Trends and Conditions Report – 2003

TRAVEL DEMAND:
Population Growth and Characteristics
July 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

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Travel Demand: Population Growth and Characteristics

Introduction

The beneficiaries of mobility and also the source of transportation demand is the population. Mobility is a fundamental personal need; hence, the demand for transportation infrastructure and services is dramatically driven by the growth of the population. Thus, understanding population growth is a critical consideration in understanding future transportation needs. This section provides a summary overview of the growth of population in Florida. Subsequent sections explore the contribution of population to the total growth in transportation demand. Information regarding various traits of the population that have historically been relevant to our understanding of travel demand and behavior are presented. These include characteristics such as density, income, age, ethnicity, and home ownership status.

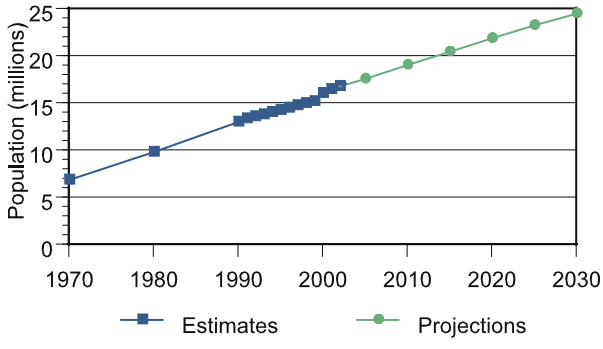
Florida's growth continues at a rate more than twice the national average, adding nearly 850 new residents daily.

Population Growth

Florida, now the fourth most populous state, has grown steadily throughout the past several decades. While the growth in both rate and absolute terms is currently slower than in some of the peak years, it continues to significantly outpace national overall growth. Throughout the 1990's, Florida grew at an annual rate of 2.14 percent compounded annually. This compares to a growth rate of 2.87 percent in the 1980's. National population growth was 0.94 percent in the 1980's and 1.24 percent in the 1990's. Florida averaged 315,000 new residents annually through the 1990's, the equivalent of adding a new city the size of Tampa each year. That equates to 863 persons per day moving into the state – a significant source of new transportation demand. In the most recent fiscal year, 2001 to 2002, Florida is estimated to have added 316,634 new residents.

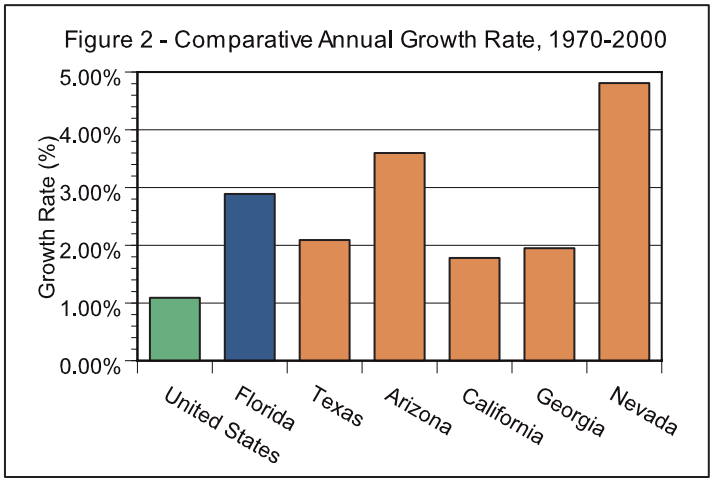
Figure 1 shows Florida's historic and predicted growth trends. In addition to the historic growth, Florida is predicted to continue to grow. Forecasts of population from the Bureau of Economic and Business Research at the University of Florida indicate that Florida is expected to reach 24,420,700 by 2030, an increase of 46 percent from 2000.

Figure 1 - Florida Population, 1970-2030



Source: U.S. Census Bureau, Historical Census; and University of Florida, Bureau of Economic and Business Reasearch, Projections of Florida Population by County, 2002-2030

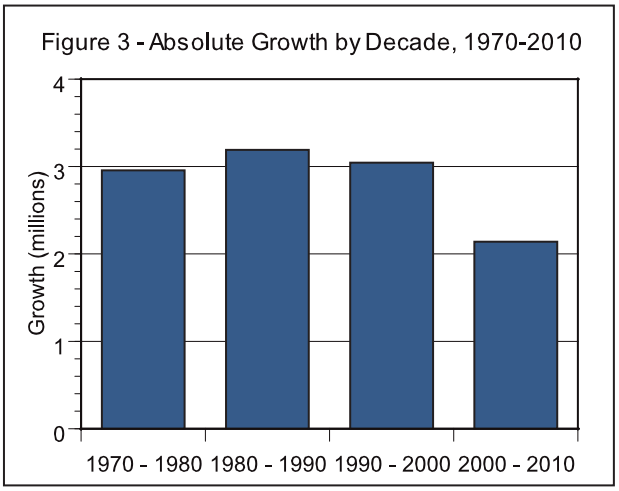
Figure 2 compares Florida's population growth rate with that of several other rapidly growing states. Florida's rate of population growth more than doubles the national average.



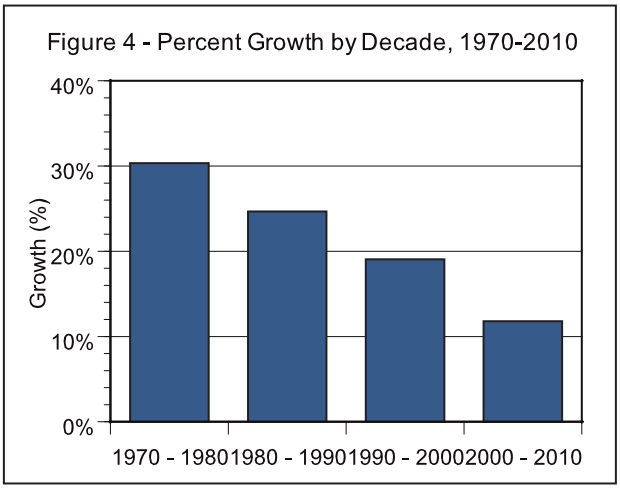
Source: U.S. Census Bureau, Historical Census 1970-2000

Figures 3 and 4 show the changes in the rate of growth in both absolute terms (number of people), and relative terms (percent change) for the past several decades. Florida's growth per decade in percentage terms has steadily declined. Perhaps surprising to some, the absolute level of growth has also declined in the past decade and is expected to continue to decline in the next decade. Florida's growth is predominately driven by immigration rates that are influenced by the overall economy and the relative attractiveness of Florida to both individuals and businesses.

Both the absolute pace of new resident growth and the percentage rate of growth are slowing in Florida.

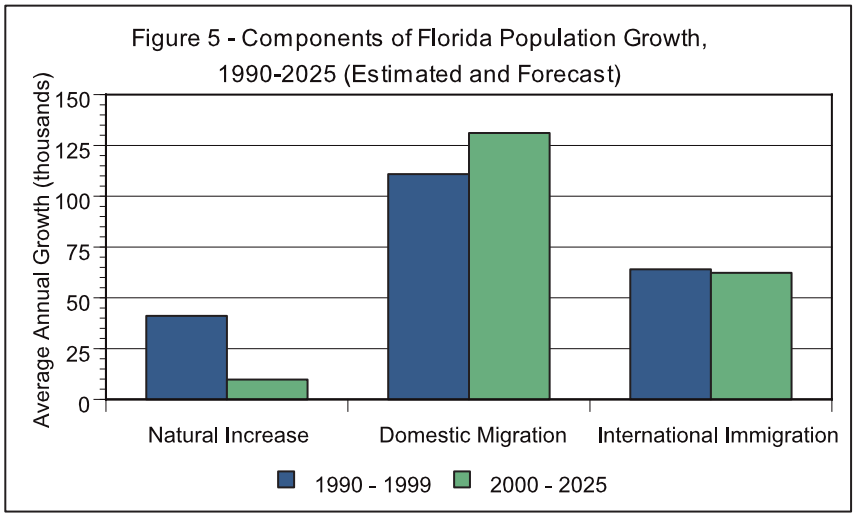


Source: U.S. Census Bureau, Historical Census and Projections



Source: U.S. Census Bureau, Historical Census and Projections

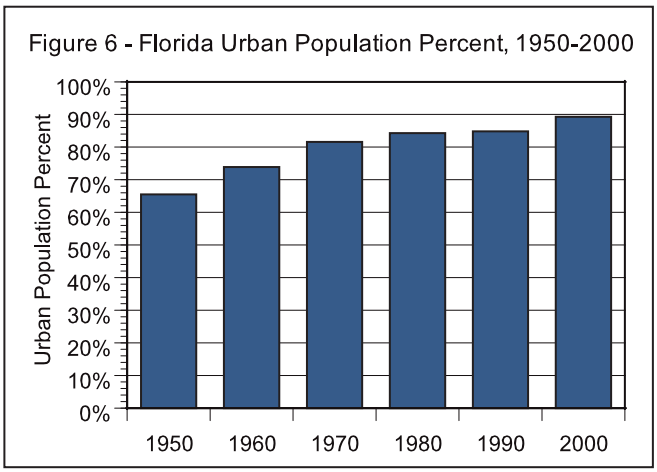
Figure 5 shows the source of population growth going forward and is representative of historic sources of population growth. As the figure shows, only 6 percent of the population growth is natural growth while 64% is attributed to domestic migration and 30 percent is international immigration.



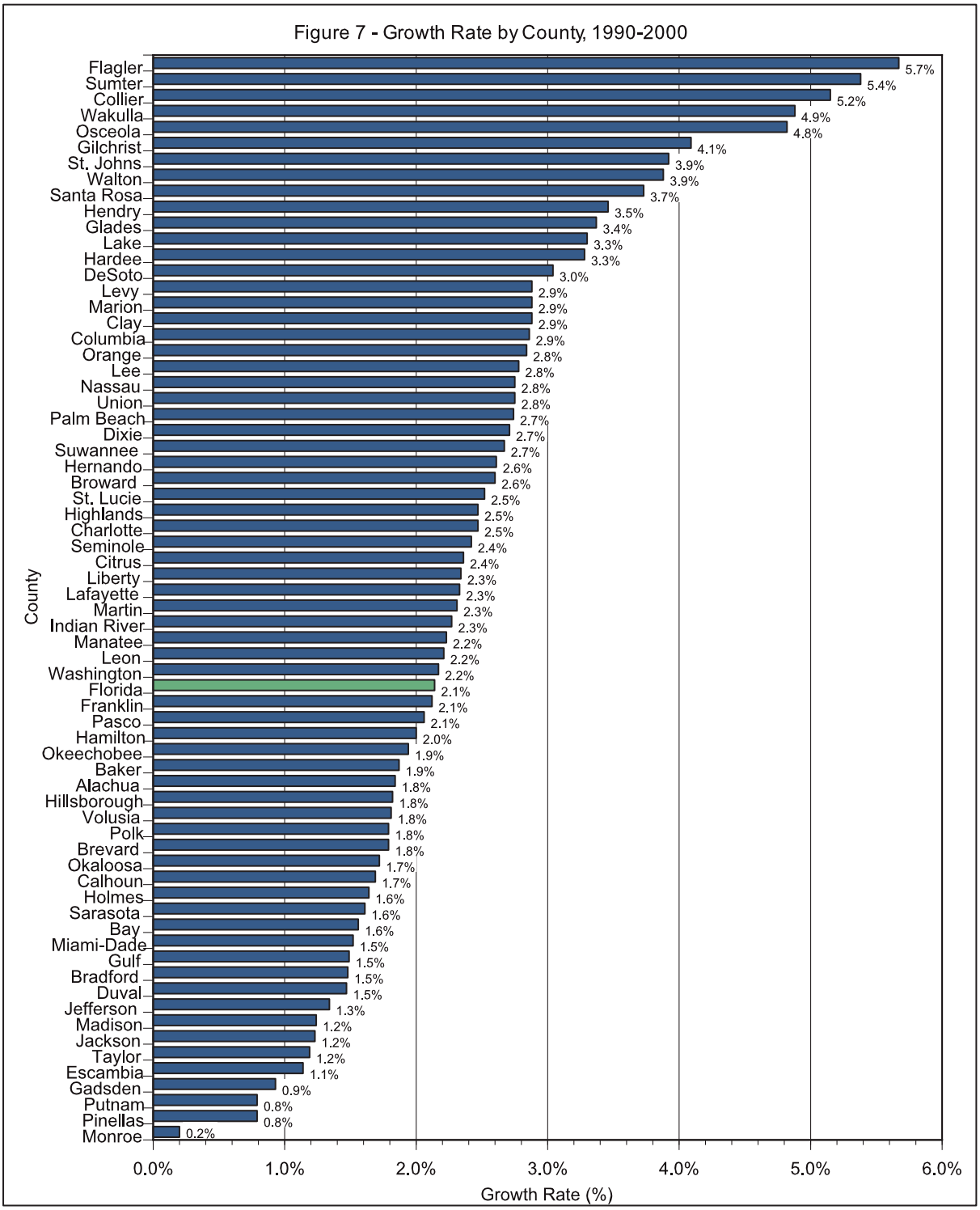
Source: U.S. Census Bureau, State Population Estimate and Demographic Components of Population Change, April 1, 1990 through July 1, 1999 and Florida Population Projections, 1995-2025

Approximately two-thirds of Florida's growth has been attributable to domestic migration and one-third to international immigration.

Figure 6 shows the percentage of Florida's population residing in urban areas has been growing over the past several decades. The growth rate varies by county and ranges from virtually no growth to over five percent per year. This is shown in Figures 7 and 8. Figure 8 presents the growth rate by county using the map of Florida. The counties with the highest growth rate include Flagler, Sumter and Collier, while Monroe, Putnam and Pinellas are the lowest.

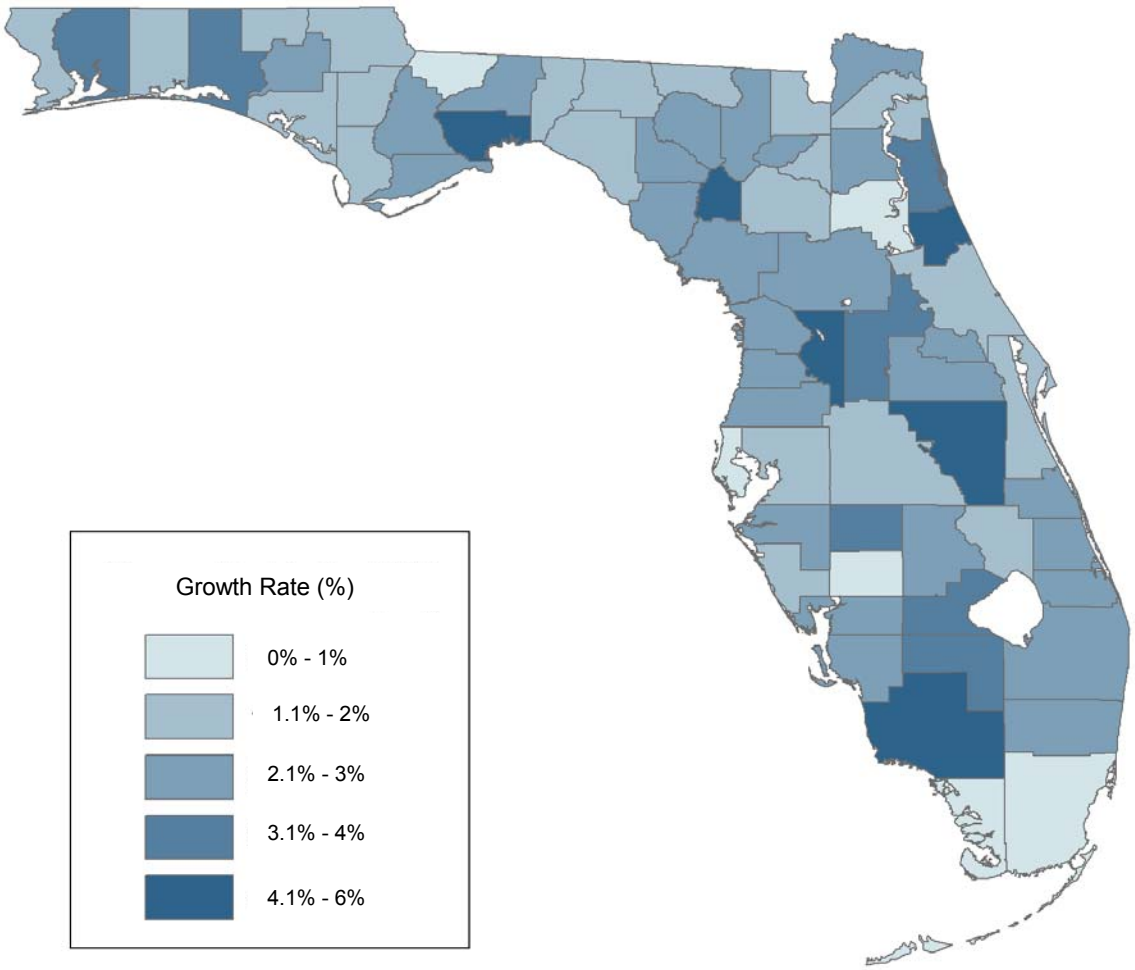


Source: U.S. Census Bureau, Census 2000; and University of Florida, Bureau of Economic and Business Research, Florida Statistical Abstract 2001



Source: U.S Census Bureau, Census 1990 and Census 2000

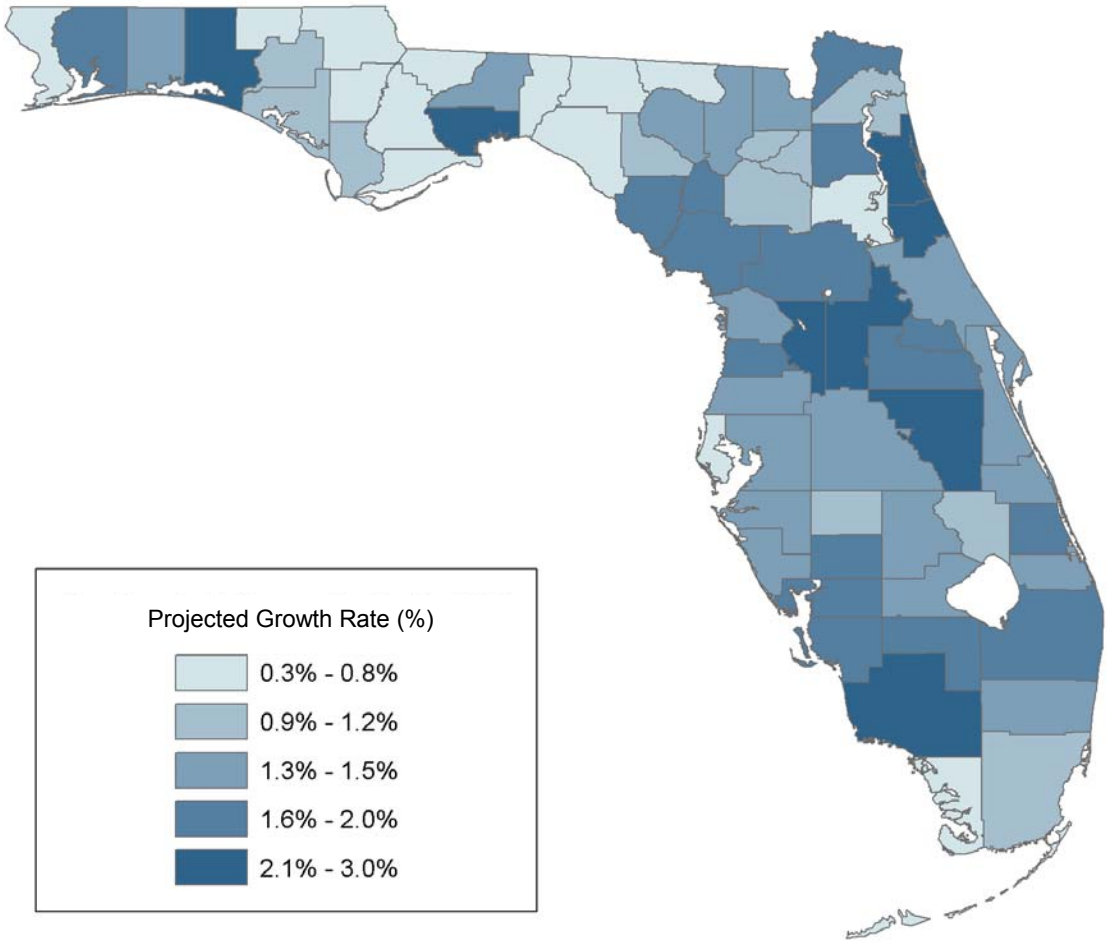
Figure 8 - Growth Rate by County Map, 1990-2000



Source: U.S. Census Bureau, Census 1990 and Census 2000

Figure 9 is a map of the forecasted growth rate by county from 2000 through 2030. Counties in central Florida are expected to have higher growth rates as compared with the rates from 1990 to 2000. The forecasts suggest that many counties in north Florida will have lower rates of growth as compared to the 1990 to 2000 rates.

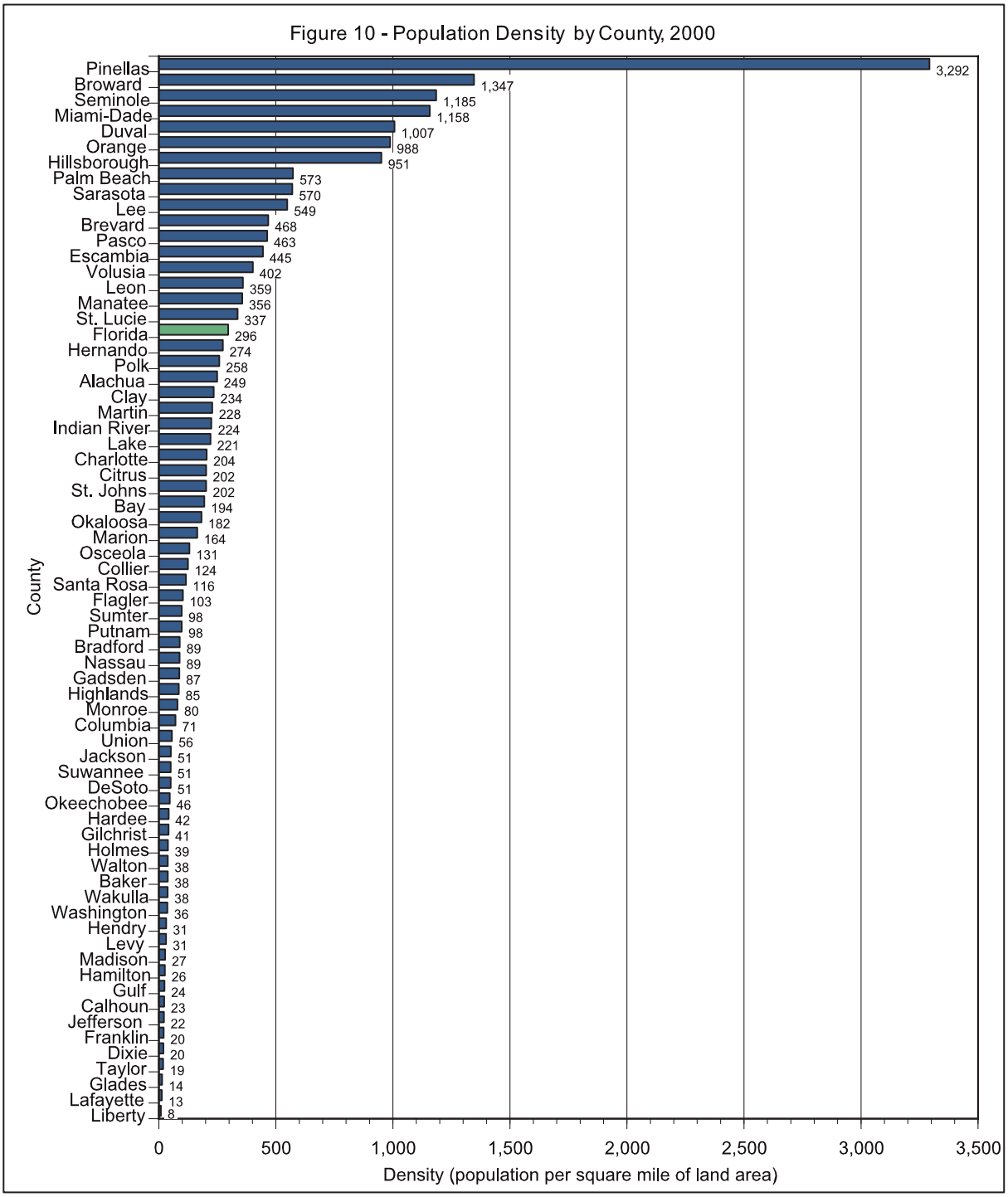
Figure 9 – Forecast Growth Rate by County Map, 2000-2030



Source: University of Florida, Bureau of Economic and Business Research, Projections of Florida Population by County, 2002-2030; and U.S. Census Bureau, Census 2000

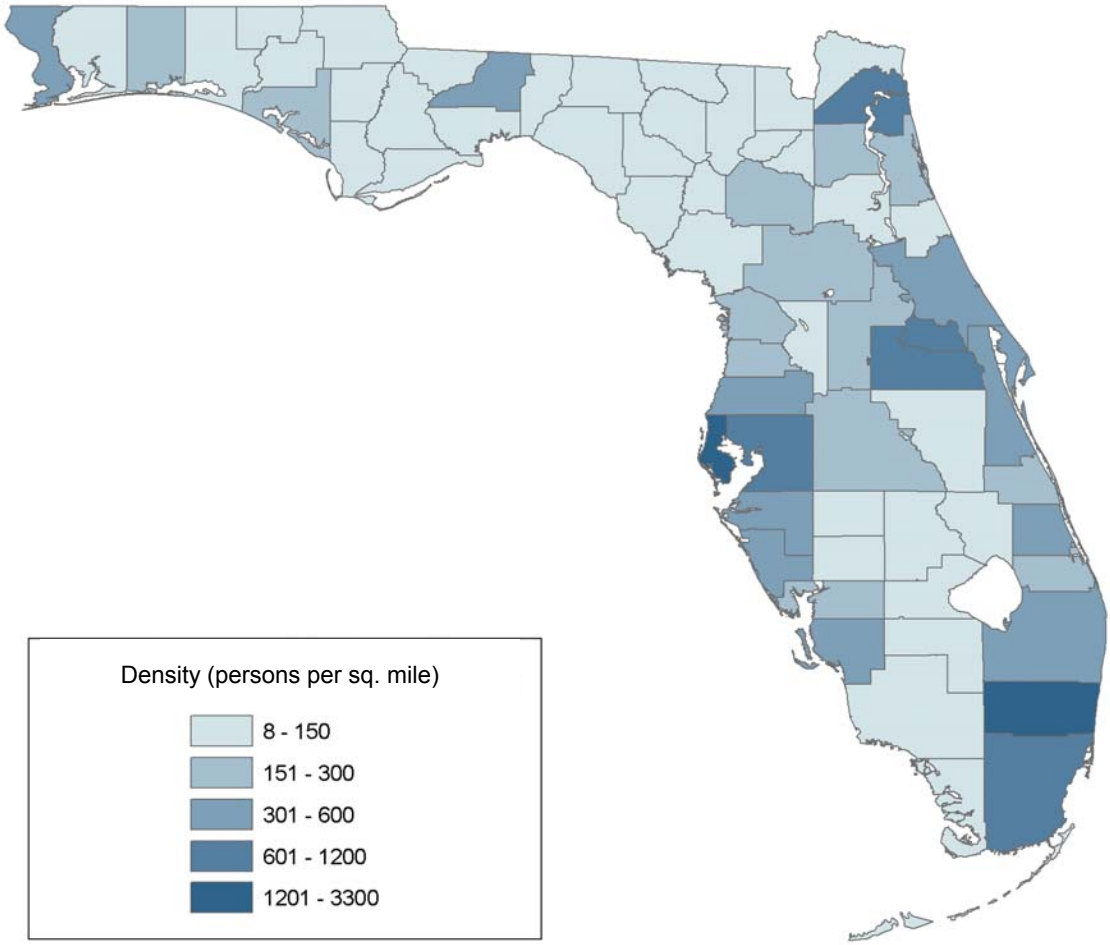
Population density across Florida's counties also varies dramatically from over 3,200 persons per square mile in Pinellas County to less than 8 in Liberty County. Figures 10 and 11 present this variation. Florida's average population density in 2000 was 296 residents per square mile.

Figure 10 - Population Density by County, 2000



Source: U.S Census Bureau, Census 2000

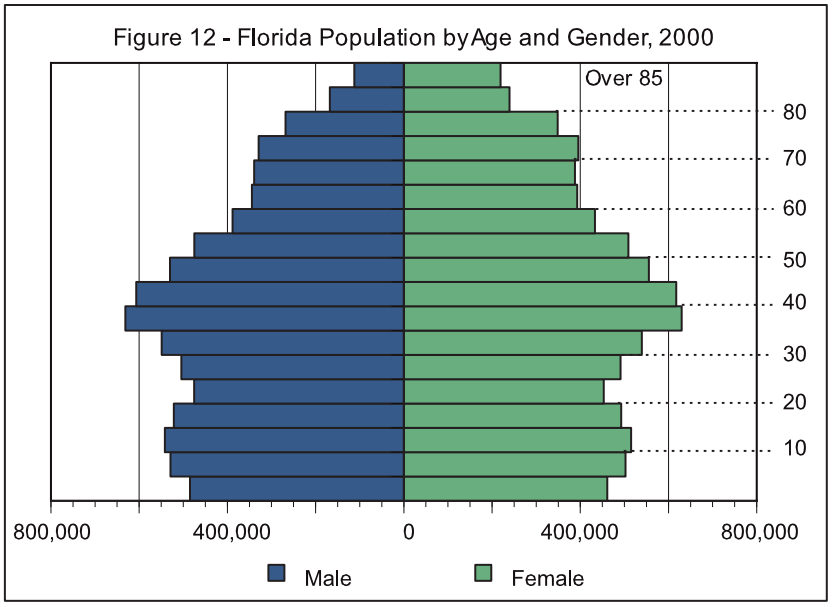
Figure 11 – Population Density by County Map, 2000



Source: U.S. Census Bureau, Census 2000

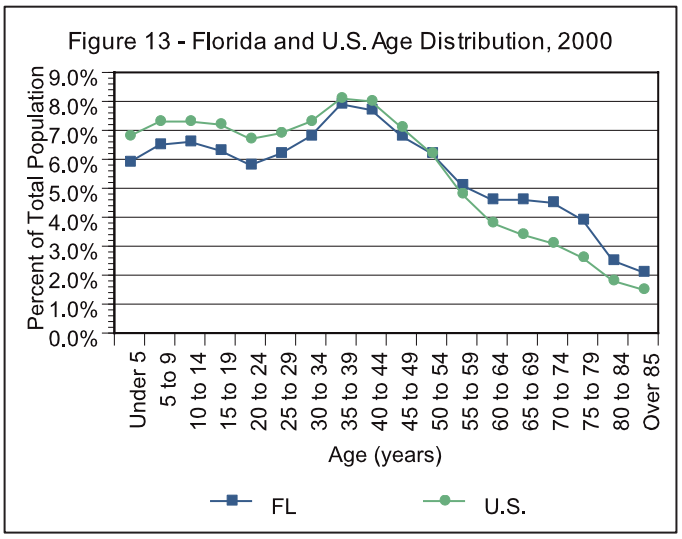
Demographic Characteristics

The Florida population is acknowledged as significantly older than the national average with a median age of 38.7 in 2000 compared to a national median age of 35.3. Florida's median age has been increasing over the past several decades. In 1990, the median age was 36.3. Figure 12 shows the distribution of Florida's residents by age and gender.



Source: U.S. Census Bureau, Census 2000

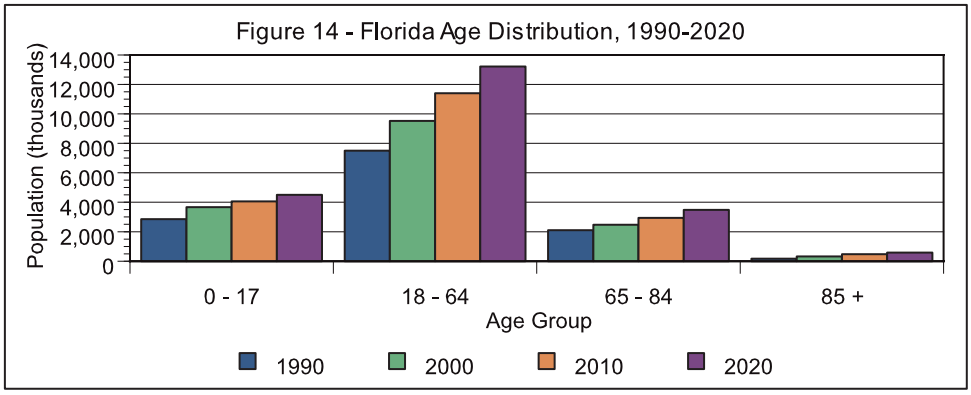
Figure 13 portrays the age distribution of the Florida and U.S. population. Florida has a higher elderly population rate than the nation as a whole.



