 - 99% within standard (1,544 of 1,565 periods of operation)



Transfers Required in TTC Trips



Number of Transfers	Subway-to-Subway Counted as a Transfer	Subway-to-Subway Not Counted as a Transfer
0	35%	50%
1	40%	40%
2	20%	10%
3	5%	<1%
>3	<1%	<1%

Summary statistics from the table:

- 95% of trips (35% + 40% + 20%) are counted as subway-to-subway transfers.
- 100% of trips (50% + 40% + 10%) are subway-to-subway transfers, either counted or not counted.

Sources: 2011 TTS Survey



Accessibility Status



- all buses accessible; over 90% low-floor





TTC's New 100% Low-Floor Streetcars





Accessibility Status



Accessible streetcars:

- accessible low-floor streetcars on 510 Spadina
- 2015: 509 Harbourfront, 511 Bathurst, 505 Dundas
- all streetcar routes accessible by 2019



Accessibility Status



- all subway trains accessible

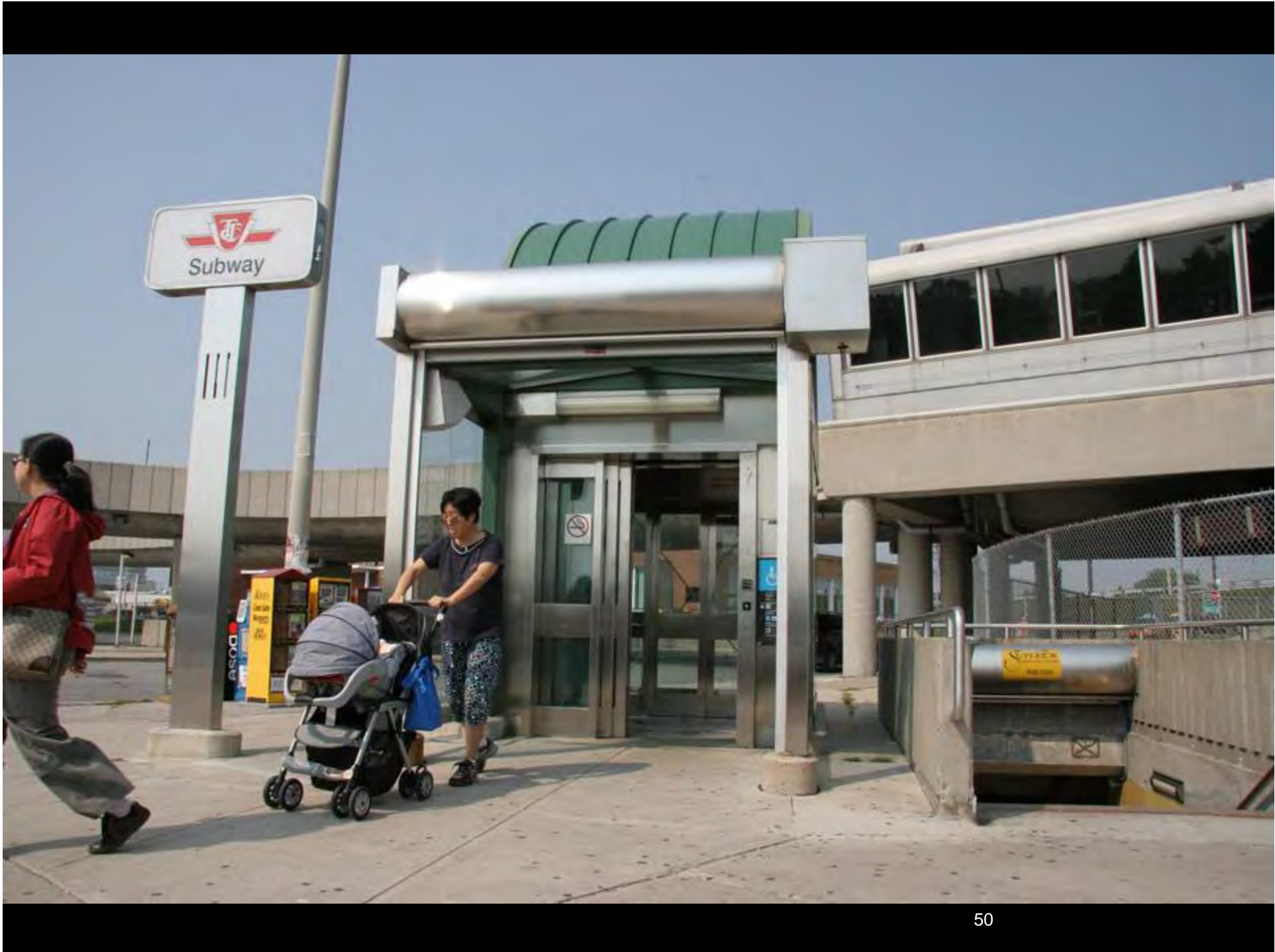


Accessible Fare Gates



Elevator

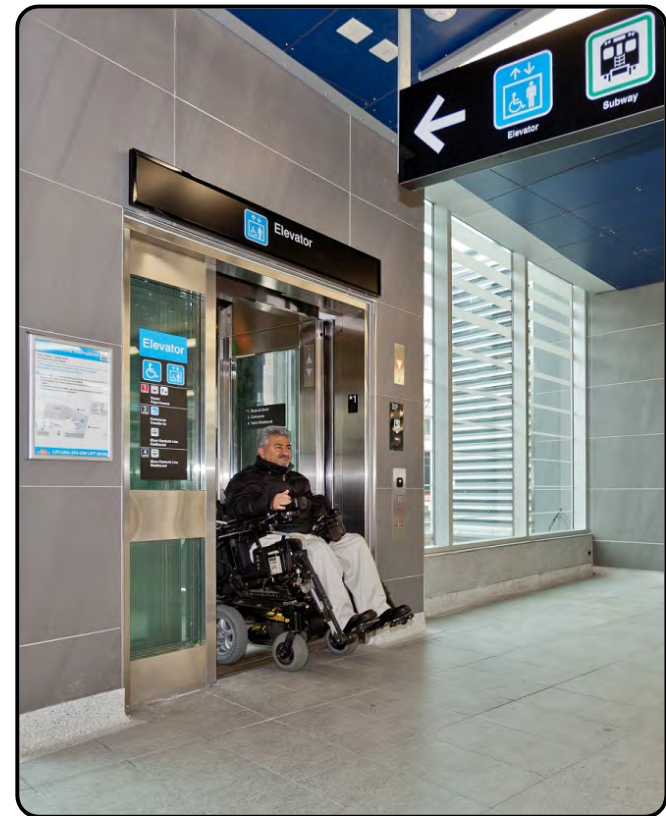




Accessible Subway Stations



Pape Station



Accessibility Subway Stations



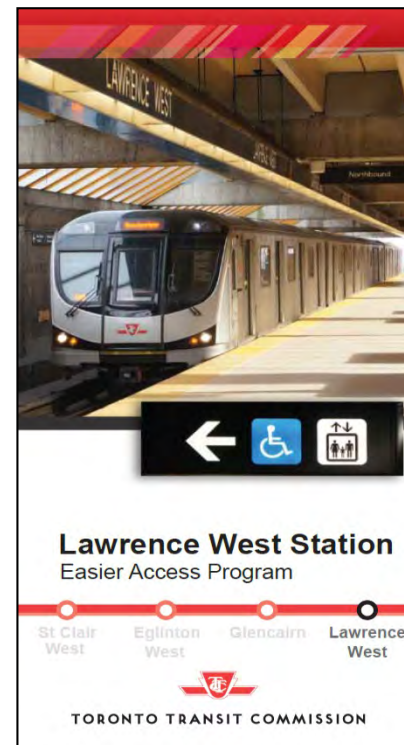
Pape Station



Accessible Subway Stations



- Dufferin, Lawrence West just completed
- currently: 34 stations accessible





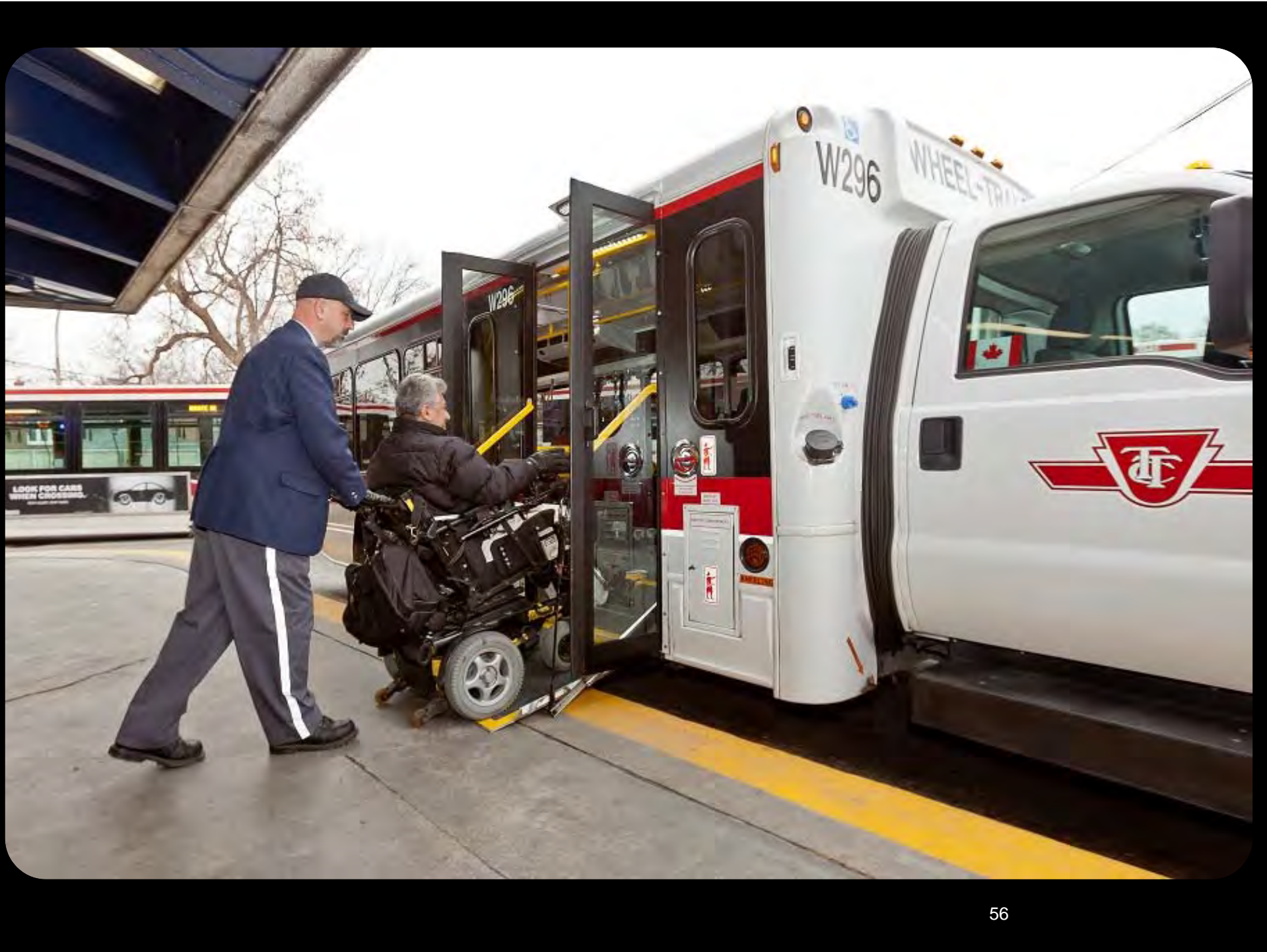
Accessible Subway Map



- Accessible Station
- Yonge-University Line
- Scarborough Line
- Interchange Station
- Bloor-Danforth Line
- Sheppard Line

*At Spadina station, only Line 2 is accessible from street to subway platform
Please use St George station for accessible transfers between Line 1 and Line 2

