

# Change in Forecast-Year Vehicle Ownership

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# Changing Situation Regarding Parking Supply

# Toronto Zoning By-law Parking Rates: Prior to revisions

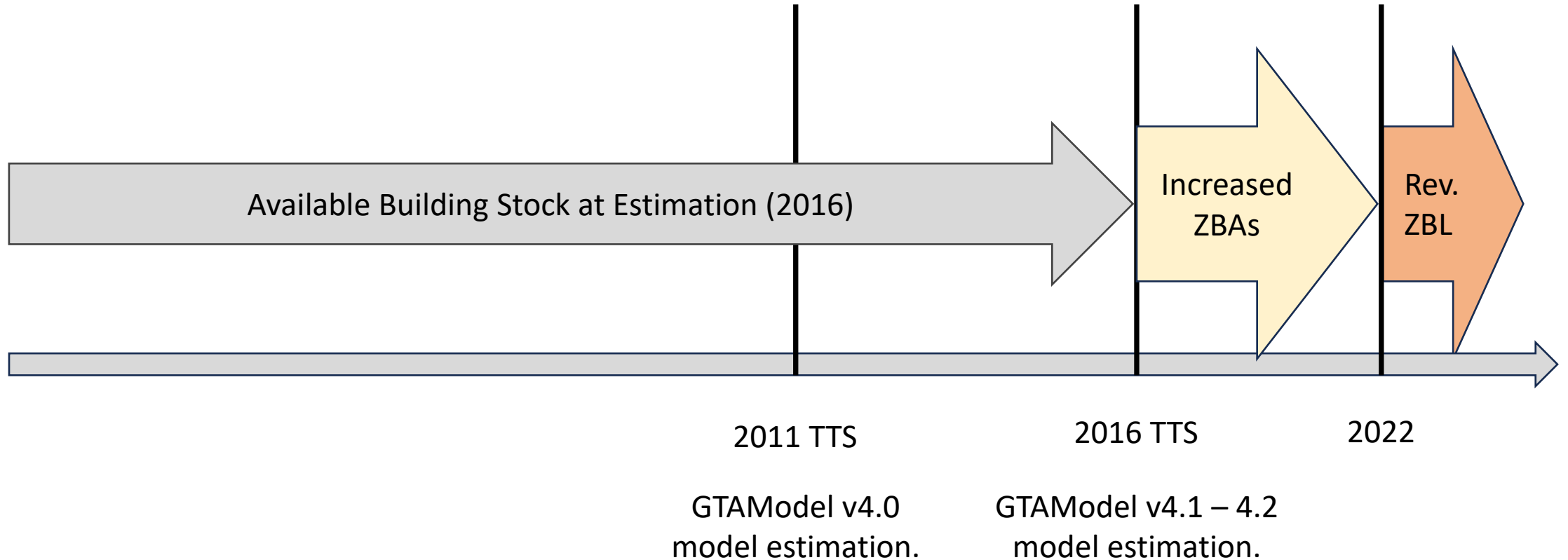
- Specified minimum parking rates
- In recent years, the minimum parking standards were not strictly enforced. Developers were able to reduce the requirement through zoning bylaw amendments (ZBAs) or minor variances
  - Nearly half of developments – and over 80% of mixed use developments – approved by the City had parking supply below zoning bylaw minimums

# Toronto Zoning By-law Parking Rates: Revised (July 2022)

- Specifies the maximum residential parking for apartment and mixed-use buildings.
- Eliminated residential parking minimums for apartment and mixed-use buildings.\*
- Removed maximum or minimum rates for low-density residential (four-plex and below).
- Council directed new developments be excluded from on-street parking permits program.

\* Except for accessible parking and visitor parking in apartment and mixed-use buildings.

# Vehicle Ownership Timeline



# Summary of Current Behaviour

- Parking availability is a strong – and necessary – requirement for vehicle ownership
- One of the largest policy levers to shape auto trip generation
- Vehicle ownership models estimated in 2016 (and earlier) are based on relatively unconstrained parking availability due to minimum parking requirements – even for households living in apartments.
- City data shows that apartment developments are being built with much lower residential parking rates ... **often far below the allowed maximum rates.** *This will constrain vehicle ownership for occupants of newly constructed apartments.*



