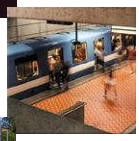
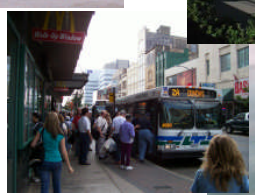
CUTA ACTU

CANADIAN URBAN TRANSIT ASSOCIATION
ASSOCIATION CANADIENNE DU TRANSPORT URBAIN

A Profile of Canadian Transit Ridership





Transports Canada

Transport Canada

Halcrow

September 2007

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Final Report

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Halcrow

In association with Brendon Hemily, Ph.D.

September 2007

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- Capital Region District.

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1 INTRODUCTION

1.1 Background

The Canadian Urban Transit Association (CUTA) has had a long-standing interest in understanding who rides transit in Canada and why, and has conducted various studies to answer these questions.

In 1991, CUTA published a study entitled, *The Implications of Demographic and Socioeconomic Trends for Urban Transit in Canada* (STRP Report #1) undertaken as part of the Strategic Transit Research Program. This study explored the Canadian urban transit market and the trends that were expected to affect it over the next decade. That work included an in-depth analysis of origin-destination and other household travel survey from urban centres across Canada. It identified key social factors and trends based on a review of available research, assessed these trends and their implications for the transit industry, and recommended appropriate responses to challenges and opportunities.

In 1992, building on the previous study, CUTA commissioned the *Modal Shift to Transit Study* to develop strategic and tactical recommendations to help increase transit's modal share. The study followed a market segmentation approach, and included a public survey to investigate public opinions and test strategy alternatives. The study made over 50 recommendations for action by stakeholders including CUTA, individual transit systems, federal, provincial and municipal governments, the private sector, NGOs and individuals. The study also produced a number of fact sheets on modal initiatives to guide transit industry stakeholders in their future planning efforts.

In addition, in 2000, CUTA published a report entitled *Profiling Transit Ridership* (STRP Synthesis S1). This study examined the literature for approaches to profiling transit riders, reviewed traveler classifications (i.e. auto captive, transit captive, choice rider), and examined the factors that influence traveler motivation and behaviour.

Canadian cities have changed immensely since these previous studies. Population growth, municipal amalgamation, smart growth, Kyoto and other sustainability issues are new drivers that affect the importance of mobility. The increased accessibility of advanced technologies (e.g. intelligent transportation systems) has created new marketing opportunities as part of transportation demand management (TDM) strategies. Increased automobile ownership, especially among women, is also changing the way that some market segments relate to transit.

It is an appropriate time to re-examine some of these variables in an effort to develop a "Profile of Transit Ridership in Canada".

1.2 Objectives

This study addresses the need for an overall transit ridership profile for Canada recognizing the wide range of community and transit system types that exist, and based on a review of the most current available information. In addition, specific attention was paid to identify those communities and travel market segments offering marketing opportunities to increase transit ridership or modal shift, and the identification of those factors that will motivate Canadians to use transit, and/or to make greater use of transit among current users.

The main objectives of this study are twofold:

- to profile current transit riders (for Cities, Regions, different classes of City and for "Canada") and,
- to identify promising market segments and practical ways to encourage modal shifts to transit as well as increased ridership by current transit patrons.

1.3 Study Methodology

1.3.1 Literature Review

During the first phase of the project, (Research into Past Studies and Reports), the study team reviewed the research findings from recent reports and studies (e.g. TCRP Report 95 – Traveler Response to Transportation System Changes, past and recent CUTA, APTA, and other studies, and available origin-destination (O-D) and other travel survey summary documents and technical reports) to quickly update earlier study findings.

The findings and conclusions of the literature review and related consultations with transit and transportation agencies, academic researchers across Canada, were summarized in a short report (Appendix A) and reviewed with the Project Steering Committee to provide direction to the balance of the study.

1.3.2 National Survey

Concurrently with the literature review, a national survey of conventional transit agencies in Canada was undertaken by e-mail using a simple survey that asked the identified respondents within each agency to report on the types of information that they collect including:

- ridership counts
- on-board passenger surveys
- "attitude" or "customer satisfaction" surveys of the general population
- household origin-destination surveys of the general population
- any other types of counts or surveys including "stated preference" studies.

In addition, the survey asked agencies to identify any reports documenting the results of the above mentioned surveys and to advise whether these could be made available to CUTA for the purposes of this study. Also, they were asked to identify *"any significant transit service, fare or other measures designed to increase transit ridership over the last five years".*

The specific survey questions are provided in Appendix B.

The initial survey utilized SurveyMonkey, an innovative and low cost internet based service. This tool allowed for systematic follow-up to encourage an initial response which ultimately resulted in 66% of the existing transit agencies on the list (46 of 71) submitting returns.

1.3.3 Survey Analysis

The survey returns, classified by the four standard CUTA community size classes (Stat Groups), were reviewed systematically in order to identify potentially relevant data or reports by type, and individual agencies were contacted via e-mail and telephone in an attempt to obtain these documents. A total of 37 transit agencies were contacted as part of this process, and most of those who had useful documents provided them to the study team. Appendix C provides a list of the reference materials identified during the study including documents provided by the participating agencies.

The survey uncovered a wide range of data and reports, including some background studies and studies documenting recent initiatives such as discounted transit passes for students and other passengers.

The review of the identified data confirmed that the best and most widely available transit ridership profiling information available would be provided by household telephone origin-destination surveys such as those carried out every five years in the Greater Toronto and Montreal areas (Transportation Tomorrow Survey in Toronto and the AMT Origin-Destination Survey in the Montreal area). Comparable recent household origin-destination surveys were identified for urban areas across Canada outside of Toronto and Montreal including Ottawa, Edmonton, Vancouver and Victoria.

In addition, attitudinal surveys aimed at area households were identified and obtained for Victoria, Edmonton, Calgary, Saskatoon, Mississauga, Toronto, and GO Transit. Also, other travel and passenger surveys were identified and obtained for Durham Region, Kingston, Guelph, GO Transit and Mississauga**.**

1.3.4 Developing the National Transit Ridership Profile.

The national transit ridership profile was developed based on the available O-D survey data from across Canada. These surveys were undertaken in support of multi-modal transportation planning and modeling in the various regions, with the most recent data having been collected between 2001 and 2005.

The various surveys employed similar sampling methods (e.g. random or systematic samples of households from across each study area) and collected data on the households, persons living in each household and their travel behaviour on the previous weekday.[1] Furthermore, and most importantly, the survey results were validated to ensure that the estimates of population and trip making were consistent with independent estimates of population and transit ridership for a typical weekday during the survey season. In summary, these are the best available data describing total travel and transit travel and the characteristics of transit and other trip makers including dimensions such as age, gender and employment/student status.

Special tabulations were obtained of the survey data for the following areas and communities:

[1] Surveys did vary in terms of the data collection methods used with most using a standard telephone interview approach (e.g. Toronto, Montreal and Ottawa) while B.C. cities employed trip diaries (using paper and internet options) following an initial telephone contact. Edmonton employed a “tour-based” approach in the questions describing what people did through the day, rather than the standard reporting of individual trips using a trip diary.

- Victoria (the Capital Region District) for 2001 and 2006,
- Vancouver (covering the Trans-Link Service area) for 2004,
- Edmonton for 2005,
- Greater Toronto area municipalities, covering an area that includes Burlington on the west, York Region on the north and the communities that now make up the Durham Regional Transit service area on the east for 1986, 1996 and 2001.
- Independent Communities in Southern Ontario including Hamilton, Barrie, Niagara Falls, St. Catharines and Peterborough which were also included in the GTA's Transportation Tomorrow Survey (TTS) for 2001.
- Greater Montreal Area Communities including Montreal, Laval, Longueuil and the Northern and Southern CIT communities for 1998 and 2003.
- National Capital Region: Ottawa and Gatineau for 1995 and 2005.

The special tabulations of these survey data bases were designed to update the analysis undertaken in the 1990-91 Demographic and Socioeconomic Trends Study for STRP Report #1.

The first set of tabulations requested were designed to illustrate observed variations in travel and transit ridership associated with age (for at least 7 age cohorts including 0-14, 15-24, 25-34, 35-44, 45-54, 55-64 and 65+)[2], gender, and employment status (employed or workers, students and others, including housepersons, unemployed and retired persons).

A second set of O-D survey tabulations was designed to illustrate the observed variations in travel and transit use associated with variations in auto access considering auto availability in households (0, 1, 2, and 3 or more cars) and whether or not the individual had a valid driver's license.

In estimating the national urban transit ridership profiles, the National profile was based on adding up profiles for distinct community sizes and types based loosely on the CUTA Population Groups:

Group 1: 400,000 plus,

Group 2: 150,000 to 400,000,

Group 3: 50,000 to less than 150,000 and

Group 4: less than 50,000.

Group 1 was sub-divided into 3 classes to capture differences in size and community type, as follows:

1.1 City of Toronto (TTC) and Montreal Island (STM), Canada's oldest and largest transit systems.

[2] Minor changes to the cohort definitions were required for Vancouver and Victoria. In these cases the youngest age cohorts were defined as 0-12, 13-17 and 18-24, in keeping with the age breaks employed in these surveys.

1.2 Other large independent Urban Centres such as Hamilton, Ottawa, Edmonton and Vancouver, and

1.3 Large Satellite Communities in Greater Toronto Area including Mississauga, Brampton, York Region Transit and Durham Region Transit, even though it is not technically in Population Group 1 in that its TSA population is less than 400,000

Group 2 was divided into 2 subclasses to distinguish between independent communities and satellite communities in the Toronto and Montreal areas as follows:

2.1 Medium Size Cities (Gatineau, Victoria)

2.2 Medium Size Satellite Communities in GTA and GMA including communities such as Oakville and Laval.

Population Groups 3 and 4 were not subdivided.

The profiles for each group were estimated by taking the averages for the surveyed communities for each class (reported in terms of percentage of class for individual variables such as age or auto ownership, average modal splits or trips by purpose) and applying this profile information (percentages, trip rates or market shares) to the total populations and transit trips reported for all members of the size class for 2005 in the CUTA fact book. For transit ridership, reported annual figures for 2005 were translated into average weekday ridership using appropriate factors (ranging from 260 to 310 depending on the size class)[3].

Note that the O-D survey data available for size class 4 was limited, so the profile information for class 4 was based on a single community (Welland). Therefore, this profile information should be used with caution as it may not be representative of typical Class 4 communities.

1.3.5 Factors Not Included in O-D Surveys Have Also Been Considered

While the O-D survey data are of good quality, in that they are representative of the residents living in the regions and communities and the demographic, auto ownership/access and travel habits and transit travel data provided is consistent with reported census and ridership statistics, these surveys do not provide information on factors such as income or ethnicity. Also, they are silent on the attitudes and values of transit riders and non-riders. Therefore, the assessment of these factors is based on other sources including local rider and attitudinal surveys and research carried out by other agencies or academic researchers.

1.4 Report Structure

The rest of the report discusses a variety of findings from the study:

- Chapter 2 presents the profile of transit ridership based on the common definition of tabulations from O-D surveys obtained for a variety of communities in each community class across Canada.
- Chapter 3 discusses various aspects defining transit's market share.

[3] These factors were estimated based on those reported for larger cities and estimated in the TAC Urban Transportation Indicators Survey 3 (2001).

- Chapter 4 provides a comparison of transit ridership to the general population with respect to gender, age, employment status, and vehicle availability.
- Chapter 5 focuses on a few specific issues (e.g. income, immigrant population) that had to be derived from ad-hoc sources of information.
- Chapter 6 discusses the evolution of transit ridership since the first Demographic Trends study in 1991.
- Chapter 7 discusses some promising initiatives to increase transit ridership or attract new market segments to transit.
- Chapter 8 concludes with a discussion of key factors affecting the future of transit ridership.

2 PROFILE OF RIDERSHIP ON TRANSIT

This chapter provides an overview of transit ridership in Canada considering the following dimensions:

- Gender
- Age
- Employment Status
- Vehicle Availability
- Trip Purpose (peak only)

2.1 Daily Transit Trip Making

Transit riders are somewhat more likely to be women and under 25 years of age, and most are either workers or students. Approximately 57% of transit riders nationally are women, whereas they are about 50% of trip makers, while about 31% are 15-24 years of age and 19% are 25-34. An estimated 52% of transit riders on the typical weekday are employed persons while 34% are students.

Whereas an estimated 14% of Canadians living in urban households do not have access to a car or light truck, this group accounts for approximately 36% of all transit trips on a typical weekday.

Figure 2.1 shows that for every community size/type class, women account for most transit riders with the highest female transit use being in the smaller communities (less than 150,000 pop) and in large satellite communities in the GTA (Mississauga, Brampton, and the York and Durham transit systems).

