



CITY OF BRAMPTON TRANSPORTATION MASTER PLAN UPDATE

TECHNICAL REPORT #3 - EXISTING TRANSIT CONDITIONS

AUGUST 2015



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1. INTRODUCTION

Brampton Transit, the transit agency serving the City of Brampton, has experienced significant ridership increases and service expansion in recent years. Since the last Transportation and Transit Master Plan (TTMP) in 2009, there has been a 49% increase in transit ridership. Growth in transit has exceeded the 20% growth in population that has been realized in the same timeframe resulting in an improved per capita ridership.

The increase in transit ridership comes with the improvements in the provision of transit services, particularly the ZUM corridor implementation and associated route structure and improved service frequencies. The forecast growth in population and employment from 2011 to 2031 will have a further impact on transit service delivery in that there will be a need for transit to play a greater role as part of the overall transportation system. In particular, the limited available growth in auto roadway capacity will result in the need for people to find alternative modes of travel.

This report documents the current transit conditions within the City of Brampton. The existing service structure along with the route frequencies and rolling stock is presented in the following sections. As well, the analysis reviews the historic transit performance trends to evaluate growth in transit ridership, operating expenses and service /route efficiency.

2. DEMOGRAPHICS

2.1 Population and Employment

With a population of over 520,000, Brampton is the ninth largest city in Canada, fourth largest in Ontario, and third largest in the GTA. The existing 2006 and 2011 population and employment for the City of Brampton are presented in Table 2-1. Since the last update to the Official Plan, there have been significant changes in the City. Not only has the population increased by approximately 90,100, the number of households has increased by 23,900, translating into a tremendous amount of development in the City over the five year period. The number of jobs also increased between 2006 and 2011 by 27,200. The growth in Brampton has been significant over the last ten years and rapid growth is forecast to continue, which will require improved access to all modes of transportation, particularly transit, to ensure that the quality of life is maintained for the new and existing residents.

Table 2-1 – Brampton’s Existing Population and Employment Growth

	2006	2011	Growth
Population	433,800	523,900	+ 90,100 (+20.8%)
Housing	130,800	154,700	+23,900 (+18.2%)
Employment	154,800	182,000	+27,200 (+17.6%)

Source: 2006 and 2011 Census



The City of Brampton is expected to grow considerably between 2011 and 2031. As shown below, the population is expected to increase by 61% (approximately 300,000 additional people) and employment by 60%, adding 100,000 jobs over the next 20 years.

Table 2-2 – Brampton’s Planned Five Year Incremental Growth

	2016	2021	2026	2031
Population	627,500	701,600	771,300	842,800
Housing	166,600	188,600	203,800	217,000
Employment	207,800	238,100	264,000	291,400

Source: City of Brampton, TAZ projections (population and employment) and Economic Development

2.2 Land Use and Population Distribution

2.2.1 Age Distribution

The City of Brampton is a young city, with the median age of the population in 2011 being the youngest of all the large cities in Canada. The median age in 2011 was 34.7 years, up from 33.7 in 2006 and 32.9 in 2001. This compares with 38.6 years for the City of Toronto.

The age distribution in the City of Brampton between 2001 and 2011 is shown in Table 2-3 and indicates that there was a decrease in the percentage of children under the age of 10 as well as in the number of adults between the ages of 20 and 39 in this period. While Brampton does not face the challenges of an aging population to the extent that many Canadian cities do, the 75+ age group grew by more than 100% over the last ten years. This signifies the need for increasing focus on accessibility for the transit system.

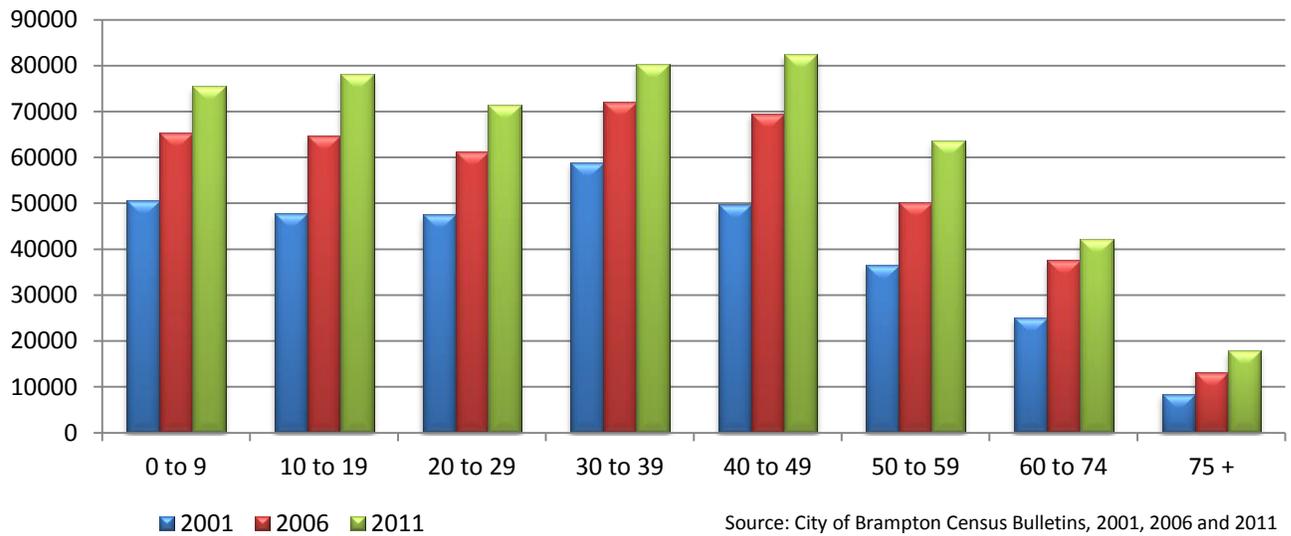
Table 2-3 - Brampton Population Distribution and Change

Age	Population Distribution by Age						% Change		
	2001	%	2006	%	2011	%	2001-2006	2006-2011	2001-2011*
0-9	50,740	15.6	65,335	15.1	75,485	14.4	-0.5	-0.7	-1.2
10-19	47,885	14.7	64,770	14.9	78,090	14.9	0.2	n/c	0.2
20-29	47,605	14.6	61,225	14.1	71,520	13.7	-0.5	-0.4	-0.9
30-39	58,955	18.1	71,955	16.6	80,370	15.3	-1.5	-1.3	-2.8
40-49	49,845	15.3	69,595	16	82,530	15.8	0.7	-0.2	0.5
50-59	36,530	11.2	50,260	11.6	63,655	12.1	0.4	0.5	0.9
60-74	25,415	7.8	37,615	8.7	42,225	8.1	0.9	-0.6	0.3
75 +	8,455	2.6	13,055	3	17,820	3.4	0.4	0.4	0.8
Totals	325,428		433,806		523,910				

Source: City of Brampton Census Bulletins, 2001, 2006 and 2011



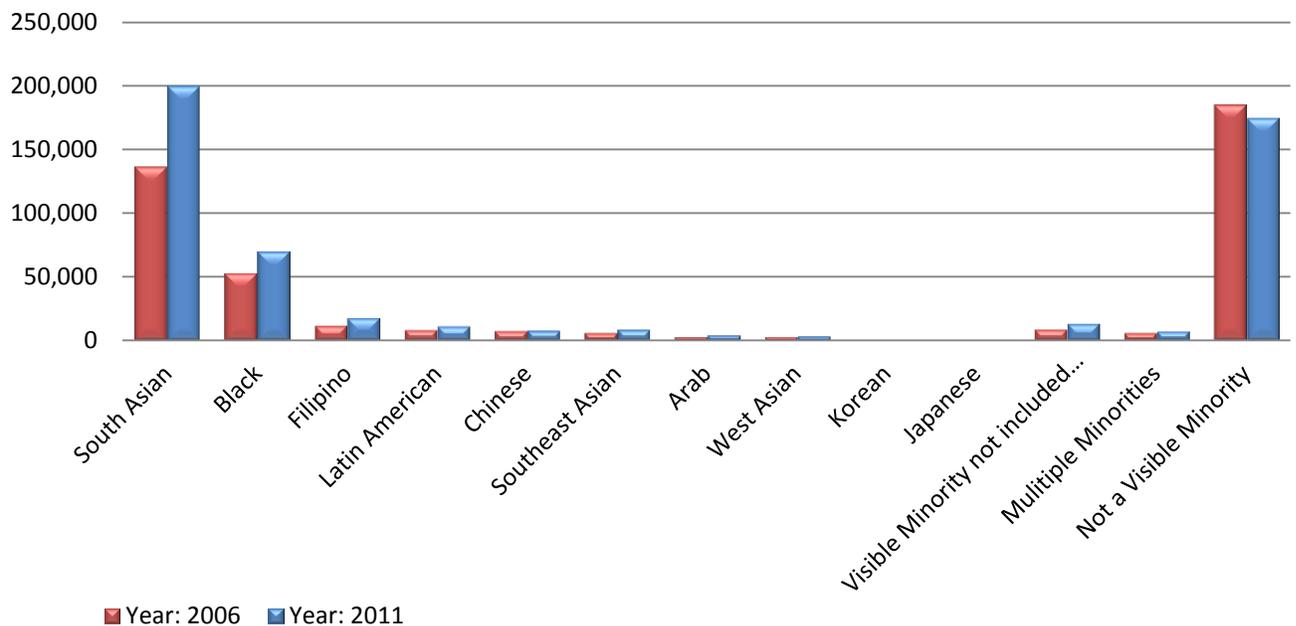
Figure 2.1 - Brampton Population Distribution and Change



