GREATER TRIANGLE TRAVEL STUDY

HOUSEHOLD TRAVEL SURVEY
FINAL REPORT

PREPARED FOR:

CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

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INTRODUCTION

This report documents the design, implementation and results of a household travel survey conducted as part of the Greater Triangle Travel Study. It was sponsored by the Capital Area Metropolitan Planning Organization, the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization, the Triangle Transit Authority, and the North Carolina Department of Transportation. The primary objective of this survey effort was to document demographic and travel behavior characteristics of regional travelers in order to update the current regional model and to develop a new, more robust travel demand model for the 12-county region. In addition, the data will be used to support other studies relating to regional travel, including assessing response to policy initiatives and the identification of transportation infrastructure investment priorities. The Greater Triangle Household Travel Survey (documented herein) is one of four such studies conducted by NuStats for the sponsors, under the direction of the Triangle Regional Model Service Bureau at the North Carolina State University. The other studies include a regional transit on-board survey, a commercial vehicle survey, and a special land use survey. The data from these surveys will inform the various components of the upcoming Triangle Regional Model update.

The 2006 Greater Triangle Household Travel Survey was conducted using state-of-the-art travel survey methods and computer-aided telephone interviewing (CATI) technology. It entailed the collection of activity and travel information for all household members during a specific 24-hour period. The survey relied on the willingness of regional households to (1) provide demographic information about the household, its members and its vehicles and (2) have all household members record all travel-related details for a specific 24-hour period, including address information for all locations visited, trip purpose, mode, and travel times. Due to variances in response rates, incentives were offered to select households (those with no vehicles, those living in the outlying counties who were of African American descent, and those comprised of university students). This was accompanied by an extensive public information campaign that was designed to emphasize the importance of and benefits from participating.

Survey work began with design in August and September 2005, followed by a pilot study in October and November. The full study ran from January through June 2006. In total, 7,300 households were recruited to participate in the study and 5,107 provided all details required for inclusion in the final data set. The overall response rate was 25%, which included a 35% recruitment rate and a 70% retrieval rate. Traffic volume estimates generated by this study are shown in Table I-1.

TABLE I-1: 2006 STUDY AREA TRANSPORTATION VOLUME ESTIMATES

Transportation Volume Estimates	2006 Survey Results
Total Households Surveyed	5,107
Total Households Expanded to 12-County Region	548,539
Average Household Size	2.46 persons
Average Vehicles per Household	1.82 vehicles
Total Person Trips Recorded	51,002 trips*
Average Daily Household Trip Rate	9.99 trips*
Travel Volume Projection	5,478,060 trips*

Source: 2006 Greater Triangle Household Travel Survey, weighted. *Unlinked Trips

Prior to this 2006 survey, the most recent household travel survey conducted in the region was the 1994/5 Travel Behavior Survey, conducted by NuStats for the Triangle Transit Authority. There are several methodological differences between the 1994/5 and the 2006 surveys, the primary differences being: (1) the earlier study employed a 2-day activity diary, while the 2006 survey obtained travel only for a 24-hour period; (2) the earlier survey obtained travel and activities only for those household members age 5 and older, while the later obtained travel for all household members, and (3) the earlier study focused on a limited geography (represented in this report as the "inner region") while the 2006 effort encompassed a much broader area (the inner and outer regions of the 12-county area). The following table summarizes

the data from the current survey and compares it to the results from the 1994/5 survey. As indicated in that table, the 2006 survey results reflect slightly larger households with fewer vehicles and a slightly lower trip rate. A more complete comparison of the 2006 survey results with those from the 1994/5 survey effort is forthcoming from the Triangle Regional Model Service Bureau.

TABLE I-2: STUDY AREA TRANSPORTATION VOLUME ESTIMATES: 1994/5 AND 2006 SURVEYS

Transportation Volume Estimates	1994/5 Survey	2006 Survey – Inner Region
Total Households Surveyed	2,045	3,987
Total Households Expanded	301,035	428,193
Average Household Size	2.4 persons	2.5 persons
Average Vehicles per Household	1.89 vehicles	1.79 vehicles
Total Person Trips Recorded	34,755 trips	38,669 trips*
Average Daily Household Trip Rate	11.89 trips	9.81 trips*
Travel Volume Projection	3,567,264 trips	4,153,403 trips*

Sources: 1994 Travel Behavior Survey Final Report and 2006 Greater Triangle Household Travel Survey, weighted.
*2006 results restricted to households in the inner region of the study area and reported travel by household members age 5+, weighted.

This report documents the methods and results of the household travel survey effort. It is structured in three sections: methods, results, and conclusions. The appendices contain the survey materials and questionnaires, as well as a frequency of unweighted responses to both the recruitment and the retrieval questionnaires. The 2006 Greater Triangle Household Travel Survey was conducted in association with NuStats' DataSource and Louis Berger Group. NuStats designed the survey, managed data collection, processed and geocoded the data, provided quality control and assurance, and analyzed the survey data. NuStats' DataSource conducted the telephone interviews and mailed the travel log packets. Louis Berger Group managed the public involvement task and assisted with the geocoding effort, focusing on the university building lists (for on-campus travel) as well as trip destinations in high growth areas, where the coverage files were outdated.

SURVEY METHODS

The Greater Triangle Household Travel Survey was a comprehensive study of travel behavior throughout the 12-county Research Triangle Region. The counties included all portions of Chatham, Durham, Franklin, Granville, Johnston, Lee, Orange, Person, Wake, and Vance counties, the eastern portion of Harnett County, and the southern portion of Nash County. The project was conducted over an eleven-month period, from August 2005 through June 2006. The general progression of the project began in August 2005 with the design stage, where the data elements to support modeling and other desired analyses were identified and used to craft the recruitment and retrieval questionnaires and the 24-hour travel log provided to respondents to record their travel. At the same time, a sampling plan was developed to ensure sufficient samples for sub-regional modeling.

Once the design work was completed, a pilot test was conducted in October and November 2005 to assess respondent reaction to the survey and to confirm that the survey questions would yield the desired data. Subsequent to the pilot test, the full study data collection began in January 2006, with travel dates beginning January 31 and ending May 26. As the travel data were collected, they were processed and geocoded as well as subjected to a series of quality assurance tests. The final task was to create the weighting factors to adjust the data with regard to geographic and demographic distribution and to provide an expansion factor to expand the survey results to the study area population.

This section of the report provides details about the methodology used to conduct the survey. Within each section, the methods used as well as the outcomes from those methods are discussed.

SURVEY DESIGN

The goal of the study was to collect data from a minimum of 5,000 regional households. This goal was achieved and the final data set contains demographic and trip information for 5,107 households. The survey utilized standard household travel survey methods, in which all household members were asked to record all trips for a specified 24-hour period using a specially designed travel log. In the survey materials and interview scripts, respondents were assured that their responses would be kept confidential and that their responses would be analyzed in the aggregate only. To ensure this, the data files are structured such that a 7-digit unique identifier ("sample number") links each household's data together across the various files. This allows for the creation of "public use" data sets that contain no identifying information but still allow for robust analysis of the demographic and travel behavior characteristics.

As part of the survey process, households were randomly assigned to non-Holiday weekdays (Monday-Friday) for recording their travel. The final distribution of households by day of week is shown in Table M-1, which indicates a fairly equal distribution of completed households across the days of the week.

TABLE M-1: DISTRIBUTION OF HOUSEHOLDS BY DAY OF WEEK

DAY OF WEEK	FREQUENCY	PERCENT
Monday	1,083	21.2%
Tuesday	1,015	19.9%
Wednesday	1,052	20.6%
Thursday	972	19.0%
Friday	985	19.3%
Total	5,107	100%

Base: Greater Triangle Household Travel Survey, unweighted.

The study began with an in-depth review of data needs that would satisfy the modeling requirements and analysis plans that would be relying on the survey data. This resulted in the identification of the following variables (listed based on their location in the final data files):

TABLE M-2: HOUSEHOLD TRAVEL SURVEY DATA ITEMS

Household Data File	Person Data File	Vehicle Data File	Travel / Activity Data File
For each household	For each person in HH	For each HH vehicle	For each person trip
Home Address	Relationship	Year	Destination Address
Geographic Location	Gender	Make	Departure time
Household Size	Age	Model	Arrival Time
# Vehicles Owned	Race/Ethnicity	Body Type	Activity
Dwelling Type	Disability Status	Fuel Type	Activity Duration
Own/ Rent Status	Licensed Driver	Vehicle Used on Travel Day	Travel Mode
Residential Tenure	Bike, Walk, and Transit Usage		Trip Duration
Prior Residence Location	Employment Status		Travel Party Details*
Factors Influencing Location Choice	# Jobs Held		HH vehicle used
Telephone Ownership Details	Occupation		Parking Details
Household Income	Travel Mode to Work		Transit Access and Egress Details
Personal Income (non-related HH only)	Personal Vehicle Requirements for Work		Transfer Details
Traffic Info Sources	Telework Potential		Vehicle Availability (for Transit Trips)
Travel Day and Date	Schedule Flexibility		
# Delivery and Service Calls	Tenure at Work Location		
Summary Statistics	Prior Work Site		
Special population identifiers	Factors Influencing Job Choice		
	Work Address		
	Educational Attainment		
	Student Status		
	School Address		
	Travel Mode to School		
	Travel Summary Statistics		
	Activity-related Process Details		
	Survey Protocol Adherence		
	Special Population Identifiers		

*The Greater Triangle Household Travel Survey obtained travel party size for all reported trips, regardless of mode. Auto occupancy can be derived from this data by focusing on party size for only the auto travel modes. Similarly, average party size can also be calculated for trips by all other modes, including walk, bike, and transit.

SAMPLE DESIGN

The study objective was to provide a data set representative of the region's population and travel patterns. To ensure this, the main sampling plan was developed with a focus on representation both geographically as well as demographically, with the key demographic variables being household size and vehicles owned. Secondary sampling goals included obtaining sufficient samples from special population groups: low-income households, transit-using households, college students, and people who walk or bike to work/school.

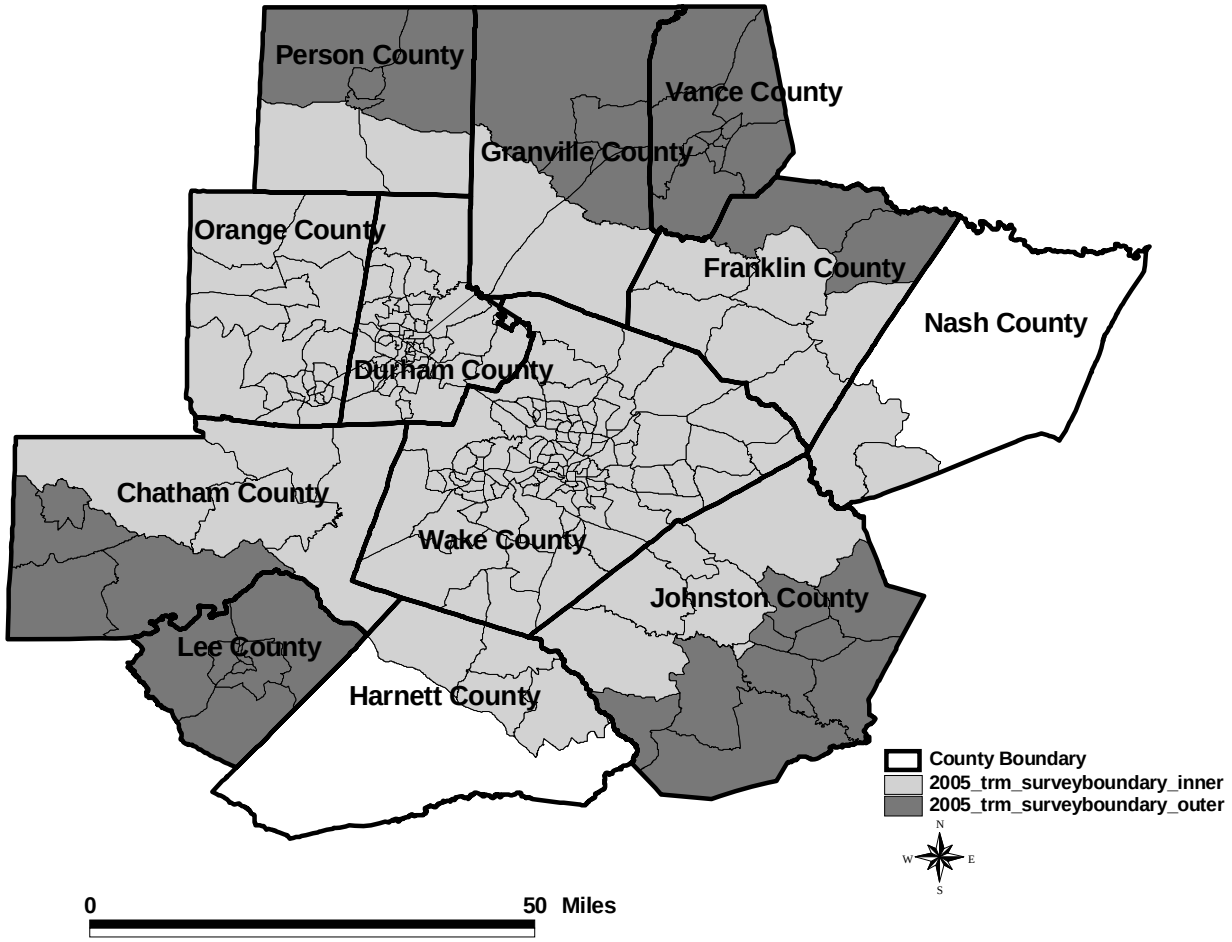
The general sampling approach assumed the following:

1. Study Universe: The study area is comprised of twelve counties: Durham, Orange, Wake, Chatham, Lee, Harnett, Johnston, Nash, Franklin, Vance, Granville, and Person. A review of Census 2000 data (particularly the journey-to-work details) as well as model specifications resulted in the division of these twelve counties into two regions: inner and outer core. The inner core areas include the complete counties of Durham, Orange, and Wake, portions of Chatham, Franklin, Granville, Harnett, Johnston, and Person Counties (defined at the tract level) and the southern portion of Nash County. The outer core is comprised of the remainders of Chatham, Franklin, Granville, Johnston, and Person Counties, an additional portion of Harnett County, and all of Lee and Vance Counties. (See Figure M-1 for a spatial representation of how the study region was divided into inner and outer core across the 12 counties.)
2. Special Populations: The transportation planning goals for the region included minimum sample sizes for the following population subgroups: low-income households, transit-using households, college students, and households with members who walk or bike to work/school. Census Journey to Work data, Census Transportation Planning Package data, and special tabulations provided by the project sponsors were used to identify census tracts with higher-than-average proportions of these households.
3. Sampling Frame. The sampling frame (or the data base from which the sample was drawn) consisted of all telephone-owning households in the census tracts that defined the 12-county region.
4. Coverage Biases. Coverage bias results from systematic exclusion of households who live in the region from the sampling frame. Because the sampling frame was based on telephone-owning households, an estimated 2 percent of regional households that did not own telephones (per the 2000 Census) were excluded. In addition, the sampling frame was based on residential telephone numbers. Thus households with only cellular phones were also excluded from the sampling frame. According to the Bureau of Labor Statistics[1], the proportion of cell-only households in the US was 4% in 2003. The BLS research indicates that these "cell-only households are more likely to be student housing units, rented households, single-person households, located in urban areas, and households that are not in the highest income quartile." While it is not possible to quantify the number of cellular-phone-only households in the Greater Triangle area, their exclusion from the sampling frame should be recognized (and will be measured as part of the special land use surveys).
5. Target Number of Completes: For the full study, the goal was to obtain travel data from 5,000 households.

The survey sample was selected randomly, using a probability-based selection process. A major requirement for probability-based samples is that the relative probability (or chance) of any given household being selected is known. The final sample drawn for the survey included proportions of listed and unlisted samples at the ratio of 60% listed and 40% unlisted.

[1] See http://www.bls.gov/ore/pdf/st040130.pdf

FIGURE M-1: STUDY AREA GEOGRAPHY



As indicated earlier in this section, the sampling plan included both geographic and demographic goals. These goals, and the outcomes from the data collection effort, are presented below. With regard to the geographic goals, the study area geography was divided into 18 "areas." Each area was defined by census tracts and corresponded both to a specific county as well as whether that portion of the county was part of the inner or outer core of the region. Table M-3 shows the census proportion of households within each area, the sampling goals, the data collection results, and the weighted distribution of households within the final data set. The table shows slight deviations from the general goals to the results, reflecting the in-field challenges associated with balancing both geographic and demographic goals alongside respondent participation rates. Table M-4 shows the actual numeric goals by geography and the unweighted and weighted counts of participating households for each area.

TABLE M-3: HOUSEHOLD SURVEY DATA COLLECTION RESULTS - GEOGRAPHY

Area	Census %	Goals	Results	Weighted Results
Chatham County - Inner	2.2%	2.1%	2.0%	2.2%
Chatham County - Outer	1.4%	1.3%	1.4%	1.4%
Durham County - Inner	16.2%	18.1%	18.2%	16.2%
Franklin County - Inner	2.7%	2.2%	2.7%	2.7%
Franklin County - Outer	0.5%	1.3%	1.0%	0.5%
Granville County - Inner	1.4%	2.1%	2.3%	1.5%
Granville County - Outer	1.8%	1.3%	1.4%	1.6%
Harnett County - Inner	2.0%	2.1%	1.9%	2.0%
Harnett County - Outer	1.4%	1.3%	1.3%	1.4%
Johnston County - Inner	4.6%	3.7%	3.6%	4.6%
Johnston County - Outer	3.9%	3.2%	3.1%	3.9%
Lee County - Outer	3.4%	2.7%	2.6%	3.4%
Nash County - Inner	0.7%	1.3%	1.2%	0.7%
Orange County - Inner	8.3%	10.5%	11.1%	8.4%
Person County - Inner	1.0%	2.1%	1.9%	1.0%
Person County - Outer	1.6%	1.3%	1.3%	1.6%
Vance County - Outer	2.9%	3.7%	4.1%	3.0%
Wake County - Inner	44.0%	39.7%	38.9%	44.1%
Total Inner	83.1%	83.9%	83.8%	83.3%
Total Outer	16.9%	16.1%	16.2%	16.7%
Total	100%	100%	100%	100%

TABLE M-4: PARTICIPATING HOUSEHOLDS BY GEOGRAPHY

Area	Goals	Unweighted Data	Weighted Data
Chatham County - Inner	104	103	114
Chatham County - Outer	67	69	70
Durham County - Inner	918	927	829
Franklin County - Inner	111	140	138
Franklin County - Outer	67	52	28
Granville County - Inner	104	117	74
Granville County - Outer	67	70	81
Harnett County - Inner	104	99	100
Harnett County - Outer	67	65	71
Johnston County - Inner	187	186	234
Johnston County - Outer	160	160	200
Lee County - Outer	138	134	172
Nash County - Inner	67	61	34
Orange County - Inner	540	95	50
Person County - Inner	104	65	81
Person County - Outer	67	565	427
Vance County - Outer	121	211	151
Wake County - Inner	2007	1988	2253
Total Inner	4246	3781	3907
Total Outer	754	1326	1200
Total	5000	5107	5107

The second portion of the goals considered household demographic characteristics. This focused on the distribution of households by size and vehicle ownership, two of the strongest correlates with differences in trip rates and travel patterns. As with the geographic goals, the initial goals were set using census data. However, during the data collection effort, the incidence levels of large households with few vehicles and 0-vehicle households in general differed greatly from the census estimates. This was anticipated, given that the survey was conducted five years after the census was taken and demographic trends since that time have included both faster vehicle acquisition rates and decreasing household sizes.[2] While random sample targeting census tracts with higher proportions of these lower-incidence households were drawn several times, the telephone screening efforts documented a shift in demographics, even in these specific areas. As a result, the household size and vehicle goals were adjusted slightly to reflect this shift. Table M-5 shows the census distribution, the original goals, the data collection results, and the weighted distribution of households by type, with the actual numeric distributions in Table M-6. Overall, the surveyed data set contains almost exactly what was desired, particularly with regard to the zero-vehicle households (a reflection of targeted sampling and data collection efforts.

TABLE M-5: HOUSEHOLD SURVEY DATA COLLECTION GOALS - DEMOGRAPHICS

Household Type	Census %	Original Goals	Unweighted Results	Weighted Results
1 person/0-vehicles	4.0%	3.5%	2.3%	3.5%
1 person/1-vehicle	17.5%	17.8%	17.7%	17.7%
1 person/2-vehicles	3.5%	3.7%	4.3%	3.7%
1 person/3+ vehicles	1.0%	0.9%	1.0%	0.9%
2 person/0 vehicles	2.0%	1.6%	0.8%	1.6%
2 person/1-vehicle	7.0%	7.3%	5.9%	7.3%
2 person/2-vehicles	19.0%	18.7%	24.2%	18.7%
2 person/3+ vehicles	6.0%	6.1%	10.0%	6.1%
3 person/0-vehicles	0.5%	0.8%	0.3%	0.8%
3 person/1-vehicle	3.5%	3.6%	1.7%	3.6%
3 person/2-vehicles	7.5%	7.7%	7.0%	7.7%
3 person/3+vehicles	6.0%	5.6%	6.1%	5.6%
4 person/0 vehicles	0.5%	0.9%	0.2%	0.9%
4 person/1 vehicle	4.0%	3.5%	1.3%	3.5%
4 person/2 vehicles	11.0%	11.2%	10.1%	11.2%
4 person/ 3+ vehicles	7.0%	7.3%	7.2%	7.3%
Total	100%	100%	100%	100%

[2] The comparison of survey results from 1994 to 2006 in Table I-2 suggested vehicle size has declined for the study area. However, the 1994 survey significantly under-sampled Durham County households while the 2006 survey contained a proportionate representative sample for that same county. This difference in sampling resulted in the "decline" from 1994 to 2006 in terms of vehicle ownership in Table I-2. Regionwide, vehicle ownership has actually increased according to 1990 and 2000 census summaries and the 2006 telephone survey incidences.

TABLE M-6: PARTICIPATING HOUSEHOLDS BY DEMOGRAPHICS

Household Type	Original Goals	Unweighted Results	Weighted Results
1 person/0-vehicles	177	118	181
1 person/1-vehicle	887	903	906
1 person/2-vehicles	184	219	188
1 person/3+ vehicles	44	53	45
2 person/0 vehicles	79	40	81
2 person/1-vehicle	366	299	374
2 person/2-vehicles	937	1234	957
2 person/3+ vehicles	304	509	310
3 person/0-vehicles	38	14	39
3 person/1-vehicle	181	89	185
3 person/2-vehicles	383	360	391
3 person/3+vehicles	278	311	284
4 person/0 vehicles	45	12	46
4 person/1 vehicle	176	64	180
4 person/2 vehicles	558	514	570
4 person/ 3+ vehicles	364	368	371
Total	5000	5107	5107

The geographic distribution of sampled households is shown in Figure M-2. Figure M-3 shows the location of the 5,107 participating households.

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FIGURE M-2: SAMPLED HOUSEHOLD LOCATIONS

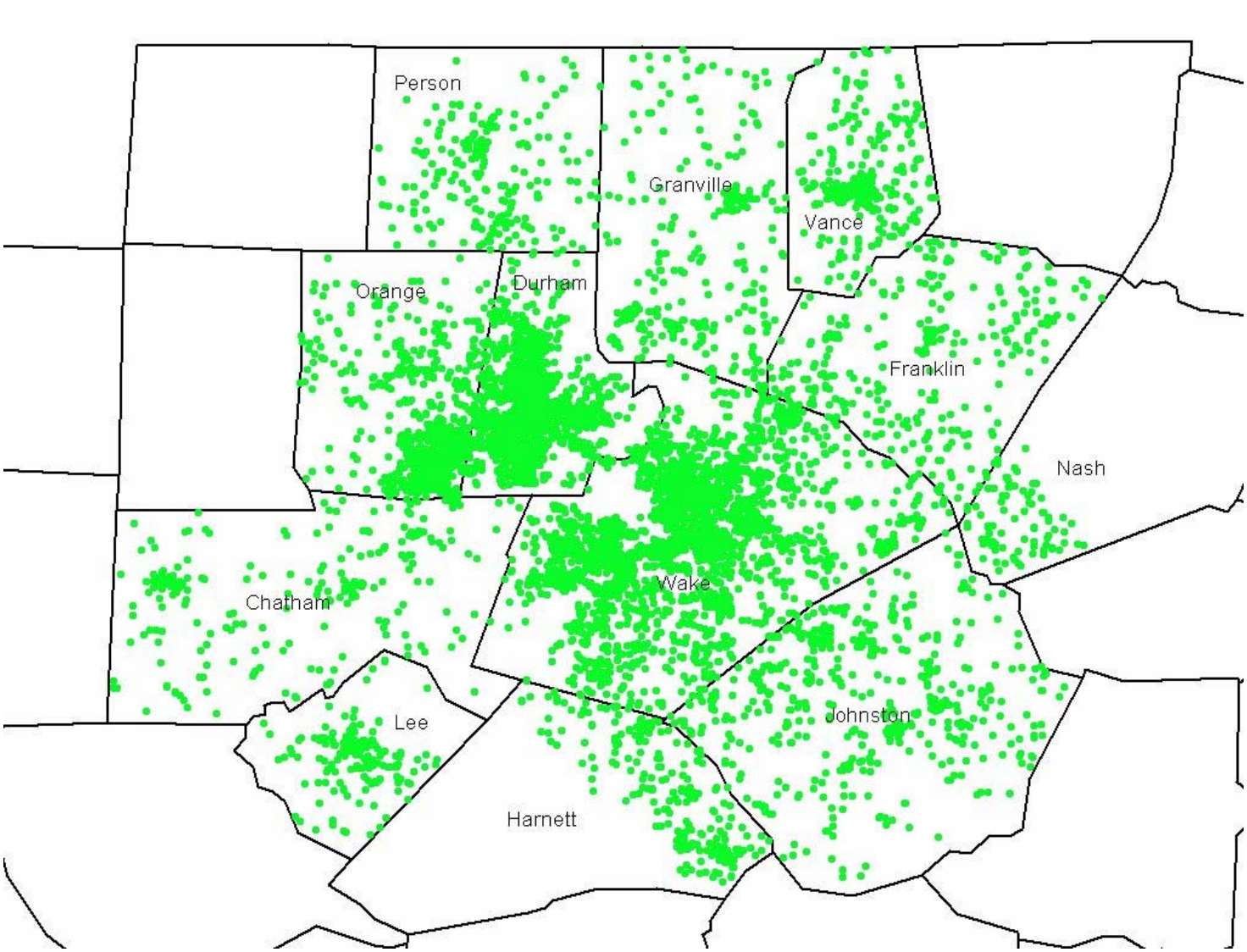
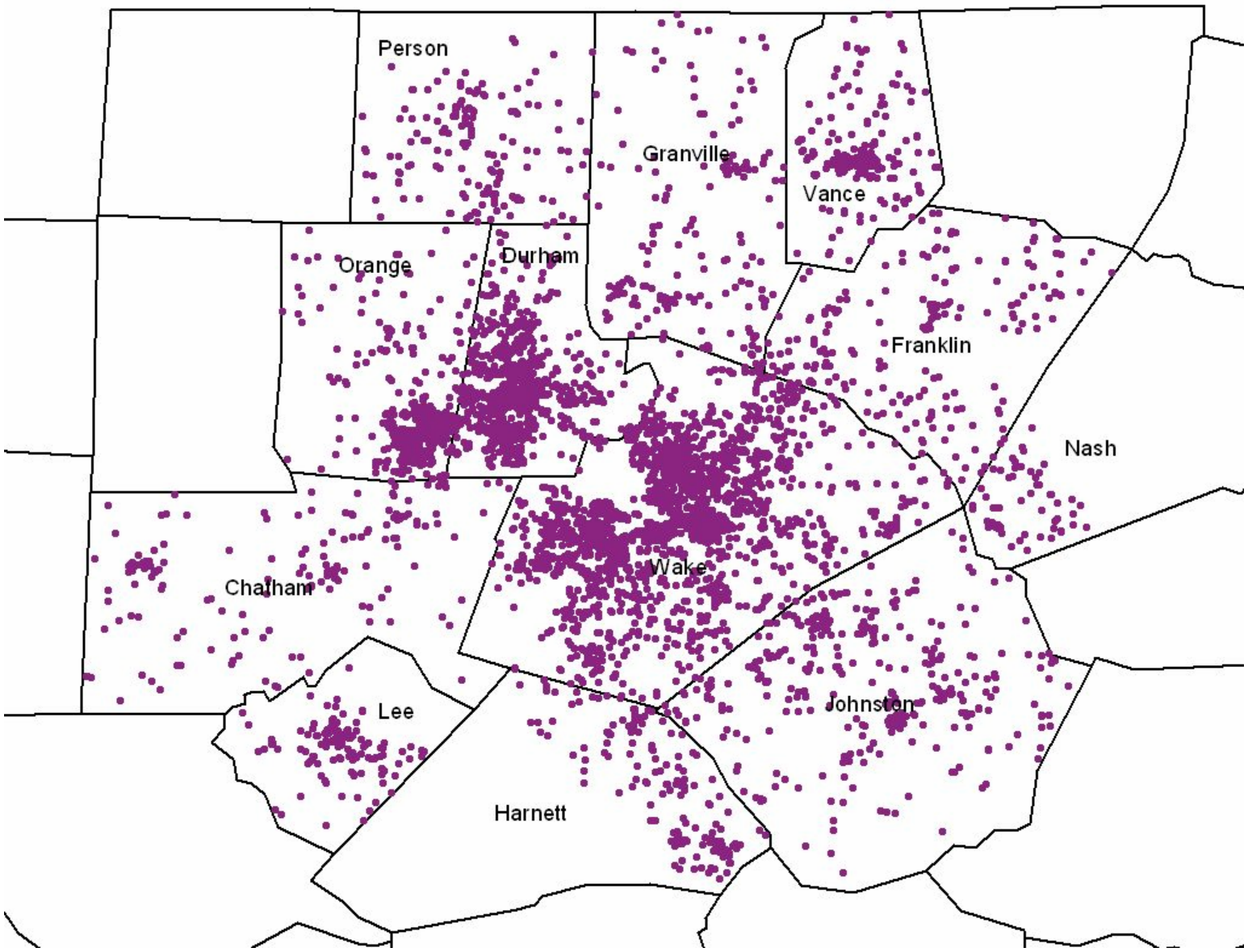


FIGURE M-3: PARTICIPATING HOUSEHOLD LOCATIONS



PILOT TEST

The pilot was conducted in October and November 2005. As part of this test, NuStats tested the procedures and instruments identified for the Greater Triangle Household Travel Survey. Throughout all pilot activities, the focus was to identify areas where adjustments to processes, procedures, or respondent materials were necessary to strengthen the results in the full study. Thus, the pilot included of all activities required to produce a data set comprised of 30 resident households. This included sample generation, advance notification, recruitment, placement of respondent materials, reminder calls, retrieval, geocoding, quality assurance and data delivery. The pilot focused on three zip codes within the study area: Cary (27513), Vance County (27536), and Durham (27701). The Cary 27513 zip code was chosen to represent the "average" regional respondent, the Vance County 27536 zip code was selected to represent the more rural outer core participants and the Durham 27701 zip code represented low-income respondents in the region.

Prior to the start of the pilot test, objective criteria were identified to guide the evaluation process. The subsequent evaluation was then documented in the pilot report. The main conclusion was that the pilot test was successful in terms of the procedures and collection of necessary data. Key findings included:

1) ***To examine all stages of data flow procedures.*** The household travel survey pilot was designed as a "dress rehearsal." As such, all systems developed for the full study were employed as part of the pilot test. This allowed for a full testing of all systems, from sample generation to respondent contacts to preparation of the final data set. In general, the processes worked well.

   The main areas of discussion focused on aspects unique to the Triangle survey. This included both the accounting mechanisms for tracking respondents with characteristics of multiple special population groups (the low-income college student who walks to school) and the best approach for flagging individuals who traveled on one of the three main campuses. With regard to the former, the decision was made to simply track each household according to all special population groups (one household could contribute to the goals of multiple respondent groups). In terms of the latter, this study was unique in that it is the first regional travel survey to obtain on-campus travel for destinations at Duke University, North Carolina State University, and the University of North Carolina. After the pilot, the data collection team agreed that, instead of trying to pre-identify students who might travel to campus on their travel day, any traveler to any of the three destinations would be asked for on-campus travel. The respondent instructions were modified accordingly.