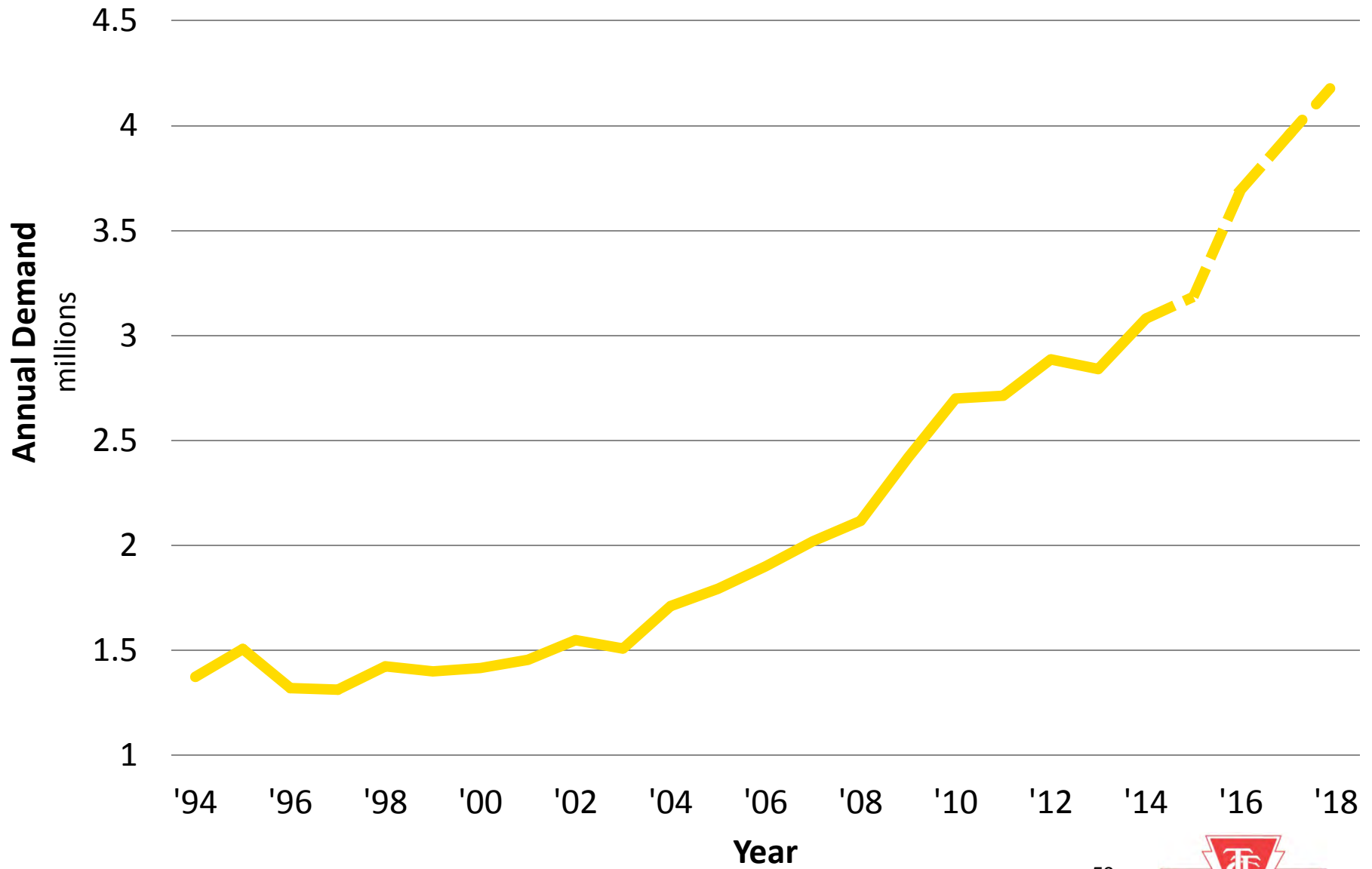








Wheel-Trans Demand



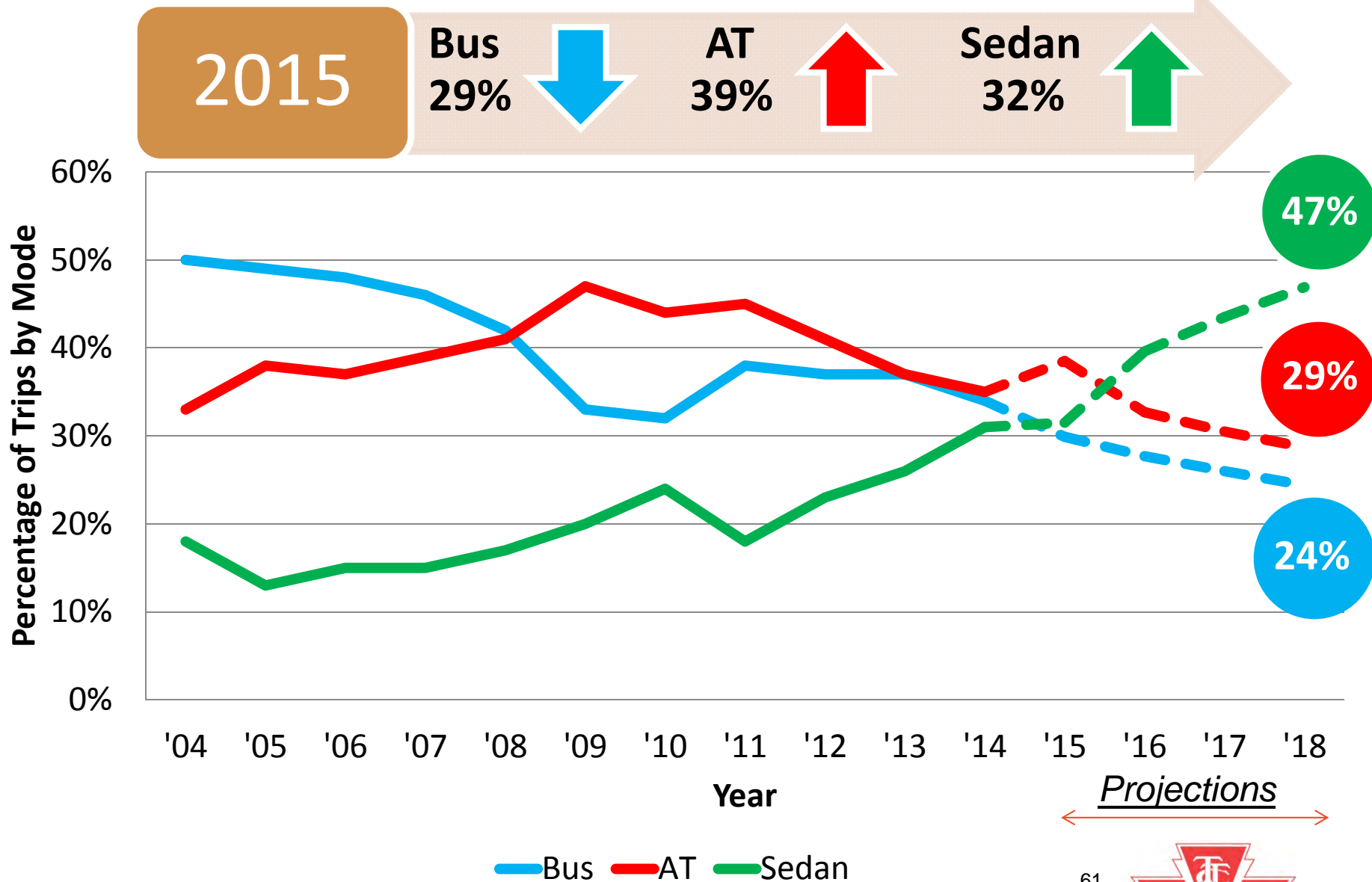
Wheel-Trans



- maintain unaccommodated rate < 1%
- scheduling, service revisions → increase capacity
- integration with conventional system → improve efficiency:
 - low-floor accessible streetcars
 - more accessible subway stations
- AODA – mandated eligibility – conditional, temporary



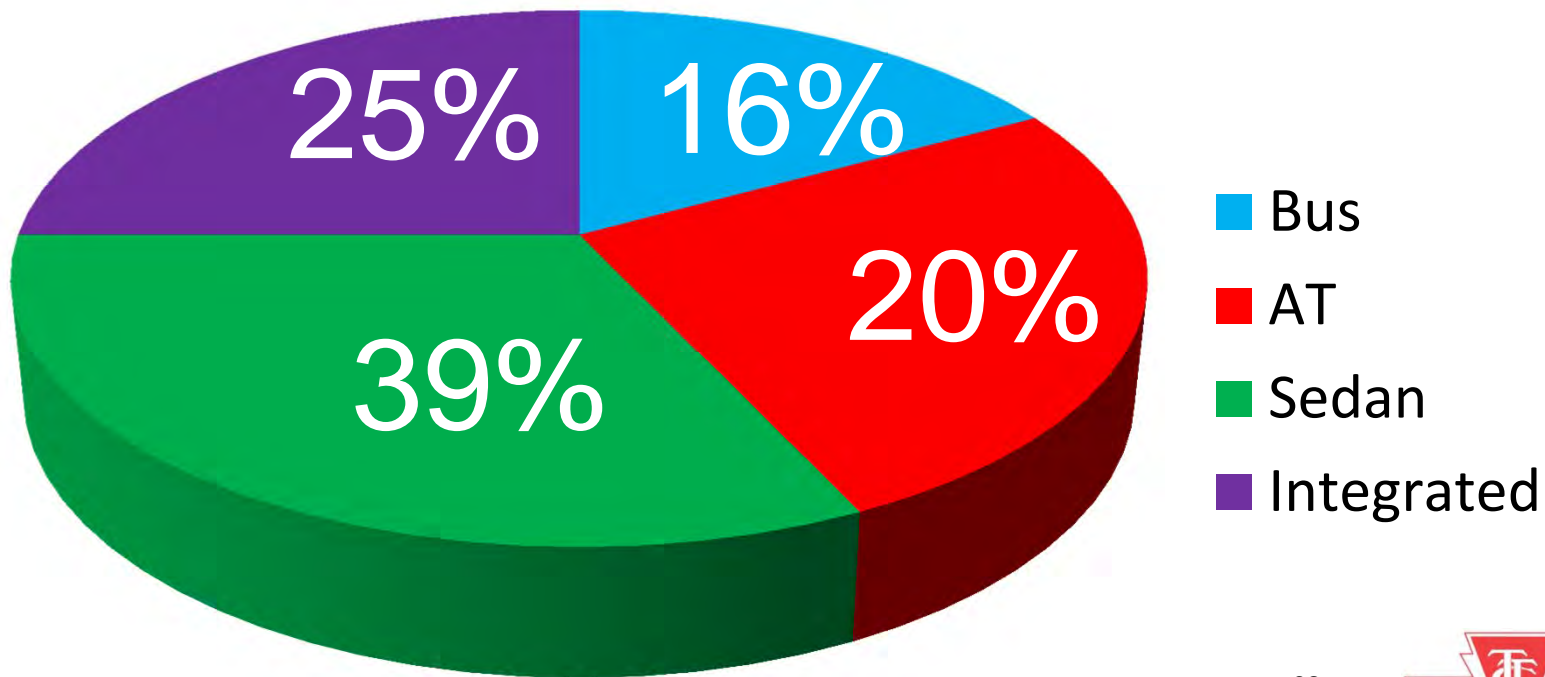
Wheel-Trans: Projected Modal Split



Wheel-Trans: Projected Usage by Mode

By 2025:

25% of Demand on
Integrated-Conventional
Services



TTC Commuter Parking



TTC Commuter Parking



- 14 stations → 28 lots → 12,300 spaces
- Finch East, West: biggest, growing market
- ~ 6 million transit trips annually
- net operating income + \$2.2 million (23% margin)
- demand constrained by lack of capacity at half of lots





TTC Commuter Parking



- 60% of spaces: temporary / long-term closures, relocations:
 - Build Toronto, Metrolinx
- long-term forecast: 38% reduction – Build Toronto
- Metrolinx: Eglinton LRT construction
 - 750 spaces removed:
 - Kennedy, Eglinton West



