

## INTRODUCTION

### BACKGROUND

The 2006 Transportation Tomorrow Survey (TTS) is the largest and most comprehensive travel survey ever conducted in Ontario or perhaps anywhere in North America. The 2006 survey is the fifth in a series of surveys conducted every five years in the Greater Toronto and Hamilton Area (GTHA). The TTS contains detailed demographic information on all members of a surveyed household and a ledger of travel information over an entire weekday.

The first Transportation Tomorrow Survey, conducted in 1986, collected information for more than 61,700 households in the GTHA. It was the most comprehensive travel survey in the Toronto area since the 1964 Home Interview Survey for the Metropolitan Toronto (now City of Toronto) and Region Transportation Study (MTARTS).

The 1991 TTS was an update of the 1986 survey data. Approximately 22,300 households in the GTHA and 2,200 households at the fringe of the GTHA were successfully interviewed. The survey captured the travel condition in the GTHA after five years of active changes, with particular emphasis on areas that experienced rapid population growth between 1986 and 1991. The 1991 survey data provided a clear measure of global trends on urban travel characteristics. One of the most significant observations was the shift of urban population and employment growth from the City of Toronto to the surrounding regions and its impact on travel demands and modal choice.

In 1996, municipalities adjacent to the GTHA were invited to participate in the TTS survey. Ten municipalities elected to be included, expanding the survey area to cover a large part of south central Ontario. The resulting survey now involved co-operation from sixteen local and regional governments, two transit operators and one provincial ministry. Based on Census information, the survey area covered 60% of Ontario's total population. Altogether 115,200 households, or five percent of all households in the survey area, were successfully interviewed. The survey provided sample information on an estimated 13 million daily trips in the survey area.

The 2001 TTS survey covered much of the same area as the 1996 survey excluding the Regional Municipality of Waterloo whilst expanding some other counties outside of the GTHA. The survey again involved the co-operation from sixteen local and regional governments, two transit operators and one provincial ministry. Altogether approximately 137,000 households were successfully interviewed. The survey provided sample information on an estimated 14 million daily trips in the survey area.

The 2006 TTS covered all of the area involved in the 2001 survey plus the Regional Municipality of Waterloo, which had previously been surveyed in 1996 but not 2001, and two new areas which had not been covered in any previous surveys. The survey involved co-operation from 19 local and regional governments, two transit operators and one provincial ministry. Altogether approximately 149,000 households were successfully interviewed. The survey provides sample information on an estimated 16.5 million daily trips in the survey area.

Unlike data sources such as regular traffic counts which measure the change in magnitude of travel demand, the TTS provides information on the characteristics of these changes. As a transportation time series database, the TTS enables analysis on how factors such as flexible work hour programs, relocation of manufacturing employment, increasing female participation in the labour force, and aging population influence how people travel, how often and the purpose of their trips.

In addition to providing time series travel information for the GTHA, the 2006 data is useful in identifying the dynamic and increasing socio-economic influences between the GTHA and its surrounding regions.

## **PURPOSE OF THIS REPORT**

The purpose of this report is to summarize the Transportation Tomorrow Survey data for the GTHA according to municipal boundaries. The summary is presented in tabular and graphic formats at three levels of detail, namely the Greater Toronto and Hamilton Area, each of the six Regional Municipalities and each of their respective local municipalities. The information presented includes socio-demographic and travel characteristics. In addition to presenting the magnitude of the trips coming into and leaving an area, the summary tables and figures also describe travel characteristics such as travel purpose, trip start time, travel distance and travel mode choice.

Data from four of the five surveys, 1986, 1996, 2001 and 2006 are presented in this report. Although the four surveys differ in survey area, the information in this report has been made compatible to present a true comparison between 1986, 1996, 2001 and 2006 data. Hence, the information presented in this report includes only GTHA households. A summary of the 2006 survey data for the entire survey area is presented in the 2006 TTS report, *2006, 2001 and 1996 Travel Survey Summaries*.

The 1991 survey data is not presented in this report but detailed information on the findings of that survey is available in the 1996 report, *1996, 1991 & 1986 Travel Survey Summaries for the Greater Toronto Area*.

