

2009 National Household Travel Survey Florida Data Analysis



Trends and Conditions Report

Office of Policy Planning
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2009 National Household Travel Survey Florida Sample Analysis

Executive Summary

This report explores the National Household Travel Survey (NHTS) results, looking specifically at the Florida sample and how it compares to the rest of the country and prior surveys. The goal is to get a present-day status of Florida travel that will be useful to policy makers, practitioners, and researchers. These new data provide a unique opportunity to develop a richer understanding of travel behavior and serve as a resource to the transportation industry in terms of specific analyses relevant to transportation.

The NHTS is conducted by the U.S. Department of Transportation's Federal Highway Administration every five to eight years. It is considered the most comprehensive survey in examining travel patterns and behavior within the United States. The most recent survey was completed in 2009. This report summarizes Florida-specific travel behaviors based on NHTS 2009, reviews historical travel trends using the 2001, 1995, and 1990 surveys and compares Florida trends with the national trends. The first chapter provides background on the NHTS and discusses the project focus, the second chapter compares Florida travel with U.S. travel, the third looks at Florida travel trends, the fourth examines Florida travel by geography, and the fifth chapter presents the results of a mode specific analysis for Florida.

Florida and U.S. Travel

Analysis reveals both similarities and differences in travel patterns of Florida and U.S. travelers. Floridians have essentially similar travel patterns to the rest of the U.S., with a few minor differences. The differences that do exist are relatively modest and are explained by a combination of socio-demographic characteristics of the Florida population and the transportation choices and activity patterns available in Florida.

- A larger share of trips in Florida is made by travelers age 65 and older when compared with the U.S.
- Florida travelers in all age groups younger than 70 take fewer trips than the average traveler in the U.S.
- In Florida, travelers in lower income groups represent a larger share of the overall population and account for a higher number of trips than the national average. Conversely, higher income travelers account for a lower percentage of the population and trips in Florida.
- Florida travelers across all income groups take fewer daily trips than the average traveler in the U.S.
- Florida travelers travel at slightly lower personal vehicle speeds than the average U.S. traveler.

2009 National Household Travel Survey Florida Sample Analysis

- Florida travelers use cars, trucks, SUVs, or vans as their mode of transportation more often than travelers in the U.S. At the same time, Florida travelers tend to use less public transportation and walk less compared with an average U.S. traveler.
- The share of households with zero vehicles is lower in Florida than in the U.S.
- Floridians travel fewer miles per trip using private vehicles than the average traveler in the U.S. However, Floridians travel more miles per trip on public transit than the average U.S. traveler.
- The distribution of trips by time of the day and day of week in Florida is essentially similar to that of the entire nation. The one major difference is that there is a spike in Florida travel around 5–6 p.m. on the weekend, not typical for the entire U.S.

Florida Travel Trends

Historical NHTS datasets provide an opportunity to examine how travel patterns have changed over time. For Florida, travel has been experiencing a number of changes in recent years.

First, Floridians are traveling less. This is partially attributed to the sluggish economy, but the evidence suggests that there is more to it than a reaction to recent economic conditions. Numerous factors could be affecting this, including aging of the population, saturation of vehicle ownership/availability, stabilization in the historic trend toward suburbanization, saturation of labor force participation, intolerance for increasing time spent on travel, and substitution of technology/communications for travel.

Second, the mode share in Florida is changing. The data reveal a slight increase in the number of transit, walk, and bike trips taken by Floridians. Walk travel, in particular, has shown a meaningful increase. In addition to survey effect, this may reflect environmental and health consciousness as well as fuel costs or auto availability changes that have occurred over the past few years. Increases in transit supply, as well as environmental and fuel cost considerations and more challenging economic conditions, appear to be the explanations for modest growth in transit market share.

Third, there appears to be a shift in trip purposes. Most notably, there is a decrease in the share of trips to/from work and an increase in social/recreational trips. The decline in work trip share is most likely due to declining employment levels, perhaps some aging effect, a shift to telecommuting and compressed workweek schedules, and increased travel for other trip purposes.

2009 National Household Travel Survey Florida Sample Analysis

Florida Travel by Geography

The comparisons of travel by urban/rural area, consolidated metropolitan statistical area (MSA), MSA size, and population density provide some insight into the travel taking place in Florida.

In urban areas, it was found that there were lower levels of vehicle miles of travel (VMT) and person miles of travel (PMT) per capita when compared with rural areas. The VMT/PMT ratio and trip rate were found to be similar across both urban and rural areas. Trip lengths were found to be shortest for urban areas and noticeably longer for rural areas. In terms of mode choice, the automobile remained the dominant mode in all regions, with transit and walk shares the highest in urban areas. Privately operated vehicle (POV) travel speeds were lowest in urban areas and highest in rural areas. An analysis of the temporal distribution of trips showed that there was no significant difference in travel patterns between urban and rural areas. There was also no distinguishable difference in trip purpose distributions between urban and rural areas.

Next, an analysis was performed on Florida metropolitan areas. The person vehicle miles of travel¹ (PVMT)/VMT ratio (a measure of vehicle occupancy) across metropolitan areas did not show much variation. VMT and PVMT per capita were found to be lowest in Fort Lauderdale-Miami and highest in Jacksonville. Trip length analysis revealed that Fort Lauderdale-Miami had the shortest average trip length, while Jacksonville had the highest. Mode shares across all areas reveal heavy reliance on the auto. Fort Lauderdale-Miami had the highest share of transit usage, while West Palm Beach-Boca Raton experienced the highest walk share. POV travel speeds were found to vary quite a bit; Jacksonville recorded the highest average travel speed at 33.3 mph while Fort Lauderdale-Miami recorded the lowest at 23.9 mph. Temporal distributions of all regions revealed travel patterns that were quite similar. Trip purposes were also similar, with shopping, family/personal business, and social/recreational trips being the dominant motivators of travel.

Next, MSA size was analyzed. In analyzing VMT and PVMT, it was observed that these values fall as the size of the MSA increases. VMT/PMT ratios increased as MSA size increased. Increasing MSA size also had an impact on decreasing the trip rate, trip length, travel speeds, and auto mode share (resulting in increases in the transit and walk modes).

Population density was the last type of geography examined. Many results were similar to those found in the MSA size analysis. As population density increased, there was a marked decrease in the VMT and PVMT per capita, trip lengths, travel speeds, and auto mode share.

¹ PMVT differs from PMT in that PMT includes walk, bike, and transit mileage in addition to PVMT.

2009 National Household Travel Survey Florida Sample Analysis

Trip rates seemed to hold steady for low- and medium-density regions before showing a noticeable decline in high-density areas. VMT/PMT ratios remained constant across different areas.

Florida Mode-Specific Analysis

Analysis done on pedestrian/bicycle travel shows that trip length is highly influenced by gender, age, and household income. Similarly, mode share is influenced by age and household income. An analysis of trip purposes reveals that a majority of walk/bicycle trips are conducted purely for social and recreational purposes. When use of these modes was examined, it was determined that a large majority of the population does not bicycle in a given week. However, most people did walk during the week, although it was just twice a week or less.

For travel on public transportation, the analysis revealed that, in terms of mode share, younger individuals, persons in zero-vehicle households, and those with lower household annual incomes were more likely to use the service. Transit is most often used for travel to/from work, shopping, or social/recreational activities. Based upon the available data, it was computed that local buses travel at an average speed of 10.7 mph—considerably slower than private vehicle travel. Usage analysis indicated that around 15 percent of the population had used transit at least once in the month they were surveyed. Trips on buses were shorter in length than those on rail transit modes.

Shared ride travel was examined as one of three categories: household (HH) carpool, mixed carpool, or non-HH carpool. In terms of trip length, non-HH carpools had the highest average trip length, whereas HH carpools had the lowest average trip length. When mode share was analyzed, it was determined that slightly more than 50 percent of all private auto travel is in carpools. Mode share of the different types of carpools was observed to change based upon both age of the individual and household income. A majority of carpool trips were observed to be primarily for social/recreational purposes, shopping, or family/personal business. Occupancies within the vehicle were different based upon vehicle type, household type, and trip purpose.

2009 National Household Travel Survey Florida Sample Analysis

Table of Contents

Chapter 1: The NHTS and Project Scope	1
Introduction to the NHTS.....	1
Project Focus.....	3
Chapter 2: Florida and U.S. Travel Summary	5
Introduction.....	5
Population Demographics.....	5
Trip Rate.....	9
Trip Length.....	10
Mode Share	13
Travel Speed	16
Temporal Distribution of Trips.....	16
Trip Purpose	20
Trips by Age.....	26
Trip by Income	27
Observations.....	27
Chapter 3: Florida Travel Trends	30
Introduction	30
VMT and PMT.....	30
Trip Rate.....	32
Trip Length.....	33
Mode Share	34
Travel Speed	35
Temporal Distribution of Trips.....	36
Trip Purpose	39
Conclusions and Interpretations	40
Chapter 4: Florida Travel by Geography.....	42
Introduction	42
Urban/Rural Travel	42
Travel by Metropolitan Area.....	49
Travel by MSA Size	54
Travel by Population Density	59
Conclusions and Interpretations	63
Chapter 5: Florida Mode-Specific Analysis	65
Introduction	65

2009 National Household Travel Survey Florida Sample Analysis

Walk and Bicycle Travel	65
Transit Travel.....	78
Shared Ride Travel.....	92
Conclusions and Interpretations	99
Bibliography	101

2009 National Household Travel Survey Florida Sample Analysis

List of Figures

Figure 1 – Age Distribution: Florida vs. U.S.5

Figure 2 – Gender Distribution: Florida vs. U.S.6

Figure 3 – Annual Household Income: Florida vs. U.S.6

Figure 4 – Household Size: Florida vs. U.S.8

Figure 5 – Trip Rates by Age: Florida vs. U.S.9

Figure 6 – Trip Rates by Income: Florida vs. U.S.10

Figure 7 – Trip Length by Mode: Florida vs. U.S.*11

Figure 8 – Trip Length by Age: Florida vs. U.S.12

Figure 9 – Trip Length by Income: Florida vs. U.S.12

Figure 10 – Mode Share: Florida vs. U.S.13

Figure 11 – Mode Share by Age: Florida vs. U.S.14

Figure 12 (continued) – Mode Share by Age: Florida vs. U.S.14

Figure 13 – Mode Share by Income: Florida vs. U.S.15

Figure 14 (continued) – Mode Share by Income: Florida vs. U.S.15

Figure 15 – Travel Speed by Trip Purpose: Florida vs. U.S.16

Figure 16 – Weekday Trips by Time Period: Florida vs. U.S.17

Figure 17 – Saturday Trips by Time Period: Florida vs. U.S.17

Figure 18 – Sunday Trips by Time Period: Florida vs. U.S.18

Figure 19 – Temporal Distribution of Weekday Trips: Florida vs. U.S.18

Figure 20 – Temporal Distribution of Saturday Trips: Florida vs. U.S.19

Figure 21 – Temporal Distribution of Sunday Trips: Florida vs. U.S.19

Figure 22 – Trips by Trip Purpose: Florida vs. U.S.20

Figure 23 – Trip Length by Purpose: Florida vs. U.S.21

Figure 24 – Trips by Purpose – Sunday: Florida vs. U.S.21

Figure 25 – Percentage of Trips To/From Work by Day of Week: Florida vs. U.S.22

Figure 26 – Percentage of Family/Personal Trips by Day of Week: Florida vs. U.S.23

Figure 27 – Percentage of Vacation Trips by Day of Week: Florida vs. U.S.23

Figure 28 – Percentage of Total Trips by Day of Week: Florida vs. U.S.24

Figure 29 – Trip Length by Purpose – Weekdays: Florida vs. U.S.25

Figure 30 – Trip Length by Purpose – Saturday: Florida vs. U.S.25

Figure 31 – Trip Length by Purpose – Sunday: Florida vs. U.S.26

Figure 32 – Trips by Age: Florida vs. U.S.26

Figure 33 – Trips by Income: Florida vs. U.S.27

Figure 34 – Historical Annual Total Florida VMT and PMT31

Figure 35 – Historical Annual Florida VMT and PMT per Capita31

Figure 36 – Historical Florida VMT/PMT Ratio31

Figure 37 – Historical Florida Trip Rates by Age32

2009 National Household Travel Survey Florida Sample Analysis

Figure 38 – Historical Florida Trip Rates by Household Income (not adjusted for inflation)	33
Figure 39 – Average Florida Trip Length over Time	34
Figure 40 – Historical Florida Trip Lengths for Various Trip Purpose	34
Figure 41 – Historical Florida Mode Share for Trips	35
Figure 42 – Historical Mode Share for Transit, Bike, and Walk in Florida.....	35
Figure 43 – Historical Florida Travel Speed Trends	36
Figure 44 – Historical Florida Temporal Distribution of Weekday Trips	36
Figure 45 – Historical Florida Temporal Distribution of Saturday Trips.....	37
Figure 46 – Historical Florida Temporal Distribution of Sunday Trips.....	37
Figure 47 – Historical Florida Temporal Distribution of Work Trips on Weekdays.....	38
Figure 48 – Historical Florida Temporal Distribution of School/Church Trips on Weekdays.....	38
Figure 49 – Florida Historical Weekday Trip Purposes.....	39
Figure 50 – Mode Share for Urban/Rural Areas	44
Figure 51 – Weekday Temporal Distribution for Urban/Rural Areas.....	45
Figure 52 – Saturday Temporal Distribution for Urban/Rural Areas	45
Figure 53 – Sunday Temporal Distribution for Urban/Rural Areas	46
Figure 54 – Trip Purposes for Urban/Rural Areas	46
Figure 55 – VMT by Trip Purpose for Urban/Rural Areas.....	47
Figure 56 – Average Travel Time by Trip Purpose for Urban/Rural Areas	48
Figure 57 – Mode Share by Metropolitan Area	51
Figure 58 – Speeds by Trip Purposes by Metropolitan Area	52
Figure 59 – Weekday Temporal Distribution by Metropolitan Area	53
Figure 60 – Trip Purposes by Metropolitan Area	53
Figure 61 – VMT and PMT per Capita by MSA Size	55
Figure 62 – VMT/PMT Ratio by MSA Size.....	56
Figure 63 – Trip Rates by MSA Size.....	56
Figure 64 – Trip Length by MSA Size	57
Figure 65 – Auto Mode Share by MSA Size	57
Figure 66– Mode Share for Other Modes by MSA Size.....	58
Figure 67 – Travel Speed by MSA Size	58
Figure 68 – Population Density and Built Environment Examples	59
Figure 69 – VMT and PMT per Capita by Population Density	60
Figure 70 – VMT/PMT Ratio by Population Density	60
Figure 71 – Trip Rate by Population Density	61
Figure 72 – Trip Length by Population Density.....	61
Figure 73 – Auto Mode Share by Population Density	62
Figure 74 – Mode Share for Other Modes by Population Density	62
Figure 75 – Travel Speed by Population Density.....	63
Figure 76 – Average Length of Bicycle and Walk Trips by Gender	65

2009 National Household Travel Survey Florida Sample Analysis

Figure 77 – Bicycle and Walk Trip Length by Age	66
Figure 78 – Bicycle and Walk Trip Length by Household Income	66
Figure 79 – Bicycle and Walk Trip Length by Trip Purpose	67
Figure 80 – Bicycle and Walk Mode Share by Age	67
Figure 81 – Bicycle and Walk Mode Share by Household Income	68
Figure 82 – Bicycle and Walk Mode Share by Trip Purpose	68
Figure 83 – Gender of Pedestrians and Bicyclists	70
Figure 84 – Age Distribution of Pedestrians and Bicyclists	70
Figure 85 – Race and Ethnicity of Pedestrians and Bicyclists	71
Figure 86 – Household Size for Pedestrian and Bicyclist Households	72
Figure 87 – Residential Location for Pedestrians and Bicyclists	72
Figure 88 – Home Ownership for Pedestrians and Bicyclists	73
Figure 89 – Household Vehicle Ownership for Bicyclist and Pedestrian Households	73
Figure 90 – Household Income for Pedestrian and Bicycle Households	74
Figure 91 – Educational Attainment for Pedestrians and Bicyclists	74
Figure 92 – Occupation of Pedestrians and Bicyclists	75
Figure 93 – Work Flexibility for Pedestrians and Bicyclists	75
Figure 94 – Pedestrian and Bicyclist Response to Lack of Sidewalks	76
Figure 95 – Pedestrian and Bicyclist Most Important Transportation Issue	76
Figure 96 – Average Trip Length for Transit Modes in Florida	79
Figure 97 – Transit Mode Share by Age	80
Figure 98 – Transit Mode Share by Household Income	80
Figure 99 – Transit Mode Share by Trip Purpose	81
Figure 100 – Transit Trip Lengths by Trip Purpose	82
Figure 101 – Gender of Transit Riders	83
Figure 102 – Age Distribution of Transit Riders	83
Figure 103 – Ethnicity of Transit Riders	84
Figure 104 – Household Size of Transit Users	85
Figure 105 – Residential Location of Transit Users	85
Figure 106 – Home Ownership of Transit Riders	86
Figure 107 – Household Vehicle Ownership of Transit User Households	86
Figure 108 – Household Income for Transit User Households vs. All Households	87
Figure 109 – Educational Attainment of Transit Riders	87
Figure 110 – Occupation of Transit Users	88
Figure 111 – Work Flexibility of Transit Riders	89
Figure 112 – Desire of Transit Users to Go Out More	89
Figure 113 – Transit User Evaluation of Access to Transit	90
Figure 114 – Transit User Evaluation of Most Important Transportation Issue	90
Figure 115 – Trip Length by Trip Purpose and Carpool Type	93

2009 National Household Travel Survey Florida Sample Analysis

Figure 116 – Mode Share for all Person Trips 94

Figure 117 – Mode Share for Auto Trips..... 94

Figure 118 – Mode Share by Age and Carpool Type 95

Figure 119 – Mode Share by Household Income and Carpool Type 95

Figure 120 – Speeds by Trip Purpose and Carpool Type..... 96

Figure 121 – Trip Purpose by Carpool Type 96

Figure 122 – Average Occupancy by Trip Purpose 97

Figure 123 – Occupancies for Cars by Household Type 97

Figure 124 – Occupancies of Vans by Household Type 98

Figure 125 – Occupancies of SUVs by Household Type..... 98

Figure 126 – Occupancies of Trucks by Household Type 99

2009 National Household Travel Survey Florida Sample Analysis

List of Tables

Table 1 – Household Race: Florida vs. U.S.	7
Table 2 – Household Vehicle Ownership: Florida vs. U.S.	8
Table 3 – Percentage of Total Trips by Day of Week and Trip Purpose: Florida vs. U.S.	22
Table 4 – Florida NHTS Sample Sizes	30
Table 5 – VMT and PMT per Capita Urban/Rural Areas	43
Table 6 – VMT/PMT Ratio Urban/Rural Areas.....	43
Table 7 – Trip Rate for Urban/Rural Areas	43
Table 8 – Trip Length – Urban/Rural	43
Table 9 – Average Travel Speeds – Urban/Rural	44
Table 10 – Sample Size by Metropolitan Area.....	49
Table 11 – VMT and PMT by Metropolitan Area.....	49
Table 12 – VMT/PMT Ratio by Metropolitan Area	50
Table 13 – Trip Rates by Metropolitan Area	50
Table 14 – Trip Length by Metropolitan Area.....	50
Table 15 – Average Travel Speeds by Metropolitan Area	51
Table 16 – Metropolitan Areas in Florida by Population	54
Table 17– Sample Size of MSA Sizes	55
Table 18 – Selected Travel Attributes by MSA Size	55
Table 19 – Number of Bicycle Trips in a Week.....	69
Table 20 – Number of Walk Trips per Week.....	69
Table 21 – Driver Licensing Status of Pedestrians and Bicyclists	71
Table 22 – Number of Jobs for Pedestrians and Bicyclists.....	75
Table 23 – Share of Transit Trips by Transit Modes.....	81
Table 24 – Number of Transit Trips in a Month	83
Table 25 – Driver Licensing Status of Transit Users.....	84
Table 26 – Number of Jobs for Transit Users	88
Table 27 – PVMT/VMT Ratio by Carpool Type.....	92
Table 28 – Trip Length by Carpool Type	93

Chapter 1: The NHTS and Project Scope

Introduction to the NHTS

As the country has continued to evolve and change over time, travel behavior has also changed. A primary way to track and understand this change has been through the National Household Travel Survey (NHTS), formerly known as the National Personal Transportation Survey (NPTS). The NHTS is conducted by the U.S. Department of Transportation's Federal Highway Administration every five to eight years. The most recent survey was completed in 2009; past surveys were done in 2001, 1995, 1990, 1983, 1977, and 1969. Information on these surveys can be found online at the NHTS website: <http://nhts.ornl.gov/>. As is the case, the source for all charts and tables in this report is the NHTS or its earlier form NPTS, unless otherwise mentioned.

This report explores the NHTS results, looking specifically at the Florida sample and how that sample compares to the rest of the country and prior surveys. The report primarily describes a myriad of travel characteristics, although each chapter includes some interpretation and concluding remarks. The first chapter provides background on the NHTS and discusses the project focus, the second chapter compares Florida travel with U.S. travel, the third looks at Florida travel trends, the fourth examines Florida travel by geography, and the fifth chapter presents the results of a mode specific analysis for Florida.

Data Collection Process for the NHTS

Data collection for the survey was a lengthy process, which is explained here briefly. For more information, readers are encouraged to go online and view the online user's guide at <http://nhts.ornl.gov/2009/pub/UsersGuideV2.pdf>. First, to identify eligible households for the survey, a random sample of land line telephone numbers was generated for all 50 states including the District of Columbia. These telephone numbers were then screened to determine if they were residential. Telephone numbers associated with medical institutions, prisons, or military barracks were excluded from the sample. Dormitories and fraternity and sorority houses were included as long as no more than 10 people shared that telephone number.

For each telephone number that was identified as residential, a recruitment interview was conducted by Westat Telephone Research Centers. During the interview, each household was assigned a date to collect travel data. Travel days were assigned for all seven days of the week, including holidays, throughout the period from March 2008 to May 2009. Daily trips were recorded within a time period that began at 4:00 AM on the assigned travel day until 3:59 AM the next day. Households were instructed to document details in a travel diary for all trips that each household member took on his/her assigned travel day. Trip mode, trip distance, travel time, trip purpose, and the number of people on the trip were some of the things that

NHTS Report: Chapter One – The NHTS and Project Scope

households were asked to report. After the household's travel date had passed, a follow-up telephone interview was conducted to collect all of the household's travel data. The data collection was done using Computer-Assisted Telephone Interviewing technology, which allowed the interviewer to verify suspect entries as the interview proceeded.

NHTS Data Collected

A total of 150,147 households, 308,901 people, and 1,167,321 trips were ultimately collected and used in the survey. The 2009 NHTS included a national sample and 20 add-on samples that were purchased by various states, regional planning agencies, and metropolitan planning organizations. These add-on samples could be customized to include additional questions that were not in the national questionnaire. For the full dataset, all of these add-on samples were included, but the additional questions were not. To account for the oversampling of specific regions, the weights in the dataset were adjusted accordingly. For example, if a state was oversampled by a ratio of 3 to 1, the computed weights were reduced by one-third of the value.

The State of Florida elected to purchase an add-on sample that targeted an additional 14,000 Florida households. With the inclusion of the add-on sample into the national sample, the 2009 NHTS contains a rich dataset of 15,884 Florida households, 30,982 Floridians, and 114,910 trips. The motivation behind Florida purchasing the add-on sample was to achieve a statistically-valid sample size for the state that could be used in assessing travel patterns, including calibrating travel models to support planning initiatives. By working with a better picture of Florida's travel patterns, the state is able to provide effective and efficient infrastructure and service investments, and develop transportation projects that more effectively meet travel needs.

A wide array of data was collected from respondents, including demographics of each person in the household, trip attributes (mode used, trip distance, trip time, trip purpose), household characteristics (household size, number of vehicles owned), and personal reasons or views on various transportation issues. These data, in the form of numerous variables, are stored in four different files: Travel Day, Household, Person, and Vehicle. Each file contains variables relevant to the particular category of interest. For a complete listing of variables as well as which file they are located in, readers should refer to the NHTS Data Dictionary at <http://nhts.ornl.gov/2009/pub/DataDictionaryPU.xls>.

Despite the best efforts to obtain a statistically-valid sample, the 2009 NHTS data remain a replicate of the entire population. This results from issues such as under sampling and lower response levels from certain groups and non-responses from individuals within a household. To make the NHTS data applicable to the entire population, weights were calculated for the household, person, and daily trip files.

NHTS Report: Chapter One – The NHTS and Project Scope

In this document, the NHTS results have been compared with the 2010 American Community Survey (ACS). This allows one to see how the weights transform the NHTS sample into a data source that is representative of the overall population. It is noted, however, that the ACS is also a sample, and while it is a larger sample and one in which the respondent has a legal obligation to respond (as it is administered by the Census Bureau), it samples approximately only two percent of the population. In the absence of a Census long form, the ACS is the source for demographic information and the demographics used for weighting the 2009 NHTS sample to replicate the population. Throughout this report, all tables and figures using NHTS data are based on weighted data unless otherwise stated.

Project Focus

The focus of this project is to look at the 2009 NHTS dataset and examine Florida's travel behavior and compare it to the U.S., where applicable. The goal is to get a present-day status of Florida travel that will be useful to policy makers, practitioners, and researchers. These new data offer a unique opportunity to develop a richer understanding of travel behavior and provide a resource to the transportation industry in terms of specific analyses relevant to transportation.

While this report provides information on how travel behavior has evolved over time, changes in survey methods, especially between the 2001 and earlier surveys, require caution in drawing conclusions when comparing data across surveys. The 2001 NHTS provided a number of enhancements to the survey content, the survey method, and the resulting data set over previous surveys. Results are presented in descriptive terms, with the authors providing observations and interpretation.

The need for high-quality data on travel behavior has perhaps never been more critical. Over the past few years, multi-decade trends that have been relatively stable appear to be changing. The historic growth in person travel may have stopped or even reversed, and multi-decade declines in bicycle, pedestrian, and transit travel also appear to have ended and perhaps reversed. A similar multi-decade trend in increasing auto availability may have peaked and reversed.

Collectively, data from recent surveys indicate that potential causes for these fluctuating trends are saturation in suburbanization and auto availability, aging of baby boomers, and perhaps some fundamental changes in personal priorities and economic capacity for away-from-home activities and travel. Several factors appear to be impacting travel behavior in ways not observed over the past several decades: advances in communication technology as a potential substitution for travel, increases in fuel costs, effects of environmental concerns regarding the impact of roadway travel, and fundamental changes in the income and wealth of the public. If a "new normal" for person travel is being shaped, it is important for planners and policymakers to understand it.

NHTS Report: Chapter One – The NHTS and Project Scope

If per capita travel no longer grows or grows far more slowly, it could have dramatic impacts on future transportation needs, funding opportunities, and investment priorities. Fully understanding the public's acceptance of alternative modes and responsiveness to land use and other influences on travel are critical as we contemplate and execute significant and complex sets of policies and programs intended to influence travel. A wide-range of considerations must be explored. Will travelers embrace hybrid technologies, and how will they use those vehicles in their daily travel? Will transit, walk, or bike travel become a more significant means of travel and, if so, under what conditions? Are there long-distance travel needs conducive to shifting modes? Can land use and urban design changes have sufficient impact to merit the investment? Is the relationship between physical health, transportation options, and urban design sufficiently strong that it can be leveraged in a positive way?

While we may be at a tipping point in terms of fundamental travel behavior trends, transportation resources are increasingly scarce. We cannot afford to make decisions that are not based on the best possible data on travel behavior. The cost of collecting and analyzing data on travel behavior is a small fraction of the annual transportation capital program in any state or metropolitan area in the country.

One of the greatest assets of the NHTS is that it is a great data source for analyzing attributes that are not available in the ACS dataset or other data sets. In particular, the NHTS includes unique data such as information on temporary residents residing within the state, any medical conditions that an individual might have, and even a child's journey to school. As such, an emphasis is placed on examining these unique elements in this report and in future briefs.

Chapter 2: Florida and U.S. Travel Summary

Introduction

This chapter first introduces some basic demographics of both Florida and the U.S. using 2010 American Community Survey (ACS) data. These data allow for a general understanding of why people in Florida and the U.S. travel the way they do. Later, the characteristics and travel patterns of Florida travelers are compared with those of the U.S. (including Florida) using the 2009 NHTS dataset. This allows the reader to see how Florida's travel profile compares with the travel patterns of the entire U.S.

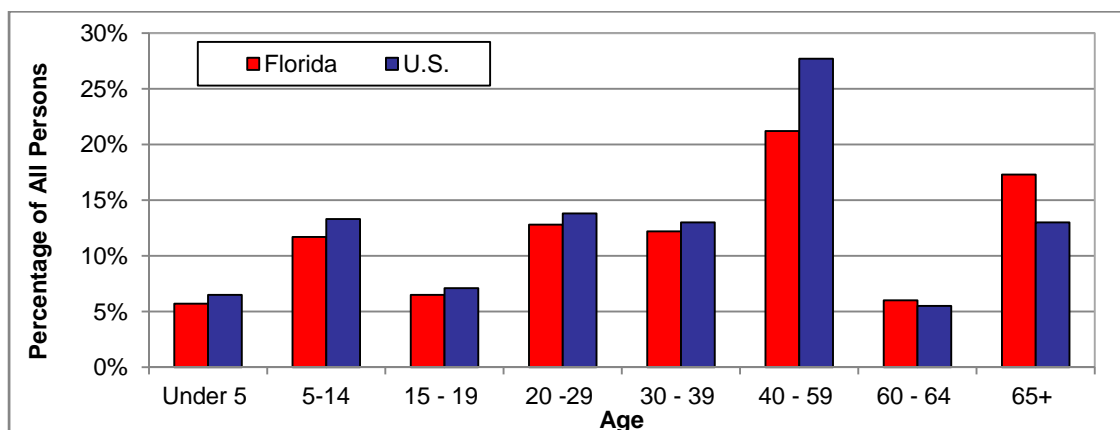
Population Demographics

Before discussing NHTS analyses, it is helpful to provide a brief overview of the demographics of the U.S. and Florida. Several key demographic variables are presented subsequently, using the 2011 ACS. Since travel behavior is highly related to demographic characteristics, understanding Florida's demographics is important for the interpretation of comparative travel behavior.

Person Characteristics

Figure 1 reveals Florida's age distribution. Due to Florida's historic tendency to attract retirees, Florida has a larger share of the 65 and older population. Older Floridians have far less work-trip commuting and generally travel less than younger members.

Figure 1 – Age Distribution: Florida vs. U.S.

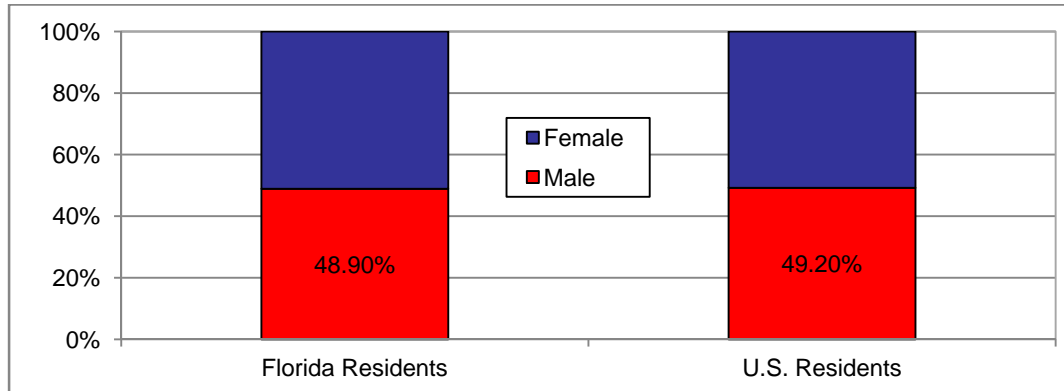


Source: U.S. Census Bureau, 2011 ACS.

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

It can be seen in Figure 2 that Florida has a similar composition of male and female residents as the rest of the country. Historically, there have been differences in travel behavior by gender, but those differences have moderated over the years.

Figure 2 – Gender Distribution: Florida vs. U.S.

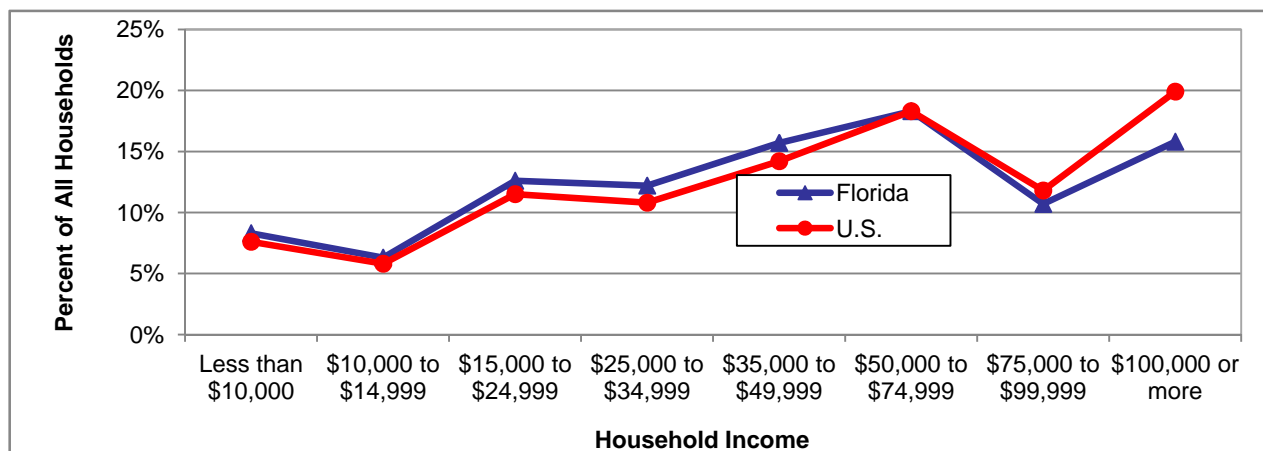


Source: U.S. Census Bureau, 2011 ACS.

Household Characteristics

Income can affect travel behavior. As seen in Figure 3, there are more Floridian households that fall within the lower brackets of income and fewer households that have incomes exceeding \$75,000 per year. Several factors influence household income: the nature of employment, the cost of living that can impact compensation levels, the share of the population comprising retirees—often with lower incomes, the share of immigrant households—often filling entry-level positions, and other factors.

Figure 3 – Annual Household Income: Florida vs. U.S.



Source: U.S. Census Bureau, 2011 ACS.

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Race and ethnicity often play a role in travel behavior as both cultural and socio-economic conditions highly correlated with race and ethnicity influence location and travel behaviors. As seen in Table 1, Florida has a higher proportion of Hispanic and African American households than the rest of the U.S.

Table 1 – Household Race: Florida vs. U.S.

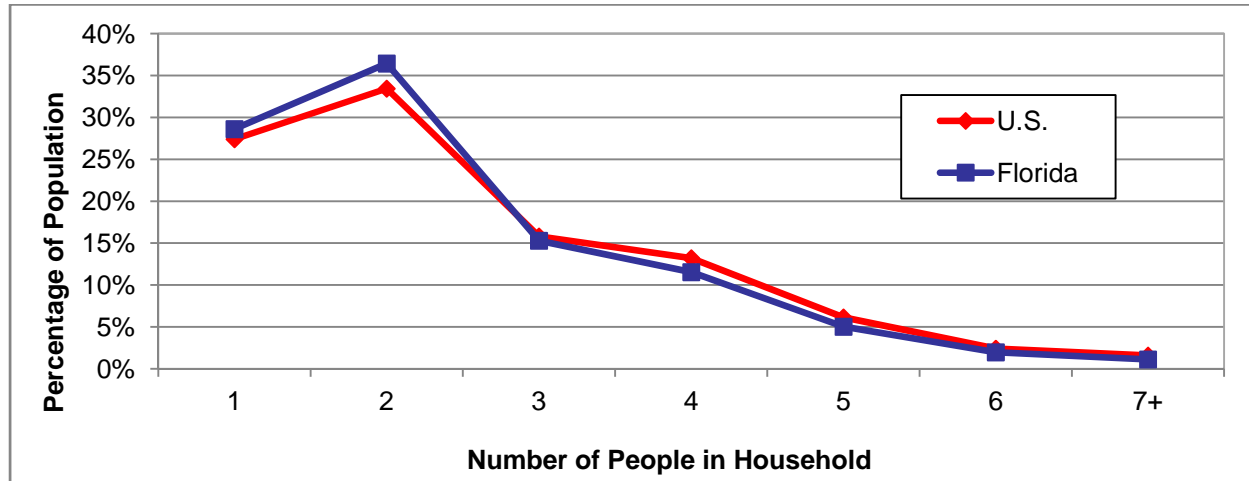
	United States			Florida		
	Estimate	Total Population Percentage	Group Percentage	Estimate	Total Population Percentage	Group Percentage
Total	309,349,689			18,843,326		
Not Hispanic or Latino	258,609,600	83.6%		14,590,129	77.4%	
White alone	196,929,412		76.1%	10,884,119		74.6%
Black or African American alone	37,897,524		14.7%	2,875,804		19.7%
American Indian and Alaska Native alone	2,074,523		0.8%	39,874		0.3%
Asian alone	14,566,264		5.6%	446,753		3.1%
Native Hawaiian and Other Pacific Islander alone	474,799		0.2%	10,162		0.1%
Some other race alone	558,211		0.2%	50,631		0.3%
Two or more races	6,108,867		2.4%	282,786		1.9%
Multiracial/Other race	6,667,078		2.6%	333,417		2.3%
Hispanic or Latino	50,740,089	16.4%		4,253,197	22.6%	
White alone	32,468,060		64.0%	3,527,342		82.9%
Black or African American alone	977,101		3.0%	121,573		2.9%
American Indian and Alaska Native alone	479,043		49.0%	27,980		0.7%
Asian alone	162,038		33.8%	5,827		0.1%
Native Hawaiian and Other Pacific Islander alone	33,117		20.4%	1,363		0.0%
Multiracial/Other race	16,620,730		726.0%	569,545		13.4%

Source: U.S. Census Bureau, 2011 ACS.

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Given that Florida is an attractive retiree state, it can be expected that its household size will differ from the rest of the country. As evidenced in Figure 4, the number of one- and two-person households is higher in Florida than in the U.S.

Figure 4 – Household Size: Florida vs. U.S.



Source: U.S. Census Bureau, 2011 ACS.

Vehicle Ownership

Vehicle availability influences travel levels and mode choice. Auto ownership in Florida is quite high, as shown in Table 2. Florida has a lower share of households with no vehicles than the U.S. However, it also has a lower share of 3+ vehicle households, partially as a result of smaller household sizes. On average, Floridian households own 1.68 vehicles, whereas the average U.S. household owns 1.86 vehicles (based on 2009 NHTS). In examining commuting to work, the 2011 ACS shows that nearly 90 percent of Floridians use a personal auto (driving alone or riding in a carpool).

Table 2 – Household Vehicle Ownership: Florida vs. U.S.

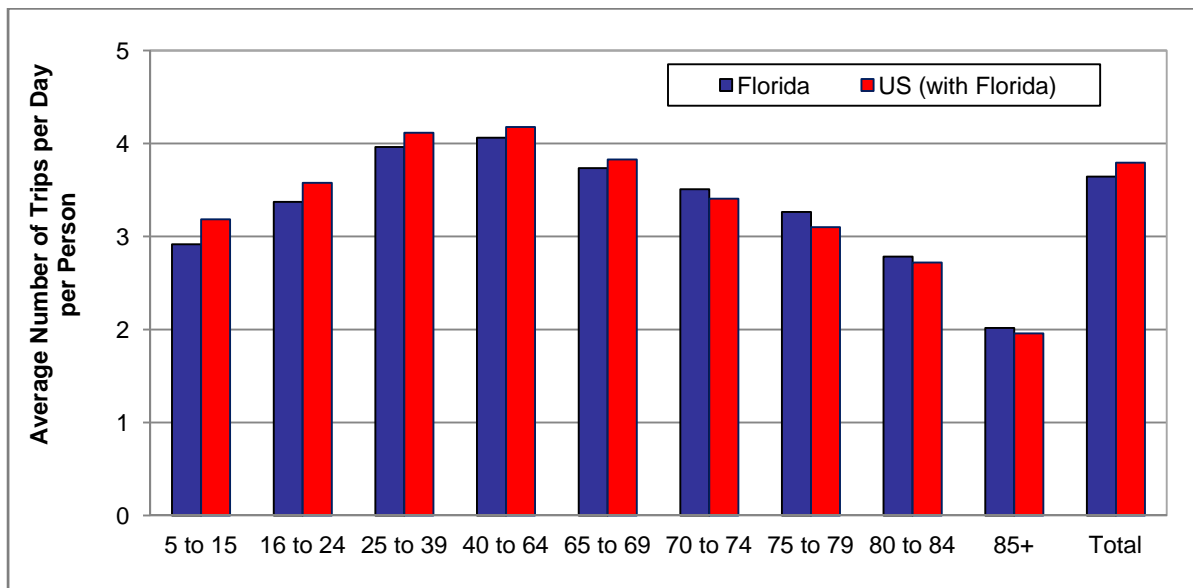
	Florida	U.S.
0 Vehicles	7.0%	9.1%
1 Vehicle	41.5%	33.8%
2 Vehicles	37.8%	37.6%
3+ Vehicles	13.7%	19.5%

Source: U.S. Census Bureau, 2011 ACS.

Trip Rate

Trip rates measure how often a particular individual travels on a typical day. Daily trip rates were computed by age and then again by household income. The comparison of trip rates by age between Florida and U.S. travelers is presented in Figure 5.

Figure 5 – Trip Rates by Age: Florida vs. U.S.



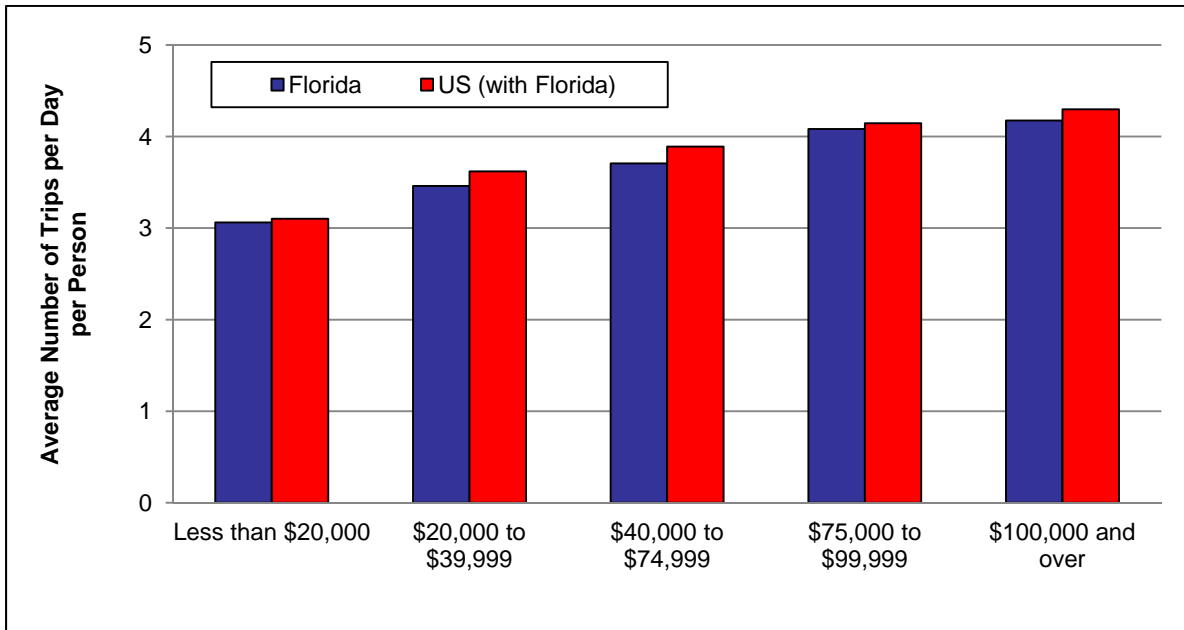
NHTS data show that travel rates typically peak for individuals ages 40 to 64 and start to decline slowly for older travelers both in Florida and the U.S. Not surprisingly, individuals age 85 and older travel less than the rest of the population. The analysis reveals that Florida travelers in all age groups younger than 69 years travel less than the average traveler in the U.S. Overall, Florida travelers take slightly fewer trips per day than the average U.S. traveler (3.6 trips per day for Florida travelers vs. 3.8 trips per day for U.S. travelers). At the same time, Florida travelers age 70 and over take more trips than the average U.S. traveler in the same age groups. The last observation is consistent with prior NHTS analyses that showed higher-than-national-average mobility of the older adult population in Florida. Factors hypothesized to explain this include the Florida land use pattern and the perception that many of the retirees that choose to live in Florida are, by their very nature, active (as indicated by their desire and ability to relocate to Florida in retirement) and thus more likely to be out and about taking advantage of Florida's weather and attractions.

Typically, travel is positively correlated with income. Therefore, it can generally be expected that individuals in households with higher income will tend to travel more than individuals

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

residing in lower-income households. Figure 6 presents the comparison of trip rates by household income between Florida and the U.S. travelers. The analysis reveals that Florida travelers of all income levels tend to take fewer daily trips than the average traveler in the U.S.

Figure 6 – Trip Rates by Income: Florida vs. U.S.

