

A Transportation Vision for the City of Toronto Official Plan

1. Introduction

This report describes the development of a transportation ‘vision’ to serve as the basis for the transportation component of the new Official Plan now being prepared for the amalgamated City of Toronto. The transportation component is intended to complement values and goals embodied in the new Plan and provide flexibility to adapt to the rapidly changing environmental, economic, and institutional conditions under which the new City will function.

The transportation component is expected to include:

- *policies* regarding pricing and finance, transit priority, aspects of urban design that promote the use of more environmentally friendly modes of transportation such as walking and cycling, improvements in goods movement, and protection of the environment,
- *priorities* for investment in transportation infrastructure such as new rapid transit routes, commuter rail stations, and major renovation to key elements of the existing system, and
- *targets* such as transit ridership, reductions in greenhouse gas emissions, and accessibility for the disadvantaged which are important for measuring progress with respect to achieving goals.

Interest in a new vision of transportation for the City of Toronto implies some degree of dissatisfaction with the existing system and the likelihood that it will be able to serve increased demand resulting from population growth both within and external to the City. Depending upon the point of view, sources of dissatisfaction may include:

- unacceptable congestion and delay,
- insufficient road capacity for automobiles and trucks,
- the general level of service provided by the transit system,
- costs (both public and private),
- effects of congestion on goods movement and economic competitiveness,
- encouragement of unsustainable forms of growth such as urban sprawl,
- safety (injuries and fatalities), particularly for pedestrians and cyclists,
- accessibility for specific groups or geographic areas within the community,
- traffic impacts on neighbourhoods,
- effects on pollution and health, and
- contribution to greenhouse gas emissions and climate change.

By and large, there is a growing awareness that these problems result directly from increased dependence on private automobiles -- a worldwide trend that essentially conflicts with the increased interest in sustainable development and more environmentally friendly transportation. Support for that view can be inferred from:

- increasing concerns about congestion, public health impacts of automobile use, road safety, urban sprawl, and the high costs associated with public transportation, noted above,
- specific policies now being debated by the City's Environmental Task Force, national and provincial Round Tables on the Economy and the Environment, and the influential Transportation Association of Canada, and
- commitments made by the Government of Canada to achieve substantial reductions in greenhouse gas emissions under the Kyoto Agreement.

Development of a vision of transportation for the future is important for several reasons. First, as already noted, the vision provides a rationale for those proposals and recommendations that will eventually be presented to City Council.

Second, the process itself can be a useful means of ensuring that the interests and concerns of as wide a range as possible of constituencies are taken into account before formulating specific policies and recommendations.

Third, the rationale included in the vision statement provides a context for assessing the merits of *ad hoc* transportation proposals or initiatives that so often appear on the urban transportation scene. Such proposals typically deal with the concerns of special interest groups or may be promoted by commercial interests in isolation of broader transportation needs of the entire community.

In short, the fundamental reason for defining a 'new' vision of transportation is to provide a basis for transportation and land use planning that will counteract as many as possible of the *perceived* negative impacts of the current system on the community, the economy, and the environment, while contributing simultaneously to orderly economic growth and development. Committing to a new or revised vision essentially means that continuation of the *status quo* is not acceptable or good enough, and that at least with respect to transportation, the future City should be different from the one we now know.

Section 2 of the report describes the process followed in developing the vision statement, a statement that is perceived largely as a response to both present and anticipated problems associated with emerging trends in growth, land use and travel patterns. Section 3 provides a rather simplified explanation of the key factors that, on one hand, are generally agreed upon to contribute to increasing automobile dependence and, on the other, to the increasing difficulty of serving traditional growth patterns by public transportation. Certainly, it can be skipped by those already familiar with the urban transportation problem.

The existing transportation system serving the City of Toronto is described in Section 4 in terms of general characteristics and performance. Section 4 also highlights changes in travel patterns over the period 1986 to 1996 (for which the best data are available) and stresses the high degree of interdependence between travel within the City and development elsewhere in the Greater Toronto Area (GTA).

Section 5 provides selected data on travel projections based on extrapolation of current trends to provide some indication of the magnitude of changes and new pressures that can be expected over the next 20 or so years. This section begins with a brief summary of travel forecasting methods, primarily to explain the sensitivity and reliability of the forecasting process to the main assumptions about growth and distribution of population and employment *throughout the GTA*. The explanation of forecasting methods can also be skipped by those already familiar with transportation modeling.

Section 6 of the report attempts to integrate data and information about the present system, viewpoints of a diverse set of constituents, and the best information currently available about future transportation pressures, into a transportation vision statement consistent with the major thrust of the new Official Plan. That vision statement is then supplemented by a number of guiding principles which might serve as the basis for developing transportation plans and priorities.

Finally, on the basis of these principles, Section 7 describes a number of 'next steps' for proceeding with development of the transportation component of the Official Plan. Sections 6 and 7 basically treat the main policy initiatives of the visioning process and many readers may wish to move directly to those sections.

2. The Visioning Process

The term 'vision' describes the characteristics or attributes of the transportation system to be embodied in the Official Plan for the City. Those attributes have many dimensions including, but not limited to:

- the degree of integration between land use and roads, parking, and transit, as well as between local, inter-regional, and intercity transportation,
- road system characteristics,
- transit system characteristics in terms of fares, ridership, mode share, cost recovery, coverage, and general performance,
- accessibility to transit for those with special needs and those without cars,
- friendliness of the system for pedestrians and cyclists,
- costs and travel times related to the movement of goods,
- levels of automobile ownership and use,
- parking policies and pricing, both on-street and off-street,
- energy consumption, air pollution and greenhouse gas emissions related to transportation, and
- methods of finance and funding.

Attributes are largely outcomes of three sets of basic factors, namely,

- the overall economic and demographic environment within which the City functions,
- transportation and land use decisions made within the City of Toronto, and
- external public policy decisions made by other municipalities of the Greater Toronto Area (GTA), the Government of Ontario, and the Government of Canada.

Overall prospects for growth and economic development of the City will be influenced by:

- provincial, national and even global economic conditions,
- inter-provincial and international immigration,
- the North American Free Trade Act, and
- commercial decisions and marketing practices of key industries such as the automotive sector.

Although the City has little or no direct control over these factors, indirectly, they do influence general transportation needs and performance of the transportation system itself.

By contrast, the City's own land use and transportation policies have a direct effect on transportation needs and performance, as well as other attributes of the transportation system that eventually emerges. *Internal* City policies on zoning and other land use controls, capital investment in roads and public transportation, fare and parking policies, and regulations pertaining to truck movements and the use of road space, for example, are just some of the more important factors that influence where, how, and when individuals travel.

Travel patterns within the City are also influenced by a variety of *external* transportation and land use policies. Automobile oriented residential development and relatively modest transit services in neighboring municipalities both contribute to more use of automobiles for trips to the City. Provincial funding (or lack thereof) for GO Transit and municipal transportation also have a strong influence on travel within the City. In addition, federal government policies such as tax regulations influence automobile ownership and use and motor vehicle regulations have an important impact on vehicular emissions and air pollution. (Exemptions for vans and sports utility vehicles from voluntary industry standards for automotive fuel consumption, for example, contribute significantly to the growth in greenhouse gas emissions.)

Due to the economic interdependence of the entire GTA, these internal City and external factors are highly inter-related. Decisions about TTC expansion and fare policies, for example, influence how neighboring municipalities design their own transit systems. Moreover, City investment in rapid transit expansion and major projects such as Union Station is strongly influenced by inter-regional travel, and much of the City's roads' needs derive from land development patterns in the surrounding municipalities.

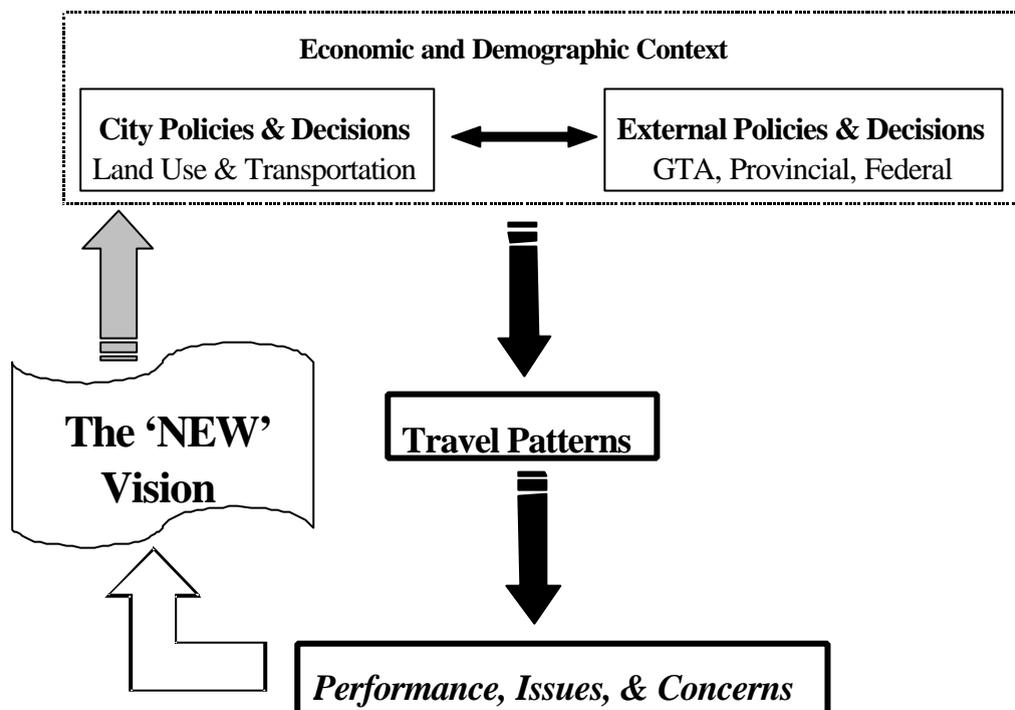
Interaction between transportation related policies and decisions of the City and those of the surrounding municipalities has, of course, long been recognized in numerous studies. These include the provincial government's *Metropolitan Toronto and Region Transportation Study* (1966), *Design for Development: The Toronto Centered Region Concept* (1971), the *Metropolitan Toronto Transportation Plan Review* (1975) and numerous GTA studies sponsored by the Ontario Ministry of Transportation and the provincial Office of the Greater Toronto Area.

As suggested in Figure 2.1, within the broader economic setting, the combination of City and external (GTA and provincial) policies and decisions is the main determinant of travel patterns that emerge at any particular point in time. The combined effect on travel patterns basically dictates how the transportation system performs in terms of travel time and delays, congestion, safety, costs, effects on the local economy, air pollution, and greenhouse gas emissions.

The underlying assumption of the visioning process is that the vision statement should respond to weaknesses in how the present transportation system performs and how it is

likely to perform under predicted growth scenarios for the entire GTA. Once established, the vision is then intended to form the basis for altering those land use and transportation decisions over which the City has some degree of control.

**Figure 2.1
The Visioning Process**



Starting with current performance, a major difficulty arises from the wide diversity of views among those constituents which now comprise the enlarged, amalgamated City as to how well or how poorly the transportation system performs. Frequently expressed and often contradictory views, for example, include the following:

- there are too many cars and trucks on the roads
- levels of congestion and gridlock are unacceptable
- streets are unsafe for pedestrians and cyclists
- air pollution and greenhouse gas emissions from automobiles and trucks are deadly for health and the environment
- automobiles contribute in a major way to unsustainable urban sprawl
- the needs of road users are being ignored
- road users do not pay their fair share of societal costs
- traffic regulations such as high occupancy vehicle lanes are poorly enforced
- more transit service is needed
- transit coverage is poor in some areas
- transit service is underutilized in some areas
- transit service is not customer oriented
- transit is unaffordable

- transit fares are too high
- transit service is too slow
- cross boundary transit services are poorly integrated
- inefficient truck movement reduces economic competitiveness
- trucks are responsible for most of the serious highway accidents
- transportation planners are overly concerned with peak period trips only
- too little money is being invested in transit
- too little money is being invested in roads.

The diversity and often contradictory nature of these views merely illustrate that transportation issues, needs, and priorities are all perceived differently by the various constituencies which comprise the amalgamated City of Toronto -- constituencies that include a variety of socio-economic and special interest groups, transportation service providers, and authorities responsible for fiscal management. Under these circumstances, reaching agreement on a vision of transportation as defined by basic priorities for transportation investment, requisite policies, and formal actions is essentially a problem in dispute resolution.

Traditionally, the vision incorporated in previous transportation plans for Toronto has been based on the concept of 'balanced transportation' -- a concept in which individuals are intended to have considerable choice among alternative means of high quality transportation, primarily automobile or transit oriented.

