Re: EX12.2n

TORONTO TRANSIT COMMISSION

Service Level Review

Executive Committee Presentation
June 30, 2015

TORONTO

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	10.234	10.562	10.841	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

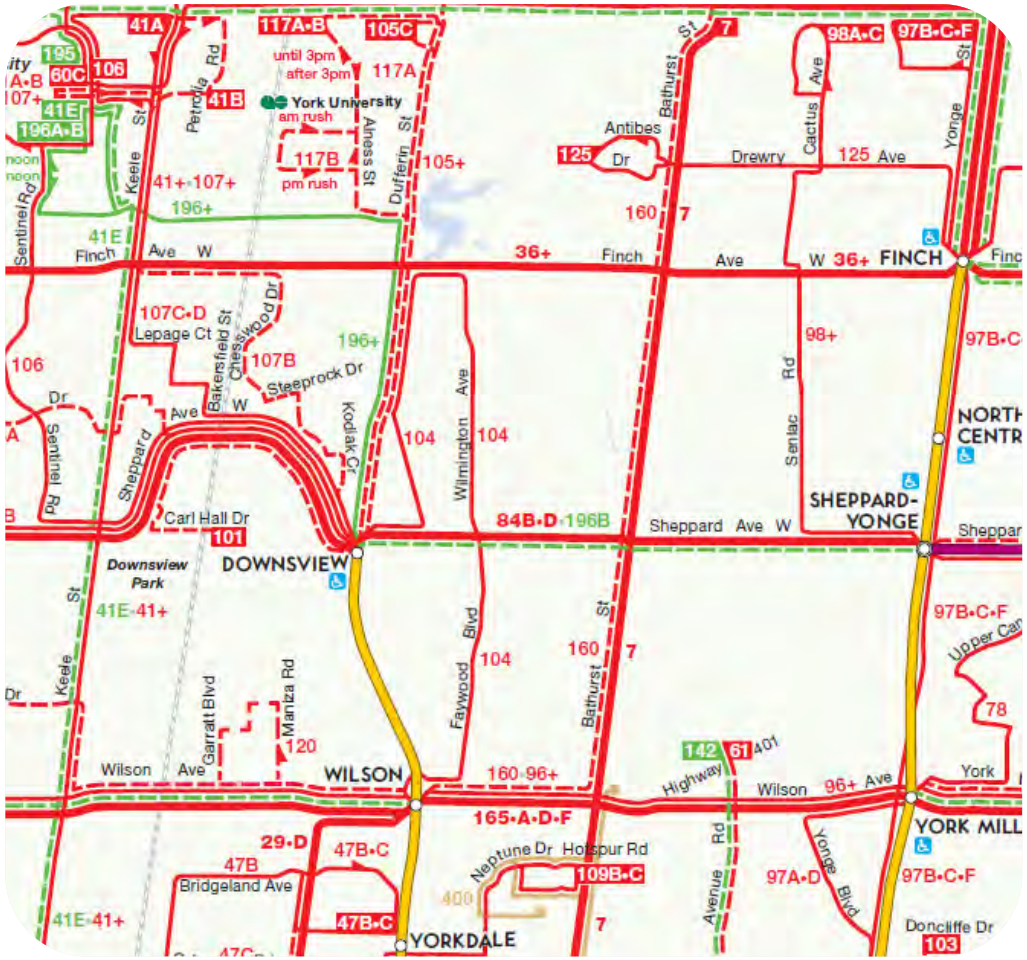
- % of service within 5 minute walk
- % of service within maximum crowding standards
- % of service within maximum waiting standards
- % accessible -- bus, streetcar, subway service
- demand, service profiles for Wheel-Trans
- demand, outlook for commuter parking lots
- profile of TTC customers

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: ≤ 10-minute walk to transit
  - ≤ 5-minute not eligible for additional service
- overnight:
  - ≤ 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

Service: Standards, Decision Rules, Processes

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

Service: Standards, Decision Rules, Processes

On-board crowding standards used to:

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

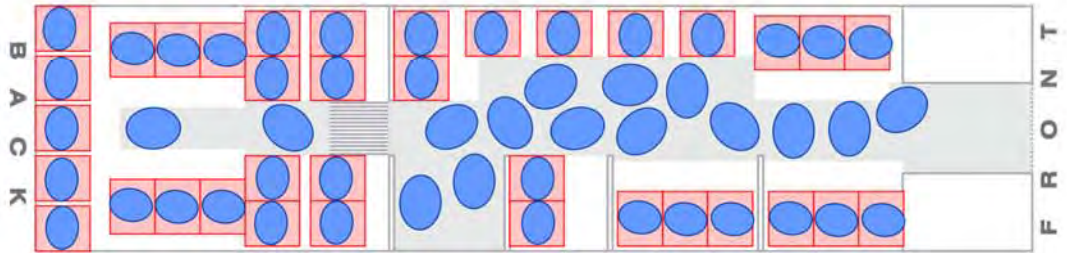
Service: Standards, Decision Rules, Processes

On-board crowding standards:

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

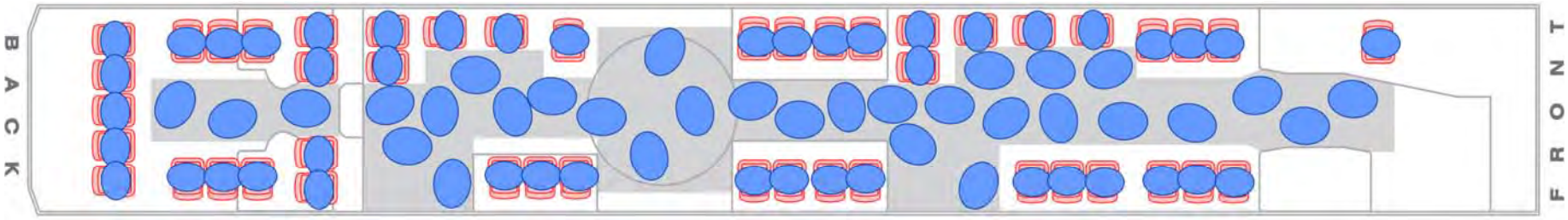
Vehicle	Peak Crowding Standard
bus	50 to 53
articulated bus	77
streetcar	74
articulated streetcar	108
low-floor streetcar	130

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

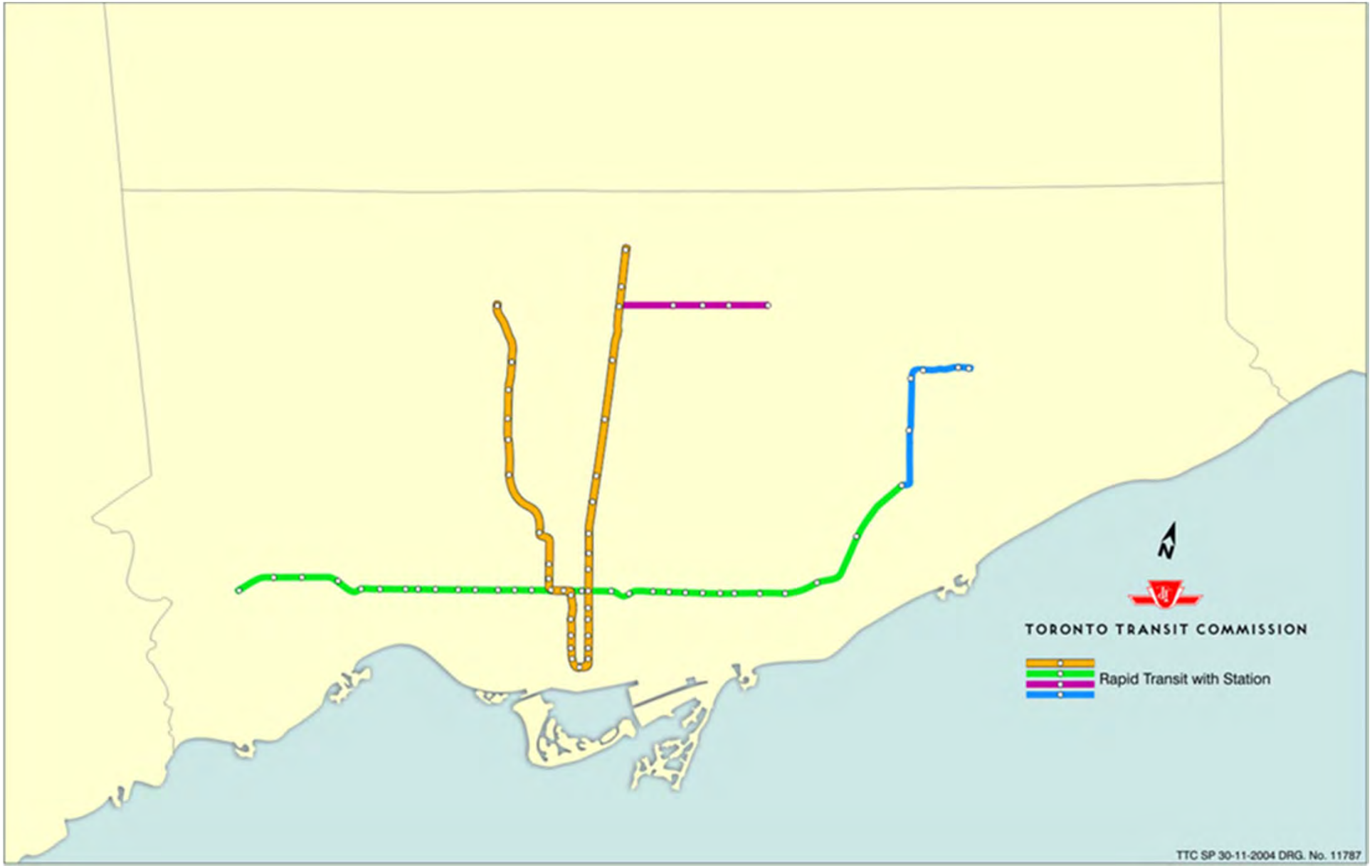
- prevent overcrowding
- prevent customer discomfort, dissatisfaction

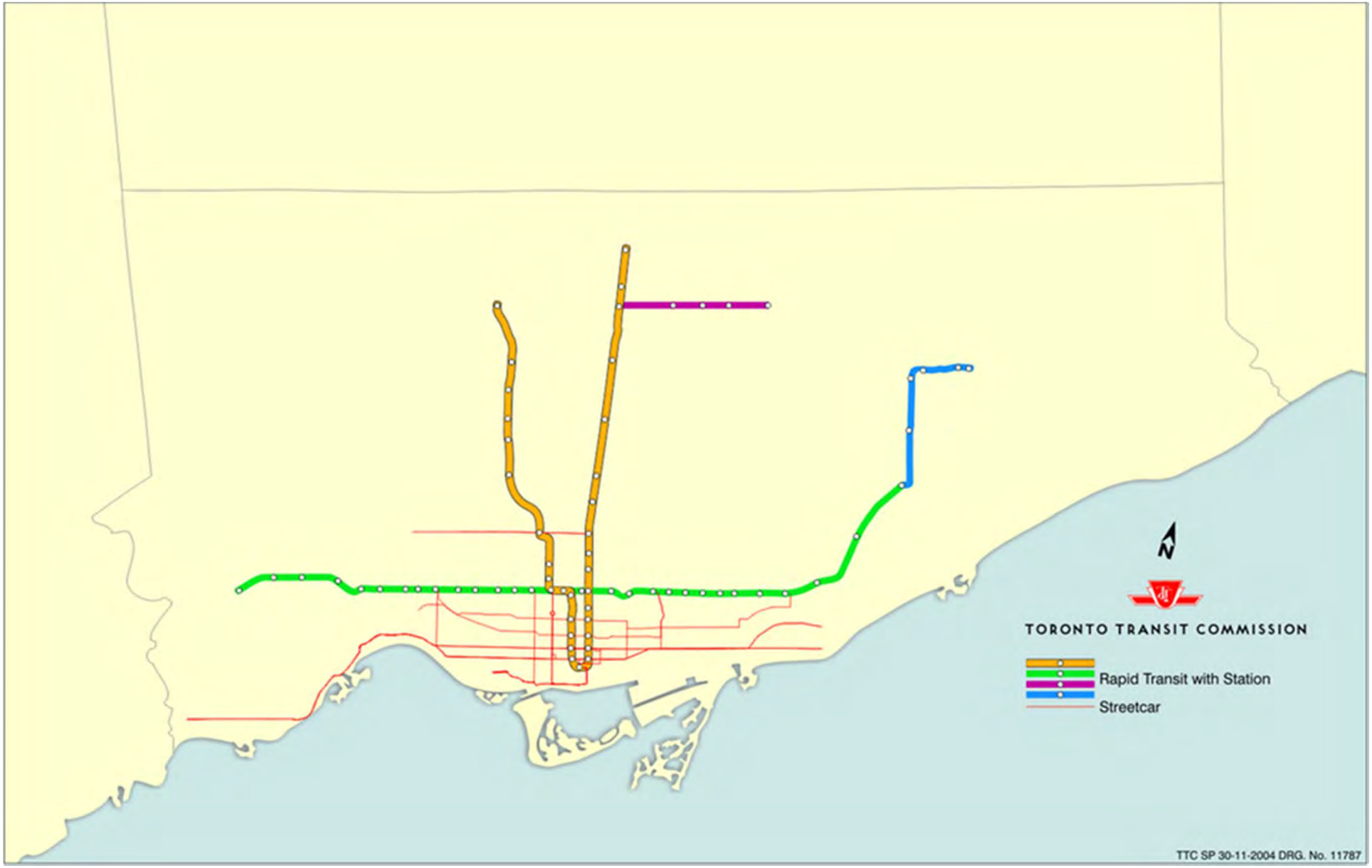
Service: Standards, Decision Rules, Processes

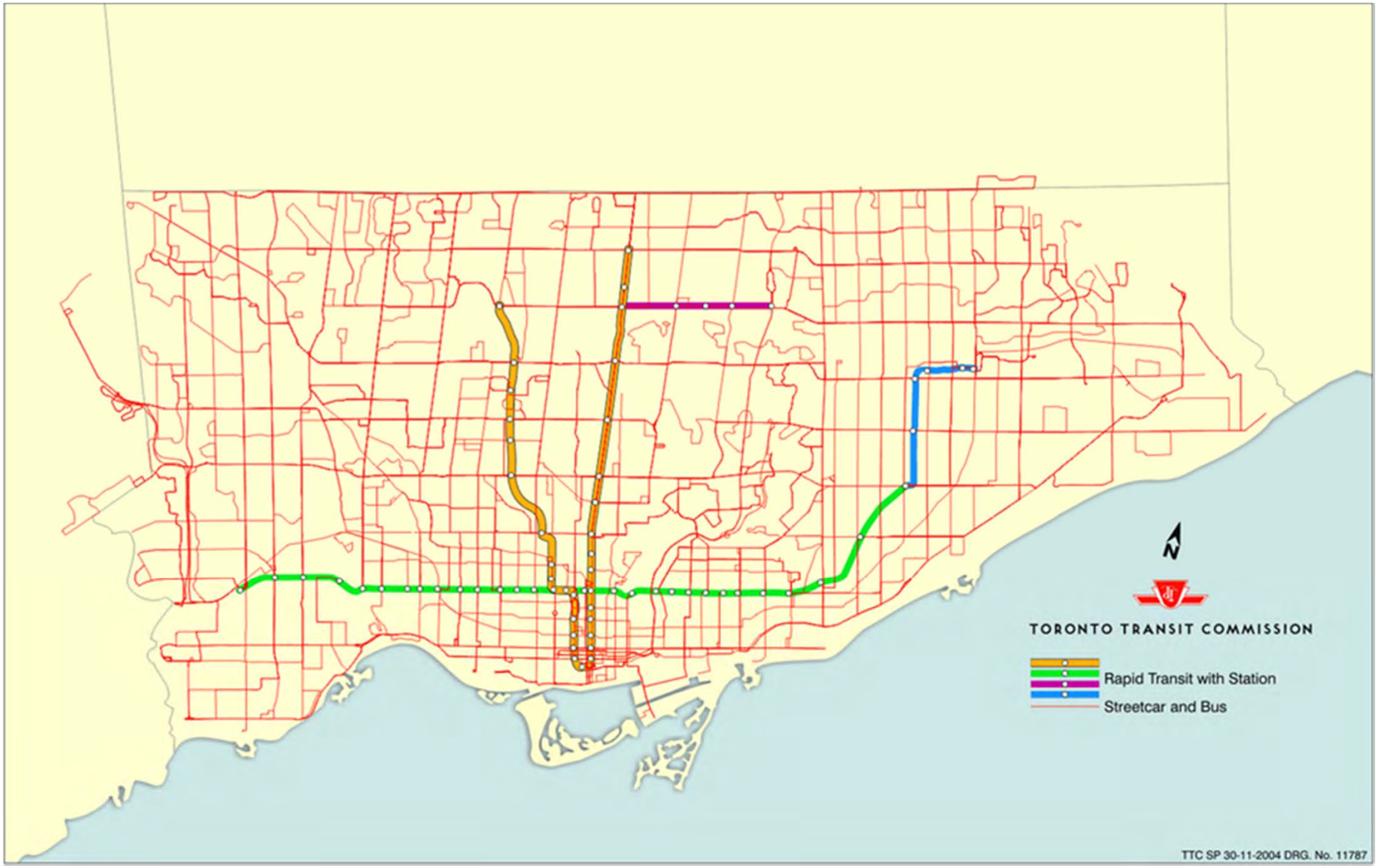
University of Melbourne, Australia:

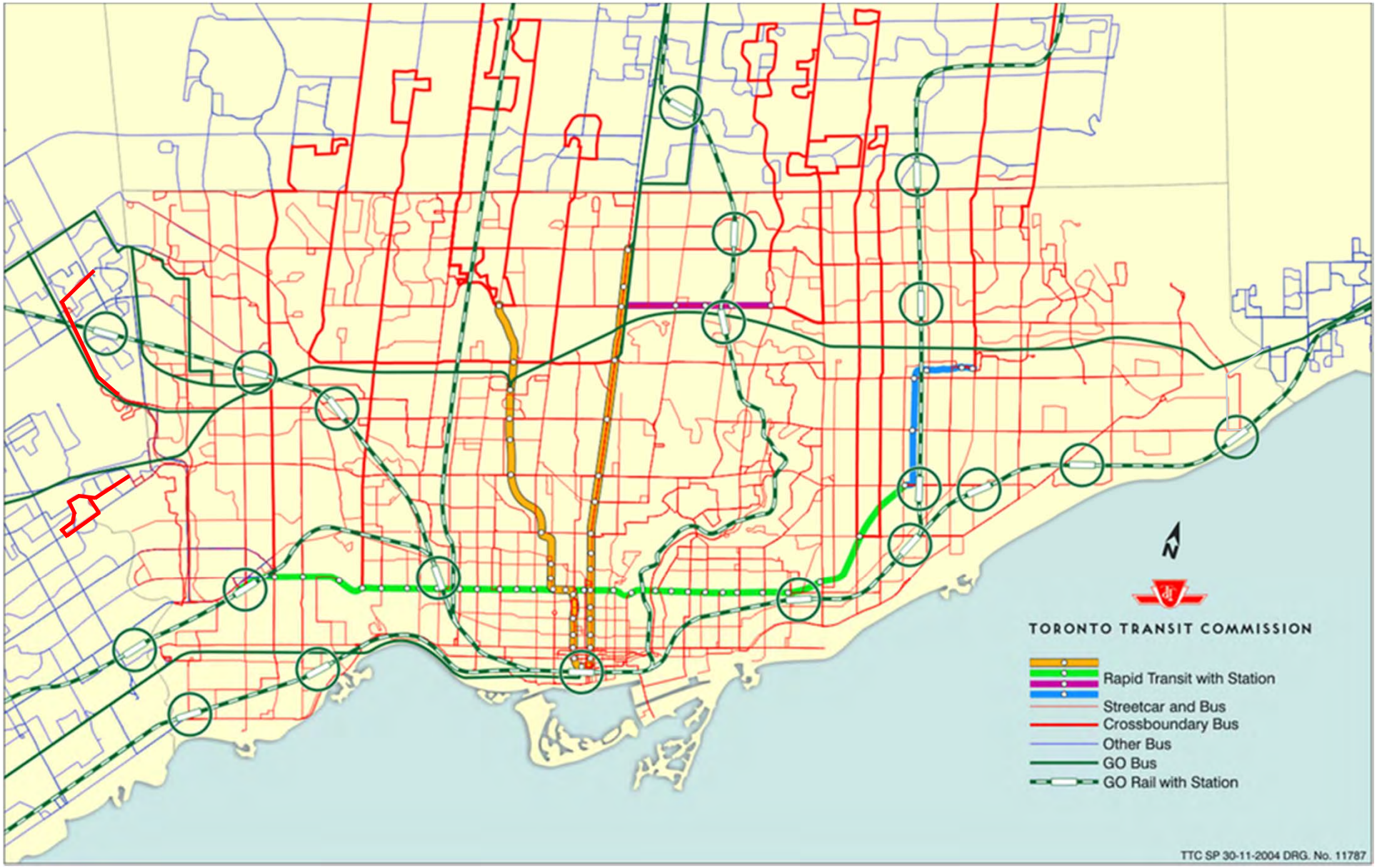
"...TTC practices are exceptional internationally…
resulting in high occupancy rates by international standards,
and efficient use of staff and vehicles".

TTC Service Profile


TORONTO TRANSIT COMMISSION
Rapid Transit with Station
TTC SP 30-11-2004 DRG. No. 11787


TORONTO TRANSIT COMMISSION
Rapid Transit with Station
Streetcar
TTC SP 30-11-2004 DRG. No. 11787


TORONTO TRANSIT COMMISSION
Rapid Transit with Station
Streetcar and Bus
TTC SP 30-11-2004 DRG. No. 11787


TORONTO TRANSIT COMMISSION
Rapid Transit with Station
Streetcar and Bus
Crossboundary Bus
Other Bus
GO Bus
GO Rail with Station
TTC SP 30-11-2004 DRG. No. 11787

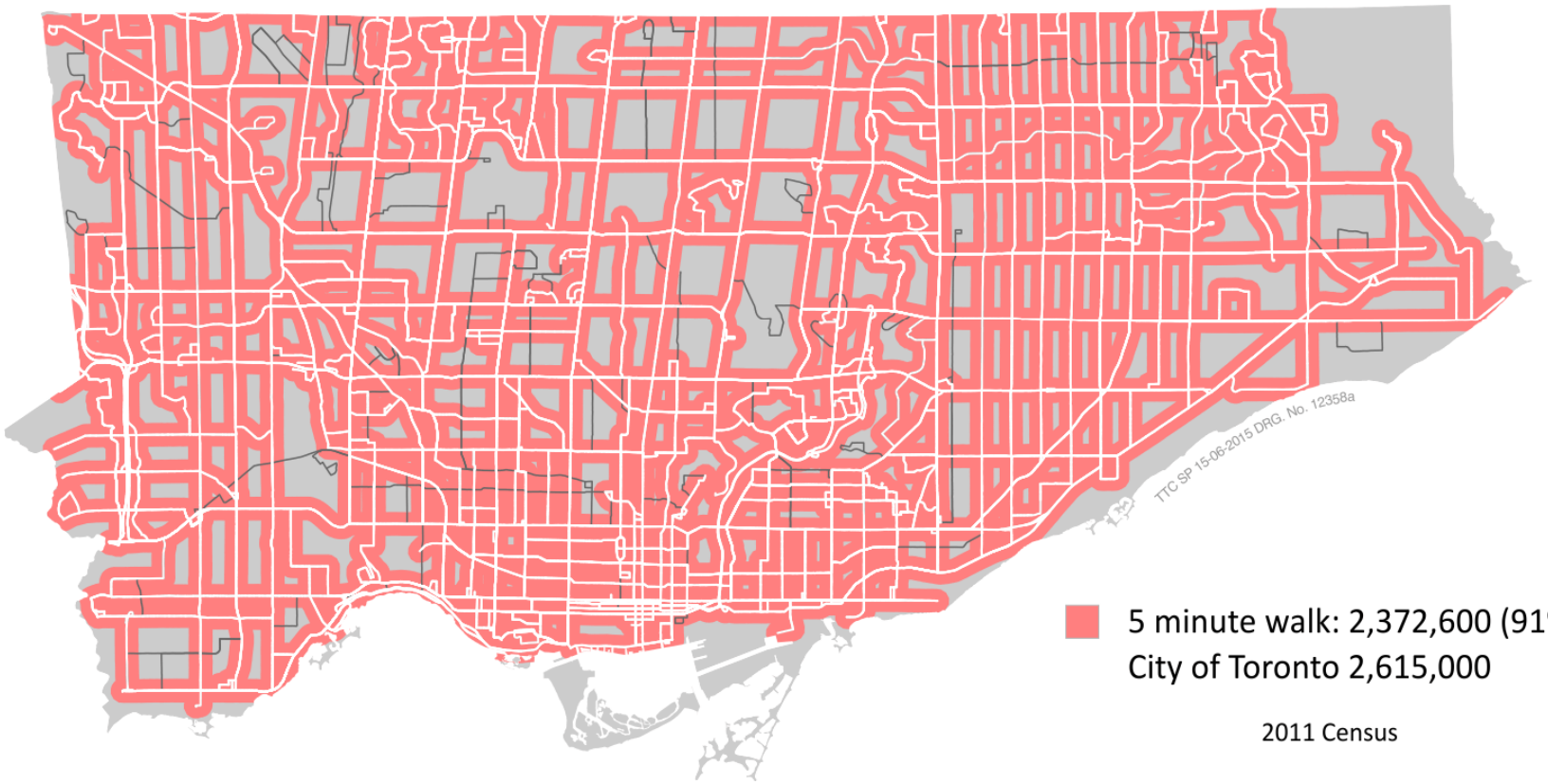
1,508 buses in peak service

202 streetcars in peak service

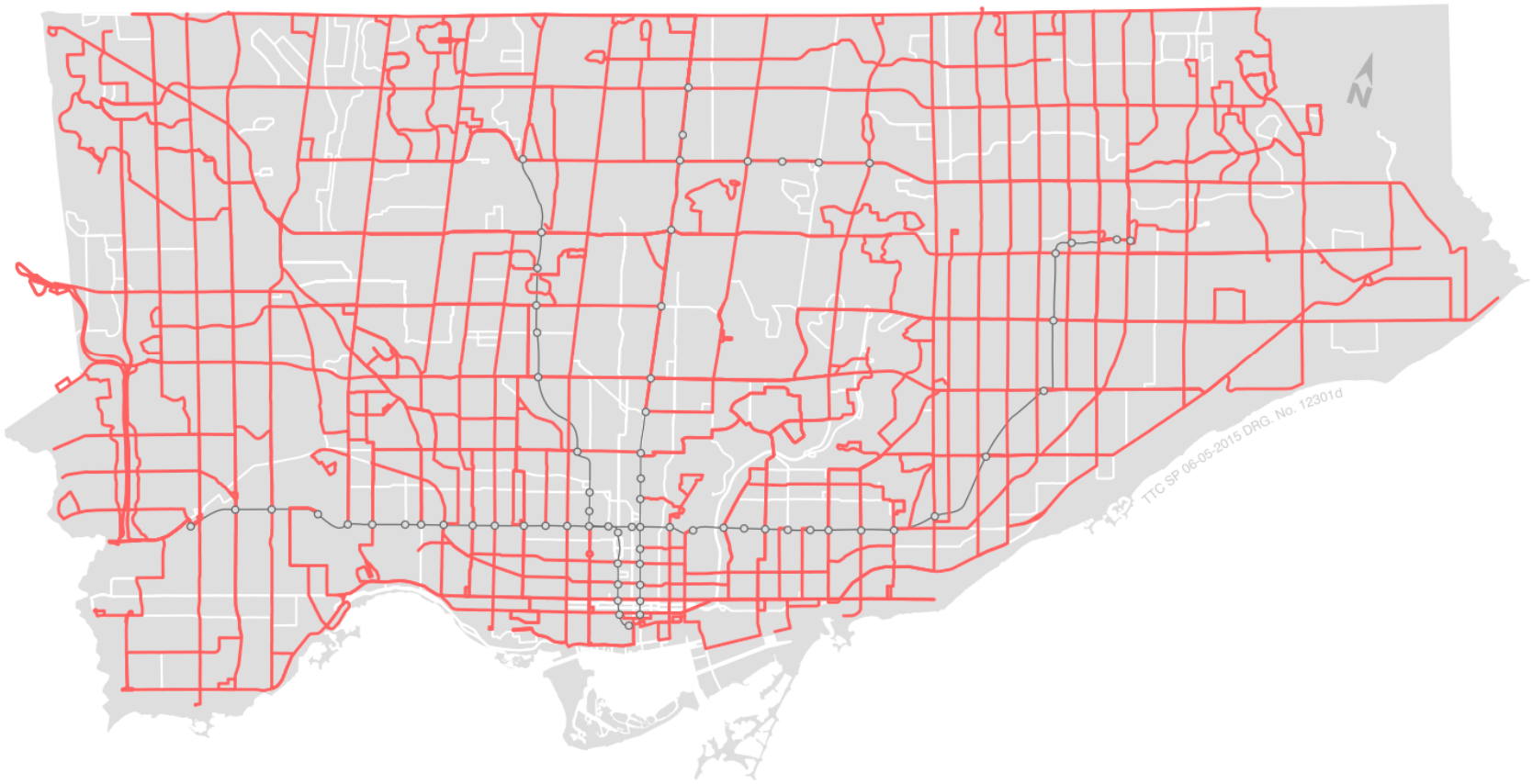
105 rapid transit trains in peak service