   A second issue was the length of the recruitment interview, which averaged 21 minutes instead of the budgeted 17 to 19 minutes. The team suggested the following changes to shorten the interview length: shorten the introduction (with an alternative introduction for the non-core counties) and delete two questions (a telephone-sharing question and another determining whether each household vehicle was owned, leased, or provided under an alternative arrangement).

   Finally, the data collection team evaluated the geocoding coverage files and found the 2003 TransCAD files adequate for the project needs, including the 100% geocoding requirement.

2) ***To evaluate respondent reaction to the survey process and explore levels of respondent cooperation and response rates.*** The overall response rate for the pilot test was 36%. This was seen as reflective of the compressed time window of the pilot. The normal fielding period of several months would provide for better sample management, suggesting a similar or higher response rate would result.

3) ***To assess project staff training and performance.*** As part of the pilot, the need was identified for more focused training in recruitment in terms of obtaining building information for workers and students at the major universities.

To assess the effects of these changes on the final survey data, Table M-7 compares the unweighted pilot results for the three target zip codes to households from the full study that reside in the same zip codes. As indicated in that table, the results for the same zip code areas improved for most measures.

TABLE M-7: IMPACT OF PILOT CHANGES ON FULL STUDY RESULTS

Variables	Pilot Results	Full Study Results	Census Data
	%	%	%
Household Size			
1	30.0%	33.2%	27.4%
2	30.0%	36.5%	30.6%
3	20.0%	12.6%	17.7%
4+	20.0%	17.7%	24.2%
Household Vehicles			
0	13.3%	9.0%	11.7%
1	33.3%	32.5%	34.4%
2	36.7%	40.1%	38.7%
3+	16.7%	18.4%	15.3%
Household Income			
< $25k	27.6%	26.0%	32.6%
$25 - < $50k	13.8%	21.5%	25.5%
$50k- < $75k	10.3%	17.0%	17.3%
$75k +	48.3%	35.5%	24.6%
Residence Type			
Single family	83.3%	73.4%	61.0%
All other types	16.7%	26.6%	39.0%
Respondent Age			
<20	30.0%	25.7%	30.6%
20 – 24	0.0%	1.7%	7.0%
25 – 54	52.1%	40.3%	47.5%
55 – 64	5.6%	13.8%	6.5%
65+	12.3%	18.5%	8.5%
Respondent Ethnicity			
White	76.7%	64.6%	72.1%
Non-White	23.3%	35.4%	27.9%

Census Data obtained from American FactFinder for 27513, 27536, and 27701 then combined for display purposes herein. All results unweighted.

DATA COLLECTION

Data collection activities began in late January and continued through early June. These activities centered about six main stages: advance notification, recruitment, placement of materials, travel data retrieval, processing, and geocoding. The details regarding each stage are provided in this section.

Advance Notification. An advance mailing, consisting of a letter and a brochure, was sent to a portion of sampled households for whom a name and addresses were known prior to the recruitment call. This mailing advised the household that it had been randomly selected and would be receiving a call regarding the study. It provided information about the study sponsor, introduced NuStats DataSource as the company that would be calling, and provided a web site address and a telephone number where additional information could be obtained. The advance mailing materials are included in Appendix A.

Recruitment. The recruitment interview was administered using a computer-assisted telephone-interviewing (CATI) program. During recruitment, each household was contacted to secure participation in the study. If the household agreed, household-level demographic information was collected including income, household size, vehicle ownership, and other household characteristics. In addition, demographic characteristics were obtained for each member of the household such as age, gender, employment and school status (see Appendix B for the recruitment questionnaire).

The recruitment calls began on January 23rd and continued through May 16th, recruiting a total of 7,300 households. All households within the study area that provided the necessary address and demographic details were eligible for the study, regardless of whether they were reached via landline or cellular telephone. Over the course of the recruitment effort, 49,314 telephone numbers were called. Of these:

- 8,467 (17%) resulted in contact with eligible households.
- 12,998 (26%) were determined to be ineligible (non-working, non-household or non-voice lines), and
- 27,849 (56%) were unable to be classified as eligible or ineligible after 5 call attempts, since the CATI sample management program suppressed sample from being dialed as geographic goals were reached.

Of the eligible households reached, 7,300 of the 8,467 agreed to participate in the study (86%). The average length of the recruitment call was 19 minutes. It took an average of 2.82 call attempts to reach a household for recruitment. Table M-8 shows the average interview length and the average number of call attempts it took to reach each household based on household size. As indicated in that table, the larger the household, the longer the interview length.

TABLE M-8: RECRUITMENT INTERVIEW LENGTH AND CONTACTS

HOUSEHOLD SIZE	N	INTERVIEW LENGTH	# ATTEMPTS
1 person	1,668	14.64 min	2.69
2 persons	2,756	18.43 min	2.71
3 persons	1,241	21.31 min	2.79
4+ persons	1,635	24.15 min	3.14
Total	7,300	19.28 min	2.82

The recruitment instrument performed well as item non-response was marginal, as evidenced by the unweighted frequency of responses to the recruitment questionnaire contained in Appendix C. The following is list of questions for which respondents did not all provide answers:

- Vehicle year (4.8% refused), Vehicle make (0.6% refused), Vehicle body type (0.6% refused)
- Dwelling type (0.1% refused)
- Reason for selection current home location (0.4% refused)
- Number of home telephone #s and cell phone numbers (0.2% refused), modems (0.7%)
- Household income (6% refused)
- Relationship to respondent (0.1% refused)
- Gender (0.4% refused)
- Age (< 0.1% refused)
- Ethnicity (0.7% refused)
- Disability Status (0.1% refused)
- Licensed Driver Status (0.1% refused)
- Employment Status (0.2% refused)
- Primary Activity if not employed (0.4% refused)
- Educational Attainment (0.9% refused)
- Student School Level (0.3% refused)

Packet Mailout. The day following recruitment, the demographic information was processed into the master data set and packets were assembled for each recruited households. These packets included a cover letter, study brochure, travel log, sample travel log, and a postage-paid envelope to return the completed logs after the retrieval interview (see Appendix D). Travel days were scheduled 7 to 10 days after recruitment to allow for sufficient time for packets to reach the households using first class mail.

Reminder Call. The night prior to the assigned travel day, reminder calls were made to the households. This reminder call served three key purposes:

1. Confirm that the household received the packet and answer any questions respondents might have about using the log to track their travel.
2. Schedule an appointment to conduct the retrieval interview.
3. Increase the likelihood that the household will follow-through with recording their travel by re-iterating the importance of the study and the household's commitment to participate.

For those instances where an answering machine was reached, the interviewers left brief messages that referenced a toll-free number for respondents to call if they had questions.

Retrieval. The day after an assigned travel day or at the appointed time, telephone calls were made to retrieve the travel data recorded by each eligible household member in his/ her travel log. The interviews were guided using CATI programs of the retrieval instrument (see Appendix E). The average interview length was 26 minutes and it took 7 call attempts to complete each household, on average.

TABLE M-9: RETRIEVAL INTERVIEW LENGTH AND CONTACTS

HOUSEHOLD SIZE	N	INTERVIEW LENGTH	# ATTEMPTS
1 person	1,293	17.11 min.	6.73
2 persons	2,082	24.03 min.	5.95
3 persons	774	29.98 min.	7.72
4+ persons	958	37.77min.	9.08
Total	5,107	25.69 min.	6.99

Travel days were assigned beginning Tuesday, January 31st and continued through Friday, May 26th. Retrieval interviews began on Wednesday, February 1st and continued through Thursday, June 1st. Data was collected from all household members for the 5,107 households that completed the study. This is a retrieval rate of 70% (5107 retrieved / 7300 recruited). The overall response rate for the study is determined by multiplying the recruitment rate (35%) by the retrieval rate (70%). For this study, the response rate is 25%. This means that 25% of all households that were initially attempted and/or actually contacted about participation in the Greater Triangle Household Travel Survey completed all activities associated with the project.

The retrieval instrument had nominal item non-response. As indicated in the unweighted frequencies contained in Appendix F to this report, the only variable that experienced item non-response was "where parked" (0.4% unknown).

Processing. Data processing took place throughout the study, beginning with the creation of the advance notification mailout, continuing with the release of sample for recruitment, processing recruitment data for the respondent mailout, appending the retrieval data to the master tables, and performing initial quality control measures on the data. A master control file tracked the progress of each household through the various survey stages, with codes to allow immediate identification of problem cases that were not progressing according to schedule as well as confirmation that cleared cases moved along as appropriate. Routine data checks totaled more than 100 and included the following:

- Data range checks to ensure data were inside the expected ranges for each variable and that there was agreement across data files (for example, if the household had 4 persons and 2 vehicles, there should be 4 records in the person file and 2 records in the vehicle file).
- Confirmation that travel data were collected from all household members or were considered a non-related household or valid partial, where not all household members were required to provide data (only 3 households had 5 or more members and were missing travel data for one person).[3]
- If a person reported no travel, the household was flagged for manual review to confirm the reason for non-travel was appropriate, given the demographic characteristics of the household member. Those cases where the reason for non-travel was suspect or did not make sense within the context of the available demographic information were flagged and returned to DataSource for confirmation or replacement.
- Within the travel data itself, several items were checked. The following are examples of conditions researched within the trip data:
  - Did each trip begin and end at a different location? Loop trips (those that have the same origin and destination) might be neighborhood walks, which were left in the trip file, but flagged as a loop trip in a special variable.
  - Did each person return home at the end of the travel day? If not, did the final recorded destination make sense within the context of the household and person characteristics?
  - For all trips with "auto-driver" as the reported mode, was the respondent a licensed driver?
  - For all trips reported as "auto-passenger", did another household member report the same trip as an auto-driver? If not, did the passenger report riding in a non-household vehicle with at least one other person making the trip?

Geocoding. The geocoding process took place throughout the course of the project, beginning with the home addresses, continuing with habitual addresses (work and school locations) obtained during recruitment, and ending with the trip ends (non-home and non-habitual locations) collected during the retrieval stage of the survey.

Using ArcView software, all home, work, school and trip locations reported were subjected to the geocoding task, using coverage files provided by the Triangle Regional Model Service Bureau. During the course of the project, 29,639 addresses were obtained from the respondents. Of all locations reported (regardless of whether they were used on the travel day), 98% of the in-area destinations were successfully matched to latitude/longitude coordinates. The distribution of addresses by type and geocoding status is shown in Table M-10.

TABLE M-10: GEOCODING OUTCOMES BY ADDRESS TYPE FOR ALL ADDRESSES COLLECTED

LOCATION	DIRECT MATCH	CAMPUS BUILDING	IMPUTED	OUT OF AREA	UNMATCHED	TOTAL
Home	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
School	87.7%	5.0%	1.1%	3.8%	2.40%	100.0%
Work	95.3%	0.6%	1.3%	1.4%	1.4%	100.0%
Other	90.7%	2.7%	1.8%	4.6%	0.1%	100.0%
Total	92.0%	2.6%	1.3%	3.5%	0.6%	100.0%

[3] Note: only three households in the data set qualify as a valid partial, each missing data only for one person. The missing trip details for one household member suggest that they traveled heavily with other household members, so reconstruction is an option. The other two were missing from the final data set largely due to unmatched locations.

The results in Table M-10 included all addresses reported, including work and school locations that were not used on the travel day[4]. Table M-11 shows the geocoding rate of all addresses associated with travel on the travel day. Per contractual requirements, all in-area trip destinations were geocoded. This included both those that directly matched through the geocoding process, as well as a small proportion (1%) that were imputed based on address details and the other places visited on the travel day. During the course of data collection, 5,180 households provided travel data. However, only 5,107 are included in the final data set, largely due to the lack of sufficient address detail to geocode all trip ends.

TABLE M-11: GEOCODING OUTCOMES BY ADDRESS TYPE FOR ADDRESSES ASSOCIATED WITH TRAVEL

LOCATION	DIRECT MATCH	CAMPUS BUILDING	IMPUTED	OUT OF AREA	UNMATCHED	TOTAL
Home	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
School	89.7%	5.5%	1.4%	3.4%	0.0%	100.0%
Work	97.1%	0.3%	1.4%	1.2%	0.0%	100.0%
Other	91.3%	2.3%	1.8%	4.5%	0.0%	100.0%
Total	93.0%	2.3%	1.4%	3.3%	0.0%	100.0%

PUBLIC INVOLVEMENT EFFORT

The household travel survey design included a strong public involvement effort. This included electronic and hard copy distribution of a public information packet, as well as targeted outreach to community leaders. All project stakeholders assisted in this effort. The Capital Area MPO and the Durham-Chapel Hill-Carrboro MPO staff promoted the survey both internally as well as with the community leaders involved in the MPO planning process. In addition, staff at these agencies provided lists of key contacts to use in reaching community leaders and residents. The Public Relations Division of the North Carolina DOT drafted and disseminated a press release to contacts in an extensive database of local, regional, and political officials and also tracked press coverage on the survey effort. The Triangle Transit Authority provided space on its website to host an electronic press kit, which included sample project materials as well as a letter with more details about the project.

In addition to the efforts of the stakeholders, Louis Berger Group assisted NuStats with on-the-ground contacts of community leaders and targeted outreach to African American households living in the outer core region of the county, who had lower-than-average participation rates. Their outreach efforts were centered about three main tasks:

1. **Mailings.** Public Information Packets were mailed to Wake, Harnett, Johnston, Durham, Orange, Lee, Chatham, Vance, and Franklin County local town managers, mayors, and local law enforcement officials. In total, 185 packets were mailed to agencies and officials determined to not be on NCDOT's distribution list or who were identified by MPO staff as preferring hard copy materials over an electronic press release. A second mailing was done with the intent of helping to boost participation rates among African American households living in the outer core region of the study area. This mailing consisted of sending 40 packets to African American Churches in the rural portions of the study area correlated with the lower participation rates. In addition to the information provided to the local and regional officials, these mailings also included a letter requesting a meeting with the members of the church to discuss the survey.

2. **Telephone Contacts.** After the mailings went out, a round of phone calls was placed to each of the African American Churches to follow up on the meeting request. Where fax numbers were available, a copy of the packet letter was also sent via fax. None of the churches responded. Calls were also

[4] Work and school addresses are obtained during recruitment, then verified if used during retrieval. For some part-time workers and part-time students, the randomly assigned travel day did not capture the work or school trip. As a result, the location file contains work and school addresses that are not used on the travel day. These tended to have a lower geocoding rate because they were not verified during retrieval.

made to three local radio stations requesting a few minutes of airtime to speak about the survey. One station indicated they needed at least three months notice and the others did not respond.

3. **Information Kiosks**. Since the effort to set up community group meetings did not yield any contacts, staff from the Louis Berger Group set up informational tables outside local area Wal-Marts in Sanford (Lee County), Siler City (Chatham County), Louisburg (Franklin County), and Dunn (Harnett County). These locations were selected as they represented areas where the African American households were responding at a lower-than-average level. At each store, information fliers containing survey information were passed out to consumers as they entered the store. On average, about 50 to 75 fliers were passed out per site and about ten shoppers at each store stopped by the table to further discuss the survey. None of these shoppers remembered having received the telephone call or survey materials.

While the outreach efforts did not yield a wealth of contacts for follow-up meetings or any telephone interviews, the proportion of African American households participating in the survey did increase from April 5th (the study mid-point) through the end of the study. As shown in Table M-12, the unweighted results suggest that while participation rates of African American households was still at levels below census, they almost tripled after the focused public involvement effort.

TABLE M-12: INCREASE IN AFRICAN AMERICAN PARTICIPATION RATES

Geography	Census %	Retrieve % (as of 4/5)	Retrieve % (final)
Chatham County	17.1	4.6%	10.5%
Durham County	36.9	9.8%	20.9%
Franklin County	29.0	6.6%	16.1%
Granville County	34.9	5.3%	15.5%
Harnett County	21	4.0%	12.8%
Johnston County	14.6	4.0%	9.8%
Lee County	19.3	6.3%	17.9%
Nash County	32.1	5.9%	11.5%
Orange County	13.3	1.6%	3.7%
Person County	26.8	3.8%	11.9%
Vance County	45.4	20.0%	29.4%
Wake County	18.9	3.3%	8.5%
Total		4.9%	12.3%

DATA WEIGHTING

As discussed earlier, the sample design was crafted to enable the collection of data from a representative and randomly selected sample of households from throughout the 12-county study area. Demographic and geographic targets were used to guide data collection with the goal of having a final data set that reflected the 2000 Census population proportions of households by size and vehicle ownership, across 18 geographies defined by census tracts. Although the sample was randomly selected, not all sampled households agreed to participate, nor did all households that agreed to participate actually complete the study. This resulted in a non-response bias in the data set. To correct for this, the final data set includes a weight variable that was developed to adjust for the non-response bias of particular population segments. There is also an expansion weight that factors the survey data to represent total households in the 12-county study area. The 2000 Census data for the Triangle Region was used to calculate these factors.

The basis for the weight calculations was the sampling plan. As detailed in that technical memorandum and summarized in an earlier section of this report, the sample was drawn to support the identification and inclusion of households based on geographic location, size, and vehicle ownership. The weighting process thus entailed three steps: determining the census proportion of households for each of the three

variables (geography, size, and ownership), identifying the survey proportion of households in the same categories, and creating a weight factor that adjusts the survey proportion of households into alignment with that of the census. The process used was iterative proportionate fitting. This meant that the data were first weighted for geography, and then an iterative process was used that readjusted the weight to balance the proportions of the three variables based on the interim weights. After four rounds, the weights converged and the weighted survey proportions matched those of the census (see the Technical Memorandum on Weighting for more details about this process). Table M-13 shows the effects of the final weights.

TABLE M-13: FINAL WEIGHTS

GEOGRAPHY	UNWEIGHTED	WEIGHTED	CENSUS	HH WT
Chatham Inner	2.0%	2.2%	2.2%	1.233795
Chatham Outer	1.4%	1.4%	1.4%	0.914658
Durham Inner	18.2%	16.2%	16.2%	0.855994
Franklin Inner	2.7%	2.7%	2.7%	1.017763
Franklin Outer	1.0%	0.5%	0.5%	0.529511
Granville Inner	2.3%	1.5%	1.5%	0.668771
Granville Outer	1.4%	1.6%	1.6%	1.193641
Harnett Inner	1.9%	2.0%	2.0%	1.038751
Harnett Outer	1.3%	1.4%	1.4%	1.138056
Johnston Inner	3.6%	4.6%	4.6%	1.330102
Johnston Outer	3.1%	3.9%	3.9%	1.278812
Lee Outer	2.6%	3.4%	3.4%	1.242378
Nash Inner	1.2%	0.7%	0.7%	0.543105
Person Inner	1.9%	1.0%	1.0%	0.561168
Person Outer	1.3%	1.6%	1.6%	1.268615
Orange Inner	11.1%	8.4%	8.4%	0.751840
Vance Outer	4.1%	3.0%	3.0%	0.716420
Wake Inner	38.9%	44.1%	44.1%	1.135272
HOUSEHOLD TYPE				
1-person / 0-vehicles	2.3%	3.5%	3.5%	1.565398
1-person / 1-vehicle	17.7%	17.7%	17.7%	1.017650
1-person / 2 vehicles	4.3%	3.7%	3.7%	0.888171
1 persons/3+ vehicles	1.0%	0.9%	0.9%	0.827590
2 persons/0-vehicles	0.8%	1.6%	1.6%	2.043630
2-person / 1-vehicle	5.9%	7.3%	7.3%	1.234878
2-person / 2-vehicle	24.2%	18.7%	18.7%	0.772470
2-person / 3+ vehicles	10.0%	6.1%	6.1%	0.600991
3-person / 0-vehicles	0.3%	0.8%	0.8%	2.961515
3-person / 1 vehicle	1.7%	3.6%	3.6%	2.077567
3-person/ 2-vehicles	7.0%	7.7%	7.7%	1.074707
3-person / 3+ vehicles	6.1%	5.6%	5.6%	0.912774
4+ persons/0-vehicles	0.2%	0.9%	0.9%	3.828757
4+ persons/1-vehicle	1.3%	3.5%	3.5%	2.948976
4+ persons/2-vehicles	10.1%	11.2%	11.2%	1.077062
4+ persons/3+ vehicles	7.2%	7.3%	7.3%	1.008490

These weights were applied to the data and the distribution of key variables was reviewed to determine whether any additional adjustments to the data were necessary. Of particular concern were income and ethnicity. Table M-14 shows the unweighted and weighted distributions for these two variables compared to the census distribution.

TABLE M-14: EFFECT OF FINAL WEIGHT ON INCOME AND ETHNICITY

HOUSEHOLD INCOME	UNWEIGHTED DATA	WEIGHTED DATA	CENSUS
$0-$14,999	6.5%	8.5%	13.8%
$15-$24,999	7.7%	9.2%	11.3%
$25-$34,999	8.4%	9.0%	12.2%
$35-$49,999	15.4%	16.1%	16.2%
$50-$74,999	20.7%	19.7%	20.6%
$75-$99,999	16.3%	15.2%	11.4%
$100k +	25.0%	22.3%	14.5%
Ethnicity			
White	82.2%	78.6%	70.6%
African American/Black	12.4%	14.9%	22.4%
Hispanic/Mexican	1.9%	2.8%	3.4%
Other Race	3.5%	3.7%	3.6%
Refused	0.9%	1.0%	0.0%

The expansion factor was calculated by dividing the total households based on Census 2000 data (548,539) by the number of households surveyed (5,107) and determined to be 107.409. This, multiplied by the final weight for each household, created the final expansion factor in the file.

SAMPLE VALIDATION

The purpose of this section is to review the survey results with regards to general population parameters as reflected in the 2000 Census, focusing on key demographic characteristics. This is followed by a comparison of the work trip characteristics reported in the survey data as compared to those reflected in the 2000 Census Transportation Planning Package Profile for the 12-county region. All survey data presented in this section are weighted.

The first comparison is on key household characteristics, including household size, household vehicles, household workers, household income, residence type, and home ownership. As indicated in Table M-15, the weighted data compares favorably with the census data, suggesting that the data are representative of the regional population.

TABLE M-15: SURVEY HOUSEHOLD CHARACTERISTICS COMPARED TO CENSUS

CHARACTERISTIC	UNWEIGHTED DATA	WEIGHTED DATA	CENSUS DATA
Household Size			
1	25.3%	25.8%	25.8%
2	40.8%	33.7%	33.7%
3	15.2%	17.6%	17.6%
4+	18.8%	22.8%	22.8%
Household Vehicles			
0	3.6%	6.8%	6.8%
1	26.5%	32.2%	32.2%
2	45.6%	41.2%	41.2%
3+	24.3%	19.8%	19.8%
Household Income			
$0-$14,999	6.5%	8.5%	13.8%
$15-$24,999	7.7%	9.2%	11.3%
$25-$34,999	8.4%	9.0%	12.2%
$35-$49,999	15.4%	16.1%	16.2%
$50-$74,999	20.7%	19.7%	20.6%
$75-$99,999	16.3%	15.2%	11.4%
$100k +	25.0%	22.3%	14.5%
Home Ownership			
Own	83.4%	79.1%	65.6%
Rent	16.6%	20.9%	34.4%
Other	0.7%	0.7%	0.0%

The key person characteristics of respondent age and ethnicity track the census proportions fairly well, indicating a relatively good representative data set at the person level. The greatest difference between the weighted data and census data is with regards to ethnicity, where African American households in the survey sample, weighted, are 8% lower than census proportions.

TABLE M-16: SURVEY PERSON CHARACTERISTICS COMPARED TO CENSUS

CHARACTERISTIC	UNWEIGHTED DATA	WEIGHTED DATA	CENSUS
Respondent Age			
<20	24.0%	28.3%	27.4%
20 – 24	2.6%	2.7%	8.0%
25 – 54	43.8%	43.4%	47.7%
55 – 64	15.2%	12.7%	7.6%
65+	14.5%	12.9%	9.3%
Respondent Ethnicity			
White	82.2%	78.6%	70.6%
African American/Black	12.4%	14.9%	22.4%
Hispanic/Mexican	1.9%	2.8%	3.4%
Other Race	3.5%	3.7%	3.6%
Refused	0.9%	1.0%	0.0%

Source: 2000 Census data and Greater Triangle Household Travel Survey, unweighted and weighted.

The 2000 Census Transportation Planning Package data for the 12-county region was used to review the worker flow characteristics. As shown in the following figures, the commute trip characteristics of these interim household members track the census fairly well.

FIGURE M-4: WORKER GENDER COMPARISON

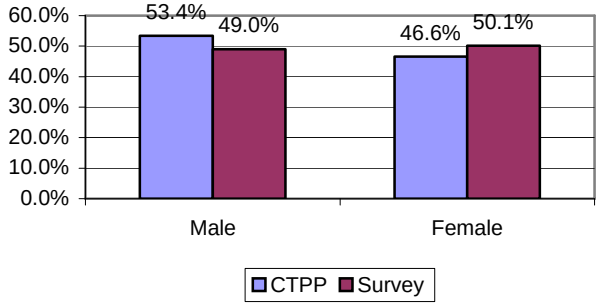
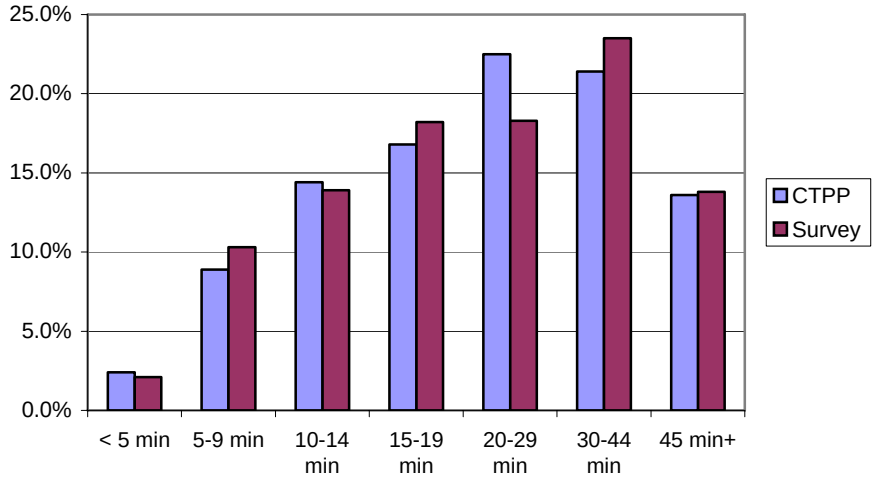


TABLE M-17: MODE TO WORK COMPARISON

Mode	CTPP	Survey
Auto	92.3%	92.0%
Transit	1.3%	0.6%
Bike/Walk	2.4%	3.1%
Other	1.2%	0.3%
Work at Home	2.8%	4.0%

FIGURE M-5: TRAVEL TIME TO WORK COMPARISON



In general, with regard to both demographic and the journey to work information reported by the participating households, the Greater Triangle Household Travel Survey is representative of the study area population.

SURVEY RESULTS

A total of 5,107 regional households fully participated in the Greater Triangle Household Travel Survey. In doing so, these households provided data about their household composition, vehicles owned, and travel about the region. When properly weighted to adjust for non-response, the data from the 5,107 households contains details about 12,560 household members, 9,312 vehicles, and details regarding 51,002 unlinked trips during a 24-hour period. When expanded to the survey universe, the travel data represents 548,539 households, 1,349,032 persons, 1,000,158 vehicles, and 5,478,060 trips. In all, the households reported an average of 9.99 daily household trips and 4.06 daily person trips.

TABLE R-1: 2006 SURVEY RESULTS

Survey Indicators	Weighted Data	Expanded Data
Total Households Surveyed	5,107	548,539
Total Members Surveyed	12,560	1,349,032
Total Household Vehicles	9,312	1,000,158
Total Trips (unlinked)	51,002	5,478,060
Average HH Trip Rate	9.99 trips*	N/a
Average Person Trip Rate	4.06 trips *	N/a

Source: 2006 Greater Triangle Household Travel Survey, weighted. *Unlinked Trips

The purpose of this chapter is to summarize the demographic and travel behavior characteristics of the participating households and to provide details highlighting how demographic variations in the households across the study area are reflected in the travel behavior data. The presentation has three sections: Demographic Characteristics, Travel Behavior Characteristics, and Travel by Special Populations. The study area geography is summarized at the county level, as well as whether the household is in the inner area or the outer area of the region, along with a region-wide total. All results are weighted, unless otherwise noted.

DEMOGRAPHIC CHARACTERISTICS

In this section, the demographic characteristics of the travelers are presented. This includes characteristics both about the participating households and the travelers themselves.

HOUSEHOLD CHARACTERISTICS

The 5,107 participating households reported an average household size of 2.46 persons. The distribution of households by size is shown in Table D-1. Households in Nash and Granville counties tended to report the highest number of members (2.82 and 2.72, on average, respectively) while those in Vance and Lee Counties had the smallest household sizes of 2.21 and 2.20, respectively. There was no statistical difference in average household size between households in the inner area and those in the outer area.

TABLE D-1: HOUSEHOLD SIZE

	Household Size							
	N	1	2	3	4+	Total	Mean	SE Mean
Chatham County	184	22.3%	34.7%	21.2%	21.8%	100.0%	2.53	0.09
Durham County	829	31.6%	33.6%	16.7%	18.1%	100.0%	2.28	0.04
Franklin County	166	21.1%	34.9%	19.9%	24.2%	100.0%	2.59	0.10
Granville County	155	21.9%	34.2%	15.5%	28.4%	100.0%	2.72	0.12
Harnett County	171	22.5%	38.2%	19.5%	19.8%	100.0%	2.39	0.10
Johnston County	434	22.6%	38.2%	19.5%	19.7%	100.0%	2.45	0.06
Lee County	172	32.0%	34.9%	19.8%	13.4%	100.0%	2.20	0.09
Nash County	34	20.6%*	26.4%*	20.6%*	32.4%*	100.0%	2.82	0.25
Orange County	427	31.1%	30.2%	16.4%	22.2%	100.0%	2.34	0.06
Person County	131	18.1%	38.7%	22.7%	20.5%	100.0%	2.51	0.10
Vance County	151	31.6%	37.6%	15.7%	15.1%	100.0%	2.21	0.10
Wake County	2253	23.8%	32.8%	17.1%	26.3%	100.0%	2.55	0.03
Inner Region	3987	25.8%	33.2%	17.2%	23.8%	100.0%	2.47	0.02
Outer Region	1120	25.9%	35.6%	19.2%	19.4%	100.0%	2.42	0.04
Total	5107	25.8%	33.7%	17.6%	22.8%	100.0%	2.46	0.02

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

With regard to household vehicle ownership, the regional average was 1.82 vehicles per household. Households in Nash and Person Counties reported owning the most vehicles, on average (2.14 and 2.12, respectively). Households in Lee and Durham Counties reported owning the fewest (1.68 and 1.55, respectively). Households in the inner area reported owning 1.79 vehicles, on average, which was statistically different (smaller) than the 1.93 vehicles owned, on average, in the outer areas.

TABLE D-2: HOUSEHOLD VEHICLES

	Household Vehicles							
	N	0	1	2	3+	Total	Mean	SE Mean
Chatham County	184	5.4%*	25.5%	40.2%	28.8%	100.0%	2.07	0.09
Durham County	829	11.0%	39.3%	37.6%	12.1%	100.0%	1.55	0.03
Franklin County	166	3.6%*	33.1%	34.3%	28.9%	100.0%	2.06	0.09
Granville County	155	7.1%*	22.7%	39.6%	30.5%	100.0%	2.07	0.09
Harnett County	171	1.6%*	34.1%	38.9%	25.3%	100.0%	1.89	0.08
Johnston County	434	1.6%*	34.1%	38.9%	25.3%	100.0%	2.01	0.05
Lee County	172	11.0%	40.5%	30.1%	18.5%	100.0%	1.68	0.09
Nash County	34	5.9%*	26.5%*	38.2%*	29.4%*	100.0%	2.14	0.21
Orange County	427	4.9%	37.2%	41.2%	16.6%	100.0%	1.74	0.04
Person County	131	7.7%*	23.8%	37.7%	30.8%	100.0%	2.12	0.11
Vance County	151	9.9%*	35.1%	35.8%	19.2%	100.0%	1.77	0.10
Wake County	2253	6.2%	29.4%	45.5%	18.9%	100.0%	1.84	0.02
Inner Region	3987	6.6%	32.2%	43.2%	18.0%	100.0%	1.79	0.02
Outer Region	1120	7.2%	32.4%	34.3%	26.1%	100.0%	1.93	0.03
Total	5107	6.8%	32.2%	41.2%	19.8%	100.0%	1.82	0.01

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

According to the detailed information provided for each household vehicle, households in Wake, Johnston, and Orange Counties tended to own newer vehicles, while those in Vance and Person Counties tended to own older vehicles, on average.