2.2.2 Ethnic Breakdown

Brampton is an ethnically diverse community and immigration rates are expected to continue to be high. This diversity and the population distribution are important to the understanding of travel and potential for transit use. Experience elsewhere has shown that new immigrants have a propensity to use transit, which could be capitalized on to build transit ridership in the longer term if their experience is good.

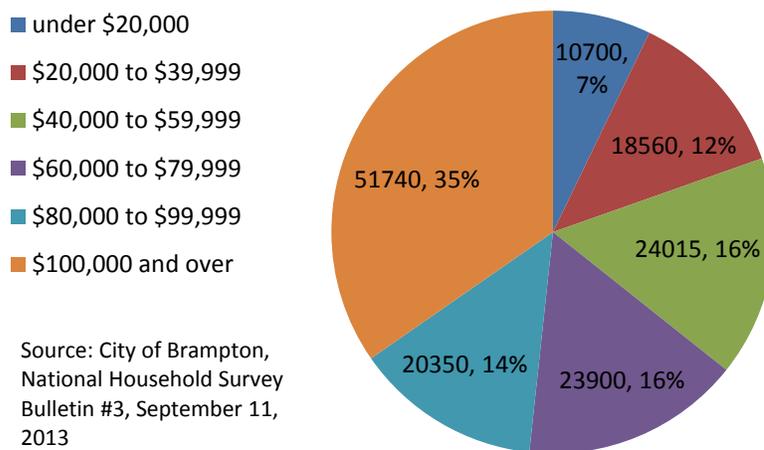
Figure 2.2 - Brampton Ethnic Breakdown



2.2.3 Household Income

The National Housing Survey provides data on a variety of topics, including household income. The number of households with incomes above \$100,000 increased by 6% to 35% of all households from 2006 to 2011 showing that Brampton residents are becoming more prosperous. However, it should also be noted that just over 50% of households have an annual income of less than \$80,000. It is typically the lower income households who make more use of public transit services.

Figure 2.3 - Brampton 2010 Household Income



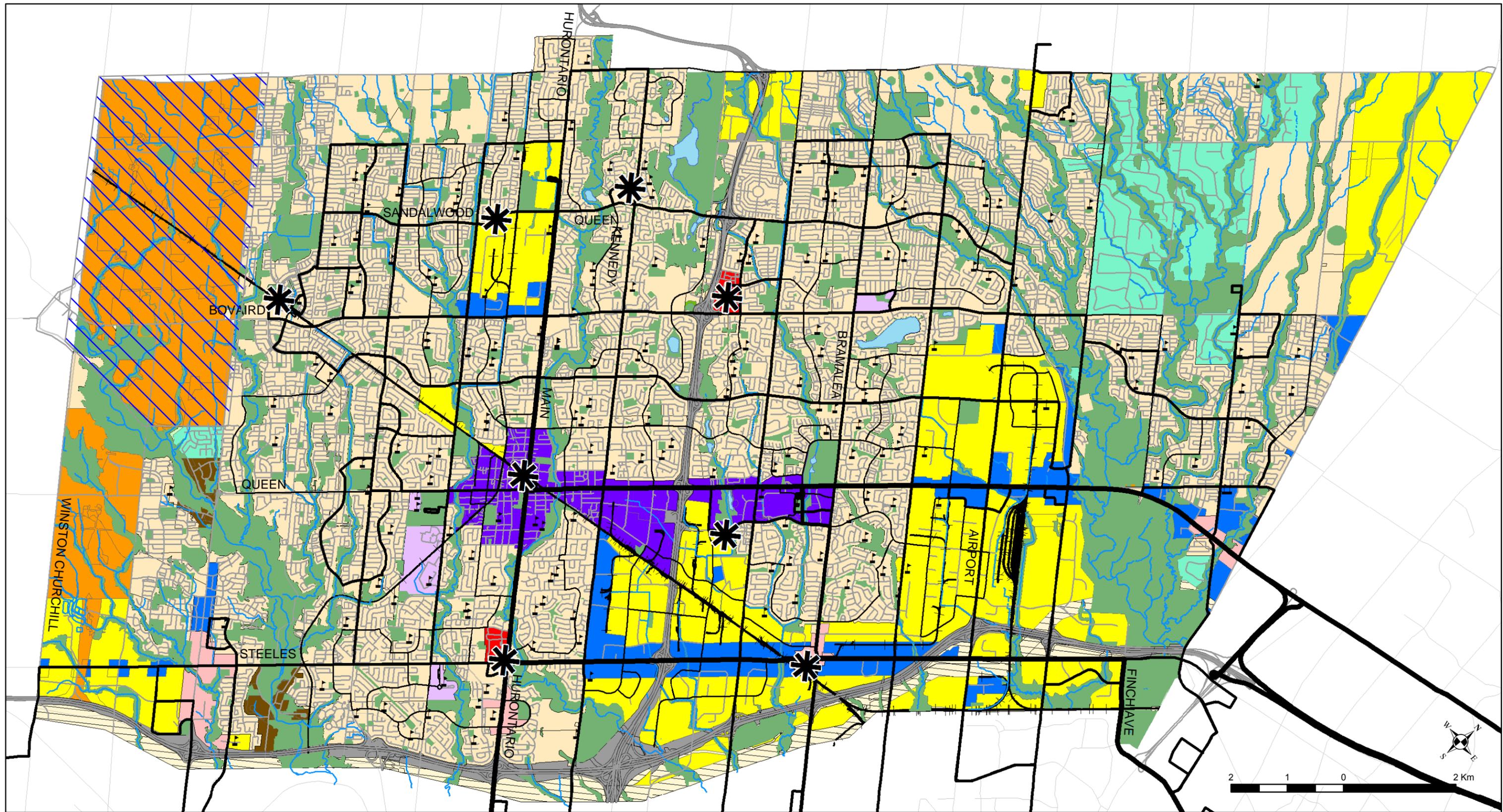
2.3 Transit Market Penetration

The City of Brampton is primarily a residential community and currently many residents work outside of the city. As shown in Figure 2.4 – Brampton Land Uses (and Transit Network), land designated as residential comprises a significant portion of the city’s area. The residential areas are located throughout the city.

There are significant employment and commercial areas located along major road corridors, adjacent to the GO train line and these are served by a variety of transit services including the Bus Rapid Transit (BRT) service known as ZUM. Residential and institutional areas are also served by a variety of transit services.

As the City grows, there will be need to provide more transportation services to residents and employees, and to ensure that the transit infrastructure and fleet can support the emerging travel patterns and increase transit’s market share.

As this growth occurs, there will be a need to provide more transit services, particularly in the growth areas in the northwest of the City. The western areas of Brampton are not well served by transit, including the existing residential areas. Continuing growth in these areas will require improved and expanded transit. Providing improved transit services between the residential communities and the employment areas will help to make employment opportunities within Brampton more accessible to its own residents.