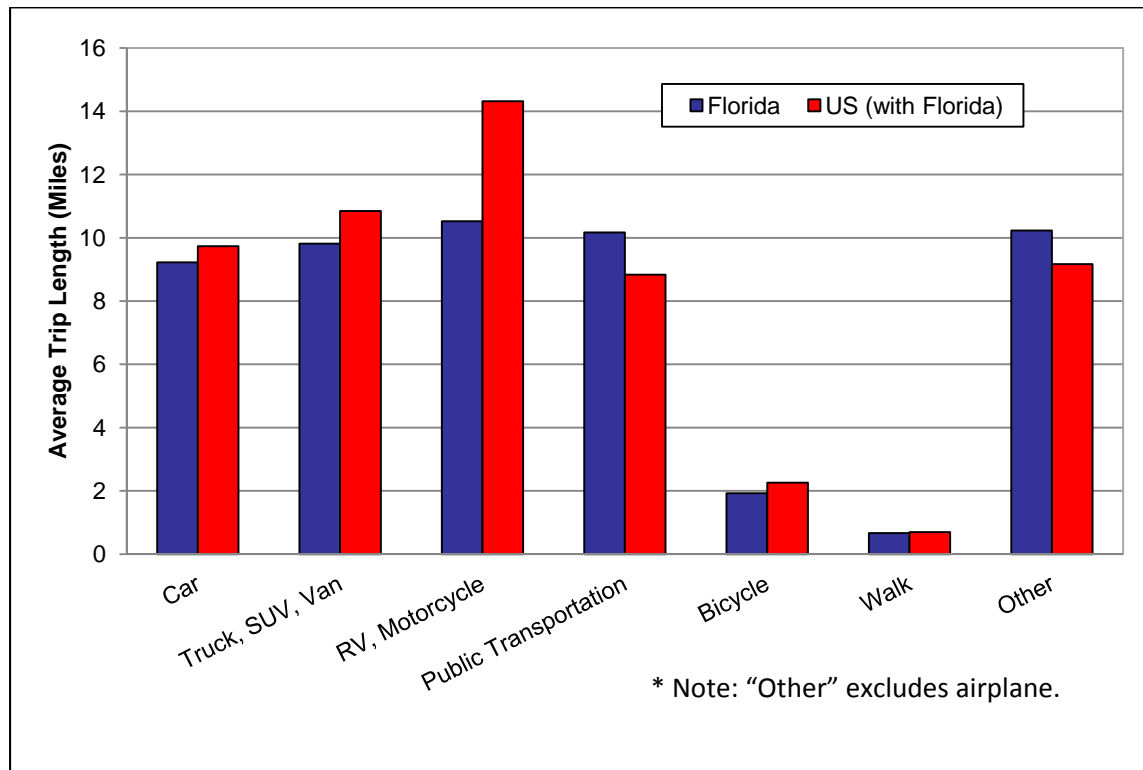


As could be expected, individuals with household income less than \$20,000 per year tend to travel the least, whereas individuals with annual household incomes of \$100,000 and over travel the most. This trend is true for both Florida and the U.S.

Trip Length

Trip length measures the entire length of each individual trip taken by a traveler in miles. The analysis looks at trip length by transportation mode, age, and income. Figure 7 presents the comparison of trip length by mode of transportation between Florida and U.S. travelers.

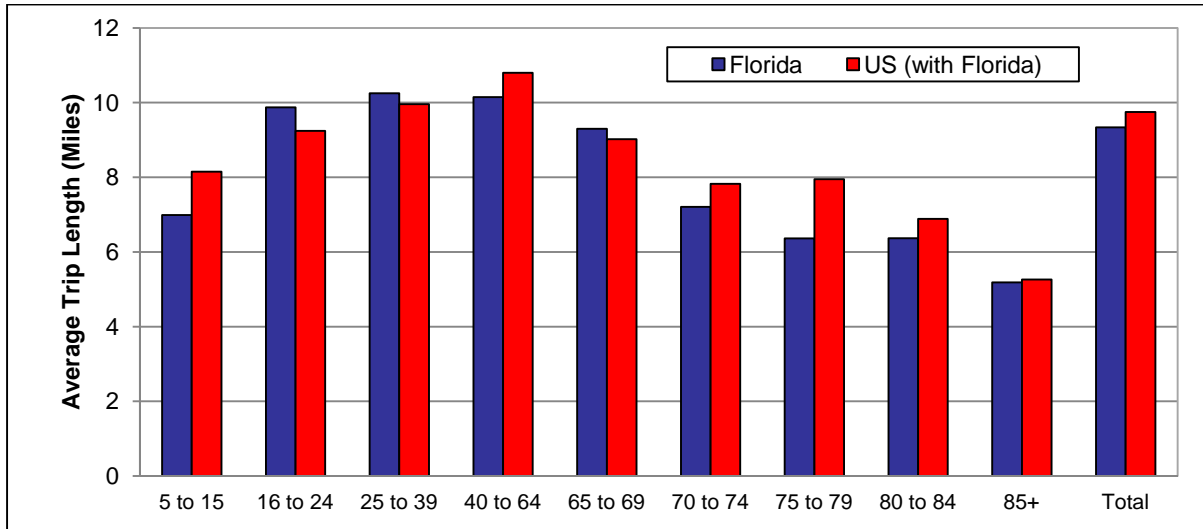
Figure 7 – Trip Length by Mode: Florida vs. U.S.*



The analysis reveals some interesting trends regarding different modes of transportation in Florida and the U.S. NHTS data indicate that, of all transportation modes (excluding airplane), the longest distance is covered by RV and motorcycle, both in Florida and the U.S. As can be seen from Figure 7, Florida travelers travel fewer miles per trip by almost all major modes of travel, including car, truck, SUV and van, RV and motorcycle, and bicycle, compared with an average traveler in the U.S. At the same time, Floridians take longer public transportation trips (measured in terms of miles per trip) than an average U.S. traveler.

In addition to the number of trips a person takes, the age of a traveler also has an effect on the length of a typical trip (in miles). Younger and older travelers tend to travel shorter distances, while middle-age travelers typically travel the longest distance. Overall, travelers in Florida travel a slightly shorter distance per trip compared with the U.S. average (9.3 miles per trip in Florida vs. 9.7 miles per trip in the U.S.).

Figure 8 – Trip Length by Age: Florida vs. U.S.

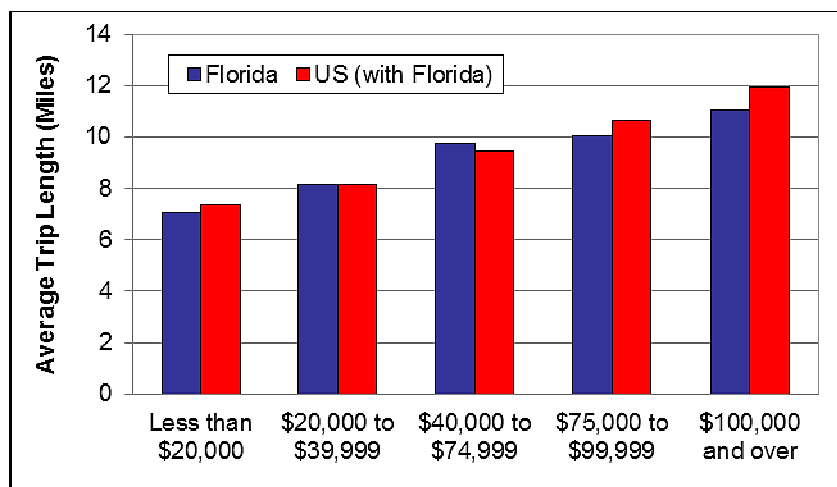


As can be seen in Figure 8, trip length peaks in the 25 to 39 age bracket for Florida travelers and between 40 and 64 for U.S. travelers. Florida travelers in the age groups of 16-24 and 25-39 travel longer distances compared with their U.S. counterparts. On the other hand, average U.S. travelers aged 70 and older take longer trips compared with Florida travelers in the same age groups. Travelers aged 85 and older make the shortest trips both in Florida and the U.S.

Income typically is positively correlated not only with the number of trips but also with the length of a trip an individual takes. Individuals with higher household incomes are generally expected to travel longer distances than individuals with lower household incomes, as depicted in the comparison of trip length by income between Florida and U.S. travelers (Figure 9).

As expected, the data show that the shortest distance is traveled by individuals with household incomes of less than \$20,000, while individuals with a household income of \$100,000 or more take the longest trips, both in Florida and the U.S. Florida travelers with household incomes of \$40,000 to \$74,999 per year take slightly longer

Figure 9 – Trip Length by Income: Florida vs. U.S.



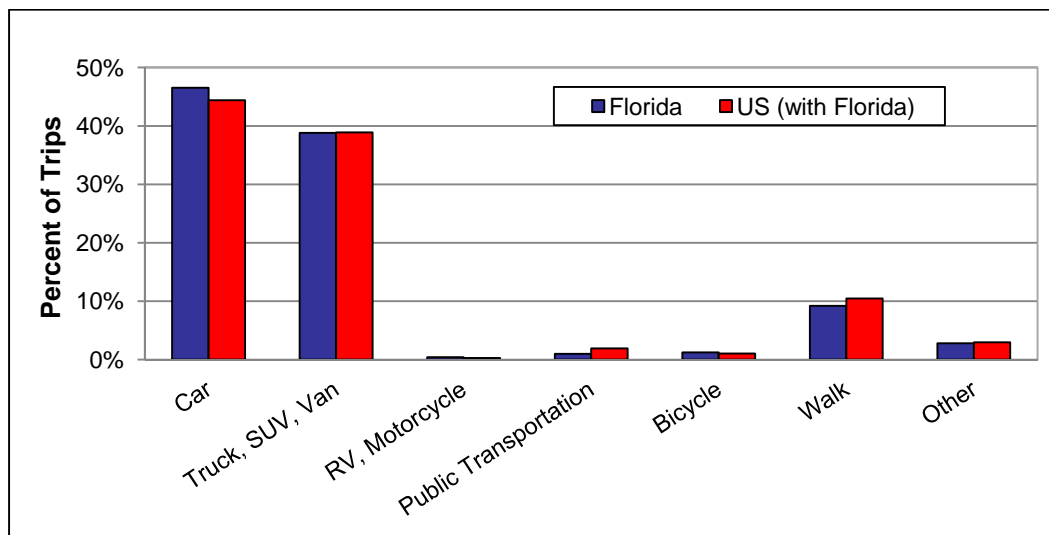
NHTS Report: Chapter Two – Florida and U.S. Travel Summary

trips than their U.S. counterparts (9.8 miles per trip in Florida vs. 9.4 miles per trip in the U.S.). Conversely, U.S. travelers in all other income groups travel longer distances per trip than Florida travelers.

Mode Share

Historically, Florida travel has been dominated by the auto. While walk and transit modes in Florida have increased slightly in the past, they still are below the national average. Figure 10 compares mode share of trips in Florida and the U.S.

Figure 10 – Mode Share: Florida vs. U.S.



The data presented in Figure 10 show that Florida travelers typically choose the car as their preferred mode of transportation more often than travelers in the U.S. The choice of a transportation mode can be influenced by a number of factors, including socio-demographic factors, age, income, personal preferences, the availability of various travel options and the land-use patterns. The current analysis looks mainly at the age of travelers and household income in terms of their influence on the mode of transportation.

Figure 11 and 12 present the comparison of the mode choice by age between the travelers in Florida and the U.S. It reveals interesting trends. As travelers age, they tend to choose the car as their mode of choice, while travel by truck, SUV, and van steadily declines with age for both Florida and the U.S. This trend becomes especially pronounced after travelers reach the age of 65. The data show that walking remains relatively the same over the entire age spectrum, while the use of public transportation peaks between the ages of 16 and 24 and then declines slightly with age, for both Florida and U.S. travelers.

Figure 11 – Mode Share by Age: Florida vs. U.S.

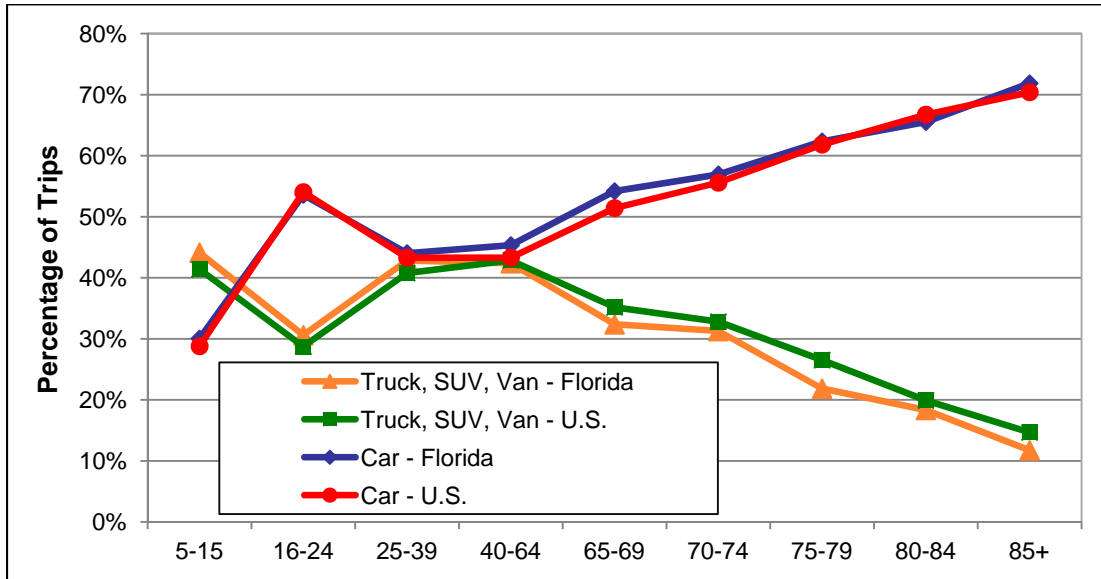
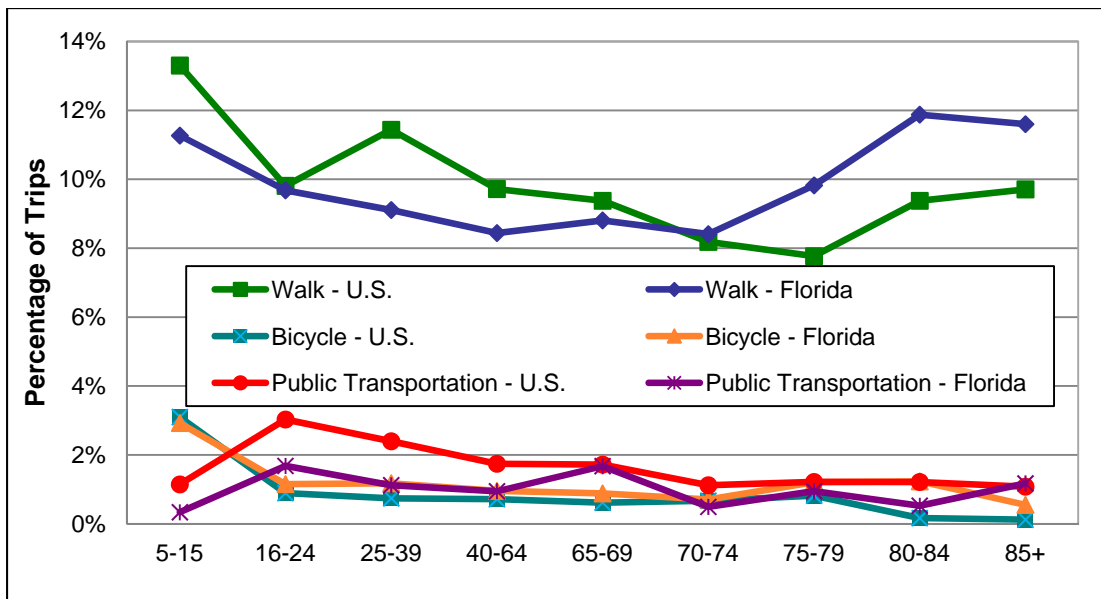


Figure 12 (continued) – Mode Share by Age: Florida vs. U.S.



Income is another important factor that has an effect on the choice of the transportation mode. It is generally expected that as income rises, travelers would tend to choose faster, more convenient modes of travel. The comparison of transportation mode choice by income between Florida and U.S. travelers is presented in Figure 13.

Figure 13 – Mode Share by Income: Florida vs. U.S.

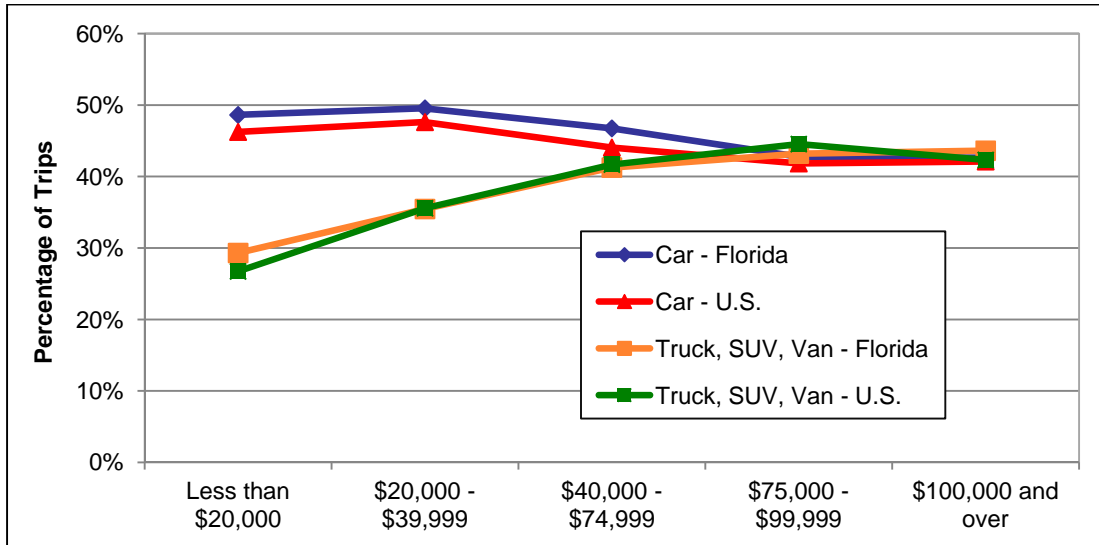
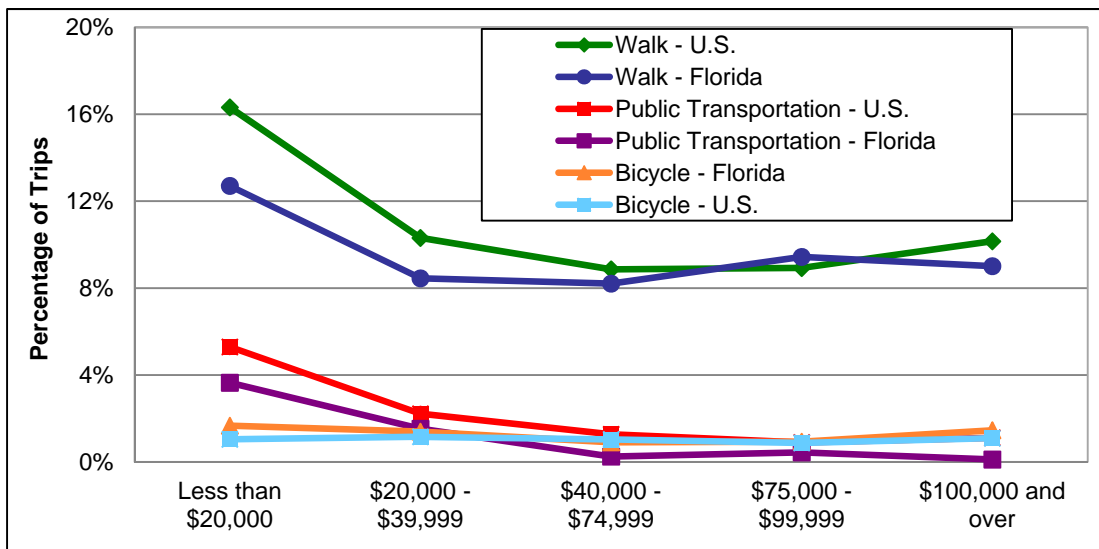


Figure 14 (continued) – Mode Share by Income: Florida vs. U.S.

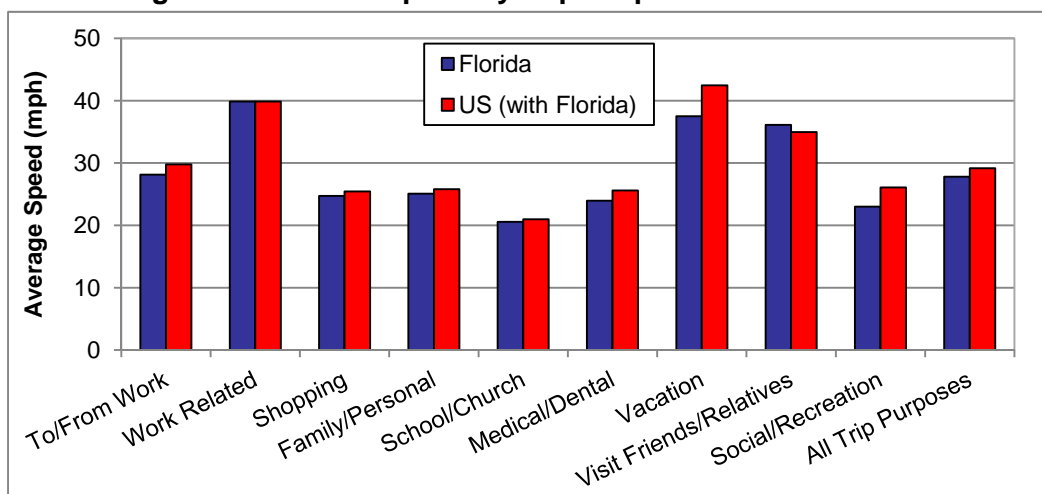


NHTS data show that as income rises, travelers both in Florida and the U.S. tend to take significantly more trips by truck, SUV, and van, while the use of passenger cars steadily declines with income both for Florida and U.S. travelers. Walking and the use of public transportation also decline for travelers with higher household income in both Florida and the U.S.

Travel Speed

The speed of travel varies between trips with different purposes. It is reasonable to expect that travelers would prefer faster travel options for trips of higher importance or higher time sensitivity, such as work-related trips or trips for medical/dental purposes. Also, longer distance trips (e.g., vacation trips) often offer higher speed travel (e.g., freeway travel) or encourage the choice of faster modes of transportation (e.g., airplane). The comparison of travel speed by trip purpose between Florida and U.S. travelers is presented in Figure 15.

Figure 15 – Travel Speed by Trip Purpose: Florida vs. U.S.



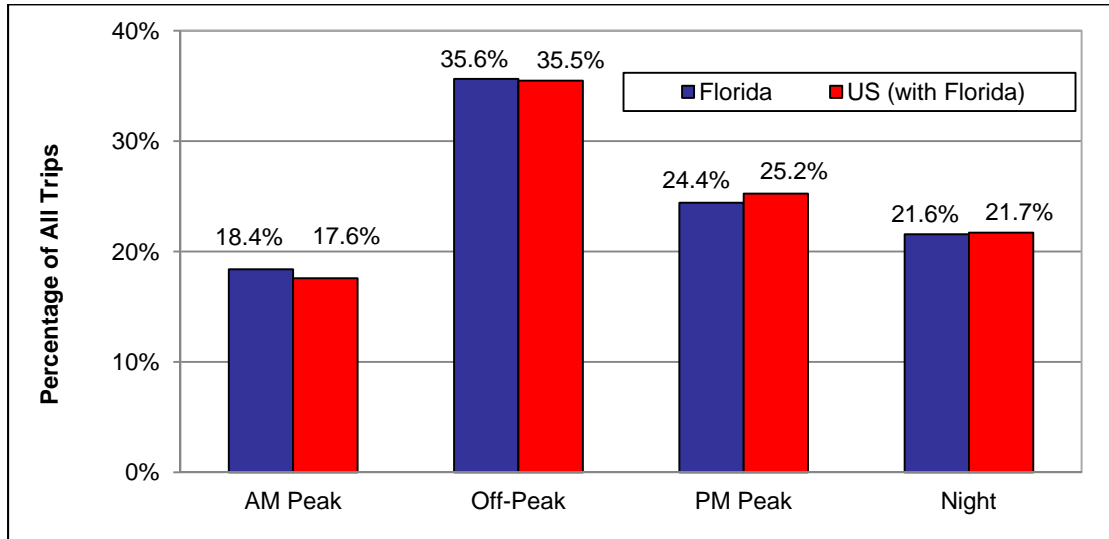
As may be expected, the highest speed is observed for work-related trips and vacation trips while trips to school/church have the lowest speed, both in Florida and the U.S. The analysis shows that Florida travelers travel at a slightly lower overall speed than the travelers in the U.S. (27.8 mph for Florida vs. 29.1 mph for the U.S.). Travel speed for trips to visit friends/relatives is slightly higher in Florida than in the U.S. and is identical to the national average. The speed for trips of all other purposes is lower in Florida than in the U.S.

Temporal Distribution of Trips

The temporal distribution of trips refers to trips made during different time periods throughout the day. Looking at temporal distribution of trips is useful for studying the behavior of travelers in response to congestion. The comparison of trips by time period between Florida and the U.S. — taken on weekdays, Saturday, and Sunday — is presented in Figure 16, Figure 17, and Figure 18, respectively.

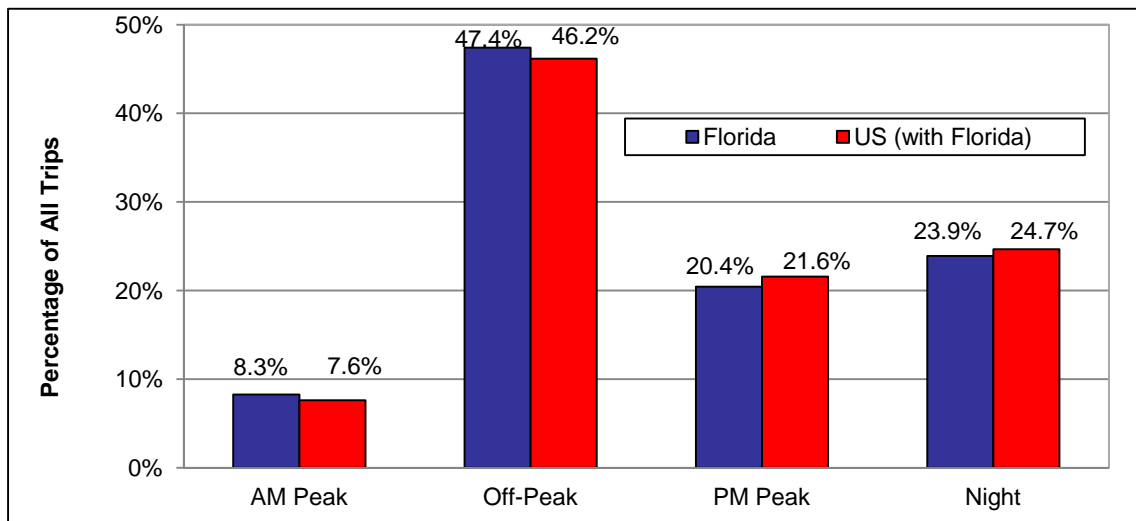
NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Figure 16 – Weekday Trips by Time Period: Florida vs. U.S.



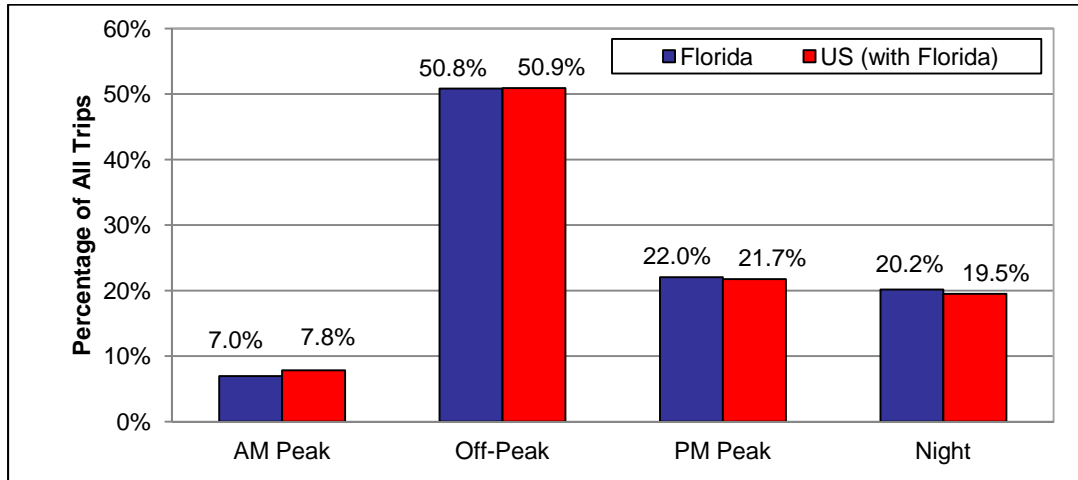
Note: Travel classified based on trip start time.

Figure 17 – Saturday Trips by Time Period: Florida vs. U.S.



Note: Travel classified based on trip start time.

Figure 18 – Sunday Trips by Time Period: Florida vs. U.S.

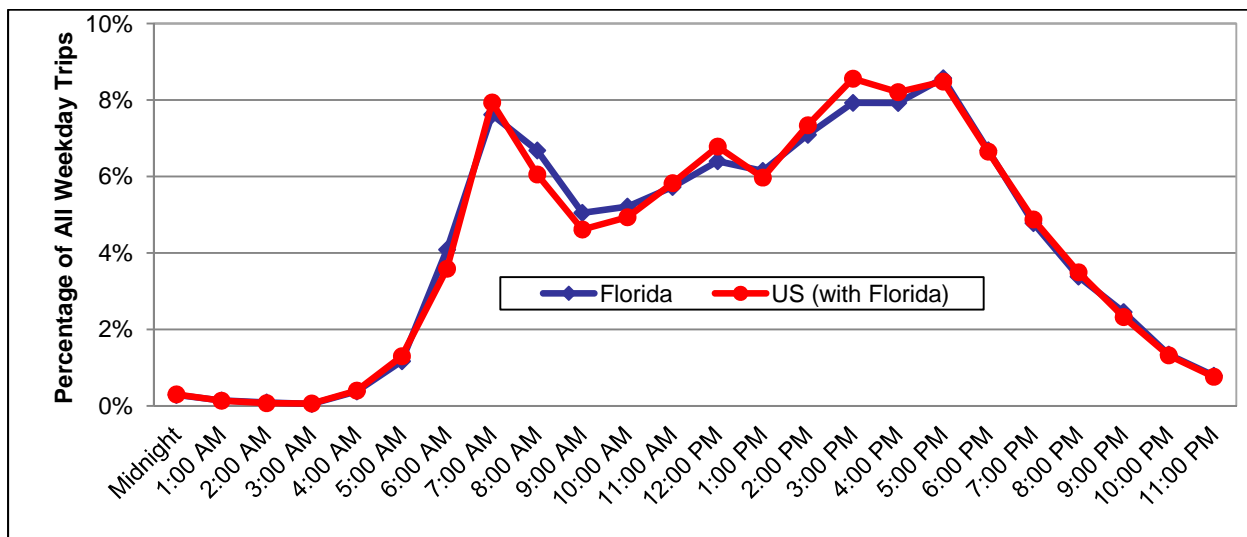


Note: Travel classified based on trip start time.

Since people typically have relatively rigid time schedules on weekdays due to work or school commitments, a large portion of trips occurs during the morning peak (defined as 6:00–9:00 AM) and the afternoon peak (defined as 3:00–6:00 PM), both in Florida and the U.S. On Saturday and Sunday, travel is primarily social or recreational with more flexible schedules. Therefore, the majority of weekend travel, both in Florida and nationwide, occurs off-peak.

Figure 19, Figure 20, and Figure 21 demonstrate an hourly temporal distribution of trips and compare Florida and the U.S. for weekday, Saturday and Sunday travel, respectively.

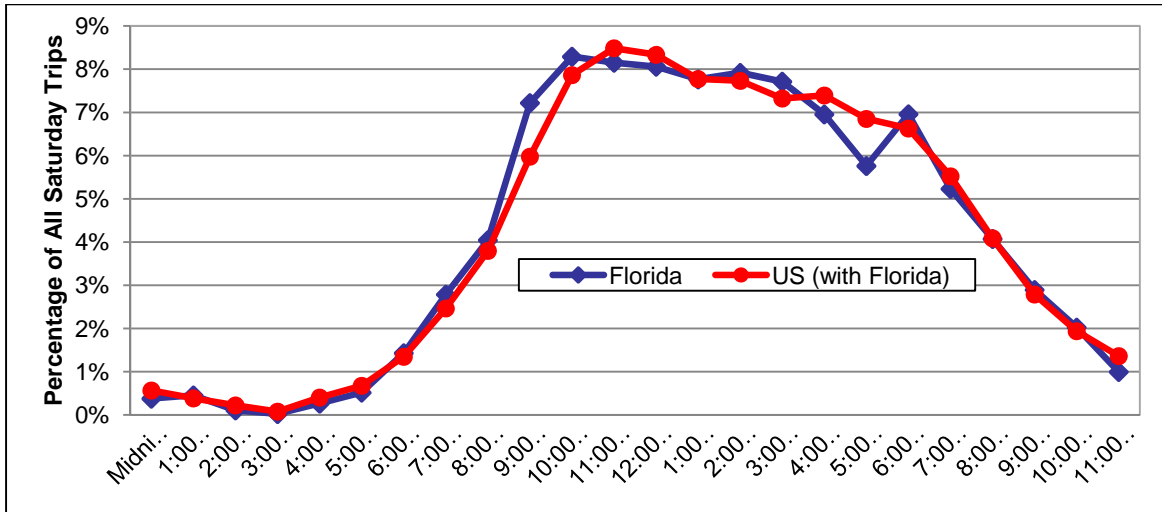
Figure 19 – Temporal Distribution of Weekday Trips: Florida vs. U.S.



Note: Travel classified based on trip start time.

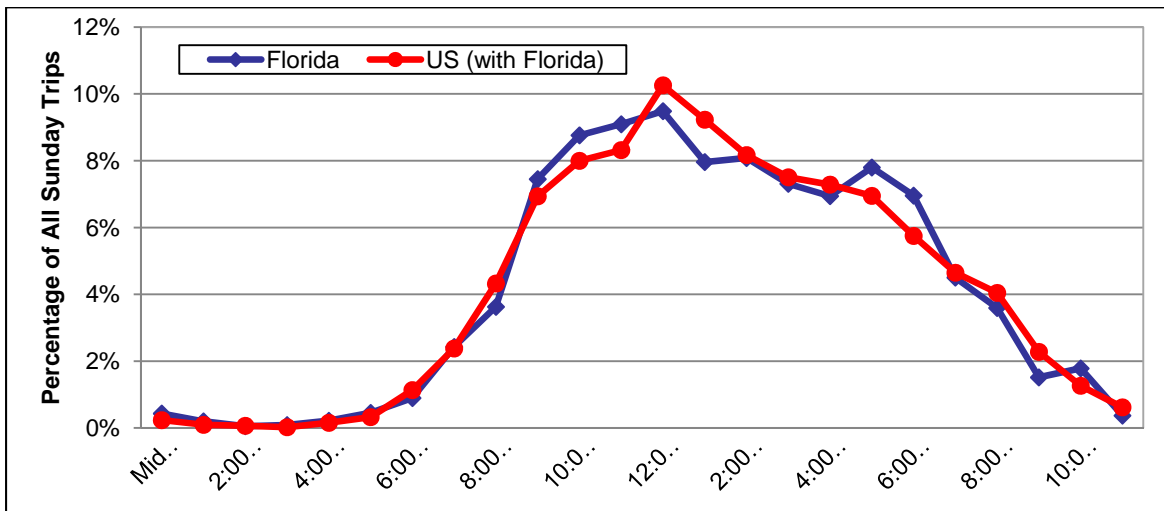
NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Figure 20 – Temporal Distribution of Saturday Trips: Florida vs. U.S.



Note: Travel classified based on trip start time.

Figure 21 – Temporal Distribution of Sunday Trips: Florida vs. U.S.



Note: Travel classified based on trip start time.

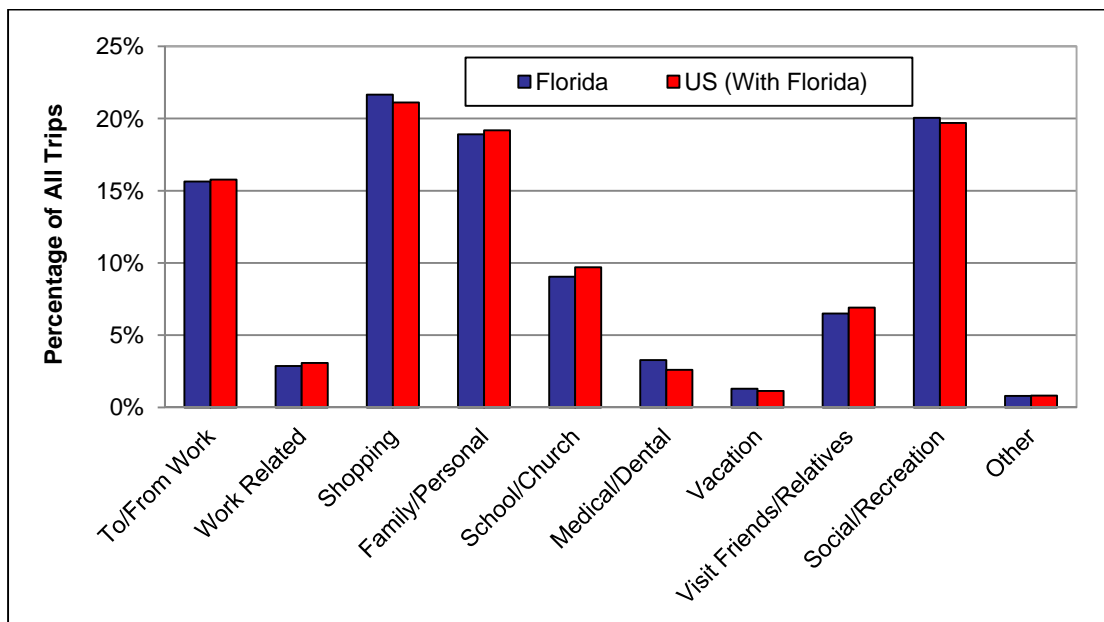
NHTS data show that the distribution of trips by time of the day in Florida is essentially similar to that of the entire nation. On weekdays, the highest percentage of trips is taken during the afternoon peak, both in Florida and the U.S. In the U.S., weekday peak travel occurs during the period from 3–5 PM, while in Florida, travel peak is mostly concentrated around 5 PM. Florida data show a distinctive spike in travel around 5–6 PM on the weekend, possibly due to dining- and entertainment-related travel. Notably, this trend in PM travel is not observed in the travel data for the entire U.S.

Trip Purpose

Travel patterns are usually influenced by the purpose of the trip. The reason for traveling may impact traveler decisions regarding the choice of mode, travel speed, trip length, etc. The current analysis presents the distribution of trips by purpose for Florida compared with the U.S.

Figure 22 compares trip percentages by trip purposes between Florida travelers and the nation. The highest percentage of trips, both in Florida and the U.S., is taken for the purpose of shopping. Social/recreation and family/personal purposes represent, respectively, the second and third most popular reasons for traveling (both in Florida and the U.S.). Traveling to/from work in Florida is almost identical to the U.S. average (15.6% in Florida vs. 15.8% for the U.S.). Work-related travel, family/personal travel, traveling to school/church, and visiting friends/relatives all account for lower shares of the overall trips in Florida. The analysis reveals, however, that Florida travel is very similar to the U.S. in terms of the distribution of trips by trip purpose.

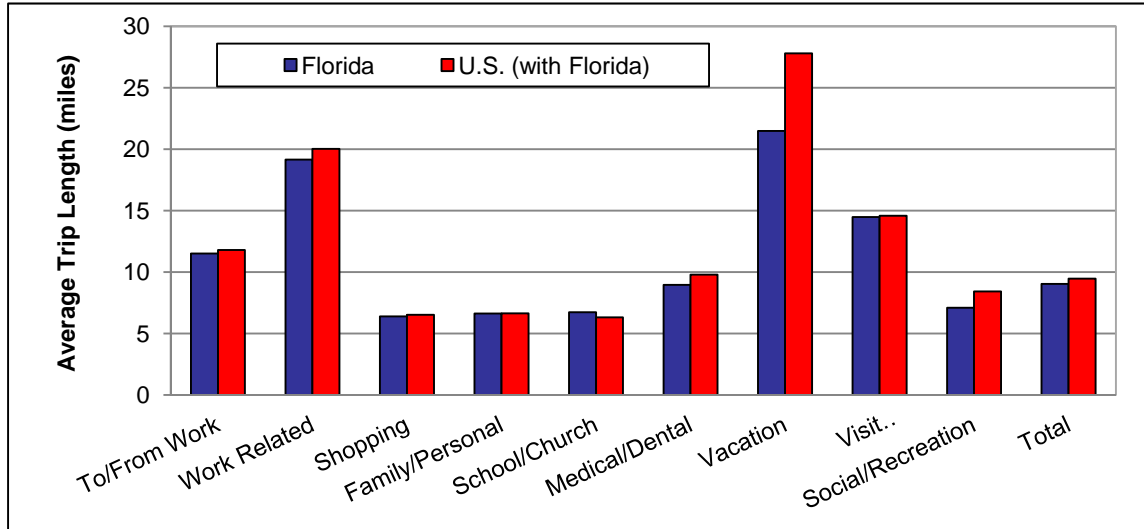
Figure 22 – Trips by Trip Purpose: Florida vs. U.S.



Trips taken for different purposes typically have different lengths. The data show that travelers both in Florida and the U.S. take the longest trips when traveling to/from vacation destinations, followed by work-related trips and visiting friends or relatives. For most trip purposes, travelers in Florida take trips with similar lengths or slightly shorter trips as U.S. travelers. Florida travelers take longer trips only for the purposes of traveling to school or church (Figure 23).

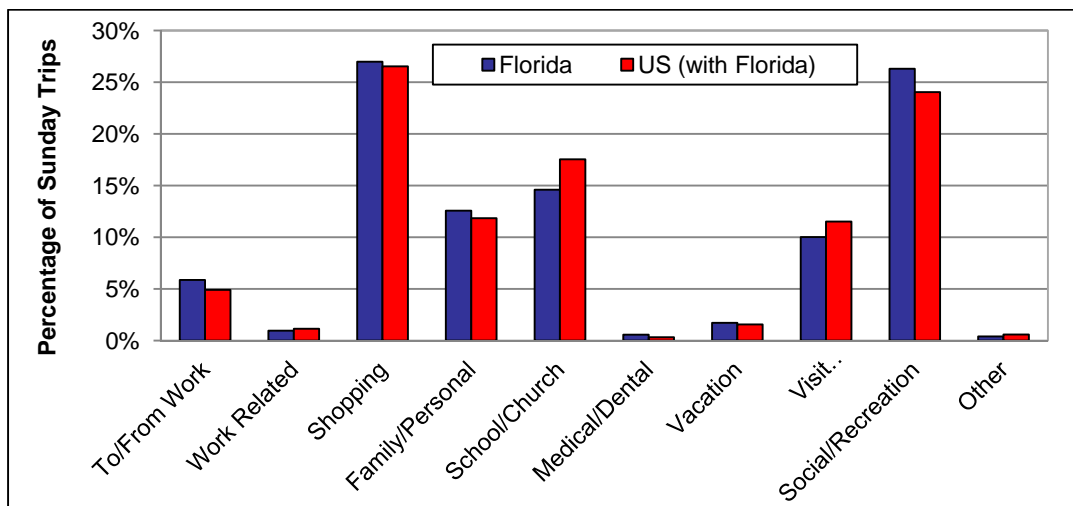
NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Figure 23 – Trip Length by Purpose: Florida vs. U.S.



Changes in travel patterns between weekdays and the weekend can be tracked by looking at the number of trips taken on different travel days. Table 3 and Figure 24 compare trips by purpose between Florida and the U.S, taken on weekdays, Saturday, and Sunday, respectively.

Figure 24 – Trips by Purpose – Sunday: Florida vs. U.S.



As is expected, the highest share of trips to/from work is observed on weekdays, while shopping trips and social/recreational trips have the highest share during the weekend. During weekdays, family/personal trips are the most frequent trips both in Florida and the U.S., followed by trips to/from work and shopping trips. The analysis also shows that the vast majority of all weekly

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

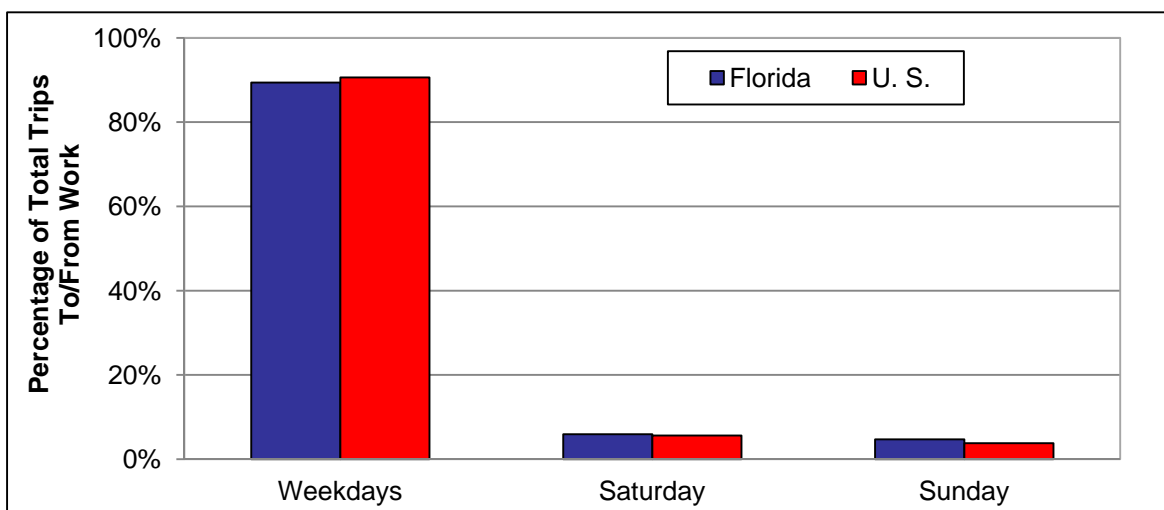
trips (over 73%), both in Florida and in the U.S., occur on weekdays and the weekend (both Saturday and Sunday) accounts for roughly 26 percent of trips. The comparison of trip shares as a percentage of total trips between Florida and the U.S. in each travel day is presented in Table 3.

Table 3 – Percentage of Total Trips by Day of Week and Trip Purpose: Florida vs. U.S.