Source: U.S. Census Bureau, Census 2000

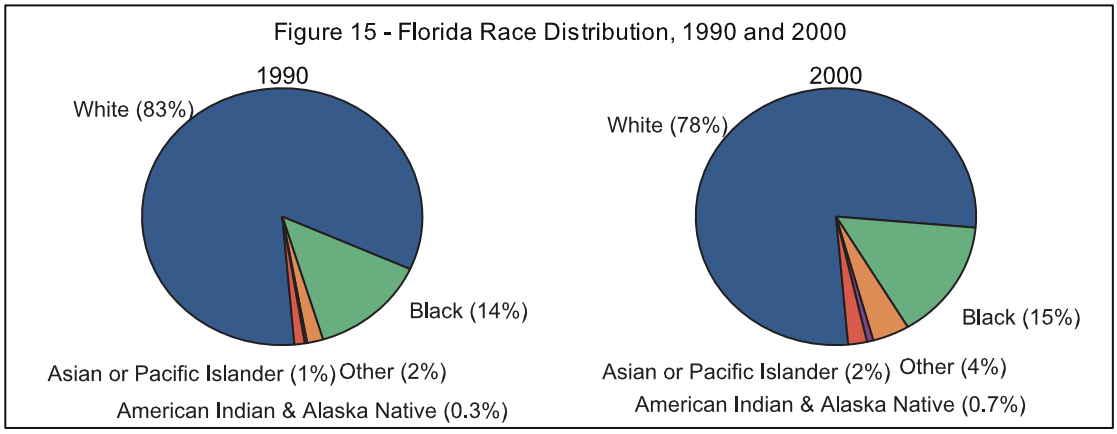
Florida's age distribution today is similar to what the country's will be like in 20 to 30 years.

Figure 14 shows how various segments of the population have changed over the past few decades. The working age population has been growing the fastest. If one looks at narrow age ranges, the over 85 population has been increasing fastest in percentage terms.



Source: U.S. Census Bureau, Census 1990 and Census 2000; and University of Florida, Bureau of Economic and Business Research, Florida Statistical Abstract 2002

Figure 15 shows the race distribution of Florida population. Black, Asian, and Other shares of the population have been increasing. Year 2000 census data for the first time allowed a richer classification of race and ethnicity. The Hispanic share of the population continues to grow rapidly and has increased from 12.2 percent in 1990 to 16.8 percent in 2000. The Census classifies Hispanic as an ethnicity and hence, it is not shown as a distinct race in Figure 15.

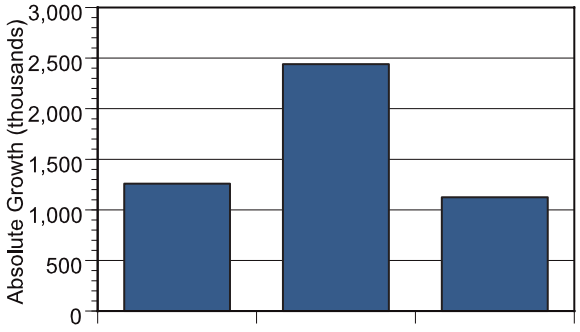


Source: U.S. Census Bureau, Census 1990 and Census 2000

Historically mobility has been highly correlated with race and ethnicity with the non-white population having lower levels of mobility and greater dependence on alternatives to auto travel. This situation has been changing over time with other groups moving toward similar levels of travel especially when age, income, residential location and household size are considered. However, even with adjustments, some travel behaviors appear to be culturally related. For example, the Black population is more inclined to use transit even when adjusting for other factors and the Asian population is more inclined to walk (Polzin, 2001).

One important indicator of travel demand growth is the change in the labor force. The labor force is a segment of the population that is highly related to transportation needs as they often dictate peak period travel demands and are an indication of the economic activity of an area. The pace of labor force growth slowed markedly in the 1990's. This reflects several factors including the fact that the full baby boom generation is in the work force and the upward trend in female labor force participation appears to have run its course, stabilizing at far higher rates of participation than a generation ago. Demographers believe the declining rate of labor force growth will have significant impacts in future years. This may well include impacts in the rate of growth of travel demand.

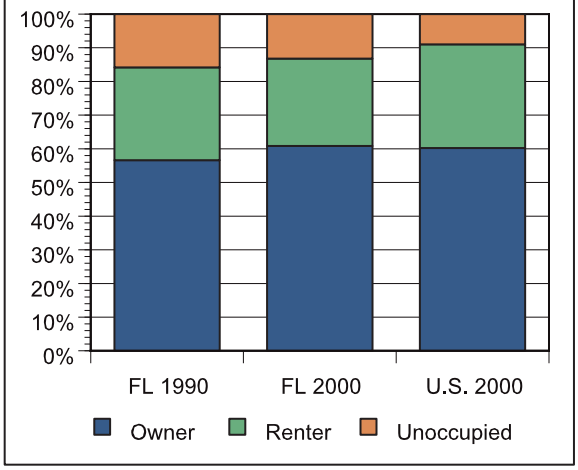
Figure 16 - Florida Labor Force Growth by Decade, 1970-2000



Source: University of Florida, Bureau of Economic and Business Research, Annual Florida Statistical Abstract

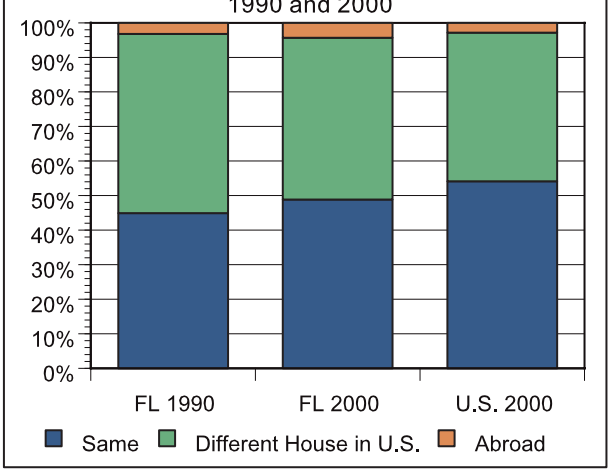
Another characteristic of the population that influences travel demand is housing. Figure 17 shows the housing tenure for the Florida population. Home ownership in Florida is 60.82 percent, which is slightly higher than the national level of 60.24 percent. In 2000, Florida had a higher share of unoccupied and less renter occupied homes. National Household Travel Survey (NHTS) data indicates that rental households tend to have fewer occupants, the residents are more inclined to use transit and they generally produce less travel than do owner occupied homes.

Figure 17 - Housing Tenure, 1990 and 2000



Source: U.S. Census Bureau, Census 1990 and Census 2000

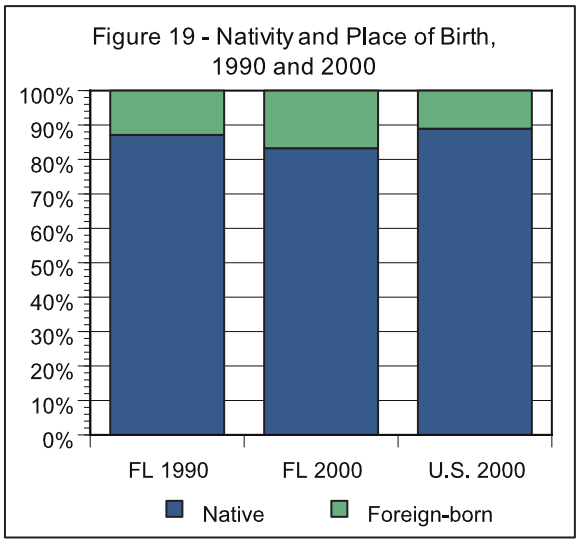
Figure 18 - Residence Location 5 Years Ago, 1990 and 2000



Source: U.S. Census Bureau, Census 1990 and Census 2000

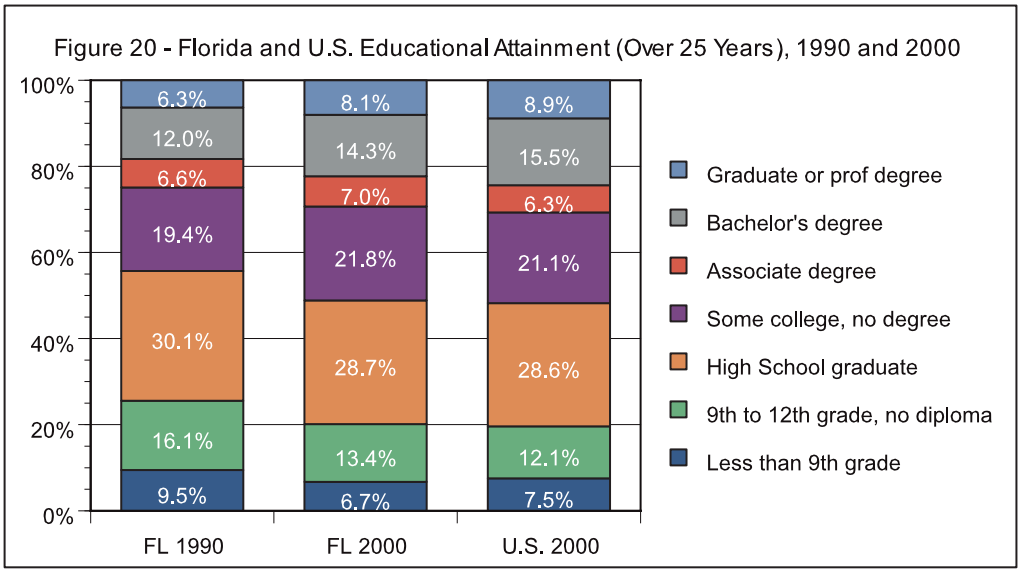
Figure 18 shows the stability of the population. Florida's immigration levels contribute to the smaller share of the population that has lived in the same home for five or more years.

Figure 19 also indicates the growth in immigrant population. International immigrant population tends to have increasing travel demand over time as their economic conditions change and they become more similar to the domestic population in terms of vehicle ownership and licensed driver status.



Source: U.S. Census Bureau, Census 1990 and Census 2000

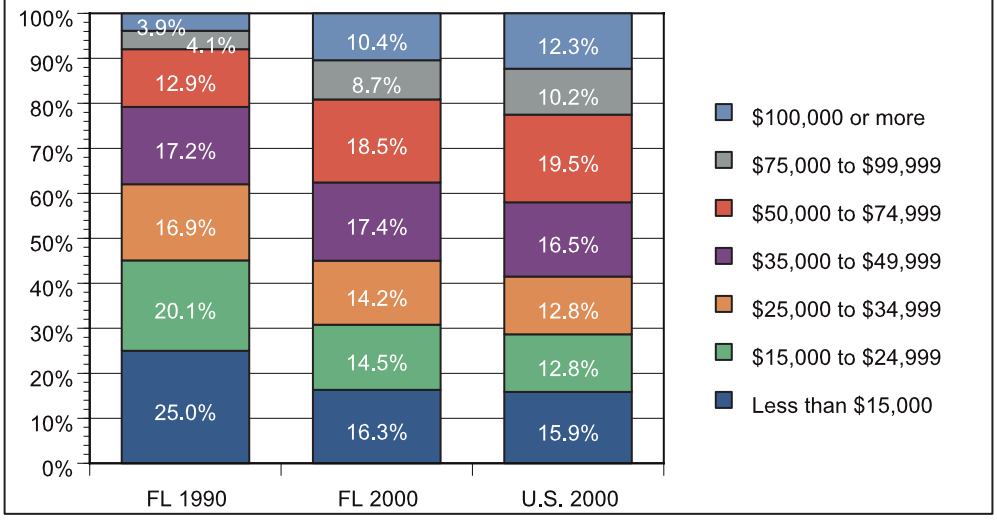
Education and income levels, Figures 20 and 21, are similarly factors in travel demand as more highly educated and compensated individuals have greater travel demand through the middle-income brackets. Household vehicle miles of travel increase as household income increases. For more information please see Figure 7, Household Income Effects on Travel, in the *Travel Demand: Travel Demand and Travel Behavior* section of this report.



Source: U.S. Census Bureau, Census 1990 and Census 2000

As Figure 21 indicates, in 2000 Florida was similar to the rest of the country in household income distribution, but with somewhat higher shares of the population in the lower income brackets. Additional adjustments to reflect differential buying power based on cost of living differences between Florida and the rest of the country might narrow the differences further.

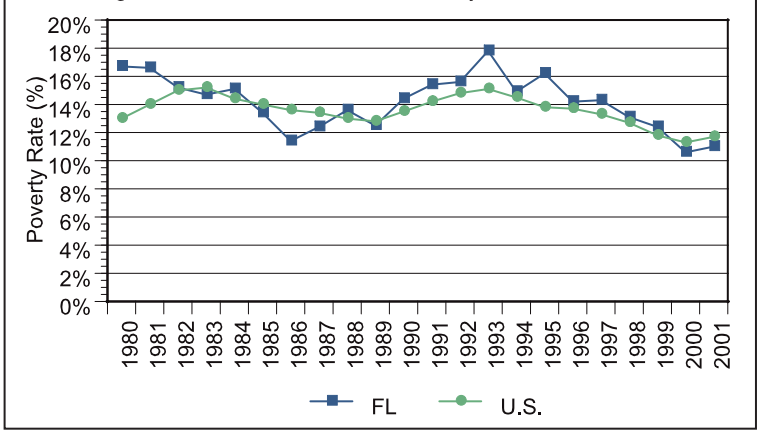
Figure 21 - Florida and U.S. Household Income Distribution, 1990 and 2000



Source: U.S. Census Bureau, Census 1990 and Census 2000

Another measure of income that influences travel levels and the means to use various modes is the poverty level of the population. Figure 22 shows the comparative poverty level of Florida over the past several years compared to the national levels. The poverty rate is expressed in terms of the percentage of the population that is defined as below the poverty level. Florida has made progress with the poverty levels in the state dropping both in absolute terms and relative terms, being below national averages in recent years.

Figure 22 - Florida and U.S. Poverty Rate, 1980-2001

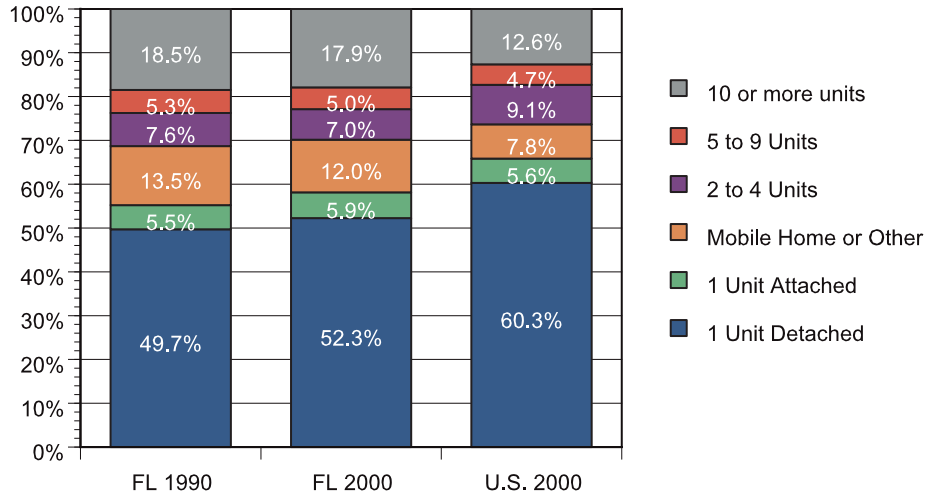


Source: U.S. Census Bureau, Historical Poverty Tables

Income levels continue to be one of the most important factors influencing travel demand. Higher real income levels create higher travel demands.

Another factor that influences travel is the housing type of the population. Housing is highly correlated with incomes as well as influenced by population density and other characteristics. Historically, higher density housing types have produced lower per unit levels of travel demand and the propensity to use transit and walk modes is higher. While the housing type itself does not cause travel, it remains highly correlated to conditions that influence travel demand. As shown in Figure 23, Florida has lower levels of single unit detached housing and more multiunit housing. Higher density units tend to generate fewer and shorter trips and be more likely to be served by and use public transportation. Florida continues to have more mobile homes than the country as a whole, but fewer single family units and more large multifamily units.

Figure 23 - Florida and U.S. Units in Housing Structure, 1990 and 2000



Source: U.S. Census Bureau, Census 1990 and Census 2000

Conclusion

Looking ahead, demographers and planners have speculated about how various factors might influence population growth and demographic conditions in Florida in the future. National and international relations, economic health, immigration policy and various other factors may influence the growth of Florida and the allocation of new jobs and population within Florida. Florida continues to offer an attractive physical and economic cllimate. Growth is very dependent on continued in-migration of both domestic and international residents and this migration is influenced by conditions in Florida as well as conditions in the originating locations. Quality of life considerations, including the mobility of the population, are among the influences in these trends. The quality of the transportation infrastructure and services is a factor that influences the willlingness to choose Florida for both individuals and for businesses who may consider relocating.

Planners, by definition, are tasked with ensuring that the need and wishes of future generations are represented in current decisions and actions. Thus, transportation planning in Florida has a responsibility to address the inevitable needs of a population that all the available information suggest will require ever more mobility.

All sources continue to forecast population growth for Florida. Economic conditions, immigration policy, and quality of life factors will influence the magnitude of the relative population growth in Florida compared to the rest of the nation. Population growth will continue to play a major role in determining the pace of increasing travel demand in Florida. Even with slowing rates of growth, the absolute increase in population is expected to continue at levels similar to those in recent years and be approximately twice the national average rate of growth. Prudent stewardship creates a responsibility to plan for how the mobility needs of a growing state can best be met.

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List of Tables and Figures

Travel Demand: Travel Demand and Travel Behavior Trends

Introduction

There are three major contributors to transportation demand: person travel by the resident population, commercial and freight transportation, and person travel by tourists. This section explores trends and conditions regarding the largest of these three components of travel demand, resident travel. This collection of information provides a level of understanding about the resident population of Florida as it influences the demands for travel. Various information items are included to give the reader a richer understanding of how and why Floridians travel. Various data sources are noted and the data are occasionally compared with national or historic data to provide an indication of trends and context.

Travel Demand and Travel Behavior Trends

Just as population is the principal driver of travel demand and was addressed in the prior section, the characteristics of the population also influence demand. Travel demand varies quite significantly across the population depending on the various characteristics of the population. Age, income, auto ownership and various other factors affect travel demand or are often highly correlated with travel demand and hence are reviewed in this section.

Table 1 - Distribution of Households by Household Size

Household Size	Florida	US Excluding Florida
1	28.45	25.64
2	35.86	32.42
3	15.77	16.58
4+	19.92	25.35
Total	100%	100%

Source: NHTS, 2001

Household size is one factor in travel demand. Typically, larger households imply some youth and often there are more shared vehicle trips and hence less total vehicle travel per person. Additionally some trips are reduced, for example, shopping may be carried out for a group rather than each individual having to do the shopping. However, multi-person households are often economically and socially active, thus, generating more person miles of travel. Florida's average household size is below that of the rest of the nation, principally due to the large number of one or two person households with retirees. These households may also have different housing location decision-making criteria. Access to employment is not critical and location decisions are more influenced by amenities and access to relevant services.

Ethnicity is often highly correlated with location choice, household size, household income, and immigration status. However, there are some travel traits, such as mode choice, that have some relationship to ethnicity even when other considerations are adjusted. Florida is more diverse than the rest of the country with higher shares of African Americans, Hispanics and other non-white persons. Table 2 compares ethnicity between Florida and the remainder of the country.

Travel levels have long been correlated with income, higher incomes enabling and motivating additional travel. Florida has lower household incomes than the remainder of the country with higher shares of the households having incomes below the $30,000 level. Table 3 compares the Florida household income levels with those of the remainder of the country.

Vehicle travel demand is highly correlated with vehicle availability; not surprisingly, vehicle availability is highly correlated with income levels. Florida's vehicle availability levels are slightly lower than the remainder of the country. According to the 2001 National Household Travel Survey (NHTS), the vehicle availability level was 1.75 in Florida versus 1.94 for the U.S. and 1.59 versus 1.68 according to the Census 2000 data. This difference may be attributed to average age and perhaps income factors. Figure 1 displays the vehicle availability data.

Table 2 - Distribution of Persons by Ethnic Origin

	Florida	US Excluding Florida
White	62.20	70.17
African-American	13.70	11.94
Other	24.11	17.89
Total	100%	100%
Hispanic	20.22	12.19
Non Hispanic	79.78	87.81
Total	100%	100%

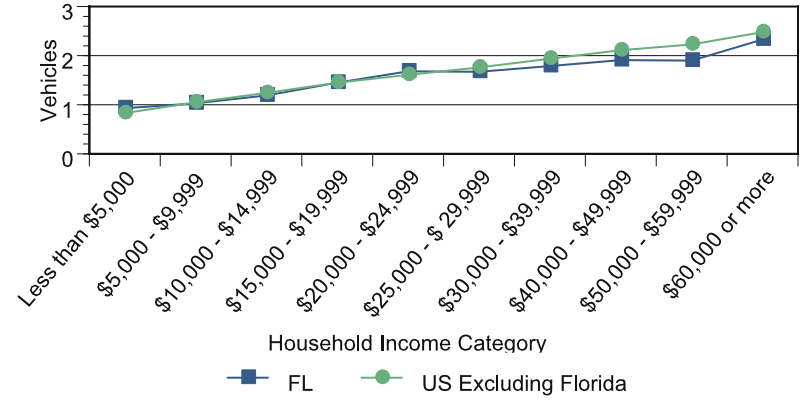
Source: NHTS, 2001

Table 3 - Distribution of Households by Household Income

Household Income	Florida	US Excluding Florida
Less than $5,000	2.63	3.16
$5-$9,999	7.75	6.38
$10-$14,999	7.64	5.85
$15-$19,999	8.77	7.23
$20-$24,999	6.94	6.14
$25-$29,999	10.64	8.21
$30-$39,999	13.95	13.96
$40-$49,999	10.58	11.05
$50-$59,999	9.56	8.93
$60,000 or more	21.54	29.10
Total	100%	100%

Source: NHTS, 2001

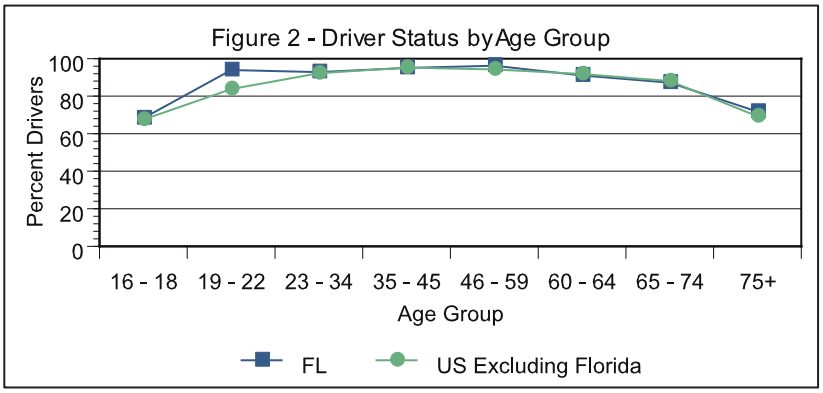
Figure 1 - Vehicle Ownership by Income Category



Source: NHTS, 2001

Vehicle availability has been growing over time as income growth has enabled its increase. Analysts have presumed that vehicle availability is no longer a constraint on travel growth when the household has as many vehicles as licensed drivers. Data indicated that on average one vehicle is available per adult or licensed driver. However, these vehicles are not uniformly spread over the population so some households remain more limited in their mobility due to limited vehicle availability. In other cases, it is common for the number of vehicles to exceed the number of persons. In these cases, the additional vehicles provide a specialization of vehicles for special purposes and a contingency vehicle should one not be currently working. Lack of vehicle availability can be a result of income constraints, lack of choice or physical/mental abilities. The number of households without vehicles declined over the past few decades to levels that appear to be quite modest. Average vehicle availability per household has remained stable over the past decade both for Florida and for the country as a whole. The number of households without any vehicles has dropped about one percent in share for both the state and the nation since 1990, but the actual number of households without vehicles has moved up slightly in the past decade; whereas, it had been declining in both share and absolute terms in the past few decades. This suggests we may be near a stable point regarding vehicle availability. While there are still some vehicle availability constraints for some groups such as low-income persons, young persons, and new immigrants, the prospects of significant additional travel demand, because of growing vehicle availability, are lower than in previous decades when there was more limited vehicle availability.

Figure 2 presents the trends in driver status by age in Florida and the U.S. This is a measure of whether the respondent functioned as a driver for the response period of the data collection in the NHTS. The driver status rate in Florida is similar to the remainder of the country with the exception of the higher driver rates for young adults. Limited modal alternatives may be contributing to this younger age of driver participation.



Source: NHTS, 2001

Eight out of 100 Florida households do not have a personal vehicle available.

Table 4 shows the comparative data on household vehicle availability from the Census data. This shows a lower zero-car household level, higher one-car household levels and lower levels of multi-car households. The lower level of zero-car households is consistent with the auto dependent nature of much of Florida.

Table 5 provides several mobility related information items. Focusing on the per capita data, one notes that Florida continues to have slightly fewer and shorter trips per capita than the remainder of the country, but more trips by individuals as the vehicle driver. The slightly lower labor force participation and higher percent driver numbers are no doubt partially attributed to the age profile of Floridians.

Floridians make fewer and shorter trips than other Americans, but are more likely to be vehicle drivers for their travel.

On average in Florida, each household is responsible for over 9 person trips, comprised of nearly 6 vehicle trips generating over 50 vehicle miles of travel a day.

Table 4 - Household Vehicle Availability Comparisons

	Florida 1990	Florida 2000	US 1990	US 2000
No Vehicle Available	9.0%	8.0%	11.3%	10.2%
1 Vehicle	40.6%	41.3%	33.4%	34.1%
2 Vehicles	37.3%	38.4%	37.7%	38.5%
3 Vehicles	10.0%	9.5%	12.7%	12.5%
4 Vehicles	2.4%	2.1%	3.6%	3.4%
5 or more Vehicles	0.7%	0.7%	1.3%	1.3%
Mean Vehicles	1.59	1.59	1.68	1.69

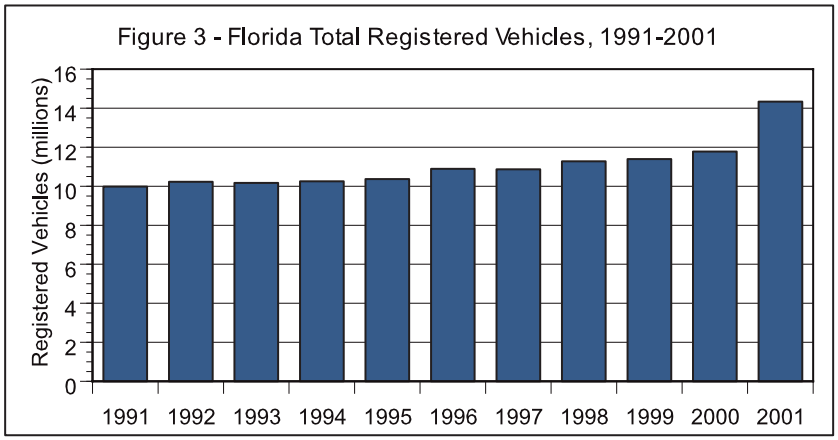
Source: CTPP Profiles

Table 5 - Travel Related Characteristics, 2001

Average Household Characteristics		
Characteristics	Florida	US Excluding Florida
Persons per Household	2.37	2.57
Drivers per Household	1.72	1.75
Workers per Household	1.19	1.32
Vehicles per Household	1.72	1.91
Daily Person Trips per Household	9.22	10.57
Daily Person Miles per Household	84.10	103.94
Daily Vehicle Trips per Household	5.70	6.02
Daily VMT (miles) per Household	53.03	58.60
Average Vehicle Trip Length	9.31	9.74
Average Per Capita Characteristics		
Characteristics	Florida	US Excluding Florida
Percent Drivers	72.56	68.43
Percent Workers	50.89	52.40
Vehicles per Capita	0.73	0.74
Daily Person Trips per Capita	3.88	4.11
Daily Person Miles per Capita	35.44	40.42
Daily Vehicle Driver Trips per	2.40	2.34
Daily VMT Driver (miles) per	22.34	22.78
Average Person Trip Length	9.31	9.74

Source: NHTS, 2001
Note: These numbers may differ slightly from census tabulations due to different sample sizes.

Vehicle availability and the number of registered vehicles have been critical factors in influencing mobility and vehicle miles of travel. Vehilcle availability affects the choice of travel means and the length and number of trips taken. As shown in Figure 3, registered vehicles in Florida have increased more than 20 percent in the past decade. This growth is a result of population growth and greater relative auto availability for the population. For example, in 1991 there were 13,289,497 people in Florida and 9,980,076 vehicles or 0.75 vehicles per capita. Of that population, 9,692,974 were licensed drivers, indicating that there were more vehicles than licensed drivers. By 2001, the ratio of vehicles per person had grown to 0.87, an increase in vehicle availability.



Source: Federal Highway Administration, Highway Statistics Series

The growth of vehicle availability has slowed in recent years as vehicle availability has become widespread. The aging of the state and national population has contributed to this trend as a higher share of the population is in the adult categories and is able to own vehicles.

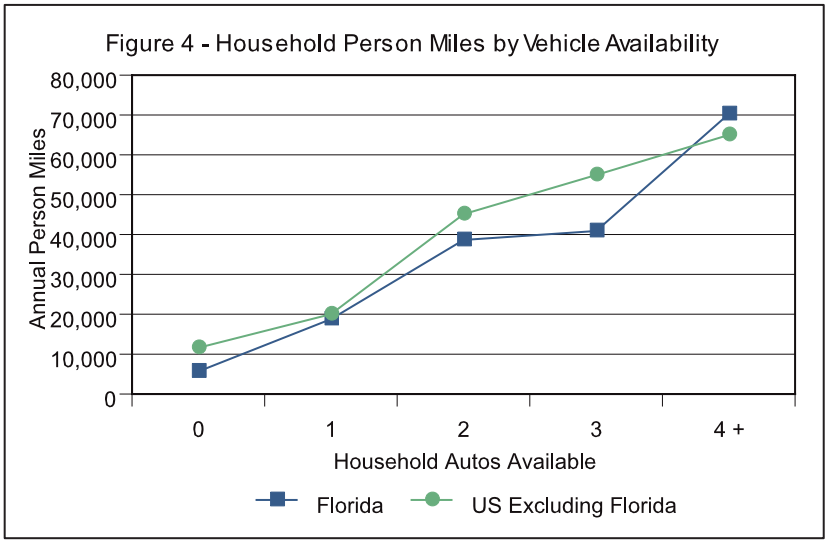
There are more households in Florida with three or more vehicles than those with zero vehicles.

Table 6 - Number of Registered Vehicles in Florida

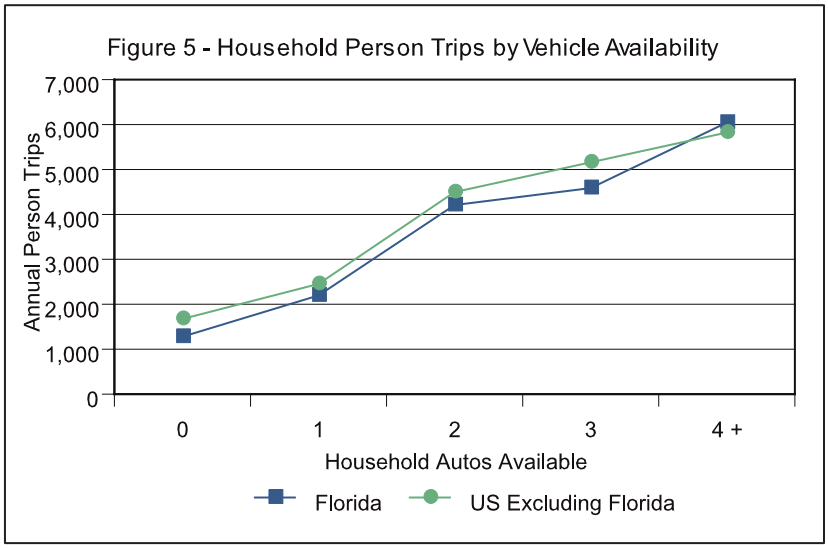
Year	Registered Vehicles	Percent Change from 1991
1991	9,980,076	0.0%
1992	10,232,336	2.5%
1993	10,169,556	1.9%
1994	10,251,810	2.7%
1995	10,369,395	3.9%
1996	10,888,596	9.1%
1997	10,874,031	9.0%
1998	11,276,389	13.0%
1999	11,389,713	14.1%
2000	11,781,010	18.0%
2001	14,340,102	43.7%

Source: Federal Highway Administration, Highway Statistics Series

As shown in Figures 4 and 5, the trip rate and miles of travel increase significantly as household vehicle availability goes up. Census data indicate that of 6.3 million households in Florida in 2000, only 509,106 or 8 percent had no vehicles. The number of zero-vehicle households increased by approximately fifty thousand, but the share of zero-vehicle households in Florida declined from 9 percent in 1990. Nationally, the share of zero-vehicle households was 9 percent in 2000. Vehicle availability has grown for lower income households and it is increasingly likely that a vehicle is available for every licensed driver in a household. Crowded high school student parking lots and crowded street and driveway parking conditions in moderate and low-income areas epitomize the high levels of vehicle availability.

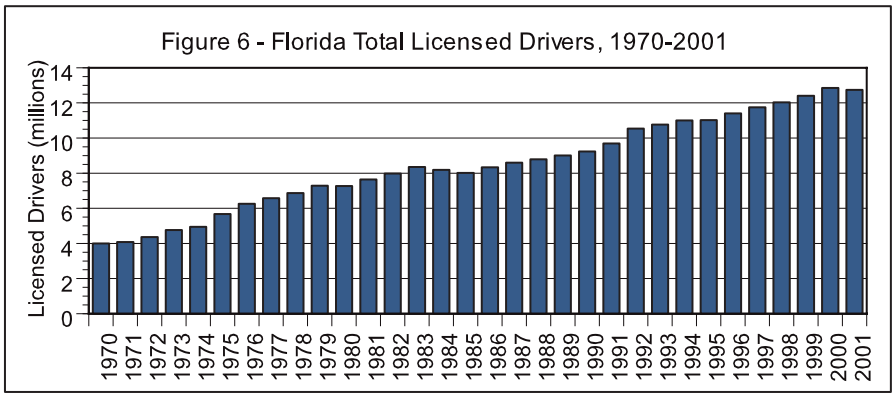


Source: NHTS, 2001



Source: NHTS, 2001

Figure 6 illustrates the trend of licensed drivers in Florida from 1970 through 2001. Although fluctuations were observed from year to year, the general trend indicates that the population of licensed drivers is on the rise. Table 7 details the number of licensed drivers in Florida and population size from 1970 through 2001. In 2001, the percent of the population in Florida with a drivers license was 78%, while the United States had only 66% of persons with a license.