The information presented in this report is based on Version 3.1 of the 1986 TTS database, Version 2.1 of the 1996 TTS database, Version 1.0 of the 2001 TTS database and Version 1.0 of the 2006 TTS database.

## THE TTS DATA

### DESIGN AND CONDUCT OF THE SURVEYS

#### **1986 Survey**

The 1986 Transportation Tomorrow Survey was conducted in the fall of 1986. The survey area covered the entire Greater Toronto and Hamilton Area (GTHA). This area consists of the Cities of Toronto and Hamilton (formerly Metropolitan Toronto and the Regional Municipality of Hamilton-Wentworth) and the Regional Municipalities of Durham, Halton, Peel and York.

A random sample of households in the study area was selected from Bell Canada's files containing information on residential subscribers. The Bell files contain the name, address and telephone number of households listed in the telephone directory. Households with unlisted telephone numbers were not included in the sample of five percent of the households in the study area. The actual sampling rate in each Forward Sortation Area (defined by the first three characters of the postal code) was reviewed to ensure an even distribution of samples across the sample area.

An advance letter was mailed to the sample household before the actual interview took place. The purpose was to introduce the survey, outline the survey process and impress upon the household the legitimacy and importance of information that would be collected in the interview.

Interviewers telephoned each sample household to collect travel information for the preceding day and recorded the data on coding forms. Subsequently the information collected during the interview was entered into a computerized database. The location of the household and the locations of all trip origins and destinations were recorded, or "geocoded", using a graphical referencing system.

#### **1991 Survey**

In 1991 a partial survey was completed in order to supplement the 1986 survey data. The 1991 survey because of its size also served as a large field test of improvements to data collection which were used in later surveys.

In 1991, as in the 1986 survey, an advance letter to explain the importance and nature of the survey was mailed to the sample household prior to the actual interview. Data processing and control of the survey were, however, significantly improved from 1986. The biggest change from 1986 was that the information collected by interviewers over the telephone was recorded directly on computer files using a direct data entry program. As the information was entered, the program carried out spelling checks on street names, validation checks on transit routes and many other checks on the consistency of the information. The sample rates were monitored daily by sample control software to ensure even coverage of the study area during the survey period. The location of households, trip origins and destinations were again geocoded as was the new information on location of employment.

#### **1996 Survey**

The 1996 TTS was conducted as a full survey as opposed to the 1991 survey which had only been a partial survey. Similar to 1986, the target in 1996 was a five percent random sample of households throughout the survey area. The survey area was expanded from the GTHA to include the Regional Municipalities of Niagara and Waterloo, the County of Victoria (now City of Kawartha Lakes), the Cities of Barrie, Guelph, and Peterborough, the Town of Orangeville and partial coverage of the Counties of Peterborough, Simcoe and Wellington.

The approach taken in the 1996 survey is a continuation of the experience and development gained from the 1986 and 1991 surveys: an advance survey letter, telephone interviews, on-line direct data entry and automated geocoding of all geographic information. The most significant change in the data collection process was the use of a networked computer system for improved efficiency in sample control and quality assurance.

Unlike previous surveys, the 1996 TTS was conducted over two time periods. At the request of the Regional Municipality of Waterloo, households in the Waterloo area were surveyed in the fall of 1995 while the main survey was conducted in the fall of 1996. There were no changes in the survey methodology or questionnaire between survey periods and the two data sets are combined for all expansion and analytical processes.

### **2001 Survey**

Similar to the 1986 and 1996 surveys, the 2001 survey was a new, full survey with a target of a five percent random sample of households throughout the survey area. The survey area in 2001 was similar to that in 1996 except that the Regional Municipality of Waterloo was not surveyed, while the City of Orillia and full coverage of Simcoe County were added. The 2001 TTS collected information for over 137,000 households.

The approach taken in 2001 followed that taken in 1996 with additional logic checks and quality control mechanisms built into the conduct of the survey for enhanced accuracy.

The 2001 survey was conducted over three time periods. Areas external to the GTHA were surveyed in the fall of 2000 and the GTHA was surveyed in the fall of 2001. In May 2002, additional interviews were conducted in the GTHA to amend a sample bias discovered after the first two survey periods. There were no changes in the survey methodology or questionnaire between survey periods and all data was combined for all expansion and analytical processes.