Figure 2.1

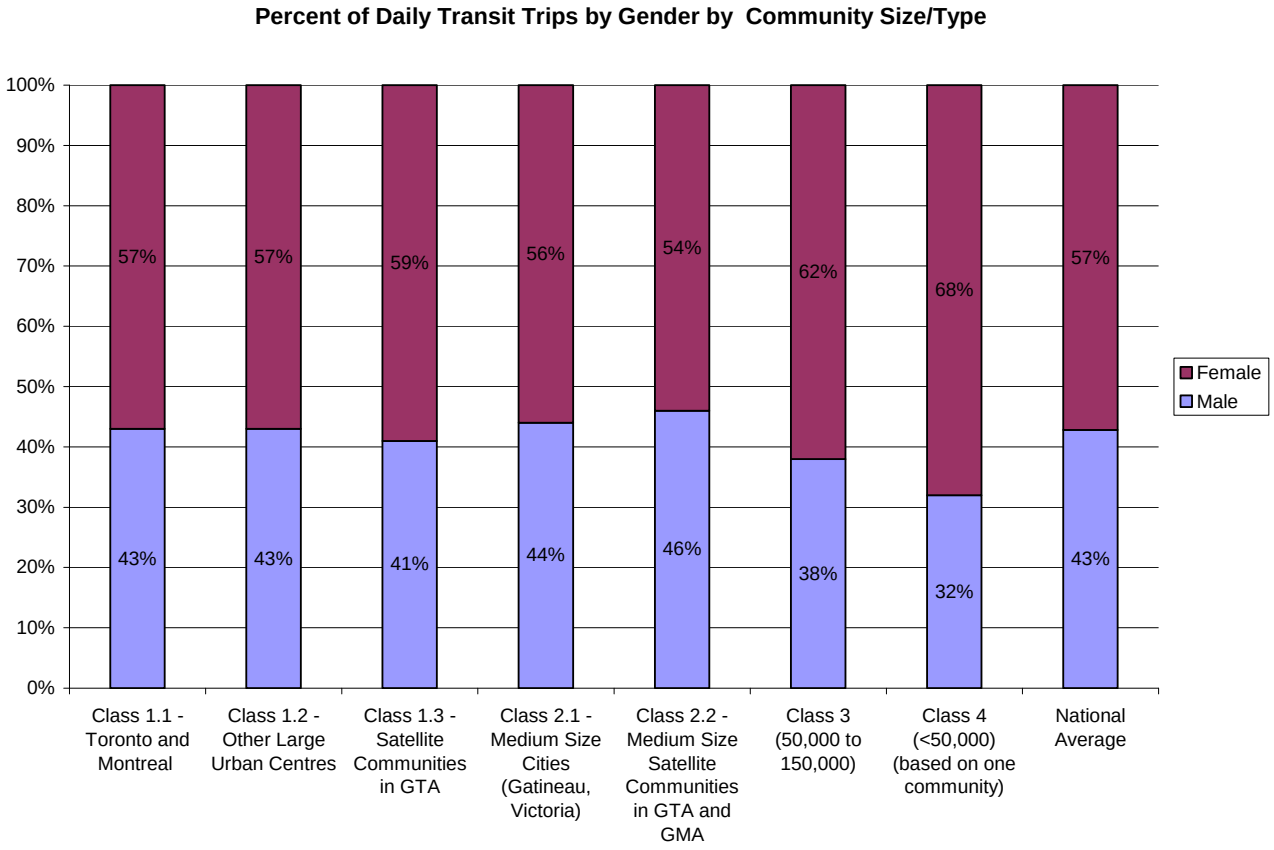
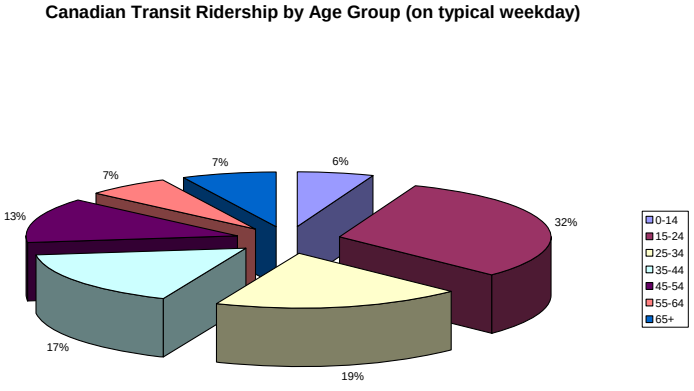


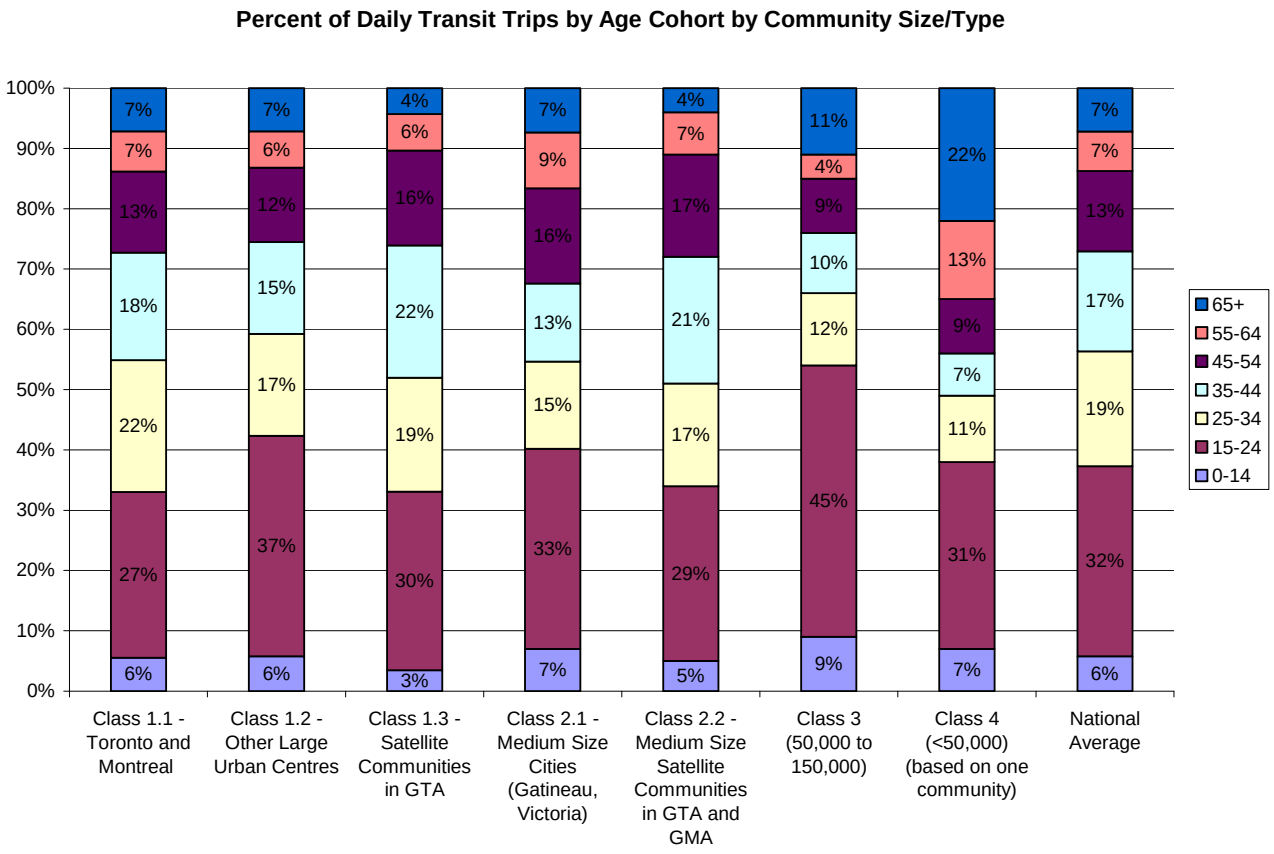
Figure 2.2a shows the distribution of Canadian transit riders by age. The largest single group of transit riders 15 to 24 years of age and the size of each transit cohort tends to decline with age.

Figure 2.2a



As illustrated in Figure 2.2b, there is substantial variation in the distribution of transit riders by age group across the classes. However, in almost every case the largest single group of

Figure 2.2b

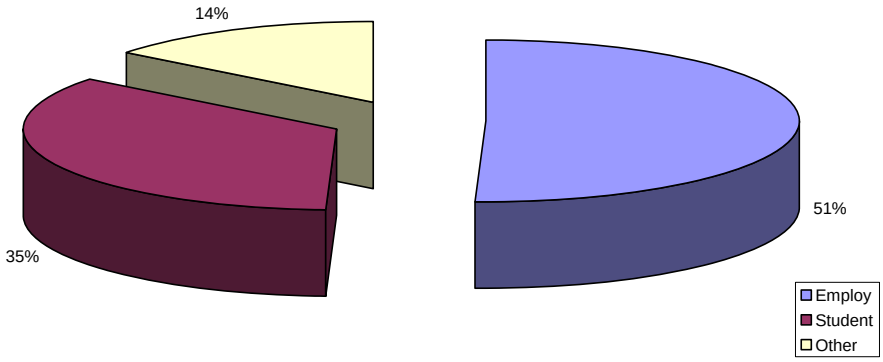


riders are 15 to 24 years of age. In other large urban centres and medium size cities, the second largest cohort of transit riders is that aged 25-34. In the Satellite communities outside of Toronto and Montreal, the second largest age cohort is that aged 35-44. This age group shows increased transit ridership in these communities because of the high level of commuting to downtown jobs, usually using the commuter rail lines that serve communities such as Oakville, Mississauga and York and Durham Regions in the GTA and Laval and Longueuil in the GMA.

As shown in Figure 2.3a, on average, employed individuals account for just over 50% of Canadian transit riders, while students account for just over one third of all riders.

Figure 2.3a

Canadian Weekday Daily Transit Trips by Employment Status



There are substantial variations in these proportions between classes and communities. As shown in Figure 2.3b, workers account for 32 to 65% of regular transit users on any given weekday. In most cases, workers account for more than 50% of all weekday transit trips, including almost 2/3rds of transit riders in the satellite communities around Toronto and Montreal, and 54% in Toronto and Montreal (down from about 60% in the late 1980s) [4].

Students account for between 28% and 48% of all weekday transit trip makers. In satellite communities, transit plays a smaller role in carrying secondary school students to and from school, as private school bus operators and cars tend to handle school trips, while in independent cities, public transit still plays an important role in serving school trips. Persons who neither work nor attend school account from between 7% and 45% of all weekday transit trips but the lowest values apply to suburban satellite communities (7% for classes 1.3 and 2.2); and the higher values applying to smaller Class 3 and 4 communities. As indicated, the highest value was observed for Class 4, based on a single case.

[4] STRP Report #1-1, The Implications of Demographic and Socio-Economic Trends for Urban Transit in Canada: Phase 1 – Trends and Implications,, CUTA, December 1991, Exhibit 8, page 16,

