The Impact of the Suburbanization of Employment on Transit Modal Share: A Toronto Region Case Study

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The Impact of the Suburbanization of Employment on Transit Modal Share: A Toronto Region Case Study

Abstract: This paper examines the impact that the suburbanization of employment has on transit mode share by focusing on the case of the Greater Toronto Area (GTA). The regional transportation planning agency Metrolinx has outlined its objectives as ‘Vision in Numbers’ in the regional transportation plan The Big Move. It is their vision that by 2031, on average one third of trips to work will be taken by transit. According to 2006 Transportation Tomorrow Survey data, the transit modal share for work-related trips for the Region is 19.5%. A business-as-usual scenario developed using Growth Plan projection for employment growth and transit-modal shares for work-related trips, forecasts that in twenty-five years the transit-modal share for work-related trips will be 14.5%, down from the 2006 figure of 19.5%. Therefore, two alternative scenarios are presented to counteract the negative impact that the suburbanization of employment will have on the transit-modal share for work-related trips, which are: (1) implement policies to influence the location of future employment development; and (2) provide ‘rapid transit’ to existing areas of employment growth. Both scenarios will have a positive impact on the transit-modal share for work-related trips; however, these scenarios must be pursued in tandem, as neither is sufficient by itself to achieve the work-trip transit mode share of the Metrolinx vision.
1. INTRODUCTION
Transit-oriented development (TOD) planning has generally been focused on the home side of the trip, envisioned as dense residential neighbourhoods with mixed-use retail development to maximize public transit use. This vision has seemingly ignored an even more important part of the TOD equation, that being the work destination - commercial development or areas of significant employment. Residential neighbourhood characteristics are of importance, but the degree to which they matter is highly dependent on where people are going.

Work related trips represent a significant portion of transit trips. According to 2007 statistics from the American Public Transportation Association, while work-related trips total just fewer than twenty percent of all trips by all modes of transportation, they are the largest category of trips by transit, comprising fifty-nine percent of total transit trips. Similarly, data from the 2006 Transportation Tomorrow Survey (TTS) for the Greater Toronto Area (GTA) found that forty-eight percent of transit trips are between work and home. Therefore, targeting work-related trips is a critical factor in a successful strategy to increase the transit modal share of a region. Or conversely, if transit is unable to connect people to their place of work, it will be unable to sustain its share of ridership in the future.

It is becoming increasingly difficult for transit to capture a significant share of work-related trips as employment has decentralized or suburbanized over the past few decades. Similar to the trend toward residential sprawl, employment development has increasingly occurred in low-density, dispersed, suburban locations. The decentralization of employment will have a significant impact on how transit agencies connect workers to their place-of-work.

Historically, many regional transit systems were designed in a “hub and spoke” pattern, focusing on moving residents to a single high-density employment center. However, growth of employment in suburban locations makes this transit system design no longer sufficient, as it will service a decreasing percentage of work places. Further compounding the problem is that suburban employment tends to be low-density and dispersed, making it difficult for transit agencies to efficiently service these locations. If transit agencies are unable to effectively connect workers to their place-of-work it will result in reduced ridership, contributing to increased congestion, negative impacts to the economy, environment and quality of life.

This paper will examine the impact that the suburbanization of employment has on transit mode share by focusing on the case of the GTA. The GTA has experienced the trend towards the suburbanization of employment over the past several decades with only 4% of the region’s total employment in 2006 located in its traditional Financial Core (1). The Region’s transportation planning agency Metrolinx has set its ambition that by 2031, on average one third of trips to work will be taken by transit. According to 2006 TTS data, the transit modal share for work-related trips for the GTA is 19.5%.

1 For the purposes of this paper the GTA or the region refers to the City of Toronto as well as the regions of Halton, Peel, York, and Durham. The Transportation Tomorrow Survey covers a larger geography than the GTA, however, data only data for these regions encompassing the GTA was examined.

2 This is found in the regional transportation plan the ‘Big Move’, under the section ‘Vision in Numbers’. This ambition covers all the geography that Metrolinx is responsible for, including the City of Hamilton, which is not included in this analysis.
To evaluate the impact that the suburbanization of employment will have on the transit mode share for the GTA, this paper will present a business-as-usual scenario utilizing Provincial employment projections and data from the TTS and Statistics Canada. This business-as-usual scenario will project the distribution of the Region’s employment in 2031 and its impact on the transit-mode share for work-related trips. This paper will also present two alternative scenarios that will illustrate how Metrolinx can arrive at its goal of one-third of work trips to be taken by transit in 2031.

