

Effects of an HOV-2 to HOT-3 Conversion on Traveler Behavior:

Evidence from a Panel Study of the I-85 Corridor in Atlanta

Report for Federal Highway Administration

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14. ABSTRACT

This paper uses a two-stage panel survey approach, with roughly 1,600 respondent households, to analyze the impacts of a federally sponsored variable tolling program on the I-85 corridor northeast of Atlanta. The focus is on corridor users' daily travel choices and opinions. Key survey findings include a decrease in respondents' travel in the corridor after tolling, including on I-85. However, changes in travel varied by lane; while travel declined in the general purpose lanes, there was an increase in both the number of trips, as well as the number of respondents utilizing the Express Lanes, as compared to the former HOV lane. The largest share of trips in the Express lanes (82%) was solo drivers who paid the toll. Vehicle occupancy declined dramatically in the Express Lanes, as carpoolers tended to shift onto the general purpose lanes, and conversely, there was a significant increase in vehicle occupancy in the general purpose lanes. There were small (but not statistically significant) increases in transit mode share in the corridor, while carpooling and telecommuting levels increased slightly, but the changes cannot be attributed to tolling. In the post-tolling survey, reported satisfaction with travel time, travel speed and reliability of individual trips varied by key user groups: Wave 1 HOV-2 users became significantly less satisfied, whereas Express Lane users became more satisfied. Overall, personal attitudes toward tolling became significantly more negative after the deployment of pricing.

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Executive Summary

This report presents the findings from the household travel behavior survey conducted as part of the evaluation of the Atlanta Congestion Reduction Demonstration (CRD) Program. In support of the U.S. Department of Transportation (DOT) Federal Highway Administration, the Volpe Center conducted a household panel survey (before-after survey) to measure the impacts of the new I-85 road pricing strategy on travel behavior in the corridor.

Background

As part of its *National Strategy to Reduce Congestion on America's Transportation Network*, the U.S. DOT created the Urban Partnership Agreement (UPA) and Congestion Reduction Demonstration (CRD) programs to promote innovative approaches to reducing travel delays. The UPA/CRD programs provided Federal funding and technical assistance to metropolitan areas committed to pursuing a coordinated "4 Ts" approach to congestion, comprising tolling, transit, telecommuting, and technology. In addition to Atlanta, the recipients included Los Angeles, Miami, Minnesota, San Francisco, and Seattle.

In 2008, U.S. DOT signed a Congestion Reduction Demonstration Agreement with three local partners involved in the operation of the I-85 corridor in the area northeast of Atlanta: the Georgia Department of Transportation (GDOT), State Road and Tollway Authority (SRTA), and Georgia Regional Transportation Authority (GRTA). The CRD project involved the conversion of an existing high occupancy vehicle (HOV-2) lane to a dynamically priced high occupancy toll (HOT-3) lane, combined with an increase in the occupancy requirement from 2+ to 3+. This HOV-2 to HOT-3 conversion was implemented along a 16 mile stretch of I-85 in northeast Atlanta, from I-285 in DeKalb County to Old Peachtree Road in Gwinnett County. Another key element of the CRD project is the requirement that all users must have a Peach Pass transponder. Prior to traveling in the Express Lanes, users must register in either toll mode status (single occupant or 2 person vehicle) or non-toll mode status (3+ person vehicles, motorcycles, or alternative fuel vehicles). Other strategies pursued as part of the CRD project included transit service enhancements, the deployment of ITS technologies (e.g., dynamic message signs, automated enforcement), and transportation demand strategies to encourage carpooling.

In addition to funding a national evaluation at each of the UPA/CRD sites, the Federal Highway Administration (FHWA) funded a before-and-after household travel survey in Seattle and Atlanta to gain insight on the impact of the UPA/CRD program on travelers and their households. More specifically, the traveler survey assesses change in route and mode choice, trip timing, trip purpose, and telework that result from pricing. The survey also explores changes in attitudes related to tolling and travel in the corridor.

Survey Methodology

The household travel survey was a panel survey, in which individuals in the same households were surveyed "before" and "after" the implementation of road pricing in order to assess

changes in travel behavior. The survey included a demographic questionnaire, travel diary, and follow-up questions on current travel patterns and attitudes.

The population of interest for this survey consisted of I-85 corridor users, defined as drivers, transit users and vanpoolers. Each of these populations were sampled as follows:

- Drivers on the corridor were identified via license-plate capture photography on sections of I-85 and Buford Highway, which runs parallel to I-85.
- Transit riders were intercepted by survey staff at Park and Ride facilities and at transit stations in the corridor.
- Members of GRTA organized vanpools received an e-mail solicitation to participate; those who indicated interest provided their contact information on a survey website and were mailed a survey packet inviting them to participate.

A series of mailings were sent to sampled households to encourage participation, including a pre-notification postcard, a survey invitation packet, and reminder postcards and e-mails, as necessary.

Incentives were offered as a means of boosting response rates, including a \$15 Amazon gift card upon completion of the Wave 1 survey, and a \$30 Amazon gift card upon completion of the Wave 2 survey. In addition, panel maintenance efforts were undertaken in between the two survey waves to keep respondents engaged and to encourage continued participation.

Wave 1 (“before”) data collection took place in April 2011, as variable tolling was expected to begin during the summer of 2011. The Wave 2 (“after”) survey was conducted in April 2012, approximately seven months after the deployment of pricing (the Express Lanes opened on October 1, 2011). The timing of the survey was designed to give local residents several months to acclimate and adjust to the new tolling system, and to ensure that the two survey waves could be conducted at roughly the same time of year, minimizing any seasonal variation.

Overall, 1655 households comprised of 3126 individuals, completed both waves of the survey. The response rate for the Wave 1 survey was 6.4%. From Wave 1 to Wave 2, 69% of households were retained in the survey, resulting in a final response rate of 4.4%.

Key Highlights

The following section provides a summary of key highlights from the Atlanta panel survey. When comparing data across the two survey waves, the term “HOV lanes” or “HOV-2 lanes” is used to reference the Wave 1 facility, and the term “Express Lanes” or “HOT-3” is used to reference the Wave 2 facility.

Trip making in the corridor: The trip diaries reveal a 15% decline in the overall number of trips reported across the two waves of the survey, with a slightly greater decline in I-85 corridor trips (-18%) compared to non-corridor trips (-12%). Within the I-85 corridor, there was a 12% decline in I-85 trips; however the number of trips using “other roads in the corridor” dropped even more

precipitously, by 33%. By contrast, there was an increase in the number of trips using any transit in the corridor.

When asked to self-report how many trips they make on I-85 in a typical week, the findings align with the travel diaries; fewer respondents reported regular use of I-85 in Wave 2.

Use of the Express Lanes: The travel diaries reveal a significant increase – nearly a doubling – in the number of trips reported in the Express Lanes, relative to the HOV-2 lanes. As a share of all I-85 driving trips, Express Lane trips increased from 7% (Wave 1) to 15% (Wave 2). When we look at the data by respondents (rather than trips), we also see increased use of the Express Lanes; in Wave 1, 7% of respondents reported one or more driving trips in the HOV lanes, compared to 11% who used the Express Lanes.

In Wave 2, the large majority of trips using the Express Lanes were single occupants who paid the toll (82%), with an additional 4% of trips comprised of 2-person carpools that also paid a toll. Nine percent of trips were HOV 3+, including vanpools (5%) and private vehicles (4%), and approximately 5% were alternative fuel vehicles or motorcycles that could use the Express Lanes toll-free.

Among those who use the Express Lanes regularly (one or more trips per week), the top reasons cited for using the Express Lanes included:

- Regular lanes are very congested (71%)
- Want to save time (66%)
- Want to have a more reliable trip (43%)

Use of the Express Lanes is restricted to individuals who own a Peach Pass transponder, and among the sampled households, only a minority — 34% — reported owning a Peach Pass. Among households who did not obtain a Peach Pass, the reasons cited most frequently included: tolls are too expensive (42%), I don't use toll roads often enough (40%), and I am against tolling, in general (39%).

Vehicle occupancy: Overall, the survey finds an increase in I-85 vehicle occupancy, as mean occupancy rose from 1.13 to 1.17. With the HOV-to-HOT conversion, vehicle occupancy in the Express Lanes decreased dramatically for private vehicle driving trips, from 2.22 in Wave 1 to 1.18 in Wave 2. In the general purpose lanes, however, there was an increase in vehicle occupancy (1.07 to 1.18). As a share of vehicle trips in the general purpose lanes, 2-person carpools increased from 4% to 12%. Three person carpools also increased from 1% to 2% (presumably these are 3+ person carpools who decided not to obtain a Peach Pass).

Mode: The conversion from an HOV-2 to a HOT-3 did not have a significant impact on mode choice. The large majority of respondents continued to drive alone for their trips, and while there was an increase in carpooling, the increase resulted from a rise in intra-household carpooling that appeared unrelated to road pricing. In open-ended comments, a number of respondents indicated that they had recently started carpooling with a family member who had started a new job or started school (between our Wave 1 and Wave 2 surveys, the Atlanta unemployment rate decreased from 9.4% in April 2011 to 8.5% in April 2012).

With regard to transit use, there was a slight increase in the use of transit in the corridor, but depending on which measure is analyzed, in one case the increase is statistically significant and in the other case it is not. But even where statistical significance is achieved, the magnitude of the increase was quite small, from 2.6% to 3%.

Trip Departure Times: The introduction of pricing on I-85 appears to have had an impact on the timing of trips in the corridor. In the general purpose lanes, there was an increase in trips departing during non-peak hours (between 9 AM and 3 PM), with small shifts out of the morning and afternoon peak hours (7 to 9 AM, and 3 PM to 6 PM, respectively). One possible explanation is that respondents may have been trying to avoid the general purpose lanes during the most congested times of day. Regarding Express Lane trips, as compared to HOV lane trips, there was a significant drop in trips departing during midday non-peak hours, between 10 AM and 3 PM (9% Wave 1 vs. 5% in Wave 2), as well as a drop in trips occurring during the morning shoulder period, defined as 6 AM to 6:59 AM (18% Wave 1 vs. 14% Wave 2), suggesting that fewer respondents are willing to pay a toll during less congested times of the day. Use of the Express Lanes increased for trips occurring during the AM peak (7 AM to 9 AM). There was also an increase in trips departing during the PM peak.

Trip Duration: Based on an analysis of trip start and end times for I-85 driving trips, road pricing does not appear to have improved travel times on the general purpose lanes; there was no difference in reported travel times between the two waves, even when the analysis is confined to respondents making the same commute trips in both waves of the survey.¹

Trip Purpose: With respect to trip purpose, Express Lane trips (Wave 2) were significantly more likely than HOV trips (Wave 1) to be used for commute purposes (41% vs. 34%). This is not surprising, given that commute trips generally occur during the most congested times of day, and as respondents indicated in the survey, they tend to use the Express Lanes when the regular lanes are very congested (see earlier discussion). The Express Lanes were used less (relative to the HOV-2 lanes) for trips involving dropping off or picking up someone else (2% in Wave 2 vs. 14% in Wave 1) or for social/recreational trips (1% in Wave 2 vs. 3% in Wave 1), which tend to be less time sensitive.

Telecommuting: Across the survey waves, there was a slight uptick in telecommuting. When asked why they are telecommuting more in Wave 2 than in Wave 1, the reason cited most often, “work situation” (54%), is seemingly unrelated to pricing. However, 40% cited “saving money on commute costs,” and 22% cited “worse traffic”; for some of these respondents, pricing may have played a part in their decision to telecommute more often.

¹ It should be noted that these survey data are not ideal for examining changes in travel times. Travel times encompass the entire trip (origin to destination), only some portion of which occurred on I-85. As a consequence, travel times on I-85 may have decreased, but if the travel time on other roads increased, then the overall travel time would appear the same, despite the improved travel times on I-85. In addition, travel start and end times were measured in 5 minute increments, which limits the precision of the measurements.

Trip Satisfaction: For all I-85 driving trips, respondents were asked to record their satisfaction with travel time, travel speed, and predictability of driving time using a 7-point satisfaction scale. During the morning commute (7-9 AM), a majority of general purpose lane drivers were dissatisfied with these aspects of their I-85 trips, both before and after pricing. For example, approximately 60% of general purpose lane trips were rated as unsatisfactory with respect to travel time and travel speed in Wave 1 as well as Wave 2. However, in comparing HOV-2 lane trips to Express Lane trips, there was an increase in satisfaction for all three measures.

In addition to assessing satisfaction for general purpose lane trips and HOV/Express Lane trips in the aggregate, we tracked trip satisfaction among two key user groups: HOV-2 users and Express Lane users. Among HOV -2 users, there was a significant decline in trip satisfaction, as many of these HOV-2 users shifted to the general purpose lanes in Wave 2, when they could no longer use the priced facility for free. By contrast, there was a significant increase in trip satisfaction among Express Lane users, most of whom had been using the general purpose lanes in Wave 1.

In both waves of the survey, I-85 transit users were significantly more satisfied with their trips than drivers. Large majorities reported being satisfied (with a quarter or more being “very satisfied”) with transit travel time, wait time at stop, reliability of service, availability of seats, and parking availability at Park and Ride lots. Despite the overall positive ratings, it should be noted that on each of the measures, there was a slight decline in satisfaction across the survey waves.²

Attitudes Toward Tolling: Overall, attitudes toward tolling became significantly more negative after the introduction of the Express Lanes. In Wave 1, 65% of respondents agreed with the statement, “I will use a toll route if the tolls are reasonable and I will save time,” but in Wave 2, agreement dropped to 41%. In addition, a majority of respondents (53%) disagreed that their travel along I-85 has been improved by the Express Lanes, and only 16% agreed (the remainder were either neutral or expressed no opinion). Respondents who regularly use the Express Lanes, however, tended to be more satisfied, as 54% agreed that their travel along I-85 has improved.

Regarding equity, a large majority of respondents in Wave 1 agreed that highways tolls are unfair to people with limited incomes (74%), but in Wave 2, the percent agreeing dropped to 57%. On other travel-related attitudes, we see small shifts in opinion indicating a degradation in travel experience. Following tolling, respondents were somewhat more likely to agree that “at least twice a week there is an unexpected delay on my trip” (58% vs. 50% in Wave 1), and “driving on Atlanta highways is stressful for me” (72% vs. 66% in Wave 1).

² Transit service changes had been introduced immediately prior to our survey administration. We may have captured initial dissatisfaction among some customers as they adjusted to the service changes.

Introduction

Atlanta Congestion Reduction Demonstration Program

As part of its *National Strategy to Reduce Congestion on America's Transportation Network*, the United States Department of Transportation (U.S. DOT) created the Urban Partnership Agreement (UPA) and Congestion Reduction Demonstration (CRD) programs to promote innovative approaches to reducing travel delays. The UPA/CRD programs provide Federal funding and technical assistance to metropolitan areas that commit to pursuing a coordinated “4 Ts” approach to congestion, comprising tolling, transit, telecommuting, and technology.

The Atlanta region was one of six metropolitan areas selected for the UPA/CRD programs based on responses to a 2006 Federal Register notice.³ In 2008, U.S. DOT signed a Congestion Reduction Demonstration Agreement with three local partners: the Georgia Department of Transportation (GDOT), State Road and Tollway Authority (SRTA), and Georgia Regional Transportation Authority (GRTA). Other partners include Atlanta Regional Commission (ARC), Georgia Department of Public Safety, Metropolitan Atlanta Rapid Transit Authority (MARTA), Gwinnett County Government, Clean Air Campaign, and Georgia Institute of Technology (Georgia Tech).

The CRD project involved the conversion of an existing high occupancy vehicle (HOV-2) lane to a dynamically priced high occupancy toll (HOT-3) lane, combined with an increase in the occupancy requirement from 2+ to 3+ in order to use the priced facility without paying a toll. This HOV-2 to HOT-3 conversion was implemented along a 16 mile stretch of I-85 in northeast Atlanta, from I-285 in DeKalb County to Old Peachtree Road in Gwinnett County. This strategy takes advantage of the unused capacity of the HOV lanes by enabling single occupant vehicles to use the lanes for a fee, thus freeing up capacity in the general purpose lanes and providing a more reliable trip for all I-85 users. The Atlanta CRD partners have as a long-term regional goal an integrated system of congestion-priced lanes, enhanced transit service, and advanced technology on 49-miles of I-75, I-85, and I-20. The CRD will establish the first phase of that network.

I-85 is a major north-south freeway that connects downtown Atlanta to metro Atlanta counties and rural Georgia, and it also provides inter-state connection between South Carolina and Alabama. This section of I-85 is among the most congested in metro Atlanta. I-85 between Chamblee-Tucker Road and Old Peachtree Road has a travel time index of 1.82 in the morning peak hour and 2.36 in the evening peak hour.

With the conversion of the HOV lane to a HOT lane, called the Express Lanes, single-occupant vehicles paying the dynamically priced toll can utilize the Express Lanes. Over the 16 mile stretch of the CRD project, the Express Lanes operate continuously for one lane in both the northbound and southbound directions, separated by the general purpose lanes by a double white striped buffer (no physical barrier exists). The Express Lanes operate with seven entry and exit points in the northbound direction as well as in the southbound direction, and toll rates

³ Other selected regions include Los Angeles, Miami, Minnesota, San Francisco, and Seattle.

are displayed at each entry point on changeable message signs.⁴ Tolling occurs 24 hours a day and seven days a week, and ranges from .01 cents to 90 cents per mile, based on demand in the Express Lanes. As congestion on the Express Lanes increases, the toll rates increase to maintain free-flow conditions.

Figure 1: Orientation Map of the Atlanta CRD Project. © SRTA (www.peachpass.com)



Note: The I-985 & SR 20 Park and Ride added capacity. The new Park & Ride facilities include Hamilton Mill and Hebron Baptist Church in Dacula (the latter is not shown on this map). Cedars Mill was planned but not constructed.

A central element of the CRD project is the change in the occupancy requirement to use the Express Lanes for free. Prior to pricing, vehicles with 2 or more people could use the HOV lane (HOV2+), but with the deployment of road pricing, three or more occupants were required in order to use the Express lanes for free (HOT3+).

All I-85 Express Lane users are required to have an active Peach Pass account and a valid transponder. The transponder is registered in either toll mode (for single or double occupant

⁴ Originally, there were six entry and exit points in the southbound direction; however, in 2012, an additional weave zone was added near the Boggs Road overpass on I-85 South.

vehicles using the Express Lanes) or in non-toll mode. Toll exempt vehicles include HOV3+, motorcycles, alternative fuel vehicles (AFV) with Georgia AFV license plates (but not hybrids), transit, and emergency vehicles. Vehicle owners can change the toll status of the vehicle any time prior to making the trip.

The Atlanta local partners also committed to improving public transit service in this corridor. At the time of the Wave 1 survey (April 2011), the Georgia Regional Transportation Authority in collaboration with Gwinnett County Transit (GCT), operated five Xpress bus routes in the corridor (Routes 101, 102 and 103 are operated by GCT and Routes 410, 411 and 412 are under authority of GRTA). The Xpress bus service is a commuter service operating during peak hours only.

Originally the CRD provided funding for 36 new buses to be used on five new routes in the I-85 corridor. However, during the survey time period, only three of the new routes had been added, and twelve new buses were assigned to those routes. Park and Ride enhancements included three new lots: Mall of Georgia, Hamilton Mill, and Hebron Baptist Church, as well as one expanded lot at I-985/GA 20.⁵ The first lot to open was the Mall of Georgia lot in August of 2010 with 750 leased spaces until the permanent lot is open at that location. The other lots, including Hamilton Mill, Hebron Baptist Church, and the expanded I985/GA 20 lot, have added a total of 1700 more spaces and opened during the summer of 2011. In addition, there are two existing Park and Ride lots in the corridor, Discover Mills and Indian Trail. The table below outlines the transit service available in the I-85 corridor and highlights enhancements (either park and ride or route) in red.

Table 1: Park and Ride and Route Enhancements

Park and Ride Locations	Route Served	Route Start Date	Number of Parking Spaces Added
Mall of Georgia (new)	411 (Midtown)	August 2010	750
Hebron Baptist Church, Dacula (new)	416 (Downtown)	June 2011	400
I-985-GA 20 Lot (expansion)	101 (Downtown)	Existing	400
Hamilton Mill (new)	413 (Downtown)	August 2011	918
Discover Mills	103 (Downtown) 410 (Lindbergh MARTA) 412 (midtown)	Existing	NA
Indian Trail	102 (downtown)	Existing	NA

⁵ The original plan called for the construction of a new Park and Ride lot at Cedars Lane; however, the Cedars Lane Park and Ride was cancelled, and instead 400 spaces were leased at Hebron Baptist Church in Dacula.

The CRD's technology components include automated enforcement technologies to insure the payment of tolls and the use of the legal ingress and egress points for access to the Express Lanes. A series of gantries equipped with RFID readers that read transponders are located along the Express Lanes, along with cameras that are part of a license plate recognition system that can detect where and when vehicles get in and out of the Express Lanes. In addition, mobile automatic license plate readers (ALPR) camera systems are installed in enforcement vehicles to assist in the enforcement of occupancy requirements.

The local partners also pursued a transportation demand management (TDM) strategy, through expanding their efforts to promote ridesharing in the corridor. Clean Air Campaign (CAC), a TDM service provider under contract to GDOT, conducted public outreach to encourage the formation of 3 person carpools. CAC identified and contacted 2-person carpools in their databases to help them transition to 3-person carpools. CAC also contacted SOV who use the Express Lanes to encourage them to form carpools and made presentations to employer groups within the I-85 corridor. The targeted outreach efforts occurred from July 2011 to February 2012. CAC also continued its incentive programs (Carpool Rewards, cash for Commuters, and Commuter Prize) to promote travel alternatives to single occupant vehicles, but there were no changes to the incentive programs associated with the CRD project.

Household Travel Panel Survey

The UPA/CRD programs have placed a strong emphasis on evaluation, so that other metropolitan areas across the country can learn from the experiences of the six UPA/CRD sites. A national evaluation, led by the Battelle Memorial Institute, was conducted at each of the UPA/CRD sites (Seattle, Atlanta, San Francisco, Minneapolis-St. Paul, Miami, and Los Angeles). This national evaluation addressed the traffic, tolling, transit, environmental, and other impacts of each region's programs, as well as non-technical success factors such as institutional cooperation.

As an additional component to the national evaluation, the Federal Highway Administration (FHWA) funded a before-and-after household travel survey at two of the UPA/CRD sites, Seattle and Atlanta. FHWA's goal for this add-on survey is to gain further insight into the specific *traveler behavior responses to congestion pricing*, such as changes in telework, route and mode choice, and trip timing. Results from this survey are intended to be complementary with the other components of the national evaluation. For example, roadway sensor data may show a decrease in highway traffic volumes during the morning peak period, while household travel survey data would shed light on the extent to which this change was due to increased telecommuting, shifts to public transportation, or foregone trips. The household travel survey also provides important information about travelers' *attitudes* toward the congestion pricing system and how these change over time. Another important goal of the household survey is to understand the implications of congestion pricing for *socioeconomic and geographic equity*, by analyzing the impacts on household budgets, time allocation, and trip making behavior across groups of households.

Atlanta was selected as one of cities for the household travel survey because it offers the opportunity to study a more conventional HOV-to-HOT conversion project, while Seattle was

selected because it is the first example in the United States of variable pricing for all lanes of a major highway facility. As a practical matter, both projects also had schedules that were amenable to before-and-after comparison.

The household travel survey was a panel survey, in which the same households were surveyed during the “before” and “after” period in order to assess changes in travel behavior. While it is possible to conduct such a survey via repeated cross-section, panel surveys offer several methodological advantages, including the fact that individuals essentially serve as their own controls. The survey consisted of a demographic questionnaire, travel diary, and follow-up questions on current travel patterns and attitudes. The diary covered an assigned 48-hour period, during which the respondent recorded the details of all trips taken, including origin, destination, time, travel mode, vehicle occupancy and purpose. For trips using the I-85 study corridor, there were specific follow-up questions about trip satisfaction.

Wave 1 (“before”) data collection for Atlanta took place in April 2011, as variable tolling was expected to begin during the summer of 2011. The Wave 2 (“after”) survey was conducted in April 2012. The timing of the survey was designed to give local residents several months to acclimate and adjust to the new tolling system, and to ensure that the two survey waves could be conducted at roughly the same time of year, minimizing any seasonal variation.

Methodology

This section of the report provides an overview of the methodology, including the following key topics:

- Survey Approach
- Survey Timeline
- Population, Sampling, and Sample Size
- Survey Recruitment and Communications
- Pre-Testing
- Incentives
- Panel Maintenance
- Response Rates
- Analytic Method

More detailed information on the methodology is included in Appendix A.

Survey Approach

This study was designed as a diary-based household travel survey because of the rich detail that such an approach can provide on a trip-by-trip basis. Surveys of this type are typically used by metropolitan planning organizations, such as ARC, to gather data on trip generation rates, origin-destination patterns, and mode choice, and thus to calibrate regional travel demand models and ultimately to prioritize transportation investments. In this case, the use of a before-and-after trip diary enabled the analysis of how different aspects of respondents’ travel choices

were affected by the implementation of congestion pricing on I-85.

Household travel surveys often use a one- or two-day diary period, the result of a tradeoff between the benefits of additional data versus the risk of additional respondent burden, which lowers participation rates and the representativeness of responses. This study used a two-day (48-hour) diary period. In recent years, longer diary periods have been used in cases where much of the trip information is collected automatically via portable GPS devices. While the price of GPS devices has fallen substantially over time, their use in a household travel survey still entails significant expense, and such an approach was not feasible here due to resource constraints.

In addition to the trip-level questions in the diary portion of the survey, respondents also provided basic demographic information about their household and answered a supplemental survey about their general travel patterns, commuting behavior, and travel-related attitudes. Responses to these questions provide valuable context for the diary data, and permit a number of more detailed analyses. For example, a question on workplace benefits can be used to assess whether commuters with free parking or transit benefits respond differently to the I-85 tolling than those who pay for parking out-of-pocket, or whether travelers from different demographic groups respond to tolling differently.

The survey was structured so that *all adult members of the contacted household* were part of the sample, not just the primary contact. (Children under 18 were not asked to complete a survey due to potential concerns about privacy and informed consent, even though some teenagers are drivers and independent transit riders in the I-85 corridor). The inclusion of all household members increases respondent burden and has the potential to include non-users of the corridor, but it ensures that the survey captures important intra-household dynamics regarding travel behavior. For example, congestion pricing on I-85 could potentially encourage household members to carpool together, telecommute more frequently, or change the way shopping trips and errands are handled by different members of the household during the course of the day.

Survey Timeline

At the time the survey was planned, tolling on I-85 was expected to begin in the spring of 2011, with some of the CRD transit components starting even earlier. Therefore, the Wave 1 survey was planned for the spring of 2011 in order to obtain a relatively “clean” baseline, unaffected by the tolling project. Spring is also a good time for travel surveys in general because daylight and weather conditions tend to be favorable. Prior to scheduling the travel days for the survey, the contractor, Resource Systems Group (RSG) confirmed that there were no holidays or school vacations that would disrupt typical traffic patterns. License plate capture of vehicles in the corridor (as described in more detail below) was conducted on January 11, 2011 for the pilot study and then on February 15-17, 2011 for the Wave 1 survey. With the further time required to process the license plate image data and contact participants, the assigned travel dates for the diary survey were in late April. Due to the lower than expected response rate, two additional travel dates were added on May 11-12. The Wave 2 survey was administered one year later, in

April-May 2012, approximately 7 months after the start of tolling on October 1, 2011. The travel dates for the Wave 1 and Wave 2 surveys are shown in Table 2.

Table 2: Survey Schedule

Wave 1	Wave 2
April 18-19, 2011	April 24-25, 2012
April 19-20, 2011	April 25-26, 2012
April 26-27, 2011	April 30-May 1, 2012
April 27-28, 2011	May 1-2, 2012
May 11-12, 2011	

Population, Sampling and Sample Size

One notable difference between this study and a more typical regional travel survey is that the population of interest is defined as *current users of the affected corridor*, i.e. I-85 and parallel arterials in northeast Atlanta, rather than the entire ten-county ARC region. This stems from underlying differences in the purpose of the study: rather than gathering data on an entire region for planning purposes (e.g., travel demand modeling), this study seeks to understand the response of existing transportation system users to the deployment of road pricing. A survey of the entire ARC region would have the advantage of capturing a slightly wider range of users and impacts, for example if travelers who currently avoid the corridor start using I-85 more frequently after the start of tolling due to increased travel time reliability. However, a fully regional survey, would expend scarce survey resources on large numbers of respondents who seldom or never use I-85 and for whom any impacts would be quite minor.

For the purposes of the Volpe survey, corridor users were divided into three groups for recruiting purposes:

- Drivers on the corridor were identified via license-plate capture photography on sections of I-85 and Buford Highway, which runs parallel to I-85. Buford Highway was selected because of its proximity to I-85, and the fact that it runs parallel to I-85 for the entire length of the corridor, thus offering a good alternative to I-85. Limited resources did not allow the sampling of other parallel arterials. License plate collection was focused on peak and shoulder periods (6-10 a.m. and 3-7 p.m.) since these periods were expected to be most affected by the tolling project and additional transit service.
- Transit riders were intercepted by survey staff at Park and Ride facilities and at transit stations in the corridor. At the park and ride lots and the MARTA stations, survey staff engaged with transit riders as they waited for their bus, described the survey effort and answered questions, and distributed invitation postcards.

- Members of GRTA organized vanpools received an e-mail solicitation to participate; those who indicated interest provided their contact information on a survey website and were mailed a survey packet inviting them to participate.

The recruitment process for each of these groups is described in more detail below.

The overall goal for achieved sample in Wave 1 was 3,000 households: 2,600 “driver” households and 400 “transit/vanpool” households. These terms refer only to whether the primary contact for the household was recruited from the license plate sample or from the transit and vanpool contacts; other household members (or indeed even the initial contact himself) may use other modes of transportation some or all of the time. These sample sizes were chosen such that, with the expected level of attrition between waves of the survey, approximately 1,500 households would complete both waves and comprise the panel dataset, including 1,300 “driver” households and 200 “transit” households. The quota for transit recruits was designed to ensure that there were enough data to permit separate analysis of impacts on this group.

Survey Recruitment and Communications

For the Wave 1 survey, respondents recruited via license plate capture received a series of hard-copy mailings from the survey team. All materials were provided in both English and Spanish. The first mailing was a pre-notification postcard that briefly described the survey and advised that a full survey packet would be arriving in a few days (see Figure 2). The postcard also noted that a \$15 gift card was being offered as an incentive for completing the survey.

Figure 2: Advance Notification postcard



The survey packet itself, which arrived about 2 days prior to the assigned travel dates, included an invitation letter, a set of “memory jogger sheets that members of the household could use to record information about their daily trips, and a “Frequently Asked Questions” document.

Follow-up postcards were mailed to households that did not respond to the initial invitation request.

Once participants completed the household survey and provided their email contact, all future communications regarding the survey were conducted via email.

Pre-Testing

The entire survey process, from the recruiting of participants all the way through to the collection and analysis of data, was pre-tested using a small-scale pilot study. It should be noted that a pilot study was conducted in Seattle in the fall of 2011, prior to the Atlanta pilot study. Since the survey in Seattle was very similar to the one being used in Atlanta (with the exception of some site-specific questions), the findings from the Seattle pilot study were also used to inform the development of the Atlanta questionnaire. As a result, a somewhat smaller-scale pilot was conducted in Atlanta compared to Seattle.

The pilot study resulted in the recruitment of 176 drivers and 49 transit users. At the end of the pilot survey, telephone debriefs were conducted with six households to obtain more in-depth feedback. These interviews probed the respondents' response to the printed materials they received, their experiences with the online survey tool, their view of the incentive, and other general impressions. Despite the small number of interviews, RSG attempted to include a mix of respondents with respect to commute mode, household size, and other factors such as income, age, and English proficiency.

The Volpe Center study team worked with RSG to analyze results of the pilot, including those from completed surveys as well as partially complete surveys and comments from telephone debriefs. The surveys were then revised based on feedback from the pilot study.

Incentives

Incentives have become common practice in the household travel survey community because a small incentive can be more cost-effective than refusal conversion in improving response rates, and more generally because they improve the representativeness of the sample. In the absence of an incentive, employed commuters and larger households – those who use the transportation system the most – are often under-represented, while retirees are over-represented because they have more free time to complete surveys. Incentives can also help to overcome the tendency of lower-income households to be under-represented in travel surveys, which is problematic for analysis of the equity issues surrounding congestion pricing.

Incentives were particularly important for this study because of its design as a panel survey, with the same set of respondents in both survey waves. An incentive in the form of a \$15 gift card to Amazon.com was offered to households that completed all parts of the Wave 1 survey. The survey materials also noted that completion of Wave 2 would result in an additional \$30 gift card for the household, which was designed to reduce panel attrition and reflect the fact that the Wave 2 survey may have more questions. This incentive structure was tested among the small sample of respondents in the Seattle pilot study. Since it was found to be effective, the same incentive structure was adopted in Atlanta.

For ease of administration and to make the reward more immediate, e-gift cards (i.e. electronic codes that are valid for purchases) were used and were e-mailed to respondents soon after completion of their survey. Amazon was believed to be a relatively neutral choice for the gift

card because of the wide variety of products sold, reducing the potential for bias compared to cards from a more specialized retailer.

Panel Maintenance

The baseline survey was conducted in April/May 2011 prior to pricing, and the post-pricing survey was administered one year later, in April/May 2012. In order to minimize panel attrition over the course of the year, the survey team undertook panel maintenance efforts to keep respondents engaged and to encourage their continued participation. These included:

- Email contact thanking respondents for their participation. The email provided a link and password to review a few results from the study (September 2011).
- “Mini-survey” of five questions to engage respondents (February 2012).

Response Rates

Overall, 1,655 households, or 3,126 individuals, completed both waves of the survey. The table below provides response rates for each survey wave.

Table 3: Response Rates

Survey Stage	Response
Total Survey Invitations Distributed	37,888
Wave 1 Completions	2,412 households
Wave 1 Response Rate	6.4%
Wave 2 Completions	1,655 households
Retention (Wave 1 to Wave 2)	69%
Overall response rate	4.4%

When response rates are calculated by mode, the highest response was achieved among the transit sample.

Table 4: Response Rate by Mode of Intercept

Mode	Survey invitations distributed	Household completions	Percent completed
Auto	34,690	1,422	4.0%
Transit	2,721	220	8.1%
Vanpool	477	13	2.7%
Total	37,888	1,655	4.4%

Analytic Method

Different statistical tests were used in the analysis of the data. For data involving categorical variables, where we were testing for differences in the distribution of the data, the chi-square test was utilized. For numerical data, where mean values were calculated, a t-test was utilized.

to compare the difference in mean scores. For individual level data, where it was possible to compare an individual's wave 1 mean score to their wave 2 mean score, a paired t-test was utilized. For example, on the attitudinal statements, many of the same questions were repeated in Wave 1 and Wave 2, so we utilized a paired t-test to determine if changes in attitudes were significant or not. All tests were performed at the 95 percent confidence level (p-values are reported in the tables).

Findings

This section provides findings from the Atlanta travel behavior survey. A detailed description of the socio-demographic composition of the sample is presented first, followed by a comparison of Wave 1 and Wave 2 findings on key measures, including overall use of the I-85 facility, vehicle occupancy, mode, timing of trips, travel time, trip satisfaction and traveler attitudes. When comparing data across the two survey waves, the term “HOV lanes” or “HOV-2 lanes” is used to reference the Wave 1 facility, and the term “Express Lanes” or “HOT-3” is used to reference the Wave 2 facility.

Since the sampling plan was stratified by mode and route, the data were weighted according to these parameters (see Appendix for a more detailed description of the weighting). All data presented in the findings are weighted.

Panel Description

Individual and Household Characteristics

The panel sample consists of somewhat more females than males (55% vs. 45%). With regards to race, the majority of the respondents are White (75%); 13% are Black; 8% are Asian, and 3% are “Other.” In addition, 6% of respondents reported that they are Hispanic. The sample tends to be dominated by those of working age, which is not surprising given that sampling occurred during peak hours, when people tend to be commuting to their jobs. Seventy-three percent of the sample is between the ages of 25 to 54, with an additional 19% being 55 to 64 years of age. Only 3% of respondents are in the youngest age bracket (18-24 years old) and 5% are in the oldest age bracket (65+ years old)

The sample is also highly educated, with 41% having a bachelor’s degree and an additional 26% having earned a post-graduate degree. Twenty-two percent have either completed some college (16%) or have an Associate’s Degree (6%). Ten percent of the sample has a high school degree or less and 3% have completed vocational or technical training.

Table 5 shows respondent demographic characteristics, as compared to the census and American Community Survey statistics for Gwinnett County.⁶ As previously noted, the sample was drawn from peak hour corridor users, so any comparisons with local census figures should keep this in mind. Compared to the overall county, the sample was somewhat more female and less racially and ethnically diverse. In addition, the sample had a higher concentration of working age population and was more highly educated than the county as a whole.

⁶ Measures of gender, race, ethnicity and age for Gwinnett County are from the 2010 Census. Education level is from the American Community Survey(2007-2011 5-Year Estimates) and is based on respondents 25+ years of age.

Table 5: Respondent Demographic Characteristics

	Wave 2	Gwinnett County
Gender:		
Male	45%	49%
Female	55%	51%
Age:		
18-24	3%	11%
25-34	20%	20%
35-44	27%	24%
45-54	26%	21%
55-64	19%	13%
65+	5%	11%
Race:		
White	75%	53%
Black	13%	24%
Asian	8%	11%
Amer. Indian/Alaskan Native	*	1%
Other	3%	9%
Education:		
High School degree or less	8%	36%
Vocational/ Technical	3%	
Associate's Degree	6%	9%
Some College	16%	21%
Bachelor's Degree	41%	24%
Post-Graduate Degree	26%	11%
Ethnicity:		
Hispanic	6%	20%
Not Hispanic	94%	
Number of respondents:	3,126	3,126

*Note: * denotes less than .5%*

With regard to household characteristics (see Table 6), the largest share of households – 38% – earn \$50,000 to \$99,000 per year, while nearly one-quarter of households report an annual income of \$100,000 to \$150,000. Fewer households are in the lowest income category (13% of households earn under \$50,000 per year) or in the highest income category (13% earn more than \$150,000).

In terms of household composition, there is a mix of household types, as 60% are adult-only households and 40% are households with children. The family configurations that are most prevalent include 2-adult households (32%) and 2-adult households with children (31%).

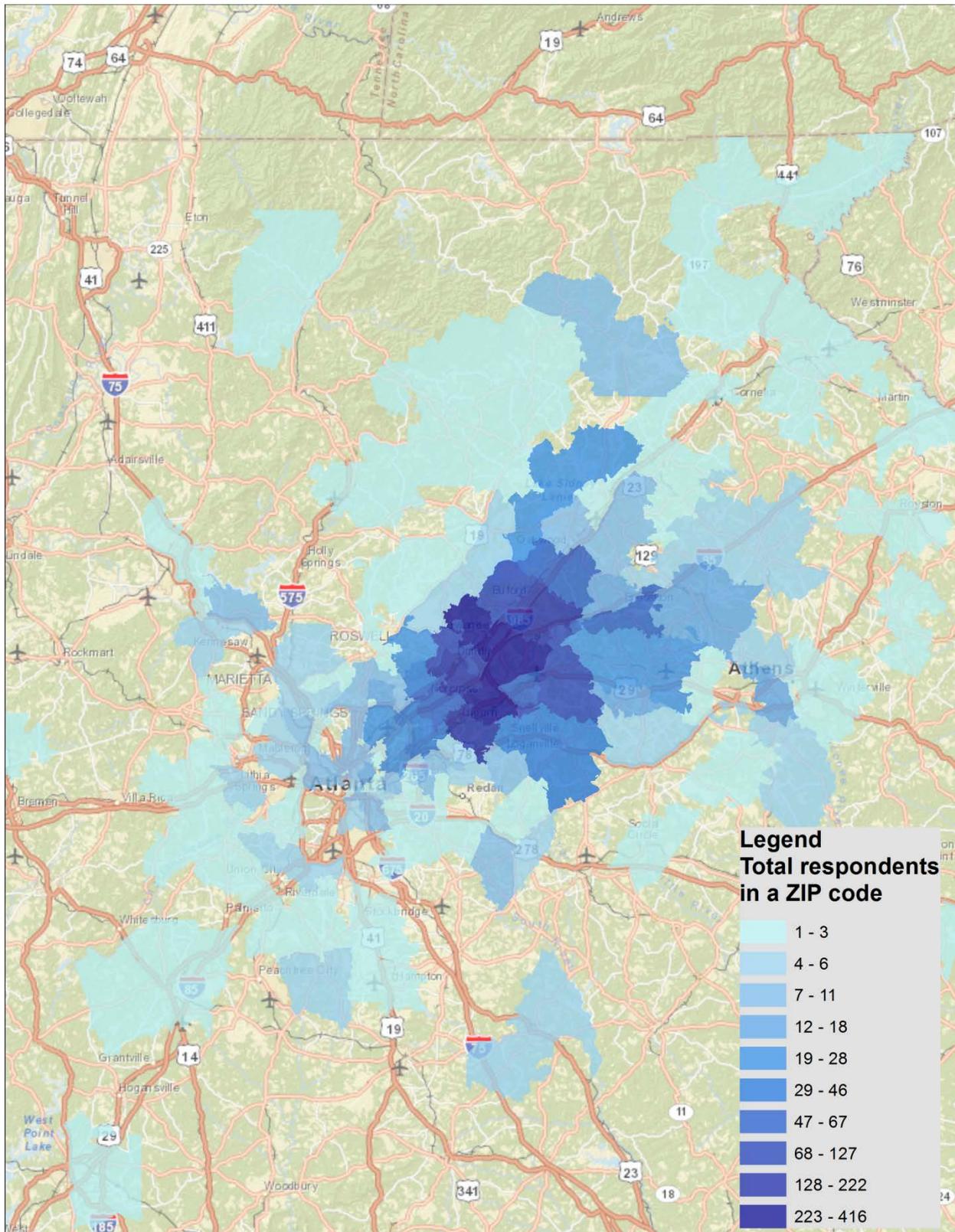
A majority of households have two vehicles (53%), an additional 26% have three or more vehicles, and 21% have one vehicle. Across the two waves, 85% of households reported the same number of vehicles, while 9% acquired one or more new vehicles, and 6% of households reported fewer vehicles in Wave 2.