Legend

- Business Corridor
- Central Area
- Corridor Protected Area
- Estate Residential
- Industrial

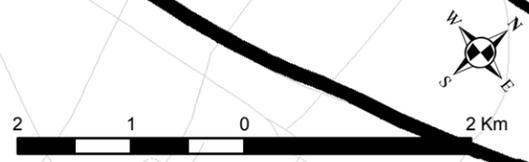
- Major Institutional
- Residential / Deferral
- Office
- Open Space
- Utility

- Parkway Belt West
- Provincial Highways
- Village Residential
- Residential
- Regional Retail

- Provincial Greenbelt Area
- Special Land Use Policy Area
- ✱ Transit Facilities
- N-W Brampton Urban Development Area
- Conceptual Road Network for use in the Development Charges Background Study

- Student
- Local
- Base Grid
- Express
- ZUM

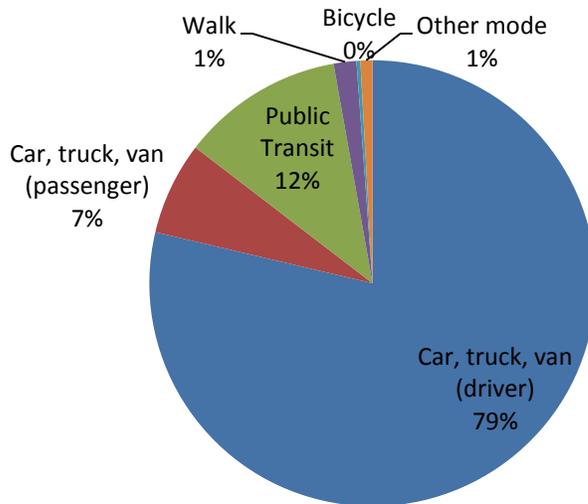
**Figure 2.4
 Brampton Transit
 Route Structures**





The way in which the people of Brampton travel to work is shown below. Brampton is a suburban community with lower densities and separated land uses. As a result, the most common mode of travel for work purposes is by single occupant vehicle drivers using cars, trucks or vans. The existing 12% transit reported from the 2011 National Household Survey represents an increase in transit share from 8% that is identified in the previous 2009 TTMP.

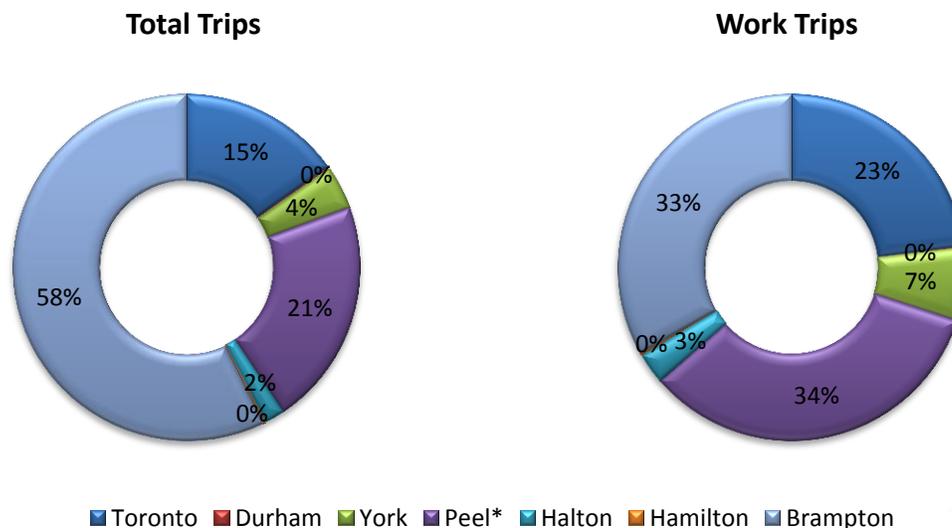
Figure 2.5 – Brampton Transportation Modes



Source: 2011 National Household Survey

The total number of people traveling during the morning peak period for all purposes is shown in Figure 2.6. As can be seen, the percentage of those who live and travel within Brampton is 58%. However, only a third of Brampton residents work within the City. About a third work elsewhere in the Region of Peel and about a quarter work in Toronto.

Figure 2.6 - Destinations for Brampton Residents: AM peak Period (6am to 9am)



3. TRANSIT FACILITIES AND SERVICES

The transit system that is operated across the City of Brampton is presented below. It includes a variety of bus routes serving various neighbourhoods, employment areas, and inter-regional terminals.

3.1 Route Structure

Brampton transit routes are currently classified as follows:

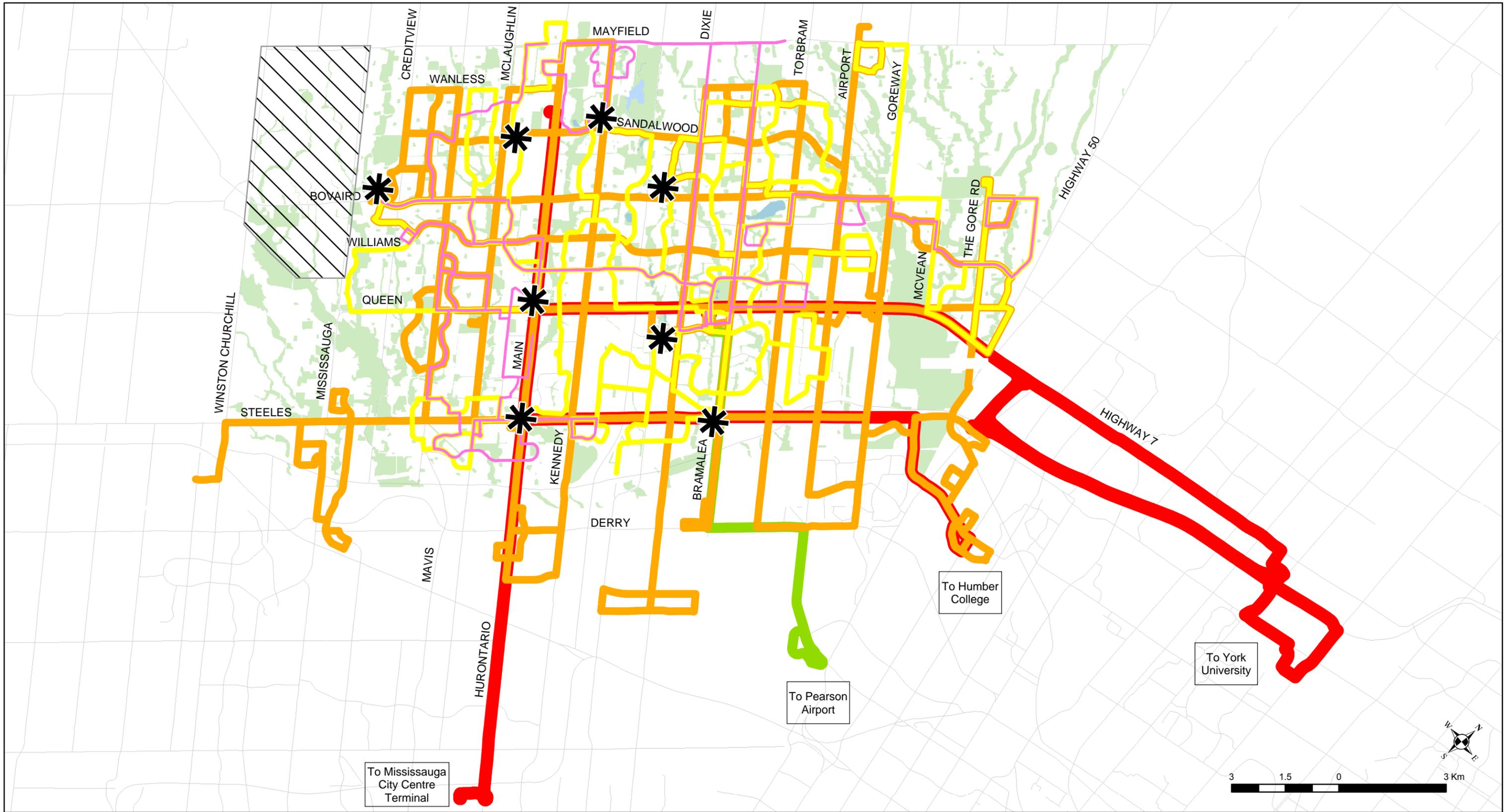
- Züm BRT Routes
- Base Grid Routes
- Express Routes
- Local Routes
- Community Bus Routes
- School Special Routes

Below are brief excerpts from the *'Service Standards Working Paper'*, which describe the various types of transit services. The various routes are presented in Figure 3.1.

