Descriptive Analysis of Long-Distance Travel by Personal Vehicles Using 2004 Commute Atlanta Data

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Abstract

Long-distance travel constitutes a sizeable portion of total travel in the nation. Knowledge about long-distance travel patterns is important to identify characteristics of current use of the nation's transportation system, forecast future demand, analyze alternatives for investment in and development of the system, and assess the effects of legislation and regulations on the transportation system. This paper analyzes long-distance travel by personal vehicles of 102 households over a period of 12 months based on the 2004 Commute Atlanta instrumented vehicle panel dataset. This paper focuses on frequency, mileage, duration, day of week variation and seasonal variability of long-distance travel. The authors found out even though long-distance related travel has a relatively small share of all trips (7%), it represents a much larger share of the total miles traveled (23%). Using a 50-mile linear one-way criterion, the sample households made an average of 6 long-distance tours per household per year. The authors observed day-of-week and seasonal variation in long-distance travel. The results discussed in the paper provided useful information for the design of future long-distance travel surveys.

INTRODUCTION

Long-distance travel constitutes a sizeable portion of total travel in the nation. Based on 2001 NHTS, Americans make more than 2.6 billion long distance trips and travel approximately 1.3 trillion person-miles of long distance travel a year. Reasons for taking intercity trips include visiting friends and relatives, leisure travel, business, and personal business including school activities, weddings and funerals, and health care. Knowledge about long-distance travel patterns is important to identify characteristics of current use of the nation's transportation system, forecast future demand, analyze alternatives for investment in and development of the system, and assess the effects of legislation and regulations on the transportation system [1]. However, primarily due to the lack of disaggregate behavioral data, research in travel behavior and travel demand analysis has been focused on trip-making patterns within urban areas instead of long-distance travel between urban areas and associated travel outside of the home region [2].

As discussed in detail by Richardson and Seethaler [3], long-distance travel surveys are different from urban mobility surveys in two fundamental ways. First, the definition of a "long-distance trip" is open to interpretation. In most cases, a minimum distance is involved but this minimum distance varies across countries and surveys. The measurement methods of the minimum distance also differ from survey to survey. In some surveys, distances are measured in round-trip distance and some are straight-line distances between home and the most distant point in the trip. Some researchers have suggested that a "long-distance trip" should not be based solely upon distance, but whether there is an overnight stay in the trip. The rationale being that urban mobility surveys can easily be adapted to pick up all trips that start and end within the study area on the surveyed travel day, no matter what distance is involved. Second, because it is widely accepted that long-distance travel is a relatively rare event, a major issue has been the selection of the period of observation. Unlike daily mobility surveys, where the most common survey period is a single 24-hour period, long-distance travel surveys have used survey periods ranging from several weeks to several months. Selection of too short a period means that many respondents have no long-distance trips to report, while selection of too long a period means that frequent long-distance travelers have many trips to report, and respondents may inadvertently under-report trips due to recall problems.

Most previous long distance travel surveys include travel undertaken on all modes. Given that air, bus, train travel is typically commercial travel, there are data sets available for long distance travel undertaken using these modes. Based on the 2001 National Household Travel Survey (NHTS), which collected long distance travel information for all modes, 9 out of 10 long-distance trips are made by personal vehicle. Personal vehicles are used for almost all trips less than 300 roundtrip miles. The current undergoing Commute Atlanta project is an instrumented vehicle study which has collected detailed travel information for a sample of around 475 vehicles in around 275 households during an extensive time period (multiple years). The data collected by this project provides a key opportunity for examining various facets of long-distance travel by personal vehicles.

The remainder of this paper is organized as follows. The paper provides an overview of recent long-distance surveys in the United States, followed by an overview of the 2004 Commute Atlanta travel dataset. The next section summarizes the methodologies of distance calculation and long-distance travel dataset creation. A detailed analysis of long-distance travel behavior

based on the 2004 Commute Atlanta dataset is then presented. Finally, the paper summarizes the research findings and future research.

PREVIOUS LONG-DISTANCE TRAVEL SURVEYS

The 1995 American Travel Survey (ATS) and the 2001 National Household Travel Survey (NHTS) are the primary surveys that provide rich sources of data on long-distance travel in the United States. A short description and key facts and figures for each data set are highlighted below.

1995 American Travel Survey (ATS)

The 1995 ATS was conducted for the Bureau of Transportation Statistics by the U.S. Bureau of the Census. Prior to the ATS, the 1977 National Travel Survey (NTS) had been the most recent source of long-distance travel data. The 1995 ATS contains information on the origin, destination, volume, and characteristics, of long distance trips made by residents of the United States. The data provide insight into American's long-distance transportation choices, including foreign and domestic travel. The survey consisted of four detailed interviews conducted approximately every three months from April 1995 to March 1996. Approximately 80,000 households nationwide participated in the survey, and over 65,000 households completed all four interviews. In most cases, one adult household member provided information for all household members. Trip characteristics included such items as the origin and destination, the principal means of transportation, the reason for travel, the access and egress modes to airports, train, and bus stations, and information about the travel party. The survey also collected travel and tourism information, including the number of nights spent away from home, and the type of lodging.