# City of Toronto's Current Modelling Procedure

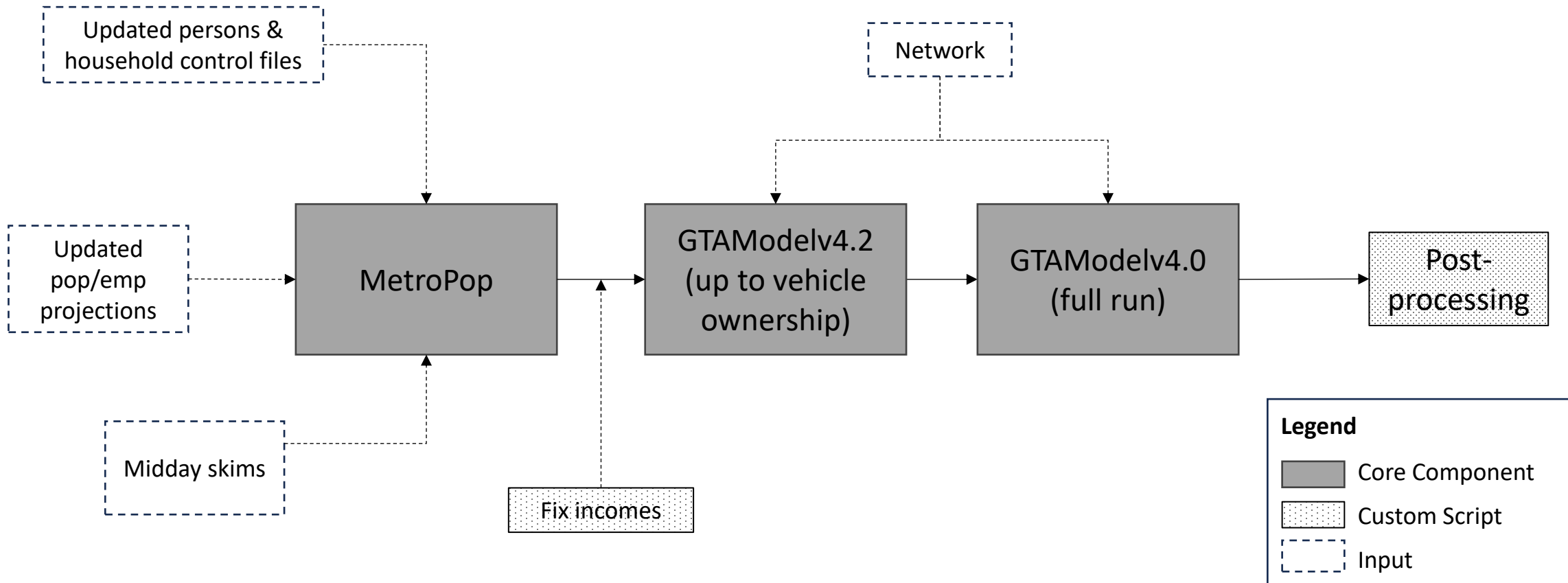
# City of Toronto Modelling Practice

- The City of Toronto is still using GTAModel v4.0.
- We are in the process of updating our modelling process:
  1. Update model inputs – COMPLETED
    - Update zone system to TTS 2022 zones (within Toronto) and manually reviewed all connectors.
    - Updated base-year network to TMG 2022
    - Updated population/employment projections throughout GTHA
    - Switched population synthesizer to MetroPop
  2. Switch to GTAModel v4.2 (Q1 2026)