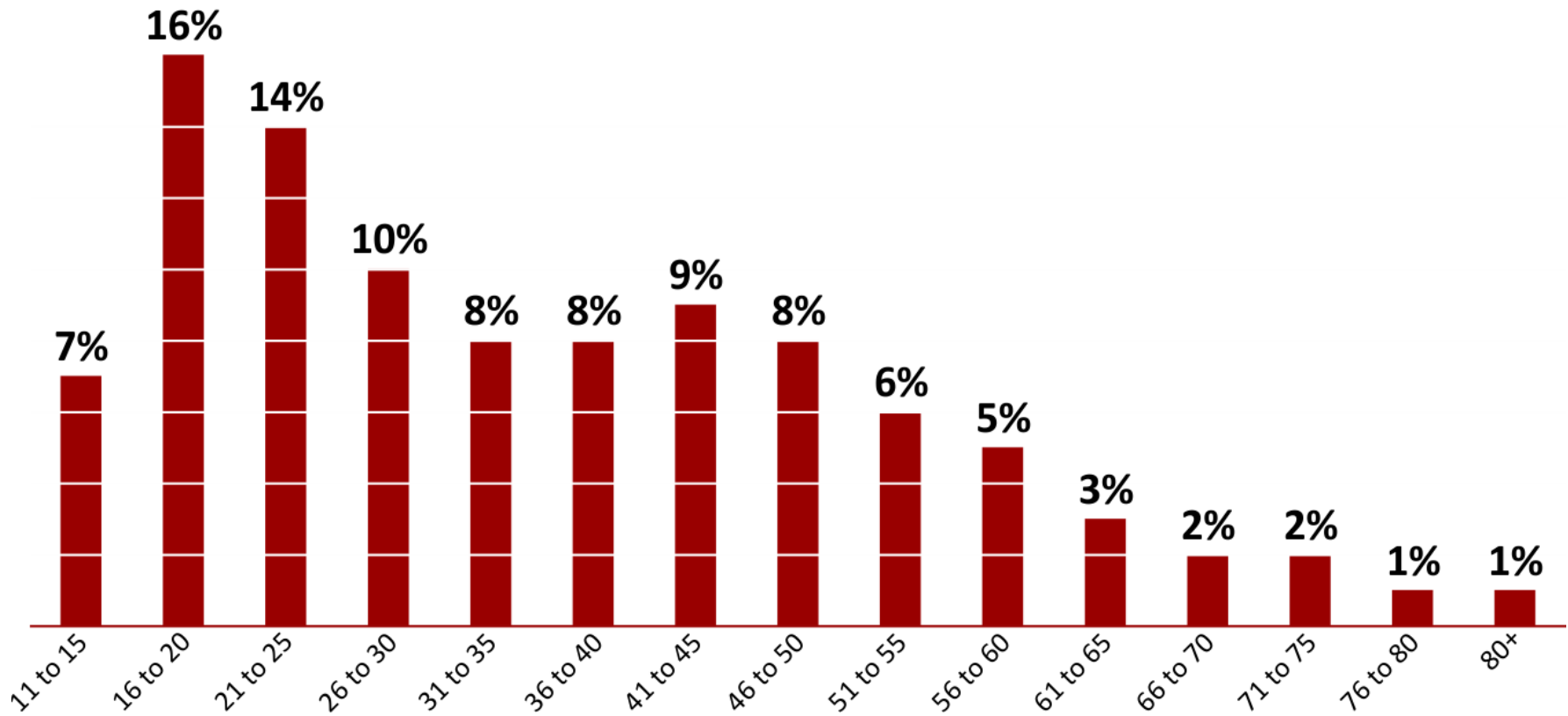
TTC Ridership Profile



- 57% are female
- 58% have driver's licence
- 66% have household vehicle
- 66% are employed
- 32% are students