Trip Purpose	Percent of Total Trips					
	Weekdays		Saturday		Sunday	
	Florida	U.S.	Florida	U.S.	Florida	U.S.
To/From Work	89.4%	90.6%	5.9%	5.6%	4.7%	3.8%
Work-Related	90.2%	89.6%	5.6%	5.8%	4.2%	4.5%
Shopping	63.7%	63.8%	20.8%	20.9%	15.5%	15.3%
Family/Personal	81.6%	80.5%	10.2%	12.0%	8.3%	7.5%
School/Church	75.0%	73.9%	4.9%	4.2%	20.1%	22.0%
Medical/Dental	93.2%	94.9%	4.7%	3.6%	2.2%	1.5%
Vacation	52.7%	62.1%	30.7%	21.3%	16.6%	16.7%
Visit Friends or Relatives	60.6%	59.6%	20.2%	20.1%	19.1%	20.2%
Social/Recreation	64.0%	63.5%	19.6%	21.6%	16.3%	14.8%
Other	82.8%	79.3%	10.9%	11.9%	6.3%	8.8%
Total	73.7%	73.6%	13.8%	14.3%	12.4%	12.1%

Figure 25 through Figure 27 compare the share of trips by day of the week and between Florida and the U.S. for trips to/from work, family/personal trips, and vacation trips, respectively. Figure 28 shows the percentage of total trips by day of the week.

Figure 25 – Percentage of Trips To/From Work by Day of Week: Florida vs. U.S.



NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Figure 26 – Percentage of Family/Personal Trips by Day of Week: Florida vs. U.S.

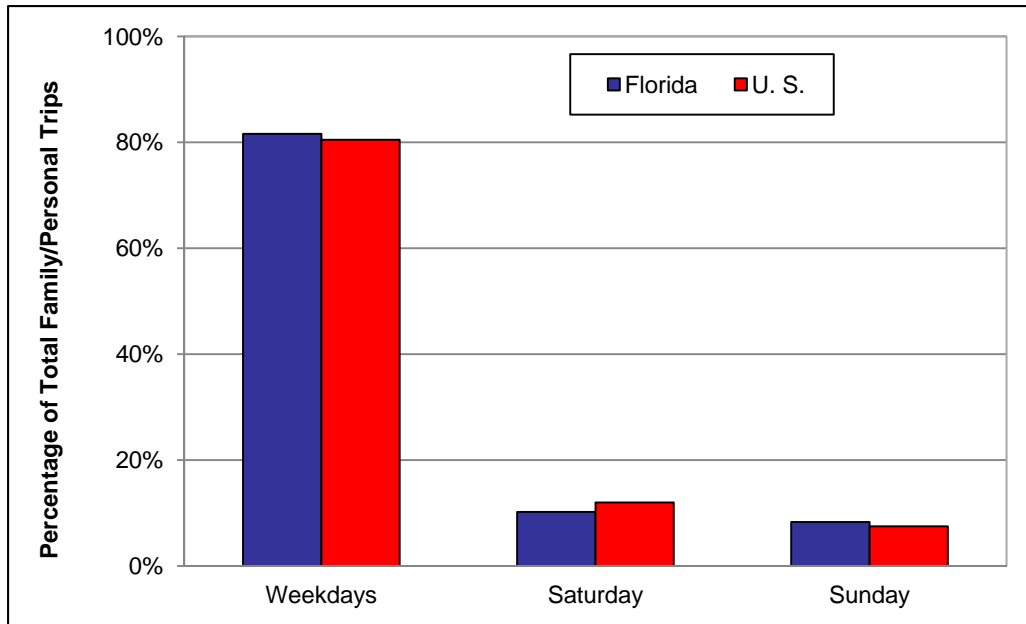


Figure 27 – Percentage of Vacation Trips by Day of Week: Florida vs. U.S.

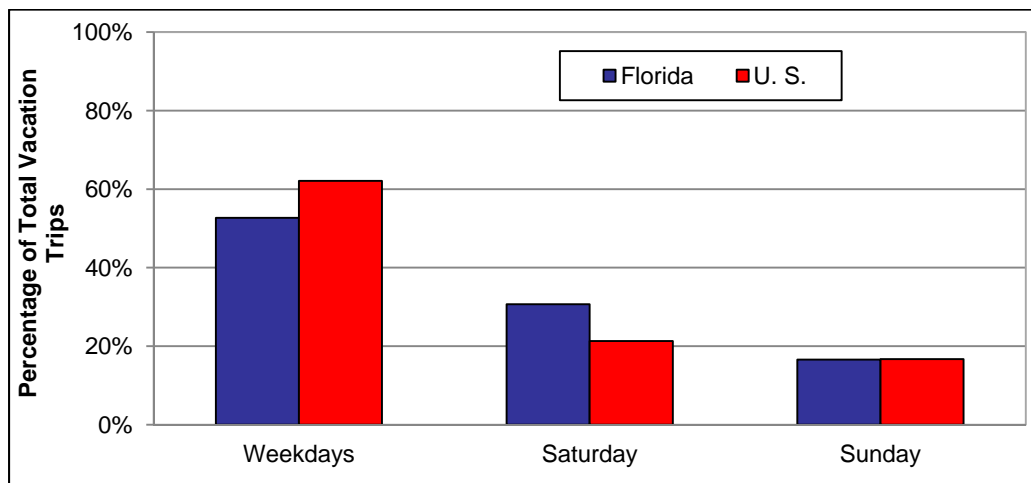
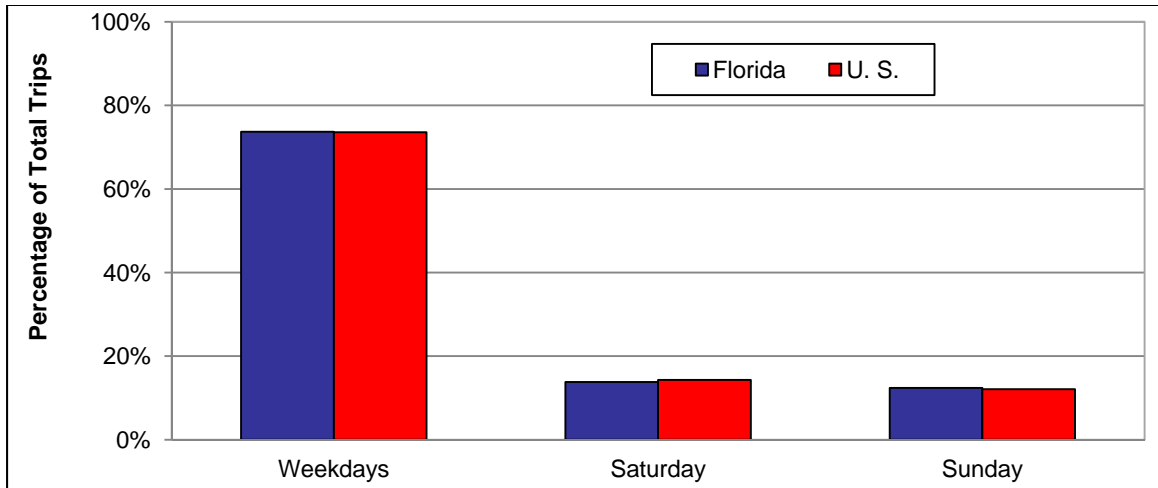


Figure 28 – Percentage of Total Trips by Day of Week: Florida vs. U.S.



The above figures show that the distribution of trips by day of week, measured as a percentage of trips taken each day, is virtually identical in Florida and the U.S. for trips to/from work, as well as for the total trips. On the other hand, Florida travelers take a slightly higher percentage of family/personal trips during weekdays and on Sunday and a lower percentage of trips on Saturday compared with U.S. travelers.

Figure 27 displays a noticeable difference in vacation travel habits between Florida and U.S. travelers. While the majority of vacation trips, both in Florida and the U.S., occur on weekdays, Florida travelers are more likely than U.S. travelers to take vacation trips on Saturday, while the opposite is true on weekdays (in Florida, 52.7% of all vacation trips are taken on weekdays and 30.7% on Saturday, compared with 62.1% on weekdays and 21.3% on Saturday for the U.S.). Interesting trends are revealed by reviewing the length of trips during weekdays and the weekend. As may be expected, the average trip length (for all purposes) is typically longer during the weekend for both Florida and U.S. travelers. The data also show that Florida travelers take significantly longer vacation trips during the weekdays than on the weekend. Comparisons of trip length by purpose between Florida and U.S. travelers on weekdays, Saturday, and Sunday is presented in Figure 29, Figure 30, and Figure 31, respectively.

Figure 29 – Trip Length by Purpose – Weekdays: Florida vs. U.S.

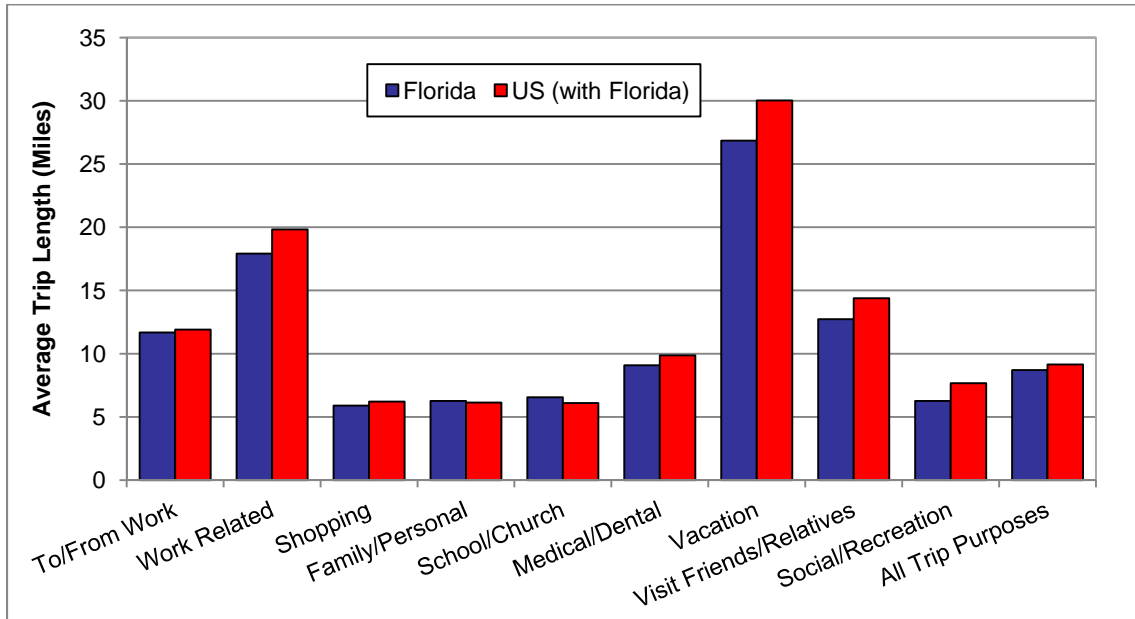


Figure 30 – Trip Length by Purpose – Saturday: Florida vs. U.S.

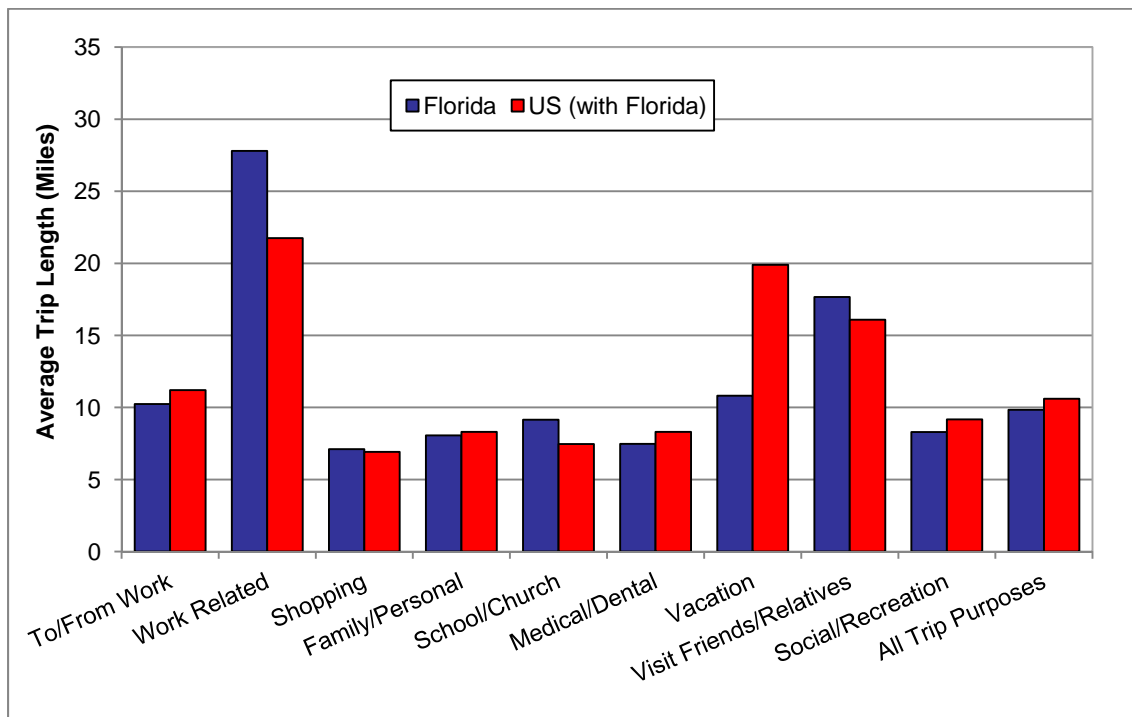
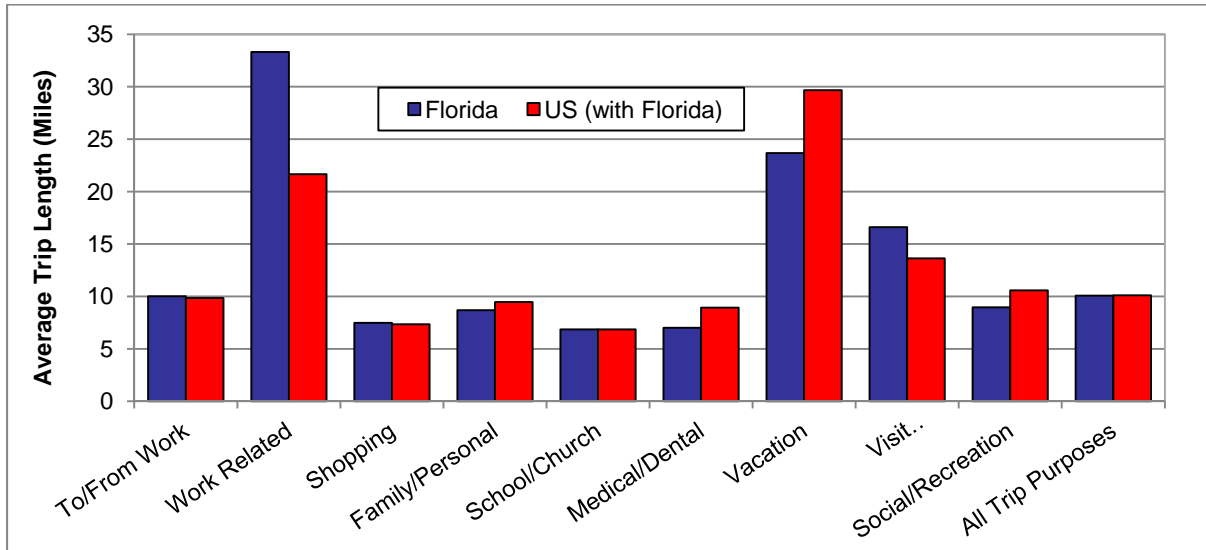


Figure 31 – Trip Length by Purpose – Sunday: Florida vs. U.S.

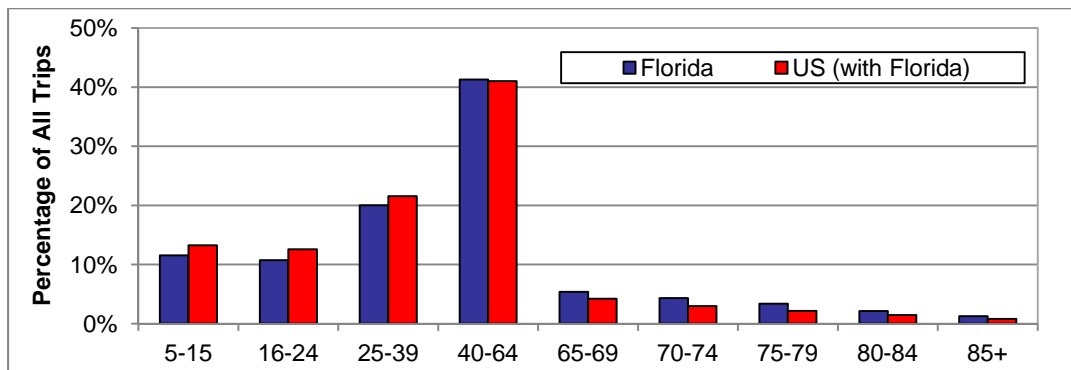


The above figures demonstrate that while during the weekdays Floridians travel fewer miles for work-related trips than U.S. travelers, weekend work-related travel is significantly longer in Florida than in the U.S. Average vacation trips in the U.S. exceed the length of vacation trips in Florida during all days. Floridians take longer trips than U.S. travelers to visit friends/relatives during the weekend, while the opposite is true during weekdays.

Trips by Age

Florida has historically been characterized by a highly-mobile older adult population. Trips made by travelers age 65 and older make up a larger percentage of trips in Florida, compared with the U.S. Figure 32 presents the shares of trips taken by travelers in each age group, comparing Florida to the U.S.

Figure 32 – Trips by Age: Florida vs. U.S



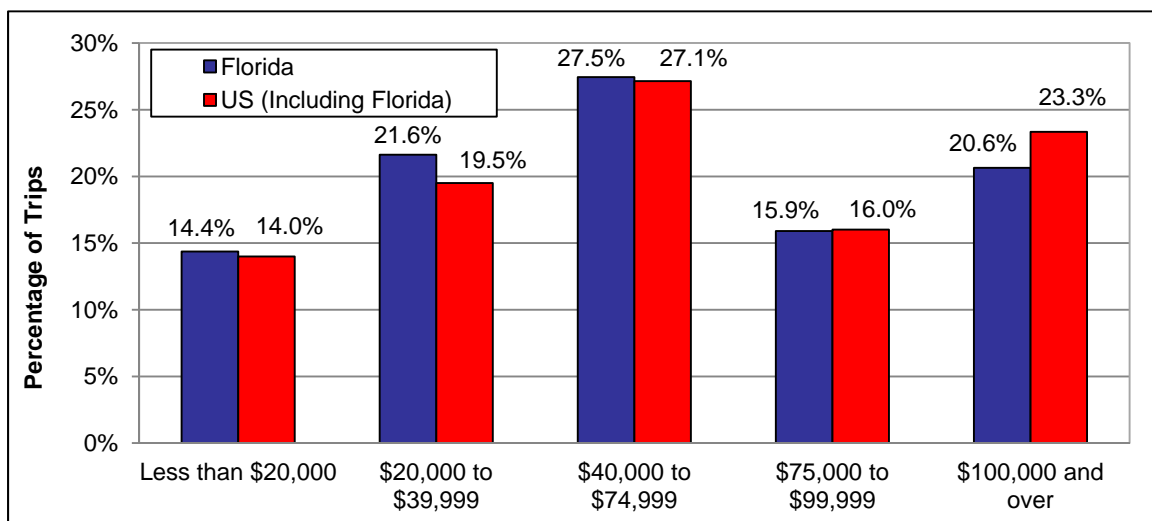
NHTS Report: Chapter Two – Florida and U.S. Travel Summary

The figures show that Florida travel is characterized by a larger-than-national share of trips made by older travelers (age 65 and older). This differential can be explained by higher mobility rates of older adults in Florida and by a larger-than-national average percentage of the older adult population in the state.

Trip by Income

Travel and income are usually positively correlated. In general, the income profile of travelers in Florida is similar to that of the U.S. The data show that travelers in lower income groups (less than \$20,000 and \$20,000 to \$39,999) represent the larger share of the overall number of trips in Florida. Higher income travelers (those with income \$75,000 to \$99,999 and over \$100,000), on the other hand, account for a lower percentage of trips in Florida compared with the U.S. as a whole (Figure 33).

Figure 33 – Trips by Income: Florida vs. U.S.



Observations

The analysis of NHTS data, including the Florida sample, allows comparison of travel trends in Florida with those of the U.S. The analysis reveals both similarities and differences in travel patterns of Florida and U.S. travelers. Floridians have essentially similar travel patterns to the rest of the U.S., with a few minor differences. The differences that do exist are relatively modest and are explained by a combination of socio-demographic characteristics of the Florida population and the transportation choices and activity patterns available in Florida.

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Florida travel is characterized by a larger-than-national share of trips made by travelers age 65 and older, reflecting the retired population. These retirees, while active relative to their peers in other states, travel less than individuals in their peak working years and, not surprisingly, have lower levels of work trips.

Florida travelers in all age groups younger than 70 years travel less than the average traveler in the U.S. while Florida travelers age 70 and older take more trips than U.S. travelers. Overall, Florida travelers take slightly fewer trips per day than the average U.S. traveler (3.6 trips per day for Florida travelers vs. 3.8 trips per day for U.S. travelers).

In Florida, travelers in lower income groups represent a larger share of the overall population and number of trips compared with the U.S. average. At the same time, higher income travelers (those with income over \$100,000) account for a lower percentage of the population and trips in Florida compared with the U.S.

The analysis reveals that Florida travelers of all income levels tend to take fewer daily trips than the average traveler in the U.S. In addition, Florida travelers travel at a slightly lower overall speed than the travelers in the U.S. (22.6 mph for Florida vs. 23.2 mph for the U.S.).

The analysis of NHTS data identifies interesting trends regarding the length of travel and mode choice of Florida travelers. Floridians travel fewer miles per trip by most major modes of transportation, including cars, trucks, SUVs and vans, RVs and motorcycles, and bicycles, compared with an average traveler in the U.S. At the same time, Florida travelers take longer public transportation trips (measured in terms of miles per trip) than an average U.S. traveler.

Florida travelers choose (or need to use) car, truck, SUV, or van as their preferred mode of transportation more often than travelers in the U.S. At the same time, Florida travelers tend to use less public transportation and walk less. The disparity in public transportation use relative to national averages is perhaps among the more significant deviations from national travel behavior (1.9% trips on transit nationwide 1.0% in Florida). This comes in spite of having higher proportions of minority and low-income population. Nationally, strong transit use occurs in older Northeastern pre-auto era cities, which drive national averages up. Florida, built mainly in the post-auto era, is much more similar to other post-auto era areas with similar levels of development density and transit service supply.

A related factor, the share of zero-vehicle households, is lower in Florida than the rest of the nation (7% vs. 9.1%). While cause-and-effect relationships are not clear, this may also contribute to the lower use of transit and walk modes.

NHTS Report: Chapter Two – Florida and U.S. Travel Summary

Finally, the distribution of trips during time of the day and day of week in Florida is essentially similar to that of the U.S. Notably, the analysis reveals a distinctive spike in Florida travel around 5–6 PM on the weekend, a trend that is not typical for the entire U.S.

While the trends are reported for the state of Florida, it is important to note that within different regions in the state there may be significant differences in both socio-demographics and the supply/availability of various modes. One is cautioned against over-interpreting differences at the state level, as explanatory factors for regional differences in travel can distort comparison with national norms.

Florida does have some distinctive socio-demographic characteristics that need to be understood in planning for transportation. However, these variations from national norms are not dramatic in many aspects of travel and are relatively stable and consistent across populations. Many of the differences that are observed can be explained in the context of variations in socio-demographic characteristics and transportation system availability and performance.

The reader is cautioned that the observed trends refer to travel of Florida residents, as they were the sample surveyed. As a result, travel by out-of-state tourists and visitors is not accounted for, despite the fact that they constitute a significant portion of statewide travel. These individuals generally have different travel patterns and behavior (both temporally and spatially) that are not necessarily the same as those of Floridians. For example, visitors and “snowbirds” do not make work trips but make higher volumes of social-recreation and vacation travel trips.

Chapter 3: Florida Travel Trends

Introduction

Travel behavior often changes over time. Changing demographics, adoption of different policies, and fluctuating economic factors all play a major role in changing how people travel. This chapter analyzes travel trends for Florida using the 1990, 1995, 2001, and 2009 NHTS/NPTS datasets. Historical travel data provides the reader an opportunity to look at how travel has changed over time in Florida.

The four datasets used to examine travel trends in Florida need to be used with caution due to unequal and, at times, small sample sizes. In Table 4, it can be seen that there is a variation in the number of samples from dataset to dataset. The 1990 dataset, in particular, has a very small sample size, whereas the 2009 dataset has a relatively large sample size

Table 4 – Florida NHTS Sample Sizes

NHTS Dataset Year	Number of Florida Households	Number of Florida Persons	Number of Florida Trips
2009	15,884	30,952	114,910
2001	1,437	2,783	12,110
1995	1,129	2,428	10,475
1990	930	1,877	4,452

VMT and PMT

Vehicle Miles of Travel (VMT) is a measure of the distance traveled in a personal vehicle. In this case, a personal vehicle is defined as a car, truck, van, SUV, motorcycle, or RV. Person Miles of Travel (PMT) is a measure of the distance a given person travels on all modes of travel (walk, bicycle, personal vehicle, etc.). It is important not to confuse PMT with VMT. For example, if a car carries 4 people 5 miles, 5 vehicle miles and 20 person miles will be generated.

Figure 34 demonstrates that VMT and PMT have been steadily increasing over time. On the other hand, Florida's per capita VMT and PMT paint another picture (Figure 35). Instead of the historical upward trend, they appear to be tapering off due to the economic recession combined with other demographic and economic effects.

NHTS Report: Chapter Three – Florida Travel Trends

Figure 34 – Historical Annual Total Florida VMT and PMT

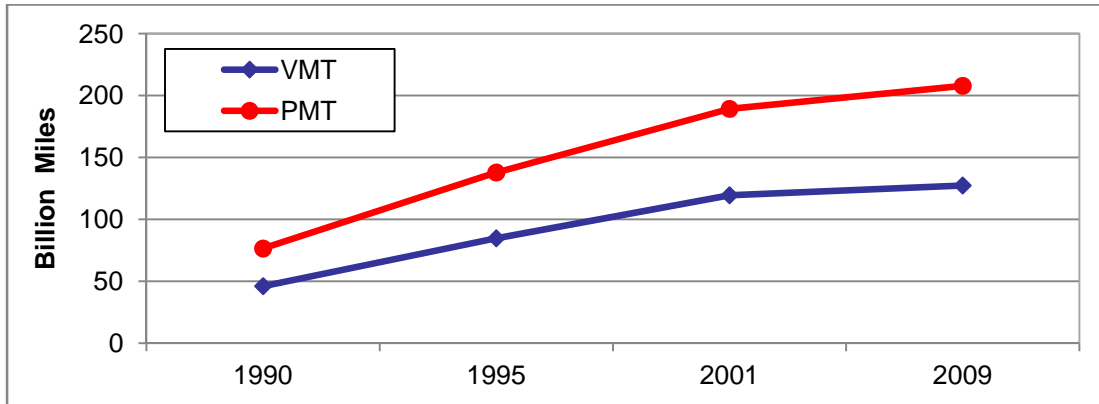
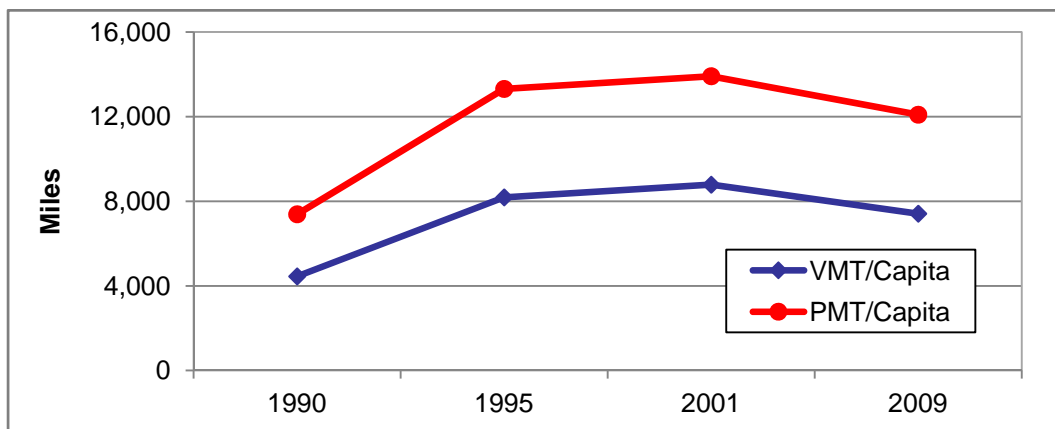
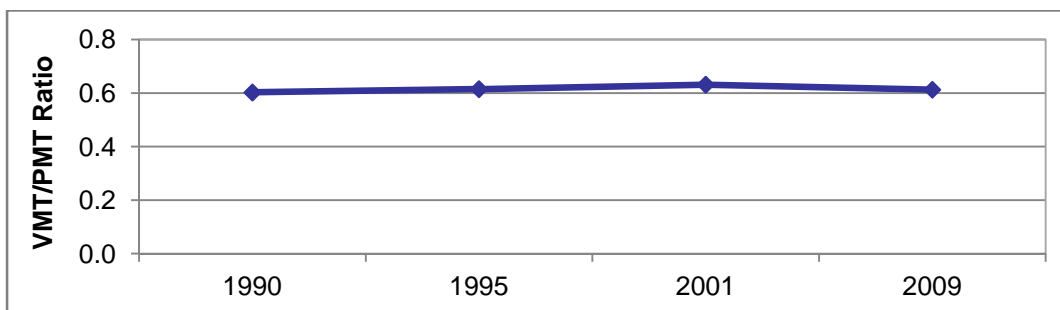


Figure 35 – Historical Annual Florida VMT and PMT per Capita



The VMT/PMT ratio is a measure that indicates the vehicle intensiveness of travel. It is impacted both by the use of alternative modes and by auto occupancies. Figure 36 shows that, over time, the ratio has been rather stable, indicating little change in travel behavior.

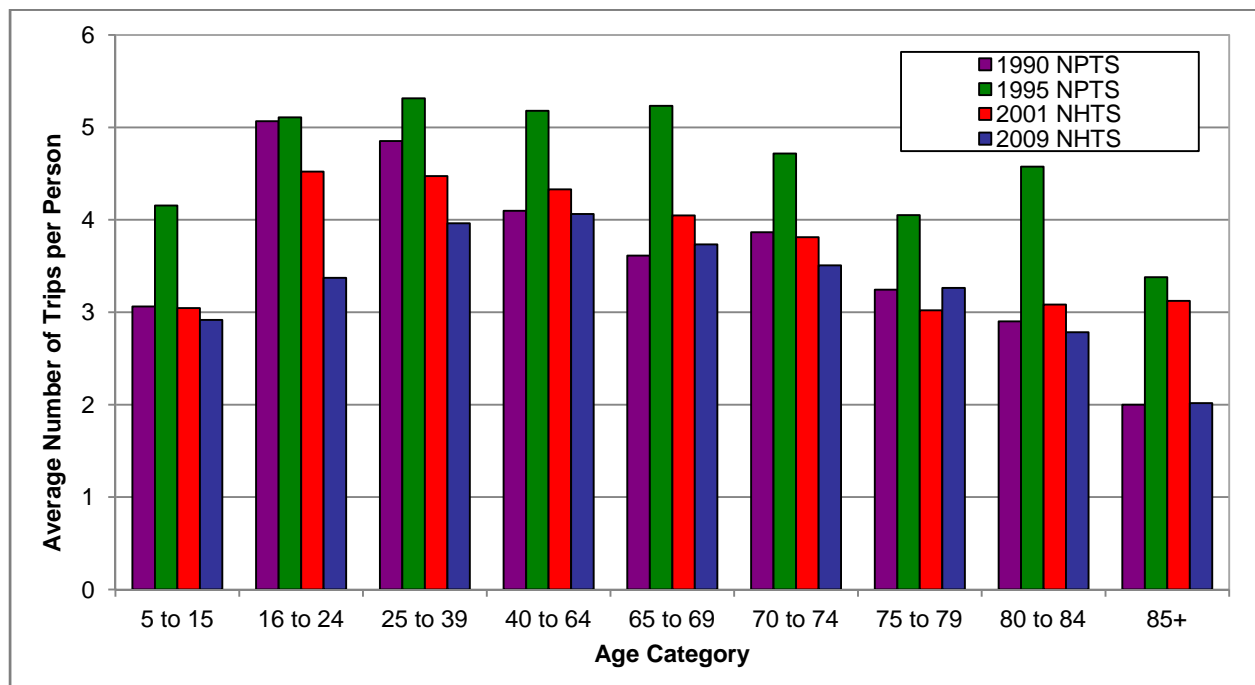
Figure 36 – Historical Florida VMT/PMT Ratio



Trip Rate

As seen in Figure 37, travel for an individual typically peaks when s/he reaches working age and is economically established. Middle-age persons often have children and occasionally older parents for whom they provide mobility. As adults approach typical retirement age, the amount of travel begins to slowly decline. The NHTS reveals that individuals age 85 and older travel less than the rest of the population. The decrease in travel as one ages is due to a number of reasons, such as no longer having to travel for work or for serving household members and perhaps financial or stamina/health constraints on travel.

Figure 37 – Historical Florida Trip Rates by Age

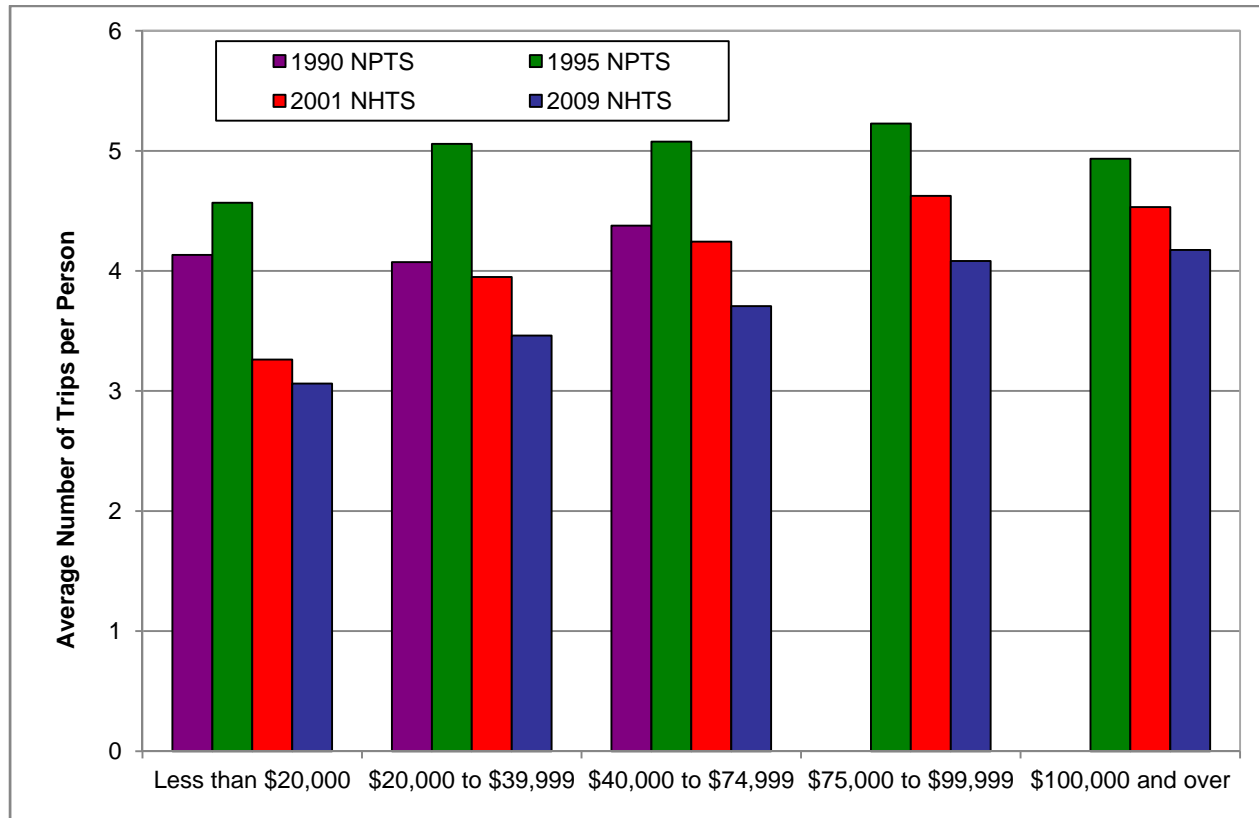


Historically, it can be seen that most age groups have had stable trip rates. However, it can also be seen that the 16–24 and 25–39 age groups experienced declines in travel. Part of this decline can be attributed to the recent economic depression because these age groups are usually the first to be laid off or receive reduced work hours. Compounding this effect is the fact that recent college graduates are finding it more difficult to secure a job after graduation. With the lack of a job, many individuals are forced to cut back on unnecessary expenses, which include social/recreational travel. Others have speculated that this generation is less infatuated with travel and more likely to substitute communication for travel. This might include on-line gaming and using Facebook, Myspace, Twitter, cell phone talk, and texting in lieu of in-person socialization. Other factors contributing to low travel include student debt levels, many young people staying at or returning to their parent’s homes, and other economic constraints.

NHTS Report: Chapter Three – Florida Travel Trends

In general, it can be expected that individuals in households with higher incomes will tend to travel more than individuals residing in households with lower incomes. As seen in Figure 38, individuals with a household income of less than \$20,000 per year tend to travel the least, whereas households with more than \$75,000 per year tend to travel the most.

Figure 38 – Historical Florida Trip Rates by Household Income (not adjusted for inflation)



Note: 1990 NPTS uses different income categories than subsequent surveys. To provide fair comparison, only valid 1990 NPTS categories are shown.

In 2001 and 2009, individuals across all income categories traveled less than in the past. This decline can partially be attributed to the economic conditions, but it goes beyond that factor; other factors such as congestion levels and busy schedules may be encouraging greater trip chaining, which reduces the total number of trips while still accomplishing as many activities.

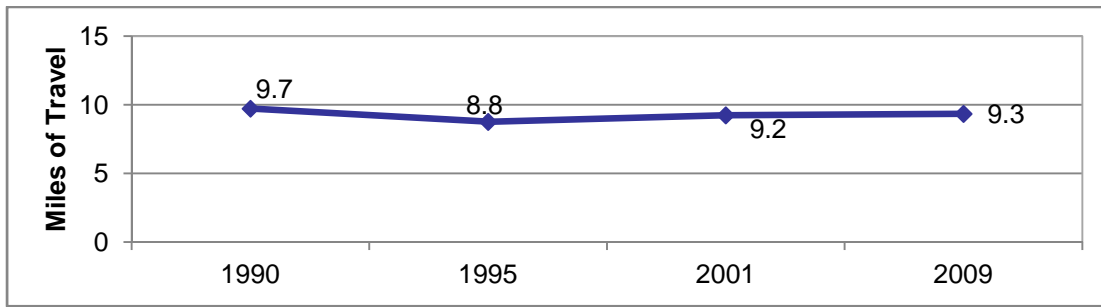
Trip Length

Average trip lengths have had little change since 1990, as shown in Figure 39. Readers are advised to use caution when comparing trip lengths with the 1990 NPTS dataset, as trips less than half a mile were not reported for that survey. In addition, unlike the other datasets, the

NHTS Report: Chapter Three – Florida Travel Trends

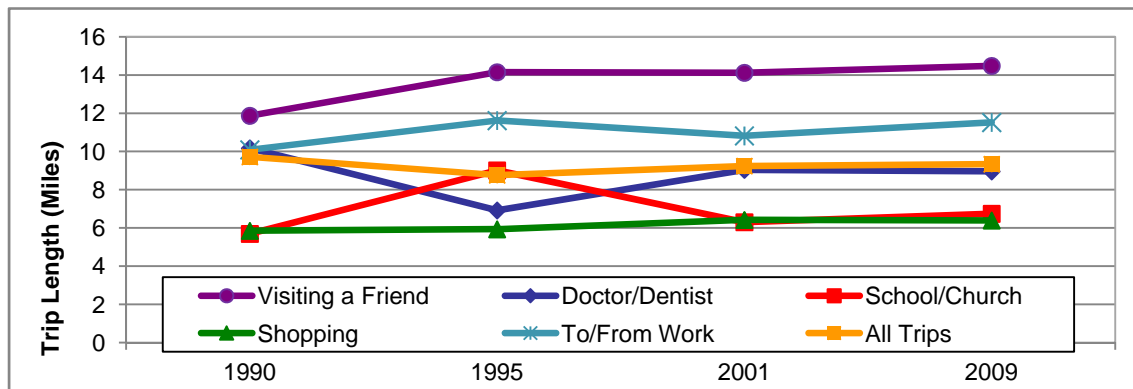
1990 dataset rounded reported trip lengths to the nearest mile. These factors may skew results and cause incorrect interpretations to be drawn.

Figure 39 – Average Florida Trip Length over Time



A look at trip lengths for various trip purposes reveals some interesting trends (Figure 40). The distance of travel to and from work appears to be on the rise, most likely due to the need to travel farther for more specialized employment opportunities. Shopping and school/church trip lengths appear to remain fairly constant. Medical trips appear to be of a relatively stable trip length, while trips to visit a friend appear to be increasing in length.

Figure 40 – Historical Florida Trip Lengths for Various Trip Purpose



Mode Share

The auto has historically dominated Florida's travel, as evidenced in Figure 41. While the figure also shows slight increases in the transit and walk modes, comparisons between datasets should be done with caution due to changes in the survey methodology. For instance, the 2001 and 2009 NHTS datasets placed a greater emphasis on capturing walk trips and, as such, some of the increase in walk trips may actually be previously unreported trips rather than "new trips."

NHTS Report: Chapter Three – Florida Travel Trends

Figure 41 – Historical Florida Mode Share for Trips

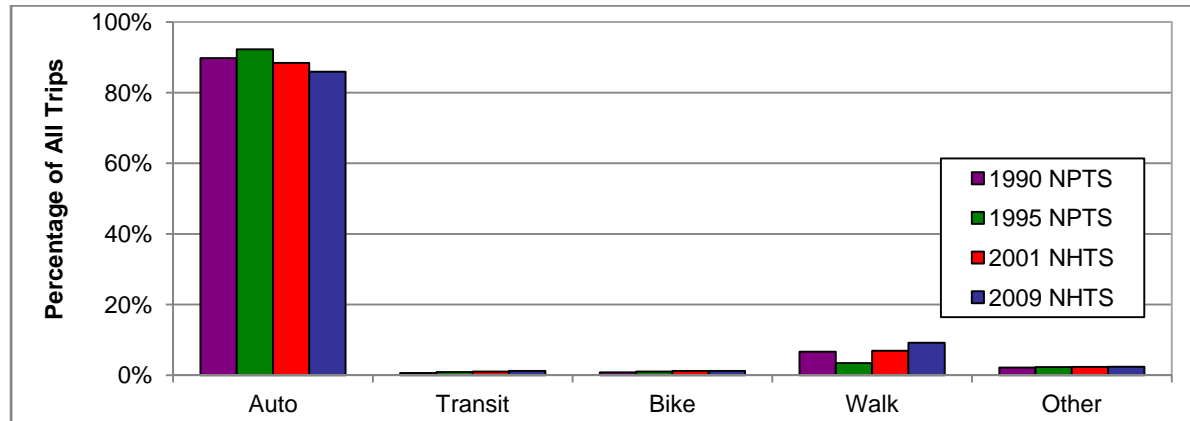
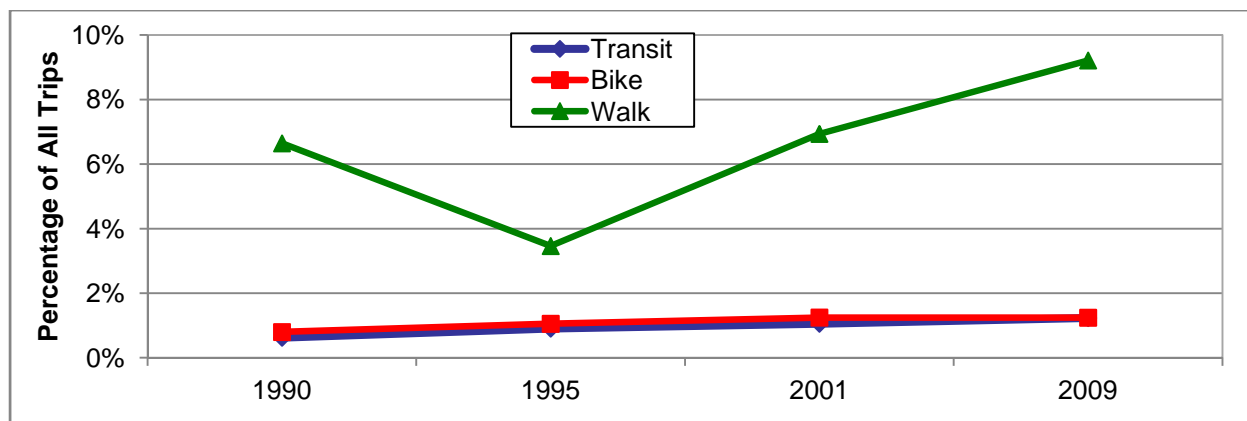


Figure 42 provides a more detailed look at the historical trends for the transit, bike, and walk modes. Closer examination reveals a modest increase in the usage of all these modes. Consequently, these increases have reduced the share of auto trips. The increase in the usage of these modes could be directly correlated to a number of different factors such as rising fuel prices, increased urbanization of Florida's population, improved supply of transit, increased interest in bike/walk facilities, and personal health benefits.

Figure 42 – Historical Mode Share for Transit, Bike, and Walk in Florida

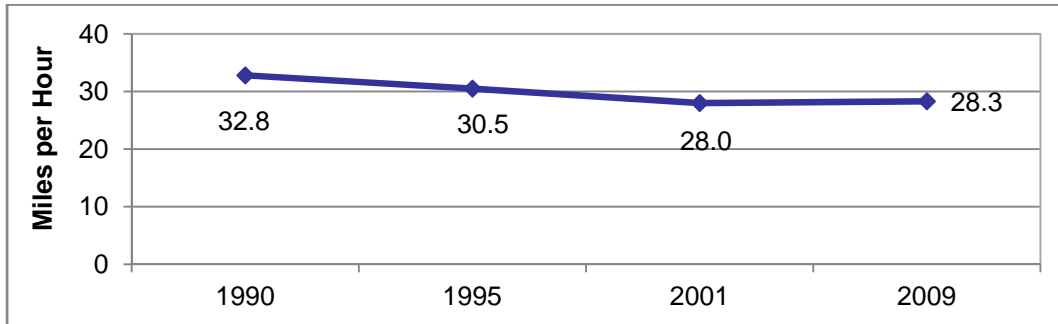


Travel Speed

Over time, the transportation network has been getting more and more congested. As the roadways become more crowded, one can expect the travel speeds throughout the network to decrease as well. Speeds for personal occupancy vehicles were computed and are presented in Figure 43.