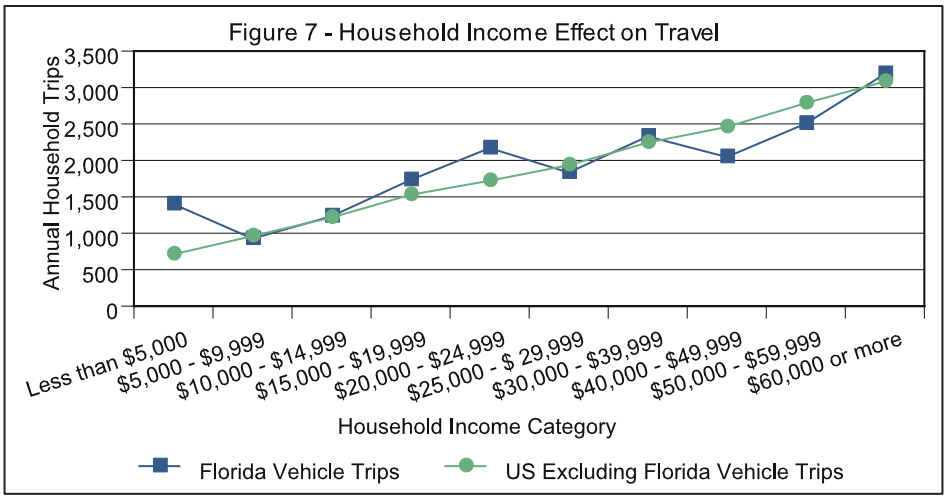
Source: Federal Highway Administration, Highway Statistics Series 1995-2001

Table 7 - Licensed Drivers in Florida

Year	Licensed Drivers	Percent Change from prior year	Population	Percent of Population
1970	3,994,024		6,789,443	58.8%
1980	7,267,962	-0.3%	9,746,324	74.6%
1981	7,641,035	5.1%	10,192,774	75.0%
1982	7,978,824	4.4%	10,471,407	76.2%
1983	8,347,269	4.6%	10,749,851	77.7%
1984	8,185,949	-1.9%	11,039,925	74.1%
1985	8,016,239	-2.1%	11,351,118	70.6%
1986	8,334,798	4.0%	11,667,505	71.4%
1987	8,593,062	3.1%	11,997,283	71.6%
1988	8,789,843	2.3%	12,306,395	71.4%
1989	9,006,249	2.5%	12,637,715	71.3%
1990	9,231,405	2.5%	12,937,926	71.4%
1991	9,692,974	5.0%	13,289,497	72.9%
1992	10,537,677	8.7%	13,504,775	78.0%
1993	10,762,041	2.1%	13,713,593	78.5%
1994	11,005,438	2.3%	13,961,798	78.8%
1995	11,024,064	0.2%	14,185,403	77.7%
1996	11,399,593	3.4%	14,426,911	79.0%
1997	11,749,244	3.1%	14,683,350	80.0%
1998	12,026,947	2.4%	14,908,230	80.7%
1999	12,400,841	3.1%	15,111,244	82.1%
2000	12,853,428	3.6%	15,982,378	80.4%
2001	12,743,403	-0.9%	16,396,515	77.7%

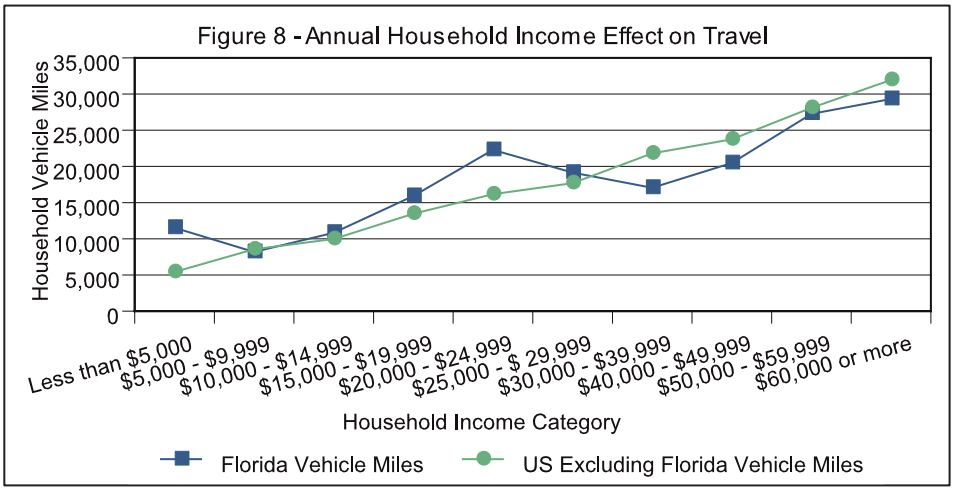
Source: Federal Highway Administration, Highway Statistics Series

Figure 7 presents the significant increase in household trips as income rises. This 2001 NHTS data compares Florida conditions with national conditions. Florida has higher annual trips than the U.S. for households with an income of less than $5,000 and $15,000-$24,999, but lower trips for incomes of $40,000-$59,999.



Source: NHTS, 2001

Figure 8 shows household vehicle miles as a function of household income. It reveals the significance of the relationship between income and vehicle travel. Households with the means to travel clearly choose to spend resources on vehicle travel. Attaining the goal of having higher household incomes and lower poverty levels is accompanied by increased demand for vehicle travel. Florida data indicates that travel demand increases until the middle-income levels, a decline is then observed for the income levels of $25,000-$24,999 and $25,000-$39,999, and then demand picks up after household income exceeds approximately the $50,000 level. Numerous researchers have predicted saturation of household travel demand at certain levels of income and vehicle availability. While that issue will be revisited with the new NHTS data, analysts have been surprised with the strength of the continuing growth in travel demand.



Source: NHTS, 2001

Beyond understanding total travel demand, it is useful to reflect on other aspects of overall travel behavior. One of the areas of key interest has been work travel. Work travel is a large share of total travel, occurs predominately in the peak periods when capacity is most constrained and influences very large shares of total travel as numerous other trips are linked with work trips or planned around work travel schedules. Table 8 shows an allocation of travel by trip purpose for Florida and the rest of the nation. Given the share of retirees, it is not surprising that Florida has a lower share of work trips than the remainder of the country where work trips remain the most common trip purpose. Work trips are typically longer than trips for most other purposes so when considering shares by vehicle miles of travel, work trips have a somewhat higher share. While not shown in Table 8, the share of travel for work trips has declined over the past several years as growing mobility has enabled increased numbers of non-work trips via vehicles. Shopping, family/personal and social/recreational trips are among the categories that have seen significant growth in share.

Table 8 - Summary of Annual Household Vehicle Travel by Trip Purpose

Trip Purpose	Florida			US Excluding Florida		
	Vehicle Trips Percent	VMT Percent	Trip Length (miles)	Vehicle Trips Percent	VMT Percent	Trip Length (miles)
To/From Work	20.9%	23.2%	10.45	22.0%	27.6%	12.30
Shopping	22.1%	12.8%	5.46	20.9%	14.2%	6.69
Family/ Personal	26.0%	21.8%	7.87	25.4%	19.1%	7.40
Church/ School	4.7%	3.8%	7.64	4.9%	3.7%	7.49
Social/ Recreational	12.8%	12.8%	9.41	13.7%	13.1%	9.40
Other	13.4%	25.5%	17.89	13.1%	22.2%	16.63
All Purposes	100.0%	100.0%	9.41	100.0%	100.0%	9.82

Source: NHTS, 2001

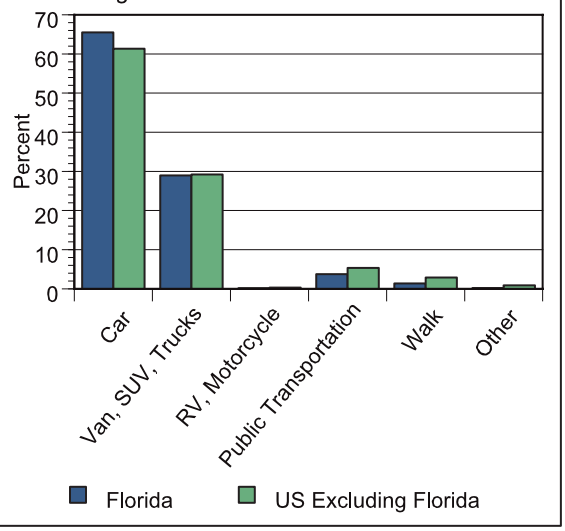
Roadway travel demand is also influenced by the mode choice of travelers. Figure 9 and Table 9 provide Florida and national mode choice data for work trips.

Table 9 - Distribution of Workers by Usual Mode to Work

	Florida	US Excluding Florida
Car	65.50	61.35
Van, SUV, Trucks	28.97	29.23
RV, Motorcycle	0.16	0.32
Public Transportation	3.76	5.33
Walk	1.40	2.88
Other	0.20	0.88
All Purposes	100%	100%

Source: NHTS, 2001

Figure 9 - Mode for Travel to Work



Source: NHTS, 2001

Table 9 reveals the strong dominance of personal vehicle based work travel. Florida is more auto oriented than the remainder of the country. Table 10 shows that most vehicle based travel occurs with low vehicle occupancies. In Florida, vehicle occupancies are generally slightly above national averages due to higher occupancies for family and personal travel, a dominant trip purpose that more than offsets higher national occupancies for shopping, school, and social/recreational travel. Figure 10 details vehicle occupancies for Florida and the remainder of the country.

Table 10 - Average Vehicle Occupancy by Trip Purpose and Vehicle Type

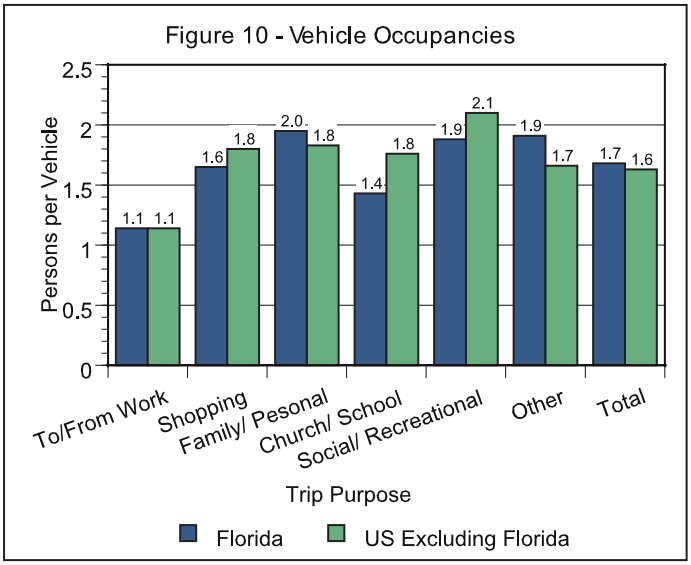
Florida	To/From Work	Shopping	Family/ Personal	Church/ School	Social/ Recreational	Other	Total
Car	1.10	1.65	1.98	1.38	1.84	1.67	1.62
Van, SUV, Trucks	1.20	1.64	1.89	1.62	1.98	2.11	1.77
RV, Motorcycle	1.00	1.00	1.23	1.00	1.78	1.01	1.37
Total	1.14	1.65	1.95	1.43	1.88	1.91	1.68
US Excluding Florida							
Car	1.11	1.70	1.78	1.57	2.00	1.62	1.57
Van, SUV, Trucks	1.17	1.95	1.89	2.14	2.26	1.71	1.71
RV, Motorcycle	1.00	1.05	1.96	1.38	1.14	1.50	1.26
Total	1.14	1.80	1.83	1.76	2.10	1.66	1.63

Source: NHTS, 2001

Trend data indicates that occupancies that have been declining for years appear to have stabilized since the mid 1990's. This is partially attributable to stabilization of the average household size and the fact that occupancies are currently quite low; leaving little room for further declines. The fact that modest shares of travelers use modes other than personal vehicles and that occupancies are currently at low levels limits the impact that could results from continued shifts to single occupant vehicle (SOV) travel. The share of persons in these categories that could shift to SOV is far lower than in prior decades.

Floridians, like the remainder of the country, are highly reliant on the personal vehicle with very modest use of other travel means and low vehicle occupancies.

Figure 10 - Vehicle Occupancies



Source: NHTS, 2001

Table 11 summarizes travel behavior by person age. Not surprisingly, people are most active in their working years where they often have both employment and household serving travel needs. The lower level of travel demand for youth and seniors are explained by lack of travel options for youth and lessened need and ability to travel for the elderly. Both of these market segments have shown increasing mobility. The elderly in particular have shown significant increases in travel levels over the past several decades. This is partially attributable to better health and longer life and partially attributable to the fact that the current generation reaching retirement is one where license holding and vehicle owning habits are entrenched – unlike prior generations where it was common for women not to have licenses. The largest impact from women entering the work force and having drivers licenses has played itself out so that the change in travel demand from these cultural changes appears to be almost fully reflected in current travel behavior. Future demand growth can be expected with further improvements in the health and economic circumstances of the older population. The same is true if economic conditions enable increased auto availability for young people and low-income persons who are economically constrained from auto ownership.

Table 11 - Summary of Daily Vehicle Travel by Age

Age	Florida			US Excluding Florida		
	Daily Vehicle Trips	Daily Vehicle Miles	Average Vehicle Trip Length (miles)	Daily Vehicle Trips	Daily Vehicle Miles	Average Vehicle Trip Length (miles)
Under 16 years	0.03	0.18	6.16	0.02	0.11	6.53
16-19 years	1.87	14.37	7.70	2.05	15.23	7.43
20-29 years	3.32	34.18	10.30	2.87	30.24	10.52
30-39 years	3.27	32.29	9.86	3.38	34.76	10.27
40-59 years	3.50	32.35	9.24	3.45	34.79	10.09
60-64 years	3.10	27.61	8.92	3.01	29.60	9.84
65+ years	2.18	18.11	8.29	2.28	16.79	7.36
Total	2.43	22.59	9.31	2.32	22.56	9.74

Source: NHTS, 2001

The demand for travel is also influenced by the performance of the transportation system. In addition to income levels and auto availability, the time demands of travel influence the overall level of demand. Historically, Americans have had a relatively stable travel time budget allocating approximately 45 minutes per day for commuting to and from work and spending approximately 70 minutes per day per person in total travel. Over the past several decades average travel speeds have increased due to a number of factors. These include increased mileage of high-speed interstate/freeway roads, improved performance of arterial

Floridians, like other Americans, have their greatest travel demands in their peak parenting and working years, 20 to 60 years of age.

systems, movement to more distant suburbs with less crowded and higher speed roads, shifts from slower travel modes such as transit, walk and shared ride, and shifts in travel times to avoid the peak periods for a larger share of total travel. These changes have enabled travel speeds to continue to increase until the past decade. The newest Census and NHTS data indicated that travel speeds are now starting to decline at an accelerating rate.

Table 12 gives Census Commute to Work times. These times have increased an unprecedented amount between 1990 and 2000. While additional, more detailed data need to be released before the time increases can be allocated between slower speeds and longer trip distances, preliminary evidence from other sources such as NHTS indicates that commute travel speeds are declining.

Floridians' demand for travel may be dampened as slowing speeds result in a lessened inclination to increase vehicle miles of travel.

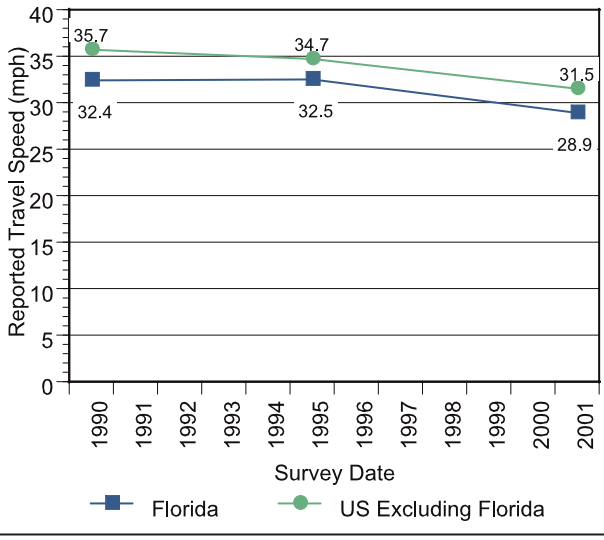
Figure 11 shows travel speed changes during the 1990's based on NHTS data. As this set of data indicates, the pace of declining speeds in Florida has accelerated in the past 6-year period and the decline in speeds in Florida is outpacing the national speed declines. These changes in speed place pressure on increasing vehicle travel levels, as a value of time for travelers that also comes into play in determining total travel demand levels. Thus, slowing travel speeds may be a dampening factor on the growth of travel demand in the future.

Table 12 - Commute Time Comparisons

Mean Commute to Work Time (minutes)	1990	2000	Change (minutes)
California	24.6	27.7	3.1
Georgia	22.7	27.7	5.0
Texas	22.2	25.4	3.2
Illinois	25.1	28.0	2.9
North Carolina	19.8	24.0	4.2
Wisconsin	18.3	20.8	2.5
Arizona	21.6	24.9	3.3
New York	28.6	31.7	3.1
South Carolina	20.5	24.3	3.8
Florida	21.8	26.2	4.4
U.S. Total	22.4	25.5	3.1

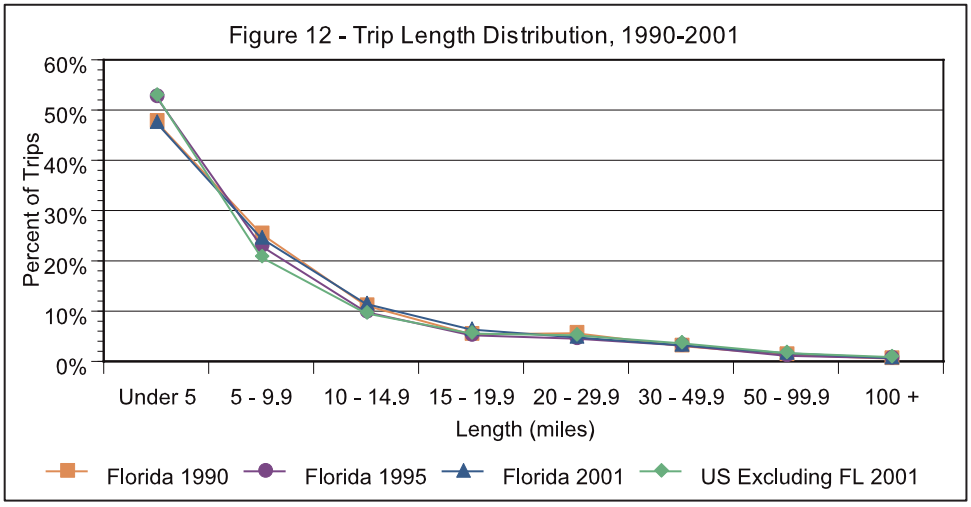
Source: NHTS, 2001

Figure 11 - Travel Speed Changes



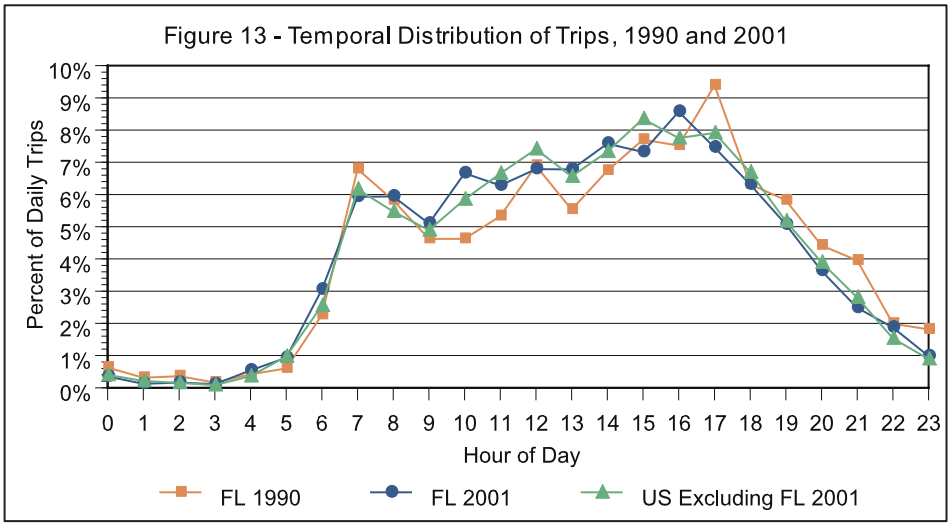
Source: NHTS, 2001

Figure 12 presents the trip length distribution for travelers in Florida and the rest of the nation. Florida tends to have fewer trips under five miles and more trips in the 5-15 mile range than the U.S. Perhaps this is due to the relatively low density of development in Florida urban areas. The share of trips longer than 20 miles mirrors the national trend.



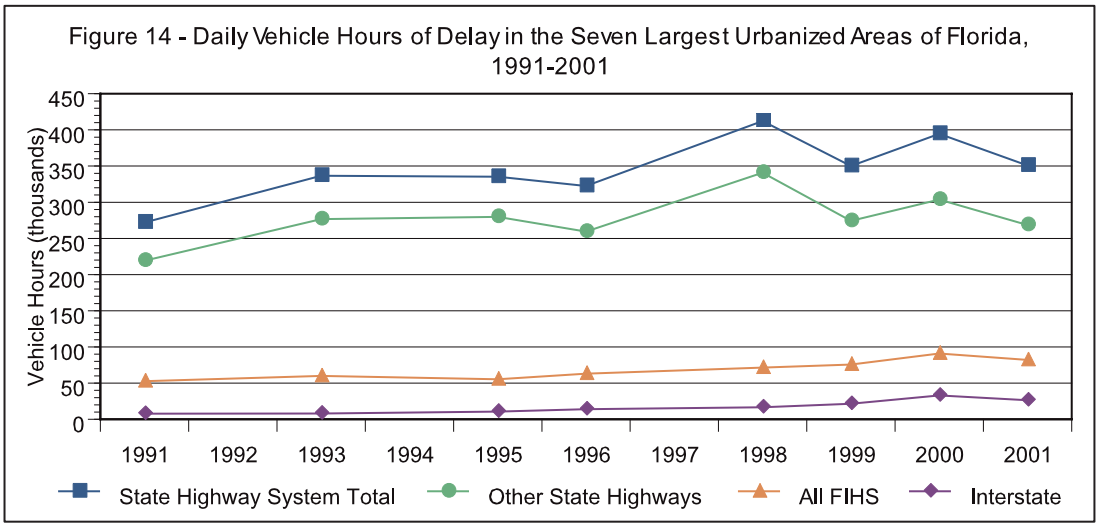
Source: NHTS, 2001

The temporal distribution of trips in Florida has changed over the past decade. As depicted in Figure 13, the percentage of trips beginning in the peak a.m. and p.m. periods has decreased, while the percentage of midday trips has increased. The distribution of daily trips for the rest of the nation has also experienced similar changes since 1990.



Source: NPTS, 1990 and NHTS, 2001

Figure 14 shows transportation system performance in Florida's urban area as expressed by a measure of travel delay. This data shows growing delay levels through 2001, with a decline in 2001.



Source: Florida Department of Transportation. 2002 Florida Highway Data Source Book.

Conclusion

Assessing all the data collectively there are some evolving trends that will no doubt influence future travel demand and behavior. Many of the pressures for increasing travel demand are dampening due to demographic and economic trends. The role of economic constraints in dampening travel demand appear to have lessened with auto availability and household licensure status becoming stabilized at high levels. Trends, such as women entering the work force and possessing licenses, growing auto availability and the aging of the baby boomers, have been major factors in growing travel demand in the past few decades. Looking forward, there is no evidence of new cultural or demographic conditions that will produce the growth in travel demand at the same rate as in the past few decades. Similarly, shifts from transit, walk and shared ride appear to have played themselves out and are no longer likely to be factors increasing vehicle travel demand. The biggest risk factor in growing travel demand appears to be the prospect that continued or accelerated outward suburban and exurban growth will increase trip lengths and travel demand. Also, strong economic conditions could result in an accelerated immigration based population growth.

Many of the pressures for increasing travel demand are dampening due to demographic and economic trends; therefore, slower growth of VMT may result.

The bad news appears to be the fact that the existing transportation system is operating at capacity in several metropolitan areas and is thus extremely sensitive to incremental increases in demand. Just as individual roads have rapidly deteriorating performance as volumes pass the optimal capacity point, so too, many links of the roadway system appear to be more likely to show serious performance deterioration in the form of worsening congestion even with more minor increases in vehicle travel demand. Many travelers have exhausted available options: in parts of several urban areas there is less opportunity to shift travel in time or space to less congested facilities. The shoulders of the peak periods are more often already crowded and the alternative roadway paths congested; thus, the consequences of even modest increases in demand may be more severe than in the past.

The consequences of even modest increases in demand may be more severe than in the past.

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Trends and Conditions Report - 2003

TRAVEL DEMAND:
Trade and Freight Transportation
August 2003

This “Trends and Conditions” report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Tables and Figures

Travel Demand: Trade and Freight Transportation

Introduction

In addition to person travel for daily activities and tourist and visitor travel, the third largest source of travel demand for the transportation system is the shipment of materials and products to meet the needs of individuals and businesses. Freight travel demand has been a growing source of demand for transportation infrastructure and has and is expected to increase at rates faster than those expected for person travel. Airports, seaports, rail and highway systems are used to transport freight in Florida. The Florida peninsula is precluded from being traversed to meet the surface travel demand for adjacent states. However, in an international context Florida provides a gateway to the Caribbean and Central and South America. In addition, as the fourth largest state that has one of the fastest growing populations and as a global tourist destination, Florida is a major generator of freight demand to serve the local and visitor population. Florida also produces numerous items from phosphates to citrus to tropical fish that are shipped internationally.

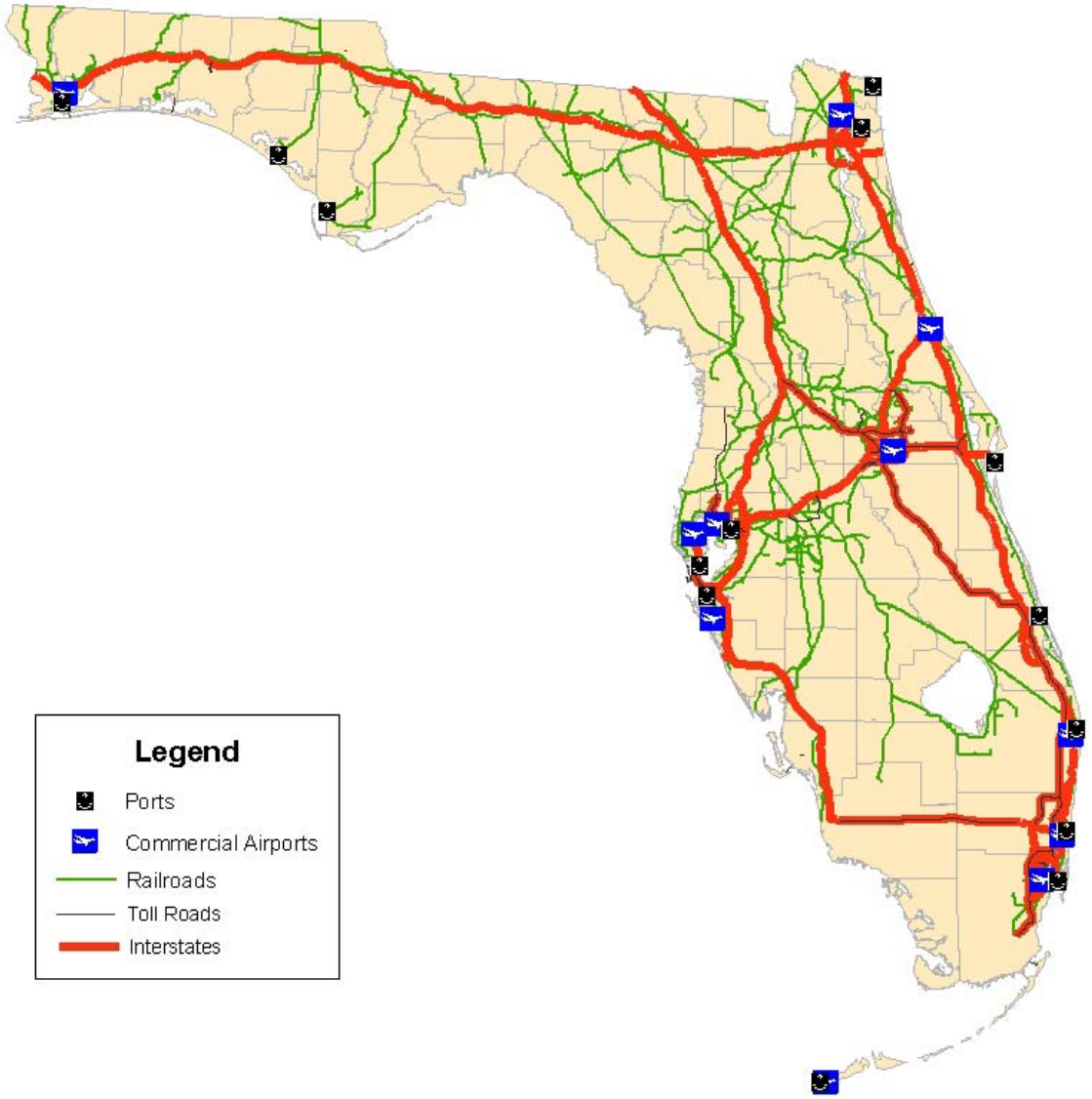
There is a growing recognition of the importance of freight travel as a major component of transportation demand.

Over the past decade, there has been a growing recognition of the importance of freight and business travel as a major component of transportation demand. As the transportation system has become more crowded, there is a growing recognition that the transportation system performance has increasing impacts on business health. There is also a growing share of freight traffic on the surface transportation system and air travel system that also serves person travel. This has motivated a growing effort to develop a richer understanding of freight travel demands. The role of the private sector in providing freight travel and the proprietary nature of some data, as well as the public interest in freight travel, has resulted in a limited, but rapidly growing body of information on freight travel. In addition to the shorter history of knowledge on freight travel demand, there is evidence that the factors influencing freight demand may be more dynamic than those that have governed person movement. For example, the relative recent shift to just in time manufacturing, the shifts from rail to truck travel, and the recent impacts of transportation security, result in a very dynamic situation regarding freight travel demand.

Freight Transportation for all Modes

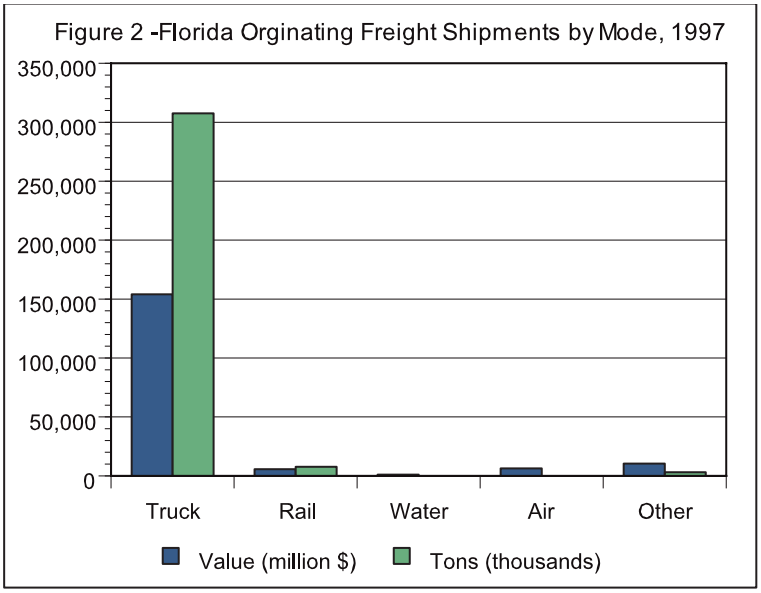
The major transportation facilities throughout Florida are displayed in Figure 1. In June of 1998, the Florida Freight Stakeholders Task Force was formed to address the needs of Florida's intermodal freight transportation system. One of the purposes of the task force is to establish the Florida Strategic Freight Network as part of the 2020 Florida Statewide Intermodal Systems Plan.

Figure 1 – Florida Major Transportation Facilities, 2002



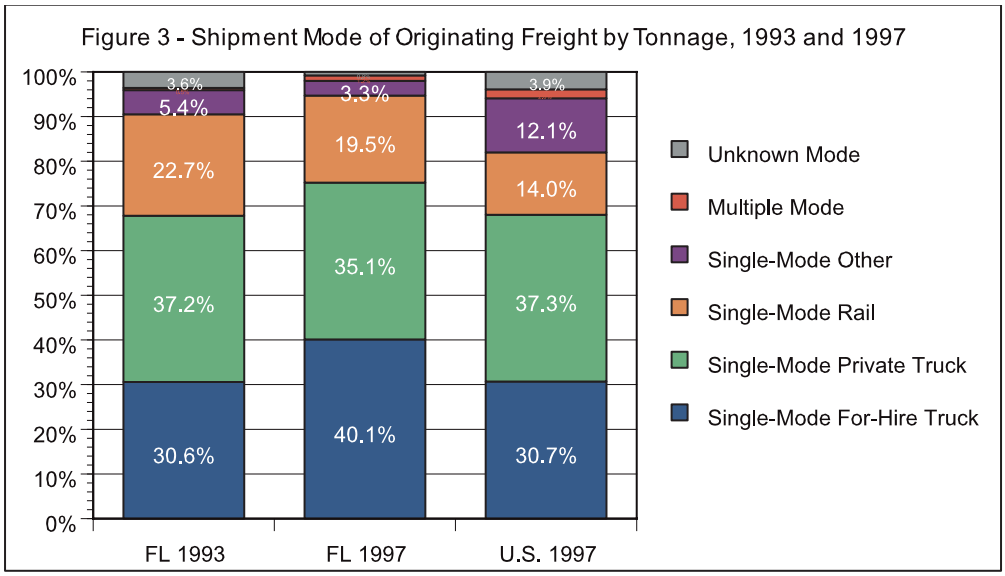
Source: Florida Department of Transportation

Figure 2 presents the value and tonnage of freight shipments by mode. In 1997, trucks handled 77.4% of the freight tonnage and 71.8% of the total freight value. Compared to the 1993 values, truck share of freight tonnage increase by 9.6% while the share of freight value decreased by 5.8%.



