

Sheppard Corridor

City Planning Division,
Transportation Planning Section

Commentary on Professor Eric Miller's
February 24, 2012 Presentation

Sheppard Transit Expert Panel Meeting
March 2, 2012

Commentary on Professor Eric Miller's Presentation to the Sheppard Transit Expert Advisory Panel on February 24, 2012

- Technology Choice - Evaluation Criteria
- Ridership and Capacity
- Level of Service
- Sustainability



Professor Miller

- Current/Projected Land Use
- Match Supply and Demand
- Level of Service
- Network Connectivity
- Cost Effectiveness
- Equity
- Sustainability

City Planning

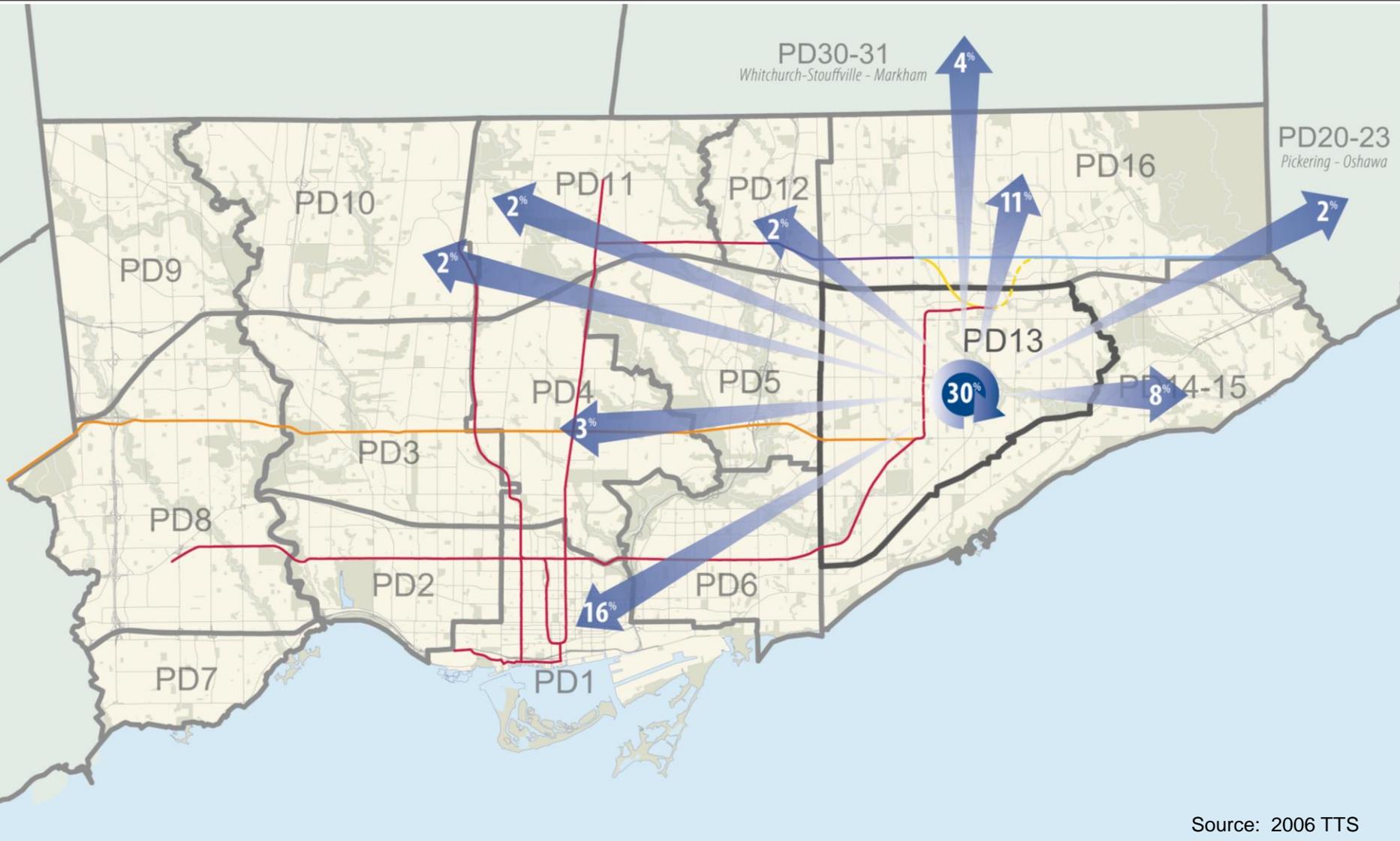
- Ridership
- Connectivity
- Cost
- Access/Mobility
- Sustainability
- Community Impact