Figure 2.3b

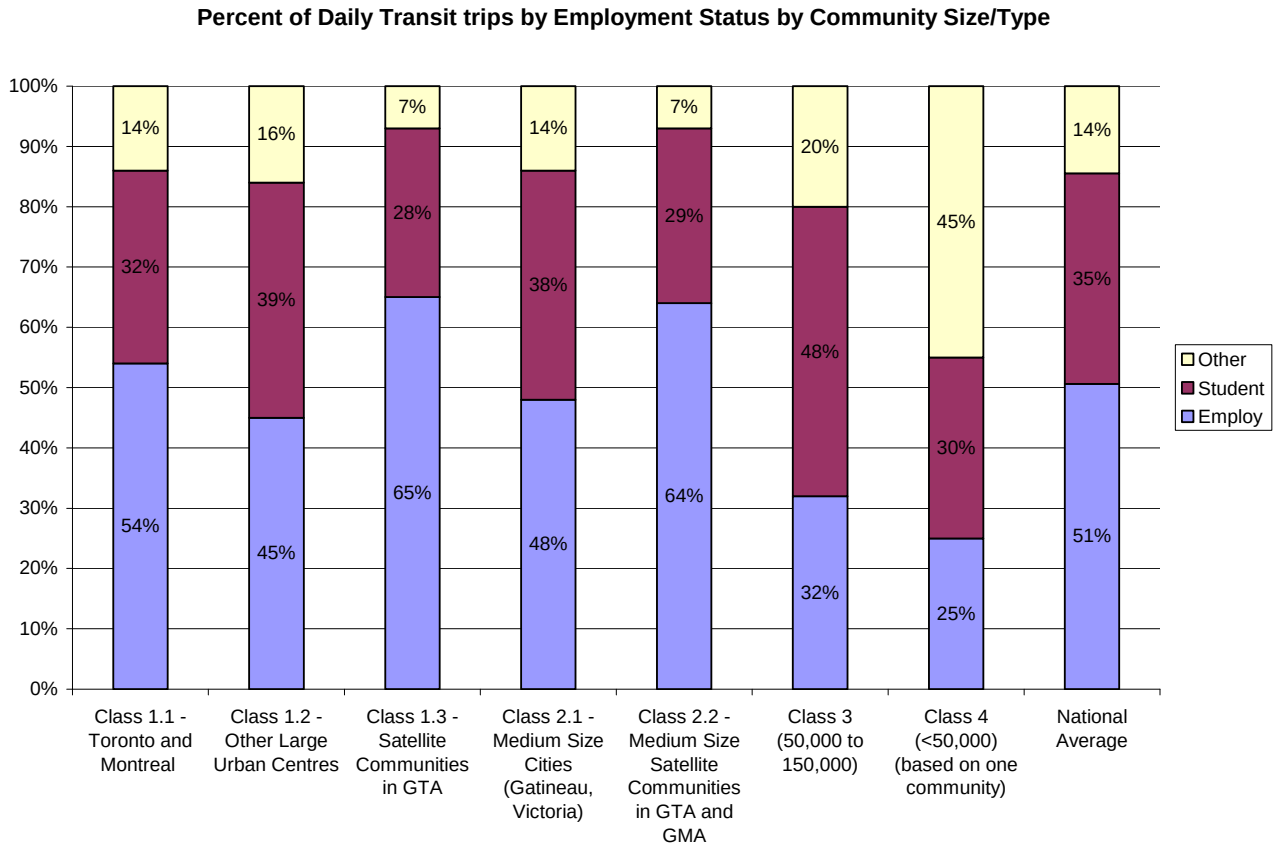
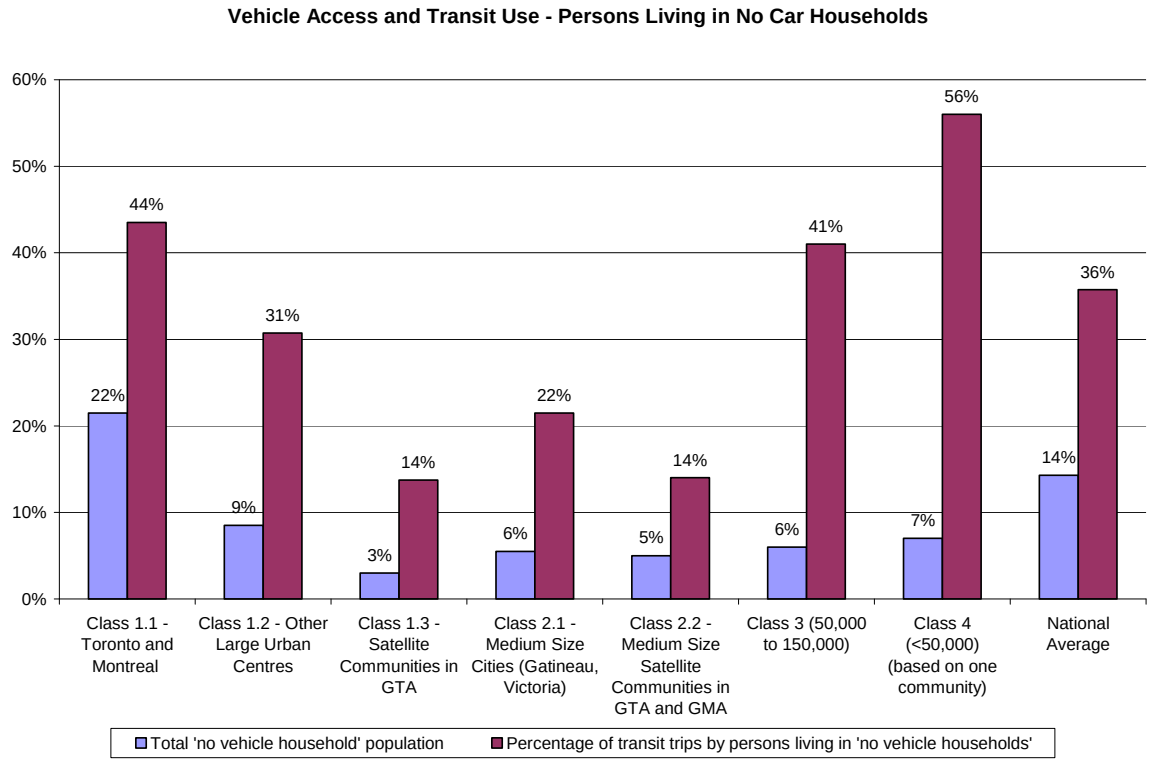


Figure 2.4 summarizes available information on two important factors: the percentage of persons who live in households without cars, about 14% of all urban households in Canada, and the proportion of total transit trips made by persons who do not have access to a vehicle.

Not surprisingly, the highest proportions of 'no car' households are in Toronto and Montreal, cities with well established transit systems that offer a relatively high level of basic mobility to their residents. Generally speaking, the proportion of 'no car' households declines with city size but is lowest in the larger suburbs around Toronto, at about 3% for places such as Mississauga, York and Durham Regions. Within class 2 urban communities, including the smaller satellite communities, 5% to 6% of residents live without cars, a similar level to the nation's smaller communities.

Overall, persons living in 'no car' households account for about 36% of all transit trips with this value ranging from a high of 44% for Class 1.1 (Toronto / Montreal) to a low of 14% in the large and medium sized satellite communities. In the independent cities outside of Toronto and Montreal, 'no car' households accounted for between 22% and 31% of all transit riders.

Figure 2.4



Auto ownership and transit use are related in two ways. In those communities where transit service is superior, a high proportion of residents can and do live without cars. They rely on transit for their mobility needs. On the other hand, the decision to purchase a car, even in Toronto, Montreal, Ottawa and Vancouver, communities that are well served by transit, has an impact on transit ridership. In Ottawa, 2005 Attitude Survey results suggest that the main reason for stopping using transit regularly is the purchase of a car.

2.2 Peak Period Trips

Figures 2.5 and 2.6 show the gender and employment status distributions for AM peak period transit trip making.

While the distributions by gender are very similar with only very small differences for each size class, this is not the case for the employment status distribution. Workers clearly dominate the AM peak for larger communities accounting for 55 to 72% of all AM peak trips for classes 1.1, 1.2, 1.3, 2.1, and 2.2. However, workers account for only 41% of AM trips for Class 3 communities and 38% of AM trips for Class 4 communities. Trips by “others” account for only 3% on AM peak transit trips, overall.

Figure 2.5

Percent of AM Peak Transit Trips by Gender by Community Size/Type

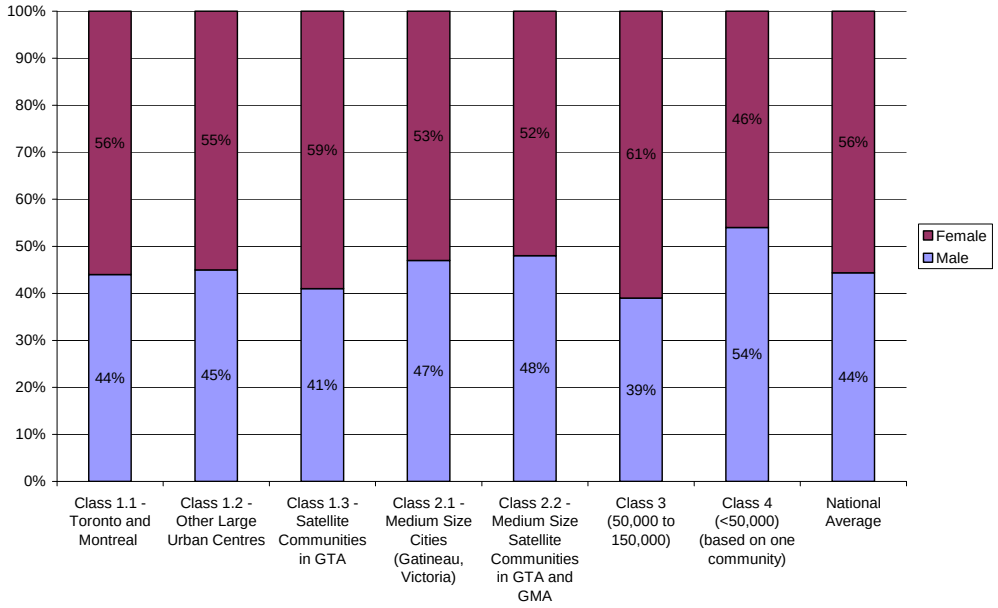
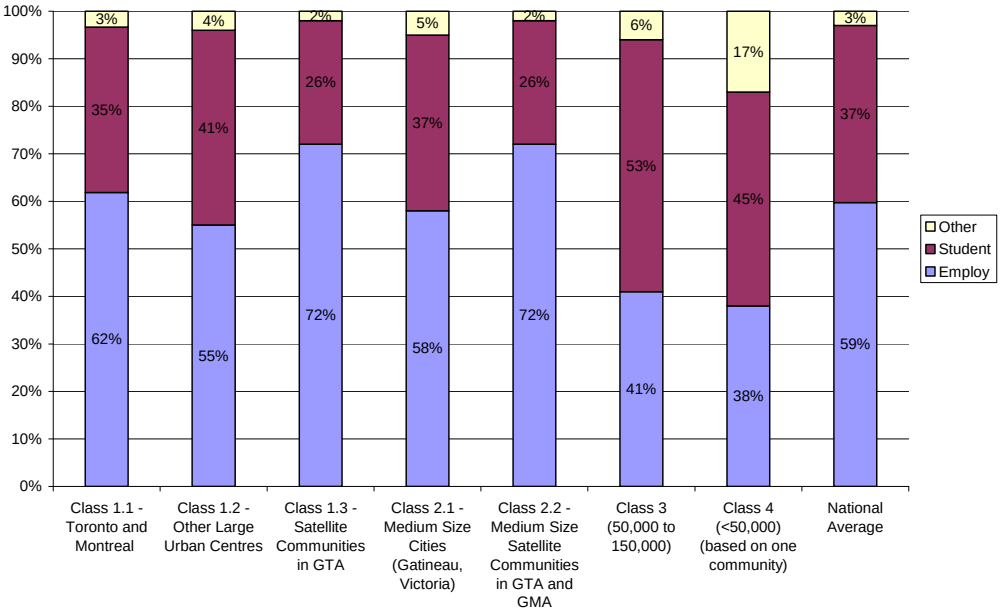


Figure 2.6

Percent of AM peak Period Transit Trips by Employment Status and Community Size/Type



3 TRANSIT'S MARKET SHARE

Chapter 3 discusses transit trip making in the context of total trip making in Canadian communities considering transit's share of total daily trips and how transit use varies by gender, age and employment status across the broad range of community types.

3.1. Transit and Total Trip Making in Canadian Communities

This section presents a general discussion of variations in transit use across Canadian communities in relation to total trip making by age, gender, and employment status in terms of daily trip rates (total and transit), and transit "market shares" or "modal splits".

Figure 3.1 shows typical daily market shares for the different modes (auto driver, auto passenger, transit walk and other) for the different community size/type classes. This figure shows that the auto continues to capture the majority of daily trip making across all community classes with the auto driver mode, usually involving a single person in a vehicle, accounting for between 54% and 73% of weekday trips. Transit captures about 22% of daily travel in Class 1.1 and about 11% of daily travel is class 1.2, but six percent or less in the other communities.

Figure 3.1

Daily Market Shares by Mode for Different Community Size/Type Classes

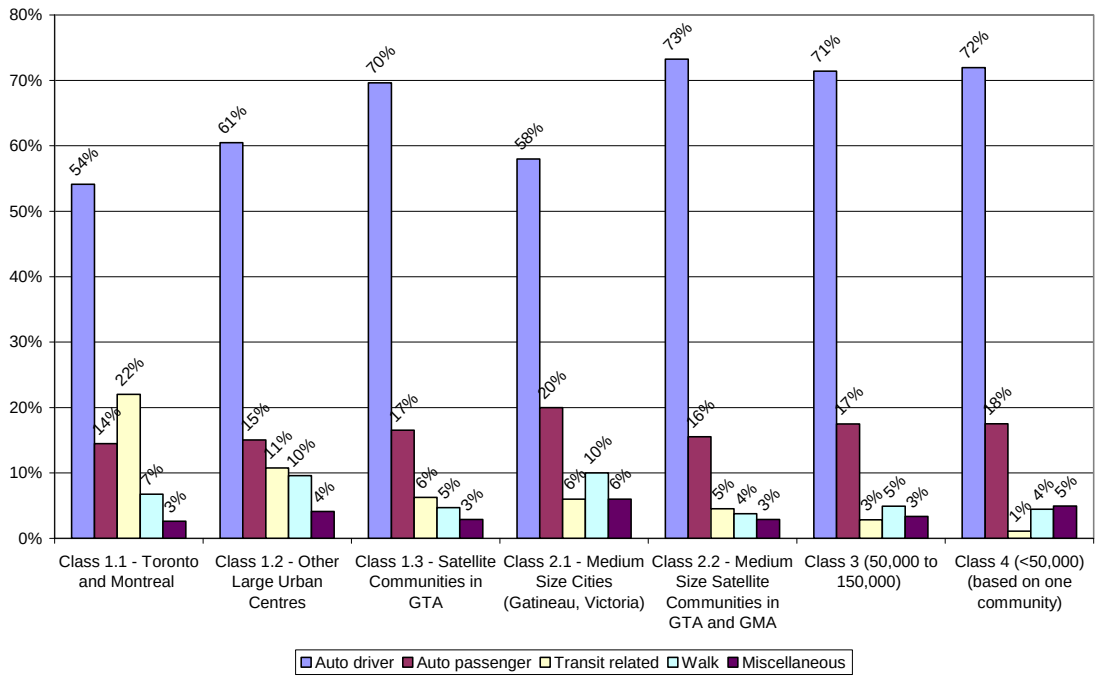


Table 3.1 provides more details regarding total and transit trip rates and market shares for each community type as well as variations within classes. It summarizes the relevant data for the seven community size/type classes employed in this study including data on total daily trip rates and variations associated with age, gender, and employment status. While total trip

rates vary with community size and the precise questions used in the various surveys[5], these results do indicate consistent variations in trip making by age, gender and employment status.