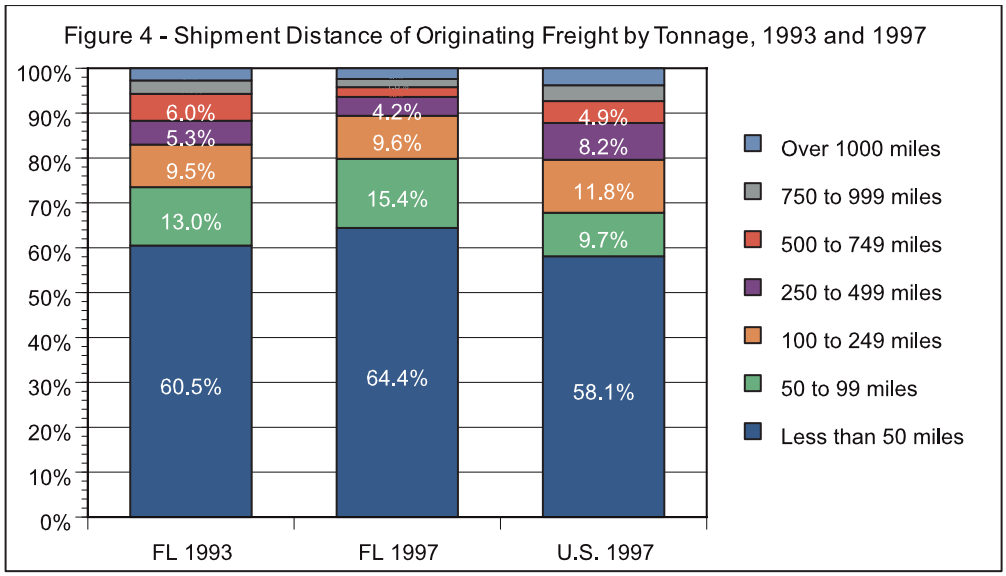
Source: U.S. Census Bureau, Economic Census, 1997 Commodity Flow Survey
Note: The tonnage for water and air freight did not meet publication standards of the Commodity Flow Survey.

Figure 3, Figure 4 and Figure 5 show the characteristics of freight shipments originating in Florida by tonnage. A shipment is defined, in the 1997 Commodity Flow Survey, as an individual movement of commodities from an establishment to a customer or another location of the originating company. Figure 3 compares the shipment mode of Florida for 1993 and 1997 to the United States shipment mode distribution in 1997. Florida has a higher share of freight transported by truck and rail as compared with the United States and has had a meaningful increase in “For-Hire Truck “ use in the four year period for which data are available.



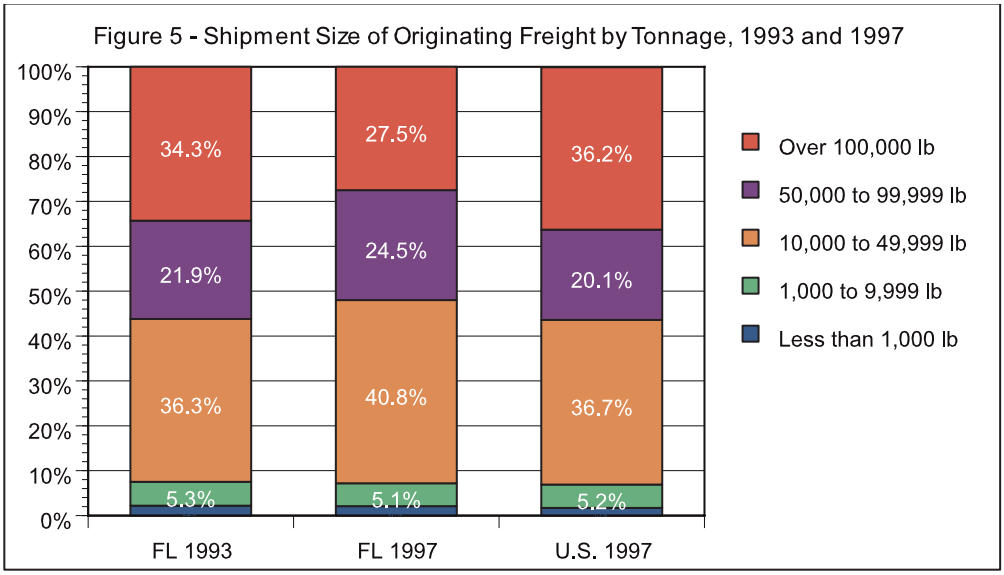
Source: U.S. Census Bureau, Economic Census, 1993 and 1997 Commodity Flow Survey

Figure 4 exhibits the percentage of freight shipments by length. Most freight shipments are less than 100 miles, which is why the truck mode transports the largest share of freight. In 1997, Florida had a higher share of shipments less than 50 miles and from 50 to 100 miles as compared with the United States.



Source: U.S. Census Bureau, Economic Census, 1993 and 1997 Commodity Flow Survey

The distribution of shipment size of freight originating in Florida is available in Figure 5. In 1997, 93% of freight shipments originating in Florida were over 10,000 lbs, but these accounted for only 40% of the total value. This is due to the type of major commodities originating in Florida, including gravel and crushed stone, fertilizers, nonmetallic mineral products and natural sands.



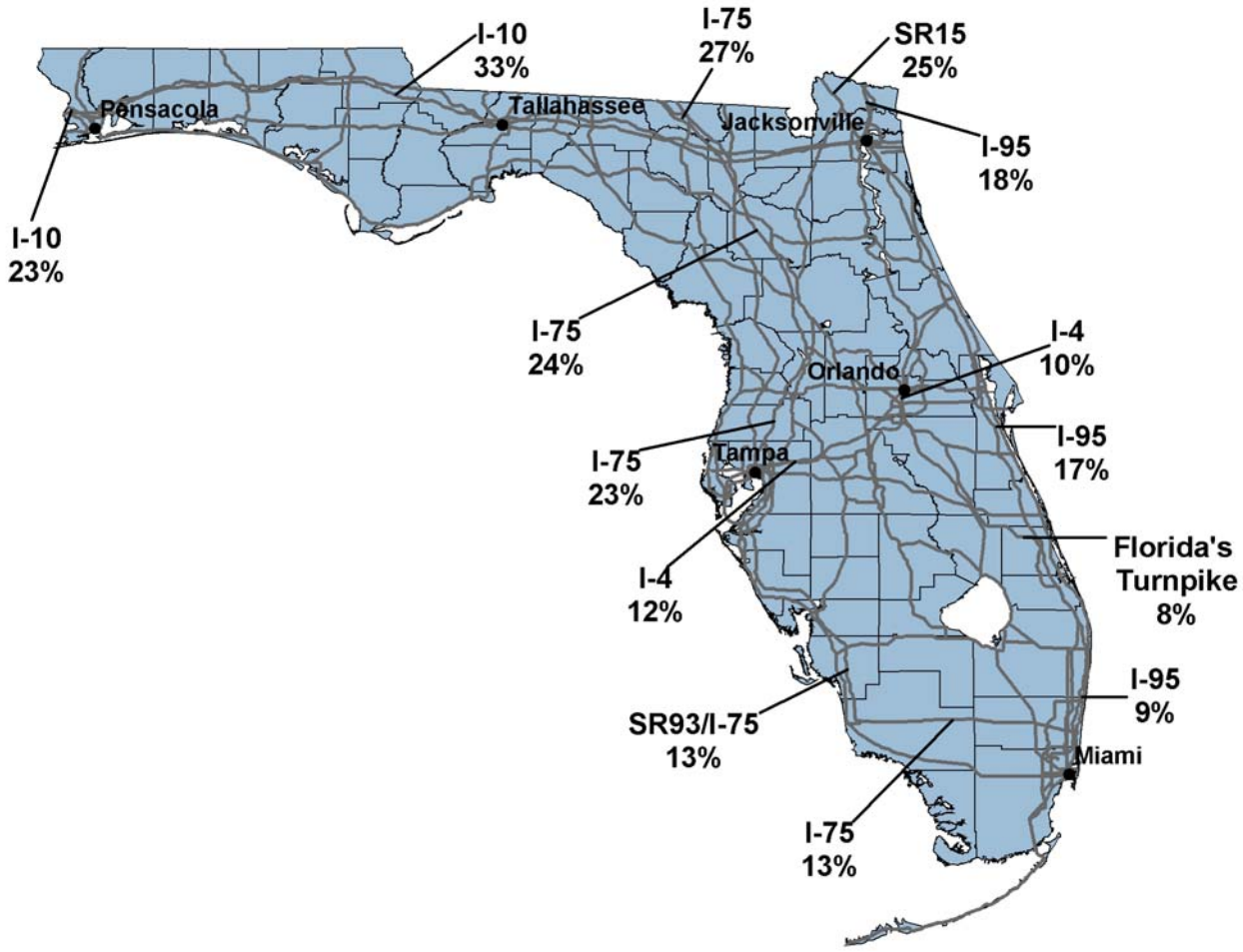
Source: U.S. Census Bureau, Economic Census, 1993 and 1997 Commodity Flow Survey

Surface Trade: Truck and Rail

The high percentage of freight transported by trucks speaks to the significance of the roadway network for handling freight traffic. The shift of the economy to services and high value consumer goods, the change to just-in-time inventory systems, the dispersion of population and the expansion of services, such as overnight delivery, have accentuated the growth of roadway based truck freight transportation.

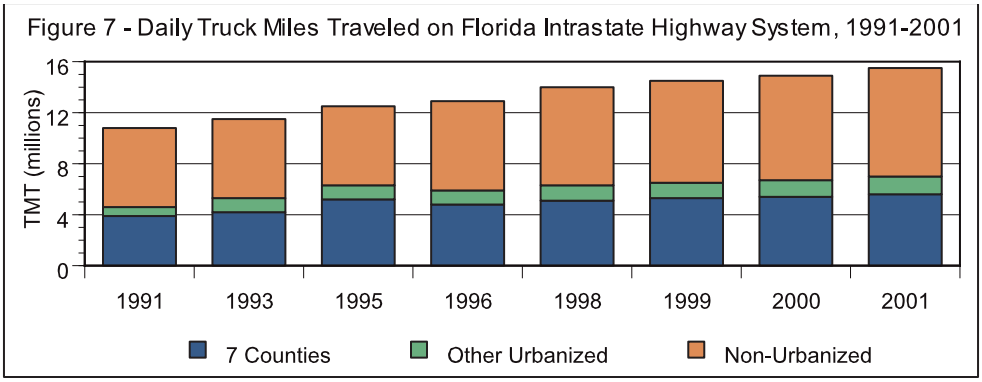
Figure 6 shows the share of average daily traffic attributed to trucks at various locations around the state. The share ranges from less then 10% to over 30% of daily traffic. The shares are typically greater in the northern part of Florida on the Interstate system.

Figure 6 – Share of Average Daily Travel Attributed to Truck Traffic

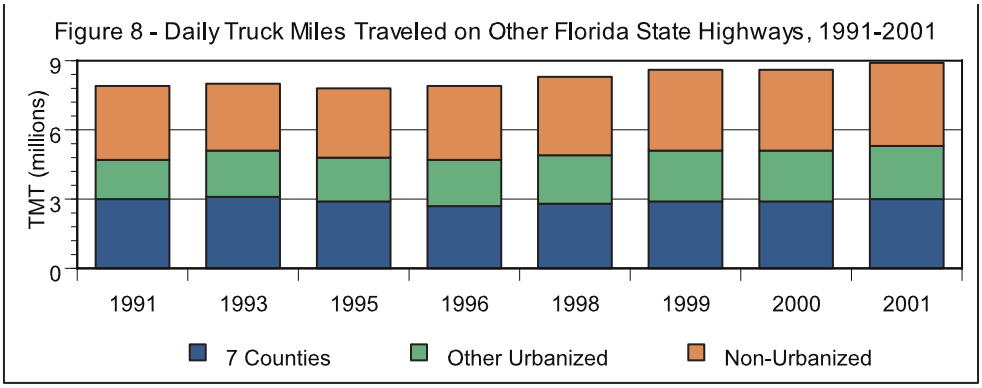


Source: Florida Department of Transportation, Florida Traffic Count Information, 2002

Two surrogate measures of freight movement by trucks are truck miles traveled and truck registrations. Figures 7, 8 and 9 illustrate the trends in these data for Florida. Since 1991, the daily truck miles traveled on all state highways have increased. Growth of truck travel on urbanized highways and turnpike facilities has shown the highest rate of increase. In 2001, trucks accounted for 9.4% of all vehicle miles traveled on Florida's State Highway System. This is an increase of 0.2% of the share from 2000. Peak hour truck travel has also been increasing on the State Highway System. Approximately 7.6% of daily truck miles traveled occurred during the peak hour, from 5:00 to 6:00 PM, in 2001.

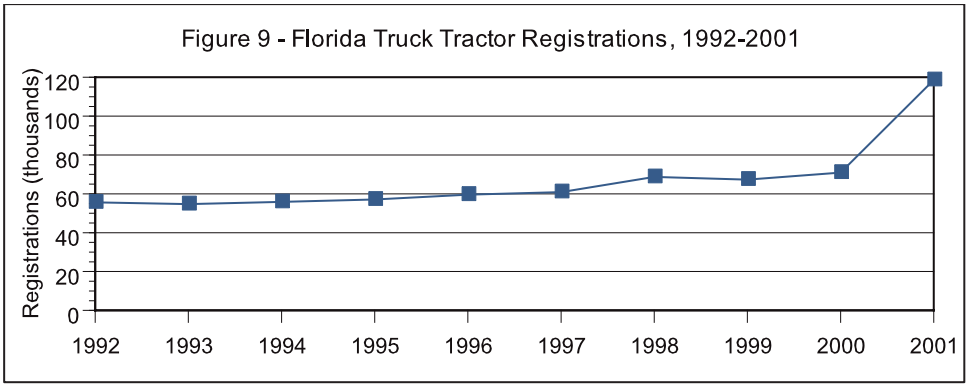


Source: Florida DOT, 2002 Florida Highway Data Source Book



Source: Florida DOT, 2002 Florida Highway Data Source Book

The number of truck tractor registrations in Florida has been steadily increasing since the early 90's as shown in Figure 9.

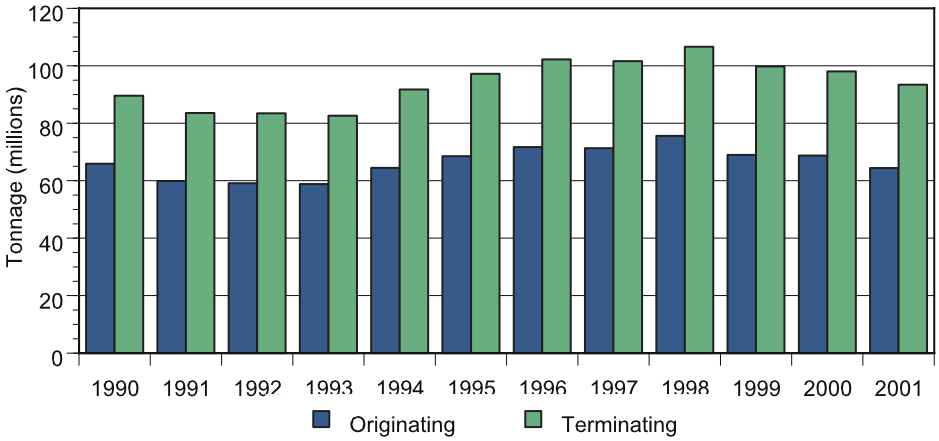


Source: U.S. DOT, Federal Highway Administration, Highway Statistics Series, Motor Vehicles

Note: Truck Tractor registrations for 2001 vary substantially from prior years because of new information and changes in estimating procedures.

Rail is the other surface mode used to transport freight. Figure 10 presents the tonnage of rail freight both originating and terminating in Florida. In recent years, the overall tonnage handled by rail has been decreasing.

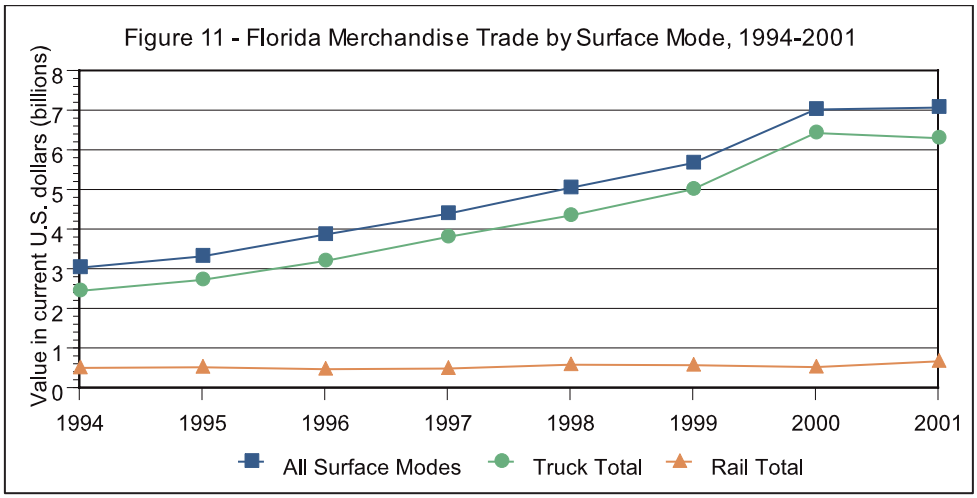
Figure 10 - Florida Rail Freight Traffic, 1990-2001



Source: Florida DOT, 2002 Florida Rail System Plan

The trend in the value of freight by surface mode is presented in Figure 10. As indicated above, trucks transport the greatest percentage of freight in Florida. The total value of freight has been increasing since 1994, but in recent years has leveled off. This no doubt reflects both local and international economic conditions, as well as the slight increase in the role of rail freight activity.

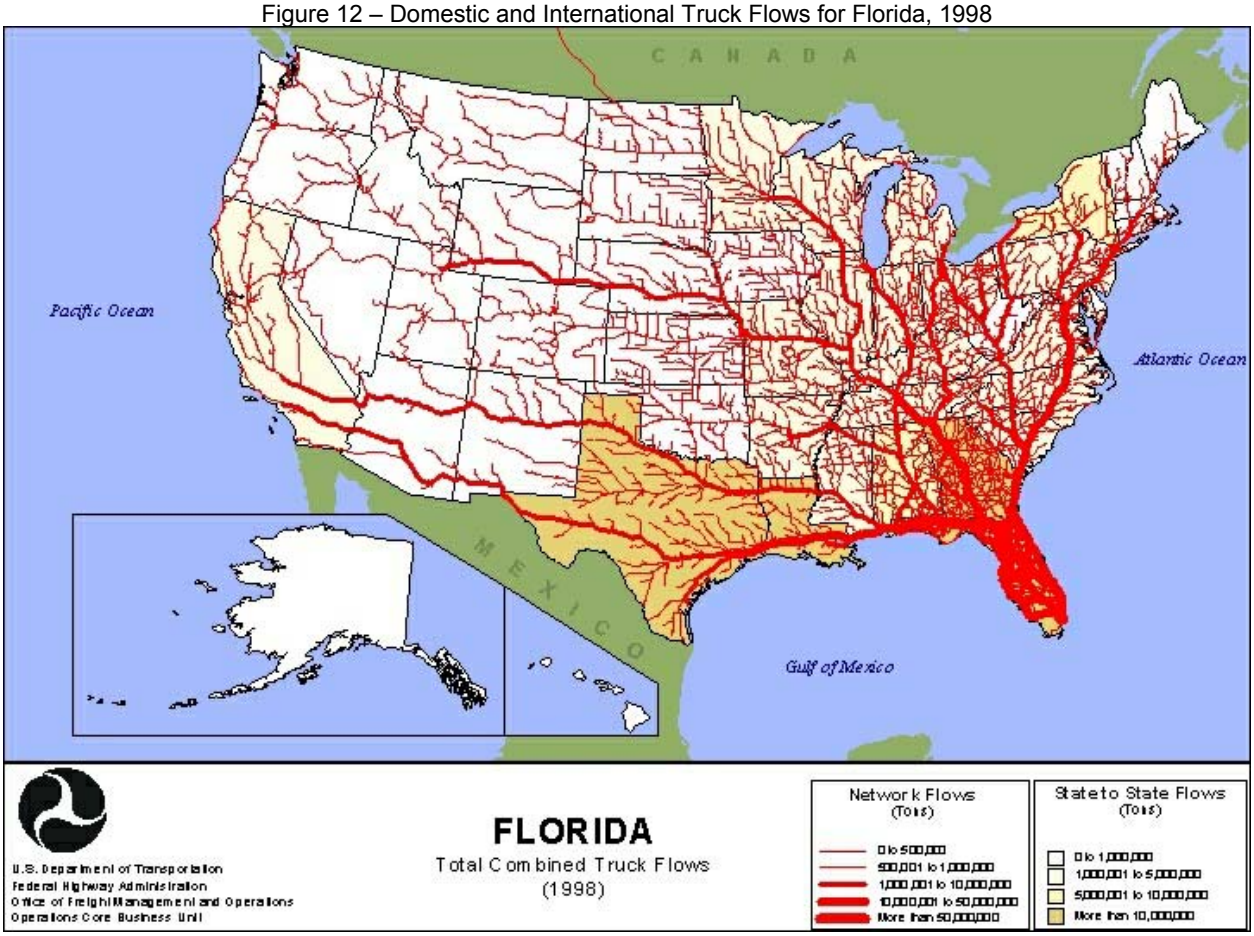
Figure 11 - Florida Merchandise Trade by Surface Mode, 1994-2001



Source: Bureau of Transportation Statistics, Transborder Surface Freight Data, Annual Summaries 1994-2001

Figures 12 and 13 visually portray the flow volumes of freight on roadways and rail respectively.

Figure 12 – Domestic and International Truck Flows for Florida, 1998



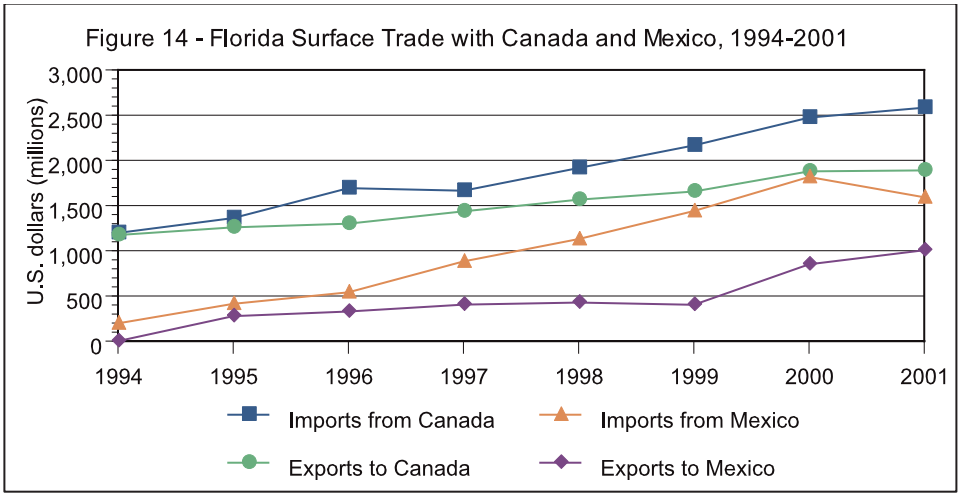
Source: U.S. DOT, Federal Highway Administration, http://ops.fhwa.dot.gov/freight/state_maps/florida_index.htm

Florida's economic interdependence with the rest of the country is shown by truck flow volumes that reveal linkages with all contiguous states.

Figure 13 – Rail Freight Tonnage Flows for Florida, 1999

Source: U.S. DOT, Federal Highway Administration, http://ops.fhwa.dot.gov/freight/state_maps/florida_index.htm

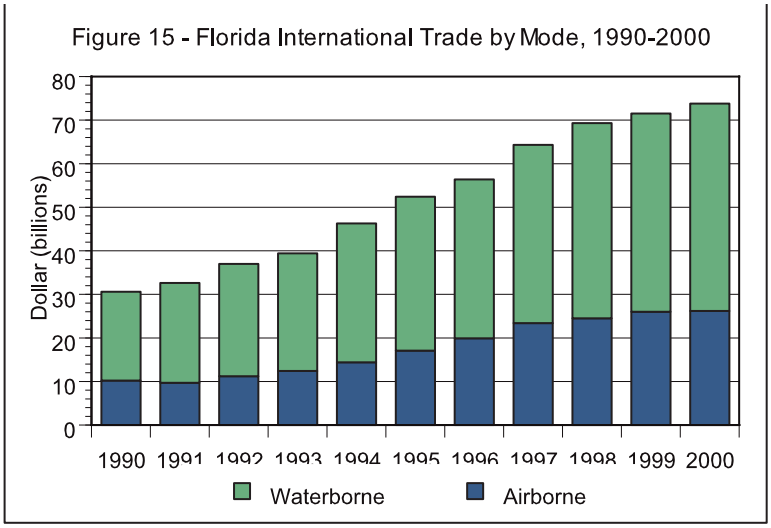
Figure 14 is the trend of Florida surface trade with Canada and Mexico. The values of imports and exports with Canada and Mexico have been increasing steadily over the past decade. International trade by air and water modes has also been increasing over the past decade.



Source: Bureau of Transportation Statistics, Transborder Surface Freight Data, Annual Summaries 1994-2001

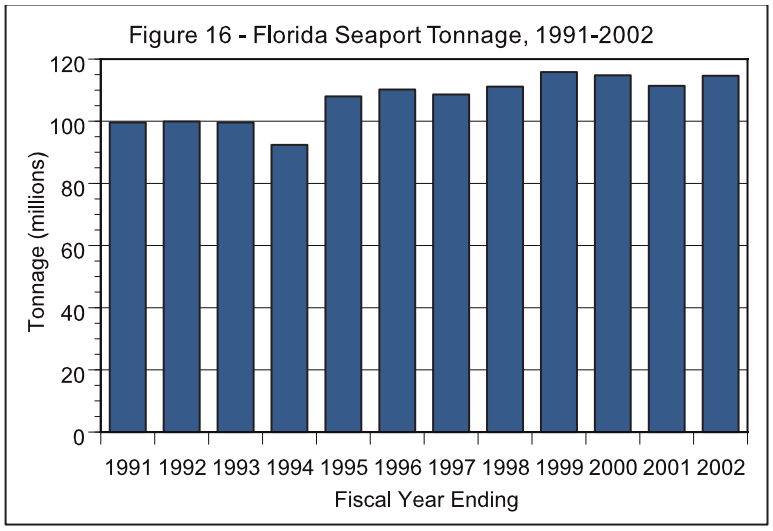
Freight Transport: Air and Water

Figure 15 demonstrates the value of trade by air and water modes from 1990 through 2000. The value of freight transported by water through Florida's ports and waterways is approximately twice that of the airfreight.



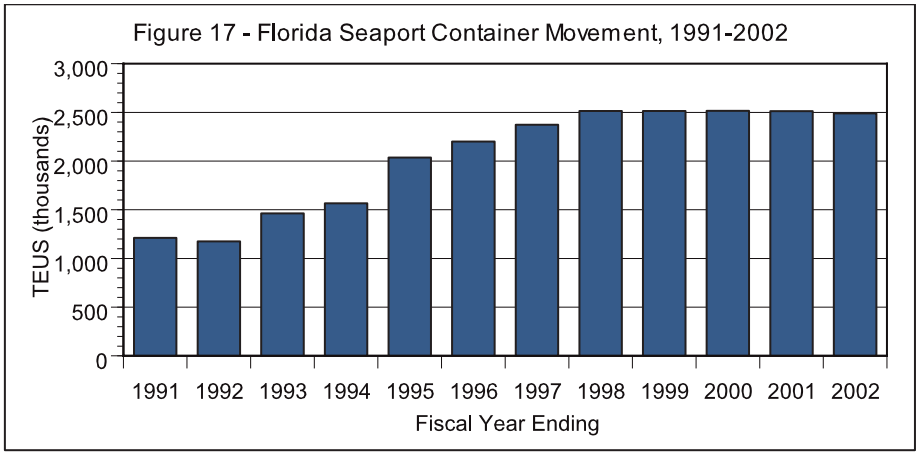
Source: Florida Ports Council; Original Source: U.S. Census Bureau

The trend of tonnage handled at Florida's seaports from 1991 through 2002 is shown in Figure 16. In recent years, the tonnage has remained relatively stable with a slight drop in 2001.



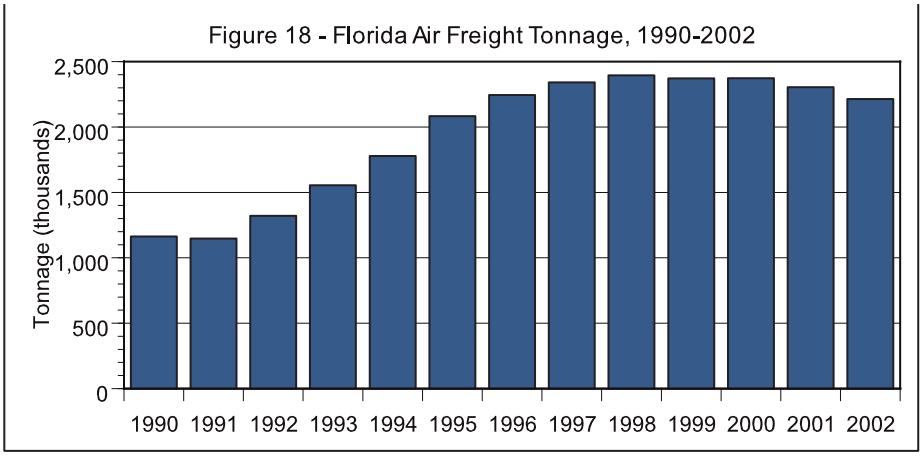
Source: Florida Seaports Transportation and Economic Development Council

Likewise, Figure 17 displays the trend of container movements at Florida's seaports has remained relatively constant over the past five years.



Source: Florida Seaport Transportation and Economic Development Council
Note: Twent-foot equivalent unit (TEU) is a unit of measure that is equivalent to a twenty foot shipping container.

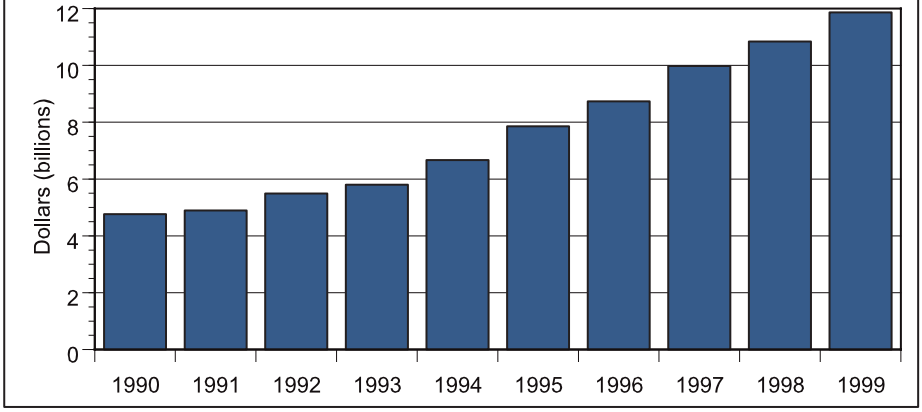
Figure 18 provides the trend of airfreight tonnage from 1990 through 2002. In the early 1990's, the air tonnage was increasing, but since 2000 the tonnage has been decreasing. This could be a result of changes in the air industry or slowing economy.



Source: Florida DOT, Florida Air Cargo Statewide System, 2002

The value of air exports has been increasing steadily through the past decade. This is exhibited in Figure 19. Air travel is used for the higher value, more fragile or more time sensitive commodities, such as mail and sophisticated manufactured items. The volume of many of these commodities will be related to the population and business activities in the state and the economic condition.

Figure 19 - Florida Value of Air Exports, 1990-1999



Source: Florida DOT, Florida Air Cargo Statewide System, 1999

Future of Freight

Table 1 shows recent and forecast freight flows to, from and within Florida. This table verifies the dramatic forecasted increases in volumes and shows the continued dominance of the roadway network as the primary mode of freight movement.

Table1 – Freight Shipments To, From and Within Florida

	Tons (millions)			Value (billions $)		
	1998	2010	2020	1998	2010	2020
Highway	562	834	1,052	395	795	1,319
Rail	143	193	235	42	73	114
Water	73	96	107	9	19	28
Air	2	4	6	120	269	492
Other	6	14	22	<1	3	7
Total	787	1,141	1,422	567	1,159	1,960

Source: FHWA, Office of Freight Management and Operations, Florida Freight Transportation Profile, 2002.

The projected increase of freight shipments by highway is a critical factor for the future of roadway system performance and physical condition. According to projections by the FHWA, total vehicle miles of travel is expected to increase 2.08% annually. This would result in an increase in total vehicle travel of approximately 42% by 2020. On the national level, heavy truck travel is expected to increase by 49% in the same time period according to The Roadway Information Program's analysis of FHWA data.