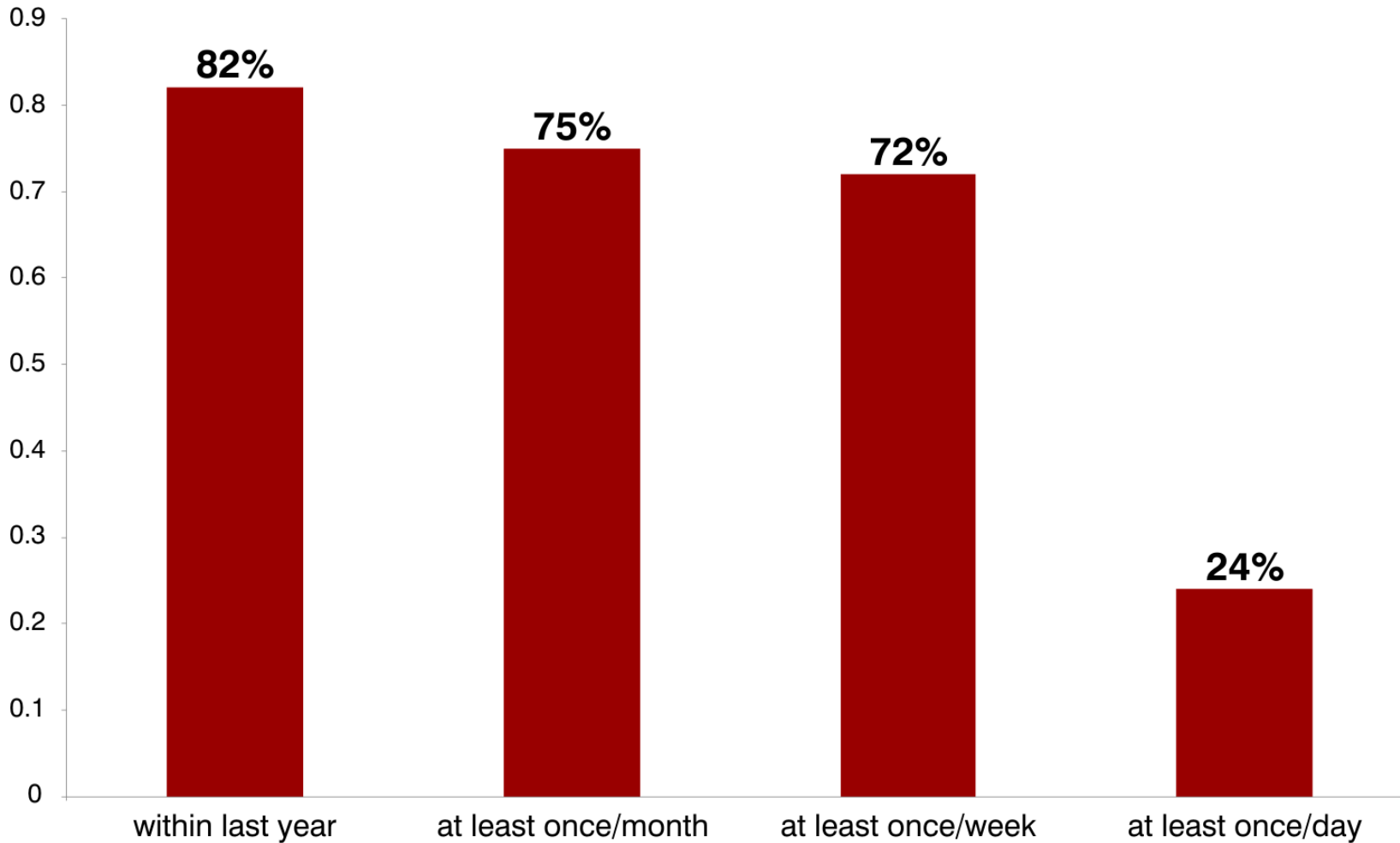


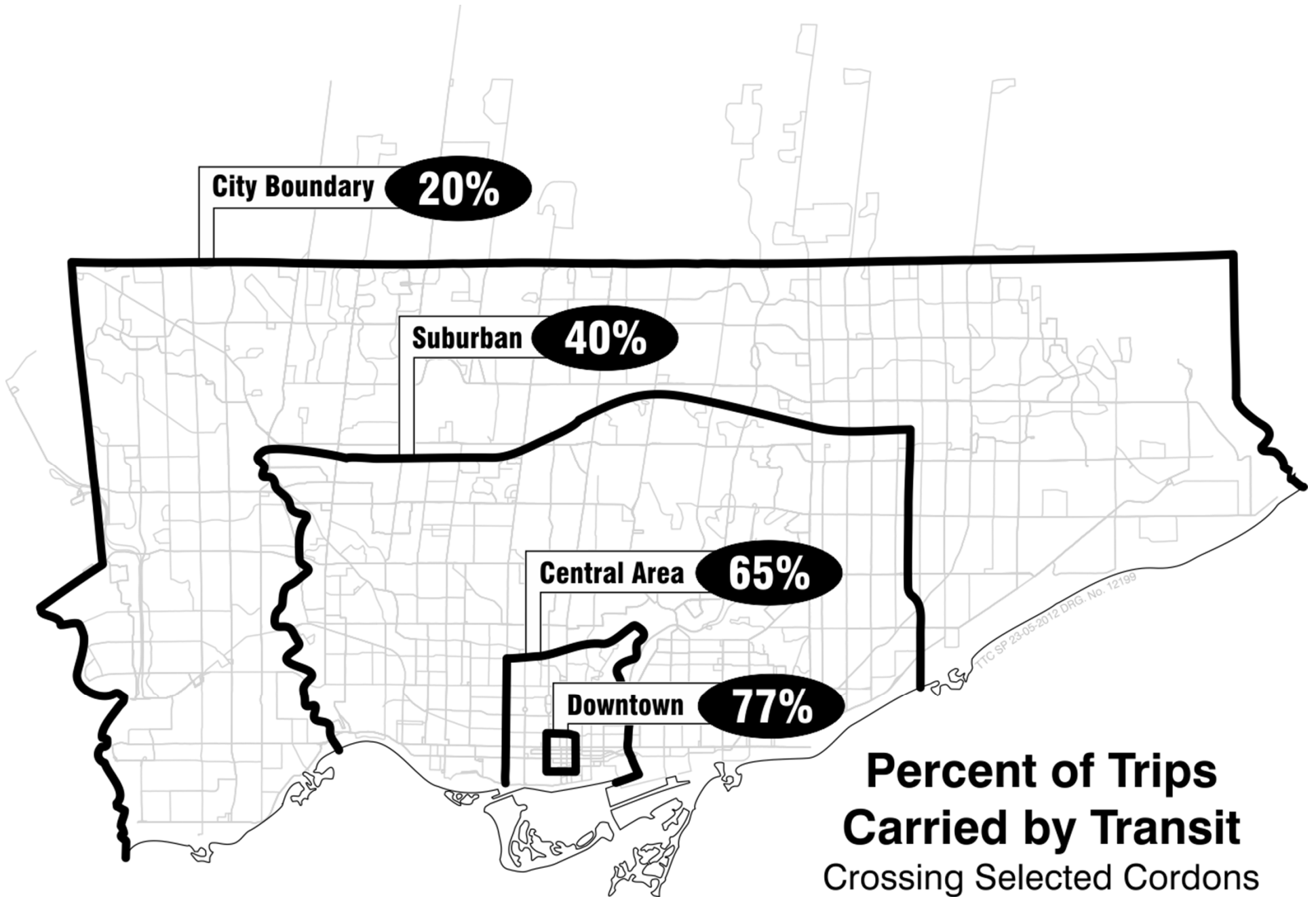
Age Distribution of TTC Customers



Frequency of TTC Use

Toronto Residents



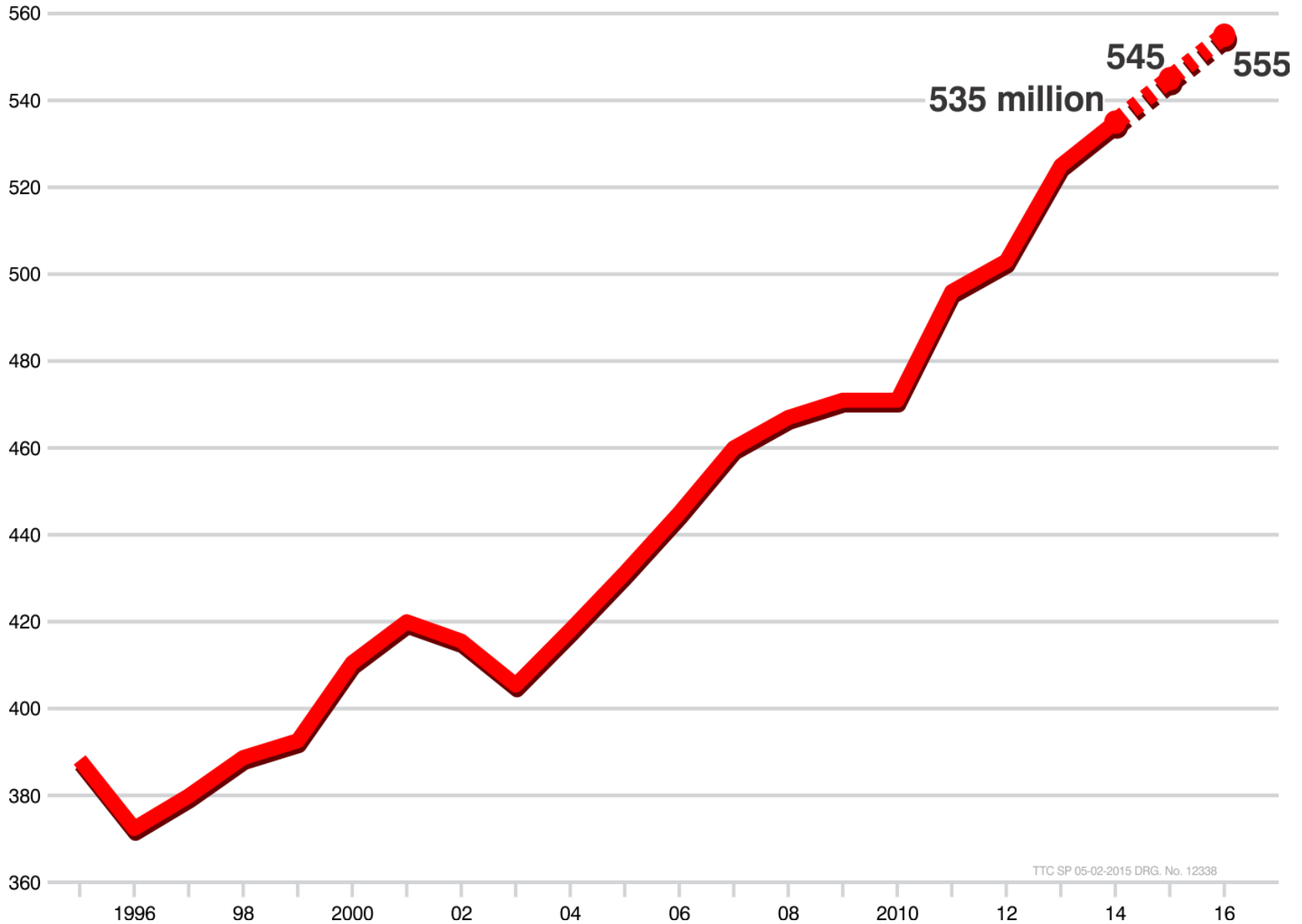


**Percent of Trips
Carried by Transit**
Crossing Selected Cordons
AM Peak Period (Inbound)



TTC Annual Ridership

from 1995 - 2016, millions



Purpose of Travel on TTC



Trip Purpose

Percentage

work

45%

other

28%

school

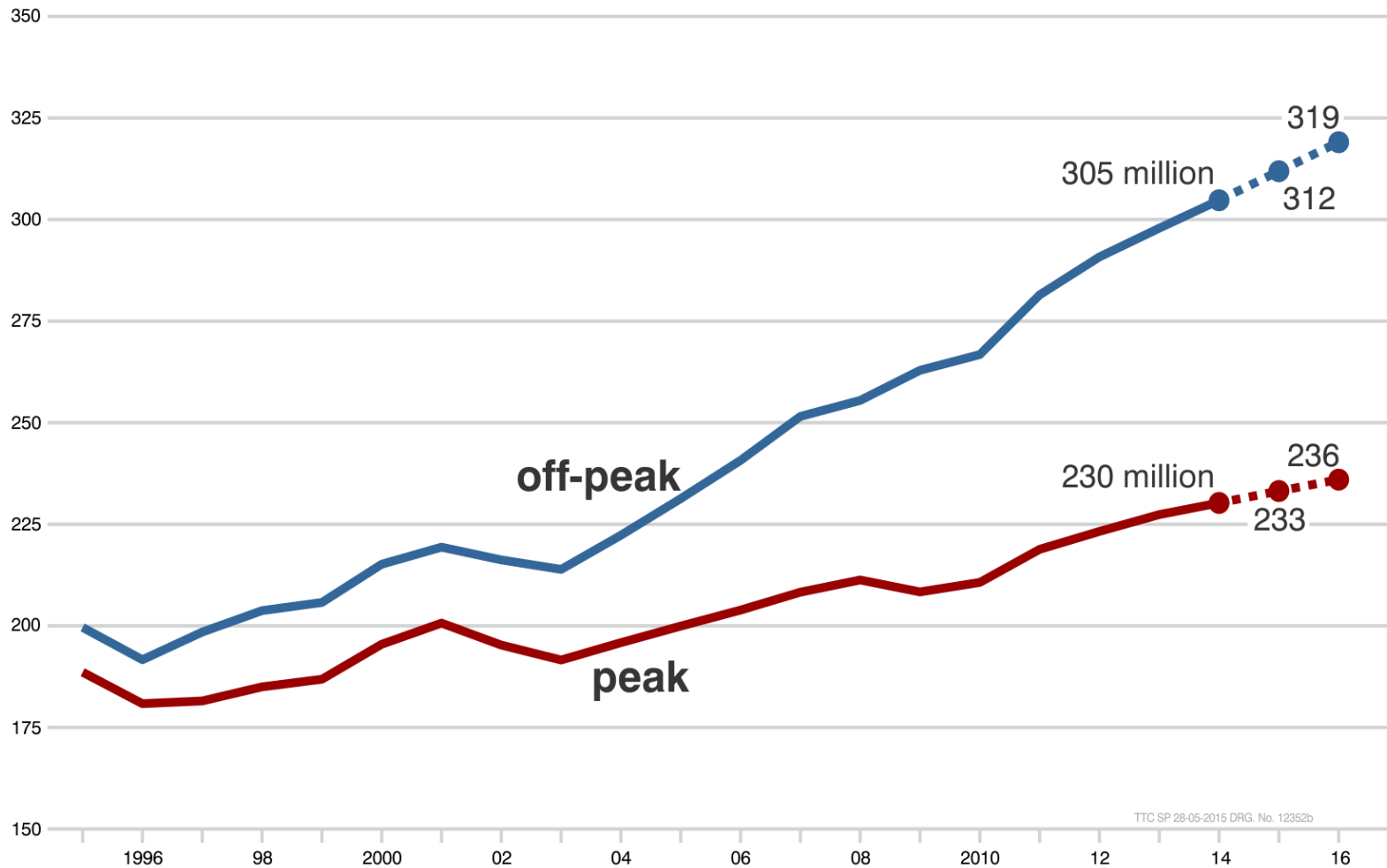
27%





TTC Peak and Off-Peak Ridership

from 1995 - 2016, millions



TTC SP 28-05-2015 DRG. No. 12352b

Public Support for Transit in Toronto

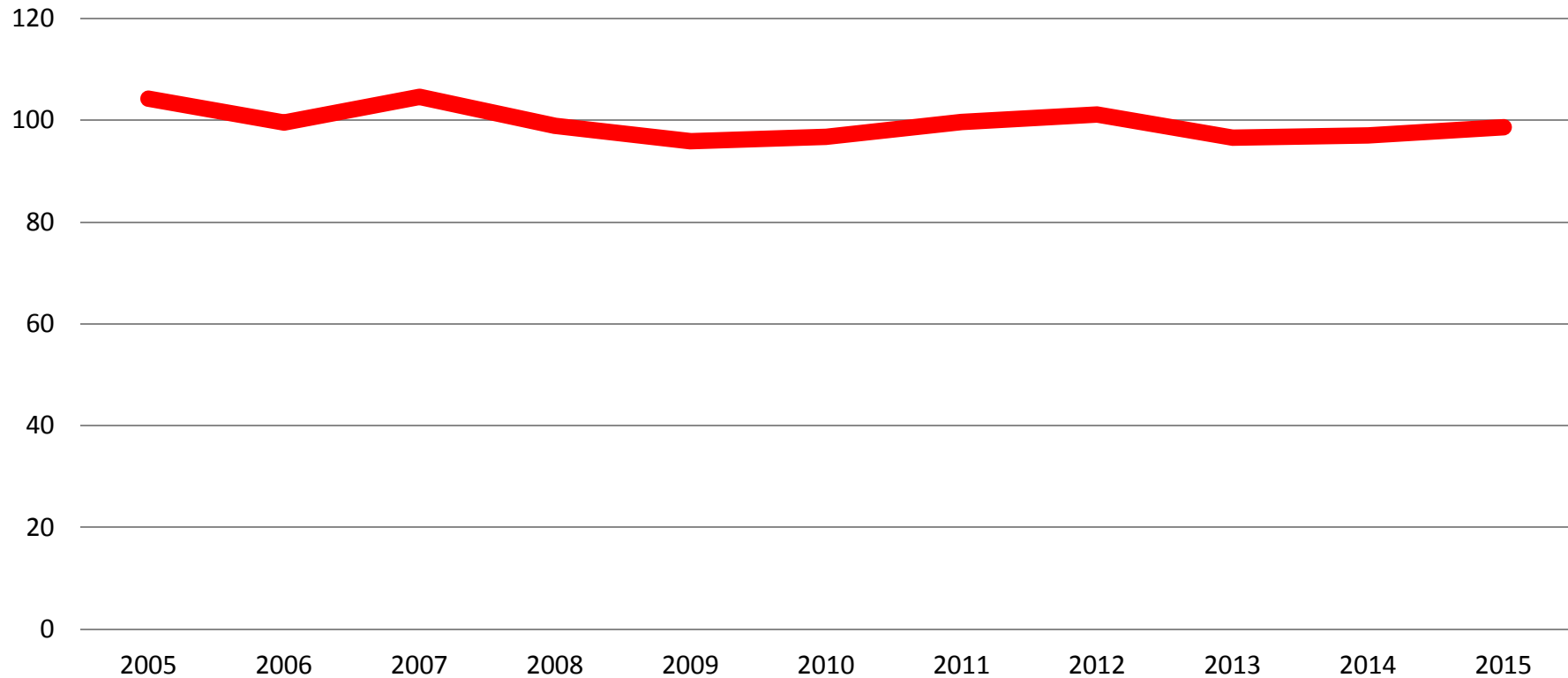


Ridership per Capita (using boardings)

<u>Agency / City</u>	<u>Population</u>	<u>Ridership per Capita</u>
York Region	1,055,558	30
Washington, DC	3,719,567	111
Vancouver	2,451,783	127
Chicago	3,425,958	154
TTC	2,825,620	295
Montréal	1,959,987	360
New York	8,008,278	432



Productivity: Boardings per Service Hour



- productivity: system-wide -- approximately 100 boardings / hour



Comparison of Revenue / Cost Ratios



<u>City</u>	<u>Revenue / Cost</u>
TTC	71%
New York	53%
Washington	51%
Chicago	45%
Vancouver	44%
York Region	38%



Subsidy / Rider – Comparison Among Cities



<u>City</u>	<u>Subsidy / Rider</u>
TTC	\$0.89
Montréal	\$1.21
New York	\$1.53
Vancouver	\$1.63
Chicago	\$1.91
Washington	\$2.39
York Region	\$4.34





2015 Service Initiatives

Council's \$95 Million Investment in Better Service



Children Aged 12 & Under Ride Free



11 million
annual customers

- make public transit more affordable for families
- children riders become adult riders