TABLE D-3: FLEET AGE

	Year of Manufacture							
	N	Pre 2000	2000-2004	2004+	Refused	Total	Mean	SE Mean
Chatham County	379	53.6%	27.4%	16.6%	2.4%*	100.0%	1997.45	0.34
Durham County	1289	52.2%	29.1%	16.7%	2.0%	100.0%	1997.89	0.18
Franklin County	342	52.3%	27.5%	17.3%	2.9%*	100.0%	1997.31	0.40
Granville County	321	53.3%	31.5%	14.3%	0.9%*	100.0%	1997.51	0.38
Harnett County	322	51.7%	27.9%	19.0%	1.4%*	100.0%	1997.85	0.34
Johnston County	870	51.7%	27.9%	19.0%	1.4%*	100.0%	1998.09	0.21
Lee County	289	57.1%	29.1%	12.8%	1.0%*	100.0%	1997.39	0.35
Nash County	73	57.5%	26.0%*	13.7%*	2.7%*	100.0%	1997.09	0.99
Orange County	743	51.7%	29.1%	17.5%	1.7%*	100.0%	1998.07	0.22
Person County	278	54.3%	28.8%	15.1%	1.8%*	100.0%	1996.71	0.49
Vance County	266	57.1%	25.2%	13.5%	4.1%*	100.0%	1996.76	0.43
Wake County	4139	45.0%	34.0%	19.4%	1.6%	100.0%	1998.78	0.10
Inner Region	7154	47.5%	32.3%	18.6%	1.6%	100.0%	1998.47	0.07
Outer Region	2158	55.7%	26.8%	15.0%	2.5%	100.0%	1997.19	0.15
Total	9311	49.4%	31.0%	17.8%	1.8%	100.0%	1998.18	0.07

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Throughout the region, households were most likely to report owning a car (57%) over a truck (16%), SUV (15%), or van (10%). Households in Durham and Orange Counties were most likely to own cars and least likely to own trucks. Those in Nash and Person Counties were most likely to own trucks and least likely to own cars. Wake and Johnston households reported the highest proportions of vans, while Vance and Nash County households reported the lowest proportions of vans. Finally households in Wake and Nash Counties were most likely to report owning SUVs, while those in Chatham and Harnett were least likely to report owning SUVs.

TABLE D-4: TYPE OF VEHICLE

	N	Car	Van	SUV	Truck	Other	Total
Chatham County	379	55.3%	10.0%	12.4%	21.1%	1.3%*	100.0%
Durham County	1289	67.8%	8.4%	12.8%	9.7%	1.3%	100.0%
Franklin County	342	45.9%	9.6%	12.9%	29.2%	2.3%*	100.0%
Granville County	321	50.2%	8.7%	14.0%	25.2%	1.9%*	100.0%
Harnett County	322	52.6%	9.0%	11.5%	24.6%	2.2%*	100.0%
Johnston County	870	48.7%	10.9%	14.2%	24.0%	2.2%	100.0%
Lee County	289	52.4%	8.0%	13.5%	22.9%	3.1%*	100.0%
Nash County	73	45.2%	6.8%*	16.4%*	30.1%	1.4%*	100.0%
Orange County	743	66.1%	9.8%	13.7%	8.9%	1.5%*	100.0%
Person County	278	44.8%	9.3%	13.3%	29.7%	2.9%*	100.0%
Vance County	266	55.5%	7.5%	12.5%	21.9%	2.6%*	100.0%
Wake County	4139	57.6%	11.1%	17.7%	12.0%	1.6%	100.0%
Inner Region	7154	59.4%	10.3%	15.9%	12.9%	1.6%	100.0%
Outer Region	2158	49.9%	9.3%	13.1%	25.2%	2.5%	100.0%
Total	9311	57.2%	10.1%	15.2%	15.7%	1.8%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

On average, households reported owning 0.71 bikes. Bicycle ownership was statistically higher for households in the inner area as compared to households in the outer area. Households in Nash County reported owning the most bikes (1.05), while those in Lee County owned the fewest (0.34).

TABLE D-5: BICYCLES OWNED

	Household Bicycles							
	N	0	1	2	3+	Total	Mean	SE Mean
Chatham County	184	65.8%	13.0%	13.0%	8.2%*	100.0%	0.67	0.08
Durham County	829	66.7%	14.8%	10.4%	8.1%	100.0%	0.65	0.04
Franklin County	166	71.5%	12.7%*	6.7%*	9.1%*	100.0%	0.63	0.10
Granville County	155	71.0%	7.7%*	10.3%*	11.0%*	100.0%	0.67	0.10
Harnett County	171	69.3%	11.5%*	12.7%*	6.5%*	100.0%	0.55	0.08
Johnston County	434	69.3%	11.5%	12.7%	6.5%	100.0%	0.61	0.05
Lee County	172	82.0%	9.3%*	5.8%*	2.9%*	100.0%	0.34	0.07
Nash County	34	52.9%	14.7%*	23.5%	8.8%*	100.0%	1.05	0.25
Orange County	427	57.8%	16.2%	13.6%	12.4%	100.0%	0.89	0.06
Person County	131	69.5%	8.4%*	13.7%*	8.4%*	100.0%	0.68	0.11
Vance County	151	75.5%	13.9%	7.9%*	2.6%*	100.0%	0.42	0.08
Wake County	2253	63.6%	14.0%	10.9%	11.5%	100.0%	0.79	0.03
Inner Region	3987	64.2%	14.1%	11.3%	10.4%	100.0%	0.75	0.02
Outer Region	1120	72.9%	11.0%	9.5%	6.7%	100.0%	0.56	0.03
Total	5107	66.1%	13.4%	10.9%	9.6%	100.0%	0.71	0.02

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Region-wide, households indicated having 1.29 workers, on average. Households in Orange and Wake Counties reported the highest average number of workers (1.37), while those in Vance County reported the lowest number (0.91).

TABLE D-6: HOUSEHOLD WORKERS

	Household Workers							
	N	0	1	2	3+	Total	Mean	SE Mean
Chatham County	184	22.3%	38.0%	35.3%	4.3%*	100.0%	1.22	0.06
Durham County	829	18.0%	44.6%	33.7%	3.7%	100.0%	1.24	0.03
Franklin County	166	19.8%	43.1%	32.9%	4.2%*	100.0%	1.22	0.06
Granville County	155	26.5%	33.5%	33.5%	6.5%*	100.0%	1.20	0.07
Harnett County	171	21.2%	38.0%	36.6%	4.1%*	100.0%	1.14	0.07
Johnston County	434	21.2%	38.0%	36.6%	4.1%*	100.0%	1.25	0.04
Lee County	172	30.8%	39.0%	26.2%	4.1%*	100.0%	1.04	0.07
Nash County	34	25.7%*	28.6%*	40.0%	5.7%*	100.0%	1.30	0.17
Orange County	427	13.8%	40.2%	41.6%	4.4%	100.0%	1.37	0.04
Person County	131	21.4%	38.2%	34.4%	6.1%*	100.0%	1.25	0.08
Vance County	151	38.7%	34.7%	24.0%	2.7%*	100.0%	0.91	0.07
Wake County	2253	15.4%	38.2%	41.7%	4.8%	100.0%	1.37	0.02
Inner Region	3987	16.0%	39.7%	39.7%	4.5%	100.0%	1.34	0.01
Outer Region	1120	28.3%	37.8%	28.9%	5.0%	100.0%	1.11	0.03
Total	5107	18.7%	39.3%	37.3%	4.6%	99.9%	1.29	0.01

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Households in the inner area reported higher incomes than those in the outer area. Households in Harnett, Vance, and Lee Counties had the highest proportions reporting incomes under $15,000. Those in Orange and Wake Counties had the highest proportions reporting incomes of $100,000 or more.

TABLE D-7: HOUSEHOLD INCOME

	N	< $15k	$15k-<$25k	$25k-<$35k	$35k-<$50k	$50k-<$75K	$75k-<$100k	$100k+	Total
Chatham County	184	9.7%*	13.7%	12.6%*	15.4%	26.9%	9.7%*	12.0%	100.0%
Durham County	829	12.0%	10.5%	9.1%	16.1%	17.5%	14.6%	20.3%	100.0%
Franklin County	166	8.8%*	12.6%	8.8%*	18.2%	23.3%	15.1%	13.2%	100.0%
Granville County	155	8.5%*	10.6%*	13.5%	13.5%	18.4%	22.7%	12.8%	100.0%
Harnett County	171	16.1%*	7.5%*	13.0%*	18.0%	22.4%	11.2%*	11.8%	100.0%
Johnston County	434	7.1%*	9.2%	10.0%	26.5%	19.7%	12.2%	15.3%	100.0%
Lee County	172	14.4%*	25.1%	9.6%*	18.6%	17.4%	8.4%*	6.6%*	100.0%
Nash County	34	6.1%*	24.2%*	9.1%*	12.1%*	18.2%*	9.1%*	21.2%*	100.0%
Orange County	427	5.9%	6.2%	10.1%	13.3%	20.0%	13.8%	30.8%	100.0%
Person County	131	11.5%*	15.4%	6.9%*	16.9%	20.8%	16.9%	11.5%	100.0%
Vance County	151	14.5%	16.7%	16.7%	14.5%	19.6%	9.4%	8.7%	100.0%
Wake County	2253	6.3%	6.3%	7.2%	14.5%	19.7%	17.5%	28.6%	100.0%
Inner Region	3987	7.4%	7.4%	7.9%	15.5%	19.9%	16.4%	25.6%	100.0%
Outer Region	1120	12.6%	15.7%	12.6%	18.3%	19.0%	10.9%	10.8%	100.0%
Total	5107	8.5%	9.2%	9.0%	16.1%	19.7%	15.2%	22.3%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Most participating households reported owning their own home (79%), with little variation between households in the inner and outer areas. Households in Granville County had the highest ownership rates (90%). Households in Lee County had the highest rental rates (30%).

TABLE D-8: HOME OWNERSHIP STATUS

	N	Own	Rent	Other	Total
Chatham County	184	83.2%	16.3%	0.5%*	100.0%
Durham County	829	69.7%	28.6%	1.7%*	100.0%
Franklin County	166	83.0%	16.4%	0.6%*	100.0%
Granville County	155	90.3%	9.7%*	0.0%*	100.0%
Harnett County	171	86.5%	12.9%*	0.6%*	100.0%
Johnston County	434	81.8%	17.1%	1.2%*	100.0%
Lee County	172	69.8%	29.7%	0.6%*	100.0%
Nash County	34	88.2%	11.8%*	0.0%*	100.0%
Orange County	427	74.9%	24.8%	0.2%*	100.0%
Person County	131	84.7%	14.5%*	0.8%*	100.0%
Vance County	151	80.8%	18.5%	0.7%*	100.0%
Wake County	2253	79.8%	19.8%	0.4%*	100.0%
Inner Region	3987	78.2%	21.1%	0.7%*	100.0%
Outer Region	1120	79.7%	19.6%	0.7%*	100.0%
Total	5107	78.5%	20.8%	0.7%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Corresponding to the high home ownership rates are long tenures in the region. As shown in Table D-9, 39% of participating households have lived in the region for ten years or more. However, 10% of households have lived in the Greater Triangle region for less than a year, and 9% have lived here for about a year. Newcomers to the region were found more in Durham and Lee Counties, while the highest proportion of "old timers" was found in Vance County (62%).

TABLE D-9: REGIONAL TENURE

	N	< 1 year	1 to < 2 years	2 - < 5 years	5 - < 10 years	10 years+	Total
Chatham County	184	9.7%*	6.5%*	18.4%	18.4%	47.0%	100.0%
Durham County	829	12.1%	9.3%	21.8%	19.4%	37.4%	100.0%
Franklin County	166	4.2%*	11.4%*	19.3%	19.9%	45.2%	100.0%
Granville County	155	7.7%*	1.9%*	17.9%	21.8%	50.6%	100.0%
Harnett County	171	8.2%*	5.3%*	12.4%*	17.6%	56.5%	100.0%
Johnston County	434	10.1%	6.5%	19.6%	20.0%	43.8%	100.0%
Lee County	172	11.0%*	6.4%*	14.0%*	15.1%*	53.5%	100.0%
Nash County	34	8.8%*	2.9%*	26.5%*	14.7%*	47.1%	100.0%
Orange County	427	9.4%	11.7%	23.4%	20.1%	35.4%	100.0%
Person County	131	6.1%*	6.9%*	19.1%	20.6%	47.3%	100.0%
Vance County	151	4.6%*	3.3%*	11.9%	18.5%	61.6%	100.0%
Wake County	2253	10.0%	9.7%	24.7%	22.4%	33.2%	100.0%
Inner Region	3987	10.1%	9.6%	23.5%	21.7%	35.1%	100.0%
Outer Region	1120	8.5%	5.2%	16.0%	16.9%	53.5%	100.0%
Total	5107	9.7%	8.6%	21.8%	20.6%	39.2%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

While the study was regional in nature, four specific types of households were identified as requiring special attention to ensure sufficient sample sizes for planned analyses. These included low-income households, transit-using households, households that walked or biked for work/school, and households with university students. Table D-10 shows the number and distribution of these special population households by geography. It should be noted that these numbers are not mutually exclusive (i.e., a low-income student who walks to campus then takes transit back home is included in all four groups). Characteristics of these special population households are presented at the end of this report section.

TABLE D-10: SPECIAL POPULATION GROUPS

	Low-Income		Transit-Using		Non-Motorized		Student	
	N	%	N	%	N	%	N	%
Chatham County	23	4.7%	9	3.6%	6	1.6%	13	5.6%
Durham County	114	23.1%	80	32.4%	84	22.5%	52	22.4%
Franklin County	14	2.8%	1	0.4%	2	0.5%	12	5.2%
Granville County	14	2.8%	1	0.4%	3	0.8%	5	2.2%
Harnett County	27	5.5%	0	0.0%	3	0.8%	7	3.0%
Johnston County	39	7.9%	0	0.0%	4	1.1%	8	3.4%
Lee County	25	5.1%	0	0.0%	0	0.0%	7	3.0%
Nash County	8	1.6%	1	0.4%	0	0.0%	1	0.4%
Orange County	24	4.9%	63	25.5%	102	27.3%	35	15.1%
Person County	19	3.9%	3	1.2%	4	1.1%	5	2.2%
Vance County	22	4.5%	0	0.0%	1	0.3%	4	1.7%
Wake County	164	33.3%	90	36.4%	163	43.7%	83	35.8%
Inner Region	334	67.7%	239	96.8%	361	96.8%	196	84.5%
Outer Region	159	32.3%	8	3.2%	12	3.2%	37	15.9%
Total	493	100.0%	247	100.0%	373	100.0%	233	100.4%

Source: Greater Triangle Household Travel Survey, weighted.

A short section of the recruitment questionnaire asked households how often they seek information about traffic conditions in the region (the results will be used to inform ITS investment decisions). As shown in Table D-11, about half of all regional households indicated they never seek regional traffic information (49%). However, one-third (33%) of regional households seek it 5 or more times per week. A higher proportion of households in the inner area were more likely to seek traffic information 5 or more times per week (35% as compared to 25% in the outer area). Two-thirds of households in Chatham, Lee, and Person Counties never seek regional traffic information.

TABLE D-11: FREQUENCY HOUSEHOLDS SEEK REGIONAL TRAFFIC INFORMATION

	N	Never	At least Once/Week	2-4 Times/Week	5+Times/Week	Total
Chatham County	184	66.3%	7.6%*	6.0%*	20.1%	100.0%
Durham County	829	53.9%	9.5%	9.3%	27.3%	100.0%
Franklin County	166	49.1%	7.2%*	6.0%*	37.7%	100.0%
Granville County	155	47.4%	9.0%*	7.1%*	36.5%	100.0%
Harnett County	171	61.8%	5.9%*	5.3%*	27.1%	100.0%
Johnston County	434	45.9%	7.6%	8.1%	38.5%	100.0%
Lee County	172	66.3%	7.0%*	5.2%*	21.5%	100.0%
Nash County	34	50.0%	8.8%*	8.8%*	32.4%	100.0%
Orange County	427	63.9%	10.1%*	8.0%	18.0%	100.0%
Person County	131	67.2%	5.3%*	4.6%*	22.9%	100.0%
Vance County	151	60.3%	9.3%	7.9%*	22.5%	100.0%
Wake County	2253	40.3%	11.6%	9.3%	38.8%	100.0%
Inner Region	3987	45.9%	10.5%	9.1%	34.6%	100.0%
Outer Region	1120	61.7%	7.4%	5.8%	25.1%	100.0%
Total	5107	49.3%	9.8%	8.3%	32.5%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Of those regional households that do seek regional traffic information, most (46%) look for it on the television, one-third (33%) will listen to the radio, and 15% go on the Internet. Households in the outer area listen more to the television than the radio. Those most likely to use the Internet live in Orange County, and those most likely to look to variable message signs live in Lee County.

TABLE D-12: WHERE HOUSEHOLDS SEEK REGIONAL TRAFFIC INFORMATION

	N	Internet	Radio	TV	Variable Msg Sign	Other	Total
Chatham County	62	14.8%*	28.4%	51.9%	2.5%*	2.5%*	100.0%
Durham County	382	16.6%	30.8%	43.5%	2.0%*	2.0%*	100.0%
Franklin County	85	10.3%*	31.0%	51.6%	1.6%*	1.6%*	100.0%
Granville County	82	13.2%*	23.6%	57.5%	0.0%*	0.0%*	100.0%
Harnett County	65	17.0%*	32.0%	46.0%	1.0%*	1.0%*	100.0%
Johnston County	235	8.7%	31.4%	53.5%	1.5%*	1.5%*	100.0%
Lee County	58	11.8%*	34.1%	47.1%	3.5%*	3.5%*	100.0%
Nash County	17	12.5%*	29.2%*	50.0%*	0.0%*	0.0%*	100.0%
Orange County	154	24.3%	28.0%	35.1%	2.9%*	2.9%*	100.0%
Person County	43	10.7%*	33.9%	51.8%	0.0%*	0.0%*	100.0%
Vance County	60	17.7%*	17.7%	58.2%	1.3%*	1.3%*	100.0%
Wake County	1346	15.4%	34.9%	44.3%	0.8%*	0.8%*	100.0%
Inner Region	2158	15.7%	33.7%	44.0%	1.2%	1.2%	100.0%
Outer Region	429	14.8%	11.4%	66.1%	1.6%	1.6%	100.0%
Total	2587	15.2%	32.5%	45.7%	1.3%	1.3%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Multiple Responses allowed. *fewer than 20 observations.

The respondents who seek traffic information were also asked whether they changed their travel plans in some way based on the information received. As shown in Table D-13, the most frequent response was to change route of travel. Canceling the trip was reported mainly by households in the outlying areas, and changing time of travel a more common response for households in Orange, Vance, Person, and Durham Counties.

TABLE D-13: HOW TRAFFIC INFORMATION CHANGES TRAVEL

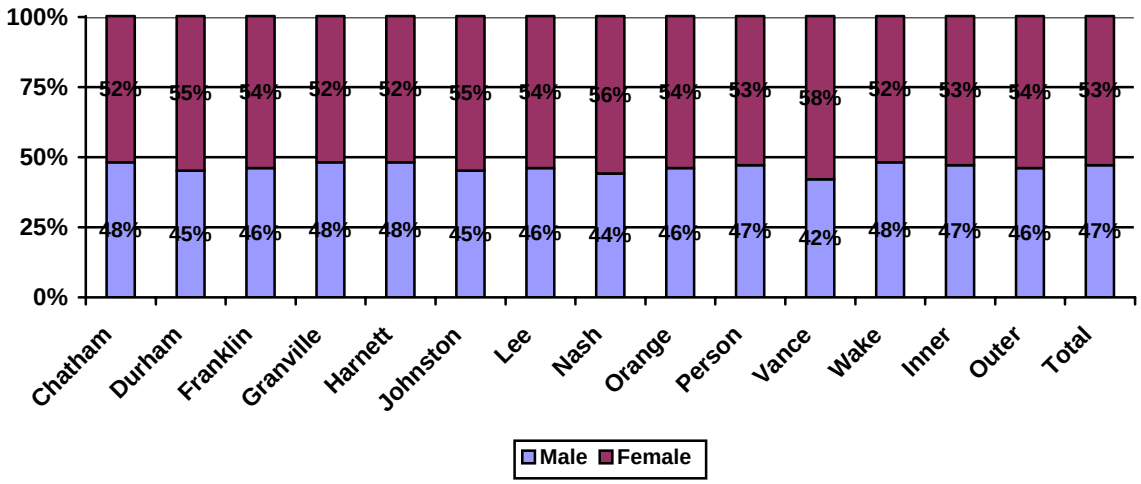
	N	No Change	Change Route	Change Time	Change Mode	Cancel Trip	Total
Chatham County	62	1.6%*	53.1%	20.3%*	3.1%*	21.9%*	100.0%
Durham County	382	3.9%*	59.7%	23.3%	3.7%*	9.4%	100.0%
Franklin County	85	2.4%*	63.5%	22.4%*	3.5%*	8.2%*	100.0%
Granville County	82	7.3%*	62.2%	17.1%*	3.7%*	9.8%*	100.0%
Harnett County	65	9.2%*	70.8%	15.4%*	1.5%*	3.1%*	100.0%
Johnston County	235	4.7%*	64.3%	20.9%	0.4%*	9.8%	100.0%
Lee County	58	10.3%*	50.0%	17.2%*	10.3%*	12.1%*	100.0%
Nash County	17	5.3%*	52.6%*	21.1%*	0.0%*	21.1%*	100.0%
Orange County	154	0.0%*	52.7%	29.7%	7.7%*	9.9%*	100.0%
Person County	43	7.0%*	51.2%	23.3%*	0.0%*	18.6%*	100.0%
Vance County	60	1.7%*	48.3%	25.0%*	5.0%*	20.0%*	100.0%
Wake County	1346	0.0%*	66.5%	22.7%	3.4%	7.3%	100.0%
Inner Region	2158	0.0%	65.2%	23.2%	3.7%	8.0%	100.0%
Outer Region	429	4.7%	56.4%	21.1%	3.3%	14.5%	100.0%
Total	2587	0.0%	64.2%	23.0%	3.6%	9.1%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Multiple Responses allowed. *fewer than 20 observations.

PERSON CHARACTERISTICS

A total of 12,560 persons across the 5,107 participating households provided travel behavior details. The distribution of respondents by gender was fairly consistent across the region. As shown in Figure D-1, 47% of all respondents were male and 53% female.

FIGURE D-1: RESPONDENT GENDER



Household members in the inner area tended to be younger than those in the outer area. Those living in Nash and Wake Counties reported the highest proportions of members under age 16. Respondents living in Vance and Lee Counties reported the highest proportion of members age 65 or older.

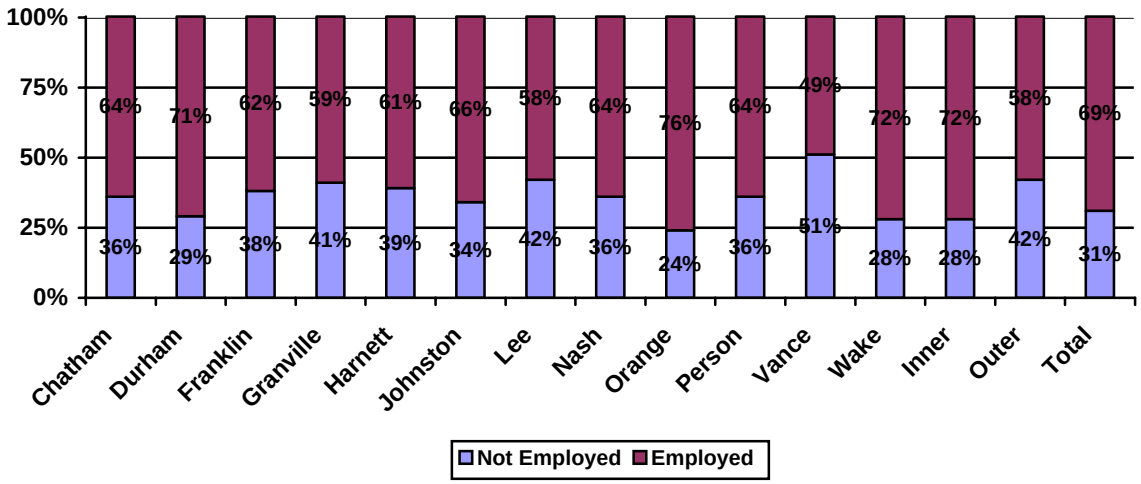
TABLE D-14: AGE

	N	<16	16-24	25-34	35-44	45-54	55-64	65+	Total
Chatham County	464	24.1%	6.4%	9.2%	15.4%	13.4%	17.3%	14.3%	100.0%
Durham County	1888	23.8%	6.5%	14.0%	16.5%	14.6%	12.0%	12.6%	100.0%
Franklin County	430	24.5%	8.7%	13.7%	11.1%	15.6%	12.0%	14.4%	100.0%
Granville County	422	24.2%	8.2%	7.5%	17.7%	13.1%	14.5%	14.8%	100.0%
Harnett County	409	21.5%	7.4%	11.1%	11.4%	14.4%	18.3%	15.8%	100.0%
Johnston County	1062	23.0%	6.3%	8.8%	14.3%	17.2%	14.3%	16.1%	100.0%
Lee County	378	18.7%	8.8%	8.3%	13.1%	18.2%	8.3%	24.6%	100.0%
Nash County	97	28.4%	9.5%*	11.6%*	18.9%	10.5%	12.6%	8.4%*	100.0%
Orange County	999	22.7%	5.4%	12.0%	14.5%	20.3%	12.5%	12.7%	100.0%
Person County	329	22.1%	6.9%	8.1%	18.7%	17.1%	10.6%	16.5%	100.0%
Vance County	333	14.6%	6.7%	5.8%	13.1%	15.5%	17.7%	26.5%	100.0%
Wake County	5749	25.9%	6.6%	11.4%	17.3%	16.4%	12.0%	10.3%	100.0%
Inner Region	9845	25.1%	6.4%	11.8%	16.8%	16.4%	12.2%	11.3%	100.0%
Outer Region	2715	21.1%	7.8%	8.6%	13.4%	15.7%	14.7%	18.7%	100.0%
Total	12560	24.2%	6.7%	11.1%	16.1%	16.2%	12.7%	12.9%	100.0%

Source: Greater Triangle Household Travel Survey, weighted.

Employment status was obtained for those respondents age 16 or older. As shown in Figure D-2, region-wide, 69% of respondents age 16+ were employed. Employment rates were higher in the inner area as compared to the outer area. At the county level, the highest proportions of employed respondents were reported by those in Orange (76%), Wake (72%), and Durham (71%) Counties. The lowest proportions of employed respondents were reported in Vance (49%) and Lee (58% Counties. A map showing the work locations for these respondents is shown in Figure D-4.

FIGURE D-2: WORKER STATUS



University students (those attending any type of schooling past high school or GED equivalency courses) lived in households from throughout the region. The highest proportions of university students were found in Orange (8%), Durham and Franklin Counties (7% each). The lowest proportions of university students were in Nash, and Vance Counties (3% each).

FIGURE D-3: UNIVERSITY STUDENT STATUS

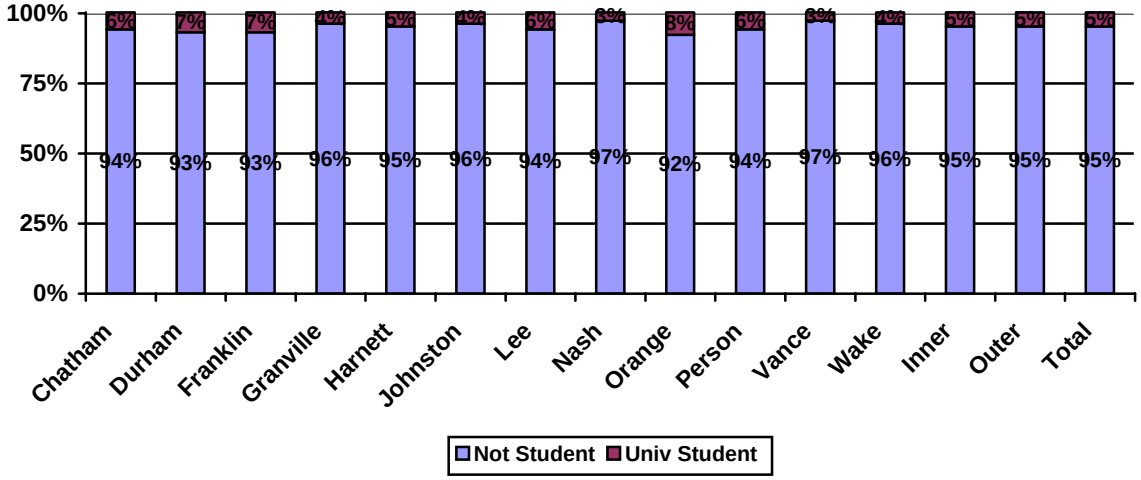
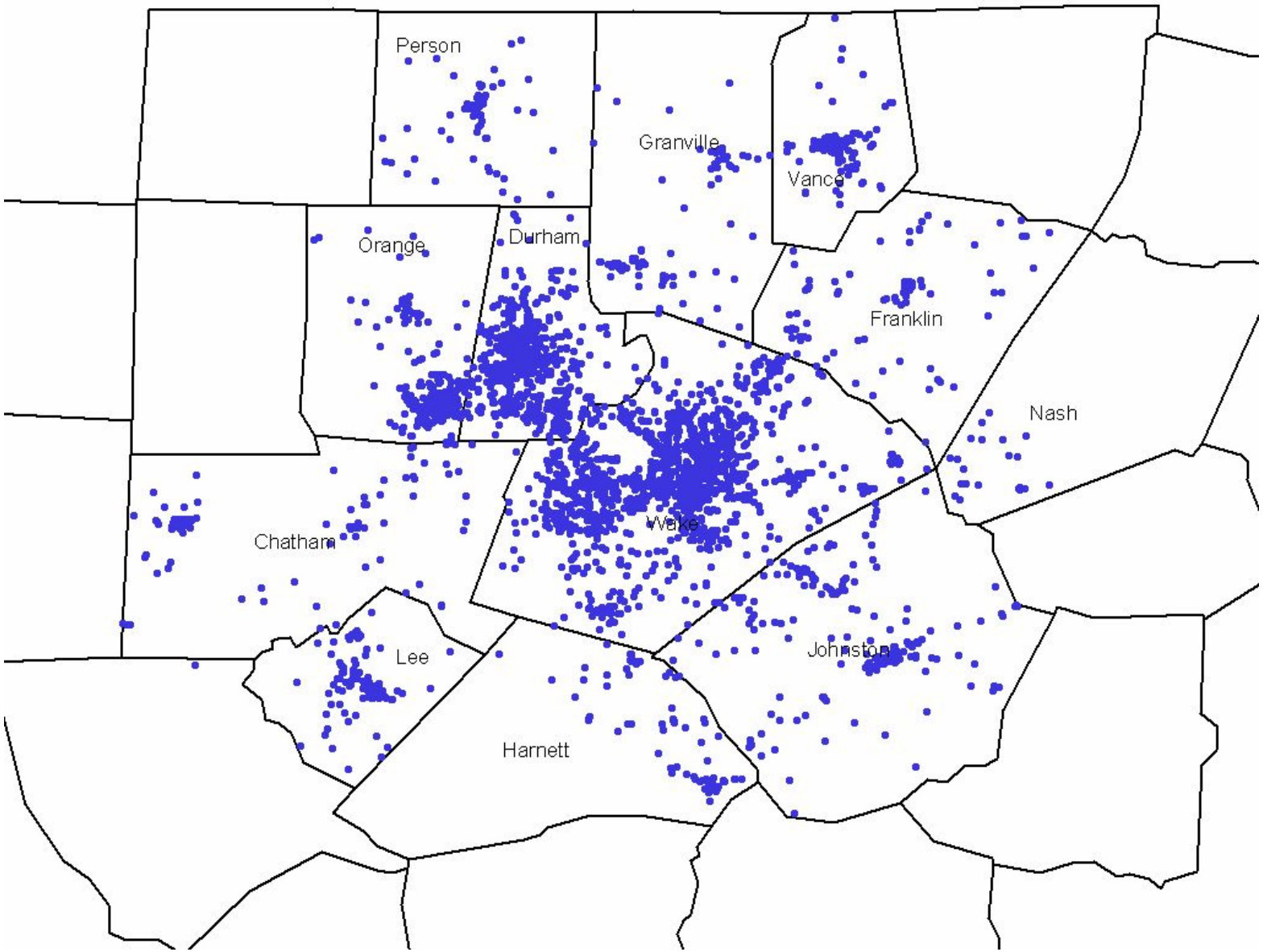
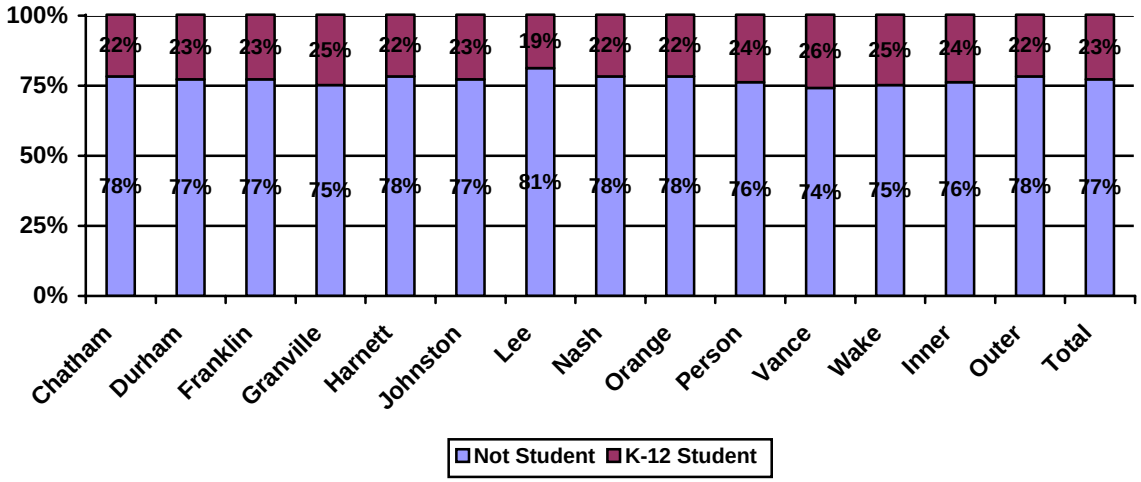


FIGURE D-4: REPORTED WORK LOCATIONS



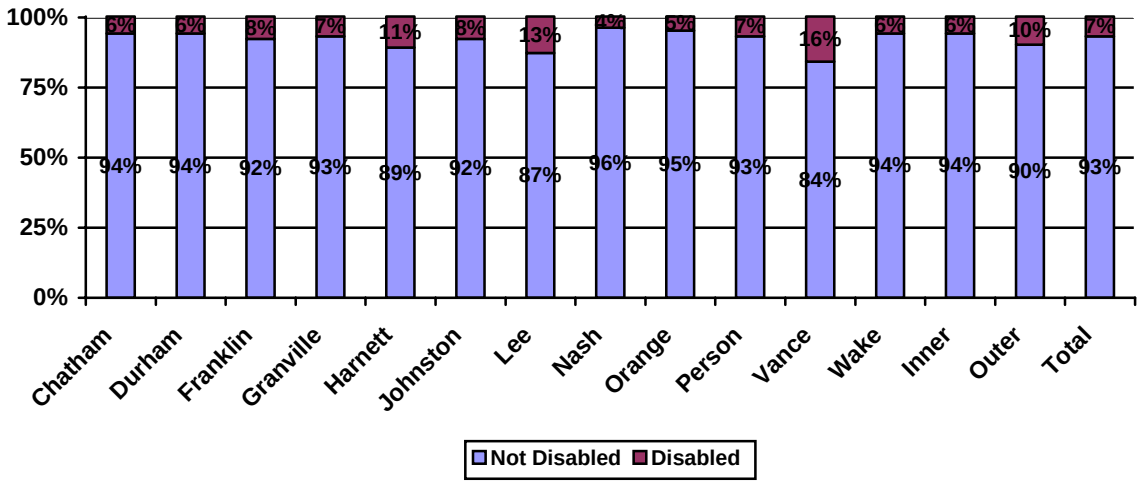
The proportions of K-12 students (which includes children in daycare and preschool, as well as those seeking GED equivalency status) were uniform across the region.