Consistently, as reported in SRTP Report #1-1 in 1991, the age cohort reporting the highest total trip rates was 35 to 44 years of age. Also, employed persons consistently reported higher total trip rates than students and others, as was reported in 1991. However, whereas men had traditionally reported higher trip rates, because they were more likely to have access to cars, this is no longer the case in most Canadian communities. The exceptions are Toronto and Montreal, which have the lowest car ownership, and the large satellite communities around Toronto (Class 1.3).

In terms of transit trip making, Table 3.1 shows that transit trip rates decline with community sizes and as one moves from city to suburb within a given size class but that the female trip rate is consistently higher than the male rate.

Whereas the reported average transit trip rates is .48 trips per weekday in Toronto/Montreal, this average falls to .30 trips/day for Class 1.2, and 22 trips/day for class 2.1. The suburban transit trip rates in the satellite communities are .14 trips/day (for class 1.3), and .18 trips/day (for class 2.2). The smaller communities reported transit trips per day are in the .05 range.

Transit use among women is consistently higher than the average across all community types and this applies for all transit trips and trips made by workers, students and others. These facts are reflected in the female transit market share figures than are generally higher than the total (or average) transit market shares except for Size Class 2 (2.1 and 2.2), where they are equal to the average.

[5] The reported total trip rates by community type are effected by some definitional differences regarding walking trips and should be used with caution. Some O-D surveys asked respondents to report all walk trips, for all trip purposes, while others (e.g. those for the GTA), reported only walk trips associated with travel to and from school and work. Also, trip diary methods tend to report higher numbers of walk trips compared to telephone surveys, even where definitions are similar.

Table 3.1

Summary of Total Mobility and Transit Travel Statistics for Community Types

Community Size/Type Description	1.1 Toronto/Montreal		1.2 Other Large Centres		1.3 GTA Large Satellites		2.1 Medium Size Cities		2.2 Medium Satellites		3 50,000 to 150,000		4 Less than 50,000**	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
Daily Trips per Capita: All Modes														
Total Trip Rates*	2.17	2.01-2.33	3.04	2.20-3.31	2.22	2.12-2.30	2.92	2.92-3.45	2.39	2.31-2.46	2.45	2.29-2.53	2.42	2.42
Peak Age Group	35-44		35-44		35-44		35-44		35-44		35-44		35-44	
Peak Rate (for peak age grp)	2.74	2.67-2.81	3.64	3.04-4.18	3.08	2.96-3.20	3.43	2.86-3.99	3.09	2.83-3.45	3.43	3.21-3.60	3.62	3.62
Male Rate	2.24	2.11-2.36	3.00	2.23-3.56	2.24	2.18-2.28	2.88	2.41-3.35	2.37	2.34-2.39	2.41	2.22-2.50	2.42	2.42
Female Rate	2.12	1.92-2.31	3.07	2.17-3.63	2.20	2.06-2.31	2.96	2.38-3.54	2.41	2.29-2.57	2.49	2.37-2.56	2.42	2.42
Employed Rate (Total)	2.71	2.73-2.69	3.44	3.00-3.90	2.97	2.90-3.05	3.11	2.54-3.68	2.93	2.69-3.19	3.27	3.05-3.43	3.35	3.35
Student Rate (Total)	2.04	1.67-2.42	2.75	1.82-3.35	1.70	1.60-1.80	2.84	2.61-3.06	2.08	1.75-2.42	1.88	1.65-2.02	1.84	1.84
Other Rate (Total)	1.47	1..15-1.79	2.58	1.42-3.22	1.27	1.01-1.48	2.64	1.91-3.37	1.75	1.71-1.83	1.66	1.44-1.82	1.71	1.71
Employed Rate (female)	2.69	2.68-2.70	3.56	30.5-4.07	3.02	2.91-3.15	3.21	2.60-3.82	3.01	2.71-3.39	3.44	3.24-3.59	3.47	3.47
Student Rate (female)	2.06	1.69-2.43	2.78	1.88-3.34	1.74	1.63-1.86	2.89	2.63-3.15	2.11	1.77-2.44	1.96	1.71-2.17	1.95	1.95
Other Rate (female)	1.49	1.15-1.83	2.60	1.44-3.25	1.36	1.07-1.58	2.63	1.83-3.42	1.86	1.73-2.08	1.72	1.47-1.83	1.73	1.73
Daily Trips per Capita: Transit														
Total Trip Rates	0.48	0.44-0.52	0.30	0.14-0.46	0.14	0.11-0.18	0.22	0.22	0.18	0.08-0.30	0.07	0.02-0.11	0.03	0.03
Peak Age Group	15-24		15-24		15-24		15-24		15-24		15-24		15-24	
Peak Rate (for peak age grp)	1.03	0.93-1.13	0.65	0.31-0.98	0.31	0.26-0.38	0.49	0.43-0.55	0.47	0.15-0.85	0.25	0.06-0.39	0.07	0.07
Male Rate	0.43	0.39-0.47	0.27	0.12-0.43	0.11	0.09-0.15	0.20	0.19-0.21	0.17	0.08-0.27	0.05	0.01-0.09	0.02	0.02
Female Rate	0.53	0.49-0.56	0.33	0.17-0.49	0.16	0.13-0.20	0.24	0.24	0.20	0.08-0.34	0.08	0.03-0.09	0.04	0.04
Employed Rate (Total)	0.56	0.55-0.56	0.28	0.13-0.44	0.18	0.14-0.23	0.21	0.20-0.22	0.23	0.12-0.35	0.12	0.02-0.46	0.02	0.02
Student Rate (Total)	0.71	0.58-0.83	0.51	0.25-0.87	0.16	0.14-0.20	0.44	0.43-0.46	0.27	0.08-0.50	0.16	0.03-0.27	0.04	0.04
Other Rate (Total)	0.21	0.17-0.25	0.16	0.10-0.20	0.04	0.03-0.05	0.09	0.07-0.12	0.04	0.03-0.07	0.04	0.02-0.05	0.03	0.03
Employed Rate (female)	0.68	0.65-0.70	0.33	0.17-0.51	0.23	0.19-0.31	0.24	0.24-0.25	0.28	0.12-0.44	0.05	0.02-0.09	0.03	0.03
Student Rate (female)	0.75	0.62-0.88	0.55	0.29-0.92	0.17	0.15-0.21	0.47	0.46-0.47	0.28	0.09-0.54	0.18	0.03-0.30	0.04	0.04
Other Rate (female)	0.23	.018-0.28	0.17	0.11-0.20	0.04	0.03-0.06	0.11	0.08-0.14	0.05	0.03-0.08	0.05	0.03-0.07	0.04	0.04
Female Market Share	25%	24%-26%	11%	8%-16%	8%	6%-10%	8%	7%-10%	8%	3%-14%	3%	1%-6%	1%	1%
Worker Market Share	21%	20%-21%	8%	4%-13%	6%	5%-8%	7%	6%-8%	8%	4%-13%	4%	1%-15%	0%	0%
Student Market Share	35%	34%-35%	18%	11%-30%	9%	8%-12%	16%	14%-18%	12%	4%-21%	8%	2%-13%	2%	2%
Other Market Share	14%	14%	6%	5%-7%	3%	2%-4%	4%	3%-4%	2%	1%-4%	3%	1%-4%	2%	2%
Total Market Share	22%	22%	10%	7%-15%	6%	5%-8%	8%	6%-9%	8%	3%-13%	3%	1%-5%	1%	1%

Sources: most current available O-D Surveys for representative communities (2001 to 2003)

* Total Trip rates vary due to survey practices: Whereas Vancouver, Victoria and Montreal asked respondents to report all walk trips, the TTS survey only reported walk trips for work and school

** Class 4 is based on a single city, Welland Ontario, and should be used with caution

As shown in Table 3.2, the data reported in the CUTA Fact Book provides a generally consistent picture. Transit ridership per capita is highest in the Class 1.1 communities and the large independent urban centres (with more than 400,000 population). In general, per capita transit ridership tends to decline with community size and transit level of service (as measured by vehicle hours/capita), and is lower in the large satellite communities around Toronto. The smaller suburban communities (class 2.2) around Toronto and Montreal are reporting higher transit ridership (annual riders per capita) because Laval and Longueuil are included along with Burlington and Oakville. These two Montreal area communities are much more comparable with Mississauga and York Region than Oakville and Burlington in terms of location, urban form/density and therefore transit use, despite their smaller size.

Table 3.2

Summary of CUTA Population, Ridership, Service and Fare Data by Class

Class	Service area population	Population density (ppl/sq km)	Annual ridership	Annual Regular Service Trips /capita	Estimated weekday ridership	Average Vehicle hrs/Capita
Class 1.1 - Toronto and Montreal	4,355,307	3,845.7	790,503,000	181.50	2,550,010	3.02
Class 1.2 - Other Large Urban Centres	6,542,416	1,301.2	496,348,565	75.87	1,654,495	2.01
Class 1.3 - Satellite Communities in GTA	2,356,251	943.9	59,178,996	25.12	215,196	1.08
Class 2.1 - Medium Size Cities (Gatineau, Victoria)	1,827,475	911.5	93,332,227	51.07	339,390	1.46
Class 2.2 - Medium Size Satellite Communities in GTA and GMA	1,064,204	1,509.5	53,646,875	50.41	206,334	1.30
Class 3 (50,000 to 150,000)	1,979,871	249.6	58,849,203	29.72	226,343	1.12
Class 4 (<50,000)	572,967	233.4	8,514,863	14.86	32,749	0.73
Totals	18,698,491		1,560,373,729		5,224,517	

4 COMPARISON OF TRANSIT RIDERSHIP TO GENERAL POPULATION

This chapter compares transit's ridership profile to the general population considering gender, age, employment status and vehicle availability.

4.1 Gender

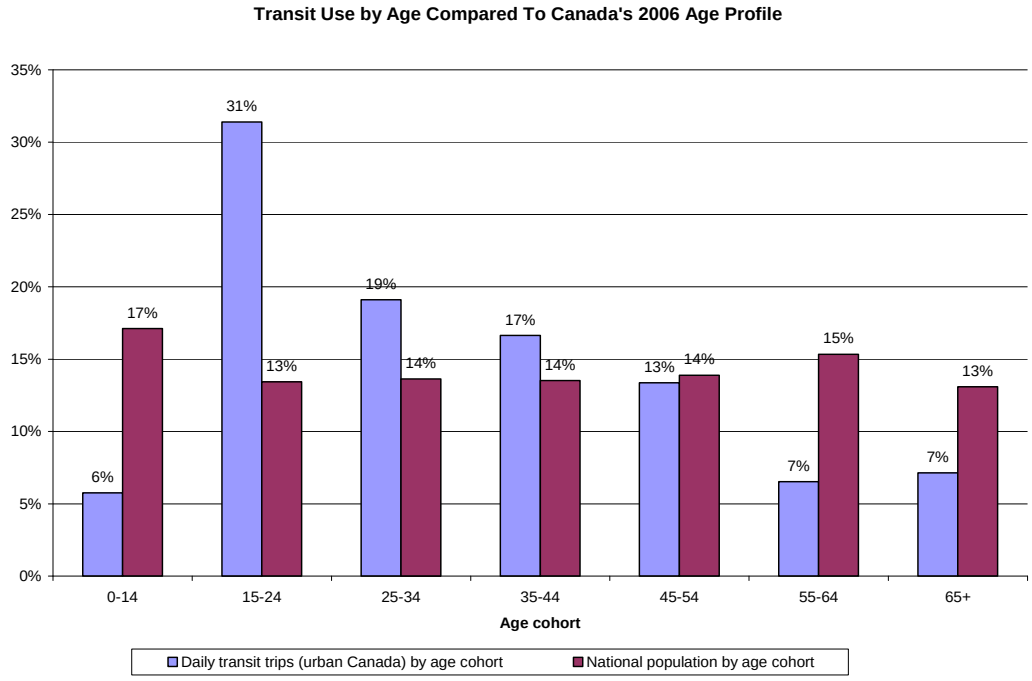
Women are over-represented among transit riders in terms of both daily ridership and peak period ridership. Whereas they are about 50.4% of Canada's urban population, they account for about 57% of daily ridership and about 56% of AM peak ridership. Historically, the assumption was that male transit ridership was higher during peak periods for downtown oriented commutes using premium services including Metro/subway, LRT and commuter rail (in Toronto, Montreal and Vancouver). The most current data suggests that there is very little difference in the gender profiles for daily and peak transit riders, with women being a higher proportion of total riders in the largest satellite communities around Toronto and in smaller cities.