Population Within 5 Minute Walk

Monday to Friday Morning Peak Period

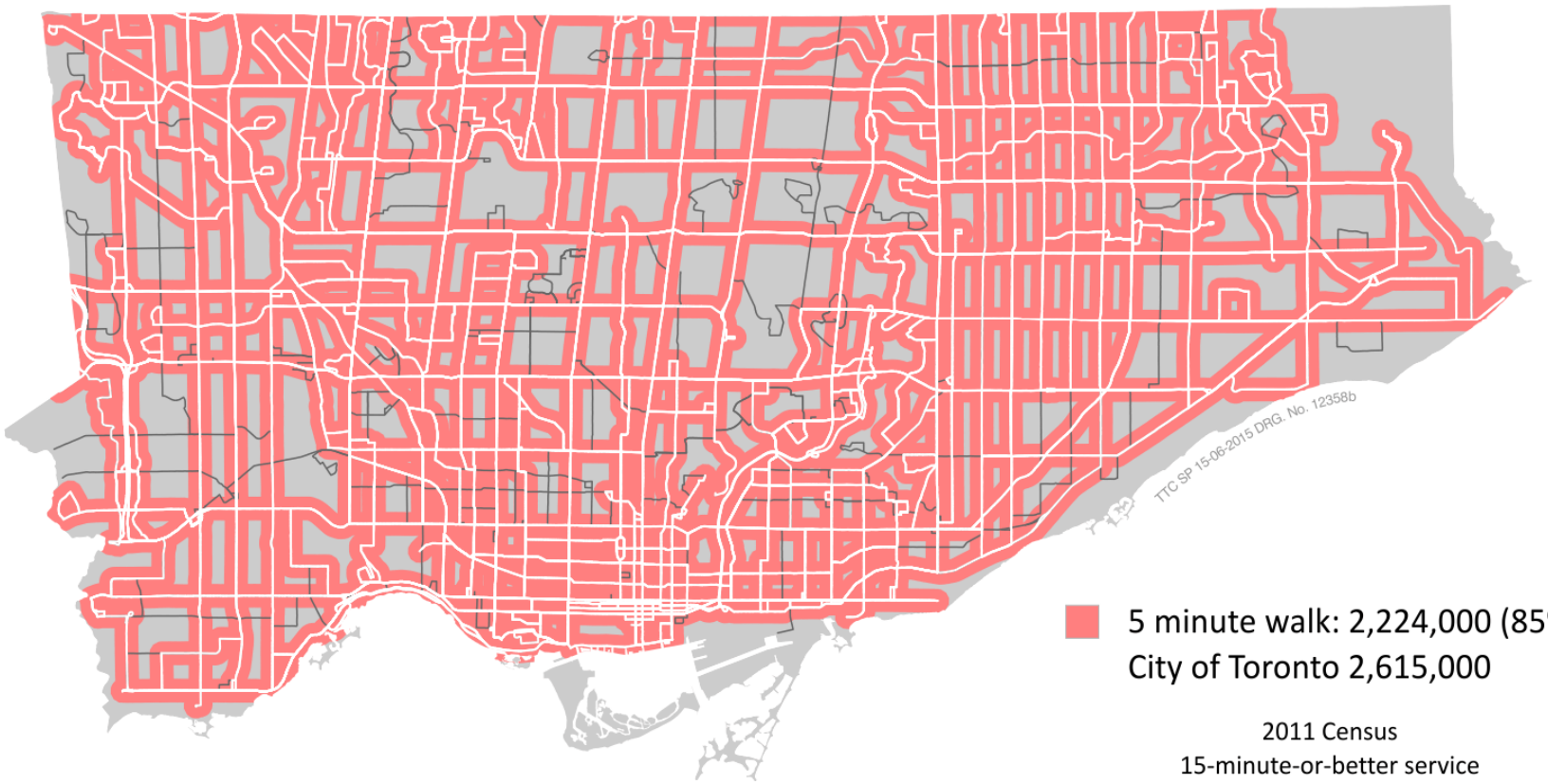


Current Off-Peak Coverage



Population Within 5 Minute Walk

Monday to Friday Midday Period

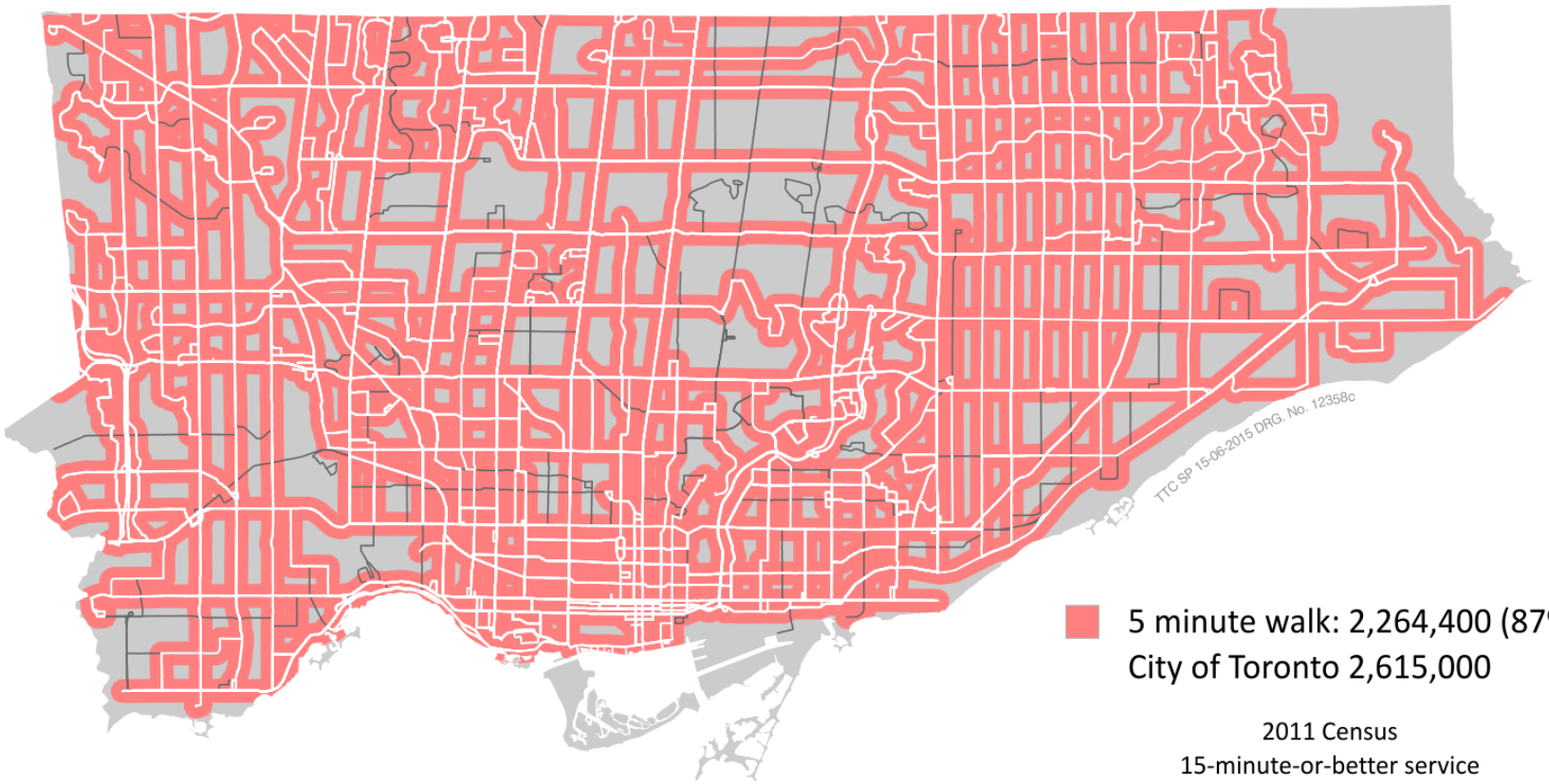


5 minute walk: 2,224,000 (85%)
City of Toronto 2,615,000

2011 Census
15-minute-or-better service

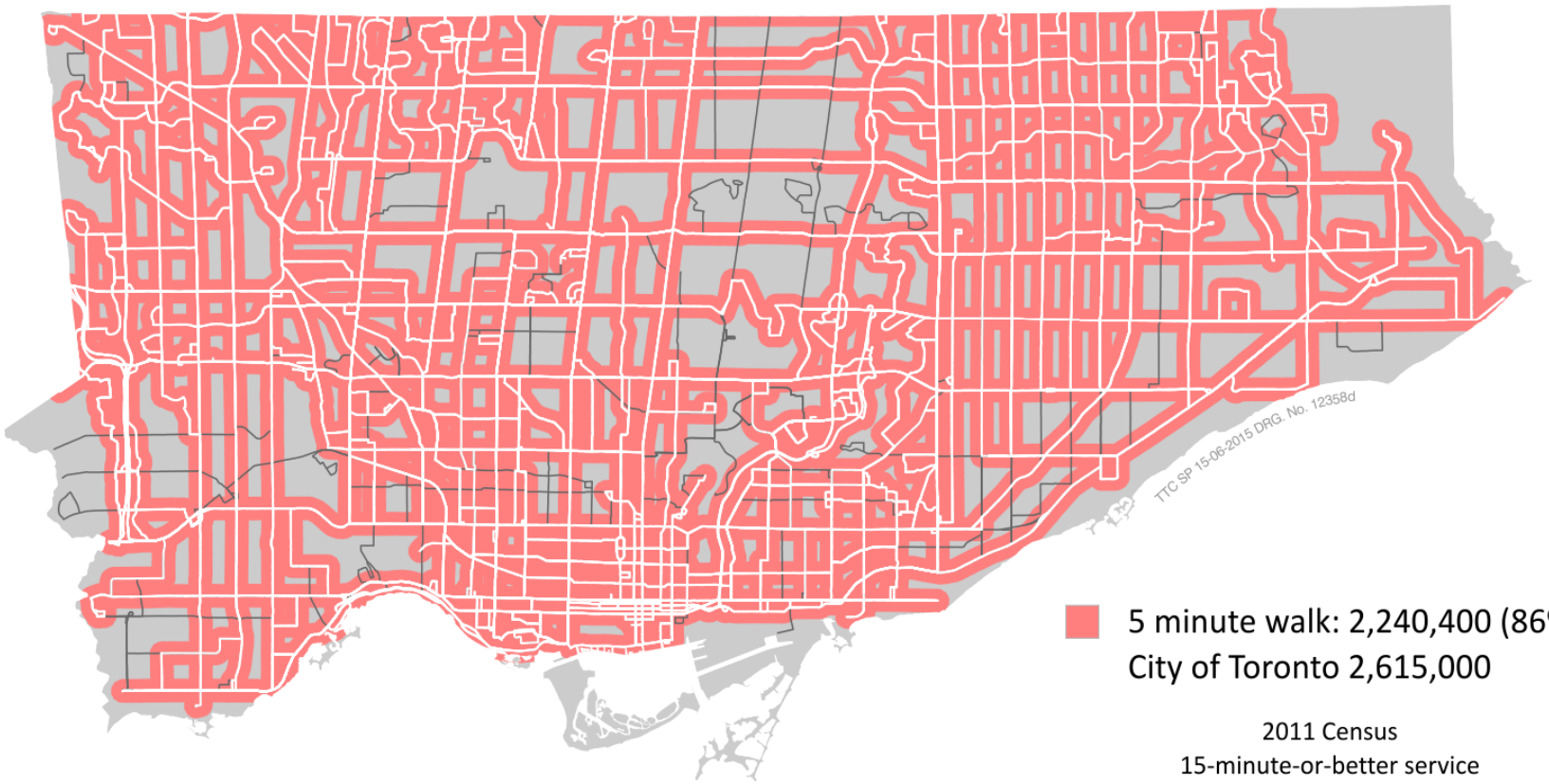
Population Within 5 Minute Walk

Monday to Friday Early Evening Period



Population Within 5 Minute Walk

Saturday Afternoon Period

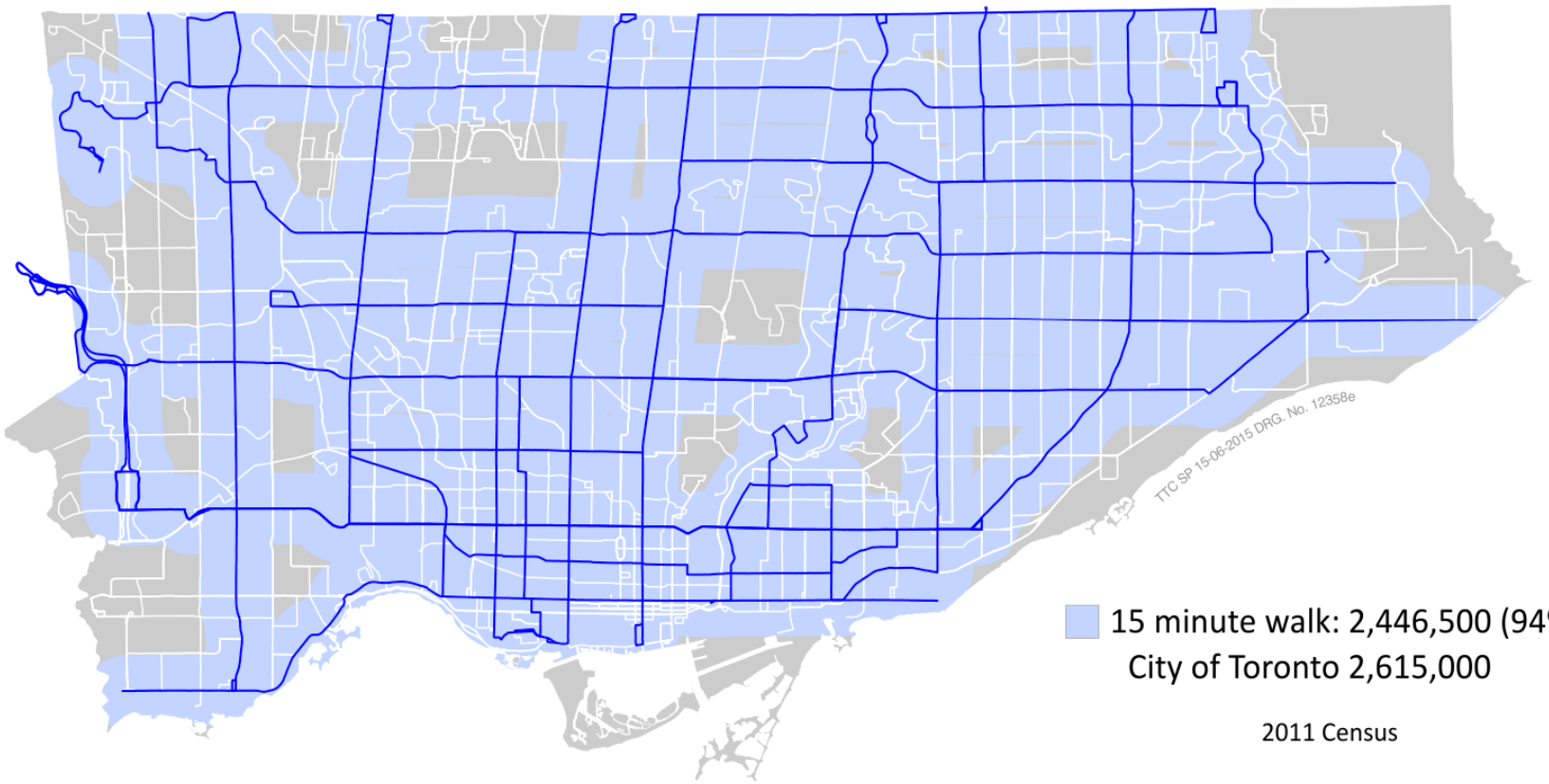


5 minute walk: 2,240,400 (86%)
City of Toronto 2,615,000

2011 Census
15-minute-or-better service

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%	95%	50%	100%
1	40%		40%	
2	20%		10%	
3	5%		<1%	
>3	<1%		<1%	