FIGURE D-5: K-12 STUDENT STATUS



Region-wide, seven percent of respondents reported having some type of disability. The proportion of respondents with a disability was higher in the outer area as compared to the inner area. At the county level, Vance (16%) and Lee (13%) had the highest reported disability levels, while Nash and Orange had the lowest levels (4% and 5% respectively).

FIGURE D-6: DISABILITY STATUS



As reported earlier, 78% of all respondents were white, while 15% were African American, and the remaining 7% belonging to other minority ethnic groups. The highest proportion of African American households were reported by respondents in Vance (33%), Durham (25%), and Granville (21%) Counties.

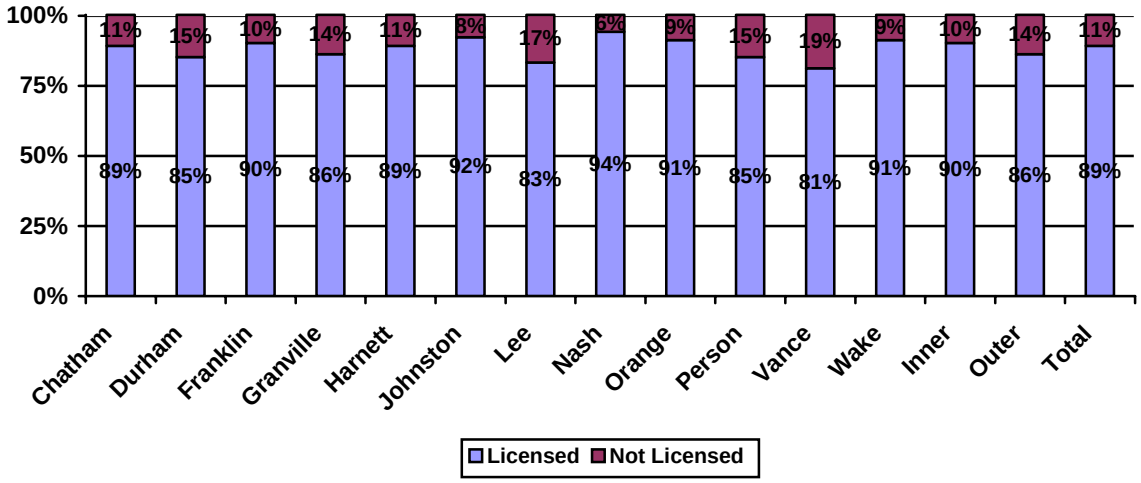
TABLE D-15: ETHNICITY

	N	White	African American	Other Minority	Total
Chatham County	464	79%	13%*	8%*	100.0%
Durham County	1888	66%	25%	9%	100.0%
Franklin County	430	78%	17%	5%*	100.0%
Granville County	422	72%	21%	6%*	100.0%
Harnett County	409	79%	16%	5%*	100.0%
Johnston County	1062	80%	11%	9%	100.0%
Lee County	378	68%	20%	12%*	100.0%
Nash County	97	74%	17%*	9%*	100.0%
Orange County	999	87%	5%	8%	100.0%
Person County	329	78%	16%	6%*	100.0%
Vance County	333	63%	33%	4%*	100.0%
Wake County	5749	82%	11%	7%	100.0%
Inner Region	9845	80%	13%	7%	100.0%
Outer Region	2715	71%	21%	8%	100.0%
Total	12560	78%	15%	7%	100.0%

Source: Greater Triangle Household Travel Survey, weighted.

The majority of respondents age 16 or older (89%) were licensed to drive. Respondents in Vance (81%), Lee (83%), and Durham (85%) Counties reported the lowest rates of licensure. Respondents in Nash (94%) and Johnston (92%) Counties reported the highest rates.

FIGURE D-7: LICENSED DRIVER STATUS



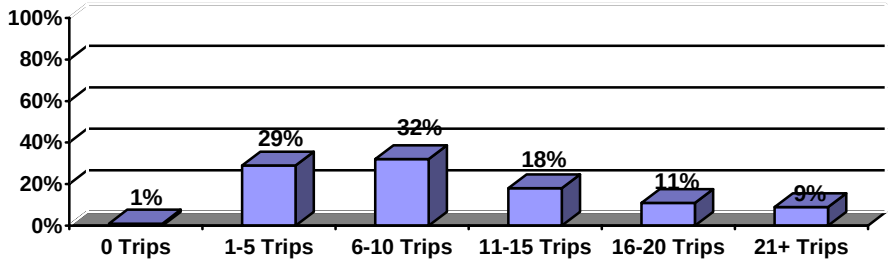
TRAVEL BEHAVIOR CHARACTERISTICS

The previous section provided a summary of demographic characteristics for the participating households. The differences included variances in household size, vehicle ownership, types of vehicles owned, employment and student status, and rates of licensure. In this section, details of the 51,002 reported trips are reviewed in order to document the extent to which the travel behavior varies across the region. This includes summaries of trip rates by the different household and person characteristics across the region as well as the total study area, trip characteristics, travel times, and mode choice.

HOUSEHOLD TRIP RATES

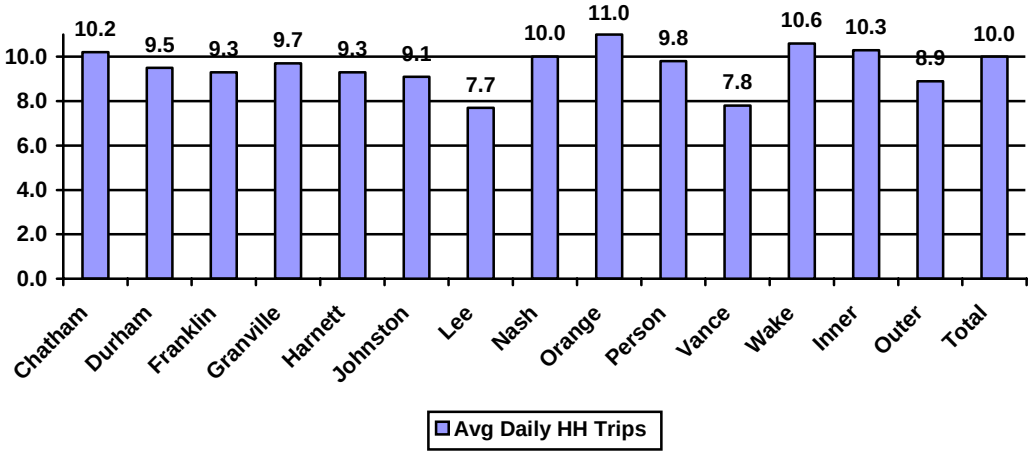
The average daily household trip rate was 9.99 trips. Of the 5,107 participating households, 66 (1%) reported having no trips on the assigned travel day. Reasons included being sick (or having a sick dependent), telecommuting, etc. This rate is well within the standard range of immobility in household travel surveys (8%). Of those households that did report travel, most reporting making 10 trips or less (61%), but 9% reported making more than 20 trips during their assigned 24-hour period.

FIGURE T-1: HOUSEHOLD TRIP VOLUME



Household trip rates did vary across the region, as shown in Figure T-2. Households in the inner area made more trips, on average (10.3 trips compared to 8.9 trip in the outer area). The highest average daily household trip rates were reported by households in Orange (11.0 trips), Wake (10.6 trips), and Chatham (10.2 trips) Counties. The lowest average daily household trip rates were associated with households in Vance (7.8 trips) and Lee (7.7 trips). As reported in the previous section, these two counties were characterized as having older residents with lower incomes and lower employment rates.

FIGURE T-2: HOUSEHOLD TRIP RATES BY GEOGRAPHY



The average number of reported daily household trips increased as household size increased, which was an expected trend. The average number of trips for a 1-person household was 4.6, which is almost half that of 2-person households (8.1 trips). Households with three persons reported 12.13 trips, while those with four or more reported 17.2 trips.

TABLE T-1: HOUSEHOLD TRIP RATES BY HOUSEHOLD SIZE

	N	1-person		2-person		3-person		4+-person		Total	
	N	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Chatham County	184	4.82	0.39	8.98	0.57	12.30	0.81	15.40	1.10	10.16	0.45
Durham County	829	4.65	0.16	8.75	0.27	12.05	0.47	17.22	0.68	9.54	0.24
Franklin County	166	4.36	0.37	7.32	0.57	11.76	0.90	14.45	1.33	9.31	0.51
Granville County	155	3.54	0.33	7.71	0.63	11.56	1.30	15.54	1.12	9.65	0.57
Harnett County	171	4.09	0.33	7.24	0.59	10.60	0.81	19.41	1.54	9.33	0.58
Johnston County	434	4.89	0.25	7.40	0.33	11.40	0.58	15.06	0.80	9.12	0.29
Lee County	172	3.81	0.33	7.05	0.53	8.47	0.62	17.14	1.97	7.67	0.48
Nash County	34	3.54*	0.68	6.23*	1.20	10.34*	1.54	16.78*	2.91	10.02	1.38
Orange County	427	5.12	0.25	9.46	0.40	14.05	0.67	18.82	0.81	10.95	0.36
Person County	131	4.56	0.51	7.25	0.64	11.50	0.83	17.43	1.49	9.80	0.59
Vance County	151	4.81	0.40	6.96	0.63	10.18	0.97	13.81	1.46	7.81	0.45
Wake County	2253	4.60	0.11	8.16	0.15	12.65	0.29	17.66	0.32	10.58	0.15
Inner Region	3987	4.69	0.08	8.31	0.12	12.61	0.21	17.46	0.26	10.29	0.11
Outer Region	1120	4.30	0.14	7.48	0.23	10.58	0.34	16.00	0.56	8.90	0.20
Total	5107	4.60	0.07	8.12	0.10	12.13	0.18	17.19	0.23	9.99	0.10

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

The rate of household travel also increased as vehicle ownership increased. Households with no vehicles reported 5.9 trips, which is less than the mobility rate for households with one vehicle (7.5 trips). Households with 2 vehicles reported trip rates of 11.3 trips, while those with 3 or more vehicles reported 12.8 trips on average, suggesting that not all 3-vehicle households use all their vehicles on a daily basis.

TABLE T-2: HOUSEHOLD TRIP RATES BY HOUSEHOLD VEHICLES

	N	0-vehicles		1-vehicle		2-vehicles		3+-vehicles		Total	
	N	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Chatham County	184	4.45*	0.59	8.58	0.67	10.55	0.73	12.18	0.94	10.16	0.45
Durham County	829	7.20	0.46	7.70	0.32	10.91	0.40	13.38	0.77	9.54	0.24
Franklin County	166	6.91*	1.50	7.52	0.97	8.96	0.63	12.08	1.04	9.31	0.51
Granville County	155	7.77*	2.08	5.51	0.58	10.16	0.98	12.49	0.99	9.65	0.57
Harnett County	171	8.51*	2.37	7.43	0.94	8.70	0.89	12.62	1.20	9.33	0.58
Johnston County	434	2.00*	0.32	6.80	0.35	9.80	0.46	11.65	0.68	9.12	0.29
Lee County	172	5.39	0.33	5.89	0.52	9.57	1.24	9.89	0.84	7.67	0.48
Nash County	34	2.50*	0.60	10.01*	2.11	7.78*	1.35	14.03*	3.56	10.02	1.38
Orange County	427	5.01	0.70	8.12	0.51	12.88	0.56	14.29	0.83	10.95	0.36
Person County	131	7.76*	1.46	8.91	1.18	10.31	1.12	10.39	0.91	9.80	0.59
Vance County	151	4.08*	1.04	5.82	0.47	9.03	0.75	11.09	1.26	7.81	0.45
Wake County	2253	5.24	0.36	7.57	0.21	12.03	0.23	13.51	0.37	10.58	0.15
Inner Region	3987	5.86	0.27	7.69	0.16	11.68	0.17	13.24	0.28	10.29	0.11
Outer Region	1120	6.06	0.59	6.68	0.24	9.40	0.35	11.80	0.42	8.90	0.20
Total	5107	5.91	0.25	7.47	0.14	11.26	0.16	12.82	0.23	9.99	0.10

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

As discussed earlier, data collection was guided by demographic goals that considered both household size and household vehicle characteristics. The average daily household trip rate for this cross-classification is shown in Table T-3.

TABLE T-3 HOUSEHOLD TRIP RATES BY HOUSEHOLD SIZE AND HOUSEHOLD VEHICLES

	0-VEHICLES	1-VEHICLE	2-VEHICLES	3+ VEHICLES	TOTAL
1-person	3.40 +/- 0.20	4.75 +/- 0.08	5.02 +/- 0.19	4.78 +/- 0.35	4.60 +/- 0.07
2-persons	6.52 +/- 0.37	7.95 +/- 0.24	8.21 +/- 0.14	8.48 +/- 0.26	8.12 +/- 0.10
3-persons	9.39 +/- 0.78	12.64 +/- 0.41	11.93 +/- 0.28	12.43 +/- 0.31	12.13 +/- 0.18
4+ persons	11.83 +/- 0.66	14.86 +/- 0.55	18.00 +/- 0.34	17.73 +/- 0.41	17.19 +/- 0.23
Total	5.91 +/- 0.25	7.47 +/- 0.14	11.26 +/- 0.16	12.82 +/- 0.23	9.99 +/- 0.10

Source: Greater Triangle Household Travel Survey, weighted.

Households with 2 or more workers reported twice the number of trips as those without workers.

TABLE T-4: HOUSEHOLD TRIP RATES BY HOUSEHOLD WORKERS

	N	0-workers		1-worker		2-workers		3+-workers		Total	
	N	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Chatham County	184	6.25	0.57	9.14	0.67	13.08	0.77	15.41*	2.32	10.16	0.45
Durham County	829	5.88	0.36	8.40	0.31	12.18	0.42	16.79	1.32	9.54	0.24
Franklin County	166	6.91	0.75	7.41	0.62	12.34	1.02	16.49*	2.95	9.31	0.51
Granville County	155	7.69	0.89	8.72	1.21	11.84	0.83	11.14*	1.55	9.65	0.57
Harnett County	171	6.29	0.95	9.03	0.89	11.40	1.19	14.56*	1.98	9.33	0.58
Johnston County	434	6.68	0.44	7.00	0.39	12.21	0.51	13.79*	1.46	9.12	0.29
Lee County	172	5.12	0.55	6.74	0.52	11.42	1.32	12.26*	1.86	7.67	0.48
Nash County	34	4.92*	1.14	10.41*	3.52	12.78*	1.91	11.21*	3.89	10.02	1.38
Orange County	427	5.74	0.48	8.66	0.51	14.36	0.54	16.09*	1.60	10.95	0.36
Person County	131	6.15	0.80	9.24	0.84	11.52	1.13	16.50*	2.38	9.80	0.59
Vance County	151	5.40	0.48	6.77	0.55	12.36	1.10	14.62*	2.73	7.81	0.45
Wake County	2253	6.01	0.24	9.10	0.24	13.04	0.24	15.53	0.60	10.58	0.15
Inner Region	3987	6.02	0.17	8.75	0.16	12.94	0.18	15.54	0.48	10.29	0.11
Outer Region	1120	6.17	0.27	7.83	0.29	12.03	0.39	14.37	0.86	8.90	0.20
Total	5107	6.07	0.14	8.56	0.14	12.79	0.16	15.27	0.42	9.99	0.10

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

In general, household trip rates increased as income increased. Household trips rates for the specific income categories were very consistent between the inner and outer areas of the Greater Triangle region.

TABLE T-5: HOUSEHOLD TRIP RATES BY HOUSEHOLD INCOME

	N	< $15k	$15k-<$25k	$25k-<$35k	$35k-<$50k	$50k-<$75K	$75k-<$100k	$100k+
Chatham County	184	6.81*	11.71	9.89	10.74	8.66	11.40	12.73
Durham County	829	7.73	7.03	7.60	8.04	10.09	12.10	11.93
Franklin County	166	5.69*	6.22	8.00*	11.29	9.10	13.58	9.13
Granville County	155	8.14*	5.52*	7.42*	9.26*	11.41	12.48	10.88
Harnett County	171	6.49	8.50*	8.86	8.57	11.05	9.60*	9.95
Johnston County	434	6.13	8.43	6.38	8.12	9.06	12.72	11.51
Lee County	172	5.52	5.26	11.47*	8.24	9.45	8.45*	9.35
Nash County	34	3.27*	10.32*	7.83*	6.25*	12.94*	13.84*	12.08*
Orange County	427	6.10	5.86	8.89	8.96	11.12	12.11	14.04
Person County	131	8.70*	9.32	8.22*	9.15	9.00	10.59	13.73
Vance County	151	4.22	5.61	7.28	8.87	10.38	10.56*	9.80
Wake County	2253	6.69	8.21	7.99	8.73	10.23	11.69	13.44
Inner Region	3987	6.90	7.85	7.91	8.74	10.11	11.87	13.04
Outer Region	1120	6.34	7.10	8.42	8.58	10.03	11.39	11.58
Total	5107	6.72	7.57	8.07	8.70	10.09	11.79	12.88

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Finally, average daily household trip rates by home ownership type were examined. As indicated in Table T-6, trip rates were fairly consistent for owners vs. renters across all portions of the study area, with owners reporting a higher level of travel than renters.

TABLE T-6: HOUSEHOLD TRIP RATES BY HOME OWNERSHIP STATUS

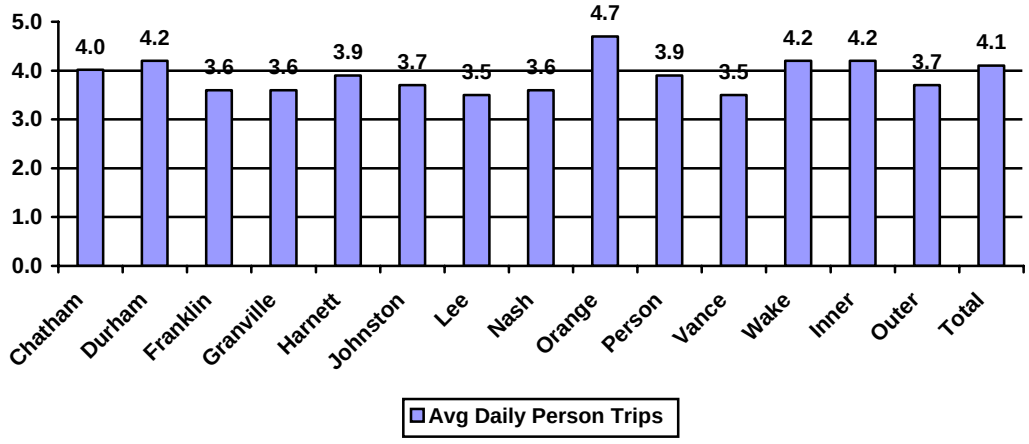
	N	Own		Rent		Total	
	N	Mean	SE	Mean	SE	Mean	SE
Chatham County	184	10.08	0.51	10.83	1.01	10.16	0.45
Durham County	829	9.81	0.29	8.70	0.37	9.54	0.24
Franklin County	166	9.66	0.58	7.75	1.05	9.31	0.51
Granville County	155	10.02	0.61	6.31*	1.08	9.65	0.57
Harnett County	171	9.62	0.63	7.89	1.53	9.33	0.58
Johnston County	434	9.38	0.34	8.15	0.55	9.12	0.29
Lee County	172	7.81	0.61	7.46	0.76	7.67	0.48
Nash County	34	10.44	1.55	7.17*	2.23	10.02	1.38
Orange County	427	11.65	0.42	8.89	0.63	10.95	0.36
Person County	131	10.08	0.66	8.42*	1.32	9.80	0.59
Vance County	151	8.00	0.49	6.30	0.82	7.81	0.45
Wake County	2253	11.23	0.17	8.00	0.30	10.58	0.15
Inner Region	3987	10.82	0.13	8.33	0.21	10.29	0.11
Outer Region	1120	9.18	0.23	7.87	0.37	8.90	0.20
Total	5107	10.46	0.11	8.24	0.18	9.99	0.10

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

PERSON TRIP RATES

The average daily person trip rate for participating household members was 4.06. The following tables and figures in this section summarize the average daily person trip rates for those household members based on specific person-level characteristics. Person trip rates at the county, modeling area, and regional levels are shown in Figure T-3. Trip rates in the inner area are higher, on average, than those for the outer area. In addition, travelers in Orange, Durham, and Wake Counties reported higher trip-making levels than those in the other counties.

FIGURE T-3: PERSON TRIP RATES BY GEOGRAPHY



Throughout the region, female travelers tended to report higher average daily person trip rates than the male travelers. The exceptions to this were in Lee, Nash, Person, and Vance Counties, where there was not a statistical difference in trip rates by gender.

TABLE T-7: PERSON TRIP RATES BY GENDER

		Male		Female		Difference	Total	
	N	Mean	SE	Mean	SE	(Female-Male)	Mean	SE
Chatham County	464	3.76	.16	4.26	.17	0.50	4.02	.12
Durham County	1888	4.13	.09	4.26	.08	0.13	4.19	.06
Franklin County	430	3.17	.17	3.95	.19	0.78	3.60	.13
Granville County	422	3.34	.18	3.75	.17	0.41	3.55	.12
Harnett County	409	3.76	.17	4.03	.19	0.27	3.90	.13
Johnston County	1062	3.57	.11	3.86	.11	0.29	3.72	.08
Lee County	378	3.43	.19	3.55	.19	0.12	3.49	.14
Nash County	97	3.75	.42	3.40	.32	-0.35	3.56	.26
Orange County	999	4.48	.13	4.86	.13	0.38	4.68	.09
Person County	329	3.89	.20	3.93	.20	0.04	3.91	.14
Vance County	333	3.43	.23	3.61	.19	0.18	3.54	.15
Wake County	5749	3.98	.05	4.31	.05	0.33	4.15	.04
Inner Region	9845	4.00	.04	4.32	.04	0.32	4.17	.03
Outer Region	2715	3.54	.07	3.78	.07	0.24	3.67	.05
Total	12560	3.91	.03	4.20	.03	0.29	4.06	.02

Source: Greater Triangle Household Travel Survey, weighted.

Person trip rates increased from children until middle age, peaking for respondents between the ages of 35 to 44. After this, the average daily trip rate declines for each age cohort. Person trip rates tended to be higher for respondents in the inner area as compared to the outer area, regardless of age cohort.

TABLE T-8: PERSON TRIP RATES BY AGE

	N	<16	16-24	25-34	35-44	45-54	55-64	65+	Total
Chatham County	464	3.17	3.32	3.44	4.52	4.93	4.79	3.74	4.02
Durham County	1888	3.19	3.77	4.59	5.12	4.73	4.33	3.90	4.19
Franklin County	430	2.53	5.10	3.05	3.89	4.44	3.82	3.73	3.60
Granville County	422	2.90	2.85	3.31	4.34	3.84	3.86	3.72	3.55
Harnett County	409	3.47	4.00	4.58	4.49	4.15	3.58	3.63	3.90
Johnston County	1062	2.88	3.55	3.78	4.48	4.16	4.03	3.52	3.72
Lee County	378	2.72	3.27	3.73	4.31	3.43	3.86	3.60	3.49
Nash County	97	3.00	4.22*	2.62*	4.70*	5.04*	2.91*	2.71*	3.56
Orange County	999	3.51	4.04	5.27	5.51	5.23	5.08	4.24	4.68
Person County	329	3.50	3.24	3.67	4.27	3.96	3.70	4.17	3.91
Vance County	333	2.65	2.78	4.59*	4.11	3.69	4.10	3.26	3.54
Wake County	5749	3.40	3.91	4.44	4.80	4.75	4.18	3.90	4.15
Inner Region	9845	3.33	3.90	4.51	4.87	4.75	4.30	3.90	4.17
Outer Region	2715	2.92	3.47	3.52	4.35	4.06	3.92	3.61	3.67
Total	12560	3.25	3.79	4.34	4.78	4.60	4.21	3.81	4.06

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Ethnicity was asked only of the main reference person and is assumed to represent the ethnicity of all household members. As indicated in Table T-9, white households tended to report higher average daily person trips (4.89) as compared to African American households (4.25 trips) and other minority households (4.46 trips).

TABLE T-9: PERSON TRIP RATES BY ETHNICITY

		White		African American		Other Minority		Total	
	N	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Chatham County	184	4.73	.22	4.57	.60	3.72	.48	4.63	.20
Durham County	829	5.07	.12	4.48	.21	4.60	.29	4.87	.10
Franklin County	166	4.32	.24	5.28	.66	3.64*	.62	4.45	.22
Granville County	155	4.81	.28	3.60	.33	3.51*	.71	4.46	.22
Harnett County	171	4.34	.21	4.49	.56	4.70*	1.07	4.38	.20
Johnston County	434	4.46	.14	4.64	.37	4.51	.47	4.49	.12
Lee County	172	4.41	.30	3.27	.35	4.27	.39	4.16	.22
Nash County	34	3.96	.48	4.48*	1.72	3.55*	1.52	4.01	.45
Orange County	427	5.62	.16	3.48	.48	4.45	.48	5.42	.15
Person County	131	4.51	.27	3.98	.39	7.49*	1.51	4.61	.25
Vance County	151	4.63	.29	3.66	.32	3.79*	.75	4.28	.21
Wake County	2253	4.96	.07	4.24	.18	4.45	.20	4.84	.06
Inner Region	3987	4.99	.05	4.34	.13	4.54	.16	4.87	.05
Outer Region	1120	4.51	.10	4.06	.16	4.19	.25	4.39	.08
Total	5107	4.89	.05	4.25	.10	4.46	.13	4.77	.04

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Respondents age 16 or older that held a driver's license reported almost two trips more than those without driver's licenses.

TABLE T-10: PERSON TRIP RATES BY LICENSE STATUS

		Licensed		Not Licensed		Total	
	N	Mean	SE	Mean	SE	Mean	SE
Chatham County	353	4.51	.15	2.59	.31	4.02	.12
Durham County	1442	4.71	.08	3.34	.17	4.19	.06
Franklin County	325	4.13	.16	2.18	.54	3.60	.13
Granville County	316	3.93	.16	2.72	.34	3.55	.12
Harnett County	322	4.07	.16	3.58	.41	3.90	.13
Johnston County	822	4.12	.10	2.24	.22	3.72	.08
Lee County	307	3.79	.18	3.07	.32	3.49	.14
Nash County	70	3.90	.35	1.82*	.71	3.56	.26
Orange County	771	5.23	.12	2.93	.32	4.68	.09
Person County	258	4.12	.19	3.43	.35	3.91	.14
Vance County	284	4.01	.18	2.27	.28	3.54	.15
Wake County	4256	4.58	.04	2.80	.13	4.15	.04
Inner Region	7382	4.62	.03	2.93	.10	4.17	.03
Outer Region	2144	4.05	.07	2.79	.12	3.67	.05
Total	9526	4.50	.03	2.89	.08	4.06	.02

Source: All respondents age 16+ in the Greater Triangle Household Travel Survey, weighted.

University students reported slightly higher trip rates than non-university students. The difference is even greater when considering university students living in the inner area as compared to those in the outer area. The exceptions to note are university students living in Chatham, Granville, Lee, and Person Counties, where the university student trip rates were the same statistically as the non-university student travelers.

TABLE T-11: PERSON TRIP RATES BY UNIVERSITY STUDENT STATUS

		University Student		Not University Student		Total	
	N	Mean	SE	Mean	SE	Mean	SE
Chatham County	464	4.07	.46	4.02	.12	4.02	.12
Durham County	1888	4.91	.23	4.13	.06	4.19	.06
Franklin County	430	5.24	.62	3.47	.13	3.60	.13
Granville County	422	3.83	.50	3.54	.13	3.55	.12
Harnett County	409	4.36*	.58	3.87	.13	3.90	.13
Johnston County	1062	4.97	.47	3.67	.08	3.72	.08
Lee County	378	3.88*	.46	3.47	.14	3.49	.14
Nash County	97	4.55*	1.64	3.52	.26	3.56	.26
Orange County	999	5.25	.34	4.64	.10	4.68	.09
Person County	329	3.72	.52	3.92	.15	3.91	.14
Vance County	333	4.49*	.45	3.50	.15	3.54	.15
Wake County	5749	4.84	.19	4.11	.04	4.15	.04
Inner Region	9845	4.92	.13	4.13	.03	4.17	.03
Outer Region	2715	4.24	.23	3.64	.05	3.67	.05
Total	12560	4.78	.11	4.02	.02	4.06	.02

Source: All respondents in the Greater Triangle Household Travel Survey, weighted.
*fewer than 20 observations

Workers reported on average one trip more than non-workers at the regional level. When considering modeling areas, workers in the inner area reported one-half trip higher, on average, than workers in the outer area. These trends were also reflected in the county-level data.