### **2006 Survey**

The 2006 survey is another full survey with a target of a five percent random sample of households throughout the survey area. The survey area has expanded from 2001 to include the Regional Municipality of Waterloo, Dufferin County and the City of Brantford. In order to provide continuous coverage in the area surveyed, Brant County was surveyed during the training of interview staff.

The survey methodology and questionnaire in the 2006 survey was the same as the previous surveys. However, the sample control, interview and geocoding software were rewritten to provide better performance and quality control. The survey was divided into two phases. The first phase was conducted in the fall of 2005 and included interviews for the areas outside the GTHA,

while the second phase was conducted in the fall of 2006 and included only households within the GTHA. As in previous surveys, the two datasets were combined into one database at the end of the survey for data expansion and validation.

Detailed documentation of the planning and implementation of the surveys is contained in the Design and Conduct of the Survey reports for each corresponding survey year.

## **INFORMATION COLLECTED**

### **1986 Survey**

The 1986, 1991, 1996, 2001 and 2006 surveys collected similar demographic and travel information. Demographic data were collected for the households and each of its members. Travel information was usually for the weekday just prior to the day of the interview. The 1986 database may be summarized as follows:

#### Demographic Information

- Household Characteristics
  - Dwelling unit type
  - Number of persons living in the household
  - Number of vehicles available for personal use
- Person Characteristics
  - Age
  - Gender
  - Employment and student status
  - Possession of a driver's licence

#### Travel Information

- Nature of trip
  - Start time
  - Purpose of trip

- Origin and destination points
- Means of travel
  - Travel mode
  - Detailed transit routes

A trip was defined as a one-way movement between two locations for a single purpose. For example, a trip may be made to work, to serve the needs of a passenger, or to return home. The 1986 survey collected trip information for all persons of age 6 years or older over a 24-hour period. To reflect travel activities on an average work day, only trips made on Monday to Friday were recorded. The survey results indicated an equal coverage of trips on each of the five weekdays. A walk or bicycle trip was recorded only if it was made to or from a place of work or school.

### 1996 Survey

In discussing the information collected in 1996 it is necessary to look at the changes implemented in 1991. In addition to the information collected in the 1986 survey, the 1991 survey also collected the following for each person in the household:

- Location of usual place of work
- Location of usual place of school
- Availability of free parking at usual place of work

There are also several changes in definitions and operating procedures between the 1986 and 1991 surveys. In the 1991 survey, no trip or school information was collected for persons under the age of 11. The qualifying age was raised from 6 to 11 to alleviate some of the concerns parents may have had about releasing information for young children. Age 11 was chosen since this is the minimum age at which any significant number of people use transit. All children between the ages of 6 and 11 were assumed to be full-time students.

Employment and student status (full or part-time) were recorded as separate data to allow for all combinations. The 1986 survey did not permit all combinations to be recorded.

The 1986 survey had included shopping, personal business and entertainment as separate trip purposes. These were grouped under the “other” trip purpose category in the 1991 survey and a new category, “to daycare centre” was added.

In 1991, all trips made on a bicycle were recorded instead of just trips to or from work or school

as was the case in 1986.

In addition to the data collected in the 1986 and 1991 surveys, the 1996 TTS also collected the following for each person:

- Possession of a transit pass
- Occupation type
- Whether or not the person worked at home on the trip day (only asked if a person employed full-time outside the home did not make a work trip on the survey day)

Furthermore, two changes were made to existing survey questions. Townhouse was added as a dwelling unit type in 1996. Previously, dwelling types were limited to house or apartment. Shopping was again distinguished as a separate trip purpose as it was in 1986. In 1991 it was placed in the “other” category. All other definitions remained the same as in 1991.

### 2001 Survey

In addition to the information collected in the 1996 survey, the 2001 survey also collected the following for each person in the household:

- School name
- Boarding and alighting stations for all GO Train and subway trips

### 2006 Survey

The information collected in 2006 remained the same as that collected in 2001.

A comprehensive description of the contents and structures of the TTS database is contained in the Data Guides for each individual survey year.