Key descriptive socio-demographic statistics of the 1995 ATS dataset are as follows [2]:

- The average household size of the weighted sample was 2.5 persons per household
- Average vehicle ownership was about 1.7 vehicles per household
- About one-fourth of the sample had household incomes less than $15,000, while just about one-tenth of the sample had household incomes over $60,000

In the 1995 ATS, analysts calculated trip distances based on the zip codes of the origin and destination and the shortest network path distance using the Tiger files. With a 100-mile minimum distance threshold, long-distance trips are about 0.5% of all trips covering roughly 25% of the person-miles traveled. An average of 4 long distance trips (over 100 miles on the network) per person per year was observed during the survey period. This equates to approximately 7 long distance trips per year per household. Other statistics of interest include:

- 77% of the long-distance trips were made by personal vehicles
- 32% of the households reported no long-distance trips of length 100 miles or more
- 29% made 1-4 trips and 20% made 5-10 trips
- 58% of all trips were less than 500 mile round-trip
- 80% of long-distance trips within the United States were taken in a personal vehicle
- The median length car trip was 368 miles
- 25% of long-distance trips were day trips (trips to a destination at least 100 miles away from home and completed in a single day)
- 49% of trips included a stay of 1-3 nights
- 19% of trips included a stay of 4-7 nights

2001 National Household Travel Survey (NHTS)

The 2001 NHTS is the nation's inventory of daily and long-distance travel. The NHTS is the successor to the 1995 Nationwide Personal Transportation Survey (NPTS) and American Travel Survey (ATS). NHTS survey collects data from a sample of U.S. households and expanded to provide national estimates of trips and miles by travel mode, trip purpose, and a host of household attributes. The NHTS was conducted from March 2001 through May 2002. Data collection for the remaining add-on areas extended to July 2002. The sample size for the 2001 NHTS was 69,817 households. The survey includes demographic characteristics of households, people, vehicles, and detailed information on daily and longer-distance travel for all purposes by all modes [4].

The survey period for the 2001 NHTS is 4 weeks. The 2001 NHTS defines a long-distance trip as a journey from home to the furthest destination of 50 miles or more based on network distance between the geo-coded home address and city/state centroid of the destination. More than 45,000 long distance trips were reported in the 2001 NHTS. The median distances on the long-distance trips by personal vehicles are 194 miles. Personal vehicles predominated over commercial air travel for all round-trip distance categories except that of 2,000 miles or more. The majority of long-distance travel was for pleasure; followed by business travel, commuting to work, and personal business. The greater the trip distance is, the greater the number of nights away from home. Long-distance trips on Thanksgiving weekend were 54% higher than the annual weekend average; the comparable spike for Christmas week was 23%. Long-distance travel increased with education level. The personal vehicle dominated long-distance travel for all income groups, but air travel increased sharply with household incomes greater than $50,000.

The ATS included trips of 100 miles or more taken over a full year (4 interviews). In the 2001 NHTS, travel period was four-week period, and trips of 50 miles or more from home were defined as long distance. The four-week travel period and shorter distance criterion provides better recall of trips in NHTS versus ATS, but the NHTS has a smaller sample of trips and greater difficulty estimating annual long-distance trip rates than ATS. The 4-week travel period may have increased the potential for telescoping (i.e., bringing trips into the travel period) [4]. A thorough understanding of the methodological details of long-distance studies is important when comparing results between various studies.

2004 COMMUTE ATLANTA LONG-DISTANCE TRAVEL DATASET

The Commute Atlanta program is funded by the Federal Highway Administration (FHWA) Office of Value Pricing Programs and the Georgia Department of Transportation (GDOT). The main objective of the multi-year Commute Atlanta program is to assess the effects of converting automotive fuel tax, registration fee, and insurance costs into variable driving costs. The overarching research hypothesis is that given a per-mile pricing system, participants will modify their driving patterns in an effort to reduce their total mileage, pocketing the savings. The Commute Atlanta project includes the parallel collection of instrumented vehicle data, household socio-demographic surveys, annual two-day travel diaries, and employer commute options surveys (designed to assess employer programs that may affect the commuter's travel to work, such as parking pricing and transit pass subsidies). The Commute Atlanta research program spans three phases. The first phase included one continuous year of data collection with no

treatments, to define baseline travel patterns. The second research phase is designed to evaluate the effects of fixed cent/mile pricing. The third phase of research includes a real-time congestion pricing when the vehicle is operated on freeway under congested conditions (in-vehicle data terminals display real-time price). The third phase is designed to examine the impact of such financial incentives on travel time choice.

The Commute Atlanta study area includes 13 counties representing the Atlanta metropolitan area.[1] The area is approximately 80 miles from north to south by 70 miles from east to west. The data used in preparing the analyses reported in this paper were collected from January-December 2004 (during the baseline period of the project, without pricing treatment). The Commute Atlanta project installed GT Trip Data Collectors in more than 475 vehicles in 273 participating households to collect second-by-second vehicle activity data during vehicle operation. Figure 1 shows the study area and participating household locations. Due to budget limitations, only vehicles that travel more than 3000 miles/year were instrumented (odometer readings were collected for the low-mileage vehicles).