Conclusion

The past few decades have seen significant shifts in the nature of the economy. Changes in demographic characteristics and technology have impacted freight volumes. The shift from a manufacturing based economy to a service based economy at the national level has had implications on freight activities, yet overall VMT attributable to freight have increased. Several factors account for this including a consolidation and restructuring of the rail freight business, evolution of just-in-time business inventory strategies and the dispersion of business and population in urbanized areas. In spite of the decline in domestic manufacturing, many commodities such as fuel, building materials and food products will ensure ongoing freight volumes. In addition, the shift to just in time inventories and the dispersion of the employment and population simultaneous with a decline in freight rail mileage have produced a significant volume of small loads of freight to serve the dispersed needs of the public and businesses. Looking ahead, studies predict continued growth in freight volumes as these same factors continue to drive demands.

In light of higher overall travel volumes and more congested facilities, the public has a renewed interest in understanding and accommodating freight activities. Economic competitiveness and safe and efficient travel for both freight and passengers are supported by understanding freight travel demand.

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Trends and Conditions Report – 2003

TRAVEL DEMAND:
Visitors and Tourists
July 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Tables and Figures

Travel Demand: Visitors and Tourists

Introduction

Understanding tourist or visitor travel trends is important in being able to understand and predict future travel demands. Visitor travel has different temporal and geographic distributions than does other resident or freight travel. Visitor travel can also follow a different growth pattern than resident or freight travel, as has been the case over the past few decades in Florida where tourist travel has outpaced the growth in resident travel. Understanding the significance of tourist/visitor travel may be relevant to a variety of policy considerations such as how to fund transportation infrastructure and service investments in an equitable manner. Similarly, knowledge of tourism may have an impact on facility planning, design, and operation. A good understanding of visitor travel has implications on safety, traveler security, signage, and other aspects of how transportation facilities and services are provided.

While tourism has many positive impacts on local economic development, tourism can also result in many negative impacts on the environment of the host areas. Travel by tourists is a contributor to the negative impacts of travel demand including impacts on air pollution from automobile driving by visitors, impacts on congestion levels, involvement in traffic accidents and fatalities and related consequences of transportation activities and facilities.

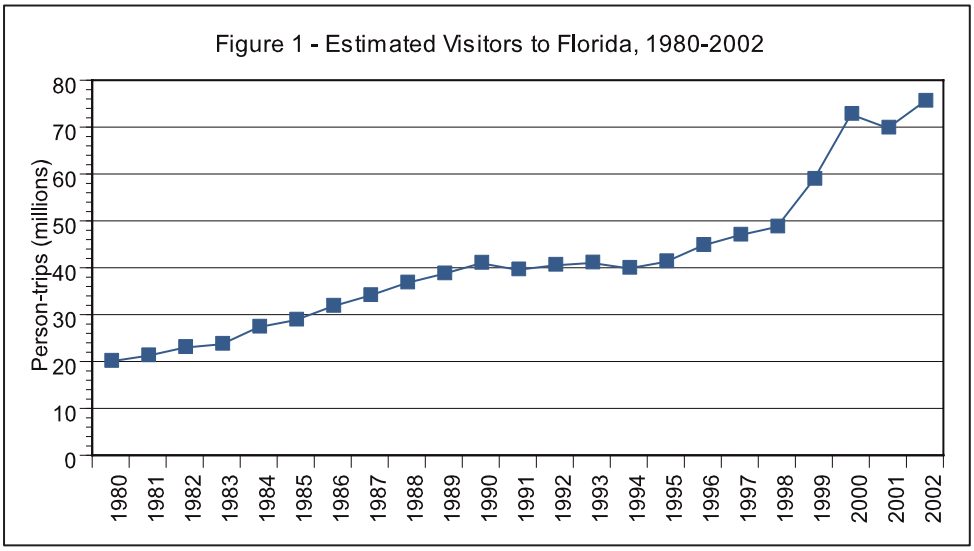
As transportation planners have begun to develop a richer understanding of freight travel in recent years, it is equally appropriate that tourist and visitor travel garner similar attention particularly in Florida where tourist travel comprises a meaningful share of total travel on the transportation system. Data indicate that visitors comprise a higher share of vehicle miles of travel on Florida roadways than do heavy trucks and that tourism travel has grown at a rate approximately 1.5 times that of population. For 1994-1998, heavy trucks accounted from 7.3 percent to 8.2 percent of all vehicle travel on freeways and arterials in Florida (CUTR, 2001a). During this same time period, CUTR estimated that visitors account for about 9.8 to 12.7 percent of all vehicle travel in the state.

In Florida, tourists account for more vehicle miles of travel than do heavy trucks.

The estimated annual number of visits by non-state residents increased from 29.9 million in 1984 to 52.7 million in 1998 in Florida (CUTR, 2001b). This is an increase of about 76 percent during this 15-year period. Such high volume and high growth of visitors are often cited when transportation problems in Florida are the topic. More recently, the post September 11, 2001 era is characterized by far greater uncertainty in tourism levels and some evidence of changes in tourist travel behavior. While initially attributed to the September 11, 2001 terrorist attack, the slowing economy and the unprecedented decline of the equities market coupled with the aging of the baby boom generation and fundamental changes in air travel are collectively influencing the nature of tourist travel. As a critical aspect of both the economy and a direct source of significant travel demand, tourism merits close scrutiny as there may be some fundamental changes in historic patterns taking place.

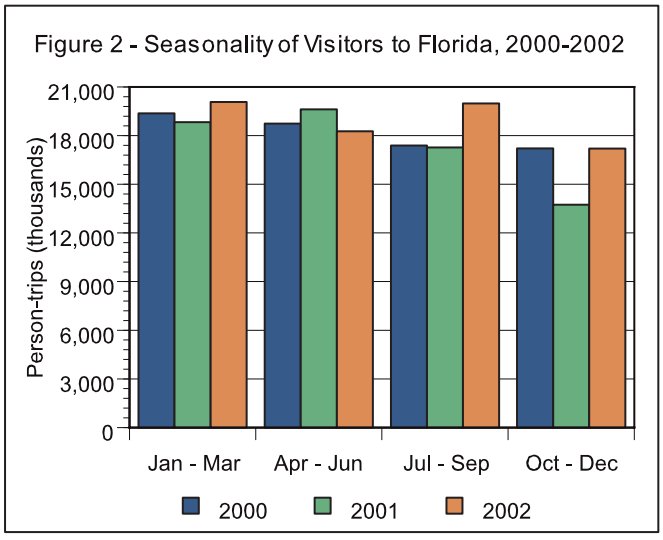
Visitor Estimates and Characteristics

Figure 1 shows the estimates of visitors to Florida (from outside the state) from the Annual Florida Visitor Study carried out to monitor tourism trends. This set of data was redefined in mid-1999 accounting for the dramatic increase of the trend in 1999 and 2000. The 2001 datum indicates the impact of September 11 and the slowing economy. However, there was a resumption of the upward trend in visitors to Florida in 2002.



Source: FLAUSAVisit Florida, Annual Florida Visitor Study (1997-2001) and Visitor Estimates, Profiles and Industry Trend Indicators 2002Q4
Note: New domestic visitor estimation system began in July 1999.

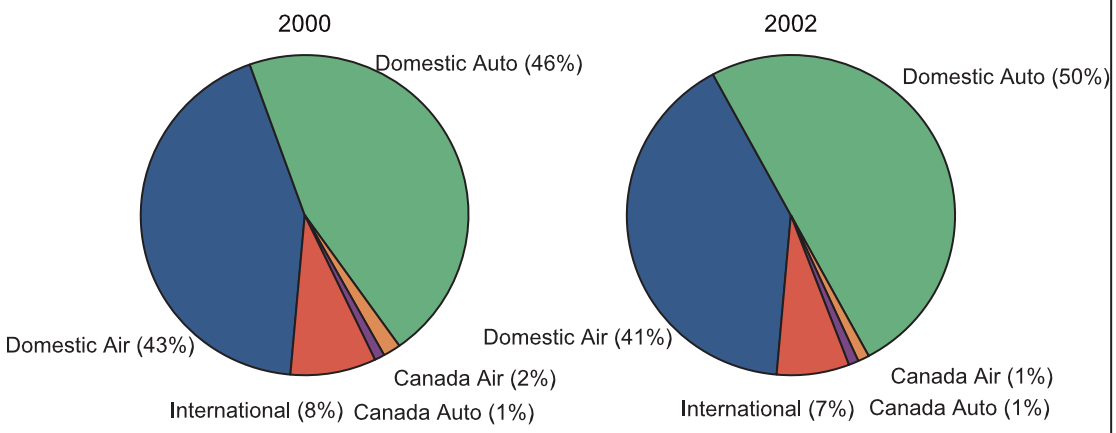
Figure 2 shows in greater detail the impact of the last quarter in calendar year 2001, and the subsequent recovery. This figure also shows that one advantage of the Florida tourism industry; coupled with the Florida climate, is the fact that historically tourist travel has remained relatively evenly distributed throughout the year. This is helpful in that it lessens tourist related peaking and associated congestion and enables more efficient capacity utilization.



Source: FLAUSAVisit Florida, Annual Florida Visitor Study (2000-2001) and Visitor Estimates, Profiles and Industry Trend Indicators 2002Q4

Figure 3 shows the source and means of access for out of state visitors to Florida. The means of arrival has some clear implication in terms of the modal infrastructure (airports versus freeway/toll way system). Domestic travelers account for 90 percent of total out of state tourists. When coupled with Florida resident tourism, it is clear that the vast majority of tourism destined for Florida originates in the United States.

Figure 3 - Percentage of Florida Visitors by Type, 2000 and 2002



Source: FLAUSA Visit Florida, Annual Florida Visitor Study 2000 and Visitor Estimates, Profiles and Industry Trend Indicators 2002Q4

The modal distribution of arrival has shifted in recent periods as a result of the changes in the air travel system. Airport security has increased the time and perceived risk of air travel and altered tourist travel patterns. Tourists are indicating a preference for shorter trips than in prior years making them more amenable to auto travel. Figure 3 shows the mode of arrival for tourists visiting from outside the state. International air travel, domestic air travel and Canadian air travel have each declined in share with domestic auto picking up the market share. It remains to be seen if, over the longer term, air travel costs and security considerations will result in the 2000-2002 change being sustained or if there will be a reversion to prior air travel shares. The fundamental cost restructuring going on in the airline industry may support relatively attractively priced air travel, which could help its competitive position.

Tables 1 and 2 show the originating location for Florida visitors in 2001. In 2001, Florida was the most preferred destination of oversees visitors to the United States. The greatest percentage of these visitors was from the United Kingdom. The leading origin states for domestic visitors in 2001 are Georgia and New York. Domestic visitors arriving by automobile typically originate from neighboring states in the southeastern portion of the country. While visitors arriving by air are distributed throughout the country with a high concentration in the northeast.

Table 1 – Top 10 Overseas Origin Countries for 2001 Visitors to Florida

Country	(thousand person-trips)	Percent of Total
United Kingdom	1,516	28.8%
Venezuela	393	7.5%
Germany	303	5.8%
Argentina	227	4.3%
Brazil	218	4.1%
France	139	2.6%
Italy	117	2.2%
Japan	110	2.1%
Netherlands	98	1.9%
Spain	77	1.5%

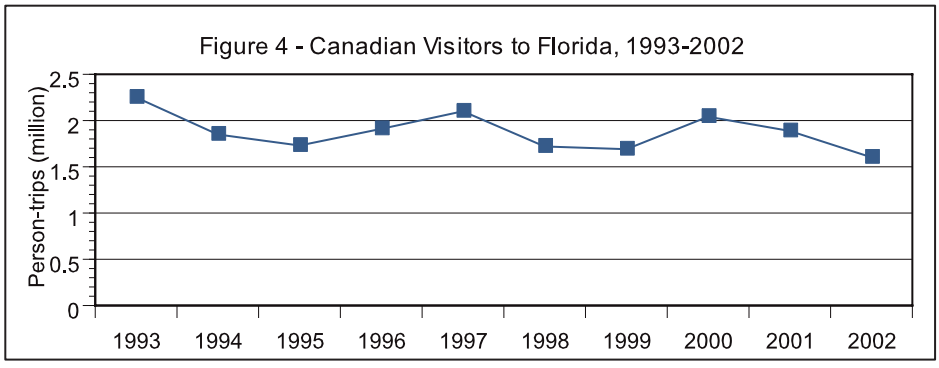
Source: FLA USA Visit Florida, 2001 Florida Visitor Study

Table 2 – Top 14 Domestic Origin States for 2001 Visitors to Florida

State	Air	Auto	Total
Georgia	4.8%	17.5%	11.0%
New York	13.1%	5.8%	9.5%
Illinois	6.4%	5.7%	5.8%
Ohio	5.4%	6.4%	5.6%
Alabama	1.5%	8.8%	5.2%
New Jersey	6.6%	3.2%	4.9%
North Carolina	2.0%	5.1%	4.5%
Michigan	5.7%	3.2%	4.3%
Texas	5.1%	3.3%	4.2%
Pennsylvania	4.1%	3.2%	3.8%
Virginia	3.4%	3.4%	3.4%
Indiana	3.1%	4.1%	3.4%
California	5.5%	0.9%	3.3%
Massachusetts	4.9%	1.1%	3.0%

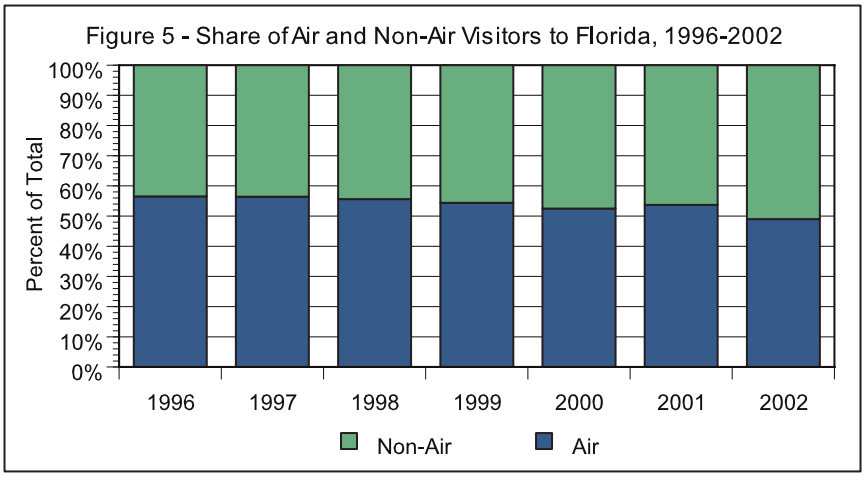
Source: FLA USA Visit Florida, 2001 Florida Visitor Study

Figure 4 shows the history of Canadian visitor trends for Florida. Despite the decrease in the number of person trips by Canadian visitors since 2000, Canada remains Florida's leading international market.



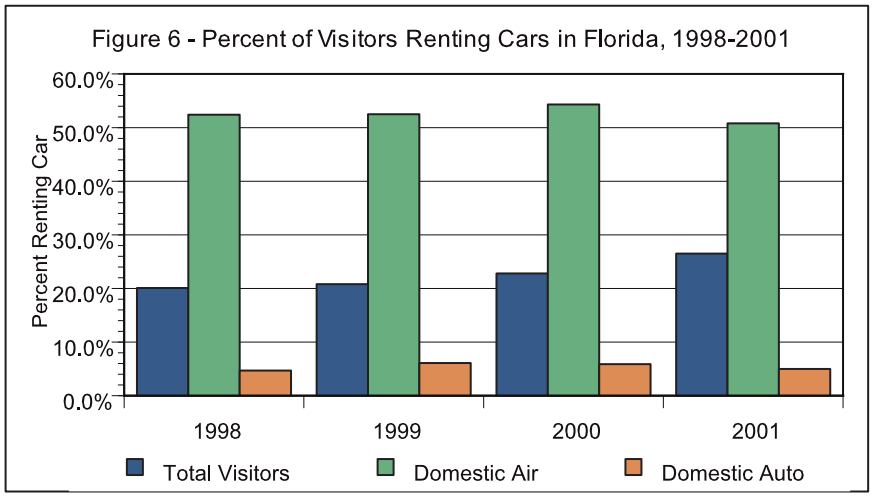
Source: FLA USA Visit Florida, Annual Florida Visitor Study (1997-2001) and Visitor Estimates, Profiles and Industry Trend Indicators 2002Q4

Figure 5 provides the air arrival share over the 1996–2002 time period. Since 2001, the share of air visitors to Florida has declined.



Source: FLAUSAVisit Florida, 2001 Florida Visitor Study and Visitor Estimates, Profiles, and Industry Trend Indicators 2002Q4

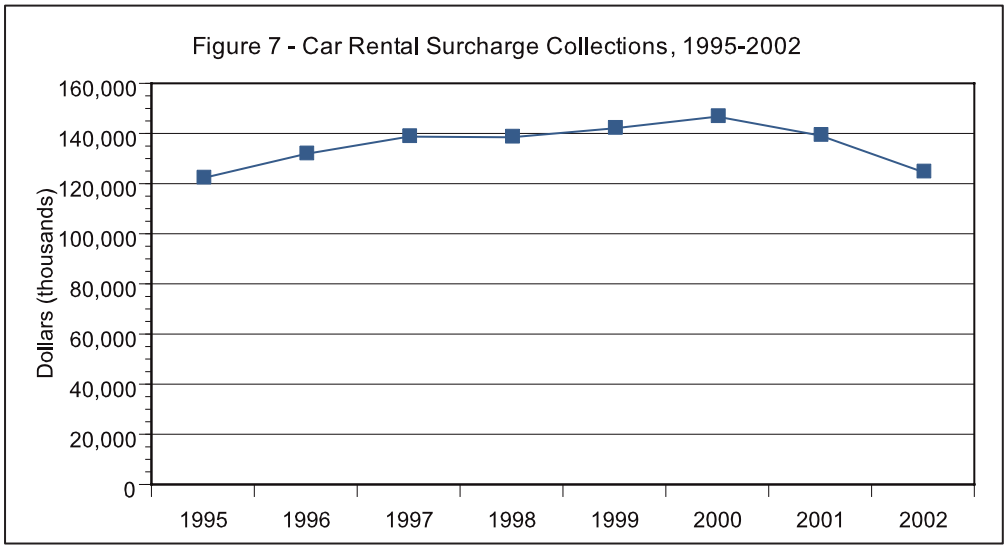
Travelers arriving in Florida by air are not captive to public modes of travel on arrival. The data in Figure 6 indicate that over half of the tourists subsequently rent cars for local intrastate travel while in Florida. Even some parties arriving by auto subsequently rent autos, perhaps as some of their group members participate in different activities.



Source: FLAUSAVisit Florida, Florida Visitor Study (1999-2001)

A growing share of tourists entering Florida are arriving by automobile.

Figure 7 shows data on auto rental fees collected in Florida. This is a surrogate measure of rental car activity as the fee is based on rental days of activity. To the extent that more tourists arrive in Florida with a car, one would anticipate a moderating of demand for rental vehicles. Similarly this revenue stream is impacted by length of stay.

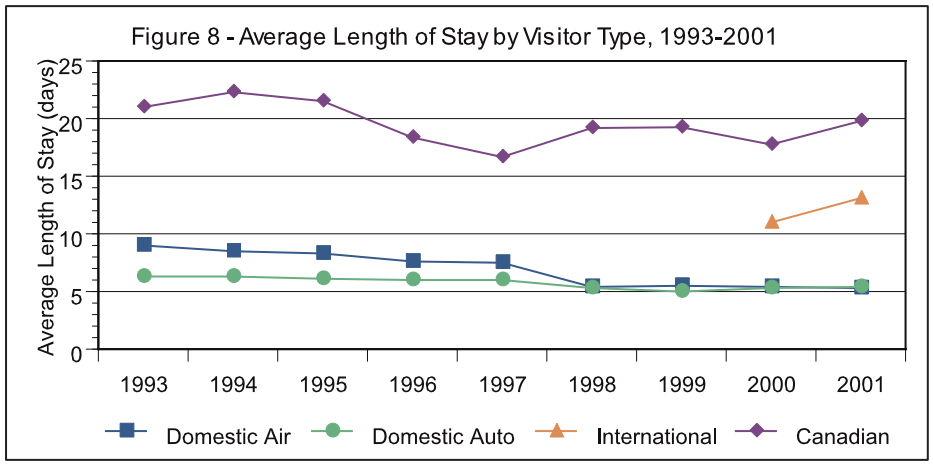


Source: Visitor Estimates, Profiles and Industry Trend Indicators 2002Q4
Note: The rental car surcharge is a $2.05 per day charge for the first thirty days of a rental or lease of a vehicle.

Tourism contributes to the large auto rental business levels in Florida.

Another aspect of the demand for travel in Florida by tourists is the size of the travel group and the length of stay. The length of stay impacts their local mileage traveling within and between Florida's urban areas and tourist attractions. The group size influences travel demands for public modes of travel such as airlines where each individual would be occupying a seat.

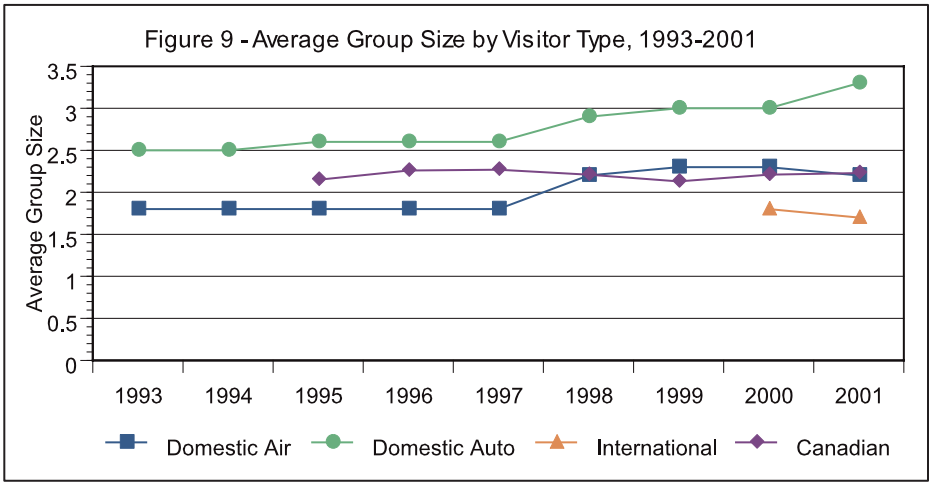
Figure 8 indicates that domestic travelers are making shorter vacation trips than in prior years. This is consistent with national trends toward more frequent and shorter vacations. This trend increases total travel demand and is facilitated by relatively modest costs for both air and auto travel in recent years (compared in real terms to historical travel cost levels).



Source: FLAUSA Visit Florida, Annual Florida Visitor Study (1997-2001)

Florida Visitors are staying slightly fewer days and traveling in slightly larger groups.

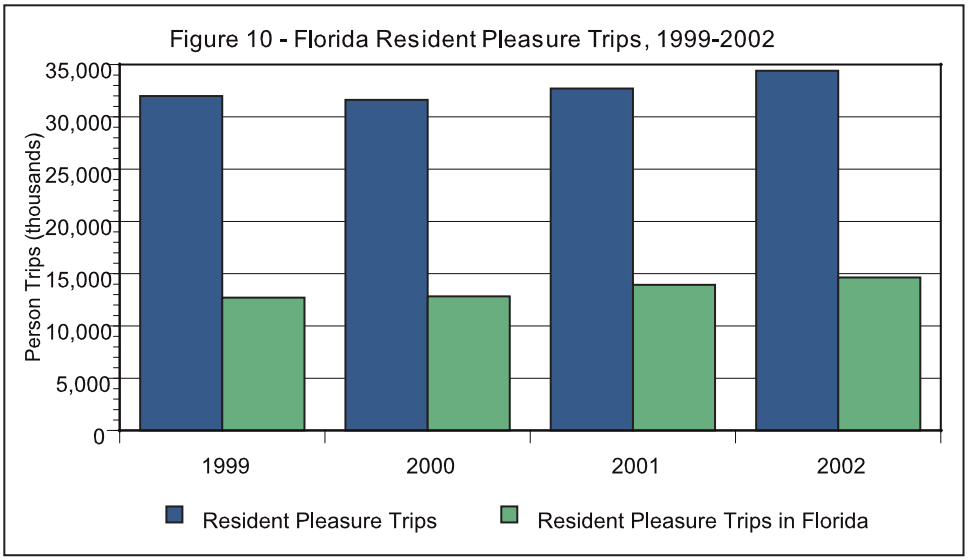
Figure 9 shows group size trends. Increases in group size favor the auto travel mode which has no marginal cost for additional passengers. Florida's appeal to family groups and the trend toward combined personal business and family vacation travel may be contributing to this overall trend.



Source: FLAUSA Visit Florida, Annual Florida Visitor Study (1997-2001)

Travel Demand: Visitors and Tourists

In addition to tourist travel by visitors to Florida, Florida's substantial population created demand for tourist travel as well. Figure 10 shows the trends in Florida resident tourist travel. Resident tourist travel is governed by the size of the population and the economic conditions. Post September 11, tendencies for persons to vacation closer to home may be contributing to greater in-state tourism by Florida residents. Generally, leisure travel is highly related to disposable income and as the economy grows, one expects that the total amount of leisure travel would also be growing. Thus, growth in tourism by both residents and visitors to Florida will be influenced by the health of the economy.



Source: FLAUSAVisit Florida, Florida Visitor Study (1999-2001)

The significance of tourist travel in terms of total travel demand in Florida is explored in Table 3. This table, developed based on research into Florida's total travel demand components, estimated the share of total travel demand that can be attributed to tourist travel. This estimate gives a sense of perspective regarding the overall share of demand that is tourism related and also provides insight into the relative growth rates of tourism related travel to overall vehicle miles of travel. This analysis indicated that as of 1998, tourism comprised 10.9 percent of all Florida vehicle miles of travel and that this share had grown since the mid 1980's, but was below the peak years in the late 1980's and early 1990's.

Tourists and Visitors comprise over ten percent of total vehicle miles of travel in Florida.

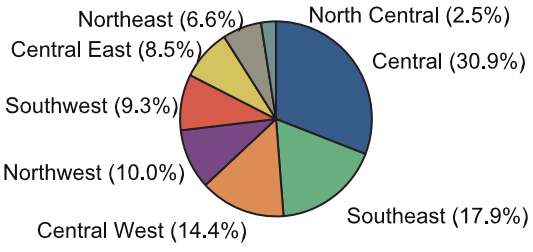
Table 3 – Vehicle Travel by Florida's Visitors and Share of State Total, 1984-1998

Year	Vehicle Miles Traveled (millions)				As a Percent of State Total			
	Domestic Air	Domestic Auto	Foreign	All Visitors	Domestic Air	Domestic Auto	Foreign	All Visitors
1984	2,699	5,184	524	8,406	3.2%	6.1%	0.6%	9.8%
1985	2,487	5,487	557	8,531	2.8%	5.8%	0.6%	9.2%
1986	2,853	5,435	675	8,963	3.3%	5.7%	0.8%	9.7%
1987	2,738	7,922	831	11,491	2.9%	7.8%	0.9%	11.7%
1988	3,514	8,707	1,084	13,306	3.3%	7.7%	1.0%	12.1%
1989	2,859	8,527	1,354	12,740	2.6%	7.3%	1.2%	11.2%
1990	2,929	8,415	1,469	12,813	2.7%	7.1%	1.3%	11.1%
1991	3,173	8,478	1,698	13,349	2.8%	6.9%	1.5%	11.2%
1992	3,370	9,407	1,968	14,744	2.8%	7.3%	1.6%	11.8%
1993	3,717	10,100	2,123	15,941	3.1%	7.8%	1.8%	12.7%
1994	3,775	9,186	1,913	14,874	3.1%	7.1%	1.6%	11.7%
1995	3,736	8,766	1,912	14,413	2.9%	6.4%	1.5%	10.8%
1996	3,912	8,309	2,138	14,359	3.0%	6.0%	1.6%	10.6%
1997	3,329	9,396	2,331	15,056	2.5%	6.5%	1.7%	10.7%
1998	3,775	9,489	2,387	15,652	2.7%	6.4%	1.7%	10.9%

Source: CUTR, Xuehao Chu, "Measuring Vehicle Travel by Visitors", 2003

The consequences of tourist travel have been alluded to earlier in this section and it is appropriate to address other characteristics of tourist travel that affect system performance and needs. Information on the geographic distribution of tourist travel around the state is presented in the figures and tables that follow. Figure 11 shows regional allocations of visitor trips. It is well known that there are locations like the Keys and the Orlando area as well as smaller sections of many areas where tourist travel is a very significant share of total travel demand. While available data can give a sense of tourism for various urban areas, such data are generally not available on a roadway segments level. However, local planning agencies develop knowledge of the geographic distribution of tourist travel as they carry out various survey and modeling initiatives. More detailed data on tourism travel routes would no doubt prove useful in addressing more localized transportation needs and funding strategy issues. The daily temporal distribution of tourist travel, specifically the presence of tourist travel during peak travel periods would also be of use in local planning.

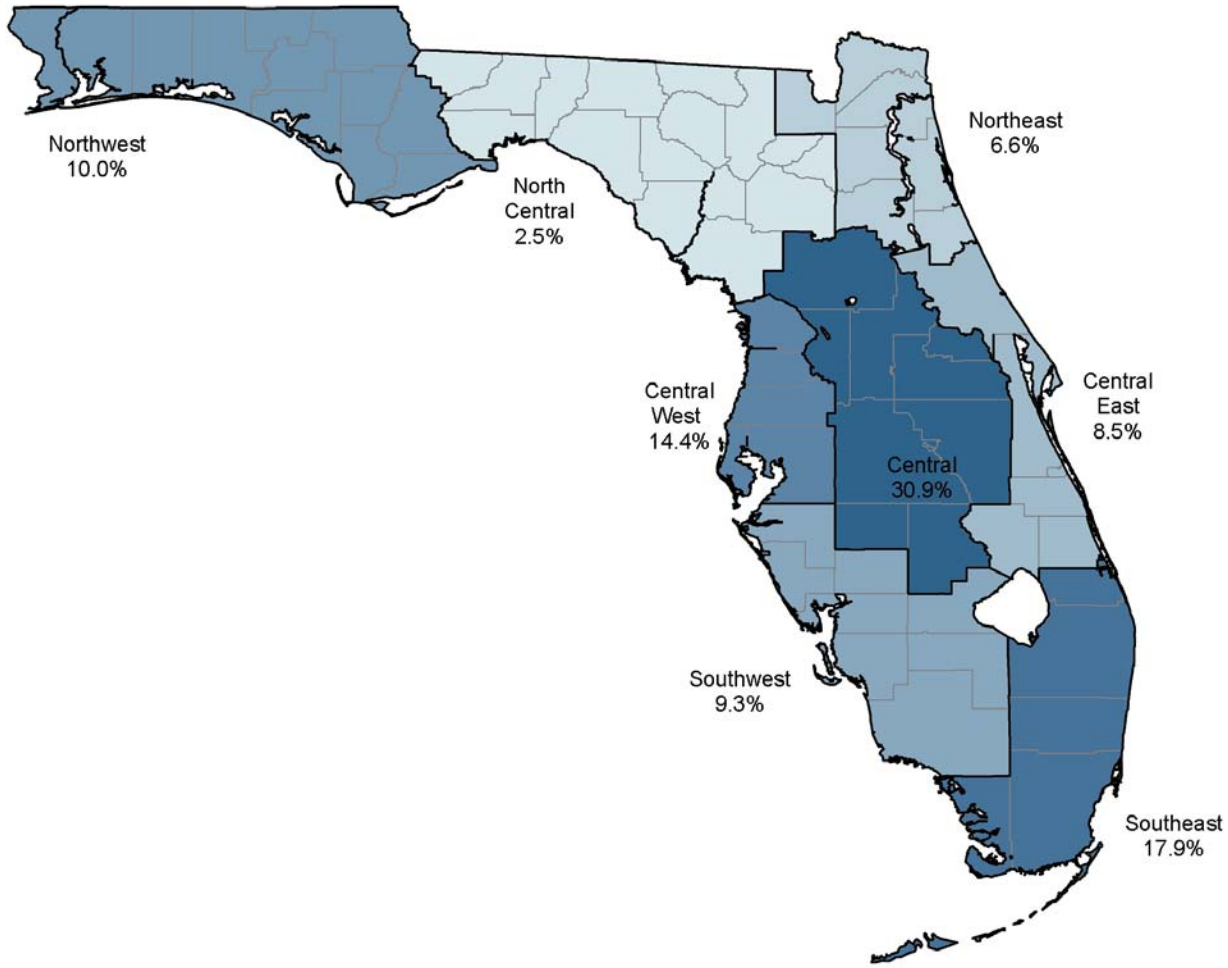
Figure 11 - Percent of Visitor Trips by Region, 2001



Source: FLAUSA Visit Florida, Annual Florida Visitor Study 2001

Figure 12 shows, in map form, the allocation of tourist travel. Central and Southeast Florida have the highest share of visitor trips, because of the key tourist destinations there including Orlando and Miami.

Figure 12 – Allocation of Visitor Trips by Region, 2001



Source: FLA USA, Visit Florida, Florida Visitor Study 2001

Table 4 provides the major destinations of Florida travelers from overseas locations. Table 5 presents the county locations of domestic visitors. For both visitor groups, the Orlando, Tampa-St. Petersburg and Miami are the choice destinations.