## **SAMPLE EXPANSION METHODS**

### **1986 Survey**

In total, more than 61,700 households were successfully interviewed in the 1986 survey. Based on the 1986 Census count of about 1,470,000 households in the Greater Toronto and Hamilton Area, this constituted a 4.2 percent sample of all households.

To represent the total population in the GTHA, each sample household record was given an expansion factor. The factors were defined as the ratio of the number of Census dwelling units to the number of surveyed household units in an “aggregation district”. A total of 191 aggregation districts were defined and each sample household in an aggregated district received the same expansion factor. To ensure spatial consistency of the expansion factors, each aggregation district was defined to contain a minimum of 2,500 Census dwelling units. The number of Census dwelling units in an aggregation district was obtained from the 1986 Census information.

### **1996 Survey**

Including the Waterloo Region survey, approximately 88,900 households in the GTHA and 26,290 households outside the GTHA were successfully interviewed in the 1996 survey. Based on the 1996 Census count of 1,802,700 households in the GTHA and 499,000 households in the remaining survey area, the 1996 survey achieved its target of a five percent global sample of all households.

In previous TTS expansion procedures, special tabulations of Census information were required to expand household samples by aggregations of traffic zones. To expedite the process, the 1996 survey was expanded based on census tracts (CT) and by municipalities for areas not covered by census tracts. Some minor adjustments and aggregations were made due to incompatibility between census tract, census sub-division and municipal boundaries. In general, expansion factors have been calculated by municipality if the total number of households surveyed is less than 450.

The sample selection for each survey up to 1996 was based on Bell Canada’s residential phone listings. Institutions such as retirement homes and reformatories were not part of the three surveys. As a result, while the expansion procedure ensures that TTS data represent total census

dwelling units, population counts by TTS are usually less than those reported by census. The overall under-reporting of the GTHA population in 1986, 1991 and 1996 are 2.2 percent, 2.5 percent and 2.7 percent, respectively.

### **2001 Survey**

In 2001, approximately 113,600 households in the GTHA and 22,700 households outside the GTHA were successfully interviewed. Based on the 2001 Census count of 1,968,700 households in the GTHA and 438,400 households in the remaining survey area, the 2001 survey achieved its target of a five percent global sample of all households.

The 2001 TTS differed from previous surveys in that the data did not consist of a random selection of households throughout the survey area. The initial sample selection and sample control process were based on Forward Sortation Areas (FSAs) - the first three characters of the postal code. Expansion factors were applied to the data at the FSA level as opposed to census tract in 1996. Within most FSAs, apartment buildings were known to be under-represented relative to other types of housing. Hence, different expansion factors were applied within individual FSAs depending on the type of housing (apartment versus non-apartment).

As with 1996, institutions such as retirement homes and reformatories were not part of this survey and the population count by TTS was again less than those reported by Census. The overall under-reporting of the GTHA population in 2001 is 3.2 percent.

### **2006 Survey**

There were approximately 112,500 households in the GTHA and 37,100 households outside of GTHA successfully interviewed in the 2006 TTS. Based on the 2006 Census, there were 2,160,100 households in the GTHA and 711,200 households in the remaining survey area. Therefore, the target of a five percent sample was achieved.

Similar to previous surveys, sample selection and sample control processes were based on FSAs. According to past experience, apartment buildings are under-represented in TTS. Hence, a higher sample rate for apartments was used. Unlike the 2001 TTS, no differential expansion process was used for apartments.



Institutions such as retirement homes and reformatories were not included in the survey. As a result, the overall population count for the GTHA by TTS is 3.1% less than that reported by Census.

The sample expansion procedures for the four surveys are described in detail in four reports: the 1986 TTS report, *Version 3 Data Guide*, the fifth report of the 1996 TTS working paper series, *Data Expansion*, the third report of the 2001 TTS working paper series, *Data Expansion* and the third report of the 2006 TTS working paper series, *Data Expansion*.

## **QUALITY OF THE DATA**

### **1986 Survey**

Tests on the validity of the 1986 survey information using data from other sources are described and documented in the 1986 TTS report, *Data Validation*. The validation exercise indicated that the 1986 data is reliable and representative. With respect to peak period trips, there are no significant differences between TTS results and other data sources such as Census, Labour Force Surveys and Cordon Count Programs. Therefore, the 1986 data can be used with reasonable confidence in transportation planning analysis that relate to peak period travel.