Table 6: Household characteristics

Wave 2	
Income:	
Under \$50,000	13%
\$50,000 - \$74,999	18%
\$75,000-\$99,999	20%
\$100,000 - \$150,000	23%
More than \$150,000	13%
Refused to Say	13%
Household composition:	
Adult-only household	60%
1 adult	19%
2 adults	32%
3+ adults	9%
Households with children:	
1 adult with child(ren)	4%
2 adults with child(ren)	31%
3+ adults with child(ren)	5%
Number of vehicles:	
0	0%
1	21%
2	53%
3	19%
4+	7%
Number of Households:	1,655

Figure 2 illustrates the home locations for all panel households (all members of the household completed both a Wave 1 and a Wave 2 survey). Most of the respondents live along the corridor, particularly to the east of I-85.

Figure 2: Respondent Home Zip Codes



Technology Ownership

To better understand the socio-demographic profile of respondents as well as their access to real-time traveler information, the survey included a question on technology ownership. The survey asked respondents whether or not they owned:

- A home computer (desktop or laptop) with internet access
- A Smartphone, iPhone, Blackberry or other web-enabled mobile device
- A cell phone that is not web-enabled
- A mobile navigation or GPS device (such as Tom-Tom or Garmin)

An overwhelming majority of respondents in both waves (97%) has a home computer with internet access. There is also a high penetration rate for web-enabled mobile devices, up from 61% in Wave 1 to 72% in Wave 2. There was a similar drop in the ownership of cell phones that are not web-enabled, from 45% to 35%. GPS ownership increased from 59% to 62%.

Employment and Commute Status

As shown in Table 7 below, aggregate employment status remained stable over the survey period. Commuting frequency was also relatively stable, though to a lesser extent than employment status. Nearly two-thirds of respondents (65%) were commuting five days per week in Wave 1 and this figure dropped slightly to 62% in Wave 2.

Table 7: Employment Demographics

	Wave 1	Wave 2
Employment Status:		
Employed full-time	72%	72%
Employed part-time	6%	6%
Self-employed	5%	5%
Student	4%	4%
Homemaker	6%	6%
Retired	3%	4%
Unemployed	4%	3%
Commute Frequency:		
6-7 days	4%	4%
5 days	65%	62%
4 days	11%	11%
3 days	7%	8%
2 days	3%	4%
1 day	1%	1%
0 days	5%	6%
No fixed commute	4%	4%
Number of respondents:	3126	3126

In a paired comparison of individual responses, fully 94% of respondents maintained the same employment status in both Wave 1 and Wave 2. Approximately 71% of respondents maintained

the same commuting frequency. Table 8 illustrates the largest shifts in behavior for both employment status and commuting frequency.

Table 8: Shifts in Employment Status

Shifts in Employment Status–Wave 1	Shifts in Employment Status–Wave 2	Shifts in Employment Status–Percent of Sample	Shifts in Commute Frequency–Wave 1	Shifts in Commute Frequency–Wave 2	Shifts in Commute Frequency–Percent of Sample
Part-time	Full-time	1%	5 days/week	4 days/week	4%
Unemployed	Full-time	1%	5 days/week	0 days/week	2%
Full-time	Retired	1%	4 days/week	3 days/week	2%
Full-time	Unemployed	1%	4 days/week	5 days/week	2%

Change in Use of the Facility

Number and Share of Trips

Overall, there was a 15% decline in the overall number of trips reported in the 2-day travel diaries. The total number of trips in the corridor declined by 18%, whereas the number of trips occurring outside the corridor declined by somewhat less – 12%.

When looking at the *share* of trips in the corridor, there was a relatively small but statistically significant 2 percentage point decline across the waves, with 47% of all Wave 1 trips occurring in the I-85 corridor, compared to 45% of all Wave 2 trips.⁷

Table 9: Change in the Number and Share of Recorded Trips: Corridor vs. Non-Corridor (based on trip diaries)

	Wave 1 Number of trips (Share of total trips)	Wave 2 Number of trips (Share of total trips)	Difference Percent (Percentage points)
All Trips	19,397	16,521	-15%
Corridor Trips	9,035 (47%)	7,449 (45%)	-18% (-2)
Non Corridor Trips	10,362 (53%)	9,072 (55%)	-12% (+2)

⁷ A t-test was performed comparing the two percentages; t-value= -3.76, p-value=.00.

Looking specifically at trips within the corridor, there was a significant decline of 12% in the number of driving trips reported on I-85, and an even larger decline – 33% – in the number of trips reported on other roads in the corridor (see Table 10). At the same time, there was an increase in the number of trips reporting any use of transit in the I-85 corridor (it should be noted that the sample sizes are quite small for transit). Despite the decline in the overall number of trips reported on I-85, the share of trips on I-85 increased slightly across the waves (70% in Wave 1 and 74% in Wave 2), due to the disproportionate decline in trips occurring on other roads in the corridor (-33%).

Table 10: Change in the Use of I-85 (based on trip diaries)

	Wave 1 Number of trips (Share of corridor trips)	Wave 2 Number of trips (Share of corridor trips)	Difference Percent (Percentage points)
Corridor Trips	9,035	7,449	-18%
Drive on I-85	6,338 (70%)	5,553 (74%)	-12% (+4)
Any Transit on I-85	165 (2%)	207 (3%)	+30% (+1)
Other Roads in Corridor	2,532 (28%)	1,689 (23%)	-33% (-5)

For each I-85 trip recorded in their travel diaries, respondents were asked whether they used the HOV/Express Lanes or the general purpose lanes. The trip diaries show a significant increase – nearly a doubling – in the number of trips reported on the Express Lanes versus the HOV lanes (98% increase). The share of I-85 trips in the Express Lanes also increased dramatically. In Wave 1, 7% of I-85 trips were in the HOV lanes, whereas in Wave 2, Express Lane trips comprised a 15% share of I-85 trips. By contrast, there was a 20% decline in the overall number of trips recorded in the general purpose lanes and an 8 percentage point decline in the share of I-85 trips in the general purpose lanes.

Table 11: Change in the Use of the HOV vs. Express Lanes (based on trip diaries)

	Wave 1 Number of trips (Share of total trips)	Wave 2 Number of trips (Share of total trips)	Difference Percent (Percentage points)
Drive on I-85	6,338	5,553	-12%
General Purpose Lanes	5,924 (93%)	4,733 (85%)	-20% (-8)
HOV/Express Lanes⁸ (excludes transit)	414 (7%)	820 (15%)	+98% (+8)

To better understand the decrease in reported trips, we assessed changes in the number of trips by trip purpose, for all trips as well as for I-85 trips. This analysis indicates that, in general, the biggest drop-off in trips was for discretionary trips, including shopping, dining, religious/community and exercise trips. Social/recreational trips are an exception to this pattern; these trips decreased by only 6% overall, and in fact increased on I-85.

Table 12: Changes in Trip Count by Trip Purpose

	Change in Overall Trip Count	Change in I-85 Trip Count
Total	-15%	-12%
Go home	-9%	-5%
Go to primary workplace	-13%	-15%
Other work –related location	-3%	+25%
Child Care	-10%	-15%
School	-24%	-25%
Personal business	-10%	-13%
Social/recreational	-6%	+8%
Exercise/gym	-19%	-18%
Religious/community activity	-21%	-16%
Shopping	-33%	-41%
Eat out/pick up takeout	-32%	-31%
Drop off or pick up someone else	-25%	-36%
Other	-10%	-1%

⁸ This table is based on person-trips, so two individual traveling together from the same household are counted as separate trips. If the analysis is confined to vehicle-trips (e.g., individuals from the same household traveling together are counted as one trip), there is a 126% increase in the share of Express Lane relative to HOV lane trips. Not surprisingly, removing “duplicate” household members has a larger impact on HOV lane trips (which drop from 414 to 350) compared to Express Lane trips (which drop from 820 to 791).

We also looked at the total number of trips recorded by time of day, to determine if there was a differential decline by time of day that might explain the findings. The smallest decline in recorded trips - 10% - occurred during the morning peak (7- 9 AM) which aligns with the relatively smaller decrease in commute trips. There was a greater decline of 18% in trips occurring during the midday off-peak (9 AM to 3 PM), which likely includes discretionary trips.

Based on these data it is difficult to discern what may be driving the decline in reported trip making behavior. One hypothesis is that respondents were less diligent in recording their trips in Wave 2 (compared to Wave 1). While we cannot totally rule out this hypothesis, it does not seem to be supported by the data, as respondents did report increases in some trip types and trip purposes. In addition, the decrease in trip making aligns with respondents' self-report that they were using I-85 less often (results presented below). Finally, the Battelle National Evaluation also found a decrease in both vehicle and person throughput, as well as vehicle miles traveled (VMT) on I-85. Exogenous factors, such as gas prices, may partially explain the decreased trip-making, as well as the fact that the region was still recovering from the economic recession.

Use of the Express Lanes

When the trip diary data is analyzed at the individual level, there is an increase in the proportion of individuals who made an Express Lane trip (vs. the proportion making an HOV Lane trip in Wave 1). In Wave 1, 7% of traveling respondents reported one or more driving trips in the HOV lane; this compares to 11% of respondents who reported at least one driving trip in the Express Lanes in Wave 2.⁹ In large part, we find that new users are accessing the Express Lanes. Of those who reported an HOV trip in their Wave 1 diaries, only 24% reported making an Express Lane trip in their diaries. The large majority (76%) of respondents reporting a Wave 1 HOV Lane trip did *not* report an Express Lane trip.

In terms of the distribution of the sample as a whole, 84% did not record either an HOV Lane or an Express Lane trip over the course of the two day travel diary. Ten percent made one or more Express Lane trips (Wave 2), but made no HOV trips in Wave 1. Five percent recorded one or more HOV trips but no Express Lane trips, and 1% recorded both HOV and Express Lane trips.

Table 13: Distribution of Respondents: HOV Trips and Express Lane trips (N=2971)

	Made an Express Lane trip	Did not make an Express Lane trip
Made an HOV trip	1%	5%
Did not make an HOV trip	10%	84%

Solo drivers who paid a toll comprised the largest share of Express Lane driving trips (82%), while only 4% of trips were two-person carpools that also paid the toll. Fourteen percent of Express Lane trips were toll-exempt, including 9% HOV3+ (4% private vehicle and 5%

⁹ A paired t-test was performed; t-value=-6.85, significant at <.0001 level)

vanpools), and 5% alternative fuel vehicle or motorcycle. The Battelle National Evaluation also found that the significant majority of Express Lane trips were single occupant vehicles (83%), though the Battelle Evaluation found more 2-person carpools (14%) than did the Volpe survey.

Table 14: Breakdown of Wave 2 I-85 Driving Trips (based on trip diaries)

Note: Based on vehicle-trips (individuals from the same household are counted as one trip)

	Wave 2: Share of I-85 Driving Trips	Share of Express Lane Trips
Drove alone and paid toll	12.0%	82.2%
2 –person carpool/paid toll	.6%	3.9%
HOV 3+	1.4%	9.2%
Private vehicle	0.6%	4%
Vanpool	0.7%	5%
AFV or motorcycle	.7%	4.5%
General Purpose Lanes	85.4%	NA

In addition, we looked at the patterns of travel for Wave 2 Express Lane users. For this analysis, we flagged all individuals who made an Express Lane trip, and compared their use of the corridor, as well as their use of I-85, in both waves of the study. Among this group of Express Lane users, there is no difference in their use of the corridor in Wave 1 compared to Wave 2. In both waves, nearly all their corridor trips involved driving on I-85 (89%).

Table 15: Changes in Use of the Corridor Among Express Lane Users

	Wave 1	Wave 2
Drove on I-85	89%	89%
Drove and Transit	0%	*
Transit Only	1%	1%
Other Roads in the Corridor	10%	9%
Number of Trips	1225	1278

However, there are significant differences in their use of HOV/Express Lanes. In Wave 1, Express Lane users made nearly all their trips in the general purpose lanes (89%), with 10% of trips recorded in the HOV Lanes. By contrast, in Wave 2, a majority of their I-85 trips were in the Express Lanes (69%) and less than one-third of trips were reported in the general purpose lanes.

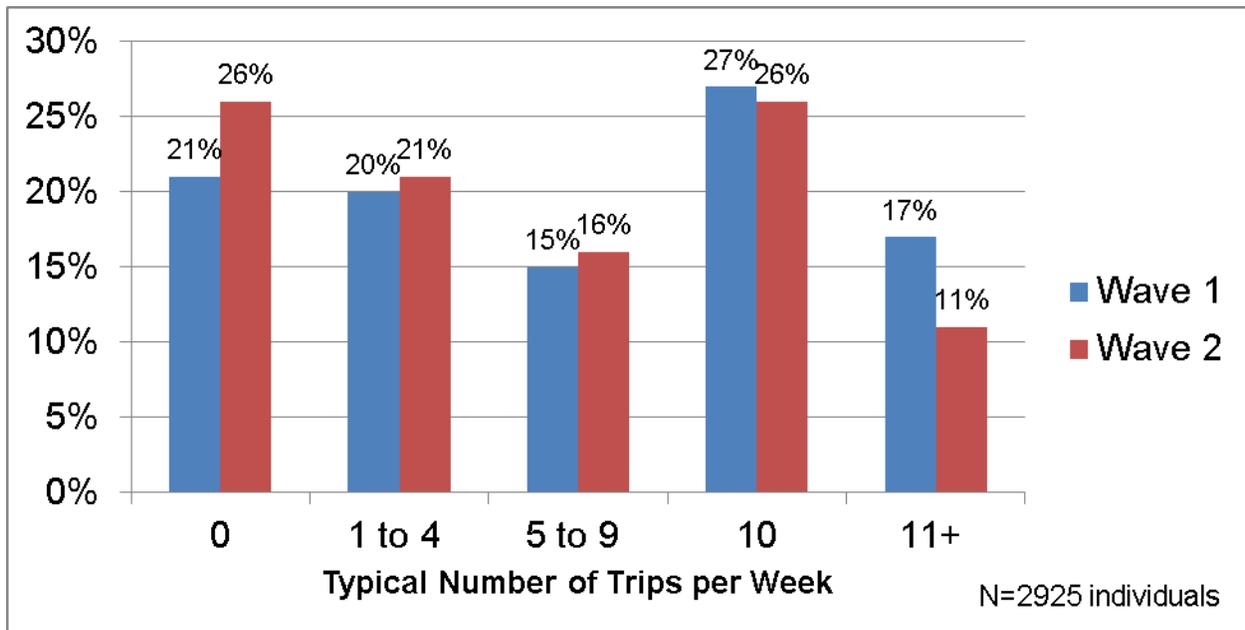
Table 16: Changes in Use of I-85 Among Express Lane Users

	Wave 1	Wave 2
HOV/Express Lanes	10%	69%
Alternative Fuel Vehicle	1%	3%
General Purpose Trips	89%	29%
Number of Trips	422	280

Self-Reported Use of I-85 and the HOV/Express Lanes

When asked how many trips they make on I-85 in a typical week, respondents' self-report aligns with the travel diary findings. Respondents were significantly more likely in Wave 2 to say they made "0" weekly trips on I-85: 26% in Wave 2 vs. 21% in Wave 1. There was also a drop in frequent use of I-85. Before tolling, 17% of respondents reported making 11 or more trips in a typical week, compared to 11% after tolling.

Figure 3: Comparison of Self-Reported Use of I-85: Typical Number of Weekly Trips



NOTE: In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value} = -11.12$, $p\text{ value} = <.0001$

In a paired analysis of individual responses, 43% of respondents reported the same weekly usage of I-85 in both waves, including 16% who reported making 0 weekly trips in both waves. Thirty-seven percent reported using I-85 less in Wave 2, with 9% of respondents indicating that they no longer made weekly trips on I-85. Twenty percent reported using I-85 more, with 4% being "new" weekly users in Wave 2; that is, they made 0 weekly trips in Wave 1 but reported making weekly trips in Wave 2 (see table below).

If this analysis is isolated to the core panel (e.g., those who have experienced no change in their home location, their work location or schedule, or the school location or schedule for their children), the findings are essentially the same as those for the full sample, with a slightly greater proportion of the core panel making the same number of weekly trips in both waves.

Table 17: Use of I-85: Paired Comparison at the Individual Level

	All Respondents	Core Panel
Same number of weekly trips in both waves	43%	45%
0 weekly trips in both waves	17%	13%
Same number of weekly trips in both waves (>0)	26%	32%
Fewer weekly trips after tolling	37%	37%
-Stopped using I-85	(9%)	(8%)
More weekly trips after tolling	20%	18%
-Started using I-85	(4%)	(4%)
Total percentage	100%	100%
Number of Respondents	2925	1338

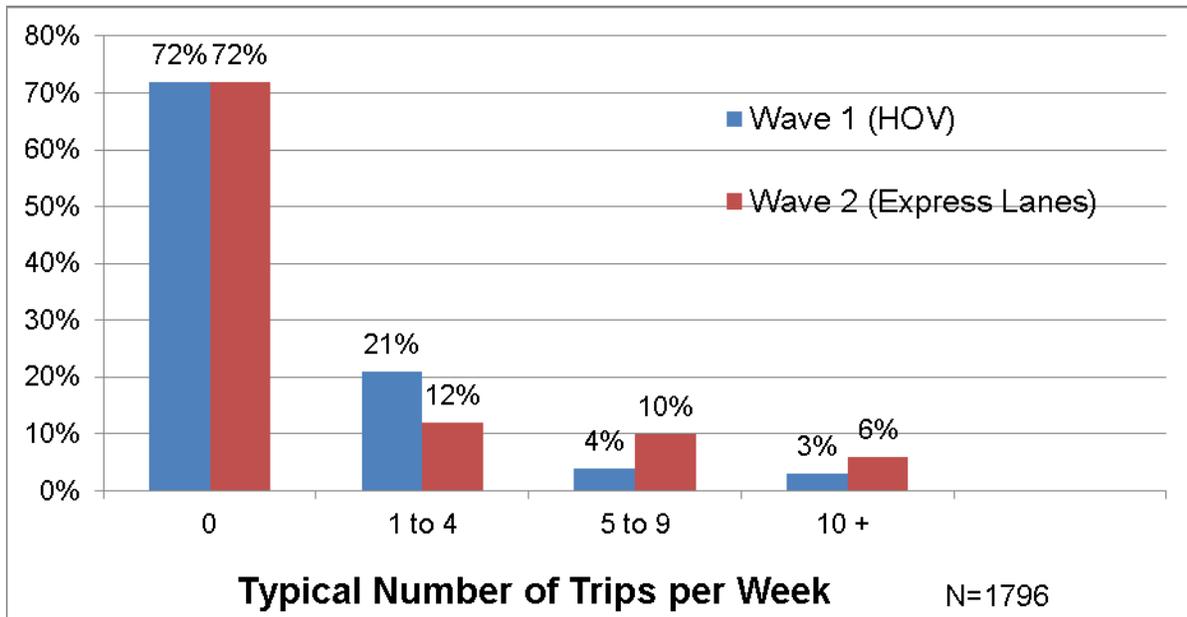
With regard to self-reported use of the HOV/Express Lanes, respondents who made at least one trip per week on I-85 were asked how many of these trips are in the HOV/Express Lanes. In each of the waves, 28% of regular I-85 users reported making one or more of their weekly I-85 trips in the HOV/Express Lanes, whereas 72% in each wave reported that none of their weekly I-85 trips used the HOV/Express Lanes (see Figure 4). Interestingly, in the self-reported data, we do not see the same increase in the proportion of respondents making Express Lane trips (vs. HOV Lane trips) that we saw in the travel diary data. Unless the two travel days were atypical (e.g., respondents who rarely use the Express Lanes just happened to make trips in the Express lanes during the survey period), it is possible that respondents are under-reporting their typical use of the Express Lanes.

While the overall proportion of regular I-85 users who reported using the HOV lanes is the same as that using the Express Lanes (28% in each wave), the frequency of usage differs, with reported use of the Express Lanes being more frequent compared to reported use of the HOV lanes. More specifically, 16% of regular I-85 users say that 5 or more of their weekly trips are on the Express Lanes, compared to 7% who reported the same level of use of the HOV Lanes. The travel diaries confirm this overall finding, as 1% of respondents made four or more HOV-2 trips over the course of the two day diary, compared to 4% of respondents who made four or more Express Lane trips.

Respondents who reported that they typically made “0” trips per week on I-85 were asked if they have ever used the Express Lanes. Thirteen percent of these respondents indicated that they have used the Express Lanes previously.¹⁰

¹⁰ This question was not asked of those who said they typically make 0 trips per week in the Express Lanes. Consequently, among those who regularly use I-85 but do **not** regularly use the Express Lanes (e.g., at least once a week), we do not know how many have ever used the Express Lanes.

Figure 4: Comparison of Self-Reported Typical Use of HOV vs. Express Lanes



Note: In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value}=-5.31$, significant at the $<.0001$ level

In a paired comparison of self-reported use of the HOV lanes versus the Express Lanes (Table 18), 57% of I-85 users reported using the HOV Lanes and the Express Lanes with the same level of frequency, nearly all of which included respondents reporting 0 weekly trips in both waves (54%). Twenty-two percent reported using the Express Lanes more than they used the HOV lanes, and this includes 18% who are “new” weekly users (they reported 0 weekly trips in Wave 1, but report making weekly trips in Wave 2). A similar proportion – 21% – reported using the Express Lanes less than they used the HOV Lanes, and again, most of these (17%) are users who were making regular trips in Wave 1 but stopped doing so in Wave 2.

Table 18: Typical Use of HOV/Express Lanes: Comparison at the Individual Level

Use of HOV vs. Express Lanes	Percent
0 weekly trips in both waves	54%
Same number of trips in both waves (>0)	3%
Fewer weekly trips after tolling	21%
-Stopped using I-85	(17%)
More weekly trips after tolling	22%
-Started using I-85	(18%)
Total percentage	100%

Respondents whose reported use of the Express Lanes and HOV lanes differed across the two waves were asked the reason why they were using the Express Lanes either more or less often, relative to their use of the HOV lanes. Among those who reported using the Express Lanes less often relative to the HOV lanes, the key reason, cited by more than three-quarters of respondents, is that they would rather not pay a toll (77%). In addition, 16% indicated that they

no longer use the Express Lanes because their two-person carpool cannot use the Express Lanes for free. Other reasons cited by respondents include:

- Changes in my personal/work schedule (17%)
- Entering and exiting the Express Lanes is difficult or inconvenient (13%)
- I use a different route now to avoid I-85 (8%)
- The regular lanes on I-85 are less congested (4%)
- The Express Lanes are unsafe (2%)
- Other (14%)

Under “other,” respondents offered some of the following comments as reasons for using the Express Lanes less often:

- *“Opposed to these lanes in principle – will not support them by using them.”*
- *“Express Lanes offer no advantage most of the time”*
- *“Not worth the effort for two miles”*
- *“I do not use them in the AM because I leave early enough [that] traffic is manageable”*

Among those who are using the Express Lanes more often (N=382), the reason cited by most is that “the Express Lanes are faster and less congested” (63%) and “I can drive alone in the Express Lanes now” (59%). Other reasons cited by significantly fewer respondents include:

- Changes in my personal or work schedule (10%)
- I can ride the Express Lanes for free (9%)
- Road conditions are now safer in the Express Lanes (8%)
- I ride the bus on I-85 more often now (5%)
- Other (10%)

When and Why Travelers Use the Express Lanes

Respondents who make one or more trips per week in the Express Lanes were asked when they generally decide to use the Express Lanes – before they start their trip, during their trip, or sometimes before and sometimes during their trip (they could also respond that they only use the Express Lanes when they can travel on them for free). A significant plurality – 42% - said they generally decide to use the Express Lanes *during* their trip – more than twice the number who decide before their trip (18%). Nineteen percent reported that they sometimes decide before and sometimes during their trip, and 21% said they only use the Express Lanes when they can travel in the lane for free.

These regular Express Lane users were also asked their reasons for deciding to use the Express Lanes. Their responses are indicated below:

- Regular lanes are very congested (71%)
- Want to save time (66%)
- Want to have a more reliable trip (43%)
- Express Lanes are safer (13%)
- Other (15%)

Vehicle occupancy

The travel diaries offer the opportunity to assess changes in vehicle occupancy, as respondents were prompted to indicate the number of occupants in the vehicle for each driving trip. In addition, respondents were asked about the nature of their trip in the HOV Lane and Express Lanes. In Wave 1, for each trip in the HOV Lane, respondents were asked whether they traveled in the HOV Lane as a 2+ person carpool or whether they used an AFV or motorcycle. In Wave 2, for each trip made in the Express Lanes, respondents were asked whether they drove alone and paid a toll, drove as a two-person carpool and paid a toll, drove as a 3+ person carpool, used an AFV or motorcycle (which are toll-exempt) or rode a bus. In a small percentage of trips, there were discrepancies between the vehicle occupancy numbers and the question on how they traveled in the HOV/Express Lanes. For example, there were 44 cases in which respondents said there were two occupants in the vehicle, but when asked how they traveled in the Express Lanes, they reported traveling in the Express Lane as a single occupant vehicle. Ultimately the Volpe team decided to recode vehicle occupancy according to what respondents said they did in the Express Lanes. In the example above, vehicle occupancy for those 44 cases was recoded to '1.' The charts and tables in this section reflect this coding decision; however, results are also presented with no recoding of vehicle occupancy. We believe the estimate for vehicle occupancy lies somewhere between these two values (assuming that in some cases respondents mis-recorded vehicle occupancy and in some cases they mis-recorded what they actually did in the HOV or Express Lanes).

Overall, the survey finds an increase in I-85 vehicle occupancy, as mean occupancy for all I-85 driving trips (excluding transit and vanpools) increased from 1.13 to 1.17¹¹. However, changes in vehicle occupancy varied by type of lane. In the HOV/Express Lanes, there was a dramatic decrease in the number of vehicle occupants across the waves, from a mean of 2.22 (HOV Lanes) to 1.18 (Express Lanes).¹²

In the general purpose lanes, however, there was an increase in vehicle occupancy, from a mean of 1.07 to 1.18.¹³ Prior to tolling, 4% of all trips in the general purpose lanes had 2 or more occupants, but after tolling the comparable figure rose to 12%. The Battelle National Evaluation also found a significant decrease in vehicle occupancy in the Express Lanes (from 2.0 to 1.25) and an increase in the general purpose lanes (from 1.08 to 1.13 during peak hours).

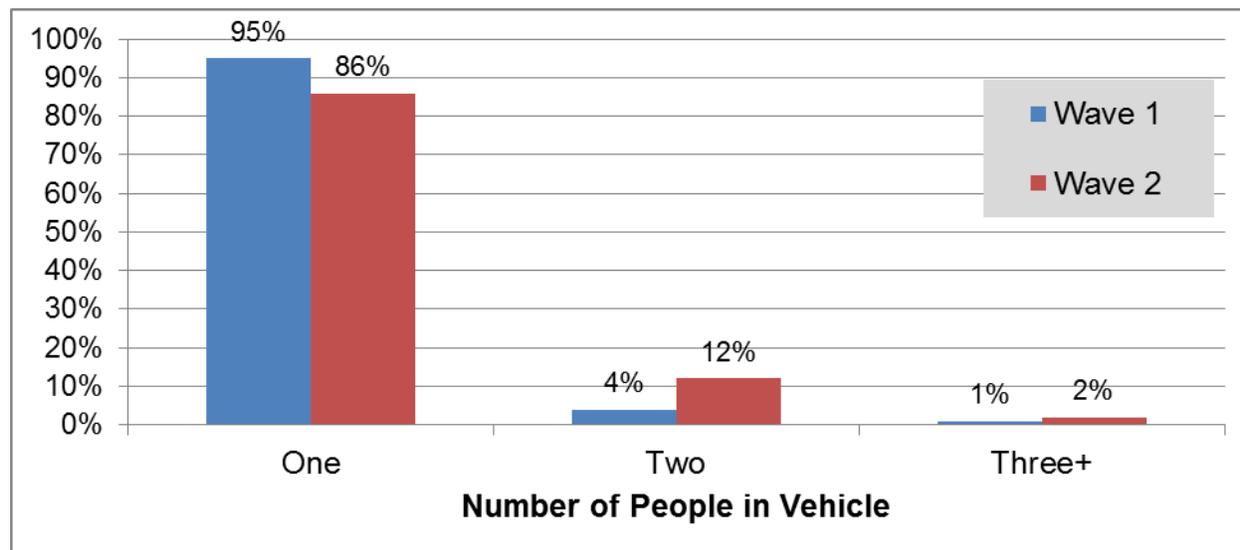
¹¹ t-value=5.96, p-value= <.0001.

¹² When vehicle occupancy is not recoded, the mean values are 2.68 (HOV) and 1.53 (Express Lanes). Hence we estimate that vehicle occupancy in the HOV Lanes ranges from 2.22 to 2.68, and 1.18 to 1.53 in the Express Lanes.

¹³ When vehicle occupancy is not recoded, the mean occupancy is 1.08 in Wave 1 and 1.21 in Wave 2. We estimate that vehicle occupancy in the general purpose lanes ranges from 1.07 to 1.08 in Wave 1 and 1.18 to 1.21 in Wave 2.

Figure 5: Changes in Vehicle Occupancy in the General Purpose Lanes (trip diaries)

Note: Based on vehicle-trips (individuals from the same household are counted as one trip)



To assess how tolling affected 2-person carpools in the HOV lanes, we flagged those respondents who made any HOV-2 trips in Wave 1 and compared the profile of their I-85 corridor trips in Wave 1 vs. Wave 2. Overall, we find that they made somewhat fewer trips on I-85 in Wave 2 (69% in Wave 2 vs. 79% in Wave 1). There was some movement to “other roads in the corridor” (27% of their corridor trips used other roads in Wave 2 compared to 20% in Wave 1), and minimal movement to transit (approximately 4-5 respondents).

Table 19: Profile of Corridor Trips Among Respondents Making HOV-2 Trips in Wave 1 (based on trip diaries)

	Wave 1	Wave 2
Drove on I-85	79%	69%
Drove and Transit	.4%	.9%
Transit Only	1.4%	2.9%
Other Roads in the Corridor	20%	27%
Number of Trips	534	401

Among these Wave 1 HOV-2 users, we see some significant shifting in their use of the general purpose lanes and the HOV/Express Lanes. In Wave 1 64% of their I-85 trips were in the HOV lanes; in Wave 2 only 19% of their trips were made in the Express Lanes. By contrast, the proportion of their I-85 trips in the general purpose lanes increased from 36% to 81%. In wave 1, only 17% of their general purpose lane trips comprised two persons; in Wave 2, 52% of their general purpose lanes consisted of 2-persons. This indicates a clear shifting of HOV-2 trips to the general purpose lanes, with a share of 2-person carpools remaining in-tact.

Table 20: Profile of I-85 Trips Among Respondents Making HOV-2 Trips in Wave 1 (based on trip diaries)

	Wave 1	Wave 2
HOV/Express Lanes	64%	19%
General Purpose Trips	36%	81%
1-person	(81%)	(43%)
2-person	(17%)	(52%)
3+ person	(2%)	(5%)
Number of Trips	422	280

Mode

The survey offers several different ways of assessing changes in mode that occurred in the corridor. First, in the trip diaries, respondents were asked the mode(s) they used for each trip recorded in the diary. For trips that used I-85, there was a slight decline in the number who reported “drive alone” and an increase in the number of trips with two or more occupants (this increase in carpooling is discussed in more detail below). Use of transit for I-85 trips remained relatively consistent across the waves, with a slight increase that is not statistically significant. When looking specifically at bus trips on I-85, the share increased from 2.4% to 2.7%, an increase that is also not statistically significant.

Table 21: Modes used for I-85 trips (based on trip diaries, vehicle trips)

	Wave 1	Wave 2
Drive alone	88%	83%
Carpool (2+ persons)	9%	13%
Any transit (bus or rail)	3.1%	3.5%
All other modes	*%	1%
Number of Trips	6334	5530

Further analysis of carpooling behavior reveals that there was an increase in intra-household carpooling. Among morning I-85 commute trips, the share of multi-occupant trips increased from 6% in Wave 1 to 9% in Wave 2 (t-value=6.42, p-value= <.0001). The increase in vehicle occupancy was due in large part to the increase in 2-person carpools from the same household.¹⁴ In Wave 1, 2% of all morning commute trips consisted of 2 person carpools from the same household. In Wave 2, this proportion increased to 5% (t-value=6.53, p-value= <.0001). Open end comments from respondents (discussed below) suggest that the increase in intra-household carpooling was unrelated to tolling.

¹⁴ Households with new children in Wave 2 were excluded from this analysis.

Table 22: Carpool Configurations for AM Trips to Work on I-85 (based on trip diaries)

	Wave 1	Wave 2
Drive alone	94.5%	91%
2 person – same household	2%	5%
2 person – not same household	3%	3%
3+ person: same household	0.1%	0%
3+ person – not same household	0.4%	0.4%
3+ person – household and non-household	0.4%	0.4%
Total	100%	100%

NOTE: Households with new children are excluded from the Wave 2 analysis

A separate question in the trip diary measured both route and mode choice for trips in the I-85 corridor. More specifically, for each recorded trip in the diary, respondents were asked if they traveled in the I-85 corridor northeast of Atlanta, and if yes, they were asked whether they:

- Drove on I-85
- Drove and took transit on I-85
- Took transit on I-85
- Traveled on other roads in the corridor (did not use I-85)

Excluding trips that occurred on other roads in the corridor, the findings from this analysis are similar to the findings on mode described above. There was a slight increase in the use of transit, from 2.6% of I-85 trips in Wave 1 (using any transit) to 3.0% of I-85 trips in Wave 2 (t-value=2.56; p-value=.01).

As another measure of modes used, respondents were also asked the mode they typically use to commute to work. Among respondents who made six or more trips per week on I-85 (that is, three round-trips), commute mode remained fairly consistent across the two waves, with more than nine-in-ten respondents reporting they drive alone, and a similar proportion across both waves saying they carpool (7.6% in Wave 1 and 7.2% in Wave 2).

Respondents who either started carpooling or stopped carpooling in Wave 2 were asked the reason for the change in their carpooling status. Among those who stopped carpooling, the reasons included (N=93):

- Work location change (35%)
- Two person carpool no longer eligible to drive for free (26%)
- Other members dropped out (25%)
- Prefer to drive alone now (9%)
- Faster and more reliable to drive alone in the Express Lanes (5%)

- Switched to vanpool or transit (5%)
- Other (18%)

While the top reason that respondents stopped carpooling was due to a work location change (35%) and presumably had nothing to do with tolling, it is important to note that one-quarter (26%) of respondents who stopped carpooling did so as a consequence of having to pay a toll to use the Express Lanes, and 5% stopped carpooling because they were willing to pay the toll for a faster trip.

Among respondents who started carpooling in Wave 2 (N=77), they offered the following reasons for the change in carpooling status:

- To share vehicle operating costs (48%)
- Less stressful or more convenient (23%)
- Work location or schedule change (19%)
- Carpooling is more environmentally-friendly (18%)
- HOV lanes save time (13%)
- To use the Express Lanes for free (10%)
- To share the cost of the toll (5%)
- Other (27%)

For a small number of respondents, tolling did affect their decision to carpool; however, the responses suggest that most new carpools among the panel respondents formed due to reasons other than tolling. Several respondents who cited “other” as their reason for carpooling more often in Wave 2 indicated that they were now traveling with a family member due to a change in their work or school situation.

Interestingly, the typical commute measure does not capture the increase in multi-occupant trips that is measured through the trip diaries. This may be due to a misinterpretation of the term “carpool.” The vehicle occupancy data indicate that the largest increase in multi-occupant commute trips is due to an increase in 2-person carpools with members of the same household. When responding to the typical commute question, some respondents who commute with a household member may not have considered this a “carpool.”

Telecommuting

In terms of telecommuting, there was a slight uptick in respondents’ self-reported frequency of telecommuting. In Wave 1, 20% of respondents reported typically telecommuting 1 or more days per week, compared to 25% in Wave 2 (see Table 23)¹⁵.

¹⁵ Respondents who reported “Not Applicable” to the question on telecommuting were omitted from this analysis.

Table 23: Self-Reported Frequency of Telecommuting

(“Not Applicable” responses were omitted)

	Wave 1	Wave 2
5 to 7 days/week	5%	6%
4 days/week	1%	2%
3 days/week	2%	2%
2 days/week	5%	6%
1 day/week	7%	9%
A few times per month	8%	9%
Less than monthly	16%	12%
Never	56%	54%
Number of respondents	2235	2235

In a paired comparison of individual responses, 69% of respondents reported the same frequency of telecommuting across the two waves, whereas 20% reported telecommuting more frequently and 10% reported telecommuting less frequently. Those who telecommuted more often were asked to indicate the reasons why. The reason cited most often, “change in work situation” (54%), is seemingly unrelated to tolling. Forty percent indicated “saving money on commute costs,” and while some of these respondents may have been referring to the cost of the toll, it is likely they were thinking about the other costs of commuting, such as gas, since using the Express Lanes is a choice and not a fixed cost of commuting. In addition, 22% (N=80) cited the reason as “traffic has gotten worse,” which may be attributable to tolling. While it is not possible to determine the extent to which tolling directly impacted telecommuting behavior; the data suggest that it may have had an impact for a small number of respondents.

Table 24: Reasons for Telecommuting More Among those who telecommuted more in Wave 2 (compared to Wave 1)

Multiple responses allowed

Reasons	Percent
Work situation	54%
Saving money on commute costs	40%
Worse traffic	22%
Personal situation	15%
Improved home technology	13%
Environmental reasons	4%
Other	7%
Number of respondents	394

Among those who telecommute less, the reason reported by most respondents was a change in work situation (73%) and an additional 21% cited personal reasons. The full range of responses is provided below:

Table 25: Reasons for Telecommuting Less Among those who telecommuted less in Wave 2 (compared to Wave 1)

Multiple responses allowed

Reason	Percent
Work situation	73%
Personal situation	21%
Improved traffic conditions	2%
Other	12%
Number of respondents	241

The travel diaries also reflect a slight increase in telecommuting behavior, as 17% of respondents reported any telecommuting in their travel diaries in Wave 1 and 19% did the same in Wave 2 (t-value=-2.09, p-value=.04 level). In a paired comparison of responses across individuals, 76% reported the same level of telecommuting in their travel diaries in Wave 1 as Wave 2 (72% did not telecommute at all), 13% reported telecommuting on more days, and 11% reported telecommuting on fewer days.

Trip Purpose

For each trip recorded in the trip diaries, respondents were asked to report the primary purpose of the trip. The following response categories were provided:

- Go home
- Go to primary workplace
- Other work –related location (e.g., meeting, sales call)
- Child care
- School
- Personal business (e.g., medical, banking, post office)
- Social/recreational (e.g., movies, visit friends,/family)
- Exercise/gym
- Religious/community activity
- Shopping
- Eat out/pick up takeout
- Drop off or pick up someone else
- Other

When considering all trips reported in the corridor, the distribution of trips was very similar across both waves, with the exception of shopping trips, which had a small but statistically significant decline, from 6% in Wave 1 to 4% in Wave 2.¹⁶ For all I-85 driving trips, again, there was a slight decline in the proportion of shopping trips (5% to 3%), with no other notable changes (see table below).