2. LITERATURE REVIEW

Research on the topic of employment and transit has been recognized as increasingly important, since traditionally research and planning regarding TOD has been focused on the residential or origin aspect of the trip. Destination is a critical factor in the determination of transit use, as overall transit share from a given trip origin is strongly dependent on the destination. Arguably, residents choose to live in a TOD as a product of self-selection. That is, those with a lifestyle predisposition for transit-oriented living consciously sort themselves into housing in close proximity to transit stations. However, less is understood about the ridership impacts of working close to transit. Although there is no investigation specifically examining the relationship between employment and transit in the GTA, there is a select group of research that has concentrated on this topic in comparable regions. A vast majority of this work is from American think-tanks and academics including the Brookings Institute, the Public Policy Institute of California, and the University of California. This research has focused on three main topics: (1) travel behaviour, to demonstrate the importance of the destination side of the trip to transportation mode choice; (2) land use and office development, to determine factors influencing transit mode choice; and (3) industry types, to investigate whether this is a predisposition for certain industries to locate in high-density, transit-served locations. This enabled researchers to draw conclusions regarding the factors influencing work-trip transportation choice, as well as possible policy recommendations to increase transit ridership and better connect employment areas. The research on the relationship between employment and transit suggests that transit investments that connect large, high-density employment clusters are more likely to have a productive network. The key findings from the literature reviewed are as follows:

2.1 Travel Behaviour

The first category of research examining the importance of the destination side of the trip focused on studying travel behaviour. A study conducted by Robert Cervero in 2006 found that rail commuters use a variety of modes to arrive from their origin at home, to the transit stations (51% drove alone, 6% carpooled, 34% walked, 7% used local transit, and 2% used bicycle). However, a large majority (78%) arrived by foot at their workplace destination (2). This demonstrates that unlike the home end of the trip, where there are many options for accessing transit, generally, walking is the preferable option at the work end. This enables public transit to capture ridership from a variety of residential density options, while limiting service to primarily areas of high-density employment. A quote from Robert Cervero’s 2004 study summarizes this point.

“While a TOD residential location makes all employment destinations at other transit stations more easily accessible, a TOD work destination makes almost any residential location in the respective region transit accessible.” (3)
Walking as the primary form of transportation at the work-end of the trip highlights the importance of workplace proximity to transit to the transit modal share. It has been found that there is a strong negative relationship between work distance greater than half a mile from a transit station and transit ridership (2, 3, 4). Further, a study conducted by Jed Kolko in 2011 concluded that not only is transit ridership dependent on proximity, but that the distance commuters are willing to walk from the transit station is shorter on the work-end of the trip than the home-end of the trip (5). Given this information, the clustering of suburban workplaces around transit stations is necessary for a reasonable share of workers to use public transit as their transportation mode choice for commuting (6).

One primary deterrent to the use of public transit regardless of workplace proximity is the need to trip-chain or make midday trips. Trip chaining - the requirement to make multiple stops on the way to or from work- or midday trips outside of the workplace can negatively impact the use of public transit (6, 3, 4). Cervero 2006 found that thirty-five percent of workers he surveyed in office buildings in California’s largest metropolitan areas made intermediate stops. Those commuting by automobile were far more likely to trip-chain than transit commuters. The need to make multiple stops emphasizes the importance of land use, such as placing a mix of uses including child care and retail, in employment areas near transit stations to enable workers to consolidate trips ends and encourage public transit usage.

2.2 Land Use
It is evident from commuters’ travel behaviour that the urban form and land use, such as density, proximity, and a mix of uses in employment areas, are critical factors to increase the transit modal share in suburban environments. Research highlights three factors associated with workplace land use as influences on transit modal share for work-related trips: (1) employment density; (2) availability of free parking; and (3) a mixed-use environment.

Employment density or the concentration of workers in a given area is associated with beneficial impacts for transit ridership (8, 7, 6, and 5). Not only is employment density important to generating transit ridership, but research has found that the relationship between employment density and transit ridership is of higher importance than residential density and transit ridership. Kolko examined all metropolitan areas in the United States, and found that those with higher densities have higher transit ridership. However, of significant relevance to this area of research, the magnitude of the relationship between employment density and transit ridership is twice as large as that between residential density and transit ridership (5). Further, employment densities of 50-100 workers per acre have been found to support a light rail transit system, even when surrounded primarily by low-density residential units (9, 8). Therefore, increasing the size and density of work locations, at least beyond some minimum threshold, will increase the likelihood of transit use, even if the residential density does not change at all.