Table 4 – Top 11 Major Florida Destinations by Overseas Countries, 2001 (% of total)

Country	Daytona Beach	Florida Keys	Ft. Lauderdale	Ft. Myers	Jacksonville	Melbourne	Miami	Orlando	Sarasota	Tampa-St. Petersburg	West Palm Beach
United Kingdom	2.3%	6.2%	4.7%	4.3%	2.4%	3.9%	14.5%	70.8%	6.4%	15.0%	2.2%
Venezuela	-	-	9.4%	3.2%	-	-	80.8%	19.4%	0.6%	0.4%	6.4%
Germany	1.4%	16.7%	12.4%	13.6%	4.2%	7.7%	41.6%	32.2%	7.3%	12.0%	7.4%
Argentina	0.7%	2.3%	9.8%	1.1%	0.2%	3.5%	82.3%	35.0%	-	5.0%	4.2%
Brazil	0.8%	3.3%	5.3%	0.2%	-	1.0%	56.7%	54.6%	-	4.5%	1.1%
France	0.8%	9.7%	2.4%	8.9%	-	-	61.8%	35.4%	1.2%	20.9%	-
Italy	1.0%	13.2%	12.3%	2.0%	-	-	44.8%	52.1%	0.4%	5.7%	1.4%
Japan	1.7%	1.9%	3.1%	0.4%	-	0.4%	30.1%	70.9%	-	1.6%	1.0%
Netherlands	3.4%	32.7%	18.6%	4.8%	4.6%	1.1%	65.1%	58.8%	4.6%	2.7%	6.2%
Spain	-	-	14.7%	-	6.3%	0.3%	80.5%	27.8%	8.3%	9.7%	-

Source: FLA USA Visit Florida, 2001 Florida Visitor Study

Table 5 – Top 15 County Destinations for Domestic Visitors, 2001

State	Air	Auto	Total
Orange	31.3%	22.3%	26.1%
Hillsborough	9.8%	7.6%	9.0%
Broward	9.6%	3.1%	7.0%
Miami-Dade	8.3%	1.7%	5.1%
Volusia	2.6%	5.9%	4.4%
Pinellas	5.1%	2.6%	3.9%
Duval	3.3%	4.8%	3.9%
Bay	0.5%	6.8%	3.6%
Palm Beach	5.5%	1.6%	3.5%
Okaloosa	0.5%	6.1%	3.4%
Lee	3.9%	2.4%	3.1%
Brevard	2.3%	3.3%	2.9%
Collier	3.2%	1.2%	2.2%
Escambia	0.9%	3.4%	2.1%
Sarasota	2.3%	1.7%	2.0%

Source: FLA USA Visit Florida, 2001 Florida Visitor Study

Conclusions

While the data in this section suggest reasonable seasonal uniformity, the hourly distribution of travel during the day is unknown. Other research conducted by John Lu and Wiemin Huang for FDOT has suggested that the impacts of tourist travel maybe disproportionate to its share of the traffic volume. Specifically, tourists as non-regular users are more likely to be novice users on a given facility and may not operate their vehicles as would a regular traveler. Observing sites, looking for directions, and other distractions might result in somewhat slower travel and more disruptions, particularly when on non-freeway facilities. Many tourists are also driving rental vehicles with which they may be less familiar, have many distractions from the large group size, be tired after busy event schedules, be driving campers or trailers or pulling trailers, or otherwise not operate with the same performance as a regular local traveler.

Looking ahead, one can only speculate on the share of travel on Florida roads that will be comprised of tourists and visitors. However, the mobility of the dominant baby-boom generation and the fundamental appeal of Florida's climate as well as the significant tourist infrastructure base suggest that tourism will continue to be a significant factor in travel demand in Florida in the foreseeable future.

Tourism will remain an important driver of travel demand in Florida's future.

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Trends and Conditions Report – 2003

TRANSPORTATION SYSTEM:
Air Facilities – Passengers and Freight
November 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Tables and Figures

Transportation System: Air Facilities – Passengers and Freight

Introduction

The dramatic growth of air travel over the past few decades is testimony to the fact that both individuals and shippers have recognized the value of rapid travel time and been willing to purchase air travel. Just as ports and rail yards are critical economic engines in urban development, so too airports and air services are playing a growing role in the economic competitiveness of urban areas. While post 9-11 security concerns and airline restructuring may result in more moderate growth in air travel than the high growth rates of the past decade, the fundamental attractiveness of air travel remains. Subject to economic growth trends, air travel is destined to continue to grow. Florida, as a destination for tourism, is highly dependent on air travel.

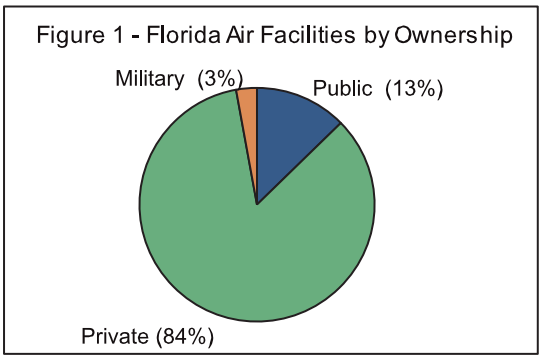
Air travel requires an integrated transportation system as both freight and passenger travel are dependent on other modes of travel for access to and egress from airports.

By its very nature, air travel is a mode of travel that requires an integrated transportation system as both freight and person travel are dependent on other modes of travel for access to and egress from airports.

Florida Aviation Facilities

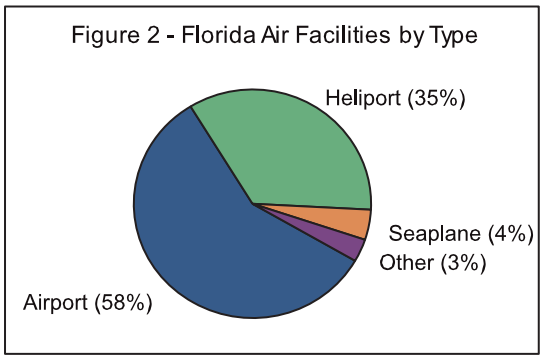
Florida has a total of 860 air facilities. Of these, 730 are privately owned, 106 are public airports and 24 are military. Figure 1 shows the percent of air facilities by ownership, while Figure 2 displays the percent of air facilities by type. Of the public airports, nineteen provide commercial passenger service and 87 are general aviation airports. Twenty-three of the privately owned air facilities also are classified as public access. Figure 3 is a map of the commercial airports in Florida.

Figure 1 - Florida Air Facilities by Ownership



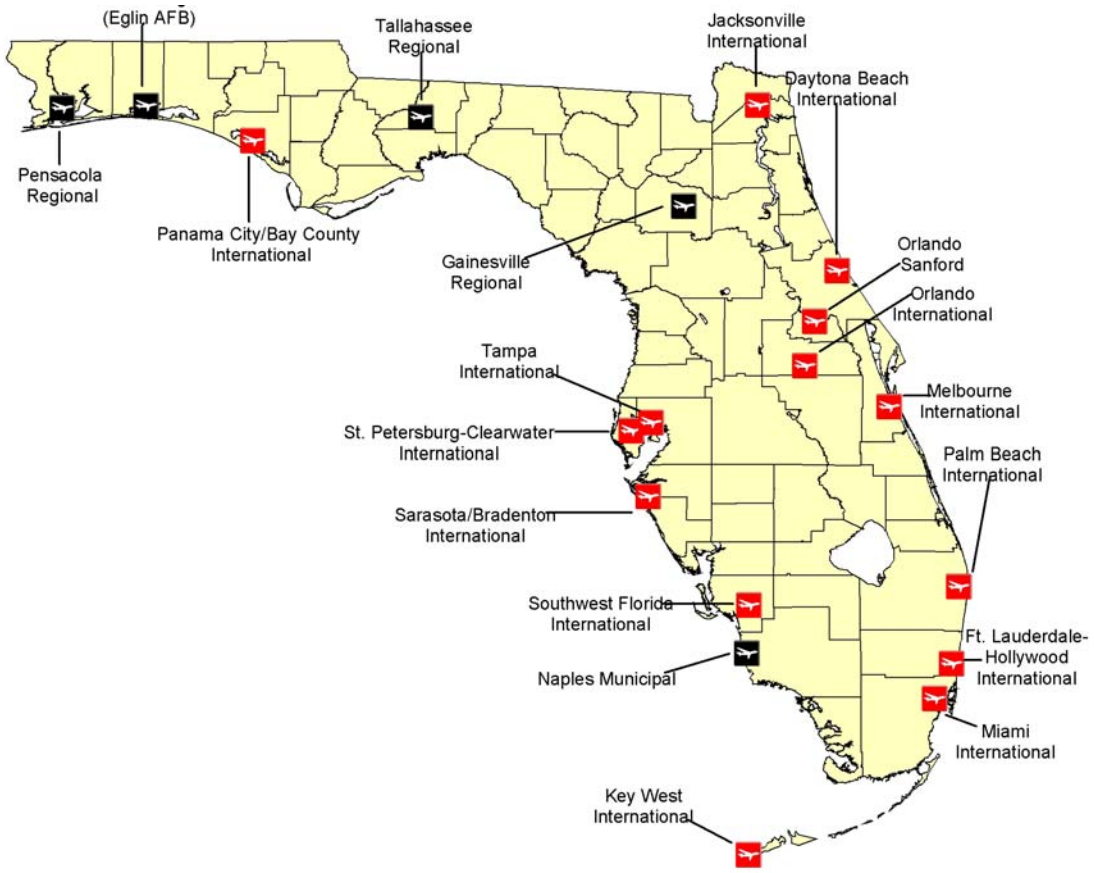
Source: FDOT Aviation Office

Figure 2 - Florida Air Facilities by Type



Source: FDOT Aviation Facility Directory, 2003

Figure 3 – Map of Commercial Airports in Florida

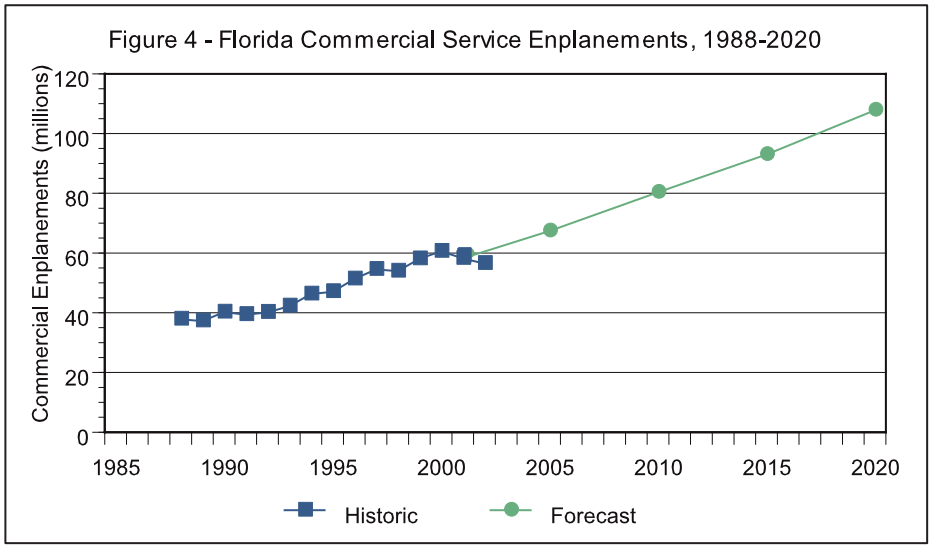


Source: Florida Department of Transportation, Aviation Office

Florida Aviation Passenger and Freight Transport

Thousands of flights depart from Florida's public and commercial airports every day. Florida's ability to connect efficiently to both domestic and international markets is vital to its economy. Therefore, tracking trends in airline service can be an effective method of determining how Florida's economy is growing and changing. Three important trends to consider are the number of passengers, operations and cargo tonnage handled at the commercial airports.

Figure 4 presents the historic trend of enplanements at Florida's commercial airports as well as forecasted enplanements through 2020. The number of enplanements has been increasing historically, but has declined over the past two years. Forecasts made in 2001 predicted the continued growth of air travel. An enplanement is defined as a passenger boarding an aircraft. Eight of Florida's nineteen commercial airports provided approximately 94% of service for enplanements in 2002. Table 1 details the number of enplanements handled by airport in 2001 and 2002. Miami International and Orlando International handled 50% of Florida's commercial air passengers in 2002.



Source: Florida Aviation System Planning (FASP) 2000 (year ending December 31)
Original Source: The Federal Aviation Administration - Aviation Policy and Plans (FAA-APO), Terminal Area Forcasts, December 1999; and Florida Aviation Database, FASP Commercial Service Enplanement Forecasts 2002-2022

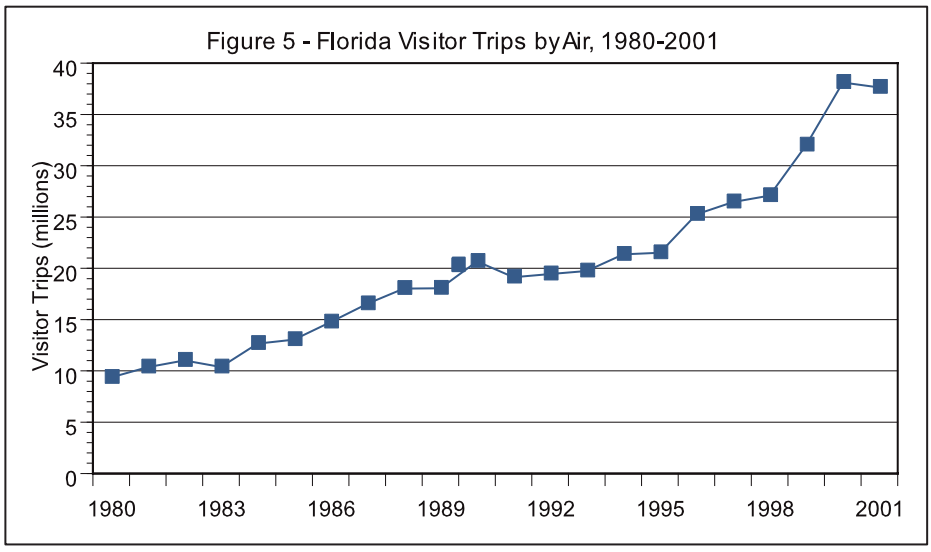
The number of enplanements initially declined after 9-11. The longer range impacts of security considerations and economic conditions in the airline industry remains to be seen.

Table 1 – Passenger Enplanements Handled by Airport, 2001 and 2002

Airport	Enplanements		Share 2002
	2001	2002	
Miami	15,876,629	15,007,693	26.6%
Orlando	14,054,410	13,250,599	23.5%
Ft. Lauderdale	8,217,203	8,517,527	15.1%
Tampa	7,736,198	7,760,828	13.7%
Palm Beach	2,967,452	2,748,181	4.9%
Jacksonville	2,542,975	2,475,755	4.4%
Southwest Florida	2,665,387	2,618,297	4.6%
Sarasota-Bradenton	592,491	564,516	1.0%
Other	3,568,891	3,526,990	6.2%
Total	58,221,636	56,470,386	100%

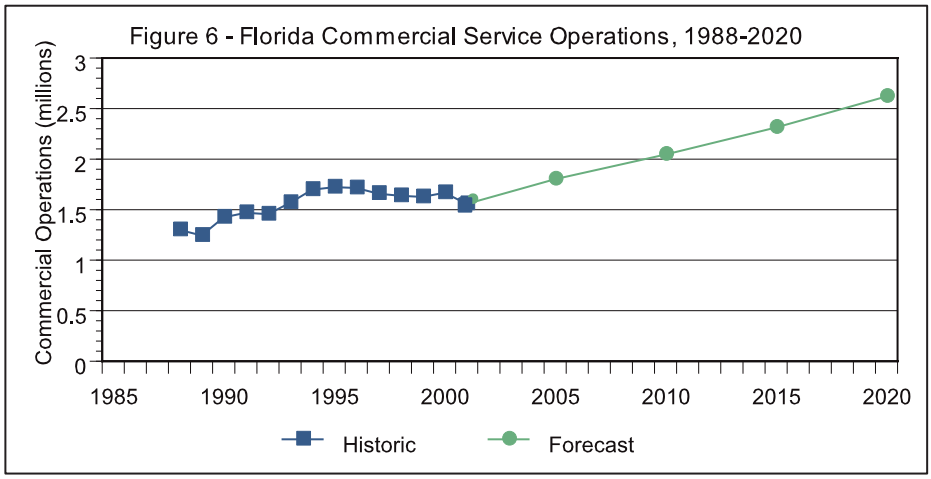
Source: Florida Department of Transportation, Aviation Office

As discussed in the *Travel Demand: Visitors and Tourists* section of this report, approximately 50% of visitors to Florida enter the state by air. In 2001, there were over 37.6 million passenger trips by visitors that used air travel in Florida. Figure 5 presents the estimated number of visitor trips by air from 1980 through 2001.



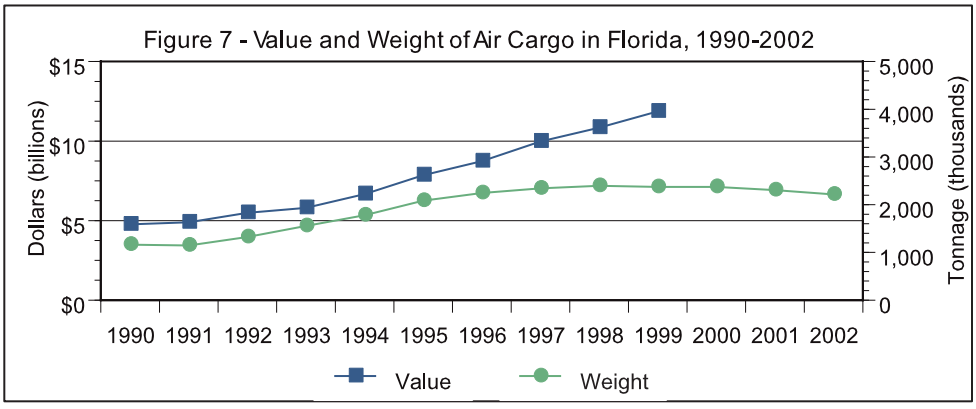
Source: Visit Florida, Annual Florida Visitor Study
Note: Changes in methodology were made in 1996 and 1999

Operations are landings, takeoffs, or touch-and-go of an aircraft. Figure 6 shows the historic trend and forecast commercial service operations. The number of service operations at Florida's commercial airports has declined over the past several years. However, forecasts from 2001 predict an increase in the future.



Source: Florida Aviation System Planning (FASP) 2000 (year ending December 31)
Original Source: The Federal Aviation Administration - Aviation Policy and Plans (FAA-APO), Terminal Area Forcasts, December 1999; and Florida Aviation Database, FASP Commercial Service Operations Forecasts 2002-2022

Air cargo is another important indicator of how the air transport system is being used in Florida. As discussed in the *Travel Demand: Trade and Freight Transportation* section of this report, the aviation system handles a relatively small share of Florida's total freight trade. Figure 7 shows the trend of the total value of air exports in billions of dollars and air weight in thousands of tons. Air cargo shipments are typically high value and low in weight. The aviation system is typically used to transport valuable, fragile or time sensitive items. The total value has been steadily increasing since the early nineties, while the tonnage has not increased at the same rate. Since 2000, the total tonnage transported by air has decreased. This may be a result of the slowing economy or changes in the air industry.



Source: Florida DOT, Florida Air Cargo Statewide System, 2002

Air cargo can be classified as domestic or international. Table 2 presents the number of air cargo movements in Florida by cargo type and direction. International trade accounts for approximately 60% of air cargo movements. A movement is defined as enplaning or deplaning cargo from an aircraft.

Table 2 – Total Air Cargo Movements in Florida by Type and Direction, 1999

Air Cargo Type	Domestic	International	Total
Freight	809,500	1,562,300	2,371,800
Mail	266,000	6,800	272,800
Total	1,075,500	1,569,100	2,644,600

Source: Florida Aviation System Plan, Air Cargo Impacts and Implications, 2002.

Table 3 breaks down the tonnage handled by commercial airport in Florida. Miami International handled 73% of the total air cargo in Florida in 2002.

Table 3 – Air Cargo Handled by Airport, 2001 and 2002

Airport	Tonnage		Share 2002
	2001	2002	
Miami	1,807,894	1,790,784	73.0%
Orlando	246,467	218,603	8.9%
Ft. Lauderdale	200,559	181,959	7.4%
Tampa	88,086	101,058	4.1%
Jacksonville	67,025	75,973	3.1%
Other	86,764	84,300	3.4%
Total	2,496,795	2,452,677	100%

Source: FDOT Aviation Office, 2003.

Conclusions

Over the past several decades, Florida's aviation industry and air travel have been growing. In partnership with the airline industry, Florida's public airports have been growing to accommodate that demand. Infrastructure expansion and renewal, airport access, airspace congestion, security, community impacts and other considerations will require ongoing planning and investment to ensure Florida's ability to compete in the international business and tourist markets. This is one of the reasons why the Florida Aviation System Plan (FASP) was originally created in 1976 by the Florida Department of Transportation. FASP is a twenty-year plan for the development of Florida's publicly owned airports.

Another increasingly prominent area in the airline industry is security. Since the September 11, 2001, terrorist attack, this part of air travel has been radically reformed. The Federal Aviation Administration in conjunction with Florida's airports will continue to work to assure that air travel is safe and efficient. For more information of aviation safety and security please refer to the *Impact of Transportation: Transportation Safety* section of this report.

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Trends and Conditions Report – 2003

TRANSPORTATION SYSTEM:
Bike and Pedestrian
November 2003

This “Trends and Conditions” report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

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Transportation System: Bike and Pedestrian

Bike and Pedestrian Travel

While data shows that vehicular travel is by far the dominant transportation mode in terms of both the number of trips on that mode and the person miles of travel by mode, both pedestrian travel and bike modes have important roles in overall mobility. Walking in particular is an integral activity in virtually all travel by all modes. While not perhaps counted as the primary mode for a trip, walking is used to access and egress other modes for all other trips. That walk may be no farther than from the kitchen to the garage or from a parking structure across a lobby to an office or elevator or it may be several hundred yards to and from distant parking or transit facilities. In addition, walking is the sole mode for some share of trips as shown in Table 1. Because walk and bike travel are both more modest as the primary mode of travel and because they are less infrastructure intensive, they tend to be given somewhat less attention in transportation investments. Additionally, the responsibility for providing the infrastructure for these modes has typically fallen on local governments. However, there is a growing awareness of the importance of walking and bike travel both as viable modes and as modes that have some unique characteristics of special interest to transportation professionals and decision makers.

There is a growing awareness of the importance of walking and bike travel.

By their nature, walk and bike modes are less resource intensive than other modes. Typically, either they do not have dedicated facilities (bikes share the road or sidewalk in most places) or these facilities are modest in costs compared to roadways (sidewalks are a fraction of the cost of roadways for example). These modes are also somewhat unique in that the absence of a substantial vehicle not only significantly impacts the safety and security of these modes but also results in them being the least intrusive and resource intensive of travel modes as they consume no combustion fuels, produce no pollutants, and are less space intensive for operation and vehicle storage than other modes.

As Table 1 indicates, bike and pedestrian travel is the primary means of travel for only a small share of trips taken.

Table 1 – Mode Share of Person Trips, 2001

	FL	US
Car	57.5%	50.9%
Van, SUV, Truck	30.6%	35.5%
RV, Motorcycle	0.5%	0.2%
Public Transportation	2.9%	3.7%
Walk	6.8%	8.6%
Bicycle	1.3%	0.9%
Other	0.5%	0.3%
Total	100%	100%

Source: NHTS, 2001

Tables 2 and 3 provide data on characteristics of bike and pedestrian travel. As these tables portray, these modes are predominately used for short trips and principally for social or recreational purposes. The bicycle and pedestrian trips rates for the four metropolitan areas in Table 2 averaged 0.17 trips per day and 1.08 trips per day respectively. The bicycle trip rate increased 42% from 1998, while pedestrian trip rates only increased19% over the same time period. National historic data paints a picture of the decline in

these modes for functional transportation, particularly work trip making and an increase for social/recreational purposes – often walking a dog or walking or biking for exercise. Walking remains a critical mode of travel for those population segments that may not have auto or public transit options for some trips. Low income, elderly, and young people often walk for access to employment, shopping and school.

Table 2 – Bicycle and Pedestrian Daily Trip Rates, 1998 and 2002

Metropolitan Area – 2002	Bicycle Trip Rate	Pedestrian Trip Rate
Jacksonville	0.12	0.99
Miami	0.25	1.13
Orlando	0.16	1.06
Tampa	0.17	1.12

Source: CUTR and NuStats, Bicycle and Pedestrian Travel: Exploration of Collision Exposure in Florida, 2002

Table 3 – Trip Purpose and Trip Length, 2002

Trip Purpose	Average Bicycle Trip Length (miles)	Percent of Total Trips	Average Pedestrian Trip Length (miles)	Percent of Total Trips
Home to Work	4.33	5%	0.67	5%
Shopping	2.46	13%	0.63	21%
School	1.00	<1%	0.67	2%
Religious	0.00	0%	1.00	1%
Personal Business	3.67	5%	1.03	11%
Visit Friends or Relatives	1.75	2%	1.16	5%
Other (Social/Recreation)	5.07	75%	1.47	55%
All	4.53	100%	1.17	100%

Source: CUTR and NuStats, Bicycle and Pedestrian Travel: Exploration of Collision Exposure in Florida, 2002

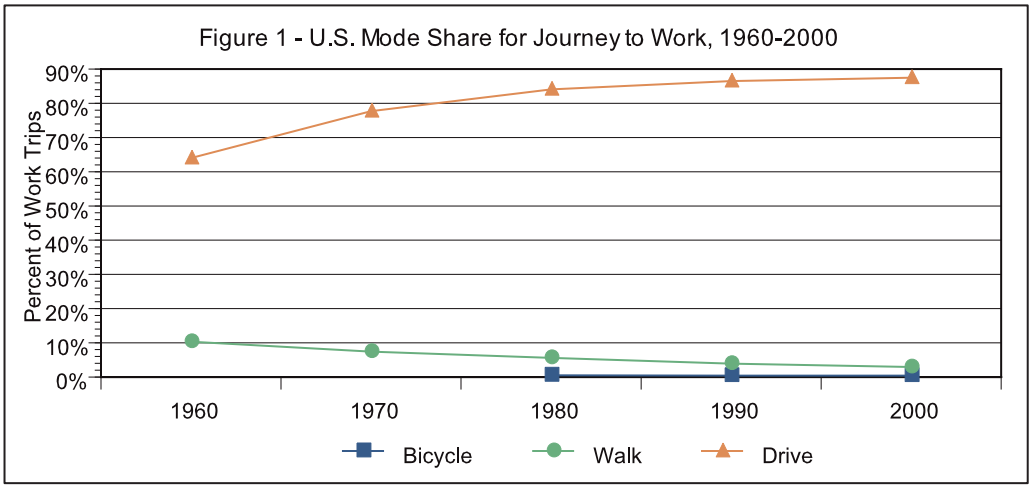
In Florida, every public transit agency that operates buses provides bike-on-bus provisions. The ability of bicyclists to use transit extends the potential range of travel for this group. According to Bikemap.com, some other benefits to this group include an expanded range for recreational activities, increased flexibility to transit and the ability to get out of congestion. The use of bike-on-bus has been increasing in recent years. Table 4 provides the ridership and share of transit passengers that use this program in a few of the major public transportation agencies around the state.

Table 4 – Florida Bikes on Transit Ridership Statistics

Agency	Bike Boardings	Bike Share (%)
BCT, Fort Lauderdale	1,200 per day (2002)	1.16%
PSTA, St. Petersburg	10,000 per month (2002)	1.25%
HARTline, Tampa	5,000 per month (1997)	0.63%
SCAT, Sarasota	175 per day	2.82%
MCAT, Bradenton	1,166 (April 1998)	1.80%

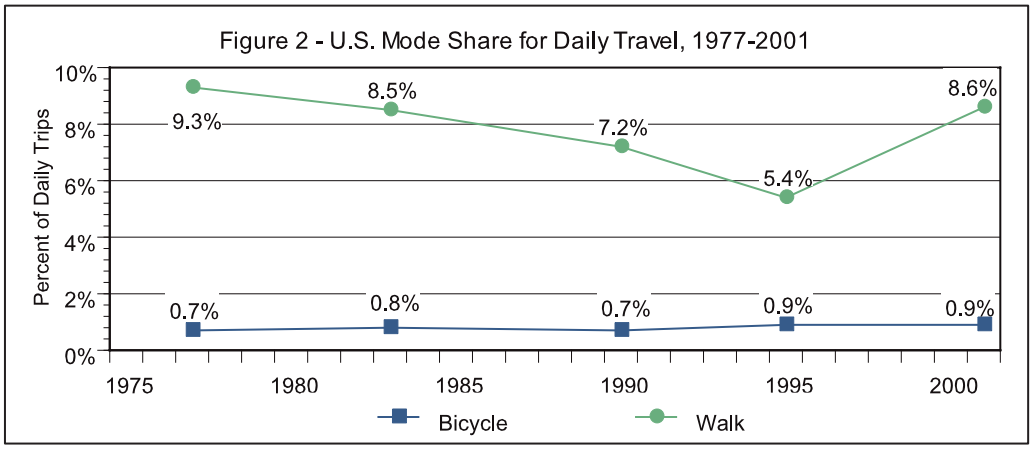
Source: BikeMap.com (accessed 8/19/03)

The mode share of journey to work trips by walking and bicycle has been decreasing since the 1960's. Figure 1 presents the national trend of the share of work trips by these modes. In 2000, the reported percent of trips to work by walking or riding a bicycle were 2.9% and 0.4%. Though not shown here, the 1990 Nationwide Personal Transportation Survey (NPTS) and 2001 National Household Travel Survey (NHTS) data for share of work trips by walking are consistent with the Census data.



Source: US Decennial Census, Supplemental Survey: Journey to Work, Census 1960 to 2000

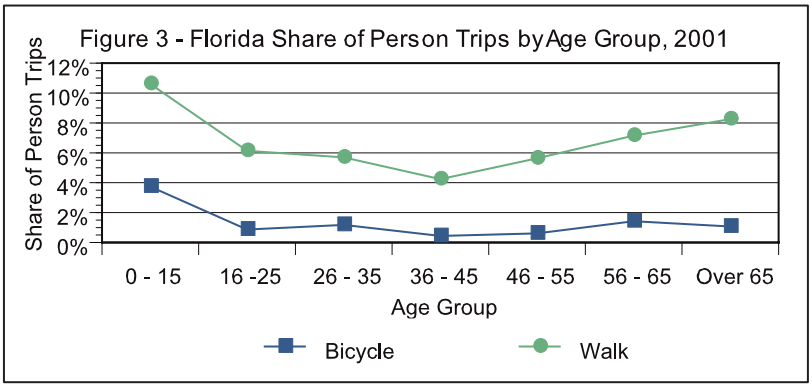
While Figure 1 shows the mode share for work trips, Figure 2 includes all person trips to determine the national modal distribution. Over time bicycle trips has remained less than 1% of all daily travel. The walk share, however, constitutes almost 9% of daily travel for 2001.



Source: Federal Highway Administration, NPTS 1977, 1983, 1990 and 1995 and NHTS 2001
Note: Part of the increase in mode share for walk trips from 1995 to 2001 is due to changes in sampling methodolgoy that captures previously unreported walk trips.

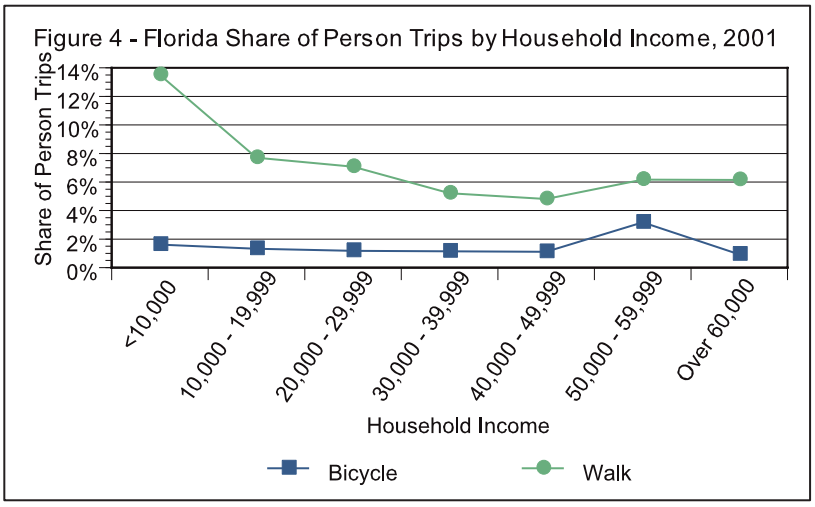
Between 1995 and 2001, the sampling methodology of the NHTS was altered in order to capture previously unreported walk trips. This change is part of the reason for the large jump in the walk mode share and a similar decline in personal vehicle mode share.

Figure 3 shows the share of person trips by age group. Persons under 16 years old have the greatest share of trips by walking or bicycle as compared with other age groups. Persons in this age group are not eligible for driver licenses and, therefore, must rely on others for auto travel or use other modes, such as walking or bicycling. Also persons over 65 have a relatively high share of person trips by walking. As discussed in the *Travel Demand: Population Growth and Characteristics* section of this report, this age group is expected to grow significantly over the next several decades. This growth will expand the number of walk trips.



Source: NHTS 2001

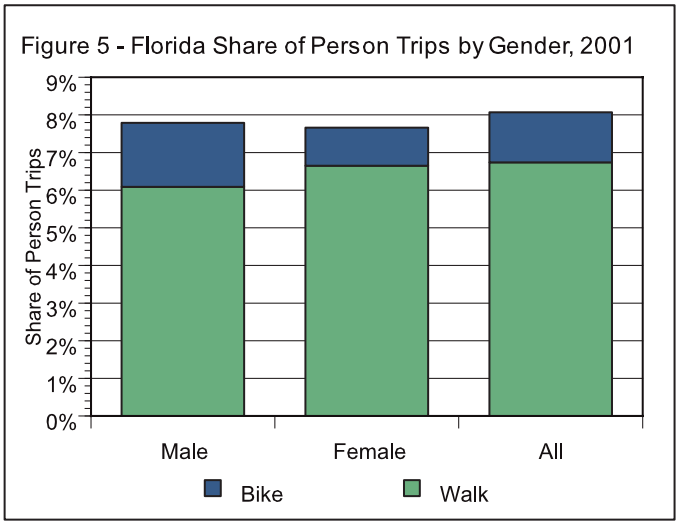
The share of person trips by walking and bicycle is typically greater for persons without access to a personal vehicle, such as low-income households. As Figure 4 shows, households with an income less than 10,000 dollars have the highest share of person trips by walking.



