Household Trip Patterns and Travel Characteristics in Lethbridge, Alberta

By

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ABSTRACT

This paper presents the results of the travel diary survey undertaken in Fall 2010 as part of the transportation master planning study in Lethbridge, Alberta. Travel diaries are invaluable in understanding the travel characteristics and patterns of the City's residents and identifying emerging trends. They provide a read on the effectiveness of the past transportation plans and programs and identify for planners what needs to be improved in the future to meet the area's transportation objectives.

A total of 4,226 surveys were distributed (3,384 web, 642 mail-back and 201 onsite interviews with post-secondary students). The final number of eligible returns was 2,166 resulting in a 51% eligible return rate.

The trip diary survey represents **5.29%** of the study area's households (2,166 out of 40,949 households). In order to use the information to estimate trip totals by area and by time of day, the information was expanded to represent the total target population (ie. the total number of households in the study area). The household socio-economic characteristics indicated a close resemblance with Lethbridge Census data, which validates the sampling.

Some of the salient results of the survey are:

- Average car ownership per household: 2.0
- Average daily trips per person: 3.54
- Average daily trips per household: 9.17
- Overall 4.7% of the daily trips were made by walking, 1.3% using bicycle, and 1.4% using transit. Single occupant auto trips constituted 69.2% of the total trips

The paper includes the sampling techniques, survey methodology, and a detailed analysis of results, and findings of the survey.

1. INTRODUCTION

Household (HH) travel surveys are intended to measure the travel (or activities) that take place by members of a specified household over a typical weekday. The types of data collected fall into three broad categories: household characteristics, person characteristics and trip characteristics (1). The information collected in a HH travel survey is very efficient to generate data that permits the estimation of trip generation and modal split models; furthermore, the data on household travel provides good information on the distribution of trip lengths in the city, an important element in the estimation of trip distribution models (2). Travel diaries are invaluable in understanding the travel characteristics and patterns of the City's residents and identifying emerging trends. They provide a read on the effectiveness of the past transportation plans and programs and identify for planners what needs to be improved in the future to meet the area's transportation objectives.

The purpose of the 2010 City of Lethbridge household travel survey was to collect data on the regional travel patterns of residents so as to:

- Provide data for the development of a new regional transportation demand model which will include transit for the first time
- Enable monitoring of transportation patterns in the City to assess policies and plans
- Develop a City of Lethbridge travel database for the purpose of analysis and use in policy research and planning

2. METHODOLOGY

Survey Design

Since one of the aims of a survey is to achieve the highest possible response rate, to minimize the non-response rate bias, it is recommended that mixed methods (i.e., based on self completion and personal interviews) are used to collect the data (3). The 2010 City of Lethbridge Household Travel Survey was designed to collect information on 24 hour weekday travel characteristics from a random sample of study area residents. This survey was not intended to capture the weekend travel patterns. There were two surveys used in this study – the telephone recruitment survey and the web based travel diary survey.

The survey design and preparation took place during August 2010, with the recruitment phase running from September 14th until October 6th, 2010. The travel diary survey (which was primarily conducted online, with the option of mail-back) commenced three days later, starting on September 17th and continuing on every weekday until October 18th, 2010 (with the exception of October 11th, Thanksgiving Day).

Several measures were taken to encourage participation:

- Prize draws were offered as incentives for participating
- Households were provided with unique password protected survey links
- Households were sent acknowledgement and reminder emails
- Respondents wishing to verify the survey were directed to City of Lethbridge website which posted information about the survey
- Respondents with questions about how to complete the survey were provided with

1-800 helpline

To ensure that young people, particularly post-secondary students, were appropriately represented in the sample, on-site interviewing was conducted at the campuses of the University of Lethbridge and the Lethbridge Community College campus on Tuesday to Friday from September 22nd until October14th, 2010.

Sampling Plan

The ASDE Canada Survey Sampler (CSS) was used to generate the telephone sample. Canada Survey Sampler provides electronic up-to-date listings of Lethbridge residents, including names, addresses, postal codes and telephone numbers.

Response rates from each of the 9 districts (**Figure 1**) were monitored closely throughout the recruiting phase. However, strict quota limits were not put in place as accurate dwelling distribution data was not available and not all listed addresses were initially geocodable (geocoded after confirmation of respondents' address).

Telephone Recruitment

The telephone recruitment survey was used to engage the respondent to participate in the online travel diary survey (or in the mail-back diary survey for those without Internet access) and to collect basic household demographics.

The telephone survey was administered via Computer Assisted Telephone Interviewing technique (CATI) and consisted of household information questions as well as the request to participate in the trip diary survey. The interviewer asked to speak to the person in the household who was most familiar with the daily commuting and local traffic habits of the household. If this designated person agreed to participate, he or she was assigned a specific travel diary day during the telephone recruitment, typically three to five days later. The household's address was then confirmed and email address obtained and re-confirmed for accuracy. The average length for the telephone survey was 8 minutes.

The telephone survey was pre-tested by the project team and improvements were made to the survey, mostly to smooth out wording and enable quicker collection of the desired information.

Online and Mail-back Trip Diary

The online survey was designed to consist of an easy-to-follow set of screens which included instructions, examples, drop down menus and explanations/examples where needed. Respondents were prompted when a question was skipped or appeared to be inconsistent or inaccurate. For example, when providing the end time of each trip, the program checked against the trip start time to ensure the start time was earlier than the end time.

The web survey was also programmed to minimize respondent time and mistakes, in the following ways:

- By using GIS data for the region to provide a list of all possible roads and intersections
- By using word recognition software to shortcut typing, prevent typos and standardize abbreviations for landmarks and street names
- By automatically geocoding locations upon entry of destination information

Respondents were provided with several ways of indicating their location information to make this as easy as possible for them:

- By choosing from a customized list of locations for their household (home address as well as work and school addresses)
- By entering the name of a landmark location (assisted by word recognition)
- By entering two cross streets (assisted by word recognition)

Prior to the survey going live, the online survey was tested and refined to verify logic and ensure ease of use.