Züm BRT Routes - Züm BRT Routes are higher order transit routes designed to provide a frequent, high quality service in designated corridors with little or no deviation from these corridors except to access multi-modal transit terminals. Züm BRT Routes are operated using distinct and specially branded vehicles with intelligent technology systems, upgraded station stops and shelters, and transit priority measures such as queue jump lanes and transit signal priority. In 2013 there were three Züm routes in operation (501 Queen, 502 Main, and 511 Steeles) which operate with between 7 and 10 minute headways during the peak hours.

Base Grid Routes - Base Grid Routes provide a basic minimum level of service and route coverage at all times. They are designed to fulfill the Primary and Secondary Transit Corridor roles as set out in the City's TTMP. Base Grid Routes operate in designated arterial corridors with minimal or no deviation, except at major transfer locations such as multi-modal terminals, GO Stations, and major shopping malls and centres to provide connections, as required. They typically operate along the major travel corridors, generally perpendicular to and intersecting the Züm BRT Routes.

Express Routes - Express Routes serve high demand destinations with direct non-stop or limited stop service. While providing similar levels of direct express services as Züm BRT Routes, Express Routes do not receive the same minimum service frequencies and span of service, high quality technologies and branding as Züm BRT Routes. Express Routes are often implemented as a result of high transit demands and/or as precursors to Züm BRT Routes. There is one single Express Route, the "115 Pearson Airport Express".



Legend

- Existing ZUM (2013)
- Local
- Base Grid
- Student
- Express
- * Transit Facilities
- Conceptual Road Network for use in the Development Charges Background Study

Local Routes - Local Routes form the balance of the fixed route network. They are designed to provide a feeder or neighbourhood circulation function supplementing and connecting to the Züm BRT Routes and Base Grid Route Network; major local activity centres or corridors; and transfer points where additional connections between routes can be made.

Community Bus Routes - Community Bus Routes are fully accessible transit services typically designed for seniors and persons with disabilities who can use fully accessible conventional transit. Rather than follow conventional routing patterns, they are custom designed to provide better access to facilities oriented to this market group, such as senior's apartments, medical facilities, community centres and shopping areas.

School Special Routes - A School Special Route may be considered in cases where:

- The secondary school is located greater than 800 meters from the existing transit network; and/or
- A large movement of students would create significant overload conditions on existing scheduled fixed route service; and/or
- The catchment area for relevant school cannot be serviced by an existing Local or Base Grid Route within the limits of the route directness criteria for the respective services type.
- Where the introduction of a School Special would duplicate existing services or shift current passengers from existing regular service routes without a corresponding increase in ridership, they are not recommended.
- 16 School Routes were in operation as of 2013, with route numbers in the 200's (e.g. Route 214 to Cardinal Ambrozic and Route 211 to Chinguacousy Secondary School).

3.2 Service Frequency and Transit Terminals

As of 2013, there were several bus routes in operation including three Züm BRT routes, 15 base grid routes, one express route, and 23 local routes.

During weekdays, Züm BRT routes operate with a frequency of 7-9 minutes during the peak periods and 10-20 minutes off peak. Base grid buses are typically more frequent than local buses, with headways of 8-20 minutes during peak hours and 15-45 minutes off peak. Local buses routes have a 20-50 minute frequency during peak periods and 20-60 minutes frequency off peak.

For weekends, the service frequency generally decreases to almost twice the time between buses, with fewer local buses in operation. The Züm BRT buses have scheduled headways of 15 or 20 minutes. Base grid and local routes have headways ranging from 20 to 60 minutes.

There are seven major transit terminals in the City of Brampton serving numerous bus routes as well as GO Transit services.

3.2.1 GO Transit

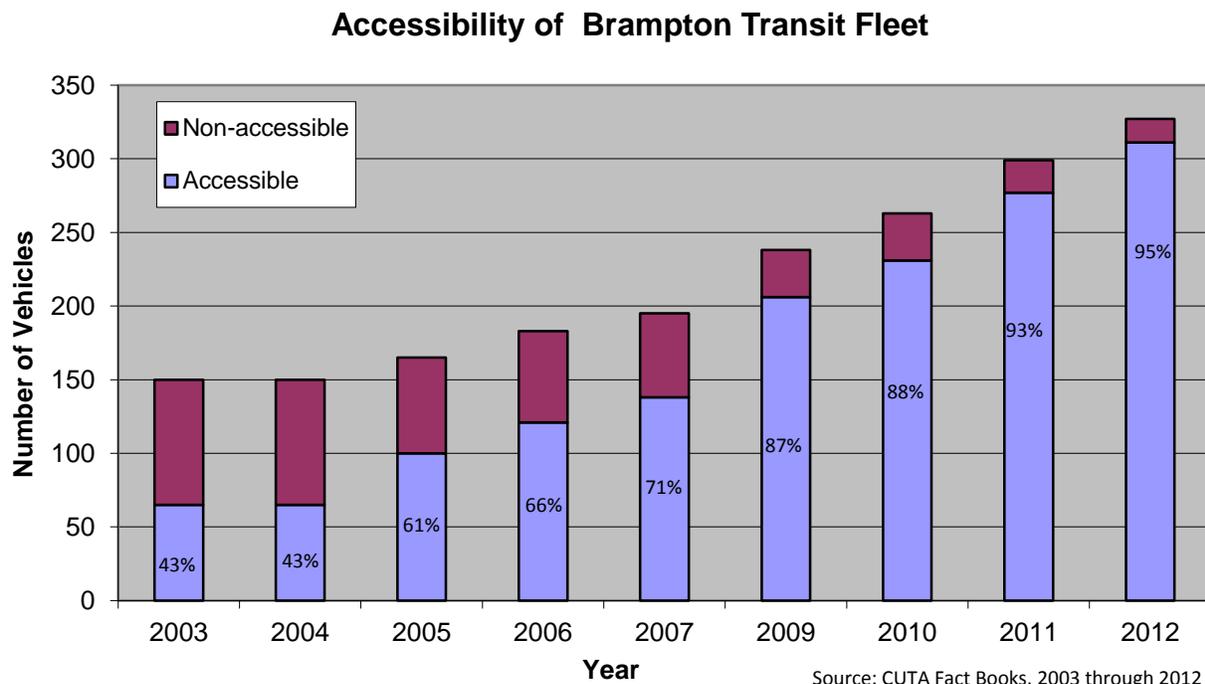
GO Transit serves the City of Brampton with 12 bus routes and one train line. The Kitchener GO train serves the Mount Pleasant, Brampton and Bramalea GO stations in the City. Train service is available Monday to Friday during peak periods, travelling eastbound to Toronto during the a.m. peak period and westbound from Toronto during the p.m. peak period. The train frequency varies between 5 to 73 minutes, depending on the number of stations served.

The bus routes serve the GO stations as well as key stops in Brampton, including Bramalea Transit Terminal, Trinity Common, Hurontario Street at Bovaird Drive, and the Williams Parkway Carpool lot. GO buses serving Brampton typically operate on weekdays (both peak and off-peak periods) as well as Saturdays and Sundays, with select routes operating only during weekday peak periods. Service frequencies for these buses vary from a half hour to an hour, typically longer during off peak periods and weekends.

3.3 Fleet

As of 2013, Brampton Transit had a rolling stock of 290 standard buses operating on the 42 fixed routes listed previously. In recent years there has been a significant renewal of the transit fleet with the average bus age improving from 8.5 years in 2003 to 5.4 years in 2012. This has translated into a drastic improvement in the fleets' accessibility from 43% to 95% over the past decade.

Figure 3.2 - Accessibility of Brampton Transit Fleet



3.4 Coordination/integration with Neighbouring Municipalities and GO Transit

While Brampton Transit is responsible for the provision of transit services within the City, much of the travel demand is due to trips that cross the City boundary into adjacent properties. GO transit operates both commuter bus and train services from Brampton transit terminals with service to the Subway, and other major transit centres.