Sources: 2011 TTS Survey

Accessibility Status

- all buses accessible; over 90% low-floor


9241
29 TO EXHIBITION
Guardian Drugs

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


Subway

Accessible Subway Stations

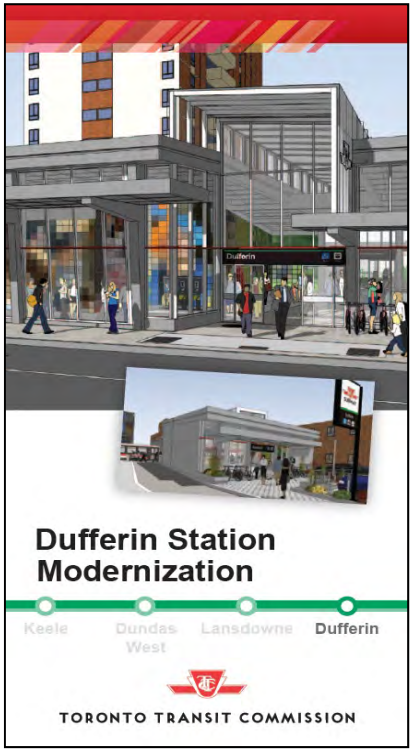
Pape Station

Accessibility Subway Stations

Pape Station

Accessible Subway Stations

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



Accessible Subway Map

*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

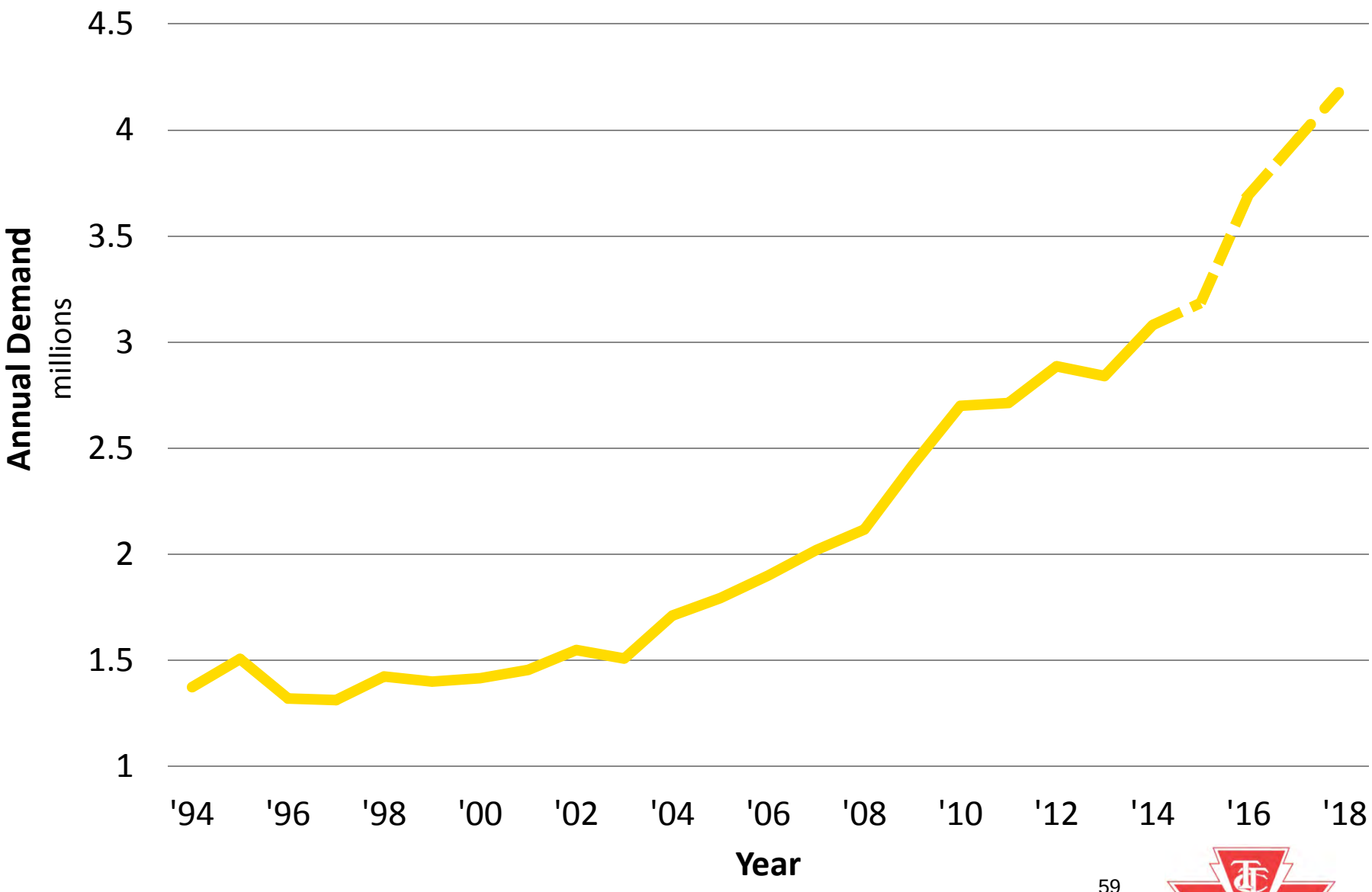

W153
W153


W296
LOOK FOR CARS
WHEN CROSSING


co-op
A059
Operated on behalf of
WHEEL-TRANS
TORONTO
co-op
CABS
416-504-2667
co-opcabs.com
4161


BECK
751-5555
ONTARIO
AMPC 956

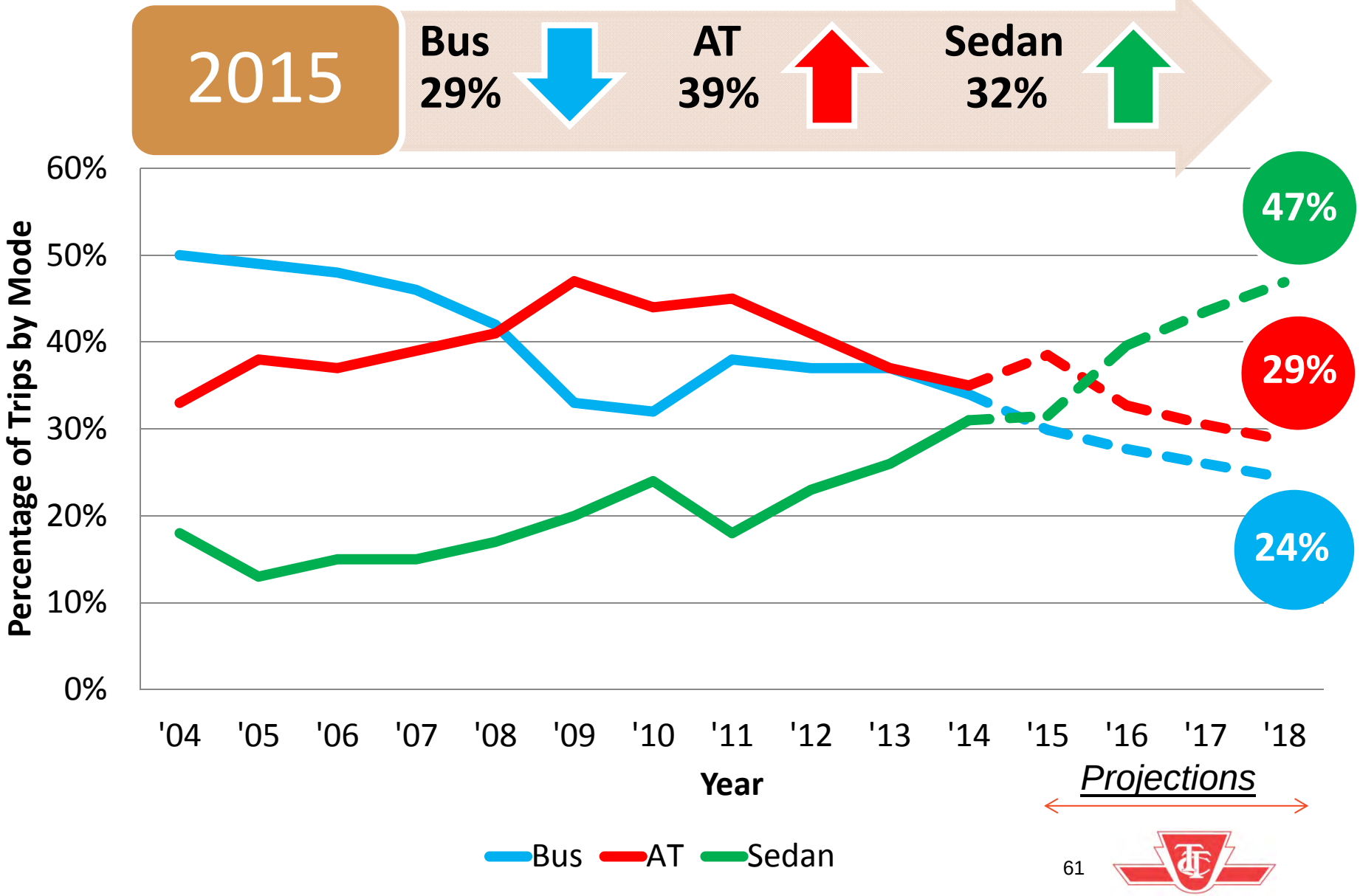
Wheel-Trans Demand



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

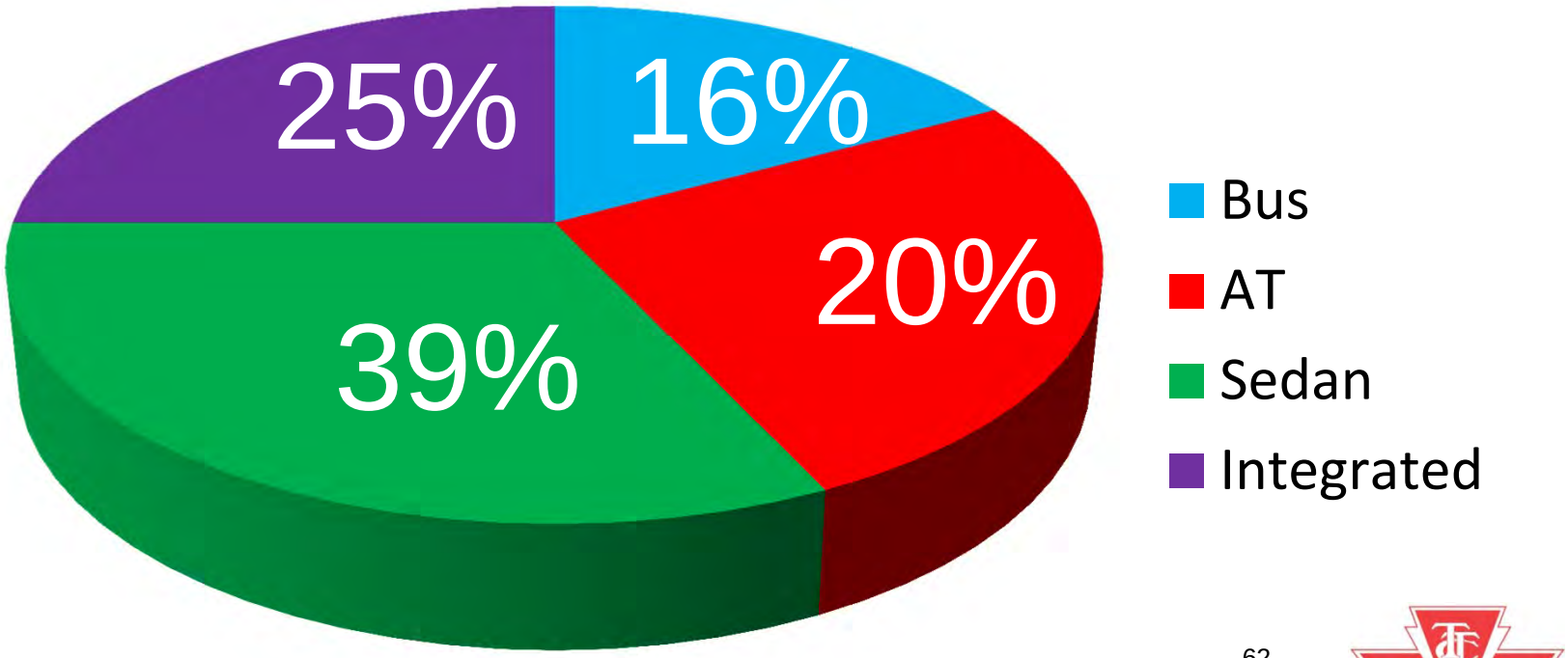
Wheel-Trans: Projected Modal Split



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

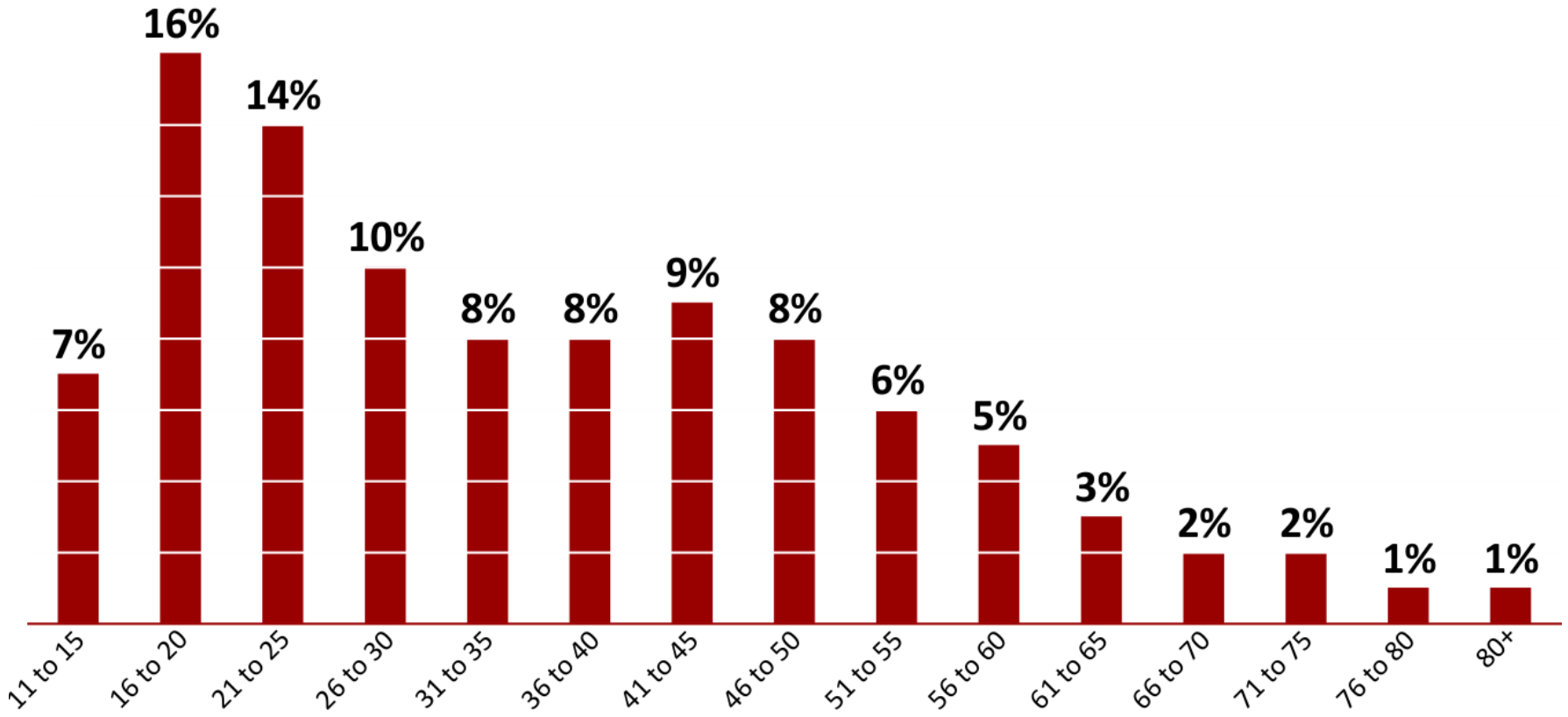
TTC Commuter Parking

- 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

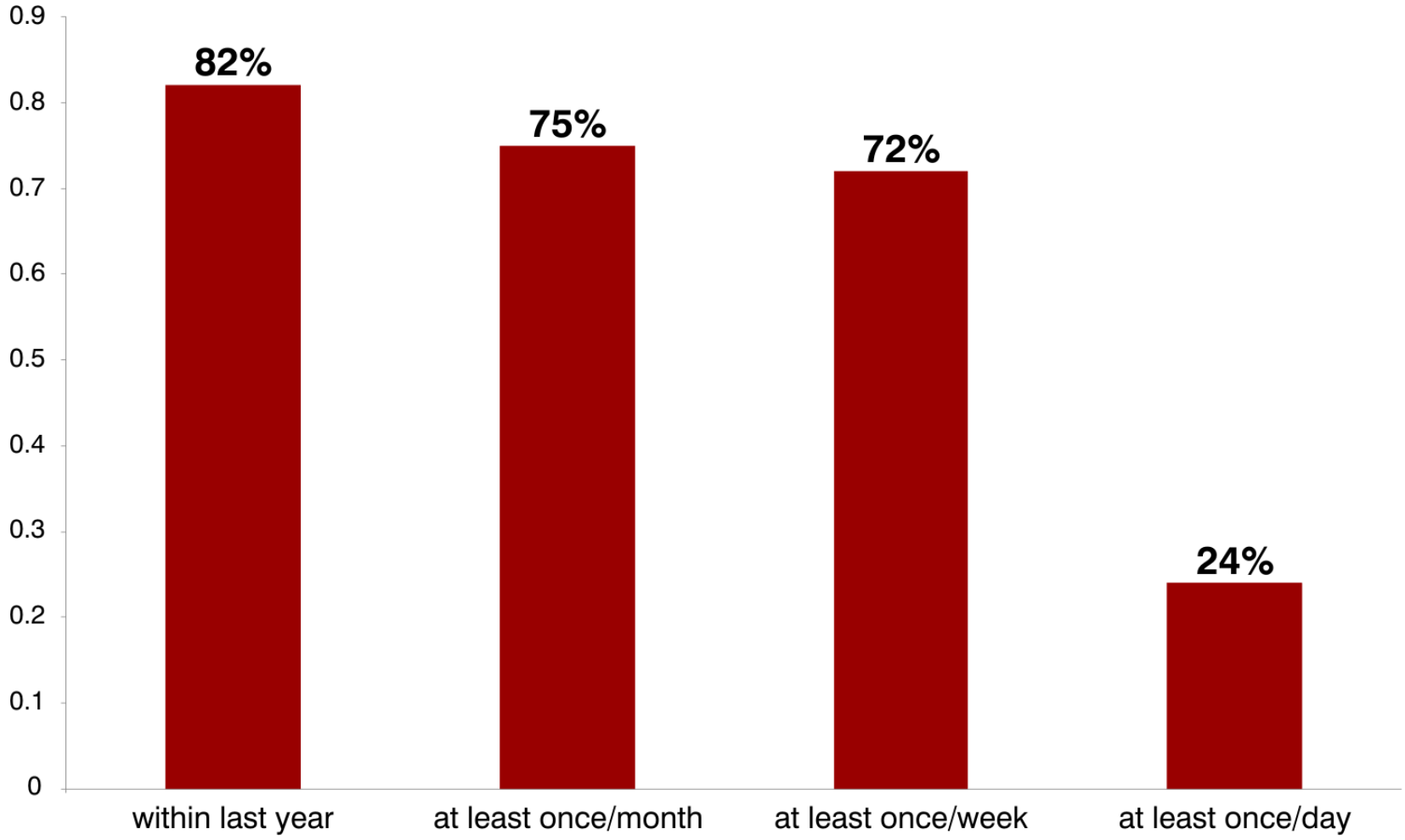
- 57% are female
- 58% have driver's licence
- 66% have household vehicle
- 66% are employed
- 32% are students