Areas with high-employment densities have the potential to greatly increase transit modal share. This is especially the case when transit and municipal officials coordinate their efforts to address land use factors with proven transit benefits. A primary land use factor to be considered is the reduction or elimination of access to free parking. A study by Lund, Cervero, and Wilson in 2004 conducted surveys of travel behaviour along each of California’s major urban rail systems, and collected detailed data on site and
neighbourhood factors to determine how urban form can potentially affect public transit usage. It was found that the Sacramento TOD had the lowest level of free parking (24.6 percent) and also had the highest level of transit use (29 percent), while San Diego Mission Valley sites had the highest level of free parking (82.9 percent) and the lowest level of transit use (1.0 percent). The availability of free parking skews commuters’ transportation decision-making process, as the cost of transit may be greater in comparison to using a private vehicle. Employers providing free parking are subsidizing the use of the automobile, rather than supporting alternative transportation plans. Even if a commuter is a TOD resident, they are less likely to use transit if there is good job accessibility via highways, if they can park for free at their workplace, or if their employer helps to pay vehicle expenses (3). Reducing the abundance of free surface parking that is commonly found in suburban office parks is a necessary condition to make substantial improvements to the transit modal share.

Finally, integrating a mix of uses such as child care centres and retail in employment areas will have positive impacts on transit mode share, as it will address the challenge of trip-chaining and create a transit inductive environment. Incorporating a mix of uses such as street-level retail can be utilized as a method to improve the pedestrian-orientation of a neighbourhood. Access to neighbourhood amenities from workplace location reduces the need for an automobile to make intermediate stops to or from work. Compared to workers in their surrounding region, office workers in transit-supportive developments that contain a mix of uses are more than three-and-a-half times as likely to commute by transit (3). Other pedestrian-oriented design that is associated with increased transit use includes higher intersection density, street lighting, landscaping, and bicycle and walking paths (4, 3). In order to achieve a mix of uses and transit-supportive development it is necessary to first achieve medium to high employment densities, and reduce surface parking. Surface parking inherently reduces the density of TOD, and often increases the distance from the transit station to the workplace as workers are forced to cross large parking lots.

2.3 Industry Predisposition
The final area of research that examines the relationship between employment and transit is whether certain industries are predisposed to locate in transit-supportive areas. This body of research is important because it enables government policy to understand which industries to engage with when attempting to create TOD. There are many considerations affecting a firm’s location decision. These include land/building prices and availability; proximity to production inputs, to customers, and to complementary firms; neighbourhood amenities and support services, and a host of other factors. Therefore, transit access may be a secondary amenity. However, for a growing number of firms labour may be the most critical input into operations and, consequently, access to a talented, high-skilled labour force is of critical importance. A central location near transit may be essential to maximizing the ability to draw from this labour pool. Policies to encourage development in transit-supportive areas should identify and target these sectors, as they will likely result in the greatest benefit to the transit modal share.

3. CASE STUDY: THE TORONTO REGION
The GTA, located in southern Ontario, is Canada’s largest urban region. It is also one of North America’s fastest growing regions with an anticipated population growth of
2.6 million people and 1.3 million jobs between 2001 and 2031 (11). A study conducted by Metrolinx, a provincial government agency responsible for managing road transport and public transportation for the Greater Toronto and Hamilton Area (GTHA), concluded that in 2006 the annual cost of congestion in the region was $3.3 billion (12). To address this growing concern, in 2008 Metrolinx released The Big Move, a regional transportation plan intended to provide effective transit and transportation solutions for the GTHA. The Big Move is the third component of the Places to Grow Act, a three-part approach by the Ontario government to manage growth and sustainability for the region. It builds on the Greenbelt Plan, which protects more than 1.8 million acres of environmentally sensitive and agricultural land, and the Growth Plan for the Greater Golden Horseshoe, which manages population and job growth, with the intention to curb urban sprawl.

The Big Move’s vision for work-related trips is that by 2031, one-third of these trips are made by transit. In order to achieve this vision, the plan identifies a full package of strategies, including an ambitious 25-year program of transit infrastructure improvements, including rapid transit lines (subway, light rail transit, bus rapid transit, and express/regional rail). The plan’s modelling, based on the Growth Plan’s land use forecasts, projects a work-trip transit mode share of 26% at the 25 year horizon.

The GTA has experienced a trend towards the suburbanization of employment over the past several decades, with only 4% of the Region’s total employment in 2006 located in its traditional Financial Core. This trend has been documented for some time. In the past decade Statistics Canada has produced two reports speaking to employment trends in Canadian Metropolitan Areas (CMAs). In 2001 Where Canadians Work and How They Get There concluded that the majority of employment growth has occurred in suburban municipalities in most census areas. This was followed up by the 2005 report Trends and Conditions in Census Metropolitan Areas: Work and Commuting in Canada Metropolitan Areas 1996-2001, which found that “the landscape of where people work is changing” (Heiz & LaRochelle, 2005, p. 5). This report highlighted that the suburbanization of office development places added stress on urban infrastructure, with significant increases in traffic as well as increases in demands for public transit systems. Looking specifically at the Toronto area, census data found that an additional 208,300 workers commuted to locations more than 20km from the city centre in 2001 than in 1996, and nearly 90% of these workers commuted by car (Heiz & LaRochelle, 2005, p.6).