Interim model

City's model until at least end of 2028

# Interim 'Hybrid' GTAModel (MetroPop designed for GTAModelv4.2)



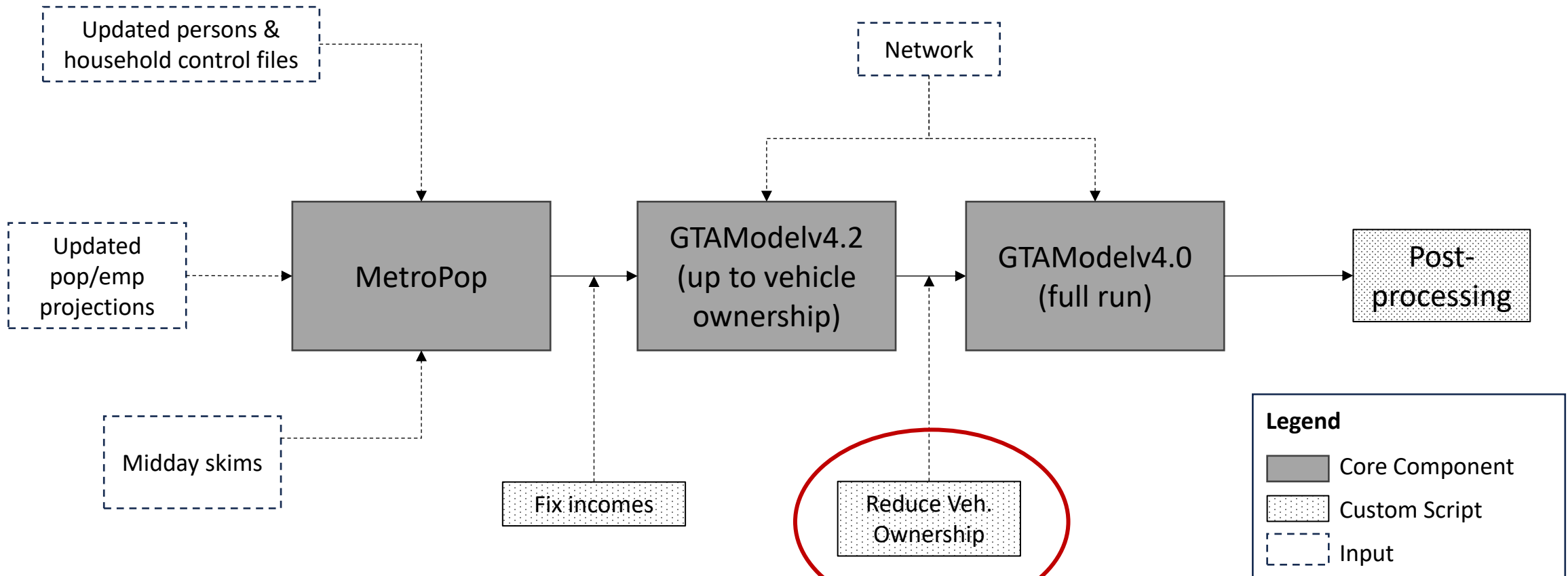


# Test Study

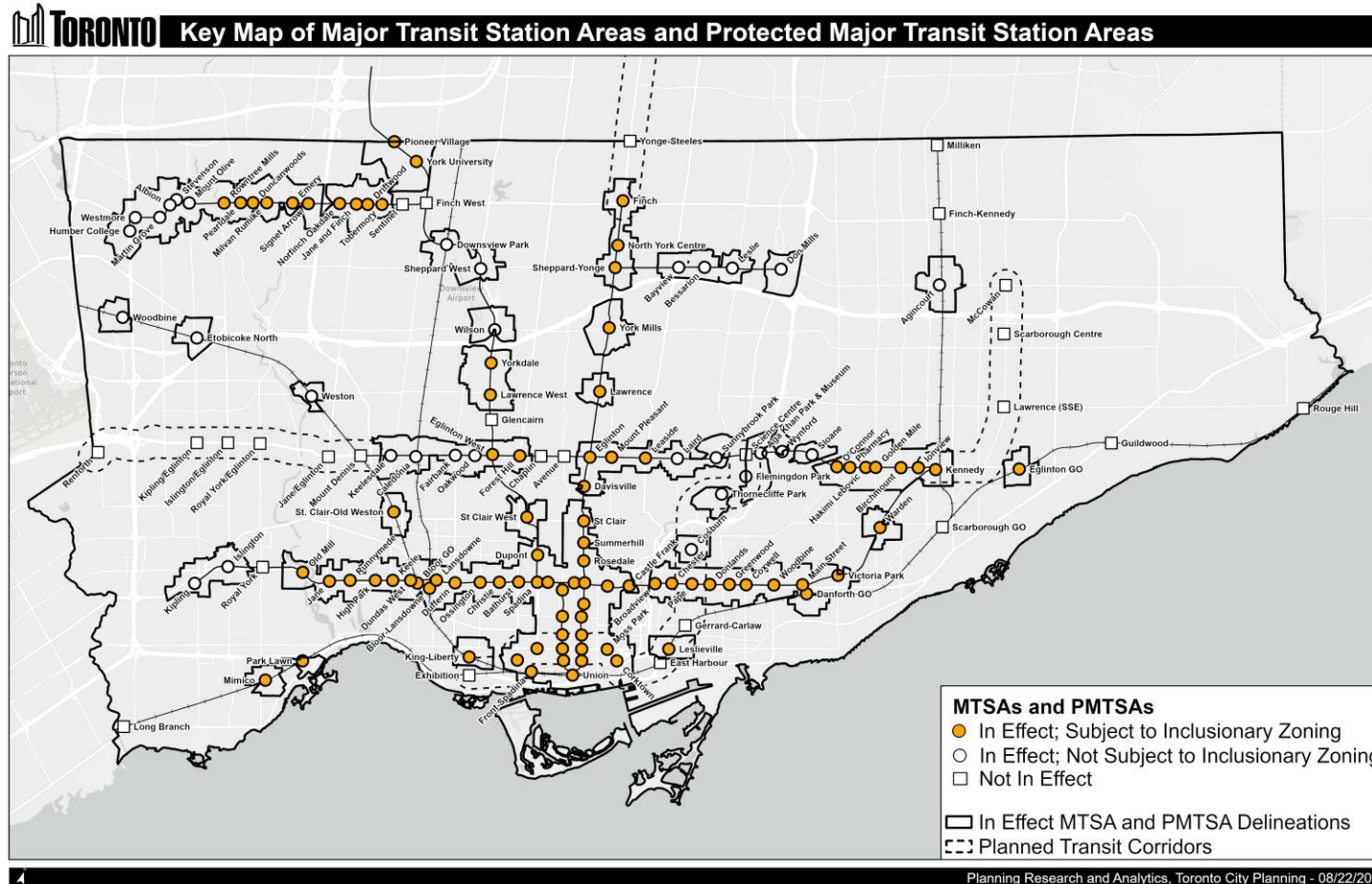
2051 Forecasts Based off a Secondary Plan Study