TABLE T-12: PERSON TRIP RATES BY WORKER STATUS

		Worker		Non-Worker		Total	
	N	Mean	SE	Mean	SE	Mean	SE
Chatham County	353	4.80	.18	3.40	.22	4.02	.12
Durham County	1442	4.81	.09	3.72	.14	4.19	.06
Franklin County	325	4.16	.18	3.56	.29	3.60	.13
Granville County	316	3.93	.18	3.51	.25	3.55	.12
Harnett County	322	4.34	.18	3.51	.25	3.90	.13
Johnston County	822	4.31	.11	3.33	.17	3.72	.08
Lee County	307	3.87	.23	3.38	.22	3.49	.14
Nash County	70	3.98	.38	3.42	.65	3.56	.26
Orange County	771	5.33	.13	4.07	.22	4.68	.09
Person County	258	4.19	.21	3.72	.29	3.91	.14
Vance County	284	4.42	.24	3.00	.21	3.54	.15
Wake County	4256	4.61	.05	3.90	.09	4.15	.04
Inner Region	7382	4.69	.04	3.82	.06	4.17	.03
Outer Region	2144	4.23	.08	3.37	.09	3.67	.05
Total	9526	4.61	.03	3.68	.05	4.06	.02

Source: All respondents age 16+ in the Greater Triangle Household Travel Survey, weighted.

Children (under the age of 16) tended to report one trip less, on average, as compared to those ages 16 or older. Trip rates for children were higher in the inner area than for the outer area.

TABLE T-13: PERSON TRIP RATES BY CHILD STATUS

		Child (under 16)		Non-Child		Total	
	N	Mean	SE	Mean	SE	Mean	SE
Chatham County	464	3.17	.17	4.29	.14	4.02	.12
Durham County	1888	3.19	.09	4.49	.07	4.19	.06
Franklin County	430	2.53	.16	3.93	.16	3.60	.13
Granville County	422	2.90	.19	3.75	.15	3.55	.12
Harnett County	409	3.47	.25	4.01	.15	3.90	.13
Johnston County	1062	2.88	.11	3.97	.09	3.72	.08
Lee County	378	2.72	.18	3.67	.16	3.49	.14
Nash County	97	3.00	.28	3.78	.34	3.56	.26
Orange County	999	3.51	.13	5.02	.11	4.68	.09
Person County	329	3.50	.20	4.02	.17	3.91	.14
Vance County	333	2.65	.25	3.69	.16	3.54	.15
Wake County	5749	3.40	.05	4.40	.04	4.15	.04
Inner Region	9845	3.33	.04	4.44	.03	4.17	.03
Outer Region	2715	2.92	.07	3.87	.06	3.67	.05
Total	12560	3.25	.03	4.31	.03	4.06	.02

Source: All respondents in the Greater Triangle Household Travel Survey, weighted.

TRIP CHARACTERISTICS

Participants in the Greater Triangle Household Travel Survey recorded a total of 51,002 trips during the course of the study. While the previous section focused on the characteristics of the travelers, the purpose of this section is to present the characteristics of the trips themselves. The method used to collect this data was a "place-based" approach. This means that each trip segment is recorded separately in the data file as a "trip." So a person traveling from home to work by auto has one trip segment (assuming the car was parked at the same address as the work location). A person using transit to make that type of journey would have recorded at least three trips: home to the bus stop, the journey on the bus, then from where he/she got off the bus to the work location. For purposes of this report, the word "trip" is used to refer to a particular trip segment between two addresses.

The Triangle Regional Modeling process considers trips based on seven main trip purposes: home-based work (HBW), home-based work-related (HBWR), home-based shopping (HBSh), home-based school (lower level – HBSc), home-based university (HBU), and non-home based trips (NHB). The twenty reasons reported for travel (as shown in the travel log in Appendix D) were re-classified into the seven modeling trip purpose categories based on the following definitions:

- Home-Based Work (HBW) - All trips that start at the home location and end at the work location (or vice versa).
- Home-Based Work-Related - All trips that start at the home location and end at a work-related location (or vice versa).
- Home-Based Shopping - All trips that start at the home location and end at a shopping or quick stop destination (or vice versa).
- Home-Based School (lower level) – All trips that start at the home location and end at a school or school-related destination, for students in daycare, preschool, or K-12 (or vice versa).
- Home-Based University – All trips that start at the home location and end at a school or school-related destination, for students in school that are post-12th grade (or vice versa).
- Home-based Other (HBO) - All trips that start at the home location and end at any location not included in the above categories (or vice versa).
- Non-Home Based trips (NHB) - All trips that start and end at a non-home location.

Table T-14 shows the distribution of household trips by geography across the seven trip purposes and Table T-15 shows the average household trip rates associated with each trip purpose, by geography.

TABLE T-14: HOUSEHOLD TRIP PURPOSES

	N	HBW	HBWR	HBSh	HBSc	HBU	HBO	NHB	Total
Chatham County	184	10.7%	1.5%	11.8%	8.4%	1.5%	29.6%	36.5%	100.0%
Durham County	829	13.2%	1.7%	11.0%	8.2%	1.0%	31.0%	33.9%	100.0%
Franklin County	166	12.9%	1.7%	10.4%	10.1%	1.2%*	29.5%	34.2%	100.0%
Granville County	155	13.4%	2.0%	10.3%	11.2%	0.5%*	32.2%	30.5%	100.0%
Harnett County	171	13.6%	2.2%	11.2%	8.1%	1.4%	30.6%	32.8%	100.0%
Johnston County	434	14.4%	2.6%	9.3%	8.8%	0.3%*	32.2%	32.3%	100.0%
Lee County	172	13.2%	2.6%	12.1%	8.1%	1.3%*	33.0%	29.6%	100.0%
Nash County	34	12.2%	2.5%*	17.2%	9.3%	0.6%*	28.3%	29.9%	100.0%
Orange County	427	10.5%	2.3%	8.6%	6.5%	1.2%	34.3%	36.6%	100.0%
Person County	131	12.7%	1.3%*	10.3%	9.1%	1.0%*	31.1%	34.5%	100.0%
Vance County	151	12.0%	2.0%	13.2%	6.1%	0.5%*	33.7%	32.4%	100.0%
Wake County	2253	12.9%	2.0%	9.8%	8.7%	0.6%	33.7%	32.3%	100.0%
Inner Region	3987	12.7%	1.9%	10.0%	8.3%	0.8%	32.8%	33.4%	100.0%
Outer Region	1120	13.0%	2.2%	11.2%	9.0%	0.8%	32.1%	31.6%	100.0%
Total	5107	12.7%	2.0%	10.2%	8.5%	0.8%	32.7%	33.1%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-15: HOUSEHOLD TRIP PURPOSE RATES

	N	HBW	HBWR	HBSh	HBSc	HBU	HBO	NHB	Total
Chatham County	184	1.09	0.15	1.20	0.85	0.15	3.01	3.71	10.16
Durham County	829	1.26	0.16	1.05	0.78	0.10	2.95	3.23	9.54
Franklin County	166	1.20	0.16	0.97	0.94	0.11*	2.75	3.18	9.31
Granville County	155	1.29	0.19	0.99	1.08	0.05*	3.11	2.94	9.65
Harnett County	171	1.27	0.21	1.05	0.76	0.13	2.86	3.06	9.33
Johnston County	434	1.31	0.24	0.85	0.80	0.03*	2.94	2.95	9.12
Lee County	172	1.01	0.20	0.93	0.62	0.10*	2.53	2.27	7.67
Nash County	34	1.22	0.25*	1.73	0.93	0.06*	2.84	3.00	10.02
Orange County	427	1.15	0.25	0.94	0.71	0.13	3.76	4.01	10.95
Person County	131	1.24	0.13*	1.01	0.89	0.10*	3.05	3.38	9.80
Vance County	151	0.94	0.16	1.03	0.48	0.04*	2.63	2.53	7.81
Wake County	2253	1.36	0.21	1.04	0.92	0.06	3.56	3.41	10.58
Inner Region	3987	1.31	0.20	1.03	0.86	0.08	3.38	3.44	10.29
Outer Region	1120	1.16	0.20	1.00	0.80	0.07	2.86	2.81	8.90
Total	5107	1.27	0.20	1.02	0.85	0.08	3.26	3.30	9.99

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

The following tables show the mean travel time (in minutes) and mean travel distance (in miles) for each trip by geography and trip purpose. The average trip was 21 minutes in length. Trips for home-based shopping were the shortest, on average, at 17 minutes. Trips for work-related purposes were the longest, on average, at 36 minutes. The average commute trip was 27 minutes in length, the average school trip was 25 minutes in length, and the average higher-level school trip (university) was 31 minutes in length. Home-based other trips averaged 19 minutes, and non-home-based trips averaged 19 minutes.

TABLE T-16: AVERAGE TRIP DURATION BY PURPOSE AND GEOGRAPHY

	N	HBW	HBWR	HBSh	HBSc	HBU	HBO	NHB	Total
Chatham County	1868	28.11	31.65	18.86	26.32	29.16	17.27	19.14	20.45
Durham County	7902	21.74	24.40	15.67	21.70	24.92	15.49	16.44	17.42
Franklin County	1547	33.72	56.19	24.83	23.05	43.81*	19.40	20.84	23.61
Granville County	1496	26.36	55.21	19.14	28.01	63.86*	19.36	18.81	22.01
Harnett County	1595	28.96	36.06	13.81	24.26	17.38	21.77	17.28	20.84
Johnston County	3957	28.39	33.28	18.30	21.34	29.35*	18.53	18.54	20.60
Lee County	1319	19.62	35.94	17.29	31.95	23.77*	20.09	21.64	21.57
Nash County	344	29.91	33.58*	16.38	21.96	27.83*	17.53	23.14	21.38
Orange County	4676	22.45	19.44	13.88	16.54	26.43	14.86	15.10	16.01
Person County	1286	28.82	28.11*	17.13	20.92	41.97*	18.85	22.06	21.59
Vance County	1179	28.80	29.57	14.03	23.51	16.08*	19.03	18.33	19.80
Wake County	23833	24.21	36.15	13.58	19.72	29.03	16.45	17.42	18.23
Inner Region	41030	24.81	33.25	15.28	21.15	28.56	16.88	17.60	18.75
Outer Region	9972	24.36	32.60	14.79	20.16	27.88	16.37	17.18	18.22
Total	51002	26.62	35.64	17.07	24.93	31.31	19.06	19.44	20.94

Source: Greater Triangle Household Travel Survey, weighted. All values reflect minutes of travel. *fewer than 20 observations.

The average trip distance was 5.7 miles. Respondents based in the inner area reported shorter trips than those in the outer area. Home-based work, work-related, and university trips were the longest, while home-based school trips were the shortest.

TABLE T-17: AVERAGE TRIP DISTANCE BY PURPOSE AND GEOGRAPHY

	N	HBW	HBWR	HBSh	HBSc	HBU	HBO	NHB	Total
Chatham County	1868	13.01	15.44	8.20	5.05	14.41	6.39	6.04	7.24
Durham County	7902	7.20	7.73	4.20	3.99	4.46	4.08	4.41	4.64
Franklin County	1547	17.18	20.28	9.26	5.57	16.64*	8.40	7.81	9.41
Granville County	1496	13.44	21.23	8.37	6.76	12.89*	8.06	6.66	8.51
Harnett County	1595	11.57	10.15	4.35	4.91	7.38*	6.13	6.25	6.64
Johnston County	3957	13.13	12.71	6.89	6.23	9.99*	6.67	6.55	7.68
Lee County	1319	5.39	12.42	3.96	7.00	8.69*	6.67	5.40	6.01
Nash County	344	17.88	21.35*	8.15	9.79	*	10.63	7.72	10.75
Orange County	4676	8.61	5.78	3.90	2.65	12.02	3.62	4.10	4.26
Person County	1286	12.26	11.21*	5.82	5.35	10.35*	6.54	5.19	6.72
Vance County	1179	11.32	14.19	4.39	3.99	5.70*	7.00	6.44	6.93
Wake County	23833	8.66	8.66	4.02	4.06	9.13	4.42	4.86	5.12
Inner Region	41030	9.19	8.81	4.48	4.07	9.38	4.56	4.95	5.30
Outer Region	9972	11.36	14.32	6.06	6.08	8.17	6.84	6.11	7.19
Total	51002	9.61	9.95	4.81	4.48	9.05	4.98	5.16	5.66

Source: Greater Triangle Household Travel Survey, weighted. All values reflect miles of travel, calculated as a straight line distance between origin and destination (point to point) and NOT the actual travel distance or network distances. Distances are reported for comparative purposes only and should not be used for model calibration. *fewer than 20 observations.

The next series of tables show the origins and destinations of travel for all reported trips, then each of the seven trip purposes. For each table, the trip origin is listed in the left hand column and the trip destinations appear in the remaining columns. The cell percentages reflect the proportion of trips that begin in each specific origin city and where they end. For example, in Table T-18A, 68% of all trips that begin in Chatham County also end in Chatham County, while 4% begin in Chatham County and end in Durham County, and less than 1% begin in Chatham County and end in Granville County. Each table shows origins and destinations for all trips, then by specific trip purposes. The tables are "paired" in that the first table shows the proportions and the second table shows the actual expanded trip counts. As with the other trip details presented in this report, these are unlinked trips.

TABLE T-18A: ORIGINS & DESTINATIONS OF ALL TRIPS (%)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	140577	74.0%	4.4%		.1%	.3%	.1%	4.1%	.2%	8.2%			4.8%	3.8%	100.0%
Durham	861529	.7%	76.5%	.2%	.9%	.1%	.3%	.1%	.0%	7.1%	.7%	.2%	10.1%	3.1%	100.0%
Franklin	114633		2.3%	71.7%	1.4%		.6%		2.6%	.2%	.1%	3.6%	16.5%	1.0%	100.0%
Granville	120331	.1%	6.2%	1.5%	74.7%		.1%			.8%	1.4%	6.9%	7.1%	1.3%	100.0%
Harnett	126880	.3%	.4%			77.2%	4.5%	1.1%		.1%		.1%	12.4%	4.0%	100.0%
Johnson	320247		.8%	.2%		2.1%	81.1%	.0%	.1%	.2%		.1%	13.1%	2.3%	100.0%
Lee	114731	5.2%	.9%			1.2%	.1%	85.4%	.3%	.4%		.2%	2.9%	3.4%	100.0%
Nash	15972	.8%	.3%	5.1%			.8%	1.7%	52.1%	.7%		1.0%	16.8%	20.7%	100.0%
Orange	467180	2.7%	12.9%	.1%	.2%		.1%	.1%	.0%	73.2%	.5%	.1%	3.6%	6.5%	100.0%
Person	108115		5.4%		1.5%		.0%		.0%	2.3%	87.3%	.2%	.9%	2.3%	100.0%
Vance	113462		1.1%	3.0%	7.6%		.3%	.2%	.1%	.3%	.2%	83.1%	2.0%	2.1%	100.0%
Wake	2443465	.3%	3.5%	.8%	.4%	.7%	1.8%	.2%	.2%	.5%	.0%	.1%	89.8%	1.7%	100.0%
Out of Area	530938	3.1%	16.6%	2.0%	.8%	3.3%	4.5%	2.5%	4.3%	17.4%	1.6%	1.1%	23.4%	19.4%	100.0%
Total	5478060	2.9%	16.5%	2.3%	2.5%	2.7%	6.4%	2.4%	.5%	8.7%	2.2%	2.2%	47.6%	3.2%	100.0%

Source: Greater Triangle Household Travel Survey, weighted.

TABLE T-18B: ORIGINS & DESTINATIONS OF ALL TRIPS (COUNTS)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	158734	117437	7059		199	450	86	6566	242	12980			7695	6020	158734
Durham	905304	6652	692890	1935	8399	456	2616	1088	53	63843	6418	1480	91829	27645	905304
Franklin	125536		2842	89954	1778		747		3292	293	139	4478	20714	1299	125536
Granville	134707	199	8342	1964	100587		130			1035	1887	9245	9616	1702	134707
Harnett	147038	450	549			113501	6665	1630				147	18160	5813	147038
Johnson	353767		2692	686		7401	286973	122	425	565		352	46404	8147	353767
Lee	132689	6949	1143			1622	122	113322	405	534		235	3910	4447	132689
Nash	18741	152	53	957				325	9762	125		180	3157	3885	18741
Orange	478712	12843	61976	299	792		503	453	123	350623	2574	266	17092	31166	478712
Person	118133		6342		1822		55		35	2729	103147	194	1072	2737	118133
Vance	122282		1295	3706	9335		416	235	180	313	185	101624	2477	2516	122282
Wake	2607432	8462	90698	21935	9934	17591	46723	4357	4608	14271	868	2234	2342202	43549	2607432
Other	174979	5458	29001	3571	1413	5832	7821	4333	7545	30460	2739	1904	40901	34001	174979
Out of Area	5478054	158602	904882	125007	134259	146853	353002	132431	26672	477894	117957	122339	2605229	172927	5478054

Source: Greater Triangle Household Travel Survey, weighted.

TABLE T-19A: ORIGINS & DESTINATIONS OF HOME-BASED WORK TRIPS (%)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	16352	55.8%	7.9%		.4%			7.9%		8.5%			8.9%	10.7%	100.0%
Durham	129495	1.0%	54.9%	.9%	2.0%	.2%	.7%			9.7%	1.2%	.2%	23.1%	6.1%	100.0%
Franklin	16337		8.9%	46.5%	4.1%		.7%		2.9%	1.1%		1.7%	33.0%	1.1%	100.0%
Granville	18848	.4%	15.8%	2.7%	56.8%		.7%			.4%	2.0%	6.4%	13.3%	1.5%	100.0%
Harnett	19747		2.4%			62.8%	8.2%	2.0%					18.7%	5.9%	100.0%
Johnson	48472		2.0%	.2%		3.3%	63.5%		.3%				26.8%	3.9%	100.0%
Lee	18675	5.9%	.3%			2.7%		81.9%	1.5%				3.7%	3.9%	100.0%
Nash	2665			6.3%				7.7%	40.8%				27.0%	18.2%	100.0%
Orange	46367	2.4%	24.9%	.4%	.4%					46.4%	.8%	.2%	8.1%	16.5%	100.0%
Person	14502		14.8%		3.0%					2.6%	72.2%	.4%	3.0%	3.9%	100.0%
Vance	14266		2.4%	3.1%	12.4%		1.6%			.5%		71.5%	6.1%	2.4%	100.0%
Wake	323785	.5%	10.0%	1.3%	.7%	1.1%	3.6%	.2%	.3%	1.1%	.2%	.2%	78.1%	2.6%	100.0%
Out of Area	29423	6.1%	22.7%	.5%	1.2%	4.5%	6.9%	1.8%	2.6%	24.6%	1.8%	1.4%	25.7%		100.0%
Total	698934	2.3%	18.8%	2.1%	2.7%	2.8%	6.8%	2.6%	.5%	6.7%	2.0%	1.9%	46.2%	4.5%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a work location.

TABLE T-19B: ORIGINS & DESTINATIONS OF HOME-BASED WORK TRIPS (COUNTS)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	16352	9120	1286		66			1294		1386			1452	1748	16352
Durham	129495	1326	71081	1206	2540	219	966			12561	1545	275	29908	7868	129495
Franklin	16337		1457	7590	675		110			181			5387	184	16337
Granville	18848	66	2979	509	10701		130			81	384	1197	2514	287	18848
Harnett	19747		478			12398	1629	391					3691	1160	19747
Johnson	48472		966	110		1603	30768						12975	1881	48472
Lee	18675	1103	55					15302	287		275		700	724	18675
Nash	2665			169				206	1087				719	484	2665
Orange	46367	1114	11547	181	192					21514	350	78	3740	7651	46367
Person	14502		2146							383	10475	55	442	562	14502
Vance	14266		344	448	1786		227					10201	866	336	14266
Wake	323785	1662	32309	4354	2376	3712	11535	751	972	3446	487	789	252929	8463	323785
Out of Area	29423	1807	6687	152	365	1325	2025	540	768	7245	521	420	7568		29423
Total	698934	16198	131335	14719	19120	19761	47390	18484	3761	46875	13762	13290	322891	31348	698934

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a work location.

TABLE T-20A: ORIGINS & DESTINATIONS OF HOME-BASED WORK RELATED TRIPS (%)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	2869	43.4%	3.6%					9.1%		23.0%			9.3%	11.6%	100.0%
Durham	16236		57.6%		.7%				.3%	14.2%	2.6%	1.4%	19.5%	3.6%	100.0%
Franklin	2299			34.7%					12.3%	4.8%		2.0%	39.9%	6.3%	100.0%
Granville	2645		5.6%		60.2%							6.5%	17.5%	10.1%	100.0%
Harnett	2507					58.8%	5.0%			4.9%			19.6%	11.7%	100.0%
Johnson	8265		3.4%			2.9%	64.9%						21.9%	6.8%	100.0%
Lee	3234	13.8%						72.1%					10.3%	3.8%	100.0%
Nash	344		15.4%						57.3%				17.2%	10.2%	100.0%
Orange	11433	2.9%	12.2%	1.0%						71.2%	.5%		7.2%	4.9%	100.0%
Person	1562		19.3%						2.2%	3.5%	72.7%			2.3%	100.0%
Vance	1907			4.9%	8.1%							79.1%	3.6%	4.4%	100.0%
Wake	51963	.4%	4.4%	1.5%	1.3%	2.1%	5.6%	.7%	.3%	1.7%		.3%	76.2%	5.5%	100.0%
Out of Area	5227	5.0%	6.5%	.7%		11.1%	13.8%	5.1%	4.7%	4.8%	.9%	1.6%	45.9%		100.0%
Total	110491	2.2%	12.9%	1.6%	2.3%	3.1%	8.3%	2.9%	.9%	11.4%	1.5%	2.0%	45.6%	5.3%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a work-related location.

TABLE T-20B: ORIGINS & DESTINATIONS OF HOME-BASED WORK RELATED TRIPS (COUNTS)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	2869	1244	102					261		661			267	334	2869
Durham	16236		9354						53	2307	423	227	3166	587	16236
Franklin	2299			798					282	111		46	917	145	2299
Granville	2645		149		1591							173	464	268	2645
Harnett	2507					1475	125							293	2507
Johnson	8265		284	119		236	5366						1814	565	8265
Lee	3234	446						2333					333	122	3234
Nash	344		53						197				59	35	344
Orange	11433	335	1400	118					123	8142	55	491	824	559	11433
Person	1562		301						35	55	1135			36	1562
Vance	1907			93	155							1508	68	83	1907
Wake	51963	193	2272	776	676	1089	2914	382	154	896		147	39604	2860	51963
Out of Area	5227	260	340	34		582	719	265	248	250	47	83	2399		5227
Total	110491	2478	14255	1819	2541	3382	9124	3241	969	12545	1660	2184	50406	5887	110491

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a work-related location.

TABLE T-21A: ORIGINS & DESTINATIONS OF HOME-BASED SHOPPING TRIPS (%)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	18281	77.3%	6.3%					2.3%		10.8%			2.6%	.6%	100.0%
Durham	93314	1.1%	83.1%	.1%	1.6%			.3%		6.1%	.9%	.2%	6.5%	.2%	100.0%
Franklin	13719		.7%	78.9%			1.7%		2.7%			2.0%	13.6%	.4%	100.0%
Granville	14162		4.0%	2.3%	80.8%						.4%	9.5%	2.2%	.9%	100.0%
Harnett	18242					85.0%	4.9%						10.1%		100.0%
Johnson	37134		.3%	.3%		1.1%	85.2%		.2%			.1%	12.5%	.3%	100.0%
Lee	17431	5.3%						90.6%					.8%	3.3%	100.0%
Nash	2952						2.9%		72.5%				20.6%	4.0%	100.0%
Orange	41943	6.8%	10.0%							76.4%	.8%		4.9%	1.1%	100.0%
Person	12509		3.2%							1.3%	91.6%			3.9%	100.0%
Vance	16510			3.2%	4.7%							90.2%	.5%	1.4%	100.0%
Wake	268158	.6%	3.1%	1.3%	.7%	1.0%	1.6%	.1%	.5%	.2%		.1%	90.8%	.1%	100.0%
Out of Area	5322	10.5%	6.1%	5.2%		1.4%	4.9%		34.2%	7.6%	10.1%	1.3%	18.7%		100.0%
Total	559677	3.8%	16.6%	2.8%	2.8%	3.3%	6.7%	3.0%	1.0%	7.3%	2.4%	3.0%	46.9%	.5%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a shopping location.

TABLE T-21B: ORIGINS & DESTINATIONS OF HOME-BASED SHOPPING TRIPS (COUNTS)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	18281	14140	1151					424		1980			468	118	18281
Durham	93314	1051	77558	94	1454			244		5650	855	142	6097	169	93314
Franklin	13719		94	10828									1862	57	13719
Granville	14162		561	321	11448						55	1340	308	129	14162
Harnett	18242					15513	891						1838		18242
Johnson	37134		127	118		398	31628		86			46	4625	106	37134
Lee	17431	931				235		15789			275		136	575	17431
Nash	2952						86		2141				607	118	2952
Orange	41943	2840	4202							32047	331		2065	458	41943
Person	12509		398							164	11454			493	12509
Vance	16510			532	777							14897	78	226	16510
Wake	268158	1607	8343	3364	1850	2585	4262	353	1301	521		267	243447	258	268158
Out of Area	5322	560	322	279		74	260		1818	407	539	70	993		5322
Total	559677	21129	92756	15536	15529	18570	37362	16810	5714	40769	13234	17037	262524	2707	559677

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a shopping location.

TABLE T-22A: ORIGINS & DESTINATIONS OF HOME-BASED SCHOOL TRIPS (%)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	16702	92.3%	.5%					4.7%		1.7%			.9%		100.0%
Durham	68904	.1%	90.8%		.4%		.6%	.2%		2.6%	.1%		4.6%	.7%	100.0%
Franklin	15811			92.0%	1.8%				2.3%			1.0%	2.9%		100.0%
Granville	16605		1.2%	1.7%	86.5%						.8%	3.9%	5.9%		100.0%
Harnett	13378					91.2%							6.3%	2.5%	100.0%
Johnson	36179		1.1%			.3%	93.6%			.8%			3.9%	.4%	100.0%
Lee	10754	5.3%	1.3%					88.5%					4.8%		100.0%
Nash	1823			9.9%					60.4%				13.1%	16.6%	100.0%
Orange	33270	1.1%	5.9%				.9%			90.8%	.4%	.2%		.8%	100.0%
Person	12335		1.3%		1.0%					1.1%	93.9%		1.6%	1.1%	100.0%
Vance	8563			3.0%	7.5%					.7%		87.9%	.9%		100.0%
Wake	227094		1.2%	.3%	.4%	.4%	.7%	.2%	.2%				96.5%	.1%	100.0%
Out of Area	2480		19.0%	7.3%		13.3%	6.0%		23.5%	10.5%	5.6%		15.0%		100.0%
Total	463898	3.5%	14.8%	3.5%	3.6%	2.9%	7.8%	2.4%	.5%	7.1%	2.6%	1.8%	49.0%	.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a school location. "School" includes school and school-related travel for all students through grade 12.

TABLE T-22B: ORIGINS & DESTINATIONS OF HOME-BASED SCHOOL TRIPS (COUNTS)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	16702	15415	80												16702
Durham	68904	80	62535				382	144		1814	55		3153	470	68904
Franklin	15811			14544	286								463		15811
Granville	16605		198	286	14365						129	640	987		16605
Harnett	13378					12206	778		286			143	843	329	13378
Johnson	36179		382	271		113	33856			286			1394	148	36179
Lee	10754	574	144					9517 361			157		519		10754
Nash	1823			180					1102				239	302	1823
Orange	33270	359	1965				286			30210	130	59		261	33270
Person	12335		165							130	11578		195	138	12335
Vance	8563			255	640							7531	78		8563
Wake	227094		2701	724	982	843	1526	519	479				219057	263	227094
Out of Area	2480		470	181		329	148			261	138		371		2480
Total	463898	16428	68640	16170 129	16673	13491	36198	10958	2524	33046	12030	8387	227442	1911	463898

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a school location. "School" includes school and school-related travel for all students through grade 12. 59

TABLE T-23A: ORIGINS & DESTINATIONS OF HOME-BASED UNIVERSITY TRIPS (%)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	1975	53.9%	20.3%					6.9%					6.1%	12.8%	100.0%
Durham	9020	4.4%	59.7%		.9%					11.3%	1.5%		7.9%	14.4%	100.0%
Franklin	1176			8.5%					27.5%				36.6%	27.5%	100.0%
Granville	623		12.4%		23.3%							36.9%	11.6%	15.9%	100.0%
Harnett	2423					81.0%	3.9%	5.6%					9.5%		100.0%
Johnson	1643						84.9%						7.5%	7.6%	100.0%
Lee	1847	15.1%						80.5%		4.4%					100.0%
Nash	208								71.6%					28.4%	100.0%
Orange	3633		28.2%					2.3%		19.5%			2.3%	47.8%	100.0%
Person	1192		11.6%								78.0%			10.4%	100.0%
Vance	746			7.6%	8.8%							83.5%			100.0%
Wake	13093	2.0%	6.1%	2.4%	.5%	3.2%	.9%			1.6%		.5%	60.9%	21.8%	100.0%
Out of Area	6170	5.6%	23.2%	6.8%						23.8%	2.0%		38.5%		100.0%
Total	43749	5.4%	21.2%	2.0%	.8%	5.4%	3.7%	4.2%	1.1%	8.0%	2.7%	2.1%	27.7%	15.7%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a school location. "School" includes school and school-related travel for all students attending a school that is post-12th grade.

TABLE T-23A: ORIGINS & DESTINATIONS OF HOME-BASED UNIVERSITY TRIPS (COUNTS)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	1975	1065	401					136					121	252	1975
Durham	9020	401	5382							1016	138		709	1297	9020
Franklin	1176			100					323				430	323	1176
Granville	623		77		145							230	72	99	623
Harnett	2423					1962	94	136					231		2423
Johnson	1643			77			1395						123	125	1643
Lee	1847	278						1487		82					1847
Nash	208								149					59	208
Orange	3633		1024					82		708			82	1737	3633
Person	1192		138								930			124	1192
Vance	746			57	66							623			746
Wake	13093	264	802	313	72	420	123					70	7968	2848	13093
Out of Area	6170	347	1431	422						1471	124		2375		6170
Total	43749	2355	9255	892	360	2382	1612	1841	472	3490	1192	923	12111	6864	43749

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a school location. "School" includes school and school-related travel for all students attending a school that is post-12th grade.

TABLE T-24A: ORIGINS & DESTINATIONS OF HOME-BASED OTHER TRIPS (%)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	55001	76.4%	3.3%			.8%		2.2%	.2%	7.4%			6.3%	3.3%	100.0%
Durham	265149	.6%	81.4%	.1%	.8%	.0%	.1%	.2%		8.2%	.5%	.1%	6.4%	1.6%	100.0%
Franklin	44078		.9%	73.7%	1.1%		.7%		2.6%		.3%	4.5%	15.2%	.9%	100.0%
Granville	46227		4.6%	1.4%	75.5%					1.4%	2.7%	7.8%	6.0%	.4%	100.0%
Harnett	47723	.9%	.1%			78.2%	5.9%	.6%					11.3%	2.8%	100.0%
Johnson	128550		.4%	.4%		2.1%	84.0%	.1%	.1%	.1%		.2%	10.1%	2.5%	100.0%
Lee	43596	3.0%	2.2%			1.2%	.3%	85.8%		1.0%		.4%	1.3%	4.8%	100.0%
Nash	6368			6.9%					41.6%	2.0%		2.8%	17.7%	29.0%	100.0%
Orange	171535	2.7%	11.5%		.1%			.2%	.0%	80.8%	.8%		2.1%	1.7%	100.0%
Person	41462		4.1%		2.9%					2.9%	89.1%	.3%	.5%	.1%	100.0%
Vance	42381		1.4%	3.8%	7.0%			.4%	.4%		.4%	81.7%	2.6%	2.2%	100.0%
Wake	872471	.4%	1.7%	.7%	.2%	.6%	1.4%	.1%	.1%	.5%	.0%	.0%	93.4%	.7%	100.0%
Out of Area	25348	4.7%	13.1%	2.9%	.7%	5.3%	11.3%	7.4%	9.2%	19.1%	1.4%	3.1%	21.8%		100.0%
Total	1789889	3.0%	14.7%	2.4%	2.5%	2.7%	7.1%	2.4%	.4%	9.8%	2.3%	2.4%	48.9%	1.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a non-work, non-work related, non-shopping, non-school and non-university location.