As mentioned in the data validation report, a discrepancy was noted as a result of the tendency for households to remember less about, and to therefore under-report, discretionary trips and off-peak trips. Part of the under-reporting was the result of using a single informant to report travel activities for the entire household. A detailed discussion of the topic is contained in the reports, *Analysis of TTS Data Bias: Bias Due to Use of Informants* and *Under-reporting of Trips in Telephone Interview Surveys*.

Since the publication of the 1986 TTS report, *Travel Survey Summary for the Greater Toronto Area*, the 1986 survey data have been updated to Version 3.1. The changes are minor and do not affect summary totals at the planning district level.

### **1996 Survey**

Analysis of the 1996 survey data indicates a similar conclusion on the quality of the data as with previous TTS results. With respect to peak period travel, especially during the morning peak, 1996 TTS data match closely with other data sources such as Cordon Count Programs and transit ridership counts. Under-reporting of off-peak travel is predominately associated with automobile trips. Public transit trips are in general well represented by TTS data with the exception of some off-peak under-reporting in the Toronto downtown area mainly associated with streetcar use.

The TTS tends to under-report infants and elderly persons in comparison with Census data. The exclusion of collective homes, such as hospitals and nursing homes, from the survey is likely a contributing factor in the under-representation of the elderly. Furthermore, due to the difference in sample periods between the TTS and Census, the spatial distribution of persons aged 18 to 27 differ between the two databases. This in turn affects the estimation of post-secondary students for portions of the survey area.

A detailed analysis on trip rates between informants and non-informants of surveyed households indicate no significant differences on the home-based work and school trips. Differences in trip rates between informants and non-informants are mainly associated with non-home-based and home-based discretionary trips by auto driver mode.

For further discussion on the validation of the 1996 data, refer to the Data Management Group's report entitled, *1996 Transportation Tomorrow Survey Discretionary Travel* and the 1996 TTS report, *Data Validation*.

### **2001 Survey**

Analysis of the 2001 survey data indicates that, as with previous years, the TTS data may be used with a high degree of confidence. With respect to peak-period travel there is no evidence of under-reporting of trips made in the a.m peak period. Public transit trips are accurately represented through the day and any under-reporting which occurs is primarily associated with off-peak automobile trips.

TTS tends to under-represent the overall population of the survey area compared to Census data. The under representation is most noticeable in infants and elderly persons. The exclusion

of collective homes, such as hospitals and nursing homes, from the survey is likely a contributing factor in the under-representation of the elderly. Also as in 1996, the spatial distribution of persons aged 18 to 27 differ between the two databases. This can again be attributed to the timing and definition of the survey relative to the census and the effect this has on post-secondary school students.

TTS data accurately reflects the number of full-time students in most parts of the survey area. Initial comparisons with university and college enrollment data suggest that there might be some under-representation of students at McMaster, Guelph and Trent Universities.

For further discussion on the validation of the 2001 data, refer to the 2001 TTS report, *Data Validation*.

### **2006 Survey**

Analysis of the 2006 survey data indicates that the quality of the data is consistent with those from the previous surveys and can be used with confidence. Peak period travel corresponds with the 2006 Cordon count data and transit trips are comparable to the ridership data provided by transit agencies.

As in previous surveys, population was under-represented by the 2006 TTS as compared to the Census data. The under-representation in infants and elderly persons are likely to be contributed by the exclusion of collective homes such as hospitals and nursing homes from the survey. There is also an under-representation of people aged 18 to 27. This can be attributed to the timing and definition of the survey relative to the census and its effect on post-secondary school students. The growing use of cell phone in place of land lines in this age group might also be accountable for the under-representation.

For further discussion on the validation of the 2006 data, refer to the 2006 TTS report, *Data Validation*.



## REPORT CONTENTS

### **OVERVIEW**

This report presents data from the 1986, 1996, 2001 and 2006 TTS Survey. The data in this report are presented in two sections. The first section provides demographic characteristics and travel pattern data. The information is presented by local municipalities and summarized by regional municipalities and for the entire GTHA. In total there are 36 local municipalities and six regional municipalities in the GTHA. In addition, there is a separate summary for the central area of the City of Toronto.