The online diary survey was structured as follows:

- Introduction screens – residents entered their unique ID code and password. These screens also included an introductory letter from the City of Lethbridge, and 1-800 number to call with questions or to verify the legitimacy of the survey. Printable forms for the trip diary were provided along with an example of a completed form.
- Household information screen – the household information gathered during the telephone survey was displayed and respondents verified and made corrections to this information as necessary.
- Personal information screens – information was collected for each member of the household.
- Trip data screens – information was collected for each and every trip made by each household member on the specified day.

The mail-back package included the following components:
- An introductory letter from the City of Lethbridge
- General survey instructions, including Frequency Asked Questions
- Example of a completed trip diary form
- Household information form
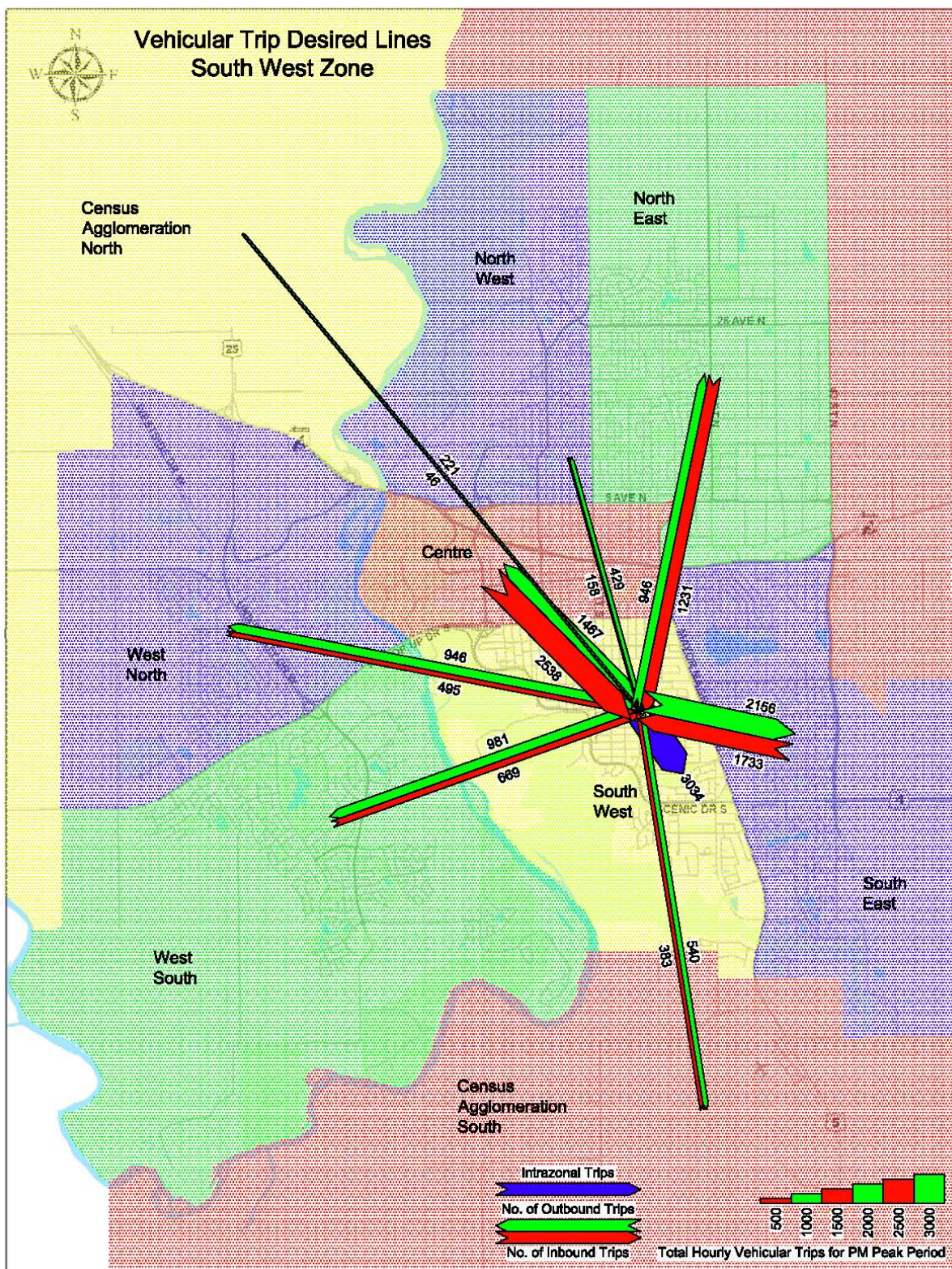- Trip diary form for each household member

Figure 1: Lethbridge Travel Model Super-zones with Desire Lines for a Zone

3. SURVEY IMPLEMENTATION

Survey Rate of Return

Approximately 22,554 original telephone recruitment calls were made, with 4,004 households completing the telephone survey and agreeing to participate in either the online or mail-back diary survey. About 16% of the households lacked internet access and opted for a mail-back survey. An additional 201 surveys were conducted with post-secondary students at University of Lethbridge and Lethbridge Community College. A total of 2,220 diaries were collected by the due date of October 30th – 1,818 by web, 201 by mail and 201 onsite interviews with post-secondary students. 54 forms (2%) were excluded due to incomplete/inaccurate information, for a final sample of 2,166 and a sample size of 5.3%.

Respondent Inquiries

Respondents were provided with 1-800 helpline, which was staffed throughout the duration of the survey, Monday to Friday from 9am to 9pm Mountain Time. The calls received primarily requested assistance to complete the online survey or sought clarification about the survey.