Source: NHTS 2001

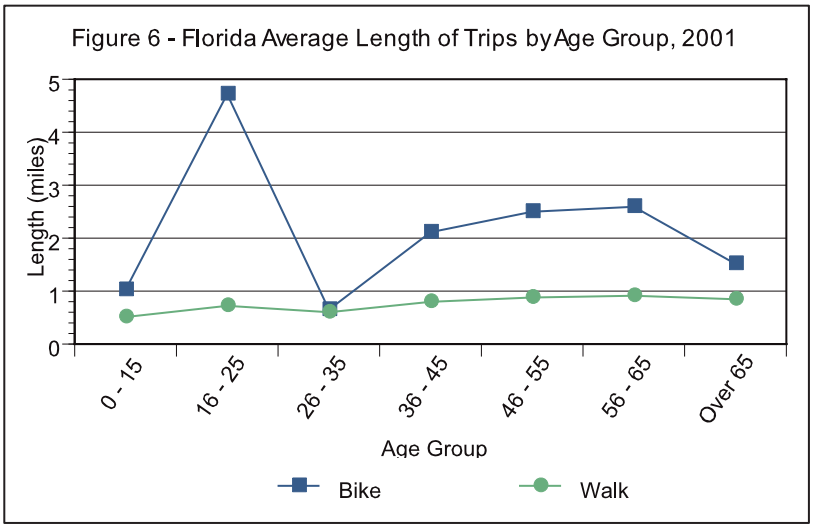
According to Florida data, women walk for person trips more often than men. However, men are more likely to use the bike mode. This is shown in Figure 5.

In Florida, women walk for a greater share of person trips than men; but men are more likely to bike.



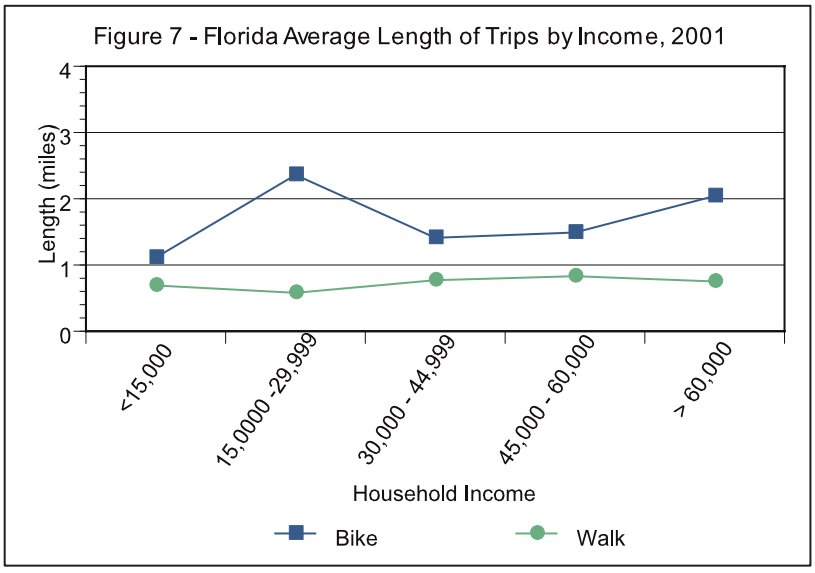
Source: NHTS 2001

Figure 6 presents the average trip length for bicycle and walk by age group. The data shows that trip lengths slightly increase as age increases for the walk mode. The average trip length of bicycle trips varies across age groups. This fluctuation may coincide with life cycle changes and physical activity levels of persons in various age groups. For example, persons between 16 and 25 years of age may participate in longer recreational trips by bicycle, while individuals under 15 may have restrictions on the length of trips by non-motorized modes.



Source: NHTS 2001

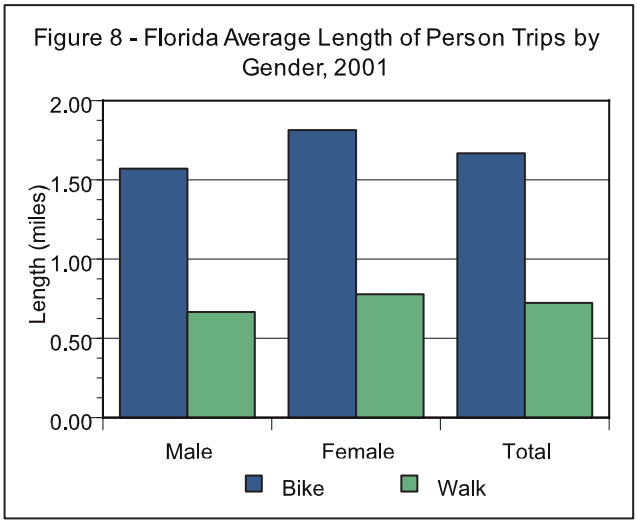
Figure 7 provides the average trip length for non-motorized modes by annual household income. For all groups, walk trips on average are less than a mile. Bicycle trip lengths generally increase with income, but data shows a peak in the $15,000 to $29,999 income group.



Source: NHTS 2001

Trips by bicycle are generally longer than walk trips. On average, bicycle trips are over twice as long as walk trips. In 2001, the average trip length by bicycle in Florida was 1.72 miles, while walk trips averaged 0.73 miles. Figure 8 shows that women typically take longer bicycle and walk trips than do men.

On average, bicycle trips are more than twice as long as walk trips.



Source: NHTS 2001

Infrastructure for Walking and Biking

The information available on the amount and condition of infrastructure to support walking and bike travel modes is limited due to a number of factors, including the fact that these modes often share infrastructure with other modes. Also, the provision of the infrastructure is often a local responsibility and data are not compiled at the state level to enable a clear statewide picture of the extent or condition of infrastructure. For example, it is not known what share of roadways

have adjacent sidewalks by functional classification at the state level or what share of roadways has accommodations for bicycles or adjacent special bike lanes. Growing amounts of data are available that provide some insight into the provisions being made for walk and bike modes. The FDOT has organized a task force to investigate the possibility for future facility-based measures on state facilities. The identified measures include basic bike lanes/sidewalk facility inventory and level of service (LOS) evaluation.

Although sidewalk infrastructure is not available at the state level, many local Metropolitan Planning Organizations (MPOs) or localities collect data for planning purposes. For example, Hillsborough County has a Sidewalk Master Plan, which details all roadway segments that lack sidewalk facilities. Hillsborough County's transportation network includes 3,700 miles of roadways. Approximately 2,400 of these miles lack sidewalk facilities. Each roadway segment that is identified in the master plan in need of sidewalks is ranked according to a benefit/cost ratio. Other MPOs have similar information on the sidewalk and bicycle facilities in their area.

Although there are no available state data for bike or sidewalk facilities adjacent to the roadway, in neighborhoods or in other urban areas where much of the pedestrian and bicycle travel occurs, data are available for outdoor recreation facilities across the state. Tables 4 and 5 detail the length of trails throughout the state. Table 4 provides the number and length of shared-use paths by region, while Table 5 presents the length of the trails by type and major supplier.

Table 5 - Number of Shared-Use Paths in Florida

	Number of Trails	Total Trail Distance
North Florida	11	111.7 mi (178.6 km)
Central Florida	7	109 mi (176 km)
West Coast	6	83.1 mi (132 km)
South Florida	7	205.5 mi (321 km)
Palm Beach County	5	39 mi (62 km)

Source: FDOT, Bicycle Touring Information 2003

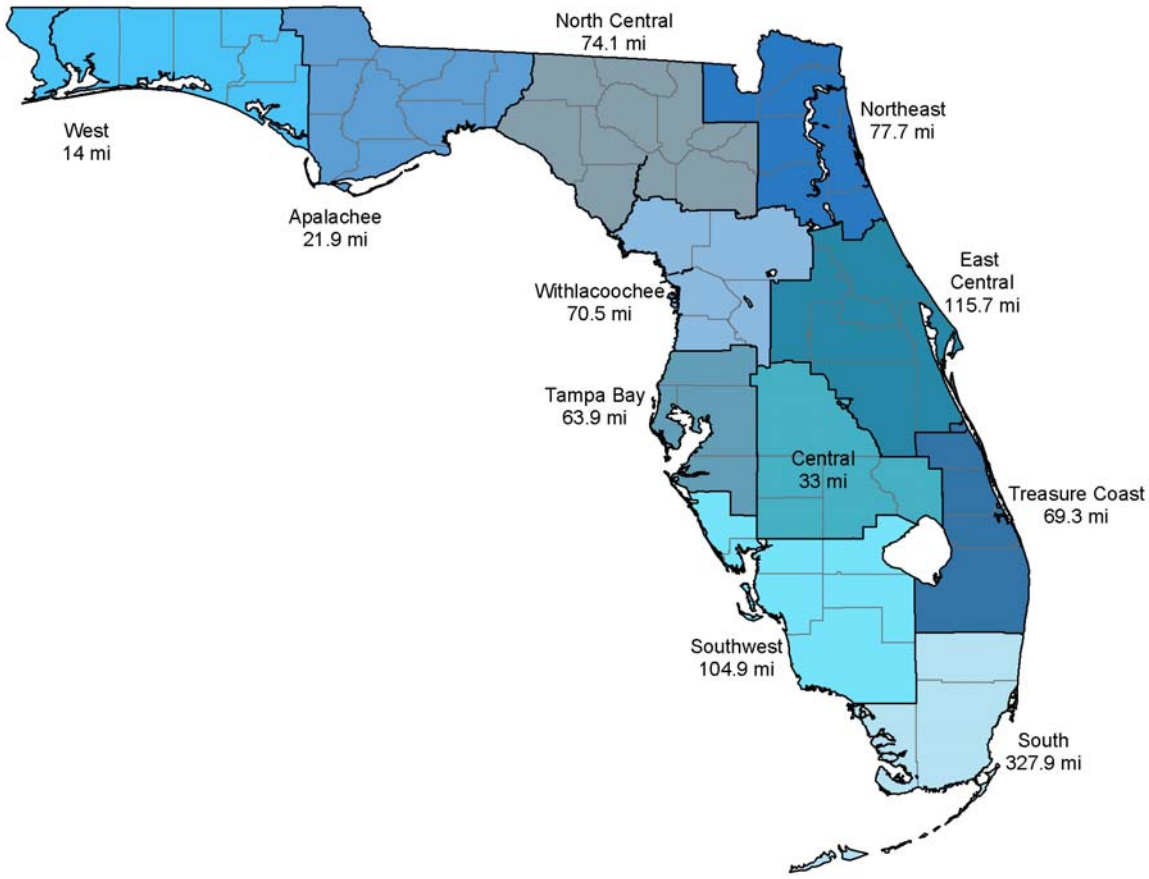
Table 6 – Outdoor Recreation Facilities by Major Supplier in Florida, 1998

Major Supplier	Bike Trails (paved)	Bike Trails (unpaved)	Hiking Trails	Jogging Trails
Federal	70.0 mi	297.3 mi	1,188.7 mi	53.6 mi
State	209.6 mi	718.3 mi	1,779.1 mi	216.1 mi
County	182.6 mi	341.9 mi	221.8 mi	205.6 mi
Municipal	402.5 mi	112.5 mi	286.6 mi	340.6 mi
Non-Government	108.2 mi	61.2 mi	427.9 mi	73.8 mi
Total	972.9 mi	1,531.2 mi	3,904.1 mi	889.7 mi

Source: Florida Department of Environmental Protection, The Office of Park Planning.
Statewide Comprehensive Outdoor Recreation Plan 2000

Figure 9 is a map of the paved bicycle trails by region in 1998. South Florida has the largest share of paved bicycle paths by length.

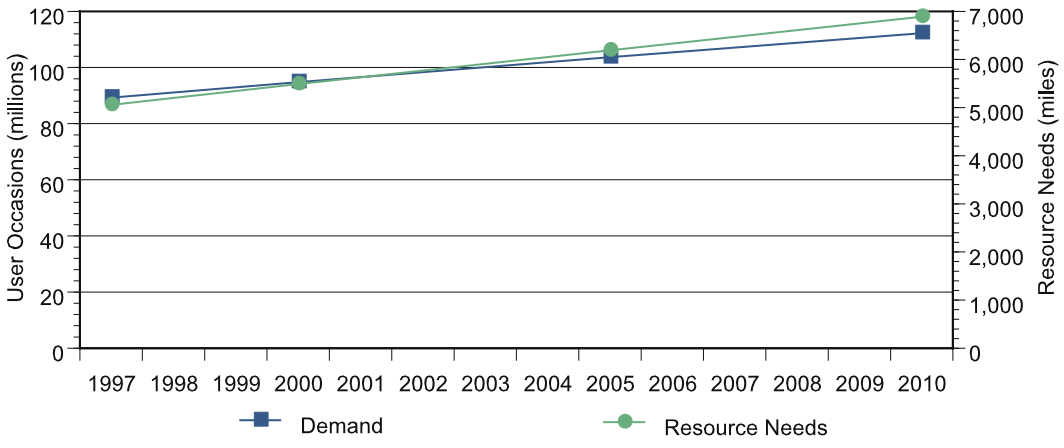
Figure 9 – Florida Miles of Paved Bicycle Trails by Region, 1998



Source: Florida Department of Environmental Protection, The Office of Park Planning. *Statewide Comprehensive Outdoor Recreation Plan 2000*

The estimated demand and subsequent need for outdoor recreation resources is expected to continue to grow over the next decade. Figure 10 shows the estimated demand in millions of user occasions, while recreation needs are presented in miles.

Figure 10 - Estimated Bicycle Demand and Need for Outdoor Recreation Resources, 1997-2010



Source: Florida Department of Environmental Protection, The Office of Park Planning. Statewide Comprehensive Outdoor Recreation Plan 2000.

Another factor influencing bicycle travel is the availability of a bicycle. In 2002, roughly 42 percent of households in Jacksonville, Miami, Orlando and Tampa did not own a bicycle. The percent of households with bicycles increased at a rate of one percent per year from 55.6% in 1998 to 58.2% in 2002.

Table 7 – Distribution of Bicycles per Household, 1998 and 2002

Bicycles per Household	2002	1998
0	41.8%	44.4%
1	18.0%	17.9%
2	19.5%	18.2%
3	10.7%	10.5%
4+	10.0%	9.0%
Total	100.0%	100.0%

Source: CUTR and NuStats, Bicycle and Pedestrian Travel: Exploration of Collision Exposure in Florida, 2002

Note: The survey sample for this report was taken from four Florida metropolitan areas and cannot be used to generalize the entire state.

Conclusions

Interest in bicycle and pedestrian travel has been increasing and efforts are being made to improve the data available to support planning, programming and policy decision-making. Improved information will allow transportation professionals and decision makers to better serve users of the system. Although there are limited data currently available at the state level on use and facility infrastructure, detailed data are available on safety for both bicyclists and pedestrians. For more information on bicycle and pedestrian safety, see the *Impact of Transportation: Transportation Safety* section of this report.

Transportation System: Bike and Pedestrian

The interest in bicycle and pedestrian facilities is motivated by a host of considerations from the opportunity for these modes to reduce vehicle travel and contribute to the subsequent benefits of lessened energy consumption, air pollution and congestion to the role these modes can play in supporting personal health through physical activity. The inherent safety risk of bicycle and pedestrian activities in locations where there are conflict opportunities with auto travel also motivates an interest in learning more about bike and pedestrian activities. Initiatives, such as the FDOT Level of Service measures that include bike and pedestrian activities, are among the steps being implemented to support more informed planning for these modes.

The interest in bicycle and pedestrian facilities is motivated by the opportunity for these modes to reduce vehicle travel and contribute to the subsequent benefits of lessened energy consumption, air pollution and congestion as well as the role these modes can play in supporting personal health through physical activity.

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Trends and Conditions Reports -- 2003

TRANSPORTATION SYSTEMS:
Rail Facilities -- Freight and Passengers
December 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Tables and Figures

Transportation Systems: Rail Facilities -- Freight and Passengers

As in many states, Florida's rail transportation has been a critical element in the historical development of the state and continues to play a significant role in meeting transportation needs. The Florida rail system is comprised of 13 line-haul railroads and four terminal or switching companies. The line-haul carriers range in size from fairly small intrastate railroads to members of large rail systems extending from Florida into Canada. As of 2002, these railroads comprise a rail system of 2,871 miles. CSX Transportation's (CSXT) 1,616 Florida route miles represent 56 percent of the statewide rail system. The Florida East Coast Railway (FEC), with 386 route miles, is the second largest carrier in terms of Florida mileage, accounting for 13.5 percent of the State rail system (Table 1).

Figure 1 - Florida Rail System Map

Source: FDOT Rail Office, *The 2002 Rail System Plan*.

Table 1 – Florida Freight Railroads (2002)

Railroad	Miles of Railroad Operated in Florida		Percent of Florida Rail System Owned/Leased
	Owned/Leased	Trackage Rights	
Alabama and Gulf Coast	44		1.5
Apalachicola Northern	96		3.4
Bay Line	63		2.2
CSX Transportation	1,616	130	56.3
Florida Central	66	10	2.3
Florida East Coast	386		13.5
Florida Midland	27		0.9
Florida Northern	27		0.9
Florida West Coast	14		0.5
Georgia and Florida RailNet	48		1.7
Norfolk Southern	96	53	3.3
Seminole Gulf	119		4.2
South Central Florida Express	158		5.5
South Florida Rail Corridor	81		2.8
Terminal Companies	30		1.0
Totals	**2,871**	**193**	**100.0**

Source: FDOT Rail Office, *The 2002 Rail System Plan*.

These railroads are classified into three classes: Class I, Class II and Class III. There are two Class I railroads, CSX Transportation (CSXT) and Norfolk Southern Railway (NS). The CSXT, Florida's largest railroad, operates 1,616 route miles in Florida. Major commodities include nonmetallic minerals, chemicals and allied products, coal, etc. The NS operates 149 route miles in Florida, and transports nonmetallic minerals; lumber and wood products; food and kindred products; pulp, paper and allied products; and various commodities moved in trailers and containers. Florida East Coast Railway Company (FEC) is the only Class II railroad. It serves the east coast of Florida with its main line running from Jacksonville to Miami. As the second largest railroad in Florida, it operates 386 route miles. Major commodities are nonmetallic minerals, vehicles and various commodities moved in containers and trailers. All the remaining Florida railroads are Class III railroads.

Florida's railroads comprise a rail system of 2,871 miles. CSX Transportation is the largest carrier with 1,616 Florida route miles.

Rail Freight

Florida's rail system handles a variety of freight traffic. Bulk commodities and short-haul movements dominate the system.

Table 2 depicts the rail freight tonnages originating and terminating in Florida in 2001 by commodity classification. Of the total 158 million tons originated or terminated, 101 million tons or 64 percent of all tons were intrastate traffic (both originating and terminating within Florida). One commodity group, nonmetallic minerals, dominates the traffic statistics, accounting for 52 percent of total originating and terminating tonnage. In a distant second place is chemical or allied products (11.9 percent), and the third-ranking commodity is coal (10.1 percent).

About 64% of the rail freight tonnage originated and terminated within Florida in 2001. That was 101 million of the 158 million tons.

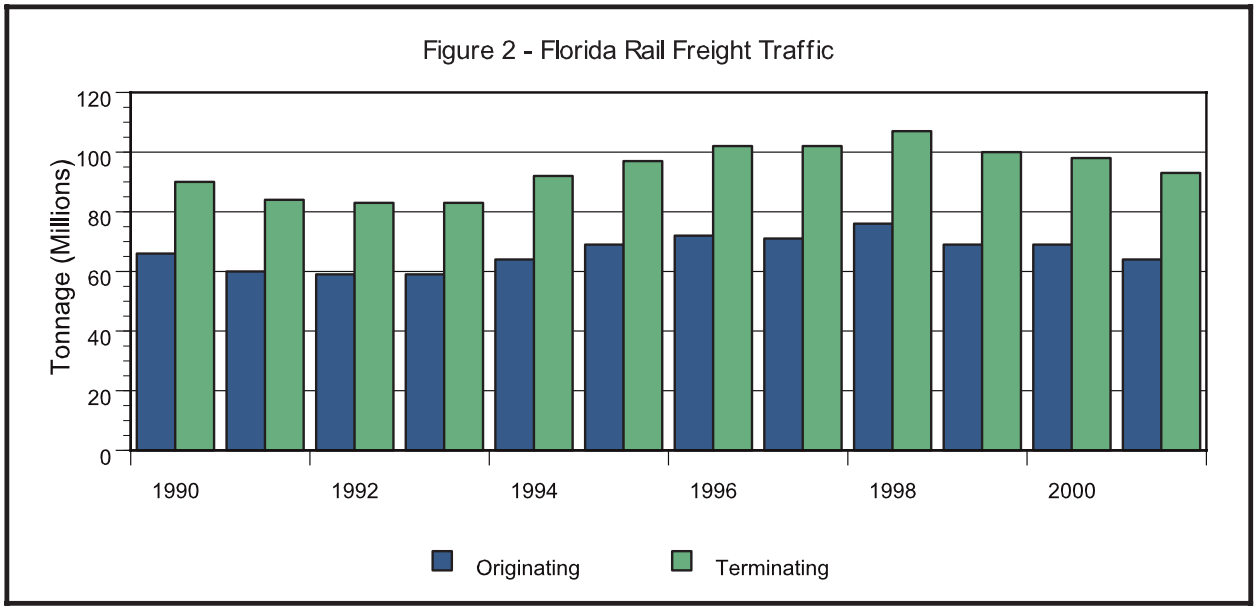
Table 2 – Florida Rail Freight Traffic 2001

Commodity	Tonnage (1,000)			Percent of Total
	Originated	Terminated	Total	
Coal	0	15,992	15,992	10.1
Nonmetallic Minerals; Except Fuels	38,952	42,453	81,405	51.6
Food or Kindred	2,695	4,205	6,900	4.4
Lumber or Wood Products; Except	585	2,495	3,080	2.0
Pulp, Paper, or Allied Products	1,768	1,515	3,283	2.1
Chemical or Allied	10,805	8,020	18,825	11.9
Clay, Concrete, Glass, or Stone Products	1,200	2,219	3,419	2.2
Hazardous Materials	1,806	3,795	5,601	3.5
Miscellaneous Mixed Shipments	2,776	5,018	7,794	4.9
All Others	3,830	7,696	11,526	7.3
Total	**64,417**	**93,408**	**157,825**	**100.0**

Source: FDOT Rail Office, *The 2002 Rail System Plan*.

Florida's rail freight traffic has experienced ups and downs in traffic tonnage over the years. Since 1999, there has been a decrease in tonnage shipments both originating and terminating in Florida. In 2001, the total volume was 157,825,000 tons. This was an increase of 38 million

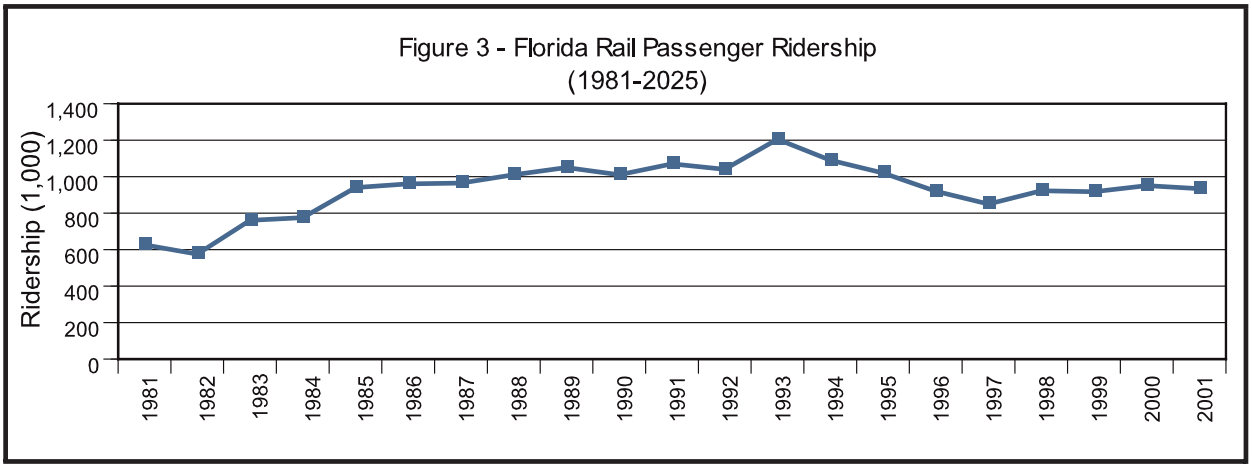
tons from 119,868,000 tons in 1972. However, the volume decreased by over 24 million tons from 182 million tons in 1998. That was a decrease of 13.4 percent, which was mostly due to downturns in demand for phosphate products (See Figure 2).



Source: FDOT Rail Office, *The 2002 Rail System Plan*.

Rail Passengers

As shown in Figure 3, rail passenger ridership reached a peak of 1.2 million in 1993. After declining to 850,000 passengers in 1997, the ridership started to come back and reached 934,069 in 2001.



Source: FDOT Rail Office, *The 2002 Rail System Plan*.

Transportation Systems: Rail Facilities -- Freight and Passengers

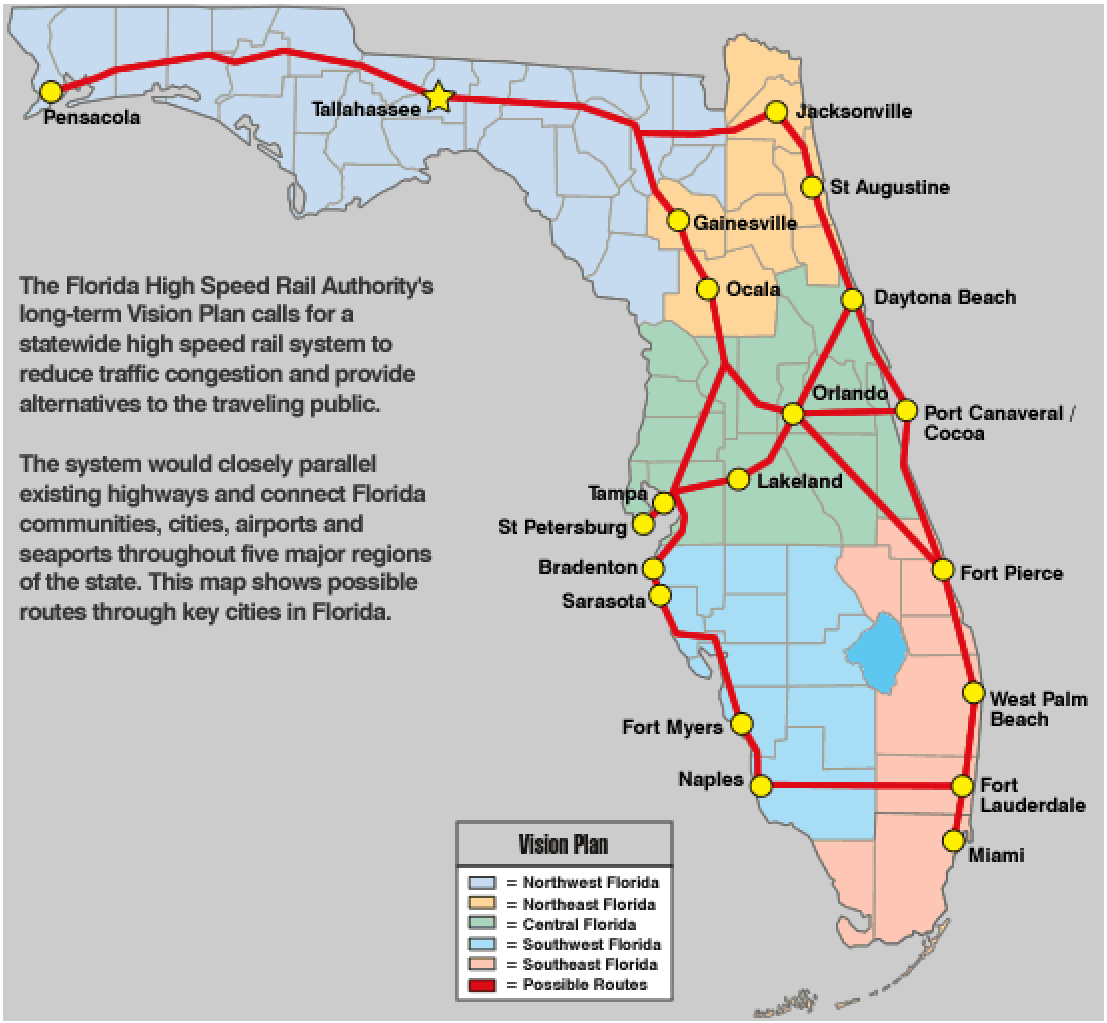
The National Railroad Passenger Corporation (Amtrak) continues to operate conventional intercity rail passenger service in Florida. Florida's routes are among the most heavily used on the national Amtrak system. A variety of Amtrak services link Florida with the Northeast and the West. Both the Silver Meteor and the Silver Star, the two conventional passenger trains to/from the Northeast, connect New York and Jacksonville through different routes. To the West, the Sunset Limited operates between Los Angeles and New Orleans and onward to Miami via Jacksonville. The Silver Palm operates between New York City, Tampa and Miami and has re-established direct Tampa-Miami service.

Besides train services, Amtrak operates its Thruway bus service to provide connections to points not served by rail. The service provides coordinated train-bus service with guaranteed connections and through fares and ticketing. Connections with commuter rail and transit are available between West Palm Beach and Miami. Tri-Rail commuter trains cover a 72-mile route between West Palm Beach and Miami.

Other forms of rail passenger services in Florida include the 22-mile Metro-Dade rail transit service in Miami-Dade county, the 2.5 mile Skyway Express and the Trolley operating in Jacksonville, and a 2.3 mile rail trolley system which began operating in Tampa in 2002. Several urban areas in Florida are exploring or planning local rail transit systems.

In November 2000, Florida voters approved Article X, Section 19 of the Constitution that calls for a high-speed rail system to be built in Florida. In June 2001, the Florida Legislature created the Florida High Speed Rail Authority to advance the development of a statewide High Speed Rail System. The system is to be constructed in phases. The first phase from Tampa to Orlando is scheduled to begin in November 2003. The system will connect major communities, cities, airports and seaports throughout five major regions of the state. Figure 4 presents planned possible routes through major cities in Florida.

Figure 4 – Proposed High Speed Rail System in Florida



Source: Florida High Speed Rail Authority. http://www.floridahighspeedrail.org/2_projectstatus.jsp

Conclusions

With ever increasing mobility needs, it is imperative that alternatives to automobiles and trucks in carrying goods and people be evaluated and considered in the transportation planning process. Rail transportation has played a critical role in the development and growth of Florida and remains an important transportation option for Florida's citizens, businesses and tourists. The Florida Department of Transportation is working diligently with its partners to provide mobility solutions by developing a statewide Strategic Intermodal System (SIS). This system plan acknowledges the role that rail plays in meeting travel needs. Growth in population and accompanying economic activity will result in continued demand for transportation of persons

and freight and will depend on existing rail services and possibly new rail technologies and applications to help meet evolving travel needs.

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Trends and Conditions Report - 2003

TRANSPORTATION SYSTEM:
The Roadway System
December 2003

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List of Tables and Figures

Transportation System: The Roadway System

Introduction

Florida's extensive transportation system consists of facilities and services of every mode of transport distributed throughout the state. The roadway system is comprised of public and private roads. This report discusses public roads that are classified into the State Highway System (SHS), the Federal-owned highways/roads, and city and county roads. Within the SHS, the Florida Intrastate Highway System (FIHS) will be described and the Florida Turnpike, as part of the FIHS, will be discussed.

Public Roads

A public road refers to a road under the State Highway System, the County Road System, the City Road System, or by a branch of the U.S. government. Public roads do not include private subdivision roads or roads within shopping centers or other large private areas.

A road can be classified by functional classification, ownership or location. In terms of functional classification, a road can be categorized as a principal arterial (including Interstate highways, turnpikes and freeways, or other principal arterials), a minor arterial, an urban/major collector, a rural minor collector, or a local road. The definitions and processes used to classify roads according to the functions or services they provide is specified by the Federal Highway Administration (FHWA) (See Table 1). Under ownership, a public road can be owned by the state, a county, a city, or the federal government. A state road may be the responsibility of the Florida Department of Transportation, another state agency, or one of several regional expressway authorities. The location of a road is either urban or rural, depending on whether it is inside or outside an urban area as defined by an FHWA-approved urban boundary (See Table 2).