Professor Miller Stated:

- Travel patterns are not well served by the proposed subway
- Densities are not high enough to justify a subway

Central Scarborough AM Peak Trips (PD 13)



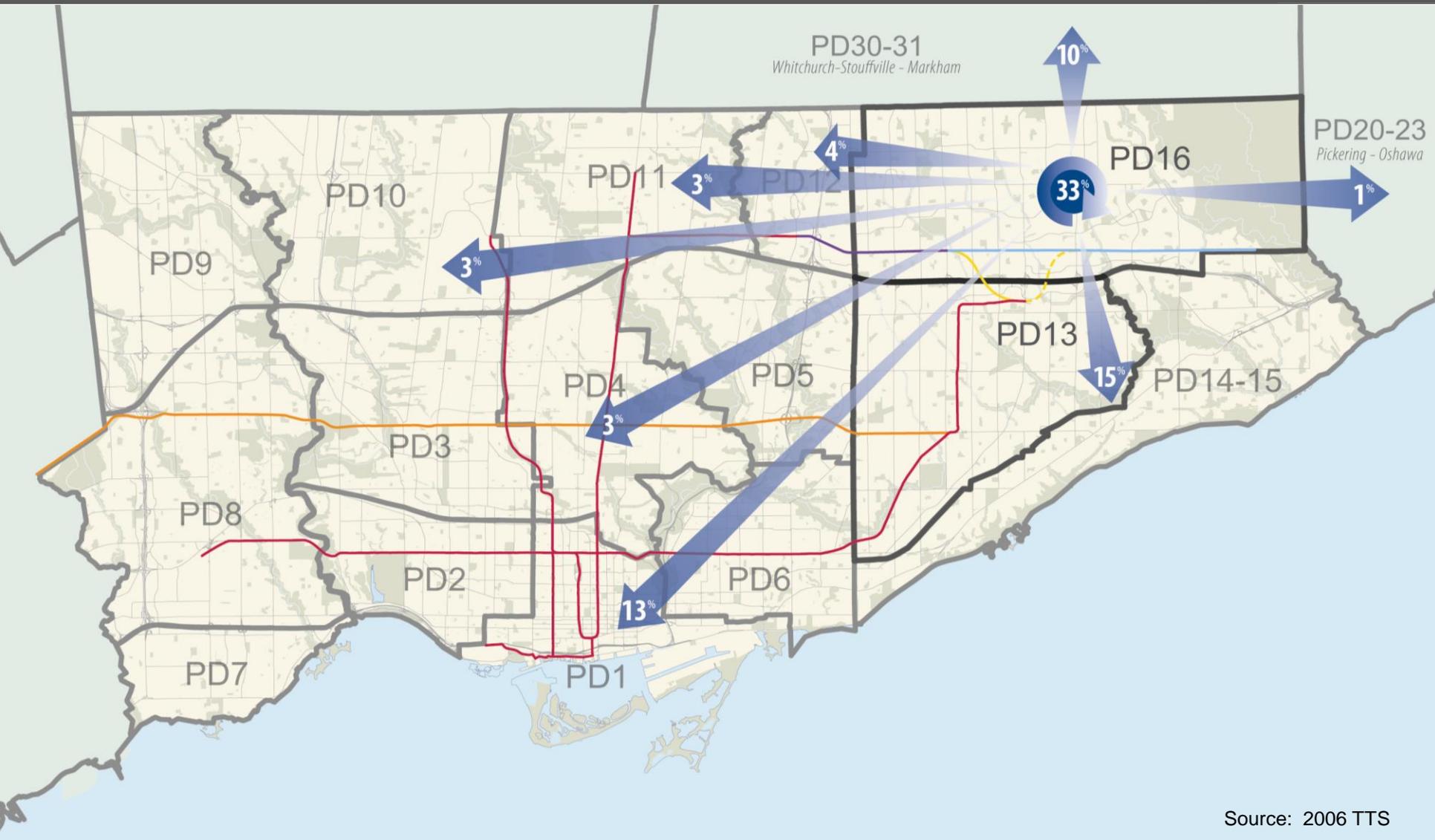
Source: 2006 TTS

From: Professor Eric Miller's Presentation on February 24, 2012

Central Scarborough Trip Distribution (PD 13)