4.2 Age- profile

As shown in Figure 4.1, transit users are over-represented among the younger cohorts, particularly the 15-24 age group which continues to account for a disproportionate share of total transit ridership (31% versus its 13% share of the total population). While transit riders

are over-represented in the 15-44 age groups, they are under-represented among those under 14 years of age and over 55 years of age.

Figure 4.1



The under-representation among seniors appears to represent a change from earlier data but was expected given the increases in auto access and driver's licenses among older women and the associated declines in transit use.

4.3 Employment status

Just over half of Canada's population (50.5%) works, whereas working people account for 51% of all transit trips. Students are over-represented among transit users, as indicated by the over-representation of persons aged 15-24. The 15-19 age group, which includes high school and beginning post-secondary students, generally has marginally higher trip rates than the 20-24 age cohort, which includes both young workers and university/college students. By definition, the other group including the unemployed, housepersons and retired individuals are under-represented among transit riders.

4.4 Vehicle availability

Vehicle access is a major factor in determining propensity to use transit. Whereas about 14% of Canadian urban households do not own or have access to a personal use vehicle (car or light truck), the residents of these households account for about 36% of all weekday transit trips.

5 OTHER PERSPECTIVES ON TRANSIT RIDERSHIP PROFILE

While the O-D survey data provide a very good picture of the demographic and auto ownership/ access characteristics of transit riders, they do not provide information on factors such as income, immigration status, or ethnicity. This chapter summarizes the available information on income, immigration and ethnicity in relation to propensity to take transit.

5.1 Income

Household income relates to auto access (ability to pay) as evidenced by the fact that individuals with family incomes of less than $40,000 are almost twice as likely to travel to and from work by transit than persons from families earning $80,000 or more.[6] In general, richer households have more and better cars and are less likely to use transit, except for commute trips to downtown, where transit is often the "better way".

Despite the obvious relationship between auto access and income, in places where transit service is not an option (and people need a car to access work), most households have access to at least one car: 95% in Barrie, Victoria, Vancouver, 91% in Longueuil, and 86% in Kingston. Even in Montreal, the community with the lowest auto access, 75% of the population lives in households with at least one vehicle.

5.2 Immigrants/Ethnicity

A recent study for Statistics Canada by Heinz and Schellenberg, documents the high public transit use among immigrants for travel to/from work. The authors looked at Census Place of Work data for 1996 and 2001 for 12 CMAs ranging from Toronto and Montreal to Kitchener.

Persons who had immigrated within the previous ten years were generally about twice as likely to commute by transit than Canadian born residents in the same communities. In the case of Montreal, whereas 20.9 percent of Canadian born residents used transit for their commutes to work, the comparable percentage for new immigrants (ten years or less) was 48.6% and for those who immigrated 11 to 20 years earlier, it was. 35.5%. Even those who immigrated to the Montreal area more than 20 year ago where more likely to commute by transit than their Canadian born counterparts (24.5%).

For Toronto, Canada's largest immigrant settlement area, whereas 20.7 percent of Canadian born residents commuted by transit, the figure for new immigrants was 36.3 percent, declining to 26.8 percent for those who immigrated 11 to 20 years earlier and 19.9 percent for those who had immigrated more than 20 years earlier.

Looking at the data for all 12 CMA's it is clear that the propensity for immigrants to be "above average" transit users declined only slowly with the length of time in Canada. Transit use among immigrants who had immigrated within the previous 11 to 20 years was consistently higher than for Canadian born or the total (or average) transit use for all communities. Among those who immigrated more than 20 years ago, transit use was higher than the average or for the Canadian born in most cases (except for in Montreal, Ottawa-Hull and Vancouver where long term immigrants were still more likely to take transit).

The analysis of other factors revealed that the gender differences in transit use discussed earlier are even more pronounced among immigrants. Whereas the authors report a 6

[6] A. Heinz and Grant Schellenberg, Public Transit Use Among Immigrants, May, 2004, Analytical Studies, Research Paper Series, Statistics Canada, 11F0019MIE No. 224. p. 7.

percent spread between transit shares for Canadian born women and men, among recent immigrants the spread was 17 percent.

With respect to age, older immigrants are much more likely to use transit than other Canadian residents. For example, immigrants in their forties and fifties are reported to be twice as likely to use transit as Canadian born persons of the same age.

Higher public transit use among immigrants appears to be largely independent of income with immigrants from high income households ($60,000 to $80,000 in 2000) having a 32 percent transit market share for commute trips while only 19% of their Canadian born counterparts commuted by transit.

Considering trip lengths, immigrants are different from their Canadian counterparts in that they tend to travel farther to work and are more likely to use transit than Canadians regardless of distance.

The propensity to use transit varies for different ethnic groups with immigrants originating in the Caribbean, Southeast Asia, Central and South America, Africa and South Asia tending to be higher transit users, especially in Toronto and Montreal. The report also notes that the newest immigrant groups appear to have higher rates of transit use than the earlier cohorts which could reflect the changing patterns of immigration.

Given the greater use of transit by new immigrants and the fact the immigration is the major source of growth in urban Canada, immigrants represent an important new market for transit. Their needs and travel patterns should be explicitly considered in the planning or Canada's urban transit systems.

6 EVOLUTION OF TRANSIT RIDERSHIP SINCE 1991

Chapter 6 discusses the changes in the Canadian urban transit environment and related changes transit's market shares since the 1990s

6.1 Context

The evolution of transit ridership since the 1990s has to be considered within the changing urban context in Canada. Growth and urban development has been primarily suburban and auto-oriented in this period (which implies increasing auto ownership and use and longer commute distances).

Downtown job growth has been slow or negative with downtown development in Toronto, Montreal and Vancouver being increasingly dominated by high-rise condominium apartments, aimed at young downtown workers and empty-nesters, rather than office towers.

Most new jobs are located in auto-oriented locations and many office jobs have in recent years relocated from places with excellent or good transit service to remote locations (Loblaw and State Farm Insurance examples in GTA) where transit is not an option.

6.2 How has transit done in this largely negative context?

The review of changes in transit use over the last five to ten years, based on the available time-series information provided from the CRD, Greater Toronto and Montreal Areas and Ottawa, suggests that transit is doing very well. The declines identified and explained in STRP Report #1-1 (The Implications of Demographic and Socio-Economic Trends for Urban Transit in Canada), have been largely overcome.

The 1996 to 2001 period in the GTA and 1998 to 2003 period in the Montreal area show that transit has turned the corner as historical declines in market shares have ended. Transit in Toronto is holding its own in terms of market share and increasing in terms of total ridership despite the decline in the proportion of jobs in the Downtown and the failure to improve transit services within the City until recently. However, GO Rail and regional transit systems have continued to develop in the GTA with GO carrying an increasing proportion of downtown oriented jobs and local transit systems maintaining their share of rapidly growing travel markets.

Montreal's transit market share has increased since 1999 after years of decline, in response to modest job development in the downtown coupled with improved transit services including new commuter rail lines and express bus services.

Ottawa has also seen a dramatic recovery in ridership associated with downtown development and continued improvements in service and data with the average daily transit market share increasing from 13% to 15% between 1995 and 2005.

The Vancouver data also reveals increases in transit's market share (from 10.3% to 10.8% between 1999 and 2004), even as jobs have continued to decentralize and car ownership has increased dramatically (by 12.6% between 1999 and 2004 whereas the population increased by only 5.9%)

Even in smaller centres such as Gatineau and Victoria, transit's share of total daily trip making has either increased or held its own. In the case of Gatineau, transit's share of daily trips increased from 7% to about 9%. Victoria held its own with local transit carrying about 6 percent of all trips with an increase in travel by students compensating for a small decline in work-related travel.

6.3 How Has Transit's Profile Changed?

As discussed in Section 3, transit's profile, in terms of gender, age and auto access is quite similar to that described in 1991. The predominance of women is less pronounced but the groups which consistently display the highest transit use are aged 15-24. The one change that is evident with respect to age is that transit use among seniors has declined.

Most transit users are employed persons and the next largest group is comprised of secondary and post-secondary students. Transit plays an important role in carrying Canadians to and from work and school and serves non-work and school trips as well.

Perhaps the most significant lesson that this review has identified is the importance of new immigrants to the transit market. There is no doubt that some of the resilience of transit ridership and the maintenance of transit's market share, in the face of growing auto use, negative land use and other trends, is the result of the rapid increase in the immigrant populations in urban Canada. Immigrants have been shown to be more likely to use transit and quite likely to stay with transit for extended periods (decades), even as their incomes increase and they move to suburban locations.

7 PROMISING INITIATIVES TO INCREASE TRANSIT RIDERSHIP OR ATTRACT NEW MARKET SEGMENTS TO TRANSIT

7.1 Bus Rapid Transit

Bus Rapid Transit has been described as "a combination of facility, systems, and vehicle investments that convert conventional bus service into a fixed-facility transit service, greatly increasing their efficiency and effectiveness to the end user"[7].

One of the earliest and the most successful example of large scale BRT in North America has been in Ottawa, where the Transitway has proven very effective in both attracting new riders and carrying large peak hour demands (approaching 10,000 peak hour, peak direction passengers at the peak load point). Outside of Canada, Brazil has had long established BRT systems which were the inspiration for the rekindled American interest in BRT and there are a large number of recent and planned arterial BRT lines in the US. In fact, the U.S. Federal Transit Administration sees BRT as a precursor to more expensive rail investment.

[7] U.S.Federal Transit Administration, Bus Rapid Transit Demonstration Program, December 2002.

Given the high interest in BRT in the US, there has been a great deal of recent research that has attempted to assess the success of BRT, not only in attracting ridership, but also in attracting former auto users. Recent research suggests that the level of ridership achieved with BRT systems is already comparable to that achieved by many LRT systems.

The GAO reports that ridership on 4 U.S. busways ranged from 7,000 per day to about 30,000, and averaged about 16,000 per day while ridership on 13 HOV bus lines ranged from 1,000 to 25,000 (average 8,100) per day. Two arterial BRT lines were identified by the GAO in Los Angeles - the Wilshire-Whittier line carrying 32,500 per day and the Ventura Line carrying about 9,000 per day - both opened in 2000.

Recent surveys of before and after ridership and mode choice were undertaken for new BRT projects in Vancouver and Los Angeles which address the critical modal shift question.

7.1.1 Vancouver:

Starting in 1996, Bus Rapid Transit has been provided in the Vancouver Region using the brand-name B-Line. This class of service is marketed as "rapid transit without rails" and as an extension of the rapid transit system. Currently 3 B-line service operate: the 99 B-Line which operated east-west connecting the SkyTrain with Vancouver's Uptown employment district and serves about 25,000 a day; the 98 B-Line operating between downtown and Richmond as well as the Airport and serves over 18,000 per day; and 97 B-Line that serves an eastern suburb of Vancouver handling more than 6000 passengers per day.[8] The #98 B-Line is in the process of being converted to rapid transit (the Canada Line).

A literature review carried out for a TC Study by Cansult and HCI in 2004 found that:

- the Broadway-Lougheed #99 B Line had attracted 8,000 new riders including 20 percent, or about 2,000, who previously used autos, a group that accounted for about 80% of the net increase in transit ridership, and
- the route serving Vancouver Airport and Richmond (98B-line) attracted a 30 percent increase in ridership (about 4,000 new transit rides). Survey data collected in April/May 2002, suggested that about 55% of the net new transit riders attracted to this line were former auto drivers or passengers.

7.1.2 Los Angeles:

Los Angeles has pursued an aggressive BRT strategy that supplements their other heavy and light rail corridors. An evaluation of the first Metro Rapid BRT services in the Wilshire-Whittier and Venture of Los Angeles found a gain of 26 to 33 percent gain in ridership including about 1/3 new transit riders, 1/3 diversions from other routes and 1/3, former bus riders making more trips.

Passenger surveys of these two lines indicated that

- 39 percent and 51 percent of the total riders attracted to the respective lines in the first two years were new to transit and 14 and 17 percent were former auto drivers,

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[8] Brian Mills, "Bus Rapid Transit in Vancouver: A Review of Experience" http://www.nbrti.org/projects.htm

- 36 percent of the Wilshire/Whittier net new riders were former auto drivers while 33 percent of the net new riders on the Venture line were former auto drivers.