3.1 Business-as-usual Scenario
The suburbanization of employment in the GTA will have a significant impact on the region’s transit modal share for work-related trips, as evidence from the literature review indicates, suburban employment locations are much more difficult to efficiently service with public transit. To evaluate the impact that this trend will have on future work-related trip transit mode share, this paper will present a business-as-usual scenario for the distribution of employment growth over the next twenty-five years. Additionally, this paper will present two alternative scenarios to counteract the negative impact the suburbanization of employment will have on the transit-modal share for work-related trips for the region, which are: (1) implement policies to influence the location of future employment development; and (2) provide ‘rapid transit’ to existing areas of employment. Both scenarios will have a positive impact on the transit-modal share for work-related trips, but will require the dedication of a considerable amount of resources.
It is important to note that these scenarios are not considered forecasts but were created simply using the trends in employment distribution and current transit modal share data, to extrapolate what a future scenario may look like. Their intent is to illustrate the degree to which the current trend in employment growth will affect transit mode share in the future. The scenarios do not specifically address the extent to which Metrolinx’s planned investment in transit expansion projects, or municipal Official Plans in compliance with the provincial Growth Plan will impact future transit modal share.

To examine the impact that the suburbanization of employment will have on transit viability for the GTA, the paper will examine four distinct sub-markets (see Figure 1 below): (1) Toronto’s Financial Core, which is bounded by Yonge Street to the east, Simcoe St to the west, Queen Street to the north, and the Lake Ontario shoreline to the south; (2) Toronto’s transit-supportive sub-market, which encompasses employment within in 500 metres of high-order transit within the City of Toronto, excluding the Financial Core; (3) the City of Toronto non-transit supportive sub-market, which includes all employment in the City of Toronto, excluding the sub-markets 1 and 2; and (4) the suburban non-transit-supportive sub-market, which includes all employment in the municipalities of Peel, Halton, York, and Durham region. Together these four sub-markets will be referred to as the Region. For the purposes of this paper data was extracted from Statistics Canada, the Transportation Tomorrow Survey, and the Growth Plan for the Greater Golden Horseshoe to examine these sub-markets exclusively. Data presented represents the GTA defined as the City of Toronto, as well as the regions of Peel, Halton, York, and Durham.

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3 Higher-order transit in this case is subway trains and regional trains that offer two-way all day service.
According to 2006 data from the Transportation Tomorrow Survey, in a 24-hour period, for trips destined to work, the transit modal share in each sub-market is: (1) 70.9% for the Financial Core; (2) 50.0% for the Toronto transit-supportive sub-market; (3) 21.3% for the Toronto non-transit supportive sub-market; and (4) 4.8% the suburban sub-market.

Office employment is particularly important to increasing the transit modal share, as it is a high-density form of employment, whose functionality compliments TOD. Other forms of employment such as institutions (hospitals, and universities etc) are also well served to be housed close to transit. This is in contrast to primarily industrial types of employment, which are better served by locating near highway interchanges for goods movement requirements. The GTA housed 1 million office jobs in 2011, or one-third of the Region’s employment (Canadian Urban Institute, 2011). A report conducted by the Neptis Foundation entitled The Urban Growth Centres Strategy examined the growth of office employment in relation to four Urban Growth Centres (UGCs) as identified in the Growth Plan for the Greater Golden Horseshoe. These four locations in existing urbanized areas have been planned for several decades as urban sub-centres, and candidates for employment concentrations within the cities of Toronto and Mississauga.
These UGCs are also identified as Mobility Hubs\(^4\) under *The Big Move*. It was found that three UGCs (refer to map in Figure 1), Yonge-Eglinton, Scarborough Town Centre, and Mississauga City Centre, have experienced a total absence of office development since 1995, with North-York Centre also experiencing pronounced stagnation in the past decade. The report concluded that overall the GTA has experienced a deceleration in office development, and where growth is occurring there is increasing preference for dispersed rather than concentrated, high-density locations.

These conclusions were supported by the Canadian Urban Institute’s 2011 report entitled *Congestion Rising*, which found that the City of Toronto and transit accessible locations were no longer attracting employment growth. In the 1980s and 1990s there was an unprecedented amount of growth in office space that significantly altered the office geography of the region. During this time, although a significant amount of growth occurred in the Financial Core and other transit-friendly locations adjacent to the Yonge subway such as North York Centre, over 20 million square feet of office development was built in scattered locations across the GTA, the equivalent of 80,000 to 100,000 jobs (Canadian Urban Institute, 2011, p.21).