¹⁶ T-test was performed; t-value= -8.68, p-value= <.0001.

Looking specifically at trips that used the HOV/Express Lanes, there are several shifts across the two waves. The largest decline is in the number of trips whose purpose was to drop off or pick up someone, which comprised 14% of HOV trips in Wave 1 and only 2% of Express Lane trips in Wave 2 (t-value=-20.72, p-value= <.0001). These pick-up/drop-off trips tended to be 2-person trips that could thus use the HOV Lanes for free in Wave 1, but with the change in the vehicle occupancy requirement, they could no longer do so in Wave 2.

There was a slight downturn in “social/recreational” trips in the HOV/Express Lanes, from 3% in Wave 1 to 1% in Wave 2 (t-value=-3.87, p-value=.0001), and there was also a trending down (though not statistically significant) of other discretionary trip types, such as shopping and eating out. By contrast, there was a significant increase in the proportion of commute trips reported in the Express Lanes (42%) relative to the proportion reported in the HOV-2 lanes (34%) (t-value=3.85, p-value=.0001). This suggests that respondents may be more willing to pay for a reliable trip in the case of time-constrained trips.

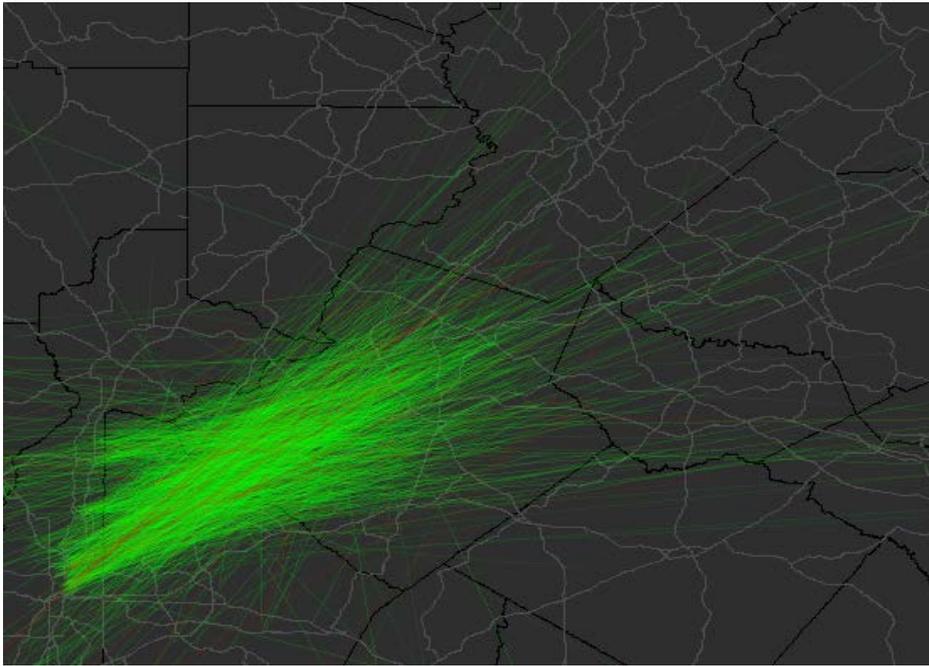
Table 26: Trip Purpose (based on trip diaries)

	I-85 Wave 1	I-85 Wave 2	HOV Lanes Wave 1	Express Lanes Wave 2
Go home	33%	36%	29%	35%
Go to primary workplace	42%	41%	34%	41%
Other work – related location	2%	3%	2%	3%
Child Care	2%	2%	4%	4%
School	1%	1%	2%	2%
Personal business	4%	4%	4%	5%
Social/recreational	2%	2%	3%	1%
Exercise/gym	2%	2%	*%	1%
Religious / community activity	0.5%	0.5%	*%	0%
Shopping	5%	3%	4%	3%
Eat out/pick up takeout	2%	2%	2%	1%
Drop off or pick up someone else	2%	2%	14%	2%
Other	2%	2%	2%	1%
Number of trips	6338	5553	426	818

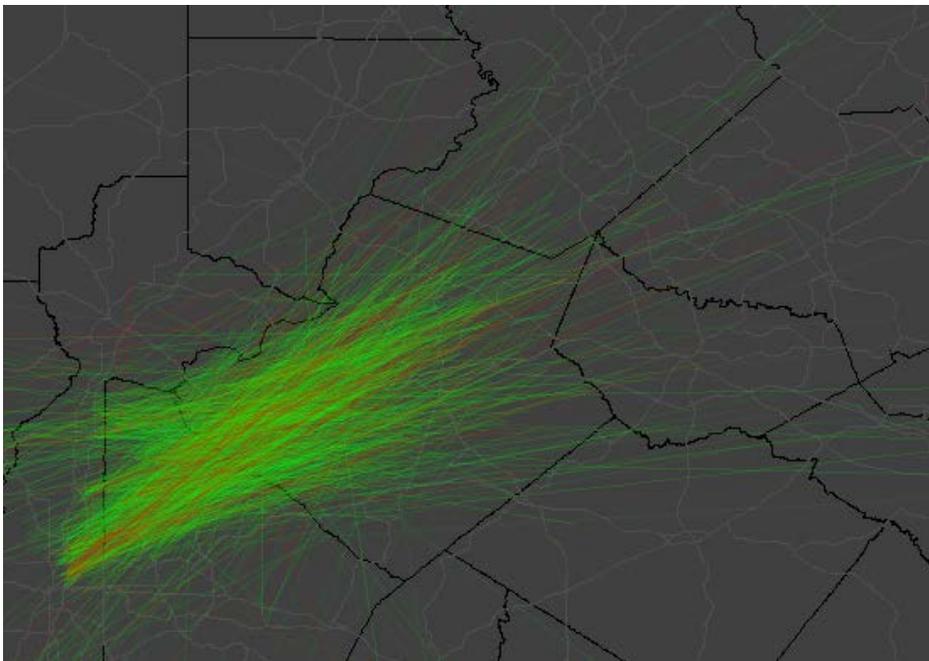
The maps on the next page (Figure 6) provide a visual representation of I-85 commute trips. A separate map is shown for each wave of the survey (pre-tolling and post-tolling), with straight lines connecting origins and destinations. The green lines represent trips that used the general purpose lanes and the red lines represent trips that used the HOV lanes (Wave 1) or the Express Lanes (Wave 2). The Wave 1 image for commute trips shows a greater density of lines overall than in Wave 2, indicating more commute trips in Wave 1 than Wave 2. In Wave 2, however, there are many more red lines (Express Lane trips) than indicated by the Wave 1 map (HOV lane trips).

Figure 6: Trips to Work: Wave 1 (top) and Wave 2 (bottom)

Wave 1: Green=General Purpose Lanes; Red=HOV Lanes



Wave 2: Green=General Purpose Lanes; Red=Express Lanes



Trip Tours

In a separate analysis, individual legs of trips were aggregated, as appropriate, into “tours.” For example, a Home-to-Work tour starts at home and ends at work, but it may consist of multiple legs, including stops at locations along the way (e.g., dry cleaners, coffee shop). The following

table describes the classification scheme used to aggregate trips into tours, and the distribution of tours for Wave 1 and Wave 2. Overall, in keeping with the decline in the number of trips across the two waves, there was also a decline in the number of tours, from 11,530 tours in Wave 1 to 10,097 in Wave 2 (12% decline). The distribution of tour types is quite similar across the waves, though work-related tours (either home-to-work or work-to-home) comprised a slightly greater share of Wave 2 tours compared to Wave 1 tours (71% vs. 68%). Again, this aligns with the finding that discretionary trip types decreased more than non-discretionary trip types (e.g. commute, other work-related).

Table 27: Distribution of Tour Types

Tour Type	Description	Wave 1	Wave 2
Discretionary	A tour of trips that starts at home, involves 1 or more non-commute trips, and ends either at home or at some other location	25%	24%
Home to Work	A tour that starts at home and ends at work, including any stops along the way	35%	36%
Work-to-Work	A tour that starts at work and ends at work (e.g., going out to lunch or running an errand during lunch)	7%	5%
Work to Home/Other	A tour that starts at work and ends either at home or at some other location, including any stops along the way	33%	35%
Total tours		11,530	10,097

The analysis that follows focuses on the core panel (those respondents who did not experience changes in their home location or work/ school location or schedule) in order to control for exogenous factors that might otherwise explain changes in travel behavior. Table 28 shows the percentage of trips for each tour type, based on the “core panel” from the Wave 2 survey.¹⁷ Home-to-work tours were most likely to include one trip (e.g., no stops along the way); more than eight-in ten of these tours (86%) went directly from home to work, with an additional 12% of these tours making just one stop. While work-to-home tours also tended to be comprised of single trips (72%), respondents were more likely to make stops on their way home (vs. their way to work). One-fifth (20%) of work-to-home tours made a stop and 6% made two stops. Discretionary tours and work-to-work tours, on the other hand, tend to be comprised of two trips (59% and 51%, respectively). In particular, discretionary tours tended to be comprised of more trips, with 28% of these tours containing three or more trips.

The findings in Wave 2 reflect the same pattern found in Wave 1. The largest difference across the waves is that work-to-home tours were somewhat more likely to be comprised of 1 trip in Wave 2 compared to Wave 1 (72% vs. 68%), indicating fewer multi-leg commute trips home in the post-pricing survey period.

¹⁷ The core panel includes those respondents who reported that they experienced no change in their work location or schedule, or in the school location or schedule of their children.

Table 28: Number of Trips per Tour Type: Wave 2

Based on the core panel

Number of Trips	Discretionary	Home-to-Work	Work-to-Work	Work-to-Home/Other
1 trip	13%	86%	41%	72%
2 trips	59%	12%	51%	20%
3 trips	17%	2%	6%	6%
4 + trips	11%	*	2%	2%
Total	100%	100%	100%	100%
Number of tours	1685	2509	360	2428

In addition, we analyzed use of I-85 (by lane) for the different tour types. For discretionary trips, the use of the corridor is very similar across the waves, with approximately two-thirds of trips occurring on roads other than I-85. For all other tour types, there was a significant increase in use of the Express Lanes over the HOV lanes. In the case of work-to-home tours, the share of trips in the Express Lanes increased from 4% to 11%, and similarly for home-to-work tours, the share more than doubled (from 4% to 9%). Work-to-Work tours were also significantly more likely to use the Express Lanes compared to the HOV Lanes (6% vs. 1%).

These data suggest that respondents are more willing to use the Express Lanes for time-constrained trips, such as commute trips. The increased use of the Express lanes for work-to-home trips is a little less intuitive; however, respondents may have other constraints on their time (such as picking up children at school or daycare or attending personal meetings) for which they are willing to pay a toll. In addition, respondents' value of time may also be high after a day at work, when they want to be able to relax and enjoy time at home.

Table 29: Use of I-85 by Tour Types

Based on the Core Panel

	Discretionary W1	Discretionary W2	Home-to-Work W1	Home-to-Work W2	Work-to-Work W1	Work-to-Work W2	Work-to-Home/Other W1	Work-to-Home/Other W2
General Purpose Lanes	33%	32%	66%	58%	34%	34%	66%	57%
HOV/Express	3%	2%	4%	9%	1%	6%	4%	11%
Non-I-85	64%	66%	30%	33%	65%	60%	30%	32%
Number of tours	1951	1685	2816	2509	594	360	2669	2428

Trip Departure Times

Another topic of investigation is the effect of pricing on the timing of trips, and whether pricing serves to shift some drivers out of the peak. For this analysis, the core panel was used – those respondents who reported that they did not experience any change in work location or schedule or in the location or schedule of their children’s school. When analyzing all I-85 trips recorded in the trip diaries by the core panel, the distribution of departure times looks fairly similar across the two waves, though there is a very slight decrease in trips departing in the AM peak and a slight increase in trips departing in the AM shoulder (9 AM – 9:59 AM) and in the midday non-peak.

When trips are isolated by lane, interesting differences emerge. For general purpose lane trips, there was a decrease in AM peak hour trip departures (19.3% Wave 1 vs. 17.6% Wave 2) and slight shifts into the AM shoulder periods. In addition, there was an increase in midday non-peak trips (10.0% to 11.3%). The changes during the PM period (including very small declines in both the peak and the shoulders) were less pronounced than changes measured for AM trips. Given respondents’ comments about the increased traffic congestion on I-85, these data suggest that some general purpose lane users sought to adjust their trip timing to avoid the most congested times of day. As described below in the report, the most frequent travel behavior change reported by respondents is “changed trip departure time to avoid congestion in the I-85 regular lanes” (53% said they do so “often” or “sometimes”).

For Express Lane trips, there was a significant increase in the proportion of trips occurring during the AM peak (from 18.1% to 24%), and a decline in trips occurring in the early shoulder period, between 6 AM and 7 AM (18.5% in Wave 1 and 14.3% in Wave 2). During the PM period, the shifts were less dramatic; nonetheless, there was a small increase in trips made during the peak as well as during the later shoulder period (6:00-6:59 PM), when traffic conditions are still likely to be congested. Also of note was the decrease in the number of Express Lane trips (relative to HOV lane trips) during the midday non-peak hours (from 8.6% in Wave 1 to 5.4% in Wave 2). It makes sense that during off-peak hours, drivers are less willing to use the Express Lanes and pay a toll, given the generally less congested conditions.

Table 30: Trip Departure Times (trip diaries)

Based on the core panel

Trip Departure Time	All I-85 trips Wave 1	All I-85 trips Wave 2	General Purpose Lane Trips Wave 1	General Purpose Lane Trips Wave 2	HOV/Express Lane Trips Wave 1	HOV/Express Lane Trips Wave 2
Midnight – 5:59 AM	6.8%	6.3%	7.0%	6.8%	3.5%	3.9%
6 – 6:59 AM (shoulder)	15.4%	15.2%	15.1%	15.4%	18.5%	14.3%
7 AM - 8:59 AM (peak)	19.2%	18.6%	19.3%	17.6%	18.1%	24.0%
9 – 9:59 AM (shoulder)	3.1%	3.6%	3.0%	3.6%	4.1%	4.1%
10 AM – 2:59 PM (midday non-peak)	9.9%	10.4%	10.0%	11.3%	8.6%	5.4%
3 – 3:59 PM (shoulder)	8.1%	7.3%	8.1%	7.4%	8.1%	6.6%
4 -5:59 PM (peak)	24.0%	24.4%	23.7%	23.3%	28.3%	30.5%
6 – 6:59 PM (shoulder)	6.7%	6.7%	6.8%	6.4%	5.5%	8.1%
7 – 11:59 PM	6.8%	7.5%	6.9%	8.2%	5.2%	3.2%
	Chi-sq=18.4 p-value=.02	Chi-sq=18.4 p-value=.02	Chi-sq=37.3; p-value= <.0001	Chi-sq=37.3; p-value= <.0001	Chi-sq=54.54; p-value<.0001	Chi-sq=54.54; p-value<.0001

The histograms below illustrate changes in trip departure times for HOV lane trips compared to Express Lane trips and show the overall increase in trips made in the Express Lanes versus the HOV lanes. Both the HOV Lanes and the Express Lanes were used most during the peak period, and this is particularly true for Express Lane trips. In the morning, there appears to be multiple peaks for Express Lane trips, compared to a single more pronounced peak for HOV trips.

Figure 7: Wave 1 HOV Trip Departure Times (Core Panel)

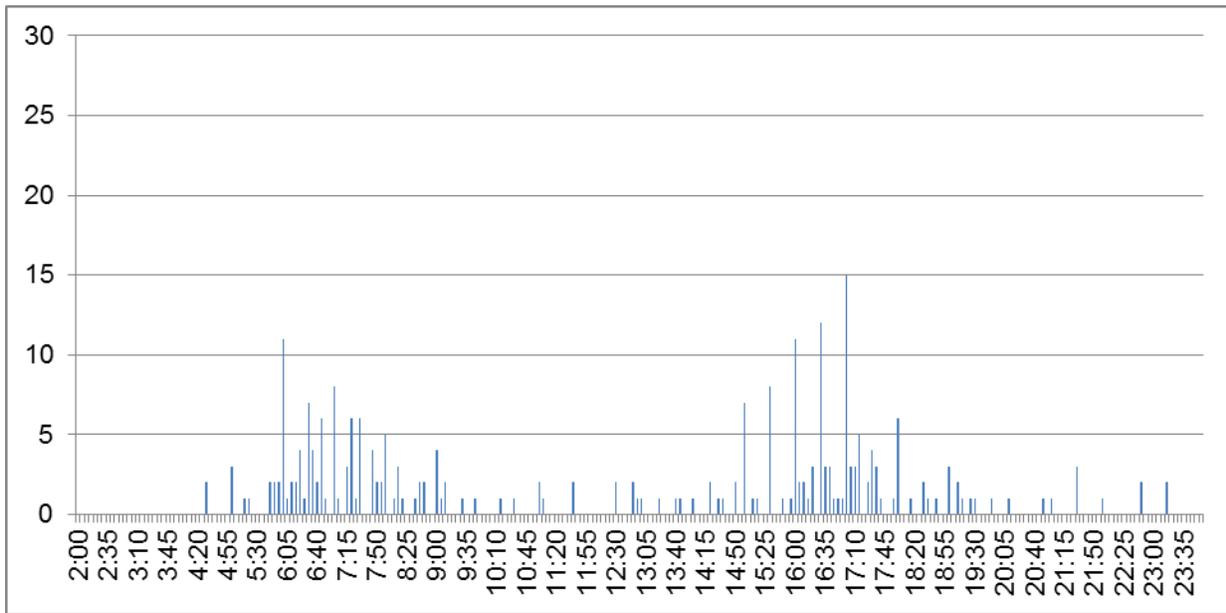
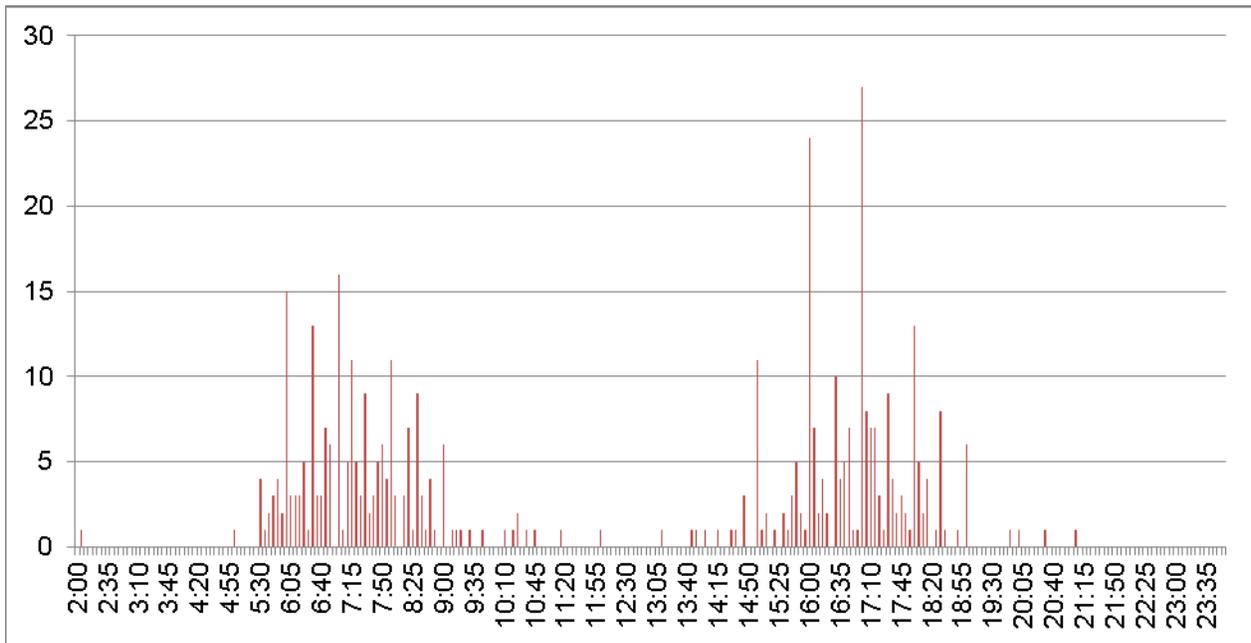


Figure 8: Wave 2 Express Lanes Trip Departure Times (Core Panel)



Change in Trip Duration

In addition, analysis was conducted to assess changes in travel time for trips that used I-85. The travel diary data are not ideal for this purpose, since the travel times presented in this section are travel times for the entire trip (origin to destination), only some portion of which was

on I-85. Moreover the reporting of trip start and end times was in 5 minute increments, which limits the precision of travel time estimates.

In the first set of analyses, overall peak hour travel times were compared for the general purpose lanes across the two waves. There was little difference across the two waves, with travel times increasing somewhat during the PM peak (from 51.12 minutes to 52.69 minutes). Looking only at trips 90 minutes or less in duration, travel times during the AM and PM peak were essentially unchanged¹⁸. Express Lane trips were not compared to HOV lane trips; there were so many more Express Lane trips reported than HOV trips, that the data are not comparable (without taking trip distance into account).

Table 31: Change in Mean Travel Times During the AM and PM Peak (in minutes)

	Peak Hour Trips - Wave 1	Peak Hour Trips - Wave 2	Peak Hour Trips, 90 minutes or less in duration - Wave 1	Peak Hour Trips, 90 minutes or less in duration - Wave 2	T-test (< 90 minute trips)
General Purpose Lane Trips, 7-9 AM	53.19 (N=988)	53.37 (N=725)	48.75 (N=951)	48.64 (N=684)	Not significant
General Purpose Lane Trips, 3-7 PM	51.12 (N=1893)	52.69 (N=1476)	48.75 (N=1813)	48.67 (N=1400)	Not Significant

In a second set of analyses, the analysis was limited to the core panel who made the same commute trips in both waves; in this way, it was possible to rule out differences in travel time that were due to changes in work location or schedule. Among I-85 morning commute trips, there was no change in mean travel time, and similarly for peak hour morning trips (7-9 AM), there was no difference across the waves.

¹⁸ We looked at trips 90 minutes or less in order to remove outliers and to remove trips that likely spent a smaller portion of their overall trip time on I-85.

Table 32: Change in Mean Commute Time for the Core Panel (in minutes)¹⁹

	All morning trips - Wave 1	All morning trips - Wave 2	Trips Departing 7-9 AM - Wave 1	Trips Departing 7-9 AM - Wave 2
Mean Travel Time for commute trips	40.43	40.54	39.67	39.77
Number of trips	786	786	366	357

Self-Reported Changes in Travel due to Tolling

In a separate series of questions, respondents who typically make at least one trip per week on I-85 were asked the frequency with which they have changed their travel as a result of tolling on the I-85 Express Lanes. More specifically, the list of items included:

- Carpooled/vanpooled on I-85 instead of driving alone
- Rode a public bus instead of driving
- Changed trip departure time to avoid congestion in the I-85 regular lanes
- Took a different route/road to avoid using I-85
- [if employed] Telecommuted instead of traveling to work on I-85
- Made planned trip less frequently
- Changed my destination to avoid traveling on I-85
- Timed my I-85 Express Lanes trip to avoid higher toll rates
- Switched to I-85 Express Lanes instead of using another road
- Decided not to make the trip at all

The purpose of this question was to gauge more generally how tolling has affected travel in the corridor, as self-reported by respondents. Respondents were most likely to change their trip departure to avoid congestion on the I-85 regular lanes, with 27% doing so often and 26% sometimes. Thirteen percent of respondents reported often taking a different route to avoid using I-85, and another 27% said they do so sometimes. For the other travel behavior items, significantly fewer respondents indicated they ever made such a change, with a majority reporting “never.” Approximately 20% either sometimes or often: telecommuted instead of traveling to work on I-85; made a planned trip less frequently; or changed their destination to avoid traveling on I-85.

¹⁹ Commute trips longer than 90 minutes in duration were excluded from this analysis.

Table 33: Frequency of Travel Behavior Changes due to I-85 Tolling

	Often	Some-times	Rarely	Never	Not applicable
Changed trip departure time to avoid congestion in the I-85 regular lanes	27%	26%	10%	32%	4%
Took a different route to avoid I-85	13%	27%	14%	42%	4%
[if employed] Telecommuted instead of traveling to work on I-85	7%	11%	8%	63%	11%
Made planned trip less frequently	5%	14%	14%	58%	9%
Changed my destination to avoid traveling on I-85	5%	14%	13%	61%	6%
Timed my I-85 Express Lanes trip to avoid higher toll rates	5%	5%	5%	68%	17%
Switched to I-85 Express Lanes instead of using another road	4%	8%	6%	74%	7%
Carpooled vanpooled on I-85 instead of driving alone	4%	4%	6%	78%	8%
Rode a public bus instead of driving	3%	2%	4%	85%	7%
Decided not to make the trip at all	2%	13%	14%	65%	7%

Socio-Demographic Profile of Express Lane Users

Analysis was conducted to assess the socio-demographic profile of regular Express Lane users (e.g., make one or more trips per week on the Express Lanes), as compared to the overall composition of the sample. In general, Express Lane users were somewhat more likely to be comprised of males (47% vs. 44% of the sample) and between the ages of 35 -54 (61% vs. 54% of the sample), with a smaller share of respondents who are 55+ years of age. In addition, Express Lane users were less likely to be comprised of the least educated (5% vs. 9% of the sample) and lower income respondents (9% vs. 14% of the sample).

Respondents who did not make weekly trips on I-85 tended to be disproportionately female (63% vs. 56% of the sample), and were more likely to be comprised of both the very youngest age group (6% vs. 3% of the sample) and the oldest age group (8% vs. 4% of the sample). This group also had a relatively greater share of the least educated (16% vs. 9% of the sample), and had a smaller share of one-person households (6% vs. 19% of the sample).

Table 34: Socio-demographic Profile of Corridor Users²⁰

	Total	1+ weekly trips in Express Lanes ²¹	1+ Weekly Trips in General Purpose Lanes (no weekly Express Lane trips)	No weekly I-85 Trips
Gender:				
Men	44%	47%	46%	37%
Women	56%	53%	54%	63%
Age:				
18-24	3%	2%	2%	6%
25-34	20%	22%	20%	20%
35-44	28%	32%	28%	24%
45-54	26%	29%	26%	23%
55-64	19%	14%	20%	19%
65+	4%	2%	4%	8%
Race:				
White	74%	77%	71%	77%
Black	14%	12%	17%	9%
Asian	9%	8%	8%	10%
Other	3%	2%	4%	3%
Education:				
HS Grad or less	9%	5%	7%	16%
Vocational/Technical	3%	2%	3%	4%
Some College	16%	16%	15%	18%
Associates	6%	6%	6%	6%
Bachelors	41%	43%	43%	36%
Graduate	26%	27%	27%	21%
Household Income:				
Less than \$50,000	14%	9%	16%	12%
\$50,000-\$74,999	18%	17%	19%	16%
\$75,000-\$99,999	21%	20%	21%	21%
\$100,000- \$149,999	23%	25%	20%	25%
\$150,000+	12%	15%	9%	14%
Refused	13%	13%	15%	12%
Household Size:				
1	19%	21%	25%	
2	35%	33%	34%	37%
3	20%	19%	19%	24%
4	17%	17%	15%	21%
5+	9%	10%	7%	12%

²⁰ For each socio-demographic measure, the chi-square test was statistically significant.

²¹ Based on individuals' self-reported behavior, when asked how many total trips they make on I-85 in a typical week, and how many of these trips are in the Express Lanes.

Further analysis was conducted to compare changes in use of the HOV lanes vs. the Express Lanes among different socio-demographic groups. When comparing HOV use to Express Lane use by age, for example, there was a significant drop-off among the oldest respondents (-11 percentage points), and a smaller decrease in use among those who are 25-34 years old (-4 percentage points). The only age group that increased its use was 45-54 year olds (+3 percentage points).

Regarding race, there was also a differential decline in the use of the Express Lanes (vs. the HOV lanes). In Wave 1, 26% of Asians reported weekly usage of the HOV lanes, compared to 19% who use the Express Lanes. Similarly, among blacks, there was a 7 percentage point decline in usage of the lane (24% HOV lanes vs. 17% Express Lanes). Among whites, however, usage remained consistent across the waves (20% HOV Lanes vs. 21% Express Lanes).

When looking across waves at how HOV vs. Express Lane usage has changed by education, there was a decline in use among those with a high school degree or less (-4 percentage points), but at the same time there was an increase in reported usage among those who have completed vocational/technical training (+4 percentage points) or who have an Associate's Degree (+4 percentage points). Interestingly, use of the Express Lanes (relative to the HOV lanes) was down slightly among those who have a Bachelor's Degree (-3 percentage points).

By income groups, there was a significant decline in usage of the Express Lanes among those earning \$75,000 to \$99,999 in annual household income (-5 percentage points), and a significant increase among the wealthiest respondents (+4 percentage points). In both waves of the survey, the lower income were less likely than the upper income to use the HOV/Express Lanes, and across the two waves there is a only 2 percentage point decline in usage among this group.

In terms of household size, there are two significant shifts. Among one-person households, only 11% reported using the HOV lane in Wave 1, compared to 22% who indicated using the Express Lanes. In 2-, 3- and 4-person households, there was a decline in Express Lane usage relative to HOV use, particularly for three-person households (-7 percentage points).

Table 35: Use of the HOV and Express Lanes by Socio-demographic Groups

	1+ weekly trips in HOV Lanes (Wave 1) ²²	1+ Weekly Trips in Express Lanes (Wave 2)	Difference (percentage points)	Number of respondents
Gender:				
Men	22%	21%	-1	1289
Women	20%	19%	-1	1636

²² Based on individuals' self-reported behavior, when asked how many total trips they make on I-85 in a typical week, and how many of these trips are in the Express Lanes.

	1+ weekly trips in HOV Lanes (Wave 1) ²²	1+ Weekly Trips in Express Lanes (Wave 2)	Difference (percentage points)	Number of respondents
Age:				
18-24	12%	12%	0	85
25-34	25%	21%	-4	593
35-44	23%	23%	0	812
45-54	20%	23%	+3	755
55-64	16%	14%	-2	547
65+	21%	10%	-11	133
Race:				
White	20%	21%	+1	2164
Black	24%	17%	-7	404
Asian	26%	19%	-7	251
Other	26%	14%	-12	97
Education:				
HS Grad or Less	16%	12%	-4	257
Vocational/ Technical	13%	17%	+4	85
Some College	19%	20%	+1	467
Associates	17%	21%	+4	166
Bachelors	24%	21%	-3	1195
Graduate	21%	21%	0	755
Household Income:				
Less than \$50,000	16%	14%	-2	399
\$50,000-\$74,999	21%	19%	-2	518
\$75,000-\$99,999	24%	19%	-5	609
\$100,000-\$149,999	21%	22%	+1	661
\$150,000+	22%	26%	+4	324
Household Size:				
1	11%	22%	+11	566
2	23%	19%	-4	1017
3	26%	19%	-7	597
4	23%	20%	-3	490
5+	20%	22%	+2	255

Use of I-85 and the Express Lanes: a Spatial Analysis by Home Location

Based on respondents' self-reported use of I-85 and the Express Lanes (e.g., the number of trips made on each facility in a typical week), we generated a series of maps highlighting use by respondents' home zip code. Figure 9 presents the typical number of weekly I-85 trips per respondent by home zip code (the striped zip code areas have fewer than 30 respondents). Not surprisingly, respondents living in zip codes clustered around the corridor tend to use I-85 more heavily. In addition, respondents who live further out, namely northeast of the corridor, tend to be frequent I-85 users (but please note the small sample sizes in these zip codes).

Figure 9: Weekly I-85 Trips Per Respondent by Home Zip Code

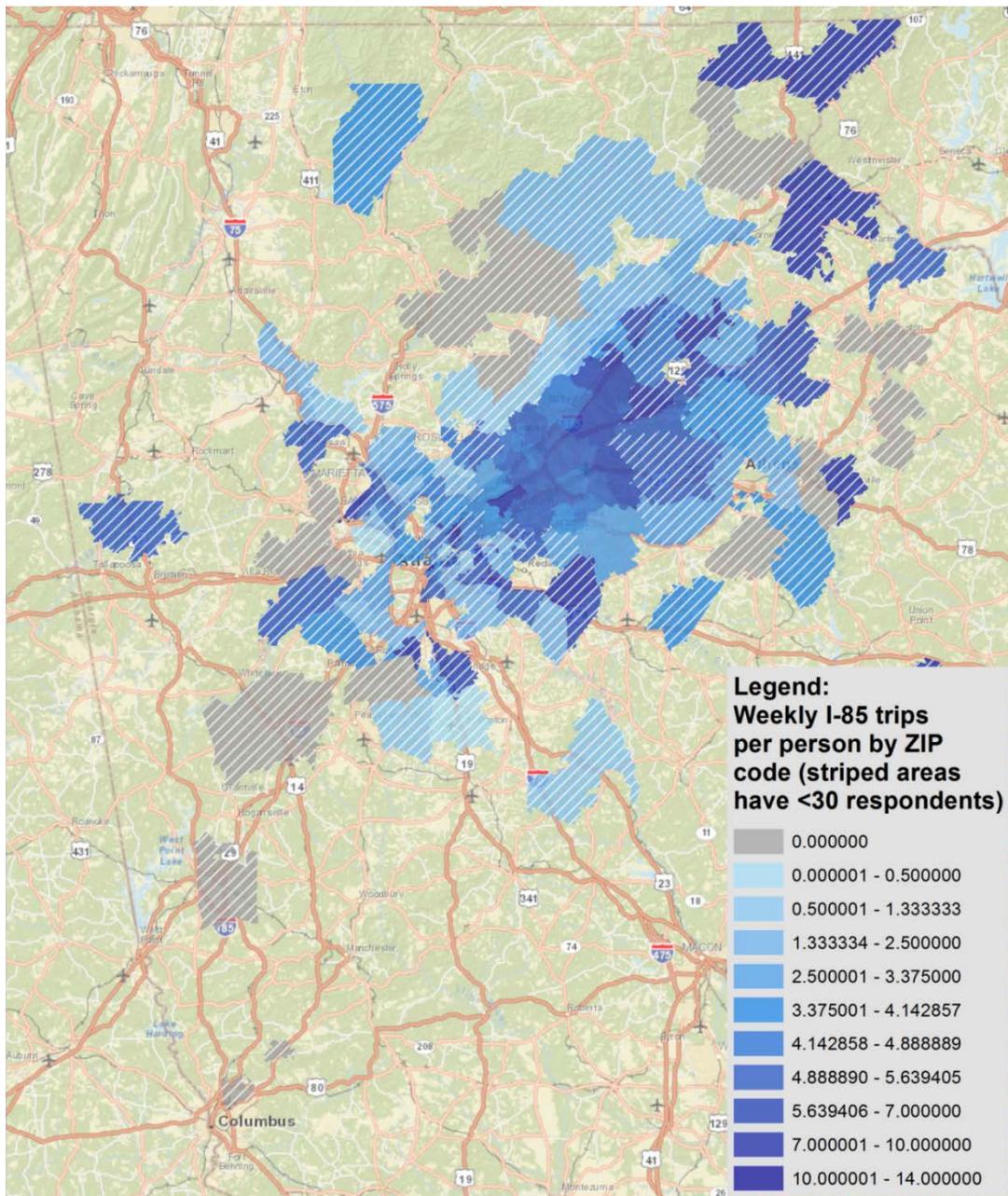
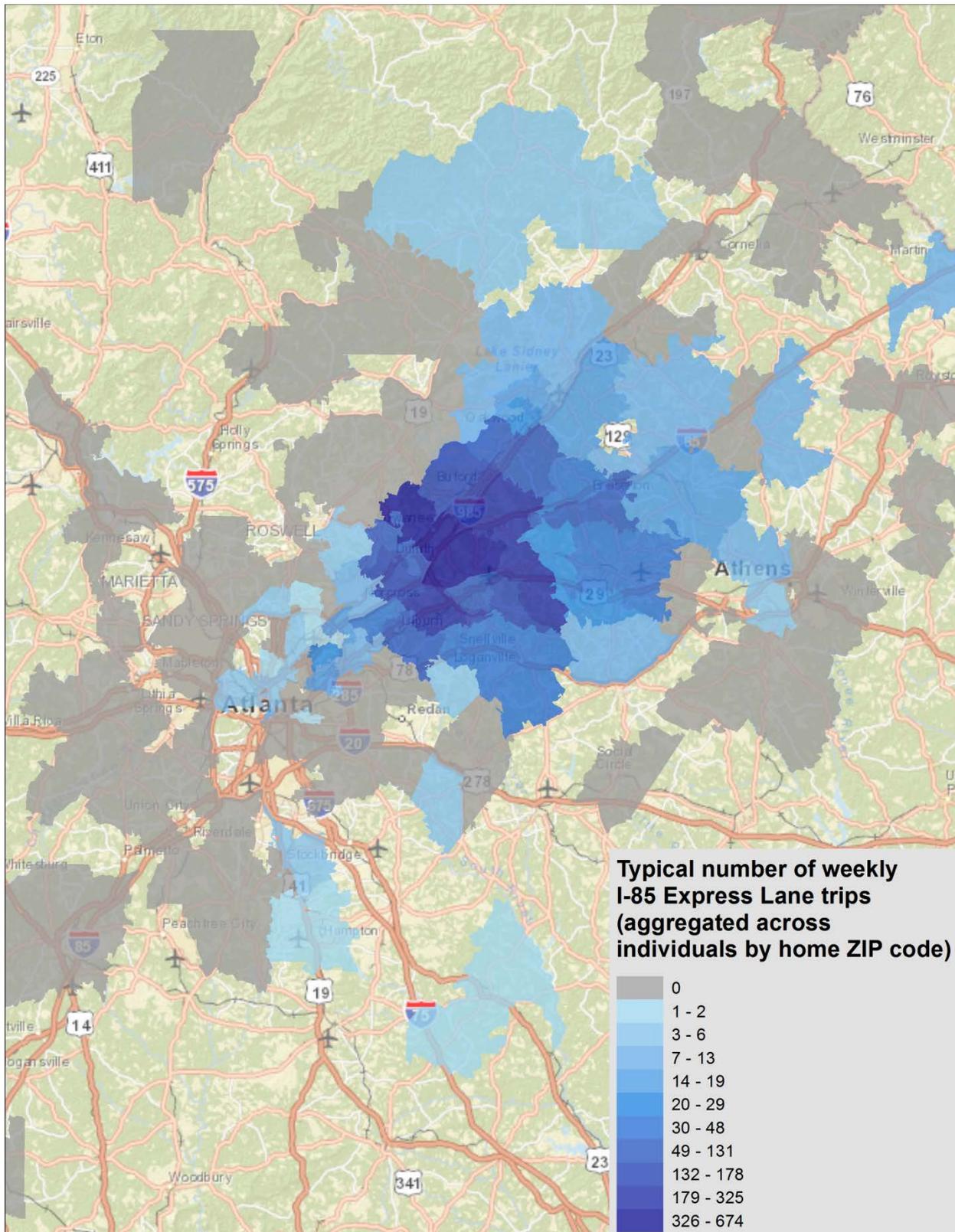


Figure 10 illustrates respondents' typical number of weekly Express Lane trips (self-reported), aggregated by home zip code. Similar to the map of I-85 trips, the greatest number of trips occurred among respondents who live in the northern portion of the corridor, as well as northeast of the corridor, including the cities and towns of:

- Lawrenceville
- Suwanee
- Buford
- Dacula
- Duluth
- Buford
- Hoschton
- Flowery Branch
- Lilburn

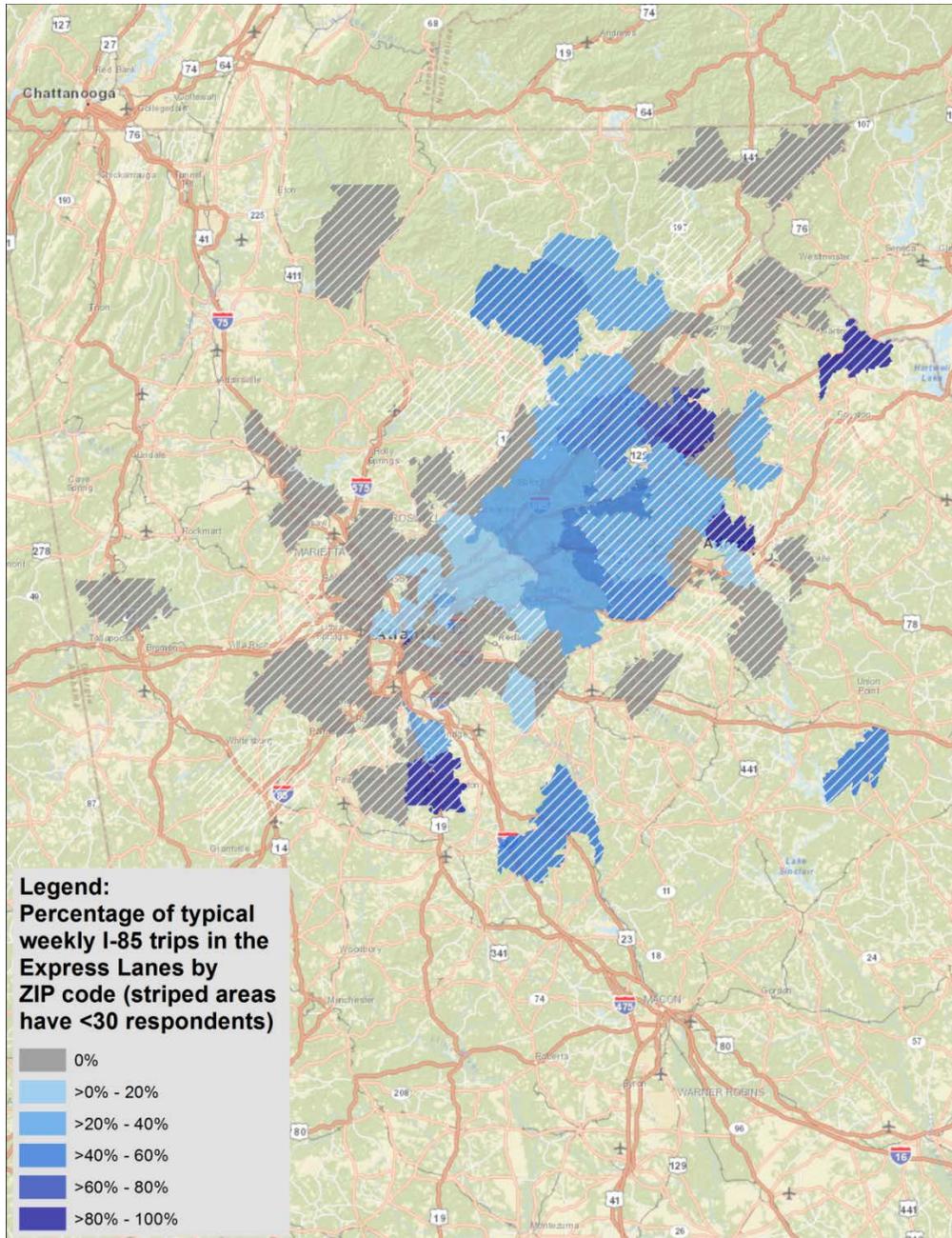
These cities and towns accounted for approximately 82% of weekly Express Lanes trips.