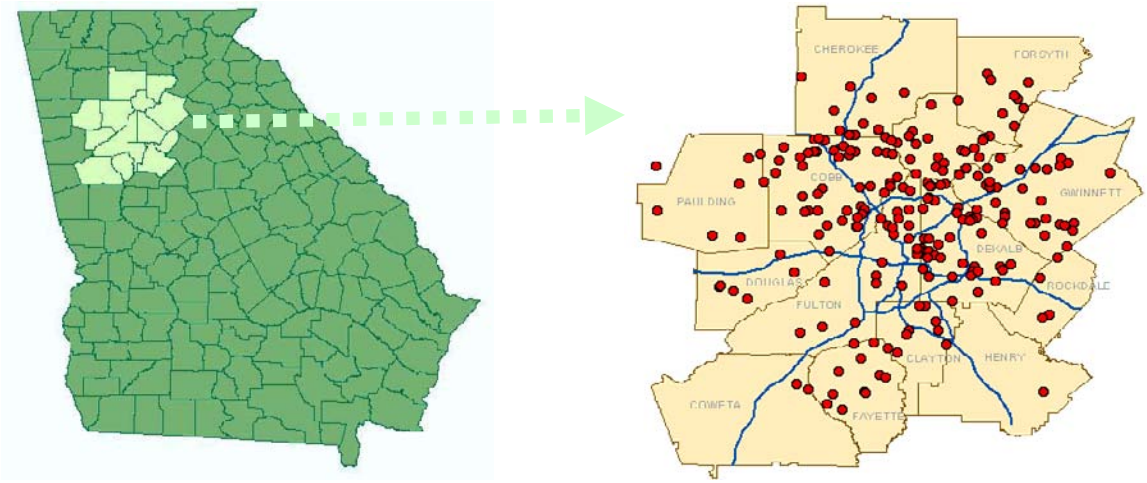

Figure 1: Commute Atlanta Study Area and Household Locations

The travel activity data (including position, speed and heading) are collected at one-second intervals. Second-by-second activity records are then aggregated into trips. A trip constitutes the time from an engine-on event to an engine-off event. Chained activities, such as dropping a video off at the video store without shutting off the engine, are embedded within the trip count, and are not counted separately. Identification of these trip chains requires extensive post-processing which is still ongoing for this data set.[2] The trips in the database represent all trips conducted inside and outside the metropolitan area. That is, long distance travel to other cities, and the chained trips conducted in these cities for business or leisure are included in the data. In addition, the data include all very short vehicle trips. A surprisingly large number (21.79% of the trips are less than 5 minutes) of vehicle trips are short in time and duration and are associated with moving the vehicle from one parking space to another. At this time, all engine starts are

[1] For air quality planning purposes, the metropolitan planning area has recently increased to 20 counties. However, this occurred after the Commute Atlanta project began.

[2] The Commute Atlanta team is currently processing the data to identify all chained trips and code the majority of trip purposes. These analyses are expected to be complete in early 2007.

included in the data, including engine starts that do not result in travel times and distances (for example, starting the engine and then shutting of the engine and returning to the house to pick up a forgotten item). Engine-start-only trips constitute less than one percent of total engine starts (but are retained in the data set for air quality impact assessment).

Unfortunately, there are periods for which travel information could not be obtained for every vehicle in the fleet. These un-monitored periods result from equipment failures (component failures, disconnecting of power during vehicle maintenance, etc.) and changes in participant vehicle ownership, household structure, or residence location. Equipment defect rates run approximately 3-5%/year and include random memory card failures, GPS, antenna, and other board-level failures. Automated equipment report monitoring helps to identity problem equipment issues. Once these problems are identified, the researchers schedule removal and replacement of equipment in the participant's vehicle. The sale and purchase of household vehicles and household membership/location changes (approximately 8% per year) also lead to unmonitored travel until the problem can be corrected. However, the research design, equipment reporting routines, and relational database structure allows researchers to determine the specific days for each vehicle during which travel was not electronically monitored. Households participating in the project undergo continuous demographic and household structure change. This change is monitored through quarterly mailings that allow the household to report changes. All the trips in the 2004 dataset are associated with specific vehicle information, specific household information, and specific primary driver information based on the device-vehicle installation period.

DATA ANALYSIS

Household Selection

For the purposes of the long-distance travel analysis, the research team assembled a subset of the 2004 Commute Atlanta data which includes all households for which complete travel histories for every primary vehicle in the household were available. That is, if one vehicle experienced an equipment failure and the unit was replaced three weeks later, the household was excluded from the analysis to ensure that all long distance travel data would be captured in the electronic data stream. The Commute Atlanta long distance travel data subset includes 161 vehicles representing 102 households. All of the vehicles in these households, with the exception of low-mileage vehicles (under 3,000 miles/year) were installed and all of the tracking devices in the installed vehicles were working properly during the entire baseline year. Some of these households sold or purchased vehicles during the middle of the year, but the household was included when the researchers were able to directly swap devices from the old to new vehicle.