York Region Transit (YRT) operates numerous bus routes; however only one route crosses into the City of Brampton. YRT route 77 travels into the City to make connections with Brampton Transit services at the municipal boundary. The only Brampton Transit route that crosses into the York region is Züm route 501 with service to Downsview Subway Station via York University. This route travels along Highway 7 using the VIVA stops and stations.

Züm route 511 and Base Grid routes 11 and 50 provide service into the City of Toronto to connect to Humber College and the Etobicoke General Hospital.

Mississauga Transit is operated as MiWay, which operates local services branded as MiLocal and express services known as MiExpress. The existing MiWay Route 103 travels into Brampton on Main Street and terminates at the Brampton Gateway transit terminal. The MiWay routes 61A and 66 travel into Sheridan College. There are numerous Brampton Transit routes that cross into Mississauga including the Züm route 502 which travels on Main Street / Hurontario Street terminating at the Mississauga City Centre Terminal. It is noted that MiWay Route 103 and Züm route 502 operate as an integrated service along the Hurontario-Main Corridor. Other Brampton Routes that travel into Mississauga are presented in Table 3-1.

Table 3-1 - Brampton Routes Providing Service to Mississauga Area Routes

Brampton Transit Route	Access to Mississauga Route
51/51A, along Steeles Ave W, Financial Drive / Winston Churchill	38, 42, 44, 46, 57, 61, 62, 82, 45A, 82A
58, Financial Drive	42, 61, 45A, 82, 82A
2, Main Street	15, 42, 19, 103
7/7A, along Kennedy Road South	15, 42, 53, 57, 19, 103
18/18A, along Dixie Road	5, 51, 57, 59
15, along Bramalea Road	15, 42, 59
115 Express, along Bramalea Road	7, 30, 42, 59
14, Torbram Road	7, 11, 12, 15, 16, 22, 24, 30, 42, 59
5, 30, Airport Road	7, 15, 24, 30, 16, 22

4. TRANSIT PERFORMANCE

The growth in overall population and changes in travel demand have resulted in increases in transit ridership. The new route structure and associated service frequencies result in additional service being provided. The following section documents the historic trends regarding ridership and service growth, and includes a review of service efficiency and cost effectiveness.

4.1 Transit Ridership

Brampton Transit has reported a total of over 18 million passenger trips in 2012. As presented in Figure 4.1, transit ridership has increased considerably in the last 10 years with nearly a doubling of passenger trips. This is partially due to the 50% population growth experienced in this period. When reviewing the passenger trips per capita as presented in Figure 4.2, there is still a noticeable growth since 2009 signifying the increase in transit share that has resulted with the capital investment and expanded services since the last TMP. Transit ridership growth includes:

- 49% increase in transit ridership since 2009 (149% since 2002); and
- 37% increase in transit ridership per capita since 2009 (58% since 2002).

Figure 4.1 - Brampton Regular Service Passenger Trips

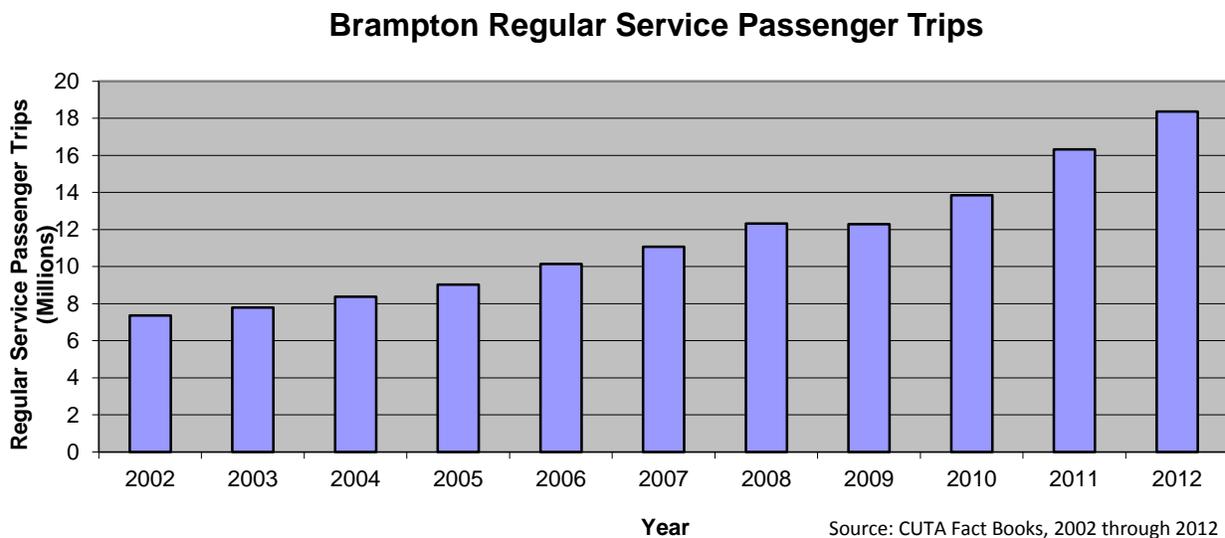




Figure 4.2 - Brampton Transit Ridership Per Capita

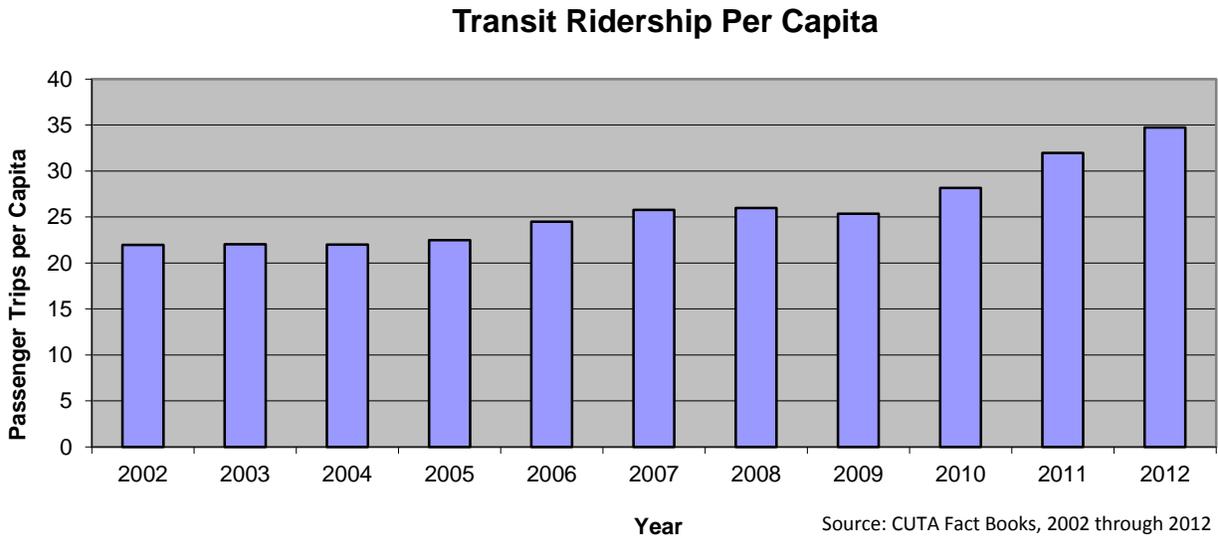
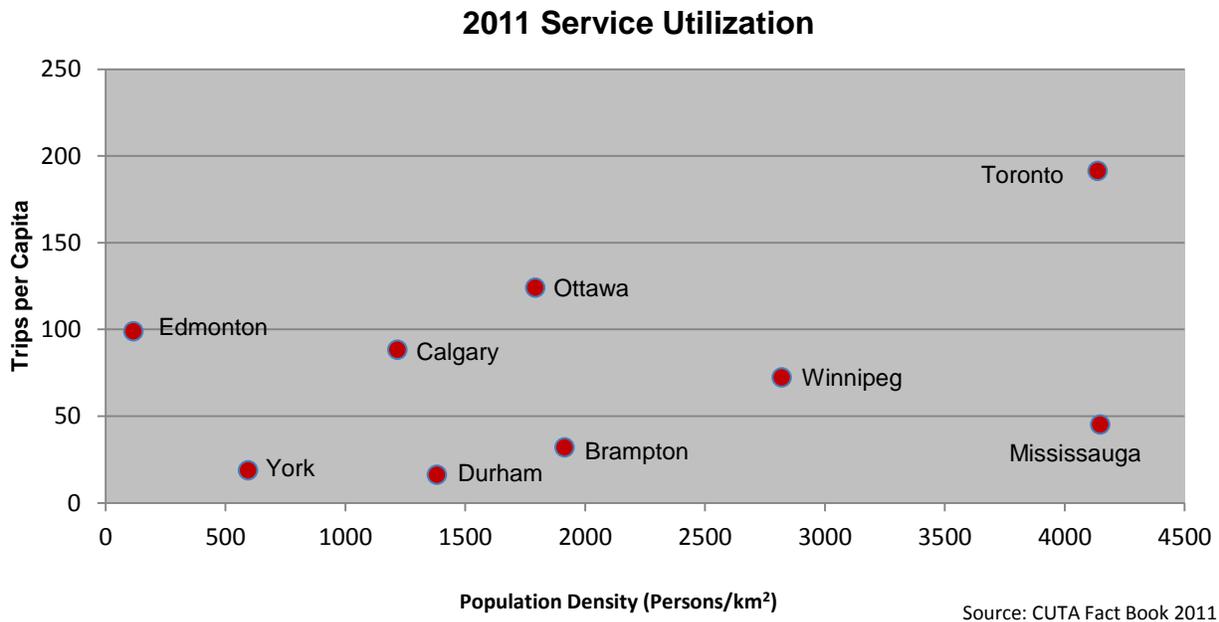