All-Door Boarding & Proof-of-Payment



- speed-up time to serve stops: decreases travel times

Subway Service Reliability



170 million
annual customers

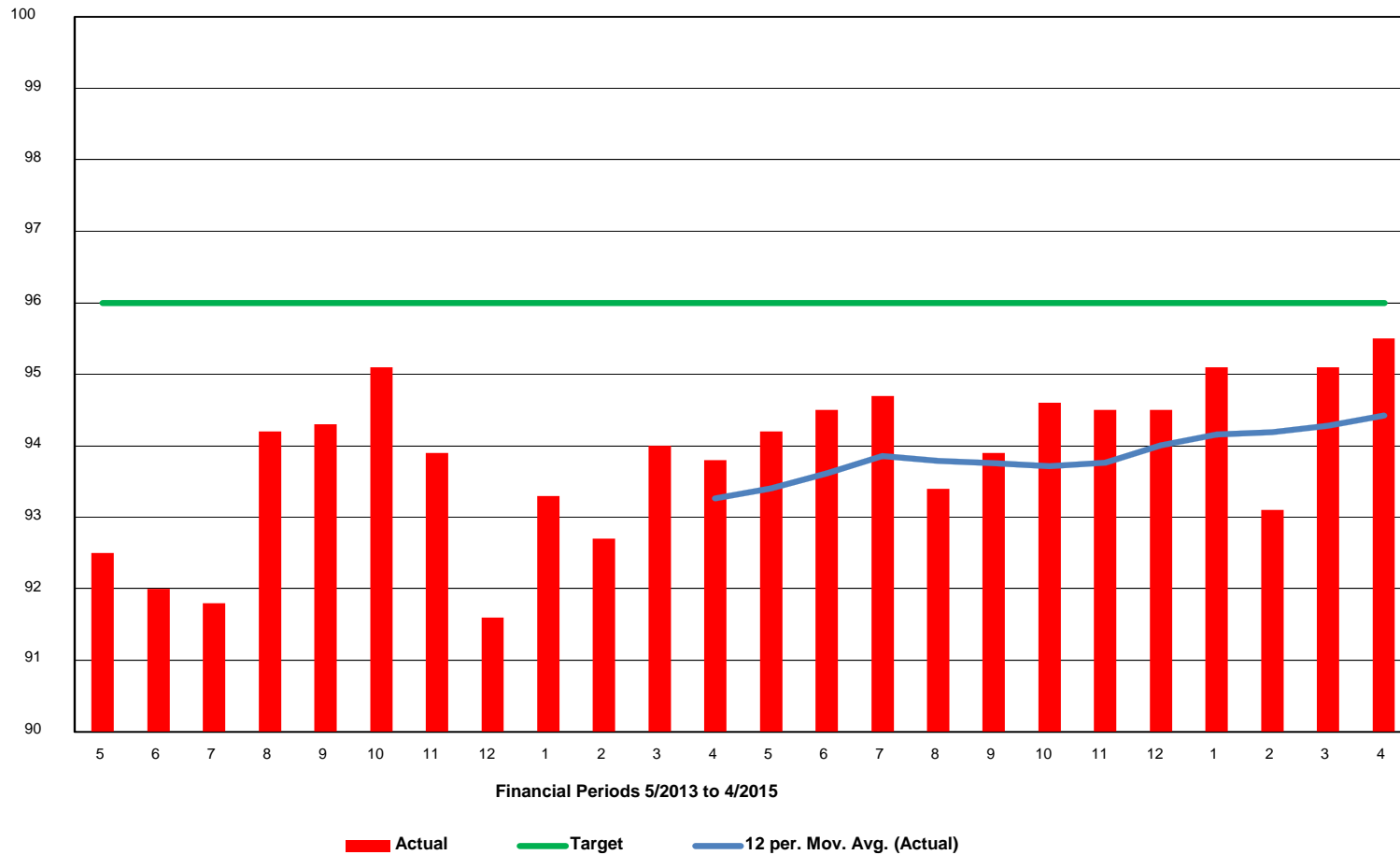
- running time adjustments, improved route management:
 - peak periods, Lines 1, 2 improve reliability, reduce delays



Subway Service Reliability



Punctuality – Line 1 Yonge-University Subway



Subway Service Reliability



- improve reliability of signals, track, communication systems:
 - reduce delays on subway

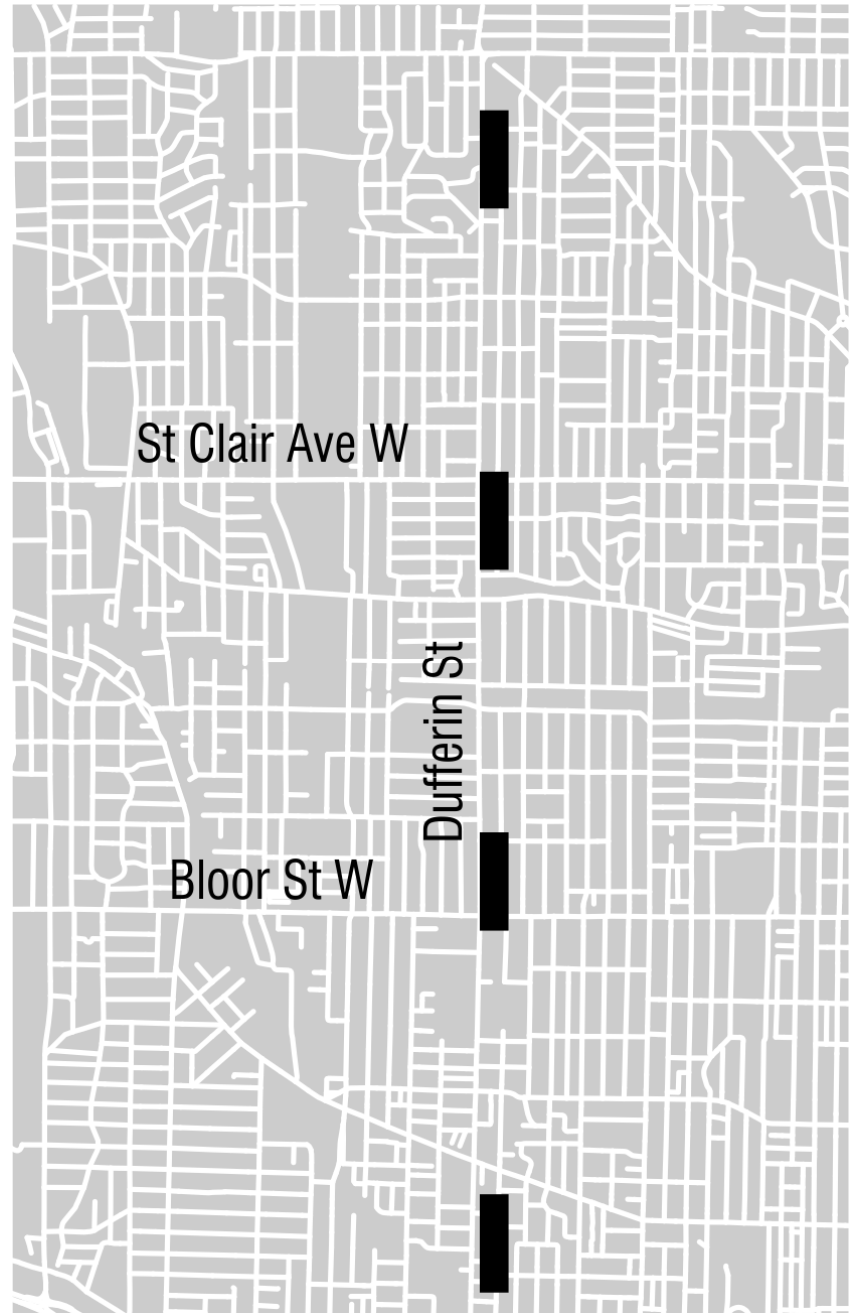
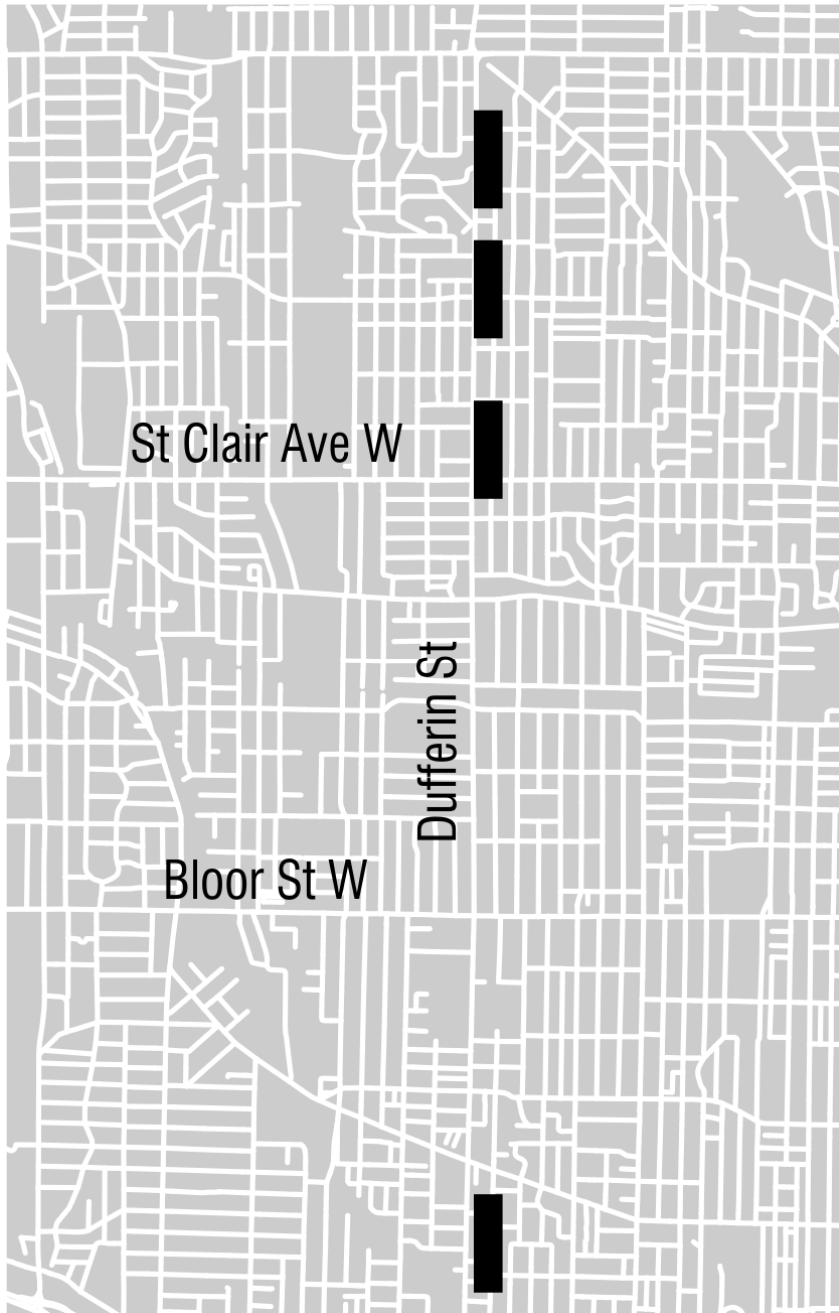


Bus, Streetcar Service Reliability



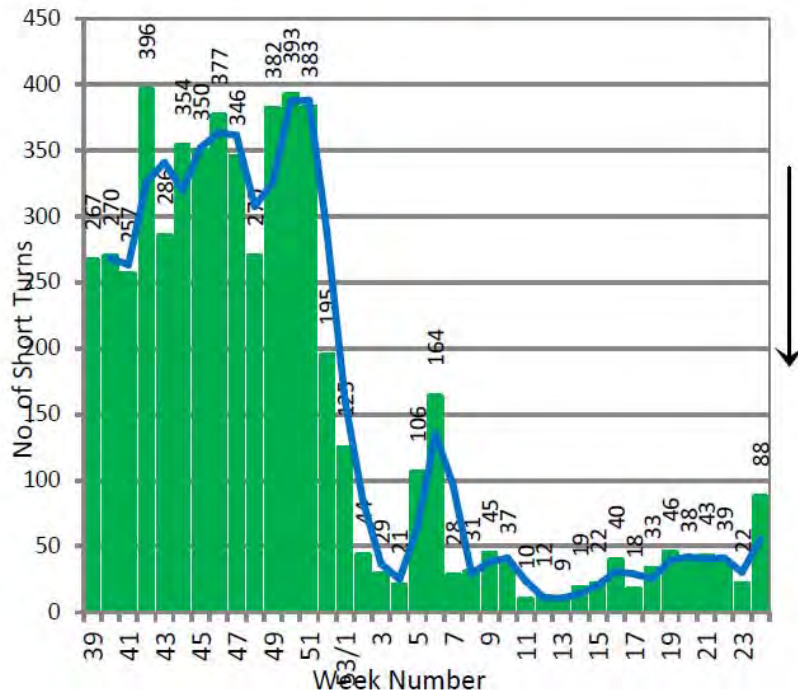
- running time adjustments, improved route management:
 - reduce short-turns, bunching, gapping on bus, streetcar routes