In the Commute Atlanta Long Distance dataset, the household size ranges from 1 to 8, with a mean of 2.4 persons per household. About 30% of the households were families with children 16 years old and younger. Total number of vehicles in a household range from 1 to 4. Average vehicle ownership is 1.8 vehicles per household. Approximately 11% of the sample has annual income below $30k, 57% are between $30-75k, 32% are above $75k. A compare of the sample used in this paper and the Atlanta population is listed in Table 1.

Table 1: Sample Strata and Atlanta Population

Sampling Group	*Annual Income, Household size, Vehicle per HH*	*Atlanta Population Percent*	*HH in the Paper (percent)*
0	Any	7.4%	0 (0%)
1	<$30,000, any per, 1+ veh	18.4%	11 (10.78%)
2	$30,000 - $75,000, 1 per, 1+ veh	11.3%	21 (20.59%)
3	$30,000 - $75,000, 2+ per, 1 veh	6.8%	13 (12.75%)
4	$30,000 - $75,000, 2 per, 2+ veh	10.6%	13 (12.75%)
5	$30,000 - $75,000, 3+ per, 2+ veh	13.9%	11 (10.78%)
6	$75,000+, 1 per, 1+ veh	2.8%	4 (3.92%)
7	$75,000 - $100,000, 2+ per, 1+ veh	12.1%	11 (10.78%)
8	$100,000+, 2+ per, 1+ veh	16.8%	18 (17.65%)
Total		**100%**	**102 (100%)**

Overall Travel Characteristics

The 102 households in the Commute Atlanta Long Distance dataset made an average of 7.21 vehicle trips per household per day. The average distance per trip is 7.04 miles[3] and the average duration per trip is 16.8 minutes. All of the trips in the dataset are coded as to the region in which the travel occurred, based on whether a trip is fully or partially within or outside of the 13-county study area using a point-in-polygon test. Seven categories were defined (see Table 2) to indicate a trip's possible travel region status.

Table 2: Possible Trip Region Status Categories

Region Status	*Comment*
0	No valid GPS data collected (antenna or GPS failure)
1	All valid GPS points inside the region
2	All valid GPS points outside of the region
3	Travel from inside of the region to outside (based on valid GPS points)
4	Travel from outside of the region to inside (based on valid GPS points)
5	Travel from inside of the region to outside, then come back inside (based on valid GPS points)
6	Travel from outside of the region to inside, then go back outside (based on valid GPS points)

Table 3 summarizes the total travel characteristics with regard to the number of trips, travel duration, and travel distance based on the region status. As shown in Table 2, 90% of all the trips made by personal vehicles of the sample households are inside the Atlanta metro region and 7% percent are outside of the region. Due to GPS data validity problems, the authors cannot detect the travel region of approximately 3% of the total trips. In terms of trip duration, approximately 86% of total travel occurs inside of the 13-county Atlanta metro area, while 13% occurs outside of the region. Because long distance trips occur outside the region and are generally much longer that regular trips, only 77% of the total mileage occurs inside the region and 23% occurs outside the Atlanta metro region. Although long-distance trip making has a relatively small share of all trips, it represents a much larger share of the total miles traveled, and therefore contributes significantly to the economic and environmental impacts of travel.

[3] Travel distance was calculated based on Kalman-filtered GPS positions [5].

Table 3: Overall Travel Characteristics

Region Status	*Number of Trips*	*Percent of Trips*	*Duration (hours)*	*Percent Duration*	*Distance (miles)*	*Percent Distance*
No Valid GPS Location (status 0)	9370	3.48%	844	1.12%	21452[4]	1.12%
Inside of Region (status 1)	240054	89.22%	64713	85.88%	1458758	76.16%
Outside of Region (status 2-6)	19628	7.30%	9799	13.00%	435139	22.72%

Figure 2 describes the monthly variation for both travel inside and outside of the region. The Commute Atlanta households traveled more between April and July when considering travel both inside and outside of region compared to the other months. In July, out-of-region travel accounted for 32% of the total VMT during that month. In April, June and November, out-of-region travel accounted for above 25% of the total VMT. For the remaining months, out-of-region travel generally accounted for less than 20% of the total VMT.