The Official Plan adopted by the former Metropolitan Toronto Council, for example, is based "on a vision of Metropolitan Toronto as a sustainable, diverse urban community that is environmentally, economically and socially healthy". For the transportation component, that vision was interpreted as:

(moving) people and goods within and across the Metropolitan boundaries, safely, conveniently, and reliably by providing an integrated and accessible transportation system (comprised of) a balanced range of travel options.¹

The general decline in transit use and increasing road congestion which has been experienced throughout the City and the rest of the GTA, coupled with a variety of social, economic, environmental, land use and financial concerns, however, now raises doubts as to either the desirability or feasibility of maintaining this commitment to balanced transportation. In other words, recent trends suggest that under a balanced concept, the use of private automobiles *dominates area wide travel patterns*, often to the detriment of more effective transit service and other more environmentally friendly forms of transportation such as walking and cycling. Recent forecasts of expected growth and congestion which seem to attract so much media attention further add to the growing perception that more planning emphasis should be placed on alternatives to the automobile.

¹¹ *The Liveable Metropolis*, The Official Plan of the Municipality of Metropolitan Toronto, Toronto: December 1994.

In short, depending on whose views are considered, weaknesses of the transportation system range from perceiving the private automobile as a major threat to a livable city to viewing further investment in public transportation as wasteful of increasingly scarce resources. Part and parcel of assessing this range of views involves dialogue with various constituencies of which the City of Toronto is comprised, a debate that might be usefully served by considering certain information on present and predicted transportation characteristics.

3. The Transportation Problem in Context

Transportation is often described as a ‘derived’ demand, meaning that other than for occasional trips where travelers wish to experience the “freedom of the road” or may take some delight in travel by bus, rail, or new technology because of its novelty, trips are made to satisfy some other purpose like working, shopping, or going to school.

Generally speaking, transportation problems arise when too many individuals try to travel at roughly the same time on a limited number of transportation facilities. Thus a large number of commuters trying to use the same expressway or rapid transit route create congestion and related adverse effects because the total demand for use of these facilities exceeds their capacity at that particular time.

Aside from issues of capacity, other transportation problems experienced by pedestrians, cyclists, trucking, and local delivery services have not attracted as much attention on an area-wide basis. Urban design features such as the lack of sidewalks and poor connectivity of streets, as well as traffic engineering priorities and street geometry, can contribute to an unfriendly and unsafe environment for pedestrians and cyclists alike. In addition, trucks, couriers, and service vehicles both contribute to and suffer from general traffic congestion in ways that appear to detract from objectives for increased economic competitiveness of the City.

Although walking constitutes an integral component of almost all trips and the relative importance of cycling is on the rise, the largest proportion of all travel is still made first, by private automobile and second, by public transportation. For this large segment of the total travel market, some modes such as subways are inherently capable of providing higher capacity (perhaps as much as 35,000 passengers per hour) than others, such as expressways (perhaps 1800 to 2000 automobile equivalents per hour per lane). For this reason, large cities like Toronto place considerable emphasis on building and operating these higher capacity and presumably more ‘efficient’ forms of transportation.

Performance of major routes, of course, is not the only determinant of travel decisions. Individuals are influenced primarily by the relative travel time, convenience, and cost of the entire ‘door-to-door’ trip. In Toronto, for example, the higher speed and reliability of the subway for a downtown work trip is often offset by the added time and inconvenience to reach a subway station, particularly at the origin end of the typical journey to work.

In many cases, 'park-and-ride' or 'kiss-and-ride' facilities greatly improve access to major stations and terminals of both the TTC subway and the GO Transit commuter rail systems. For many other trips, however, walking distances and/or the travel and waiting times associated with feeder bus and streetcar routes often detract from the competitiveness of transit relative to the private automobile. In addition, even for those who have a real choice between private and public transportation, *perceived* differences between transit and automobile costs (that sometimes affect choice) may understate *real* differences due to *hidden* subsidies and *external* costs. Hidden subsidies include employer provided car allowances and parking, as well as Revenue Canada regulations that permit deductions for automobile but not transit use. External costs refer to costs imposed on society but not paid for by the user (such as environmental damage, air pollution, and greenhouse gas emissions).²

For some of these reasons, it is not surprising that the majority (about 65 percent) of all trips today in the City of Toronto, including those originating in the surrounding regional municipalities, are made by private automobiles. Moreover, because recent trends show a decline in the proportion of trips taken by public transportation (transit mode split), ways of improving both the competitiveness and effectiveness of transit to combat growing dependence on the automobile continues to be one of the major pre-occupations of transportation planners and elected officials.

The effectiveness with which public transportation service can be provided in any urbanized area depends primarily upon travel patterns -- the general pattern of origins and destinations being the determining characteristic. Travel patterns are strongly influenced by land use, automobile ownership, demographic characteristics such as age and income, and by the spatial and service characteristics of the transit network itself, all of which are highly interrelated. Other factors, including pricing and special regulations such as priority treatment for transit vehicles, also influence transit attractiveness and effectiveness.

Practically speaking, the competitiveness or advantages of public transportation relative to the private automobile depend primarily on the following key factors:

socio-economic and demographic characteristics,
population and employment densities,
work trip patterns,
transit route configuration, service levels, and fares, as well as
transit priority.

Socio-economic Characteristics

The use of transit is certainly influenced by a variety of socio-economic factors including age, income, and automobile ownership. Clearly, those too young or too old to drive or those without automobiles are more likely to use transit and depending upon trip purpose,

² In fact, alleged hidden subsidies and external costs are the subject of considerable interest in so called 'full cost pricing', a method intended to extract the full costs of the external impacts imposed by automobile use on society from road users.

may walk or use bicycles. Data for 1996, for example, show that the proportion of trips made by transit

- is highest (about 46 percent) for those too young to drive (11-15 years),
- declines to about 30 percent for the 16-24 age group,
- subsequently declines continuously to about 7 percent by age 64, and
- then increases to about 13 percent for those above 75.

In addition, the data show that for any given age group, trip making by transit is higher for females than for males (by as much as 50 percent in the 30 to 50 age group).

Although income data are not obtained directly in GTA travel surveys, other data show a strong (negative) relationship between automobile ownership rates (which, in turn, can be correlated with income) and the use of public transportation throughout the GTA. The major exception occurs in the case of long distance commuting by rail where about 80 percent of GO Transit users do have an automobile available as an alternative.

Simply stated, transit ridership originating within the City is dominated by those who, for reasons of age or income, do not have access to a private car and by females who, historically, have been less likely to be licensed drivers relative to males. Even for those with access to cars, depending upon income, the costs of operation and parking also influence their choice of travel mode. For these users, of course, transit fares may play an important role in determining how much use is made of the transit system, particularly for discretionary travel.

Population and Employment Densities

Densities largely dictate the frequency of service that can be justified economically on specific routes which, in turn, has some influence on overall attractiveness of the service. All other things being equal, higher density residential and employment development leads to more efficient use of transit than low density development simply because the total number of *all* trips generated per kilometre of route, from which transit takes its *share*, is higher. Some evidence of this relationship is provided in the comparison of population densities and transit mode split shown in Figure 3.1.

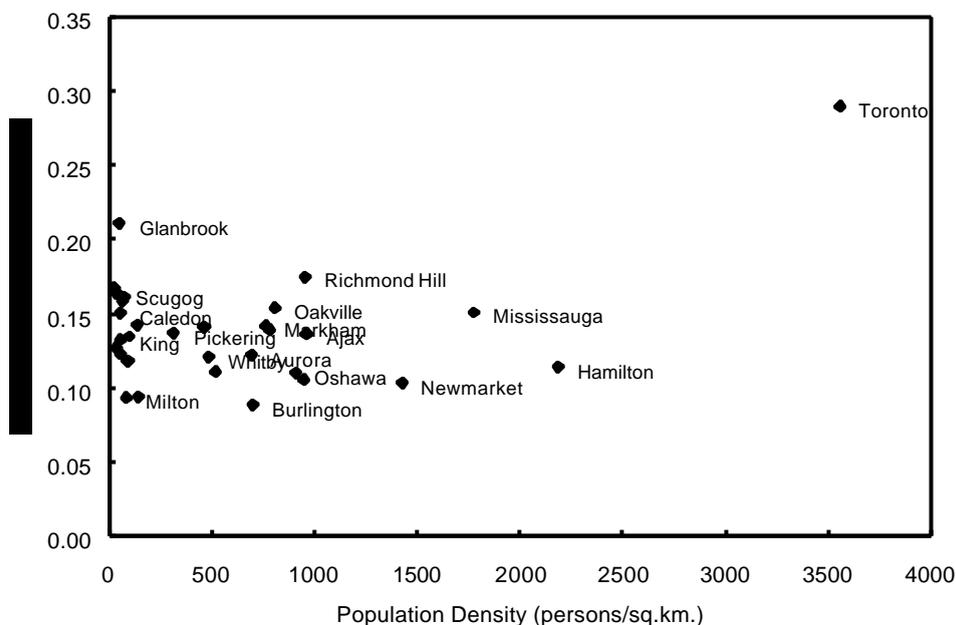
Work Trip Patterns

Trip patterns are often characterized as involving many origins to many destinations ('many-to-many'), many origins to one destination ('many-to-one') or, in some cases, 'one-to-many'. Effectively serving a dispersed pattern of trip origins destined to a dispersed pattern of job opportunities (many-to-many) by transit is much more difficult than serving the same pattern of trip origins destined to one or more highly concentrated employment centres (many-to-one). In addition, work trip patterns are dominated by highly directional flows, namely, one-way in the morning (typically inbound) and the other way in the late afternoon (typically outbound), leading to relatively lower utilization of services in the opposite direction and during off-peak hours.

Within the City of Toronto itself, of course, there is a wide variation in the use of transit. Mode split is highest by far for travel to the Central Area where the concentration of

employment and commercial activity is also the highest. Where densities are higher, particularly if there is a reasonable mix of residential and other land uses, there is also greater likelihood of trips being made by walking or cycling.

Figure 3.1
1996 GTA Municipal Population Densities and Mode Split



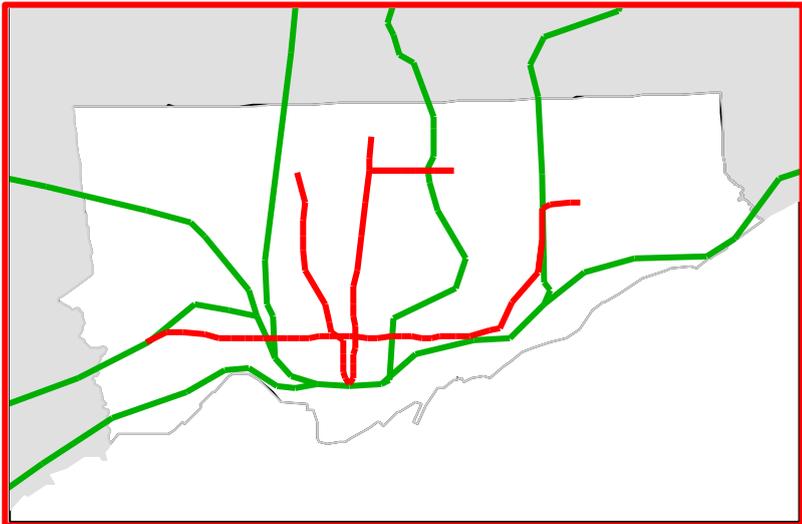
Route Configuration, Service levels, and Fares

Route configuration refers to the general layout of the network and spacing between routes, two important features that determine how well distinct travel patterns can be served. The TTC’s grid system of closely spaced bus and streetcar routes, for example, makes it easier to travel from almost any origin to almost any destination with one or two transfers, at most. As a result, this closely spaced, grid street system is well suited for serving both the many-to-many travel, as well as the many-to-one pattern, so long as the term ‘one’ is broadly defined to include major nodes or concentration of activity as exist in downtown Toronto and the North York and Scarborough city centres.

By contrast, a radial system in which most routes serve a common terminal is best suited to the many-to-one pattern noted above. Essentially, the TTC subway system serving the Central Area, as well as GO Transit’s existing network of rail services can be described in this manner.

Route configuration is also an important determinant of the trip purposes for which transit is more likely to be used. Figure 3.2, for example, compares the network configurations of the Barcelona, Montreal, and Toronto rapid transit systems. In Barcelona, the subway network makes it possible to travel throughout the city, rather than to just one central area. The Montreal subway system also provides more area-wide

Figure 3.2
Comparative Rapid Transit Networks - Barcelona, Montreal and Toronto



coverage than Toronto's system which provides excellent service, largely to the Central Area. A number of discontinuities, however, combined with missed opportunities for TTC and GO Transit integration, lead to lower overall 'connectivity'.