Figure 4.3 presents how various cities rate in terms of density and trips per capita. The expected trend is that a city with higher population density will typically show a greater number of Trips per Capita. It is noted that most GTA properties achieve less than 50 trips per capita compared with Toronto which achieves almost 200 trips per capita. Comparing Brampton with other cities of similar densities (Calgary, Ottawa), there is the potential to achieve higher use of transit with continued investment in conventional and higher order transit.

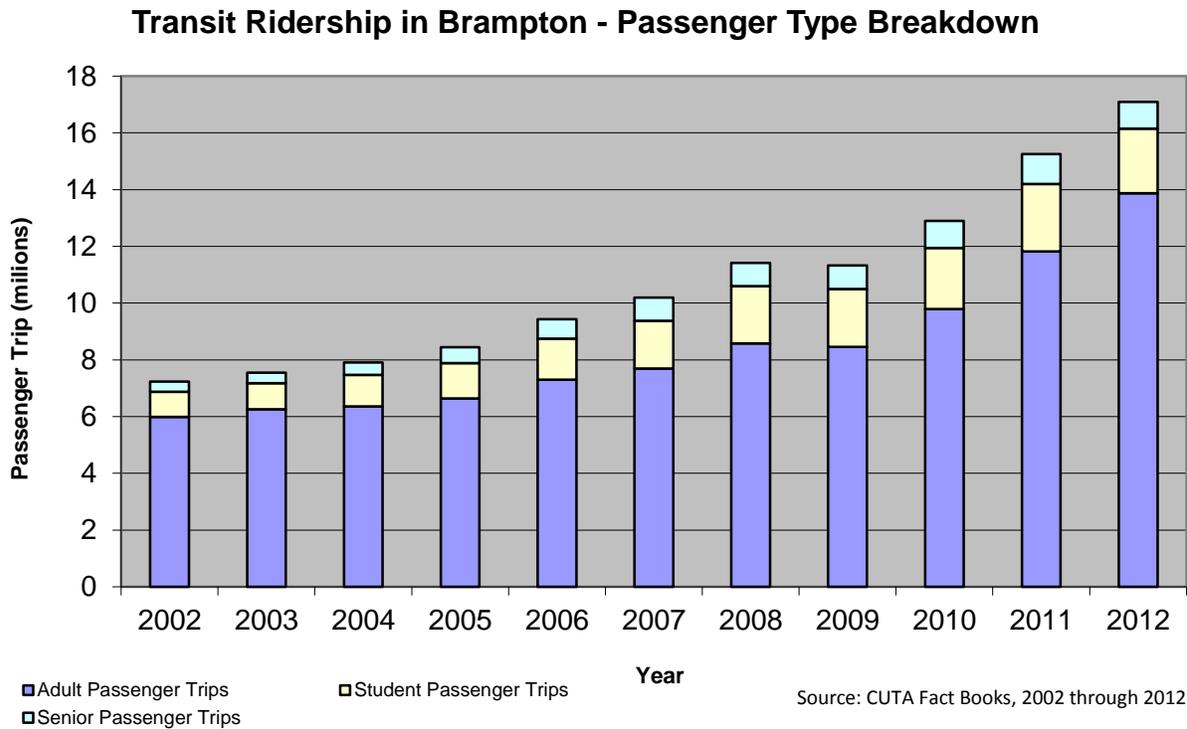
Figure 4.3 - 2011 Service Utilization: Brampton and Other Comparable Canadian Cities





The transit ridership passenger breakdown is presented in Figure 4.4. The majority of passengers are adults, however there has been a recent increase in child passengers since the children specific tickets were introduced as of 2008 (child trips are included under student trips for 2008 to 2012 in Figure 4.4). The number of senior passengers has been relatively constant.

Figure 4.4 - Brampton Transit Ridership Type Breakdown

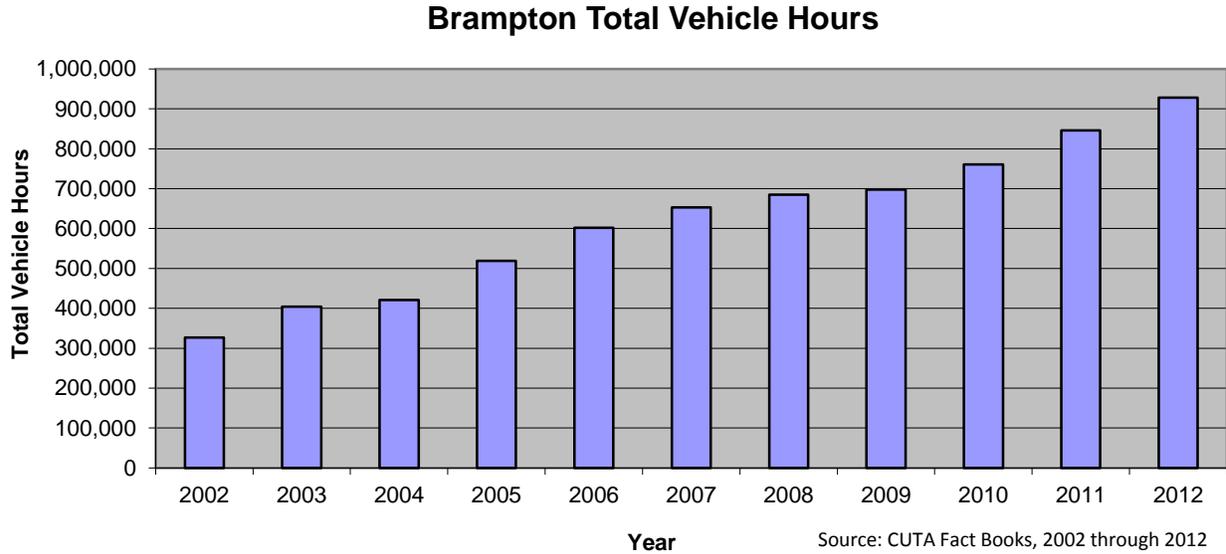


4.2 Amount of Transit Service and Route Efficiency

The figure below presents the total hours that bus vehicles are in service. With increases in transit service area, service frequency and the number of in-service buses, total vehicle hours have tripled over the past decade.