TABLE T-24B: ORIGINS & DESTINATIONS OF HOME-BASED OTHER TRIPS (COUNTS)

Origin County	N	Destination County													Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	55001	42028	1827					1234	90	4097			3439	1836	55001
Durham	265149	1580	215862	294	2122	71	270	422		21681	1425	297	16887	4238	265149
Franklin	44078		391	32476	505		323		1167			2000	6700	377	44078
Granville	46227		2138	665	34918					670	1254	3624	2782	176	46227
Harnett	47723	450	71		450	37313	2821	305					5403	1360	47723
Johnson	128550		487	458		2723	108009	122	170	148		227	12941	3265	128550
Lee	43596	1329	944				122	37389		451	139	157	582	2111	43596
Nash	6368			440					2647	125		180	1129	1847	6368
Orange	171535	4613	19753						62	138534	1424		3652	2879	171535
Person	41462		1705		1207					1209	36962	139	204	36	41462
Vance	42381		596	1616	2972	511			180			34640	1117	918	42381
Wake	872471	3085	15147	6356	2081	5609	12136	1084	1074	4232	315	265	815160	5927	872471
Out of Area	25348	1199	3314	731	173	1351	2856	1875	2328	4849	349	797	5526		25348
Total	1789889	54284	262235	43036	44225	48028	126537	42959	7718	175996	42053	42326	875522	24970	1789889

247 371 157 185

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with one trip-end at home and the other at a non-work, non-work related, non-shopping, non-school and non-university location.

TABLE T-25A: ORIGINS & DESTINATIONS OF NON-HOME-BASED TRIPS (%)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	47556	72.4%	4.7%		.3%		.2%	5.1%	.3%	9.6%			3.8%	3.6%	100.0%
Durham	323188	.7%	77.7%	.1%	.6%	.1%	.3%	.1%		5.8%	.6%	.2%	9.9%	4.0%	100.0%
Franklin	32115		2.8%	73.5%	1.0%		.2%		1.0%			5.4%	15.4%	.7%	100.0%
Granville	35597	.4%	6.3%	.5%	77.0%					.8%	.2%	5.7%	7.0%	2.1%	100.0%
Harnett	43018					75.9%	2.6%	1.9%				.3%	13.2%	6.2%	100.0%
Johnson	93525		.5%			2.5%	81.2%			.1%		.1%	13.4%	2.2%	100.0%
Lee	37154	6.2%				1.6%		84.8%	.3%			.2%	4.4%	2.5%	100.0%
Nash	4380	3.5%		3.8%			1.3%	2.7%	55.7%				9.2%	23.7%	100.0%
Orange	170533	2.1%	13.0%		.2%		.1%		.0%	70.1%	.2%	.1%	3.9%	10.3%	100.0%
Person	34570		4.3%		.1%		.2%			2.3%	88.6%		.7%	3.9%	100.0%
Vance	37909		.9%	1.9%	7.8%		.5%	.2%		.5%		85.0%	.7%	2.5%	100.0%
Wake	850872	.2%	3.4%	.7%	.2%	.4%	1.7%	.1%	.1%	.6%	.0%	.1%	89.8%	2.7%	100.0%
Out of Area	101007	1.3%	16.3%	1.8%	.9%	2.1%	1.8%	1.6%	1.8%	15.8%	1.0%	.5%	21.5%	33.7%	100.0%
Total	1811424	2.5%	18.0%	1.8%	2.0%	2.3%	5.2%	2.1%	.3%	9.1%	1.9%	2.1%	47.2%	5.5%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with neither trip-end at home.

TABLE T-25B: ORIGINS & DESTINATIONS OF NON-HOME-BASED TRIPS (COUNTS)

Origin County	N	Destination County												Total
		Chatham	Durham	Franklin	Granville	Harnett	Johnson	Lee	Nash	Orange	Person	Vance	Wake	Out of Area	
Chatham	47556	34425	2212				86	2440	152	4570			1806	1731	47556
Durham	323188	2214	251117	342	1816	166	998	279		18814	1977	538	31910	13017	323188
Franklin	32115		901	23619	311		78					1725	4954	214	32115
Granville	35597	134	2240	183	27420					284	65	2040	2489	742	35597
Harnett	43018			134		32635	1104	798				147	5663	2671	43018
Johnson	93525		446			2329	75952			131		78	12532	2057	93525
Lee	37154	2287						31507	119			78	1641	915	37154
Nash	4380	152		168			59	119	2439				404	1039	4380
Orange	170533	3582	22086				218		62	119469	285	129	6728	17621	170533
Person	34570		1489				55			788	30612		231	1349	34570
Vance	37909		355	704	2981		189	78				32224	269	953	37909
Wake	850872	1650	29124	6048	1897	3334	14228	1268	629	4964	66	696	764038	22930	850872
Out of Area	101007	1285	16437	1771	876	2170	1813	1653	1800	15977	1021	534	21669	34001	101007
Total	1811424	45729	326407	32885	35814	41241	94780	38142	5514	165173	34026	38189	854334	99240	1811424

Source: Greater Triangle Household Travel Survey, weighted. Includes all trips with neither trip-end at home.

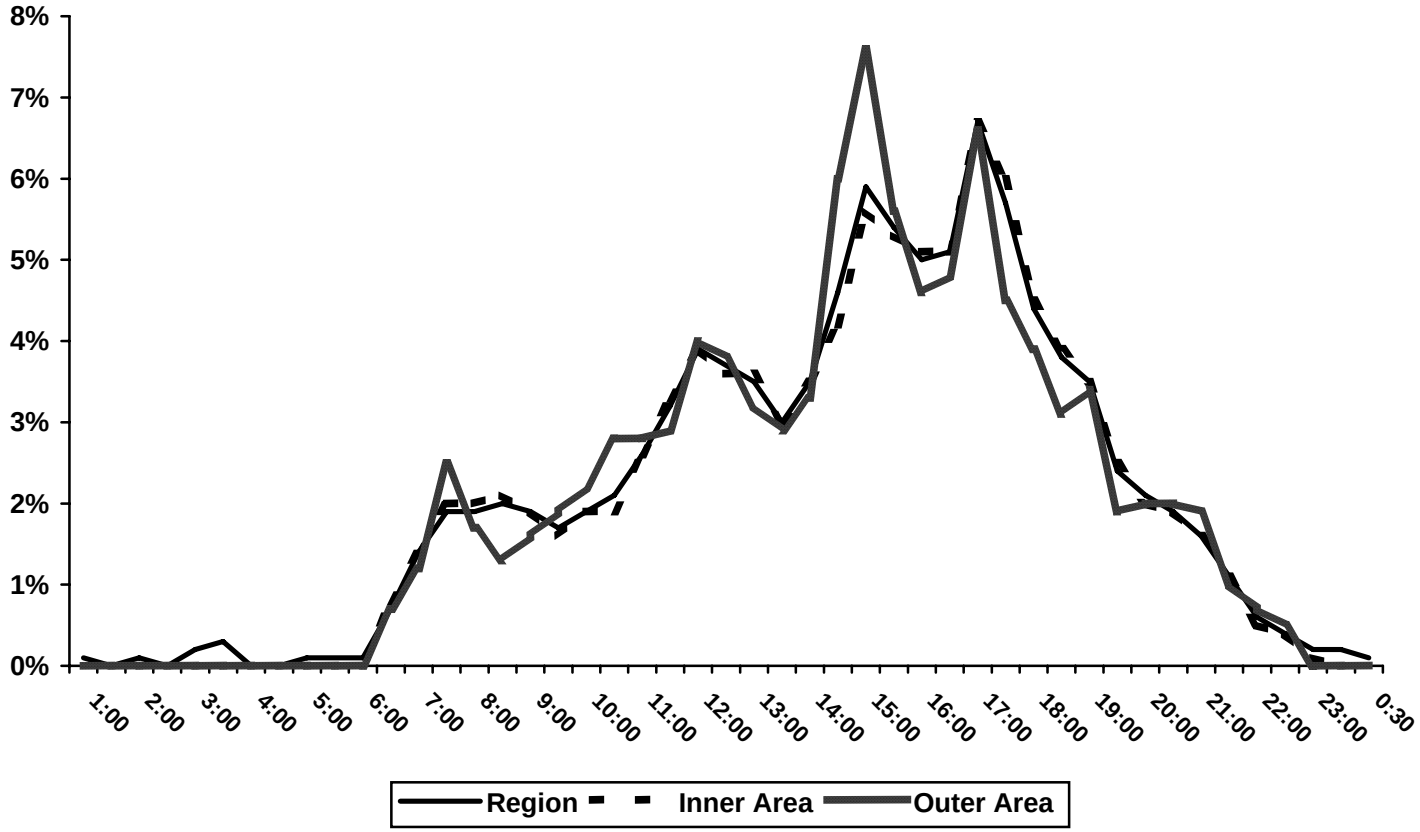
TRAVEL TIMES

The survey design requested that respondents record the departure and arrival times for all trips that took place within the assigned 24-hour travel day, which began at 3 am and ended at 2:59 am the following morning. A distribution of trip departure times (region-wide and with respect to modeling area) is shown in Figure T-4 and a similar distribution is contained in Table T-26 with the county-level data.

TABLE T-26: DEPARTURE TIME BY COUNTY OF RESIDENCE

Trip departure time	County of Residence												Total
	Chatham	Durham	Franklin	Granville	Harnett	Johnston	Lee	Nash	Orange	Person	Vance	Wake	
1:00		.0%	.2%		.7%	.1%			.0%	.1%	.1%	.0%	.1%
1:30		.0%				.1%						.0%	.0%
2:00		.0%	.2%				.4%				.1%	.0%	.0%
2:30		.0%	.1%									.0%	.0%
3:00													
3:30					.1%								.0%
4:00		.0%		.1%					.0%			.0%	.0%
4:30						.0%						.0%	.0%
5:00				.1%			.3%				.1%	.0%	.0%
5:30	.1%	.1%	.5%		.1%	.0%	.2%				.2%	.1%	.1%
6:00	.3%	.1%	.2%	.3%	.1%	.2%	.1%		.2%	.4%	.3%	.1%	.1%
6:30	1.0%	.7%	.5%	.4%	.3%	1.0%	.5%	.8%	.3%	.7%	.3%	.9%	.7%
7:00	.8%	.9%	1.2%	.7%	1.3%	2.2%	.1%	.8%	.6%	1.7%	1.1%	1.7%	1.4%
7:30	3.2%	1.4%	2.0%	2.7%	1.6%	2.0%	1.8%	1.9%	3.0%	4.5%	2.1%	1.6%	1.9%
8:00	1.7%	1.7%	2.6%	2.5%	1.3%	2.1%	1.8%	2.3%	2.2%	2.3%	1.0%	2.0%	1.9%
8:30	1.4%	2.9%	1.9%	1.9%	.9%	1.1%	1.4%	1.9%	2.3%	1.5%	.8%	2.0%	2.0%
9:00	1.5%	2.0%	1.8%	1.5%	1.2%	2.1%	1.5%	1.6%	1.7%	1.9%	1.3%	1.9%	1.9%
9:30	2.2%	1.6%	1.8%	1.3%	1.8%	1.3%	3.3%	3.1%	1.6%	1.4%	2.0%	1.6%	1.7%
10:00	2.1%	2.0%	1.0%	1.3%	1.6%	2.1%	2.4%	1.9%	1.5%	1.3%	3.8%	2.0%	1.9%
10:30	1.2%	1.9%	2.4%	4.4%	2.5%	2.4%	2.8%	5.1%	1.6%	2.9%	2.4%	1.9%	2.1%
11:00	3.1%	2.6%	2.5%	2.7%	2.2%	2.7%	3.0%	1.2%	2.4%	3.2%	3.2%	2.7%	2.6%
11:30	3.7%	3.1%	3.0%	3.2%	3.2%	3.0%	2.7%	3.5%	3.2%	2.9%	3.3%	3.3%	3.2%
12:00	3.5%	3.7%	4.0%	3.6%	3.7%	4.2%	4.6%	3.1%	4.2%	4.5%	5.3%	3.9%	3.9%
12:30	3.1%	3.4%	3.7%	3.3%	4.0%	3.8%	6.4%	1.6%	3.6%	3.8%	3.1%	3.7%	3.7%
13:00	4.3%	3.9%	4.1%	3.7%	3.5%	3.2%	2.1%	5.8%	3.8%	1.6%	3.9%	3.4%	3.5%
13:30	3.2%	2.9%	3.9%	2.0%	3.6%	2.4%	4.1%	2.3%	3.4%	2.5%	3.0%	2.9%	3.0%
14:00	3.7%	3.3%	2.0%	3.0%	3.0%	2.7%	3.4%	2.7%	3.7%	3.6%	3.1%	3.8%	3.5%
14:30	6.6%	4.3%	5.5%	4.7%	6.1%	5.6%	5.8%	6.6%	4.4%	3.0%	5.7%	4.2%	4.6%
15:00	4.8%	5.0%	9.1%	9.0%	6.2%	5.8%	5.0%	5.4%	4.8%	12.0%	8.5%	5.8%	5.9%
15:30	4.5%	6.2%	3.5%	4.8%	5.4%	5.3%	6.7%	2.7%	4.0%	8.0%	6.1%	5.4%	5.4%
16:00	5.3%	5.1%	3.8%	5.2%	5.7%	4.7%	4.2%	6.2%	5.0%	4.1%	4.3%	5.1%	5.0%
16:30	5.0%	4.8%	5.7%	6.0%	6.7%	4.6%	5.6%	3.9%	5.6%	4.7%	4.6%	4.9%	5.1%
17:00	6.8%	7.3%	6.2%	7.0%	7.1%	7.0%	7.4%	5.4%	7.4%	5.9%	5.8%	6.4%	6.7%
17:30	6.0%	5.7%	5.4%	4.3%	5.1%	5.8%	4.1%	4.3%	7.2%	5.1%	4.4%	5.8%	5.7%
18:00	4.2%	4.9%	4.8%	3.8%	5.3%	3.3%	4.1%	3.1%	4.6%	3.8%	3.6%	4.5%	4.4%
18:30	3.9%	4.3%	3.5%	2.9%	3.2%	3.2%	2.9%	3.9%	3.9%	2.9%	3.6%	3.8%	3.8%
19:00	2.3%	3.6%	2.7%	3.9%	3.4%	3.8%	3.1%	5.8%	3.4%	.7%	3.8%	3.6%	3.5%
19:30	2.3%	2.1%	2.0%	1.7%	1.6%	2.6%	2.5%	3.1%	2.4%	1.8%	1.3%	2.6%	2.4%
20:00	2.3%	2.2%	1.9%	2.0%	1.0%	2.4%	1.4%	1.6%	2.3%	1.7%	1.4%	2.2%	2.1%
20:30	1.5%	1.5%	2.4%	1.4%	1.3%	2.1%	1.4%	4.7%	1.5%	2.2%	1.9%	2.1%	1.9%
21:00	2.1%	1.9%	1.8%	1.8%	1.7%	2.4%	.5%	.8%	1.2%	1.2%	1.6%	1.5%	1.6%
21:30	.6%	1.0%	.6%	1.7%	1.4%	.9%	.3%	1.2%	1.4%	.9%	.9%	1.2%	1.1%
22:00	.3%	.8%	.5%	.3%	.6%	.5%	.7%	1.6%	.5%	.5%	1.1%	.5%	.6%
22:30	.6%	.3%	.4%	.2%	.4%	.7%	.4%		.4%	.1%	.1%	.3%	.4%
23:00	.1%	.3%	.1%	.3%		.1%	.4%		.3%	.3%	.2%	.2%	.2%
23:30	.1%	.2%	.5%	.2%		.2%			.4%	.1%	.1%	.2%	.2%
0:00	.5%	.1%	.2%	.3%	.7%	.1%	.1%		.0%	.1%	.2%	.1%	.2%
0:30		.1%		.1%	.3%	.2%	.1%		.2%			.1%	.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FIGURE T-4: TRIP DEPARTURE TIMES



The departure times can be grouped into time slots, representing travel in the morning, mid-day, afternoon, evening, and late at night. The following is a distribution of trips based on these travel time categories for the broader regional geography categories (Figure T-5) and based on county of residence (Table T-27). The travel times were consistent across the study area. The majority of travel was reported during the mid-day (10 am to 4 pm) and early evening (4 pm to 8 pm), consistent with trip-chaining literature, which suggests that the majority of trip chaining takes place on the way home at the end of the work day. The figures on the following pages show all unlinked travel destinations throughout the day, within these same time periods.

FIGURE T-5: TRAVEL BY TIME OF DAY

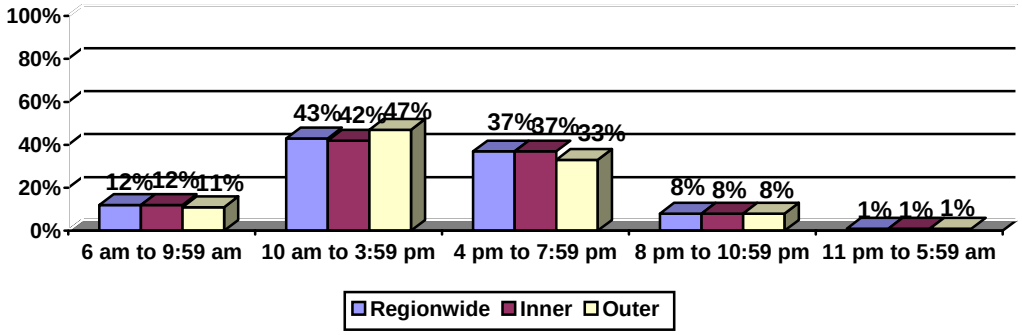


TABLE T-27: TIME OF DAY BY COUNTY OF RESIDENCE

	6 to 10 am	10 to 4 pm	4 to 8 pm	8 to 11 pm	11 pm to 6 am	Total
Chatham County	12.0%	43.8%	36.0%	7.4%	.8%*	100.0%
Durham County	11.2%	42.3%	37.8%	7.7%	.9%	100.0%
Franklin County	11.9%	44.7%	34.2%	7.6%	1.6%*	100.0%
Granville County	11.2%	45.9%	34.8%	7.3%	.9%*	100.0%
Harnett County	8.5%	45.1%	38.2%	6.4%	1.9%	100.0%
Johnston County	12.0%	43.2%	35.0%	9.0%	.8%	100.0%
Lee County	10.7%	48.9%	34.1%	4.9%	1.4%*	100.0%
Nash County	12.2%	42.4%	36.1%	9.4%	.0%*	100.0%
Orange County	11.9%	40.4%	39.5%	7.3%	.9%	100.0%
Person County	14.7%	49.0%	29.0%	6.7%	.6%*	100.0%
Vance County	9.0%	51.7%	31.4%	7.0%	.9%*	100.0%
Wake County	11.7%	42.8%	36.8%	7.9%	.8%	100.0%
Inner Region	11.7%	42.4%	37.4%	7.6%	.9%	100.0%
Outer Region	11.1%	47.0%	32.9%	7.9%	1.1%	100.0%
Total	11.6%	43.3%	36.5%	7.7%	.9%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