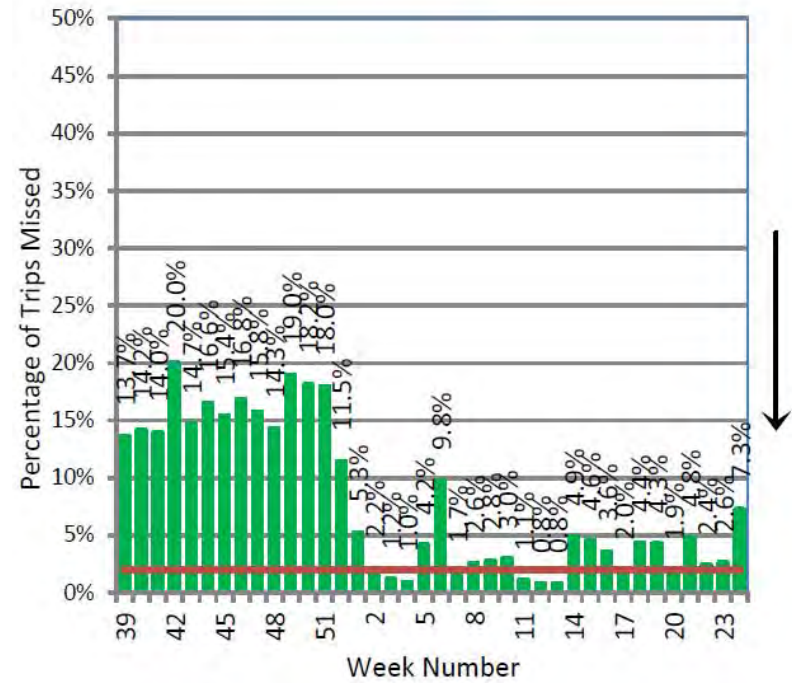


504 King

Short Turns

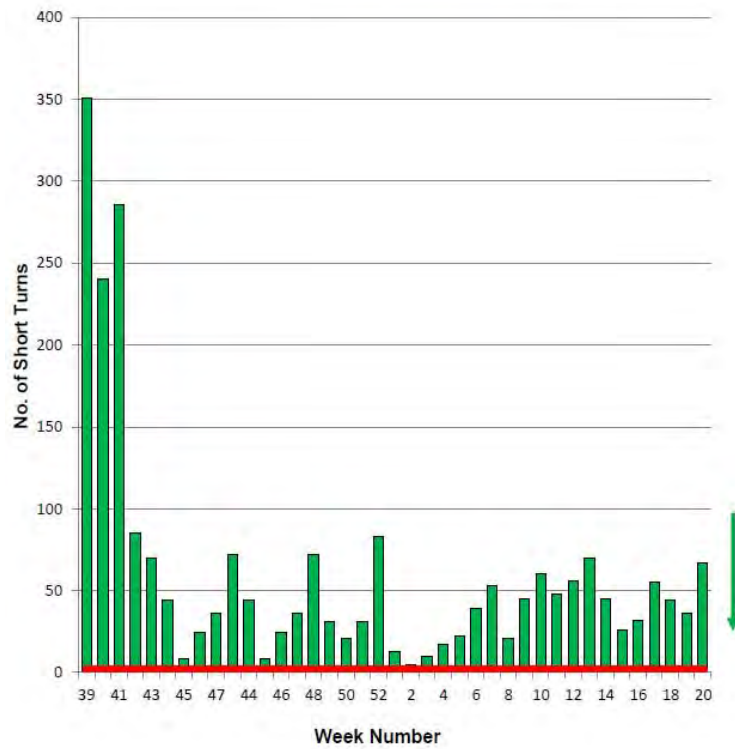


Missed Trips

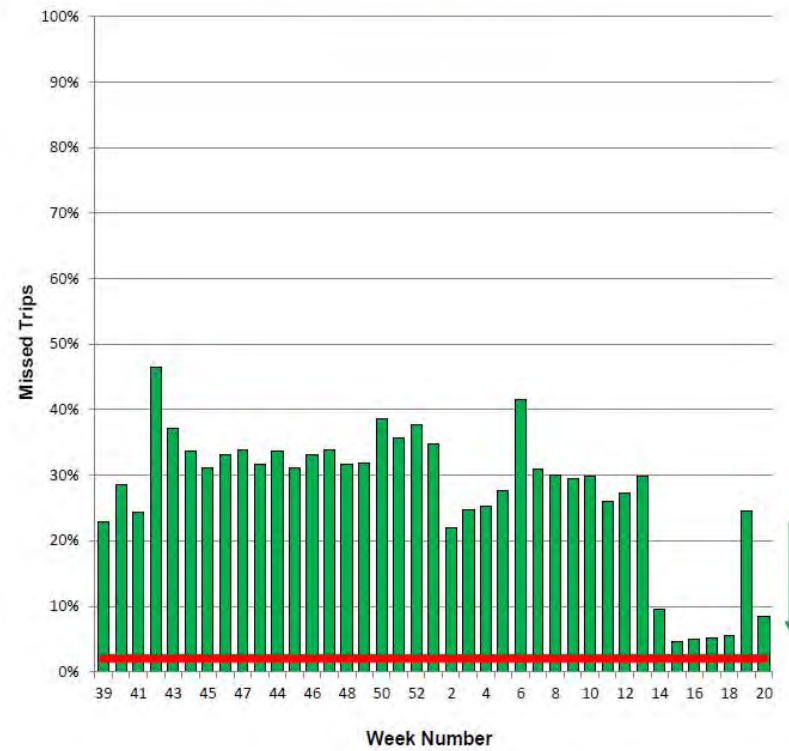


29 Dufferin

Short Turns

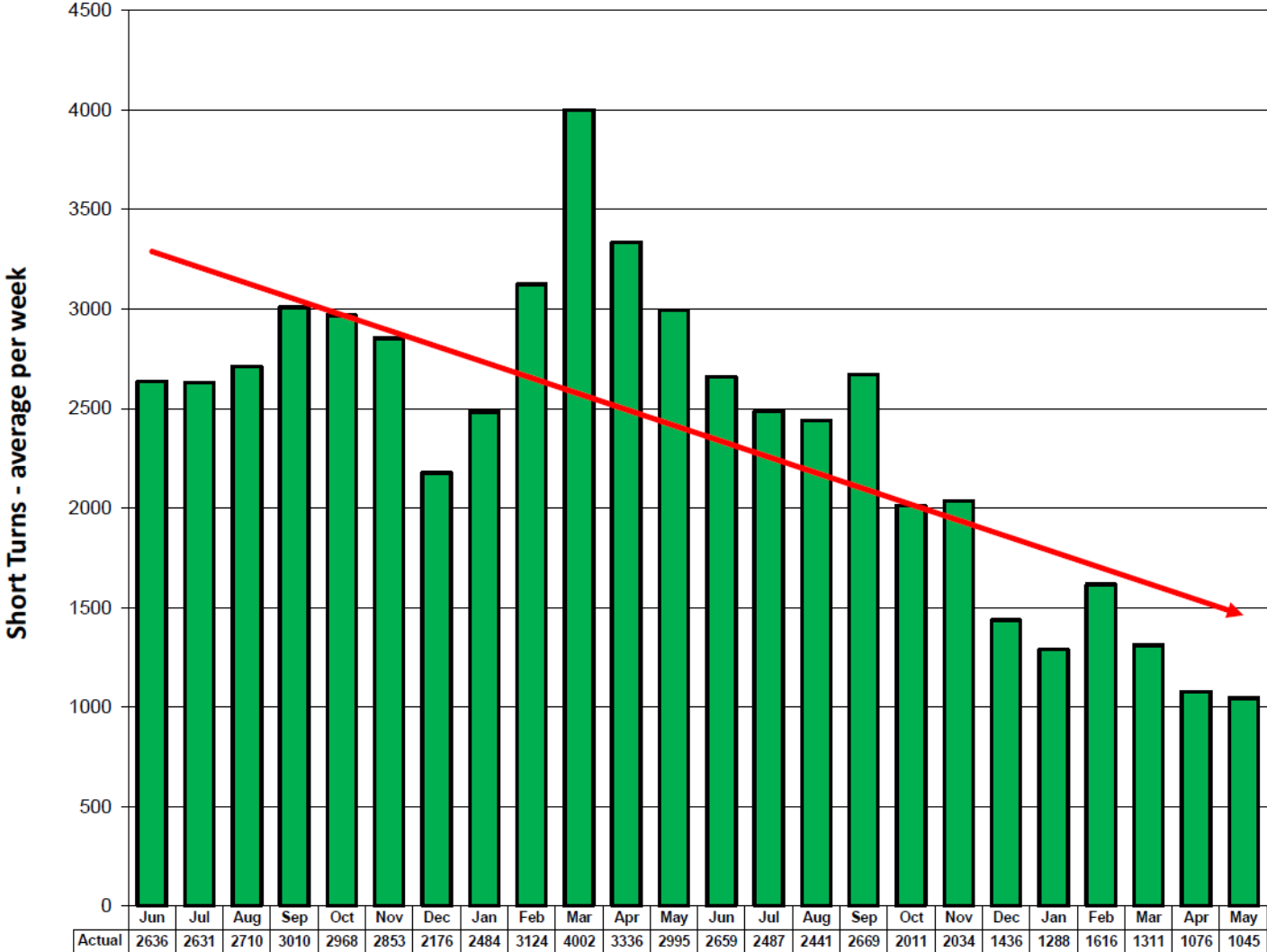


Missed Trips



STREETCAR

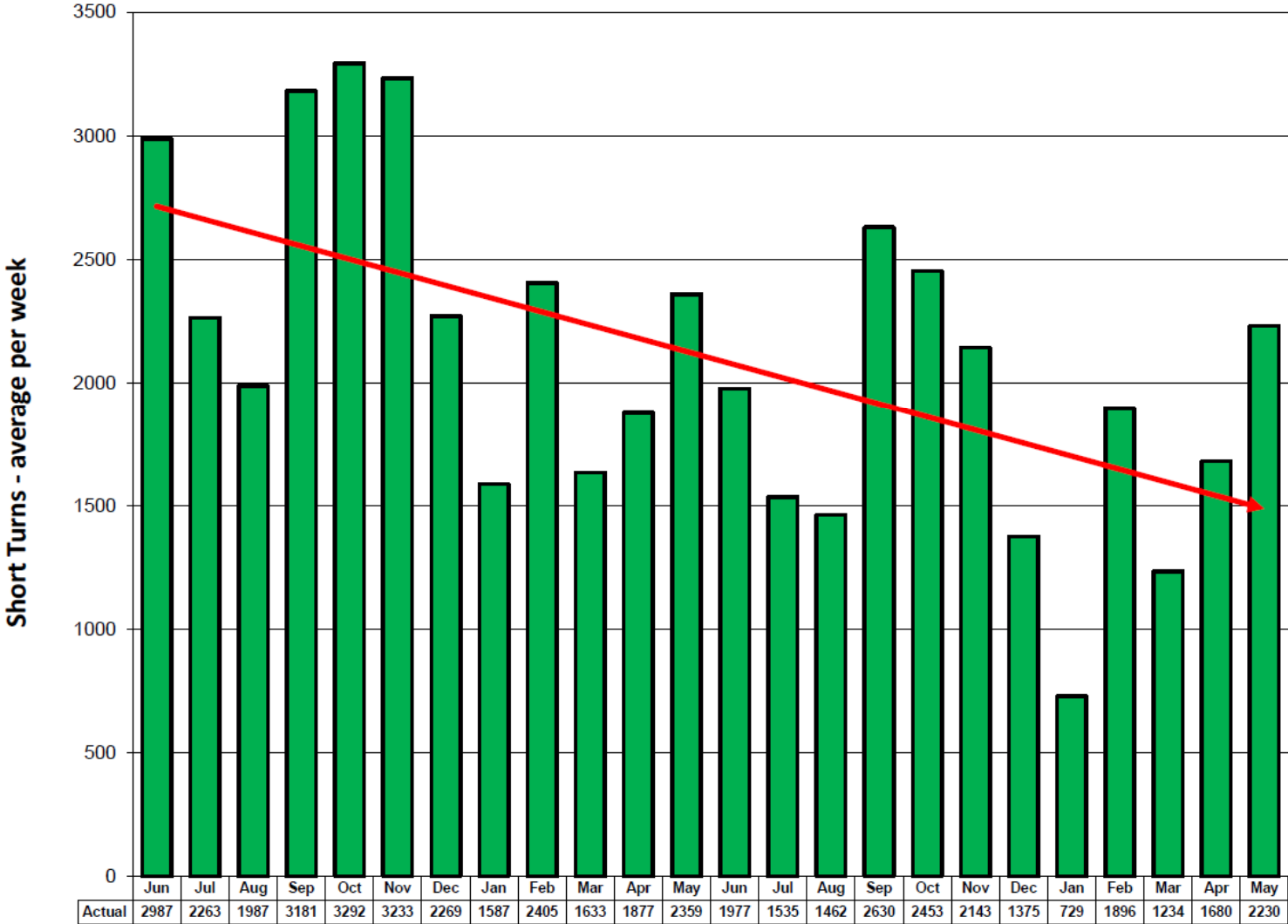
Average Short Turns per Week



06/2013 - 05/2015

BUS TRANSPORTATION

Average Short Turns per Week



06/2013 - 05/2015

New Buses, Temporary Garage



- more buses for peak service (2016):
 - new express services, reduced crowding, wait times