Not Currently Used in Operational Models

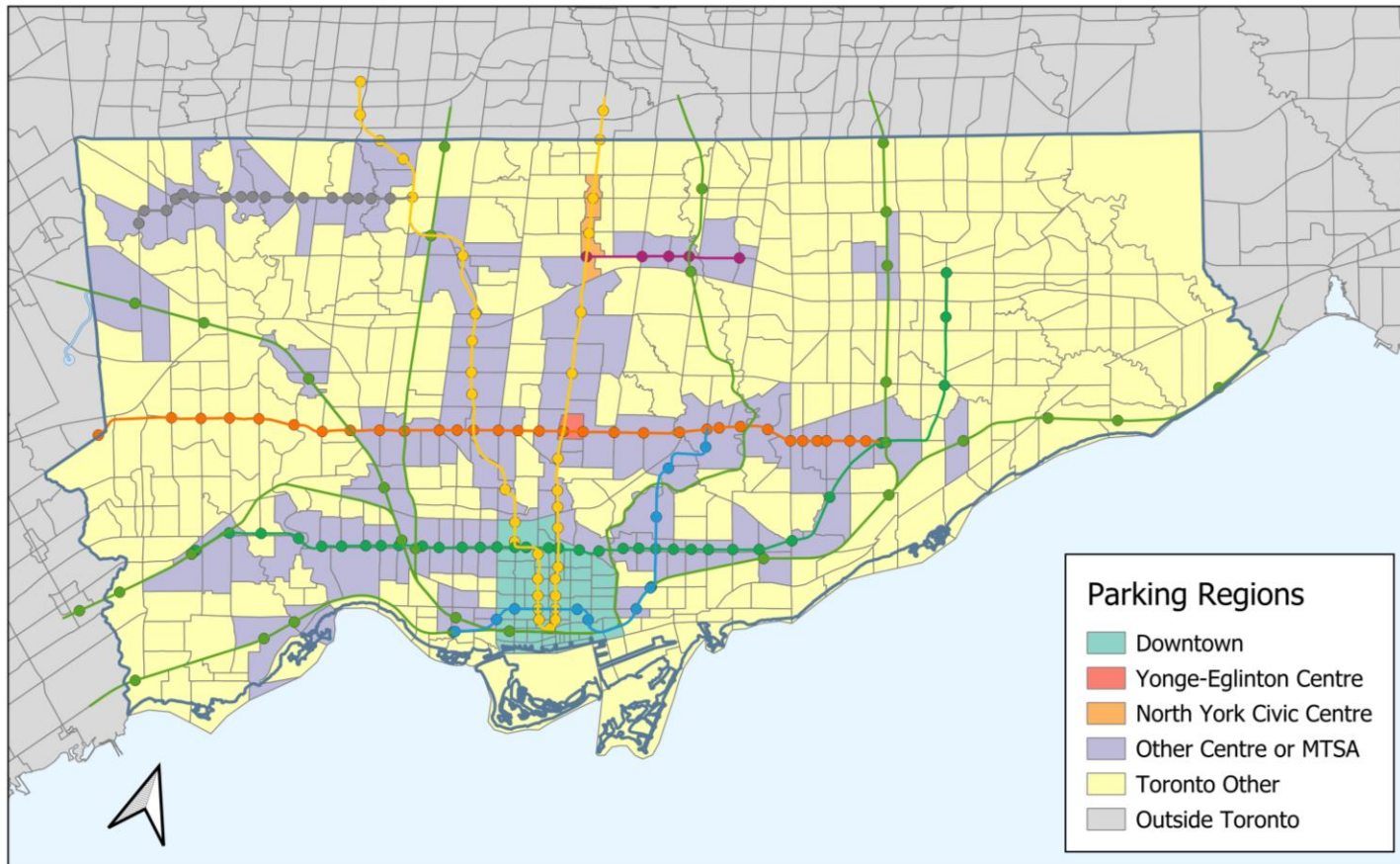
# Inject Reduced Auto Ownership for Occupants of New Apartments



# Minister Approved [P]MTSAs in Toronto



# Case Study Parking Rates



Observed number of proposed vehicle spaces per apartment

Region	2016-2023	July 2022 onwards
Downtown	0.276	0.097
Yonge-Eglinton Centre	0.308	0.137
North York Civic Centre	0.487	0.234
Other Centre or MTSA	0.465	0.3
Toronto Other	0.582	0.372
Outside Toronto	Unconstrained	

# Toronto-Wide Population Projections

Thousands of People	2021			2051		
	Apt	Ground	Total	Apt	Ground	Total
Downtown	260	54	314	426	54	479
Yonge Eglinton Centre	32	3	35	54	3	57
North York Civic Centre	54	5	59	68	6	74
Other Centre or MTSA	333	379	711	543	494	1,037
Outside of Centres and MTSAs	530	1,308	1,838	831	1,396	2,227
Toronto	1,209	1,749	2,957	1,921	1,952	3,873

# Procedure to Constrain Vehicle Ownership

1. Calculate change in projected apartment-dwelling households from 2021 to forecast year.

$$\Delta NHHLDSA_{2021-fy} = NHHLDSA_{fy} - NHHLDSA_{2021}$$

2. If  $\Delta NHHLDSA_{2021-fy} \leq 0$ ;

- No new apartments ... *Do Not Adjust Auto Ownership*

3. If  $(NVEHSA_{fy} - NVEHSA_{2021}) < \Delta NHHLDSA_{2021-fy} \times PR$ :

- GTAModel auto ownership is less than constraint... *Do Not Adjust Auto Ownership*

4. In the forecast-year households microdata:

1. Randomly select  $NHHLDSA_{2021}$  households that live in pre-2021 apartments → Do Not Adjust Vehicles
2. Rest of households: Adjust Vehicles to match  $\Delta NHHLDSA_{2021-fy} \times PR$  constraint. Randomly selected households with  $\geq 1$  vehicle → reduce by 1.