These modal shift numbers are very impressive in that they are comparable to the gains observed on the South Calgary LRT line in its early years of operation. It should be remembered that the South Calgary corridor had had the benefit of the earlier Blue Arrow Express bus system that had no doubt helped to build the market for transit in the planned rapid transit corridors. This would have tended to limit the potential short-term increase in LRT ridership.

As noted in TCRP 118, Bus Rapid Transit Practitioner's Guide, 2007, "The attractiveness of BRT systems, not unlike new rail systems, has been greater than might be expected on the basis of reductions in travel times and costs." (p 3-2) In other words, factors other than reduced headways and travel time savings must explain the observed increases in ridership, especially with low end BRT services such as the Vancouver and York Region Viva services. The available research suggests that these factors include real-time information, amenity advantages and identity or branding effects account from between 10% and 21% of the observed increases in ridership. The authors of TCRP 118, suggest that "A full-featured BRT service with separate running way could have a 25% gain in ridership beyond gains associated with travel time and frequency improvements". (p 3-9)

7.2 Smart Growth and Transit-Oriented Development

Transit-Oriented Development is intended to improve access to competitive transit services and support a lifestyle which is both healthier, because it allows an increased proportion of one's needs to be satisfied by walking and transit, and reduces the need for expensive automobiles. There is a great deal of interest in and research about TOD as documented in the following recent reports:

- "Realizing the Potential: Expanding Housing Opportunities Near Transit", April 2007 (FTA and HUD),
- TCRP Report 102, Transit-Oriented Development in the United States: Experiences, Challenges and Prospects, 2004,
- Transit-Oriented Development in Four Regions, 2004 (Gloria Ohland, The Great American Station Foundation),
- TCRP Research Results Digest, October 2002 (Number 52) " Transit-Oriented Development in the United States: A Literature Review", and
- "Transit Oriented Development: Moving from Rhetoric to Reality (by D. Belzer and Gerald Autler for the Brookings Institution and the Great American Station Foundation).

Despite the interest in Transit Oriented Development and many successes, progress has been slow and in most cases the lofty goals have not been achieved. However, increased transit oriented development in association with enhanced transit systems (HRT, LRT or BRT) is necessary, if our cities are to create environments where transit can play a larger role in serving the mobility needs of Canadians in a sustainable manner by placing jobs, shops and residential activities in close proximity to transit and creating pedestrian-oriented environments in these nodes.

In relation to non-residential TOD development, G. B. Arrington, notes that most development associated with US, LRT projects has been transit related, rather than transit oriented (TOD) in USA., because LRT lines do not deliver the volume of customers required to make TOD viable. These non-residential destinations have remained dependent on the auto because rapid transit does not serve all corridors/quadrants for work, retail and service trips.

From the residential perspective, one apparent benefit of transit oriented land use planning reflects the fact that "those who choose to ride transit choose their residential location based on this premise."[9] Therefore, if TOD planning focusing on LRT (or BRT) stations creates opportunities for new residents or empty nesters to live without a car (or with only one car), there is some expectation that there will be people who will make these choices. Ultimately, the success of TOD (and transit) will depend on the accessibility provided by LRT or BRT and the related feeder bus system – New residents must be able to get to relevant jobs, schools, shopping and services by transit.

7.3 University and Employer-Based Passes

7.3.1 Universal Passes for Post Secondary Students

Universal Transit Pass programs (aka U-Pass programs) are now in place at more than 21 colleges and universities in more than 12 communities in Canada. Students attending these institutions pay a mandatory fee with their tuition which entitles them to a post secondary transit pass for the term or school year.

The typical U-Pass fee is a fraction of the cost of buying regular transit passes, because the total cost of transit fares is distributed across the entire student population. However, in terms of the total revenue accruing to the transit operator, U-Passes result in more revenue than was collected originally through standard and student fares in order to fund the increased costs associated with the substantial increases in ridership that have resulted from the introduction of these passes.

The U-Pass phenomenon started with programs at Trent University and Queen's University in the early 1990's when only 1% of Canadian Post Secondary Students were enrolled in universal transit pass programs. By 2003, an estimated 17% of students were enrolled in these programs.[10]

Recent successful U-Pass programs include those in London, Ontario, Victoria, BC, Halifax, Nova Scotia and Vancouver, BC, as described below.[11]

In London, the University of Western Ontario Bus Pass was launched in 1998 and the Fanshawe College Bus Pass was launched in 1999. Over 35,000 post-secondary students in the London area were using Bus Passes by 2003-2004. The increase in campus ridership

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[9] Andy Johnson, "Bus Transit and Land Use: Illuminating the Interaction" in Journal of Public Transportation, Volume 6, No. 4, 2003, pp. 37.

[10] U-Pass Toolkit – A complete guide to universal transit pass programs at Canadian Colleges and Universities, May 2004, Noxon Associates Limited for CUTA, Canadian Federation of Students and BC Transit.

[11] Based largely on research carried out by TSi (now HCI) for the "Impact of Transit Improvements on GHG Emissions : A National Perspective, a project for Transport Canada, March 2005.

was estimated to be 50% in the first year and provided the impetus for London Transit to increase its service hours by 5,600 in the first year. The Bus Pass contributed to an overall 40% increase in London Transit's system-wide ridership from 1997 to 2003. While the number of parking permits issued by Western continues to sell out every year, the increase in undergraduate students (from 18,000 in 1998 to 24,000 in 2003) meant that there was a drop in the number of students per parking space.

In Victoria, British Columbia, the University of Victoria U-Pass was launched 1999. Some 18,000 UVic students had U-Passes in 2003-2004. Following its introduction, post-secondary transit ridership rose from 13% of Victoria's transit ridership in 1997-1998 to 24% in 1999-2000. For student travel to the university, the transit mode share increased from 31% in 1998 to 44% in 2000, 47% in 2001 and 51% in 2003. In the same time period, the mode share for car drivers dropped from 20% to 19%, car passengers dropped from 22% to 13%, and pedestrians dropped from 20% to 13%. Mode shares for overall travel to campus by staff and students changed between 1996 and 2000 as follows:

- car driver share decreased from 57.6% to 54.4%;
- car passenger share dropped from15.7% to 11.0%, and
- transit share increased from 11.1% to 17.8%.

The U-Pass reduced the incentive to drive and the number of parking permits sold by the university in the fall of 2000 dropped by 12% from the previous year.

In Halifax, Nova Scotia, Saint Mary's University U-Pass was launched in 2003. The average number of transit trips taken per month by the average Saint Mary's student increased from 7 to 8 a month to 14, representing an increase of 50,000 monthly transit trips by the Saint Mary's student population. Six thousand of the eligible 7,000 undergraduate students picked up their U-Pass sticker for the 2003-2004 academic year.

The U-Pass program for students at the University of British Columbia (UBC) and Simon Fraser University (SFU) in the Lower Mainland area of British Columbia has been highly successful since its launch in September 2003. This compulsory participation program for students at the two universities provides three-zone, unlimited-use transit passes at a substantial cost savings. A three-zone, monthly pass costs regularly costs $120, but students at UBC and SFU pay respectively an equivalent monthly fare of $20 and $23.

About 60,000 students at the two universities currently had U-Passes in 2003-2004 and during the academic term following the introduction of the program in September 2003, bus trips to UBC increased by 53% and to SFU by 40%. The number of SOV trips to UBC has fallen by almost 20% providing a savings of 15,000 tonnes of GHG per year and eliminating a need for an additional 1,000 to 1,300 parking spaces on campus.

Although the U-Pass is a targeted TDM measure, its impact on overall trip making patterns should not be underestimated because of the volume of trips that universities can generate. For instance, on a typical weekday in Fall 2003, an average of 117,800 person trips were made to and from the UBC campus (accounting for 2% of the almost 6 million trips made each day in the Greater Vancouver Regional District). Of these trips, 45,000 were SOV trips, 21,700 were HOV (carpool/vanpool trips) and 45,400 were transit trips. While transit ridership to the university has been increasing steadily, rising from a 17.9% mode share in 1997 to 38.5% share in 2003, the increase following introduction of the U-Pass has been

particularly sharp. The transit mode share for trips to UBC rose from a mode share of 26.2% in Fall 2002 to 38.5% in Fall 2003, after the introduction of the U-Pass.

Nonetheless, the U-Pass concept is not a solution that can be applied universally and transit systems need to assess its impacts cautiously before embarking on such initiatives. In particular, in circumstances where a transit system has already achieved very high university market penetration rates without any discounted pass (which may in particular occur where a university is located directly on a high capacity transit service offering high levels of service and attractive accessibility), the implementation of a U-Pass program can have negative impacts on revenues, and not be cost effective.

7.3.2 Discounted Employer-Based Transit Passes

Employer-based transit pass programs, sometimes branded as "EcoPass", are specifically targeted to major employers, in an effort to encourage them to sign up large numbers of their employees to become frequent transit riders, through long-term commitments to purchase transit passes. Transit systems offer a discount for employer-based transit passes, as compared to regular monthly pass programs, in exchange for: 1) bulk purchases of the passes by the employer, and 2) long-term commitments by the employees (typically for a minimum of 12 continuous months). The passes are most often paid for through payroll deduction, and employers are encouraged to also offer an additional discount of their own, in order to increase the attractiveness of these transit pass programs to their employees; a practical outcome for many employers is that it helps to reduce pressure on limited parking capacity at their employer sites. It also can provide an additional incentive to attract employees in years and locations where the labour market is competitive.

Transit systems started implemented employer-based programs starting around 1992 (e.g. Victoria, Vancouver, Ottawa) and these have now been implemented in many Canadian transit systems.

The Greater Vancouver Regional District (GVRD) Employer Pass Program (EPP) which offers employee groups of 25 or more an annual transit pass price reduction of 15 percent, is one of the earliest such programs in Canada. This program has grown rapidly since 2003 with a total of 160 employers and 10,000 employees participating in 2004 (up from 108 employers and 6000 employee in 2002). The GVRD attributes this growth to an "aggressive awareness campaign that promoted access to the programs benefits via employers in the GVRD….." as part of their OnBoard program.[12] OnBoard focused on employers in the Millenniuim SkyTrain corridor in 2004, particularly in the vicinity of the Gilmore Skytrain Station. This station saw a 50% increase in passenger boardings between 2003 and 2004 with the EPP being seen as a major factor in this growth. Twenty-three percent of new employee participants in the EPP are reported to have shifted modes (from car to transit) with 16 percent being from SOVs. Note that Vancouver EPP users are mostly full-time workers (95%), somewhat older than typical transit riders, being concentrated in the 35-54 age range

[12] OnBoard is a broader trip reduction program including the Employer Pass, Jack Bell Ride Share, car sharing, cycling, telework and parking management programs implemented through Transportation Management Associations.

(62%), and tend to have above average incomes (38% earn more than $75,000 compared to 25% for all riders).[13] In short, this program has been successful in attracting higher income and choice riders to public transit.

Another initiative that could further enhance the expansion of employer-based transit pass sales would be the creation of an employer transit tax benefit program. Such a program has been in place in the U.S. for over 15 years. It allows an employer to distribute an employee benefit for transit use that is non-taxable. This benefit is received by the employee in the form of a discount for payroll-deducted transit pass purchases, or the form of a transit-specific voucher, such as Metrochek, that can only be used to purchase transit media (typically passes). Currently, employers can distribute up to $100 per month in tax-free transit benefits to their employees.

In the Washington D. C. region, employer discounts for transit have been provided since 1993 through "Metrochek", a farecard voucher that is provided as an employee benefit by more than 2,500 public and private employers. Metrocheks can be used as a farecard when riding the rail system or as vouchers when purchasing fares for bus, vanpool and other commuter services in the region. Use of public transit was further encouraged in 2000, when a federal executive order became effective and required all federal agencies make the full Metrochek benefit available to all federal employees in the region.

Technology has also facilitated the spread of discounted transit fares. In 2000, the SmartBenefits program was introduced to allow Washington area employers to load the Metrochek benefit directly onto an employee's registered SmarTrip card, a reusable, rechargeable smart card. In the 2002 TERM Analysis report, it was estimated that the 138 large (of 100 or more employees) private companies that offered Metrochek benefits to their employees accounted for a reduction of 27,221 daily vehicle trips and 421,926 daily VMT (between 7/99 and 6/02) (Ramfos and Diggins 2003).

Many communities across the U. S. have used Metrochek, or other equivalent programs, as a practical method for implementing the employee tax benefit for transit use program, and the Urban Transportation Monitor has reported that such programs can increase public transit ridership by 15%. The concept of a similar transit tax benefit initiative has been proposed in various forms in Canada since the mid 1990s, but has not yet been implemented.