Aside from route structure itself, frequency of service, hours of operation, and fare levels obviously influence transit competitiveness. In the case of commuter rail services, for example, except for the Lakeshore routes, service is generally unavailable during off-peak periods or on the weekends, and for a number of TTC bus routes, frequency of service in off peak periods and on weekends also detracts from transit competitiveness.

Transit fares are also perceived to influence choice of travel mode, particularly for inter-regional trips where more than one fare must be paid for a 'single' trip. Even within the City, there is strong opposition in some circles to any increase in transit fares which are viewed as detrimental to transit competitiveness.³

Transit Priority

For surface transit (buses and streetcars), the time required for boarding and alighting, as well as delays at traffic signals, further reduce travel time competitiveness relative to the private car. Methods of fare collection such as exact fare and passes can shorten transit vehicle time at stops, but random delays at traffic controlled intersections, often caused by automobile turning movements, further detract from transit competitiveness.⁴

Unlike typical subway operations where transit priority is guaranteed, the use of transit priority schemes for surface transit offers benefits both to users and operators of the system largely as a result of economies of scale that can be achieved. For example, through priority treatment,

- travel times by transit are reduced,
- the increase in speed attracts additional users, and
- frequency of service can be increased without any increase in either the number of vehicles or drivers which, in turn,
- further adds to the attractiveness of the service.

In other words, effective application of transit priority means that higher route capacity can be provided with the same number of vehicles or, alternatively, the same capacity can be provided with fewer vehicles and drivers.

Transit priority can be achieved through a variety of means including reserved lanes, protected right of way (where other vehicles have no practical means of access), and signal priority at intersections. Obviously, there will be some negative impacts on

³ Note however, that recent TTC surveys suggest that transit use is more sensitive to convenience and frequency of service than to fares.

⁴ In fact, on the Bay Street 'clearway', bus ridership increased significantly due to the *perception* of transit priority, even though there was no measurable increase in average speed.

automobile users and, as with any traffic regulations, the effectiveness of transit priority schemes depends upon adequate enforcement.

Figure 3.3
An Example of Transit Delays *without* Transit Priority



4. The Existing Transportation System

The most recent information on travel patterns associated with the existing system of transportation further illustrates the influence of some of the factors treated in the preceding section.

Toronto is served by about 5,200 km of roads basically organized in a grid that facilitates reasonable coverage of the entire area by surface transit (buses and streetcars), supplemented by a few expressways and a subway network. Within the City, all transit service is provided through a single, highly integrated, one fare system operated by the TTC. Figure 4.1 shows the network of these services, including routes operated beyond the City's boundaries under contract with adjacent municipalities, and also provides some indication of the intensity of use in terms of ridership. Figure 4.2 shows the same network classified by frequency of service, an important measure of transit attractiveness. In addition, the TTC operates special Wheel Trans buses and, other than special buses and taxis that serve airports, about 3,000 taxis are currently licensed to operate within the City.

**Figure 4.1
TTC Transit Routes**

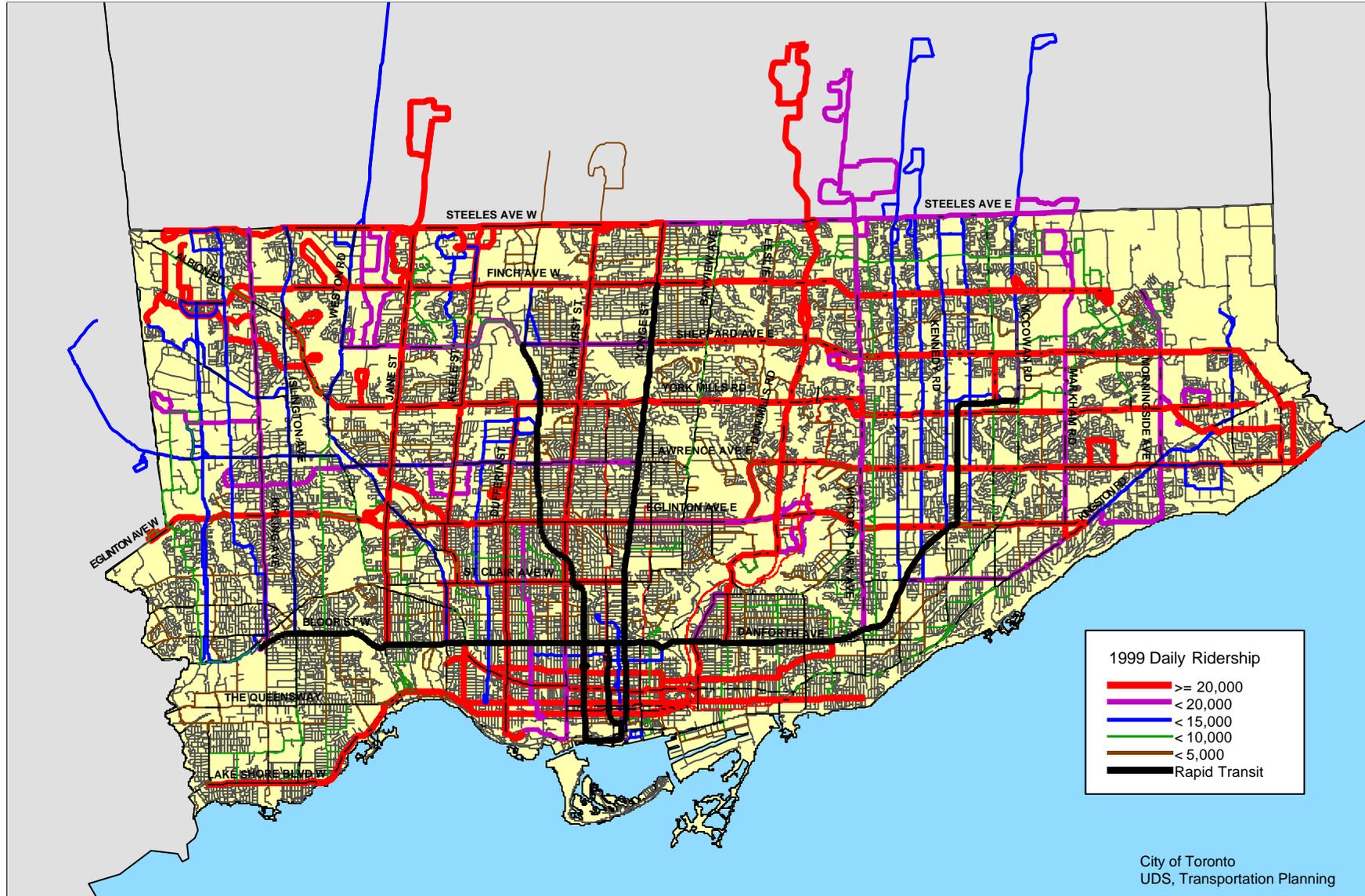
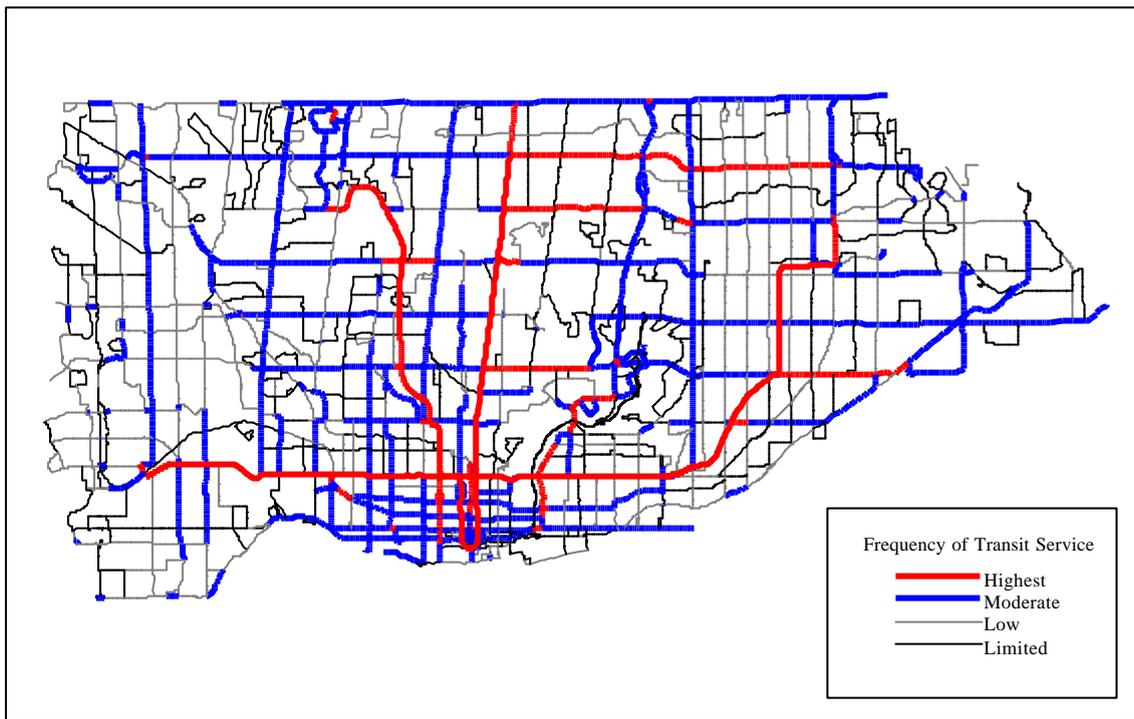


Figure 4.2
Service Frequencies on the TTC Network



The City also benefits from inter-regional bus and commuter rail services of GO Transit as well as other municipal operators shown in Figure 4.3. Formerly a provincial government operating authority, GO Transit is now the responsibility of the Greater Toronto Services Board (through which the City is presently assessed about 50 percent of GO's subsidy requirements). At present, GO Transit rail services focus on a terminal at Union Station, the destination of 96 percent of all trips.

Due to the combined importance of TTC and GO Transit services for the City, some comparative data relating to the relative scale of each operation are shown in Table 4.1. Note that although the TTC carries about ten times the number of passengers daily, in terms of passenger-km of travel, the two systems are comparable. Note also that both systems achieve comparable operating cost recovery ratios (revenues/operating costs, excluding capital costs) which by far, are the highest in North America.

The main interface between the two systems occurs at Union Station, generally viewed by all agencies throughout the Greater Toronto Area as the single most important transportation hub for the entire region.⁵ Recently acquired by the City, additional investment of the order of \$200 million will be required to modernize existing facilities, provide expanded capacity for TTC and GO Transit services, and improve integration between commuter rail, subway, Waterfront LRT, inter-city bus, and VIA Rail services.

⁵ The January 2000 GTSB report, *Removing Roadblocks*, enforces this view.