Email Reminders

Three to four automated email reminders were sent out to each respondent who agreed to participate in the online survey.

- Acknowledgement Email – sent by 10am the next business day following the previous night's telephone recruiting.
- Reminder & Link Email – sent by 5pm the night before the assigned diary day.
- Thank-You & Follow-Up Email – sent at 8pm the night of the assigned diary day.
- Second Chance Email – sent only to respondents who had not completed the online survey 24 hours after the assigned diary day. Respondents were given the choice of a new diary date if they did not track their household's travel on the assigned day.

Email Bounce-backs

To deal with email bounce-backs, email addresses that were obviously wrong were corrected or respondents were called back to clarify misspellings.

4. DATA PROCESSING AND DATABASE STRUCTURE

Database Structure

Once the phone interviews were completed, the information obtained was repackaged into a relational database. At this stage, field names and codes were standardized. The relational database contains the following tables:

Household Table – contains general household information for every respondent household obtained from the telephone survey. Information includes survey dates, household location and number of occupants in the household. The household table contains 14 fields that provide a general description of the household. The table contains 2,166 records each representing a surveyed household.

Person Table – contains information for every member of the household. Information on gender, age, school status and employment status are contained in this file. The person table contains 33 fields and 5,409 records describing the characteristics of each household member. Each record is linked to the household table via the key field.

Trip Table – contains information on the 24 hour trips made by each member of the household from the trip diary survey. Each trip is stored as a unique record that contains information on the origin and destination, start and arrival times and duration, mode of travel, trip purpose, trip purpose pairings and land use type. The trip table contains 20 fields and 19,458 records describing the characteristics of each trip. These records are linked to the household table via the Household Serial Number and to the person table via the Person Serial Number.

Data Logic Checks

In addition to the logic checks built into the telephone survey, a further set of logic checks were undertaken once the data was converted to a relational database format. The following is a summary of these logic checks.

- Age of full time employees
- Age of drivers
- Arrival time is earlier than the start time of the next trip
- Reasonable trip travel time based on travel mode
- Elimination of trips made entirely outside the study region
- Elimination of trips made after midnight (i.e. on the following day)
- Destination is the same as the origin of the next trip
- Duplicate records were identified and eliminated
- Reasonable trip distances and times by mode
- Crosscheck on work trips to ensure person is employed*
- Crosscheck on school trips to ensure person is attending school*

These checks were implemented using database programs that created flags for problem records. The problem records were then visually scanned and corrected. In some instances, the original mail-back forms were referenced to make corrections.

Geocoding Procedures

The geocoding process involved the assignment of UTM coordinates to the addresses, landmarks and intersections provided in the trip diary. Most of the geocoding was done automatically by the web program using the road, intersection and landmark files, but additional geocoding was required for locations that weren't recognized or for which partial information was missing or vague. Upon the completion of the geocoding process (including the assignment of UTM coordinates), one of 9 districts were assigned to each set of coordinates

Of the 2,166 households that submitted complete and eligible surveys, 98% of all the origin and destination points provided were successfully geocoded.

The trip diary survey represents 5.29% of the study area's households (2,166 out of 40,949 households). In order to use the information to estimate trip totals by area and by time of day, the information was expanded to represent the total target population (ie. the total number of households in the study area). Data expansion also helps to eliminate sampling biases in the

unexpanded data.

To bring the sample composition in line with the population, the data was weighted by household size within each of the 9 districts. Specifically, the data was expanded according to the number of one-person, two-person, three-person, four-plus person households in each zone, based on 2010 Municipal Census data.

A total of 36 unique weighting factors (9 districts x 4 household size categories) were developed. The adjusted data was then weighted by a common expansion factor for the data sets, the factor applied was 18.90115.

5. SURVEY ERROR AND STATISTICAL RELIABILITY

Sources of Survey Error

Any survey is subject to sampling errors that can affect the reliability of the results. These errors can arise from a number of factors, including:

- Sampling error
- Biased response error
- Non-response error
- Coding and reduction errors

Sampling error can be controlled to a large extent at the survey design stage. This type of error represents the variation between a sample and the survey universe. Sampling error can also occur when the sample is selected in a biased or non-random manner. To minimize the impact of sampling error, the sample should be chosen in a random manner and the sample size should be selected to ensure an acceptable confidence level and error tolerance.

Biased response error is introduced by the subject when the response is incorrect or not "truthful." This type of error can be introduced either inadvertently or intentionally. A well-designed and properly tested survey instrument will help to minimize this affect.

Non-response error occurs when those that refuse to participate in the survey are in some way different from those that respond. Individuals with language problems are one example of a group that may have different travel characteristics but are unable to respond. Offering survey translations or multi-lingual interviewers can minimize this bias. In general, a survey with a high response rate is less likely to be prone to this type of error.

Coding and reduction errors are introduced during the data entry and processing stage. These errors can be eliminated by proper training and quality control procedures.

For the 2010 Lethbridge Travel Survey, each of these potential error sources was addressed at various stages of the survey. Sampling error was minimized by targeting a certain number of returns from each area. Biased response error was reduced by using a well-established survey design, combined with pre-testing. Non-response error was addressed by achieving a high response rate through telephone recruiting, a mix of a few large incentives and many smaller incentives, a media campaign, acknowledgements and reminders, as well as the 1-800 helpline. Lastly, coding and reduction errors were addressed through training, quality control and data verification procedures.

Estimating Sampling Error

An important use of the 2010 Lethbridge Travel Survey will be to produce travel statistics (e.g., trip rates, trip lengths, mode shares, etc.) for specific sub-areas to assist with various planning and engineering studies. The reliability of these statistics is largely dependent on the sample size and can be calculated using standard formulas.