FIGURE T-6: DESTINATIONS VISITED BETWEEN 6_{AM} AND $9:59_{AM}$

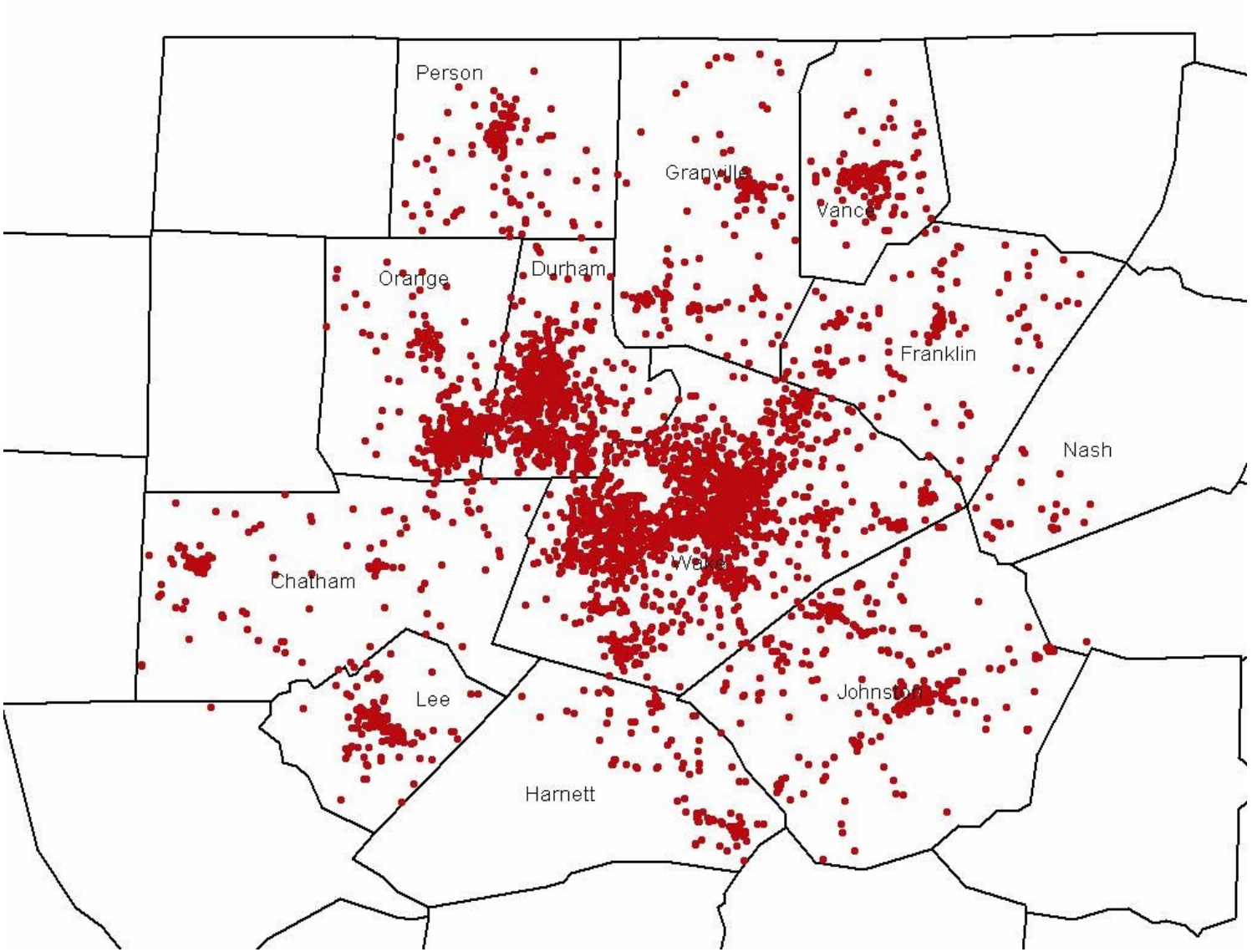


FIGURE T-7: DESTINATIONS VISITED BETWEEN 10 AM AND 3:59PM

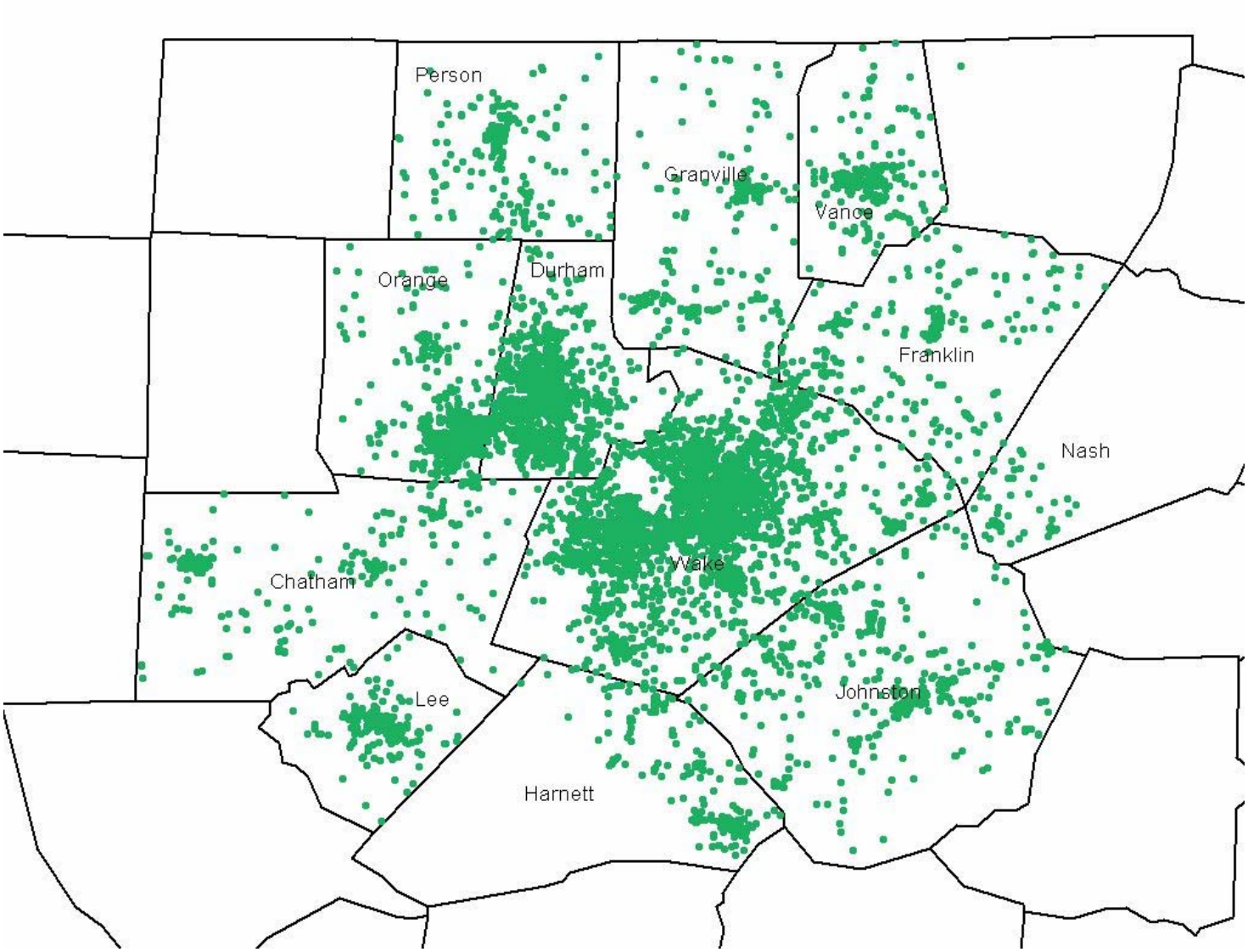


FIGURE T-8: DESTINATIONS VISITED BETWEEN 4 PM AND 7:59PM

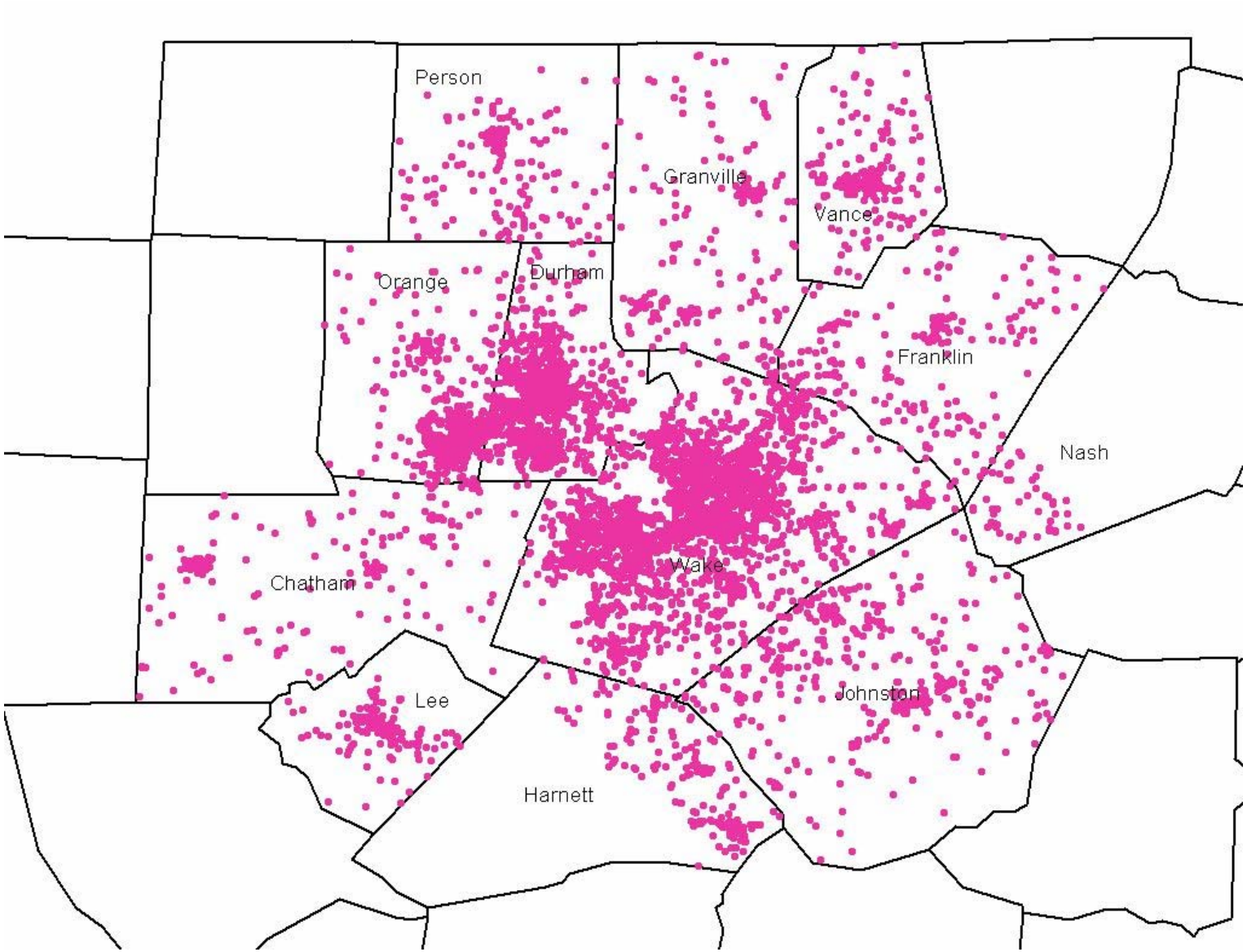


FIGURE T-9: DESTINATIONS VISITED BETWEEN 8 PM AND 10:59PM

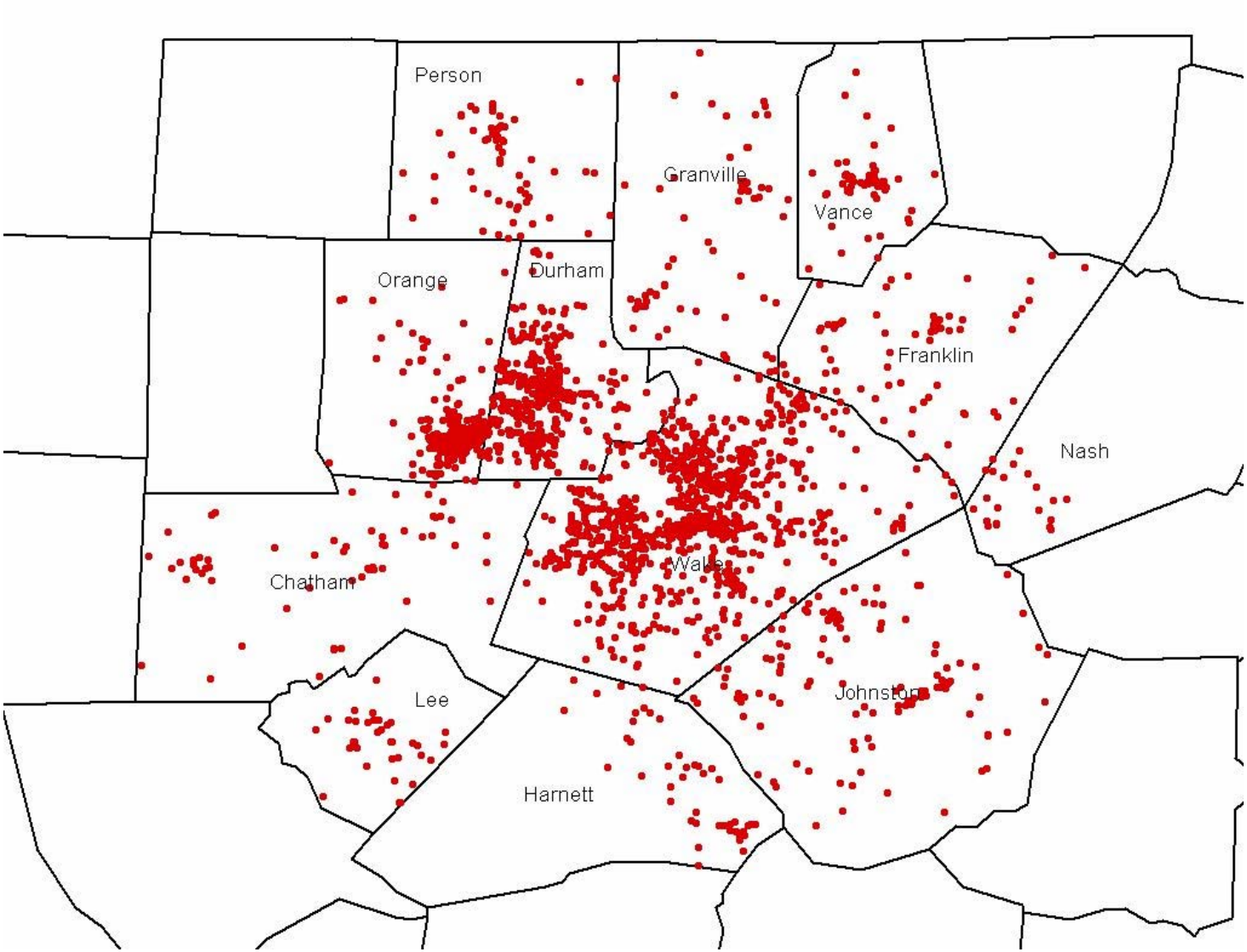
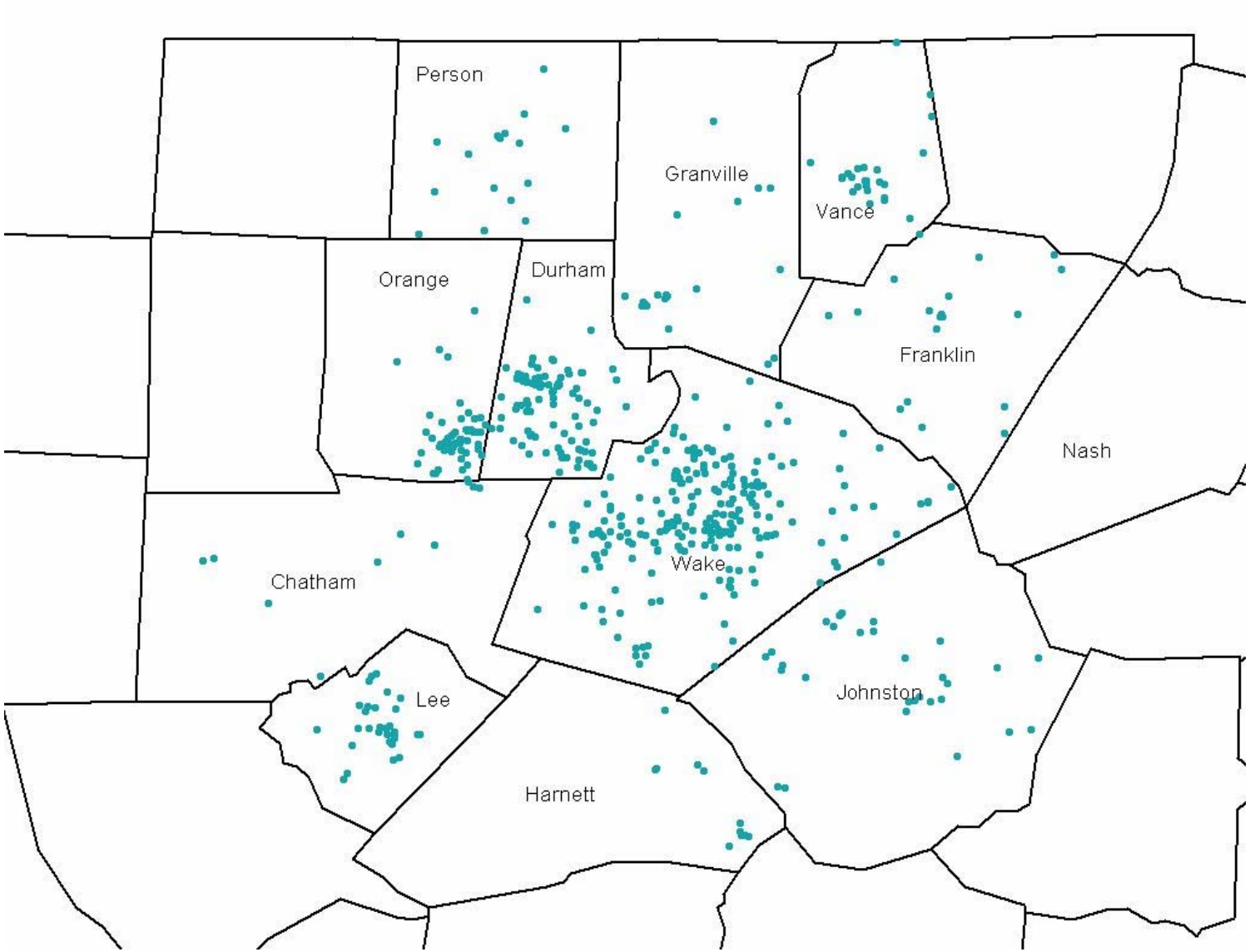


FIGURE T-10: DESTINATIONS VISITED BETWEEN 11 PM AND 5:59$_{AM}$



MODE CHOICE

In addition to recording trip purpose and location information, respondents were asked to record the mode of travel they used to make each trip. The distribution of trips by mode is shown in Table T-28. As indicated in that table, auto was the dominant mode throughout the region, accounting for 87% of all trips (63% for auto drivers and 25% for auto-passengers). Transit trips were predominantly in the three main counties (Durham, Orange, and Wake). Non-motorized travel (walk and bike) occurred throughout the region, but again was concentrated in the same three counties. Tables T-29 through T-35 show the travel mode by trip purpose.

TABLE T-28: TRAVEL MODE

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	62.8%	26.2%	.9%*	5.1%	5.0%	100.0%
Durham County	59.2%	24.2%	2.9%	9.1%	4.6%	100.0%
Franklin County	66.8%	26.3%	.1%*	1.2%*	5.6%	100.0%
Granville County	62.6%	28.2%	.1%*	3.2%	5.9%	100.0%
Harnett County	64.3%	23.8%		6.3%	5.7%	100.0%
Johnston County	69.2%	23.1%		2.5%	5.2%	100.0%
Lee County	62.3%	28.8%		3.9%	4.9%	100.0%
Nash County	62.1%	32.9%	.6%*	.9%*	3.5%*	100.0%
Orange County	56.6%	19.4%	2.9%	17.7%	3.4%	100.0%
Person County	63.0%	23.6%	.5%*	6.6%	6.3%	100.0%
Vance County	70.2%	22.7%		2.9%	4.2%	100.0%
Wake County	62.9%	25.2%	1.2%	6.7%	4.1%	100.0%
Inner Region	61.9%	24.4%	1.6%	8.0%	4.1%	100.0%
Outer Region	65.2%	25.1%	.2%	3.8%	5.8%	100.0%
Total	62.5%	24.5%	1.3%	7.2%	4.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-29: TRAVEL MODE – HOME-BASED WORK TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	92.0%	6.5%*		1.5%*		100.0%
Durham County	86.0%	8.8%	1.8%*	3.3%	.1%*	100.0%
Franklin County	91.0%	8.0%*		1.0%*		100.0%
Granville County	94.0%	3.0%*	1.0%*	2.0%*		100.0%
Harnett County	92.7%	5.5%*		1.8%*		100.0%
Johnston County	93.8%	5.1%		1.1%*		100.0%
Lee County	87.4%	12.6%				100.0%
Nash County	95.2%	4.8%*				100.0%
Orange County	80.5%	5.1%	1.6%*	12.0%	.8%*	100.0%
Person County	85.9%	9.2%*		2.5%*	2.5%*	100.0%
Vance County	88.8%	11.2%*				100.0%
Wake County	88.8%	7.1%	.5%*	3.3%	.3%*	100.0%
Inner Region	87.8%	7.2%	.8%	3.9%	.2%	100.0%
Outer Region	91.8%	6.8%	.2%	1.0%	.3%	100.0%
Total	88.6%	7.1%	.7%	3.3%	.3%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-30: TRAVEL MODE – HOME-BASED WORK-RELATED TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	100.0%					100.0%
Durham County	90.2%	6.8%*		3.0%*		100.0%
Franklin County	100.0%					100.0%
Granville County	93.3%	6.7%*				100.0%
Harnett County	100.0%					100.0%
Johnston County	92.4%	6.7%*			1.0%*	100.0%
Lee County	85.3%	14.7%*				100.0%
Nash County	88.9%*			11.1%*		100.0%
Orange County	89.5%	3.8%*	1.0%*	5.7%*		100.0%
Person County	100.0%*					100.0%
Vance County	95.8%	4.2%*				100.0%
Wake County	91.6%	5.0%	.6%*	2.5%*	.2%*	100.0%
Inner Region	91.9%	4.6%	.5%	2.9%	.1%	100.0%
Outer Region	91.9%	7.2%		.5%	.5%	100.0%
Total	91.9%	5.2%	.4%	2.3%	.2%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-31: TRAVEL MODE – HOME-BASED SHOPPING TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	65.6%	30.3%		4.1%*		100.0%
Durham County	64.1%	27.8%	2.5%	5.5%		100.0%
Franklin County	70.2%	29.8%				100.0%
Granville County	66.2%	31.2%		2.6%*		100.0%
Harnett County	63.9%	31.1%		5.0%*		100.0%
Johnston County	77.8%	20.9%		.8%*	.5%*	100.0%
Lee County	55.0%	32.5%		11.3%*	1.3%*	100.0%
Nash County	50.0%	48.3%		1.7%*		100.0%
Orange County	71.6%	17.7%	.2%*	10.4%		100.0%
Person County	67.9%	26.7%		5.3%*		100.0%
Vance County	67.1%	28.4%		4.5%*		100.0%
Wake County	69.8%	25.5%	.6%*	3.3%	.8%*	100.0%
Inner Region	68.8%	25.6%	.9%	4.3%	.5%	100.0%
Outer Region	66.5%	28.7%		4.5%	.4%	100.0%
Total	68.3%	26.2%	.7%	4.3%	.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-32: TRAVEL MODE – HOME-BASED SCHOOL TRIPS

	Driver	Passenger	Transit	Non-Motorized	School Bus	Other	Total
Chatham County	7.1%*	46.2%		1.3%*	45.5%		100.0%
Durham County	3.2%	50.6%		3.9%	42.3%		100.0%
Franklin County	5.1%*	42.9%			51.9%		100.0%
Granville County	3.6%*	45.8%		.6%*	50.0%		100.0%
Harnett County	12.4%*	24.8%		.8%*	62.0%		100.0%
Johnston County	7.8%	44.5%		.9%*	46.8%		100.0%
Lee County	10.4%*	41.5%		.9%*	47.2%		100.0%
Nash County		56.3%*	6.3%*		37.5%*		100.0%
Orange County	7.5%	52.8%	.7%*	11.8%	26.6%	.7%*	100.0%
Person County	9.4%*	52.1%		4.3%*	34.2%		100.0%
Vance County	5.5%*	43.8%		1.4%*	49.3%		100.0%
Wake County	6.2%	59.5%	.5%*	4.1%	28.9%	.7%*	100.0%
Inner Region	5.8%	56.3%	.4%	4.4%	32.7%	.5%	100.0%
Outer Region	7.9%	40.2%	.2%	1.1%	50.6%		100.0%
Total	6.2%	52.9%	.3%	3.7%	36.4%	.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-33: TRAVEL MODE – HOME-BASED UNIVERSITY TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	67.9%*	14.3%*	17.9%*			100.0%
Durham County	62.4%	15.3%*	10.6%*	11.8%*		100.0%
Franklin County	100.0%*					100.0%
Granville County	87.5%*	12.5%*				100.0%
Harnett County	95.2%				4.8%*	100.0%
Johnston County	78.6%*				21.4%*	100.0%
Lee County	83.3%*	16.7%*				100.0%
Nash County	100.0%*					100.0%
Orange County	50.0%	3.7%*	11.1%*	33.3%*	1.9%*	100.0%
Person County	100.0%*					100.0%
Vance County	71.4%*	14.3%*			14.3%*	100.0%
Wake County	70.5%	8.6%*	1.4%*	12.9%*	6.5%*	100.0%
Inner Region	68.4%	9.5%	5.2%	14.1%	2.8%	100.0%
Outer Region	82.7%	4.9%	6.2%		6.2%	100.0%
Total	71.3%	8.6%	5.4%	11.3%	3.4%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-34: TRAVEL MODE – HOME-BASED OTHER TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	63.9%	27.4%		8.7%		100.0%
Durham County	58.4%	26.9%	1.4%	12.5%	.9%	100.0%
Franklin County	65.3%	31.7%	.4%*	2.4%*	.2%*	100.0%
Granville County	62.5%	34.0%		3.5%*		100.0%
Harnett County	57.4%	28.5%		13.3%	.8%*	100.0%
Johnston County	63.6%	30.1%		6.0%	.4%*	100.0%
Lee County	61.4%	32.6%		5.3%	.7%*	100.0%
Nash County	63.9%	36.1%				100.0%
Orange County	54.5%	25.0%	1.0%*	18.5%	1.0%*	100.0%
Person County	62.8%	24.2%	1.2%*	10.7%	1.0%*	100.0%
Vance County	69.7%	24.0%		5.6%	.8%*	100.0%
Wake County	61.1%	28.6%	.8%	9.2%	.2%*	100.0%
Inner Region	60.0%	28.0%	.9%	10.7%	.4%	100.0%
Outer Region	63.3%	29.5%	.2%	6.5%	.5%	100.0%
Total	60.6%	28.3%	.8%	9.9%	.5%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

TABLE T-35: TRAVEL MODE – NON-HOME BASED TRIPS

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	63.4%	26.7%	1.5%*	5.0%	3.4%	100.0%
Durham County	59.8%	21.2%	5.5%	10.9%	2.6%	100.0%
Franklin County	72.9%	25.0%		1.3%*	.8%*	100.0%
Granville County	66.6%	27.5%		4.8%	1.1%*	100.0%
Harnett County	67.9%	27.0%		4.0%	1.1%*	100.0%
Johnston County	76.2%	20.6%		.9%*	2.4%	100.0%
Lee County	66.4%	29.0%		2.3%*	2.3%*	100.0%
Nash County	69.6%	29.4%		1.0%*		100.0%
Orange County	55.0%	14.2%	6.0%	21.5%	3.4%	100.0%
Person County	64.9%	21.6%	.2%*	5.6%	7.7%	100.0%
Vance County	75.5%	20.6%		1.0%*	2.9%*	100.0%
Wake County	65.9%	20.9%	2.1%	7.2%	3.8%	100.0%
Inner Region	63.9%	20.5%	3.1%	9.2%	3.3%	100.0%
Outer Region	69.7%	24.3%	.0%	2.9%	3.1%	100.0%
Total	65.0%	21.2%	2.5%	8.0%	3.2%	100.0%

Source: Greater Triangle Household Travel Survey, weighted. *fewer than 20 observations.

Trip duration varied by mode throughout the region.

TABLE T-36: AVERAGE TRIP DURATION BY MODE AND GEOGRAPHY

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	20.20	18.94	22.17*	14.36	37.29	20.45
Durham County	16.92	16.99	23.46	12.75	31.58	17.42
Franklin County	23.68	22.50	37.50*	13.29*	29.97	23.61
Granville County	20.49	22.31	24.00*	23.08	35.99	22.01
Harnett County	19.54	19.18	.	34.16	27.85	20.84
Johnston County	20.71	19.02	.	13.82	29.52	20.60
Lee County	19.37	19.59	.	23.86	59.38	21.57
Nash County	21.05	21.61	52.50*	4.65*	23.64*	21.38
Orange County	16.30	14.97	20.23	12.61	31.09	16.01
Person County	21.69	16.74	102.76*	16.83	37.45	21.59
Vance County	18.97	19.96	.	10.01	39.26	19.80
Wake County	18.31	16.54	32.66	13.41	31.35	18.23
Inner Region	18.29	16.93	26.50	13.24	31.40	18.22
Outer Region	20.00	19.57	61.91	20.89	36.02	20.94
Total	18.64	17.46	27.46	14.02	32.59	18.75

Source: Greater Triangle Household Travel Survey, weighted. All values reflect minutes of travel.
*fewer than 20 observations.

Table T-37 shows average distance traveled by mode and home geography.

TABLE T-37: AVERAGE TRIP DISTANCE BY MODE AND GEOGRAPHY

	Driver	Passenger	Transit	Non-Motorized	Other	Total
Chatham County	8.54	6.31	3.23*	.70	3.92	7.24
Durham County	5.17	4.96	2.67	.94	3.61	4.64
Franklin County	9.88	9.30	31.37*	.84*	5.81	9.41
Granville County	9.14	8.88	6.14*	.49	4.53	8.51
Harnett County	7.47	6.94	.	.62	3.47	6.64
Johnston County	8.27	7.10	.	.37	6.32	7.68
Lee County	6.03	6.56	.	1.46	6.84	6.01
Nash County	12.27	8.91	17.13*	.41*	4.56*	10.75
Orange County	5.23	4.37	3.49	.78	2.62	4.26
Person County	7.56	6.37	33.14*	.61	4.27	6.72
Vance County	7.44	6.29	.	1.60	5.70	6.93
Wake County	5.77	4.78	3.83	.77	4.21	5.12
Inner Region	6.03	5.11	3.37	.80	4.07	5.30
Outer Region	7.76	7.17	17.02	.74	5.17	7.19
Total	6.37	5.50	3.74	.80	4.35	5.66

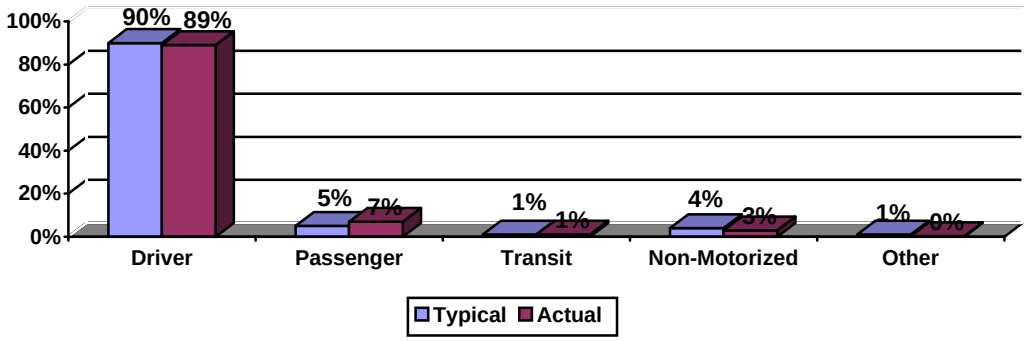
Source: Greater Triangle Household Travel Survey, weighted. All values reflect miles of travel.

GENERAL WALK, BICYCLE AND TRANSIT USAGE CHARACTERISTICS

As part of the household recruitment process, households were asked about their general usage of transit, and typical walk and bike trips. Later, as part of the travel documentation, household members recorded actual travel mode used. Comparisons to the general answers and the actual answers are provided in this section, at the regional level.

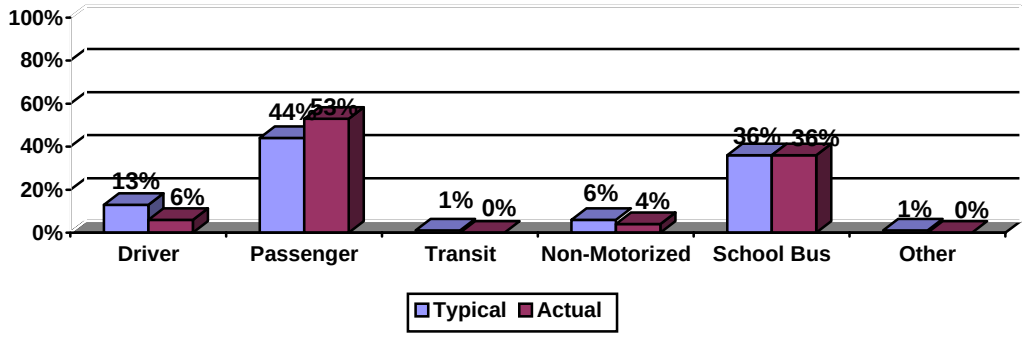
Travel mode to work, typical vs. reported, is shown in Figure T-11. As indicated therein, the actual travel mode compares very well to the "typical" mode reported.

FIGURE T-11: TYPICAL VS. ACTUAL MODE TO WORK



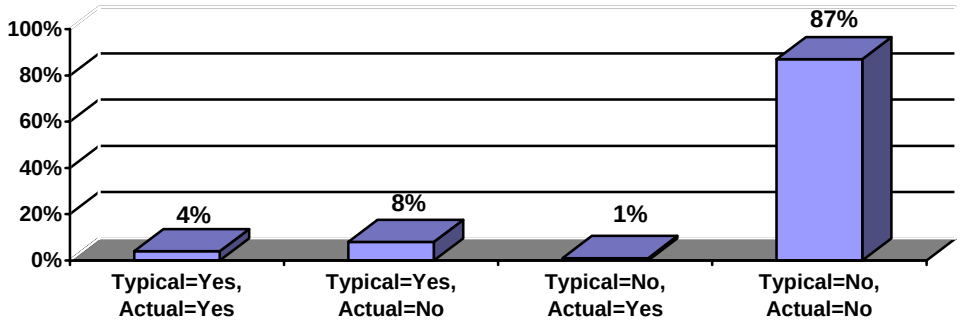
Travel mode to school, typical vs. reported, is shown in Figure T-12. Here, the actual proportion of drivers was lower than typical, but the proportion of passengers was higher.

FIGURE T-12: TYPICAL VS. ACTUAL MODE TO SCHOOL



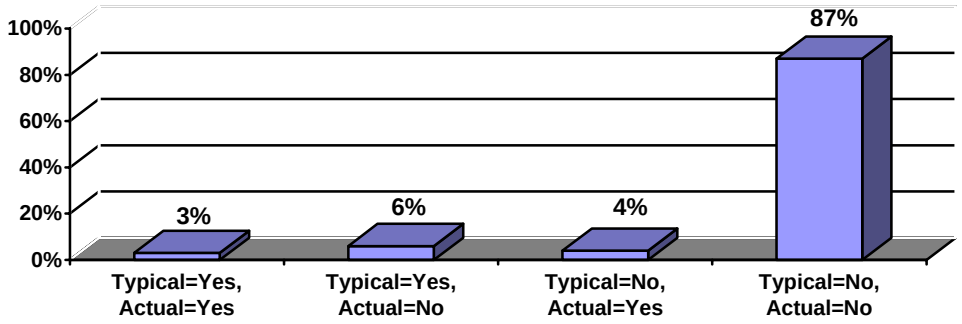
The recruitment survey asked for typical transit usage (if age 16 or older) and typical walk and bike trips (if age 5 and older). With regard to transit usage, households were asked if they used transit on a regular basis. As indicated in Figure T-13, most respondents actual transit usage matched their "typical" details. However, about 8% indicated they typically use transit, but didn't on the travel day (which may be reflective of part-time transit usage). In addition, 1% of households indicated they didn't use transit, but actually did on the travel day.

FIGURE T-13: TYPICAL VS. ACTUAL TRANSIT USAGE



A similar question was used in recruitment to gauge non-motorized travel. As shown in Figure T-14, most households don't walk to bike to work or school, and didn't on the travel day either (87%). In addition, 3% said they did, and their travel diaries reflect that behavior. However, 6% of households said they did, but there was no reflection of it in their travel diaries and 4% recorded walking or biking to work or school, when during recruitment they indicated this was not typical behavior for their household.

FIGURE T-14: TYPICAL VS. ACTUAL NON-MOTORIZED TRAVEL FOR WORK/SCHOOL



TRAVEL BY SPECIAL POPULATIONS

Of general interest throughout this study were four special populations:

- Low-income households: defined per Census guidelines based on household size and reported income, which includes
  - Household Size<4 and Household Income < $15,000
  - Household Size=4-6 and Household Income < $25,000
  - Household Size=7+ and Household Income < $35,000
- Transit-using households: defined as one in which at least one household member reported at least one transit trip on the travel day
- Non-motorized households: defined as one in which at least one household member made at least one trip for work or school by walking or biking, and
- Student households: defined as having at least one college-level student who goes to class on the travel day

The travel reported by each household was examined and each household was identified according to which special population group it fell into, if any at all. Table SP-1 summarizes the degree of overlap among households.

TABLE SP-1: SPECIAL POPULATION GROUPS

Special Population Group(s)	Frequency	Percent
Not in a special group	4190	82.0%
Low Income only	279	5.5%
Non-motorized only	246	4.8%
Student only	125	2.5%
Transit only	72	1.4%
Non-Motorized & Transit	52	1.0%
Student & Non-motorized	43	0.8%
Transit & Low Income	31	0.6%
Student & Low-Income	19	0.4%
Student, Non-Motorized, Transit	17	0.3%
Student & Transit	8	0.2%
Student, Non-motorized & Low Income	8	0.2%
Non-Motorized & Low Income	7	0.1%
Student, Transit, Low Income	7	0.1%
Student, Non-motorized, Transit & Low Income	3	0.1%
Total	5107	100%

A summary of travel characteristics for each of these four special population groups is presented in this section. The distribution of these special population households by study area geography was included in Table D-10, earlier in this report.

LOW-INCOME HOUSEHOLDS

Of the 5,107 households that participated in the study, 492 reported household size and income levels consistent with the census definition of "below poverty." Their distribution based on home location is shown in Table SP-2. In addition, Figure SP-1 shows the locations of these households (darker dots) and their trip destinations (lighter dots). The spatial distribution of travel suggests that the trip ends appear to be close to the home locations. A review of average trip duration and trip distances for these households confirms this is a statistical difference: the average trip distance for the low income households was 4.8 miles, as compared to 5.7 miles for all households above poverty.

TABLE SP-2: LOW-INCOME HOUSEHOLD SAMPLE SIZE & LOCATION

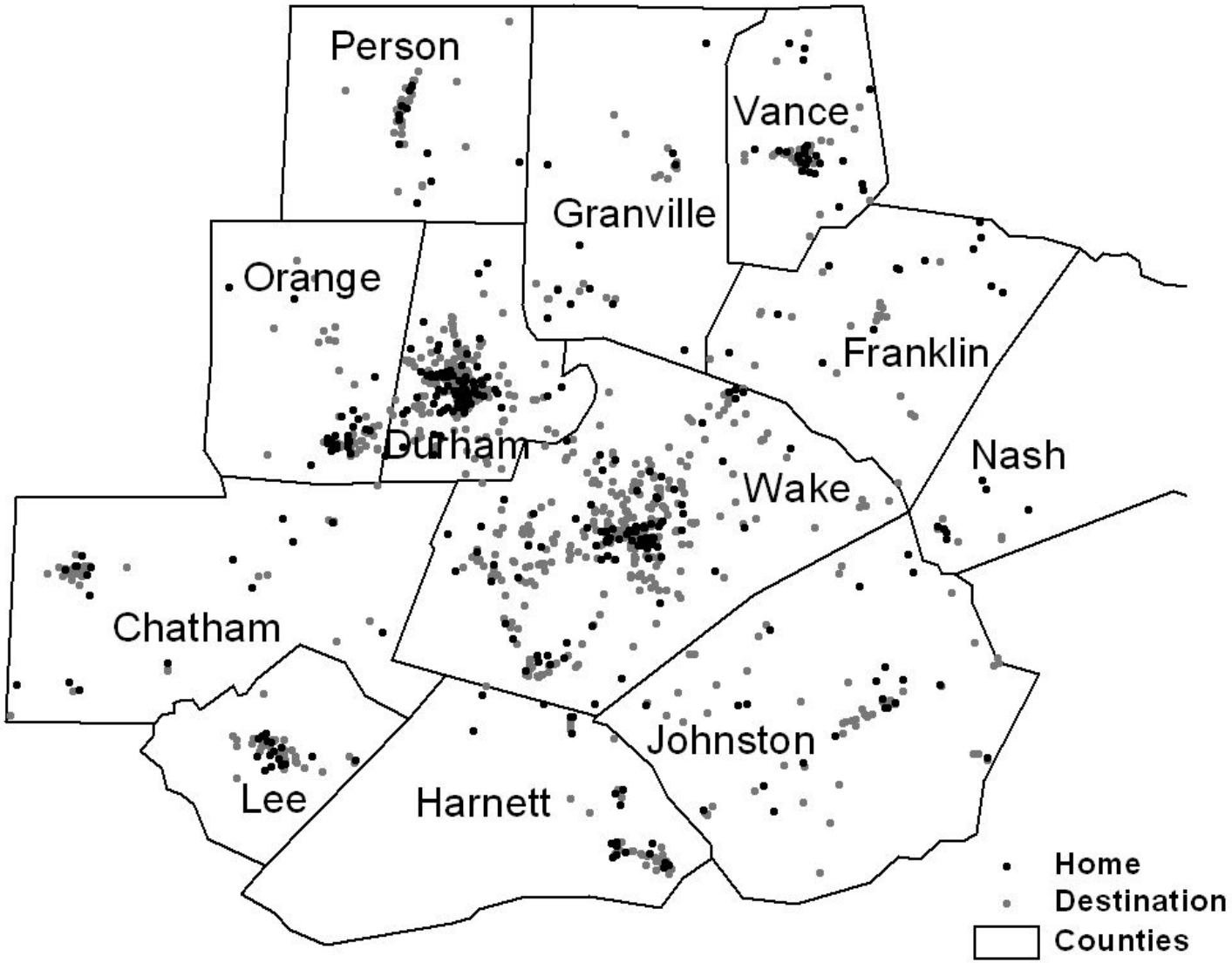
County of Residence	Weighted Sample	Expanded Sample	% of All County HH
Chatham County	23	2495	12.5%
Durham County	114	12224	13.8%
Franklin County	14	1481	8.4%
Granville County	14	1512	9.0%
Harnett County	27	2860	15.8%
Johnson County	39	4151	9.0%
Lee County	25	2724	14.5%
Nash County	8	837	22.9%
Orange County	24	2561	5.6%
Person County	19	2056	14.5%
Vance County	22	2357	14.6%
Wake County	164	17611	7.3%
Total	492	52871	9.6%

The following is a summary of household characteristics for these low-income households. The households tended to be smaller (average size 2.33 compared to regional average of 2.46) and have significantly fewer vehicles (average 0.84 compared to regional average of 1.82). They are much less likely to live in a single-family detached dwelling, and much more like to be a minority.

TABLE SP-3: LOW-INCOME HOUSEHOLD CHARACTERISTICS

Variables	Low Income HH	Non-Low Income HH
Household Size		
1	46.3%	23.6%
2	16.5%	35.6%
3	10.6%	18.4%
4+	26.6%	22.4%
Household Vehicles		
0	35.4%	3.7%
1	50.4%	30.3%
2	10.8%	44.5%
3+	3.5%	21.5%
Household Income		
< $15,000	83.7%	
$15,000 - $24,999	16.3%	8.4%
$25,000 - $34,999		10.0%
$35,000 - $49,999		17.9%
$50,000 to $74,999		22.0%
$75,000 to $99,999		16.9%
$100,000 or more		24.9%
Residence Type		
Single family	43.6%	79.5%
All other types	56.4%	20.5%
Respondent Ethnicity		
White	42.8%	81.5%
Non-White	57.2%	18.5%

FIGURE SP-1: HOUSEHOLD AND DESTINATION LOCATIONS OF LOW-INCOME HOUSEHOLDS



The average daily trip rate for these low-income households was 7.80, which is statistically smaller than the region-wide average of 9.99 trips. In addition, the households reported differing travel in both purpose and mode, as shown in Figures SP-2 and SP-3.