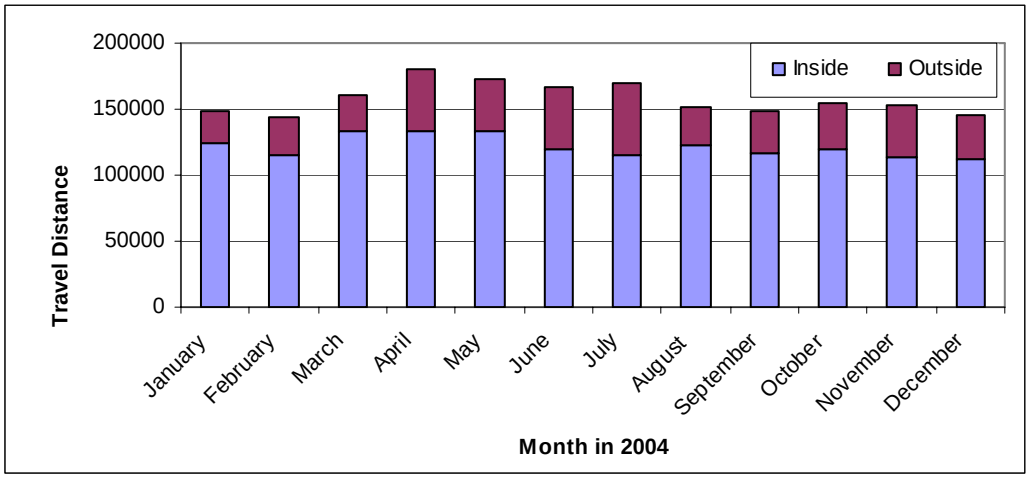

Figure 2: Inside/Outside Region Travel Distance by Month

Long-Distance Tours

The ATS and NHTS surveys focus on long distance trips. Yet, long-distance travel is generally comprised of multiple consecutive trips referred to as tours. These tours are similar in nature to trip-chaining while running errands around the home region. Long-distance tours include stops along the way, and side trips after reaching the main destination. Hence, a long distance travel event consists of several trips between home and the final destination. Since the trips that start/end within the same area are usually captured by the normal travel diary surveys, long-distance travel surveys are particularly appropriate capturing trips that go outside of the home region. Instrumented vehicle data, in which the vehicle position is recorded for every second of operation, are also amenable to analysis of long-distance tours. In this paper, the researchers assess long-distance travel where the final destination is out of the Atlanta metro area and the linear distance between home and the final destination is greater than 50 miles. An example of such a long-distance tour is shown in Figure 3. In order to analyze the long-distance travel at a

[4] Estimated based on average travel speed and total travel duration.

disaggregate level, the authors created a tour-based dataset from the 2004 Commute Atlanta trip-based dataset. Using each trip's travel region status, a long-distance tour was defined as a series of trips that start inside of the study area, go to a destination outside of the study area and then come back inside the region again, with a linear distance between home and destination of more than 50 miles. Travel distance, duration and other related information are aggregated from the trips in that tour (see Figure 3).