	2006 Observed	Sheppard Subway 2031 Forecast	Sheppard LRT 2031 Forecast
Within District	30%	32%	32%
To Scarborough North of 401 (PD16)	11%	9%	9%
To Rest of Scarborough South/East (PD14/15)	8%	6%	6%
To Markham/Whitchurch Stouffville	4%	5%	5%
To Pickering, Ajax, Whitby, Oshawa	4%	2%	2%
To Downtown	16%	17%	17%
To Midtown	3%	5%	5%
To Central North York	2%	2%	2%
To Downsview/York University (western NY)	2%	2%	2%
To Consumers and environs (eastern NY)	2%	2%	2%

Scarborough North of 401 AM Peak Trips (PD 16)



Source: 2006 TTS

From: Professor Eric Miller's Presentation on February 24, 2012

Scarborough North of 401 Trip Distribution (PD 16)

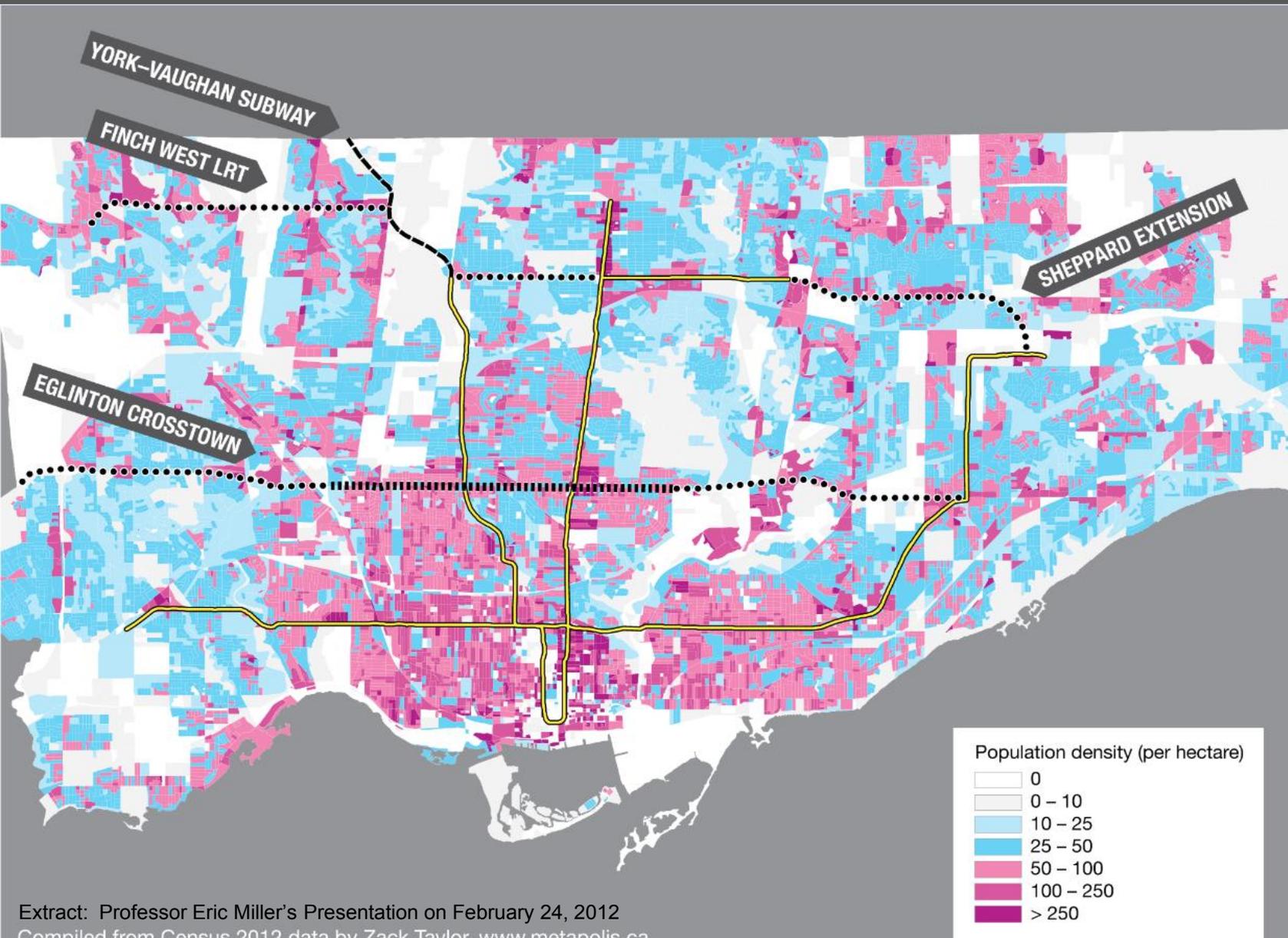
	2006 Observed	Sheppard Subway 2031 Forecast	Sheppard LRT 2031 Forecast
Within District	33%	33%	33%
To Rest of Scarborough (PD13/14/15)	15%	14%	14%
To Markham/Whitchurch Stouffville	10%	11%	11%
To Pickering, Ajax, Whitby, Oshawa	1%	1%	1%
To Downtown	13%	14%	14%
To Midtown	3%	3%	3%
To Central North York	3%	3%	3%
To Downsview/York University (western NY)	3%	3%	3%
To Consumers and environs (eastern NY)	4%	5%	5%