NHTS Report: Chapter Three – Florida Travel Trends

Figure 43 – Historical Florida Travel Speed Trends

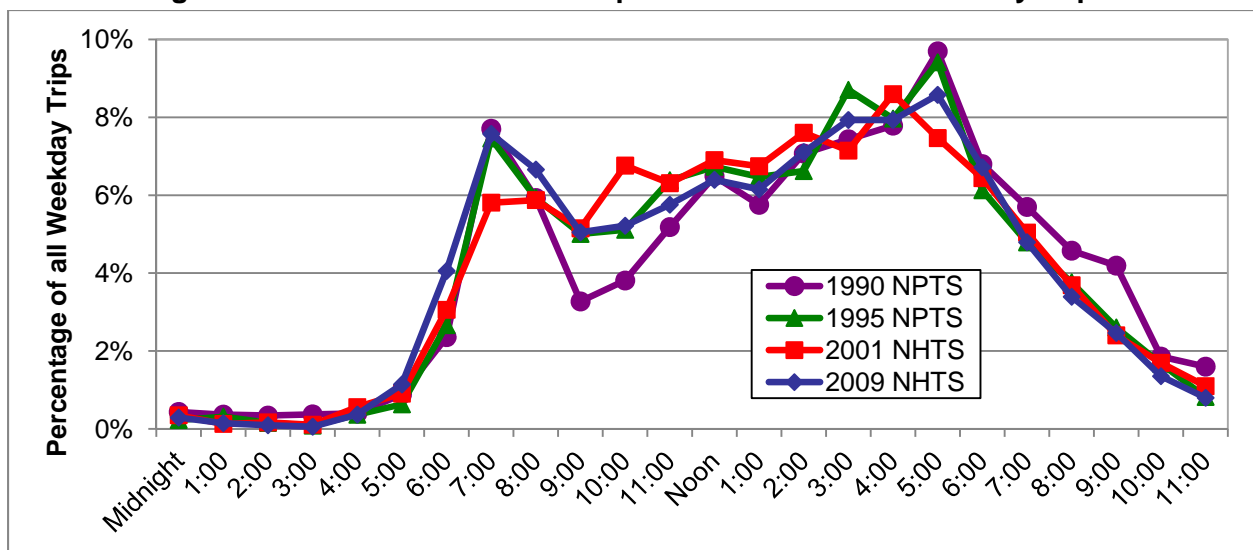


Temporal Distribution of Trips

The four different NHTS/NPTS datasets provide a unique opportunity to look at the temporal distribution of trips over time. This information is useful to determine if people are shifting their travel to less congested time periods or are continuing to commute during the same congested time periods.

In general, people have travel schedules on weekdays influenced by work or school commitments and the business hours that govern much of the personal business, medical, and retail/commercial travel. As such, the large majority of trips occur during the morning peak (6:00–8:00 AM) and the afternoon peak (3:00–6:00 PM). On the weekend, travel is mainly social or recreational and is concentrated during the hours of 9:00 AM–8:00 PM.

Figure 44 – Historical Florida Temporal Distribution of Weekday Trips



NHTS Report: Chapter Three – Florida Travel Trends

As seen in Figure 44 through Figure 46, there has been very little shift in the temporal distribution of trips over time. The large fluctuations for the 1990 Sunday travel can be directly attributed to the small sample size.

Figure 45 – Historical Florida Temporal Distribution of Saturday Trips

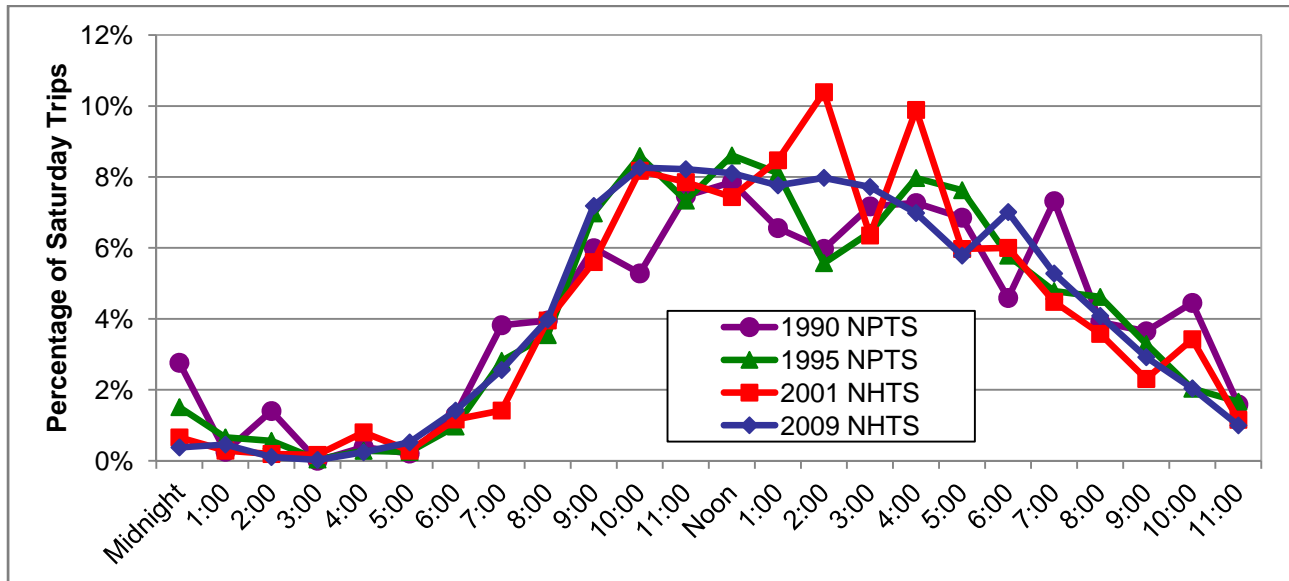
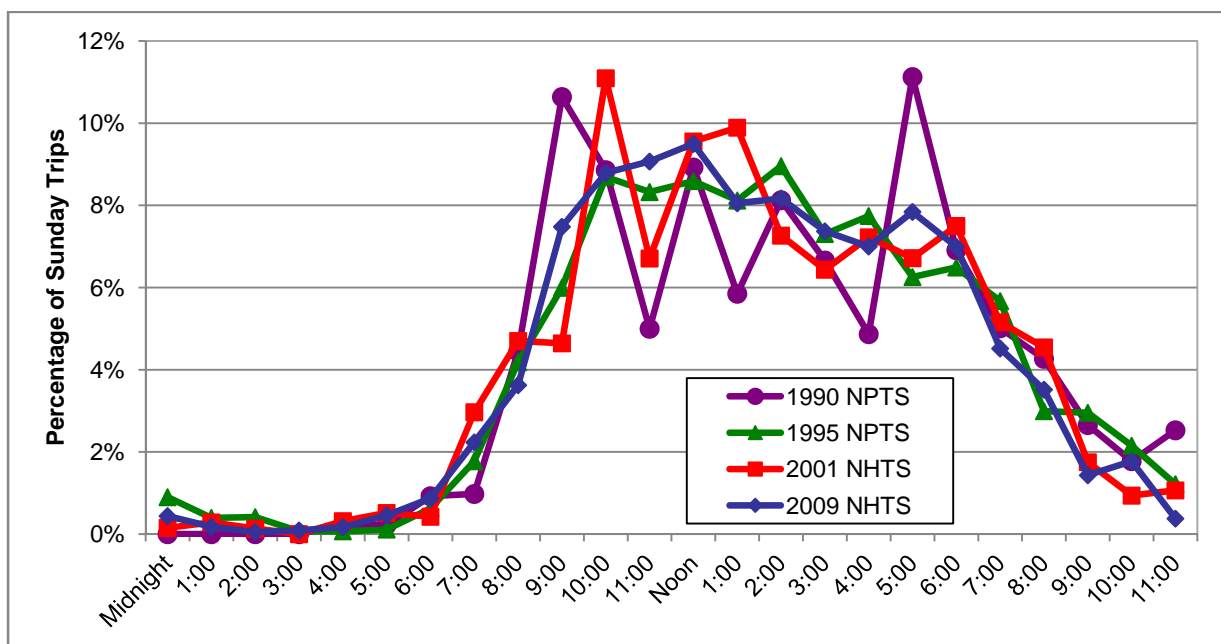


Figure 46 – Historical Florida Temporal Distribution of Sunday Trips



NHTS Report: Chapter Three – Florida Travel Trends

Two of the biggest contributors to congestion on weekdays are work and school travel. Figure 47 and Figure 48 show that while there has been some spreading of the peaks for both trip purposes, a large number of these trips still take place within a short period of time.

Figure 47 – Historical Florida Temporal Distribution of Work Trips on Weekdays

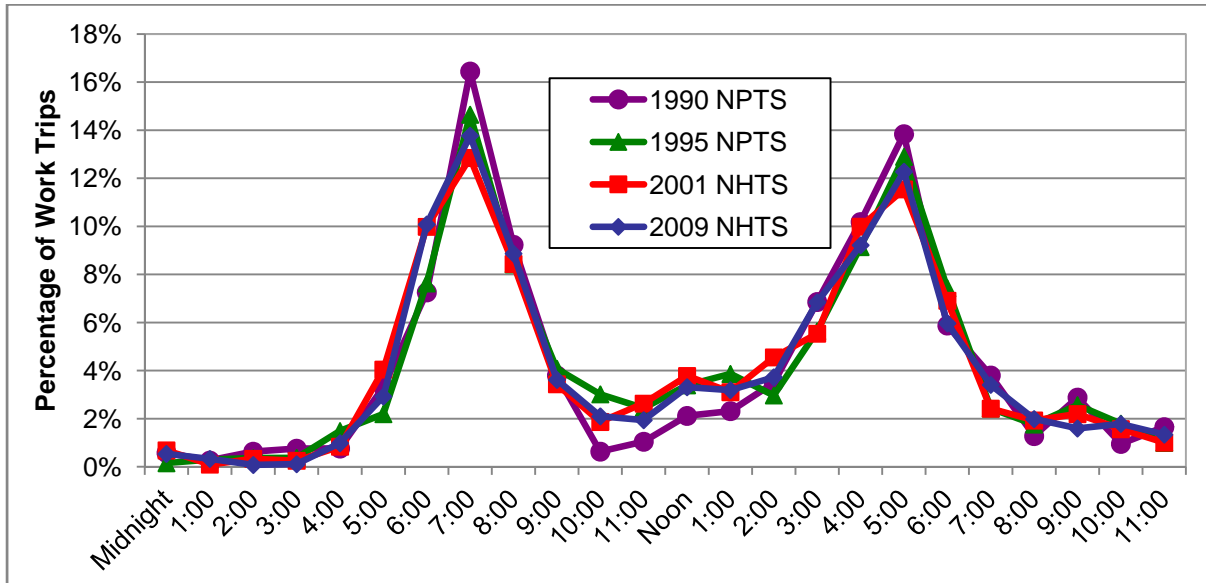
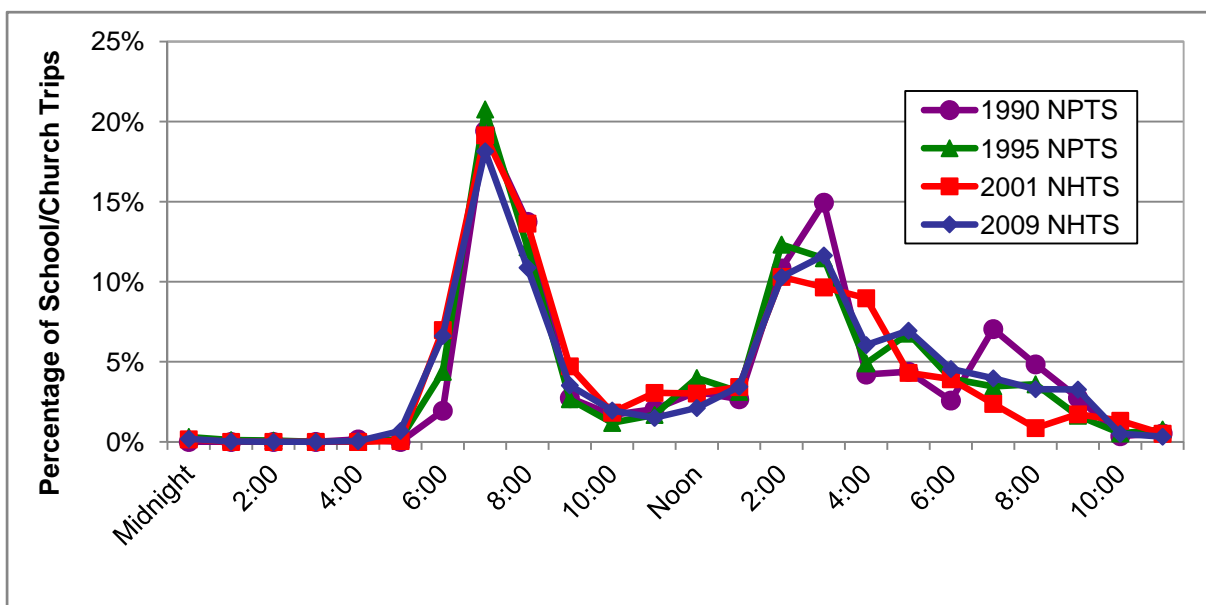


Figure 48 – Historical Florida Temporal Distribution of School/Church Trips on Weekdays



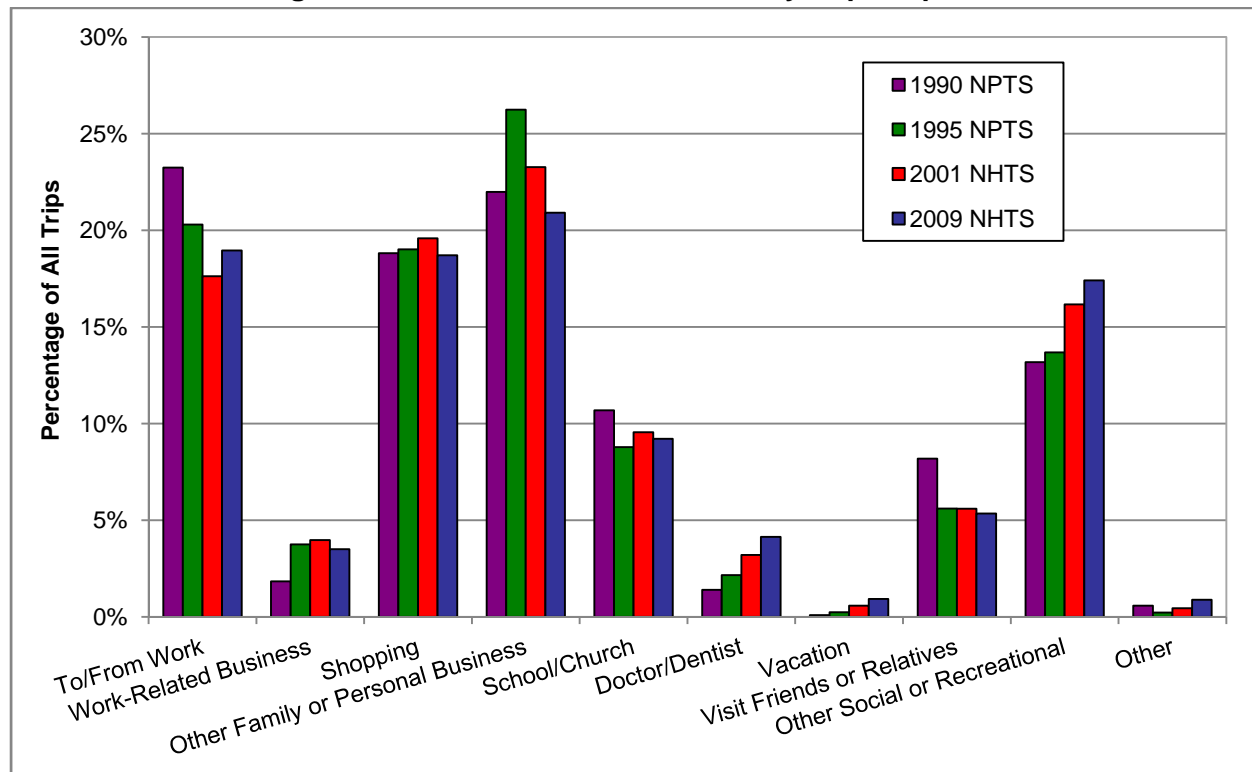
NHTS Report: Chapter Three – Florida Travel Trends

Trip Purpose

Travel is carried out to accomplish some purpose or participate in some activity. An analysis of the trip purposes over time provides a good picture of the reasons why people are traveling and whether or not those reasons have changed. As seen in Figure 49, the share of a number of trip purposes has remained steady over time, such as shopping and going to school/church, but the share of all trips to/from work has decreased over time. This has generally resulted from an increase in overall trips, making work trips a declining share; however, work at home and more flexible work arrangements may be contributing.

The figure also shows that there is an increase in the number of medical and social/recreational trips being taken. These changes may be a result of various factors such as the aging of the population (hence, more medical trips) and the nature of how healthcare has become highly specialized (referrals to specialists and various treatment venues). Increases in social/recreational travel may be a result of growth in income and declines in household size during the period (thus, more need and ability to travel to socialize).

Figure 49 – Florida Historical Weekday Trip Purposes



Conclusions and Interpretations

The NHTS/NPTS datasets provide an opportunity to look at how travel patterns have changed over time. For the state of Florida, travel has been experiencing a number of changes in recent years.

First, Floridians are traveling less. This is partially attributed to the sluggish economy. Economic constraints combined with occasional gas price spikes have dampened travel both to save on the cost of travel and to save on the cost of participation in the activity. But the evidence suggests that there is more to the moderation in travel than a reaction to recent economic conditions. The phenomenon has been observed at the national level, with some evidence that per capita travel peaked at approximately the middle of the last decade or earlier and began its decline well before the economic slowdown. Numerous factors have been postulated to explain this phenomenon: aging of the population, saturation of vehicle ownership/availability, stabilization in the historic trend toward suburbanization, saturation of labor force participation, and intolerance for increasing time spent on travel. The prospect of technology substitution for travel has also been postulated as a partial explanation for moderating travel demand as shopping, education, and socialization are now readily carried out via Internet and wireless technologies. For a comprehensive discussion of the various factors, see “The Case for Moderate Growth in Vehicle Miles of Travel: A Critical Juncture in U.S. Travel Behavior Trends,” http://ntl.bts.gov/lib/26000/26500/26532/The_Case_for_Moderate_Growth_in_VMT_2006_Final.pdf.

Second, the mode share in Florida is changing modestly. The data reveal a slight increase in the number of transit, walk, and bike trips taken by Floridians. Walk travel, in particular, has shown a meaningful increase. In addition to the survey method changes in the recent two NHTS surveys, this may reflect environmental and health consciousness as well as fuel costs or auto availability changes more recently. Increases in transit supply are a contributor to the modest growth in transit market share.

Third, there appears to be a shift in trip purposes. Most notably, there is a decrease in the share of trips to/from work and an increase in social/recreational trips. The decline in work trip share is most likely due to declining employment levels, perhaps some aging effect, a shift to telecommuting and compressed workweek schedules, and increased travel for other trip purposes.

The evidence of a fundamental shift away from the upward trend in individual travel in prior decades is a key consideration for transportation planning. If per capita travel, as appears to be the case, has turned the corner and has stopped increasing or even decreased some, it

NHTS Report: Chapter Three – Florida Travel Trends

portends slower travel demand growth in the future. Should per capita travel remained stable, future travel demand will be dependent solely on population growth. This would result in slower growth in person travel over the next several decades. Should per capita travel demand continued to soften; it could result in modest or no growth in overall demand, depending upon population growth rates. It is also important to note that freight and tourism travel also impact overall demand. Their growth is driven by population growth and income and may not track exactly as person travel demand.

Travel demand growth is likely to continue to be related to economic health. As the economy improves, and particularly if the improvement affects all segments of income distribution, one would expect some resumption in demand growth. Individuals that had foregone travel during difficult times may begin scheduling vacations and resume other leisure activities. However, the range of factors that have dampened travel demand goes well beyond the economy; therefore, one should not necessarily expect an economic recovery to result in travel demand growth returning to or replicating levels of prior decades.

Another major factor influencing travel is fuel prices. As witnessed in 2008, high fuel prices dampened travel demand. If fuel prices return to or exceed the records set in 2008, one can expect that, in the short term, households will continue to cut back on auto travel and potentially walk/bicycle or use transit more. In the longer term, one can expect households to purchase more fuel-efficient or hybrid vehicles to counteract the higher costs of fuel, explore means to substitute or further reduce travel (telecommuting, Skype, etc.), or perform more carpooling and trip-chaining (consolidating multiple errands into one trip).

From a policy perspective, if this becomes the “new normal,” transportation funding will need to change to reflect declining fuel tax revenues absent policy changes to increment tax rates or restructuring of how transportation is funded.

The uncertainty in future per capita travel demand as well as in demographic and economic growth post-recession suggests a significant degree of uncertainty regarding estimates of future overall travel demand. Thus, there is greater uncertainty regarding future transportation infrastructure and service needs. This suggests that transportation planning will need to embrace scenario planning to explore the robustness of plans in light of various forecasts for future travel demand. Collectively, these factors create a challenging but exciting time for transportation planning.

Chapter 4: Florida Travel by Geography

Introduction

Travel behavior often varies from place to place. This variation can be attributed to a number of factors such as different cultural and personal values, different effects on travel from the built environment, effects of topography and geography, the influence of the availability of various modes and the nature of the network, or even different government policies and funding.

This chapter explores how travel within the state of Florida varies according to geography. Specifically, four analyses of geography are conducted: urban/rural areas, Consolidated Metropolitan Statistical Areas (CMSAs), MSA size, and population density. Other geographically-associated variables are not readily available to be included in the descriptive analysis due to sample size limitations.

Urban/Rural Travel

Urban and rural areas have very different built environments. These built environments often influence an individual's travel patterns and the availability and competitiveness of various travel options (modes). For instance, rural communities are less likely to have a plethora of retail outlets or shopping centers as might an urban community. In addition, rural communities are also not likely to have walk access to many destinations or be able to support fixed-route transit services. As such, rural travelers may make fewer trips for shopping than individuals living in urban areas and be less likely to walk or use transit for travel.

Using the 2009 NHTS, one cannot directly analyze trips within urban or rural areas. To determine whether or not travel took place in a rural or urban area, the household residence location was used as a proxy. In the 2009 NHTS, each household's location was coded as being in a town and country, a suburb, a second city, or an urban area. A town and country is considered the most rural environment, with each subsequent area being more and more urbanized. The NHTS obtained these household location classification data from the 2000 U.S. Census.

The U.S. Census is a decennial census that collects a variety of demographics on the U.S. population, such as household and individual demographics and housing location. The data from the 2000 U.S. Census allow for enhanced analysis of NHTS data that would otherwise not be possible.

NHTS Report: Chapter Four – Florida Travel by Geography

A look at VMT and PMT per capita of various areas reveals that more urbanized areas have lower VMT and PMT levels than rural areas (Table 5). This difference can be attributed to many things. In urban areas, for example, it is possible that trip destinations are located closely together, resulting in shorter trips. The VMT/PMT ratio is impacted both by use of alternative modes and by auto occupancies. Table 6 indicates that the ratio remains relatively similar across different areas.

Table 5 – VMT and PMT per Capita Urban/Rural Areas

Area	VMT per Capita	PMT per Capita
Urban	5,380	8,756
Second City	6,999	10,977
Suburb	7,262	11,563
Town and Country	9,278	15,787

Table 6 – VMT/PMT Ratio Urban/Rural Areas

Area	VMT/PMT
Urban	0.61
Second City	0.64
Suburb	0.63
Town and Country	0.59

When trip rates are analyzed, it is revealed that people living in urban areas make a similar number of daily trips as those who live in rural areas (Table 7 and Table 8)

Table 7 – Trip Rate for Urban/Rural Areas

Area	Daily Trips per Person
Urban	3.48
Second City	3.60
Suburb	3.76
Town and Country	3.67

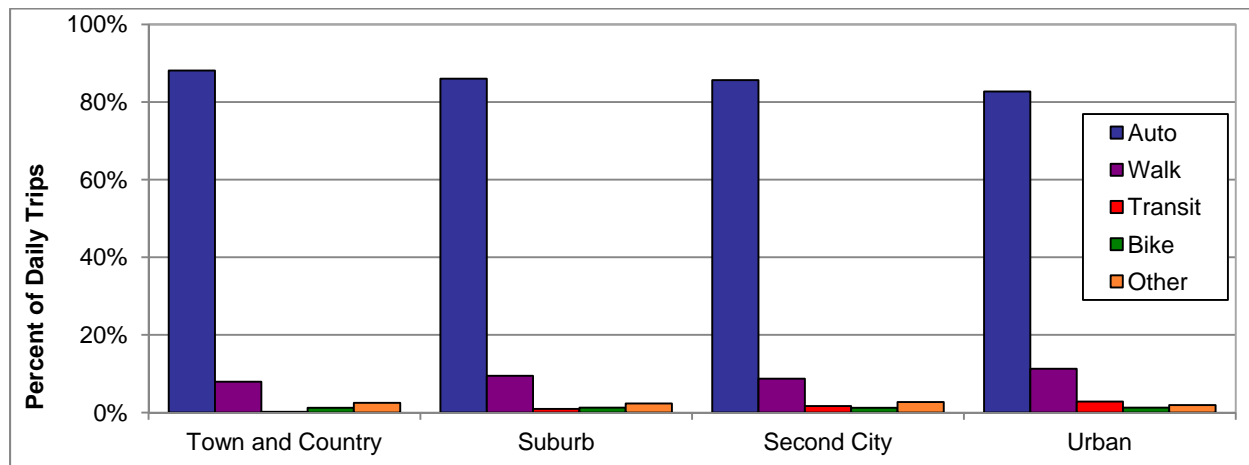
Table 8 – Trip Length – Urban/Rural

Area	Trip Length (miles)
Urban	7.2
Second City	8.6
Suburb	8.7
Town and Country	11.9

Trip length varies between a rural traveler and an urban traveler. Rural areas typically are more spread out and require more traveling to reach a destination than would be required in an urban area. This is especially true for schools, specialized employment, and retail. Table 8 presents trip lengths for all modes of travel. The table shows that trips taking place in more rural areas are significantly longer than trips in urban areas.

Mode choice may vary dramatically from rural to urban areas. In rural areas, there is often no transit service and limited sidewalks or bicycle lanes. This lack of transportation options may directly influence which mode an individual may choose. Figure 50 shows that more rural areas typically have higher auto usage and lower transit and walk usage for trips.

Figure 50 – Mode Share for Urban/Rural Areas



Travel speeds generally vary between urban and rural areas. A look at POV speeds and POV travel times is presented in Table 9. Rural areas experience significantly higher speeds than urban areas. It can also be seen that there is little variability in trip travel times across different geographies — with higher speed, rural travel tending to enable longer trip distances within a relatively constant travel time commitment for a given trip.

Table 9 – Average Travel Speeds – Urban/Rural

Area	Average Speed (mph)	Average Travel Time (Minutes)
Urban	22.9	18.7
Second City	27.5	18.2
Suburb	27.5	18.8
Town and Country	33.4	20.5

There are several reasons to explain this variation in the speed. First, urban areas are home to large numbers of residents and employers and a variety of commercial, recreational, and social venues. This large concentration of people and activities generally results in lower travel speeds due to the prominence of congestion. Second, urban areas tend to have more opportunities to travel using local streets that operate at lower speeds. Conversely, rural areas often are located in environments where there is a greater need and opportunity for using higher speed roadways for travel.

On the other hand, the temporal distribution of trips for urban and rural areas is about the same (Figure 51 - Figure 53). The huge fluctuations that are seen in the Saturday and Sunday temporal distributions can partially be attributed to the smaller sample size of rural Florida households in the NHTS dataset.

NHTS Report: Chapter Four – Florida Travel by Geography

Figure 51 – Weekday Temporal Distribution for Urban/Rural Areas

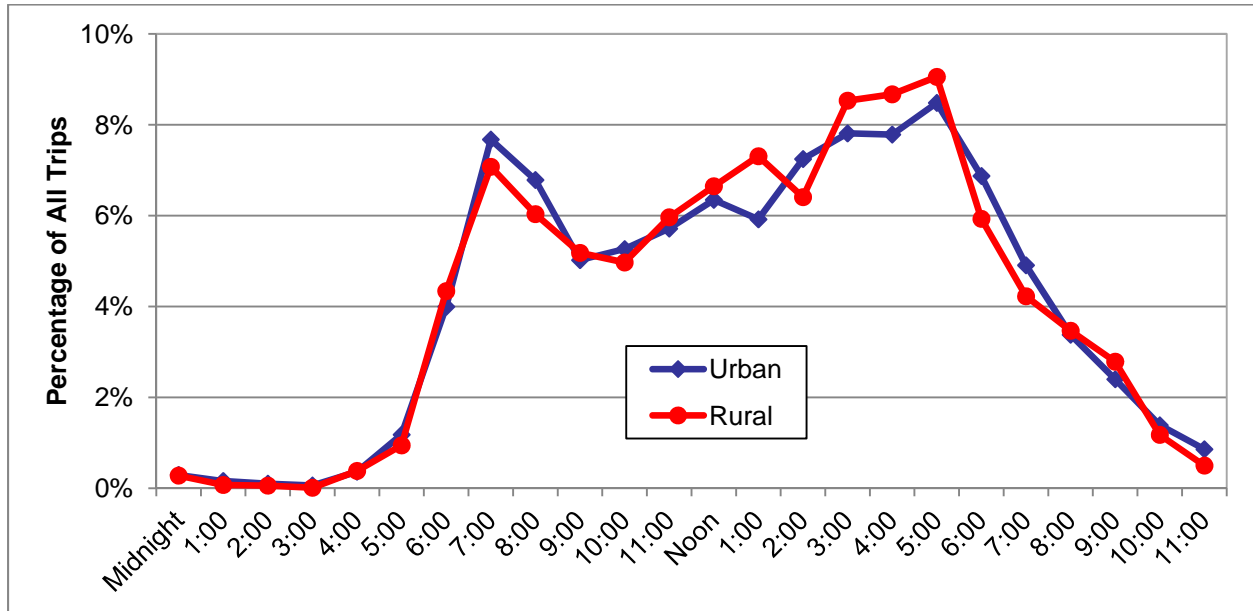
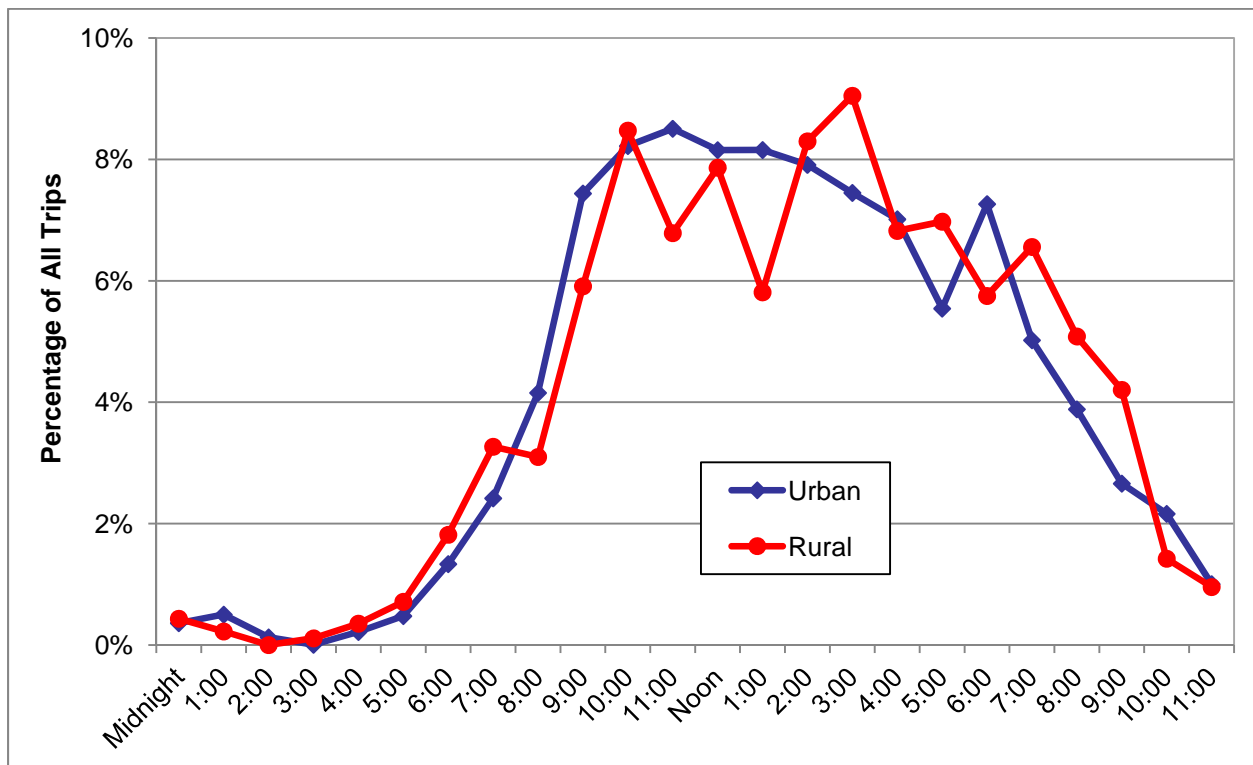
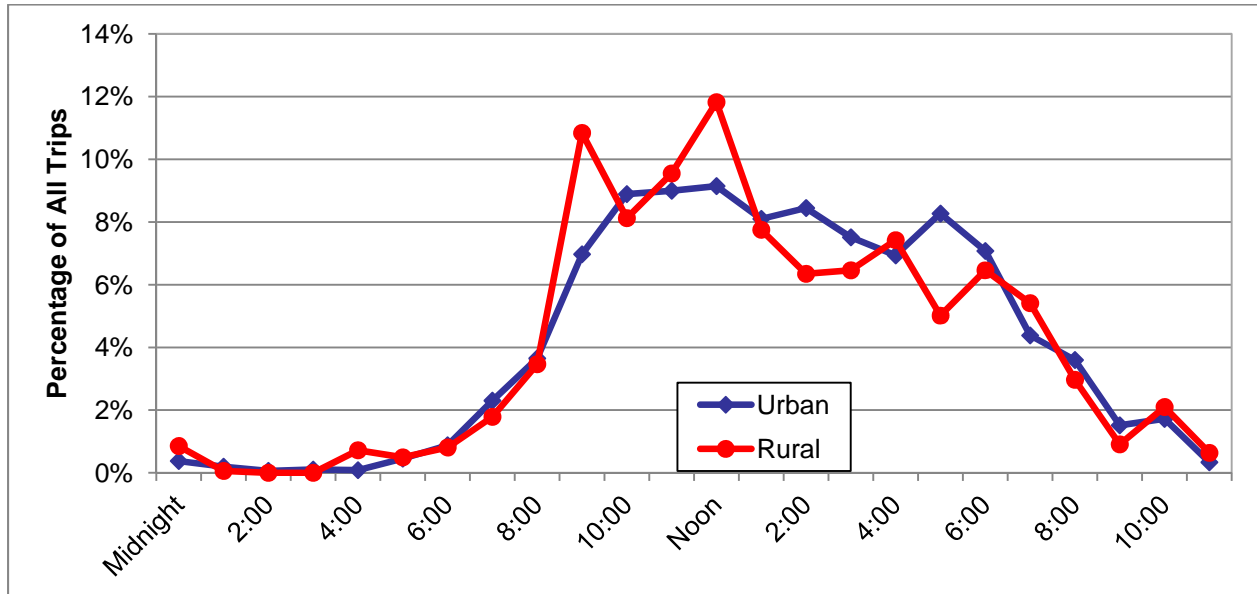


Figure 52 – Saturday Temporal Distribution for Urban/Rural Areas



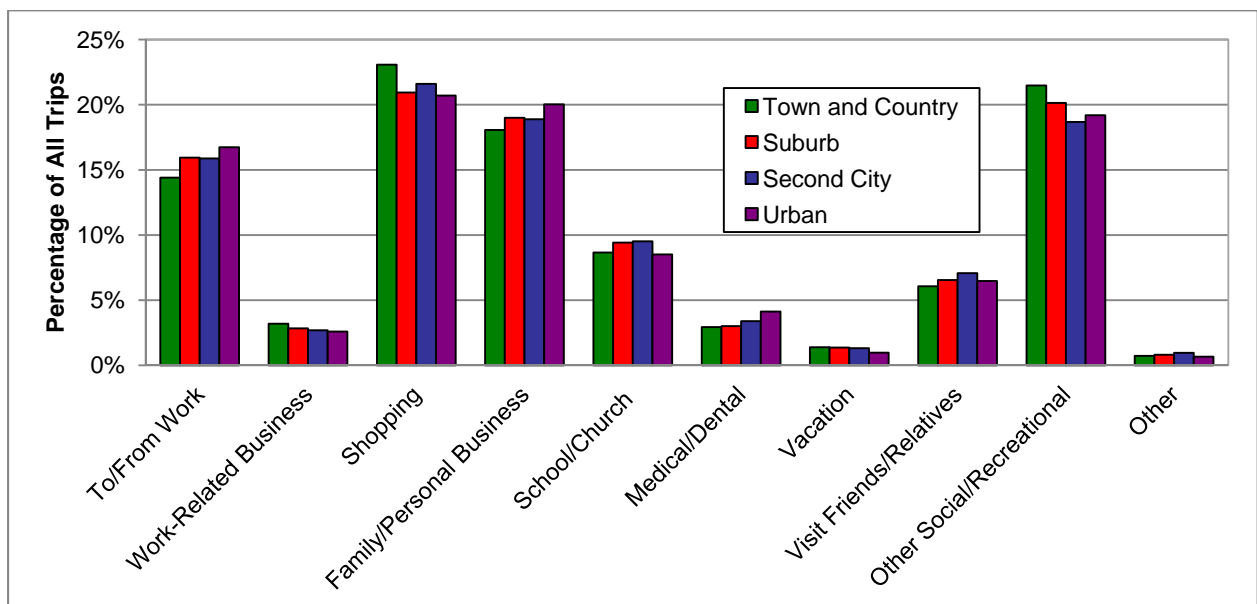
NHTS Report: Chapter Four – Florida Travel by Geography

Figure 53 – Sunday Temporal Distribution for Urban/Rural Areas



A look at trip purposes provides a good insight into why individuals are traveling. Figure 54 shows that while there are slight variations in the trip purposes, travel in urban and rural areas are motivated by similar travel needs.

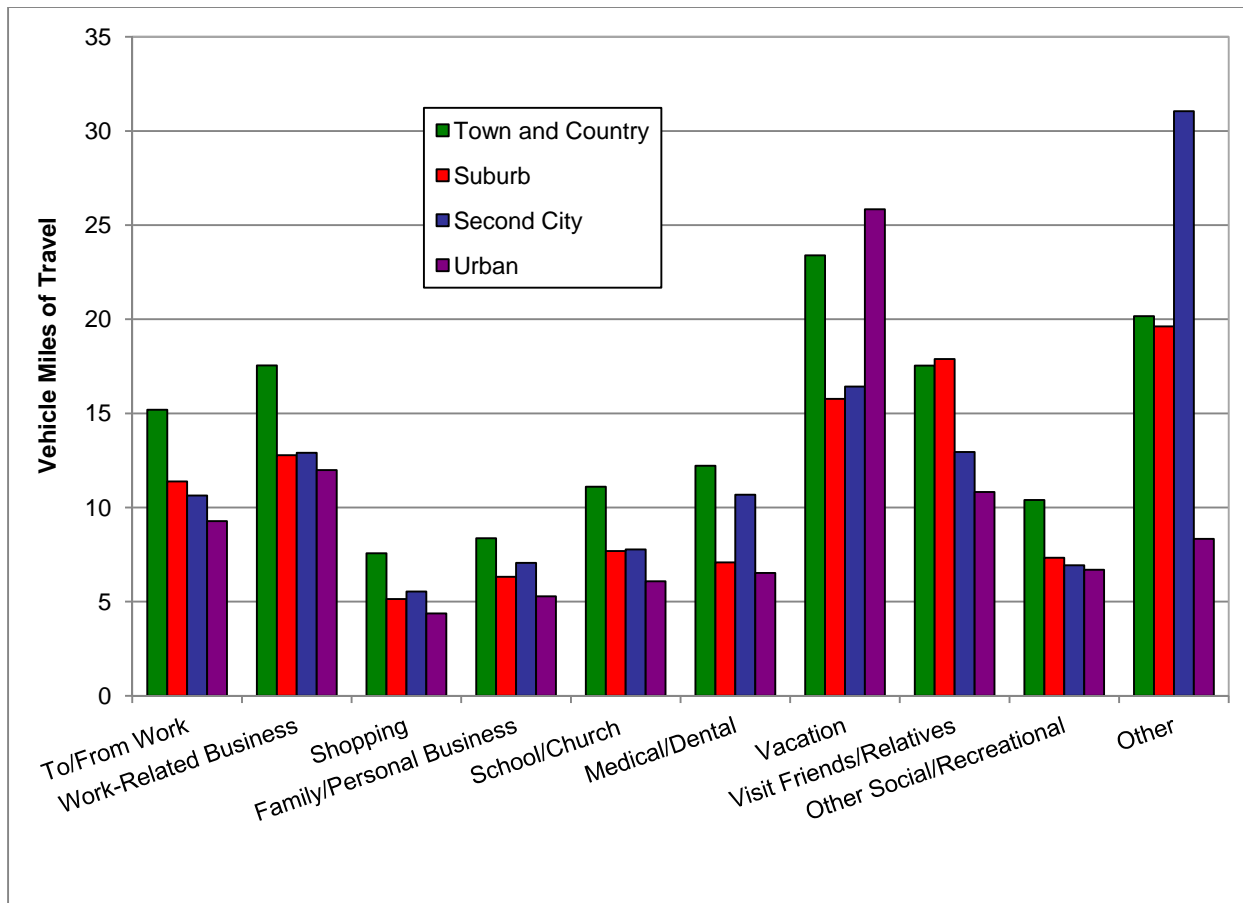
Figure 54 – Trip Purposes for Urban/Rural Areas



NHTS Report: Chapter Four – Florida Travel by Geography

Examining VMT by trip purpose shows how far an individual must travel to perform an activity. Figure 55 shows that rural areas consistently have a higher VMT for most trip purposes.

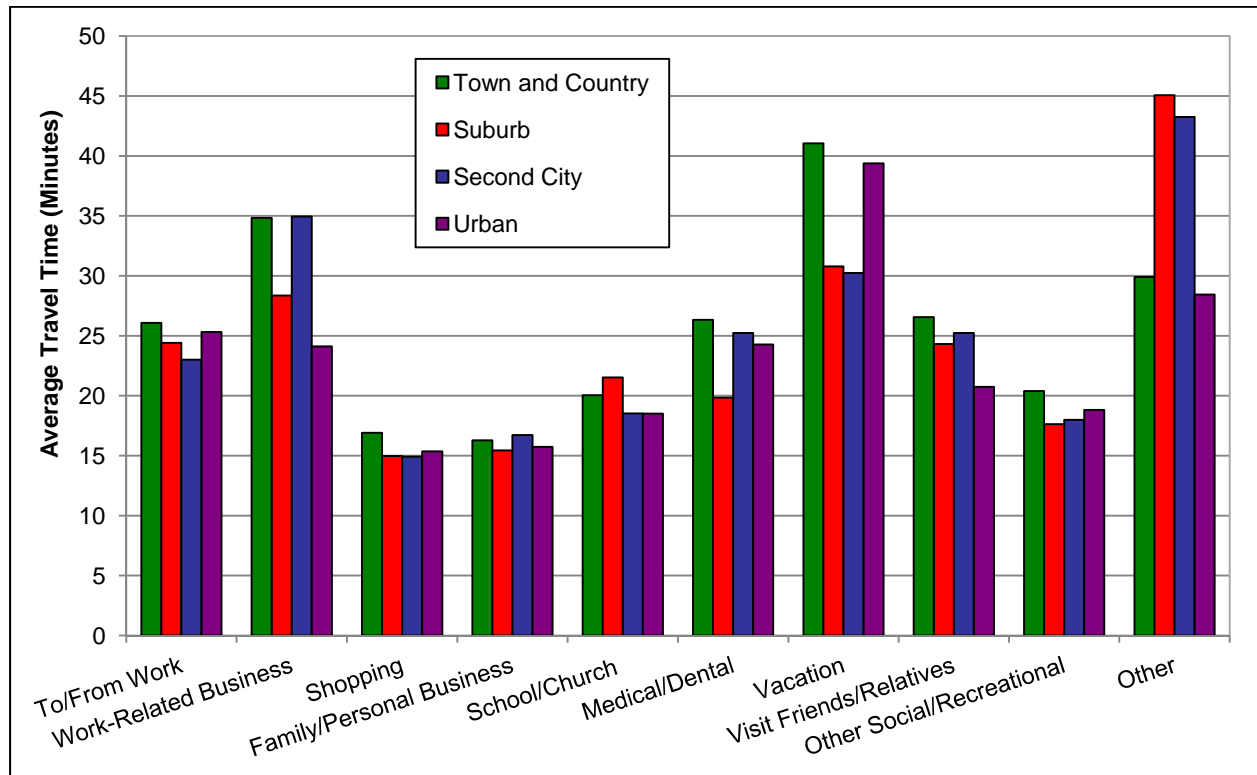
Figure 55 – VMT by Trip Purpose for Urban/Rural Areas



Analyzing the average travel time by trip purpose is another way to determine how far an individual must travel to reach a particular destination. Figure 56 shows that while there is some variability in the travel time, most trip purposes have similar travel times across different geographic regions. When VMT is taken into account, it can be seen that rural travelers can travel a much farther distance in the same amount of time than it takes for an urban driver to travel a lesser distance.

NHTS Report: Chapter Four – Florida Travel by Geography

Figure 56 – Average Travel Time by Trip Purpose for Urban/Rural Areas



Summary of Urban and Rural Analyses

- Urban areas had higher levels of VMT and PMT per capita compared with rural areas. The VMT/PMT ratio was found to be similar across the two areas.
- Trip rates were similar between rural and urban areas.
- Trip lengths in rural areas were longer than trips taking place in urban areas. This is expected as rural areas are more spread out and require more traveling to reach a destination.
- In terms of mode share, rural areas typically had higher auto usage and lower transit and walk usage for trips.
- Personal vehicle speeds were highest in rural areas and lowest in urban areas. Part of this discrepancy can be attributed to more congestion in urban areas or more usage of local roads (operating at slower speeds) in urban areas.
- Average personal occupancy vehicle travel times across different areas were remarkably similar.
- The temporal distribution of trips was found to be very similar between urban and rural areas.