Figure 4.3
Inter-Regional Transit Routes

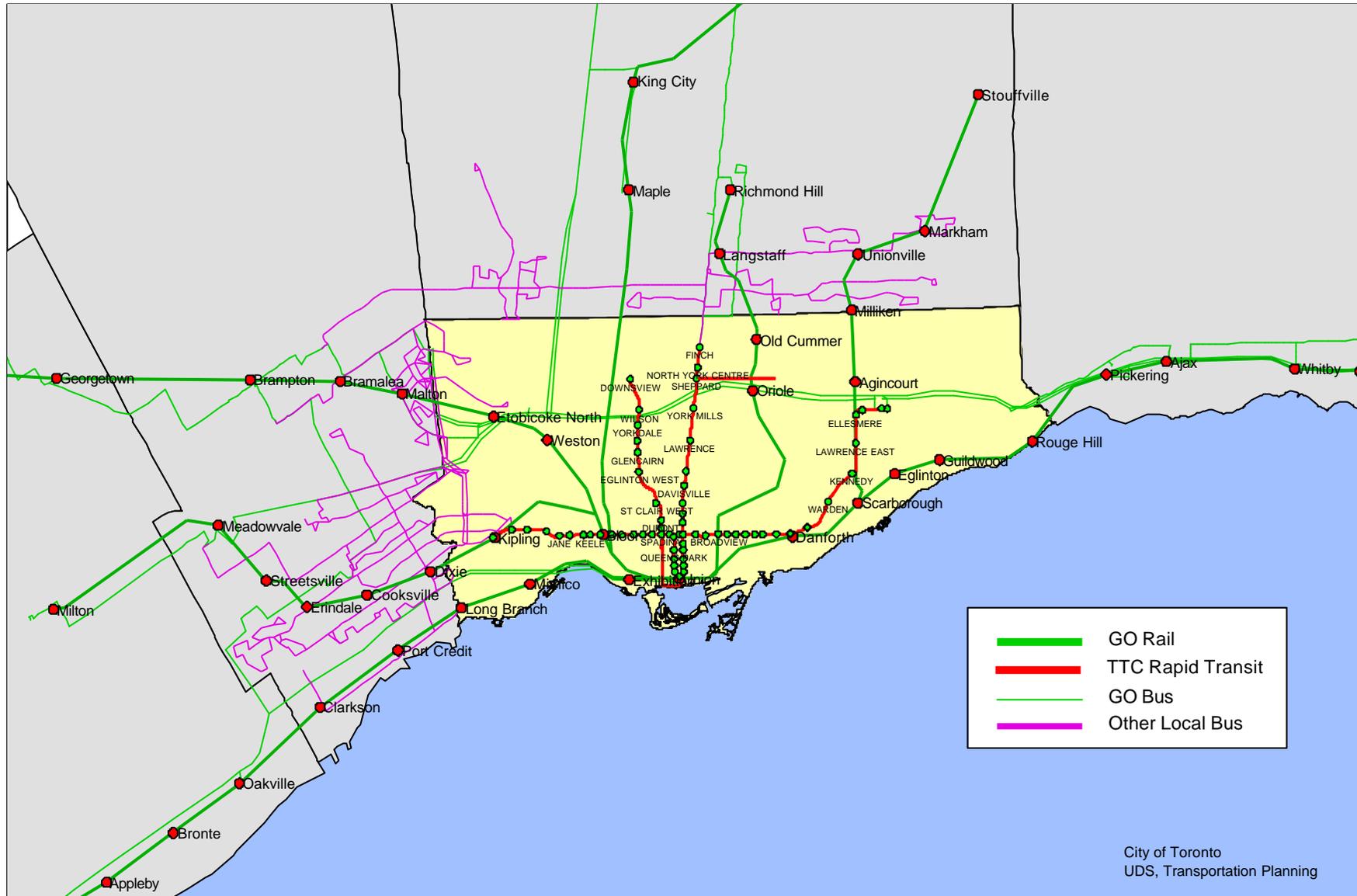


Table 4.1
Comparative 1997 GO Transit and TTC Statistics

Item	GO	TTC
Service Area (km ²)	8,300	620
Annual passengers (millions)	35	381
Annual passenger-km (millions)	1,110	1,112
Average trip length (km)	32	3
Operating Revenues (\$millions)	109	549
Operating Expenses (\$millions)	178	707
Capital Budget (\$millions)	48	437
Workforce	964	9,483
<i>Rail Service</i>		
Number of routes	7	3
Route km	361	63
<i>Bus & Streetcar Service</i>		
Number of routes	7	144
Route km	1,231	2,400
<i>Vehicles in Service</i>		
buses	174	1,240
Wheeltrans buses	na	144
streetcars	na	164
subway & RT cars	na	534
passenger coaches	329	na
locomotives	45	na
Total	548	2,082

Except for Hamilton-Wentworth and the TTC, there are presently no other regional transit systems in the GTA. (The Regional Municipality of York, however, recently approved a recommendation to establish a York Region Transit Authority in 2001.) All other local transit services are the responsibility of individual municipalities, some of which operate cross boundary routes to and from the City. In addition, a variety of intercity rail services (focussed on Union Station), intercity bus services, and airlines at Pearson International Airport and, to a lesser extent, at the Toronto Island Airport serve the City.

Table 4.2 provides some travel characteristics for 1996 as well as the ten year change over the period 1986-96, drawing primarily on detailed analyses of a series of travel studies known as the *Transportation Tomorrow Surveys*⁶.

⁶ *The Transportation Tomorrow Survey: 1996, 1991, & 1986 Travel Survey Summaries for the Greater Toronto Area*, Toronto: University of Toronto, Joint Program in Transportation, November, 1997.

**Table 4.2
Recent Toronto Travel Data**

	1996 Daily		1996 AM Peak		1986 - 1996
	Total	%	Total	%	% Change (AM)
<i>All trips in the City (INTRA)</i>					
walking & cycling	364,500	9%	115,600	13%	9%
transit and school bus	1,016,400	25%	289,800	32%	-13%
private automobile	2,596,900	65%	500,400	55%	1%
taxi	32,200	1%	2,400	0%	-3%
Total	4,010,000	100%	908,200	100%	-3%
<i>Trips Originating in Toronto</i>					
walking & cycling	368,000	8%	116,800	11%	9%
transit and school bus	1,112,500	23%	301,400	29%	-13%
private automobile	3,294,300	69%	630,000	60%	4%
taxi	33,600	1%	2,800	0%	-3%
Total	4,808,400	100%	1,051,000	100%	-1%
<i>Trips Originating in 905 Destined to Toronto</i>					
walking & cycling	3,400	0%	1,000	0%	82%
transit and school bus	97,400	12%	62,300	21%	25%
private automobile	697,400	87%	229,100	78%	36%
taxi	2,300	0%	200	0%	35%
Total	800,500	100%	292,600	100%	34%
<i>Transit Trips</i>					
TTC	1,045,100	94%	295,900	93%	-13%
TTC + GO Rail	22,700	2%	9,900	3%	45%*
TTC + GO Bus	13,800	1%	4,700	1%	12%
TTC + 905 Bus	27,300	2%	8,700	3%	12%
Total	1,108,900	100%	319,200	100%	-11%
<i>Origin of Toronto Destined Trips</i>					
Toronto	4,010,000	83%	908,100	76%	-3%
Durham	95,000	2%	45,700	4%	50%
York	318,200	7%	100,600	8%	38%
Peel	283,900	6%	103,900	9%	12%
Halton	43,200	1%	22,900	2%	22%
Hamilton-Wentworth	12,200	0%	4,800	0%	39%
Other	47,900	1%	14,800	1%	N/A
Total	4,810,400	100%	1,200,800	100%	
<i>Destination of Trips Originating in Toronto</i>					
Toronto	4,010,000	83%	908,100	86%	-3%
Durham	94,800	2%	8,300	1%	-6%
York	318,900	7%	70,300	7%	33%
Peel	281,500	6%	53,400	5%	10%
Halton	43,300	1%	4,600	0%	26%
Hamilton-Wentworth	12,300	0%	1,100	0%	-20%
Other	47,600	1%	5,100	0%	44%
Total	4,808,400	100%	1,050,900	100%	

* Independent data from GO Transit show a decline in this change.

Recognizing the relatively high degree of interdependence between the transportation systems of the City and its neighbours, data are provided both for Toronto and other regional municipalities of the GTA.

In part, this interdependence is illustrated in Figure 4.4 which shows that about 24 percent of all trips made in the City during the morning peak originate elsewhere in the GTA. (Table 4.2 shows that during the same period, about 14 percent of trips originating in the City are destined to points beyond its boundaries.) Clearly, ‘cross-boundary’ or inter-regional travel is an important factor in planning changes to the existing transportation system.

Figure 4.5 shows that public transit accounts for about 32 percent of all morning peak period trips within the City. Within the GTA however, there is considerable variation in travel behaviour with respect to choice of mode. In overall terms, mode split for all trips is considerably higher in the City than elsewhere in the GTA for many of the reasons (population densities, route configurations, etc.) noted previously. However, Figure 4.6 shows that transit mode splits increase significantly for travel from these regions to the City, and for travel to Toronto’s downtown, even more so.

Figure 4.4
Origin of 1996 AM Peak Period Trips Destined to Toronto

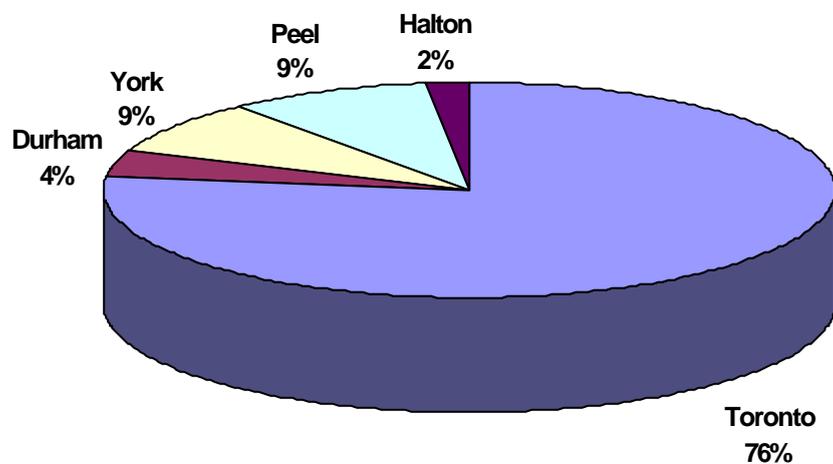


Figure 4.5
Mode Choice for 1996 AM Peak Period Trips in Toronto

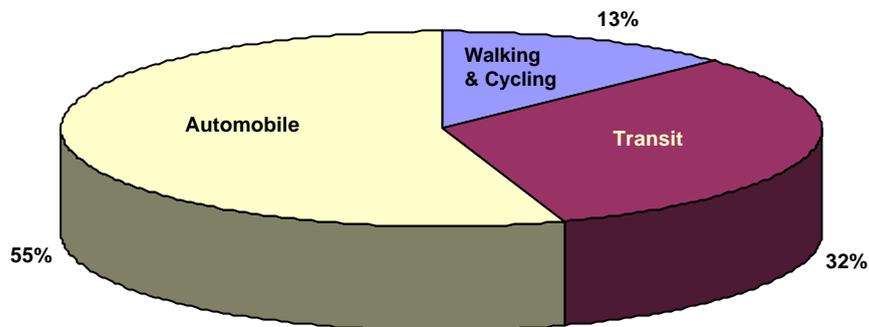


Figure 4.6
Comparison of 1996 AM Peak Period Mode Split by Region for All Trips, Trips to Toronto, & Trips to the Central Area

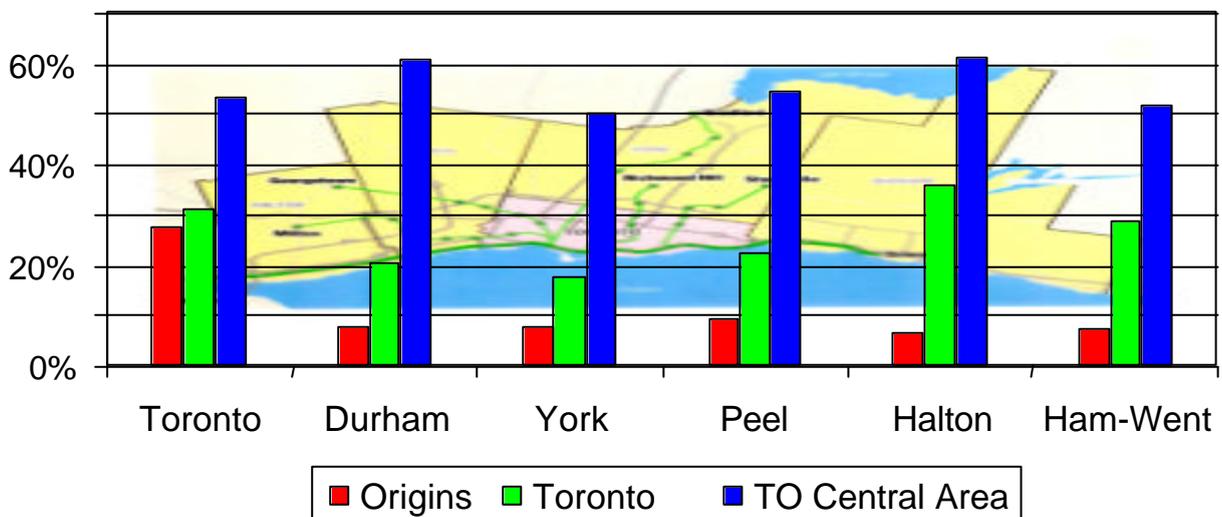


Figure 4.7 shows historical trends in transit ridership for both the TTC and GO Transit (which, though an inter-regional service, is dominated by travel to and from the City).

Figure 4.8 shows the historical relationship between downtown employment and travel across the inner cordon (an imaginary boundary around the City's downtown). This diagram illustrates that although travel to the downtown by TTC and private automobile has remained relatively constant, GO Transit rail services have grown in importance for work trips from the suburbs to the downtown. In this regard, there is some evidence to suggest that at least for the foreseeable future, the demand for GO Transit service is

somewhat 'supply driven' inasmuch as there is a reasonable correlation between ridership and frequency of service, as shown in Figure 4.9. In fact, a doubling of service frequency on the Bradford route in September 1998, led to a doubling of ridership.