The sustained growth of office development came to a sudden halt during the recession of the early 1990s. Between 2000 and 2010 new developments appeared in locations with good highway access in the suburb of Mississauga. Toronto’s Financial Core experienced a resurgence of office growth since 2005, with six new buildings added to the sub-market (Canadian Urban Institute 2011, p.23). Although the significant growth that occurred in the Financial Core can be seen as a shift away from the suburbanization trend of the past decades, it is too soon to predict whether the growth of office employment in Toronto’s downtown can be sustained, as much of the space was made available in a single year (Canadian Urban Institute, 2011, p. 23). According to data from Statistics Canada, the peripheral municipalities in the Toronto area experienced a 12.9 percent growth rate in workers between 2001 and 2006, whereas the City of Toronto remained stagnant at a 0.7 percent growth rate.

The Places to Grow Act’s Growth Plan for the Greater Golden Horseshoe (the Growth Plan) provides the Province with population and employment projections for long term planning till 2031. According to employment projections by the Growth Plan, the GTA employed 3.4 million people in 2011, with 45% of those jobs located in the City of Toronto and the remaining 55% located in the peripheral municipalities. The Growth Plan forecasts that GTA employment will grow to 4 million jobs by 2031, with 77% of that growth occurring in the suburban municipalities.

To calculate the business-as-usual scenario this paper used the employment forecasts from the Growth Plan. The Growth Plan projects that employment in the Region will be 4.3 million in 2031. These projections are broken down by municipality. The suburban non-transit supportive sub-market is calculated using the sum of projected employment for each municipality within the sub-market. The remaining three sub-mar-

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\(^4\)“Mobility hubs consist of major transit stations and the surrounding area. They serve a critical function in the regional transportation system as the origin, destination, or transfer point for a significant portion of trips. They are places of connectivity where different modes of transportation – from walking to biking to riding transit – come together seamlessly and where there is an intensive concentration of working, living, shopping and/or playing.” Metrolinx
markets located in the City of Toronto are calculated using Growth Plan forecasts, assuming that they will maintain the same ratio as their current distribution of employment. Therefore, Table 2 estimates that in 2031 59% of all employment will be located in the suburban municipalities.

**TABLE 2 Projected Distribution of Employment across the sub-markets**

<table>
<thead>
<tr>
<th>Sub-Markets</th>
<th>Employment 2001</th>
<th>% of Region</th>
<th>Employment 2006</th>
<th>% of Region</th>
<th>Employment 2031</th>
<th>% of Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial core</td>
<td>128,667</td>
<td>5%</td>
<td>118,674</td>
<td>4%</td>
<td>145,000</td>
<td>4%</td>
</tr>
<tr>
<td>City of Toronto transit supportive</td>
<td>318,202</td>
<td>13%</td>
<td>335,506</td>
<td>13%</td>
<td>410,000</td>
<td>10%</td>
</tr>
<tr>
<td>City of Toronto non-transit supportive</td>
<td>892,659</td>
<td>36%</td>
<td>884,614</td>
<td>33%</td>
<td>1,085,000</td>
<td>27%</td>
</tr>
<tr>
<td>Suburban municipalities non-transit supportive</td>
<td>1,161,610</td>
<td>46%</td>
<td>1,338,752</td>
<td>50%</td>
<td>2,390,000</td>
<td>59%</td>
</tr>
<tr>
<td>Total Employment</td>
<td>2,501,138</td>
<td>100%</td>
<td>2,677,546</td>
<td>100%</td>
<td>4,030,000</td>
<td>100%</td>
</tr>
</tbody>
</table>

The migration of employment to non-transit supportive areas in the suburban municipalities will have a significant impact on the transit-modal share for work-related trips for the Region. Taking the transit-modal share from 2006 TTS data for each sub-market, Table 3 calculates a potential Regional transit modal share for work-related trips in 2031 using the employment distribution established in Table 2. In this business-as-usual scenario, the transit-modal share for work-related trips for the Region will be 16.2%, down from 19.5% in 2006.

As the suburban municipalities gain a larger share of the Region’s employment, their transit modal share for work-related trips of 4.8% will have a proportionally stronger impact on the Region’s overall transit-modal share. Therefore, it is necessary to pursue alternative scenarios that will both seek to increase the transit-supportive sub-markets’ share of the Region’s employment and improve the suburban municipalities’ transit modal share.