NHTS Report: Chapter Four – Florida Travel by Geography

- An analysis of trip purposes reveals that travel across the different areas was motivated by similar needs.

Travel by Metropolitan Area

In this section, travel in different metropolitan areas in Florida is discussed. In the analysis, the following Consolidated Metropolitan Statistical Areas (CMSA's) were examined: Jacksonville, Fort Lauderdale-Miami, West Palm Beach-Boca Raton, Orlando, and Tampa-St. Petersburg-Clearwater. A CMSA, as defined by the Census Bureau, is an area with a population of 1 million people or more. The consolidated metropolitan area coding that was used in the NHTS was derived from the 1999 Metropolitan Areas: Cartographic Boundary files.

The purpose of this section is to see how differences in travel patterns and behavior vary by region. These differences can partially be attributed to different built environments, demographics, or local governmental policies. FDOT's purchase of an extra sample resulted in an adequate sample size to analyze the combined metropolitan areas, as seen in Table 10.

Table 10 – Sample Size by Metropolitan Area

Combined Metropolitan Area	People Sampled
Jacksonville	2,279
Fort Lauderdale-Miami	5,874
Orlando	2,385
Tampa-St. Petersburg-Clearwater	4,088
West Palm Beach-Boca Raton	1,859
All other regions/not in an MSA	14,467
Total	30,952

A comparison of VMT and PMT by metropolitan area illustrates that Fort Lauderdale-Miami has the smallest VMT and PMT per capita while Jacksonville has the highest VMT and PMT per capita. The VMT/PMT ratios for all metropolitan areas are fairly similar as can be observed in Table 12.

Table 11 – VMT and PMT by Metropolitan Area

Metropolitan Area	VMT per Capita	PMT per Capita
Jacksonville	8,825	13,889
Fort Lauderdale-Miami	6,281	9,562
Orlando	7,605	13,411
Tampa-St. Petersburg-Clearwater	6,810	11,534
West Palm Beach-Boca Raton	7,392	11,159

NHTS Report: Chapter Four – Florida Travel by Geography

Table 12 – VMT/PMT Ratio by Metropolitan Area

Metropolitan Area	VMT/PMT
Jacksonville	0.64
Fort Lauderdale-Miami	0.66
Orlando	0.57
Tampa-St. Petersburg-Clearwater	0.59
West Palm Beach-Boca Raton	0.66

Likewise, there is not a lot of variation in the trip rates between metropolitan areas (Table 13). For comparison purposes, the population density is also provided.

Table 13 – Trip Rates by Metropolitan Area

Metropolitan Area	Daily Trips per Person	Population Density (people/sq. mi.)
Jacksonville	3.57	420
Fort Lauderdale-Miami	3.54	1,096
West Palm Beach-Boca Raton	3.70	
Orlando	3.72	614
Tampa-St. Petersburg-Clearwater	3.93	1,107

Source: Federal Highway Administration, 2009 NHTS (Daily Trips); U.S. Census Bureau, 2010 Census (Population Density).

An analysis of trip lengths by metropolitan area reveals some interesting results. As shown in Table 14, the Fort Lauderdale-Miami area had the shortest average trip length while Jacksonville had the longest trip length. Some of these variations in trip lengths can be attributed to the built environment of each metropolitan area. In some areas, people may need to travel further to reach activity locations due to the layout of various land uses.

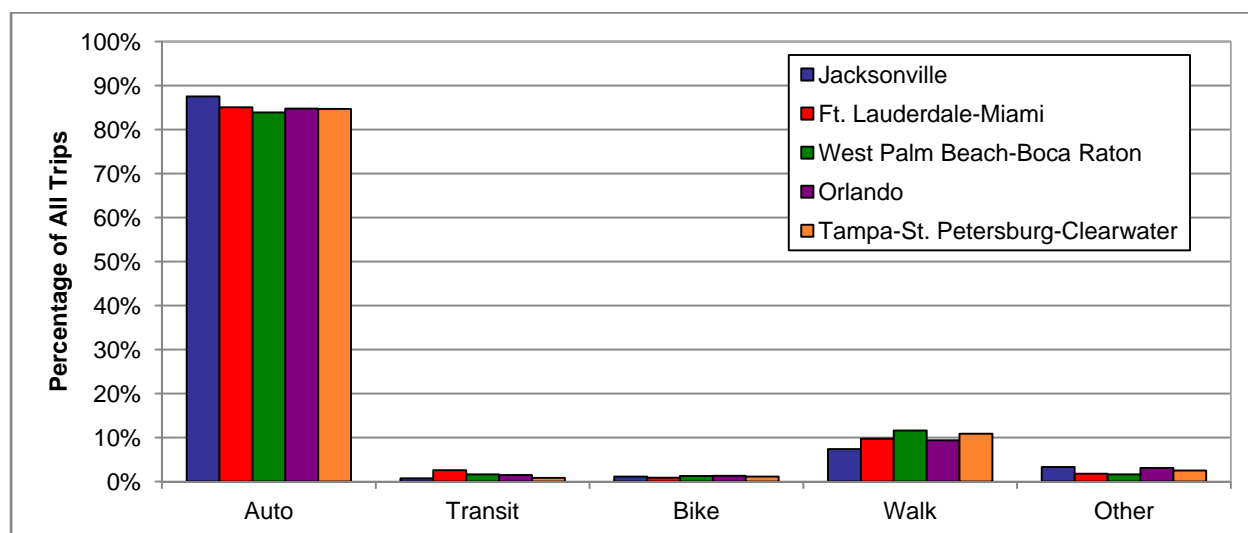
Table 14 – Trip Length by Metropolitan Area

Metropolitan Area	Trip Length (mi)
Jacksonville	11.1
Fort Lauderdale-Miami	7.7
West Palm Beach-Boca Raton	8.0
Orlando	10.6
Tampa-St. Petersburg-Clearwater	8.7

NHTS Report: Chapter Four – Florida Travel by Geography

Figure 57 reveals that all the major metropolitan areas in Florida rely predominantly on the private auto for most trips. The figure also reveals that, of all the Florida metropolitan areas, transit usage is highest in the Fort Lauderdale-Miami area. In terms of walking, the West Palm Beach-Boca Raton and Tampa-St. Petersburg-Clearwater areas have the highest shares. Bicycle usage among the studied metropolitan areas appears to be similar.

Figure 57 – Mode Share by Metropolitan Area



A look at travel speeds (for personal vehicles only) reveals a wide range of speeds by metropolitan area. Among the areas studied, the Fort Lauderdale-Miami area has the lowest average travel speed (23.9 mph) while Jacksonville has the highest average travel speed (33.3 mph). In Table 15, it can be seen that, in general, more populated metropolitan areas have lower travel speeds. Travel speeds by metropolitan area population and population density will be discussed later in this report.

Table 15 – Average Travel Speeds by Metropolitan Area

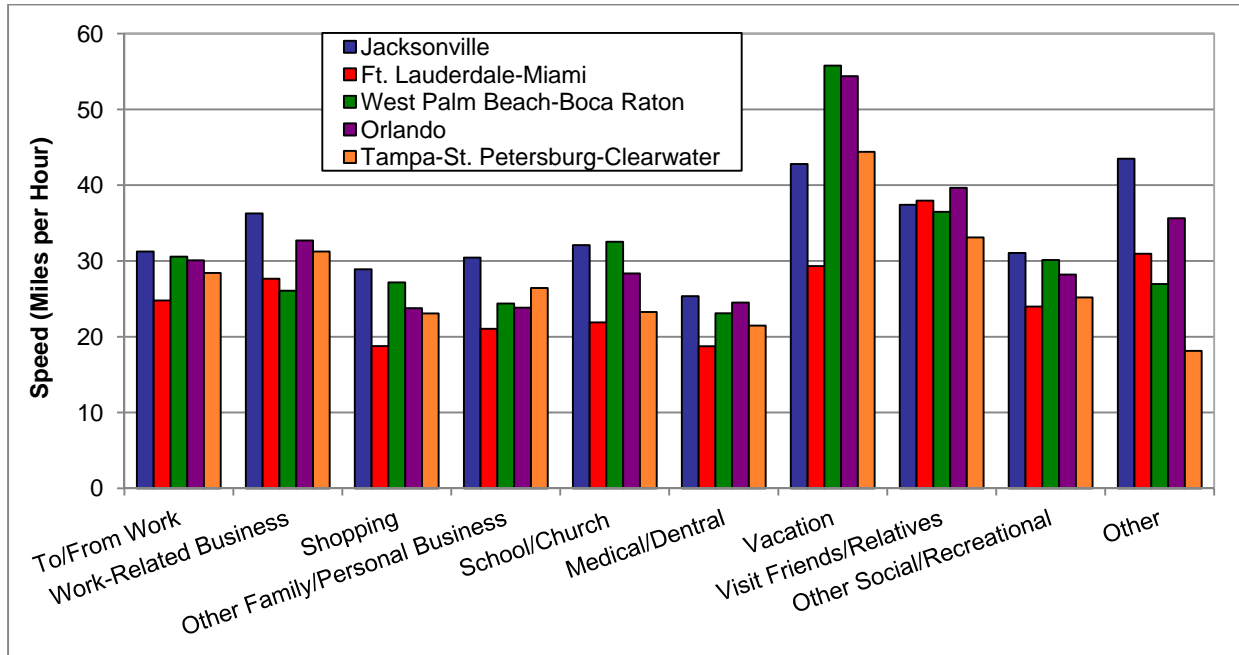
Metropolitan Area	Average Speed (mph)	Average Travel Time (mins)
Jacksonville	33.3	20.1
Ft. Lauderdale-Miami	23.9	20.2
West Palm Beach-Boca Raton	29.1	17.3
Orlando	28.8	19.4
Tampa-St. Petersburg-Clearwater	27.1	18.3

Figure 58 presents the travel speeds by trip purpose by metropolitan area. In the figure, it can be seen that most travel speeds are fairly similar across the different metro areas. The only

NHTS Report: Chapter Four – Florida Travel by Geography

exception is the travel speed by vacation in the Ft. Lauderdale-Miami metro area. The vacation travel speed is the highest among all purposes in other metro areas, but it is not so in the Ft. Lauderdale-Miami metro area.

Figure 58 – Speeds by Trip Purposes by Metropolitan Area



The weekday temporal distribution for the various metropolitan areas is shown in Figure 59. In general, every metropolitan area follows the same temporal distribution. For most metropolitan areas (with the exception of West Palm Beach-Boca Raton), the afternoon peak was greater than the morning peak. Temporal distributions for Saturday and Sunday are not presented by metropolitan area due to a lack of data. Trip purposes by metropolitan area are presented in Figure 60. Shopping, family/personal business, and other social/recreational trips remain the dominant trip purposes for most metropolitan areas.

NHTS Report: Chapter Four – Florida Travel by Geography

Figure 59 – Weekday Temporal Distribution by Metropolitan Area

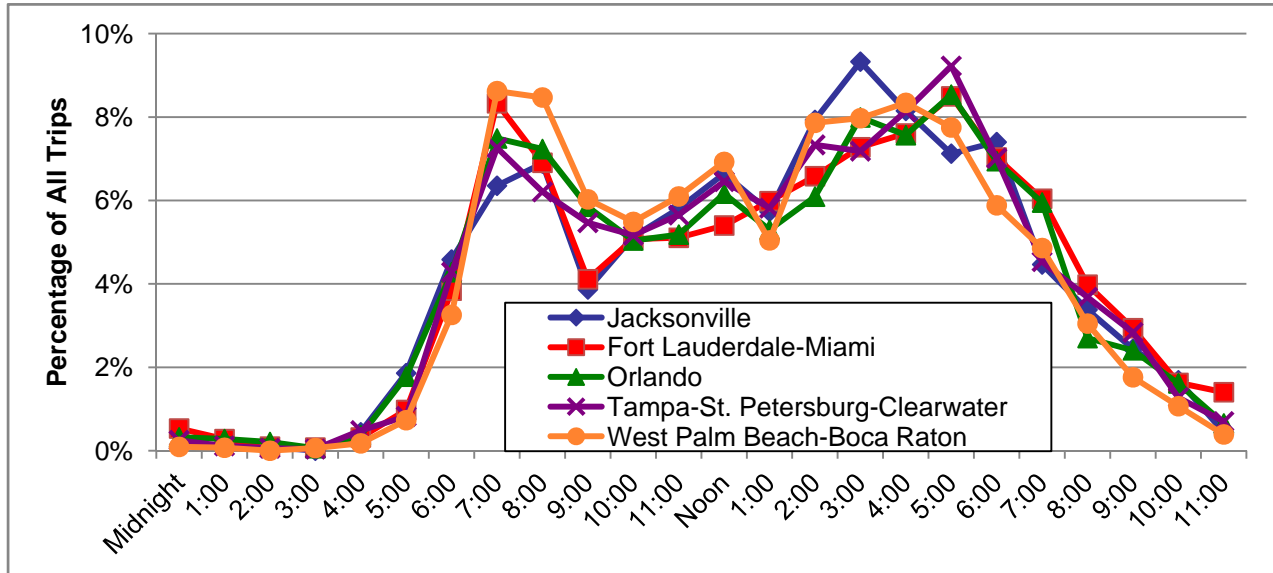
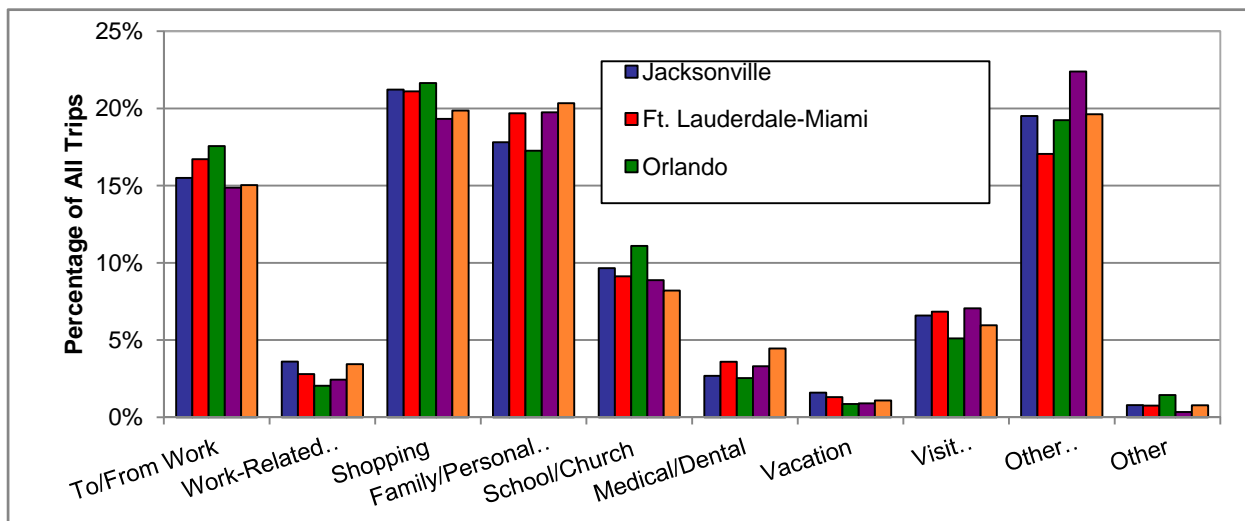


Figure 60 – Trip Purposes by Metropolitan Area



Summary of Metro Area Size Analyses

- Fort Lauderdale-Miami had the smallest VMT and PMT per capita while Jacksonville had the highest.
- The VMT/PMT ratio across the different areas was found to be similar.
- Trip rates by the different metropolitan areas were also remarkably similar.
- In terms of average trip length, Jacksonville had the longest, while Fort Lauderdale-Miami had the shortest. Some of the variation can be attributed to the built environment.

NHTS Report: Chapter Four – Florida Travel by Geography

- Mode share by the different regions indicates that the auto continues to be the predominant form of transportation. Transit usage was highest in the Fort Lauderdale-Miami area, while walking was highest in the West Palm Beach-Boca Raton area. Bicycle usage was similar across the different areas.
- Personal vehicle travel speeds were found to be highest in Jacksonville and lowest in Fort Lauderdale-Miami.
- Average personal vehicle travel times were lowest in West Palm Beach-Boca Raton and highest in Fort Lauderdale-Miami.
- The temporal distribution of trips by metro areas is also remarkably similar. In all metro areas (with the exception of West Palm Beach-Boca Raton), travel during the afternoon peak was greater than during the morning peak.
- Shopping, family/personal business, and other social/recreational trips remain the dominant trip purposes across the different metropolitan areas.

Travel by MSA Size

MSA size (in terms of population) often has an influence on travel patterns. If the MSA has a large population, trips could potentially be shorter. This is due to a greater likelihood of higher density and being located near places of interest or employment. Likewise, the number of trips an individual makes in a large MSA could be significantly greater than one would take in a smaller MSA due to greater opportunities to motivate travel.

For reference when viewing the subsequent data, Table 16 shows the population category under which all Florida MSAs fall. There is only one MSA in both the 500,000-999,999 person and the 3 million or more person categories resulting in modest sample sizes (see Table 17), and caution is advised when analyzing this category's data.

Table 16 – Metropolitan Areas in Florida by Population

Less than 250,000	250,000 to 499,999	500,000 to 999,999
Fort Walton Beach	Daytona Beach	Sarasota-Bradenton
Gainesville	Fort Myers-Cape Coral	
Panama City	Fort Pierce-Port St. Lucie	1 million to 2.9 million
Punta Gorda	Lakeland-Winter Haven	Jacksonville
	Melbourne-Titusville-Palm Bay	Orlando
	Naples	Tampa-St. Petersburg-Clearwater
	Ocala	West Palm Beach-Boca Raton
	Pensacola	
	Tallahassee	3 million or more
		Miami-Fort Lauderdale

Source: U.S. Census Bureau, 2010 Census

NHTS Report: Chapter Four – Florida Travel by Geography

Table 17– Sample Size of MSA Sizes

Metropolitan Area Population	Sample Size
Less than 250,000	1,629
250,000 to 499,999	7,427
500,000 to 999,999	960
1 million to 2.9 million	10,611
3 million or more	5,874

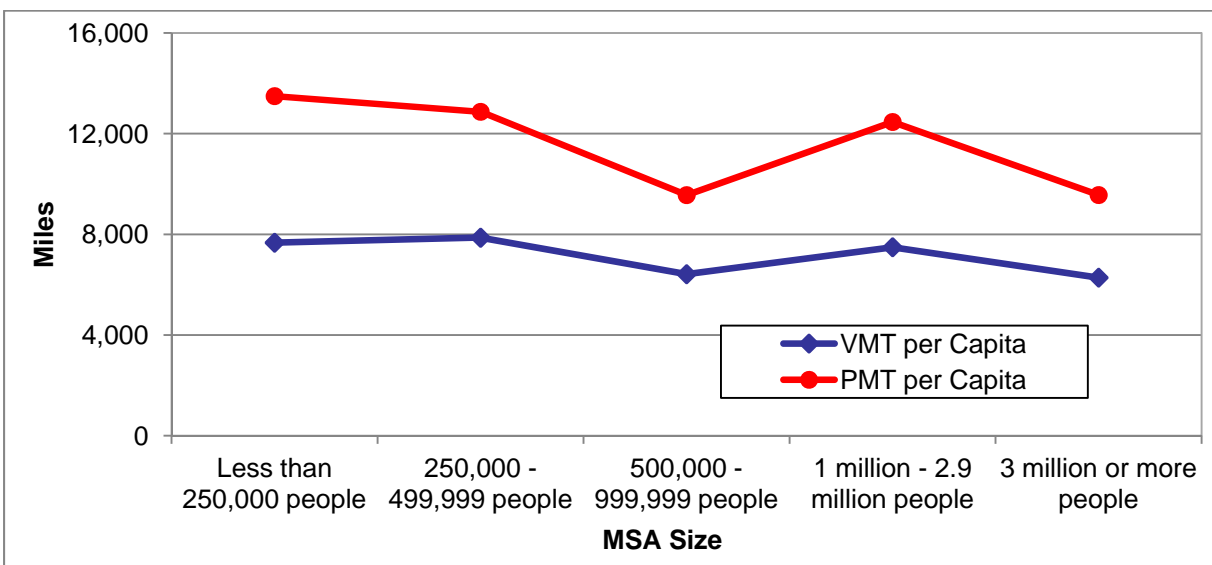
For the reader’s convenience, selected factors (VMT per capita, PMT per capita, VMT/PMT, trip rate, and trip length) by MSA Size (with corresponding MSA) are presented in Table 18 below.

Table 18 – Selected Travel Attributes by MSA Size

Metropolitan Area Size	VMT per Capita	PMT per Capita	VMT/PMT	Daily Trip Rate	Trip Length (Miles)
Less than 250,000	7,668	13,491	0.57	3.87	9.7
250,000 to 499,999	7,868	12,868	0.61	3.66	9.9
500,000 to 999,999	6,418	9,560	0.67	3.81	7.0
1 million to 2.9 million	7,488	12,464	0.60	3.65	9.6
3 million or more	6,281	9,562	0.66	3.57	7.7

As displayed in Figure 61, the VMT and PMT per capita by MSA size decrease as the MSA size increases.

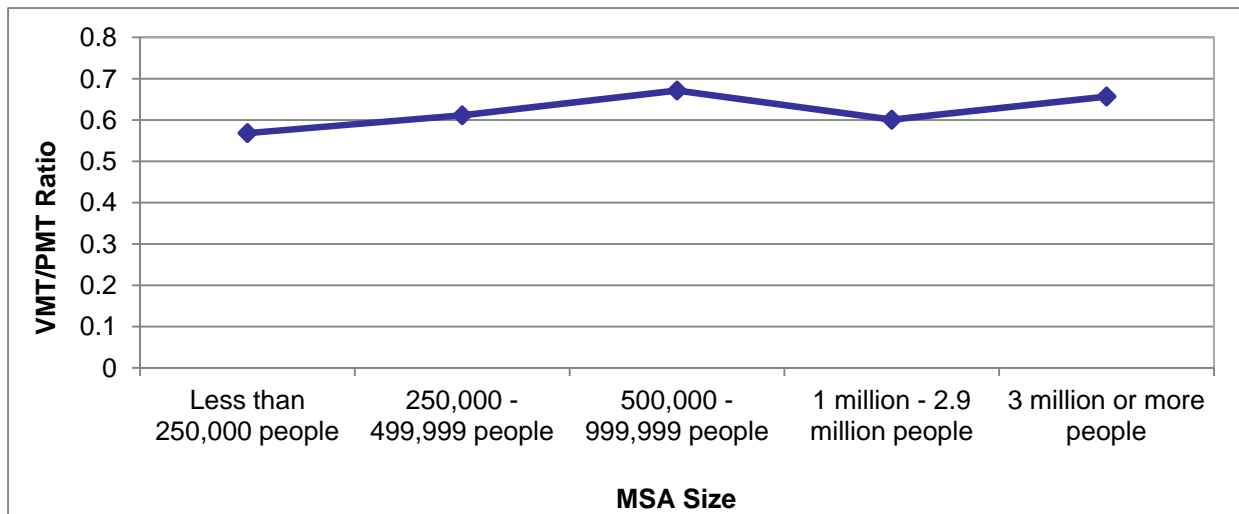
Figure 61 – VMT and PMT per Capita by MSA Size



NHTS Report: Chapter Four – Florida Travel by Geography

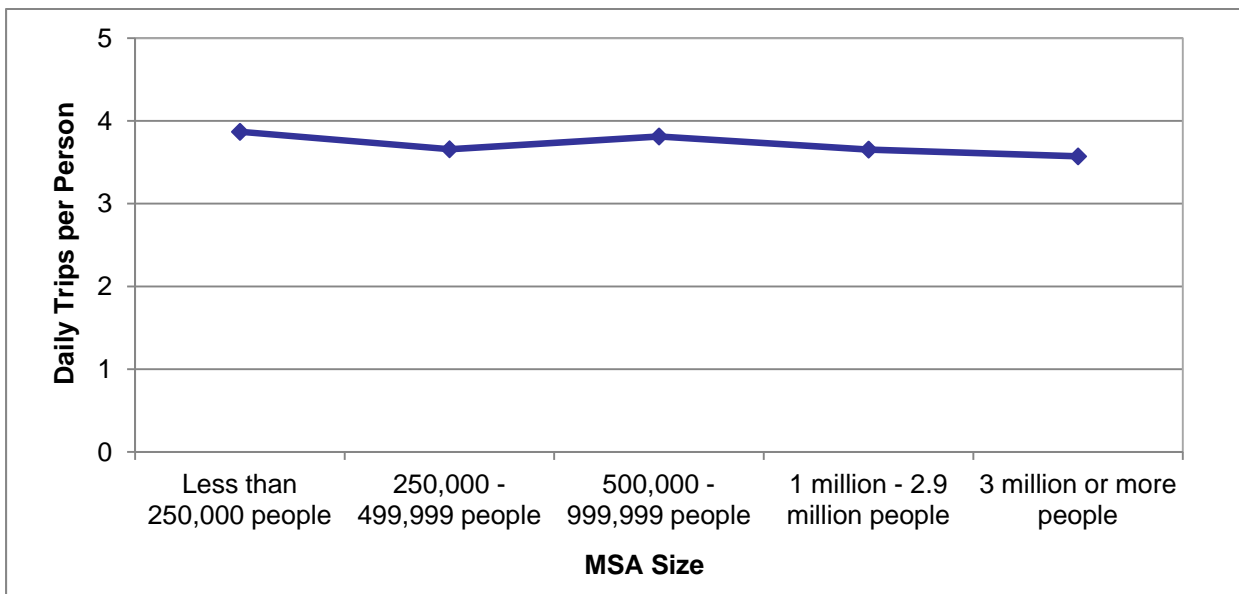
Conversely, while there is some fluctuation, the VMT/PMT ratio by MSA size increases as MSA size increases (Figure 62).

Figure 62 – VMT/PMT Ratio by MSA Size



For trip rates by MSA size, while there is a little variation between the various MSA size categories, there is a general trend of decreasing trip rates as population in the MSA increases (Figure 63).

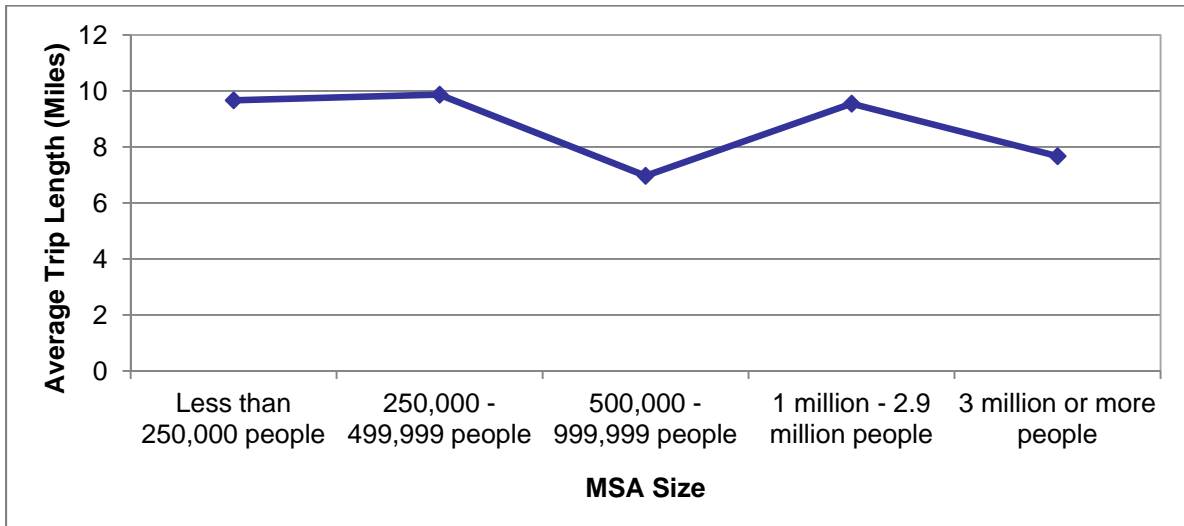
Figure 63 – Trip Rates by MSA Size



NHTS Report: Chapter Four – Florida Travel by Geography

Trip length was also analyzed with respect to MSA size. As seen in Figure 64, there is some decrease in trip length as the size of the MSA increases. This decrease in trip length can be attributed to the fact that more populated regions are more likely to have destinations of interest located close to an individual's place of residence.

Figure 64 – Trip Length by MSA Size



Likewise, as the MSA grows in size, the number of trips taken by auto decreases (Figure 65). Consequently, this decline in the use of the private auto for trips results in an increase in both walking and riding transit (Figure 66). No noticeable change was observed with the bike share as MSA size increased.

Figure 65 – Auto Mode Share by MSA Size

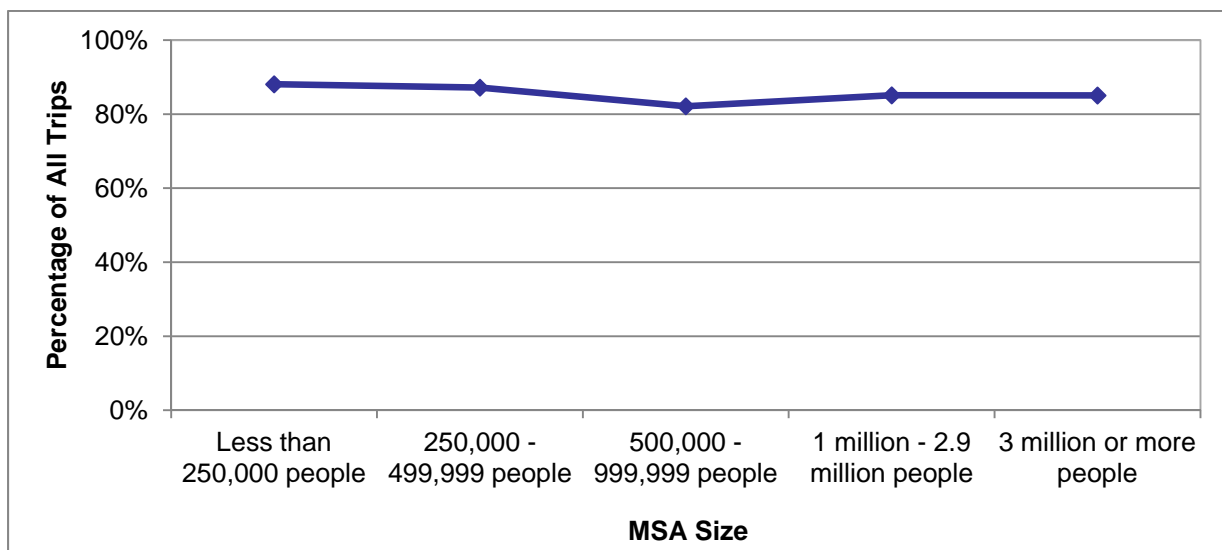
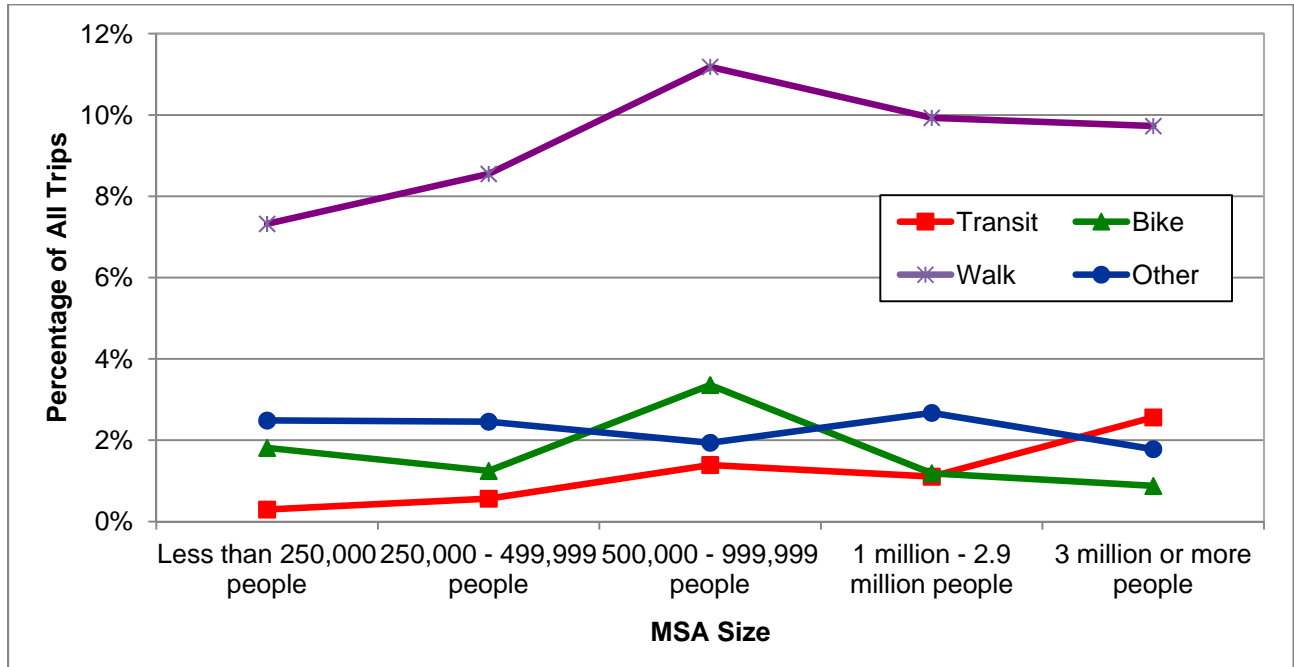
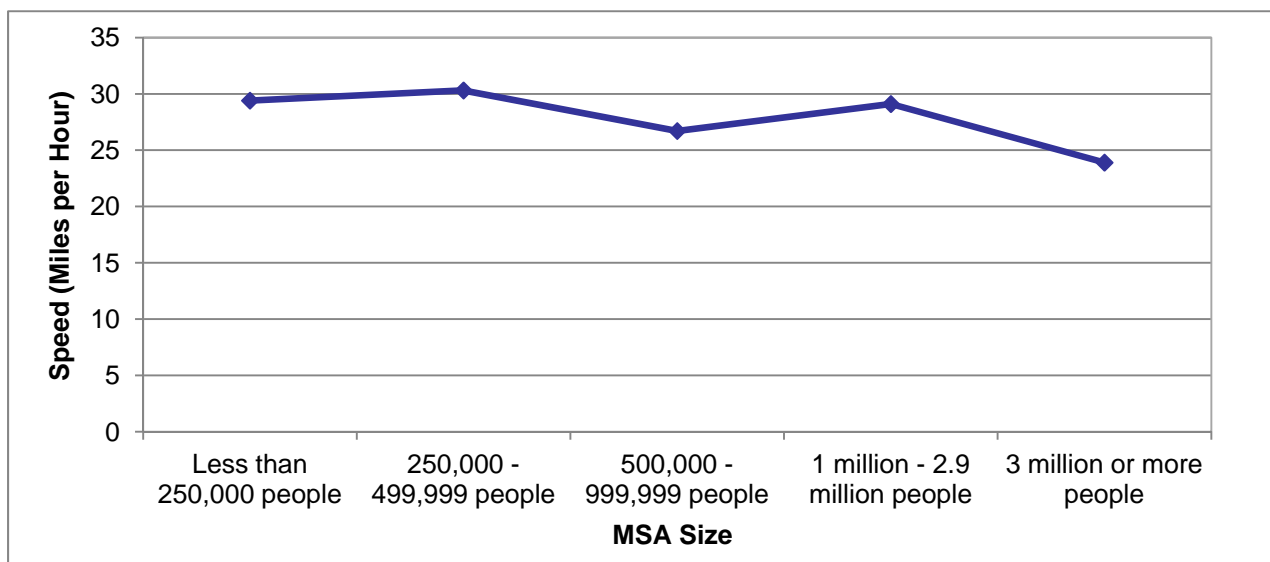


Figure 66– Mode Share for Other Modes by MSA Size



Similarly, as the size of the MSA increases, travel speeds tend to decrease (Figure 67). This decrease in travel speed can be attributed to a greater proportion of travel taking place on lower-speed facilities or more individuals using roadways, resulting in increased congestion.

Figure 67 – Travel Speed by MSA Size







NHTS Report: Chapter Four – Florida Travel by Geography

Travel by Population Density

Examining travel by population density is another way to examine travel in different regions of the state. In the analysis, population density of a household's residence was used. Population densities that were included in the NHTS dataset were derived by Nielsen Claritas, Inc., using the U.S. Census and the ACS. To assist the reader in understanding the built environment associated with varying levels of population density, several aerial photographs from within Hillsborough County are provided in Figure 68.

Figure 68 – Population Density and Built Environment Examples

	
<p>High-Density Area (greater than 25,000 people per square mile) North Harbor Island, Tampa, Florida</p>	<p>Medium-High Density Area (4,000–9,999 people per square mile) South Harbor Island, Tampa, Florida</p>
	
<p>Medium-Low-Density Area (1,000–1,999 people per square mile) Lutz, Florida</p>	<p>Low-Density Area (0–99 people per square mile) Wimauma, Florida</p>

Source: CUTR analysis of Census data.

NHTS Report: Chapter Four – Florida Travel by Geography

VMT and PMT per capita by population density are presented in Figure 69. As the population density increases, the VMT and PMT per capita decrease. However, the VMT/PMT ratio remains steady even though the population density increases as Figure 70 depicts.

Figure 69 – VMT and PMT per Capita by Population Density

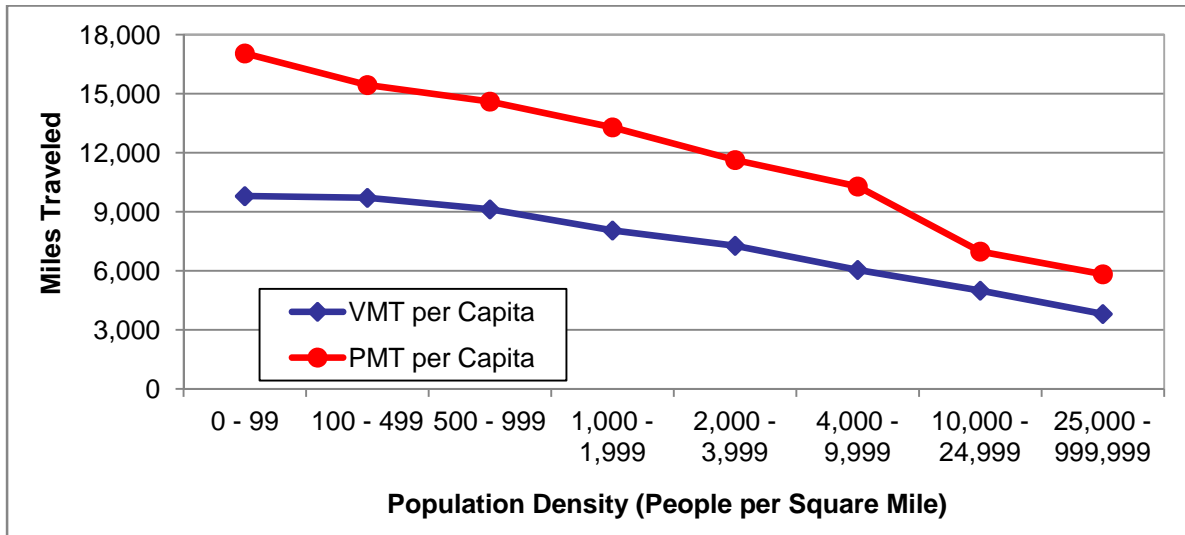
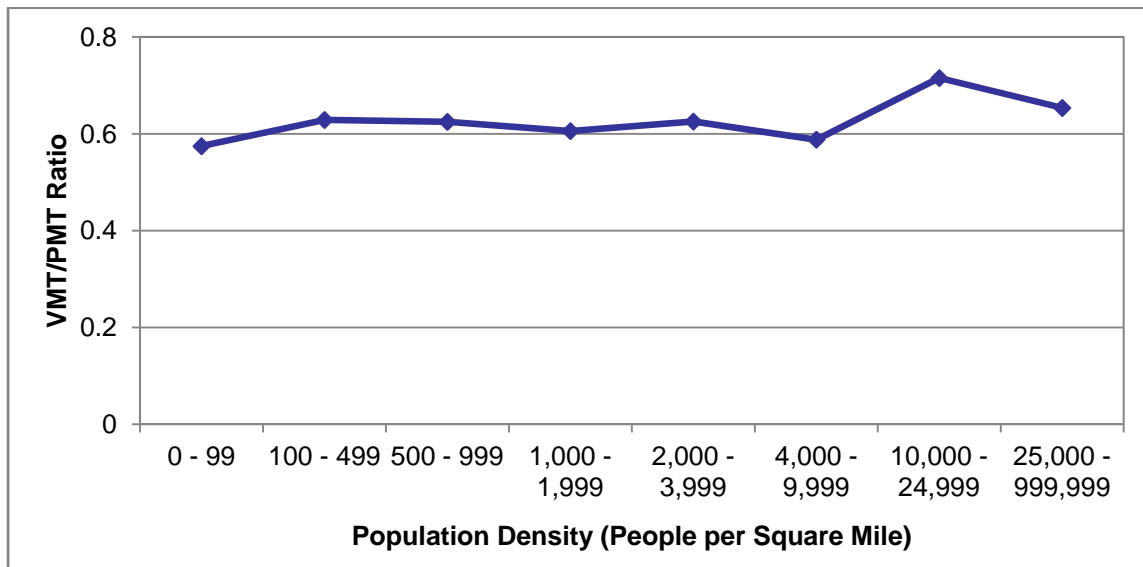
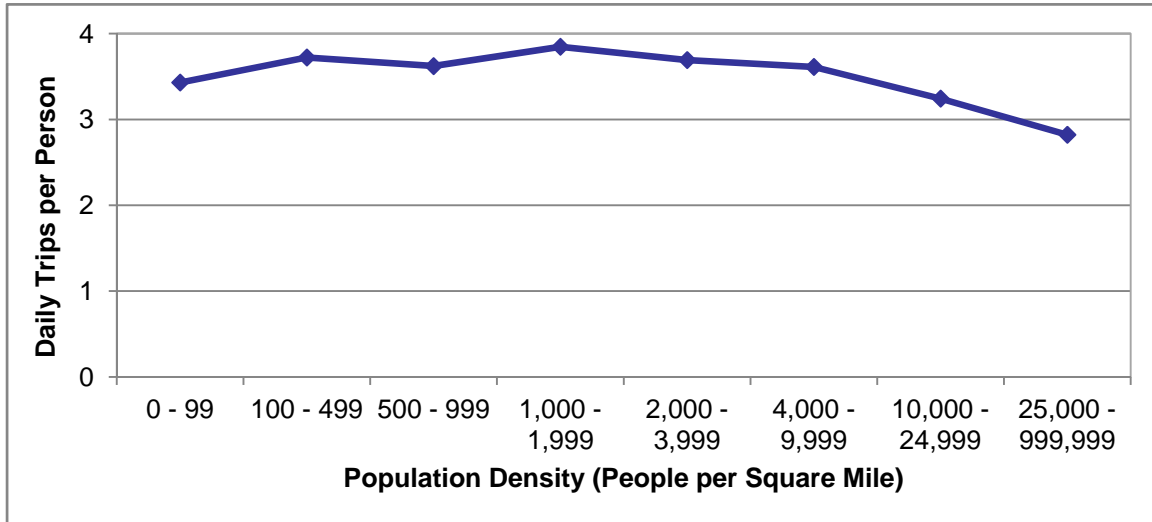


Figure 70 – VMT/PMT Ratio by Population Density



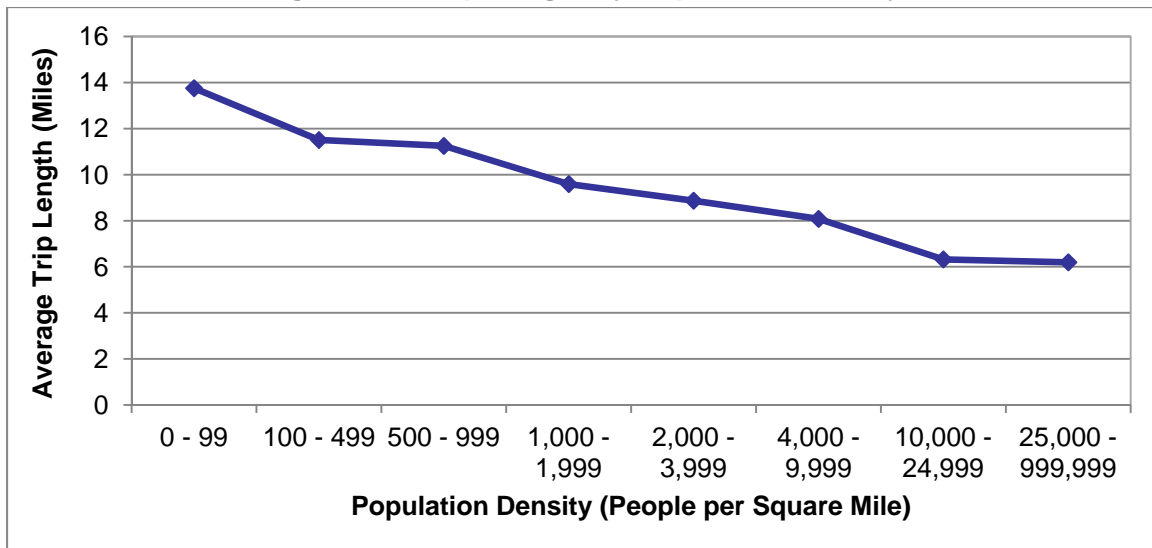
In Figure 71, trip rates by population density show little fluctuation between low and medium density areas. However, as population density surpasses 4,000–9,999 people per square mile, there is a slight drop in the trip rate.

Figure 71 – Trip Rate by Population Density



Like VMT and PMT per capita, trip length decreases as population density increases (Figure 72). This reduction in trip length could be due to the decrease in distance between the individual's place of residence and the individual's locations for various activities.

Figure 72 – Trip Length by Population Density



A look at mode share reveals similar trends that were observed with respect to MSA size. In Figure 73, it can be seen that the auto mode share decreases as the population density increases. This decrease in auto usage corresponds to an increase in walk and transit usage, as exhibited in Figure 74.