Error around Means

The error associated with a statistic such as an average household trip rate or average trip length can be determined using the following formula:

$$\chi - \frac{Z_{\alpha/2}s}{\sqrt{n}} < \mu < \chi + \frac{Z_{\alpha/2}s}{\sqrt{n}}$$

where:
χ = sample mean
μ = population mean
$Z_{\alpha/2}$ = normal variant
α = 1.0 – confidence coefficient
s = sample standard deviation
n = number of samples

For example, the average length of trips going to/from work during in the AM Peak Period (0600 – 0859) is 14.2 minutes, based on a sample of 63,357 trips with a standard deviation of 10.9. Applying the 95% confidence interval ($Z_{\alpha/2}$ =1.96) this results in a range of error of ±0.08 or 14.1 to 14.3 minutes per work-related trip during this time period.

Error Around Proportions

The error associated with mode shares and other proportional statistics is calculated based on the following formula:

$$p' - Z_{\alpha/2}\sqrt{\frac{p'q'}{n}} < p < p' + Z_{\alpha/2}\sqrt{\frac{p'q'}{n}}$$

where:
p = proportion of the population
p' = proportion of the sample
q' = 1 – p'
$Z_{\alpha/2}$ = normal variate
α = 1.0 – confidence coefficient
n = number of samples

For example, during the PM peak (1500-1759), 100,955 trips are made during this period of which 65.9% are made by auto drivers. Applying a 95% confidence interval ($Z_{\alpha/2}$ =1.96), the range of error is calculated as follows:

p' = 0.659
q' = 1 – 0.659 = 0.341
α = 1 – 0.95 = 0.05
$Z_{\alpha/2}$ = 1.96

n = 100,955

As a result the proportion of auto driver trips during the PM peak ranges between 65.6% and 66.2%.

6. SURVEY RESULTS

Household and Person Characteristics

On average, residents have about two automobiles per household (**Figure 2**). The number rises predictably with household size.   In a given household, there are about as many automobiles per household as there are licensed drivers. On average, each household made approximately 9 trips a day (**Figure 3**). Three-quarters of residents claim to hold a valid driver's license, including two-thirds who are 25 years and older as shown in **Figure 4**.
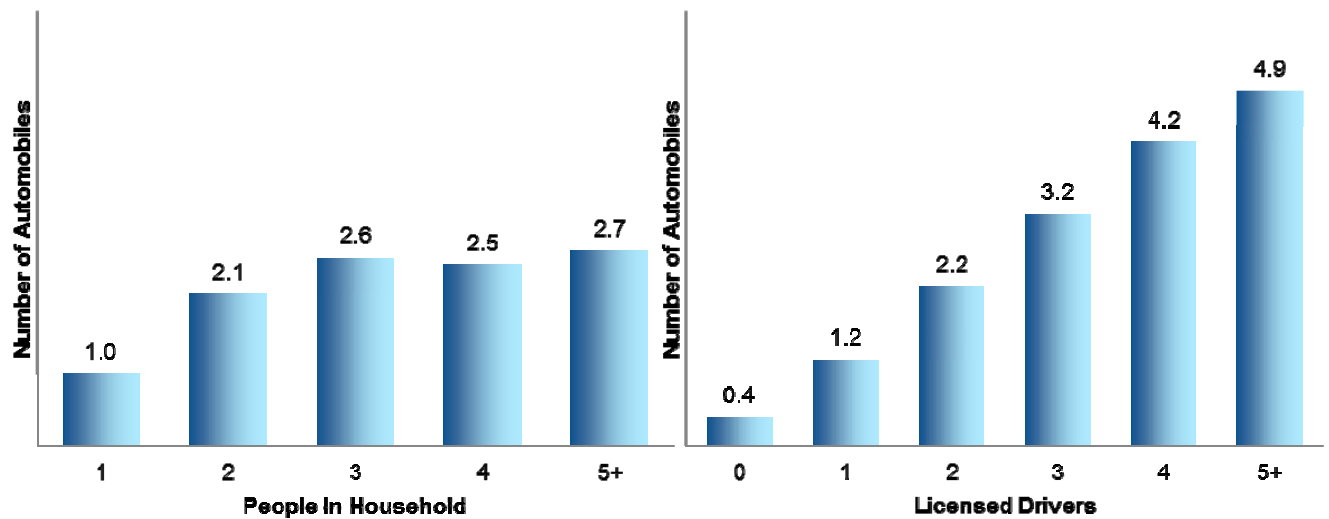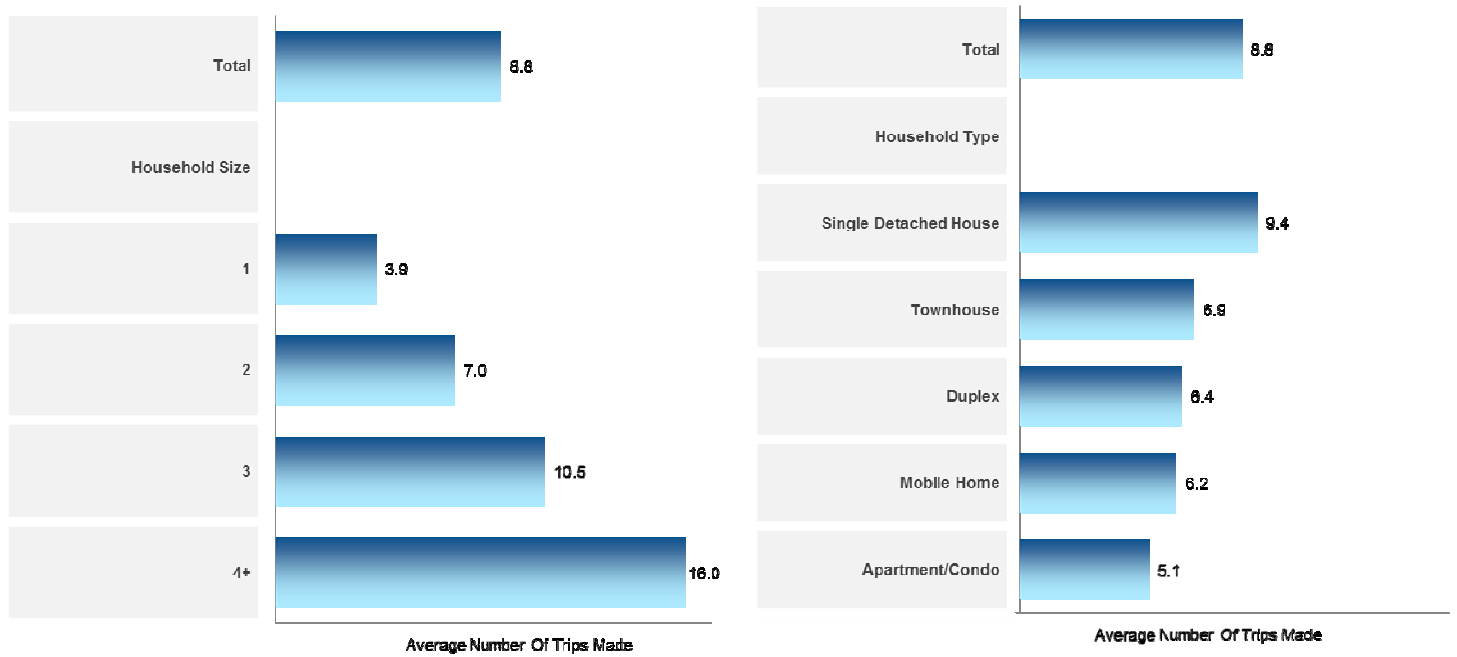
Figure 2: Automobile ownership