Travel Patterns Conclusions

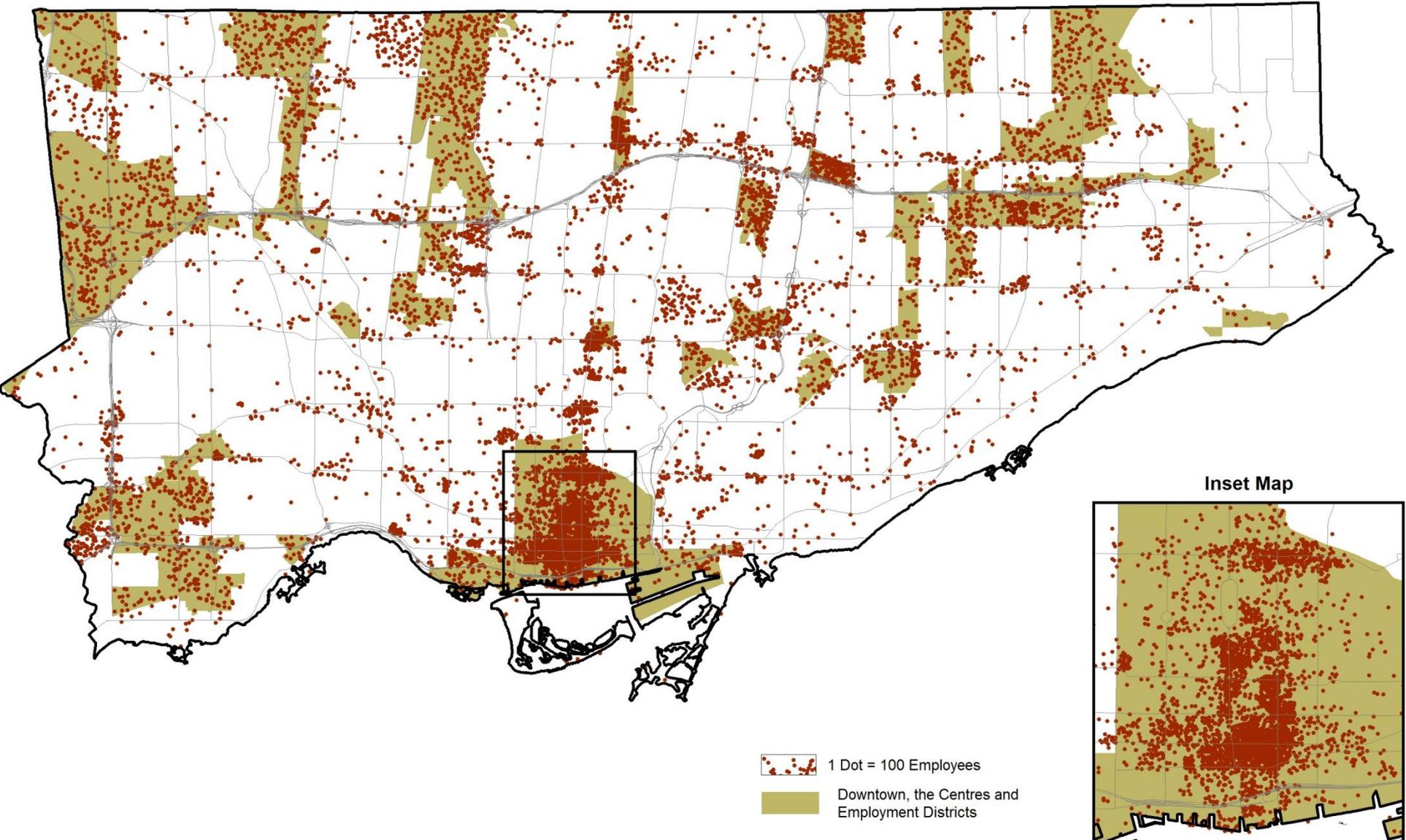
Comparison of 2006 Observed to 2031 Forecast Travel Behaviour