Figure 10: Total Number of Typical Weekly Express Lane Trips by Home Zip Code



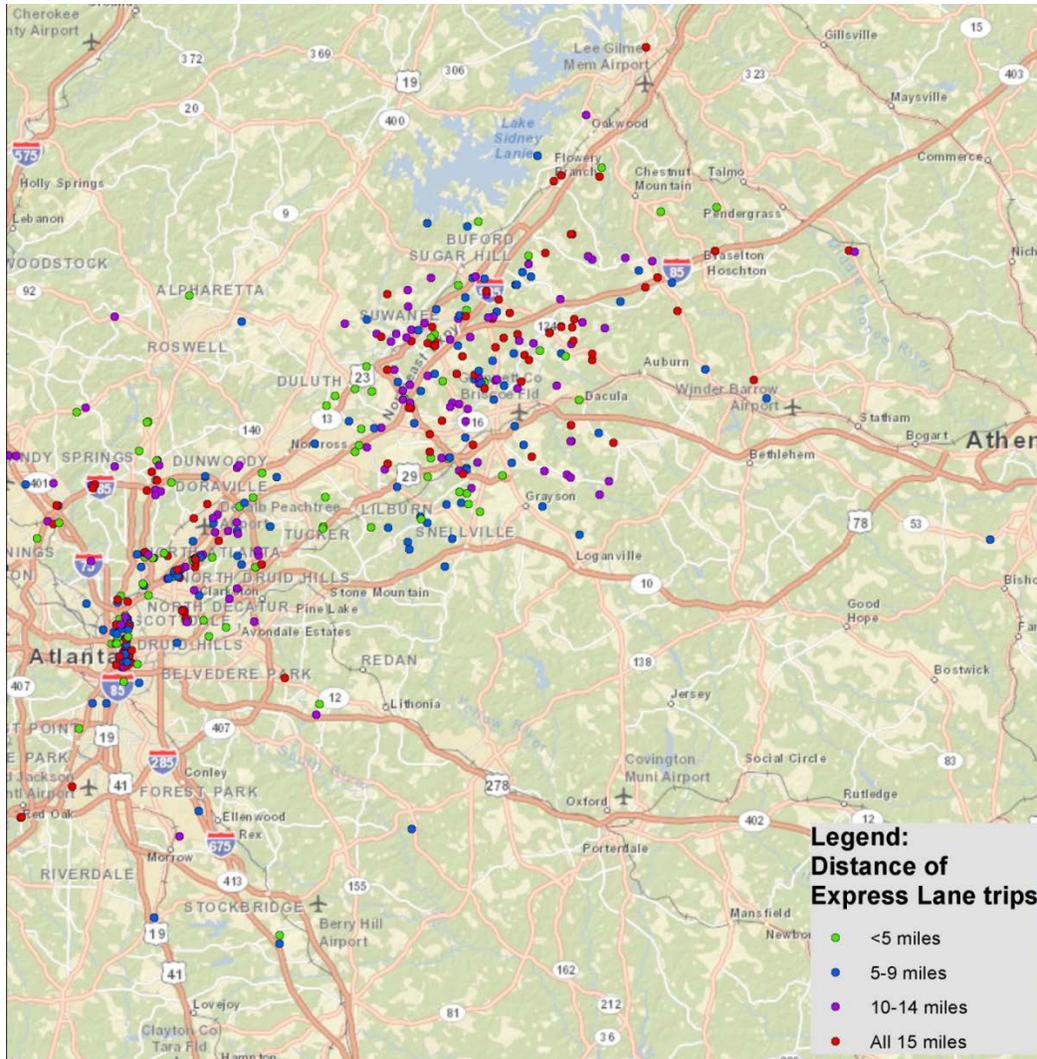
In addition, Figure 11 shows respondents' typical number of Express Lane trips, as a share of their I-85 trips, aggregated by home zip code (striped areas have less than 30 respondents). This analysis reveals that respondents who made a large share of their I-85 trips in the Express Lanes live farther out from the corridor. Respondents who used the Express Lanes for 60% or more of their I-85 trips live in the towns of Lavonia, Hampton, Maysville, Norcross, Atlanta, Athens, Gillsville, White Plains, and Dahlonega (it should be noted that the sample sizes from these towns are relatively small).

Figure 11: Share of Weekly I-85 Trips in the Express Lanes, by Home Zip Code



For each trip recorded in the Express Lanes, respondents were also asked about the distance for which they used the Express Lanes (less than 5 miles, 5-9 miles, 10-14 miles, all 15 miles). Overall, the distribution was quite even, with somewhat fewer trips traveling in the Express Lanes for a short distance. Nineteen percent of trips traveled less than 5 miles on the Express Lanes; 28% traveled 5 to 9 miles; 29% traveled 10-14 miles; and 24% traveled the entire length of the corridor in the Express Lanes. Not surprisingly, respondents who live farther out tended to travel in the Express Lanes for longer distances.

Figure 12: Distance Traveled on the Express Lanes by Home Zip Code



Relationship between Workplace Flexibility and Use of the Express Lanes

A question on schedule flexibility was included in the survey to test the hypothesis that those who have no schedule flexibility may be more likely to use the Express Lanes (compared to those who have flexibility), due to the greater travel reliability provided by the Express Lanes. In both waves of the survey respondents were asked:

Which of the following statements best describes your work/school schedule:

- I have no flexibility in my schedule
- I have some flexibility to adjust my schedule, within about 30 minutes
- I'm pretty much free to adjust my work schedule as I like

In both waves of the survey, approximately one-third (34% in Wave 1 and 32% in Wave 2) had no schedule flexibility, four-in-ten had moderate flexibility (43% in Wave 1 and 45% in Wave 2), and approximately one-quarter had total flexibility (23% in Wave 1 and Wave 2). Among those with no schedule flexibility, nearly all respondents indicated that they were constrained by their work schedule (94%), whereas only 8% indicated that they were constrained by their personal schedule.

The hypothesis that respondents with no schedule flexibility would be more likely to use the Express Lanes is not borne out by the data, and in fact, the reverse appears to be true. Among respondents who reported having no schedule flexibility, 17% used the Express Lanes. This compares to 25% among those with moderate flexibility and 23% among those with total flexibility.

Table 36: Relationship between Workplace Flexibility and Corridor Use

	No flexibility – W1	No flexibility – W2	Moderate Flexibility (+/- 30 minutes) – W1	Moderate Flexibility (+/- 30 minutes) – W2	Total Flexibility – W1	Total Flexibility – W2
One or more of weekly I-85 trips is in the HOV/Express Lanes	18%	17%	24%	25%	22%	23%
One or more weekly trips on I-85 (but not HOV/Express Lanes)	59%	56%	65%	58%	62%	54%
No weekly trips on I-85	22%	27%	11%	17%	16%	23%
Total percentage	100%	100%	100%	100%	100%	100%

Additional analysis shows that schedule flexibility increases with household income. Lower income respondents (less than \$50,000 in annual household income) tend to have either no schedule flexibility (45%) or moderate flexibility (40%), with very few having total flexibility (15%). By contrast, among households earning \$150,000 or more in income, 23% have no schedule flexibility, 46% have moderate flexibility and 31% have total flexibility. Consequently, for those with no schedule flexibility, income may be a driving factor in their lower level of use of the Express Lanes.

To further explore possible relationships between flexibility and trip-making behavior, we assessed whether trip departure time (AM and PM peak hour) shifted from Wave 1 to Wave 2 for core panel members who had no flexibility in their schedule (the same analysis was performed for core panel members with moderate flexibility as well as core panel members with total flexibility). This analysis did not reveal any significant relationship between flexibility and trip departure time across the two survey waves.

Peach Pass and Transportation Costs

Overall, 34% of the households in the sample had one or more Peach Passes (or Cruise Cards), with 17% reporting one transponder, 14% two transponders and 3% reporting 3 or more transponders. The remainder of the households in the sample – 66% – indicated they had no transponder.

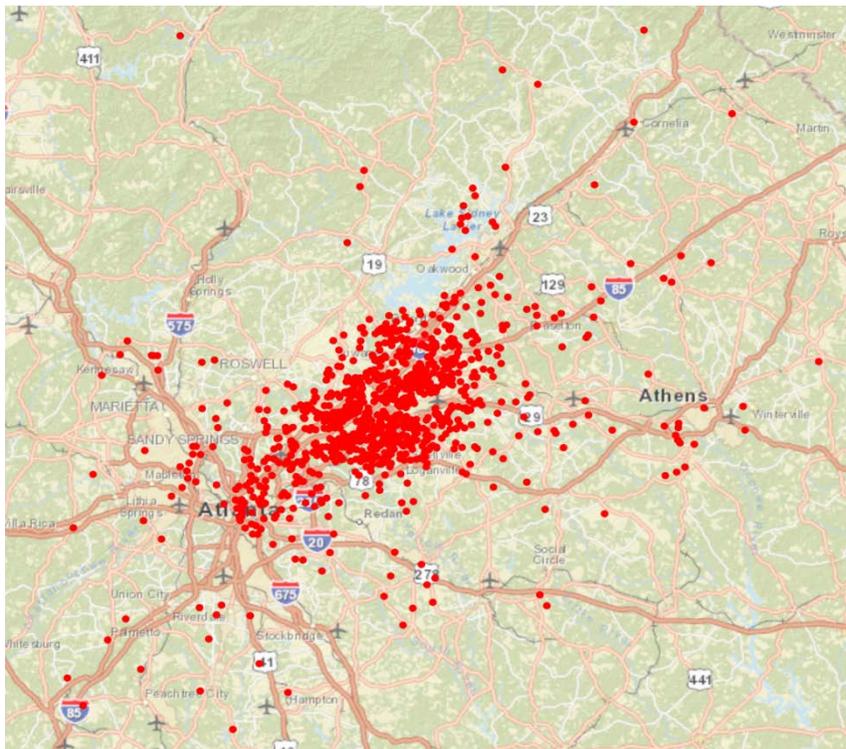
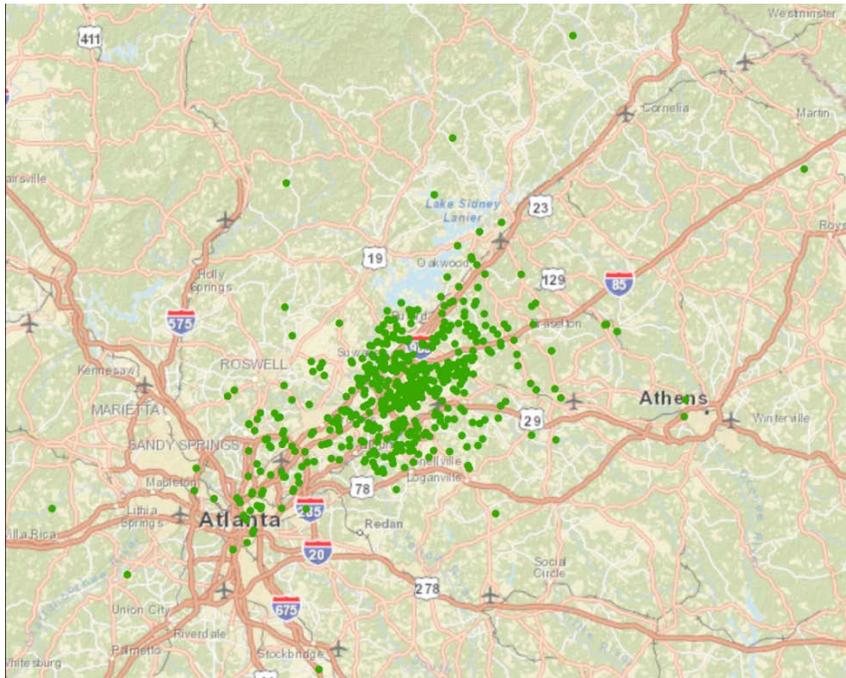
Rates of peach pass ownership differed significantly by household income. Only 20% of households in the lowest income category (less than \$50,000 in annual household income) had a Peach Pass, and similarly, only 24% of households earning between \$50,000 and \$75,000 in annual income had a Peach Pass. By contrast, 34% of households that earn between \$75,000 and \$99,999 had a Peach Pass and among households in higher income brackets (\$150,000 or greater), 48% had a Peach Pass.

Table 37: Peach Pass Ownership by Annual Household Income Level

Number of Transponders	Less than \$50,000	\$50,000-\$74,999	\$75,000-\$99,999	\$100,000-\$149,999	\$150,000 or more
0	80%	76%	66%	59%	52%
1	13%	14%	18%	20%	15%
2	6%	9%	12%	17%	27%
3+	1%	*	4%	4%	6%

Figure 13 illustrates the home locations of households with and without a Peach. As the maps demonstrate, there were fewer households with a Peach Pass than without one. In addition, the households with a Peach Pass tended to be concentrated a little more tightly around the corridor and were more likely to reside in the northern portion of the corridor and north of the corridor. There was also a higher concentration of Peach Pass households east of the corridor compared to west of the corridor.

Figure 13: Households with a Peach Pass (top) and Households without a Peach Pass (bottom)



Households were fairly evenly split between those who obtained their Peach Pass before tolling (46%) and those who obtained it after tolling began (52%). Two percent could not recall when they purchased the transponder.

Using a seven-point scale²³, respondents were asked to rate their satisfaction with different aspects of their Peach pass account, including:

- Opening and setting up your Peach Pass account
- Managing your Peach Pass account
- Changing your “toll mode” status (changing from “toll” when driving alone to “non-toll” when driving in a 3+ person carpool)

Overall, 76% of respondents were satisfied with their experience opening and managing their account (combined very satisfied, satisfied, and somewhat satisfied), with 25% being “very satisfied.” Only 11% of respondents indicated any level of dissatisfaction.

On the dimension of managing their account, the findings are very similar: 72% were satisfied, with 23% being very satisfied, and only 10% were dissatisfied. With regard to changing their toll mode status, 43% of respondents responded “Not Applicable,” which suggests that a significant plurality have never switched their status (this aligns with findings from the Battelle National Evaluation). Among those who provided a rating, satisfaction only marginally outweighed dissatisfaction.

Table 38: Satisfaction with Peach Pass Account among households with one or more transponders

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied	NA
Opening & setting up your account	2%	4%	5%	10%	12%	39%	25%	3%
Managing your account	2%	3%	5%	13%	12%	37%	23%	5%
Changing your toll mode status	9%	5%	6%	12%	4%	15%	6%	43%

Respondents who had not purchased a Peach Pass were asked to select the reasons why. The top three reasons cited included the cost of the toll, insufficient use of the toll roads, and general opposition to tolling.

²³ The response scale for this question was as follows: Very Dissatisfied, Dissatisfied, Somewhat Dissatisfied, Neutral, Somewhat Satisfied, Satisfied, Very Satisfied, Not Applicable.

Table 39: Reasons for Not Obtaining a Peach Pass

Multiple responses allowed

Reason for not obtaining a Peach Pass	Percentage
Tolls are too expensive	42%
Don't use toll roads often enough	40%
Against tolling, in general	39%
Unwanted prepayment	19%
Unwanted automatic charges	15%
Don't want another account	11%
Insufficient time to set up account	8%
Privacy concerns	7%
Other reasons	18%
Number of Households	1,122

In the “other” category, respondents were able to write in their own response. Many of the comments were against tolling, in general, as expressed by the following respondent:

- *“The toll lane has already been paid for with tax money. Paying the toll is a double-taxation.”*
- *“Against entire 'pay/privilege' toll lanes”*

A number of respondents bemoaned the loss of the HOV2 lane:

- *“I do not think it is reasonable for two or more passengers to pay a toll on I-85 when it was free two years ago”*

Other respondents indicated that they drive a reverse commute or during hours when there is little traffic congestion, so they do not need a Peach Pass. In addition, for several respondents the registration requirements or process appeared to be a barrier, as expressed by the following comments:

- *“It's complicated”*
- *“Confusing rules.”*

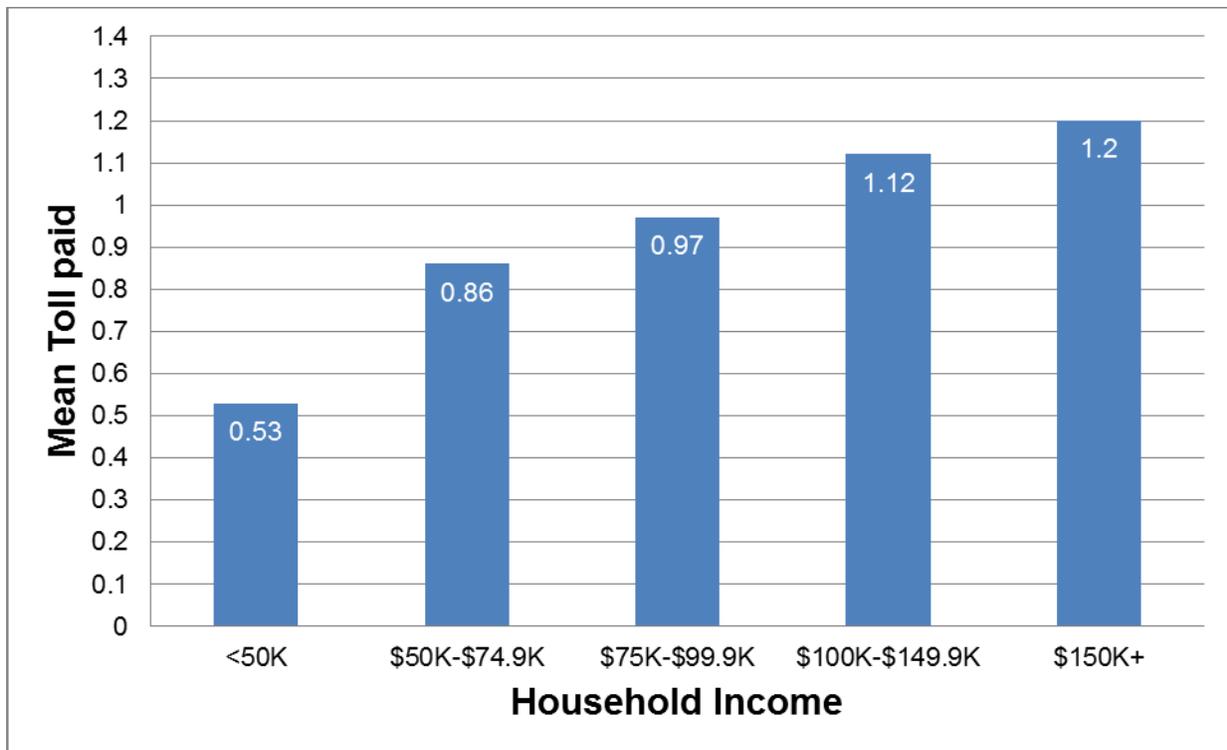
In terms of transportation costs, 15% of household incurred a toll cost over the 2-day survey period, while the large majority of households (85%) did not. Overall, six percent of households paid \$3 or less in tolls over the 2 days, 4% of households paid between \$3.50 and \$6.00, 2% paid between \$6.50 and \$10 and 3% of households paid more than \$10 in tolls (the maximum was \$23) over the 2 day period.

Table 40: Distribution of Tolls Paid

Tolls Paid	Overall (both days)
No toll paid	85%
50 cents - \$1.50	3%
\$2.00 - \$3.50	3%
\$4.00-\$6.00	4%
\$6.50 - \$10.00	2%
More than \$10	3%

Given the greater use of the Express Lanes by higher income individuals, it is not surprising that the mean toll paid increased with income.

Figure 14: Mean Toll Paid (in Dollars) by Household Income Level



Effects of Employer Reimbursement for Tolls

Employed respondents were asked whether their employers offered toll reimbursements, and whether or not they used this benefit. The working hypothesis is that employees who are offered toll reimbursement are more likely than those who are not offered such benefits to use the Express Lanes. In response to the question, 90% of employed respondents indicated they were not offered toll reimbursement, 9% didn't know, and 1.5% were offered a partial or total toll reimbursement. Two-thirds of those who were offered the benefit used it.

Given the small sample of respondents who were offered a toll reimbursement benefit, it is not possible to draw any reliable conclusions from the data. However, the data suggest that a positive relationship exists between the availability of this benefit and use of the Express Lanes. Among the 40 respondents who were offered toll reimbursement, 46% reported weekly usage of the Express Lanes. Among those who were not offered any form of toll reimbursement, 22% reported weekly usage of the Express Lanes.

Trip Satisfaction

An important objective of this study was to measure changes in trip satisfaction due to the road pricing on I-85. Travelers who either drove or took public transportation on I-85 were asked to rate their level of satisfaction with different aspects of their trips. For each I-85 trip, drivers were asked to rate their travel speed, driving time, and the predictability of their driving time. In addition, respondents who used transit were asked to rate travel time, the wait time at your stop, reliability of the service and availability of seating. The following 7-point response scale was utilized for each measure:²⁴

- Very satisfied
- Satisfied
- Somewhat satisfied
- Neutral
- Somewhat dissatisfied
- Dissatisfied
- Very dissatisfied

The results are presented separately for driving trips and transit trips.

Driving Trips

Since pricing is supposed to provide the greatest benefits during congested times of day, this analysis focused on driver satisfaction for trips occurring during the AM peak period (defined as trips departing between 7 AM – 9 AM). One important finding is that on all three measures, dissatisfaction tended to outweigh satisfaction – both before and after pricing.

For general purpose lane trips, nearly 60% of trips were rated as unsatisfactory with regard to travel time and travel speed in both Wave 1 and Wave 2, and there is no statistically significant difference in the distribution of ratings across the two waves for these measures. On predictability, there was a statistically significant difference in the distribution of ratings, though the shifts between the waves do not appear very meaningful. The largest change was an increase in the percent of trips rated as “somewhat dissatisfied” (from 12% in Wave 1 to 16% in Wave 2).

²⁴ For the purposes of summarization, “satisfactory” trips are defined as trips in which the respondent was either “very satisfied”, “satisfied” or “somewhat satisfied.” Conversely, “unsatisfactory” trips are trips in which the respondent was either “very dissatisfied,” “dissatisfied,” or “somewhat dissatisfied.”

Table 41: Satisfaction with AM Peak Hour I-85 General Purpose Lane Trips

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Travel Time: Wave 1	20%	22%	18%	10%	10%	15%	4%
Travel Time: Wave 2	19%	22%	19%	9%	11%	17%	5%
Travel Speed: Wave 1	20%	23%	16%	9%	11%	16%	5%
Travel Speed: Wave 2	19%	21%	17%	11%	11%	17%	5%
*Predictability: Wave 1	21%	16%	12%	18%	12%	17%	4%
*Predictability: Wave 2	19%	16%	16%	15%	10%	19%	5%

**On predictability, there is a significant difference in the distribution of Wave 1 vs. Wave 2 responses (chi-square=23.58, p-value= <.01).*

For Express Lane trips, there are significant differences across the waves for all three measures, with Wave 2 trips receiving more positive ratings. On travel time, for example, 32% of trips were rated as satisfactory in Wave 1 compared to 43% in Wave 2. The increase is largely attributed to the increase in the percent of trips rated as “somewhat satisfied” (+10 percentage points), with a smaller increase in the percent who were “very satisfied” (+3 percentage points). Likewise, on travel speed, the percent of trips rated as ‘somewhat satisfied’ increased from 11% in Wave 1 to 20% in Wave 2. Regarding predictability, the same pattern prevails, with the percent “somewhat satisfied” increasing from 6% to 12%. The percent “very satisfied” also increased from 3% to 6%.

Table 42: Satisfaction with AM Peak Hour I-85 HOV/Express Lane Trips

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied	
Travel Time: Wave 1	12%	18%	27%	11%	8%	21%	3%	Chi-sq=40.1 sig <..0001
Travel Time: Wave 2	13%	15%	20%	9%	18%	19%	6%	Chi-sq=40.1 sig <..0001
Travel Speed: Wave 1	12%	15%	29%	9%	11%	20%	4%	Chi-sq=34.2; sig <.0001
Travel Speed: Wave 2	15%	16%	15%	10%	20%	18%	5%	Chi-sq=34.2; sig <.0001
Predictability: Wave 1	14%	10%	20%	27%	6%	21%	3%	Chi-sq=23.1; sig .0008
Predictability: Wave 2	13%	9%	23%	19%	12%	18%	6%	Chi-sq=23.1; sig .0008

Overall, for Express Lane trips there appears to have been an increase in satisfaction across all measures, including travel time, travel speed and predictability. In the general purpose lanes, there was marginal improvement in predictability, but no change with regard to travel time or travel speed. In line with these findings, the Battelle National Evaluation found a slight improvement in travel times and travel speeds in the Express Lanes, which would explain the increased trip satisfaction. At the same time, the National Evaluation found a slight degradation in travel times and speeds in the general purpose lanes, but perhaps the change was not large enough to be perceived by drivers, and hence trip satisfaction ratings remained relatively stable (with a majority dissatisfied in each wave).

In addition to the aggregate analysis, the panel nature of the data allows us to look at differences in trip satisfaction across the same group of individuals. For this paired analysis we were interested in learning the extent to which I-85 trip satisfaction changed among Wave 1 HOV-2 users. Thus, we identified respondents who made any HOV-2 trips in Wave 1 and we compared their trip satisfaction in Wave 1 vs. Wave 2 (when most of their trips were in the general purpose lanes).

On all three measures (travel time, travel speed, and predictability of driving time) there was a significant increase in dissatisfaction. With respect to travel time, the level of dissatisfaction among Wave 1 HOV-2 users rose from 39% (combined very dissatisfied, dissatisfied and somewhat dissatisfied) to 48%. Importantly, dissatisfaction became more intense – looking at

the bottom two categories only (very dissatisfied and dissatisfied), dissatisfaction grew from 21% to 39%. For travel speed, there is a similar pattern in response; overall dissatisfaction grew from 38% to 49%, with the proportion who were “very dissatisfied” more than doubling (from 9% in Wave 1 to 22% in Wave 2). On predictability of travel time, there was also increased dissatisfaction (from 36% to 45%), though the level of satisfaction declined only very slightly (49% in Wave 1 and 46% in Wave 2).

Table 43: I-85 Trip Satisfaction Among HOV-2 Users: Wave 1 vs. Wave 2 Ratings

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Travel Time: Wave 1	10%	11%	18%	10%	14%	28%	9%
Travel Time: Wave 2	18%	21%	9%	9%	16%	23%	5%
Travel Speed: Wave 1	9%	13%	16%	7%	17%	28%	10%
Travel Speed: Wave 2	22%	19%	8%	9%	13%	23%	6%
Predictability: Wave 1	15%	9%	12%	15%	15%	26%	8%
Predictability: Wave 2	19%	18%	8%	9%	15%	25%	6%

Similar to the analysis of HOV-2 users, we compared the driving experience of Express Lane users across the two waves. We identified all drivers who made an Express Lane trip in Wave 2 and compared their trip satisfaction in Wave 1 (when nearly all their I-85 trips - 89% - were in the general purpose lanes) with their trip satisfaction in Wave 2 (when a majority of their I-85 trips (72%) were in the Express Lanes). On all three measures of travel time, travel speed and trip predictability, there are significant increases in satisfaction among this group of Express Lane users. One-half or more of I-85 trips were rated as satisfactory in Wave 2 (combined very satisfied, satisfied, and somewhat satisfied), compared to just over one-third of I-85 trips in Wave 1. With respect to travel time, for example, Express Lane users rated 37% of their trips as satisfactory in Wave 1 (combined very satisfied, satisfied, somewhat satisfied), compared to 60% of trips in Wave 2. Similarly, for travel speed, satisfaction increased from 36% to 58%, and for predictability, the proportion of trips rated as satisfactory grew from 37% to 53%.

Table 44: I-85 Trip Satisfaction Among Wave 2 Express Lane Users: Wave 1 vs. Wave 2 Ratings

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Travel Time: Wave 1	14%	22%	16%	11%	10%	20%	7%
Travel Time: Wave 2	7%	12%	12%	9%	18%	31%	11%
Travel Speed: Wave 1	15%	20%	20%	9%	11%	18%	7%
Travel Speed: Wave 2	8%	13%	12%	9%	17%	30%	11%
Predictability: Wave 1	16%	17%	15%	15%	11%	20%	6%
Predictability: Wave 2	8%	10%	12%	17%	13%	30%	10%

Transit Trips

I-85 transit users continued to be significantly more satisfied with their trips than drivers. In both waves of the surveys, large majorities reported being satisfied (combined very satisfied, satisfied, or somewhat satisfied), with a quarter or more being “very satisfied.” However, on all the repeated measures there is a statistically significant decline in positive ratings. Regarding the reliability of the service, for example, there was a 16% decline in the proportion of respondents indicating they were “very satisfied” with this aspect of their trip, though there was no change in the percent dissatisfied (5% in Wave 1 vs. 5% in Wave 2). This suggests that respondents were still satisfied, just not quite as strongly. For travel time, there was a slight decline in the share of trips rated as satisfactory (84% in Wave 1 vs. 81% in Wave 2), and a 7 percentage point increase in the share of trips rated as unsatisfactory on this dimension. With respect to wait time at stop, the largest differences across the two waves included a decline in the percent of trips that received a rating of either “very satisfied” (-5 percentage points) or “satisfied” (-5 percentage points)

Despite these declines in satisfaction, it is worth emphasizing that large majorities of respondents were very satisfied with their experience on transit. In addition, it is important to note that immediately prior to the survey administration in April 2012, there were some adjustments to the transit service that resulted in a temporary increase in customer complaints. We may have captured the initial dissatisfaction among some customers as they adjusted to the service changes.

Table 45: Satisfaction with Bus Transit Trips (Wave 1, N= 154 trips; Wave 2, N= 152 trips)

	Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Satisfied	Very Satisfied
Travel Time: Wave 1	1%	3%	5%	7%	15%	42%	27%
Travel Time: Wave 2	2%	7%	6%	3%	15%	43%	23%
Wait Time at Stop: Wave 1	2%	1%	3%	7%	10%	47%	30%
Wait Time at Stop: Wave 2	2%	2%	7%	8%	14%	42%	25%
Reliability: Wave 1	2%	*%	3%	3%	8%	39%	45%
Reliability: Wave 2	1%	1%	3%	5%	10%	51%	29%
Availability of Seats: Wave 1	1%	1%	4%	2%	11%	45%	36%
Availability of Seats: Wave 2	1%	1%	5%	4%	8%	52%	30%
Parking Availability at Park-N-Ride: Wave 2	*	*	1%	6%	1%	37%	55%

Attitudes about Tolling and Travel in the Region

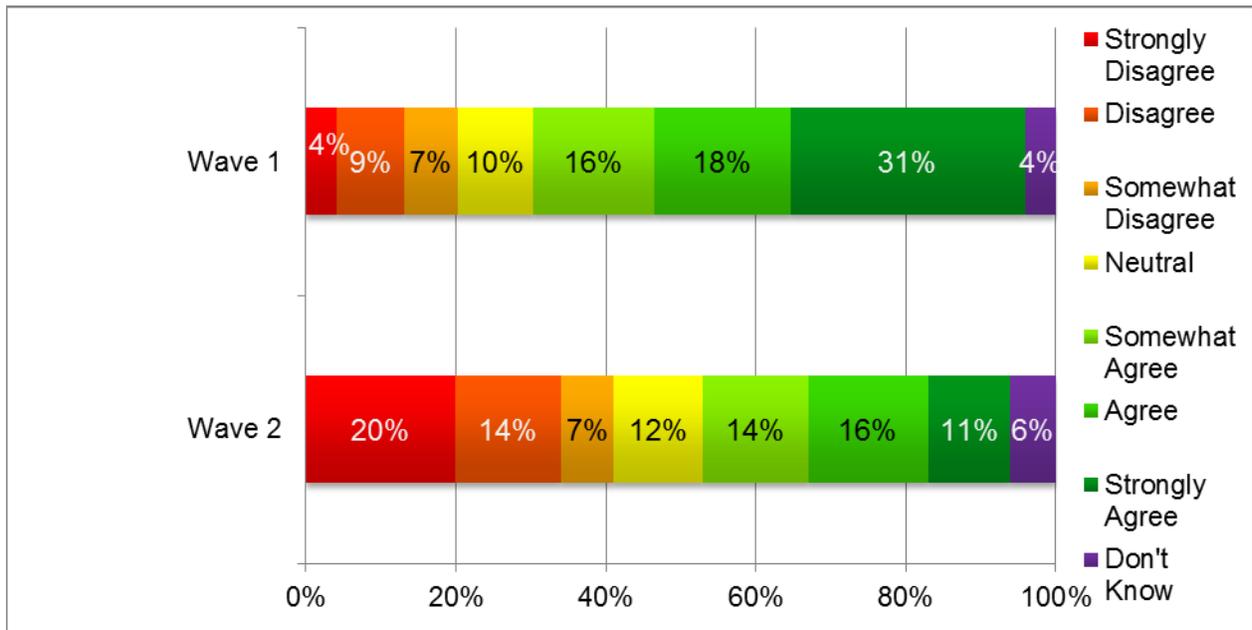
Tolling had a bumpy start in Atlanta, with significant negative reaction from the public. Initially, traffic volume was quite low in the Express Lanes, and there was increased traffic congestion in the general purpose lanes. In response to the public outcry against tolling and to increase demand on the Express Lanes, decision makers adjusted the peak period tolling algorithm and lowered the minimum tolling rate during off-peak hours to \$0.01 per mile. Approximately seven months after the start of tolling, when the Wave 2 survey was administered, respondents remained quite negative, and the panel data reveal a stark decline in favorable opinions toward tolling. However, these attitudes vary by Express Lane usage, as users were significantly more likely than non-users to say the Express Lanes have improved their travel on I-85.

The Wave 1 and Wave 2 surveys included two repeated measures on tolling:

- *I will use a toll route if the tolls are reasonable and I will save time*
- *Highway tolls are unfair to people with limited incomes*

Using a seven-point scale, respondents were asked the extent to which they agree or disagree with each of the attitudinal statements. In Wave 1, about two-thirds (65%) of the panel members agreed that they would use a toll route (with 31% strongly agreeing), and 20% disagreed. By contrast, when the measure was repeated in Wave 2, disagreement rose sharply, resulting in evenly divided opinions on the question (41% agreed and 41% disagreed) (See Figure 15). A paired analysis of how individuals' responses changed across the waves, revealed that 27% moved from some level of agreement with the statement to some level of disagreement, whereas only 8% moved from some level of disagreement to some level of agreement.

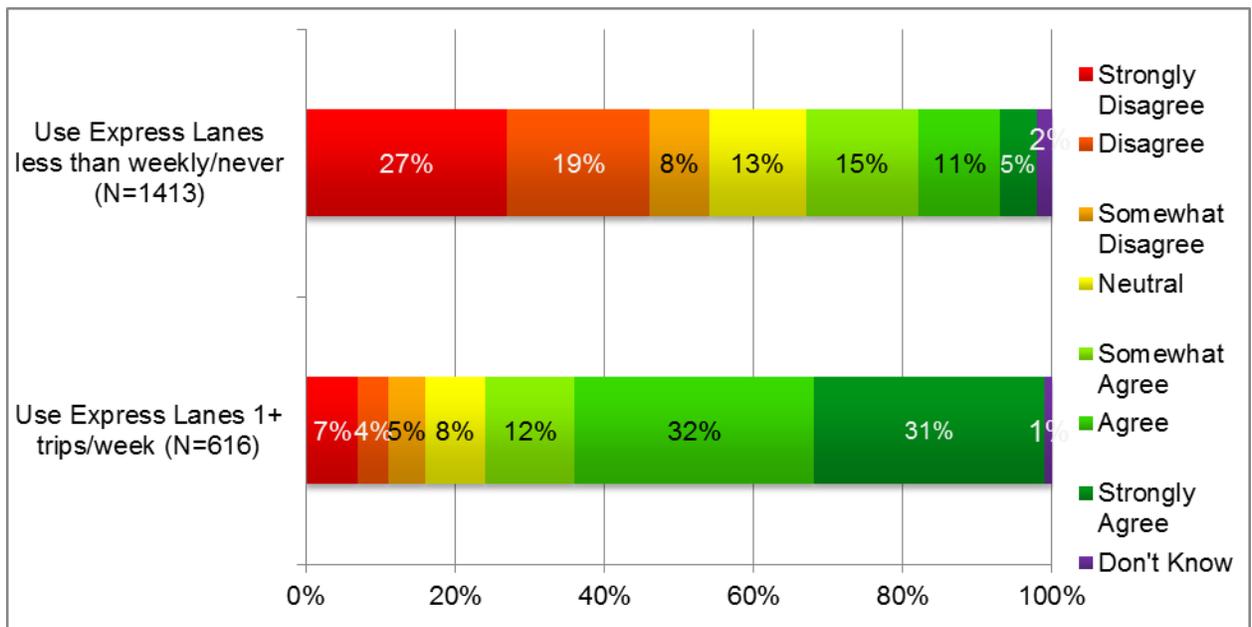
Figure 15: Changes in Opinion toward Tolling: I will use a toll route if the tolls are reasonable and I will save time (N=2907)



In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value} = -24.71$, $p\text{-value} = <.0001$

Not surprisingly, Express Lane users (those making 1 or more trips per week), were significantly more likely than other I-85 users to agree that they would use a toll route (75% vs. 31%).