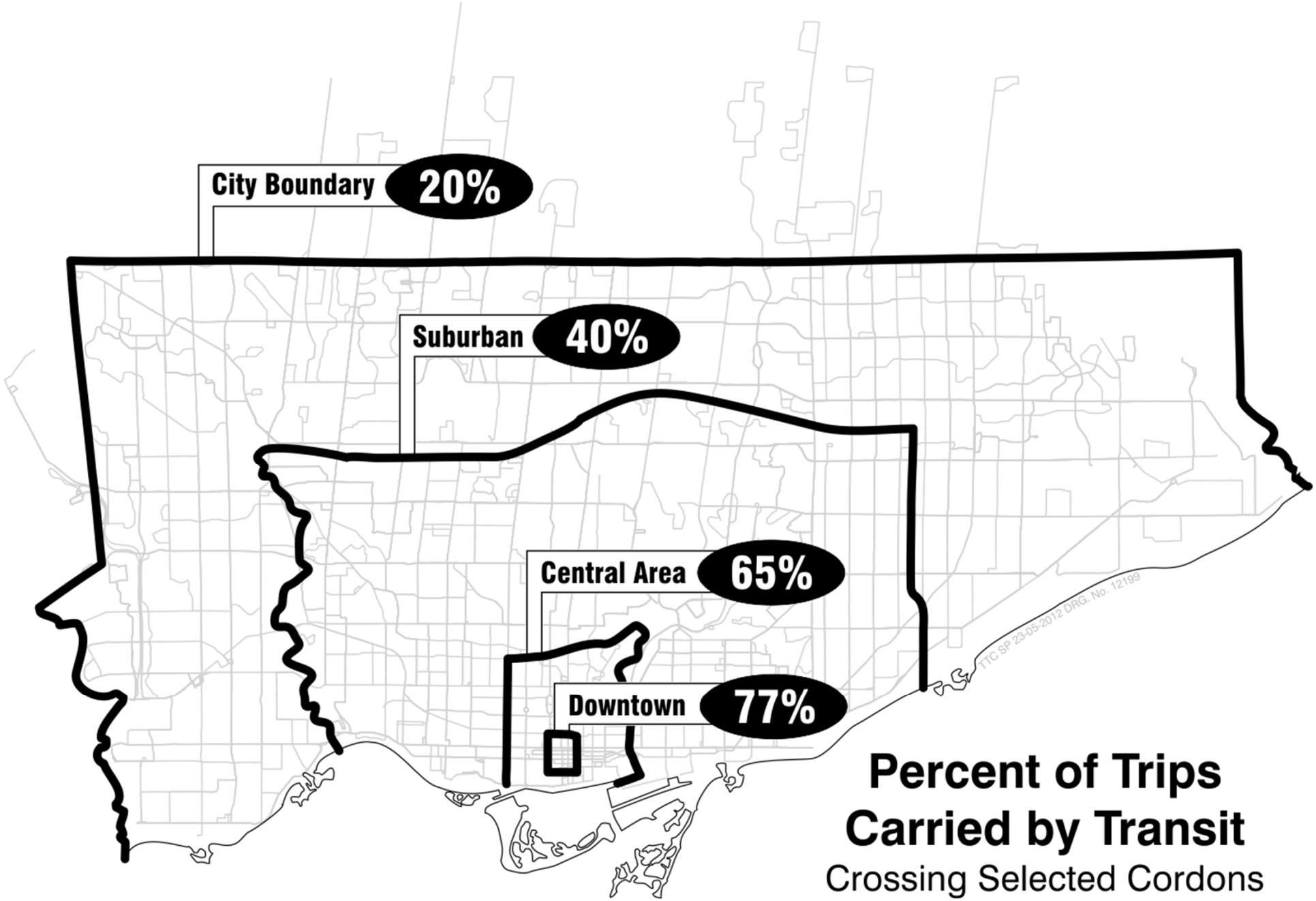
Age Distribution of TTC Customers



Frequency of TTC Use

Toronto Residents





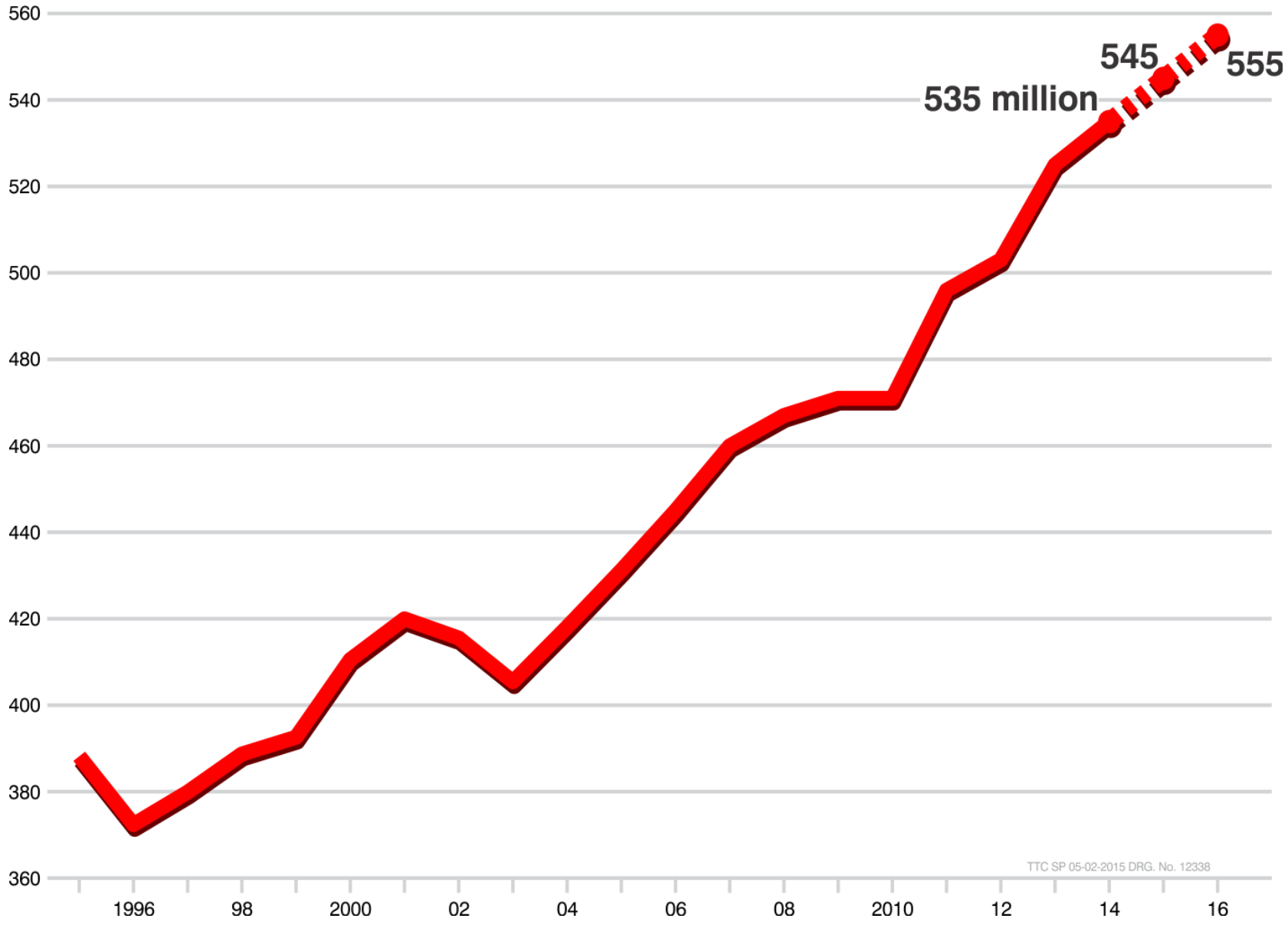
Percent of Trips Carried by Transit

Crossing Selected Cordons

AM Peak Period (Inbound)

TTC Annual Ridership

from 1995 - 2016, millions

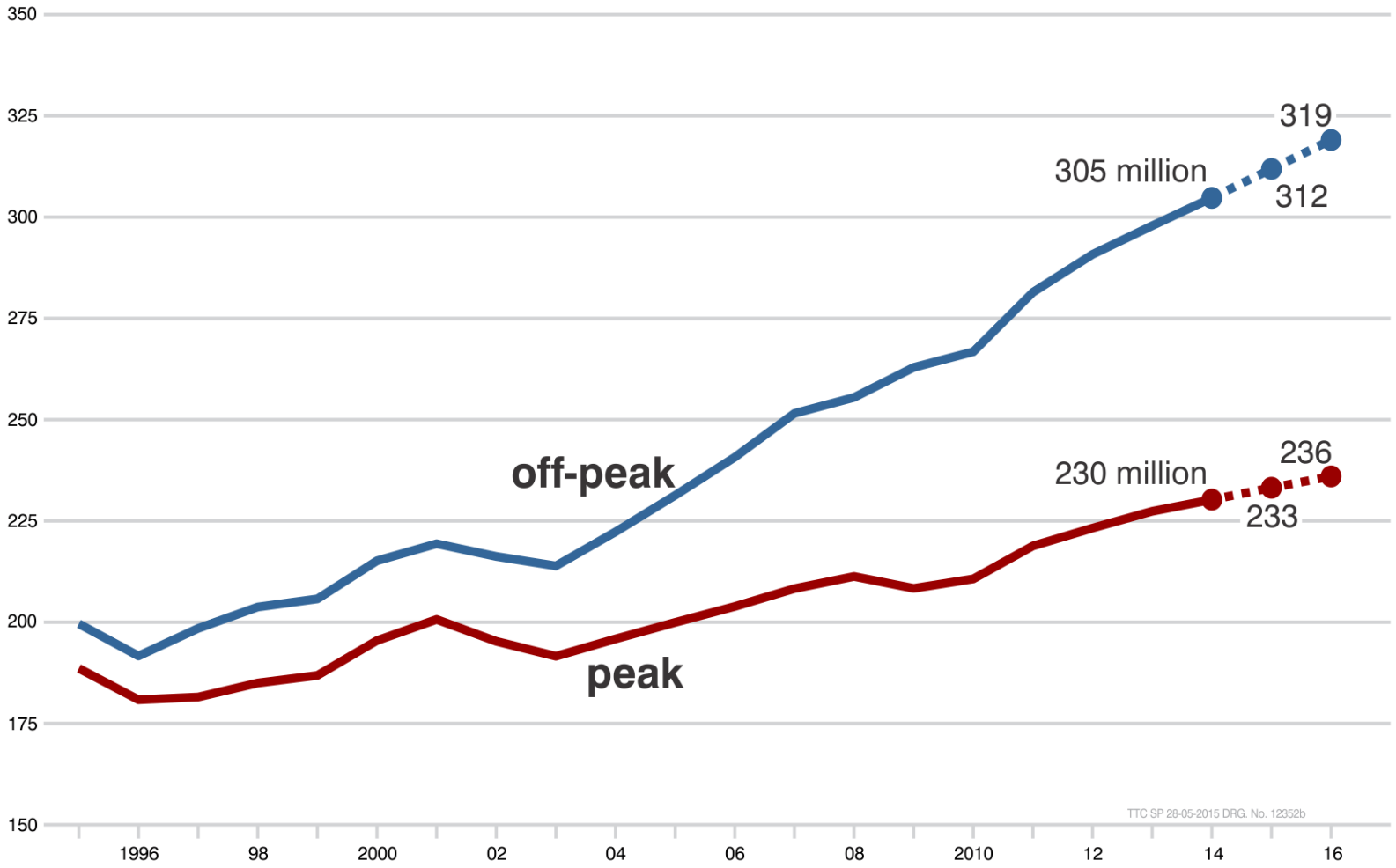


Purpose of Travel on TTC

Trip Purpose	Percentage
work	45%
other	28%
school	27%

TTC Peak and Off-Peak Ridership

from 1995 - 2016, millions

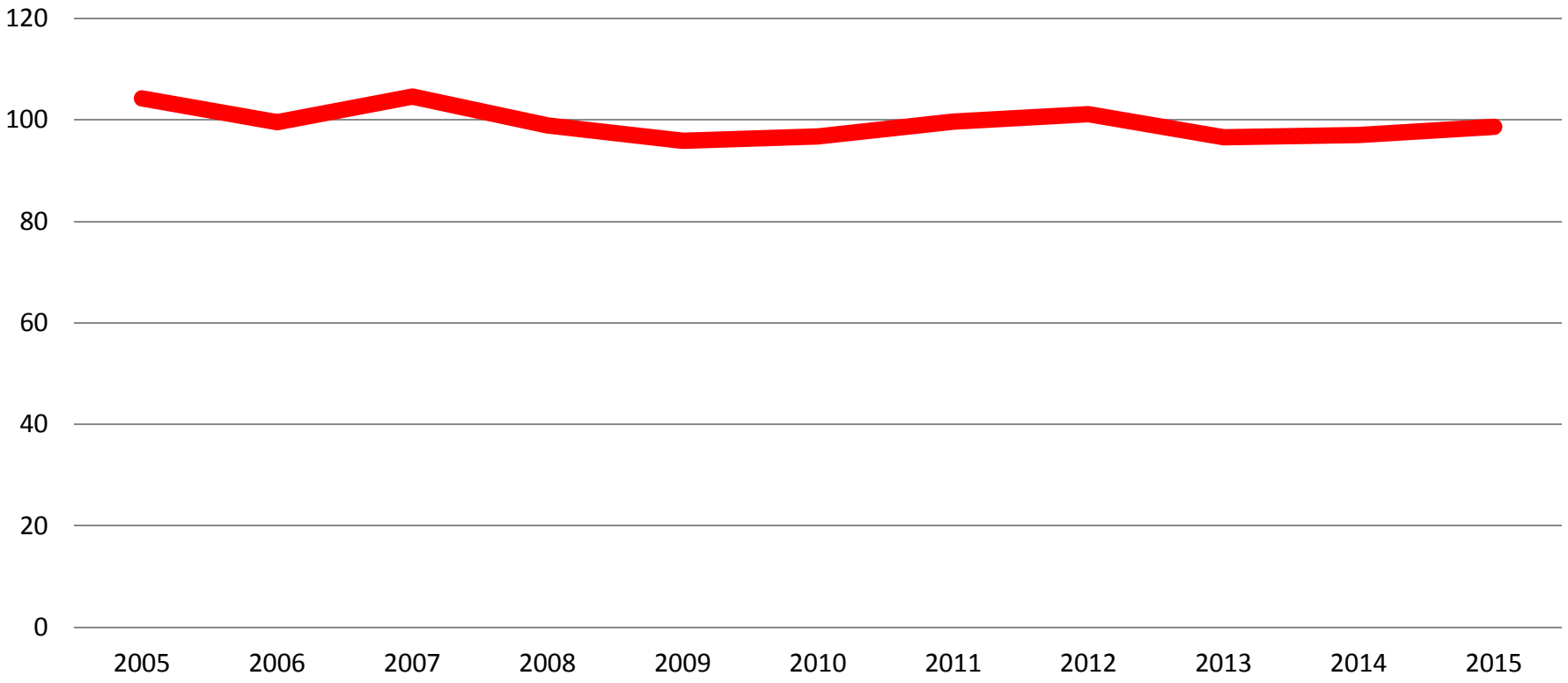


Public Support for Transit in Toronto

Ridership per Capita (using boardings)