## Glossary:

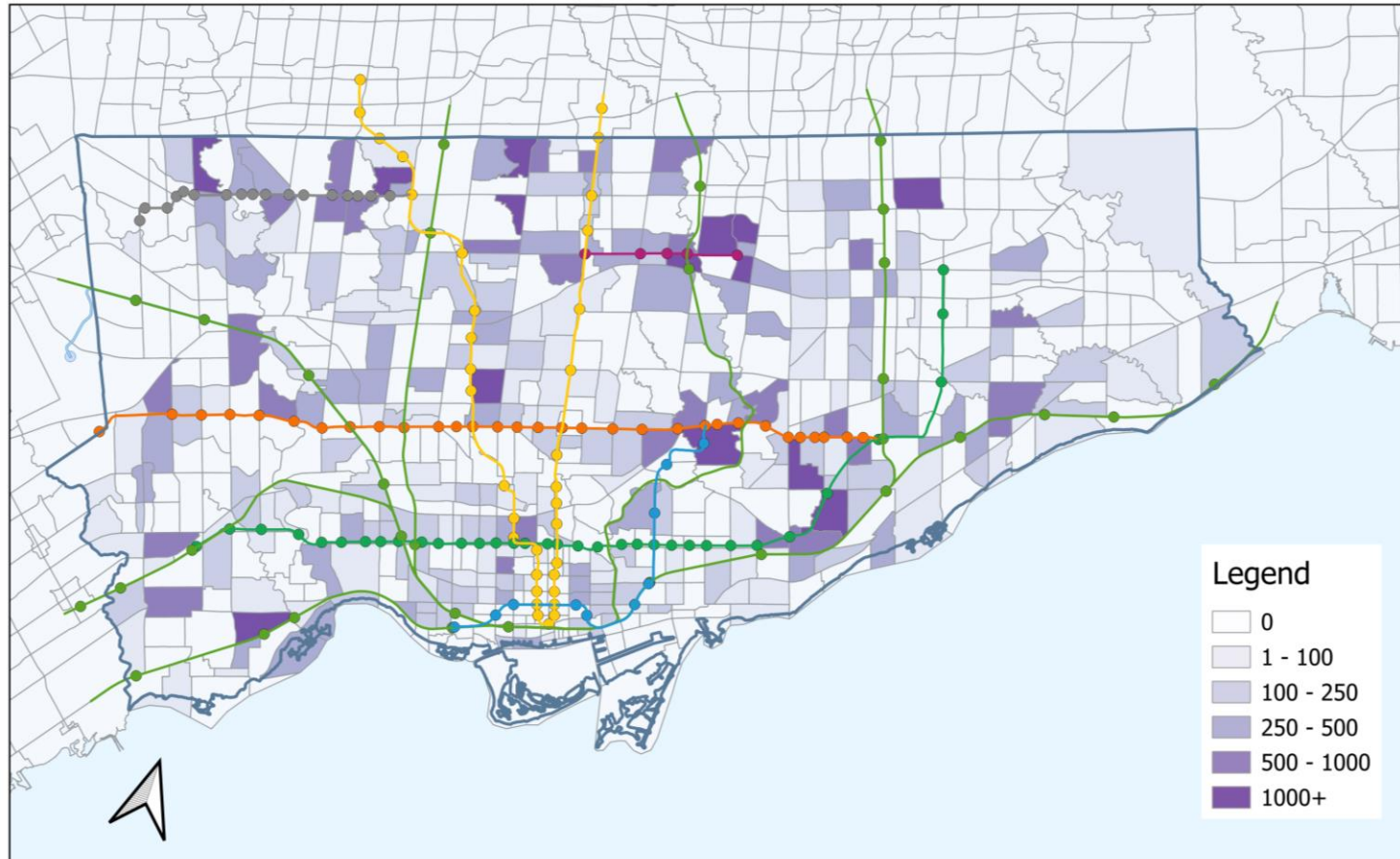
$NHHLDSA$	Number of households living in apartments
$NVEHSA$	Number of vehicles owned by households living in apartments.
$PR$	Parking rate (TAZ)
$fy$	Forecast year (unadjusted)



# Test Results

# Change in auto ownership by TAZ

Reduction in Vehicle Ownership by TAZ After Adjustment



	Original	Adjusted
Vehicles in GTHA	5,797,000	5,714,000
Vehicles in Toronto	1,396,000	1,314,000
Vehicles in Toronto Apts.	580,000	506,000

# Change in Daily Trip Mode Share of Trips to Toronto

	Ground				Apartment			
	Auto Drive	Auto Pass	Transit	Active	Auto Drive	Auto Pass	Transit	Active
PD 1	0.20%	0.08%	-0.25%	-0.02%	-0.90%	-0.05%	0.21%	0.75%
PDs 2-6	0.02%	0.12%	-0.11%	-0.03%	-3.30%	0.30%	2.02%	0.98%
PDs 7-9	0.01%	0.08%	-0.09%	-0.00%	-4.27%	0.46%	2.01%	1.81%
PDs 10-12	0.04%	0.12%	-0.14%	-0.02%	-5.94%	0.75%	2.95%	2.22%
PDs 13-16	0.03%	0.08%	-0.09%	-0.02%	-4.19%	0.59%	2.16%	1.44%
Outside Toronto	0.01%	0.04%	-0.04%	-0.01%	-2.48%	0.45%	1.86%	0.16%

# Change in Daily Auto VKT / VHT

- Vehicle Kilometres Travelled

	Base	Adjusted	Difference	% Difference
Toronto	43,415,000	42,805,000	- 929,000	-1.41%
GTAH	161,707,000	160,939,000	- 769,000	-0.48%

- Vehicle Hours Travelled

	Base	Adjusted	Difference	% Difference
Toronto	1,068,000	1,040,000	-28,000	-2.6%
GTAH	3,705,000	3,672,000	-33,000	-0.89%