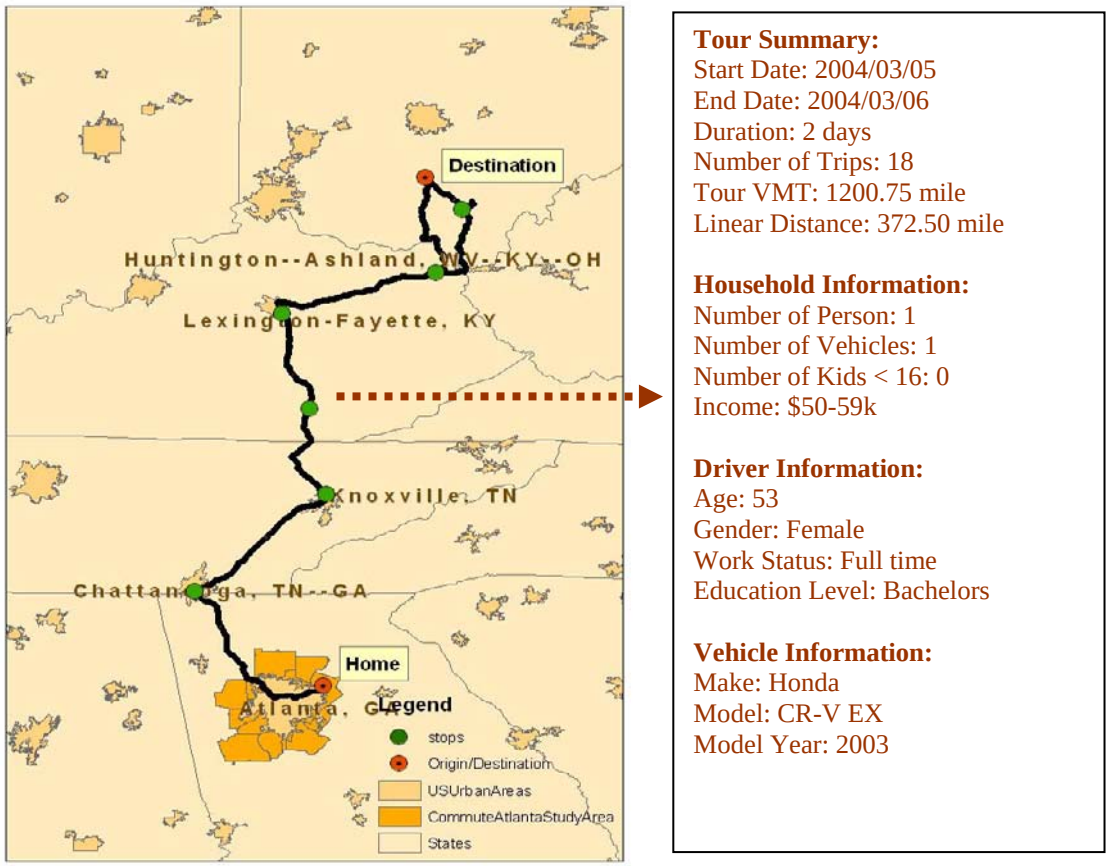

Figure 3: Example of a Long-Distance Tour

Tour Frequency

A total of 617 long-distance tours were identified from the 2004 dataset using a 50 mile linear distance criterion. Based on the 50-mile criterion, the number of tours per household per year ranges between 0 and 42, with an average of 6 long-distance tours per household per year. Among the 102 households, 19 (19%) households did not make any long-distance tours. By increasing the minimum distance criterion to 100 miles, the number of long-distance tours drops to 357. Based on the 100 mile criterion, the number of tours ranges from 0 to 30 with an average of 3.5 long distance tours per household per year. Of the 102 households, 28 (27%) did not make any tours longer than 100 miles linear distance from the home location. Table 4 summarizes tour frequency per household using different minimum linear distance criteria.

Table 4: Long-Distance Travel Frequency

Minimum Linear Distance between Home and Destination (miles)	***50***	***75***	***100***	***150***
N(households): 0 tour	19	23	28	37
N(households): 1-5 tours	43	49	47	51
N(households): 6-10 tours	24	19	20	11
N(households): 11-15 tours	7	5	3	1
N(households): 16-20 tours	4	1	1	0
N(households): >20 tours	5	5	3	2
Total	**102**	**102**	**102**	**102**

Tour Distance

The authors grouped the long-distance tours into categories based on destination distance from home. Approximately 42% of the long-distance tours are between 50-100 miles away from home, and those tours account for 17% of the total VMT. On the other hand, 58% of the long-distance tours are above 100 miles away from home, but they account for 83% of the total VMT (Figure 4 & 5).

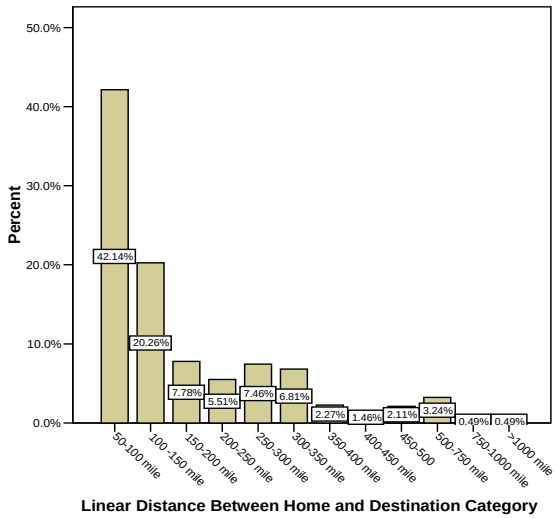

Figure 4: Percent of Tours by Destination Distance

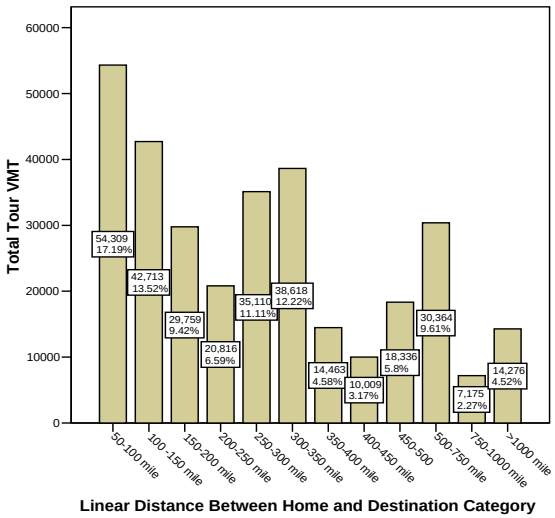

Figure 5: Tour VMT by Destination Distance

The authors identified a strong relationship between the linear distance from home to destination and the total long distance tour VMT. A simple linear regression (intercept forced to 0) indicates that the tour VMT is around 2.827 times of the linear distance between home and the travel destination (Figure 6). A similar correlation noted to total distance and number of days away from home. Additional analysis of the relationships between distance from home to primary destination (via the road network) and miles of chained travel is forthcoming.

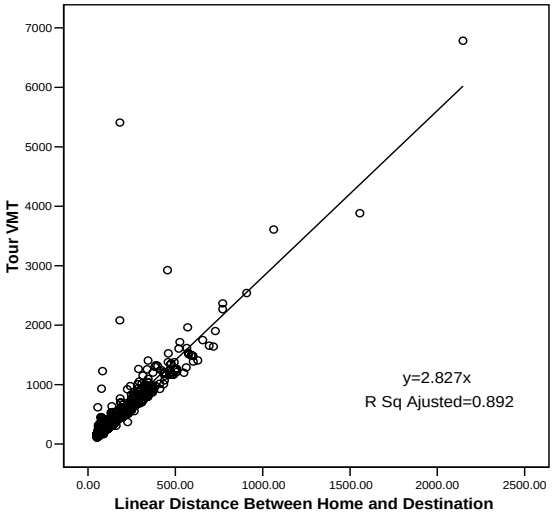

Figure 6: Linear Destination Distance and Tour VMT

Tour Duration and Day-of-Week Variation

Using the 50-mile minimum distance criterion, researches found approximately 220 long-distance tours that were single day tours without an overnight stay. By increasing the minimum linear distance to 100 miles, 75% percent of the single-day tours without overnight stays were eliminated and approximately 50% percent of the tours with one overnight stay were eliminated (see Figures 7 and 8). Tours of 4-days or more (with at least or more overnight stays) were not impacted by increasing the minimum distance criteria from 50 miles to 100 miles.