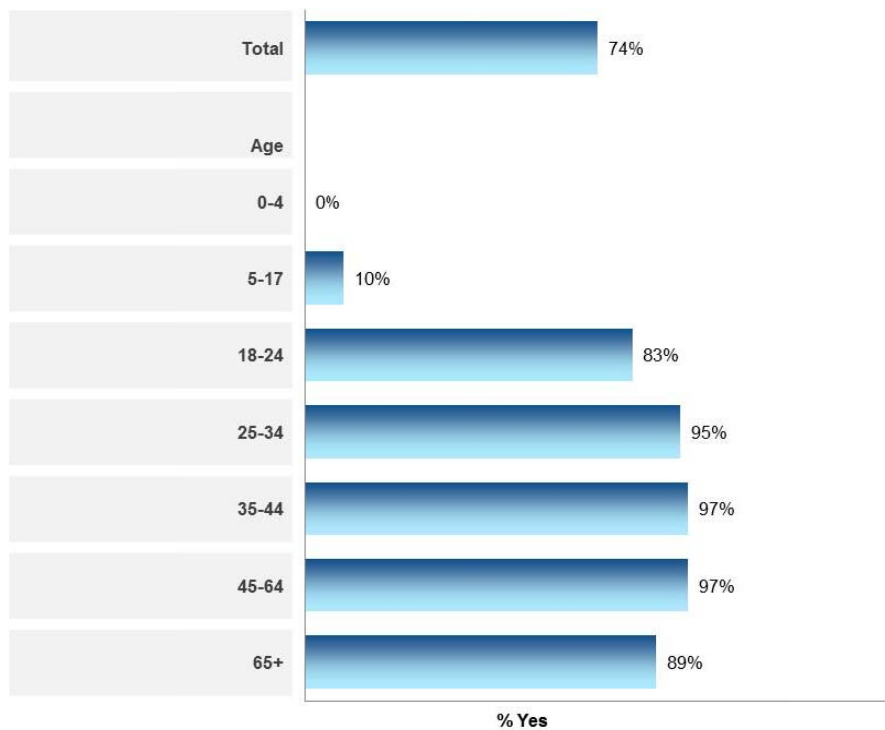**Figure 3**: Average No. of trips made by HH Size and Type

Figure 4: population Holding Driver's Licence

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Trip Totals and Trip Rates

For a typical 2010 weekday, the total number of daily trips made by Lethbridge City residents is estimated at approximately 358,329. Note that this figure does not include trips made by non-residents traveling within or through the study area. This translates to a daily average of approximately 3.5 trips per person or 9.2 trips per household. **Table 1** provides a summary of this information by time of the day. Most trips occur during the mid-day and PM peak periods, followed by the morning peak period and the evening. The trip rates closely resemble with the calculated trip rates based on the actual counts and included in the TIA guidelines of the City of Lethbridge (4). **Table 2** presents the trip rates by age category and time of the day. Residents aged 25-64 make the most trips per day, with those aged 35-44 averaging more than 4 trips per day. Apartment/condo units generate (5.1 trips/hh) almost half the trips generated by single family detached dwelling (9.1 trips/hh) as shown in **Figure 5.**.

Table 1: Trip Totals and Average Trip Rates

Trip Totals	Time Period						
	Night 0000-0559	**AM Peak** 0600-0859	**Midday** 0900-1459	**PM Peak** 1500-1759	**Evening** 1800-2359	**Time Unspec.**	**Total**
Total	2,201	68,920	116,400	101,050	66,209	3,549	358,329
% of Daily Trips	0.6%	19.2%	32.5%	28.2%	18.5%	1.0%	100.0%
Trips per Person	0.02	0.68	1.15	1.00	0.65	0.04	3.54
Trips per Household	0.06	1.76	2.98	2.59	1.69	0.09	9.17

Travel Mode and Trip Purpose by Time of Day

Table 3 and Figure 6 provide a summary of the travel mode share for different time periods. The most common mode for all time periods is the automobile, and more specifically, auto driver. Auto driver trips account for seven in ten trips overall and account for almost nine in ten trips made at night (after midnight but before 6am) and three-quarters of the trips during midday. Auto passenger trips are the next most common mode, accounting for one-fifth of all trips and for more than one-quarter of trips in the evening. Walking is the third most common mode with Lethbridge residents making 5% of their trips by foot. Very low transit share of 1.9% during the am peak and 1.3% of overall trips was noted from the results.