Figure 4.7
TTC and GO Transit Ridership

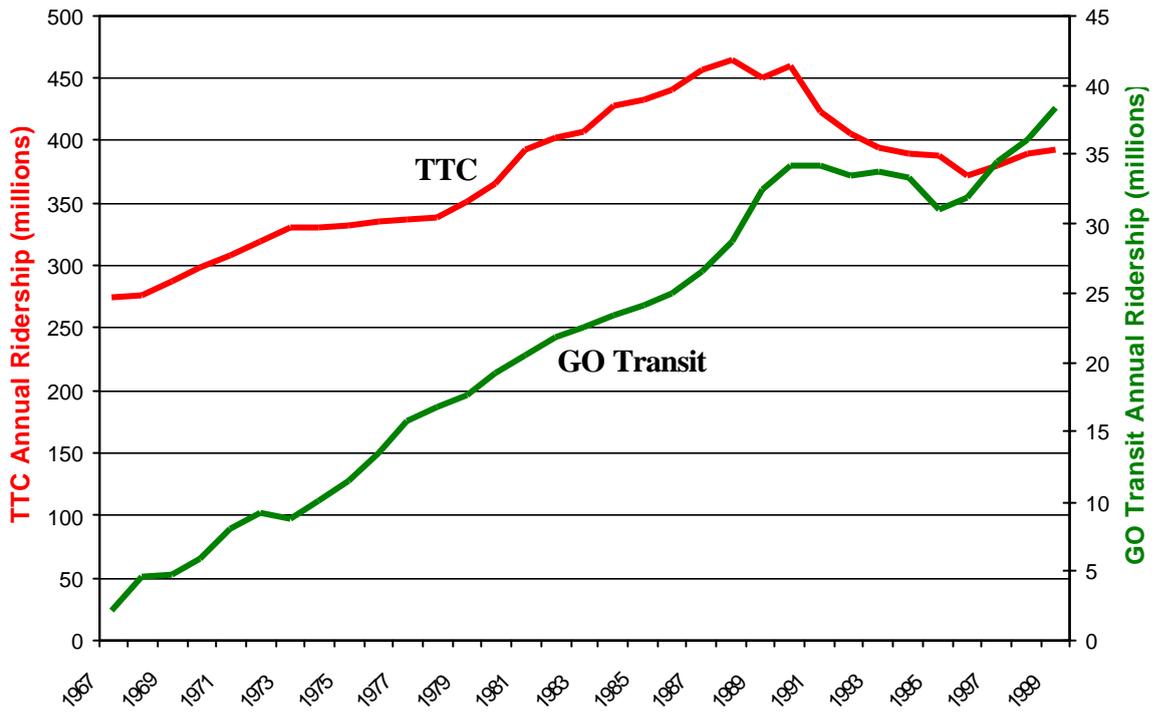


Figure 4.8
Percent Change in INBOUND Central Area Trips (7:00 - 9:00 a.m. period)
and Central Area Occupied Office Space

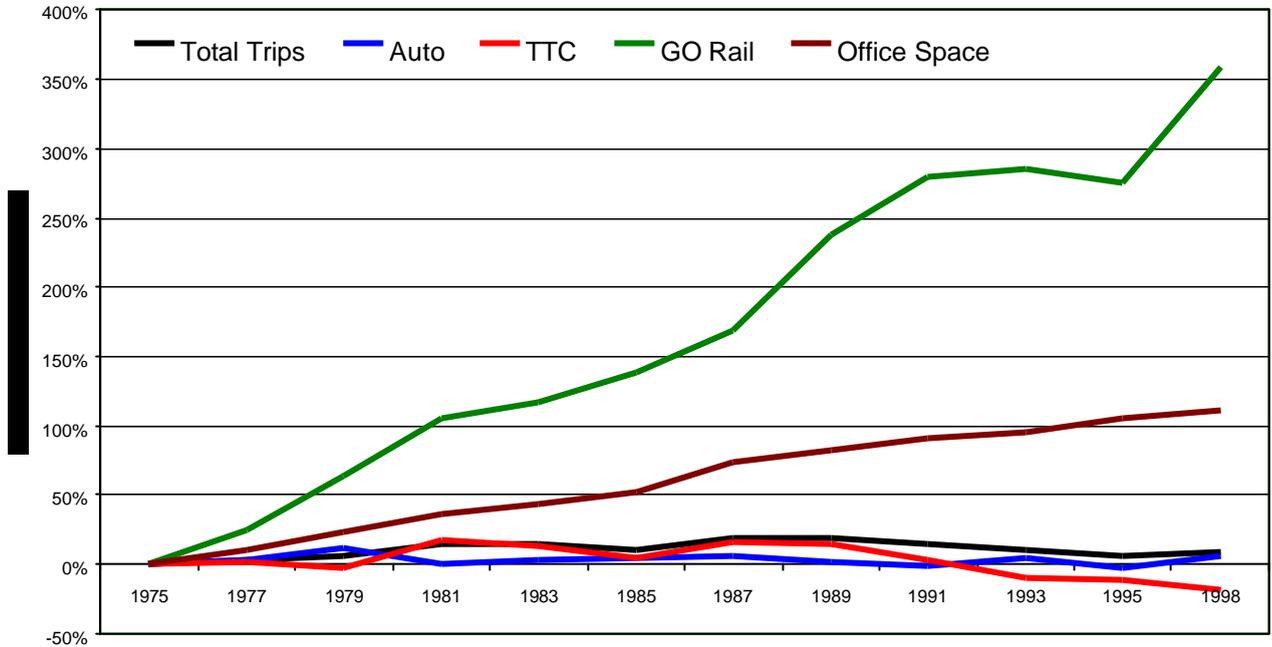
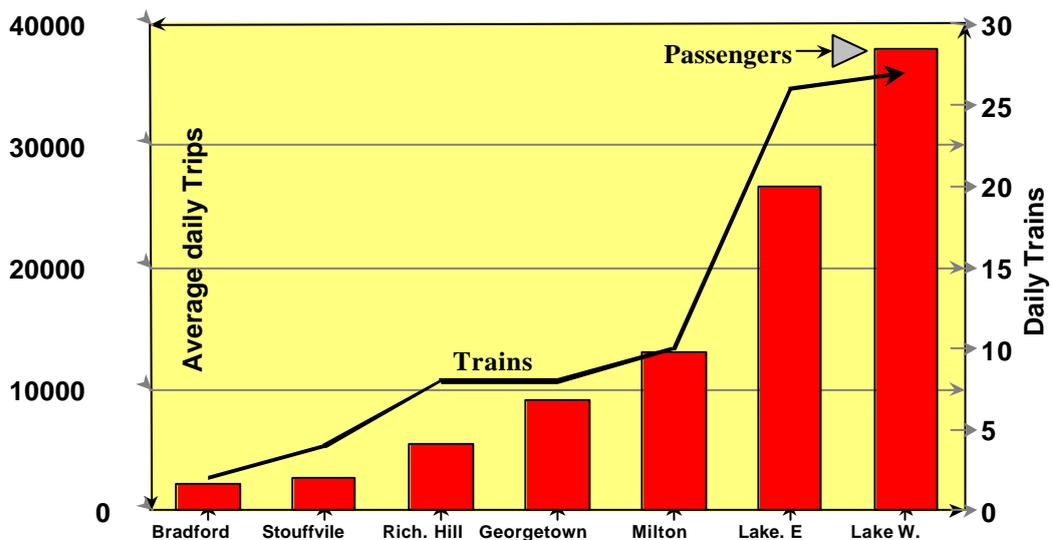


Figure 4.9
Comparison of 1998 Go Transit Ridership by Route and Frequency of Service



From these data and other information available from more detailed analyses of the *Transportation Tomorrow* surveys, as well as other recent studies for the TTC and GO Transit, the following observations may be particularly relevant to the matter of a revised vision of transportation for the future:

- the transportation needs of the City of Toronto cannot be considered independently of travel by residents of the surrounding municipalities and regions to and from the City.
- the TTC has faced an uphill struggle to maintain transit ridership in the face of rising City and GTA populations although, very recently, there appears to have been a major reversal of trends.
- lower than expected increases in total travel across the inner cordon can be attributed, in part, to increased residential population within the same area, the 1989-95 economic recession, and limits on both road and transit capacity into the downtown.
- attempts to divert automobile users to transit are likely to be far more successful for centrally oriented travel than for the ‘many-to-many’ trips described earlier.
- about 96 percent of GO Transit’s rail passengers are destined to the Central Area of Toronto and about 48 percent of GO bus riders are destined to TTC rapid transit stations.
- about 80 percent of commuter rail passengers have an alternative choice of using an available automobile.
- recent experience suggests that there is a significant latent demand, presently limited by available capacity, for even more downtown oriented commuter rail service.
- growth in downtown employment combined with growth in suburban population appear to be the prime factors contributing to GO Transit’s increase in commuter rail ridership.

5. Predicting Future Travel

To the extent that development of a new vision for transportation is influenced by performance of the existing system, projections as to how the system is likely to perform in the future are equally relevant. Clearly, future performance will be influenced by future travel patterns.

Predicting the use of any transportation system or facility is a complicated, quasi-scientific process which, in the case of the GTA, has been the major pre-occupation of transportation planners at the municipal, regional, and provincial levels for as long as anyone can remember.⁷ Estimating the future utilization of any major element of the GTA transportation system -- roads, local transit, and inter-regional transit -- has typically involved three basic steps.

First, for a particular point in time, *forecasts* of total population and employment are made for the entire GTA. These forecasts are treated as *control totals*. Assumptions are then made as to the distribution of increases in population and employment among various regions, municipalities, and sub-areas within those municipalities (usually referred to as traffic zones). Since most methods of estimating growth in population and employment are based on Census data, population and employment forecasts are usually made at the Census tract level, consistent with that municipality's official plan.

Second, *assumptions* are also made about what changes in the transportation system (both roads and transit) will be in place at the same point in time since, obviously, the extent of the system influences travel behaviour. Until recently, these assumptions have been quite optimistic, reflecting considerable 'hype' about capital investment in new rapid transit facilities and highways. This optimism has been largely in keeping with the high growth mentality that has characterized the provision of public infrastructure throughout the GTA for many decades and, prior to 1998, by the prospect of continued and substantial funding assistance from the provincial government.

The combination of the existing system and the assumed changes defines the actual transportation system to be analyzed, usually characterized by a large number of links (e.g. a sections of road or transit) and nodes (e.g. road intersections or subway stations). Definition of the system also incorporates such assumptions as the relationship between volume and travel time, user costs, and transit fares or other forms of pricing.

⁷ In this regard, it should be noted that prediction, a process of *forecasting* what will happen, should not be confused with *goal setting*, a process of targeting achievements. Many official plans within the GTA, for example, have adopted reduced dependence on the private automobile and therefore higher transit use as a planning goal which travel prediction may or may not reveal to be realistic.

Third, largely on the basis of demographic and travel data obtained from surveys, various travel forecasting *models* have been developed which attempt to describe the relationship between travel behaviour and key performance indicators such as travel time, level of service, convenience and costs. These models are then used to predict, for each sub area or traffic zone:

- the total number of trips that will be made during a particular time period (such as the morning peak),
- the destinations of those trips in terms of the sub-areas where they end,
- the mode of transportation that will be used, and
- the specific routes that will be used for each mode of transportation.

Estimates of total volumes on a particular section of a transit route or road thus basically derive from adding up the number of individuals from all origin traffic zones to all destination traffic zones who are predicted to use that mode of transportation and that particular route. *The underlying assumption in this process is that the travel behaviour of individuals in the future will, more or less, be similar to behaviour observed when the surveys were conducted.*

Present day attempts to predict travel patterns in this general way usually involve cooperative or consultative processes between adjacent jurisdictions, as well as between different levels of government, in order to avoid each municipality reaching its own conclusions about transportation needs on the basis of inconsistent or incompatible assumptions.

Such collaboration within the GTA has occurred in two ways -- first, by reaching consensus on a common set of population and employment distribution assumptions -- and second, by periodic participation in cooperative surveys of travel behaviour. As a result, in their travel predictions, most municipal, regional, and provincial transportation agencies concerned with the GTA use common population and employment forecasts, common travel data and, to a lesser extent, a common forecasting approach. It is important to note, however, that the commonality of population and employment forecasts applies only at the regional level. Regional planning authorities, as well as the City's planners then make independent distributions of growth in population and employment which are not scrutinized in any comprehensive manner at the GTA level.

Commonality of data bases, however, does not imply lack of variation. GTA transportation related studies over the last 20 years or so, in fact, have allowed for wide variation in the basic assumptions about population and employment distributions, as well as a wide variety of alternative transportation networks. Some of these networks differ little from the present system whereas others assume very generous infusions of capital into greatly enhanced systems.

As in any forecasting process, results are obviously sensitive to the main input assumptions, namely:

- C the extent of population and employment growth,
- C where this growth in population and employment will be distributed throughout the GTA,
- C what transportation system will be in place, and
- C how relative travel times, convenience, and costs affect trip choices among various transportation alternatives

It is important, of course, to differentiate between the *concensus* achieved on these various assumptions and the *likelihood* they will actually materialize. In the case of population and employment forecasts, for example, the basic assumptions have essentially been negotiated (within the estimated control totals) among the various regions. As noted above, the regional totals are then distributed at the municipal level.