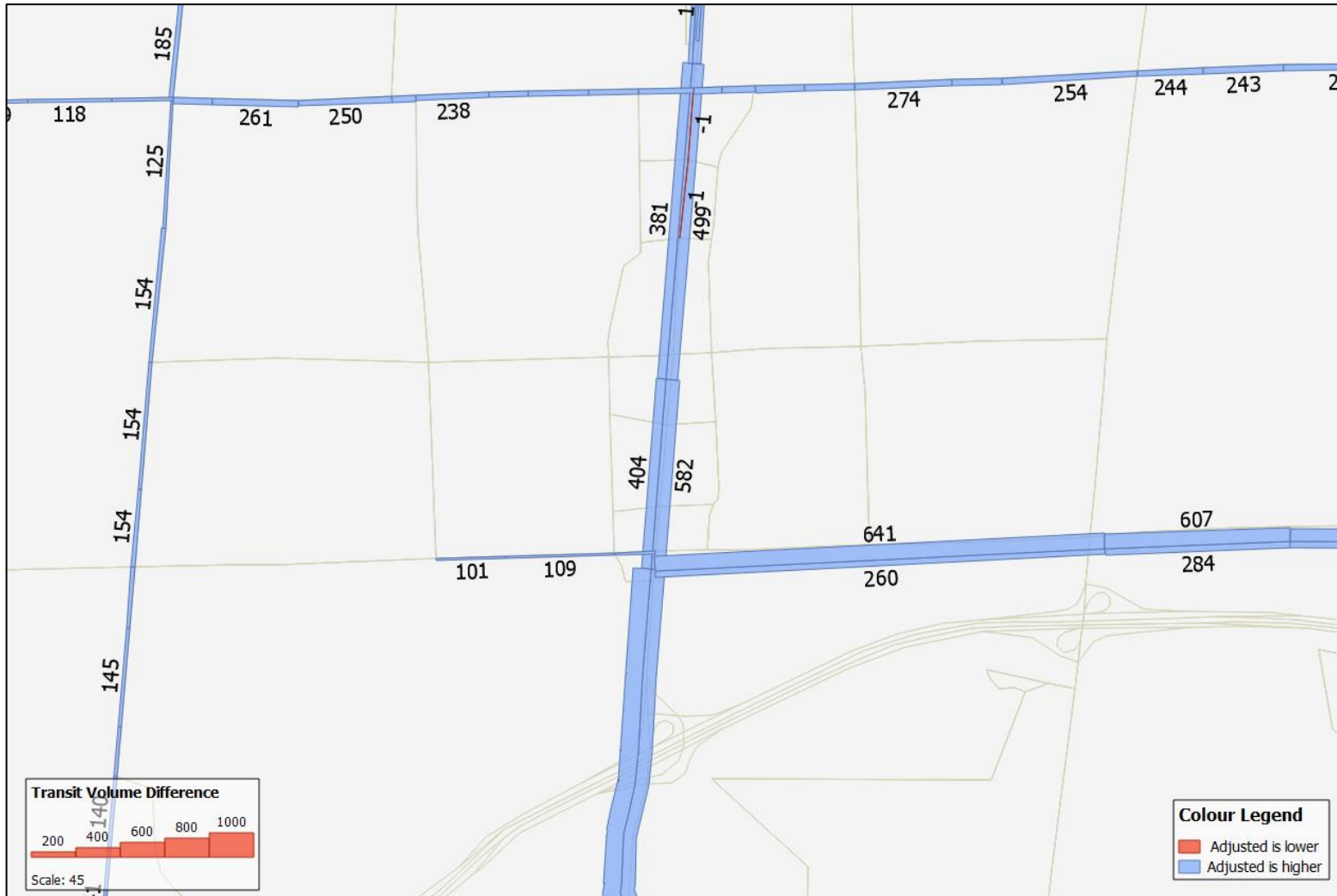
# Change in AM Peak Hour Auto Volumes Across Screenlines

Screenline	Direction	Base	Adjusted	Difference	% Difference
Central Cordon Count West Boundary	EB	22,195	22,036	- 160	-0.72%
Central Cordon Count North Boundary	SB	12,739	12,675	- 64	-0.50%
W of DVP – Lake Ontario to South of Hwy 401	EB	19,033	18,744	-289	-1.52%
W of DVP – Lake Ontario to South of Hwy 401	WB	30,397	30,150	-247	-0.81%
S of Hwy 401 – E of Hwy 400 to W of DVP	NB	23,615	23,167	-448	-1.90%
S of Hwy 401 – E of Hwy 400 to W of DVP	SB	26,905	26,440	-465	-1.73%

# Change in AM Period Subway Volumes at Key Countposts

Countpost	Direction	Base	Adjusted	Difference	% Difference
Line 1 S of Eg W Stn	NB	65,745	66,338	593	0.90%
Line 1 S of St George Stn	NB	90,880	91,133	253	0.28%
Line 1 S of Yonge/Bloor Stn	NB	107,132	107,087	- 45	-0.04%
Line 1 S of Eglinton Stn	NB	93,997	94,354	358	0.38%
Line 1 S of Sheppard Stn	NB	76,120	76,871	751	0.99%
Line 2 W of St George Stn	WB	83,647	84,113	467	0.56%
Line 2 E of Yonge/Bloor Stn	EB	56,173	56,790	617	1.10%
Line 3 W of East Harbour	WB	49,677	49,746	69	0.14%