Table 2: Average Person Trip Rates among Age Groups

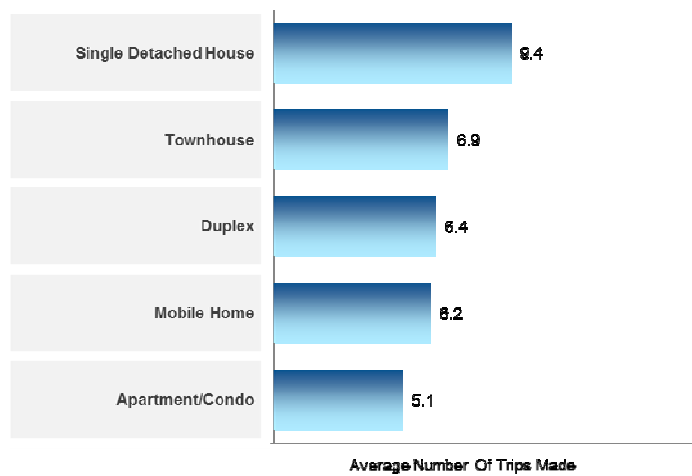| Age	Trip Totals						Total
	Night *0000-0559*	**AM Peak** *0600-0859*	**Midday** *0900-1459*	**PM Peak** *1500-1759*	**Evening** *1800-2359*	*Time Unspec.*	**Total**
0-4	0.00	0.38	0.70	0.73	0.26	0.01	2.08
05-17	0.00	0.85	0.44	1.05	0.51	0.02	2.88
18-24	0.02	0.56	0.83	0.83	0.90	0.02	3.15
25-34	0.02	0.76	1.18	1.04	0.80	0.02	3.83
35-44	0.03	0.99	1.28	1.27	0.86	0.03	4.46
45-64	0.04	0.69	1.45	1.07	0.72	0.04	4.02
65+	0.01	0.27	1.74	0.69	0.36	0.08	3.14
Total	0.02	0.68	1.15	1.00	0.65	0.04	3.54

Figure 5: Trip Rates by Type of Household

Table 3: Travel Mode Share by Time of Day

Travel Mode	Travel Mode Percentages							Total Trips
	Night 0000-0559	AM Peak 0600-0859	Midday 0900-1459	PM Peak 1500-1759	Evening 1800-2359	*Time Unspec.*	Total (%)	
Auto Driver	87.4%	65.5%	75.0%	65.9%	67.0%	70.6%	69.2%	247,331
Auto Passenger	7.1%	18.5%	15.4%	21.4%	27.2%	19.2%	19.9%	71,021
Commercial Vehicle Driver	-	0.7%	1.3%	0.5%	0.4%	0.5%	0.8%	2,749
Transit Bus	-	1.9%	1.3%	1.5%	0.8%	0.5%	1.4%	4,949
School Bus	-	6.6%	0.5%	3.8%	0.1%	1.5%	2.5%	9,017
Bicycle	1.8%	1.3%	1.2%	1.4%	1.2%	0.5%	1.3%	4,592
Rollerblade/Skateboard	-	-	-	-	-	-	-	81
Walking	2.7%	5.3%	4.8%	5.3%	3.2%	7.2%	4.7%	16,982
Taxi/Airport Shuttle	1.0%	0.1%	0.1%		0.1%	-	0.1%	203
Motorcycle/Moped	-	0.2%	0.3%	0.2%	0.2%	-	0.2%	742
Trip Totals	2,201	68,908	116,346	100,955	66,119	3,138	100.00%	358,329