A large percent (70%) of tours with one or two overnight stay were started either on Friday or Saturday and Ended on Sunday. The start and end day-of-week are more evenly distributed for longer duration tours. This pattern stays the same when the minimum distance criterion is increased from 50 miles to 100 miles.

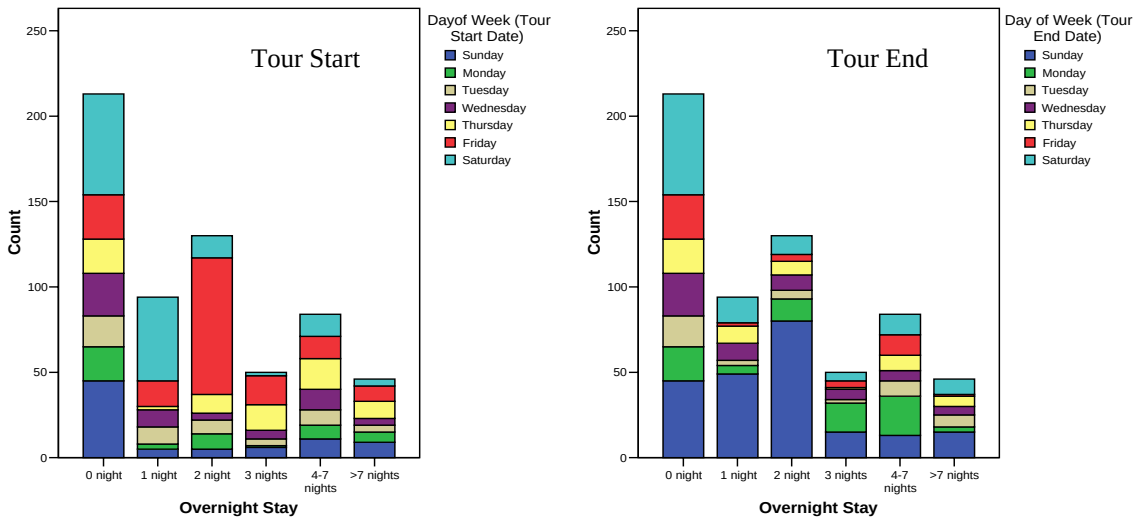

Figure 7: Start and End Day-of-Week Distribution for Tours with Different Duration (50 mile criteria)

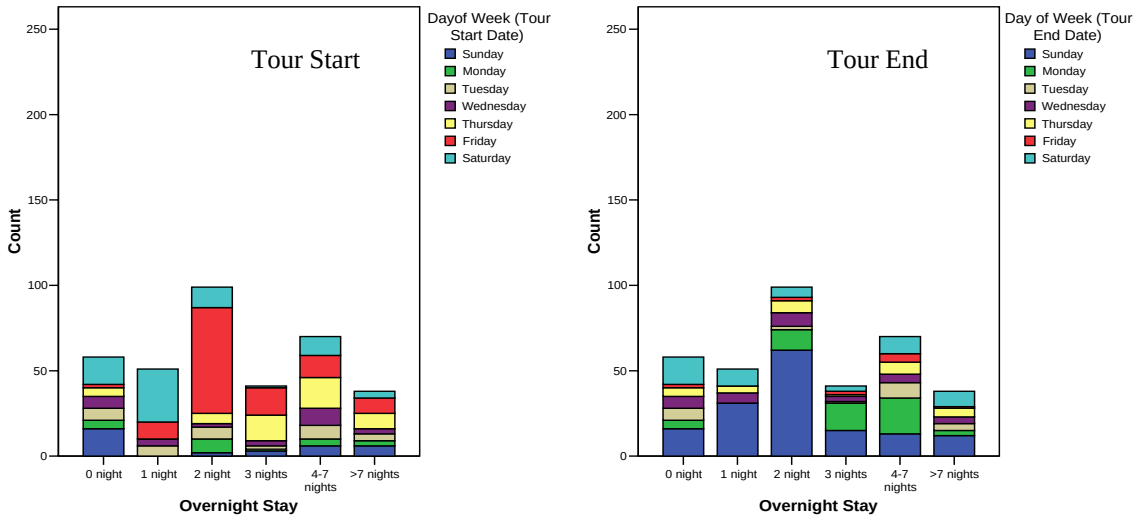

Figure 8: Start and Find Day-of-Week Distribution for Tours with Different Duration (100 mile criteria)

Seasonal Variation

A strong seasonal pattern was observed in long-distance travel. The months from April to July have higher numbers of long-distance tours compared to the other months. This relationship holds both when the 50-mile and 100-mile minimum distance criteria are used (Figure 9). The variation across months shows definitive peaks occurring in the summer months and in November (associated with the Thanksgiving holiday). The result indicates that timing of a long-distance survey will impact the result.