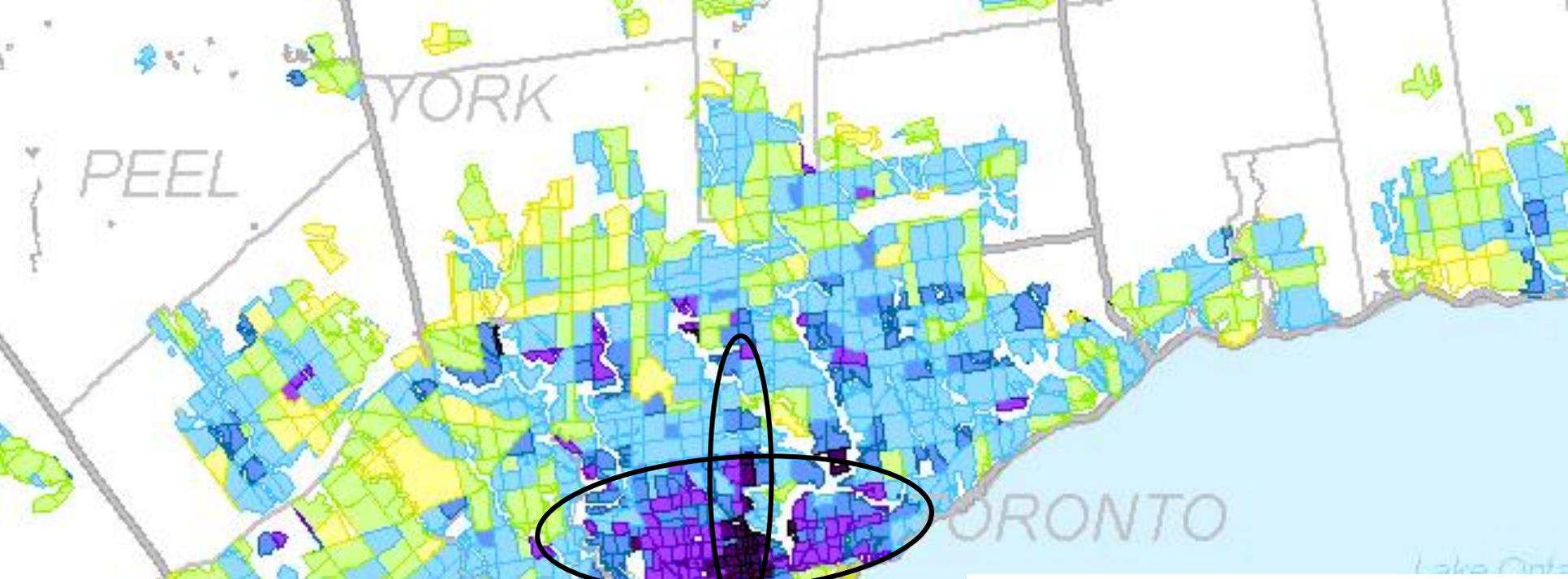
- Proportion of forecast Scarborough intra-zonal trips is consistent with observed 2006 travel behaviour
- Proportion of trips destined to the Yonge Corridor is also consistent with observed 2006 travel behaviour
- Notwithstanding relatively minor changes in trip distribution, trip-making is forecast to increase from both catchment areas in terms of absolute growth (e.g. trips from PD 13 and PD 16 will increase 51% and 40% respectively).

Land Use & Density 2011 Population Densities



2010 Employment Concentration





**Well-designed,
hierarchical
network**
**combination of
nodal and linear
("avenues")
intensification**

Our current subway system is very successful despite not very high densities along much of the routes due to a combination of:

- Very good feeder bus/streetcar system
- Dense development around many stations
- Attractive, mixed-use, walkable, medium density along many sections of Bloor & Danforth

LEGEND:

Transit Potential

(Gross Density in Population plus Employment per Hectare)

- Low (less than 20)
- Modest (20 to 40)
- Good (40-80)
- Very Good (80-120)
- BRT/LRT (120 to 200)
- Subway (over 200)