**TABLE 3 Projected 2031 Regional Transit Modal Share for Work-Related Trips**

<table>
<thead>
<tr>
<th>Sub-Markets</th>
<th>Employment 2031</th>
<th>2006 Transit Modal Share</th>
<th>Transit Riders in 2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Core</td>
<td>145,000</td>
<td>70.9%</td>
<td>102,805</td>
</tr>
<tr>
<td>City of Toronto transit-supportive</td>
<td>410,000</td>
<td>50%</td>
<td>205,000</td>
</tr>
<tr>
<td>City of Toronto non-transit supportive</td>
<td>1,085,000</td>
<td>21.3%</td>
<td>231,105</td>
</tr>
<tr>
<td>Suburban non-transit supportive</td>
<td>2,390,000</td>
<td>4.8%</td>
<td>114,720</td>
</tr>
<tr>
<td>GTA</td>
<td>4,030,000</td>
<td>19.5%</td>
<td>653,630</td>
</tr>
<tr>
<td><strong>2031 Regional Transit Modal Share</strong></td>
<td><strong>4,030,000</strong></td>
<td><strong>16.2%</strong></td>
<td><strong>653,630</strong></td>
</tr>
</tbody>
</table>
3.2 Alternative Scenarios
This section will explore two alternative scenarios that can be pursued to counteract the negative impact that the suburbanization of employment will have on the transit-modal share for the GTA. These are: (1) implement policies to influence the location of future employment development; and (2) provide ‘rapid transit’ to existing employment areas. The alternative scenarios were created using the projections established for the business-as-usual scenario.

3.2.1 Implement Policies to influence the location of future employment development
In a business-as-usual scenario, where the majority of employment growth occurs in suburban locations, the transit modal share for work-related trips in the GTA will decline from 19.5% in 2006 to 16.2% in 2031. The decrease in transit-modal share is a direct result of the suburban non-transit supportive sub-market gaining a significant share of the projected employment growth by 2031. Therefore, for the GTA to increase its transit-modal share for work-related trips, the transit-supportive sub-markets must receive a greater portion of the projected employment growth. Table 4 lists possible transit-modal shares for work-related trips for the Region in 2031 if the transit-supportive sub-markets (the Financial Core sub-market, City of Toronto transit-supportive sub-market, and future suburban transit-supportive hubs as a result of planned Metrolinx transit expansion projects) receive a larger percentage of the forecasted 1.3 million new jobs for the GTA. These scenarios also could be achieved if a similar level of transit quality and use were expanded to new geographic areas beyond the current reach of the subway.
Table 3 indicates that in order for Metrolinx to achieve its vision for work-related trips, the transit-supportive sub-markets (including new areas created by the expanded rapid transit network) must attract 100% of the GTA’s projected employment growth. This is largely a result of the fact that in 2006 the suburban municipalities already accounted for half of the Region’s employment. In fact, for the GTA to maintain its transit-modal share for work-related trips of 19.5%, the transit-supportive sub-markets must receive 20% of the projected employment growth by 2031, which is approximately 260,000 jobs or more than tripling the size of the Financial Core. Directing the 1.3 million new jobs exclusively to the transit-supportive sub-markets would require a complete reversal of the current employment trend that the GTA has been experiencing. This is a highly unlikely scenario, as many types of employment, such as heavy industrial, logistics, and manufacturing, which can require large areas of land and quick access to highway interchanges for goods movement, are not suitable for transit-supportive locations. Nevertheless, if the transit-supportive sub-markets are able to attract any percentage of the expected employment growth over the next twenty-five years it will have a positive impact on the GTA’s transit modal share for work-related trips.

4.2 Provide “rapid transit” to existing areas of employment

A second strategy that can be pursued to increase the GTA’s transit-modal share for work-related trips is to improve the suburban municipalities’ transit use. This would require expanding and improving transit quality to the level of “rapid transit” for both

<table>
<thead>
<tr>
<th>Sub-Markets</th>
<th>Business-As Usual</th>
<th>20%</th>
<th>50%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Employment</td>
<td>Transit Share</td>
<td>Transit Riders</td>
<td>Employment</td>
</tr>
<tr>
<td>Transit-Supportive</td>
<td>555</td>
<td>56%</td>
<td>308</td>
<td>56%</td>
</tr>
<tr>
<td>City of Toronto non-transit supportive</td>
<td>1085</td>
<td>21%</td>
<td>231</td>
<td>21%</td>
</tr>
<tr>
<td>Suburban non-transit supportive</td>
<td>2390</td>
<td>4.8%</td>
<td>115</td>
<td>4.8%</td>
</tr>
<tr>
<td>GTA</td>
<td>4030</td>
<td>654</td>
<td>4030</td>
<td>789</td>
</tr>
<tr>
<td>Projected Regional Transit Modal Share 2031</td>
<td></td>
<td>16.2%</td>
<td>19.5%</td>
<td>24.5%</td>
</tr>
</tbody>
</table>

Table 3 The Impact of Employment Growth in Transit-Supportive Areas on the Regional Transit Modal Share for Work-Related Trips in 2031 (in 000s)
existing and future areas of employment in suburban municipalities. Table 4 illustrates the projected regional transit-modal shares for work-related trips in 2031 if the suburban sub-market improves its transit-modal share.