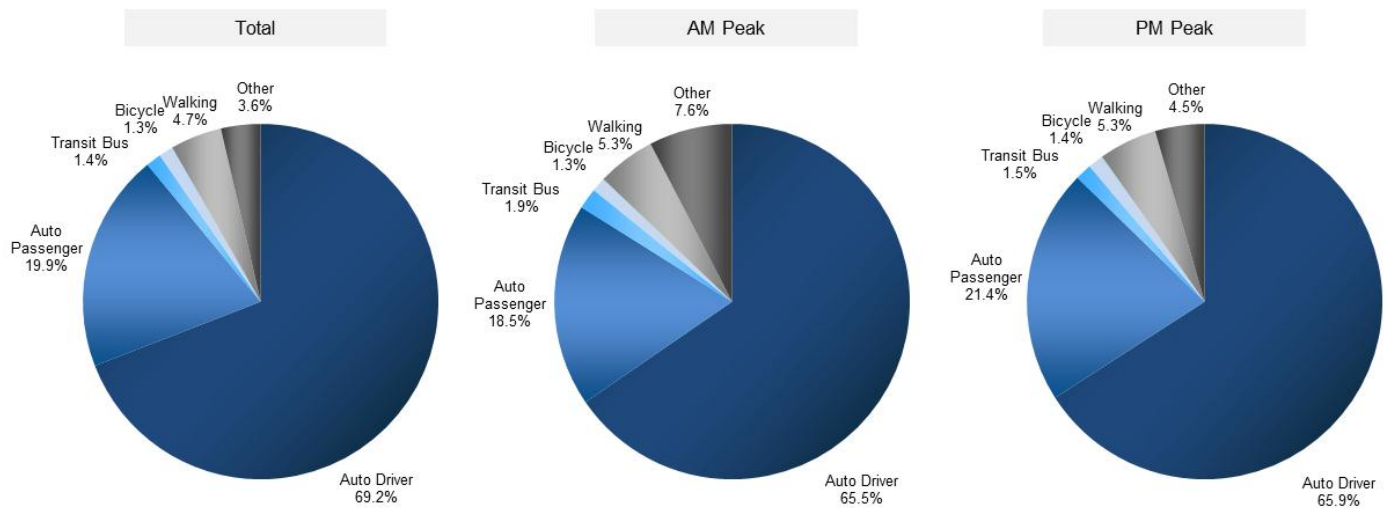| Total	AM Peak	PM Peak

Figure 6: Travel Mode Share

Trips that involve going to or from work account for about one-third of all trips, while trips involving getting to or from school account for 13% of trips. The remaining trips do not involve work or school and are for purposes such as personal business, dropping off or picking someone up and recreation. The results are shown in **Table 4** and **Figure 7**.

Table 4: Trip Purpose by Time of Day

Travel Purpose	Trip Prupose Percentages							Total Trips
	Night 0000-0559	AM Peak 0600-0859	Midday 0900-1459	PM Peak 1500-1759	Evening 1800-2359	*Time Unspec.*	Total (%)	
To Work	72.2%	43.1%	14.5%	4.0%	2.8%	6.7%	15.2%	54,277
During Work/Business Trips	3.6%	4.0%	6.6%	1.9%	0.5%	2.1%	3.6%	12,807
To Study	0.5%	24.1%	3.8%	1.1%	1.4%	4.1%	6.5%	23,173
To Drive Someone/Pick-Up	4.0%	12.9%	7.4%	11.8%	8.3%	2.6%	9.8%	35,102
Personal Business	12.4%	10.6%	40.9%	29.9%	33.0%	26.5%	30.2%	108,093
To Go Home	7.3%	5.3%	26.8%	51.3%	54.1%	58.1%	34.8%	124,458
Trip Total	2,201	68,867	116,345	100,986	66,194	3,319	100.0%	358,329
Total To/From Work	*77.2%*	*47.9%*	*33.5%*	*32.9%*	*16.5%*	*17.1%*	*33.1%*	*118,383*
Total To/From School	*0.5%*	*24.2%*	*9.4%*	*14.2%*	*5.2%*	*7.6%*	*12.7%*	*45,624*

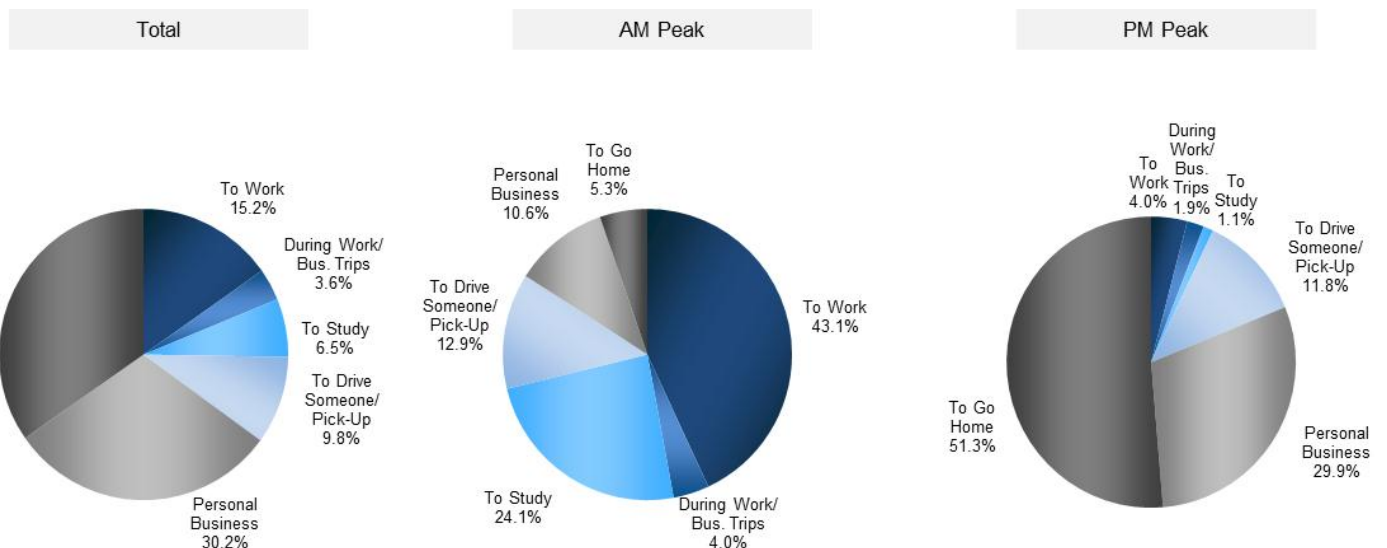| Total	AM Peak	PM Peak

Figure 7. Trip Purpose

Other Travel Characteristics

Table 5 and Table 6 provide the results of the analysis for the trip length by mode and purpose. Very few trips are taken place late at night (after midnight but before 6am) so the high average duration is more a reflection of the uniqueness of these trips. The other time periods have very similar trip durations except for those made in the evening which tend to be a little shorter (averaging about 13 minutes).

Figure 8 show the mode share among different age groups. More than half (53%) of the auto driver trips are made by those aged 45-64, while about the same proportion of the auto passenger trips are made by those aged under 18. Over one-half of transit trips are mostly made by residents under age 25, while most walking trips are made by those aged 5-17 or 45-64.