However, the Canadian Federal government did initiate an income tax credit for transit passes in 2006. This initiative is more modest, but not restricted to employers. Although no formal studies have yet been conducted, anecdotal evidence suggests that the recently implemented income tax credit for transit passes seems to be having an impact on the choice of fare media, for example by encouraging more people to purchase passes. This in turn would increase transit ridership.

Technological developments offer other promising avenues for encouraging transit ridership through the implementation of cost-effective loyalty programs. One potential application will be to combine the use of a smart card with direct debit from the transit subscriber's account, which will provide an attractive alternative to replace the concept of employer-based discounted pass programs, offered only to their employees. Over the last decade, employer-based programs allowed the creation of a long-term subscription-based discounted pass for employees, which was cost-effective to the transit system because the administrative burden

[13] 2006 Year-To-Date Bus, SkyTrain, Seabus Performance Scorecard

for managing and monitoring this special pass program was assumed by the employer (and automated through payroll deduction). In the future, smart cards, associated with long-term (e.g. annual) subscription and direct debit from the user's bank account, create a tool for drastically reducing the administrative burden of loyalty/subscription-based programs. It will enable electronic transfers of revenues and automate the monitoring of subscribing participants (where cards can be de-listed once a subscription ends, or blacklisted where abuse occurs). This will enable transit systems to offer a similar discounted pass product to *all* transit riders.

8 KEY FACTORS AFFECTING THE FUTURE OF TRANSIT RIDERSHIP

The study has used similarly structured origin destination data to provide a broad current portrait of transit ridership in various types of communities in Canada, and used various sources of ad-hoc data to explore a number of specific issues.

In thinking about the future, a number of factors are likely to be significant on the future evolution of transit ridership; these factors are discussed below, as are related recommendations:

- ***Land use and density continue to be critical factors, and transit should be at the land use planning table***

  Land use and density continue to, and will always have a determining impact on transit's effectiveness and ridership performance. This is broadly reflected in the trips per capita in communities of different population density. Increased population and employment density, and more intensive land uses will result in higher transit ridership, while lower density and more auto-oriented land use will result in lower transit ridership.

  However, land use planning processes most often do not take mobility implications into consideration, albeit with some exceptions. The search for more sustainable communities will require that mobility implications are more explicitly considered, especially for siting of facilities with impacts on transit ridership (e.g. schools, health facilities, senior homes, etc). Transit-supportive principles need to be included in land use planning and zoning, and transit needs to be *at the table* in planning decision making.

- ***Transit ridership will continue to grow with population growth and continued investment in transit***

  After a deep slump in the 1990s, caused by many factors, including demographic trends, cuts in public subsidies, cuts in transit service, increases in fares, and defrayed maintenance of transit vehicles and infrastructure, current trends indicate that transit ridership should continue to grow with population growth, provided investment in transit continues apace.

- ***Transit can be very competitive in specific markets (e.g. commuter corridors to the downtown core; BRT, university or employer-based passes, etc.) and can attract greater ridership by current user groups***

Transit can be very competitive in specific markets. This may result from competitive travel times on reserved rights-of-way (rail or higher level BRT), competitive price for markets that are price-sensitive (e.g. students, downtown employees facing significant parking costs, etc.), or where the density of potential riders enables highly competitive service frequencies (e.g. university or employment campuses). In some case, these factors can be combined to create a synergy, as has been illustrated by the experience with U Pass programs. Transit systems should continue to identify those geographic services and/or market segments that can be developed through service, pricing, or promotional initiatives.

- ***Immigrants will continue to fuel transit growth and may be the key to transit's future in some areas.***
  Immigrants exhibit a higher propensity to use transit, even when taking income differences into consideration, and the immigrant market segment has clearly been a key to ridership growth in certain markets, in particular through the challenging times of the last decade. Given current and future national immigration policies, transit should expect continued growth in this market segment.

  However, this market segment should not be viewed as "captive"; ridesharing remains a competitive alternative, especially for long-distance suburban-oriented origin-destination pairs that are poorly served by transit. Efforts should be made by transit systems to build on the relative higher propensity to use transit found in this market segment.

- ***Transit needs to assess implications of aging population***
  The population is aging as a whole, and the baby-boom generation that is currently approaching retirement and senior status was raised in an auto-oriented society. The analysis of ridership profile appears to already illustrate this trend since transit trip-making by seniors is lower than it was 20 years ago.

  In addition, although some seniors will move to new and smaller residences in city cores, the majority of the population will actually "age in place". The aging of a population that is healthier, wealthier, predominantly suburban, more auto-oriented, and more politically active will have far-reaching implications on all aspects of society, but may have particularly dramatic impacts on mobility expectations. The challenge is clear, although the solutions are not; transit will need to continuously explore the ramifications of this challenge in the coming years.

- ***Environmental-inspired TDM policies offer significant promise in some contexts: congestion charging, parking pricing or supply policies, etc.***
  Although Transportation Demand Management (TDM) has been known as a potential strategy in pursuing more sustainable mobility solutions, recent developments and experience have increased interest in some new approaches to TDM. Congestion charging initiatives, such as those in London, Stockholm, have illustrated how effective these TDM initiatives can be. They are even being considered in large North American cities (e.g. New York City). There are also more serious efforts to implement parking pricing and supply policies. It is clear that strong TDM initiatives

such as congestion charging and aggressive parking policies remain politically challenging in the North American context, and may be most applicable in larger cities with significant congestion problems or constrained parking. However, European experience has shown that the implementation of these TDM policies could have a significant impact for transit ridership, in core market segments (e.g. commuting work trip to city centers) but also for off-peak shopping and recreational trips. TDM policy initiatives should be encouraged and transit should be involved in any planning of such initiatives.

- ***Transit ridership is sensitive to transit pass discounts, but the impact of the recent income tax credit policy for transit passes needs to be better understood***
  Discounted transit passes increase transit ridership, and recent experience with deeply discounted passes such as U-Pass programs, have highlighted the significant impacts these programs can have on transit ridership. The Federal government recently implemented an income tax credit policy for the purchase of transit passes. This initiative is more indirect, and no formal studies have yet been conducted on its impact; however, anecdotal evidence suggests that the income tax credit for transit passes is having an impact on the choice of fare media, encouraging more people to purchase passes, which in ridership. It would be valuable to conduct a more formal assessment of the impacts of this policy in terms of choice of fare media, and impact on trip making patterns.

- ***Multimodal and intermodal policies can benefit transit***
  As public concern over climate change continues to grow, there is a growing focus on intermodal and multimodal policies, and these can have a significant impact on transit ridership. These range from efforts to increase the supply of all alternatives to single occupant auto use (e.g. walking, cycling, car-sharing, urban transit, intercity bus or rail, etc.), to efforts to better integrate these various modes in order to offer mobility alternatives for a wider range of desired travel. Transit is a key linchpin in many of these initiatives, and efforts to expand these policies will continue to benefit transit ridership.

- ***Marketing and customer information can encourage transit ridership***
  Marketing has always had as an important objective to build awareness of transit as a mode choice option, to encourage new transit ridership, or to retain existing riders. Recent evidence from BRT initiatives has re-affirmed the importance of marketing in general, and of branding and public information in particular, in encouraging transit ridership, although the relationships are not always easy to isolate and understand.

- ***Smart card and information technologies will offer innovative approaches to grow existing or new transit markets***
  Technology will have a growing impact on transit ridership. Smart card technology will enable the possibility of more flexible pricing and innovative fare product; these might include subscription-based discounted passes, joint pricing of transit and special events (e.g. sports events, concerts or festivals), creation of special tourist pass

products (transit + museums), city smart cards Including transit and municipal activities), etc.

Other technologies may also be used to enhance the provision of real-time and potential multimodal information to current or potential transit riders. The impacts of the growing availability of information on travel behaviour are poorly understood, but intuitively, it will certainly benefit transit ridership in the future: enhanced real-time information should increase awareness about transit services as well as reduce uncertainty about service reliability.

APPENDICES

APPENDIX A:

Summary of Literature Review Findings and Implications for this Project

Transit tends to be a big city phenomenon in that larger communities are more likely to offer higher levels of transit service than smaller communities. In both the USA[1] and Canada[2] community size appears to be the strongest single factor explaining variations in transit ridership. The correlation between community size and transit use reflects many factors, not the least of which is the fact that more persons living in larger communities offering high levels of transit service can, and do, live without cars.

The literature review focused on understanding the factors that explain variations in transit use within individual communities and how these factors influence transit ridership and ridership potential between different cities and regions.

External / Non Service Factors

The literature reviewed by the study team reveals that there are three basic external or non-service factors that could be used to stratify travelers and their trips, and profile existing and/or potential transit riders and their travel behaviour:

- **Vehicle access/availability** (the extent to which persons have choices as to how they travel);
- **Characteristics of destination land use/location** (for a person's workplace, school location or other major travel destination) focusing on the influence of destination land use and urban form/density on transit's ability to offer competitive service (e.g. pedestrian accessibility due to urban design; out-of-pocket costs for alternative modes, affected primarily by variations in parking availability and price; etc.); and
- **Characteristics of origin or residential land use/location**, again focusing on the implications of land use for transit accessibility (e.g. density of residences; accessibility to transit stops and corridors; etc.).

Three additional external factors were identified as influencing trip making and mode choice behaviour:

- **Age/stage of life cycle**: Persons aged 15-24 are much more likely to use transit than other cohorts (which appears to be reflected in differences in auto ownership and access and, therefore, is an indicator of auto access).
- **Employment status,** including full-time work versus part-time workers, students (full or part-time), and others (housemaker, retired, unemployed): This factor relates to variations in individual trip making including the

[1] As shown by Taylor and Miller, 2003, "Analyzing the Determinants of Transit Ridership Using a Two-Stage Least Squares Regression of a National Sample of Urbanized Areas"

[2] As evidenced by the "TAC Urban Indicators Report -Third Survey" results, 2005.

frequency and timing of trips, as well as auto access variations associated with income differences.

- **Changes in population composition, resulting from the increase in the number of new immigrants living in large Canadian cities**: A recent Statistics Canada study[3] has documented higher levels of transit use for commuting, as reported in Census Place of Work surveys for many Canadian cities.

The external factors are of interest in that they explain variations in ridership and in ridership potential, in the short to medium term. They also point to land use/ transportation planning issues that should be addressed in order to improve a community's transit ridership potential and identify required land use and related transit supportive policy initiatives such as TOD and TDM.

Internal or Controllable Factors

The existing literature identifies two ridership factors that are under the control of transit agencies and their sponsors: *transit level of transit service*, and *transit fares*. These factors are of interest in that they offer the potential for short term increases in transit ridership.

The transit level of service factor can be described in very general terms as the quality of the transit connection between individual trip origins and destinations, and is defined by a number of service elements including:

- walk or drive time to access transit (a function of route design, and stop or terminal locations and design),
- expected wait times at transit stops/stations (a function of frequency/headways and service reliability, which is partially under the control of the transit system),
- in-vehicle travel times on each leg of the journey, and
- the number of (and nature of) any transfers that might be required to complete the trip.

Each of the transit service components appears to have a distinct effect on travel behaviour with so-called access time (walk and wait times) and transfers being perceived as more onerous by transit riders and would-be riders, than in-vehicle travel times..

The fare factor is typically described as the perceived out-of-pocket cost, as compared to the cost of alternative modes, for a person choosing between alternative modes. Much existing literature had concluded that fares weighed less in an individual's mode choice decision than the transit level of service factor

[3] Public Transit Use Among Immigrants by Andrew Heisz and Grant Schellenberg, StatsCan, May 2004

(the combination of LOS elements), with elasticities typically estimated to be in the range of -.30 to -.35.

More recently, some observers, most notably Brian McCollum/Richard Pratt[4] , have suggested that transit fare elasticities, can be as high as reported service elasticities (at around –.40). In addition, Todd Litman (Victoria Transport Policy Institute) has suggested that in the longer run, fare elasticities can be even higher than -.40, which would seem to imply that they could be higher than service elasticities.

Innovative Perspectives on Transit Service and Related Factors

As noted in the 2000 CUTA Profiling Transit Ridership report, in most demand models, the total "cost" of using transit is estimated by adding the values of the various travel time and cost components, expressed in terms of time or dollars, and this is used as the basis for estimating the relative probability of choosing transit over competing modes.

However, various research and experience is suggesting the potential existence of synergistic impacts on transit ridership. Verron and Martens conducted ground-breaking research in the mid 1980's that questioned the assumption that the various travel time/cost values add to a total figure that reflects the total perceived "cost" of using transit or the auto.[5] Instead, they suggested that transportation options are perceived and evaluated as "entireties" and that the individual cost components are not additive.

Their research demonstrates that combinations of favourable ratings for individual cost components, such as good access to transit at both trip ends and a direct public transit link between origin and destination, combined with comfort factors, such as weather protection at stops, results in a higher probability of using transit than the sum of the individual effects. In this context, comfort factors can have a substantial impact on ridership.