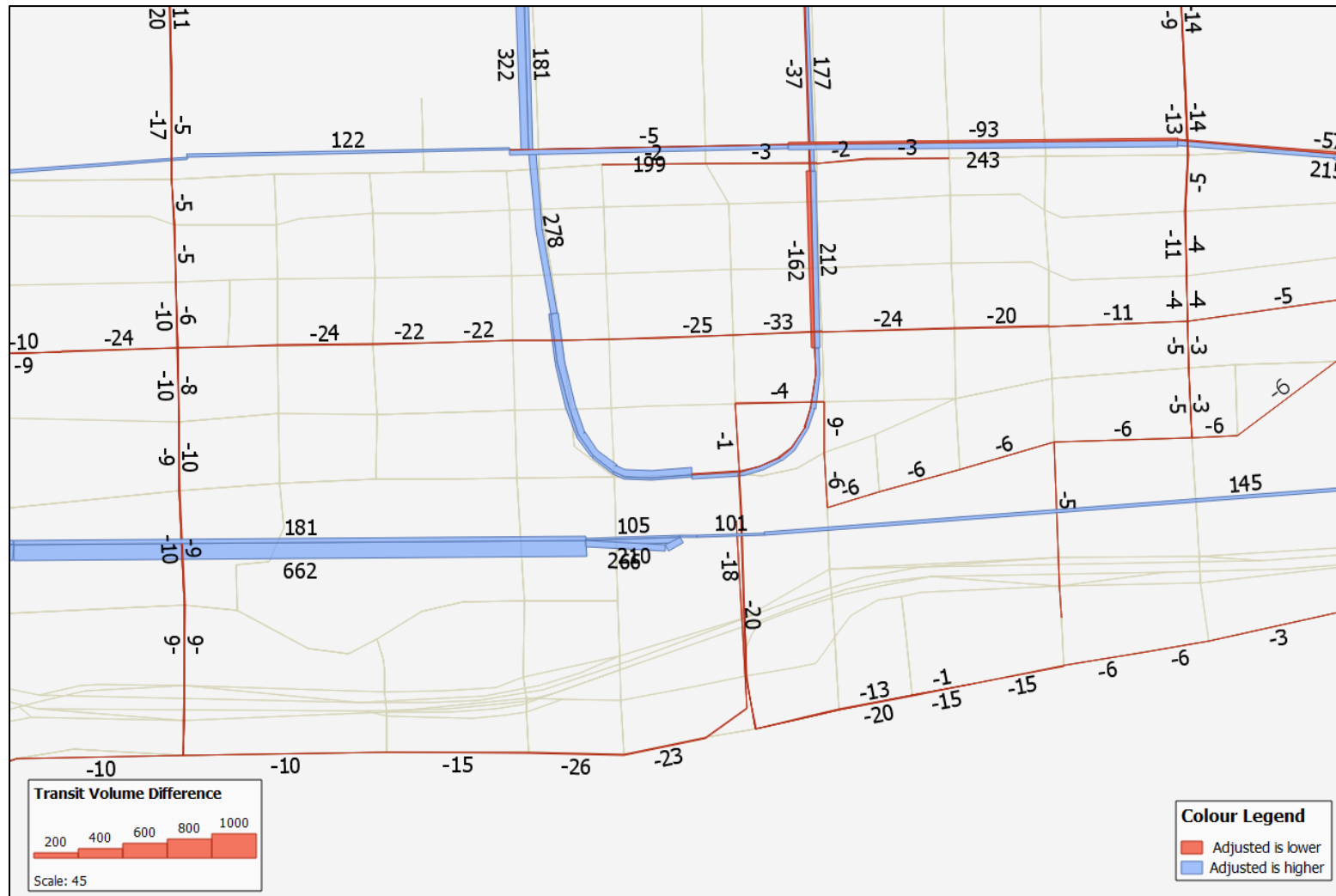
# Change in North York Centre AM Peak Period Transit Volumes