Table 5: Average Trip Time by Mode and By Trip Purpose

Travel Mode	Average Trip Time (Minutes)						
	Night 0000-0559	AM Peak 0600-0859	Midday 0900-1459	PM Peak 1500-1759	Evening 1800-2359	Time Unspec.	Total
Auto Driver	16.0	13.0	13.8	13.8	12.5	4.1	13.4
Auto Passenger	15.0	11.2	13.0	12.5	13.5	2.3	12.6
Transit Bus	-	26.6	27.4	31.6	31.6	-	29.0
School Bus	-	30.3	32.2	31.1	36.5	-	30.8
Bicycle	8.3	14.2	17.0	15.7	15.5	-	15.8
Walking	31.6	15.1	14.1	15.5	19.2	-	15.5
Other	15.0	15.9	15.4	16.3	19.7	-	16.1
Total	16.4	14.3	14.0	14.7	13.2	3.4	**14.1**

5. CONCLUSIONS

A comprehensive household travel survey was undertaken with an objective of obtaining data that is critical to making wise decisions about transportation investment choices for the future. A sample size of approximately 5.3% was selected to ensure accuracy of the data. The following are the major findings of the study:

- Out of a total of 4,226 surveys distributed, the number of eligible returns was 2,166 resulting in a 51% eligible return rate. Several promotional activities helped in such high rate of return.
- Average car ownership per household is 2.0

Table 6: Average Trip Time by Trip Purpose

| Trip Purpose	Average Trip Time (Minutes)						
	Night	**AM Peak**	**Midday**	**PM Peak**	**Evening**	*Time Unspec.*	**Total**
To Work	14.0	14.2	12.5	14.7	12.2	1.0	13.6
During Work/Business Trips	5.0	16.3	16.8	14.2	22.3	2.0	16.4
To Study	10.0	17.2	13.8	13.5	11.5	-	16.2
To Drive Someone/Pick-Up	22.2	10.4	12.2	11.2	11.7	24.8	11.3
Personal Business	24.6	13.8	14.9	14.7	13.8	1.5	14.5
To Go Home	19.3	11.0	13.4	15.5	13.2	2.5	14.1
Total	16.4	14.3	14.0	14.7	13.2	3.4	**14.1**
Total To/From Work	*13.8*	*14.2*	*14.0*	*15.1*	*13.8*	*1.7*	*14.3*
Total To/From School	*10.0*	*17.2*	*14.1*	*19.3*	*14.6*	*-*	*16.9*
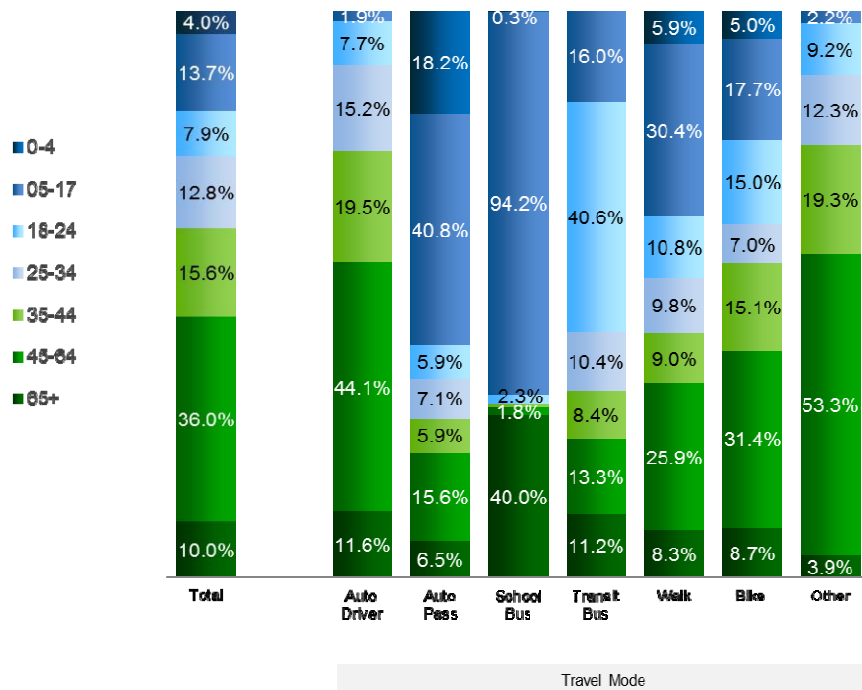
Figure 8: Travel Mode by Age

- On a typical 2010 weekday, the total number of daily trips made by Lethbridge City residents is estimated at approximately 358,329.
- An average daily trip rate per person is 3.54 and per household it was found to be 9.17.
- Apartment/condo units generate (5.1 trips/hh) almost half the trips generated by single family detached dwelling (9.4 trips/hh)
- Overall 4.7% of the daily trips were made by walking, 1.3% using bicycle, and 1.4% using transit. Single occupant auto trips constituted 69.2% of the total trips.
- Very low transit share of 1.9% during the am peak and 1.3% of overall trips was noted from the results. The City has a number of challenges to overcome in their desire to move to a more transit friendly future. City residents typically enjoy relatively none to modest congestion levels and reasonable travel times to work or school by all modes of travel. The relatively short trip lengths (average of 14 minutes) will make it difficult for public transit to compete with the comfort and convenience offered by the personal automobile.
- City of Lethbridge is actively promoting the use of alternative travel using active modes and ride share/car pool. City of Lethbridge has approved Capital Improvement Project for development of infrastructure for active modes.
- Recent hike in gas prices has helped the City in promoting ride share/car pool programs. City of Lethbridge is working with several major employers in the City to promote car pool. It should be noted that City of Lethbridge is probably the only city of its size to have created car pool programs in the City.

The Lethbridge Household Survey was conducted with the latest available methodology as well as technology using a larger sample size. The results have provided wealth of information on the residents travel characteristics which would help creating a reliable travel demand model and help in formulating transportation policies to develop and sustain an efficient transportation system.

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