Figure 73 – Auto Mode Share by Population Density

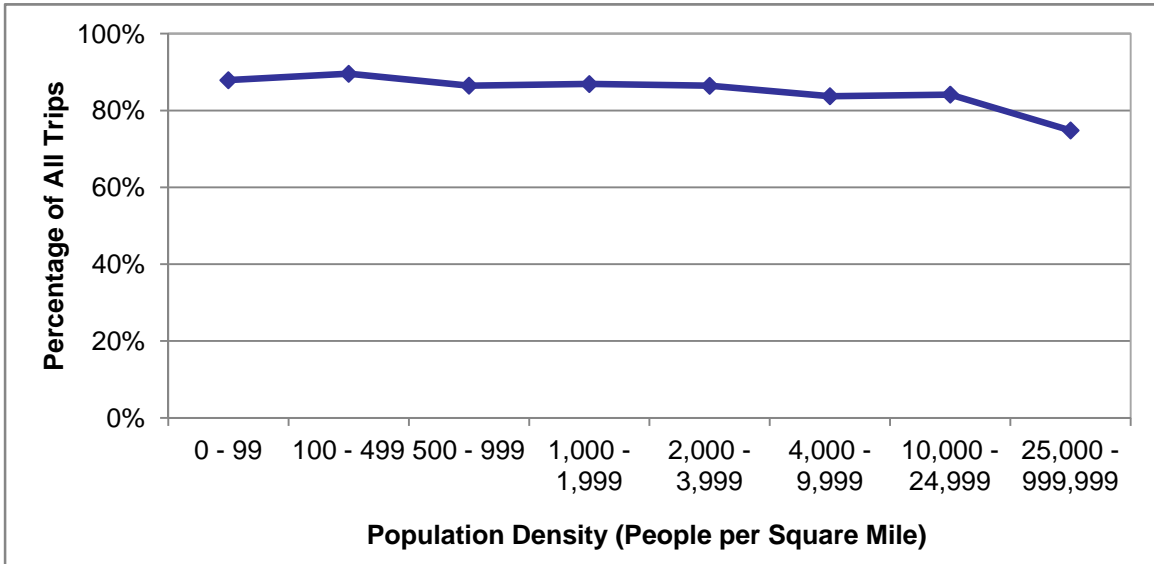


Figure 74 – Mode Share for Other Modes by Population Density

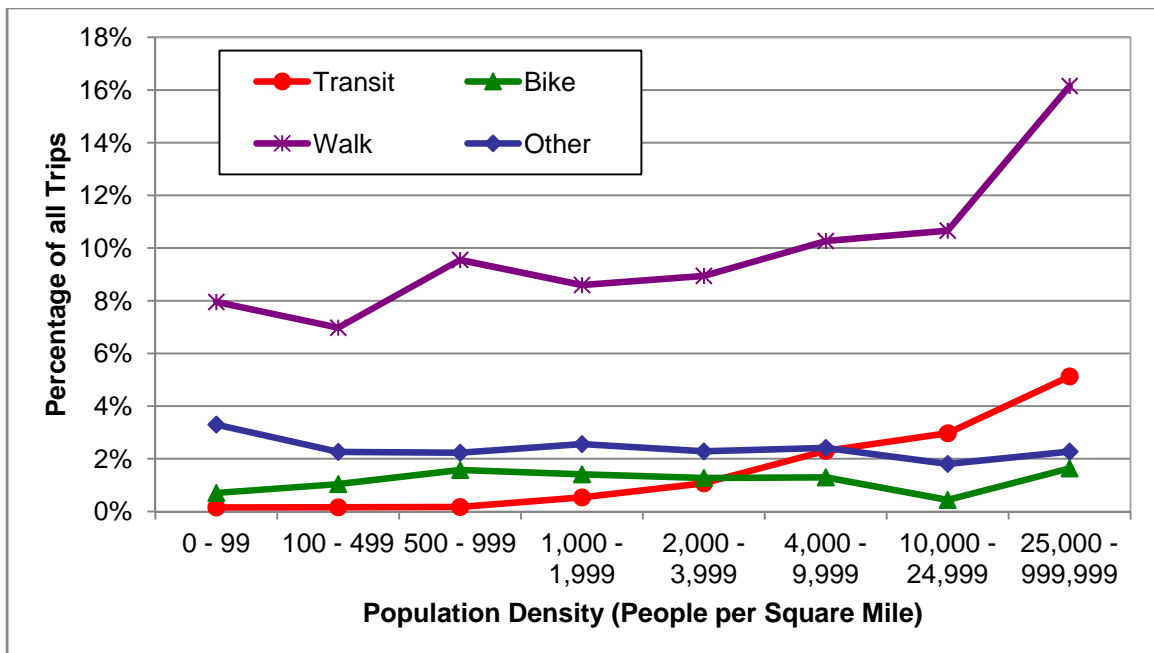
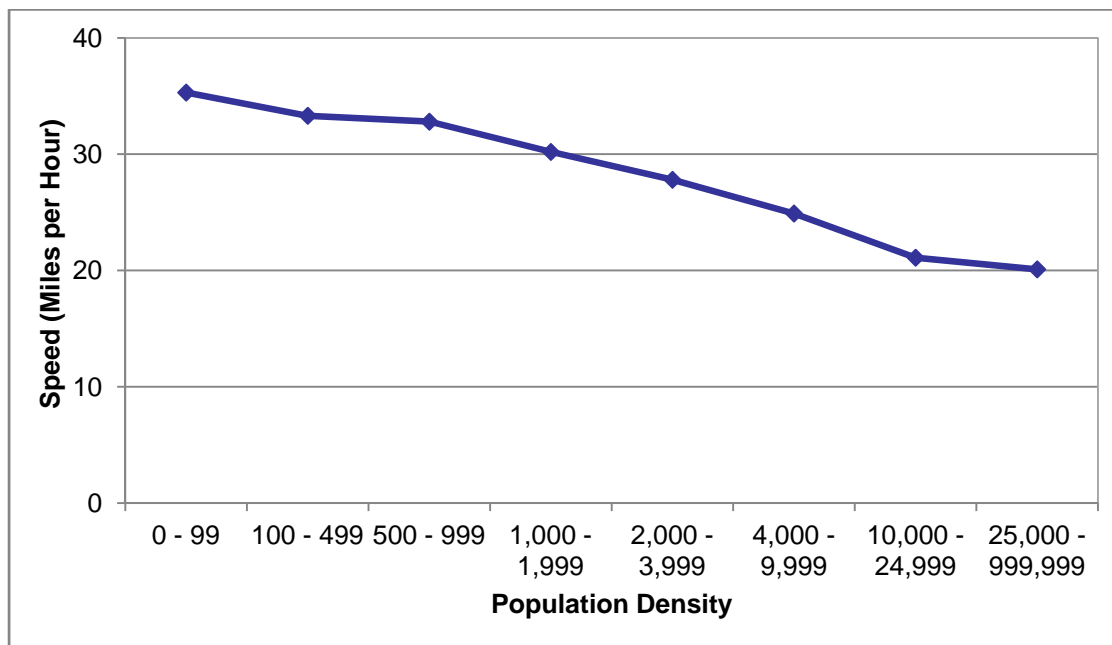


Figure 75 demonstrates that average travel speeds can range from 35.3 mph in sparsely-populated areas to 20.1 mph in more densely-populated areas.

Figure 75 – Travel Speed by Population Density



Conclusions and Interpretations

In this chapter, travel by geography was examined. The comparisons of travel by urban/rural area, CMSA, MSA size, and population density provide some insight into the travel taking place in the state of Florida. The first section of this chapter looked at urban and rural areas. In urban areas, it was found that there were lower levels of VMT and PMT per capita when compared to rural areas. The VMT/PMT ratio and trip rate were found to be similar across both urban and rural areas. Trip lengths were found to be shortest for urban areas and noticeably longer for rural areas. In terms of mode choice, the auto remains the dominant mode in all regions, with transit and walk shares the highest in urban areas. POV travel speeds were lowest in urban areas and highest in rural areas. An analysis of the temporal distribution of trips showed that there is no significant difference in travel patterns between urban and rural areas. There was also no distinguishable difference in trip purposes between urban and rural areas.

Next, an analysis was performed on the Florida metropolitan areas. VMT and PMT per capita were found to be lowest in Fort Lauderdale-Miami and highest in Jacksonville. The VMT/PMT ratio across metropolitan areas did not show much variation. Trip length analysis revealed that Fort Lauderdale-Miami had the shortest average trip length and Jacksonville had the highest. Mode shares across all areas reveal heavy reliance on the auto. Fort Lauderdale-Miami had the highest share of transit usage and West Palm Beach-Boca Raton experienced the highest walk share. POV travel speeds were found to vary quite a bit. Jacksonville recorded the

NHTS Report: Chapter Four – Florida Travel by Geography

highest average travel speed at 33.3 mph and Fort Lauderdale-Miami recorded the lowest at 23.9 mph. Temporal distributions of all regions revealed travel patterns that were quite similar. Trip purposes were also similar, with shopping, family/personal business, and social/recreational trips being the dominant motivators of travel.

MSA size was then analyzed. In analyzing VMT and PMT, it was observed that these values fall as the size of the MSA increases. VMT/PMT ratios were observed to increase as the MSA size increased. Increasing MSA size also had an impact on decreasing the trip rate, trip length, travel speeds, and the auto mode share (resulting in increases of the transit and walk modes).

Population density was the last type of geography examined. Many results were similar to those found in the MSA size analysis. As population density increased, there was a marked decrease in the VMT and PMT per capita, trip lengths, travel speeds, and auto mode share. Trip rates seemed to hold steady for low- and medium-density regions before showing a noticeable decline in high-density areas. VMT/PMT ratios remained constant across the different areas.

The results of this research provide a clear insight into how travel is different in various regions of the state. One particularly important result showed that trips in urbanized areas tend to be shorter and have lower VMT and PMT levels than other areas. In addition, these observations coincided with slightly higher walk, bicycle, and transit use. From a sustainability perspective, reducing long commutes (especially by the private auto) and encouraging the use of alternative modes of transportation can help reduce the demand on the transportation system and reduce some of the externalities of travel. Thus, to the extent that growth can be accommodated in these intensively-developed environments, it can help mitigate demands for transportation facilities and services.

Chapter 5: Florida Mode-Specific Analysis

Introduction

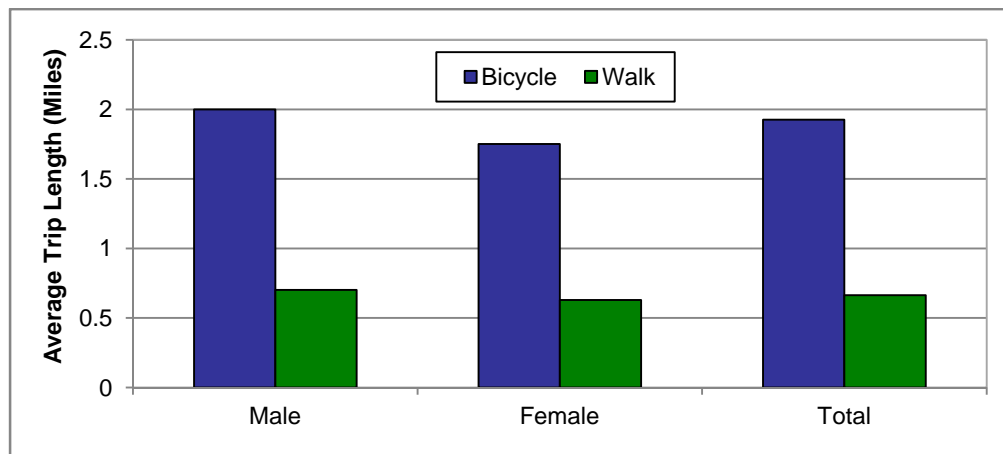
The private auto, walking/bicycling, and public transportation are the primary modes of daily travel. While the private auto continues as the dominant mode of travel for most Floridians, there is increasing interest in promoting and using alternative forms of transportation. This chapter explores three modes of travel: walking/bicycling, public transportation, and carpooling/shared ride. Each section examines some basic travel metrics (such as trip length, mode share, and travel speeds). The walking/bicycling and public transportation sections also examine the characteristics of the user, which is potentially useful for identifying underserved transit markets or perhaps prioritizing bicycle facility improvements.

Walk and Bicycle Travel

When looking at walk and bicycle trips, it is important to note the unique nature in which these trips are generated when compared with trips taken by private auto. Walking trips are integral to virtually all travel as a means of access to the respective mode. This includes walking to access parking or transit for local travel or as part of linked trips to access air, rail, and intercity bus. In addition, walking is the sole mode for many relatively short trips of all purposes. In other cases, walking is done purely for recreational or fitness purposes. Bicycling is similarly used as a means to access other modes, to carry out various activities, or for recreational purposes.

By their nature, walk and bicycle trips are generally short. One of the many factors that affect the trip length is gender. Figure 76 shows that males tend to make longer walk or bicycle trips than females.

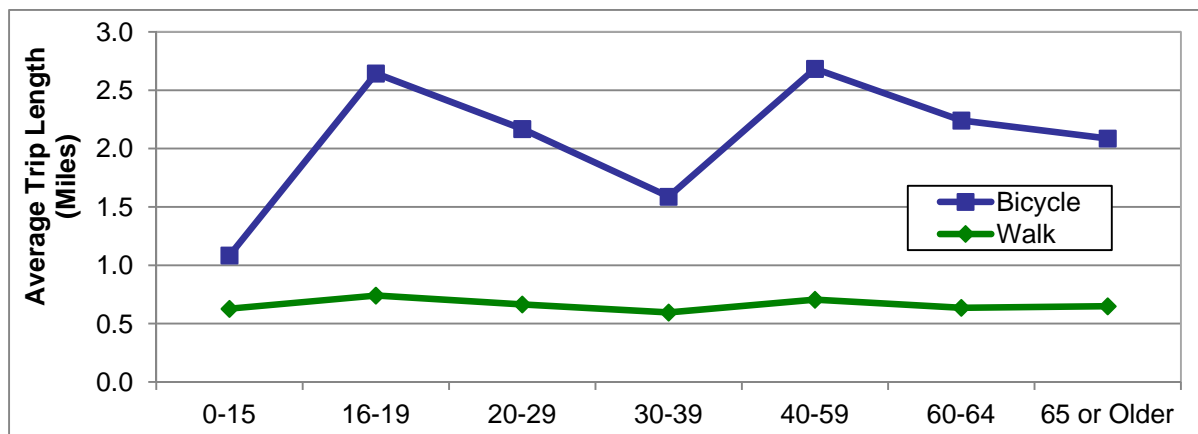
Figure 76 – Average Length of Bicycle and Walk Trips by Gender



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

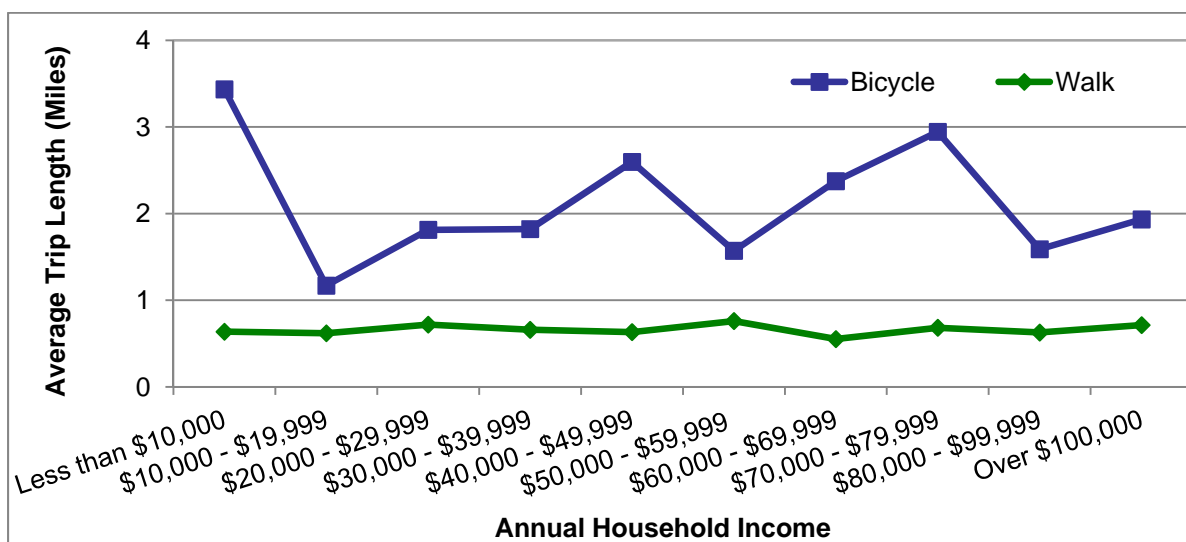
Another factor that affects trip length is age. As Figure 77 shows, trip lengths for walk trips tend to remain steady across age groups. Bicycle trips tend to have higher trip length concentrated in the teenage years and those ages 40 and older. The sample size is very small for those ages 16–29 traveling by bicycle, so caution should be used in interpreting data for this group.

Figure 77 – Bicycle and Walk Trip Length by Age



A review of trip length by household income, as seen in Figure 78, shows that walk trip lengths remain steady across all income groups whereas there is significant fluctuation in the trip length of bicycle trips. One might speculate that longer bike trips for very low income individuals are partially attributable to them being captive to non-auto modes of travel. Other income groups may have a mix of functional bike travel (accomplishing a specific trip purpose using bike as a mode of travel) and recreational bike use.

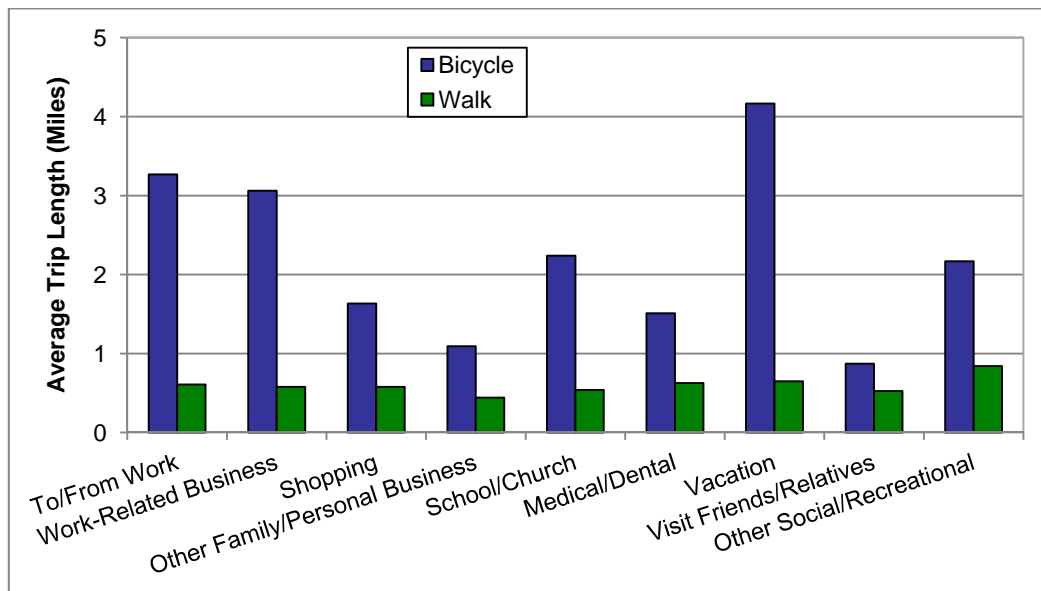
Figure 78 – Bicycle and Walk Trip Length by Household Income



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

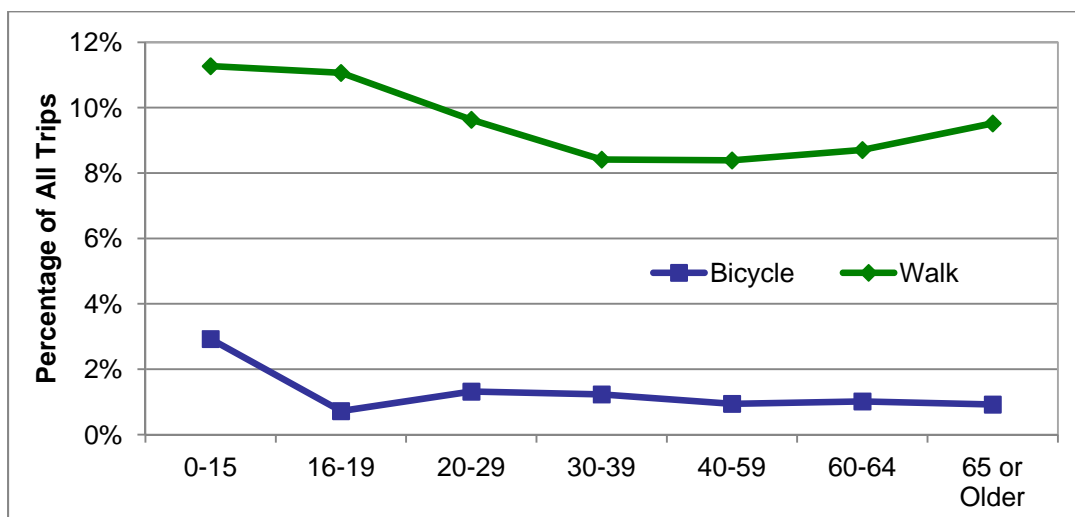
In Figure 79, trip length by trip purpose is examined. For walk trips, there was not that much variation in trip length by various trip purposes. For bicycle trips, vacation travel, trips to/from work, and work-related business had the longest trip lengths.

Figure 79 – Bicycle and Walk Trip Length by Trip Purpose



Mode share for walk and bicycle trips historically have been very low. In Figure 80, it can be seen that bicycling and walking are highest in the teenage years. Walking among older adults is also quite high, possibly due to the fact that many may not be able to drive.

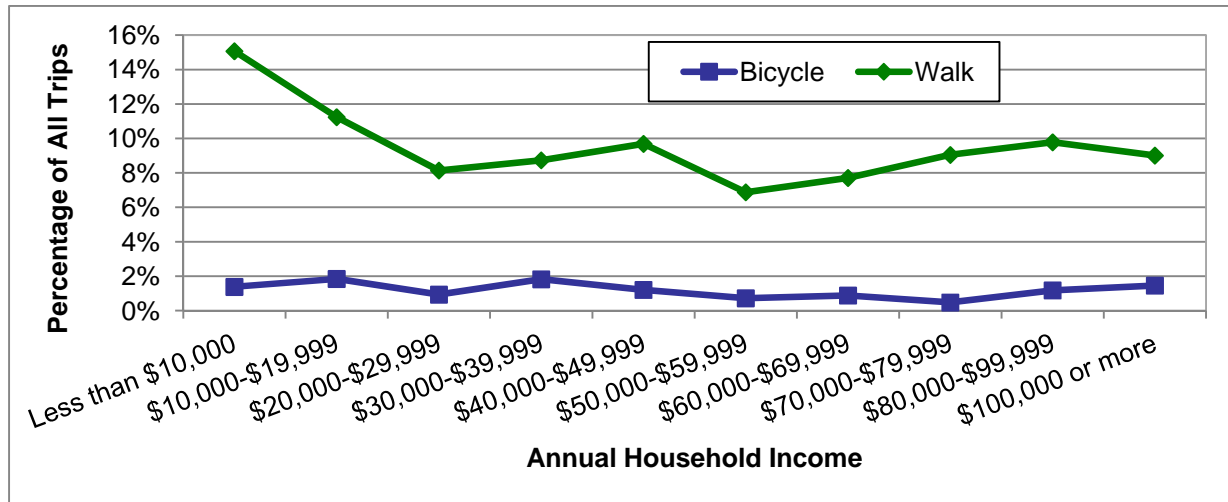
Figure 80 – Bicycle and Walk Mode Share by Age



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

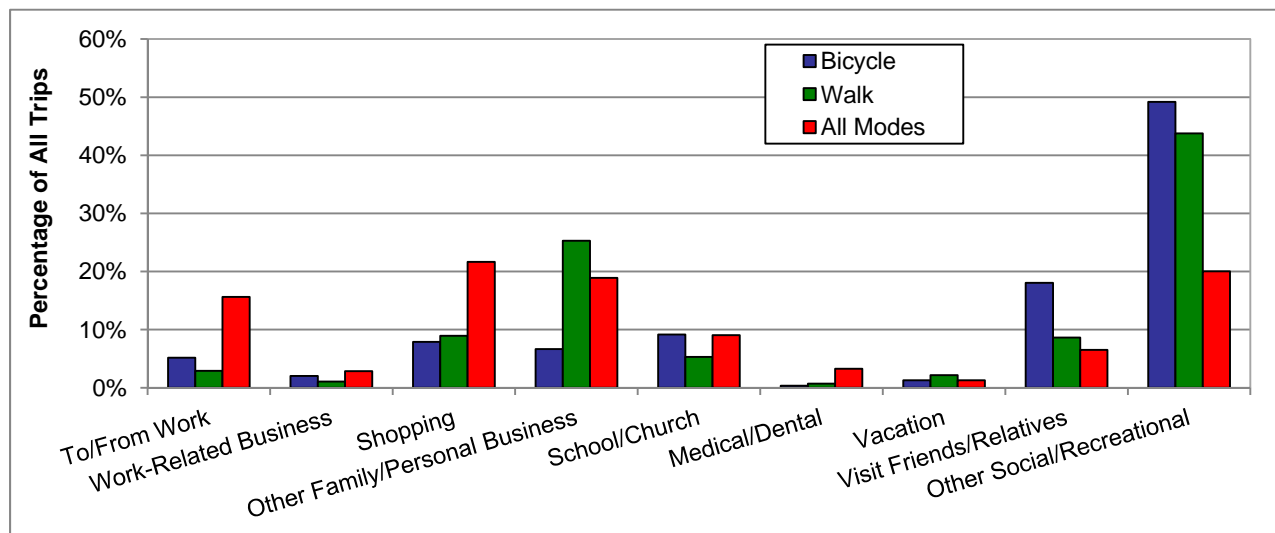
In Figure 81, the mode share by household income is presented. In general, it appears that households with lower incomes tend to walk more. However, there is no clear correlation between increasing levels of income and bicycling. Bicycle usage tends to remain relatively stable across all income groups.

Figure 81 – Bicycle and Walk Mode Share by Household Income



The trip purpose for walking and bicycling was examined in Figure 82. A majority of walk and bicycle trips are purely for social/recreational purposes. For bicycling and, to a lesser extent, walking, there is a natural tendency to use it more for purposes where there is discretion when traveling. In this way, the traveler can adjust his or her travel schedule to accommodate weather, daylight conditions, or other factors.

Figure 82 – Bicycle and Walk Mode Share by Trip Purpose



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Bicycle and Walk Usage

Since bicycling and walking is not a very common mode of travel, some time was spent to analyze how often people walked or bicycled. Table 19 presents the number of bicycle trips that a typical Floridian takes in a typical week. The table shows that a large portion of the population does not bicycle at all in a typical week. Of those that do, most are considered occasional users.

Table 19 – Number of Bicycle Trips in a Week

Frequency of Bicycling in a Week	Percentage of Population
No bicycle trips in the past week	86.7%
Less than once a week (1 time)	3.7%
Once or twice a week (2-4 times)	6.3%
Multiple times a week (5+ times)	3.4%

A look at the number of walk trips in a typical week each Floridian takes reveals that while they walk more than they bicycle, most people that walk do so about once or twice a week (Table 20).

Table 20 – Number of Walk Trips per Week

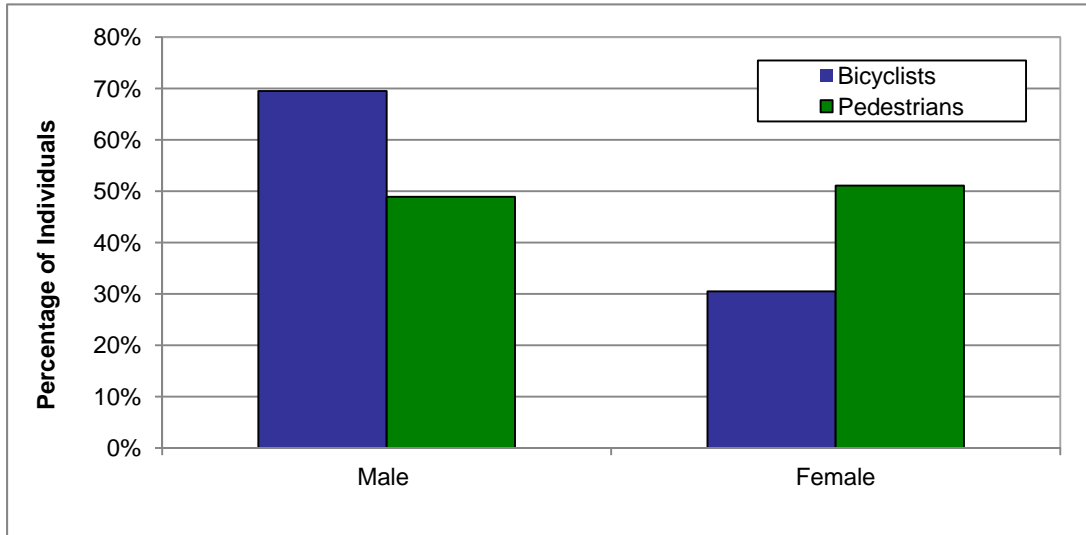
Frequency of Walking in a Week	Percentage of Population
No walk trips in the past week	34.1%
Less than once a week (1 time)	4.7%
Once or twice a week (2-6 times)	34.5%
About once a day (7-14 times)	20.1%
More than once a day (15+ times)	6.6%

Demographics of Pedestrians and Bicyclists

This section presents some demographics of pedestrians and bicyclists in Florida. Identifying characteristics of these users can help identify travel patterns or preferences that ultimately can improve the sidewalk and bicycle network.

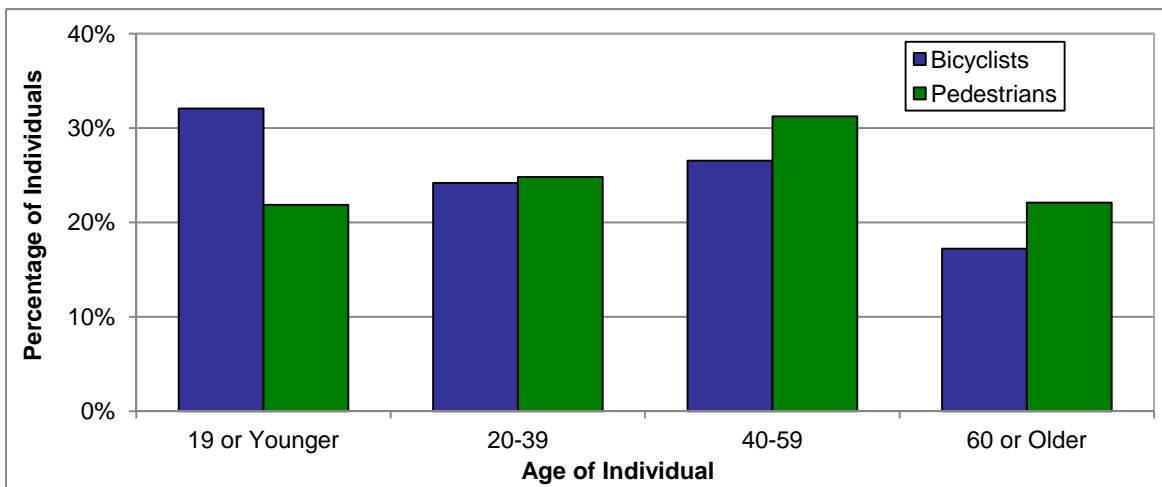
An analysis of the gender of pedestrians and bicyclists depicts that more bicyclists are male than female (Figure 83). In terms of pedestrians, there is almost an equal split between males and females.

Figure 83 – Gender of Pedestrians and Bicyclists



Age was examined for both pedestrians and bicyclists. As Figure 84 shows, older people (60+) tend to comprise a smaller share of the bicycling population with younger folks (19) comprising the largest share. Meanwhile, older people tend to walk more.

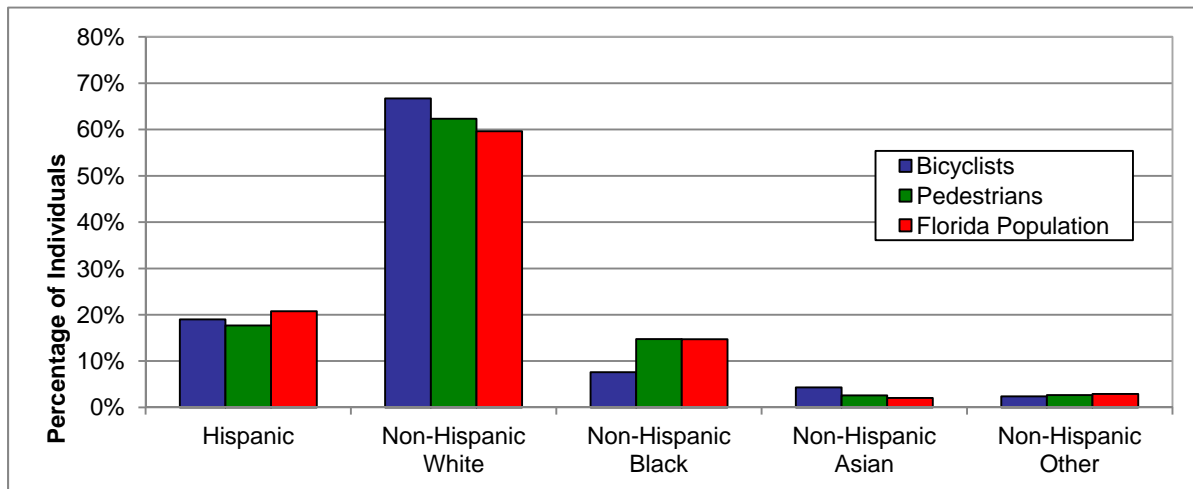
Figure 84 – Age Distribution of Pedestrians and Bicyclists



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

The race and ethnicity of pedestrians and bicyclists showed very little variation (Figure 85).

Figure 85 – Race and Ethnicity of Pedestrians and Bicyclists



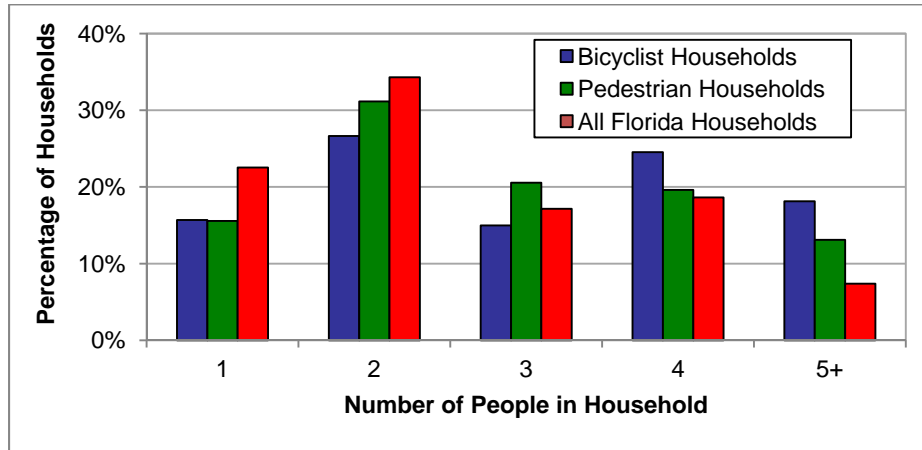
Whether or not an individual can drive can play a huge role in how one travels. As Table 21 shows, while most pedestrians and bicyclists have driver's licenses, there is still a large portion of pedestrians and bicyclists who have no license. Hence, there are some individuals in Florida who are captive to non-auto modes of travel.

Table 21 – Driver Licensing Status of Pedestrians and Bicyclists

	Pedestrians	Bicyclists	All Floridians
Has driver's license	85.6%	83.4%	88.3%
Does not have driver's license	14.4%	16.6%	11.7%

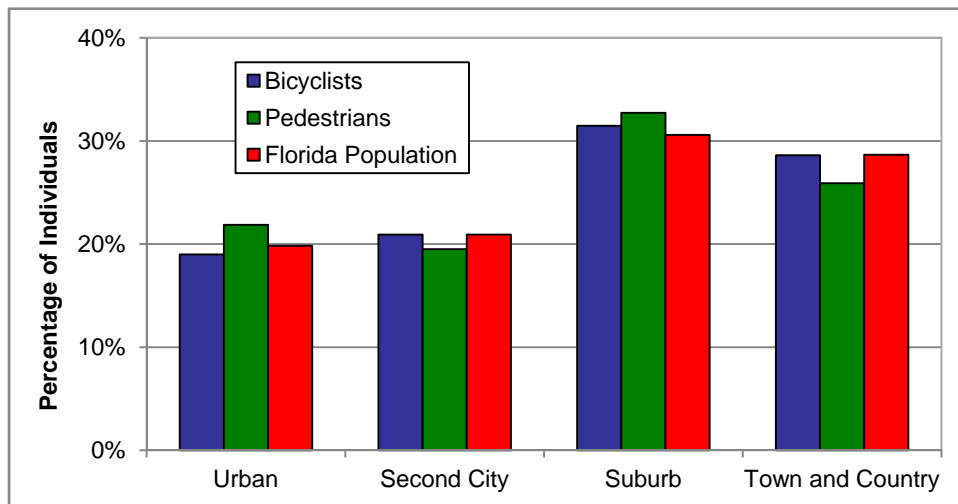
The NHTS defines a household as a pedestrian household if at least one member of the household walked during the survey period. The same methodology applies to bicyclist households. According to Figure 86, a large portion of pedestrian and bicyclist households are two-person households. Not surprisingly, one and two-person households have a lower likelihood of being a pedestrian or bicyclist household and larger households are more likely to be pedestrian or bicyclist household.

Figure 86 – Household Size for Pedestrian and Bicyclist Households



Housing characteristics of pedestrians and bicyclists were examined next. The first variable of analysis was the built environment. In the 2009 NHTS, each household’s location is coded as being in a town and country, a suburb, a second city, or an urban area. A town and country is considered the most rural environment with each subsequent area being more and more urbanized. The NHTS obtained this household location classification data from the 2000 U.S. Census. Figure 87 shows that pedestrians and bicyclists generally live in the same areas as the rest of the population. There is a slightly greater representation of pedestrian households in urban and suburban locations and a slightly greater representation of bicyclist households in suburban locations.

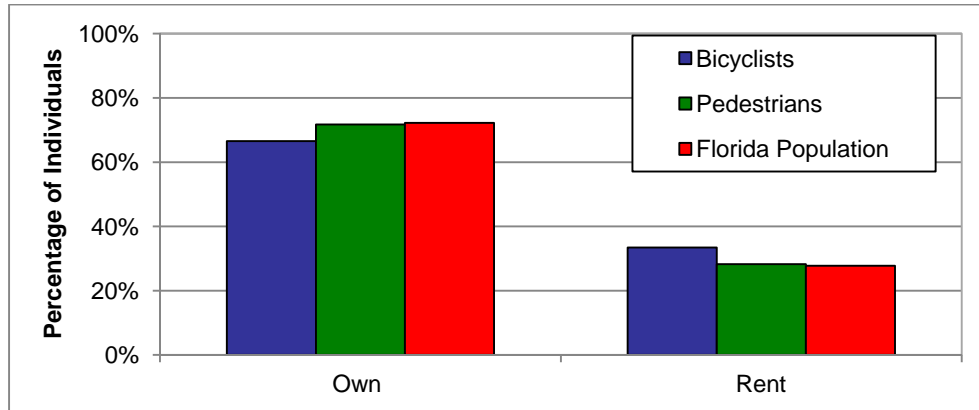
Figure 87 – Residential Location for Pedestrians and Bicyclists



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

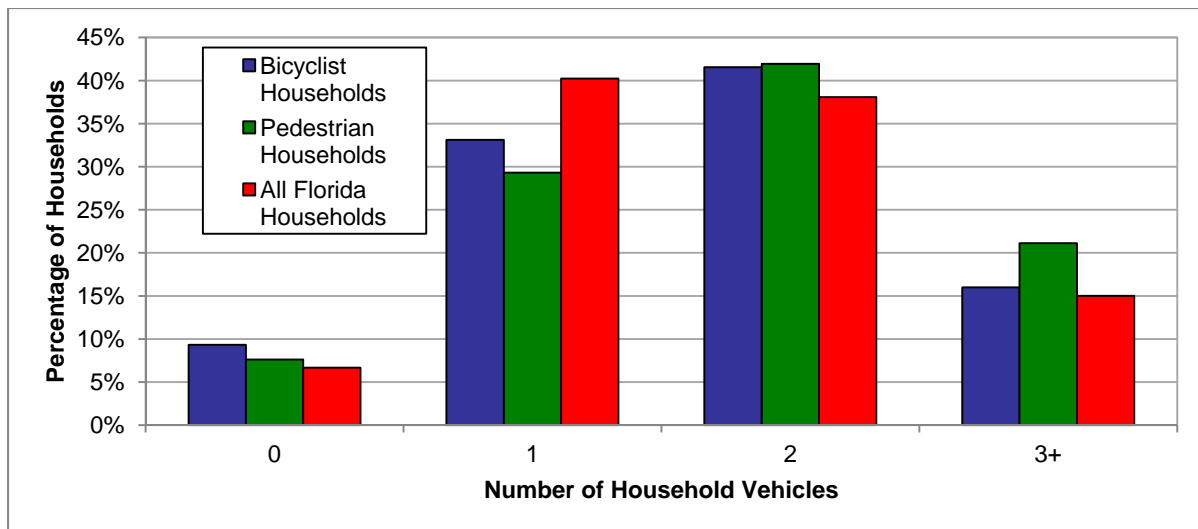
The second variable of analysis was home ownership of pedestrians and bicyclists. As Figure 88 shows, pedestrians and bicyclists generally live in the same type of housing as the rest of the population.

Figure 88 – Home Ownership for Pedestrians and Bicyclists



An analysis of the household vehicle ownership reveals some very interesting results. In Figure 89, it can be seen that more pedestrian and bicyclist households have zero vehicles than all Florida households. There are also more pedestrian and bicyclist households with two or more vehicles when compared to all Florida households. This hints that zero-vehicle households are slightly more inclined to use bicycling and walking as alternative means of travel. In addition, multi-vehicle households most probably are active families, and biking and walking are common means of travel, particularly for youth.

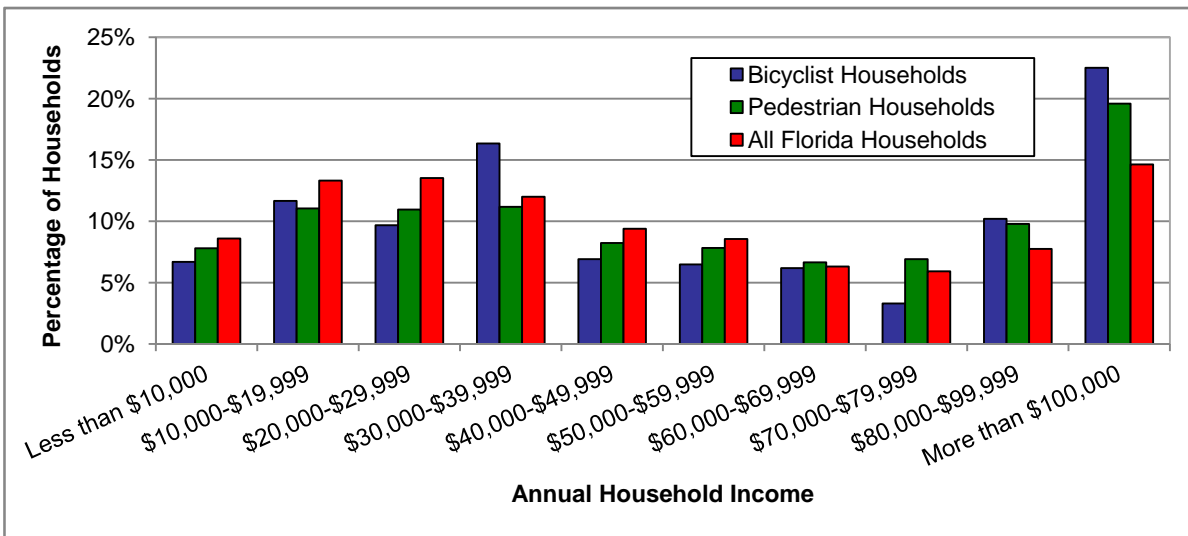
Figure 89 – Household Vehicle Ownership for Bicyclist and Pedestrian Households



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

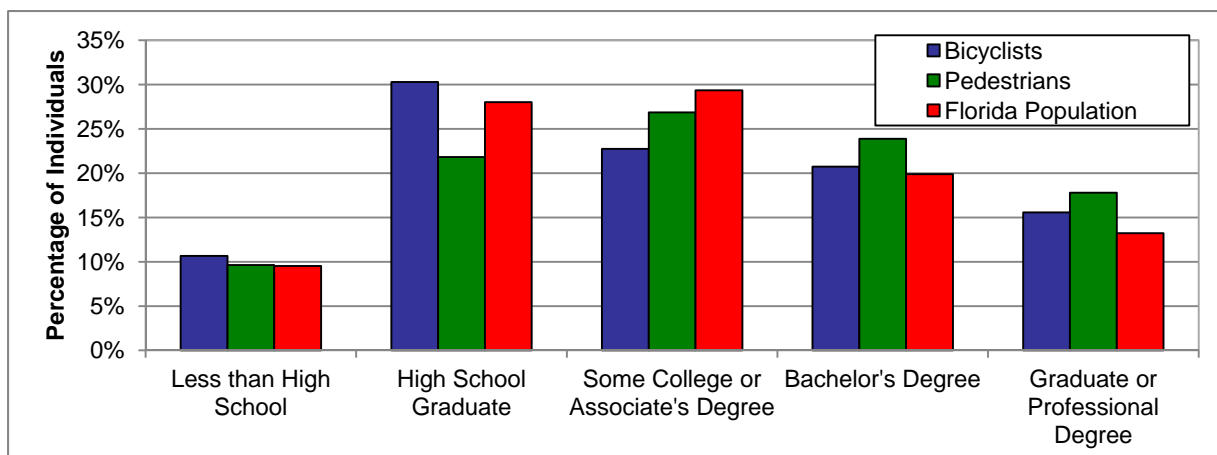
Income can be a major factor in how a household chooses to travel. Lower-income households may choose to travel by non-auto modes to reduce the cost of travel. However, high-income individuals may be more likely to walk or bicycle for social, recreational, or fitness purposes. As Figure 90 shows, pedestrian and bicyclist households tend to be well represented in the \$80,000+ income range. For lower-income categories, traveling by walking or bicycling are often under-represented relative to all households.