## Notes:

- Higher subway volumes, especially on Line 4

# Change in Downtown AM Peak Period Transit Volumes

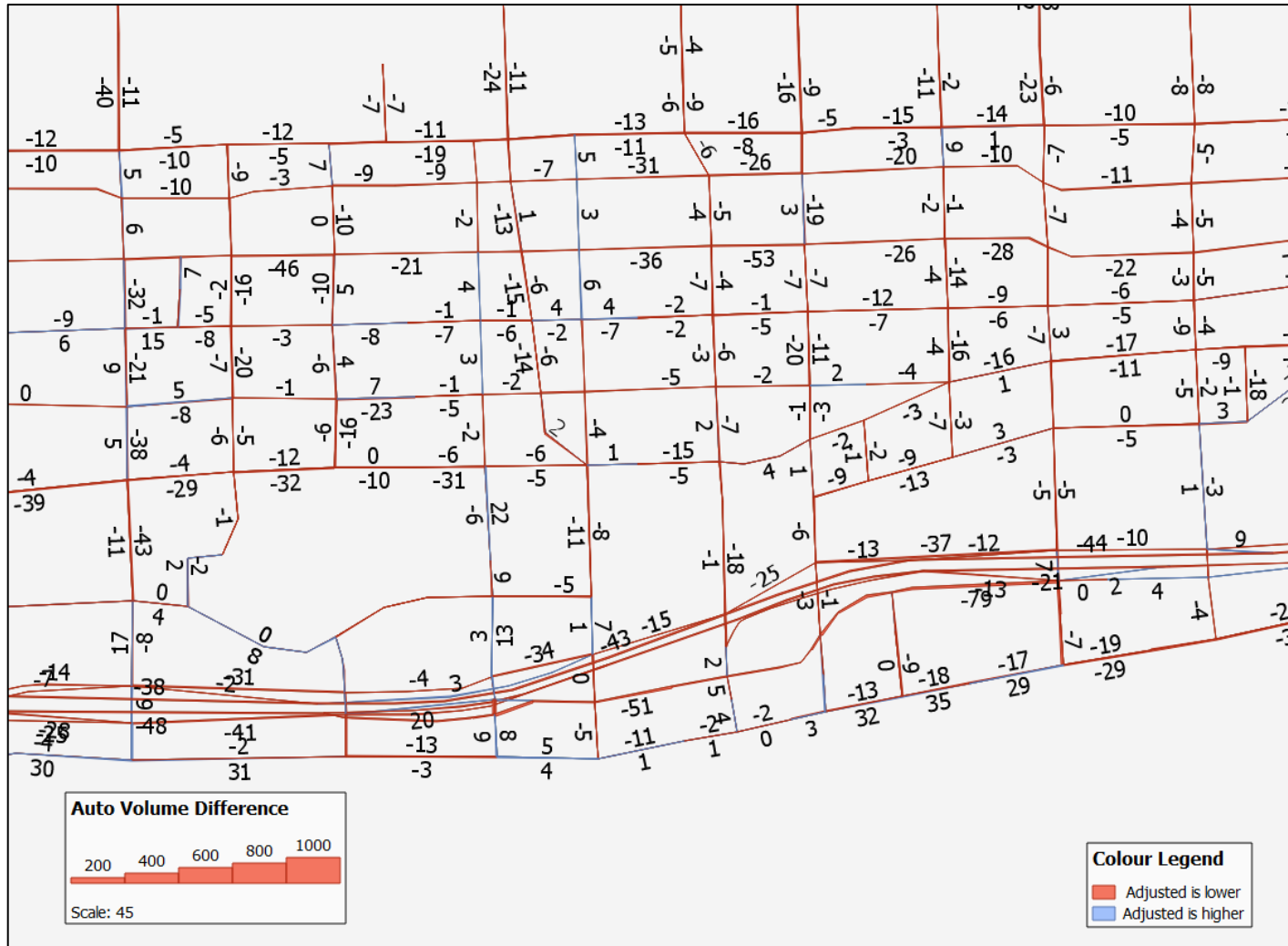


## Notes:

- Increase in outbound transit volumes.
- Increase in inbound volumes from the Line 1 University
- Line 3 and GO Rail sees increased volume from west.



# Change in Downtown AM Peak Auto Hour Volumes



## Notes:

- Again ... only slight overall drop in downtown traffic volumes.

# Conclusions

- Recent changes in apartment parking provisions mark a drastic constraint in vehicle ownership from estimated models.
- City of Toronto staff created a test where we injected reduced auto ownership into the travel demand models.
- Looking for feedback from the TMG TAC before incorporating this approach in our operational models.
- Results were generally limited as GTAModel auto ownership model includes density term, roughly 1% difference in auto and transit volumes.
- Auto travel from residents living in ground dwellings increased slightly, highlighting future equity issues.



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# Extra Slides

# Parking Rates (Residential)

Land Use Category	Parking Zone A	Parking Zone B	Rest of the City
Resident Requirement for a Dwelling unit in an: Apartment Building or a Mixed Use Building	Maximum: a) 0.3 for each bachelor dwelling unit up to 45 sq.m and 1.0 for each bachelor dwelling unit greater than 45 sq.m (b) 0.5 for each one bedroom dwelling unit (c) 0.8 for each two bedroom dwelling unit; and (d) 1.0 for each three or more bedroom dwelling unit	Maximum: a) 0.7 for each bachelor dwelling unit up to 45 sq.m and 1.0 for each bachelor dwelling unit greater than 45 sq.m (b) 0.8 for each one bedroom dwelling unit (c) 0.9 for each two bedroom dwelling unit; and (d) 1.1 for each three or more bedroom dwelling unit	Maximum: a) 0.8 for each bachelor dwelling unit up to 45 sq.m and 1.0 for each bachelor dwelling unit greater than 45 sq.m (b) 0.9 for each one bedroom dwelling unit (c) 1.0 for each two bedroom dwelling unit; and (d) 1.2 for each three or more bedroom dwelling unit
Resident Requirement for a Dwelling Unit in a: Multiple Dwelling Unit Buildings	Maximum: 1.0 per dwelling unit	Maximum: 1.0 per dwelling unit	Maximum: 1.0 per dwelling unit
Resident Requirement for a Dwelling Unit in a: Detached House, Semi-detached House, Townhouse, Duplex, Triplex or Fourplex	None	None	None
Visitor Requirement: For a Dwelling unit in an Apartment Building, a Mixed Use Building, and/or a Multiple Dwelling Unit Building	Minimum: 2.0 plus 0.01 per dwelling unit Maximum: 1.0 per dwelling unit up to five (5) dwelling units, 0.1 per dwelling unit thereafter	Minimum: 2.0 plus 0.05 per dwelling unit Maximum: 1.0 per dwelling unit up to five (5) dwelling units, 0.1 per dwelling unit thereafter	Minimum: 2.0 plus 0.05 per dwelling unit Maximum: 1.0 per dwelling unit up to five (5) dwelling units, 0.1 per dwelling unit thereafter
Secondary Suite	None	None	None
Tier 1: (Assisted Housing, Alternative Housing, Group Home, Hospice Care Home, Nursing Home, Religious Residence, Retirement Home, Respite Care Facility, or Seniors Community House)	Maximum: 0.5 for each bed-sitting room or dwelling unit	Maximum: 0.5 for each bed-sitting room or dwelling unit	Maximum: 0.5 for each bed-sitting room or dwelling unit