Reduce Wait Times & Crowding

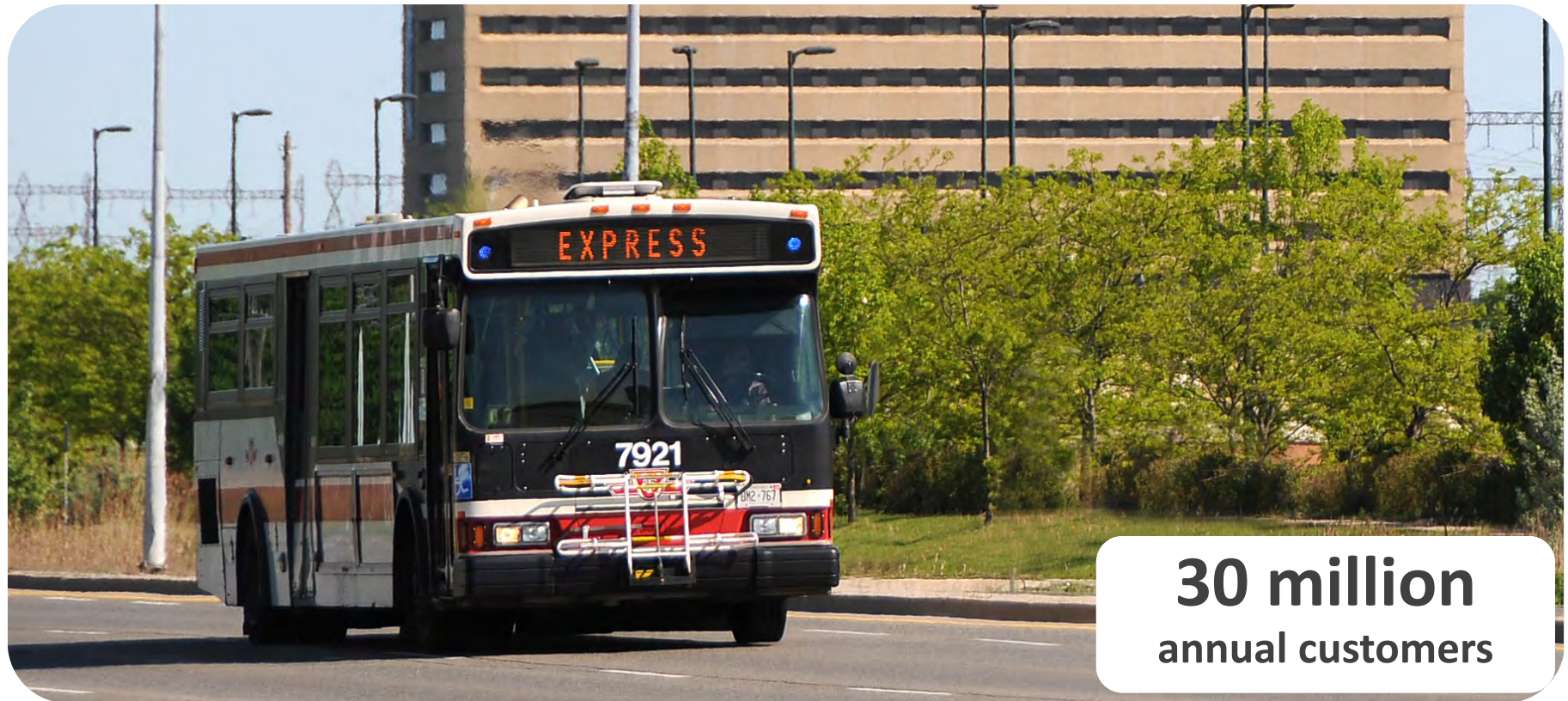


20 million
annual customers

- restore 2012 service cuts on busiest bus, streetcar routes
- 2016: add peak service on 20+ routes in 25+ periods of operation



Express Bus Network

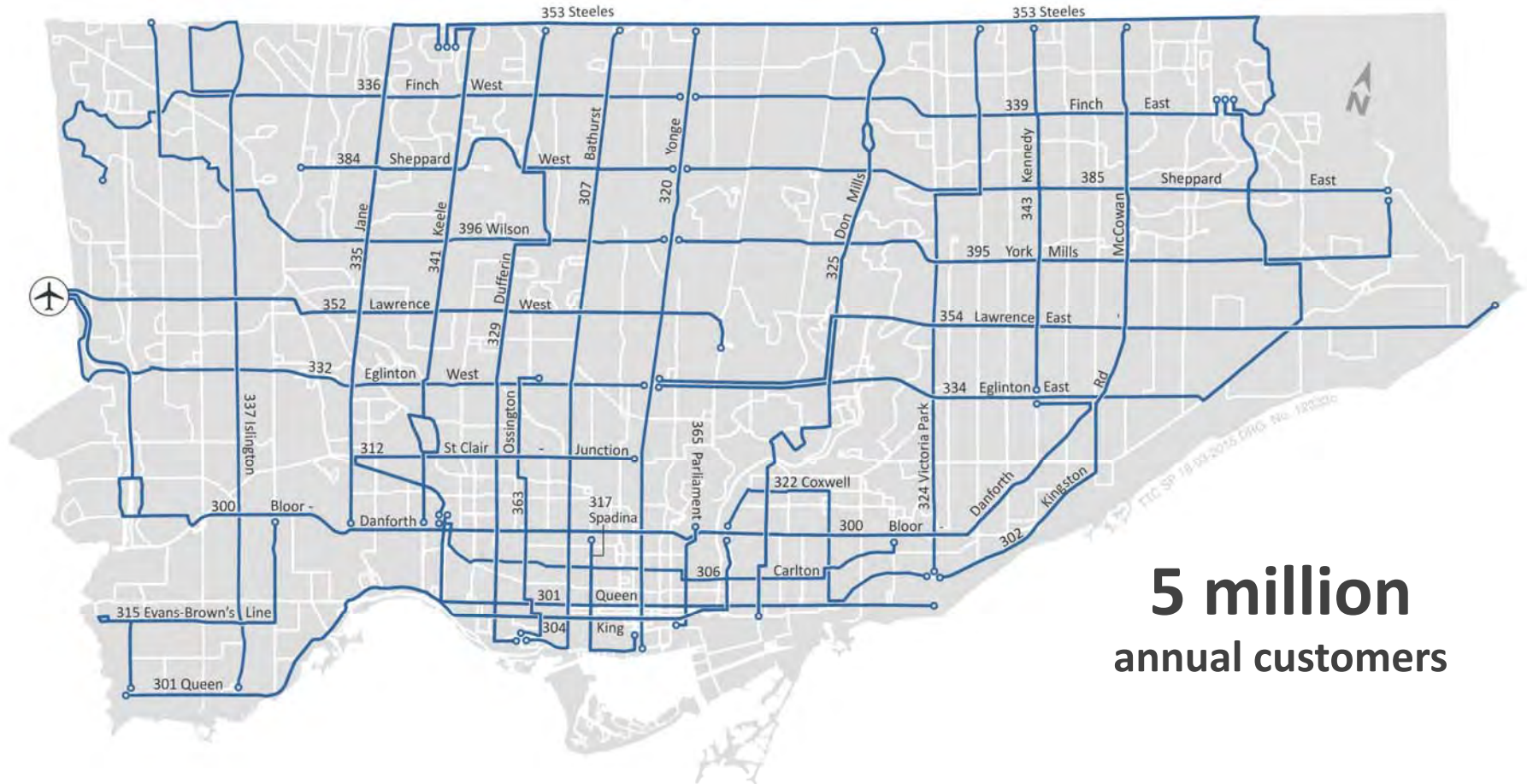


30 million
annual customers

- 2016: create new, improved express services – peak, off-peak:
 - faster, more-comfortable service for customers



Overnight Network

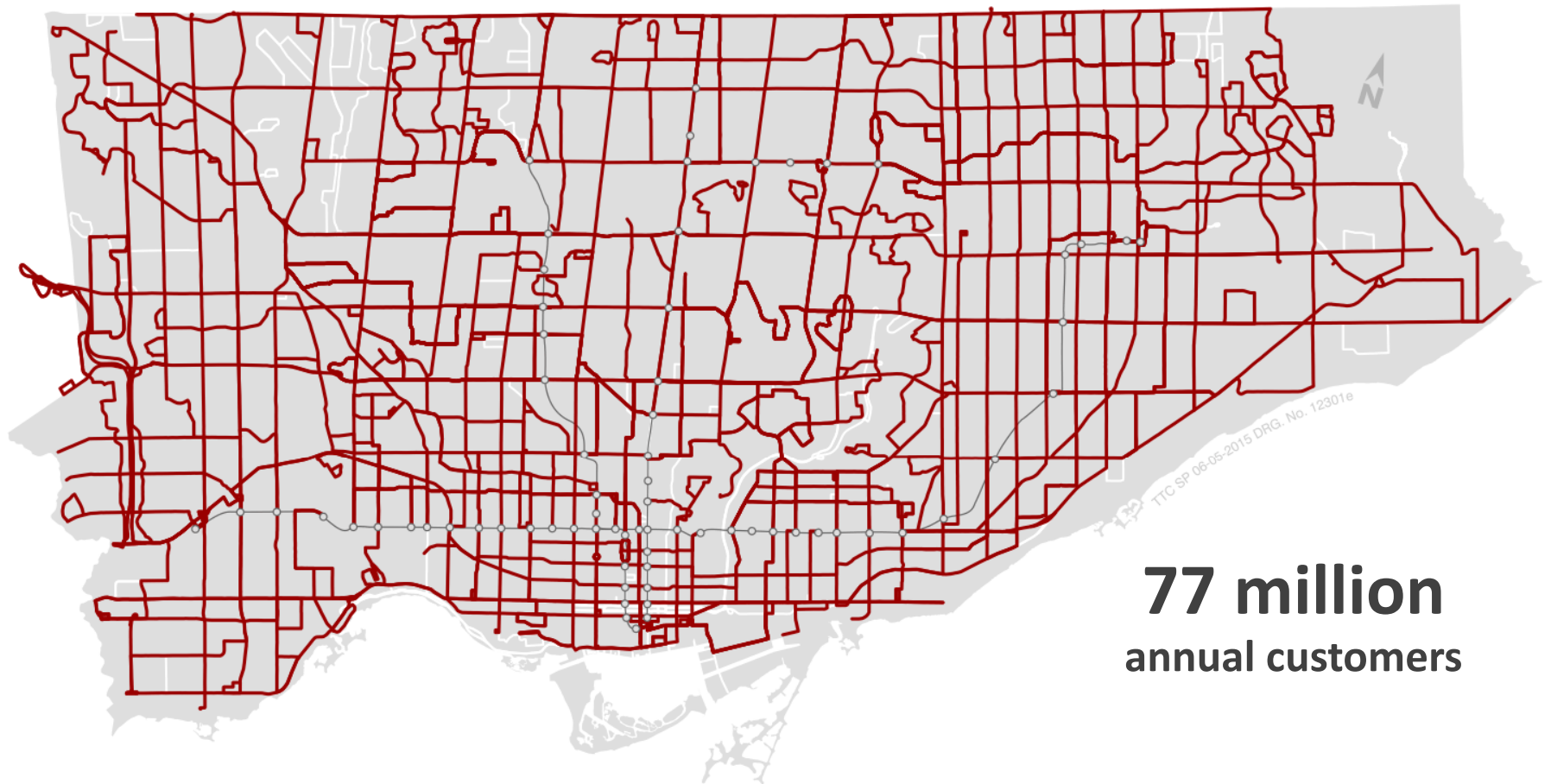


5 million
annual customers

- accommodate diverse travel needs in Toronto:
 - 99% of Torontonians within 15-minute walk of service