Agency / City	Population	Ridership per Capita
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

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

Subsidy / Rider – Comparison Among Cities

City	Subsidy / Rider
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

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

All-Door Boarding & Proof-of-Payment

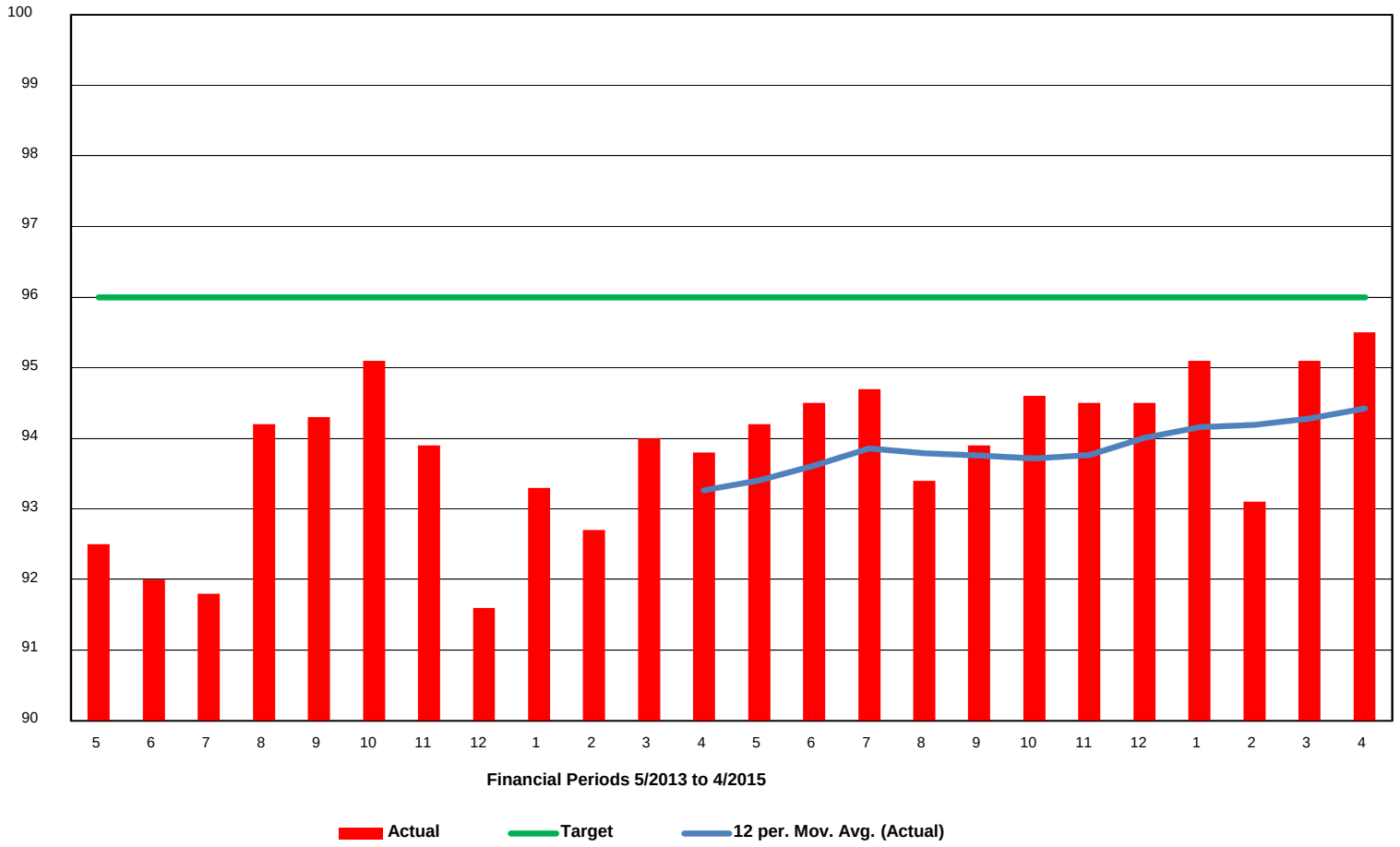
- speed-up time to serve stops: decreases travel times

Subway Service Reliability

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

Subway Service Reliability

Punctuality – Line 1 Yonge-University Subway

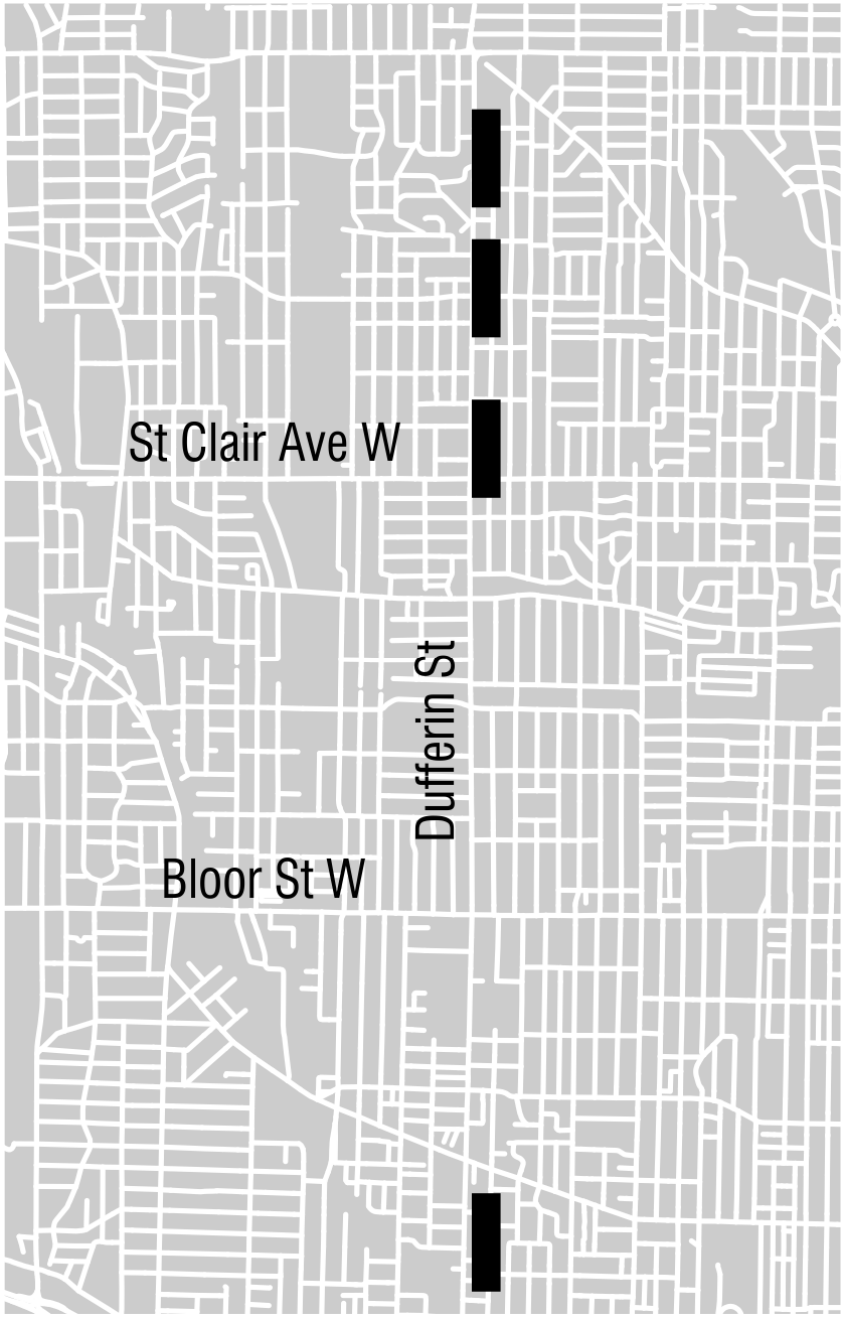


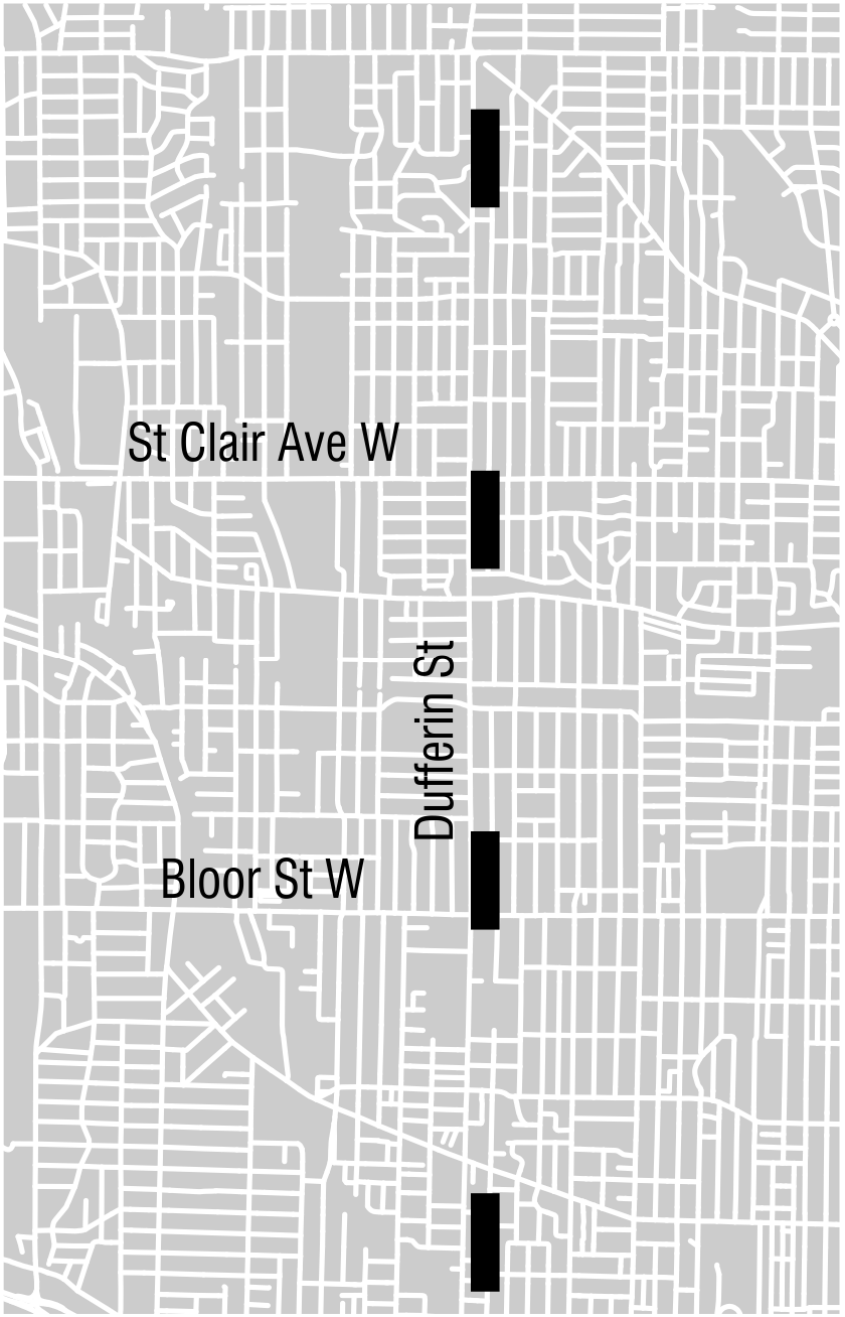
Subway Service Reliability

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

Bus, Streetcar Service Reliability

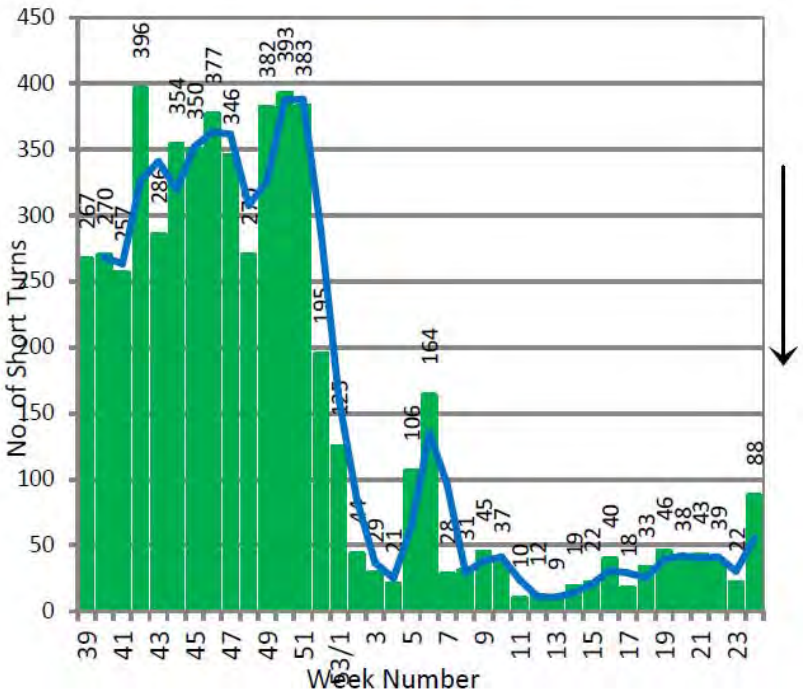
- running time adjustments, improved route management:
  - reduce short-turns, bunching, gapping on bus, streetcar routes