Source: Andre Sorensen

Extract: Professor Eric Miller's Presentation on February 24, 2012

Land Use and Density Conclusions 1/2



- Population growth alone will not generate sufficient ridership to justify a subway
- Commercial office development generates 4 to 5 times more transit ridership than an equivalent amount of residential floor area.
- Concentrated employment growth at North York and Scarborough Centres, Consumers Business Park and Agincourt Secondary Plan Area beyond the 2031 forecast levels will be required to justify a subway.
- A significant increase in employee transit modal share must be achieved (e.g. from the existing 35% for employees within North York Centre to beyond 50%)

Land Use and Density Conclusions 2/2

- Through trips (e.g. travelling through the Sheppard Corridor, but having both an origin and a destination outside of the Sheppard Corridor) are a significant proportion of total ridership (i.e. about 45% of forecast 2031 ridership, assuming the extension of the Sheppard Subway). An excellent feeder bus system would be essential.

Land Use and Density



Growth in the Sheppard Corridor					
	Sheppard Subway (EA) 1992	Existing	LRT Growth ⁽¹⁾ 2011 – 2031	Subway Growth ⁽²⁾ 2011 – 2061	Growth Beyond 2031
Sheppard Subway Corridor (404 - Agincourt)					
Population	n/a	43,900	6,100	24,000	17,900
Employment	n/a	28,900	7,700	10,000	2,300
Scarborough Centre					
Population	n/a	12,200	27,800	46,000	18,200
Employment	65,000	14,700	6,900	12,500	5,600
Consumers Business Park					
Employment	n/a	19,000	5,500	8,000	2,500
North York Centre					
Population	39,000	48,500	18,800	26,000 ⁽¹⁾	7,200
Employment	93,000	38,800	7,400	22,000 ⁽¹⁾	14,600

NOTES:

1. City of Toronto
2. N Barry Lyon's Forecast for KPMG

Level of Service

Professor Miller Stated:

- Out-of-vehicle travel time (access/egress walk times, wait/transfer times) constitute a significant proportion of transit travel times
- Out-of-vehicle travel time is weighted much more heavily by trip-makers in making their travel decisions than in-vehicle travel time (usually 2x or more)
- Frequencies are similar between subway & LRT
- LRT has more stops/stations than subway; results in many more people being within short walking distances of transit
- LRT trades off in-vehicle travel time for out-of-vehicle travel times; often a desirable trade-off & certainly the subway “time advantage” is less than is usually stated
- Also, quoted times do not account for the time spent navigating through subway stations – can add several minutes to a trip, thereby further reducing any stated advantage.

Level of Service Commentary

- Consider two alternative markets served by transit within the Sheppard corridor, each having different expectations concerning “level of service”
- The first market includes residents living within walking distance of a station.
 - Generally concur with Professor Miller’s assessment of how in-vehicle and out-of-vehicle travel time is valued
- The second market consists of longer distance commuters accessing the corridor via feeder buses
 - It may be reasonable to assume that, in light of longer trip lengths, additional wait time for feeder buses, and inconvenience associated with transfers between buses and the subway, higher operating speeds are important in order to maximize transit ridership

Professor Miller Stated:

- Gas price
 - The LRT option, with its greater coverage, provides a greater potential for mode switching than the subway option
- Walkability
 - LRT is a neighbourhood-building technology

Sheppard East Ridership Forecast (2031)

Westbound AM Peak	Existing	(1) LRT Don Mills to Morningside¹	(2) Subway Yonge to Scarborough Centre¹	(3) Subway Downsview to Scarborough Centre³	(4) Subway Downsview to Scarborough Centre^{2&4} (enhanced service)	BEYOND 2031 (5) Subway Downsview to Scarborough Centre
Approaching Consumers Business Park	N/A	3,000	4,200	4,800	7,300	30 + years of Potential Development Growth
Approaching Sheppard Station (Yonge)	4,500	6,000	7,800	9,500	12,500	

Notes:

1. TTC Service Planning/City Planning (Sheppard East LRT EA, 2008)
2. TTC Service Planning/City Planning (Eglinton-Scarborough Crosstown RT - Demand Forecasting Report, 2011)
3. TTC Service Planning/City Planning (Eglinton-Scarborough Crosstown RT - Demand Forecasting Report 2011 (Modified February, 2012))
4. Subway operating speed increased to 36 km/hr from 30 km/hr and headways reduced to 3 minutes from 5.5 minutes

Sheppard East Ridership Forecast (2031) Compared to Transit Technologies