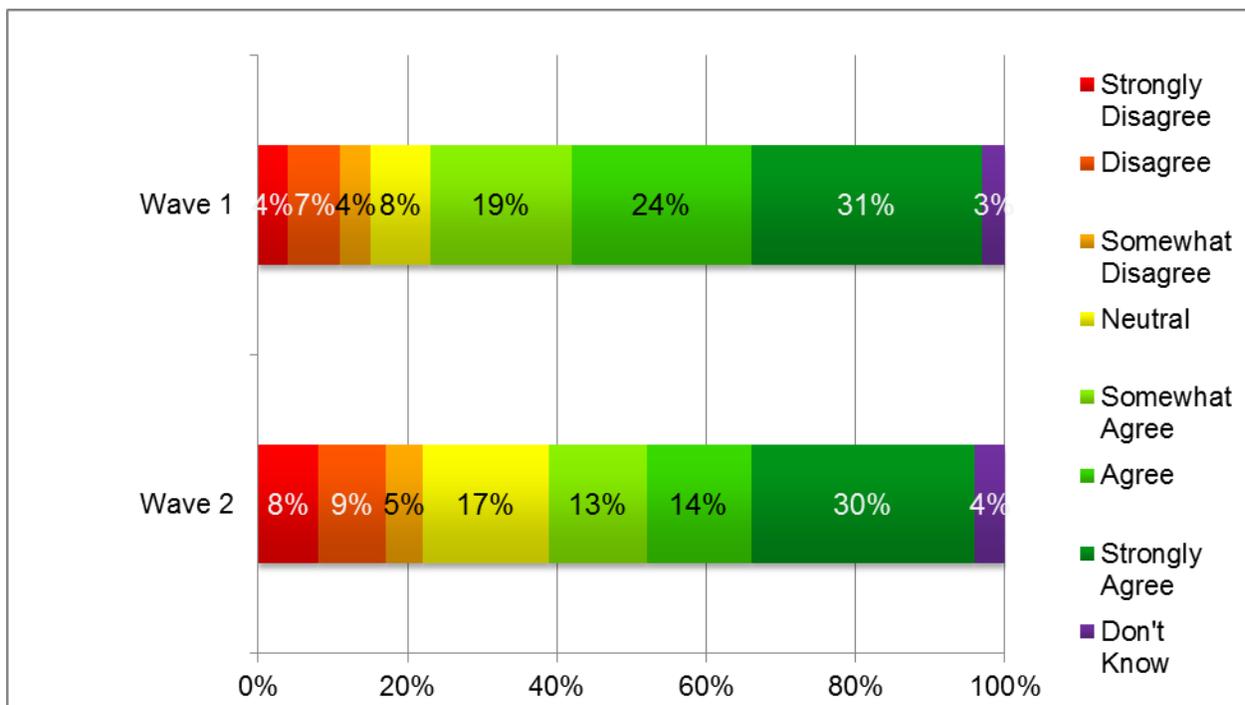
Figure 16: Attitudes toward Tolling: I will use a toll route if the tolls are reasonable and I will save time – By Express Lane Usage (Among I-85 users)



NOTE: $\text{Chi-square} = 524.39$, $p\text{-value} = <.0001$

With regard to attitudes toward the equity of tolling, there was also a shift in attitudes among the panel of respondents. In Wave 1, 74% voiced equity concerns, agreeing with the statement that highway tolls are unfair to people with limited incomes, and nearly one-third (31%) strongly agreed with this statement. In Wave 2, while a majority – 57% – agreed with the statement, this represents a 17 percentage point decline in agreement. The proportion strongly agreeing with the statement, however, remained consistent (31% Wave 1, 30% Wave 2). In a paired analysis of responses, 16% of individuals moved from some level of agreement with the statement to some level of disagreement, compared to 8% who shifted in the opposite direction (from disagreement to agreement). Given the overall negative attitude towards tolling, some respondents in Wave 2 may have disagreed with the statement because they view the toll lanes as unfair to *all* drivers, not just those with limited incomes.

Figure 17: Changes in Opinion toward Tolling: Highway Tolls are Unfair to People with Limited Incomes (N=2907 respondents)



NOTE: In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value} = -8.66$, $p\text{ value} = <.0001$

In addition, there were several new tolling questions that appeared only in the Wave 2 survey:

- Overall my travel along I-85 has been improved by the Express lanes
- Congestion has become worse on my other routes along the I-85 corridor
- I am concerned about my safety when I use the Express Lanes

As shown in the figure below, 16% of respondents agreed that their travel has been improved by the Express Lanes, while nearly three times as many – 54% – disagreed, with 30% strongly disagreeing. It should be noted that disagreement with the statement does not mean that travel

has necessarily become worse; it only indicates an absence of improvement (which may mean no change). Express Lane users (those who say one or more of their weekly I-85 trips are in the Express Lanes) were significantly more likely than other I-85 users to agree that the Express lanes have improved their travel on I-85 (54% agreed vs. 6% for all others) (See Figure 18 below).

When asked about traffic congestion on their other routes in the corridor, 50% of respondents agreed that congestion has gotten worse on their other routes since tolling started, 18% were neutral, and 13% disagreed (19% said “Not applicable”). Express lane users were somewhat less likely than other I-85 users (who do not typically use the Express Lanes) to agree that congestion has gotten worse on their other routes in the corridor (50% vs. 60%).

Overall, safety does not appear to be a significant concern, as 33% disagreed that they are concerned about their safety, compared to 19% who expressed some level of agreement (29% of respondents responded “Not applicable” and 19% were neutral). However, those who use the Express Lanes at least weekly were significantly more likely to be concerned: 36% indicated some level of agreement with this statement (9% strongly agreed, 10% agreed and 17% somewhat agreed), 18% were neutral and 44% indicated some level of disagreement (12% strongly disagreed, 23% disagreed and 9% somewhat disagreed). Only 2% responded “don’t know.”

Figure 18: Attitudes toward Tolling (Wave 2) N=2907 respondents

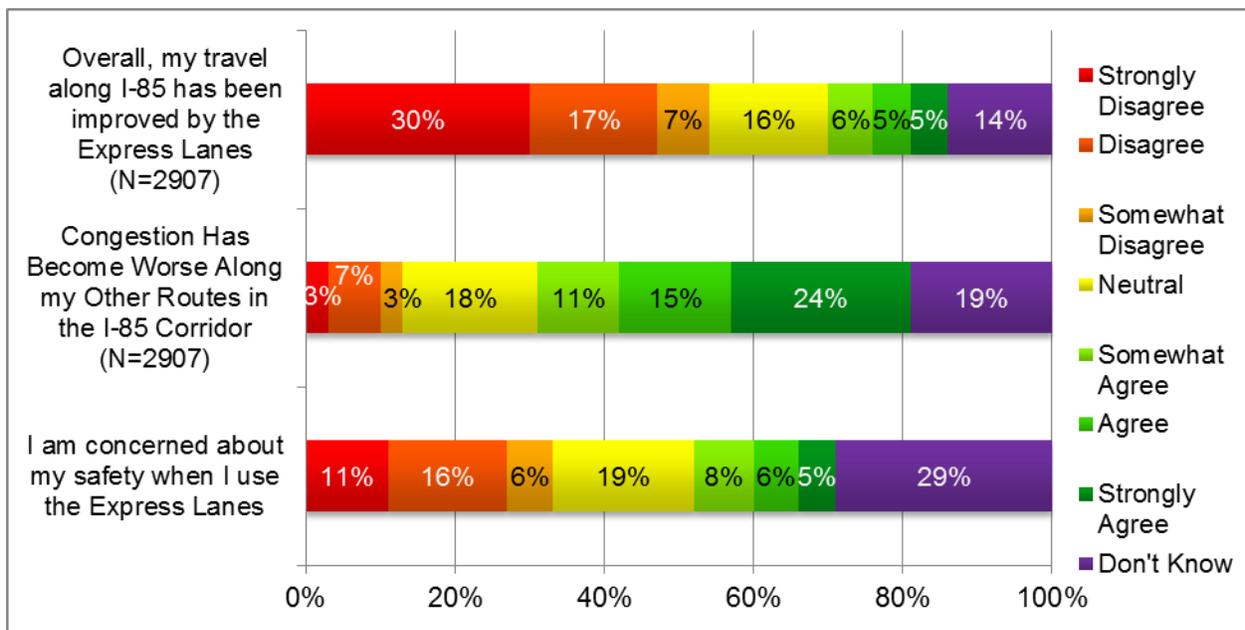
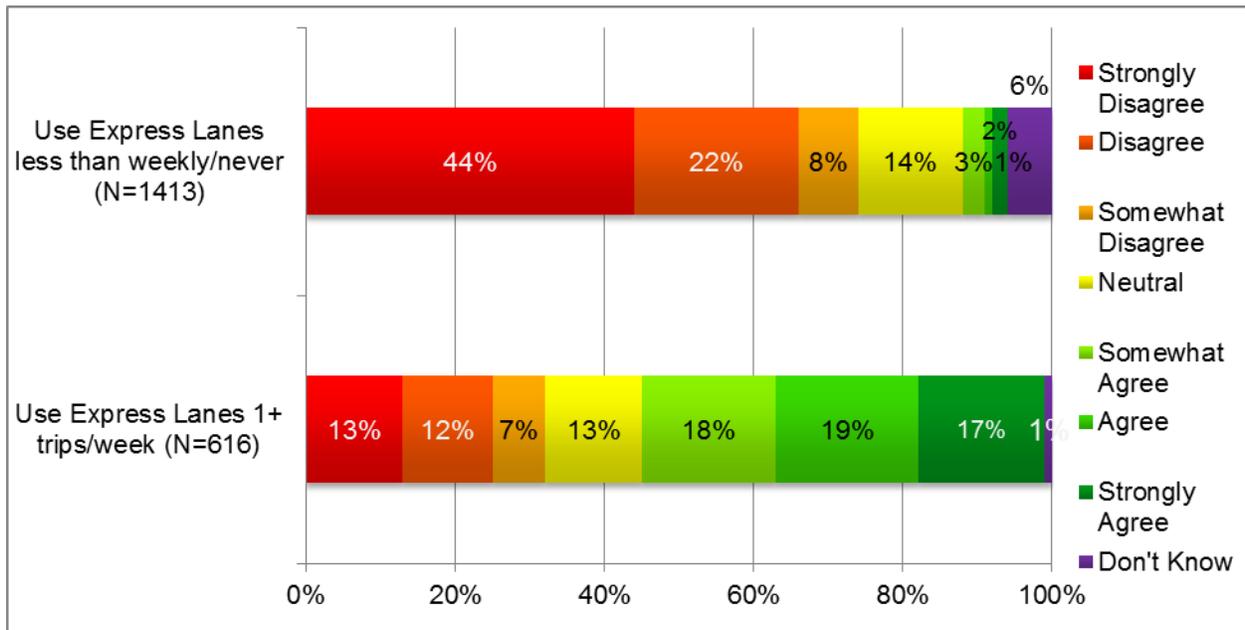


Figure 19: Attitudes toward Tolling: My Travel along I-85 Has Been Improved by the Express Lanes – by Express Lane Usage (among I-85 users)



NOTE: Chi-square=2888.18, p value= <.0001

Differences in Tolling Attitudes by Demographic Groups

With respect to the three key attitudinal questions on tolling (I will use a toll route if the tolls are reasonable and I will save time; Overall my travel along I-85 has been improved by the Express Lanes; Tolls are unfair to those with limited incomes), we analyzed differences by the demographic attributes of gender, race, age, education, and income. While the differences by gender are quite small, there are some significant differences on the other demographic measures of race, age, education, and income.

The differences between men and women are relatively small on the three tolling measures. Men were slightly more likely to agree than disagree that they would use a toll road (43% agreed vs. 41% disagreed), whereas women tended toward disagreement (42% disagreed vs. 38% agreed).

On each of the measures there are significant differences by race. Blacks were significantly less likely to agree that they would use a toll route (33% vs. 42% for whites and 41% for Asians), and a greater proportion of blacks and Asians (compared to whites) disagreed that the Express Lanes have improved their travel (56% and 55% vs. 47%, respectively). In addition blacks and Asians were more likely than whites to be concerned about equity (the difference between percent agree and disagree was significantly larger for blacks (49 percentage points) and Asians (42 percentage points) than for whites (22 percentage points)).

Regarding age, agreement with willingness to use a toll route outweighed disagreement among 25 to 34 year olds (48% agreed vs. 34% disagreed), those who are 65+ (42% agreed vs. 34% disagreed), and to a lesser extent, among 35 to 44 year olds (44% agreed vs. 41% disagreed).

Among other age groups, however, the reverse was the case, whereby disagreement outweighed agreement, including 55 to 64 year olds (48% disagreed vs. 35% agreed), 45 to 54 year olds (43% disagreed vs. 36% agreed) and 18-24 year olds (38% disagreed vs. 25% agreed). All age groups were significantly more likely to disagree (than agree) that the Express Lanes have improved their travel – however the difference between agreement and disagreement was smaller for the youngest and the oldest age groups, as many of these respondents responded either “not applicable” or “neutral.” Majorities of all age groups also were concerned about equity, though fewer respondents in both the youngest and the oldest age groups disagreed that tolls are unfair to those with limited income.

When analyzed by level of education and household income, there are significant differences in opinions toward tolling, particularly between respondents at the lower end vs. the higher end of the scales. Those with a lower level of education (High School degree or less, or vocational/technical training) were least likely to agree that they will use a toll route (32%), with 42% disagreeing. By contrast, those with a Graduate Degree or a Bachelor’s degree were most likely to agree (46% and 42%, respectively). Respondents with a high school education were also less likely to agree that the Express Lanes have improved their travel, though they were also less likely to disagree, as a higher proportion of these respondents said “not applicable” to this question. Across all education levels, a very similar proportion agreed that tolls are unfair to those with limited incomes (approximately 57%); however, those with lower levels of education were significantly less likely to disagree that tolls are unfair, compared to those with a bachelor’s or graduate degree (14% vs. 25% and 24%, respectively).

By income, those in the lowest income bracket were significantly more likely to disagree than agree that they would use a toll route (45% disagreed vs. 35% agreed); whereas the reverse was true among the highest income bracket, with agreement outweighing disagreement (52% vs. 34%). While a minority of all income groups agreed that the Express Lanes have improved their travel, those earning \$150,000 or more in household income were three times as likely as the lowest income group to agree (23% vs. 8%). With regard to equity, the highest income group stands out as somewhat anomalous, as less than one-half agreed that tolls are unfair to those with limited income and one-third disagreed (the gap between agreement and disagreement was only 11 percentage points). For all other income groups, a majority agreed that tolls are unfair and one-quarter or less disagreed; thus the gap between agreement and disagreement was significantly greater (ranging from 32 percentage points to 42 percentage points). The lowest income group was the most concerned about equity.

Table 46: Differences in Tolling Attitudes by Demographic Groups

	I will use a toll route if the tolls are reasonable and I will save time—Agree	I will use a toll route if the tolls are reasonable and I will save time—Dis-agree	I will use a toll route if the tolls are reasonable and I will save time—Diff*	Express Lanes Have improved my Travel—Agree	Express Lanes Have improved my Travel—Disagree	Express Lanes Have improved my Travel—Diff*	Tolls are unfair to those with limited incomes—Agree	Tolls are unfair to those with limited incomes—Disagree	Tolls are unfair to those with limited incomes—Diff*
Total	41%	41%	0	16%	54%	-38	57%	21%	+36
Age:									
18-24	25%	38%	-13	8%	37%	-29	56%	14%	+42
25-34	48%	34%	+14	17%	53%	-36	58%	23%	+35
35-44	44%	41%	+3	16%	56%	-40	58%	24%	+34
45-54	36%	43%	-7	16%	57%	-41	55%	23%	+32
55-64	35%	48%	-13	15%	54%	-39	58%	20%	+38
65+	42%	34%	+8	15%	45%	-30	54%	17%	+37
Race:									
White	42%	42%	0	16%	56%	-40	55%	33%	+22
Black	33%	45%	-12	15%	55%	-40	65%	16%	+49
Asians	41%	31%	+10	14%	47%	-33	58%	16%	+42
Gender:									
Male	43%	41%	+2	18%	54%	-36	54%	23%	+31
Female	38%	42%	-4	14%	54%	-40	58%	22%	+36
Education:									
HS Grad or less/Vocational	32%	42%	-10	9%	46%	-37	56%	14%	+42
Associates Degree	42%	37%	+5	16%	52%	-36	55%	17%	+38
Some College	38%	42%	-4	16%	50%	-34	58%	20%	+38
Bachelor's Degree	42%	42%	0	17%	57%	-40	57%	25%	+32
Graduate Degree	46%	39%	+7	17%	57%	-40	57%	24%	+33

	I will use a toll route if the tolls are reasonable and I will save time—Agree	I will use a toll route if the tolls are reasonable and I will save time—Dis-agree	I will use a toll route if the tolls are reasonable and I will save time—Diff*	Express Lanes Have improved my Travel—Agree	Express Lanes Have improved my Travel—Disagree	Express Lanes Have improved my Travel—Diff*	Tolls are unfair to those with limited incomes—Agree	Tolls are unfair to those with limited incomes—Disagree	Tolls are unfair to those with limited incomes—Diff*
Income:									
<\$50K	35%	45%	-10	8%	57%	-49	62%	14%	+48
\$50K-\$74.9K	38%	41%	-3	18%	56%	-38	61%	19%	+42
\$75K-\$99.9K	41%	40%	+1	17%	52%	-35	58%	23%	+35
\$100K-\$149.9K	39%	42%	-3	16%	57%	-41	56%	24%	+32
\$150K+	52%	34%	+18	23%	45%	-22	44%	33%	+11

Notes: For this table, “Agree” includes those who responded strongly agree, agree, or somewhat agree. “Disagree” includes respondents who responded strongly disagree, disagree or somewhat disagree. “Diff” is defined as the difference in percentage points between “Agree” and “Disagree.”

Comments about Tolling

The last question in the survey offered respondents the opportunity to provide comments about their travel experiences in an open-end comment box. Among those who provided feedback, the number of negative comments outweighed the number of positive comments. The range of comments is illustrated below.

Among those opposed to tolling, the following opinions were expressed:

- Roads already paid for with tax dollars
 - “I think it is wrong to create a toll lane on a highway that has already been paid for with taxpayer’s dollars.”
- Cost is too high
 - “The toll lanes are too expensive. I cannot afford to pay \$4+ to use the toll lane on a daily basis.”
- More traffic congestion in the general purpose lanes
 - “The new HOT lane has congested traffic in the regular lanes tremendously. This has caused longer commute travel times and more gas consumption due to stop and go driving.”
 - “Since implementation of the tolling Express Lane, traveling time and stress have definitely increased due to the extra congestion.”
- Opposed to tolling, in general
 - “I am against the idea of toll lanes and refuse to use them.”
- Unfair to HOV users
 - “Give the lane back to HOV!”
- Express Lanes difficult to access
 - “I don’t like the idea of changing 4 or 5 lanes to get over to the left and then changing 4 or 5 lanes to get back over to get off at 316.”
- Safety concerns
 - “I don’t know the stats but it seems to have caused more wrecks on 85 ...based on what I have experienced during my commute.”
- Rules too complicated
 - “Do not plan to ever use them. The “set-up” process is overly complicated and not well thought out.”

A smaller number of respondents expressed positive opinions, some of which are highlighted below.

- Improved commute
 - “The tolling lanes have reduced my travel times, in general, even though I am having to pay extra for it. In the long run, however, it’s probably worth it.”
 - “It’s great, I just wish there was a set fee.”
 - “...I always use the Express Lanes in the afternoons since the tolls are reasonable. I get home earlier in the evenings, so this has increased the amount of time I can spend with my family.”

- Use for reverse commute is less expensive
 - “I love the toll lane for reverse commutes given the low fees. Doubt if I would use it often if I was using it for commuting with traffic.”
- Provides an option for solo drivers
 - “I enjoy driving the Express Lane without having to have a carpool buddy.”

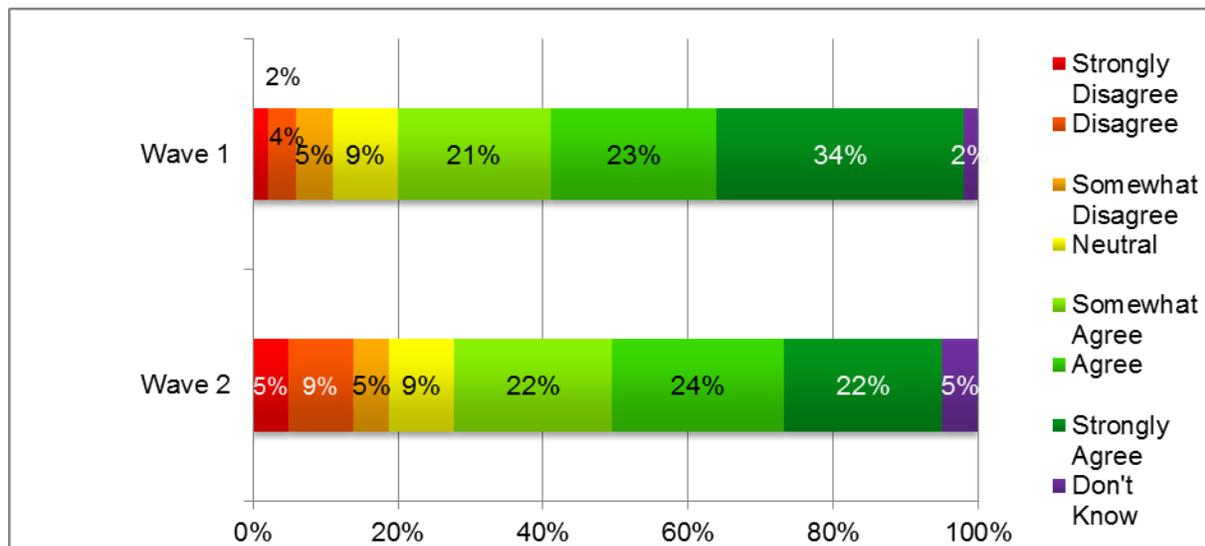
Other Attitudes about Travel in the Region

Respondents were asked a number of more general attitudes about their travel in the region, including:

- *Driving on Atlanta highways is stressful for me*
- *At least twice a week there is an unexpected delay on my route*
- *I adjust my routes and/or departure times to avoid traffic congestion*

On all three measures, there was some shifting in attitudes across the two waves²⁵. In Wave 2, respondents were somewhat less likely to agree that “I adjust my routes and/or departure times to avoid traffic congestion” (see Figure 20), though a sizeable majority did so in each wave of the survey (68% agreed in Wave 2; 78% agreed in Wave 1). In particular, respondents who typically use the Express Lanes were significantly less likely than other I-85 users to say that they adjust their routes and/or departure times to avoid traffic congestion (58% agreed vs. 76% agreed).

Figure 20: Changes in Attitudes: I Adjust my Routes and/or Departure Times to Avoid Traffic Congestion (N=2,907 respondents)

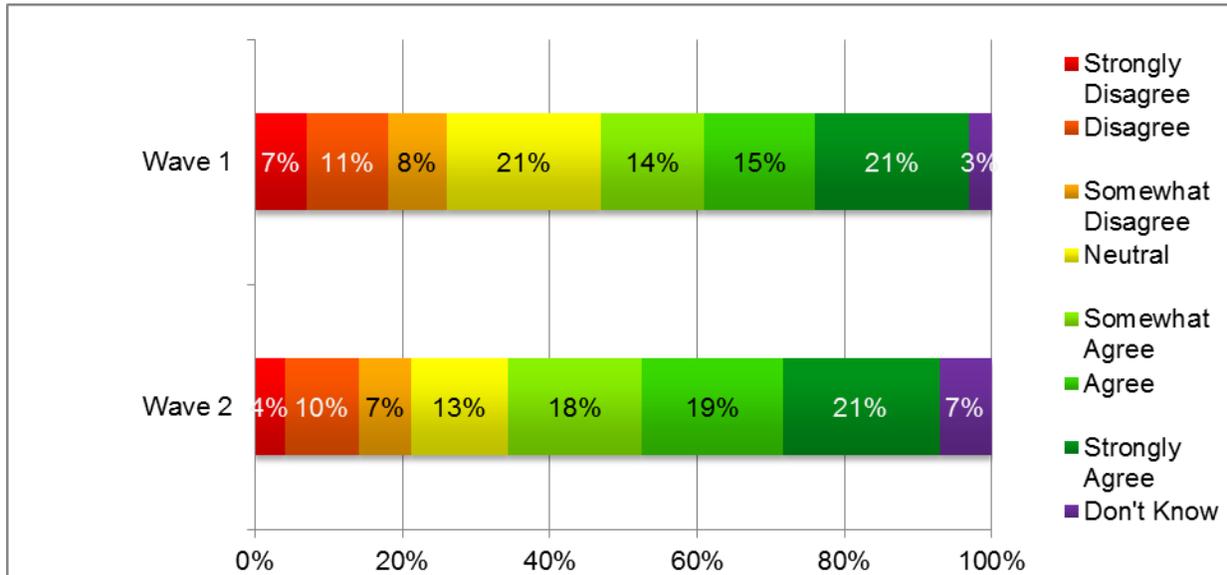


NOTE: In a paired t-test of Wave 1 vs. Wave 2 responses, t-value=-11.55, p value= <.0001

²⁵ Paired t-tests comparing Wave 1 and Wave 2 responses are significant on all three measures.

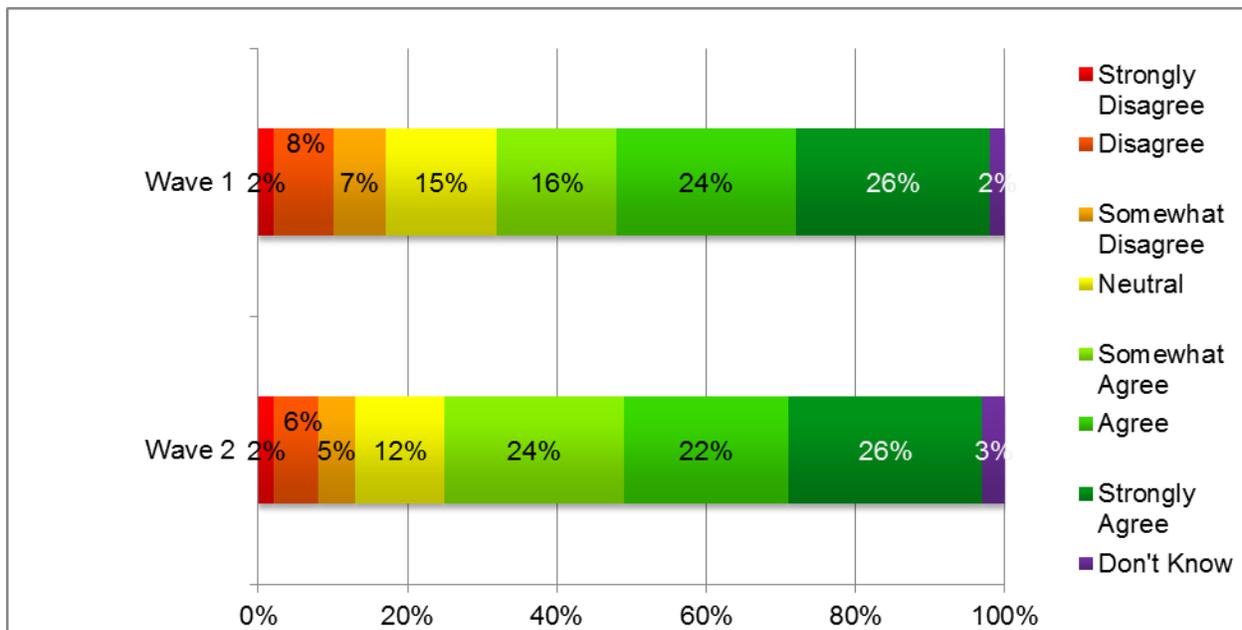
As illustrated in Figure 21 and Figure 22, in Wave 2, respondents were also somewhat more likely to agree that “at least twice a week there is an unexpected delay on my trip” (58% in Wave 2, 50% in Wave 1), and “driving on Atlanta highways is stressful for me” (72% Wave 2 vs. 66% Wave 1). There is no difference by Express Lane usage on these two measures.

Figure 21: Changes in Attitudes: At Least Twice a Week There Is an Unexpected Delay on my Route (N=2,907 respondents)



NOTE: In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value}=-5.83$, $p\text{ value}=<.0001$

Figure 22: Changes in Attitudes: Driving on Atlanta Regional Highways Is Stressful for Me (N=2,907 respondents)



NOTE: In a paired t-test of Wave 1 vs. Wave 2 responses, $t\text{-value}=-2.33$, $p\text{ value}=.03$

To gauge commute-related attitudes, two attitudinal questions were asked of employed respondents, including:

- *I am satisfied with my commute (among employed)*
- *Within the past year, I have seriously considered changing where I live or work to reduce the time I spend traveling (among employed)*

On these questions, there are no significant differences across the two waves. In both waves, only one-third (36%) of employed respondents agreed that they are satisfied with their commute, and nearly one-half disagreed (49% in Wave 1 and 48% in Wave 2). In addition, one-third (34%) of the employed, in both waves, agreed that in the past year they have seriously considered changing where they live or work to reduce the amount of time they spend traveling, while just over one-half disagreed (53% in Wave 1 and 52% in Wave 2).

Transit users (anyone who reported a transit trip to work on either day of their travel diary) were asked the extent to which they agree or disagree that “As soon as I can, I’d like to switch to driving to work.” Only 10% agreed in Wave 1, and even fewer respondents – 4% – agreed in Wave 2. Transit users continued to be committed to transit.

Traveler Information

For all trips in the I-85 corridor northeast of Atlanta (as recorded in the trip diaries), respondents were asked about the sources of traveler information they consulted to obtain traffic or transit condition information. The response categories included:

- Radio
- TV
- 511/Other phone service
- Any website
- Electronic freeway signs
- GPS/navigation system
- Smartphone or tablet app (only asked in Wave 2)
- Other
- None of these

The purpose of these questions was to gauge any changes in the use of traveler information, as such changes might reflect a response to changes in roadway conditions due to the pricing. In general, the pattern of response to this question is quite similar across the two waves, with a slight decline in the proportion of corridor trips for which no information was consulted (48% in Wave 1 vs. 44% in Wave 2). Radio dominated as a source of information, with a slight uptick in use from 40% in Wave 1 to 43% in Wave 2. Somewhat fewer respondents cited the use of electronic message signs: 19% in Wave 1 and 15% in Wave 2. The use of TV and GPS remained consistent across the waves (7% of trips and 6% of trips, respectively). While there was a slight decline in the use of websites, this may be due in part to the addition of a new response category in Wave 2, “smartphone and tablet app.”

Table 47: Use of Traveler Information (based on trip diaries)

Information Source	Wave 1	Wave 2
Radio	40%	43%
Electronic freeway sign	19%	15%
TV	7%	7%
GPS/navigation systems	6%	6%
Smartphone or tablet app	NA	6%
Any website	5%	3%
511/Other phone service	1%	*%
Other	1%	*
None	48%	44%
Number of Trips	8,588	5,706

When use of traveler information is analyzed by route and mode choice in the corridor (e.g., I-85 driving trips vs. I-85 transit trips vs. other roads in the corridor), some interesting differences emerge. First, for I-85 driving trips and I-85 transit trips, there was an increase in the proportion of trips for which *no* information was consulted; by contrast, for other roads in the corridor, there was a decrease on this measure. Secondly, in both waves of the survey, information use was generally greatest for I-85 driving trips, as compared to I-85 transit trips or driving trips on other roads in the corridor. However, there are two exceptions – the use of apps and TV was quite similar for I-85 transit trips and I-85 driving trips.

Looking at specific sources of information, there was a slight decrease in the use of radio for I-85 driving trips (52% vs. 49%), but there was an increase in the use of radio for trips using other roads in the corridor (19% to 24%). This suggests that drivers on other roads in the corridor may have had a greater need to consult information in Wave 2 compared to Wave 1. Other notable changes include the decreased use of electronic message signs for I-85 driving trips and the decreased use of the web for transit trips. Again, the latter shift may be due to the new response category, “smartphone or tablet app” that was added to the Wave 2 survey.

Table 48: Use of Traveler Information by Route and Mode Choice (based on trip diaries)

	I-85 Driving Trips–W1	I-85 Driving Trips–W2	I-85 Transit Trips–W1	I-85 Transit Trips–W2	Other Roads in Corridor–W1	Other Roads in Corridor–W2
Radio	52%	49%	14%	12%	19%	24%
Electronic freeway sign	28%	18%	10%	5%	2%	2%
TV	8%	8%	7%	7%	3%	2%
GPS/navigation systems	8%	7%	2%	2%	3%	1%
Smartphone/tablet app	NA	7%	NA	8%	NA	1%
Any website	6%	4%	12%	3%	1%	1%
511/Other phone service	1%	*	3%	0%	*	*
No sources used	33%	37%	65%	74%	77%	72%
Number of trips	5295	4599	517	432	2709	595

When traveler information use is compared for morning (AM) versus afternoon (PM) peak periods, we see similar patterns across both waves. Use of traveler information was somewhat greater in the morning compared to the afternoon. This seems reasonable, given that people tend to be more time-constrained for their commute to work (when they need to be at the office by a certain time), compared to the afternoon when they generally have more flexibility regarding their trip home. In both waves of the survey, there was less use of TV and radio in the PM peak compared to the AM peak, while there was increased use of the web in the PM peak. Again, these findings make sense and are consistent with other research on the use of traveler information. Respondents generally do not have access to a TV for their PM peak trip, but they can more easily check for traveler information on the web from their workplace computer.

Conclusions

The Atlanta CRD project involved the conversion of an existing HOV-2 lane to a dynamically priced HOT-3 lane (Express Lanes), a key element of which included a change in the occupancy requirement from 2+ to 3+ (in order to use the toll lane for free), along with registration to use the Express Lanes. Other strategies pursued as part of the CRD project included transit service enhancements in the corridor, the deployment of new ITS technologies, and transportation demand strategies to encourage carpooling. This report presents findings on how travelers responded to this road pricing strategy, based on a travel behavior panel survey, in which the same respondents were interviewed both before and after the deployment of road pricing.

Overall, the travel diaries reveal a decrease in the number of trips reported across the two waves of the survey, with the share of I-85 corridor trips decreasing by 2%. There was a decline in the overall number of I-85 driving trips as well, though the share of I-85 driving trips (as a share of all reported trips) remained essentially unchanged across the waves. By contrast, the number of transit trips in the corridor increased, although transit use, as a share of I-85 trips, remained stable.

In addition to the travel diary data, respondents were also asked about their typical weekly travel on I-85. Across the two survey waves, the self-reported data align with the travel diary findings, as fewer respondents said they were regularly using I-85, and those who are regular users indicated they were making fewer trips on I-85.

Through the trip diaries, it is also possible to examine the number of trips reported in the general purpose lanes versus the HOV-2 lane (Wave 1)/Express Lanes (Wave 2). With respect to general purpose lane trips, both the overall number of trips and the share of general purpose lane trips decreased across the survey waves; however, the number of trips in the Express Lanes was nearly twice that reported in the HOV lanes. Indeed, the share of I-85 trips in the Express Lanes (relative to the share in the HOV-2 lanes) increased from 7% in Wave 1 to 15% in Wave 2. When assessed in terms of respondents (rather than trips), we find that 7% made an HOV lane trip in Wave 1 compared to 11% who made an Express Lane trip. Clearly, the conversion to a HOT lane increased access to the priced facility, and primarily for single occupant drivers, who comprised the largest share of Express Lane trips (82%). Four percent of Express Lane trips included 2-person carpools that paid a toll to use the Express Lanes, 9% were 3+ vehicles (including vanpools and private vehicles), and 4% were AFV or motorcycles (who could use the Express Lanes toll free).

In large part, we found that new users were accessing the Express Lanes. Of those who reported an HOV trip in Wave 1, only 24% reported making an Express Lane trip. Three-quarters (76%) of those reporting an HOV lane trip (Wave 1) did not report an Express Lane trip. Moreover analysis reveals that among those making HOV lane trips in Wave 1, there was a significant shifting of I-85 trips into the general purpose lanes (from 36% to 81%).

These shifts are reflected in the vehicle occupancy numbers as well. Vehicle occupancy on the general purpose lanes increased from 1.07 to 1.18. By contrast, vehicle occupancy on the

Express Lanes dropped dramatically, from 2.22 to 1.18, as carpools shifted out of the Express Lanes in Wave 2. Overall, there was increase in vehicle occupancy on I-85, driven in part by an increase in intra-household carpooling unrelated to tolling.

In addition, there was some shifting in the timing of trips following the deployment of pricing. In the general purpose lanes, the share of trips in the peak (AM, and to a lesser extent PM) declined slightly, whereas in the Express Lanes, there was an increase in the share of trips departing during peak hours. This finding aligns with the increased use of the Express lanes for commute trips, and reflects the greater use of the tolled facility for time-constrained trips.

With regard to mode share, there was a slight uptick in the use of transit in the corridor, as measured through several different variables; however, the finding is not consistently statistically significant.

In terms of telecommuting behavior, both measures in the survey (trip diary and self-report) convey the same picture – a small increase in telecommuting behavior. Findings from follow-up questions that explored why respondents were telecommuting more suggest that the reasons were largely unrelated to tolling (e.g., due to work situation, desire to decrease commuting costs). However, 22% (N=80) who were telecommuting more did cite “worse traffic congestion” as the reason why -- a reason which might be attributable to tolling.

For each I-85 trip recorded in their diaries respondents were asked to rate their satisfaction with travel time, travel speed and travel time predictability. Changes in these measures offer another means of assessing the impact of pricing on drivers' experience on I-85. Analysis of trip satisfaction focused on the AM peak period, for trips departing from 7 AM to 9 AM. Overall, there was no change on these measures for general purpose lane trips; in both waves of the survey, a majority of peak hour trips in the general purpose lanes were rated as unsatisfactory regarding each of the attributes. For Express Lane trips, however, there was a significant increase in satisfaction for all three measures, relative to assessments of HOV lane trips in Wave 1, indicating a perceived improvement in the performance of the facility.

In addition to assessing trip satisfaction at an aggregate level, we leveraged the panel nature of the data to track trip satisfaction among two key users groups: Wave 1 HOV-2 users and Wave 2 Express Lane users. While HOV-2 users were significantly less satisfied with their I-85 trips in Wave 2 (when most had shifted to the general purpose lanes), Express Lane users were significantly *more* satisfied in Wave 2 compared to Wave 1.

Along the same lines, Express Lane users were significantly more likely than other I-85 users to agree that their travel along I-85 has been improved by the tolling (54% vs. 6%) and that they would use a toll route if the tolls are reasonable and save them time (75% vs. 31%).

For the sample as a whole, however, attitudes toward tolling became much more negative. Whereas 65% of respondents agreed that they would use a toll route in the Wave 1 survey, only 41% agreed following the deployment of tolling. In separate tolling-related questions, a majority of respondents disagreed (54%) that their travel along I-85 has improved due to tolling (only 16% agreed), and one-half the sample also agreed that congestion has become worse along

their other routes in the corridor (with 13% disagreeing). It should be noted that this represents a snapshot of opinion among corridor users approximately seven months following the deployment of tolling, and that attitudes will continue to evolve over time.

In drawing implications from these survey findings, it is important to note that the Atlanta CRD represents a unique set of strategies deployed in a particular regional context. With this caveat, we offer the following implications for regions that are considering a road pricing strategy similar to the one deployed in Atlanta:

Near term shifts in mode or increases in carpool size require programmatic support.

The survey findings indicate that travelers are much more apt to make changes to their number of trips, the timing of those trips, and their choice of route (or lane), than they are to make more fundamental shifts in their mode of travel. Switches to transit and carpooling likely require greater time to adjust personal schedules and habits and to coordinate with others. The survey data indicate that the move from a 2-person carpool requirement to a 3-person requirement did not cause a large number of carpools to dissolve²⁶, but neither did it generate many new 3-person carpools, possibly because coordinating schedules among 3 people is simply too difficult in the short term. Telecommuting also appears to be a response that takes longer to evolve. Even in jobs for which telework is an option, commuters likely need time to adjust their work and home arrangements and supporting technology.

For regions contemplating congestion pricing, these are important considerations and suggest that additional community outreach and programmatic support may be needed to generate larger shifts in transit, carpooling, and telework. Minneapolis, for example, implemented an extensive telecommuting program, “Results Only Work Environment” (ROWE), which was funded by the state and managed by the Humphrey School of Public Policy. Analysis of the program found significant impacts with respect to reductions in peak hour trips and vehicle miles traveled for those participating in the program.

In addition, programmatic support may help win public support for tolling, more generally. As one respondent expressed, “If you want to change public opinion on this project, OFFER A ONE MONTH FREE PASS (respondent’s capitalization). I feel that people will probably apply for a free Peach Pass and once they are in the system and use the Express Toll Lane during heavier traffic they may be more likely to pay for the Pass when the free portion expires.”

Make the user requirements for the priced facility as simple and convenient as possible.

While the survey data are not conclusive, there is some indication that Peach Pass user requirements may have been an impediment to Express Lane use. Following the opening of the Express lanes, there was an increase in three-person carpools using the general purpose lanes, even though these travelers were eligible to use the Express Lanes for free. When asked to rate their satisfaction with “changing your toll mode status,” nearly half of Peach Pass owners responded “not applicable,” and 20% were dissatisfied (compared to 25% who were satisfied). These ratings may be related to the perceived inconvenience of having to switch registration

²⁶ The Battelle National Evaluation did find a net decline in 2 and 3-person carpools during peak hours.

status. Moreover, among households who did not purchase a Peach Pass, some respondents voiced concerns that the rules were “confusing” or “too complicated.” To prevent the requirements from being a barrier to use, they should be as simple and convenient as possible. Additional research is needed to explore how user requirements impact the use of tolled facilities.