Land development, however, is a complex process involving developers, home buyers, employers, community organizations, and special interest groups. It is also a process that is affected by property taxes, the ease of obtaining necessary approvals, and by the availability of schools, shopping, and recreational facilities. In addition, the location decisions of both firms and households are influenced by accessibility provided by the transportation system and, in many cases, by access to transit.

As a result, there are few guarantees that actual developments will conform to the population and employment forecasts that form the basis of the travel predictions. One recent analysis of travel trends within the GTA, for example, concludes:

the land use assumptions that underlie recent and ongoing transportation planning activities should be updated to recognize the distinct possibility that Toronto's employment will be substantially below the expected 2011 and 2021 levels. Current estimates of 2011 and 2021 employment in Toronto *and the GTA* represent the highest levels that *might* be achieved, rather than the *most likely* scenario. {emphasis added}⁸

In fact, as treated below, the most recent forecasts allocate *more* growth in population but *less* growth in employment to the City than previously projected.

Forecasting methods also require a description of the future transportation system in order to predict performance, since travel behavior is influenced by the extent and nature of the system in place. At this time, however, there is little or no agreement as to what GTA-wide transportation improvements are likely, particularly in view of recent changes in provincial funding policies for transit and municipal roads.

In addition, forecasting models generally assume that current travel behaviour will remain the same in the future. However, behavior could well be altered by changes in pricing and cost recovery policies (such as increased transit fares or road pricing),

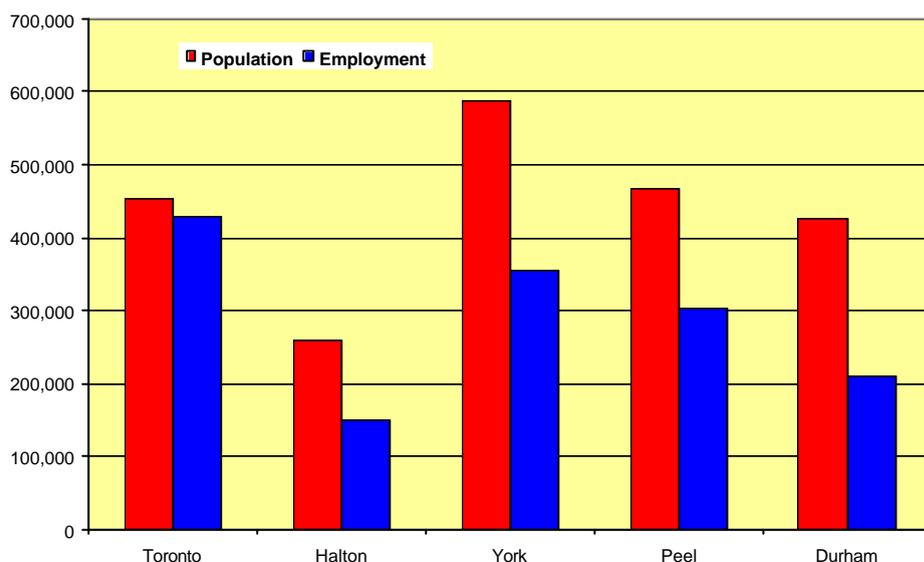
⁸ Data Management Group, *1986-1996 Travel Trends in the GTA & Hamilton-Wentworth*, Toronto: University of Toronto Joint Program in Transportation, March, 1998, p.39.

environmental policies aimed at reducing greenhouse gas emissions, and economic changes that affect employment and automobile ownership.

Recognizing the uncertainty in many of these assumptions, significant effort has been devoted by various government agencies to develop demographic and travel forecasts as the basis for transportation planning. Although these studies have yet to result in agreement on a comprehensive transportation plan for the GTA, certain findings are particularly relevant to future transportation priorities for the City of Toronto.

The most recent travel forecasts prepared for the GTA as a whole are based on estimated growth in population and employment over the period 1996-2021 of 2.19 million residents and 1.45 million jobs, respectively, distributed among the various regions of the GTA as shown in Figure 5.1. These projections were developed in 1993 by the Provincial Office of the Greater Toronto Area (OGTA) in cooperation with all regional municipalities (including the former Metropolitan Toronto) within the GTA.

Figure 5.1
1996-2021 Projected Change in GTA Population and Employment (1000s)

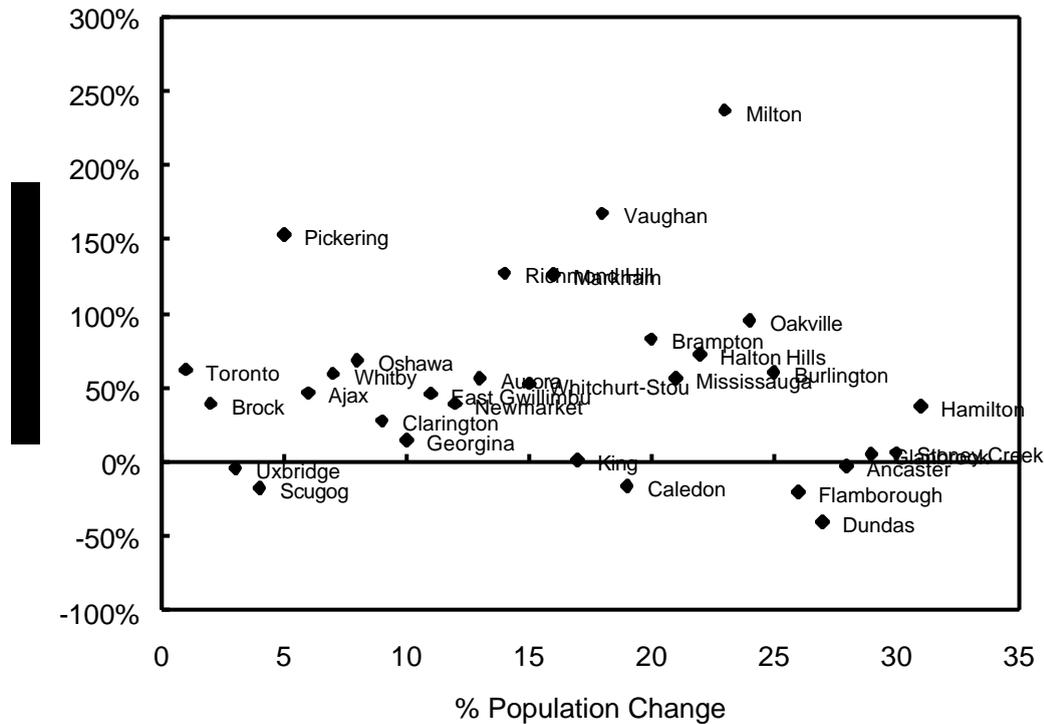


To place these growth estimates in perspective, Figure 5.2 shows the relative change in employment and population for the 28 GTA municipalities implied by the demographic assumptions included in MTO travel forecasts. While there is no particular reason to expect a consistent correlation between these two factors, the data do show which communities are expected to generate new employment opportunities at a faster rate.

The 1993 OGTA forecasts reflect an overall population increase of about 49 percent and an *increase* in average labour force participation rates of about 14 percent. In other words, they assume a higher proportion of jobs to population than is presently the case. By contrast, other forecasts for the GTA estimate an overall population increase of about

39 percent over the same time period and a *decline* in labour force participation of about 6 percent.⁹

Figure 5.2
Relative Change in Predicted 1996-2021 Population and Employment Growth

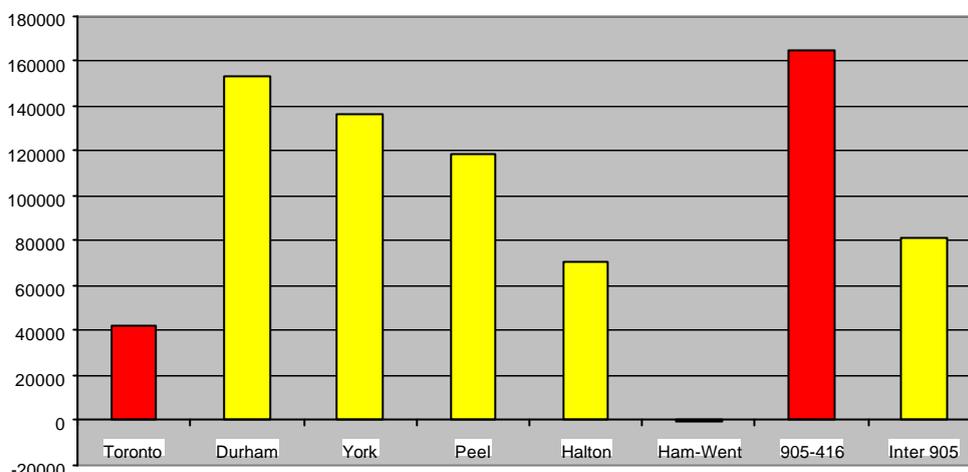


Using the travel forecasting approach discussed previously, these *basic assumptions* of growth in population and employment produce the general results shown in Figure 5.3 which essentially classifies growth in the travel market in terms of several broad categories of intra-regional and inter-regional AM peak period trips. Data shown by region refer to origins and destinations entirely within one region. The telephone area codes refer to the City of Toronto (416) and all other regions within the GTA (905).

According to these predictions, the largest growth in morning peak period travel is expected to occur for inter-regional travel between the '905 regions' and the City of Toronto followed by intra-regional travel within the four largest regions of the GTA. From the standpoint of the City of Toronto, the 905/416 and the intra-Toronto categories (shown in red) are of greatest interest. Considering previous comments on transit competitiveness, these are also the two categories of travel in which transit competes most favorably with the private automobile.

⁹Source: *Strategic Projections Inc.*, 1998.

**Figure 5.3
Predicted 1996-2021 Growth in GTA AM Peak Period Travel**



As noted above, in predicting future travel, the importance of *assumptions* related to growth in population and employment, as well as the distribution of this growth throughout the GTA, cannot be overstated. *Changing the population and employment assumptions changes the results produced by the forecasting model.*

Setting aside these caveats about demographic projections, assumptions about the future transportation system, and the reliability of the travel forecasting process, there are a number of implications which are particularly relevant to the City of Toronto's Official Plan. Table 5.1 summarizes selected travel projections for the 1993 OGTA population and employment forecasts for 2021. These projections show that for a City population increase of 239,000 (10 percent) by 2021, there are likely to be:

- 893,000 (35 percent) more private automobiles in the GTA,
- 47.6 million (54 percent) more daily vehicle km of travel in the GTA,
- 672,000 (31 percent) more daily TTC passengers,
- 114,000 passengers (87 percent) more GO Transit daily passengers, and
- 367,000 (130 percent) more passengers crossing the City boundaries by 'other' transit.

Recently, population and employment assumptions have been revised as shown in Table 5.2 which compares the 1993 OGTA forecasts with the revised 1999 forecasts for 2021. These 1999 forecasts allocate an *additional* 213,000 persons but 81,000 *fewer* jobs to the City than assumed in the 1993 forecasts. Such changes will alter the travel predictions shown in Figure 5.3 by increasing the number of trips within the City, a change that favours higher transit mode split, but may reduce cross boundary travel, a change that favours automobile use.

For these anticipated changes, the fundamental question is whether it will be possible to maintain, let alone, improve the accessibility and reliability of the associated transportation services using traditional approaches to transportation planning.

Table 5.1
Current Population, Employment, and Travel Projections
(in 1000s, based on 1993 OGTA Forecasts)

Item	1996	2021	Difference	
GTA Population	4,781	6,668	1,887	39%
GTA Employment	2,357	3,757	1,400	59%
City Population	2,463	2,702	239	10%
City Employment	1,291	1,800	509	39%
GTA Automobiles	2,527	3,421	894	35%
GTA Vehicle-km of Travel	88,615	136,264	47,649	54%
Daily TTC Riders	2,188	2,860	672	31%
AM Peak TTC Riders	716	934	218	30%
Daily GO Riders	131	245	114	87%
AM Peak GO Riders	70	130	60	86%
Daily Other Cross Boundary Transit	282	649	367	130%

Table 5.2
Comparison of 1993 and 1999 OGTA Forecasts for 2021

Region	<i>Population in 1000s</i>			
	1996	2021 Forecasts		
		93 OGTA	99 OGTA	Difference
GTA	4,781	6,657	6,975	318
Toronto	2,463	2,702	2,915	213
Halton	350	650	610	-40
York	612	1,100	1,200	100
Peel	882	1,255	1,350	95
Durham	474	950	900	-50
	<i>Employment in 1000s</i>			
	1996	2021 Forecasts		
		93 OGTA	99 OGTA	Difference
GTA	2,327	3,766	3,773	7
Toronto	1,291	1,800	1,719	-81
Halton	159	330	308	-22
York	292	580	647	67
Peel	421	686	724	38
Durham	164	370	374	4

6. Getting to the Vision

In developing the vision statement presented in this section, the underlying theme was influenced by a number of factors.