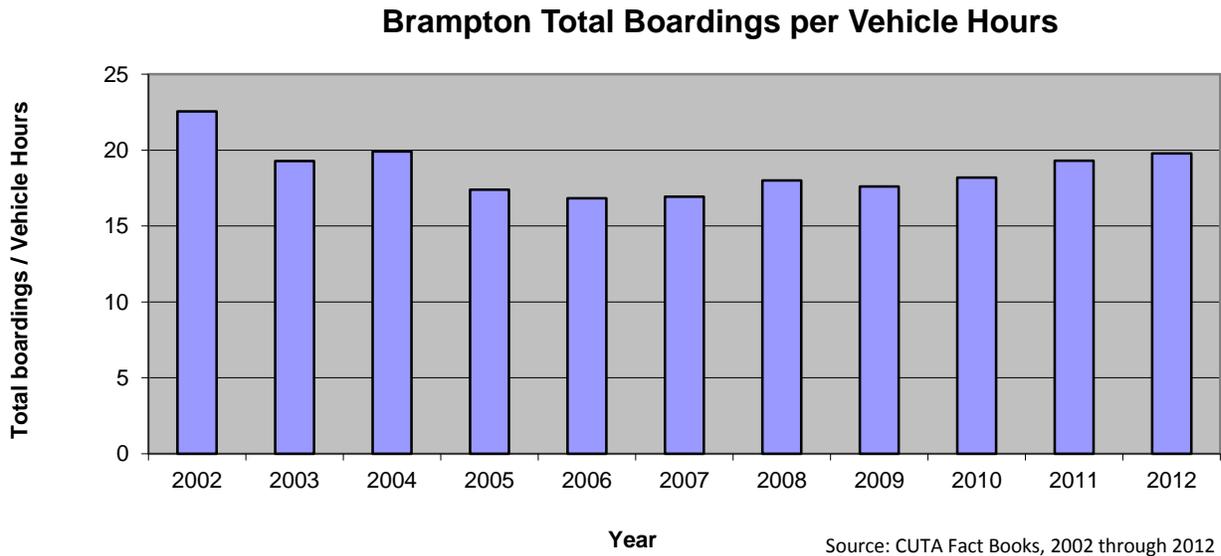


Figure 4.5 - Brampton Total Vehicle Hours



With the increased service there are additional passenger boardings. The figure below indicates that the boardings per vehicle hour have been increasing since about 2005 signifying that the service delivery is effective and that there are on average more passengers being serviced per bus.

Figure 4.6 - Brampton Total Boardings / Vehicle Hour



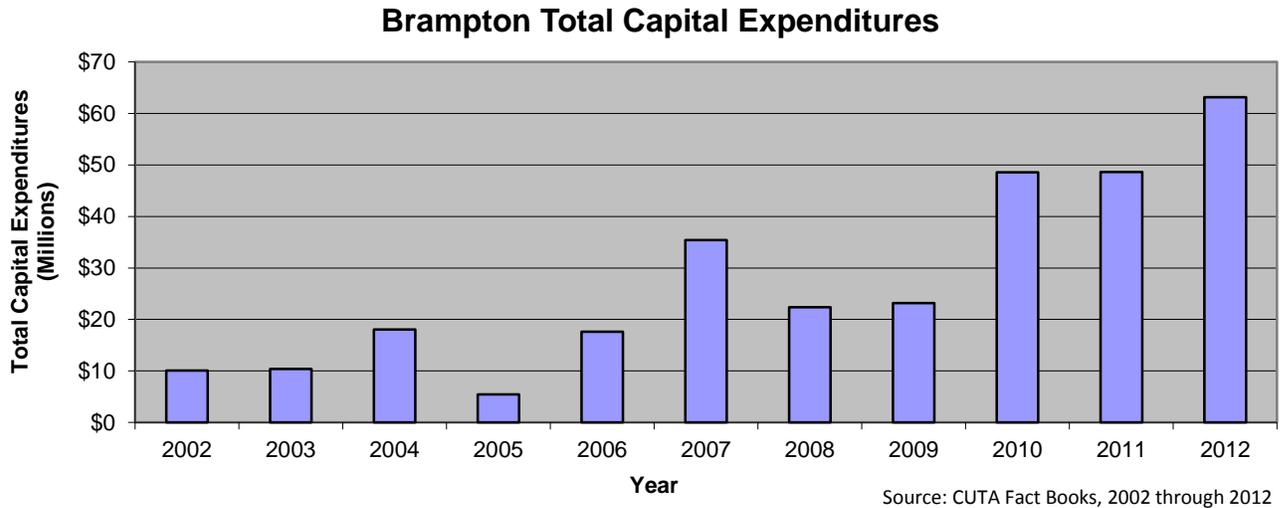
4.3 Capital and Operating Costs

The Total Capital Expenditures chart shows that investment in transit has more than doubled since the 2009 TMP. Capital expenditures include new buses, bus shelters and stations, and other facilities to improve transit such as construction of bus lanes and/or queue jumps at intersections.



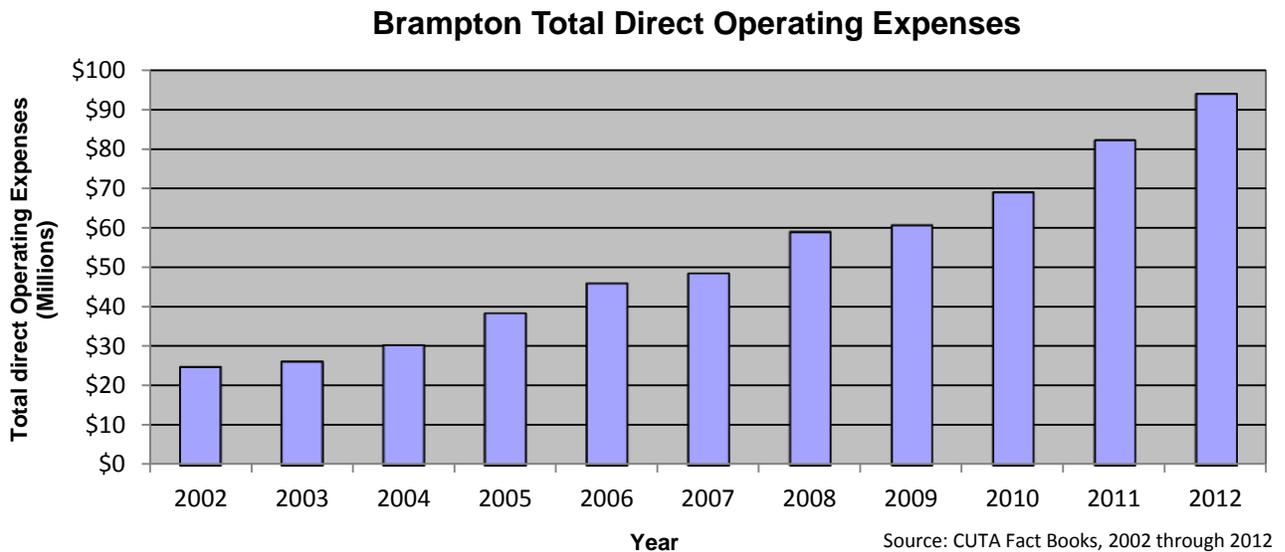
Capital investment would also include upgrades to signalling systems to allow for additional transit priority.

Figure 4.7 - Brampton Total Capital Expenditures



Service operating costs have also increased with the expansion and improvement of services. Direct Operating Expenses have nearly quadrupled, mainly due to the drastic increase in vehicle hours and the cost of fuel.

Figure 4.8 - Annual Operating Costs (Total Direct Operating Expenses / Year)