St Clair Ave W
Dufferin St
Bloor St W

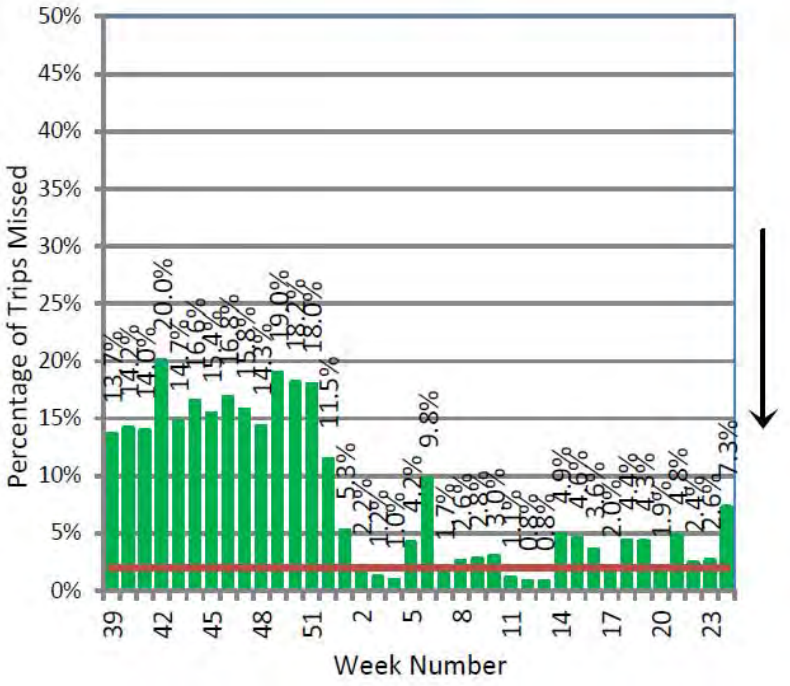

St Clair Ave W
Dufferin St
Bloor St W

504 King

Short Turns

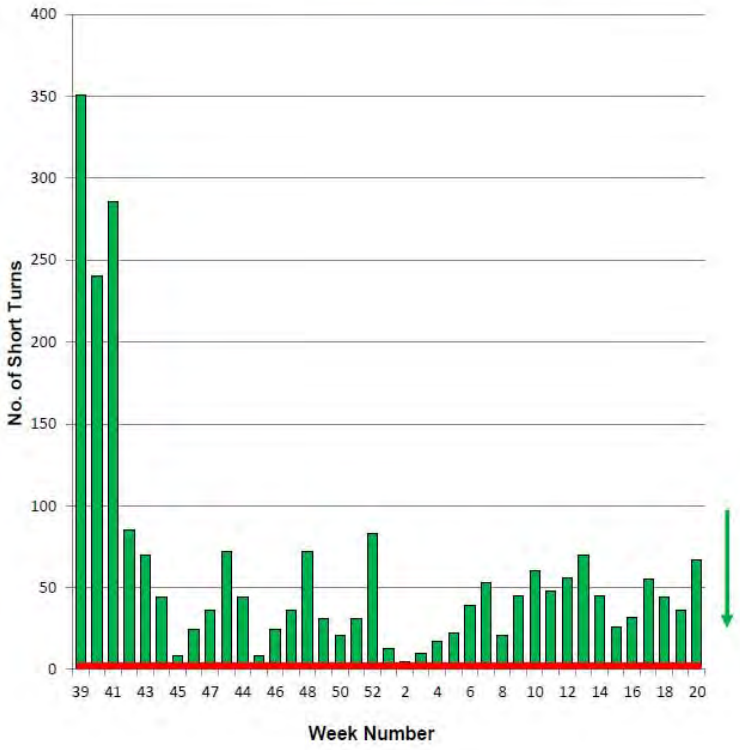


Missed Trips

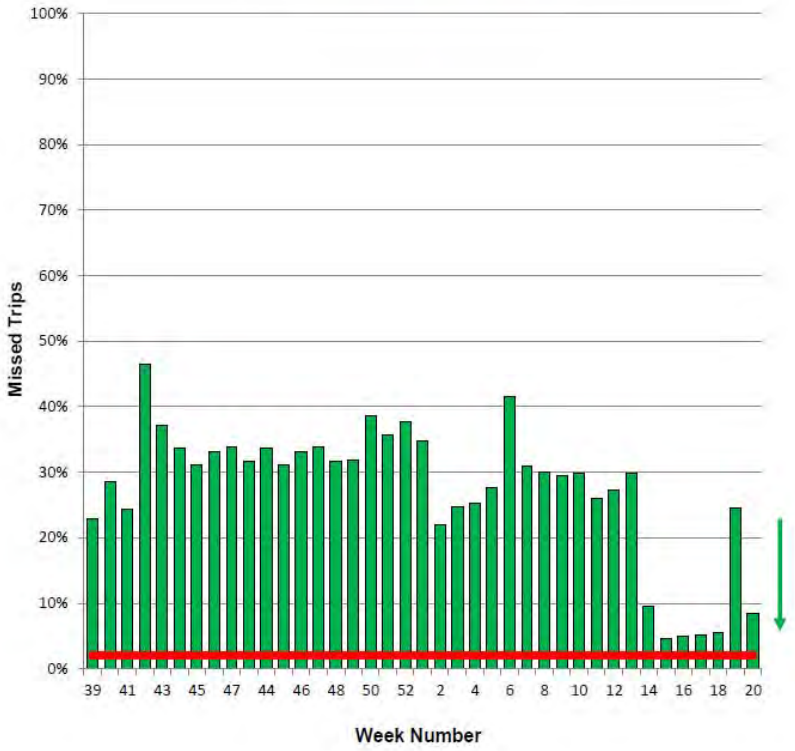


29 Dufferin

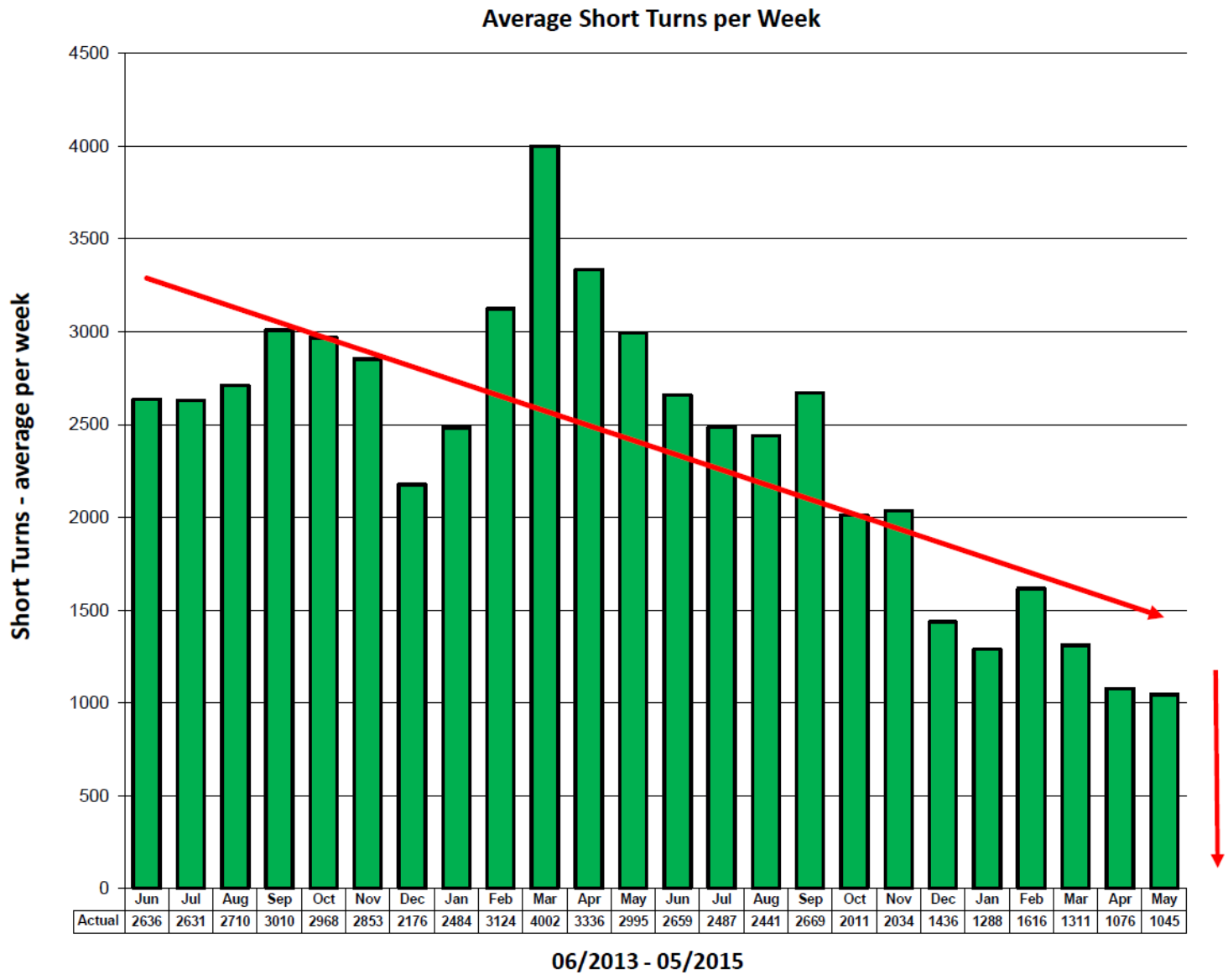
Short Turns



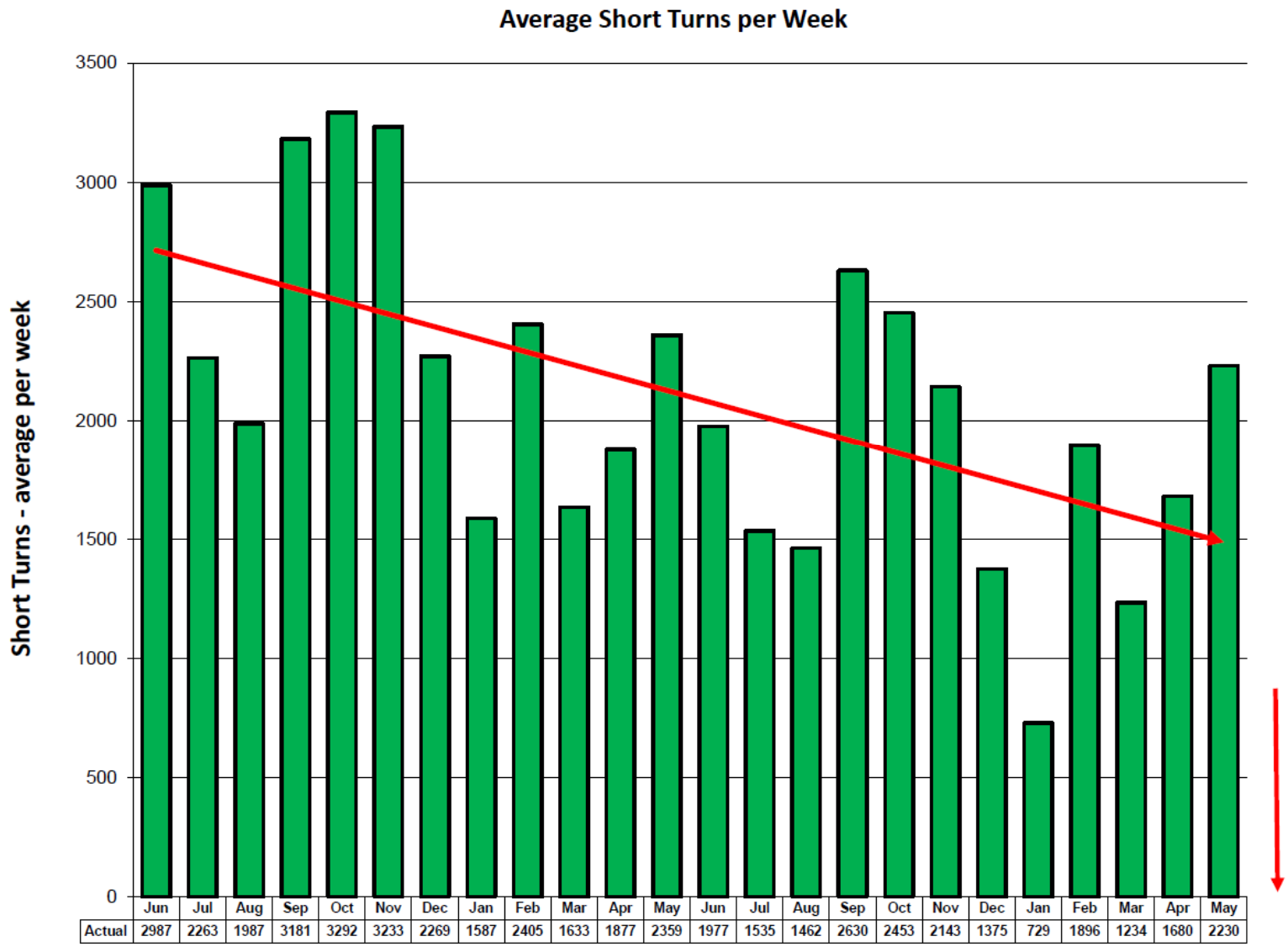
Missed Trips



STREETCAR


Average Short Turns per Week
Short Turns - average per week
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May
Actual 2636 2631 2710 3010 2968 2853 2176 2484 3124 4002 3336 2995 2659 2487 2441 2669 2011 2034 1436 1288 1616 1311 1076 1045
06/2013 - 05/2015

BUS TRANSPORTATION



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Actual	2987	2263	1987	3181	3292	3233	2269	1587	2405	1633	1877	2359	1977	1535	1462	2630	2453	2143	1375	729	1896	1234	1680	2230