Agencies should anticipate that pricing will have differential impacts on corridor users.

By disrupting the status quo, road pricing creates inconveniences for some corridor users at the same time that it creates opportunities for others, necessarily resulting in a set of “winners” and “losers” in the region. Existing HOV-2 carpoolers, for example, were clearly more dissatisfied when they could no longer use the Express Lanes for free, whereas Express Lane users appeared to have benefitted from the pricing, as reflected in their more positive trip ratings.

Prior to implementing a road pricing strategy, agencies need to understand how their customers will be impacted by pricing and need to plan for ways to offset these differential impacts. Agencies should consider extensive public communication and programmatic support mechanisms.

Regional and contextual factors influence public attitudes toward tolling.

Previous studies have found that people tend to have more positive attitudes toward tolling once they have had experience with the system. In Atlanta, however, the reverse was the case; respondents’ opinion towards became more negative after the deployment of pricing. We posit that other contextual factors, such as the purpose of the tolling, familiarity with tolling in the region, the economic context, the level of public input to the project, and the level of public outreach and education also play a role in influencing public attitudes toward tolling.

When agencies are planning and implementing road pricing strategies, it is critical to consider these factors. For example, tolling is relatively new to the Atlanta metropolitan area; when the Express Lanes opened, the only other tolled facility in the region was GA 400, which charged only fifty cents in each direction (GA 400 discontinued tolling in November 2013). In regions where there is a lack of familiarity with tolling, there may be greater public misconception about the purpose of road pricing and greater opposition to tolling, in general. As a result, public communication and outreach becomes even more important and needs to be conducted early and often.

Overall, the traveler survey findings illustrate that road pricing does have an impact on travelers’ decisions, and that they are much more apt to make changes to their number of trips, the timing of those trips, and their choice of route (or lane), than they are to make more fundamental shifts in their mode of travel. The HOV-2 to HOT-3 conversion increased access to the Express Lanes among a group of solo drivers who previously had not used the Express Lanes, and these drivers indicated that they were more satisfied with their travel experience in the Express Lanes (relative to their experiences prior to pricing). At the same time, the HOV-2 to HOT-3 conversion resulted in the shifting of carpool trips out of the HOV lanes and into the general purpose lanes, with a majority of general purpose lane users registering dissatisfaction with their peak hour trips.

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Appendix A: Methodology

This Appendix provides more detailed information about the following aspects of the survey methodology:

- Population and Sampling
- Wave 1 Survey Administration
- Pre-Testing
- Panel Maintenance
- Wave 2 Survey Administration
- Weighting of the Data
- Panel Attrition

Population and Sampling

As previously described, three populations were sampled for this survey effort:

- Peak hour corridor drivers (I-85, Buford Highway)
- Transit users in the corridor
- Vanpool users

The sampling methodology for each of these populations is described in more detail below.

Driver Sample: License Plate Capture

The license plate capture technique uses high-speed photography to record vehicles as they pass fixed points on the highway. The plate numbers recorded are then matched to the registered name and address of the vehicle owner using state motor vehicle databases, so that an invitation to participate in the survey can be sent by mail. This approach is well-suited to studies of particular routes and corridors because it provides a representative sample of actual highway users, regardless of their origin, destination, or trip purpose. Drivers who use the facility more frequently are proportionately more likely to be sampled.

This study is focused on the I-85 CRD project corridor, with more emphasis on I-85 than Buford Highway since tolling is planned only for the former. The Wave 1 sampling plan thus called for 75 percent of the license plates to be captured on I-85 and 25 percent on Buford Highway. RSG worked with a subcontractor, All Traffic Data Systems (ATDS), to conduct the license plate photography on each of the two routes. Based on a review of conditions, two camera locations were established: one on the I-85 overpass just north of Exit 96/Pleasantdale Road, and the other on Buford Highway/Route 13, just north of the intersection of Jones Mill Road and Button Gwinnett Drive (see Figure 23). RSG and ATDS recommended these locations because they afforded favorable sightlines of the travel lanes in both directions. Moreover, these locations were in the southern end of the corridor and thus would capture users traveling the full length of the corridor, as well as those traveling shorter distances in the southern portion of the corridor.

Prior to conducting the license plate capture, the Volpe Center sought and obtained permission from GDOT regarding the license plate capture plan. While out in the field conducting the

license plate capture, ATDS carried the letter of permission with them in case any motorists or law enforcement personnel had questions about the project.

License plate collection was focused on peak and shoulder periods (6-10 a.m. and 3-7 p.m.) since these periods were expected to be most affected by the tolling project and additional transit service. The design of the license plate capture plan reflected the strong directional commute pattern in the I-85 corridor, whereby many residents living in the suburbs of Gwinnett County travel southbound to their jobs in the city of Atlanta. Consequently, the license plate capture during the morning commute period primarily focused on southbound traffic, while the afternoon peak period focused on northbound travel.

Figure 23: License Plate Capture Sites: I-85 (top) and Buford highway (bottom)

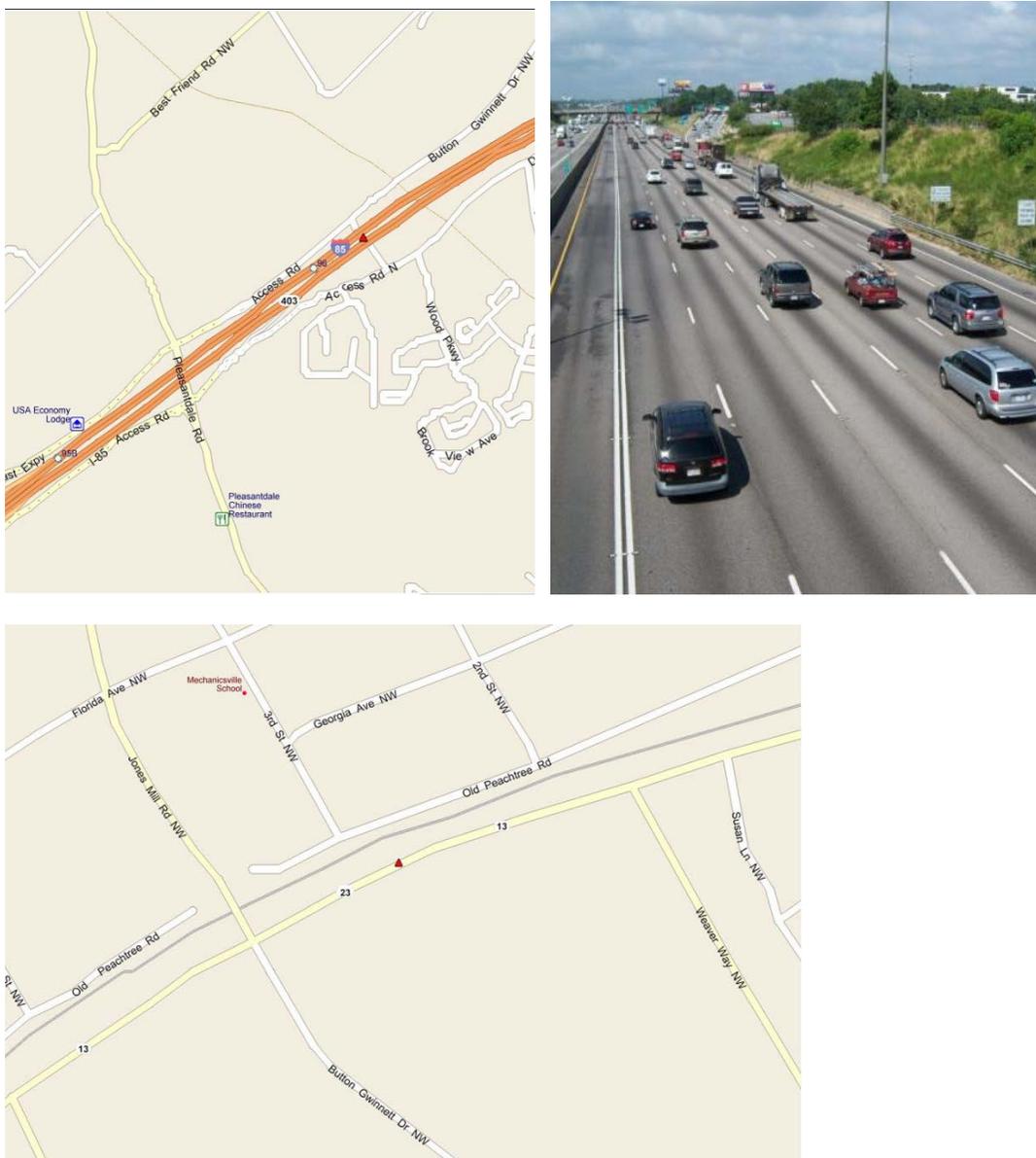


Table 49: License Plate Capture Plan

Date	Road	Direction of Traffic	License Plates to Capture	Time Period
February 15, 2011	I-85	South	12,000	6-10 AM
February 15, 2011	I-85	North	12,000	3-7 PM
February 15, 2011	Buford Highway	South	4000	6-10 AM
February 15, 2011	Buford Highway	North	4000	3-7 PM
February 16, 2011	I-85	South	12,000	6-10 AM
February 16, 2011	I-85	North	12,000	3-7 PM
February 16, 2011	Buford Highway	South	4000	6-10 AM
February 16, 2011	Buford Highway	North	4000	3-7 PM
February 17, 2011	I-85	North	4000	6-10 AM
February 17, 2011	I-85	South	4000	3-7 PM
February 17, 2011	Buford Highway	North	1500	6-10AM
February 17, 2011	Buford Highway	South	150011	3-7 PM
TOTALS	I-85	Both	53,500	Peak periods
TOTALS	Buford Highway	Both	17,750	Peak periods

RSG and All Traffic Data converted the video photography files into datasets of license plate numbers. The datasets necessarily excluded vehicles with missing or illegible plates. Furthermore, for the purposes of this study, out-of-state plates, commercial and rental vehicles, and taxi/livery vehicles were excluded (these comprised 22% of all collected plates), in keeping with the focus on Atlanta-area households. The resulting file was sent to the Georgia Department of Revenue for name and address matching. Prior to conducting the license plate capture, the Volpe Center worked with the Georgia Department of Revenue, Motor Vehicle Division (with assistance from GDOT) to acquire their approval in sharing the matched names and addresses of the sampled license plates.

Approximately 92 percent of submitted plate numbers were successfully matched to an address. RSG further processed the address file to eliminate duplicates and handle special cases such as leased vehicles. This became the contact database used for initial communication with respondents, as described in more detail below.

The table below presents an overall summary of the license plate capture and address matching effort.

Table 50: License Plate Capture: Address Matching and Mail-out

Category	Planned	Actual
License Plates Captured I-85	53,500	39,527
License Plates Captured Buford Highway	17,750	13,374
Total License Plates Captured	71,250	52,901
Total Mail-out: License Plates Matched to an Eligible, Valid Address	32,500	35,455
Adjusted for Mail Returned as Undeliverable	32,500	34,690

One important limitation of this license plate capture approach is that survey materials can be sent only to the address of the *registered owner* of vehicles that are photographed. This has the effect of excluding from the sample those travelers in the corridor who are passengers in a vehicle owned by someone else (or in some cases, as the driver of someone else’s vehicle). Likewise, official vanpool vehicles cannot be matched to the lead driver’s address, much less to the vanpool passengers. This limitation is a concern because of the importance of ridesharing, carpooling, and vanpooling in the region and the interest in tracking responses to I-85 tolling among a wide spectrum of travelers. For example, if new tolls led to an increase or decrease in carpooling, this impact might be difficult to measure if non-driver/owner participants in carpools and vanpools are not adequately represented in the survey sample.

Several factors mitigate this problem. First, about half of all carpool commute trips nationally include *only* members of the same household,²⁷ and intuition suggests that the proportion is even higher for non-commute trips such as school pick-ups and social activities. Because this is designed as a household survey (see below), all members of the vehicle driver/owner’s household would be included in the sample, thereby ensuring that the carpool passengers from the household and their travel patterns would be included. Second, for carpools comprised of members of different households, it is common, albeit not universal, for participants to take turns

²⁷ University of South Florida, National Center for Transit Research, Best Workplaces for Commuters fact sheet, 3-31-2010. http://usf-cutr.custhelp.com/app/answers/detail/a_id/3147/~~/household-only-carpools

doing the driving, meaning that each carpool vehicle has at least a chance of being sampled during the license plate capture process. Carpool passengers would also have a chance of being sampled at times when they (or another household member) drove their own vehicle or rode transit in the corridor. Finally, a separate recruitment procedure was set up specifically for GRTA vanpools to ensure that this important segment was not omitted. Despite these factors, it is possible that non-driver carpool participants may be under-represented, and this should be kept in mind when reviewing results. Note, however, that this study is focused primarily on *changes* in travel behavior that occur *within the same households* after the implementation of I-85 tolling and related projects, compared to the pre-tolling baseline.

Transit Intercepts

Prior to conducting the transit intercept, the Volpe Center and RSG obtained letters of permission from GRTA, GCT, and MARTA to intercept transit customers. These letters served to inform the transit agencies of the project and to confirm their permission. RSG survey staff used a *postcard handout* technique to personally contact transit riders in the corridor and recruit them to participate. The postcard contained information about the study, as well as the survey URL and a unique password that each rider could use to access the survey. An onboard intercept was also considered, but it was determined that it would be too time consuming for RSG staff to ride the Express bus for 50 minutes to downtown Atlanta, and would limit the staff's ability to reach the maximum number of passengers.

The postcard handout method was primarily used at park and ride lots that serve Express buses on the corridor as well as two MARTA stations (Doraville and Lindbergh). At the MARTA stations, all staff asked screening criteria to ensure that only individuals who traveled in the I-85 corridor to reach the station (or who will travel the I-85 corridor after leaving the station) were provided with a postcard. Staff used laminated maps of the I-85 corridor to aid them in the screening process.

At the park and ride lots and the MARTA stations, survey staff engaged with transit riders as they waited for their bus, described the survey effort and answered questions, and distributed invitation postcards. In addition, RSG staff devoted some resources to intercepting Express Lane users at downtown Atlanta stops (during the afternoon commute) and onboard Gwinnett County Transit (GCT) local Route 10, which operates along the corridor, running from the Discover Mills Park and Ride to the Doraville MARTA station. Interested respondents could go online and begin the first part of the survey as soon as they wished, though their assigned travel dates were kept consistent with the rest of the sample.

The transit recruitment was conducted in March 2011. The recruitment plan is detailed in the table below.

Table 51: Atlanta Transit Recruitment

Date	Details	Hour	Postcard handouts	Packets mailed out
March 21, 2011	Doraville MARTA station	6-10 AM	358	34
March 21, 2011	Lindbergh MARTA station	2-7:30 PM	105	24
March 22, 2011	Discover Mills Park & Ride	5:30 AM – 9 AM	536	536
March 22, 2011	Downtown stops servicing the Express buses	3:30 PM – 7:30 PM	154	46
March 23, 2011	Discover Mills Park & Ride	5:30 AM – 6:15 AM 8 AM - 9 AM	258	79
March 23, 2011	Doraville MARTA station	6:30 AM -7:45 AM	185	22
March 23, 2011	Onboard GCT 10 local bus	9 AM – 1:30 PM	11	2
March 23, 2011	Doraville MARTA station	2 PM – 7:30 PM	500	56
March 24, 2011	Indian Trail Park & Ride	5:30 AM – 8 AM	114	37
March 24, 2011	I-985 Park & Ride	5:30 AM - 8 AM	312	77
March 25, 2011	Mall of Georgia Park & Ride	5:30 AM – 9 AM	68	33
March 25, 2011	Discover Mills Park & Ride	5:30 AM – 9 AM	62	19
March 25, 2011	Doraville MARTA Station	10 AM – 2 PM	58	7
Totals			2721	635

Vanpool Participants

An objective of the study was to also analyze the effects of the I-85 CRD on vanpoolers. As noted, the license plate capture method would tend not to capture vanpool passengers (except to the extent that they or other household members also drove their own vehicles or took transit in the corridor at other times). A special recruitment effort was made in partnership with GRTA, whereby all registered members of vanpools in the I-85 corridor (approximately 46 vanpools with 477 members) were e-mailed an invitation to participate in the survey. Interested respondents went to an RSG-hosted survey website to register their interest and enter their name and address. From that point forward, respondents received the same survey materials by mail as those recruited via license plate capture. Vanpool respondents' survey passwords were, however, encoded to reflect that they were recruited in this way, so that they could later be analyzed as a sub-group.

Wave 1 Survey Administration

For the Wave 1 survey, respondents recruited via license plate capture received a series of hard-copy mailings from the survey team. All materials were provided in both English and Spanish. The first mailing was a pre-notification postcard that briefly described the survey and advised that a full survey packet would be arriving in a few days. The postcard also noted that a \$15 gift card was being offered as an incentive for completing the survey. Mailing of the postcard was timed to have it arrive approximately 5 business days prior to the assigned travel dates for the survey.

The survey packet itself, which arrived about 2 days prior to the assigned travel dates, included:

- **Invitation letter:** This letter was printed on USDOT stationery from the Volpe Center project manager and served to explain the purpose of the survey, the survey sponsors, and why the household should participate. The invitation letter also included the survey website address, the household's unique password, assigned travel dates, and a dedicated e-mail address and telephone number to use for questions about the survey, or to complete the survey by phone.
- **A set of “memory jogger” sheets:** This one-page, double-sided document served as a worksheet for members of the household to record information about their daily trips, which they could later use as a resource when completing the online survey (see Figure 24 in Appendix A: Methodology). In addition, it included explanatory notes about how to record the information (e.g., what constitutes “a trip”).
- **A Frequently Asked Questions Document:** A one page document with commonly asked questions about the survey project and responses to those questions.

Figure 24: Memory Jogger

**I-85 Corridor Transportation Study
MEMORY JOGGER**

To log your trips, go to: (Please register our notes, vayo) at
<http://www.rgsurvey.com/atlanta/portal>

DAY 1 Name: _____ Travel Date: _____

	When did your trip...		Travelled by	Travelled with	Where did you go?	
	Start?	End?			Description	Address/Intersection
Example	8:00am	8:30am	Car	Elise	Prechool	3435 Collins Mill Rd, Lawrenceville, GA
Example	8:30am	9:00am	Car (then bus)	John	Work	Deerfoot Ave NE @ Auburn Ave, NE, Atlanta, GA
1st Trip						
2nd Trip						
3rd Trip						
4th Trip						
5th Trip						
6th Trip						
7th Trip						
8th Trip						
9th Trip						
10th Trip						

DAY 2 Name: _____ Travel Date: _____

	When did your trip...		Travelled by	Travelled with	Where did you go?	
	Start?	End?			Description	Address/Intersection
Example	8:00am	9:30am	Car	Mark A. Jen	Sales Call	4800 Courtney Dr, Forest Park, GA
Example	10:45am	10:55am	Walking	Steve	Colleg	Math St @ Inwood Rd, Forest Park, GA
1st Trip						
2nd Trip						
3rd Trip						
4th Trip						
5th Trip						
6th Trip						
7th Trip						
8th Trip						
9th Trip						
10th Trip						

This sheet is for your use only. We do not need you to return this form. If you have questions, please email atlantastudy@dot.ga.gov.
Each trip is worth an additional compensation. We appreciate you for traveling and participating.
Thank you for participating in this study. We appreciate you for traveling and participating.

Page 1 | Page 1

On or about the first day of the assigned 2-day diary period, all households (except for those recruited via transit onboard intercept) received a follow-up postcard in the mail as a reminder, which listed the survey website and their password. E-mail reminders were also sent to the primary household contact one day prior to the first assigned travel day, and also one day after the second assigned travel day, if the survey had not been completed by all adult members of the household by then. A second and third reminder e-mail were sent over the course of the next five business days to households that still had not completed all of their assigned travel diaries. However, e-mail communication was only possible for those respondents who provided an e-mail address via the transit onboard recruitment process and/or by completing the first section of the survey.

Given the lower than anticipated response among the Atlanta auto sample, the decision was made to reassign travel dates to May 11 and May 12 for all households that had not yet completed any of the survey forms as well as those who had completed the household information survey, but not the travel diaries. A postcard was sent to 33,457 households notifying them of their re-assigned travel dates and encouraging them to participate.

A modified process was used for respondents in the transit and vanpool samples. Transit riders who responded to a postcard hand-out first went to the survey website to log in and complete the first section of the survey, which is a short household information screener (see below on survey structure). They then received a pre-notification postcard and survey packet in the mail at the address that they provided. These mailings were sent in advance of their assigned travel dates so that they could complete the diary portion of the survey.

Vanpool respondents first needed to visit a survey website referenced in their initial contact e-mail from GRTA to register their interest and provide contact details. From that point on, they were handled in essentially the same way as the driver households, receiving a pre-notification postcard and then a survey packet in the mail at the address they provided.

Respondents completed the survey online, with the option to call or e-mail with any questions or concerns. A small number of participants (no more than about 5 percent) also elected to take all or part of the survey by telephone. For these respondents, RSG used trained telephone operators who led respondents through the survey questions by phone and entered their responses into the same online survey tool.

During the survey administration period, respondents also had the option to contact RSG with questions or concerns, using the dedicated phone line or e-mail address provided in the invitation materials. While a precise breakdown of inbound communications is not available, most calls and e-mails appeared to be requests for help with technical issues with the survey or questions about who was eligible to take part. A few respondents sought confirmation that it was a legitimate, government-sponsored study or more general information about the study.

Wave 1 Survey Instruments

Similar to the communication materials, the surveys were offered in both English and Spanish. Respondents could complete the entire survey in Spanish, or they could toggle back and forth between the Spanish and English language versions (each survey page included a button that

enabled respondents to toggle back and forth). Questions and topic areas from the survey are described below. Please see Appendix B for each of the survey instruments.

Household Information and Demographics

In this section, the primary contact provided information on behalf of the entire household, including the following items:

- Whether they planned to move within one year – those who said “yes” skipped all remaining questions and were not considered part of the completed sample
- Number of household vehicles
- Number of people in the household and their relationship to primary contact
- Age and gender for all household members
- For each adult in the household: driver licensure status, employment status, educational attainment, Hispanic/Latino origin, and race
- Annual household income
- Home address for future contact

Two-Day Travel Diary and Follow-Up Questions

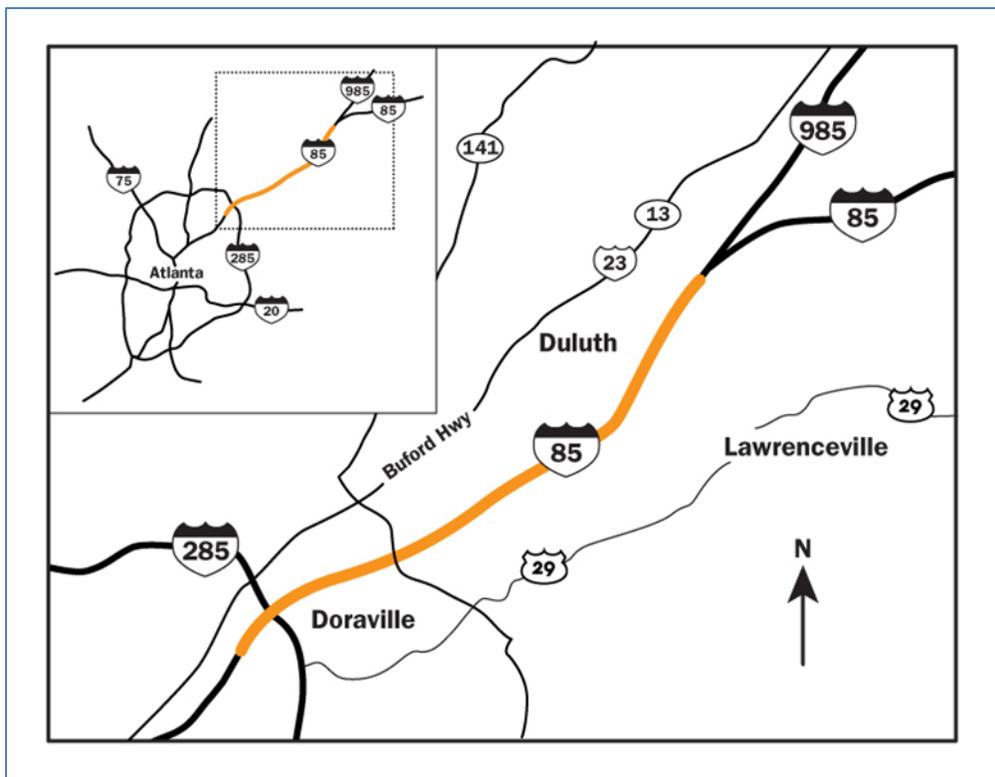
In this section, each member of the household provided information on the trips made during the assigned 48-hour travel diary period. Respondents could enter trip locations using the exact address or nearest cross-streets, and/or by using a point-and-click map interface or business search tool. The survey software geocoded each location to latitude and longitude using a Google database, though this was not visible to respondents. Specific questions in this section of the survey were:

- Whether any trips were made on assigned days, and if not, reason(s) for staying home
- Whether worked from home (telecommuted) on assigned days
- Trip roster for each day, i.e. order of location
- Origin, destination, departure time, arrival time, and purpose for each trip
- Mode(s) of transportation used for each trip
- For driving trips: whether driver or rider; parking cost; number of other people in the vehicle (household members and others)
- Whether trip traveled on the I-85 corridor northeast of Atlanta
- {IF YES} Whether the trip was a driving trip on I-85, a transit trip on I-85 or traveled on some other route in the corridor (not I-85)
- {IF YES} Whether traveler information sources such as radio traffic reports, 511 telephone service, or websites were consulted before or during the trip.

The Volpe survey team worked with the local partners in Atlanta to develop appropriate language for describing the I-85 corridor. The local partners recommended the use of the term: “I-85 corridor northeast of Atlanta.” In order to insure that respondents understood the geographic boundaries of the “I-85 corridor northeast of Atlanta,” the survey included a written definition as well as a map (see Figure 25). More specifically, the I-85 corridor was defined as [excerpted from the survey]:

1. The 15 mile portion of I-85 from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb County) to Old Peachtree Road (Exit 109 in Gwinnett County). The 15 mile portion of I-85 is highlighted on the map.
2. State roads and highways close to I-85 that cover the same general area as I-85. These include:
 - Buford Highway (State Route 13/U.S. Route 23)
 - Peachtree Parkway NW (Peachtree Industrial Blvd/State Route 141)
 - Lawrenceville Highway (U.S. Route 29)
3. Local/secondary roads approximately parallel to I-85

Figure 25: Map of the I-85 Corridor



Respondents who used I-85 answered specific follow-up questions about the experiences. For each trip on I-85, respondents were asked about:

- Exit ramp used to get on I-85
- Exit ramp used to get off I-85
- Did the trip use the HOV lane (driving trips only)
- Satisfaction with overall driving time, travel speed, and predictability of travel time (for I-85 driving trips)
- Satisfaction with overall transit time, wait time at the stop, reliability of service, and availability of seating (for transit trips)

Personal Survey

After the two-day diary, the final section of the survey asked each respondent to provide more general information about their transportation patterns and personal attitudes. These questions allow the more detailed, trip-level information from the diary to be viewed in light of the respondents' broader patterns in using the I-85 corridor. It also allows for analysis of how "typical" commute patterns (rather than specific trips) and attitudes toward tolling and traffic may change after the start of congestion pricing. Questions in this section included:

- When the respondent last used public transportation
- Typical number of trips per week on I-85
- How many of those trips are in the HOV lane
- Ownership of personal computers and telecommunications devices

Employees and students were also (as applicable) asked about:

- Number of days per week commuting and telecommuting
- Typical commute mode
- Flexibility in work/school schedule (and reason for those with no flexibility)
- Commuter benefits offered and used (e.g., discounted parking or transit pass)

Respondents also rated their agreement or disagreement with a number of attitudinal statements about traffic and tolling, including:

- At least twice a week, there's an unexpected delay on my trip.
- Driving Atlanta regional highways is stressful for me
- I adjust my routes and/or departure times to avoid traffic congestion
- I will use a toll route if the tolls are reasonable and I will save time
- Highway tolls are unfair to people with limited incomes
- I don't have enough time in the day to do all that I need to do

Pre-Testing

The entire survey process, from recruiting of participants all the way through to collection and analysis of data, was pre-tested using a small-scale pilot study. It should be noted that a pilot study was conducted in Seattle in the fall of 2011, prior to the Atlanta pilot study. Since the survey in Seattle was very similar to the one being used in Atlanta (with the exception of some site-specific questions), the findings from the Seattle pilot study were also used to inform the development of the Atlanta questionnaire. As a result, a somewhat smaller-scale pilot was conducted in Atlanta compared to Seattle. The key purpose of the Atlanta pilot study was to:

- Obtain respondent feedback on the survey, particularly on their understanding of the term "I-85 corridor northeast of Atlanta."
- Estimate expected response rates for the Wave 1 survey, including response from the driver and auto samples, as well as from the address matching from the license plate process

- Evaluate the effectiveness and use of the Spanish language version of the survey and other study materials
- Identify any logistical issues with license plate capture, address matching, transit intercepts, local agency permissions, mailings and other respondent communications, and overall timeline.

Recruiting Pilot Participants

One portion of the study that was not pre-tested was the recruiting of organized vanpool participants. This decision was made to ensure that the limited number of vanpoolers in the corridor would be available for the Wave 1 survey, rather than “used up” in the pilot. Otherwise, the pilot proceeded in the same way as described above for the Wave 1 survey, but with a reduced number of participants. License plate capture for the pilot was conducted on I-85 during morning and afternoon peak and shoulder periods on January 11, 2011. Onboard transit intercepts and postcard handouts were conducted during morning and afternoon peak periods on January 18, with postcard handouts the following day during the morning peak at the Doraville MARTA station. Assigned travel dates for both the driver and transit samples in the pilot study were February 16-17, 2011.

Results from the pilot’s recruiting efforts are summarized below.

Table 52: Pilot Study - License Plate Capture

Plates Recorded	2125
Plate Numbers Matched to Valid and Eligible Addresses	93%
Total Address List for Mail-Out	1974
Survey Response Rate	8.9%
Completed Households	176

Table 53: Pilot Study - Transit Onboard Intercept and Postcard Handout

	Method	Number of Handouts	Response rate	Number of Completed Respondents
January 18:	Postcard handout	100	16%	16
Discover Mills Park & Ride				
January 18:	Onboard intercept	50	5.6%	1
Discover Mills Park & Ride				
January 19:	Postcard handout	215	14.9%	32
Doraville MARTA station				
Total		365	13.4%	49

In general, the survey team was pleased with the response rate achieved in the pilot study. While it was somewhat lower than the response achieved in Seattle, it was comparable, and even a little higher than the response that RSG typically receives on its online surveys.

Open-Ended Comments

In addition to the draft version of the Wave 1 survey questions, the pilot survey included several open-ended questions about respondents' perceptions of the survey, particularly whether the definition of the I-85 corridor was clear, whether instructions and questions were clear, whether the answer choices were adequate, and whether they had any other recommendations for improving the survey. These comments were taken into consideration when revising the survey for Wave 1. Major comment areas included the following:

- Most of those who chose to comment stated that the instructions and questions were clear and that the answer choices were appropriate, or had only minor critiques.
- A few respondents had difficulty entering home address information; the mapping tool (Google maps) did not recognize the address.
- Overall, respondents thought the definition of the corridor was clear. However, some wanted more examples of specific roads in the corridor, and a number of respondents also provided input on how we might change the definition (e.g., in their view, the corridor should also include "X" or "Y")
- A few respondents were concerned that the two assigned travel dates were not typical of their usual travel patterns.
- Several comments dealt with the length of the survey; some felt there may have been ways to streamline the data collection.

Telephone Debriefs

At the end of the pilot survey, respondents were asked whether they would be willing to be contacted by telephone for a more in-depth discussion of the survey. Of those who agreed, six households were selected for telephone debriefs conducted by RSG survey staff. These interviews probed the respondents' response to the printed materials they received, their experiences with the online survey tool, their view of the incentive, and other general impressions. Despite the small number of interviews, RSG attempted to include a mix of respondents with respect to commute mode, household size, and other factors such as income, age, and English proficiency. Major themes of the debriefs were:

- There were no major problems cited with the survey questions or the online tool, but the overall length of the survey was a common concern, with some interviewees feeling very strongly about this.
- Most interviewees had favorable reactions to the printed materials. Respondents varied in their actual use of the Memory Jogger sheets, ranging from relatively conscientious use to simply relying on memory.
- On the online survey, questions using "drop-down" windows for answer choices were perceived to be onerous and less user-friendly.

- Several interviewees suggested ways to streamline data entry, for example by pre-filling Day 2 locations with the information from Day 1 and reducing the level of detail requested in the diary (e.g., by not requiring as much detail on trip departure and arrival times).

Survey Changes Based on the Pilot

The Volpe Center study team worked with RSG to analyze results of the pilot, including those from completed surveys as well as partially complete surveys and comments from telephone debriefs. For example, to assess respondents' understanding of the "I-85 corridor", the survey team mapped origins and destinations for trips that respondents indicated were in the corridor. The mapping exercise revealed that respondents had a good understanding of the geographic boundaries of the corridor.

While no major problems with the survey were detected in the pilot study, several minor revisions were made, including the following (new text is highlighted in red):

1. In the definition of the corridor, the following phrase was added: "For the purpose of this study, we are defining the I-85 corridor northeast of Atlanta as..." This phrase was added in order to acknowledge that there may be different definitions of the corridor.
2. In the final open-end question, which asks respondents to share any final opinions about transportation in the Atlanta Metro area, a phrase was added providing respondents with the opportunity to share information specific to their travel days:

If you would like to tell us anything else about the trips you made on <day 1> and <day 2> or share any final opinions about transportation in the Atlanta Metro area, please type your comments in the box below.

3. In instances where home addresses are not recognized by the online tool, a more specific and detailed error message was provided to ease respondents' irritation.

Panel Maintenance

The baseline survey was conducted in April/May 2011 prior to pricing, and the post-pricing survey was administered one year later, in April/May 2012. In order to minimize panel attrition over the course of the year, the survey team undertook panel maintenance efforts to keep respondents engaged and to encourage their continued participation. On September 15, 2011, the survey team sent the primary contact for each participating household an e-mail that thanked them for their participation to date and provided the link and password to review a few results from the study. The e-mail contact also reminded households to expect an e-mail in spring 2012 for the second phase of the study and that those who complete the travel diary

would receive an additional \$30 Amazon.com gift card. A total of 2830 e-mails²⁸ were delivered and of those, 55% were opened. Figure 26 illustrates the findings shared with respondents as part of the first panel maintenance contact.

Figure 26: Panel Maintenance Contact



The U.S Department of Transportation thanks you for your participation.

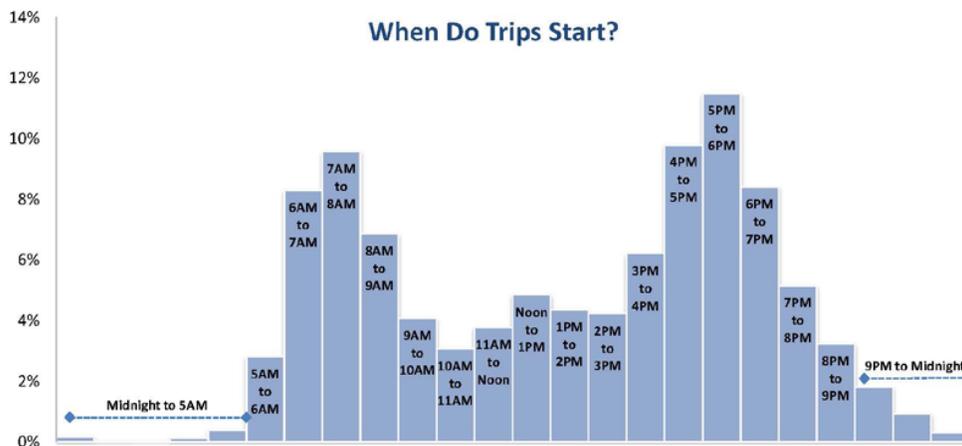
We know our study will succeed because households like yours participated last spring and plan to participate again in April 2012.



Here is some information about the trips you described:

Study Results

- Collectively, you told us about **27,695 trips**
- Travelers made an average of **3.52 trips per day**
- **About half of all trips** were to or from work



What's Next ?

April 2012: To learn how travel changes over time in the region, we will again ask your household to share your trips over a 2-day period. As thanks, your household will receive a \$30 Amazon.com gift card.



For more information, please email: atlanta@rsqsurvey.com
 Or visit the study website: <https://www.rsqsurvey.com/atlanta>

²⁸ In addition to sending an email to “completed” Wave 1 households (in which all adult members of the household completed the survey), the Wave 1 survey findings were also sent to pilot respondents and to “partially” complete households (where a minimum of one adult completed the survey).

The second component of the panel maintenance included a “mini-survey” of five questions. The survey team sent the primary contact of each household an e-mail invitation to complete the mini-survey, with the incentive of being entered into a raffle to win either an Apple iPad or Motorola Xoom tablet. Participation was completely voluntary. Of the 2808 invitations that were sent, 1350 respondents completed the online mini-survey, for a 48% response rate. The invitation e-mail was also used as another opportunity to remind respondents that they would be contacted later in the spring to complete the second wave of the survey.

The mini-survey included the following question topics:

- When the Express Lanes opened, how informed did you feel about the tolling project?
- How have you changed your travel behavior in the last two weeks due to tolling?
- How frequently do you consult traffic information for I-85 corridor trips?
- Do you know the cost of the toll for your I-85 trips?
- To what extent do you agree/disagree that tolling on I-85 has improved your travel in the region?

Wave 2 Survey Administration

As part of the Wave 2 survey effort, an update survey was administered to obtain any changes to household background information that may have occurred since the Wave 1 survey. On April 2, 2012, several weeks prior to the administration of the Wave 2 travel diary, an e-mail invitation was sent to the primary contact for each household asking them to participate in the household update survey. Respondents were able to report changes to their home address, household size or composition, education level, employment status, income, and number of household vehicles. For each employed member of the household, the survey asked whether their work location or schedule had changed since the Wave 1 survey. For households with children, the survey asked whether the child(ren)’s school or day care location or schedule had changed. Finally, the update survey asked respondents about whether or not their household had a Peach Pass/Cruise Card, when they purchased the pass, satisfaction with different aspects of the Peach Pass account, and reasons for not acquiring a Peach Pass.

In addition to sending the survey update invitation to “completed” Wave 1 households (in which all adult members of the household completed the survey), the invitation was also sent to pilot respondents and to “partially” complete households (where a minimum of one adult completed the survey).

Following completion of their update survey, all participating households were invited to complete the Wave 2 surveys. An e-mail invitation was sent to each household notifying them of their assigned two-day travel dates. The e-mail contained information on the study purpose and sponsor, as well as detailed instructions on how to participate, including the link to the survey website, their password, their assigned travel dates and a toll-free number they could call to participate by phone. For households that did not complete the two-day travel diary, up to three e-mail reminders were sent in the week following their assigned travel dates to request their participation.

Similar to Wave 1, RSG continued to maintain and respond to the e-mail inbox for Atlanta. Households were encouraged in the reminder e-mails to send messages if they had any comments or questions about the survey. Between the week of April 2, 2012 (when the e-mail invitation to complete the update survey was sent) through May 28, 2012, a total of 112 e-mails were sent to the inbox. The top five issues raised in the e-mails included:

- Amazon card status (28)
- Amazon Card Redeemed (22)
- Password Lost (13)
- Website error (10)
- Trip Log Question (7)

Wave 2 Survey Instruments

The Wave 2 surveys were largely the same as the Wave 1 surveys, with the addition of several new questions and response categories. All Wave 1 references to the HOV lanes were changed to “Express Lanes” to reflect the branding of the new I-85 HOT lane. Other key changes are highlighted below:

Trip Diaries:

- [For each Express Lane trip recorded]:
 - Approximately what portion of the I-85 Express Lanes did you use: (less than 5 miles, 5-9 miles, 10-14 miles, all 15 miles)
 - Approximately how much was your I-85 Express Lanes toll (response categories provided dollar increments)
- Transit trip satisfaction: added “Parking availability at Park and Ride Lots”
- Traveler information: added “Smartphone or tablet app” as a response category

Personal Survey

- [if makes 0 trips on I-85 in a typical week]:
 - Do you ever use I-85 in the corridor northeast of Atlanta
 - Have you used the I-85 Express Lanes since they opened on October 1, 2011
- For respondents who make fewer weekly trips on the Express Lanes, compared to their Wave 1 use of the HOV lanes – why?
- For respondents who make more weekly trips on the Express Lanes, compared to their Wave 1 use of the HOV lanes – why?
- If uses Express Lanes at least 1 time per week:
 - When do you typically decide that you will pay a toll and drive in the I-85 Express Lanes?
 - For what reasons do you decide to use the I-85 Express Lanes?
- Frequency of engaging in different travel behaviors as result of tolling
- If started or stopped carpooling since Wave 1: Why?
- If started or stopped vanpooling since Wave 1: Why?
- If telecommute more/less than wave1: Why?