First, the transportation vision is intended to enforce and support the broader vision for growth and development of the entire City. That vision stresses the concept of “reinvesting in our quality of life”. It also identifies three specific types of planning areas, namely, areas of change, areas of enhancement, and areas of protection. Intensification and redevelopment are both central to the first two of these.

From a transportation perspective, the vision for the City as a whole means:

- using transportation as an instrument for fostering or even leading the kinds of intensification and redevelopment for those areas of change envisioned in the Official Plan,
- improving the quality and accessibility of transportation in those areas identified for enhancement, and
- ensuring that transportation decisions are environmentally progressive and protect the integrity and quality of life in established communities.

These statements, of course, are sufficiently general and positive as to evoke little or no disagreement. What is important, however, is to recognize that as specific policies and investments are suggested, they should be assessed from the standpoint of these elements, rather than merely as just another idea taken out of context.

Second, as suggested earlier, reaching agreement on the vision of transportation incorporated in the City’s Official Plan is essentially a problem in dispute resolution. For this reason, the process for developing the vision statement included considerable dialogue and consultation, with relatively small focus groups in some instances, and with larger groups in others. The intent was to obtain input from:

- operating departments responsible for the delivery of transportation services,
- representatives of special interest groups,
- recognized urban transportation experts,
- relevant working groups formally associated with the City, and
- other GTA agencies.

Specifically, groups consulted included:

- a panel of 10 recognized urban transportation experts from the Toronto area,
- a reference group representing special interests and the transportation industry,
- the City of Toronto Environmental Task Force,
- the City Council Official Plan Reference Group,

- the City Cycling and Pedestrian Committees,
- the Toronto Board of Trade,
- the Transportation Committee of the Greater Toronto Services Board, and
- officials of GO Transit, the TTC, and other City transportation departments.

Recognizing the range of often conflicting views and sensitivities, achieving consensus is probably an unrealistic expectation. However, ensuring that a representative range of views is taken into account, is.

Third, it is important to recognize that rethinking the traditional vision of transportation is not a particularly novel concept. The need for a new vision of urban transportation has been fostered in many circles based on increasing doubts as to either the desirability or feasibility of maintaining the historical approach to the so called 'balanced' concept in which individual travelers have an *equal* choice between either private automobiles or transit.

Foremost among these is a vision statement first formalized in 1993 by the Urban Transportation Council of the Transportation Association of Canada (TAC), a statement that has been endorsed by a number of municipal governments including the former Council of Metropolitan Toronto.¹⁰ The TAC vision statement is based on the fundamental premise that *current trends are leading to urban transportation systems which do not meet needs and which are not sustainable*, a premise that leads to the following 13 decision making principles:

1. Plan for increased densities and more mixed land use.
2. Promote walking as the preferred mode for person trips.
3. Increase opportunities for cycling as an optional mode of travel.
4. Provide higher quality transit service to increase its attractiveness relative to the private automobile.
5. Create an environment in which automobiles can play a more balanced role.
6. Plan parking supply and price to be in balance with walking, cycling, transit and auto priorities.
7. Improve the efficiency of the urban goods distribution system.
8. Promote inter-modal and inter-line connections.
9. Promote new technologies which improve urban mobility and help protect the environment.
10. Optimize the use of existing transportation systems to move people and goods.
11. Design and operate transportation systems which can be used by the physically challenged.
12. Ensure that urban transportation decisions protect and enhance the environment.
13. Create better ways to pay for future urban transportation systems.

¹⁰ Transportation Association of Canada, *A New Vision for Urban Transportation*, Ottawa: reprinted November 1998.

The TAC vision statement is central to the current visioning exercise for the City of Toronto. In combination with various analyses and consultations referred to above, the transportation vision proposed for the City of Toronto's Official Plan focuses largely on *reducing automobile dependence* (relative to current trends) as reflected by levels of private automobile ownership as well as the manner in which automobiles are used.

Note that reduced automobile dependence has already been incorporated in earlier official planning documents. The former City of Toronto Official Plan, for example, states "Council's goal is to reduce dependency on the use of the automobile". The former Metropolitan Toronto Official Plan (still a legally valid planning instrument) states that reductions in reliance on the automobile is "fundamental to the Metropolitan Corporation's reurbanization strategy" and goes on to emphasize:

It is the policy of Council to discourage further measures which would facilitate the use of automobiles for commuting into the Central Area.

The key attributes of the proposed vision include:

1. Integrated land use and urban design that leads to fewer and shorter vehicular trips for personal travel.
2. Improved accessibility by public transit service for all constituents that is also competitive with the private automobile in terms of cost and convenience for most personal travel.
3. A comprehensive system of regulations and facilities for goods movement that enhances the economic competitiveness of the City and the Region.
4. Traffic engineering and street design that encourage walking and cycling.
5. Less need to own an automobile or to use an automobile for most travel within the City
6. Strong safeguards for the protection of the natural environment.
7. Reduced air pollution and greenhouse gas emissions from transportation.
8. Equitable pricing and financing of transportation services.

In practical terms, this vision really means:

- more people and jobs in the City,
- more intensification and mixed land use,
- a friendlier environment for pedestrians and cyclists,
- efficient goods movement,
- improved transit accessibility for the handicapped,
- higher transit ridership and mode split,
- lower automobile ownership and use,
- the development of alternative, non-property tax based sources of funding from users of the transportation system which permit greater continuity in transportation planning.

Although few if any objections have, thus far, been raised with respect to the eight elements of the proposed vision statement, two points, in particular, are noteworthy.

First, recognizing that efficient goods movement is clearly a desirable attribute of the future transportation system, little progress has actually been made in describing just how to go about achieving this goal. A range of measures such as mandatory requirements for off-street loading/unloading facilities and development of a designated network of truck routes are frequently cited as examples. Possible measures could also be expanded to include reserved truck lanes on major roads and expressways and reorganization of the trucking industry itself to facilitate consolidated pick-up and delivery. It is important to recognize, however, that competition for limited road capacity by automobiles, cyclists, transit, and pedestrians limits the range of viable options.

Second, with respect to funding, there is growing recognition of the inequity of financing all *transit* subsidies from the existing property tax base, paralleled by growing political pressure to obtain *dedicated* transit funding from fuel taxes or other automobile levies (as now practised in Alberta, British Columbia, and Quebec). Without increasing fuel taxes, however, allocating a portion of gasoline taxes to transit means less funding for other worthwhile government programs such as health, education, and social services. Dedicated funding, moreover, carries with it the likelihood of little innovation or change in the manner in which transit services are now delivered. In the proposed vision, therefore, equitable pricing and funding refer to alternative mechanisms such as road pricing or new GTA levies on automobiles and their use, for *transportation* purposes, not necessarily to the reallocation and dedication of existing sources of revenue.

Reaching the end state represented by the vision statement will, of course, require that specific actions and decisions be *adopted* by the Council of the City of Toronto and subsequently *implemented* by the relevant operating departments, the TTC, and GO Transit. 'Getting there' involves the application of available *policy instruments* and endorsement of a key set of *principles* for planning transportation of the future.

The term ‘policy instruments’ encompasses the range of decisions that can be taken by City Council that ultimately influence performance of the transportation system. Examples are listed in Table 6.1.

**Table 6.1
City Policy Instruments Related to the Transportation Vision**

Policy Instrument	Components
Land use	Type of activity (classification) Densities Allowances for mixed land use
Capital Investment in transportation	Timing by mode and route Balance between: Preservation (rehabilitation) Expansion Vehicle replacement (for transit)
Design standards	Choice of technology Capacity Level of service Supply of parking Loading and unloading facilities
Operating budgets	Transit cost recovery targets Maintenance and operations
Regulation	Priority treatment for transit Truck routes Traffic control (including ITS) Rights of ‘foreign’ operators Entry control for new operators
Pricing	Objectives & targets (i.e. cost recovery) Mechanisms Parking

Finally, to move in the direction of reduced automobile dependence consistent with the vision, there are a number of key principles that should serve as the foundation for transportation planning activity leading to formalization of the transportation component of the Official Plan. These 15 principles can be grouped in terms of the various land use and transportation actions summarized in Table 6.2.

Table 6.2
Land Use and Transportation Principles Implied by the Proposed Vision

Land Use and Urban Design

1. Confirmation of the concept of transit supported concentrated development with incentives for higher density development allowances in the vicinity of major transit nodes.
2. Zoning related to transit supported development finalized *prior* to budget approval for the construction of routes and stations.
3. Approval of new development applications based on considerations that include desirability with respect to pedestrians and cyclists, as well as access to transit stops and stations.
4. Urban forms and street design that encourage walking and cycling.

Transit Expansion and Operations

5. Priorities for capital investment in new public transportation services and facilities based on:
 - increases in *overall* transit system ridership and mode split or, in special cases,
 - contributions to achieving overall goals and objectives of major *public policy* initiatives such as Redevelopment of the Waterfront.
6. Maximization of opportunities for cost effective inter-connections between the TTC, inter-regional bus services, and GO Rail.
7. Encouragement of ancillary para-transit services in areas that cannot be served effectively by conventional TTC services.

Roads, Parking, and Traffic Engineering

8. Transit priority for the use of street space expanded to include:
 - all roads and major intersections involving streetcar service, and
 - high frequency bus routes.
9. Introduction of HOV lanes without necessarily widening streets.
10. Preferential treatment for high occupancy, ‘car share’, and fuel efficient automobiles in all publicly owned parking facilities.
11. Expansion of the bicycle lane network in areas of highest bicycle use.
12. Recognition of the increasing importance of efficient truck movement for the economic competitiveness of the City and the GTA.

Funding and Governance

13. Development of innovative alternatives for funding improvements to the City’s transportation system based on sources other than property taxes.
 14. Solicitation of provincial approval to implement more equitable methods of pricing the complete range of transportation services provided by the City.
 15. Clarification of the City’s position with respect to its relationship to priority setting activities of the Greater Toronto Services Board for GTA-wide transportation policies and funding.
-

It is important to emphasize that these *principles* are part and parcel of the *vision* and that, as a result, it is essentially illogical to be willing to commit, on one hand, to achieving the goals and objectives implied by the vision, but on the other, to be unwilling, to accept the need for significant change in the approach to planning and operations.

It is also important to note that the vision statement embodies a broad variety of objectives that are representative of the interests of a range of constituents. For this reason, it is understandable that there will be conflicts among the objectives themselves, as well as among the associated principles. As noted above, for example, contradictions may exist between principles related to transit priority, bicycle lanes, and efficient goods movement. Similarly, reducing road capacity for private passenger vehicles through some of these same measures is very likely to increase congestion and associated emissions, at least until such time as other objectives of the vision are achieved. Simply stated, every principle does not apply in every case and in the process of plan development, different tradeoffs will be appropriate in different areas of the City.

It goes without saying that land use planning, probably the single most important determinant of travel patterns, is likely to play the dominant role in determining just how far it will be possible to move in the direction of reduced automobile dependence.

Land use decisions, of course, can hardly be defined as a matter of transportation policy but as most agree, there is a cyclical relationship between land use and transportation performance. In other words, each affects the other inasmuch as land use has a strong (but not the only) influence on travel patterns whereas accessibility provided by the transportation system has a strong influence on land use. Experience has shown, however, that it is easier to change transportation policy (where important decisions are made at the regional scale) than to change land use policy (where decision making is far more sensitive to local concerns). All of the expressways included in the 1966 Metro Transportation Plan, for example, were essentially eliminated within ten years.

7. Next Steps

Once adopted or modified as the basis for planning, vision statements and associated principles clearly must be translated into a course of action for achieving the implied end product. These actions fall into two broad categories, namely,

- formal policies with respect to land use and transportation, and
- priorities for capital investment in transportation (including preservation of existing assets).

One of the key distinctions between policies and investment priorities concerns their relative financial impacts. Many policies can be pursued independently of available funding whereas priorities for capital investment are somewhat irrelevant in the absence of funding commitments. Nevertheless, one cannot argue for funding assistance from senior levels of government or for powers to generate new revenues to be used for transportation without having some idea of the magnitude of the funds required. Moreover, both governments and their policies do change. For these reasons, present uncertainty about funding should not be used as an excuse for failure to establish priorities and funding needs or, for that matter, not to plan.

Since the vision presented here is essentially one of reduced automobile dependence, initially, these policies and priorities should focus on improving the attractiveness of public transportation throughout the City of Toronto. And, since changes occur incrementally, early action will serve as the bellwether of how likely the transportation system that eventually emerges actually corresponds to the vision statement itself.

In the near term, therefore, two types of in depth analysis should be carried out as the basis for improving the competitiveness of transit for many of the trips now taken by private automobile. These include short term *policy initiatives* and longer term *priorities for capital investment*.