Figure 90 – Household Income for Pedestrian and Bicycle Households



Educational attainment is somewhat tied to household income. A higher education is tied with a higher income and a higher likelihood of owning and operating a private vehicle. As Figure 91 shows, there is no clear correlation between walking or bicycling and educational attainment.

Figure 91 – Educational Attainment for Pedestrians and Bicyclists



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

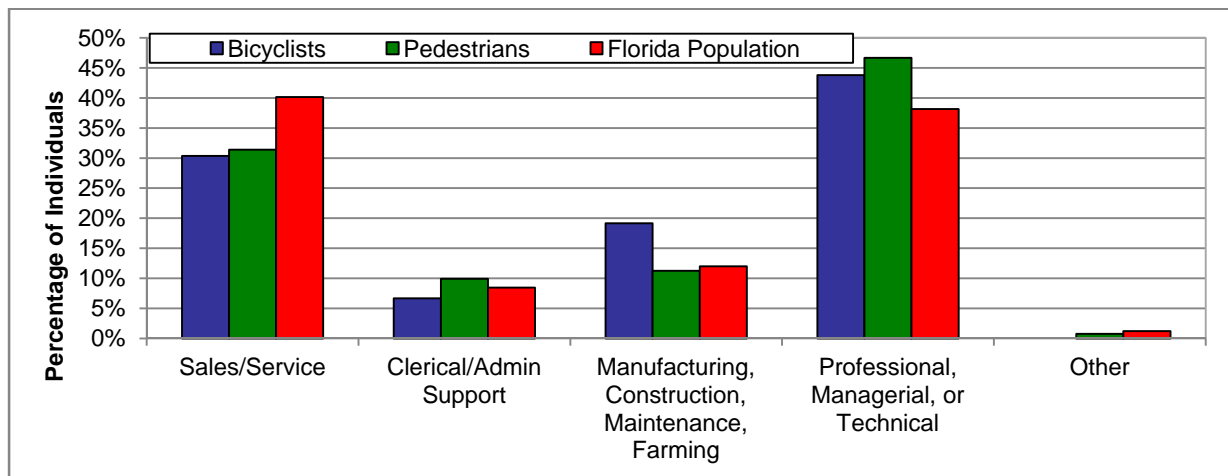
Occupation and other work characteristics can have a large effect in whether one walks or bicycles. Table 22 shows that bicyclists are more likely to have only one job. Pedestrians were found to be not very different from Floridians in general.

Table 22 – Number of Jobs for Pedestrians and Bicyclists

	Pedestrians	Bicyclists	All Floridians
Has a second job	9.5%	6.5%	9.0%
Has one job	90.5%	93.5%	91.0%

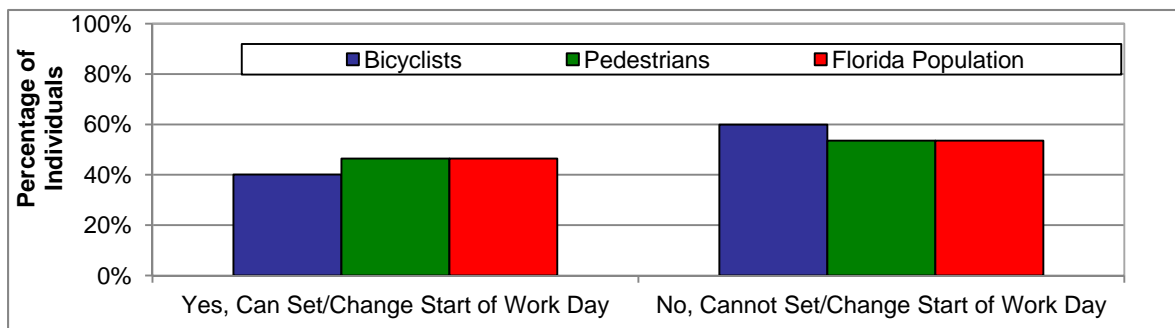
In terms of occupation, it can be seen in Figure 92 that most walkers and bicyclists are in the professional, managerial, or technical fields. It should also be noted that since the bicycle sample was small, there were no responses for the “other” category.

Figure 92 – Occupation of Pedestrians and Bicyclists



Work-hour flexibility can play a role in whether or not an individual chooses to walk or bicycle. As Figure 93 shows, there is no correlation between work flexibility and walking or bicycling.

Figure 93 – Work Flexibility for Pedestrians and Bicyclists

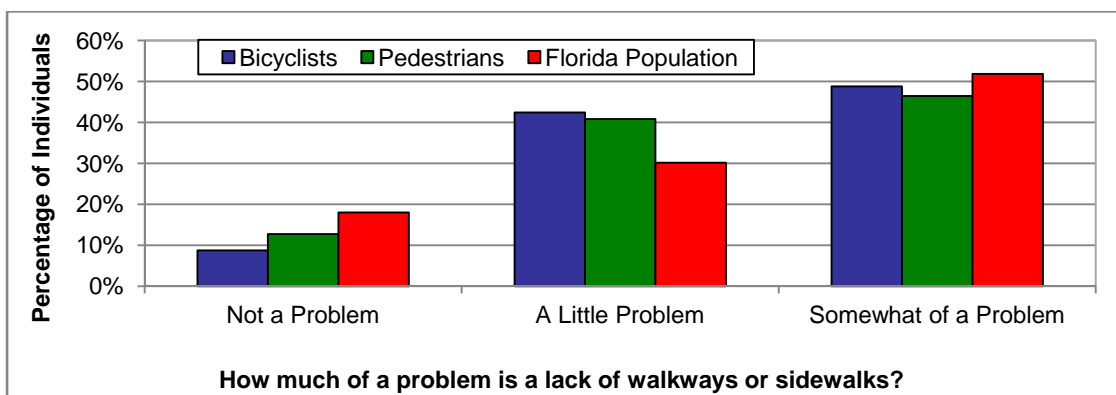


NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Pedestrian and Bicyclist Opinions

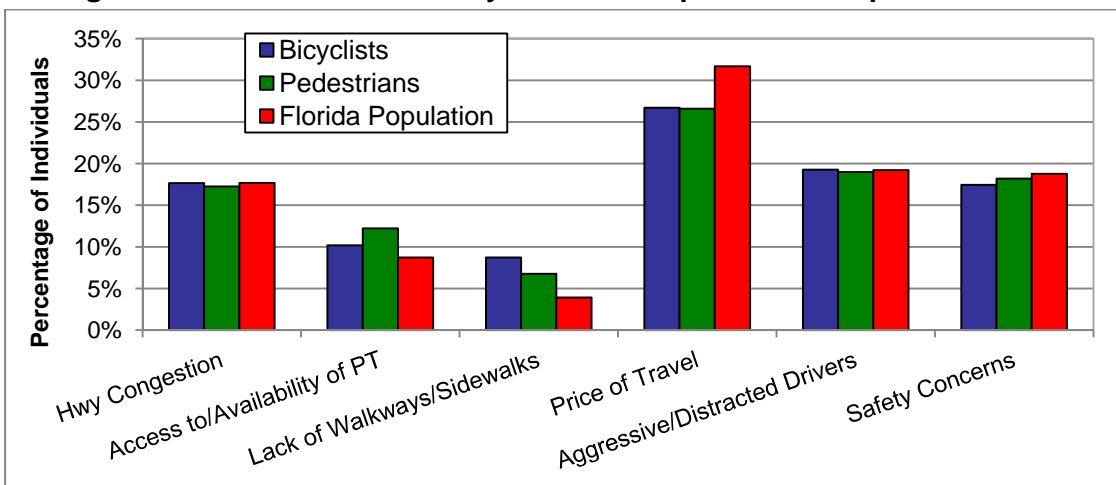
This section details some personal opinions/desires of pedestrians and bicyclists that were collected by the NHTS. The first question was regarding the availability of walkways and sidewalks. As shown in Figure 94, pedestrians and bicyclists generally find that the lack of sidewalks is a problem. The number of pedestrians and bicyclists that say the lack of sidewalks is not a problem is significantly less than the rest of the population.

Figure 94 – Pedestrian and Bicyclist Response to Lack of Sidewalks



The second question asked about the most important transportation issue. Like the general population, the majority of pedestrians and bicyclists felt that the price of travel was the most important transportation issue (Figure 95). While more pedestrians and bicyclists saw public transportation and sidewalks as important issues, there was not that much difference from what Floridians thought was the most important issue.

Figure 95 – Pedestrian and Bicyclist Most Important Transportation Issue



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Summary of Analyses of Bicycle and Walk Travel – Trip Attributes

- Trip length:
 - Males were observed to take longer bicycle and walk trips than females.
 - Bicycle trips tend to be longer in length among teenagers and those ages 40 and older. Trip lengths for walk trips were roughly the same length across all age groups.
 - Low-income bicyclists tend to make longer trips than other bicyclists. Trip length was similar across income categories for walk trips.
 - For bicycle trips, it was found that vacation travel, trips to/from work, and work-related business had the longest trip lengths. Walk trips did not show much variation by trip purpose.
- Trip purpose:
 - Most bicycle and walk trips are for social/recreational purposes.
- Bicycle and walk usage:
 - Most Floridians did not bicycle in the week prior to being surveyed. Of those who did bicycle, most were occasional users (four times a week or less).
 - A portion of Floridians did not walk in the week prior to being surveyed (34%). Of those that did, most walked about once or twice a week (2–6 times a week or less).

Summary of Analyses of Bicycle and Walk Travel – Demographics

- More bicyclists were male than female. There was an equal split between male and female pedestrians.
- Most bicyclists were age 19 or younger, while most pedestrians were between the ages of 40–59.
- The racial/ethnic composition of bicyclists and pedestrians showed little difference when compared with that of the entire state.
- A majority of bicyclists and pedestrians that were studied had driver's licenses. Licensure rates, however, were less than those of all Floridians.
- A large portion of bicyclist and pedestrian households (a household that has at least one person who uses this mode of transportation) were two-person households.
- Bicyclists and pedestrians were observed to live in the same areas (rural or urban) as all Floridians.
- Bicyclists and pedestrians were observed to have similar home ownership status as all Floridians.
- Bicyclist and pedestrian households were more likely to have zero or 2+ vehicles than other Floridian households.

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

- In terms of household income, bicyclist and pedestrian households are less likely to be lower income and more likely to have higher incomes (\$80,000+).
- There was no observed correlation between bicycle and walk use and educational attainment.
- Bicyclists were more likely to have one job. Pedestrians were not found to be very different from Floridians.
- Most bicyclists and pedestrians work at a professional, managerial, or technical job.
- There was no observed correlation between work flexibility and bicycling or walking.
- Bicyclists and pedestrians generally felt that the lack of sidewalks was more of a problem than did most Floridians.

Transit Travel

In this section, travel on public transportation is examined. In this research, transit is defined primarily as intra-city travel. As such, city-to-city buses, Amtrak, and other inter-city services were excluded from the analysis. In addition, school buses were excluded from the analysis because they are not considered a traditional transit mode since they are exclusively for children attending school. Special transit for individuals with disabilities was excluded using similar logic.

Within the state of Florida, there are five main transit modes that are offered to the public: local public bus, commuter bus, commuter train, subway/elevated train, and streetcar/trolley. All communities in Florida that provide transit service have at least local public bus service. A few larger cities, such as Miami, Tampa, and Orlando, offer commuter bus service, which is generally express routes running from the suburbs to the downtown core. Within the state, there is one commuter rail system in operation (Tri-Rail), which operates within the greater Miami area. There are three subway/elevated systems in Florida; two — Metromover (automated people mover system) and Metrorail (heavy rail system) — are located in Miami. The third system, also an automated people mover system, is located in Jacksonville. Tampa is home to the state's only streetcar system.

Since transit use within the state of Florida is fairly low, the sample size for transit trips is fairly small. Even with the added sample, there were times when the sample was still too small to perform cross-tabulation analysis. When sample sizes prevented a particular analysis from being performed, they are noted in the respective section.

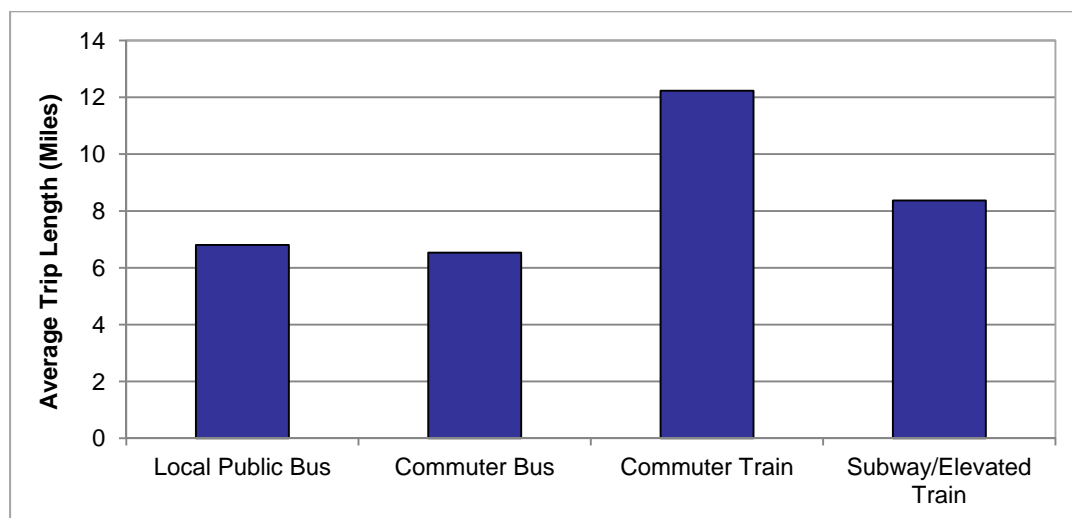
When trip lengths are reported for transit, it is not the door-to-door distance. Instead, it is the distance in which an individual was riding a transit vehicle. Sample size was a major constraint in analyzing transit trip length in Florida. Due to transit's small mode share in Florida, the

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

purchase of a larger sample by FDOT still failed to capture enough transit data to provide results with a high degree of confidence.

Figure 96 presents the average trip lengths for transit modes that are available in Florida. While Tampa has a streetcar system, it is not represented in the figure due to the lack of data. It can be seen that trips that take place on buses are shorter than those that take place on rail transit. Part of this can be attributed to the greater travel speeds and fewer stops that the rail transit modes offer. Part of it could also be due to the fact that buses serve a larger percentage of short-distance trips, resulting in the lower averages.

Figure 96 – Average Trip Length for Transit Modes in Florida

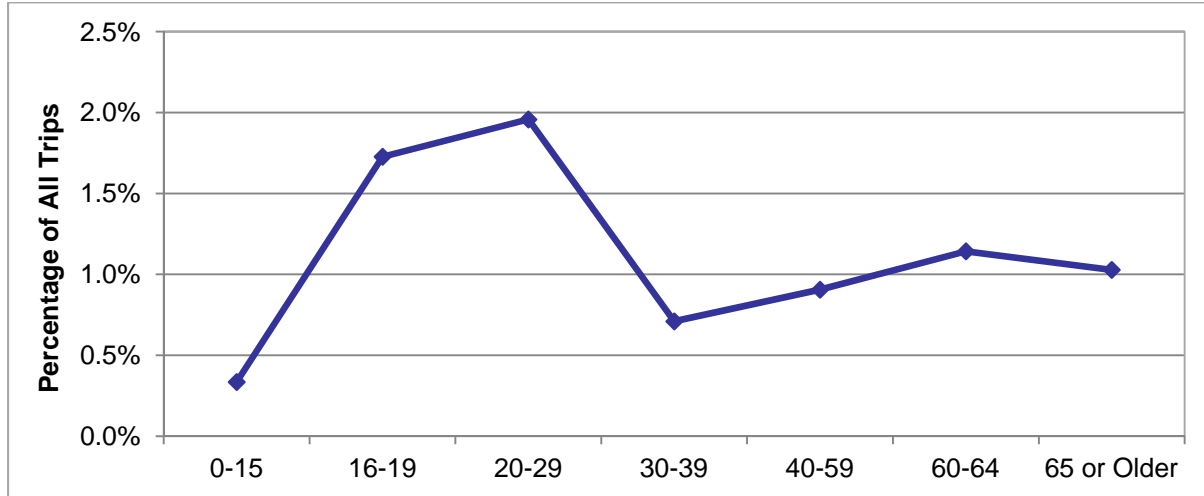


As mentioned in previous chapters, transit mode share in Florida is at 1.2 percent. In this section, the transit mode share is examined using different categories of interest such as age, income, and race.

One factor that often influences transit use is the age of an individual. Individuals who are too young to obtain a driver’s license or who are older adults are often the age groups most likely to use transit and be “transit captive.” This term used to refer to those who are forced to take transit because no other travel options are available. This trend is confirmed in Figure 97 , where transit mode share is highest for those between the ages of 16–29 or over 64. Part of the uptick in transit mode share for persons beyond the 30–39 age group is hypothesized to be based on household demographics. These persons, often with older children or who are “empty-nesters,” are no longer burdened by the time constraints and trip chaining associated with parenting children and thus are able to make more independent travel choices and choose to take transit.

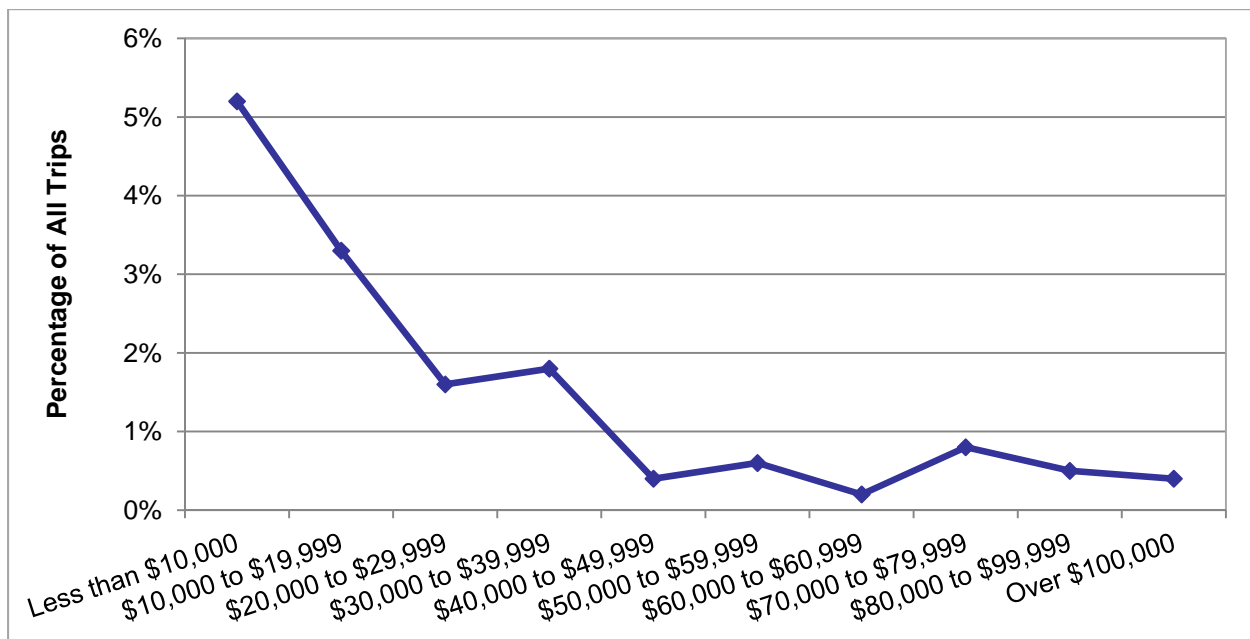
NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Figure 97 – Transit Mode Share by Age



Transit usage is also highly influenced by household income. In Figure 98, transit mode share is graphed against annual household income. As one might expect, those living in households with lower annual incomes will be more likely to use transit.

Figure 98 – Transit Mode Share by Household Income



Within Florida, most of the transit service is provided by local public transit agencies. As Table 23 shows, this translates into a majority of the transit trips in Florida being on local public bus.

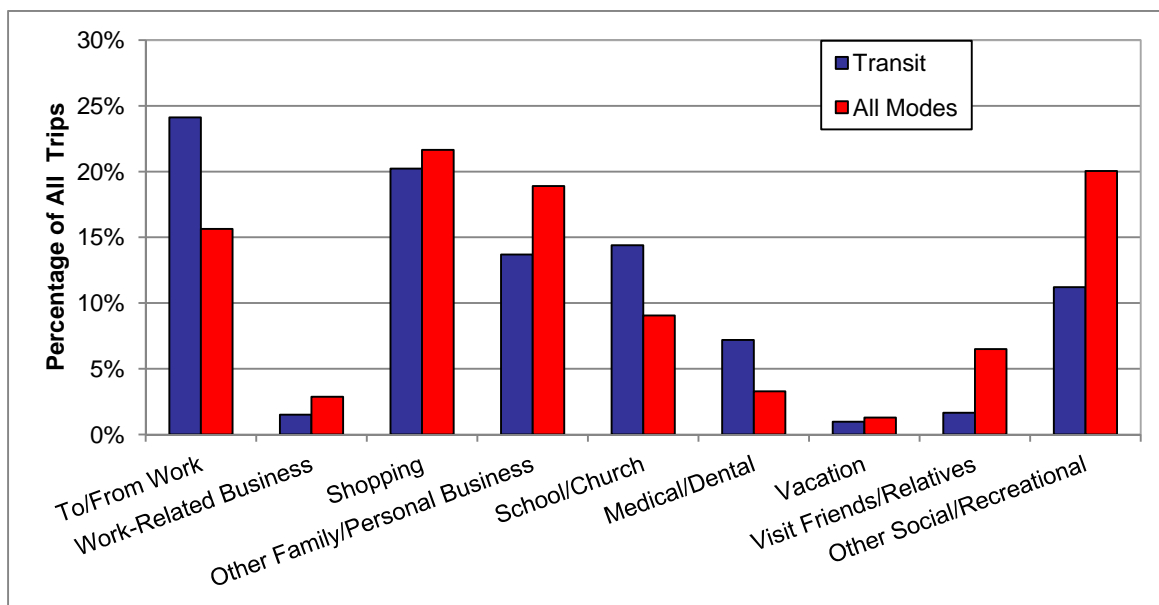
Table 23 – Share of Transit Trips by Transit Modes

Transit Mode	Share of Transit Trips
Local public bus	87.6%
Commuter bus	7.9%
Commuter train	1.1%
Subway/elevated train	3.3%
Streetcar/trolley	0.1%

Transit generally has low travel speeds due to the frequent stopping that must occur to pick up and drop off passengers. Due to the small sample size, only travel speeds for local public bus can be computed. An analysis of trips on Florida’s local public buses shows an average speed of 10.7 mph. This speed is consistent with scheduled speeds for most fixed-route bus transit systems. This value would be lower when access, egress, and waiting times were taken into account.

Transit is usually better suited or preferred for certain trip types rather than others. Figure 99 compares the mode share of transit trips to the mode share of all trips in Florida. It can be seen that nearly a quarter of all transit trips are for traveling to and from work, typically an area in which transit is a strong competitor to the automobile. Analysis shows that transit is also used heavily for shopping, conducting family/personal business, and going to school or church.

Figure 99 – Transit Mode Share by Trip Purpose

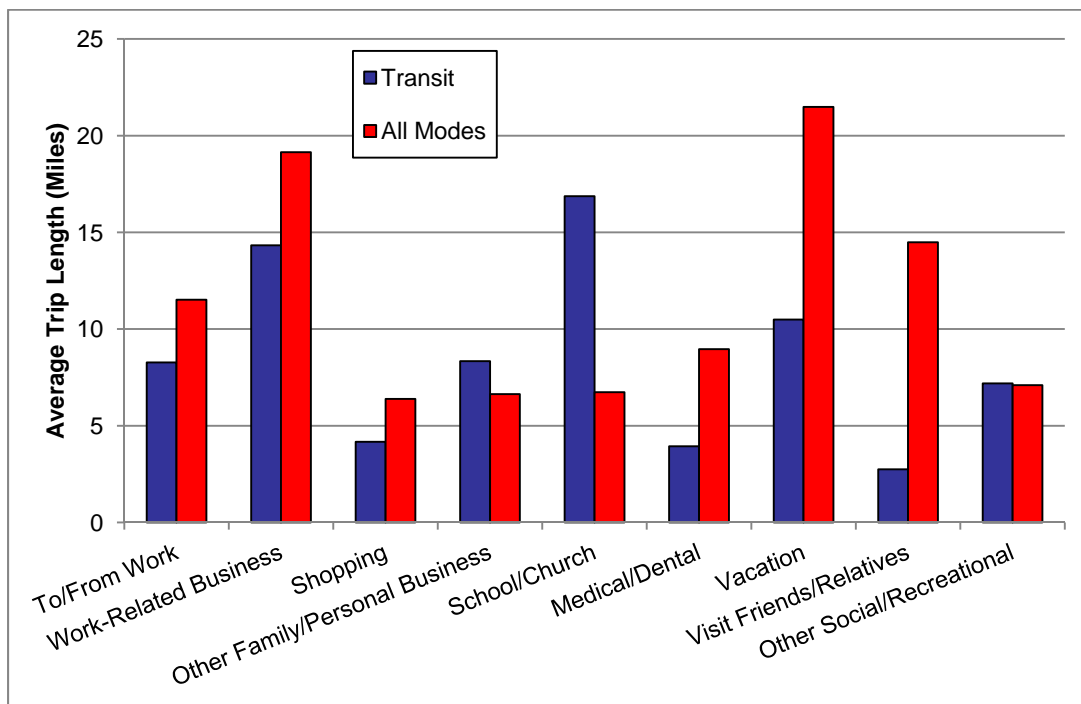


NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Figure 100 compares the average trip length of transit trips to the average trip length of all Florida trips. In general, it can be observed that the average trip lengths for transit trips are shorter than trips completed by the entire population. This difference is due to two reasons. First, transit operates at very low speeds, making it difficult to travel very far in a given time. In the same amount of time that an individual spends on a transit vehicle, someone traveling by automobile could travel a much greater distance. Second, transit coverage is often quite limited. Using an automobile, one can travel to more destinations than can be served by transit.

When riding transit, there is often some access time associated with getting to the transit stop. In an analysis of transit trips statewide, Florida transit riders spent an average of 7.6 minutes accessing transit (time spent traveling to the transit stop). Once at the transit stop, riders spent an average of 15.9 minutes waiting for the vehicle to arrive.

Figure 100 – Transit Trip Lengths by Trip Purpose



While the mode share of transit is generally very low, a fair number of people are occasional riders. Occasional riders are individuals that generally do not ride transit on a regular basis but take it when the need arises. This could be the occasional visit to the downtown area (to avoid parking frustrations), when the car is broken, or when a child is borrowing the car. It should be noted that the variable used to perform this analysis excludes those under the age of 16. Table 24 indicates the frequency of transit trip making by noting the number of transit trips per month for the survey respondents.

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

In terms of the transit usage per person, analysis of the NHTS data has revealed that the monthly trip rate is at 0.70 trips per capita.

Demographics of Transit Users

This section presents demographics of transit users in Florida. Identifying characteristics of transit users can help in targeting transit service to select individuals or communities. Individuals analyzed in this section were determined to have used public transit at least once within the past month in which they were surveyed. Riders were selected using the PTUSED variable within the person file dataset. While this methodology captures more transit riders (especially occasional users), it also excludes those under the age of 16. Figure 102 shows the gender of transit users. It can be seen that slightly more female than males use transit.

A look at the age of transit users reveals that the majority of riders are between 20 and 59 (Figure 102). As mentioned previously, data are not available for transit riders under the age of 16.

Table 24 – Number of Transit Trips in a Month

Frequency of Using Transit in a Month	Percentage of Population
Never	85.1%
Less than once a month (1 time)	3.0%
Once or twice a month (2–4 times)	4.4%
About once a week (5–10 times)	3.0%
Two or more days a week (11+ times)	4.5%

Figure 101 – Gender of Transit Riders

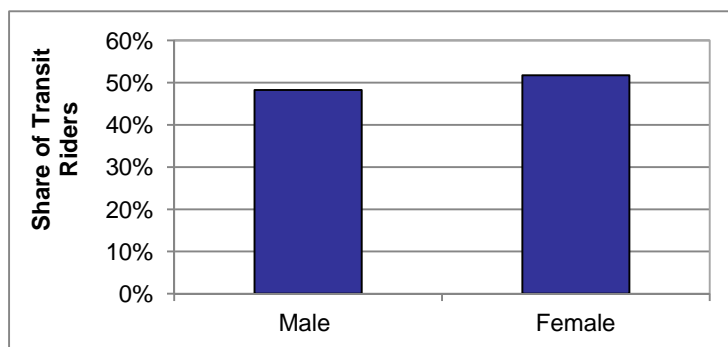
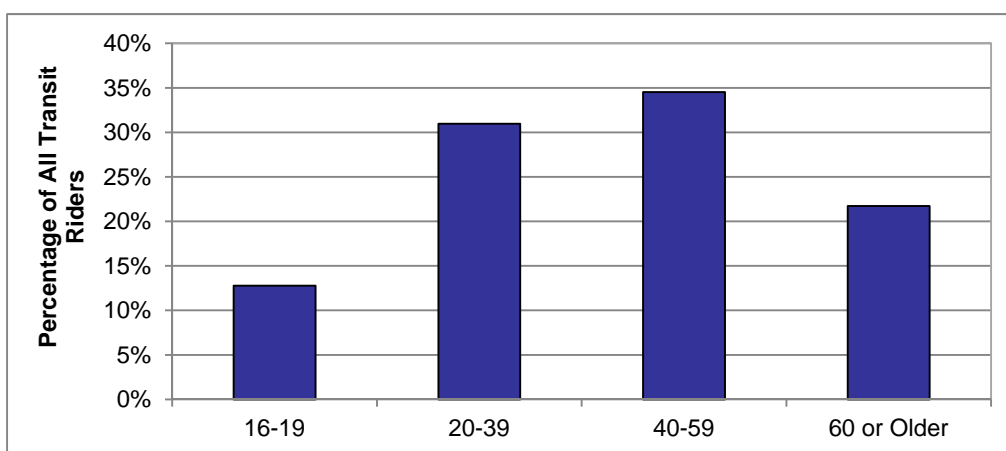


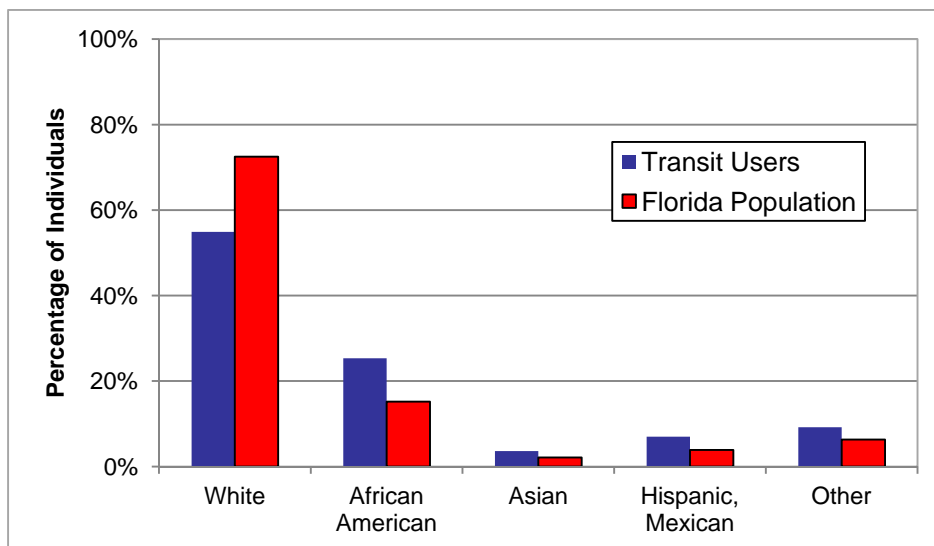
Figure 102 – Age Distribution of Transit Riders



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Ethnicity can often influence how much individuals rely on transit. In Figure 103, it can be seen that the ethnic composition of transit riders is dramatically different from that of the rest of the population. Despite these differences, whites continue to remain the dominant ethnic group riding transit in Florida.

Figure 103 – Ethnicity of Transit Riders



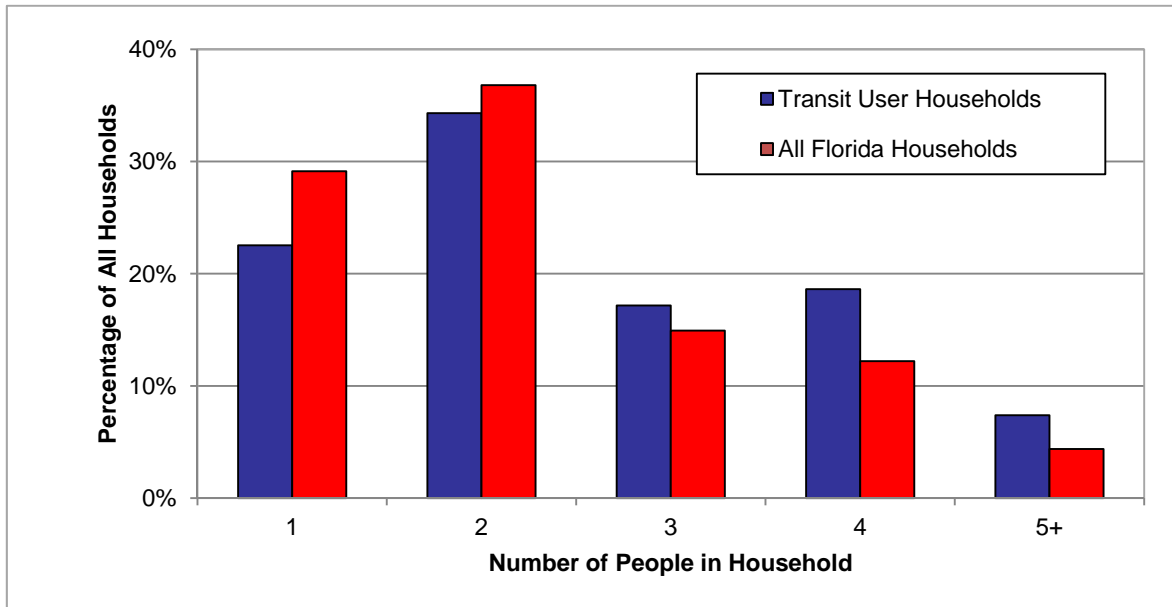
Whether or not an individual can drive will have an impact on their usage of transit. As Table 25 reveals, transit users are less likely than the rest of the population to be able to drive. These individuals may be considered “transit captive,” that is, forced to take transit because they have no other option.

Table 25 – Driver Licensing Status of Transit Users

	Transit Users	All Floridians
Has driver's license	76.5%	88.3%
Does not have driver's license	23.5%	11.7%

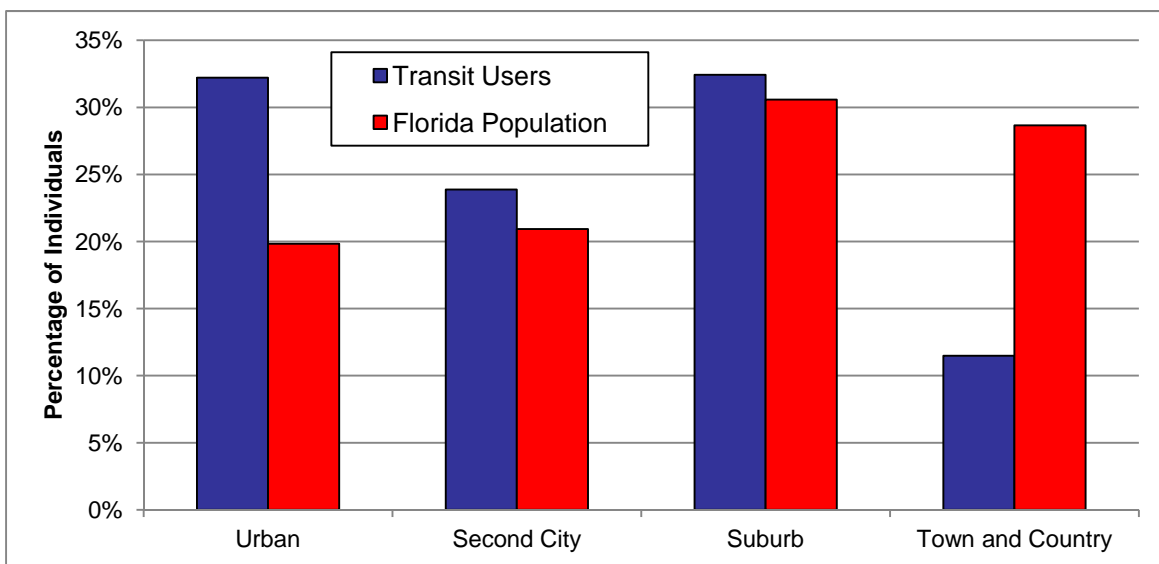
Household size may have an impact on whether an individual may choose to ride transit. It can be seen in Figure 104 that one- or two-person households constitute more than half of the transit households in the state. Smaller households could be more likely to use transit because they usually do not include children. The presence of children in a household typically adds an additional layer of complexity in trip planning that often discourages transit usage.

Figure 104 – Household Size of Transit Users



Housing location types also affect transit use among Floridians. Four types of location are evaluated in Figure 105. Town and country is considered the most rural location, with each location to the left in the figure being more urbanized. Transit users generally live in more urbanized areas than the rest of the Florida population. The results are not surprising, given that transit service is focused primarily in urban, and often densely-populated, environments.

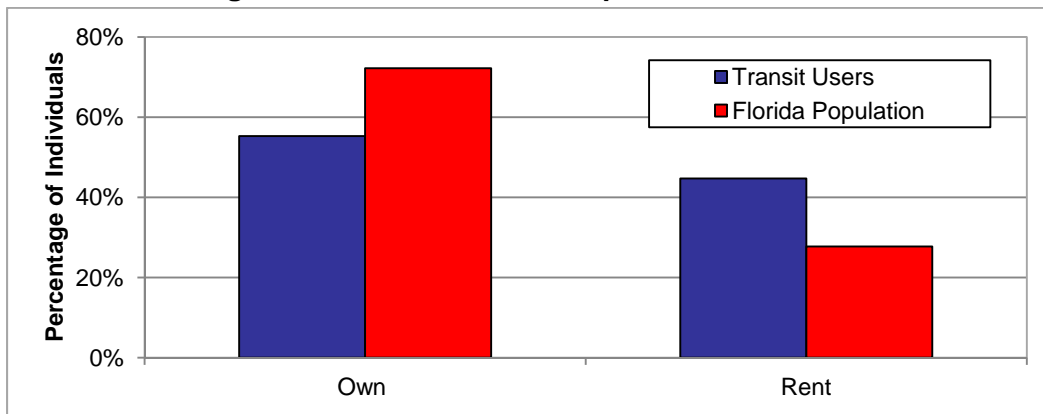
Figure 105 – Residential Location of Transit Users



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

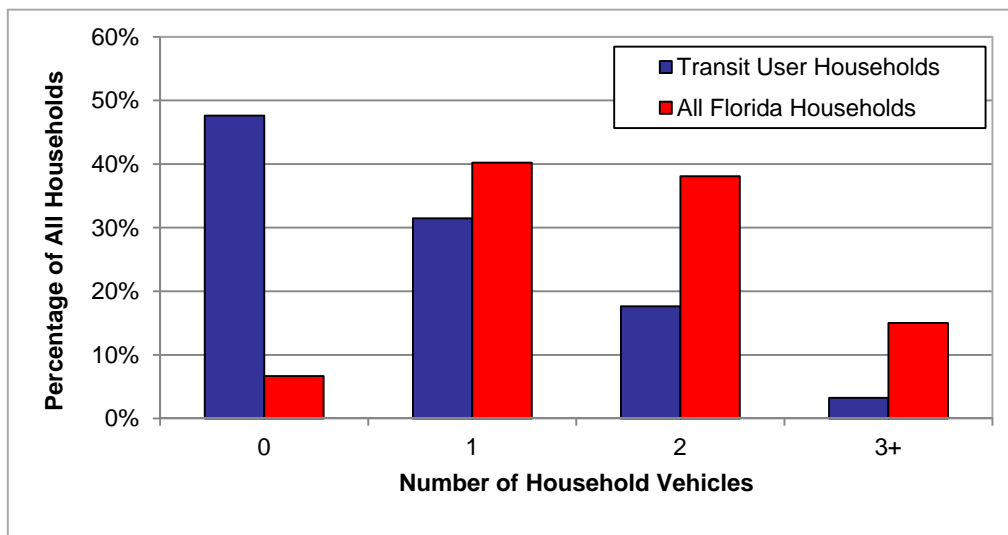
In terms of home ownership, it can be seen in Figure 106 that transit users are less likely to own a home than other Floridians.

Figure 106 – Home Ownership of Transit Riders



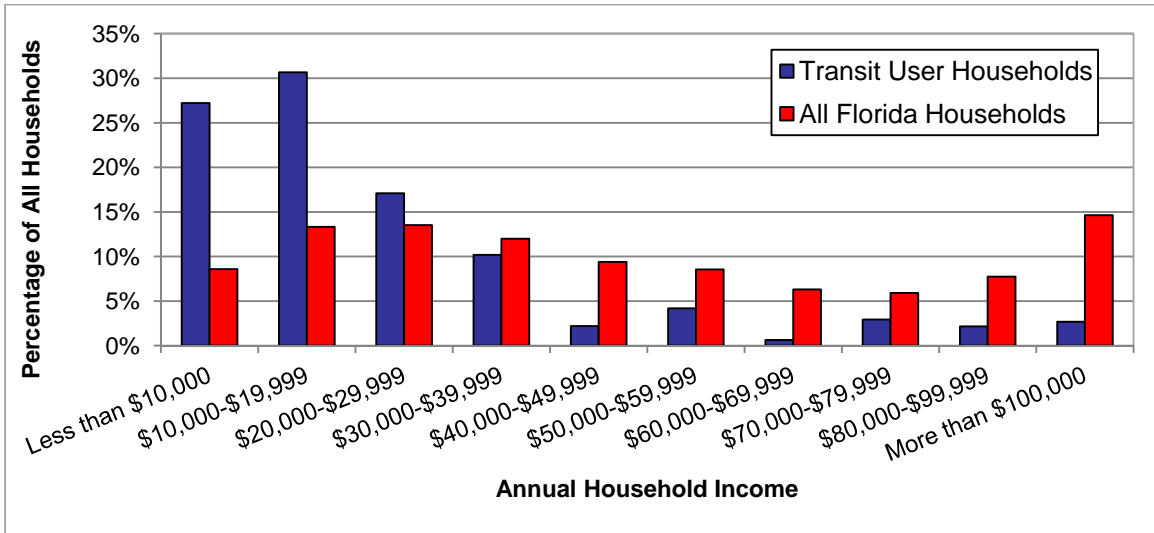
Whether an individual has access to a vehicle has a huge impact on their likelihood to take transit. As seen in Figure 107, nearly 50 percent of all transit user households do not own a car.

Figure 107 – Household Vehicle Ownership of Transit User Households



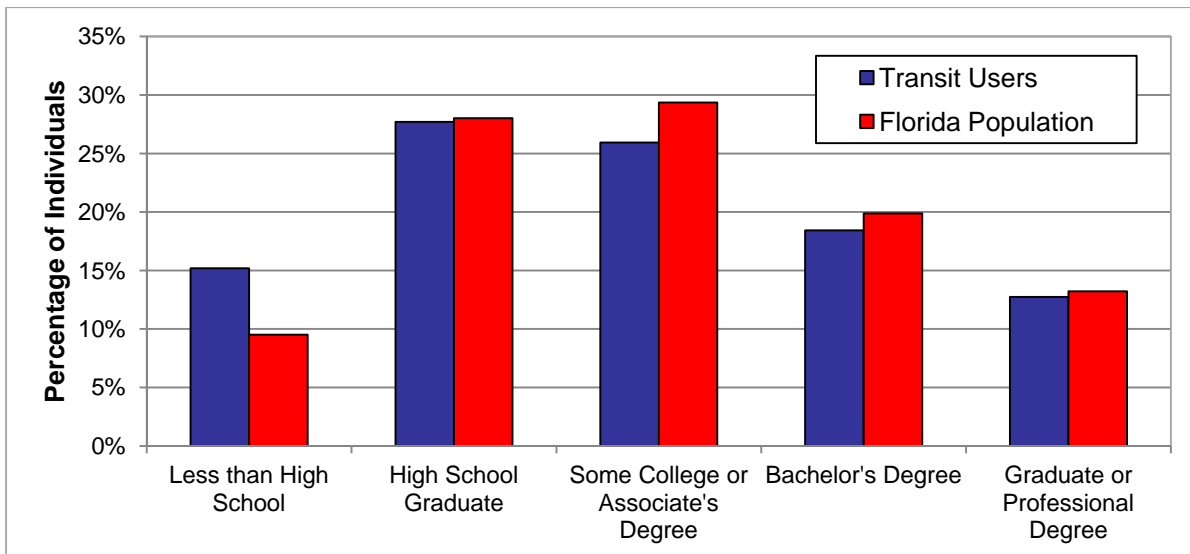
Households that have a low annual income are more likely to use transit since that is often the most economical form of transportation and low income often precludes auto ownership. As Figure 108 shows, more than 55 percent of riders come from transit user households that make less than \$20,000 per year.

Figure 108 – Household Income for Transit User Households vs. All Households



The level of education of an individual is often strongly correlated with income and mode choice. Figure 109 shows that transit users have slightly lower levels of education when compared with Floridians as a whole.