All-Day, Every-Day Service

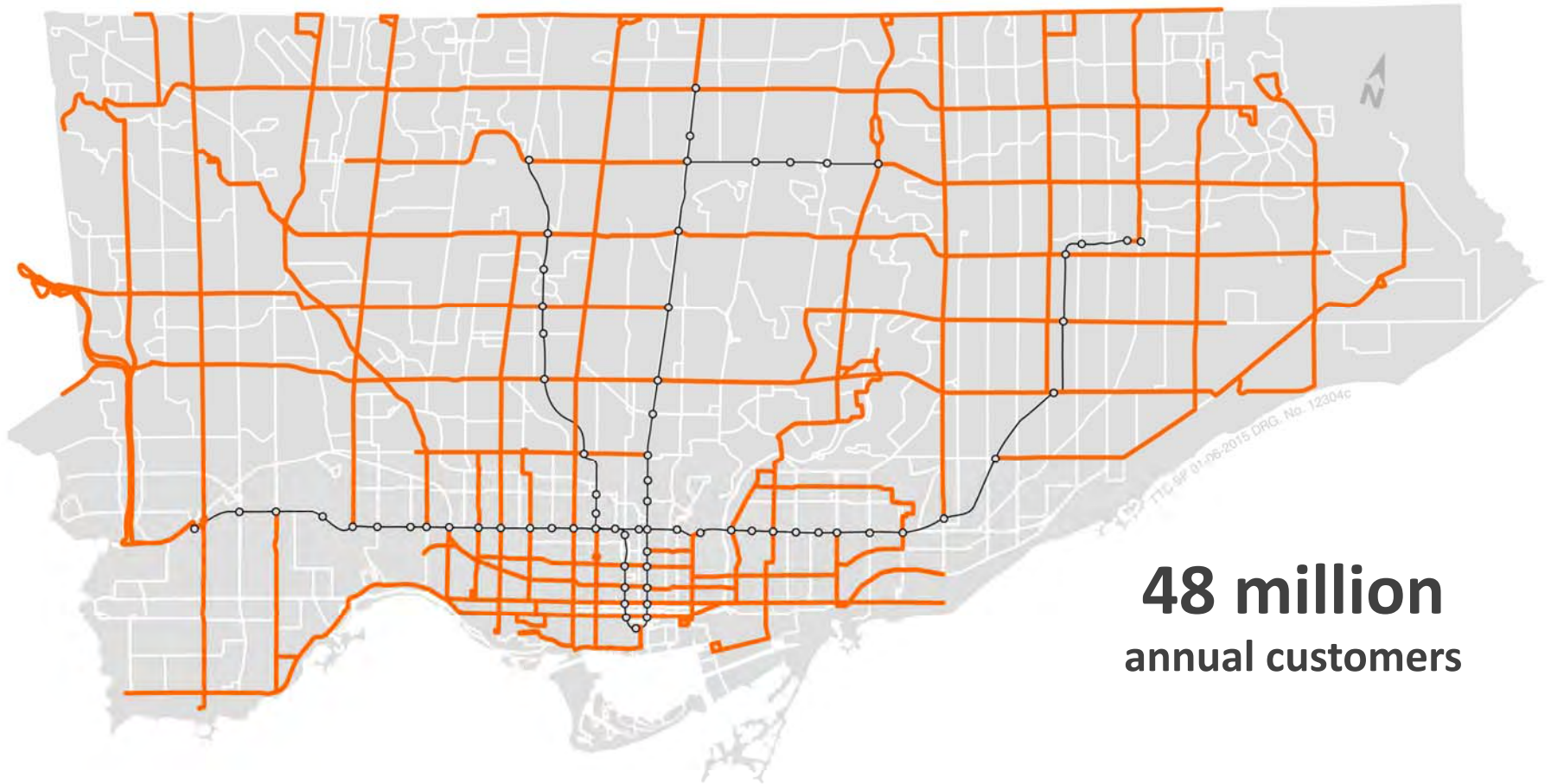


77 million
annual customers

- restore 2011 service cuts -- 43 routes, 122 periods of operation:
 - customers can count on transit any time for their travel needs



Ten-Minute-or-Better Network

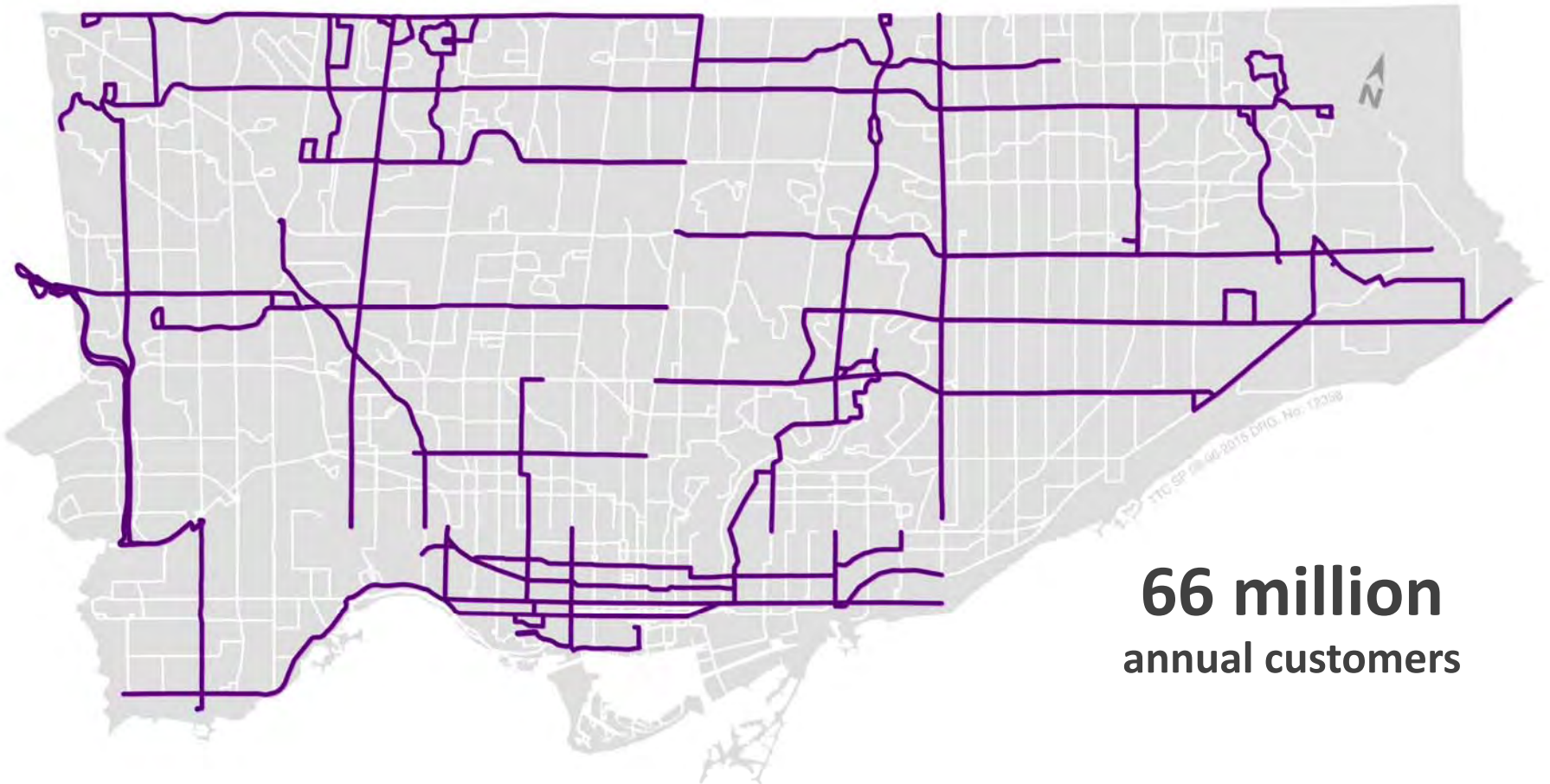


48 million
annual customers

- establish city-wide network of frequent bus, streetcar routes
- frequent, reliable service all day, all evening, every day



Reduce Wait Times & Crowding



66 million
annual customers

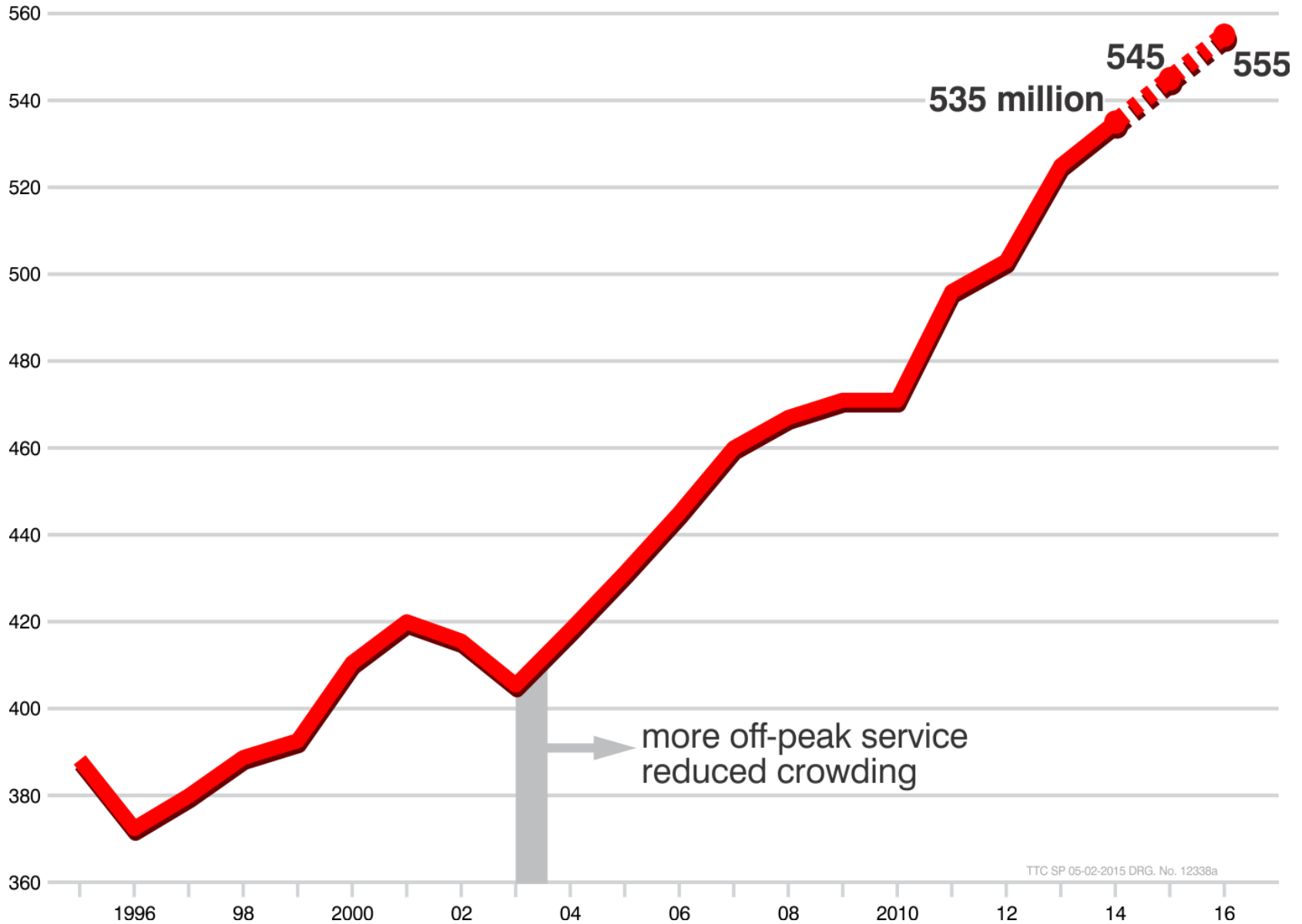
- restore 2012 service cuts on busiest bus, streetcar routes
- add off-peak service on 30 routes, 102 periods of operation





TTC Annual Ridership

from 1995 - 2016, millions





TORONTO TRANSIT COMMISSION

2016 Operating Budget





Thank You