The second section provides a set of trip matrices for each survey year. The origin-destination trip matrices and home to work trip matrices are summarized by municipality and region.

The demographic and travel pattern data are presented on two pages for each area of interest. On the left-hand page are data pertaining to employment and work trips for 2006. The right-hand page presents a time series comparison for the 2006, 2001, 1996, and 1986 surveys in summary tables.

To reflect the fact that all numbers presented in this report are estimates based on expanded survey data, all numeric figures are rounded. Totals and subtotals are rounded to the nearest 100 for all data presented in this report. All percentages are rounded to the nearest integer. No information is presented for categories that have less than four observations or survey records. These categories are denoted by an asterisk (\*).

Invalid survey responses are dealt with in two ways. The response is grouped under the "other" category if one is available (travel mode, for example). Otherwise, invalid responses are distributed proportionately (based on the valid responses) between the available categories.

Although the 2006 survey area extends well beyond the GTHA, all data presented in this report are limited to residents of the GTHA in order to show time series comparisons.

### **2006 STATISTICS**

#### **Population and Employed Labour Force**

The first chart on the left-hand page shows the distribution of population and employed labour force for the area. At the regional level, the distribution is by the local municipalities within the region. Similarly, the GTHA summary data are distributed by the six regions. At the municipality level, population and employed labour force are distributed by age cohorts.

Population includes only persons living in private residences at the time of the interview. Employed labour force includes all persons who work full-time, part-time or work at home on a full or part-time basis.

For the 2006 TTS, Statistics Canada introduced a new approach to collecting information on residents residing in apartments that has resulted in a lower number of occupied dwellings. This in turn has the affect of introducing a minor reduction in the dwelling unit and population expansion targets used in the TTS for major urban centres like the City of Toronto.

#### **Employment**

The second chart on the left-hand page presents information on employment and employed residents of the area. At the regional level, this chart compares total employment with the proportion of employment that is held by residents of the region of interest. At the municipal level, this chart compares the home location of persons employed in the municipality with the work location of its own residents.

For each area, the employment figure is defined as the number of jobs held by GTHA residents. It is measured, in the survey, by the response to the usual place of work question. This definition does not include positions that may be vacant or positions that are held by residents external to the GTHA.

## Work Trip Origins and Destinations

Work trip origin and destination distributions are presented together on the same plot on the right half of the page. The distributions are presented by the regions in the GTHA and by the municipalities in the region of interest. The origin distribution illustrates the distribution of trip origins within the GTHA for all work trips destined for the highlighted area. The destination distribution shows the distribution of destinations for work trips made by residents of the highlighted area. For the destination distribution trips made by the residents can originate anywhere. The origin and destination distribution percentages are presented side by side on each plot for comparison purposes. Note that the work trips are for a 24-hour period and include only the first work trip of the day for each person.

## TIME SERIES SUMMARY TABLES

Demographic characteristics and travel patterns are presented on the right-hand page in four tables. Information from the 2006 survey is presented in black followed by information from the 2001, 1996 and 1986 surveys in green.

### Demographic Characteristics

Demographic data are presented in two tables on the top half of the page, one summarizes the data by household and the other summarizes the data by person.

Household characteristics include:

- Total number of households in the area. The data expansion procedure ensures a close match with the census
- Distribution of households by dwelling type: house, townhouse or apartment
- Distribution of households by number of persons in residence at the time of the interview
- Distribution of households by number of vehicles available to the household for personal use
- A series of ratios that reflect the general characteristics of households in the area:
  - Persons - Total population divided by total number of households
  - Workers - Total number of employed persons (full-time, part-time or work at home)

- Drivers - Total number of persons in possession of a driver's licence divided by the total number of households
- Vehicles - Total number of vehicles available for personal use divided by total number of households
- Trips/day - Total number of trips by persons of age 11 and over divided by total number of Households

Personal characteristics include:

- Total population in private residence in the area at the time of the interview
- Population by gender
- For each gender category, the percentage of persons in possession of a valid driver's licence and distribution by employment status. Employment categories are full-time outside the home, part-time outside the home, work at home (full or part-time) and student (full or part-time). Please note that except in the 1986 data a student can also be employed
- Median age, the age where 50 percent of the population is older and 50 percent is younger
- Distribution by age cohort
- Daily trips per person calculated by the number of trips made by persons aged 11 and over divided by the number of persons aged 11 and over
- Daily work trips per worker is defined as the proportion of employed persons who make a trip to work on a given weekday. This is calculated by the number of first work trips divided by the total number of employed persons

### Travel Patterns

The table on the lower half of the page present travel pattern information in two categories: trip purpose and mode of travel. In each category, the information is summarized by trips that were made by residents of the area and by trips with a destination in the area. Trips made by residents of an area are a measure of mobility and thus all trips regardless of trip origin or destination are included. The number of trips made to an area is a measure of the area's attractiveness and therefore includes trips made by both residents and non-residents of the area. Note that trips made by residents include trips in and out of the GTHA and that trips made to the area include only trips made by GTHA residents.

The time periods dealt with are the 24-hour period and a 3-hour morning peak period. The morning peak period has been chosen to minimize the number of non-work trips that are included in the summary. In general, the composition of the morning peak is dominated by trips to work and school. Although the period chosen for the morning peak is indicated as 6:00 a.m. to 9:00 a.m., the data actually comprises trips starting at 6:00 a.m. to 8:59 a.m. The reason for excluding trips starting at exactly 9:00 a.m. is that respondents tend to round off the times they reported to the nearest quarter or half hour. If data for both 6:00 a.m. and 9:00 a.m. are included the actual number of morning peak period trips would be overrepresented.

#### Trip Purpose

For trips made by residents of an area, the home location is the link between the commuter and the area of interest. Consequently, trip purpose categories are defined as:

- Home to work and work to home (home-based work, HB-W) trips
- Home to school and school to home (home-based school, HB-S) trip
- All other home-based (home-based discretionary, HB-D) trips
- All trips where neither trip end is the home (non-home-based, N-HB)

The magnitude of the trips made to an area gives an indication of the attraction of land use in the area. The destination purposes are defined as:

- Work
- School
- Home bound
- Other or discretionary trips such as shopping, entertainment, etc.

#### Mode of Travel

The travel mode categories are:

- Automobile driver
- Automobile passenger
- Local transit
- GO Train
- Walk and Bicycle
- Other, which includes motorcycle, taxi, school bus and other modes

If a trip uses more than one mode category, public transit is given preference. In cases where both GO Train and local transit were used, GO Train is the dominant classification.

The 2006, 2001 and 1996 data include all bicycle trips whereas only bicycle trips for work or school were collected in 1986. In general, only walk trips to and from work or school are included.

#### Trips Made by Residents of an Area

In addition to the travel information by trip purpose and travel mode, the summary tables also include statistics on the percentage of internal trips and median trip lengths.

The percentage of trips made entirely within an area by residents of the same area is a measure of the degree of self-containment for the area of interest. The percentages are calculated for the 24-hour period and a 3-hour morning peak period.

Median trip lengths are calculated as the trip distance of which 50 percent of the trips are longer and 50 percent are shorter. Trip length is measured as the straight line distance between origin and destination points. Trips with origin or destination outside the GTHA are not included because the coordinates outside the GTHA were approximations in 1986. The figures presented are by travel modes for the 24-hour period.

#### **ORIGIN-DESTINATION TRIP MATRICES**

Two kinds of origin-destination trip matrices are presented in this section. Both include all travel modes and cover the 24-hour period and a 3-hour peak period. The first type is the origin-destination matrix which presents all trip purposes and includes all trip records in the database.

The second type is the home to work trip matrix which presents the first work trip for each person. The destination is the actual destination of the work trip, however, the trip origin, as recorded in the survey, is replaced by the home location of the commuter. This definition differs from the Place-Of-Work (POW) information from Statistics Canada in that the Census data uses home to work linkages, not trips.

The trip matrices are presented separately for each survey year and are summarized by municipalities and by region. Trips made to or from areas external to the GTHA are not included in

the tables. Therefore, these totals and subtotals are less than those presented in the summary pages for each area.

Values have been rounded as described in the above overview.