This "synergistic effect" may also help to explain the success of new BRT services which offer improved travel times and service reliability with a combination of various other enhancements (e.g. better customer information, real time information, more comfortable seats and station/stops, etc.),

The BRT experiences in Los Angeles and Vancouver show increases in transit ridership that appear to be greater than would be expected, based only on the reported travel time savings. With the BRT cases studied, the greatest travel

[4] Chapter 12 of TCRP Report 95 (Traveler Response to Transportation System Changes), 2004

[5] Hedwig Verron and Gerd Martens, "Users Reactions to Specific Combinations of Policy Measures" in Behavioural Research for Transport Policy, VNU Science Press, 1986, pp 144-145.

cost savings result from the in-vehicle time savings associated with fewer stops and various levels/types of transit priority. One might expect that the reduced access and longer walk times might actually negate the benefits of the travel time savings, but this is not the case. Instead, the available documentation for two BRT routes in Los Angeles and three in Vancouver demonstrates that even low-end BRT can attract former auto drivers and passengers to transit.

Another innovative line of research stresses the importance of service integration. Paul Mees[6] documents how an integrated transit networks offering access to multiple destinations are successful in attracting ridership from areas that are beyond convenient walking distance of rail transit service, despite the need to transfer. Whereas both experience and models would suggest that transit riders seek to avoid transfers, Mees' research documents that this is not necessarily the case where service is frequent across a network of well-integrated services and the transfers are convenient. Mees identifies Toronto as the best example of an integrated transit network outside of Europe. His contention is supported by the fact that about 66 percent of 2001 AM peak period TTC subway trips involved the use of one or more buses or streetcars. Persons who walk to and from the subway in completing their trips accounted for about 34 percent of subway trips and only 20 percent of all TTC trips in 2001.

Some other recent research has been exploring the combined effect of transit level of service and land use factors on auto ownership, in particular in Transit-Oriented Development (TOD) neighborhoods. The combined effect appears to encourage people to move into locations where they can access and use the improved transit services (whereas otherwise they would have had higher car ownership).

Implications for this Project:

The review of the literature reconfirms the importance of some traditional socioeconomic and land use variables including:

- Vehicle access/availability
- Age/stage of life cycle
- Employment status
- Community Size
- Employment/Residential Densities, etc.

It has also suggested several areas of focus that may suggest market niches of particular importance and/or potential initiatives to attract transit ridership. These include:

[6] Paul Mees, *A Very Public Solution – Transport in the Dispersed City*, Melbourne University Press, 2000.

1) The implications of immigration for transit ridership recognizing that they account for most of the growth in many of our cities and are more likely to use transit than native born Canadians.
2) The BRT experience in Canada and the USA: the apparent success of low-end BRT in attracting former auto users to transit illustrates the potential synergistic effect of how people respond to the various service enhancements.
3) The commuter rail experience may also illustrate a synergistic effect in that ridership increases may be higher than predicted based on traditional variables (in vehicle travel time, out of pocket costs, etc.).
4) TOD and its implications for travel behaviour and mode choices.
5) The York University experience suggests that the combination of various service enhancements and land use/transportation policies can create central city-type characteristics in the suburbs (reduction in parking supply/ increase in costs plus dramatic improvements in transit connections via BRT)
6) The recent new thinking with respect to fare elasticities suggest that a closer look should be made of special pass products: (EcoPass, Annual Pass, UPass, etc..). The information being collected will be reviewed to see if there is any new evidence of traveler behaviour with respect to pass initiatives, and in particular to identify market segments that are most sensitive to these products.

As it seeks to develop the profile of transit ridership, the study will identify any evidence or data that sheds light on these market niches of particular importance for transit and/or potential initiatives to encourage transit ridership.

APPENDIX B:
Survey Questions

1. Did your agency collect any ridership counts by fare category (e.g. fare classification counts) since 2000?
   - No
   - Yes

The ridership counts were collected in which year (s)?

- N/A
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Is a report available documenting the counts?

- N/A
- No
- Yes

Is comparable historical information available prior to 2000? (to document changes in travel by transit)?

- N/A
- No
- Yes

2. Did your agency conduct any On-Board rider surveys that describe the socio-demographic characteristics of riders (e.g. age, gender, employment status, car ownership or availability) on specific routes or the transit system since 2000?
   - No
   - Yes

The On-Board rider survey(s) was (were) conducted in which year(s)?

- N/A
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Is a report available documenting the survey(s)?

- N/A
- No
- Yes

Is comparable historical information available prior to 2000? (to document changes in travel by transit)?

- N/A
- No
- Yes

3. Did your agency conduct any telephone interview surveys of transit riders and/or non-riders (commonly called 'Attitudinal', 'Customer Satisfaction' or 'Performance Scorecard' surveys) that collect trip making and opinion data as well as socio-demographic profile information for respondents since 2000?
   - No
   - Yes

The telephone interview survey(s) was (were) conducted in which year(s)?

- N/A
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Is a report available documenting the survey(s)?

- N/A
- No
- Yes

Is comparable historical information available prior to 2000?

- N/A
- No
- Yes

4. Did your agency conduct any background studies profiling transit ridership, which were conducted as part of Transit Studies, Operational Reviews, or Transportation Master Plans since 2000?
   - No
   - Yes

The background studies were conducted in which year(s)?

- N/A
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Is a report available documenting the studies?

- N/A
- No
- Yes

Is there any comparable background study information available prior to 2000?

- N/A

- No
- Yes

5. Did your agency or another agency in your community conduct any telephone interview surveys of households to collect Origin-Destination (O-D) data for all trip makers (normally for the weekday before the interview) along with household and personal information since 2000?
   - No
   - Yes

The telephone interview survey(s) was (were) conducted in which year(s)?

- N/A
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Is a report available documenting the survey(s)?

- N/A
- No
- Yes

Is comparable historical information available prior to 2000? (to document changes in travel by transit and/or other modes)?

- N/A
- No
- Yes

6. Did your agency collect other types of counts or surveys that describe current transit use and/or travel behaviour in your community such as 'Stated Preference' surveys since 2000?
   - No
   - Yes

Please briefly describe the count(s)/survey(s):
(Open-Ended Response)

7. Has your agency initiated any significant transit service, fare or other measures designed to increase transit ridership over the last five years (e.g. redesign of transit network, new BRT line, UPass program or other new fare products, TDM program, introduction of ITS technology, major promotional campaigns, etc.)?
   - No
   - Yes

Please describe the initiatives (and identify any relevant documentation that could be made available to CUTA for this project):
(Open-Ended Response)

APPENDIX C:
List of Documents

VARIOUS DOCUMENTS

Calgary Transit Customer Satisfaction Survey 2004

The Future of Public Transit in Canada's Mid-Sized Cities
Wesley Andreas (Presentation CUTA Annual Conference 2005)

Moving Forward: Public Transit in Canadian Mid-sized Cities
Master's Thesis by Wesley Andreas
http://www.ucalgary.ca/~wjandrea/msctransit/finalreport.pdf

FTA Ridership Team. “Opportunities for improving ridership – CTRAN – Clark County, Washington”; September 2005

FTA Ridership Team. “Opportunities for improving ridership – CT Transit – Hartford Division”; August 2005

Centre for Urban Transportation Research (Univ. S. Fl., Tampa). “Public Transit in America: Results from the 2001 National Household Travel Survey”; September 2005

GO Transit. 2005 GO Rail Passenger Survey; September 2006.

École Polytechnique de Montréal. "Technical Memo-Transit corridor analysis in the Greater Montreal Area"; June 2004.

CVRD; BC Transit. “Transit Business Plan for the Cowichan Valley”; September 2005.

BC Transit. “Service Plan – Fiscal Years 2003-2006”.

Synovate; BC Transit. “Victoria Regional Transit System Tracking Survey – Annual report 2003/04”.

Campbell Goodell Traynor Consultants Limited; BC Transit. “Victoria Public Opinion Tracking Survey”; 2001.

ISL; Bannister Research & Consulting Inc.; Alberta Infrastructure and Transportation. “2005 Household travel Survey – Summary report on weekday travel by residents of the Edmonton Region”; 2005.

City of Edmonton. “LRT summary report”; 2006.

City of Edmonton. “Central Business District Cordon Report”; 2004.

Paradigm Transportation Solutions Ltd; Region of Waterloo. “Region of Waterloo Grand River Transit Mobility Plus 5 year business plan”; April 2003.

Entra Consultants; Dillon Consulting. Kingston Transportation Master Plan”; 2004.

London Transit. “London Transit Commission Annual Report”; 2005.

London Transit. “Provisional ridership growth and asset management plans; provincial gas tax program”; March 2006.

TRANS Committee. “2005 Origin-Destination Survey Summary of Results – National Capital Region”; 2006.

North Alberta Development Council. “Peace River Transit Pilot Project Survey – Final Report”; October 2005.

IBI Group; City of Red Deer. “Transit/Special Transportation Study – 25 year strategy”; June 2004.

IBI Group; City of Saskatoon. “Saskatoon Transit Strategic Plan Study”; 2005.

British Columbia Ministry of Transportation; Translink. “Greater Vancouver Trip Diary Survey 2004”; 2004.

Translink. “B-Line bus rapid transit – building ridership in Greater Vancouver”; September 2004.

Translink. “Bus rapid transit in Vancouver: a review of experience”.

FTA’s Individualized Marketing Demonstration Program (IMDP)
[US direct marketing initiative], Mele Associates Inc., 2006

Increasing Transit Ridership: Lessons from the Most Successful Transit Systems in the 1990s, MTI Report 01-22, 2002

Public Transportation is Not Going to Work: Non-Work Travel Markets for the Future of Mass Transit, Alexander Cohen, M.C.P. Thesis, M.I.T., 2004

Transit Non-User Survey: Restful Riding Rather than Stressful Driving
CUTR, 2002

Impact of Bus Priority Attributes on Catchment Area Residents in Dublin, Ireland

Simon McDonnell, Susana Ferreira, and Frank Convery, University College Dublin Journal of Public Transportation, 2006 BRT Special Edition

TRB PAPERS

Serving Limited English proficiency (LEP) Travelers: Lessons Learnt From International Experiences, Dr. Rongfang (Rachel) Liu, AICP, PE
New Jersey Institute of Technology, TRB Annual Meeting, 2006

The Role of Attitudes and Neighborhood Characteristics in Explaining Transit Use: a Study of Eight Northern California Neighborhoods, Kenneth Kwong et al., UC Davis. TRB Annual Meeting, 2006

Teenage Mobility in the United States - Issues and Opportunities for Promoting Public Transit, Alasdair Cain, CUTR, TRB Annual Meeting, 2006

Transit Customers – Who, Why, Where, and How: A Market Analysis of the San Mateo County Transit District, Yushuang Zhou et al., Cambridge Systematics Inc. TRB Annual Meeting, 2004

Customer Satisfaction Among Transit Riders - “How Do Customers Rank The Relative Importance of Various Service Attributes?” Aaron Weinstein, Department Manager, BART Customer & Performance Research, TRB Annual Meeting, 2000

Structuring and Assessing Transit Management Response to Customer Satisfaction Surveys, Mary Kay Christopher, Darwin Stuart and Peter J. Foote Chicago Transit Authority, TRB Annual Meeting, 1999

Enhancing Transit’s Competitiveness: A Survey Methodology
Bruce Schaller, TRB Annual Meeting, 1999

METHODOLOGICAL PAPERS

Development of a Customer Satisfaction and Service Quality Measurement Method and Tool for the Rhode Island Public Transit Authority, Albert J. Della Bitta. University of Rhode Island, October 2004

Counting Transit So That Transit Counts, TransManagement, Prepared for APTA, 2004

The Factors Influencing Transit Ridership: A Review and Analysis of the Ridership Literature, Brian Taylor and Camille Fink, UCLA, UCTC Paper 681

Estimating the Impacts of the Aging Population on Transit Ridership
ICF Consulting, NCHRP Web Document 86. January 2006

TCRP REPORTS (Available from tcrpponline web site)

Transit Ridership Initiative
RRD Number 4, 1995

Strategies to Assist Local Transportation Agencies in Becoming Mobility Managers
TCRP Report 21, 1997

Building Transit Ridership An Exploration of Transit's Market Share and the Public Policies that Influence It.
TCRP Report 27, 1997.

Continuing Examination of Successful Transit Ridership Initiatives.
RRD 29, 1998.

A Handbook: Using Market Segmentation to Increase Transit Ridership. TCRP Report 36, 1998.

The Role of Transit Amenities and Vehicle Characteristics in Building Transit Ridership.
TCRP Report 46. 1999.

A Handbook for Measuring Customer Satisfaction and Service Quality
TCRP Report 47,1999

Guidelines for Enhancing Suburban Mobility Using Public Transportation.
TCRP Report 55,1999.

Customer-Focused Transit
TCRP Synthesis 45, 2002

Traveler Response to Transportation System Changes (Chapters 9, 10, 11, 12, and 15), TCRP Report 95, 2003-2004.

Evaluation of Recent Ridership Increases
RRD 69, 2005