**TABLE 4: The Impact of Increasing the Suburban sub-market’s Transit Modal Share on the Region’s Transit Modal Share for Work-Related Trips in 2031 (in 000s)**

<table>
<thead>
<tr>
<th>Sub-Marks</th>
<th>Alternative Scenarios for Transit-Modal Share for Work-Related Trips for the Suburban Sub-Market (figures in 000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2031 Projected Employment</strong></td>
<td></td>
</tr>
<tr>
<td>Financial Core</td>
<td>Business-as-usual 4.8%</td>
</tr>
<tr>
<td>Toronto Transit- Supportive</td>
<td>145</td>
</tr>
<tr>
<td>Toronto Non- Transit Supportive</td>
<td>410</td>
</tr>
<tr>
<td>Suburban non- Transit Supportive</td>
<td>1085</td>
</tr>
<tr>
<td>GTA</td>
<td>2390</td>
</tr>
<tr>
<td>GTA</td>
<td>4030</td>
</tr>
<tr>
<td><strong>Suburban sub-market work-trip transit mode share</strong></td>
<td></td>
</tr>
<tr>
<td>Transit Riders</td>
<td>Financial Core</td>
</tr>
<tr>
<td>Toronto Transit- Supportive</td>
<td>205</td>
</tr>
<tr>
<td>Toronto Non- Transit Supportive</td>
<td>231</td>
</tr>
<tr>
<td><strong>Suburban Non- Transit Supportive</strong></td>
<td>114</td>
</tr>
<tr>
<td>GTA</td>
<td>653</td>
</tr>
<tr>
<td><strong>Regional Transit Modal Share</strong></td>
<td>16.2%</td>
</tr>
</tbody>
</table>

Table 4 shows that in order for Metrolinx to achieve its objective of 33% transit mode share for work-related trips, the suburban municipalities would need to improve their transit modal share from 4.8% in 2006 to 33% in 2031. In fact, for the GTA to maintain its current transit-modal share for work-related trips of 19.5% in 2031, the suburban municipalities would need to achieve a transit-modal share of approximately 10%. Achieving a transit modal share of 10% or higher is a realistic goal for the suburban municipalities to achieve in 2031. The City of Toronto non-transit supported sub-market in 2006 had a transit-modal share for work-related trips of 21.3%. This sub-market represents segments of the City of Toronto that are not connected to higher-order transit, but are primarily serviced by bus. It is reasonable to assume that suburban municipalities,
with the investment in transit expansion projects planned in *The Big Move* and with improved service quality and outreach, could arrive at a transit modal share similar to the City of Toronto non-transit supportive sub-market. However, this would require that rapid transit development is carefully planned to serve as much as possible of the emergent suburban employment.

4. POLICY IMPLICATIONS

Tenants have largely driven growth in the suburban markets by seeking out low cost, readily available, highway accessible locations (13). In the decade following the recession of the 1990s, the major driver of development decisions shifted to tenants, with investors no longer willing to invest in projects without the guarantee of a major tenant lease signed prior to construction. Of the 360 buildings constructed in the Region in the last ten years, only 15 proceeded with less than 60% of space pre-leased prior to construction (14). This marked the end of the traditional “risk model” of development, whereby construction of large amounts of office space occurred on a speculative basis. Therefore, policies to attract employment growth in transit-supportive areas must understand the locational criteria of major tenants to cater to their business needs.

One strategy that could be pursued to influence the location of employment growth is to enact policies that address the barriers to developing in transit-supportive areas. This may include providing “carrots” for tenants and developers in land adjacent to transit station areas to level the playing field with lower cost greenfield locations, and/or “sticks” to discourage development in non-transit supportive locations. Possible policy options could include: prioritizing the development review approval process for transit-supportive employment locations; protecting lands adjacent to transit station areas for office or employment development; harmonizing the commercial tax rates for the Region; financial incentives; and coordinating provincial transit infrastructure investment with municipal land use planning to improve the urban form.

Strengthening policies to attract future employment growth to transit-supportive areas is an important strategy to ensure that GTA develops in a manner consistent with the goals of *The Big Move*. However, it is unreasonable to assume that the transit-supportive submarkets will capture 100% of the anticipated 1.3 million new jobs. That is why it is necessary to also explore an alternative scenario in which transit is expanded and improved in suburban locations.

A second strategy is to increase the transit-modal share of suburban employment areas by providing ‘rapid transit’ quality service to emergent employment areas in suburban municipalities. Where possible, design of planned Light Rail Lines would provide effective service to these areas. Alternatively, Bus Rapid Transit (BRT) can be focussed on suburban employment areas: it can be introduced quickly and at a low cost; its capacity aligns with the densities found in suburban locations; express services can be tailored to specific markets; and it allows for flexibility. To make either of these services convenient, quick and well-serviced it will require most of the employment buildings to be located in close proximity, so that commuters can reasonably walk to their building from one of a small number stops.