The main policy initiatives concern first, improving transit from the standpoint of travel time and reliability for existing surface operations through more widespread application of transit priority schemes and second, increasing transit coverage in areas that now have less than acceptable access to TTC services by introducing new operators.

Surface Transit Priority

Even where transit service is accessible (for example, relatively short walking distances), travel time remains one of its most serious competitive disadvantages relative to the private automobile. Transit vehicles, after all, stop frequently to load and unload passengers and, depending upon the density of traffic, waiting time at stops can also be a significant deterrent to transit use. Less frequent stops, of course, can reduce travel time for some passengers at the expense of reduced convenience for others. Optimization of stop spacing and frequency of service thus involves balancing these tradeoffs, as well as their cost implications, a subject that has long been of major importance to those responsible for service planning within the TTC.

Other sources of transit delay derive from operation in mixed traffic, particularly under congested conditions. High occupancy vehicle and/or reserved transit lanes do offer some relief but, by and large, most delays occur at intersections which may be blocked by cross street traffic or automobile turning movements. The cumulative effect over a long route may increase passenger travel time by 15 or 20 minutes. Lower average speeds also increase the TTC's operating costs and capital investment in vehicles, basically leading to poorer service at higher cost.

In such cases, there is little justification for allowing a single occupant \$20,000 vehicle turning left to force a \$2.5 million streetcar with 40 or 50 passengers to sit through one complete traffic light sequence.¹¹ Yet it happens day in and day out almost everywhere on the TTC network of surface operations. Admittedly, in recent years, applications of transit priority measures such as exclusive lanes and turn prohibitions have become more common. By and large, however, particularly in view of the uncertainty about funding for rapid transit expansion, *more aggressive application of these policies will be required if the goal of improved transit competitiveness on an area wide basis is to be achieved, consistent with the vision statement.*

Ensuring transit vehicle priority at intersections by prohibiting, say in the case of streetcar routes, left turns by cars and trucks, clearly creates inconvenience for auto users, and dedication of truly exclusive transit lanes would require the elimination of substantial on street parking. But that is the true difference between meaningful policy and rhetoric. *Improved transit competitiveness, realistically, can only be achieved at some 'cost' to other road users.*

Achieving political support for policies of this nature does require demonstration of the benefits to be achieved with respect to higher transit ridership and lower TTC costs, as well as an objective assessment of the true inconvenience imposed on other road users. Any analysis of this sort, of course, will involve a number of value judgements that cannot necessarily be quantified. Nevertheless, as a starting point, it would be useful to undertake an analysis of existing streetcar routes to:

- isolate and rank the points of highest delay along each route and major causes,
- estimate the cumulative savings in travel time, operating costs, and vehicle requirements that could be achieved by successively eliminating these causes of delay,
- identify the traffic engineering and parking changes required to achieve these benefits, and
- determine the negative impacts from the standpoint of other road users and businesses affected by the changes.

Streetcar routes have been singled out because of the high initial cost of vehicles. A pilot analysis of one of the King, Queen, College, or St. Clair streetcar routes would provide

¹¹ One recent study correctly cites an average speed of less than 14 kmh for streetcars in the downtown, but then erroneously jumps to the conclusion that building new exclusive streetcars routes is the only way to deal with the problem. *Toronto Star*, 4 December 1999.

further insight into the overall benefits of such transit priority treatment which could then be applied to other streetcar and high density bus routes. Getting more out of the existing system may, in fact, represent one of the most cost effective ways of increasing transit ridership and reducing automobile dependency. And, as noted earlier in this report, transit priority offers opportunities for significant economies of scale in the provision of transit service.

Alternative Transit Service Delivery

Aside from differences in travel time, poor accessibility is often another deterrent to transit use, particularly at the origin end of a trip (for example, to work or shopping) for individuals who might otherwise find transit convenient at the destination end. Typically, this situation occurs in lower density residential areas where long walking distances are involved or where existing transit service is too infrequent.

In such areas, the lack of adequate transit service derives in part from the nature of the TTC's cost structure (both operating costs and vehicle investment) which may not be well suited to these types of needs.¹² The mere suggestion of 'contracting out' to other operators, however, raises some fairly serious political flags, is certainly opposed by the TTC's own labour force, and is prohibited under current legislation.

Protectionist views notwithstanding, there may well be opportunities for engaging other operators with different cost characteristics and more appropriate equipment to serve these areas in ways that increase TTC ridership and reduce automobile dependence at no public cost. In other words, there is an untapped market for transit that would be prepared to pay supplementary fares to access the main TTC system, perhaps by mini-bus, perhaps by shared taxis. The unanswered question is just how significant that market might actually be.

Particularly in the light of experience elsewhere (both good and bad) with these types of integrated *joint* operations, examining opportunities for enriching the mix of transit services available in the City as another means of reducing automobile dependence appears to be a worthwhile undertaking at this time.

Clearly, the vision statement itself will have to be reflected in the overall transportation component of the Official Plan in terms of both a variety of *policies* such as transit priority and alternative transit delivery treated above, as well as *infrastructure priorities*. In this regard, the subject of rapid transit priorities requires special attention, specifically in terms of two areas of investigation. One concerns the use of existing railway rights of way; the second relates to short term rapid transit priorities that may have to be established even in advance of the final transportation plan.

¹² An analogous situation arises with other forms of commercial transportation. Long haul air carriers such as Air Canada, for example, have a cost and equipment structure that is not as well suited to short haul needs as can be offered by regional carriers such as Air Ontario even though there is a commercial relationship between the two.

Railway Corridor Opportunities

Interest in the possibilities for relocating railway operations so that existing railway corridors can be used for other public purposes such as transit, airport access, special truck facilities, or cycling is high on the agenda of many special interest transportation groups. Changes in logistics and physical distribution, opportunities for rail rationalization, as well as traditional railway markets suggest that under the right conditions, a number of railway corridors could become available for such purposes.

These opportunities, however, should be assessed from the standpoint of the *owners* to determine the level of compensation and other incentives that may be necessary to generate sufficient railway interest. Such assessments should be carried out *before* announcements of potential abandonments and sale. Realistic assessments of the likelihood of acquiring railway corridors is important for no other reason than as an alternative to other, possibly more costly, rapid transit routes being considered. Such assessments could also provide a basis for engaging the provincial and federal governments in innovative *capital* funding programs without necessarily requiring long term, continuing commitments.

Short Term Rapid Transit Priorities.

From the standpoint of both ridership and financial performance, Toronto's system of public transportation is the envy of comparable size cities throughout North America and elsewhere in the world. Yet, as illustrated earlier, in comparison with other major cities where it is possible to travel almost anywhere by rapid transit, Toronto's network of subways and commuter rail services have a more limited focus in terms of the range of origin-destination patterns effectively served by rapid transit.

The vision statement proposed in this report implies that general transit enhancements *on an area wide basis*, in combination with appropriate land use policies, are the most important means of improving transit competitiveness and reducing automobile dependence (and ownership) throughout the City. Thus, despite the current uncertainty about transit funding, it is incumbent upon the City to reach *early* consensus on a variety of investment priorities related to both preservation of the existing system and future expansion in order to develop:

- a rationale for community and political support related to overall aspirations for growth and development embodied in the Official Plan,
- a transportation component of the Official Plan that is compatible with other GTA transportation plans now being formulated by the GTSB and adjacent Regions,
- a strategy for generating needed funds over a realistic time frame, and
- an action plan for funding that may become available as a result of recently announced federal and/or provincial government initiatives.¹³

¹³ The federal government, for example, has already announced plans to initiate a new National Infrastructure Program early in 2001, modeled along the lines of the recent Canada Infrastructure Works Program.

In an era of limited and uncertain funding, justification for new rapid transit as part of the long range transit plan should be based on relative cost effectiveness in:

- achieving increased transit ridership and mode split,
- stimulating land development consistent with the goals and objectives of the Official Plan,
- contributing to achieving overall goals and objectives of major public policy initiatives such as redevelopment of the Waterfront and main street redevelopment, and
- creating operational benefits related to capacity, operating costs, and cost recovery performance.

Increasing transit ridership within the City for trips originating in the City, as well as elsewhere in the GTA, can probably best be achieved by improving *coverage* in those areas not well served by transit (generally speaking, in the West, Northwest, and Northeast) and increasing *connectivity* of various elements of the system in ways that make it easier to use transit for more than just centrally oriented travel. Major areas designated for revitalization and new development, such as the waterfront and port lands, should also have improved transit coverage and better connectivity with the rest of the transit system.

By way of illustration only, Figure 7.1 shows a number of shorter term rapid transit alternatives that might reasonably address the problems of coverage and connectivity noted above. Rapid transit planning activities related to the analysis of these types of alternatives should be integrated with planning activities of other agencies of the City, largely to ensure compatibility with the goals and objectives of the Official Plan and to avoid confrontational priority setting within the City administration. A common approach is also important in dealing effectively with adjacent municipal and regional governments bi-laterally and/or through the GTSB.

Moreover, given the Official Plan emphasis on ‘reinvesting in the City’, it is important to ensure comprehensiveness by not restricting analysis only to previously considered projects and by recognizing potential projects that may not have appeared in any formal proposals to date.

The overall approach is described in Figure 7.2. The key element here involves identifying the specific areas of change and areas of enhancement that will form the basis of the new Official Plan, indicating as well, the magnitude of the changes envisaged that are consistent with the City’s aspirations for growth and development. Formulation of alternative rapid transit elements is then guided by the need to serve these aspirations and to improve the connectivity of the entire system in ways that make public transportation more competitive on a more area wide basis. Short term priorities, possibly for one or two rapid transit projects will, of course, eventually be integrated into the overall process for establishing the longer range transportation component of the Official Plan.

Figure 7.1
Potential Short Term Rapid Transit Priorities

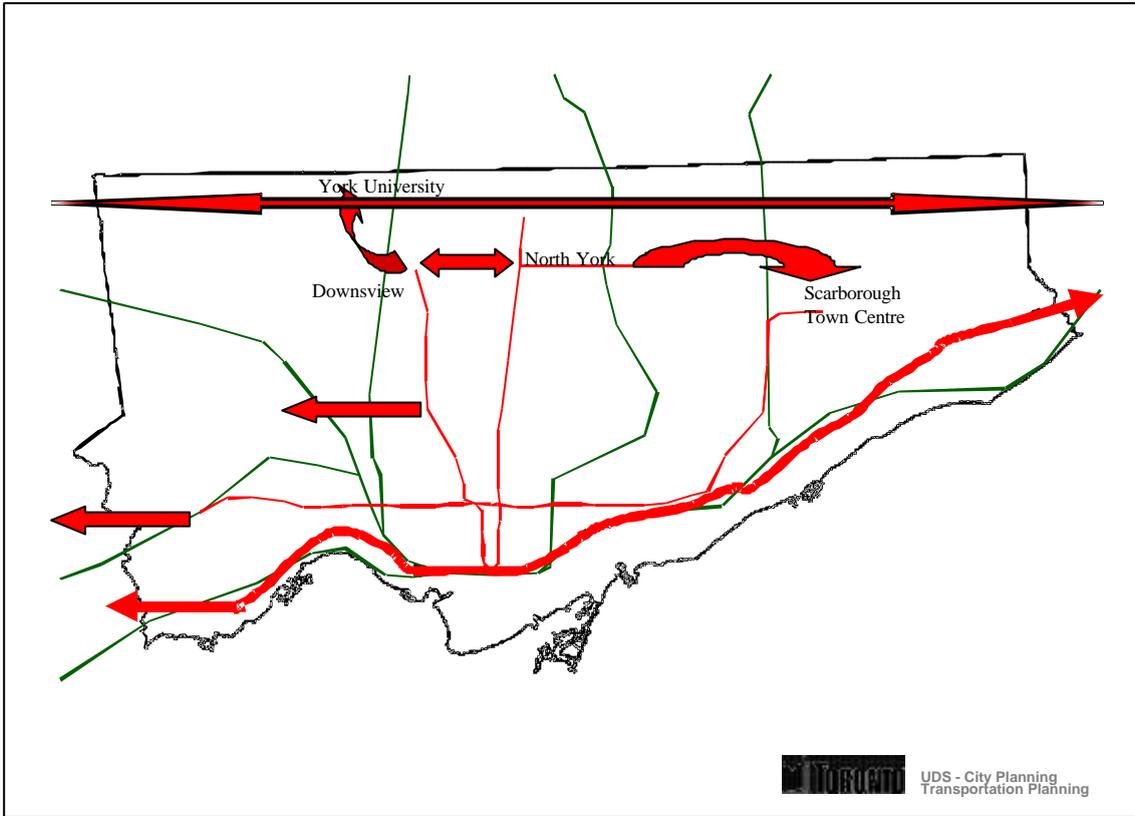


Figure 7.2
Approach for Establishing Short Term Rapid Transit Priorities