FIGURE SP-2: LOW-INCOME TRIP PURPOSE

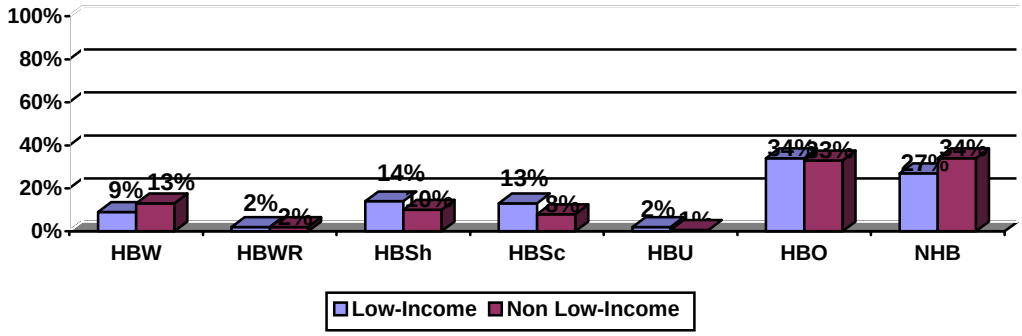


FIGURE SP-3: LOW-INCOME TRAVEL MODE

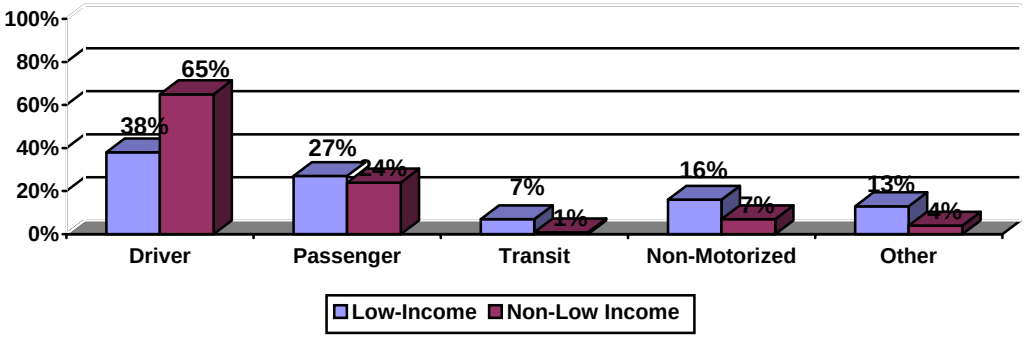


Table SP-4 shows the distribution of trips by mode and purpose, for low income and non-low income households.

TABLE SP-4: TRAVEL MODE BY TRIP PURPOSE – LOW INCOME HOUSEHOLDS

Low Income Status	Travel Mode	Trip Purpose HBW	HBWR	HBSh	HBSc	HBU	HBO	NHB	Total
Low Income HH	Driver	70.6%	78.9%	56.4%	1.9%	64.5%	50.2%	47.5%	48.8%
	Passenger	20.0%	15.8%	27.0%	28.6%	4.8%	27.3%	22.2%	24.4%
	Transit	3.4%	2.6%	3.6%	0.9%	11.3%	4.1%	9.4%	5.3%
	Non-motorized	5.1%	2.6%	10.4%	2.8%	19.4%	17.4%	15.2%	13.1%
	School bus	0.4%	0.0%	0.0%	64.8%	0.0%	0.1%	5.3%	7.3%
	Other	0.4%	0.0%	2.7%	0.9%	0.0%	1.0%	0.4%	1.0%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Non Low Income HH	Driver	92.5%	93.7%	74.8%	8.1%	74.3%	64.8%	68.9%	67.8%
	Passenger	4.3%	4.2%	22.7%	58.4%	7.5%	26.4%	19.3%	22.1%
	Transit	0.3%	0.1%	0.1%	0.2%	2.6%	0.3%	1.7%	0.7%
	Non-motorized	2.7%	1.9%	2.4%	3.8%	11.8%	8.2%	7.7%	6.3%
	School bus	0.1%	0.0%	0.0%	29.3%	3.2%	0.1%	2.0%	2.7%
	Other	0.1%	0.2%	0.0%	0.2%	0.6%	0.3%	0.5%	0.3%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TRANSIT USERS

Of the 5,107 households that participated in the study, 248 had at least one member report at least one trip using transit. Table SP-5 shows the distribution of these households by county, and Figure SP-4 shows the locations of these households (dark points) and their trip destinations (lighter points). The transit users traveled an average of 3.1 miles on each trip, as compared to the regional average of 5.7 miles overall and 5.7 for non-transit users.

TABLE SP-5: TRANSIT HOUSEHOLD SAMPLE SIZE & LOCATION

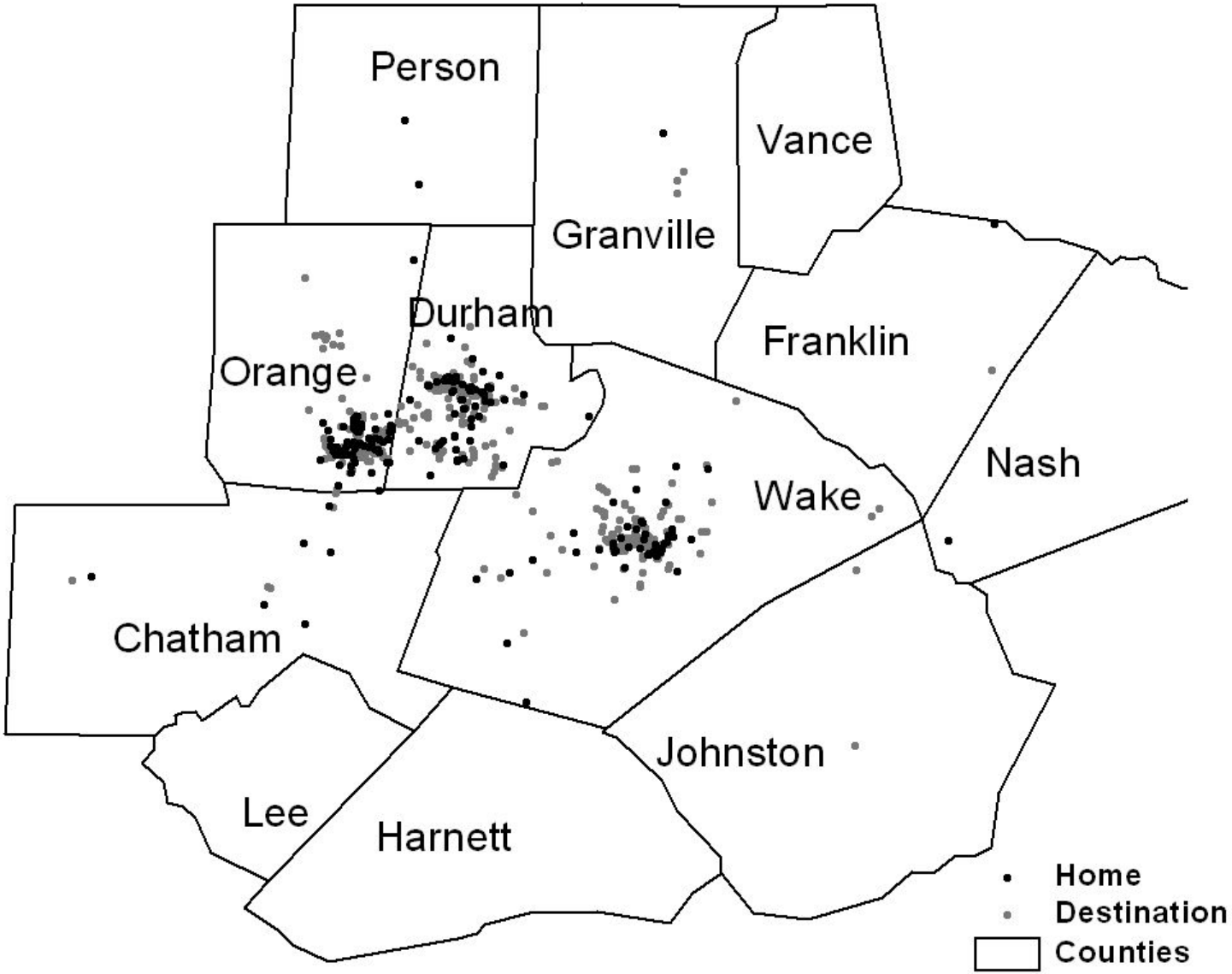
County of Residence	Weighted Sample	Expanded Sample	% of All County HH
Chatham County	9	964	4.9%
Durham County	80	8609	9.7%
Franklin County	1	89	.6%
Granville County	1	129	.6%
Harnett County	0	0	0%
Johnson County	0	0	0%
Lee County	0	0	0%
Nash County	1	63	2.9%
Orange County	63	6756	14.8%
Person County	3	340	2.3%
Vance County	0	0	0%
Wake County	90	9632	4.0%
Total	248	26582	4.9%

The following is a summary of characteristics for these transit users (at the person level). Transit users, on average, tended to be younger than non-transit users and with much lower incomes. They tend to include a higher proportion of females and non-minorities, but equal levels of workers and students.

TABLE SP-6: TRANSIT-USING PERSON CHARACTERISTICS

Variables	Transit Riders	Non-Transit Riders
Household Income		
< $15,000	26.3%	7.6%
$15,000 - $24,999	23.5%	8.4%
$25,000 - $34,999	6.5%	9.1%
$35,000 - $49,999	14.2%	16.2%
$50,000 to $74,999	14.6%	20.0%
$75,000 to $99,999	7.3%	15.6%
$100,000 or more	7.7%	23.1%
Respondent Age		
<20	29.8%	28.2%
20 – 24	5.7%	2.5%
25 – 54	48.7%	43.1%
55 – 64	9.6%	12.9%
65+	6.2%	13.3%
Respondent Gender		
Male	42.9%	47.0%
Female	57.1%	52.5%
Respondent Ethnicity		
White	45.6%	79.4%
Non-White	54.4%	20.6%
Life Status		
% Employed	68.4%	69.0%
% Student	36.4%	28.3%

FIGURE SP-4: HOUSEHOLD AND DESTINATION LOCATIONS OF TRANSIT USERS



The average daily person trip rate for these transit users was 5.7, which is higher than the region-wide average of 4.1 trips (reflecting the multiple trip segments associated with transit usage) and the average daily person trip rate of 4.0 for non-users. This reflects the addition trips required to access and egress transit service. In addition, the transit users reported differing travel in both purpose and mode, as shown in Figures SP-5 and SP-6. In both Figures SP-5 and SP-6, the survey data show that the transit users made significantly more non-home based trips, as well as walk and transit trips as compared to non-users. This reflects that the survey data are comprised of unlinked trip records. As the Triangle Regional Model Service Bureau staff begins to link the trips, these distributions will change.

FIGURE SP-5: TRANSIT USER TRIP PURPOSE

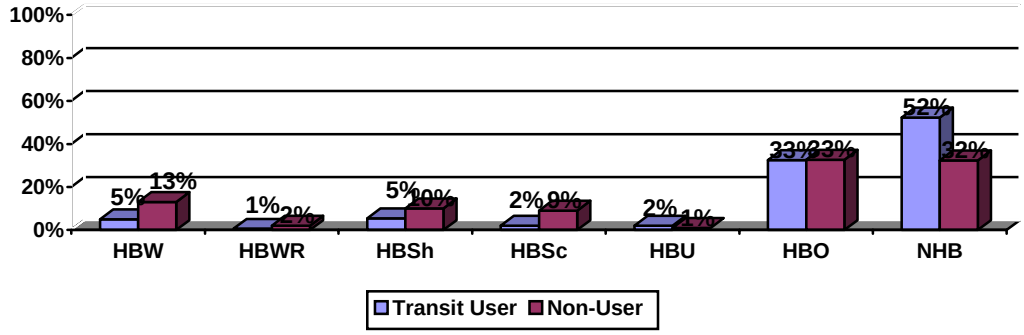
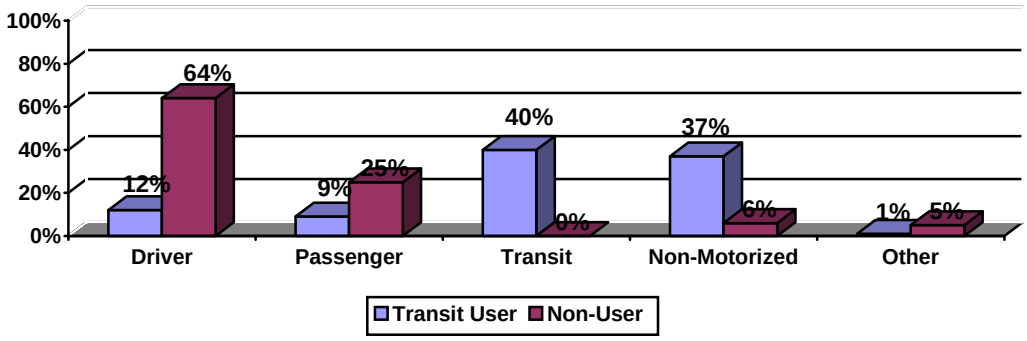


FIGURE SP-6: TRANSIT USER TRAVEL MODE



NON-MOTORIZED TRAVELERS

A total of 372 of the 5,107 participating households had at least one household member that reported a walk or bike trip to work or school. The distribution of these households is indicated in Table SP-7 and Figure SP-7 shows the locations of these households (dark points) and their trip destinations (lighter points). The non-motorized travelers averaged trip distances of 3.3 miles, as compared to the regional average of 5.7 miles and an average distance of 5.8 miles for motorized travelers.

TABLE SP-7: NON-MOTORIZED HOUSEHOLD SAMPLE SIZE & LOCATION

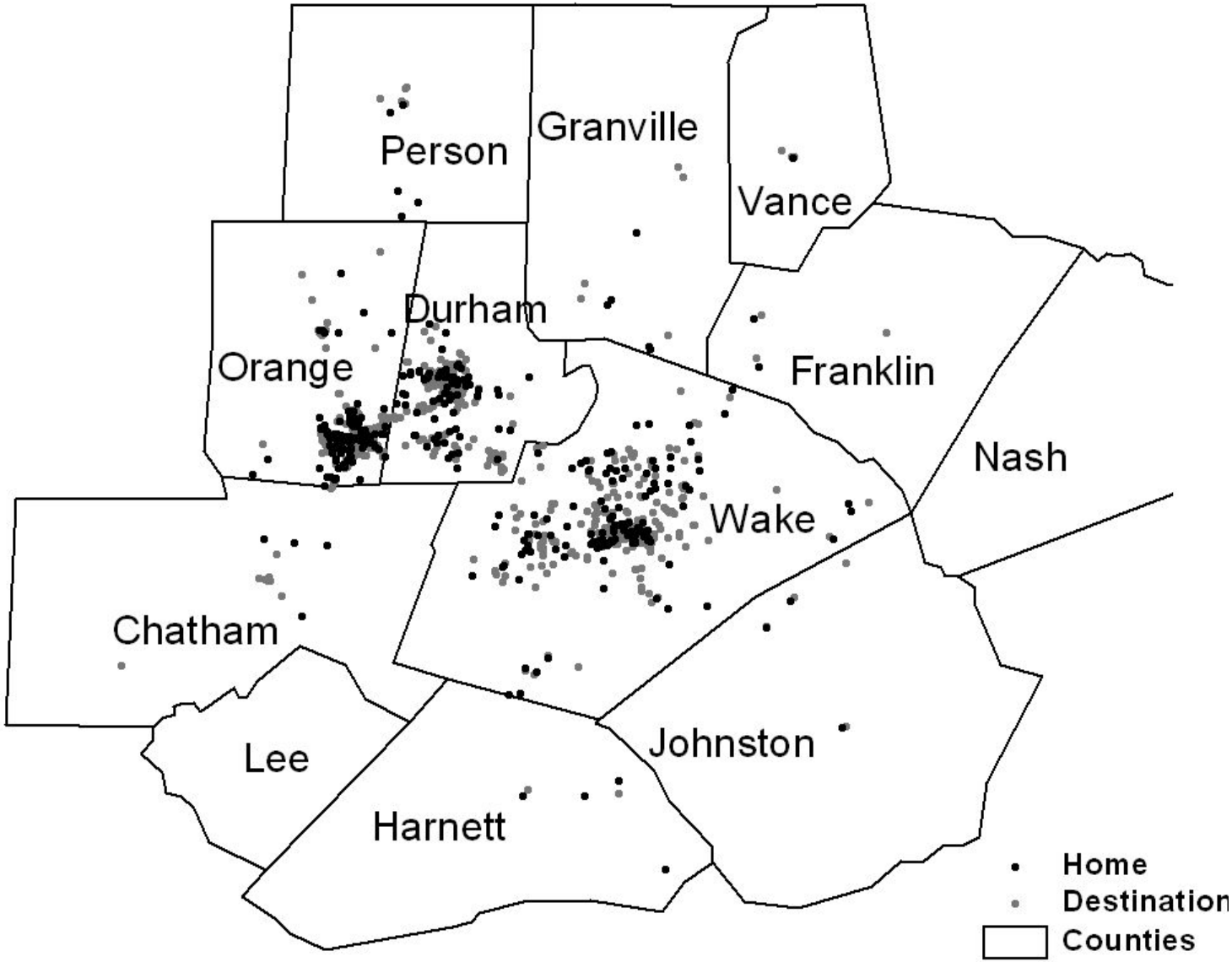
County of Residence	Weighted Sample	Expanded Sample	% of All County HH
Chatham County	6	596	3.3%
Durham County	84	9068	10.1%
Franklin County	2	195	1.2%
Granville County	3	275	1.9%
Harnett County	3	371	1.8%
Johnson County	4	446	.9%
Lee County	0	0	0
Nash County	0	0	0
Orange County	102	10955	23.9%
Person County	4	482	3.1%
Vance County	1	59	.7%
Wake County	163	17559	7.2%
Total	372	40006	7.3%

The following is a summary of characteristics for these non-motorized travelers. Non-motorized travelers tend to report incomes similar to those of motorized travelers. They tend to be middle-aged, white, and most likely to be employed (if age 16+).

TABLE SP-8: NON-MOTORIZED HOUSEHOLD CHARACTERISTICS

Variables	Non-Motorized Traveler	Motorized Traveler
Household Income		
< $15,000	5.2%	8.8%
$15,000 - $24,999	10.1%	9.1%
$25,000 - $34,999	6.6%	9.2%
$35,000 - $49,999	17.8%	15.9%
$50,000 to $74,999	21.4%	19.6%
$75,000 to $99,999	14.5%	15.2%
$100,000 or more	24.4%	22.2%
Respondent Age		
<20	15.3%	28.7%
20 – 24	5.3%	2.6%
25 – 54	64.4%	42.6%
55 – 64	12.8%	12.7%
65+	2.1%	13.3%
Respondent Gender		
Male	53.0%	46.6%
Female	47.0%	53.4%
Respondent Ethnicity		
White	79.5%	77.7%
Non-White	20.5%%	22.3%
Life Status		
% Employed	95.2%	67.9%
% Student	33.1%	28.4%

FIGURE SP-7: HOUSEHOLD AND DESTINATION LOCATIONS OF NON-MOTORIZED TRAVELERS



The average daily person rip rate for non-motorized travelers was 6.0, which is slightly higher than the region-wide average of 4.1 person trips and the 4.0 trips reported on average by motorized travelers. In addition, the households reported differing travel in both purpose and mode, as shown in Figures SP-8 and SP-9.

FIGURE SP-8: NON-MOTORIZED TRAVELER TRIP PURPOSE

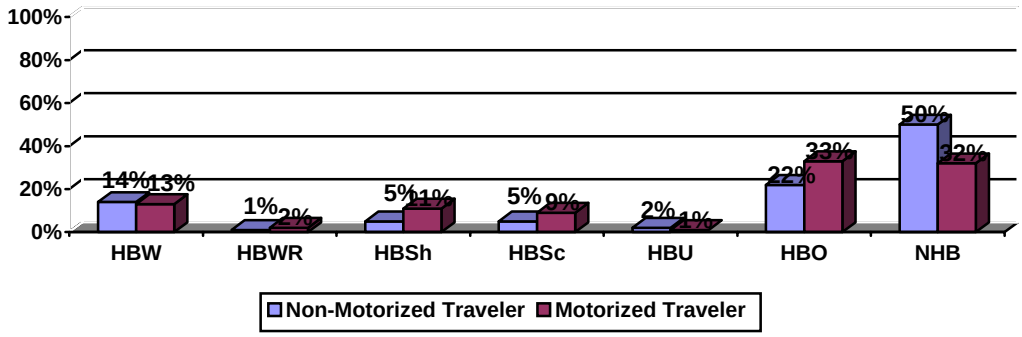
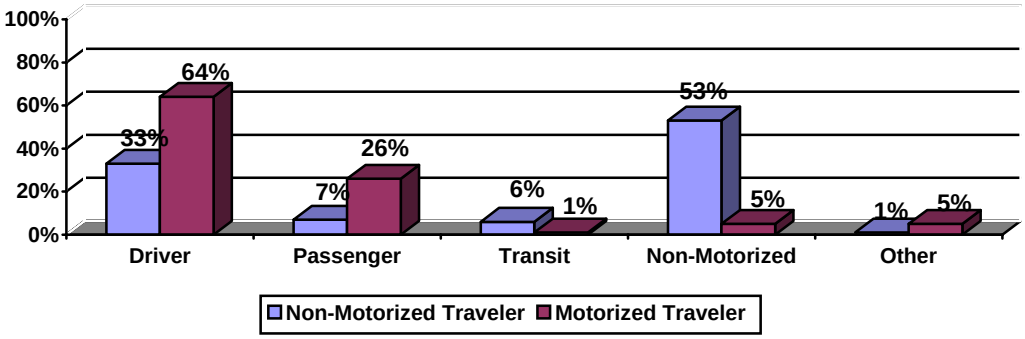


FIGURE SP-9: NON-MOTORIZED TRAVELER TRAVEL MODE



UNIVERSITY-BASED STUDENT TRAVEL

A total of 232 of the 5,107 participating households had at least one household member that was a university student who went to school (campus) on their travel day. A distribution of these household locations is shown in Table SP-9. Figure SP-10 shows the locations of these households (dark points) and their trip destinations (lighter points). The university students traveled an average of 6.4 miles on each trip, as compared to the regional average of 5.7 miles and the 5.7 average miles reported by non-university student travelers.

TABLE SP-9: UNIVERSITY STUDENT SAMPLE SIZE & LOCATION

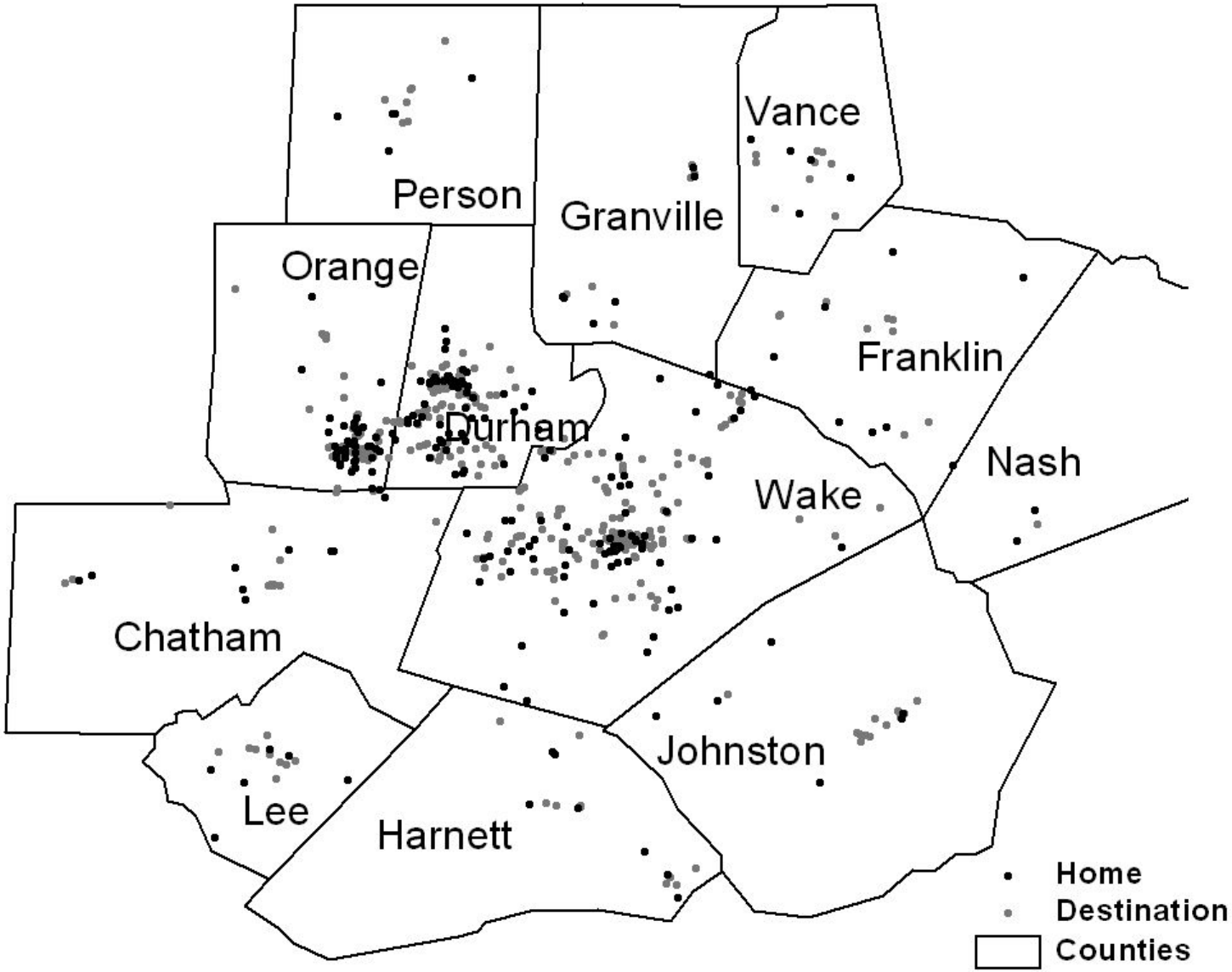
County of Residence	Weighted Sample	Expanded Sample	% of All County HH
Chatham County	13	1446	7.1%
Durham County	52	5567	6.3%
Franklin County	12	1305	7.2%
Granville County	5	552	3.2%
Harnett County	7	773	4.1%
Johnson County	8	854	1.8%
Lee County	7	787	4.1%
Nash County	1	104	2.9%
Orange County	35	3748	8.2%
Person County	5	532	3.8%
Vance County	4	382	2.6%
Wake County	83	8930	3.7%
Total	232	24980	4.5%

The following is a summary of characteristics for these student travelers.

TABLE SP-10: UNIVERSITY STUDENT HOUSEHOLD CHARACTERISTICS

Variables	Student	Non-Student
Household Income		
< $15,000	18.1%	8.0%
$15,000 - $24,999	13.2%	9.0%
$25,000 - $34,999	8.4%	9.0%
$35,000 - $49,999	14.1%	16.2%
$50,000 to $74,999	17.6%	19.8%
$75,000 to $99,999	11.5%	15.4%
$100,000 or more	17.2%	22.6%
Respondent Age		
<20	9.3%	28.7%
20 – 24	30.8%	2.1%
25 – 54	56.7%	43.1%
55 – 64	2.4%	12.9%
65+	.8%	13.2%
Respondent Gender		
Male	43.2%	46.9%
Female	56.8%	53.1%
Respondent Ethnicity		
White	68.6%	78.0%
Non-White	31.4%	22.0%
Life Status		
% Employed	60.2%	69.3%
% Student	100.0%	27.2%

FIGURE SP-10: UNIVERSITY STUDENT HOUSEHOLD AND TRIP LOCATIONS



The average daily person trip rate for university students was 5.3 trips, which was higher than that reported by non-students (4.0) and region-wide (4.1). In addition, the households reported differing travel in both purpose and mode, as shown in Figures SP-11 and SP-12.

FIGURE SP-11: UNIVERSITY STUDENT HOUSEHOLD TRIP PURPOSE

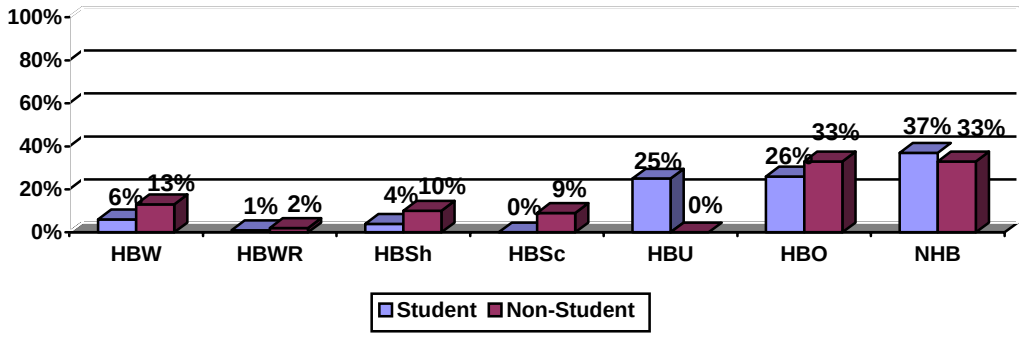
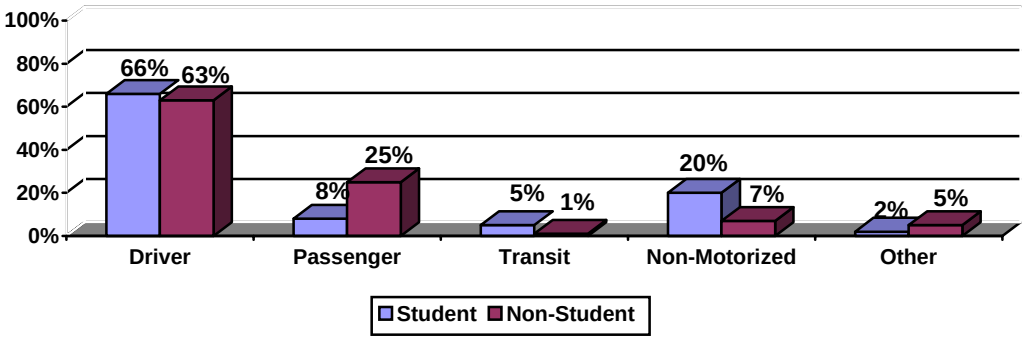


FIGURE SP-12: UNIVERSITY STUDENT HOUSEHOLD TRAVEL MODE



CONCLUSIONS

The Greater Triangle Household Travel Survey was conducted from August 2005 through June 2006 and provides a rich source of information about travel behavior in the region. Sponsored by the Capital Area MPO, the Durham-Chapel Hill-Carrboro MPO, the Triangle Transit Authority, and the North Carolina Department of Transportation, and directed by the North Carolina State University Triangle Regional Model Service Bureau, this study details the travel and activities of 5,107 participating households from throughout the 12-county Greater Triangle region.

The study was conducted using standard household travel survey methods. This included the use of an advance notification mailing (to advise households they were randomly selected for inclusion in the study), telephone recruitment, placement of respondent materials (including travel logs for each household member) via US mail, telephone retrieval, continuous data processing and geocoding, and fine-tuned quality assurance data checks. To combat differential participation rates, the study did include incentives to low-income, student, and African American households in the outer region as well as an extensive public involvement effort. In all, participate household are estimated to have spent an average of 45 minutes for the two telephone interviews and 20 minutes completing the travel logs. The overall response rate was 25%.

A total of 5,107 regional households fully participated in the Greater Triangle Household Travel Survey. In doing so, these households provided data about their household composition, vehicles owned, and travel about the region. When properly weighted to adjust for non-response, the data from the 5,107 households contains details about 12,560 household members, 9,312 vehicles, and details regarding 51,002 unlinked trips during a 24-hour period. When expanded to the survey universe, the travel data represents 548,539 households, 1,349,032 persons, 1,000,158 vehicles, and 5,478,060 trips. In all, the households reported an average of 9.99 daily household trips and 4.06 daily person trips.

Most respondents reported traveling by auto (87%). The trips were distributed across seven purpose "types": home-based work (13%), home-based work-related (2%), home-based shopping (10%), home-based school (9%), home-based university (1%), home-based other (33%), and non-home based (33%). The average reported trip length was 21 minutes. The longest trips were for home-based work-related (36 minutes) and home-based university (31 minutes). The shortest were for home-based shopping (17 minutes) and home-based other (19 minutes). In terms of trip distance, the average trip distance was 5.7 miles.

The longest trips were for home-based work (9.6 miles), home-based work-related (10 miles), and home-based university (9.1 miles). The shortest trips were for home-based school (4.8 miles) and home-based shopping (4.8 miles). Each respondent recorded travel for a 24-hour period, beginning at 3 a.m. and ending at 2:59 a.m. the following day. Regionally, 43% of all travel occurred between the mid-day hours of 10 am to 3 pm, while 37% occurred from 4 to 7 pm.

The data set produced as a result of the Greater Triangle Household Travel Survey represents a comprehensive summary of regional travel behavior for the transportation planning efforts in the Research Triangle region. The survey approach, combined with careful planning at the start of the project and continuous quality assurance efforts during data collection, have resulted in a high quality data set that will be useful in future model development efforts as well as general planning needs.