New Buses, Temporary Garage

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

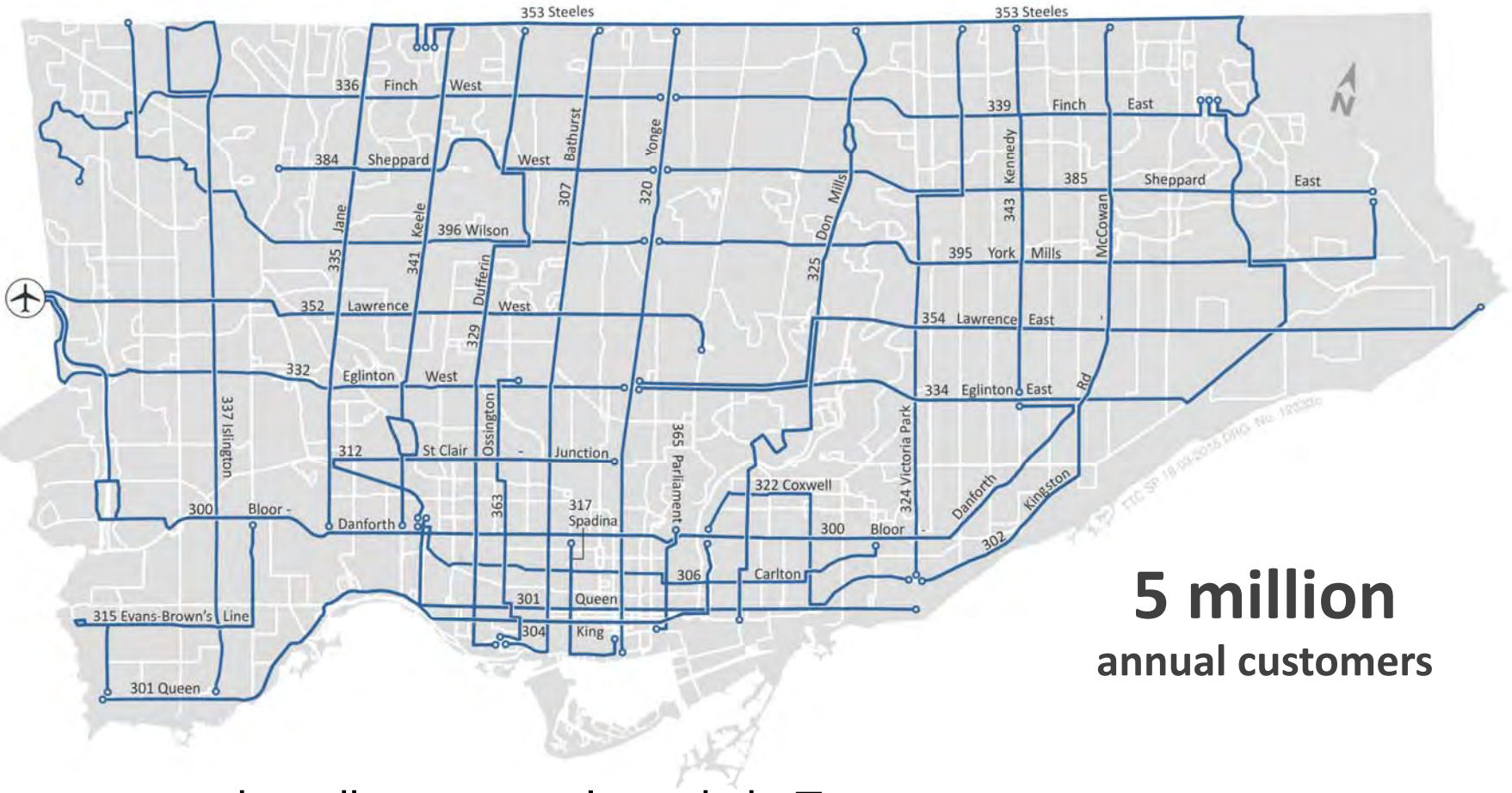
Reduce Wait Times & Crowding

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

Express Bus Network

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

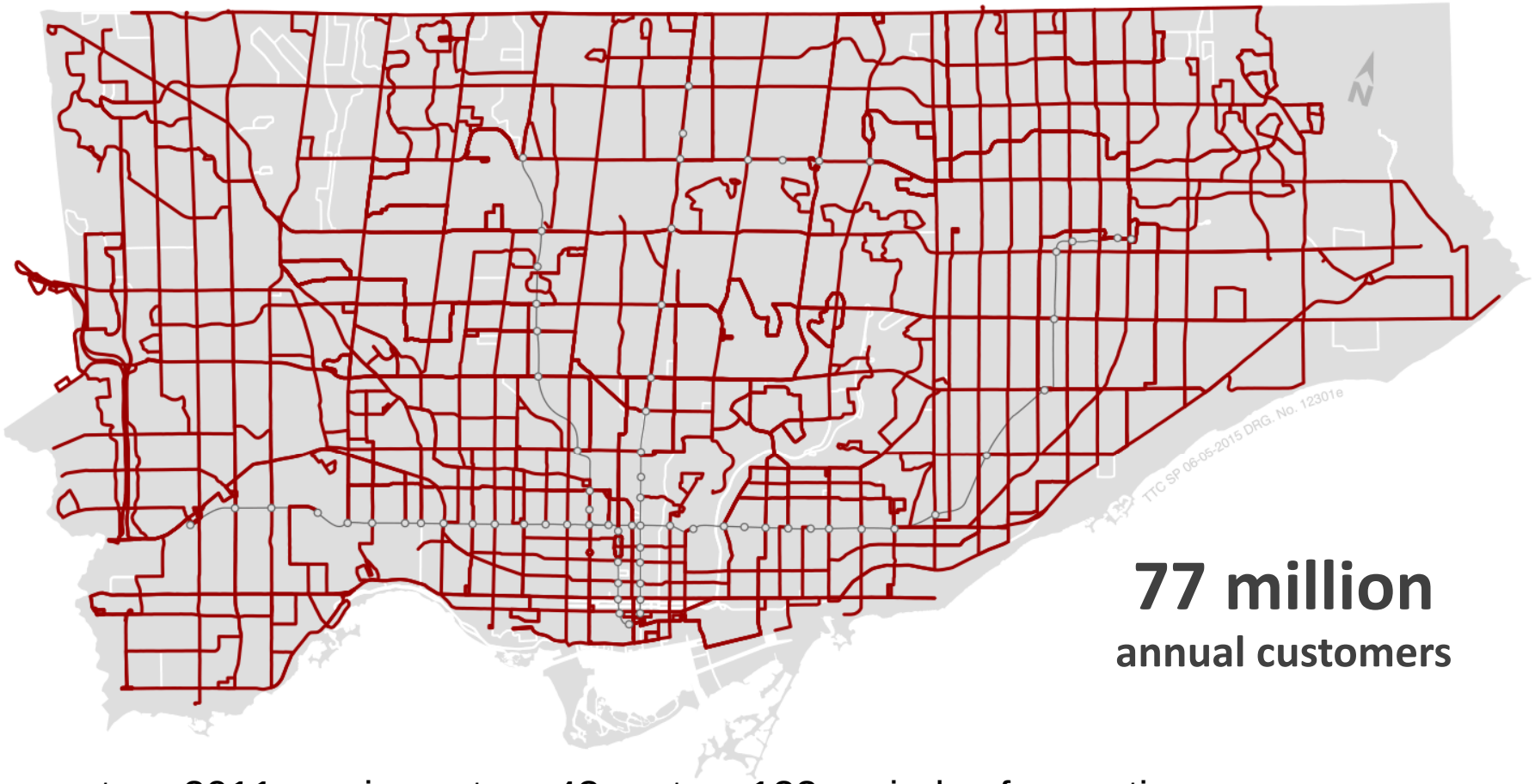
Overnight Network



5 million
annual customers

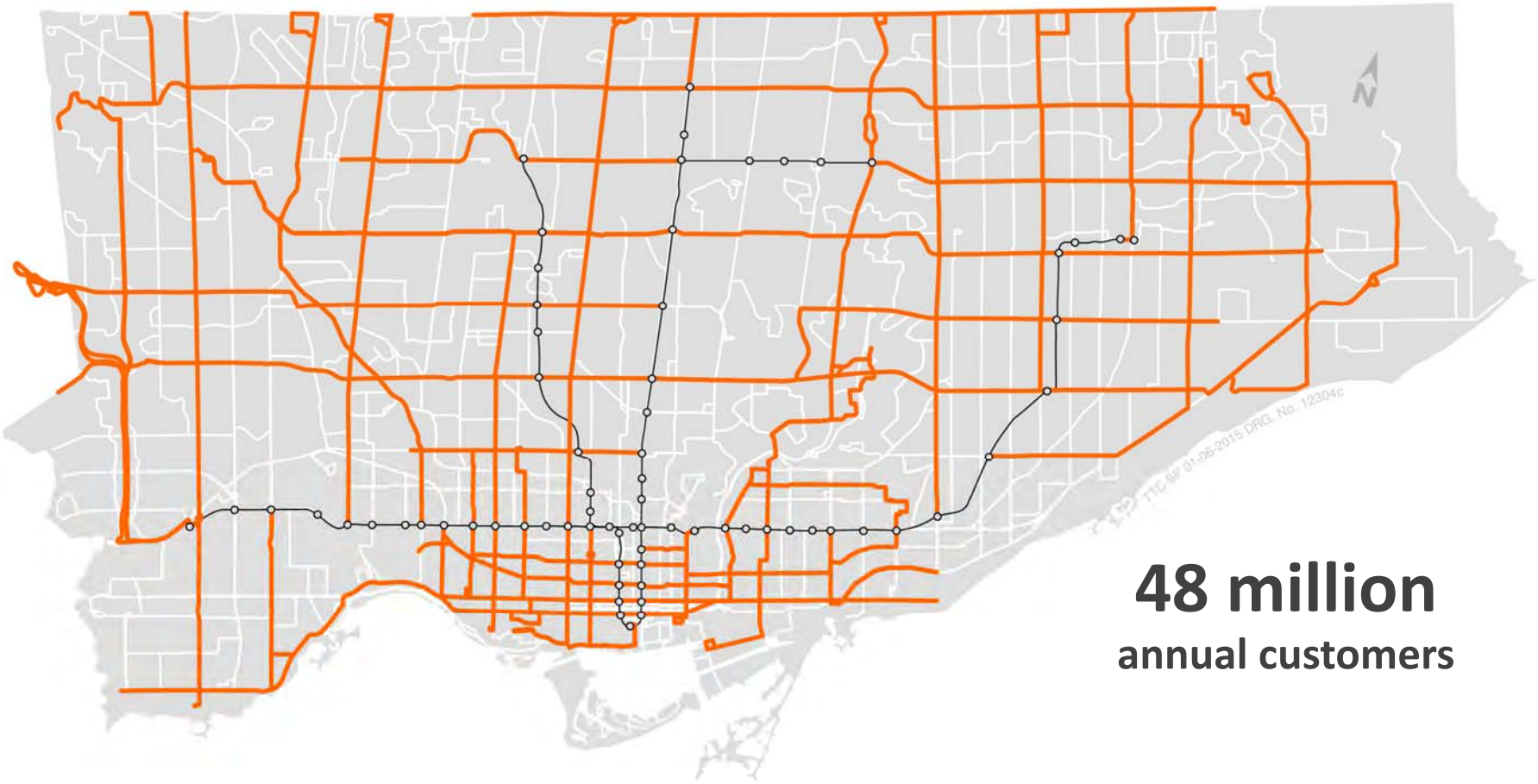
- accommodate diverse travel needs in Toronto:
  - 99% of Torontonians within 15-minute walk of service

All-Day, Every-Day Service



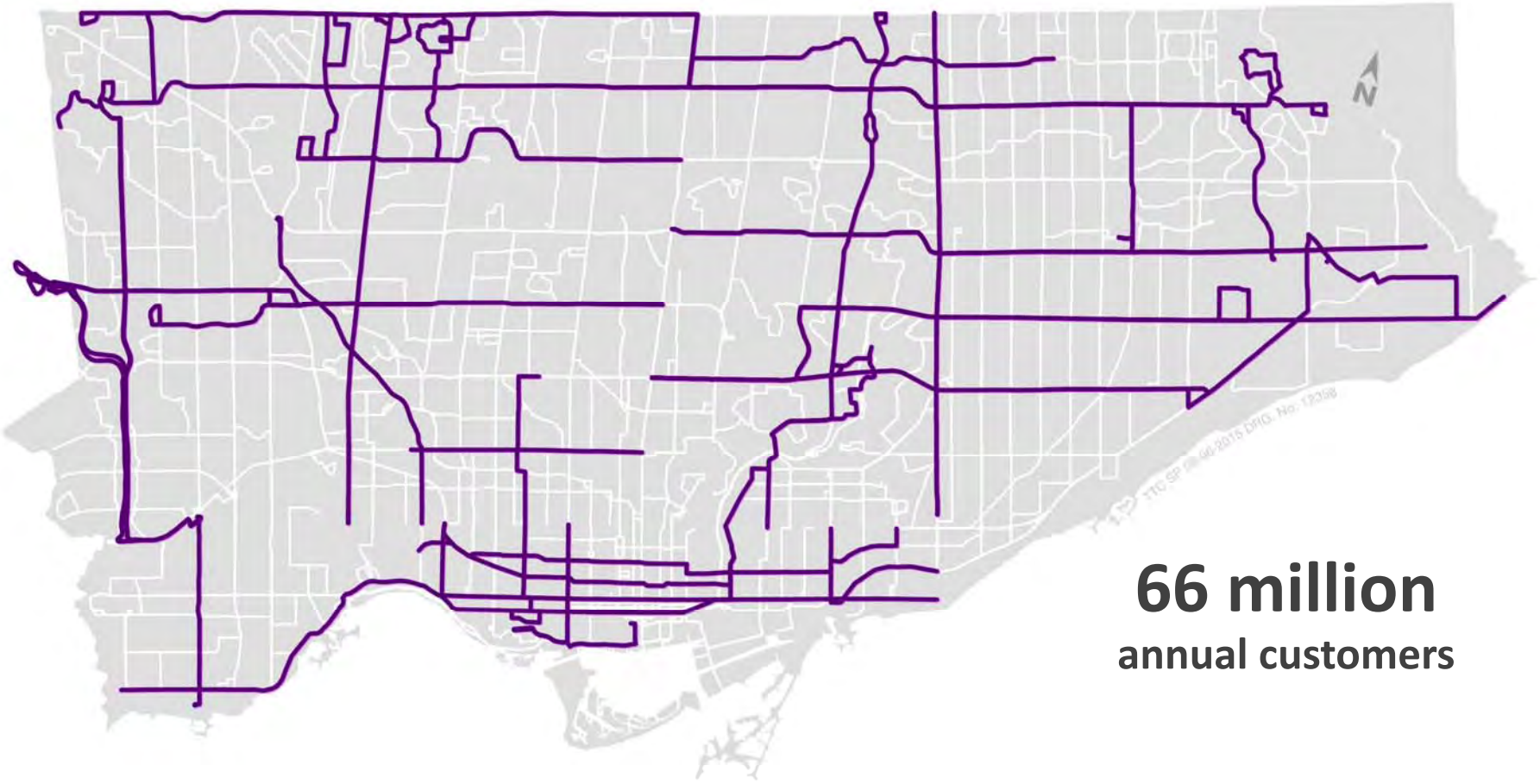
- restore 2011 service cuts -- 43 routes, 122 periods of operation:
  - customers can count on transit any time for their travel needs

Ten-Minute-or-Better Network



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

Reduce Wait Times & Crowding

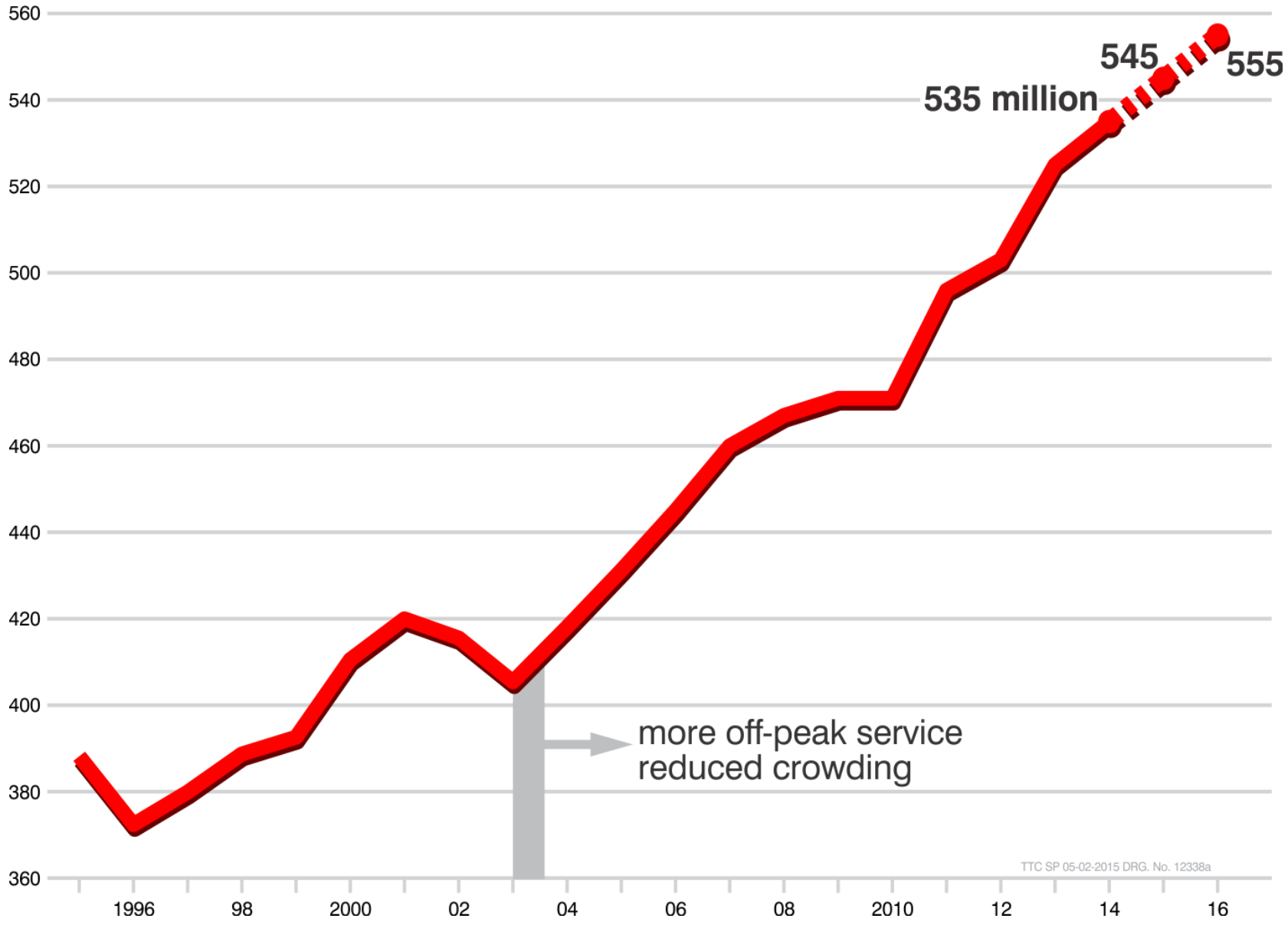


66 million
annual customers

- 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