Figure 109 – Educational Attainment of Transit Riders

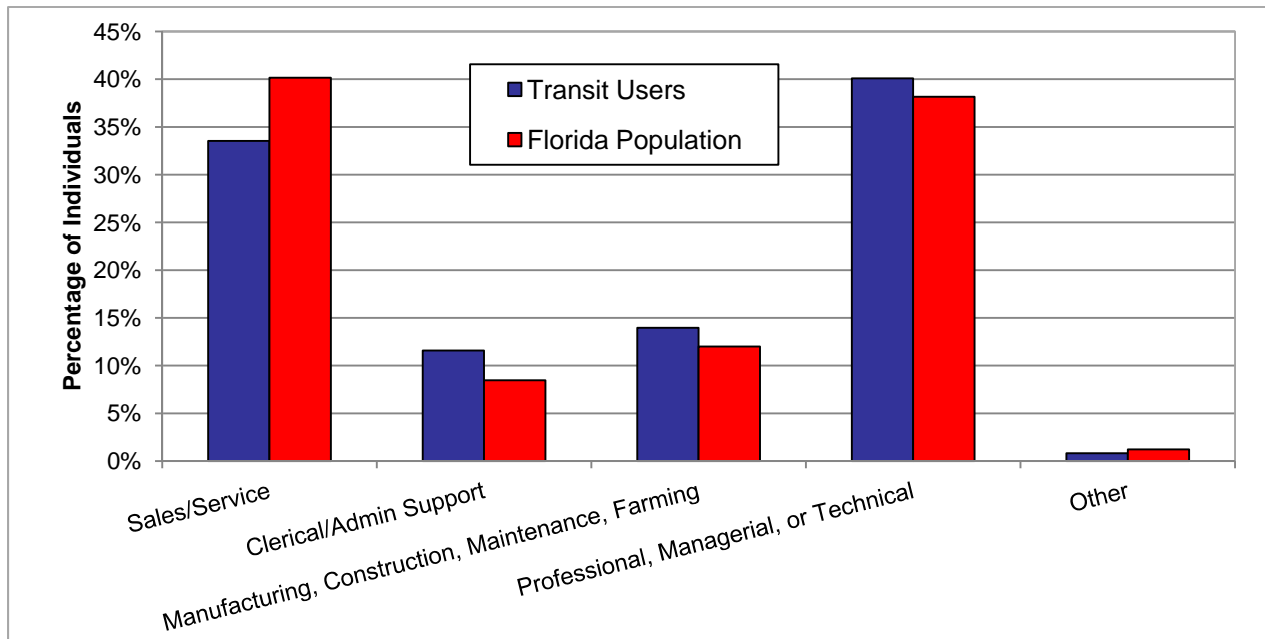


Sometimes, the type of job an individual has may influence whether he or she uses transit. In the construction industry, for example, workers are not very likely to use transit since work sites might not be on a transit route or because job sites change so frequently. Based upon the

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

analysis shown in Figure 110, there is not that much difference between the occupation of transit users and non-users for the highly aggregated job categories shown.

Figure 110 – Occupation of Transit Users



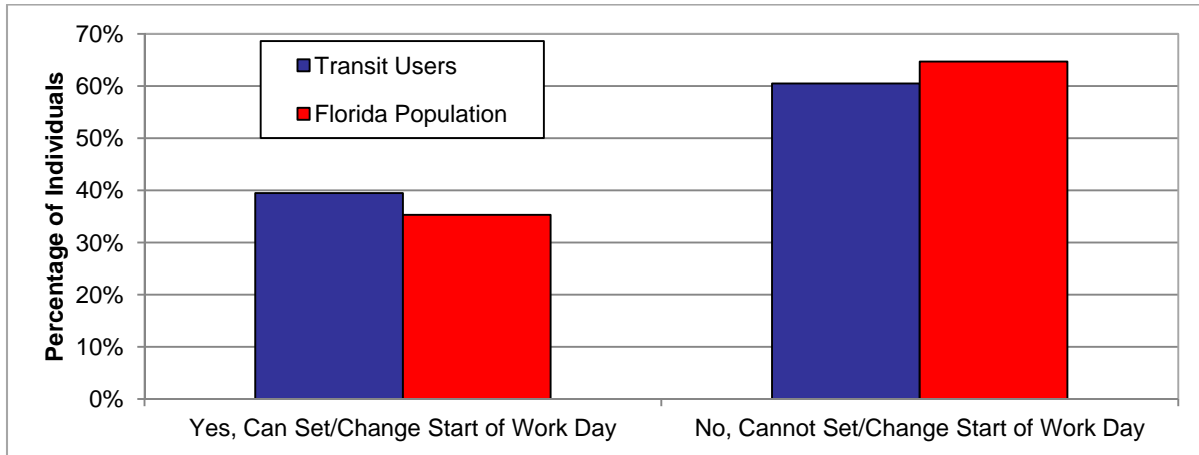
The number of jobs an individual has may also impact whether one takes transit or not. As seen in Table 26, it appears that most transit users have only one job, similar to the rest of the population.

Table 26 – Number of Jobs for Transit Users

	Transit Users	All Floridians
Has a second job	9.1%	9.0%
Has one job	90.9%	91.0%

Work flexibility can also play a large role in deciding whether or not to commute using transit. Being able to change your work schedule may make it more convenient to work with the transit schedule. As Figure 111 shows, transit users in Florida have similar work schedule flexibility to other working Floridians.

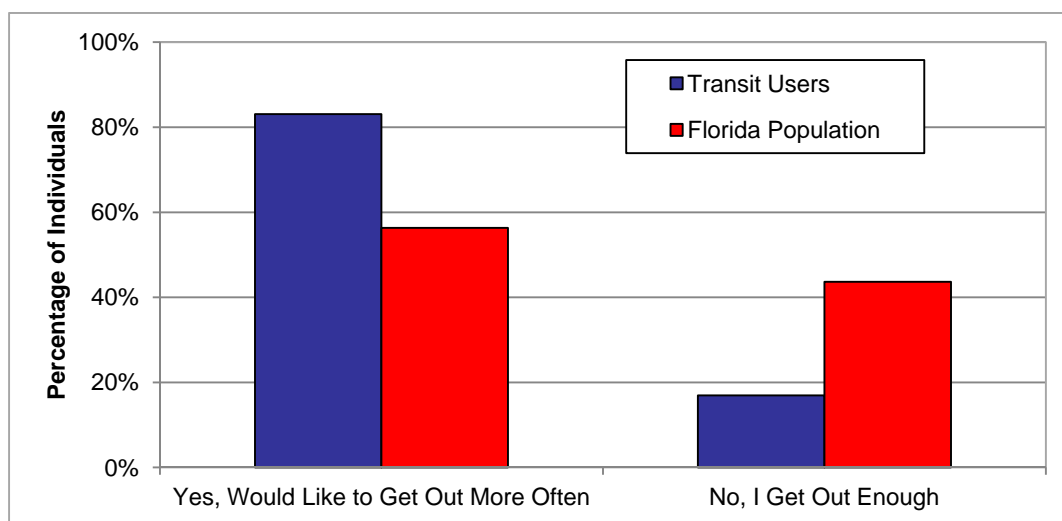
Figure 111 – Work Flexibility of Transit Riders



Transit User Opinions

This section details some personal opinions/desires of transit users that were collected by the NHTS. The first opinion question that was posed was whether an individual would like to get out more. Since transit can constrain the ability to get around (limited coverage, limited hours of operation, inconvenient wait times in some cases), transit users may be unable to make as many trips as they would like. As Figure 112 shows, transit users have a greater desire to get out more than does the rest of the Florida population.

Figure 112 – Desire of Transit Users to Go Out More

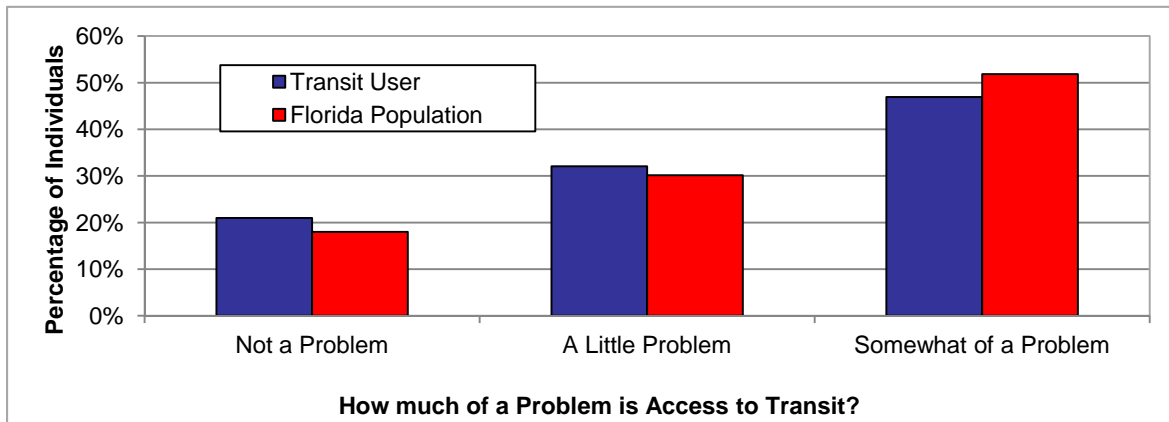


The next question that was posed was how much of a problem it is to access transit. Figure 113 shows that non-users of transit generally feel that access to transit is more of a problem

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

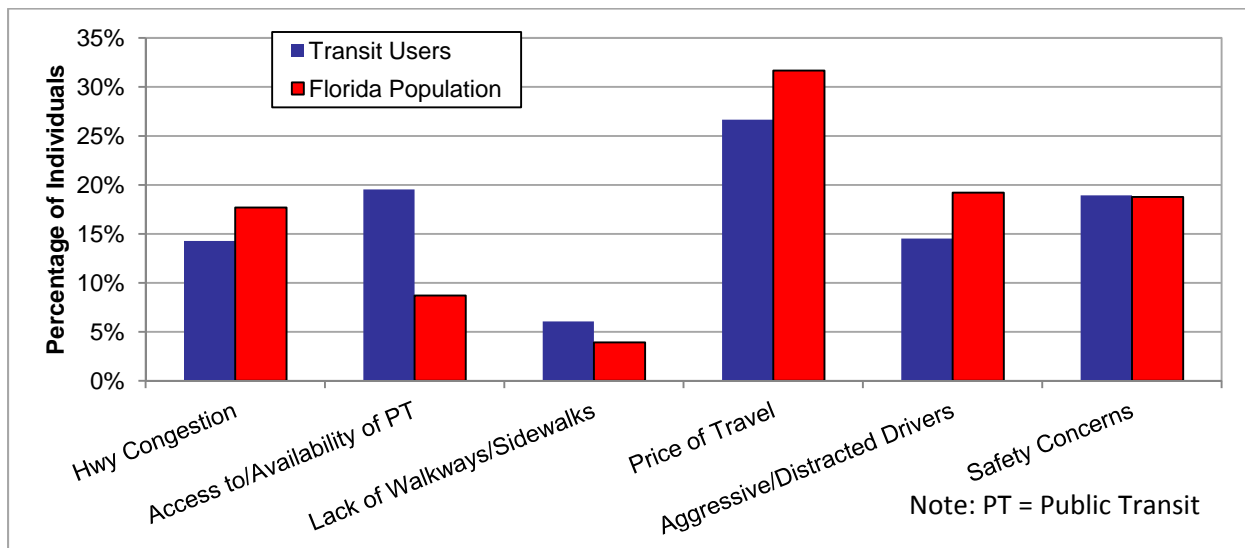
than transit users do. This result could indicate that some people may be unable to use transit because there is no service near their home and/or no service near places of interest.

Figure 113 – Transit User Evaluation of Access to Transit



In terms of the “bigger picture,” transit users were asked what the most important transportation issue was to them. Based upon the results, it appears that the cost of travel is the most important concern for transit users and for the general population. This should be no surprise, as transit users are often financially constrained regarding auto availability and subject to out-of-pocket costs for transit use.

Figure 114 – Transit User Evaluation of Most Important Transportation Issue



NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Summary of Analyses of Transit Travel – Trip Attributes

- Trip length:
 - Commuter rail trips had the longest average trip length.
 - Rail transit modes had longer trip lengths than buses.
- Transit mode share was observed to be highest among those ages 16–29 and those over age 64. Transit mode share was also highest among low-income persons.
- A majority of transit trips within the state were taken on local public bus (87.6%).
- Transit speed was able to be computed only for local public bus. The data showed that the average speed of a bus in Florida was 10.7 miles per hour.
- An analysis of trip purpose revealed that nearly one-quarter of all transit trips were for travel to/from work. Shopping, conducting family/personal business, and going to school/church were also popular trips completed on transit.
- Average trip lengths by trip purpose revealed that most transit trips were shorter than trips completed by all other modes.
- Statewide, transit riders spent an average of 7.6 minutes traveling to a transit stop and an average of 15.9 minutes waiting for a vehicle to arrive.
- Approximately 15 percent of Floridians used transit at least once a month. The monthly trip rate was computed to be 0.70 trips per capita.

Summary of Analyses of Transit Travel – Demographics

- Slightly more transit users were female than male.
- A majority of transit users were middle age (40–59).
- The racial profile of transit users was found to be different than those of Florida's population with a larger proportion of minorities using transit.
- Transit users were less likely to have a driver's license. About 77 percent of transit users had a license.
- One- and two-person households constituted nearly half of all transit households in the state.
- Transit users were observed to live in more urbanized areas than other Floridians.
- Transit users were observed to be more likely to rent a home when compared with other individuals.
- Nearly 50 percent of all transit households did not own a vehicle.
- Over 50 percent of transit user households had a household income of less than \$20,000 per year.
- Transit users had lower levels of educational attainment when compared with other Floridians.

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

- No difference was observed between occupations of transit users and the rest of the population.
- There was no observed correlation between work flexibility and transit usage.
- Transit users generally wanted to go out more than the rest of the population.
- Floridians generally feel that access to transit is more of a problem than transit users do.

Shared Ride Travel

In this section, shared ride or carpool travel is examined. Shared ride travel is defined as trips taking place in a private automobile with two or more occupants. These occupants may be household members, non-household members, or a combination of the two. For purposes of this analysis, shared ride trips have been classified into one of three categories:

- Household (HH) carpool – shared ride trips with only household members (e.g., children going with mother to shop or a husband and wife going to work together)
- Mixed carpool – shared ride trips with household members and non-household members (e.g., children and friends being taken to a soccer game by mother or family taking a relative with them to a dinner)
- Non-household (non-HH) carpool – shared ride trips with no household members (e.g., a neighbor giving another neighbor a ride or a worker taking his/her coworkers to a project site)

Additionally, shared ride trips were examined according to one of four vehicle types:

- Car
- Van
- SUV
- Truck

While there are not many metrics that can be derived for VMT and PVMT (Person Vehicle Miles of Travel, or person miles of travel by personal vehicles), one of the most important measures is comparing the total PVMT to the total VMT by carpool type. This ratio is an indication of occupancy. Table 27 shows that mixed carpools have the highest occupancy and non-HH carpools have the lowest occupancy.

Table 27 – PVMT/VMT Ratio by Carpool Type

Type of Carpool	PVMT/VMT Ratio
HH carpool trips	2.26
Mixed carpool trips	2.57
Non-HH carpool trips	1.52

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

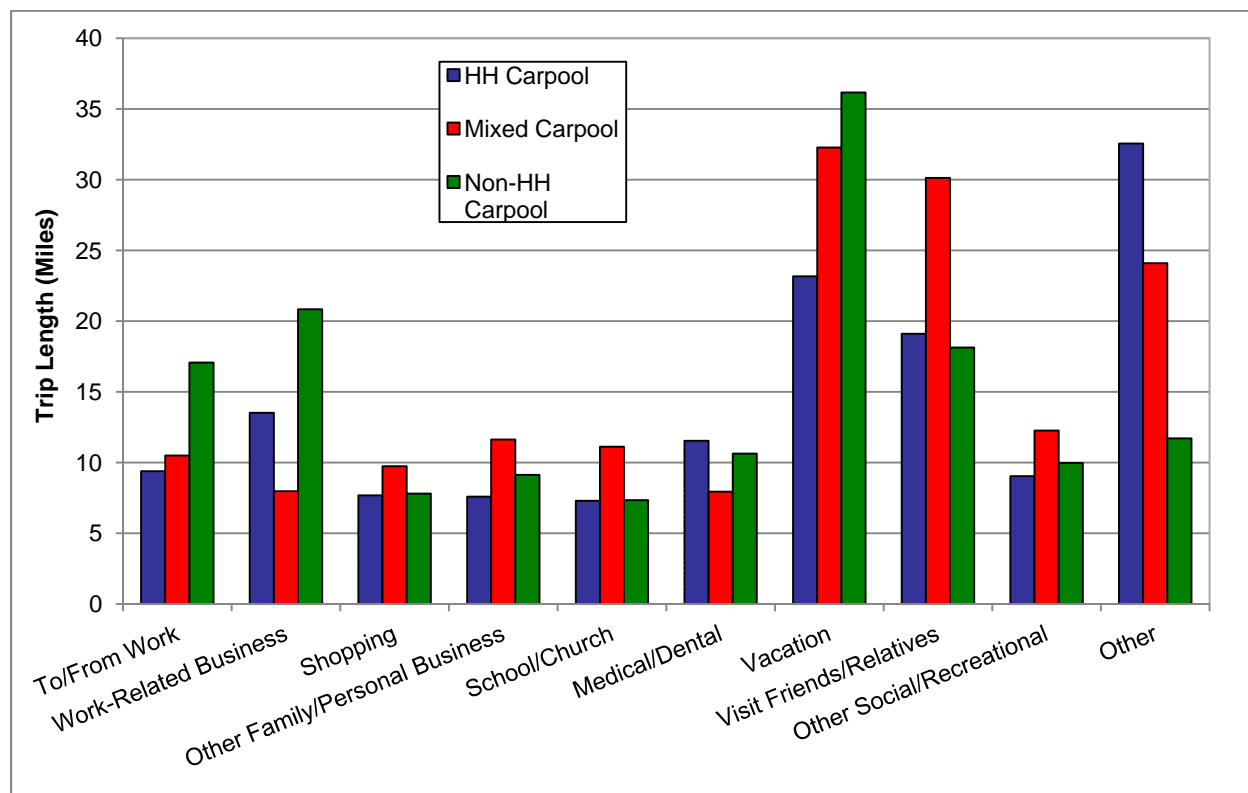
Carpools were examined for trip length based upon the type of carpool trip. Analyses show (Table 28) that mixed carpool trips tend to be the longest while HH carpool trips tend to be the shortest.

Table 28 – Trip Length by Carpool Type

Type of Carpool	Average Trip Length (mi)
HH carpool trips	9.81
Mixed carpool trips	13.28
Non-HH carpool trips	11.12

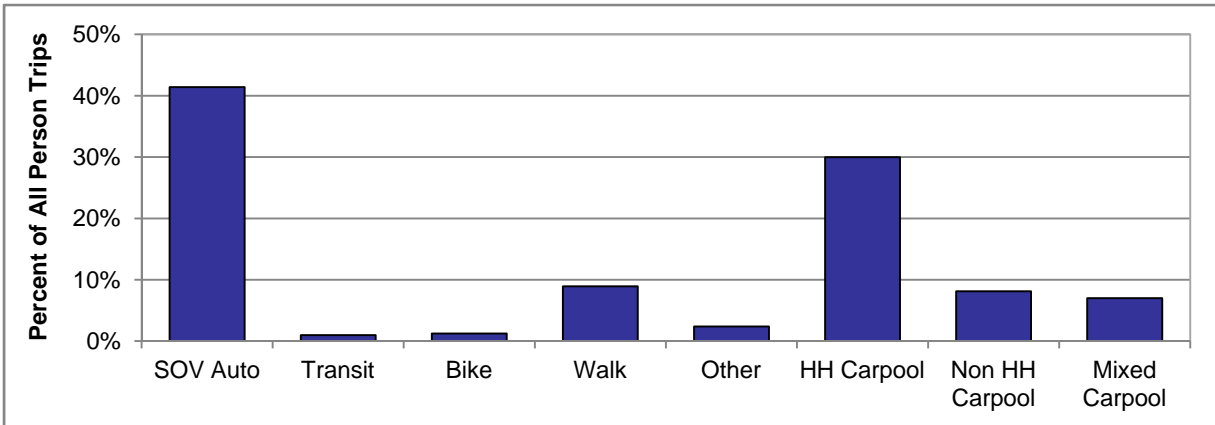
Next, trip length was examined by trip purpose and carpool type. In Figure 115, it can be seen that most trip lengths for different trip types are fairly similar across the various types of carpools.

Figure 115 – Trip Length by Trip Purpose and Carpool Type



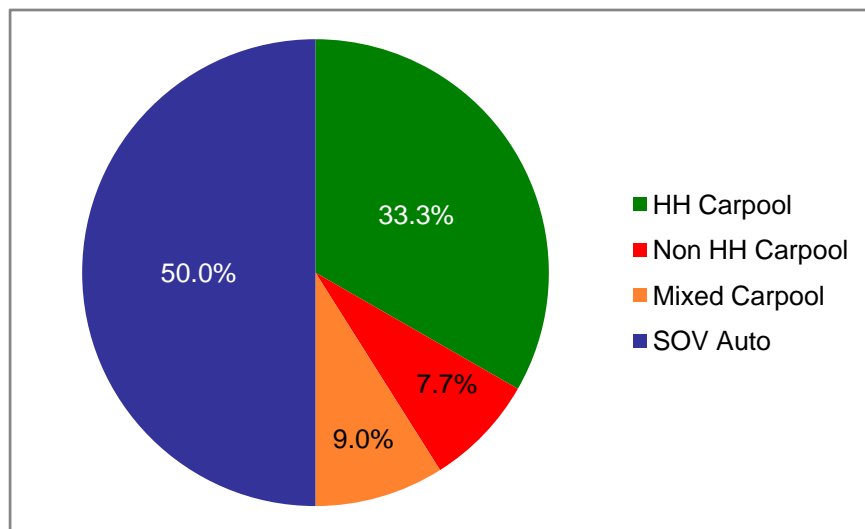
In terms of mode share, carpooling makes up the second-largest percentage of all travel (Figure 116).

Figure 116 – Mode Share for all Person Trips



When examining auto trips only, the results show that nearly half of all auto travel involves carpools or multi-occupant trips and the other half involves SOVs (Figure 117).

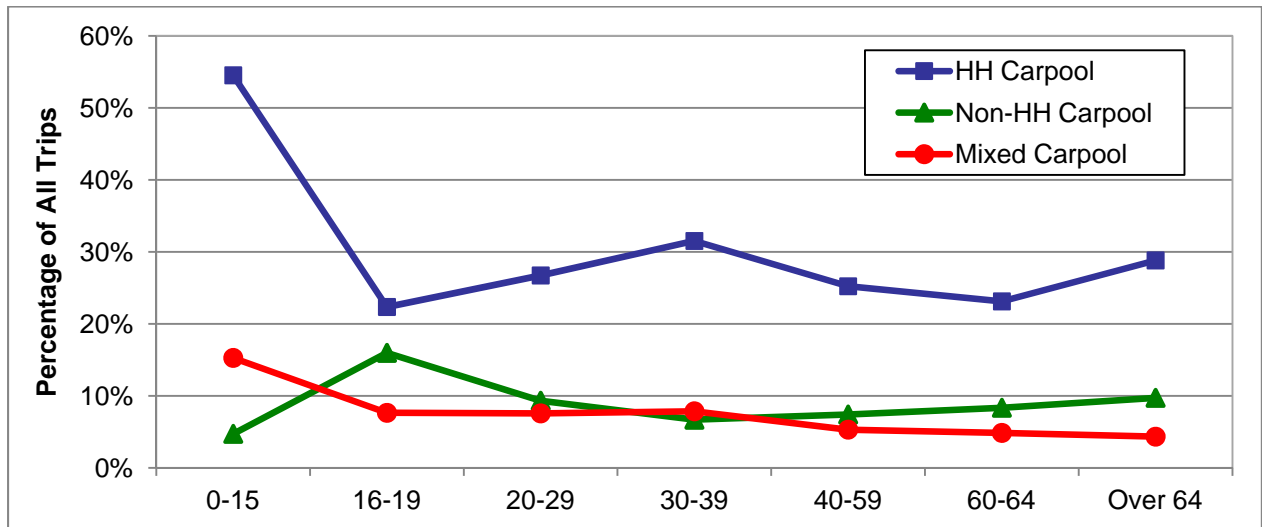
Figure 117 – Mode Share for Auto Trips



Examining mode share by age reveals some different trends. Figure 118 shows that carpool usage is highest for children (ages 0–15) and slowly declines until ages 40–64. After that point, carpool usage increases.

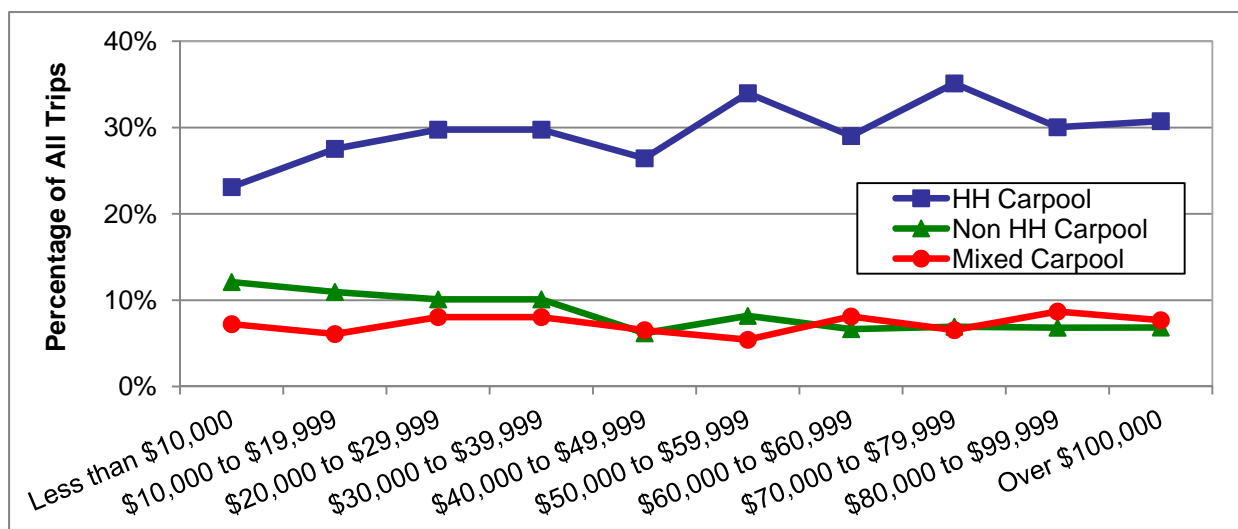
NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Figure 118 – Mode Share by Age and Carpool Type



Mode share by income also produces clear, defining trends. As Figure 119 presents, HH carpooling generally increases as income increases; non-HH carpooling, however, appears to decrease as income increases. Mixed carpooling generally appears to be unaffected by household income.

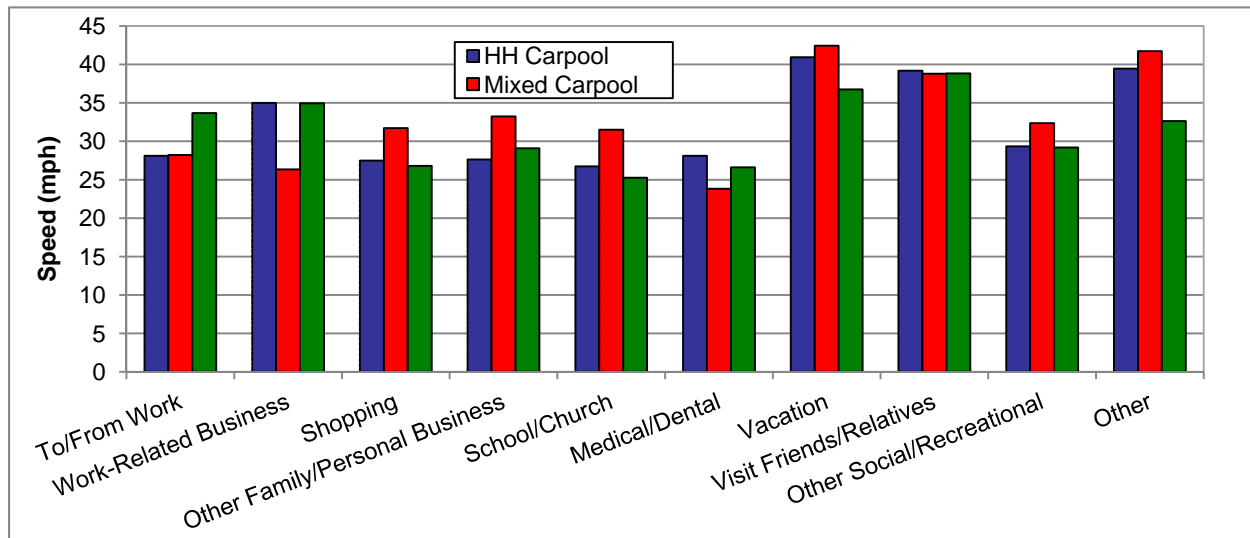
Figure 119 – Mode Share by Household Income and Carpool Type



Speeds by the various types of carpools were examined. The results shown in Figure 120 indicate that speeds are fairly consistent between the various types of carpooling. The results also show that trips for vacations and visiting friends/relatives have higher speeds, most likely due to the greater use of higher speed facilities for travel.

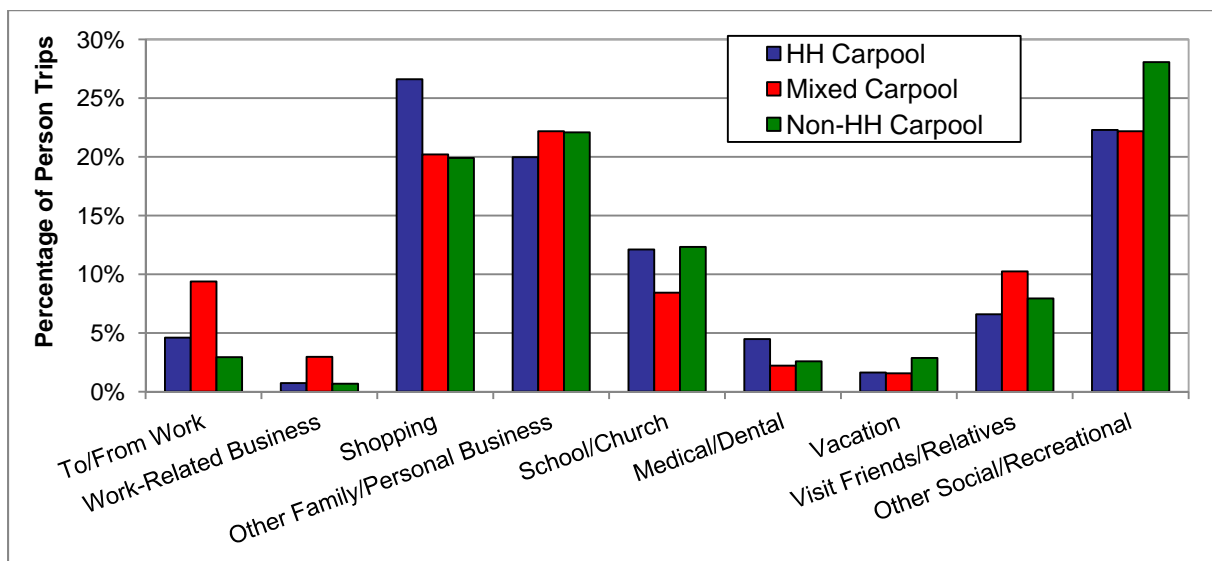
NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Figure 120 – Speeds by Trip Purpose and Carpool Type



An analysis of carpool trips shows that many trips are taken for shopping, social/recreational activities, or family/personal business (Figure 121). Other trips, such as traveling to work, doing work-related travel, or going to medical appointments, make up a very small percentage of carpool trips.

Figure 121 – Trip Purpose by Carpool Type

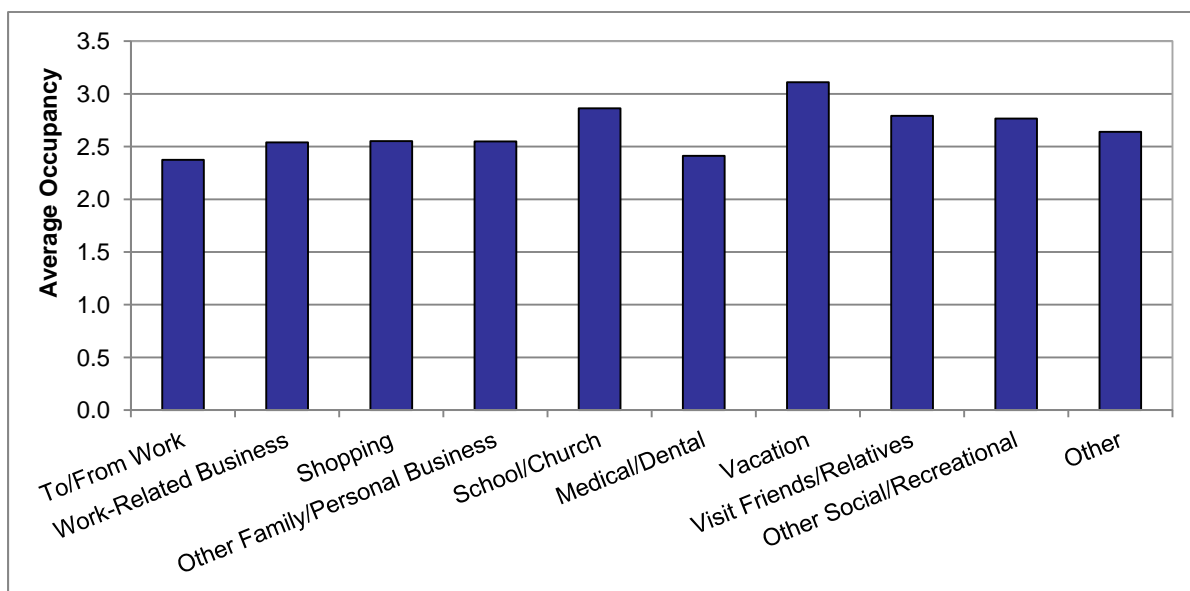


Vehicle occupancy can be affected by a variety of factors such as the type of vehicle being used, the trip purpose, or the household's characteristics. An analysis was run on the average

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

occupancies of vehicles by trip purpose (Figure 122). Not surprisingly, trips for vacations showed the highest occupancy rates.

Figure 122 – Average Occupancy by Trip Purpose



An analysis of occupancies by vehicle type and household type was conducted. In the analysis, several household types in the 2009 NHTS were combined due to negligible differences between multiple categories. Figure 123 through Figure 126 show that the presence of children, the age of the children, and vehicle type make a significant difference in the occupancy of the carpool.

Figure 123 – Occupancies for Cars by Household Type

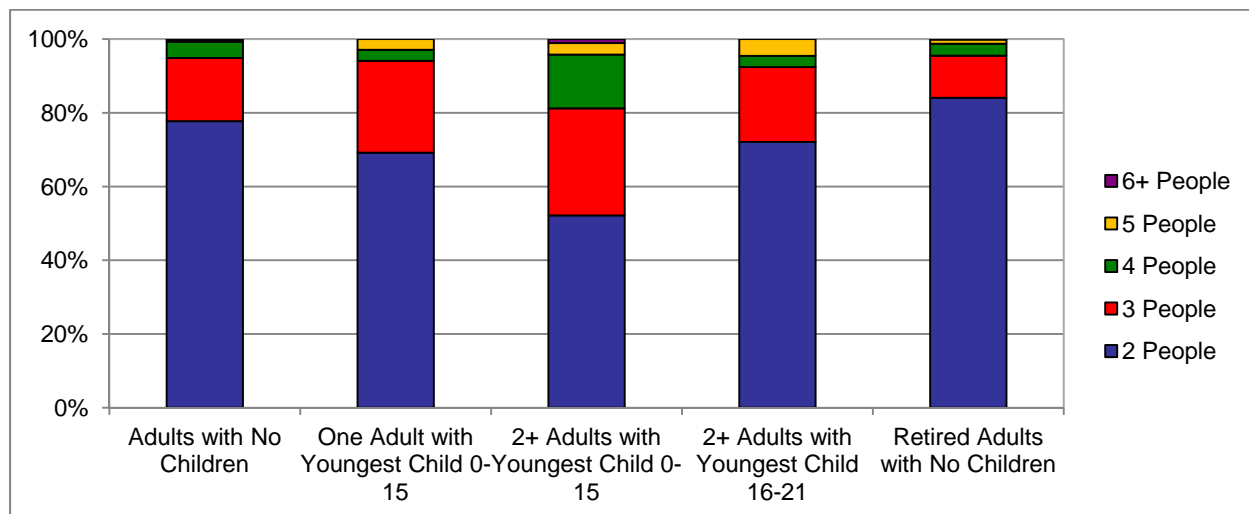


Figure 124 – Occupancies of Vans by Household Type

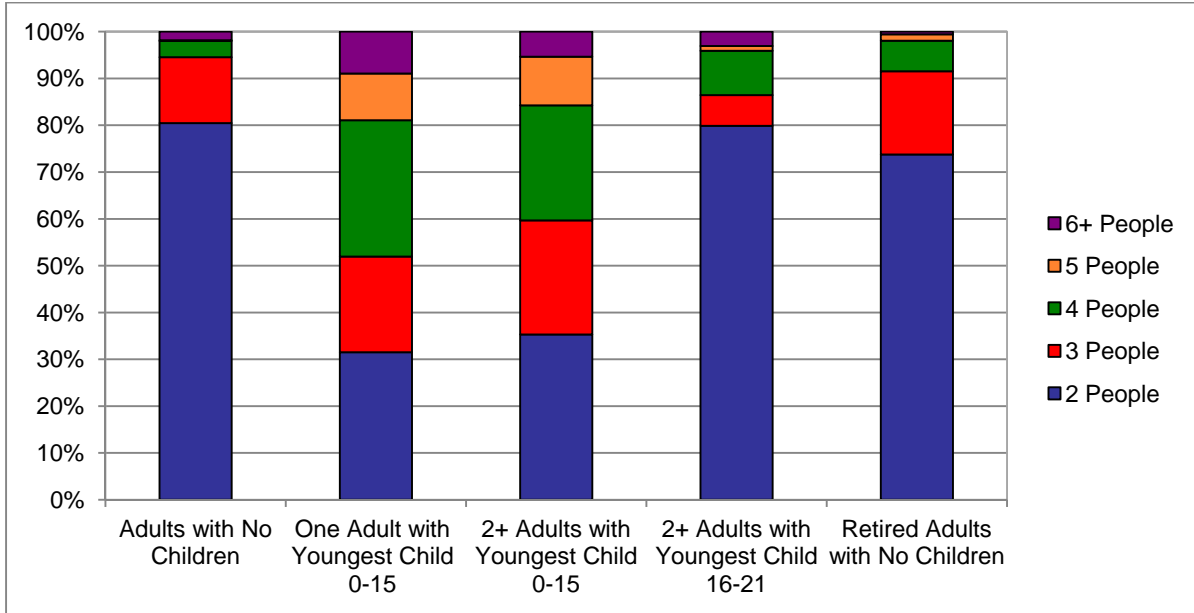


Figure 125 – Occupancies of SUVs by Household Type

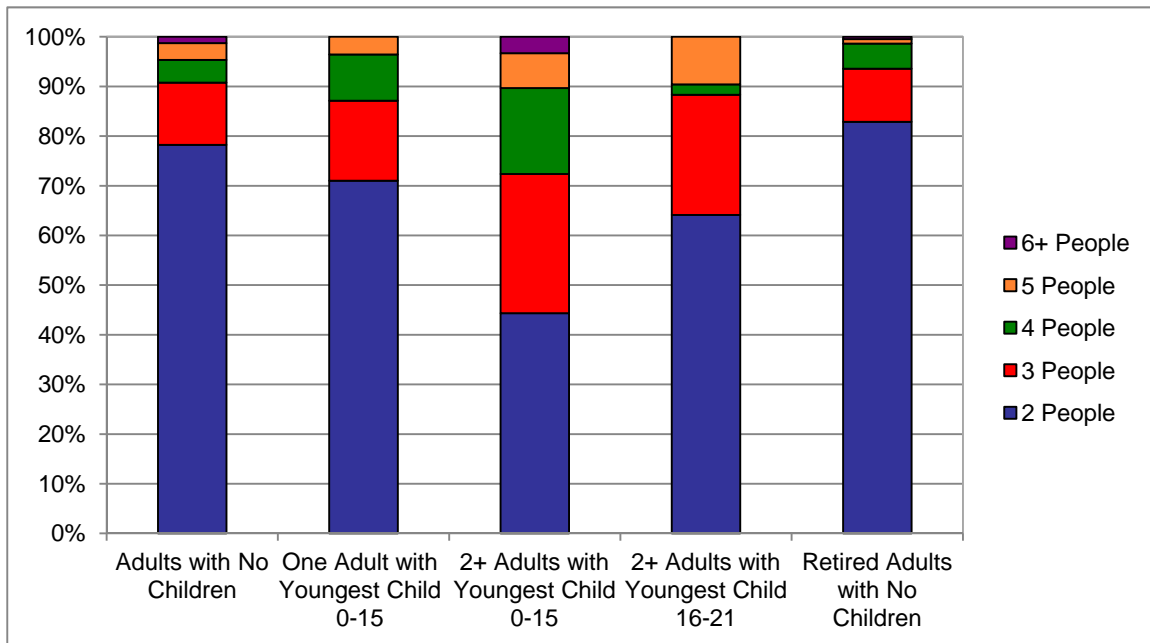
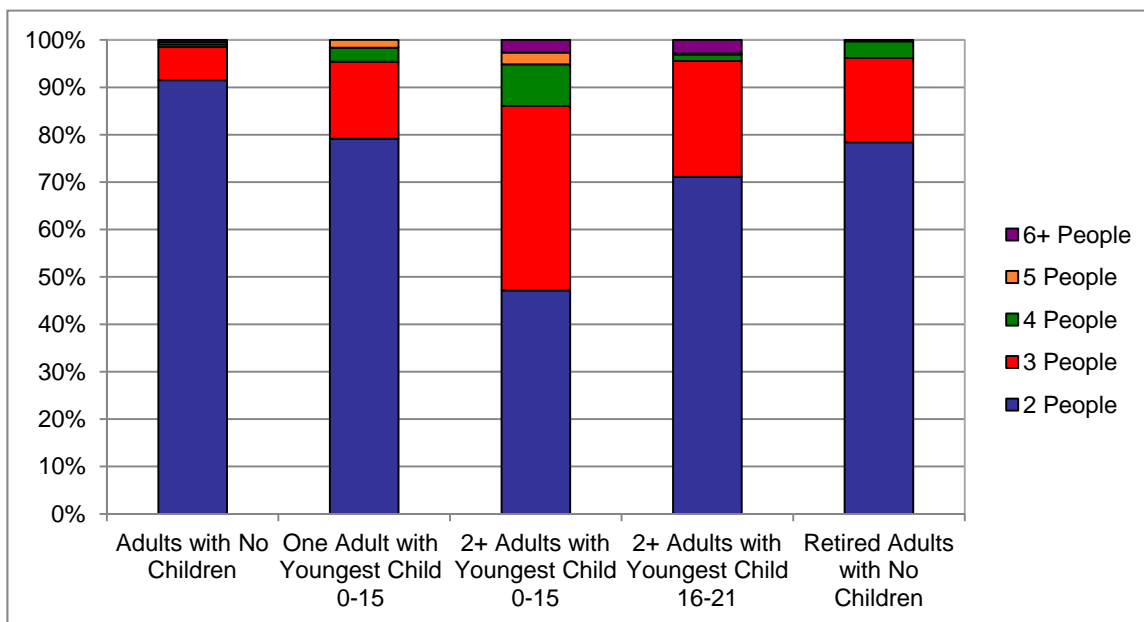


Figure 126 – Occupancies of Trucks by Household Type



Conclusions and Interpretations

This chapter summarized travel on foot/bicycle, by public transportation, and in carpools. Analysis conducted on pedestrian/bicycle travel shows that trip length is highly influenced by gender, age, and household income. Similarly, mode share is influenced by age and household income. An analysis of trip purpose reveals that a majority of walk/bicycle trips are conducted purely for social and recreational purposes. When use of these modes was examined, it was determined that a large majority of the population does not bicycle in a given week. However, most people did walk during the week, although it was just twice a week or less.

For travel on public transportation, the analysis revealed that, in terms of mode share, younger individuals and those with lower household annual incomes were more likely to use public transit. In terms of trip purposes, transit is most often used for travel to/from work, for shopping, or social/recreational activities. Based upon the available data, it was computed that local buses travel at an average speed of 10.7 mph—considerably slower than private vehicle travel. A significant share of transit use is attributable to zero-vehicle households, and transit mode share is meaningfully higher in zero-vehicle households and for low-income segments of the population. Usage analysis indicates that around 15 percent of the population has used transit at least once in the month they were surveyed. Trips on buses were shorter in length than those on rail transit modes.

NHTS Report: Chapter Five – Florida Mode-Specific Analysis

Shared ride travel was examined as one of three categories: HH carpool, mixed carpool, or non-HH carpool. In terms of trip length, non-HH carpools had the highest average trip length, whereas HH carpools had the lowest average trip length. When mode share was analyzed, it was determined that slightly more than 50 percent of all private auto travel is in carpools. Mode share of the different types of carpools was observed to change based upon both age of the individual and household income. A majority of carpool trips were observed to be primarily for social/recreational, shopping, or family/personal business. Occupancies within the vehicle were different based upon vehicle type, household type, and trip purpose.

The results of these analyses indicate that walking, bicycling, and public transportation are still modestly used modes in Florida. Many times, these modes are considered the modes of “last choice” by individuals who have no other transportation options. Bike and walk are most frequently used for social recreation purposes and far less often used as a means of travel for another trip purpose. Transit use is highly dependent on travelers who have few alternatives.

These data provide a pragmatic assessment of the competitive position of alternative means of travel for Florida travelers. Clearly, improvements in the availability or quality of facilities and services offered for users of alternative modes of travel would help to increase their use in Florida. However, numerous factors including human nature, Florida development patterns, the value of time, and the specialized nature of activity patterns, make it challenging to increase use of alternative means of travel. Improvements to the system will come at considerable cost. If there is a desire to encourage alternate forms of transportation, there needs to be investment in improving the quality of service of these modes. For the pedestrians, construction of new sidewalks, improved landscaping (shade from trees while walking), and traffic calming can increase connectivity while also increasing pedestrian safety. For bicyclists, that can involve construction of new multi-use paths or bicycle lanes. For public transit, faster service, more coverage, longer spans of service, or increased amenities (shelters or bicycle racks) can attract new riders and retain existing riders. For carpools, increasing incentives (such as reduced tolls) or increasing user fees can be used to encourage less single occupancy vehicle trips.

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