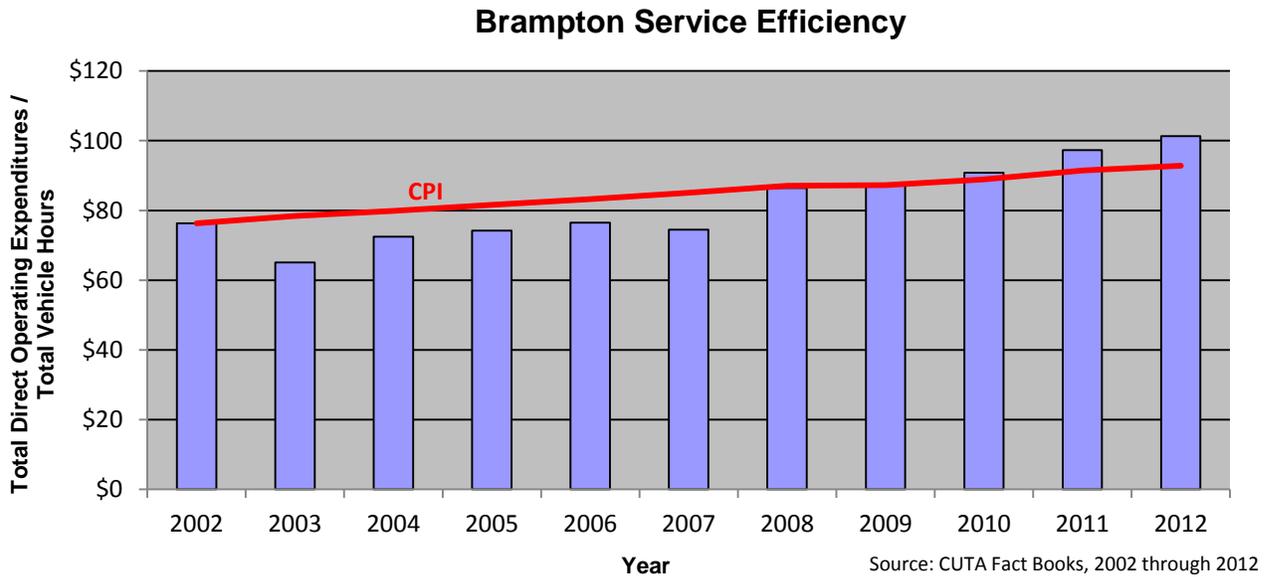


A better measure to assess the service efficiency is to review the “Total Direct Operating Expenditures/Total Vehicle Hours” as presented in Figure 4.9. The graph indicates that the cost to operate one hour of transit service has increased over the recent past. The rate of growth is slightly higher than the Consumer Price Index (CPI) which indicates that it is not inflation alone which is



contributing to the higher costs. Fuel costs and maintenance are other factors to be considered which would impact the cost of providing transit service.

Figure 4.9 – Cost for Service Delivery (Cost / Vehicle-Hour)



A measure of cost effectiveness is the revenue to cost ratio (R/C) which assesses how much of the total operating costs are covered by passenger revenues. Figure 4.10 indicates that over the past ten years the R/C ratio has fluctuated between 40% and 60%. The trend however indicates a decreasing R/C ratio indicating that the passenger revenues are covering less of the total operating costs. Figure 4.11 shows that since 2008, the revenue per passenger has been constant with the additional operating costs being covered by other municipal contributions.



Figure 4.10 – Revenue to Cost Ratio

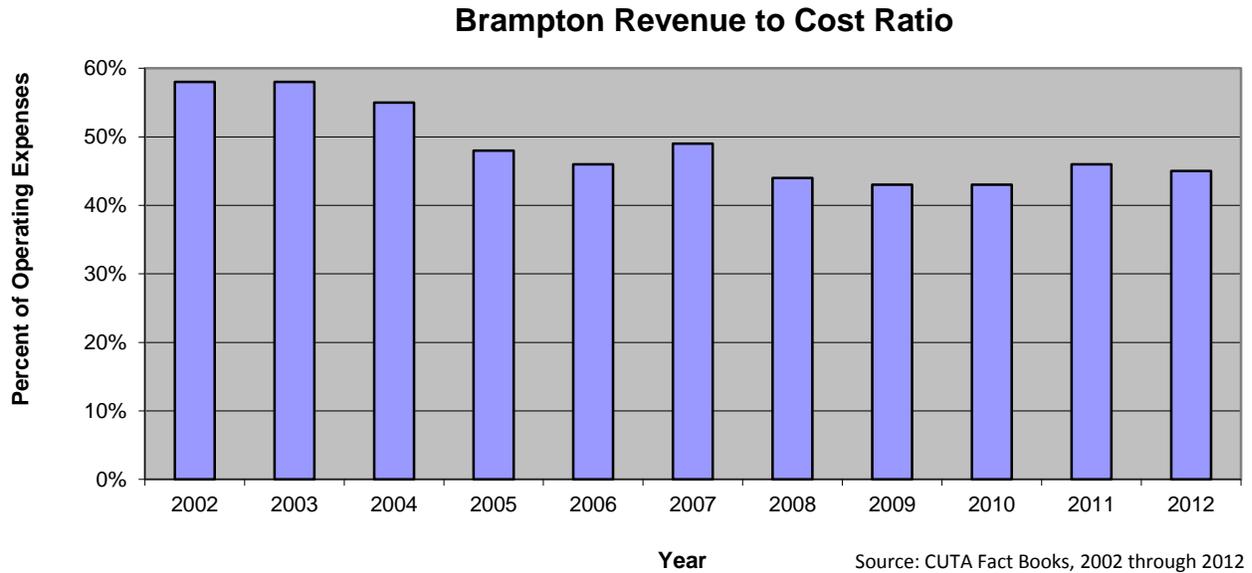
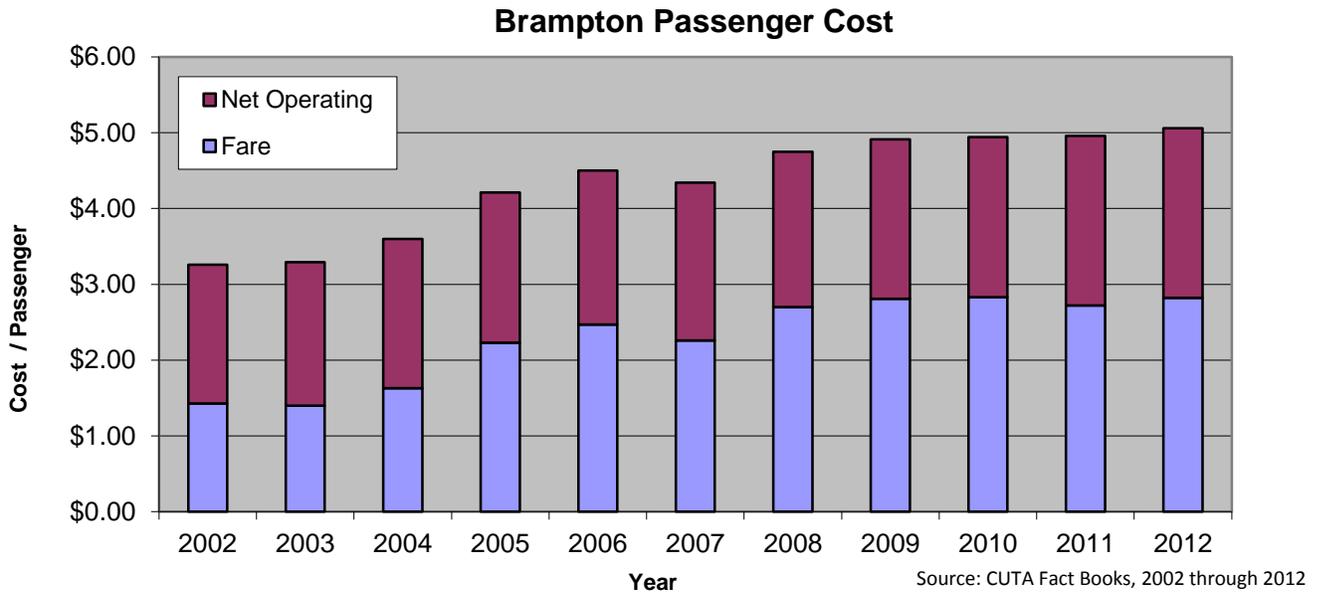


Figure 4.11 – Cost per Passenger



5. ACHIEVEMENTS FOLLOWING THE 2009 TTMP

The 2009 TMP outlines a section that defines the short-term (2011-2015) Transit network. Medium and long term goals have been developed as well.

By 2011 the first stages of BRT service will be implemented on Hurontario / Main and Queen Streets. The exact extent of the BRT service should be determined by more detailed operational studies, but at a minimum it should serve Queen Street east of Main Street and into York Region, and Hurontario / Main Street from the Sandalwood Terminal, south into the City of Mississauga.'

Source: 'TTMP Final Report March 2010 part 3'

The following are some key achievements that have been realized since the 2009 TTMP:

- Implementation of four ZÜM routes (Queen, Main, Steeles, and Bovaird) and associated facilities
 - Service Coverage
 - Route Frequency
 - Branding and rolling stock
- Increased accessibility
- Increase in transit ridership, specifically transit ridership per capita
 - 49% increase in transit ridership since 2009 (149% since 2002)
 - 37% increase in transit ridership per capita since 2009 (58% since 2002)
- Improved service coordination with GO Transit, YRT, and Mississauga Transit
- Planning for the Hurontario Main LRT