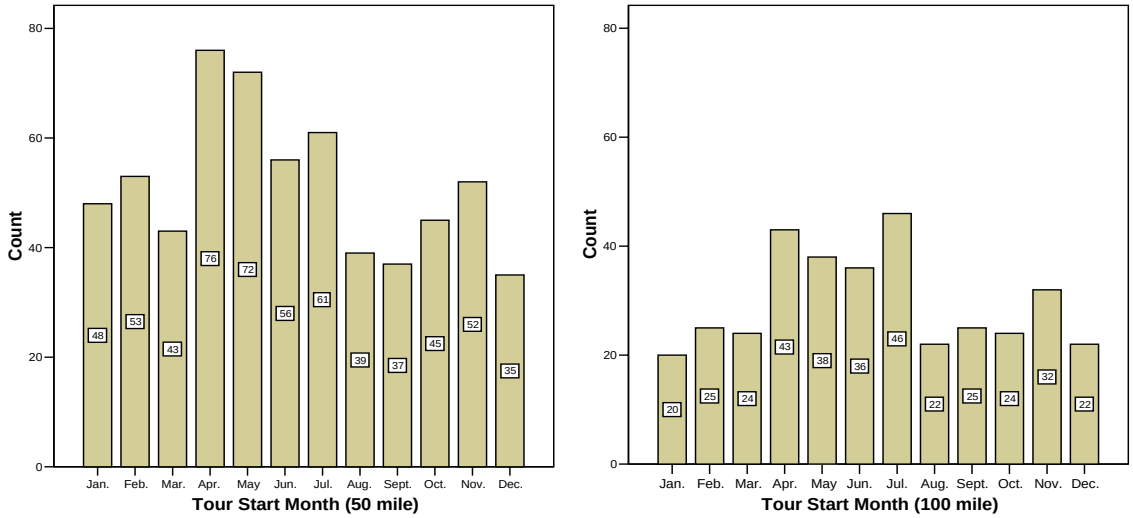

Figure 9: Long-Distance Tours per Month

CONCLUSION

This paper provides a detailed analysis of the various aspects of long-distance travel undertaken during a 12-month period of the Commute Atlanta instrumented vehicle study. Issues addressed in the paper include long-distance travel frequency, distance, duration, day-of-week variation, and seasonal variability. The results discussed in the paper provide useful information for the

design of future long-distance travel surveys. Major findings are summarized as follows. First, different distance criteria and calculation methods have strong impact on how many travel and what kind of travel will be captured. For example, increasing the minimum distance from 50 miles to 100 miles can eliminate a majority of the one-day tours. Second, looking at the long-distance travel in a tour perspective maybe helpful since long-distance travel usually made of a series of trips.

The benefits of using instrumented vehicles to collect long-distance travel information are numerous. The issues surrounding driver recall accuracy are essentially eliminated by the continuous GPS location recording. Reporting errors based on human ability to estimate distance and duration are also eliminated. Furthermore, the reporting threshold can be defined by a continuous variable rather than a discrete value, thus allowing the data to be compared with numerous previous studies. For long-term panel studies, obstacles such as choosing a reporting period (length and time of year) are also minimized by having access to all of the household's long distance travel. Finally, the ability to capture trip segments and aggregate to tours provides unlimited flexibility for analysis of long-distance travel behavior.

Given all of the positive aspects of instrumented vehicle studies, there are some drawbacks. As shown in this and other instrumentation studies, there can be problems associated with equipment defects, participant attrition, and changes in household attributes that disrupt the continuous data collection and require the dataset to be filtered and reduced. The cost of instrumentation must also be taken into account. However, a single panel can produce data for multiple types of studies from speed studies to operational analysis to planning studies. Certainly, the level of detail of the travel data and the flexibility in analysis make up for the limitations.

Although GPS data provide a very accurate record of travel behavior, GPS data by themselves do not provide information about the underlying reasons of the behavior. A study that combines both the field observation of travel behavior and survey methods that record the traveler’s decision making process can provide more insight of long-distance travel. Several important pieces of information that is included in traditional travel surveys is not available in the dataset analyzed in this paper including information on travel party, trip purpose and type of lodging. Travel purpose is an important factor affecting long-distance travel patterns. However, given the trip traces and general information about the travel date and destination, study participants could be provided with enough information to allow accurate recall of related information using a follow-up contact.

During the second phase of the Commute Atlanta program, researchers implemented a pricing experiment where drivers can receive incentive payments if their travel in Phase II is less than it was during the same quarter of the baseline year. Drivers have a number of options for reducing overall mileage including mode changes, such as telecommuting, ride-sharing, or reducing long-distance travel. Gasoline price increases also significantly impacted travel decisions during the Phase II effort. Researchers noted a mileage reduction in response to Katrina-related gasoline price increases that occurred immediately prior to and during the implementation of the cent/mile pricing experiment. A similar analysis of long-distance travel will be undertaken after the

completion of Phase II to determine the long-term effects of mileage-based pricing and gas price increases on long-distance travel behavior.

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