- Attitudinal statements:
 - Overall my travel along I-85 has been improved by the Express Lanes
 - I'm concerned about my safety when I use the Express Lanes
 - Traffic congestion has gotten worse on my other routes along the I-85 corridor since tolling started

Weighting of the Data

The survey's sampling plan was stratified by mode and route, resulting in some methods of commuting being over or under-represented in the sample, as compared to their true proportions in the population of peak-hour travelers in the I-85 corridor. For example, the share of drivers recruited off the HOV lanes was somewhat smaller than their actual share (as measured by peak hour traffic volume data), so the appropriate weights were used to bring the HOV sample in line with its actual share of trips. Transit riders, on the other hand, were over-represented in the sample compared to their actual share of peak period travelers in the corridor. For drivers sampled off the general purpose lanes and Buford Highway, their share was quite close to their actual share of peak period travelers, so minimal weighting adjustments were required.

In representing the shares of recruited trips by route, it was necessary to account for the potential to capture trips by a sampled vehicle on multiple routes. For example, a given vehicle owned by a sampled household could have been captured taking four different trips along the corridor during the recruitment process. Rather than ignoring additional trips (e.g., assuming that the first sampled trip is representative as in the case of vehicles captured exactly once), the sampled route for the vehicle would be represented as the weighted average across the captured trips (e.g. three trips by general purpose lanes and one trip by HOV would be classified as $\frac{3}{4}$ of a vehicle recruited on the general purpose lanes and $\frac{1}{4}$ of a vehicle recruited on the HOV).

To adjust for the effects of this stratified sampling approach, the raw data were weighted at the household and person level using data on peak period I-85 and Buford Highway traffic volumes and transit ridership numbers (Express bus). Household level weights were identified using the ratios of observed peak period travel share to the share of the sample recruited by route and mode, multiplied by a given mode's observed share.

Person level weights were established to give each household equal representation, and to yield summed person-level data that was consistent with the recruitment method for the household (i.e., mapped to the household weights). To achieve this, the person-level weights were specified as the product of the ratio of respondents to sampled households (i.e. 3126/1655, or approximately 1.89) and the reciprocal of the number of respondents in a sampled household.

Panel Attrition

With panel surveys, there is a concern that certain demographic groups (e.g., low-income and large households) may drop out of the survey at disproportionately higher rates than other groups, resulting in their under-representation in the final sample. To assess panel attrition, we compared the demographic composition of the original Wave 1 sample (4,780 individuals) to the final Wave 2 respondents (3,126 individuals who completed both waves of the survey). When comparing the sample composition across the two waves, notable differences include a small increase in the proportion of 35 to 44 year olds (from 25% in Wave 1 to 27% in Wave 2) and a drop-off in the number of respondents in the youngest age group (from 7% to 5%). In addition, there is a slight decline in the share of respondents who have lower levels of education. Regarding household characteristics, notable differences include a slight decline in the proportion of lower income households (from 17% to 13%), and an increase in the proportion of two adult households with children (from 27% to 30%).

Table 54: Respondent Demographic Characteristics (Wave 1 vs. Wave 2, unweighted)

	Wave 1	Wave 2
Gender:		
Male	47%	47%
Female	53%	53%
Age:		
18-24	7%	5%
25-34	18%	19%
35-44	25%	27%
45-54	26%	26%
55-64	19%	18%
65+	5%	5%
Race:		
White	71%	72%
Black	14%	13%
Asian	11%	11%
Other	5%	4%
Ethnicity:		
Hispanic		6%
Not Hispanic		94%
Education:		
High School degree or less	12%	10%
Vocational/Technical	3%	3%
Associate's Degree	7%	6%
Some College	17%	16%
Bachelor's Degree	37%	40%
Post-Graduate Degree	24%	25%
Number of Respondents	4780	3126

Table 55: Household characteristics (Wave 1 vs. Wave 2, unweighted)

	Wave 1	Wave 2
Income:		
Under \$50,000	17%	13%
\$50,000 - \$99,999	39%	39%
\$100,000 - \$150,000	22%	23%
More than \$150,000	12%	12%
Refused to Say	10%	13%
Household composition:		
Adult only Household	62%	60%
1 adult	18%	19%
2 adults	35%	32%
3+ adults	9%	9%
Households with children	38%	40%
1 adult with child(ren)	4%	4%
2 adults with child(ren)	27%	30%
3+ adults with child(ren)	7%	6%
Number of vehicles:		
0	0%	0%
1	21%	21%
2	52%	53%
3+	27%	26%
Number of Households:	2412	1655

Appendix B: Survey Instruments

Wave 1 Survey Instruments

INTRODUCTION

1. Welcome.

Thank you for visiting our website. Resource Systems Group, Inc. is conducting this study on behalf of the U.S. Department of Transportation (U.S. DOT), in cooperation with the Georgia Department of Transportation, State Road and Tollway Authority, Georgia Regional Transportation Authority, and Atlanta Regional Commission.

The purpose of the study is to understand travel patterns in the region northeast of Atlanta and how they are changing over time. You are part of a landmark national study that will analyze travel patterns in four U.S. cities (Atlanta, Seattle, Dallas, and San Diego) in order to help guide transportation improvements both in your area and around the country. **Yours is one of a small number of households who have been invited to take part, so your responses will have a significant effect on transportation decisions in the region.**

Your privacy will be protected throughout this study. Please click [here](#) to view our privacy policy. If you have any further questions about the study, please email RSG at atlanta@rsgsurvey.com or call 1-888-774-5982.

2. This study has several parts. First, one person in your household should complete a short household information survey. Next, every person in your household is asked to complete a travel diary survey about your travel on <day 1> and <day 2>. We will then send your household a \$15 Amazon.com gift card. Because we're studying changes over time, we will ask your household to complete a 2nd travel diary in one year. We will then send your household a \$30 Amazon.com gift card.

Survey	When	Who	What
Household Information	Now	You	Short survey about your household and vehicles used.
Travel diary #1	<day 1> and <day 2>	All adult household members 18 or older	On <day 1> and <day 2> each adult member of your household will write down all the trips they made on their Memory Jogger At the end of each of the two days (or at the end of the second day), each adult member of your household will return to this website to enter the information from their Memory Jogger.
\$15 Amazon.com gift card emailed to your household			
Household update	In 6 months	You	We email you with a few questions and to share the preliminary results of the study.
Travel Diary # 2	In 1 year	All adult household members 18 or older	Each adult household member will once again write down all the trips made over a 2-day period and then enter those trips online.
\$30 Amazon.com gift card emailed to your household			

DASHBOARD

Welcome

This page shows the status of all information we will ask you to provide over the course of this study. Any time you enter the website you will come to this page first. From here, you can begin or continue taking any available surveys.

Next Steps

Please click on the link below to begin the “Household Information” survey.

Remember, you can complete this survey on your own. You don’t need other household members. This survey should take about 5 minutes.

Surveys	Status
Household Information	Let's get started
Travel Diary 1	Let's get started
Household Update	Available 9/15/11
Travel Diary 2	Available 3/15/12

HOUSEHOLD BACKGROUND

1. **Welcome to the Household Information Survey.**

We'd like to ask you some general questions about your household and your vehicles. You are answering this survey on behalf of everyone who lives with you in your home, including any relatives, boarders, and live-in employees.

Here are some tips for navigating the survey:

- After you have answered all questions on a page, use the "Next" button on the bottom of the screen to advance.
- Please do NOT use your internet browser's Back button; this will log you out of the survey. If this happens, you can log back in, and you will be able to continue where you left off.

Now, let's get started!

2. **Do you plan to move (from your current residence) in the next 12 months?**

- 1 Yes [terminate – will be directed to a thank you page]
- 2 Maybe
- 3 No

3. Please tell us about the vehicles your household uses.

How many motor vehicles (in working order) are there in your household?

Please include all cars, pickup trucks, minivans, and motorcycles/scooters to which your household has regular access, whether owned, leased, or a company vehicle.

- 1 0 (no vehicles)
- 2 1 vehicle
- 3 2 vehicles
- 4 3 vehicles
- 5 4 vehicles
- 6 5 or more vehicles

4. **Please tell us about yourself.**

Name or Initials:

Age:

Gender:

Has a valid driver's license?

Employment status:

Education status:

Hispanic or Latino Origin?

Race:

Note: The following age categories will be used.

- . 16-17
- . 18-24
- . 25-34
- . 35-44
- . 45-54
- . 55-64
- . 65-74
- . 75-84
- . 85 or older

Note: The following gender categories will be used.

- . Male
- . Female

Note: The following license categories will be used.

- . Yes
- . No

Note: The following employment categories will be used.

- . Employed full-time
- . Employed part-time
- . Self-employed (full or part-time)
- . Student, not employed or employed <25 hrs/week
- . Student, employed 25+ hrs/week
- . Homemaker
- . Retired
- . Not currently employed

Note: The following education categories will be used.

- . Less than high school
- . High school graduate
- . Some college
- . Vocational/technical training
- . Associates degree
- . Bachelors degree
- . Graduate/post-graduate degree

Note: The following Hispanic categories will be used.

- . Yes
- . No

Note: The following race categories will be used.

- . African American or Black
- . American Indian or Alaskan Native
- . Asian
- . White or Caucasian
- . Other

5. **How many OTHER PEOPLE live in your household?**

Please include everyone who normally resides with you in your home, including any relatives, boarders, and live-in household employees. Please do not include people away at school or the military.

- 1 0 people (I live alone)
- 2 1 other person
- 3 2 other people
- 4 3 other people
- 5 4 other people
- 6 5 other people
- 7 6 other people
- 8 7 other people
- 9 8 other people
- 10 9 other people
- 11 10 or more other people

6. [If no other members in household, skip to income] **Please tell us about the other members of your household and their relationship to you.**

Name or Initials	Age	Gender	Relationship
	Drop down menus for Age, Gender, Relationship		

Note: The age and gender categories used will be the same as those listed above, with the age category additions of "5-15" and "Under age 5"

Note: The following relationship categories will be used.

- . Husband/Wife/Unmarried Partner
- . Son/Daughter/In-Law
- . Mother/Father/In-Law
- . Brother/Sister/In-Law
- . Other relative
- . Roommate/Friend
- . Household Help
- . Other

7. [Only show for members 18 and over] **Please enter the following information about the other members of your household.**

Name or Initials	Has a valid driver's license?	Employment Status	Education Status
<populated>	Drop down menus for License, Employment, Education		

Note: The license, employment and education categories used will be the same as those listed above.

8. [Only show for members 18 and over] **Please enter the following information about the other members of your household.**

Name or Initials	Hispanic or Latino Origin?	Race
<populated>	Drop down menus for Hispanic Origin, Race	

Note: The Hispanic origin and race categories used will be the same as those listed above.

9. **In 2010, what was <your personal/your household's> total annual income (from all sources) before taxes or other deductions from pay?**

Note: If your household doesn't share income, please report your personal income only.

- 1 Less than \$10,000
- 2 \$10,000–\$24,999
- 3 \$25,000–\$34,999
- 4 \$35,000–\$49,999
- 5 \$50,000–\$74,999
- 6 \$75,000–\$99,999
- 7 \$100,000–\$149,999
- 8 \$150,000–\$199,999
- 9 \$200,000–\$249,999
- 10 \$250,000 or more
- 11 Prefer not to answer

Note: This information is used to make sure a representative sample of the Atlanta region participates in this study.

10. **For future contact, including sending you your \$15 and \$30 Amazon.com gift cards, please enter your email address.**

You will only be contacted for this study and your email will NEVER be shared.

Primary email address for household: _____

Secondary email address for household (if available): _____

Note: Validate to require an email address that has an @ symbol and an "."

11. **What is your home address?**

Street: _____

City/Town: _____

State: Drop down, pre-populated with "Georgia"

Zip Code: _____

Note: Error message if Zip Code doesn't match State selected. Terminate if state selected is not Georgia.

12. Thank you, you have now completed the "Household Information" survey.
Please click "Finish" submit this information.

DASHBOARD

1. Welcome

This page shows the status of all information we will ask you over the course of this study. Any time you enter the website you will come to this page first. From here, you can begin any available surveys or continue from where you last left off in a survey.

Next Steps

When the “Travel Diary 1” survey becomes available, each member of your household should click on the link below to record his or her trips.

Surveys	Status
Household Information	Completed
Travel Diary 1	Let's get started
Household Update	Available 9/15/11
Travel Diary 2	Available 3/15/12

DIARY DASHBOARD

1. Thank you for taking the time to complete the household trip diary.

We are interested in the travel of all your household members, regardless of whether or not they regularly use the I-85 corridor. Please have each member of your household (listed below) enter his or her trips for <day 1> and <day2>. We want to encourage each member of your household to complete his/her own travel diary because we hope to understand how each person feels about the trips they are making.

Please have your “Memory Jogger” ready, then click on a link to begin.

Members	Day 1	Day 2
<self>	Let's get started	Let's get started
<populated>	Let's get started	Let's get started
<populated>	Let's get started	Let's get started

Listed household members: any that are 18 and older, and 16-17 year old members if they were the one to fill out the household info survey.

HOUSEHOLD DIARY #1 – DAY 1

1.1 Travel Log

1. Hello <member>. We are now going to ask you to enter the information from your “Memory Jogger.”

To begin, did you make any trips* on <day 1>?

- 1 Yes
- 2 No

***What is a trip?**

- A trip consists of any travel from one point to another by car, bus, train, bicycle, or other means, or walking for more than five minutes. For example, going from home to work and stopping for coffee along the way will be 2 trips:
 1. A trip from home to the coffee shop
 2. A trip from the coffee shop to work
- Please do NOT include any trips that you made as a paid commercial driver, such as a cabdriver or delivery driver.
- We are interested in learning about your trips even if you don’t consider it a “typical” travel day for you or your household.

2. [If respondent did not make any trips] Why **did you decide not to travel or make any trips* on <day1>?**

Please select all that apply.

- 1 I worked from home for pay (e.g., home-based business or telecommuting)
- 2 I worked around the home (not for pay)
- 3 I was sick or I cared for a sick/unwell member of my household
- 4 I was out of the Atlanta Metro area for the entire 24-hour period
- 5 I had no transportation options (i.e. car or bus) available to me
- 6 Other

*Please keep in mind that a trip consists of any travel from one point to another by car, bus, train, bicycle, or other means, or walking for more than five minutes. If you made any trips on <day 1>, please click the “Previous” button below to report your trips.

For respondents who didn't make any trips, register the survey as complete after they answer this question, then branch back to diary dashboard

3. [If respondent did make a trip] **Did you work from home or telecommute instead of traveling to work for any part of the day on <day1>?**
 - 1 Yes, all day
 - 2 Yes, part of the day
 - 3 No

4. **<member>, please list ALL the places you went on <day 1>.**

Please make sure to include your start and end location* for the day (e.g., Home).

[Click here for a 45 second help video for how to complete this page.](#)

I began my day at Add Location
 Then I went to Add Location

I began my day at	Home			
Then I went to	Work			
Then I went to	Pizza shop			
Then I went to	Work			
Then I went to	School			
Then I went to	Home			

*The last place you enter should be where you ended your day, or the place you were at 3 AM. For example, if you started at “Home” and returned home at the end of the day, then your last location should be “Home.”

If first and last locations do not match, warning message that reads “Your start location differs from your end location, click “Next” if this is correct.”

5. **Please locate each place that you went on <day 1>. You can do this 3 different ways:**

1. **Address:** Enter the full address (including street number and name OR nearest intersection) in the text box.
2. **Business or Attraction:** Click on the Business Search button, then enter the business name, city, and state.
3. **Map:** Click on the marker to the right of the textbox to activate it, then click on the map to place the marker.

[Click here for a 45 second help video for how to complete this page.](#)

Location	Address or Intersection		
<populated>			(Business Search)
<populated>			(Business Search)

6. <member>, please tell us about the trips you made.

Trip #	Origin	Destination	Departed		Arrived		Primary Purpose of Trip
			Hr	Min	Hr	Min	
1.	Home	Work	Hr	Min	Hr	Min	select...
2.	Work	Pizza shop	Hr	Min	Hr	Min	select...
3.	Pizza shop	Work	Hr	Min	Hr	Min	select...
4.	Work	Home	Hr	Min	Hr	Min	select...
5.	School	Home	Hr	Min	Hr	Min	select...

Note: All hours (AM and PM) will be available, as will all minutes in 5 minute increments.

Note: The following purpose categories will be used.

- . Go home
- . Go to primary workplace
- . Other work-related location (e.g., meeting, sales call)
- . Child care
- . School
- . Personal business (e.g. medical, banking, post office)
- . Social/recreational (e.g. movies, visit friends/family)
- . Exercise/gym
- . Religious/community activity
- . Shopping
- . Eat out/pick up takeout
- . Drop off or pick up someone else
- . Other

7. <member>, for each of your trips, please enter (in order) the types of transportation you used.

Example 1: If you used your car for the entire trip, then click “Auto/Truck” under Type 1 and leave Type 2, Type 3, and Type 4 blank.

Example 2: If you drove your car to a park and ride lot, took the bus, and then walked 10 minutes, click “Auto/Truck” under Type 1, “Express Bus” or “Other Public Bus” under Type 2, and “Walked/wheelchair” under Type 3 (leave Type 4 blank).

Trip #	Origin	Destination	Type 1	Type 2	Type 3	Type 4
1.	Home	Work	select....	select....	select....	select....
2.	Work	Pizza shop	select....	select....	select....	select....
3.	Pizza shop	Work	select....	select....	select....	select....
4.	Work	School	select....	select....	select....	select....
5.	School	Home	select....	select....	select....	select....

Note: The following transportation modes will be used. Same mode grouping as Seattle (only now Express bus and other public bus are transit. Motorcycle should considered “driving” with auto/truck)

- . *Auto/Truck*
- . *Motorcycle*
- . *Bicycle*
- . *Walked/wheelchair*
- . *Taxi/limo/shuttle*
- . *Express bus*
- . *Other public bus*
- . *School bus*
- . *Organized vanpool*
- . *Train/Rail (e.g. MARTA rail)*
- . *Dial-a-Ride/Paratransit*
- . *Other*

8. [If given trip did not use Auto/Truck/Motorcycle or Vanpool, dropdowns are “N/A”. If did not use these at all, skip to next question.] **<member>, please tell us about your driving trips.**

Trip #	Origin	Destination	Were you the driver or a passenger?	Personal Parking Cost for Trip
1.	Home	Work	select...	select...
2.	Work	Pizza shop	select...	select...
3.	Pizza shop	Work	select...	select...
4.	Work	School	select...	select...
5.	School	Home	select...	select...

Note: The following driver answers will be used.

- . *Driver*
- . *Passenger*

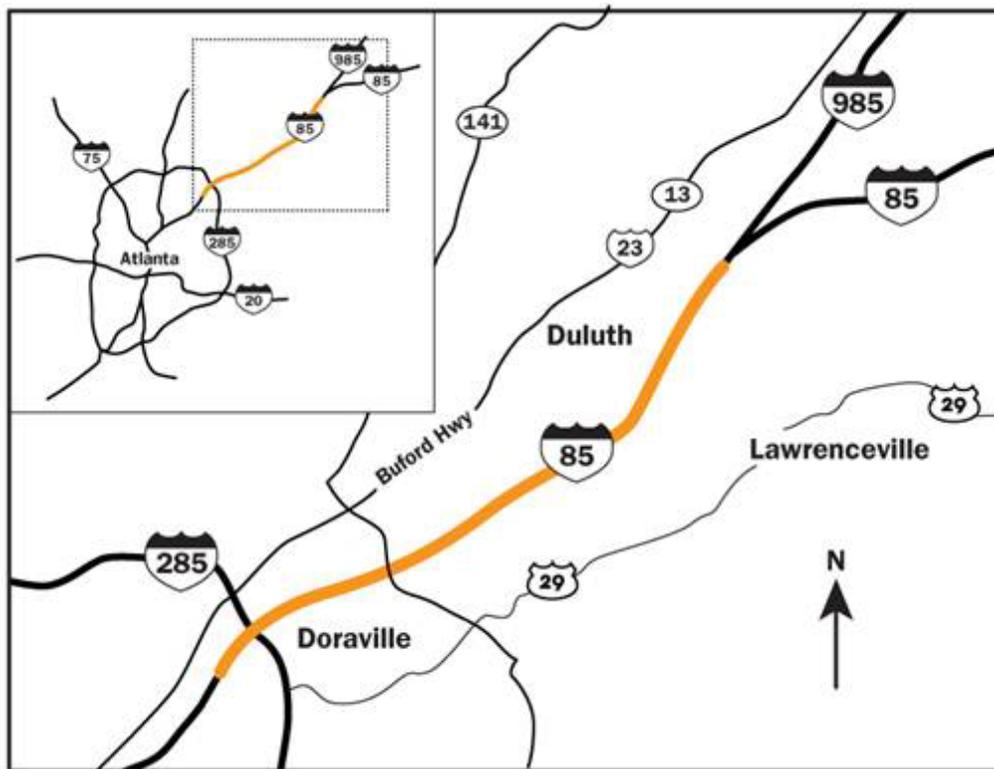
Note: The following parking cost options will be used.

- . *Did not park*
- . *Free*
- . *\$1.00*
- . *... (Dollar increments)*
- . *\$24.00*
- . *\$25.00 or more*

9. Next, we will ask you some questions about your travel in the **I-85 corridor northeast of Atlanta**.

For the purpose of this study, we are defining the I-85 corridor northeast of Atlanta as the region shown in the map below. When answering questions please remember the I-85 corridor northeast of Atlanta includes:

- 1 The 15 mile portion of I-85 from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County). The 15 mile portion of I-85 is highlighted on the map.
- 2 State roads and highways close to I-85 that cover the same general area as I-85. These include:
 - . Buford Highway (State Route 13/U.S. Route 23)
 - . Peachtree Parkway NW (Peachtree Industrial Blvd/State Route 141)
 - . Lawrenceville Highway (U.S. Route 29)
- 3 Other local/secondary roads approximately parallel to I-85



10. [If trip did not use Auto/Truck/Motorcycle or Vanpool, first two columns are “N/A.” Always show third column.]

<member>, please tell us about your trips.

Please click here for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County). The corridor also includes state roads and highways close to I-85 that cover the same general area as I-85, as well as local and secondary roads that parallel I-85.

Trip #	Origin	Destination	Number of OTHER household members in vehicle (not including you)	Number of people outside of your household in vehicle	Did you travel in the I-85 corridor northeast of Atlanta on this trip?
1.	Home	Work	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...
4.	Work	School	select...	select...	select...
5.	School	Home	select...	select...	select...

Note: Number of household members available to select will be limited to number of household members described in Household Information survey.

Note: The following categories will be used for number of people outside of the household.

- . 0
- . 1
- . 2
- . 3
- . 4
- . 5
- . 6 or more

Note: The following categories will be used for the question asking whether the trip traveled in the I-85 corridor northeast of Atlanta.

- . Yes
- . No

11. [If trip traveled in the I-85 corridor northeast of Atlanta (previous question, show answer options. If trip did not travel in the I-85 corridor, then 'N/A'. If no trips traveled in I-85 corridor, skip to general transportation patterns section.]

<member>, please tell us about your trips on I-85.

Please click [here](#) for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Trip #	Origin	Destination	How did you travel on I-85 (while in the corridor northeast of Atlanta)?
1.	Home	Work	select...
2.	Work	Pizza shop	select...
3.	Pizza shop	Work	select...
4.	Work	School	select...
5.	School	Home	select...

Note: The following categories will be used for the question asking how the trip traveled in the I-85 corridor northeast of Atlanta.

- . Drove on I-85
- . Drove and took transit on I-85
- . Took transit on I-85
- . Traveled on other routes/roads in the corridor (Did not travel on I-85)

12. [If “drove on I-85” or “drove and took transit on I-85”, show all 3 dropdowns. If “took transit on I-85”, show the first 2 dropdowns only and show “N/A” for the third dropdown. If “traveled on other routes/roads...” show “N/A” for all 3 dropdowns. If “traveled on other routes/roads” for all trips, skip to ‘sources of information used’ question.]

<member>, please tell us more about your trips on I-85.

Please click [here](#) for the map of the I-85 corridor northeast of Atlanta.

Trip #	Origin	Destination	What ramp entrance did you use to get ON I-85?	What ramp exit did you use to get OFF I-85?	Did you travel in the HOV Lane on I-85 in the corridor northeast of Atlanta?
1.	Home	Work	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...

Trip #	Origin	Destination	What ramp entrance did you use to get ON I-85?	What ramp exit did you use to get OFF I-85?	Did you travel in the HOV Lane on I-85 in the corridor northeast of Atlanta?
4.	Work	School	select...	select...	select...
5.	School	Home	select...	select...	select...

Note: For exits the following options will be used

- . North of Exit 111- Lawrenceville Suwanee Rd/Rt 317
- . Exit 111 - Lawrenceville Suwanee Rd / Rt 317
- . Exit 109 – Old Peachtree Rd NW
- . Exit 108 – Sugarloaf Pkwy
- . Exit 107 – Lawrenceville-Duluth Hwy/Boggs Rd / Rt 120
- . Exit 106 – Lawrenceville by-pass/ Rt 316/University Pkwy
- . Exit 105 – Old Norcross Rd
- . Exit 104 – Pleasant Hill Rd
- . Exit 103 – Steve Reynolds Blvd
- . Exit 102 – Beaver Ruin Rd /GA 378
- . Exit 101 – Indian Trail-Lilburn Rd
- . Exit 99 – Jimmy Carter Blvd/ Rt 140
- . Exit 96 – Pleasantdale Rd /Northcrest Rd
- . Exit 95, 95A, 95B – I-285 Perimeter
- . Exit 94 – Chamblee Tucker Rd
- . South of Exit 94 (inside or south of the I-285 perimeter)
- . I don't know

Note: For HOV Lane the following options will be used

- . Yes, as a carpool (2+ people total)
- . Yes, using an alternative fuel vehicle or motorcycle
- . No, used the regular (non-HOV) lanes

13. [If “drove on I-85” or “drove and took transit on I-85”, show dropdown, else “N/A”]

When DRIVING on I-85 WITHIN the corridor northeast of Atlanta, how satisfied were you with the following?

Please click here for the map of the I-85 corridor northeast of Atlanta.

Trip #	Origin	Destination	Your overall driving time	Your travel speed	The predictability of your driving time
1.	Home	Work	select...	select...	select...

Trip #	Origin	Destination	Your overall driving time	Your travel speed	The predictability of your driving time
2.	Work	Pizza shop	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...
4.	Work	School	select...	select...	select...
5.	School	Home	select...	select...	select...

Note: For all satisfaction questions, the following options will be used.

- . *Very Dissatisfied*
- . *Dissatisfied*
- . *Somewhat Dissatisfied*
- . *Neutral*
- . *Somewhat Satisfied*
- . *Satisfied*
- . *Very Satisfied*

14. [If “drove and took transit on I-85” or “took transit on I-85” then show dropdowns, else “N/A”]

When using PUBLIC TRANSPORTATION on I-85 WITHIN the corridor northeast of Atlanta, how satisfied were you with the following?

Please click here for the map of the I-85 corridor northeast of Atlanta.

Trip #	Origin	Destination	Your overall transit travel time	The wait time at your stop(s)	The reliability of the service (e.g., on-time performance)	The availability of seating onboard transit	Parking availability at Park/Ride lots
1.	Home	Work	select...	select...	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...	select...	select...
4.	Work	School	select...	select...	select...	select...	select...
5.	School	Home	select...	select...	select...	select...	select...

Note: For all satisfaction questions, the following options will be used.

- . *Very Dissatisfied*

- . Dissatisfied
- . Somewhat Dissatisfied
- . Neutral
- . Somewhat Satisfied
- . Satisfied
- . Very Satisfied
- . N/A (Show only in the Park/Ride column)

15. [If drove or public transit in corridor show checkbox, else, "N/A"]

For your trips in the I-85 corridor northeast of Atlanta, which of the following sources did you consult (either before or during your trip) for information about traffic or transit conditions? Select all that apply.

Please click here for the map of the I-85 corridor northeast of Atlanta.

Trip #	Origin	Dest.	Radio	TV	511/ Other Phone Service	Any Website	Electronic freeway signs	GPS/ Navigation system	Other	None of these
1.	Home	Work								
2.	Work	Pizza shop								
3.	Pizza shop	Work								
4.	Work	School								
5.	School	Home								

16. <member>, thank you for telling us about your travel on <day 1>.

Please click "Finish" to submit this information. *Repeat this section again for Day 2 of the diary.*

1.2 General Transportation Patterns

1. [For respondents who do not list using public transit at least once in their travel diary] Thank you for telling us about your travel on <day 2>. We'd now like to ask you a few questions about your general travel around the Atlanta Metro area.

When did you last use public transit (bus, train) within the greater Atlanta area?

- 1 Within the past month
- 2 More than a month ago but within the past year
- 3 More than a year ago
- 4 I have never used transit in the Atlanta Metro area

2. **In a typical week, how many total trips do you make on I-85 in the corridor northeast of Atlanta? Please count a round-trip as 2 trips.**

Please click here for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor is highlighted on the map and goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Note: Drop down with discrete options like so:

- 1 0
- 2 1
- 3 2
- 4 3
- 5 4
- 6 5.....
- 7 14
- 8 15-19 round trips per week
- 9 20-24 round trips per week
- 10 25 or more round trips per week

3. **Of the <X> trips you make in a typical week on I-85 in the corridor northeast of Atlanta, how many trips use the HOV Lane?**

Please click here for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor is highlighted on the map and goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Note: Drop down with same answer choices as previous question

1.3 Work/School Commuter Information

1. [If student or employed – student employed 25+ hours counts as employed] **How many days per week do you typically commute to your <work/school>?**

- 1 7 days a week
- 2 6 days a week
- 3 5 days a week
- 4 4 days a week
- 5 3 days a week
- 6 2 days a week
- 7 1 day a week
- 8 0 days a week
- 9 No fixed site or regular commute

6. [If employed] **How many jobs do you have?**

- 1 1 job

- 2 2 jobs
- 3 3 jobs
- 4 More than 3 jobs

7. [If commutes more than 1 day/week] **How do you typically get to your <workplace/school>? Please select all that apply.**

- 1 Drive alone (car/truck)
- 2 Carpool (2 or more people in vehicle)
- 3 Organized vanpool
- 4 Express Bus
- 5 Other public bus
- 6 Train (MARTA rail)
- 7 Motorcycle / moped
- 8 Dial-a-Ride/Paratransit
- 9 Walk (for at least 5 minutes, or the whole way)
- 10 Other

8. [If employed] **How often do you typically work from home or telecommute instead of traveling to work?**

- 1 5-7 days per week
- 2 4 days per week
- 3 3 days per week
- 4 2 days per week
- 5 1 day per week
- 6 A few times per month
- 7 Less than monthly
- 8 Never
- 9 Not applicable

9. [If employed or a student] **Which of the following statements best describes your <work/school> schedule?**

- 1 I have no flexibility in my schedule
- 2 I have some flexibility to adjust my schedule, within about 30 minutes
- 3 I'm pretty much free to adjust my work schedule as I like

10. [If no flexibility] **Why don't you have flexibility in your <work/school> schedule?**

- 1 My <work/school> schedule requires me to be present for specific hours each day
- 2 My personal situation requires me to arrive and leave at specific times each day
- 3 Other

11. [If employed or a student] **Which of the following commuter benefits does your <employer/school> offer? Which do you personally use?**

	Not offered	Offered, but I don't use	Offered, and I use	Don't know
Free or discounted parking				
Free or discounted transit pass				
Free or discounted vanpool transportation				

1.4 Opinions/Perceptions and General Questions

1. **Which of the following items do you own?**

	I own	I do not own
A home computer (desktop or laptop) with access to the internet		
A Smartphone, iPhone, Blackberry, or other web-enabled mobile device		
A cell phone that is not web-enabled		
Mobile navigation or GPS device (such as Tom-Tom or Garmin)		

2. **How strongly do you agree or disagree with each of the following statements?**

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
Driving Atlanta regional highways is stressful for me								
At least twice a week there is an unexpected delay on my trip								

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
I adjust my routes and/or my departure times to avoid traffic congestion								
I will use a toll route if the tolls are reasonable and I will save time								
Highway tolls are unfair to people with limited incomes								
I don't have enough time in the day to do all I need to do								

Note: Statements will be shown in randomized order.

3. [If employed] **How strongly do you agree or disagree with each of the following statements?**

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
I am satisfied with my commute								
Within the past year, I've seriously considered changing where I live or work to reduce the time I spend traveling								

Note: Statements will be shown in randomized order.

4. [if employed and use a transit mode for typical commute] **How strongly do you agree or disagree with the following statement?**

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
As soon as I can, I'd like to switch to driving to work								

5. **If you would like to tell us anything else about the trips you made on <day 1> and <day 2> or share any final opinions about transportation in the Atlanta Metro area, please type your comments in the box below.**

6. The U.S. Department of Transportation, in cooperation with Georgia Department of Transportation, State Road and Tollway Authority, Georgia Regional Transportation Authority, and Atlanta Regional Commission, is considering holding focus groups in your area over the next year and would love to hear more feedback from residents like you.

Would you be willing to participate in a focus group to further share your experiences traveling in the I-85 corridor northeast of Atlanta?

- 1 Yes
- 2 No

7. [If respondent would participate in a focus group] **Please provide your phone number so that we may contact you to participate in a focus group.**

If you are selected, you will receive an invitation for your participation.

Telephone number:

8. Thank you! You have completed your Travel Diary.

Please click "Finish" to submit your information.

DIARY DASHBOARD

1. Welcome

This page shows the status of all information we will ask you over the course of this study. Any time you enter the website you will come to this page first. From here, you can begin any available surveys or continue from where you last left off in a survey.

Next Steps

When the “Travel Diary 1” survey becomes available, click on the link below to record your households’ trips.

Surveys	Status
Household Information	Completed
Travel Diary 1	In Progress
Household Update	Available in Fall 2011
Travel Diary 2	Available in Spring 2012

2. Thank you for taking the time to complete the household trip diary.

Please have each member of your household (listed below) enter his or her trips for <day1> and <day2>. We want to encourage each member of your household to complete his/her own travel diary because we hope to understand how each person feels about the trips they are making.

Please have your “Memory Jogger” ready, then click on a link to begin.

Members	Day 1	Day 2
<self>	Completed	Completed
<populated>	Let's get started	Let's get started
<populated>	Let's get started	Let's get started

Wave 2 Survey Instruments

DASHBOARD

Welcome

Thank you again for your household's participation in this study.

Next Steps

Please click on the link below to tell us how your household has changed since March 2011. This should take about 4 minutes.

Surveys	Status
Household Information	Completed
Travel Diary 2011	Completed
Household Update	Let's get started
Travel Diary 2012	Available <day 1>, 2012

HOUSEHOLD UPDATE

Welcome to the Household Update Survey.

We'd like to ask some general questions about how your household has changed since March 2011, when you last completed this survey. You are answering on behalf of everyone who lives with you in your home, including any relatives, boarders, and live-in employees. The survey should only take about 4 minutes of your time.

Here are some tips for navigating the survey:

- After you have answered all questions on a page, use the "Next" button on the bottom of the screen to advance.
- Please do NOT use your internet browser's Back button; this will log you out of the survey. If this happens, you can log back in, and you will be able to continue where you left off.

Now, let's get started!

13. Have you moved since March 2011?

- 1 No
- 2 Yes

14. [If moved in last 12 months only]

What is your current home address?

Street:

City/Town:

State: Drop down, pre-populated with "Georgia"

Zip Code:

[terminate if state is not Georgia]

15. **How many motor vehicles (in working order) are there in your household?**

Last year, you reported <X> vehicles.

Please include all cars, pickup trucks, minivans, and motorcycles/scooters to which your household has regular access, whether owned, leased, or a company vehicle.

- 1 0 (no vehicles)
- 2 1 vehicle
- 3 2 vehicles
- 4 3 vehicles
- 5 4 vehicles
- 6 5 or more vehicles

16. [If 1+ vehicles]

Please tell us about the vehicles in your household.

Viewing <x> of <n> total vehicle(s).

Year: <dropdown>

Make: <dropdown>

Model: <dropdown>

17. [If 1+ vehicles]

How many Peach Pass and/or Cruise Card transponders does your household have?

Peach Pass is the electronic toll paying system in Georgia and can be used to pay tolls on the Georgia 400 and on the I-85 Express Lanes.

- 1 0 Peach Passes
- 2 1 Peach Pass
- 3 2 Peach Passes
- 4 3 Peach Passes
- 5 4 Peach Passes
- 6 5 or more Peach Passes

18. [If has 1 transponder]

When did you purchase your Peach Pass (or Cruise Card)?

[If has 2+ transponders]

When did you purchase your first Peach Pass (or Cruise Card)?

- 1 Before tolling started on the I-85 Express Lanes (before October 1, 2011)
- 2 After tolling started on the I-85 Express Lanes (on or after October 1, 2011)
- 3 I don't remember

19. [If has 1+ transponder]

For each of the following statements, how satisfied are you with your household's experience?

- 1 Opening and setting up your Peach Pass account
- 2 Managing your Peach Pass account

- 3 Changing your “toll mode” status (changing from “toll” when driving alone to “non-toll” when driving in a 3+ person carpool)

Note: For all satisfaction questions, the following options will be used.

- . *Very Dissatisfied*
- . *Dissatisfied*
- . *Somewhat Dissatisfied*
- . *Neutral*
- . *Somewhat Satisfied*
- . *Satisfied*
- . *Very Satisfied*
- . *N/A*

20. [If 0 transponders]

What are the reasons why you do not have a Peach Pass account?

Please select all that apply.

- 1 I don't use GA400 or the I-85 tolled Express Lanes often enough
- 2 Tolls are too expensive
- 3 I'm against tolling in general
- 4 I'm concerned about privacy
- 5 I don't want to have to manage another account
- 6 I don't want my account to be charged automatically
- 7 I prefer not to have to pay a deposit in advance
- 8 I have not yet had a chance to set up an account
- 9 Other, please specify:

Note: Answer choices will be randomized with “other” anchored at the bottom of the list.

21. [For year 1 primary respondent]

Please update the information below for the following household member.

Name: <pre-populated – not editable>

Age: <pre-populated – editable>

Driver's license? <pre-populated – editable>

Employment: <pre-populated – editable>

Education: <pre-populated – editable >

<If full time/part time/self employed/student 25+ in year 1 and year2>

Has this person's primary job location changed since March 2011?

select...

Has this person's work schedule (number of hours and/or when they work) changed significantly since March 2011?

select...

(checkbox) This person is no longer in the household

Note: Information for first 4 dropdowns is prepopulated using year 1 data but is editable

Note: The following age categories will be used.

- . 18-24
- . 25-34
- . 35-44
- . 45-54
- . 55-64
- . 65-74
- . 75-84
- . 85 or older

Note: The following license categories will be used.

- . Yes
- . No

Note: The following employment categories will be used.

- . Employed full-time
- . Employed part-time
- . Self-employed (full or part-time)
- . Student, not employed or employed <25 hrs/week
- . Student, employed 25+ hrs/week
- . Homemaker
- . Retired
- . Not currently employed

Note: The following education categories will be used.

- . Less than high school
- . High school graduate
- . Some college
- . Vocational/technical training
- . Associates degree
- . Bachelors degree Graduate/post-graduate degree

Note: The following age categories will be used.

- . Under age 5
- . 5-15
- . 16-17
- . 18-24
- . 25-34
- . 35-44
- . 45-54

- . 55-64
- . 65-74
- . 75-84
- . 85 or older

22. [Cycle through all Year 1 adults]

Please update the information below for the following household member.

Name: <pre-populated – not editable>

Age: <pre-populated – editable>

Driver's license? <pre-populated – editable>

Employment: <pre-populated – editable>

Education: <pre-populated – editable >

<If full time/part time/self-employed/student 25+ in year 1 and year2>

Has this person's primary job location changed since March 2011?

select...

Has this person's work schedule (number of hours and/or when they work) changed significantly since March 2011?

select...

(checkbox) This person is no longer in the household

23. [Cycle through all Year 1 children]

Please update the information below for the following household member.