Statistics Canada provides information regarding employment clusters. A primary employment cluster contains employment of greater than 10,000 jobs in a census metropolitan track (CMA) and an employment cluster contains employment of greater
than 5000 jobs in a CMA. Primary and employment clusters in the GTA would be good candidates as areas to target for increased transit service over the next twenty-five years. Further analysis is required to determine whether the density of the primary employment clusters can support improvements to the transit service and quality, and if they have the potential to develop into a transit-supportive environment.

Higher density employment centres are often appropriate places to consider introducing other types of land uses in order to create a mixed-use transit district with a variety of amenities (10). Tysons Corner, Virginia is a jurisdiction that is investing in connecting a major suburban employment centre to their regional transit network, coupled with a Master Plan to transform the area’s land use into a transit-supportive environment. Tysons Corner is located near major highway interchanges and is highly automobile-oriented in its urban form. It has twenty-seven million square feet of office space, six million square feet of retail space, and 115,000 employees. This employment centre is only slightly smaller than all the office space found in Toronto’s Financial Core. However, it houses only 17,000 residents, and is far away from the regional rapid transit network. While demand for office space remains strong, traffic congestion has become an obstacle to future intensification. To address this challenge, the Metrorail’s Silver Line is planned to be expanded to service this suburban employment location, with four Metro stations planned to be opened by 2014. Coordinated with the transit expansion project is the introduction of a Master Plan intended to reinvent the district into a mixed-use TOD by encouraging housing development and enhancing transit access. If Tysons Corner is successful at increasing the transit modal share of work-related trips through its transit expansion project coupled with TOD focused land-use planning, it is a strategy that could be replicated in the GTA.

A final strategy to increase the transit-modal share for work-related trips in the suburban municipalities is to provide transportation demand management programs to reduce the dependence on the automobile. This strategy is especially important for employment areas that do not have the minimum density thresholds to support transit themselves. Bishop’s Ranch in San Ramon California is an example of the resources required to achieve substantial increases in the transit modal share, and reductions in the use of single-occupancy vehicles in a low-density suburban office development. The office park is located twelve miles from the closest Bay Area Rapid Transit (BART) station. It was previously a green-field, developed in 1978. When the office park was first built it was simply too far from anywhere, and thus having difficulty competing with office developments in other suburbs that located closer to BART stations. As a strategy the owner of the development purchased a fleet of buses and worked with the city and county transit agencies to subsidize both bus routes and bus passes for workers. There are now 13 bus routes running to the office park, with connections to BART and various local train and express bus services are coordinated. Today the office park houses 30,000 employees. It provides free express bus connections to BART, free bus passes for local transit, 50% off the first two months of ACE train, personalized commute planning assistance, vanpool and carpool initiatives, and premium parking spots for hybrid vehicles. As a result of the extensive resources dedicated to create a culture of public transit, Bishop’s Ranch boasts that it has eliminated 10,000 cars from the roads daily, saved fifteen million gallons of gasoline, and reduced the proportion of single-occupancy vehicles to 40%. This is an example of the resources necessary to achieve a significant
reduction in the use of single-occupancy vehicles to commute to a workplace in a suburban context.

5. CONCLUSION

The GTA example illustrates the challenge in maintaining or increasing transit mode share in the face of increasing suburbanization of employment. The growth in employment outside the city centre may place stress on public transit systems which may struggle to provide adequate and competitive commuting services to these decentralized locations. In a business-as-usual scenario, where the majority of employment growth occurs in suburban locations, the transit modal share for work-related trips in the GTA will decline from 19.5% in 2006 to 16.2% in 2031. The decrease in transit-modal share is a direct result of 84% of employment growth projected to locate in the suburban municipalities that have a transit-modal share of 4.8% by 2031. Two alternative scenarios, representing the two sides of a transit policy planning coin, were presented as strategies that can be pursued to increase the Regional transit-modal share for work-related trips in 2031. The first scenario focuses entirely on managing and directing future employment growth, whereas the second scenario focuses entirely on providing high-quality transit to existing areas of employment. However, neither scenario will be sufficient on its own to reach one-third of work-related trips be made by transit.

Therefore, to sustain or increase the transit modal share in the GTA in the face of suburbanization of employment, it is necessary to both: (1) implement policies to influence the location of future employment growth; and (2) provide ‘rapid transit’ quality service to existing employment areas.
References


10. The Centre for Transit Oriented Development (2011) “Transit Oriented Development (TOD) and Employment”.