Name: <pre-populated – not editable>

Age: <pre-populated – editable>

[if 18-24] **Driver's license?** <dropdown>

[if 18-24] **Employment:** <dropdown>

[if 18-24] **Education:** <dropdown>

Has this child's school or daycare location changed since March 2011?

select...

Has this child's school or daycare schedule changed significantly since March 2011?

select...

(checkbox) This child is no longer in the household

24. How many NEW ADULTS (18 OR OLDER) live in your household?

Please answer for any adults who have become a part of your household since March 2011. This includes adults who normally reside with you in your home, including relations, boarders, and live-in household employees. Please do not include people away at school or the military.

- 1 0 (no no adults need to be added)
- 2 1 new adult
- 3 2 new adults
- 4 3 new adults
- 5 4 new adults
- 6 5 new adults
- 7 6 new adults
- 8 7 new adults
- 9 8 new adults
- 10 9 new adults
- 11 10 or more new adults

25. [If 1+ new adults]

Please tell us about the NEW ADULTS (18 OR OLDER) in your household.

Viewing <x> of <n> new adults (18 OR OLDER).

Name: <dropdown>

Age: <dropdown>

Gender: <dropdown>

Relationship: <dropdown>

Driver's license? <dropdown>

Employment: <dropdown>

Education: <dropdown>

Hispanic? <dropdown>

Race: <dropdown>

26. How many NEW CHILDREN (UNDER AGE 18) live in your household?

Please include all new children who normally reside with you in your home. Please do not include any minors away at school or the military.

- 1 0 (no no minors need to be added)
- 2 1 new minor
- 3 2 new minors
- 4 3 new minors
- 5 4 new minors
- 6 5 new minors
- 7 6 new minors
- 8 7 new minors
- 9 8 new minors
- 10 9 new minors
- 11 10 or more new minors

27. [If 1+ new children]

Please tell us about the NEW CHILDREN (UNDER AGE 18) in your household.

Viewing <x> of <n> new children (UNDER AGE 18).

Name: <dropdown>

Age: <dropdown>

Gender: <dropdown>

Relationship: <dropdown>

28. Have there been any other major changes in the life of your household since March 2011 that have affected your regular daily travel?

29. In 2011, what was your household's total annual income (from all sources) before taxes or other deductions from pay?

Note: If your household doesn't share income, please report your personal income only.

- 1 Less than \$10,000
- 2 \$10,000-\$24,999
- 3 \$25,000-\$34,999
- 4 \$35,000-\$49,999
- 5 \$50,000-\$74,999
- 6 \$75,000-\$99,999
- 7 \$100,000-\$149,999
- 8 \$150,000-\$199,999
- 9 \$200,000-\$249,999

10 \$250,000 or more

11 Prefer not to answer

Note: This information is used to make sure a representative sample of the Atlanta region participates in this study.

30. For future contact, including sending you your \$30 gift card, please confirm your email address.

You will only be contacted for this study and your email will NEVER be shared.

Primary email address for household: <pre-populated – editable>

Secondary email address for household (if available): <pre-populated – editable>

Note: Validate to require an email address that has an @ symbol and a "."

31. Thank you, you have now completed the "Household Update" survey.

Please click "Finish" submit this information.

MAIN DASHBOARD

2. Welcome

This page shows the status of all information we will ask you over the course of this study. Any time you enter the website you will come to this page first. From here, you can begin any available surveys or continue from where you last left off in a survey.

Next Steps

Please have each adult member of your household record all the trips they make on **<Day 1>** and **<Day 2>**. To help keep track of these trips, click [here](#) to view and print the Memory Jogger.

When the "Travel Diary 2012" survey becomes available, click on the link below to enter your household's trip information.

Surveys	Status
Household Information	Completed
Travel Diary 2011	Completed
Household Update	Completed
Travel Diary 2012	Let's get started

DIARY DASHBOARD

2. Thank you for taking the time to complete the household trip diary.

Please have each household member listed below (including any new adult members) enter his or her own trips for <Day 1> and <Day 2>. We want to encourage each member of your household to complete his/her own travel diary because we hope to understand how each person feels about the trips they are making.

Next Steps

Please have your “Memory Jogger” ready, then click on a link to begin.

Members	<Day 1>	<Day 2>
<populated>	Let's get started	Let's get started
<populated>	Let's get started	Let's get started
<populated>	Let's get started	Let's get started

Listed household members:

- . *Primary respondent if still household member*
- . *Year 1 adults who are still household members*
- . *Year 1 minors who turned 18*
- . *Year 2 new adults*

1.5 Travel Log

2. Hello <member>. We are now going to ask you to enter the information from your “Memory Jogger.”

To begin, did you make any trips* on <day #>?

- 1 Yes
- 2 No

***What is a trip?**

- A trip consists of any travel from one point to another by car, bus, train, ferry, bicycle, or other means, or walking for more than five minutes. For example, going from home to work and stopping for coffee along the way will be 2 trips. A trip from home to the coffee shop and a trip from the coffee shop to work.
- Please include all legs of your trips (e.g. stop for coffee on the way to work)
- Please do NOT include any trips that you made as a paid commercial driver, such as a cabdriver or delivery driver.
- We are interested in learning about your trips even if you don't consider it a “typical” travel day for you or your household.

17. [If no trips]

Why did you decide not to travel or make any trips on <day #>?

Please select all that apply.

- 1 I worked from home for pay (e.g., home-based business or telecommuting)
- 2 I worked around the home (not for pay)
- 3 I was sick or I cared for a sick/unwell member of my household
- 4 I was out of the Atlanta region for the entire 24-hour period
- 5 Other

18. [If respondent made trips and full/part/student +25]

Did you work from home or telecommute instead of traveling to work for any part of the day on <day #>?

- 4 Yes, all day
- 5 Yes, part of the day
- 6 No

19. [Help Video](#)

<Member>, please list ALL the places you went on <day #>.

Please make sure to include your start and end location* for the day (e.g., Home).

I began my day at	Home	 
Then I went to	Work	  
Then I went to	Pizza shop	  
Then I went to	Work	  
Then I went to	School	  
Then I went to	Home	  

Add Another Location

*The last place you enter should be where you ended your day, or the place you were at 3 AM.

For example, if you started at “Home” and returned home at the end of the day, then your last location should be “Home.”

If first and last locations do not match, warning message that reads “Your start location differs from your end location, click “Next” if this is correct.”

20. [Help Video](#)

Please locate each place that you went on <day #>.

4. First, select the place that you want to locate.
5. Then, you can either:
 - a. Search for an address or business in the box below.
 - b. Click on the map to zoom in on your location. Keep zooming until a marker appears.

	Location	Address or Intersection
	<populated>	
	<populated>	

Search for Address
Search for Business

Enter the full address (including street number and name OR nearest intersection) in the text box.

Search

21. The list below should include all the trips you made on <day #>.

If you need to add or remove any trips, please click "Previous" to go back and edit your locations. If all of your trips from <day #> are shown below, please click "Next" to continue.

Trip	Origin	Destination	Approx. Distance
1.	Home	Work	<calculated> miles
2.	Work	Pizza shop	<calculated> miles
3.	Pizza shop	Work	<calculated> miles
4.	Work	School	<calculated> miles
5.	School	Home	<calculated> miles

[on the right side of the screen, there will be a Google map of the area, showing all of the listed trip markers in context]

22. <Member>, please tell us about the trips you made.

Trip	Origin	Destination	Departed		Arrived		Primary Purpose of Trip
1.	Home	Work	Hr	Min	Hr	Min	select...
2.	Work	Pizza shop	Hr	Min	Hr	Min	select...
3.	Pizza shop	Work	Hr	Min	Hr	Min	select...
4.	Work	School	Hr	Min	Hr	Min	select...
5.	School	Home	Hr	Min	Hr	Min	select...

Note: All hours (AM and PM) will be available, as will all minutes in 5 minute increments.

Note: The following purpose categories will be used.

- . Go home
- . Go to primary workplace
- . Other work-related location (e.g., meeting, sales call)

- . Child care
- . School
- . Personal business (e.g. medical, banking, post office)
- . Social/recreational (e.g. movies, visit friends/family)
- . Exercise/gym
- . Religious/community activity
- . Shopping
- . Eat out/pick up takeout
- . Drop off or pick up someone else
- . Other

23. <member>, please enter (in order) the types of transportation you used to make each trip.

Example 1: If you used your car for the entire trip, then click “Auto/Truck/Motorcycle” under Type 1 and leave Type 2, Type 3, and Type 4 blank.

Example 2: If you drove your car to a park and ride lot, took the bus, and then walked 10 minutes, click “Auto/Truck/Motorcycle” under Type 1, “Public Bus” under Type 2, and “Walked” under Type 3 (leave Type 4 blank).

Trip	Origin	Destination	Type 1	Type 2	Type 3	Type 4
1.	Home	Work	select....	select....	select....	select....
2.	Work	Pizza shop	select....	select....	select....	select....
3.	Pizza shop	Work	select....	select....	select....	select....
4.	Work	School	select....	select....	select....	select....
5.	School	Home	select....	select....	select....	select....

Note: The following transportation modes will be used.

- . Auto/Truck/Motorcycle
- . Bicycle
- . Walked/wheelchair
- . Taxi/limo/shuttle
- . Public bus
- . School bus
- . Organized vanpool
- . Train/Rail
- . Dial-A-Ride/Access
- . Other

24. [drop downs only for auto or vanpool, rest filled in “N/A”]

<member>, please tell us about your driving trips.

Trip	Origin	Destination	Were you the driver or a passenger?	Personal Parking Cost for Trip
1.	Home	Work	select...	select...
2.	Work	Pizza shop	select...	select...
3.	Pizza shop	Work	select...	select...
4.	Work	School	select...	select...
5.	School	Home	select...	select...

Note: The following driver answers will be used.

- . Driver
- . Passenger

Note: The following parking cost options will be used.

- . Did not park
- . Free
- . \$1.00
- (Dollar increments)
- . \$24.00
- . \$25.00 or more

25. Next, we will ask you some questions about your travel in the **I-85 corridor northeast of Atlanta**.

For the purpose of this study, we are defining the I-85 corridor northeast of Atlanta as the region shown in the map below. When answering questions please remember the I-85 corridor northeast of Atlanta includes:

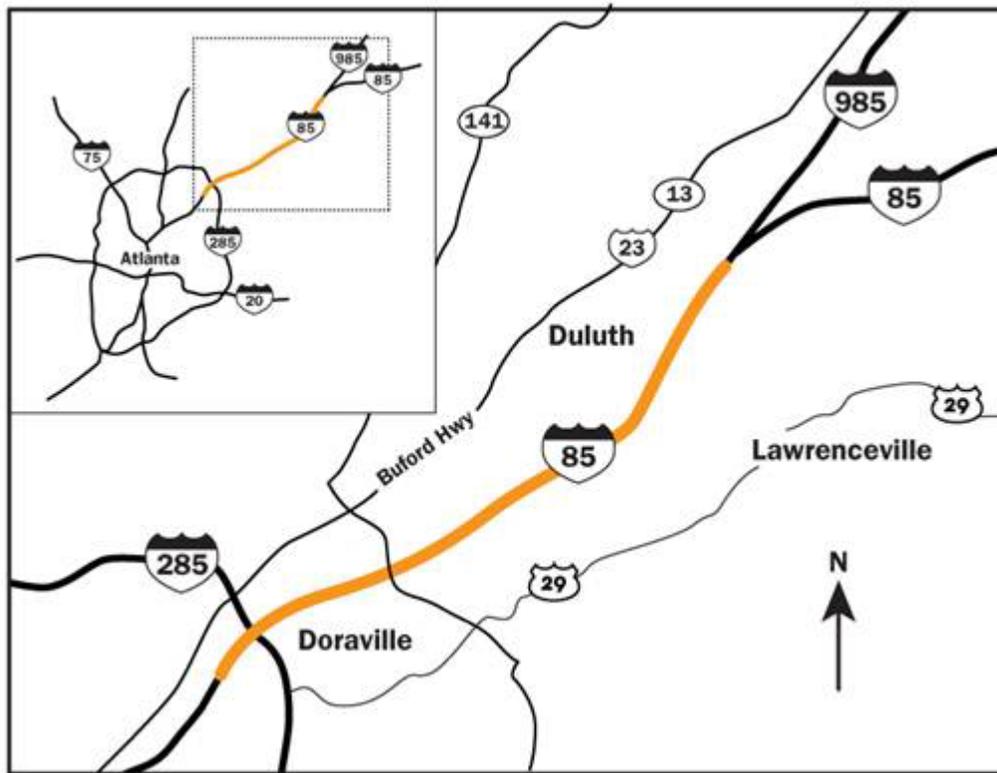
- 1 The 15 mile portion of I-85 from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County). The 15 mile portion of I-85 is highlighted on the map.
- 2 State roads and highways close to I-85 that cover the same general area as I-85. These include:
 - . Buford Highway (State Route 13/U.S. Route 23)
 - . Peachtree Parkway NW (Peachtree Industrial Blvd/State Route 141)
 - . Lawrenceville Highway (U.S. Route 29)
- 3 Other local/secondary roads approximately parallel to I-85

26. [If trip did not use Auto/Truck/Motorcycle or Vanpool, first two columns are "N/A." Always show third column.]

<member>, please tell us about your trips.

Please [click here](#) for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County). The corridor also includes

state roads and highways close to I-85 that cover the same general area as I-85, as well as local and secondary roads that parallel I-85.



Trip	Origin	Destination	Number of household members in vehicle (not including you)	Number of people outside of your household in vehicle	Did you travel in the I-85 corridor northeast of Atlanta on this trip?
1.	Home	Work	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...
4.	Work	School	select...	select...	select...
5.	School	Home	select...	select...	select...

Note: Number of household members available to select will be limited to number of household members described in Household Information survey.

Note: The following categories will be used for number of people outside of the household.

- . 0
- . 1
- . 2
- . 3

- . 4
- . 5
- . 6 or more

Note: The following categories will be used for the question asking whether the trip traveled in the I-85 corridor northeast of Atlanta.

- . Yes
- . No

27. [If trip traveled in the I-85 corridor northeast of Atlanta (previous question), show answer options. If trip did not travel in the I-85 corridor, then 'N/A'. If no trips traveled in I-85 corridor, skip to general transportation patterns section.]

<member>, please tell us about your trips.

Please [click here](#) for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Trip	Origin	Destination	How did you travel on I-85 (while in the corridor northeast of Atlanta)?
1.	Home	Work	select...
2.	Work	Pizza shop	select...
3.	Pizza shop	Work	select...
4.	Work	School	select...
5.	School	Home	select...

Note: The following categories will be used for the question asking how the trip traveled in the I-85 corridor northeast of Atlanta.

- . Drove on I-85
- . Drove and took transit on I-85
- . Took transit on I-85
- . Traveled on other routes/roads in the corridor (Did not travel on I-85)

28. **For the next set of questions, we will be referring to the I-85 “Express Lanes” and “regular lanes.”**

The I-85 “Express Lanes”

The left-most lane on I-85, which can be used by those with a Peach Pass or Cruise Card transponder. Transit, 3+ person carpools, motorcycles, and Alternative Fuel Vehicles can use the Express Lane for free. Other drivers can pay a toll to use the lane. The Express Lanes are a 15 mile portion of I-85 from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

The I-85 “Regular Lanes”

All other lanes on I-85 in which vehicles travel for free.

For the next set of questions, please keep these definitions in mind.

29. [If “drove on I-85” or “drove and took transit on I-85” or “took transit on I-85”]

<member>, please tell us more about your trips on I-85.

Please [click here](#) for the map of the I-85 corridor northeast of Atlanta and [click here](#) for a definition of the I-85 Express Lanes.

Trip	Origin	Destination	What ramp entrance did you use to get ON I-85?	What ramp exit did you use to get OFF I-85?
1.	Home	Work	select...	select...
2.	Work	Pizza shop	select...	select...
3.	Pizza shop	Work	select...	select...
4.	Work	School	select...	select...
5.	School	Home	select...	select...

Note: For exits the following options will be used

- . North of Exit 111 Lawrenceville Suwanee Rd
- . Exit 111 Lawrenceville Suwanee Rd / Rt 317
- . Exit 109 Old Peachtree Rd NW
- . Exit 108 Sugarloaf Pkwy
- . Exit 107 Duluth Hwy/Boggs Rd / Rt 120
- . Exit 106 Lawrenceville bypass/ Rt 316/Univ Pkwy
- . Exit 105 Old Norcross Rd
- . Exit 104 Pleasant Hill Rd
- . Exit 103 Steve Reynolds Blvd
- . Exit 102 Beaver Ruin Rd /GA 378
- . Exit 101 Indian Trail-Lilburn Rd
- . Exit 99 Jimmy Carter Blvd/ Rt 140
- . Exit 96 Pleasantdale Rd /Northcrest Rd
- . Exit 95, 95A, 95B I-285 Perimeter
- . Exit 94 Chamblee Tucker Rd
- . South of Exit 94 (south of I-285 perimeter)
- . I don't know

30. [If “drove on I-85” or “drove and took transit on I-85”]

<member>, please tell us more about your trips on I-85.

Please [click here](#) for the map of the I-85 corridor northeast of Atlanta and [click here](#) for a definition of the I-85 Express Lanes.

Trip	Origin	Destination	Did you travel in the I-85 Express Lanes?
1.	Home	Work	select...
2.	Work	Pizza shop	select...
3.	Pizza shop	Work	select...
4.	Work	School	select...
5.	School	Home	select...

Note: For Express Lanes the following options will be used

- . Yes, drove alone (and paid a toll)
- . Yes, drove as a 2-person carpool (and paid a toll)
- . Yes, as a 3+ person carpool
- . Yes, using an alternative fuel vehicle or motorcycle
- . Yes, rode a bus
- . No, used the regular lanes on I-85

31. [drop downs only for trips that paid a toll in the Express Lanes]

<member>, please tell us about your trips in the Express Lanes.

Trip	Origin	Destination	Approximately what portion of the I-85 Express Lanes did you use?	Approximately how much was your I-85 Express Lanes toll?
1.	Home	Work	select...	select...
2.	Work	Pizza shop	select...	select...
3.	Pizza shop	Work	select...	select...
4.	Work	School	select...	select...
5.	School	Home	select...	select...

Note: Toll Answer choices

- . I don't know
- . Less than \$1.00
- . \$1.00-\$1.99
- . \$2.00-\$2.99
- . \$3.00-\$3.99
- . \$4.00-\$4.99
- . \$5.00-\$5.99
- . \$6.00 or higher

Note: Road distance answer choices

- . *Less than 5 miles*
- . *5-9 miles*
- . *10-14 miles*
- . *All 15 miles*

32. [If “drove on I-85” or “drove and took transit on I-85”]

When DRIVING on I-85 WITHIN the corridor northeast of Atlanta, how satisfied were you with the following?

Please [click here](#) for the map of the I-85 corridor northeast of Atlanta.

Trip	Origin	Destination	Your overall driving time	Your travel speed	The predictability of your driving time
1.	Home	Work	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...
4.	Work	School	select...	select...	select...
5.	School	Home	select...	select...	select...

Note: For all satisfaction questions, the following options will be used.

- . *Very Dissatisfied*
- . *Dissatisfied*
- . *Somewhat Dissatisfied*
- . *Neutral*
- . *Somewhat Satisfied*
- . *Satisfied*
- . *Very Satisfied*

33. [If “drove and took transit on I-85” or “took transit on I-85” then show dropdowns, else “N/A”]

When using PUBLIC TRANSPORTATION on I-85 WITHIN the corridor northeast of Atlanta, how satisfied were you with the following?

Please [click here](#) for the map of the I-85 corridor northeast of Atlanta.

Trip	Origin	Destination	Your overall transit travel time	The wait time at your stop(s)	The reliability of the service (e.g., on-time performance)	The availability of seating onboard transit	Parking availability at Park/Ride lots
1.	Home	Work	select...	select...	select...	select...	select...
2.	Work	Pizza shop	select...	select...	select...	select...	select...
3.	Pizza shop	Work	select...	select...	select...	select...	select...
4.	Work	School	select...	select...	select...	select...	select...
5.	School	Home	select...	select...	select...	select...	select...

Note: For all satisfaction questions, the following options will be used.

- . *Very Dissatisfied*
- . *Dissatisfied*
- . *Somewhat Dissatisfied*
- . *Neutral*
- . *Somewhat Satisfied*
- . *Satisfied*
- . *Very Satisfied*
- . *N/A (Show only in the Park/Ride column)*

34. For your trips on I-85, which of the following sources did you consult (either before or during your trip) for information about traffic or transit conditions? Select all that apply.

*Note: Peach Pass Go!, Waze, and Beat the Traffic are examples of a smartphone app.

Note: For each trip, the following checkboxes will be used:

- . *Radio*
- . *TV*
- . *GPS/Navigation system*
- . *Electronic freeway signs*
- . *511/Other Phone Service*
- . *Smartphone or tablet app**
- . *Any website*
- . *Other*
- . *None of these*

35. <Member>, thank you for thank you for telling us about your travel on <day #>. Please click "Finish" to submit this information.

1.6 General Transportation Patterns

4. Thank you for telling us about your travel on <day 2>. We'd now like to ask you a few questions about your general travel around the Atlanta Metro region.

When did you last use public transit (bus, train,) within the greater Atlanta region?

- 1 Within the past month
- 2 More than a month ago but within the past year
- 3 More than a year ago
- 4 I have never used transit in the Atlanta Metro region

5. **In a typical week, how many total trips do you make on I-85 in the corridor northeast of Atlanta? Please count a round-trip as 2 trips.**

Please [click here](#) for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor is highlighted on the map and goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Note: Drop down with options from 0 to 25 or more.

6. [If 0 I-85 trips in a typical week]

You said that you don't make any trips on I-85 in the corridor northeast of Atlanta during a typical week.

Do you ever use I-85 in the corridor northeast of Atlanta?

- 1 Yes, a few times per month
- 2 Yes, about once a month or less
- 3 No, I never use I-85

7. [If "a few times per month" or "about once a month or less"]

Have you used the I-85 Express Lanes since they opened on October 1, 2011?

- 1 Yes
- 2 No
- 3 I don't know

8. **Of the <X> trips you make in a typical week on I-85 in the corridor northeast of Atlanta, how many trips use the I-85 Express Lanes?**

Please include ALL trips that use the Express Lanes – whether they are driving or transit trips and regardless of whether or not you pay a toll.

Please [click here](#) for a map of the I-85 corridor northeast of Atlanta. Remember, the 15 mile portion of I-85 in the corridor is highlighted on the map and goes from just inside the I-285 perimeter (Exit 94 at Chamblee Tucker Road in DeKalb county) to Old Peachtree Road (Exit 109 in Gwinnett County).

Note: Drop down with options from 0 to 25 or more.

9. [If does NOT use the Express Lanes in Year 2 as much as they used the HOV Lanes in Year 1]
Compared to when you took this survey in Spring 2011, you are using the I-85 Express Lanes LESS OFTEN than you used the HOV lanes.

Why would you say you using the I-85 Express Lanes LESS OFTEN?

Please select all that apply.

- 1 The regular lanes on I-85 are less congested now
- 2 I'd rather not pay a toll in the I-85 Express Lanes
- 3 I carpool with 1 other person and we no longer can use the Express Lane for free
- 4 I use a different route now to avoid I-85
- 5 Entering/Exiting the Express Lanes is difficult/inconvenient
- 6 The Express Lanes are less safe
- 7 Due to changes in my personal/work situation, I use I-85 less often
- 8 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

10. [If uses the Express Lanes in Year 2 MORE than they used the HOV Lanes in Year 1]
Compared to when you took this survey in Spring 2011, you are using the I-85 Express Lanes MORE OFTEN than you used the HOV lanes.

Why are you using the I-85 Express Lanes MORE OFTEN?

Please select all that apply.

- 1 The tolled Express Lane is faster/less congested
- 2 Road conditions are safer now in the Express Lanes
- 3 I ride the bus on I-85 more often now
- 4 I can use the Express Lanes for free (motorcycle, alternative fuel vehicle, and/or 3+ carpool)
- 5 Due to changes in my personal/work situation, I use I-85 more often
- 6 I can drive alone in the Express Lanes now if I pay a toll
- 7 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

11. [If uses the Express Lane at least 1/x per week]

When do you typically decide that you will pay a toll and drive in the I-85 Express Lanes?

- 1 Before starting my trip
- 2 After starting my trip
- 3 Sometimes before and sometimes after starting my trip
- 4 I only travel in the Express Lanes for free (on a bus, in a 3+ person carpool, etc.)

12. **For what reasons do you decide to use the I-85 Express Lanes?**

Please select all that apply.

- 1 The regular lanes on I-85 are very congested
- 2 I want to save time
- 3 I want to be sure of arriving at my destination
- 4 The I-85 Express Lanes are less stressful
- 5 The I-85 Express Lanes are safer
- 6 Other, please specify:

13. For your trips in the I-85 corridor northeast of Atlanta, how often have you done each of the following in the last month as a result of tolling on the I-85 Express Lanes?

	Never	Rarely	Sometimes	Often	Not applicable
Carpooled/vanpooled on I-85 instead of driving alone					
Rode a public bus (GCT, GRTA, Express bus) instead of driving					
Decided not to make a trip at all					
Made a planned trip less frequently					
Took a different route/road to avoid using I-85					
Timed my I-85 Express Lanes trip to avoid higher toll rates					
Changed trip departure time to avoid congestion in the I-85 regular lanes					
[if employed] Telecommuted instead of traveling to work using I-85					
Changed my destination to avoid traveling on I-85					
Switched to I-85 Express Lanes instead of using another road					

Note: The answer choices will be randomized.

1.7 Work/School Commuter Information

2. [If student or employed – student employed 25+ hours counts as employed]

How many days per week do you typically commute to your <work/school>?

- 10 7 days a week
- 11 6 days a week
- 12 5 days a week
- 13 4 days a week
- 14 3 days a week
- 15 2 days a week
- 16 1 day a week
- 17 0 days a week
- 18 No fixed site or regular commute

3. [If 1+ day/week]

How do you typically get to your <work/school>?

Please select all that apply.

- 1 Drive alone (car/truck)
- 2 Carpool (2 or more people in vehicle)
- 3 Organized vanpool
- 4 Bus
- 5 Train (commuter rail, light rail, or monorail)
- 6 Motorcycle / moped
- 7 Bicycle
- 8 Para-transit
- 9 Walk (for at least 5 minutes, or the whole way)
- 10 Other

4. [If carpool selected as typical commute mode in Year 1, but NOT in Year 2]

In Spring 2011, you indicated that you carpooled for at least some of your <work/school> trips.

Why do you no longer carpool?

Please select all that apply.

- 1 My <job/school> location or schedule changed
- 2 Other carpool members dropped out
- 3 Express Lanes have become less useful in saving time
- 4 I switched to transit or a vanpool
- 5 It is faster and more reliable to drive alone in the Express Lanes
- 6 I prefer to drive alone now
- 7 My 2-person carpool is no longer eligible to travel for free in the Express Lanes
- 8 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

5. [If carpool selected as typical commute mode in Year 2, but NOT in Year 1]

In Spring 2011, you indicated you were not carpooling as part of your typical commute.

Why did you start carpooling?

Please select all that apply.

- 1 Using the Express Lanes saves time
- 2 To share the cost of the gasoline/commuting
- 3 To use the Express Lanes for free (as a 3+ person carpool)
- 4 To share the cost of the toll (as a 2-person carpool)
- 5 My <job/school> location or schedule changed
- 6 Carpooling is less stressful/more convenient
- 7 Carpooling is more environmentally-friendly
- 8 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

6. [If organized vanpool selected as typical commute mode in Year 1, but NOT in Year 2]

In Spring 2011, you indicated you vanpool for at least some of your <work/school> trips.

Why do you no longer vanpool?

Please select all that apply.

- 1 My <job/school> location or schedule changed
- 2 Other vanpool members dropped out
- 3 The I-85 Express Lanes have become less useful in saving time
- 4 I switched to transit or a carpool
- 5 It is faster and more reliable to drive alone in the Express Lanes
- 6 I prefer to drive alone now
- 7 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

7. [If organized vanpool selected as typical commute mode in Year 2, but NOT in Year 1]

In Spring 2011, you indicated you were not vanpooling as part of your typical commute.

Why did you start vanpooling?

Please select all that apply.

- 1 Using the Express Lanes saves time
- 2 To reduce my commuting costs
- 3 My <job/school> location or schedule changed
- 4 Vanpooling is less stressful/more convenient
- 5 Vanpooling is more environmentally-friendly
- 6 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

8. [If employed]

How many days per week do you typically work from home or telecommute instead of traveling to work?

- 1 5-7 days a week

- 2 4 days a week
- 3 3 days a week
- 4 2 days a week
- 5 1 day a week
- 6 A few times per month
- 7 Less than monthly
- 8 Never
- 9 Not applicable

9. [If telecommute more]

Why do you telecommute MORE OFTEN than you did in Spring 2011?

Please select all that apply.

- 1 Traffic conditions are worse now
- 2 My personal situation has changed
- 3 My job situation has changed
- 4 The computer/telecommunications capabilities in my home are improved
- 5 Environmental reasons
- 6 To save money on gas/commuting
- 7 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

10. [If telecommute less]

Why do you telecommute LESS OFTEN than you did in Spring 2011?

Please select all that apply.

- 1 Traffic conditions are better now
- 2 My personal situation has changed
- 3 My job responsibilities or tasks have changed
- 4 Other, please specify:

Note: Answer choices will be randomized with "other" anchored at the bottom of the list.

11. [If employed or a student]

Which of the following statements best describes your <work/school> schedule?

- 1 I have no flexibility in my schedule
- 2 I have some flexibility to adjust my schedule, within about 30 minutes
- 3 I'm pretty much free to adjust my work schedule as I like

12. [If no flexibility]

Why don't you have flexibility in your <work/school> schedule?

Please select all that apply.

- 1 My <work/school> schedule requires me to be present for specific hours each day

- 2 My personal situation requires me to arrive and leave at specific times each day
- 3 Other

13. [If employed or a student]

Which of the following commuter benefits does your <employer/school> offer? Which do you personally use?

	Not offered	Offered, but I don't use	Offered, and I use	Don't know
Partial or full reimbursement of the I-85 Express Lanes toll				
Free or discounted parking				
Free or discounted transit pass				
Free or discounted vanpool transportation				

1.8 Opinions/Perceptions and General Questions

9. **Which of the following items do you own?**

	I own	I do not own
A home computer (desktop or laptop) with access to the internet		
A Smartphone, iPhone, Blackberry, or other web-enabled mobile device		
A cell phone that is not web-enabled		
Mobile navigation or GPS device (such as Tom-Tom or Garmin)		

10. **How strongly do you agree or disagree with each of the following statements?**

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
Driving Atlanta regional highways is stressful for me								
At least twice a week there is an unexpected delay on my trip								
I adjust my routes and/or my departure times to avoid traffic congestion								
I will use a toll route if the tolls are reasonable and I will save time								
Highway tolls are unfair to people with limited incomes								
I don't have enough time in the day to do all I need to do								
Overall, my travel along I-85 has been improved by the Express Lanes								
I'm concerned about my safety when I use the Express Lanes								
Traffic congestion has gotten worse on my other routes along the I-85 corridor since tolling started								

Note: Statements will be shown in randomized order.

11. [If employed]

How strongly do you agree or disagree with each of the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
I am satisfied with my commute								
Within the past year, I've seriously considered changing where I live or work to reduce the time I spend traveling								

Note: Statements will be shown in randomized order.

12. [if employed and use a transit mode for typical commute]

How strongly do you agree or disagree with the following statement?

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	NA / Don't Know
As soon as I can, I'd like to switch to driving to work								

13. Now that the I-85 Express Lanes are in operation, was there anything else we should have asked you about how your household's travel has been impacted?

14. Would you be willing to continue to participate in future travel studies like this one?

In the future, the U.S. Department of Transportation, in cooperation with Georgia Department of Transportation, State Road and Tollway Authority, Georgia Regional Transportation Authority, and Atlanta Regional Commission, may occasionally conduct surveys just like this one to obtain feedback from residents like you about transportation topics and would love your feedback.

- 1 Yes
- 2 No

15. Thank you! You have completed your Travel Diary.
Please click "Finish" to submit your information.

APPENDIX C: TABULAR DATA FOR SELECT FIGURES

Table 56: Table data for Figure 3

Typical number of trips per week	Wave 1	Wave 2
0	21%	26%
1 to 4	20%	21%
5 to 9	15%	16%
10	27%	26%
11+	17%	11%

N=2925 individuals

Table 57: Table data for Figure 4

Typical number of Trips per week	Wave 1 (HOV)	Wave 2 (Express Lanes)
0	72%	72%
1 to 4	21%	12%
5 to 9	4%	10%
10 +	3%	6%

Table 58: Table data for Figure 5

Number of People in Vehicle	Wave 1	Wave 2
One	95%	86%
Two	4%	12%
Three+	1%	2%

Table 59: Table data for Figure 7 and Figure 8

	Wave 1 HOV	Wave 2 Express
0:00	0	0
0:05	0	0
0:10	0	0
0:15	0	0
0:20	0	0
0:25	0	0
0:30	0	0
0:35	0	0
0:40	0	0
0:45	0	0
0:50	0	0
0:55	0	0
1:00	0	0
1:05	0	0
1:10	0	0
1:15	0	0
1:20	0	0
1:25	0	0
1:30	0	0
1:35	0	0
1:40	0	0
1:45	0	0
1:50	0	0
1:55	0	0
2:00	0	0
2:05	0	1
2:10	0	0
2:15	0	0
2:20	0	0
2:25	0	0
2:30	0	0
2:35	0	0
2:40	0	0
2:45	0	0
2:50	0	0
2:55	0	0
3:00	0	0

	Wave 1 HOV	Wave 2 Express
3:05	0	0
3:10	0	0
3:15	0	0
3:20	0	0
3:25	0	0
3:30	0	0
3:35	0	0
3:40	0	0
3:45	0	0
3:50	0	0
3:55	0	0
4:00	0	0
4:05	0	0
4:10	0	0
4:15	0	0
4:20	0	0
4:25	0	0
4:30	2	0
4:35	0	0
4:40	0	0
4:45	0	0
4:50	0	0
4:55	0	0
5:00	3	1
5:05	0	0
5:10	0	0
5:15	1	0
5:20	1	0
5:25	0	0
5:30	0	4
5:35	0	1
5:40	0	2
5:45	2	3
5:50	2	4
5:55	2	2
6:00	11	15
6:05	1	3
6:10	2	3
6:15	2	3

	Wave 1 HOV	Wave 2 Express
6:20	4	5
6:25	1	1
6:30	7	13
6:35	4	3
6:40	2	3
6:45	6	7
6:50	1	6
6:55	0	0
7:00	8	16
7:05	1	1
7:10	0	5
7:15	3	11
7:20	6	5
7:25	1	3
7:30	6	9
7:35	0	2
7:40	0	3
7:45	4	5
7:50	2	6
7:55	2	4
8:00	5	11
8:05	0	3
8:10	1	0
8:15	3	3
8:20	1	7
8:25	0	1
8:30	0	9
8:35	1	3
8:40	2	1
8:45	2	4
8:50	0	1
8:55	0	0
9:00	4	6
9:05	1	0
9:10	2	1
9:15	0	1
9:20	0	1
9:25	0	0
9:30	1	1

	Wave 1 HOV	Wave 2 Express
9:35	0	0
9:40	0	0
9:45	1	1
9:50	0	0
9:55	0	0
10:00	0	0
10:05	0	0
10:10	0	1
10:15	1	0
10:20	0	1
10:25	0	2
10:30	1	0
10:35	0	1
10:40	0	0
10:45	0	1
10:50	0	0
10:55	0	0
11:00	2	0
11:05	1	0
11:10	0	0
11:15	0	1
11:20	0	0
11:25	0	0
11:30	0	0
11:35	0	0
11:40	2	0
11:45	0	0
11:50	0	0
11:55	0	0
12:00	0	1
12:05	0	0
12:10	0	0
12:15	0	0
12:20	0	0
12:25	0	0
12:30	2	0
12:35	0	0
12:40	0	0
12:45	0	0

	Wave 1 HOV	Wave 2 Express
12:50	2	0
12:55	1	0
13:00	1	0
13:05	0	0
13:10	0	1
13:15	0	0
13:20	1	0
13:25	0	0
13:30	0	0
13:35	0	0
13:40	1	0
13:45	1	1
13:50	0	1
13:55	0	0
14:00	1	1
14:05	0	0
14:10	0	0
14:15	0	1
14:20	2	0
14:25	0	0
14:30	1	1
14:35	1	1
14:40	0	0
14:45	0	3
14:50	2	0
14:55	0	0
15:00	7	11
15:05	0	1
15:10	1	2
15:15	1	0
15:20	0	1
15:25	0	0
15:30	8	2
15:35	0	1
15:40	0	3
15:45	1	5
15:50	0	2
15:55	1	1
16:00	11	24

	Wave 1 HOV	Wave 2 Express
16:05	2	7
16:10	2	2
16:15	1	4
16:20	3	2
16:25	0	0
16:30	12	10
16:35	3	4
16:40	3	5
16:45	1	7
16:50	1	1
16:55	1	1
17:00	15	27
17:05	3	8
17:10	3	7
17:15	5	7
17:20	0	3
17:25	2	1
17:30	4	9
17:35	3	4
17:40	1	2
17:45	0	3
17:50	0	2
17:55	1	1
18:00	6	13
18:05	0	5
18:10	0	2
18:15	1	4
18:20	0	0
18:25	0	1
18:30	2	8
18:35	1	1
18:40	0	0
18:45	1	0
18:50	0	1
18:55	0	0
19:00	3	6
19:05	0	0
19:10	2	0
19:15	1	0

	Wave 1 HOV	Wave 2 Express
19:20	0	0
19:25	1	0
19:30	1	0
19:35	0	0
19:40	0	0
19:45	0	0
19:50	1	1
19:55	0	0
20:00	0	1
20:05	0	0
20:10	1	0
20:15	0	0
20:20	0	0
20:25	0	0
20:30	0	1
20:35	0	0
20:40	0	0
20:45	0	0
20:50	1	0
20:55	0	0
21:00	1	0
21:05	0	1
21:10	0	0
21:15	0	0
21:20	0	0
21:25	0	0
21:30	3	0
21:35	0	0
21:40	0	0
21:45	0	0
21:50	0	0
21:55	0	0
22:00	1	0
22:05	0	0
22:10	0	0
22:15	0	0
22:20	0	0
22:25	0	0
22:30	0	0

	Wave 1 HOV	Wave 2 Express
22:35	0	0
22:40	0	0
22:45	2	0
22:50	0	0
22:55	0	0
23:00	0	0
23:05	0	0
23:10	0	0
23:15	2	0
23:20	0	0
23:25	0	0
23:30	0	0
23:35	0	0
23:40	0	0
23:45	0	0
23:50	0	0
23:55	0	0

Table 60: Table data for Figure 15

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Wave 2	20%	14%	7%	12%	14%	16%	11%	6%
Wave 1	4%	9%	7%	10%	16%	18%	31%	4%

Table 61: Table data for Figure 16

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Use Express Lanes 1+ trips/week (N=616)	7%	4%	5%	8%	12%	32%	31%	1%
Use Express Lanes less than weekly/never (N=1413)	27%	19%	8%	13%	15%	11%	5%	2%

Table 62: Table data for Figure 17

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Wave 2	8%	9%	5%	17%	13%	14%	30%	4%
Wave 1	4%	7%	4%	8%	19%	24%	31%	3%

Table 63: Table data for Figure 18

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
I am concerned about my safety when I use the Express Lanes	11%	16%	6%	19%	8%	6%	5%	29%
Congestion Has Become Worse Along my Other Routes in the I-85 Corridor (N=2907)	3%	7%	3%	18%	11%	15%	24%	19%
Overall, my travel along I-85 has been improved by the Express Lanes (N=2907)	30%	17%	7%	16%	6%	5%	5%	14%

Table 64: Table data for Figure 19

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Use Express Lanes 1+ trips/week (N=616)	13%	12%	7%	13%	18%	19%	17%	1%
Use Express Lanes less than weekly/never (N=1413)	44%	22%	8%	14%	3%	1%	2%	6%

Table 65: Table data for Figure 20

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Wave 2	5%	9%	5%	9%	22%	24%	22%	5%
Wave 1	2%	4%	5%	9%	21%	23%	34%	2%

Table 66: Table data for Figure 21

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Wave 2	4%	10%	7%	13%	18%	19%	21%	7%
Wave 1	7%	11%	8%	21%	14%	15%	21%	3%

Table 67: Table data for Figure 22

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
Wave 2	2%	6%	5%	12%	24%	22%	26%	3%
Wave 1	2%	8%	7%	15%	16%	24%	26%	2%

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