Table 1 - Florida Public Road Centerline Miles by Functional Classification

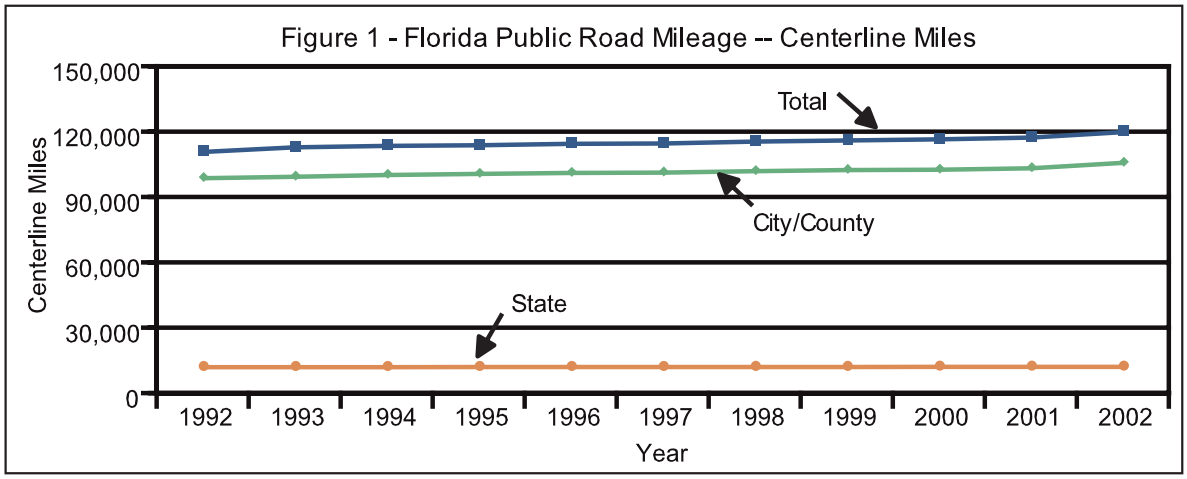
	Principal Arterials			Minor Arterials	Urban/Major Collectors	Rural Minor Collectors	Locals	Total
	Interstate	Turnpike & Freeways	Other					
1992	1,473	244	5,871	4,615	9,337	5,364	83,735	110,638
1993	1,473	287	5,971	4,865	9,766	5,239	85,347	112,949
1994	1,473	403	6,041	5,440	10,492	4,879	84,248	112,976
1995	1,472	390	6,100	5,834	10,528	4,816	84,750	113,891
1996	1,472	405	6,367	5,612	10,446	4,781	85,336	114,417
1997	1,472	404	6,404	5,592	10,242	4,204	86,253	114,571
1998	1,472	420	6,406	5,644	10,198	4,198	87,079	115,417
1999	1,472	425	6,407	5,642	10,126	4,186	87,699	115,957
2000	1,472	452	6,422	5,696	10,177	4,191	88,031	116,441
2001	1,472	455	6,448	5,720	10,117	4,103	88,985	117,300

Source: FDOT Transportation Statistics Office, Florida Public Road Mileage and Miles Traveled Report

Table 1 indicates that over the years, local roads have the largest mileage increase. In the past decade, a total of 5,250 miles have been added to the local roads whereas rural minor collectors are declining. The urban/major collectors have a trend of decline starting in 1996. Turnpike and freeways have experienced the highest rate of increase.

City and county roads make up 88 percent of Florida's roadway miles.

Figure 1 and Table 2 reveal that local urban and rural roads comprise 88 percent of the roadway miles. A majority of the roadway system consisted of rural mileage until year 2001. From 1992 to 2000, more than 57 percent of the roadway miles on the state's public roads were rural. Cities and counties owned 87 percent of the rural miles.



Source: FDOT, Transportation Statistics Office, 2002 Florida Highway Data Source Book

Table 2 - Florida Public Road Centerline Miles by Jurisdiction

Year	Rural Mileage				Urban Mileage				Total
	Under State Control	Under Local Control	Under Federal Control	Total	Under State Control	Under Local Control	Under Federal Control	Total	
1992	7,592	54,305	106	62,003	4,278	44,359	0	48,637	110,640
1993	7,509	54,815	1,306	63,630	4,423	44,755	0	49,178	112,808
1994	6,995	56,780	1,309	65,084	4,926	43,468	0	48,394	113,478
1995	6,976	57,155	1,309	65,440	4,945	43,393	0	48,338	113,778
1996	7,018	57,579	1,486	66,083	4,907	43,432	0	48,339	114,422
1997	7,007	57,758	1,486	66,251	4,920	43,401	0	48,321	114,572
1998	6,999	58,433	1,647	67,079	4,943	43,394	0	48,337	115,416
1999	7,013	58,976	1,647	67,636	4,938	43,383	0	48,321	115,957
2000	6,998	58,779	1,647	67,424	4,963	44,264	0	49,227	116,651
2001	7,056	40,418	1,937	49,411	4,996	62,752	141	67,889	117,300

Source: Federal Highway Administration, Highway Statistics 1992-2001

Urban road miles comprised less than half of the total public road length for the same period. Cities and counties owned 90 percent of all urban roads. A change in analysis methods for 2001 resulted in some recategorization due to demographic shifts: there are now more miles of urban roads than rural. The cities and counties are responsible for 58 percent of urban road miles as compared to 43 percent reported in prior years.

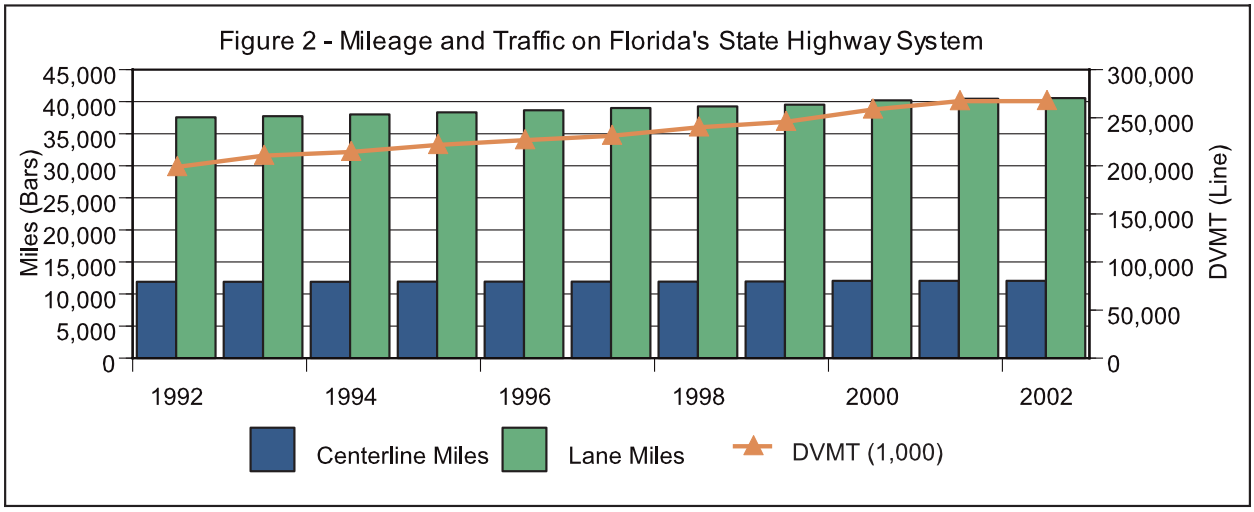
Florida State Highway System

The State Highway System (SHS) refers to roads under the jurisdiction of the State of Florida and maintained by the Florida Department of Transportation or a regional expressway authority. It includes roads signed as Interstate highways, Turnpike and other toll roads, U.S. routes, and State Roads (SR). While it only contains 10 percent of all public road length, the State Highway System is, nonetheless, the most traveled in Florida. The centerpiece of this highway network is the Florida Intrastate Highway System (FIHS), which is discussed in the next section.

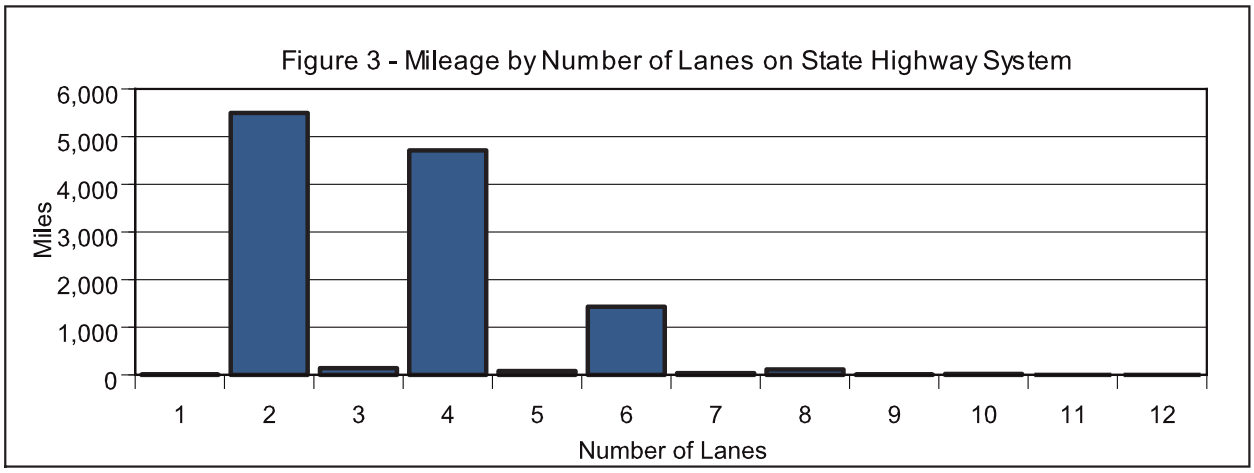
Over the last decade, lane miles have grown faster than centerline miles. This indicates that roads are being widened.

As of December 1, 2002, the SHS had 12,058.2 centerline miles and 40,553.6 lane miles. During the same period, Daily Vehicle Miles Traveled (DVMT) on the SHS reached 267,298,100. Over the last decade (1992-2002), centerline miles on the SHS increased at an annual rate of 0.13 percent, the annual rate for lane miles was 0.76 percent, and the DVMT had an annual increase rate of 3.04 percent. In total, the increase over the last decade was 1.3 percent for centerline miles and 7.9 percent for lane miles, but 34.5 percent for the DVMT. The faster rate of growth of lane miles compared to centerline miles is an indication that additional lanes are being added to the existing roads and new multilane roads are being built. This is expected, as capacity needs rather than connectivity needs drive new roadway investment. DVMT per lane mile is a measure of how intensively each lane mile of roadway is used. From 1990 to 2001, DVMT per lane mile has been rising faster than centerline miles and lane miles, growing from 5,010 to 6,606 (Figure 2). Between 1990 and 2001, the annual rate of increase was 2.4 percent and the aggregate rate of increase was 30 percent.

Figure 3 indicates that two-lane roads comprise about 46 percent of the 12,052 centerline miles on the SHS. Adding 4,713 miles from the four-lane roads, both make up about 85 percent of the total centerline miles. Together with the six-lane roads, these three types of roads comprise more than 96 percent of the total centerline miles. Less than 4 percent of roadway mileage is on other roads.



Source: FDOT Transportation Statistics Office, 2002 Florida Highway Data Source Book



Source: FDOT Transportation Statistics Office, 2003

The Florida Intrastate Highway System (FIHS)

As part of the State Highway System, the FIHS, created in 1990 by the Florida Legislature, is a statewide highway network that provides for high-speed and high-volume traffic movements. The FIHS is intended to connect urban and rural areas throughout the state, and to connect to global markets through airports, seaports, and rail terminals. Comprised of Interstate highways, Florida's Turnpike, and selected urban expressways and major arterial highways, the FIHS is intended to provide and maintain the network of highways that are referred to as the intrastate system. The FIHS constitutes approximately 3 percent of the entire Florida highway network in centerline miles, yet carries about 29 percent of all traffic and 38 percent of all truck traffic. It

handles approximately 64 percent of truck traffic on the State Highway System. As of January 1, 2003, the system consists of 3,939 miles of roadway, of which 3,844 miles exist, 92 miles are proposed and 3 miles are under construction (See Figure 3).

Comprising only 3 percent of the entire Florida highway network, the FIHS carries about 29 percent of all traffic, about 38 percent of all truck traffic, and 64 percent of truck traffic on the SHS.

The FIHS makes travel safer and more convenient through new technologies such as Intelligent Transportation Systems (ITS). ITS is the integrated application of modern computer and communication technologies to manage traffic flow and traffic incidents. Where appropriate, the FIHS includes provision for through travel, buses, passenger rail service, and vehicles with more than one occupant. As the backbone of Florida's Strategic Freight Network, the FIHS links seaports, airports, rail, and other intermodal/freight facilities. It serves major international airports that handle more than 90 percent of Florida's airfreight and passengers and serves major deep-water ports that handle more than 90 percent of Florida's waterborne trade and passengers.

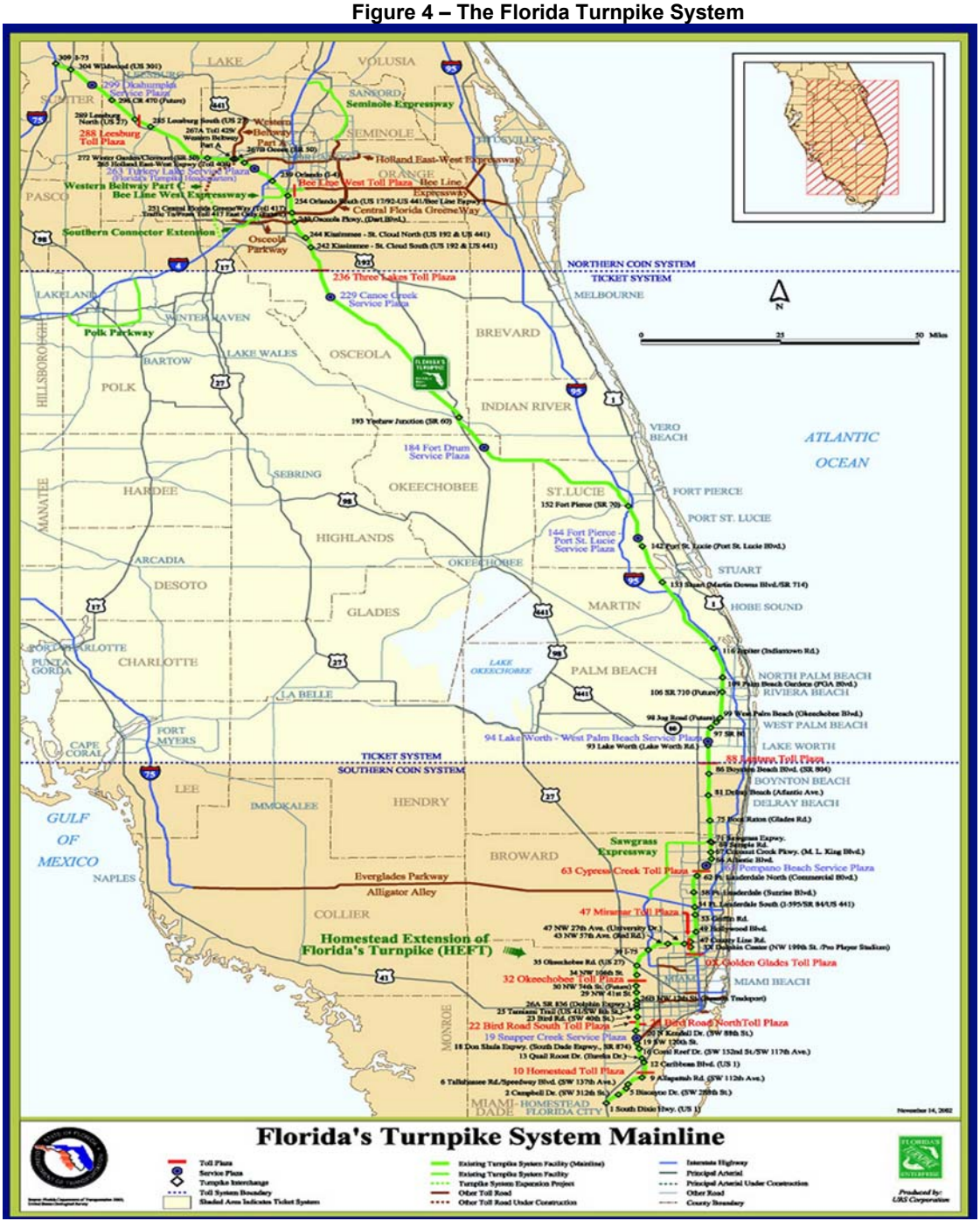
As the backbone of Florida's Strategic Freight Network, the FIHS links seaports, airports, rail, and other intermodal/freight facilities.

The FIHS also serves Florida's businesses, people and tourists by connecting the 18 counties that account for 85 percent of Florida's gross state product. About 66 percent of Florida's people and jobs, and 80 percent of Florida's industrial and warehousing facilities are within five miles of the FIHS.

One important segment of the FIHS is the Florida Turnpike System, a 450-mile system of limited-access toll highways. Florida's Turnpike mainline passes through 11 counties from North Miami to a junction with Interstate 75 in North Central Florida. It handles the bulk of traffic leading from the Central Florida area to east coast destinations in South Florida.

In addition to the 265-mile mainline, the Turnpike System includes the 47-mile Homestead Extension, which takes motorists to the top of the Florida Keys; the 23-mile Sawgrass Expressway/Toll 869 in Broward County; the 19-mile Seminole Expressway/Toll 417 in Seminole County; the 15-mile Veterans Expressway/Toll 589 in Tampa; an eight-mile portion of the Bee Line Expressway/Toll 528 in Orlando; the six-mile Southern Connector Extension of the Central Florida GreeneWay/Toll 417 in Orlando; the 42-mile Suncoast Parkway and the 25-mile Polk Parkway (See Figure 4).

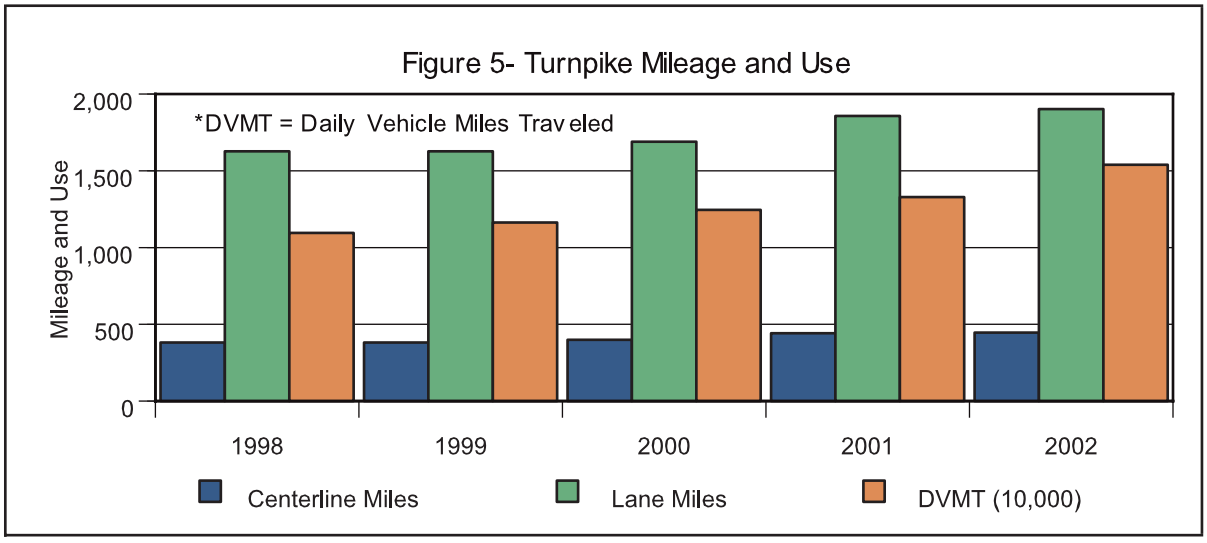
Figure 4 – The Florida Turnpike System



Source: Florida Turnpike Enterprise, 2003.

While making up an average of 4.5 percent in centerline miles of the State Highway System, Florida's toll roads carry 6.8 percent of the traffic on average with 74 percent of the toll road traffic belonging to the Turnpike. The traffic increased from 14,778,800 DVMT in 1998 to 20,754,400 in 2002 whereas only 92 centerline miles were added to the system during the same period.

Figure 5 displays Turnpike mileage and use of the system. While both the centerline miles and lane miles increased 17 percent from 1998 to 2002, the DVMT on the Turnpike grew almost 41 percent for the same period. Annually, the DVMT had a growth rate of 16 percent whereas the centerline miles and lane miles each increased 4 percent. This indicates that the travel demand on the Turnpike is growing much faster than the actual mileage.



Source: FDOT Transportation Statistics Office, Florida Public Road Mileage and Miles Traveled Reports

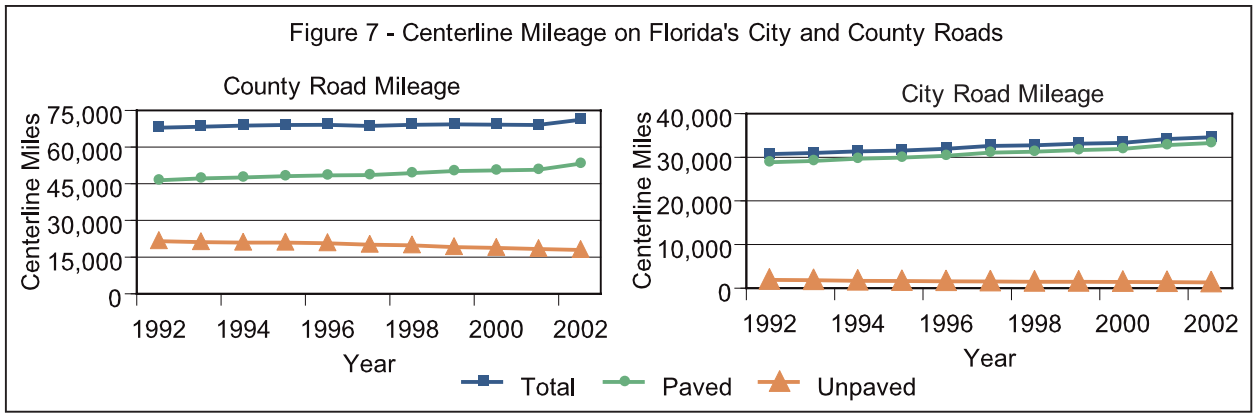
Figure 6 – System Map of Florida Intrastate Highway System

Source: FDOT Systems Planning Office, Florida Intrastate Highway System Status Report, 2003

City and County Roads

Historically, city and county roads have comprised the majority of Florida's roadway system accounting for almost 88 percent of the roadway system.

Over the years, Florida's cities and counties have added road length at a faster rate than the State. From 1992 to 2002, county roads increased 4.7 percent with an annual increase rate of 0.5 percent and the city roads grew by 12.4 percent with an annual growth rate of 1.18 percent.

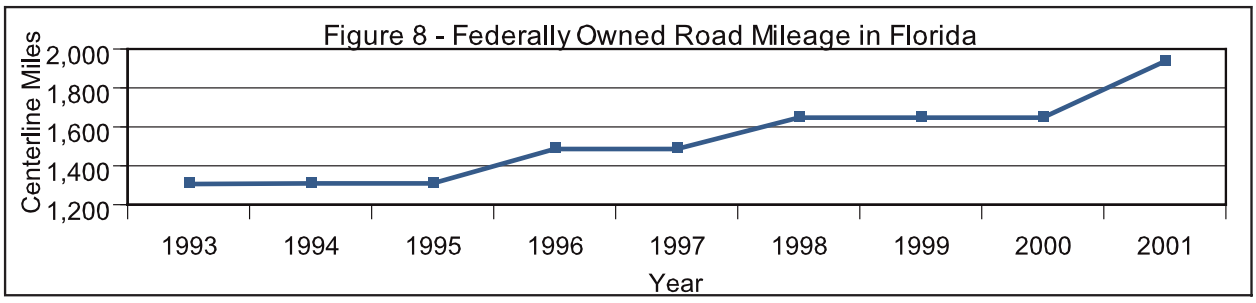


Source: FDOT Transportation Statistics Office, 2002 Florida Highway Data Source Book

Figure 7 shows that both the county and city governments have been adding paved roads over the years whereas unpaved road mileage is declining. Cities have had greater total mileage growth due to the mileage increase of paved roads. Counties experienced a much slower growth of paved roads until 2002, which explains the leveling-off of total mileage in the recent few years.

Federally Owned Roads

Federal roads are roads owned by agencies of the U.S. Government. They include many (but not all) roads in National Parks, National Forests, and Indian reservations, as well as roads owned by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the National Aeronautical and Space Administration. Interstate highways are owned by the states, not by the federal government. Most of the roads the federal government owns are rural, totaling 1,937 miles in 2001. That year, the federal government had 141 miles of urban roads (Figure 8).



Source: FHWA, Highway Statistics (1993-2001)

Conclusion

Florida's extensive transportation system consists of facilities and services of every mode of transport distributed throughout the state. By working closely with many public and private sector partners, the Department of Transportation has the lead responsibility in realizing the mission of providing "a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities".

Consisting of only 10 percent of the total public road centerline miles in the state, the State Highway System carries two-thirds of the traffic. Continued growth in freight and passenger movements will place pressure on the available capacity of key freight and passenger gateways and the highways, rail lines and transit systems that serve them. The roadway system plays a paramount role in maintaining efficient flows of people and goods through the state's critical gateways and along key transportation corridors. For information regarding the current performance on the SHS, please refer to the *System Performance: The Roadway System* section of this report.

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Trends and Conditions Reports – 2003

TRANSPORTATION SYSTEM:
Seaports -- Freight and Cruise Activity
December 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Tables and Figures

Transportation System: Seaports -- Freight and Cruise Activity

Florida's geography as a peninsula with about 1,350 miles of coastline, as well as its global location as the United States' gateway to the Caribbean, Central and South America, heighten the importance of seaport operations to the economy of Florida. Florida's 14 deepwater ports are geographically split between the Gulf and Atlantic coasts. The Gulf coast ports are focused primarily on domestic trade and growing cruise tourism, whereas the Atlantic ports compete with ports all along the Eastern Seaboard for international cargo and cruise tourism. These 14 seaports generate substantial economic benefits for communities throughout the state. They are located in Canaveral, Everglades, Fernandina, Fort Pierce, Jacksonville, Key West, Manatee, Miami, Palm Beach, Panama City, Pensacola, Port St. Joe, St Petersburg, and Tampa (See Figure 1).

Figure 1 - Map of Florida's Seaports

Source: Florida Seaport Transportation and Economic Development Council (FSTEDC), *Executive Summary: A Five-Year Plan to Achieve the Mission of Florida's Seaports (2002/2003-2006/2007)* (Hereafter referred to as "The 5-Year Mission Plan").

Freight

Trade is a major activity for Florida's seaports. One measure of seaport activity is the actual tonnage crossing seaport docks. In Fiscal Year 2002 (FY ½), Florida seaports handled 115.2 million tons of cargo, with 55.3 million tons being domestic. It is projected that Florida's waterborne trade will grow to 135 million tons by FY 06/07 (The 5-Year Mission Plan).

Table 1 displays the import, export, and domestic tonnage handled at each port in FY 01/02. International trade comprises 52 percent of the tonnage activity with domestic trade being the remaining 48 percent. Ports of Fernandina, Palm Beach and Tampa were the only ports whose exports exceeded imports. Ports of Everglades, Jacksonville, Palm Beach and Tampa are major domestic trade players. A comparison of total waterborne trade was also made between FY 01/02 and FY 00/01. Some ports gained while others lost. However, the overall trend was positive, with about 3.8 million more tons being handled at the ports.

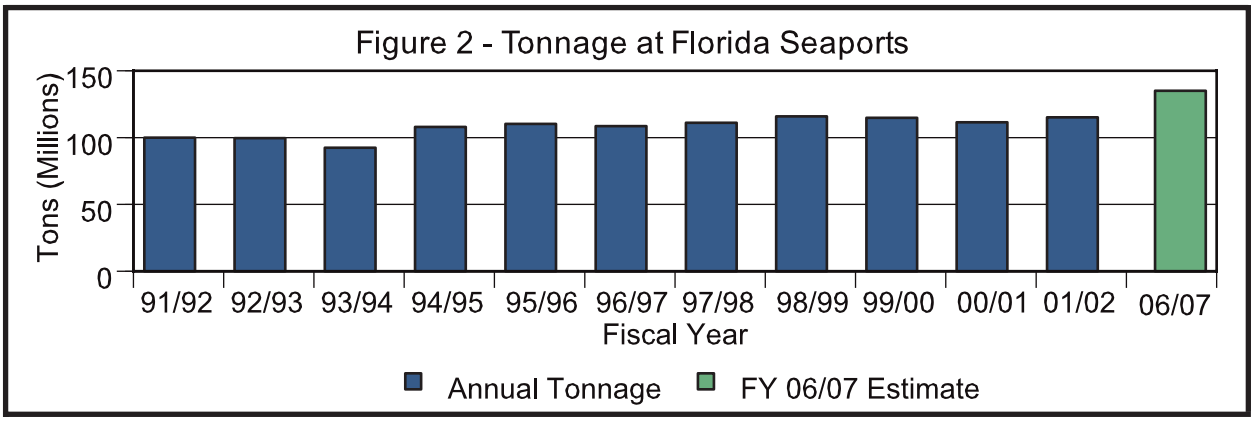
Florida's seaports handled 115.2 million tons of cargo in FY 01/02. Waterborne trade is expected to grow to 135 million tons by FY 06/07.

Table 1 – Tonnage of Florida's Total Waterborne Trade By Port FY 01/02 (with FY 00/01 Comparison)

Port	Exports	Imports	Domestic	Total (FY 01/02)	Total (FY 00/01)
Canaveral	1,081,793	3,134,008	0	4,215,801	4,555,479
Everglades	2,273,285	7,956,499	12,503,070	22,732,854	23,743,820
Fernandina	336,480	129,300	79,000	544,780	541,000
Fort Pierce	2,200	6,490	7,500	16,190	81,700
Jacksonville	1,044,000	7,666,000	11,180,000	19,890,000	18,041,000
Manatee	1,421,568	5,279,329	0	6,700,897	5,200,230
Miami	3,646,235	5,035,500	0	8,681,735	8,247,004
Palm Beach	2,525,758	1,588,959	1,372,031	5,486,748	3,322,792
Panama City	47,458	498,780	105,309	651,547	906,372
Pensacola	93,357	141,418	327,558	562,333	628,603
Tampa	8,420,000	7,521,000	29,749,000	45,690,000	46,110,473
Total	**20,892,134**	**38,957,283**	**55,323,468**	**115,172,885**	**111,378,473**

Source: FSTEDC, *the 5-Year Mission Plan (2002/2003-2006/2007)*

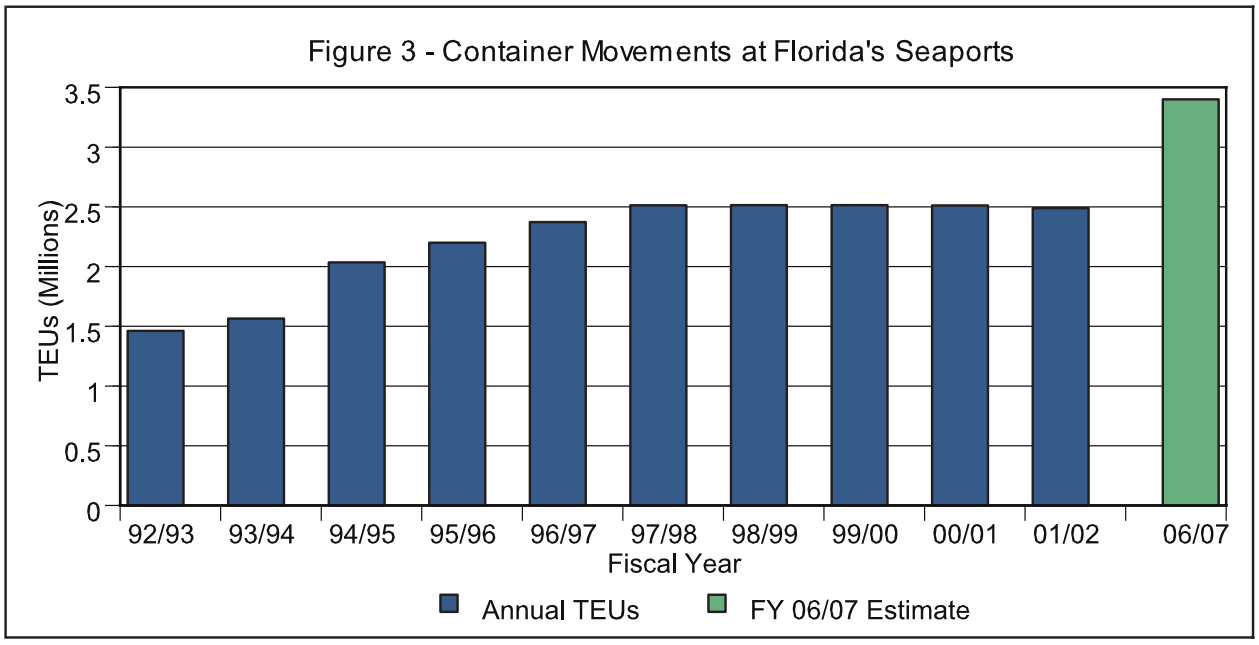
Figure 2 shows that over the last decade there was an average increase of 12.8 percent annually in activity at Florida's seaports. A positive trend is observed with ups and downs through the years. FY 93/94 witnessed a sharp drop of cargo being shipped into and out of Florida's ports, largely due to a concern over tariff changes during that period. The trend, however, quickly reversed itself and FY 94/95 observed a huge increase in tonnage shipments.



Source: FSTEDC, The 5-Year Mission Plan (FY 02/03-FY 06/07)

Shipment tonnage at Florida's seaports increased an average of 12.8 percent annually over the past decade.

Another measure of seaport activity is container traffic. The unit of measure employed is the twenty-foot equivalent unit (TEU). Over the years, Florida ports have moved millions of TEUs across their docks. Growth in container activity has been 8 percent annually. The Florida Seaport Transportation and Economic Development Council (FSTEDC) estimates that by FY 06/07 about 3.4 million TEUs will be handled at Florida's seaports (Figure 3).



Source: FSTEDC, The 5-Year Mission Plan (FY 02/03-FY 06/07)

In FY 01/02, Florida's seaports handled 115 million tons of international and domestic commodities including automobiles, apparel, steel, bananas, petroleum, and computer products. For the same period, 20.9 million tons of international exports and 38.9 million tons of international imports were handled at the seaports. The top 10 import and export commodities that Florida trades with the world are ranked in Tables 2 and 3.

Table 2 –Florida's Top 10 Export Commodities, 2002 ($million)

Rank	Commodity	Trade Value (2002)	Percent Change over 2001
1	Machinery	$7,168.4	-18.4
2	Electrical machinery	5,027.3	-13.4
3	Vehicles (not railway)	2,775.7	52.6
4	Optic, medical instruments	1,658.3	-14.0
5	Aircraft, spacecraft	1,525.8	7.7
6	Pharmaceutical products	1,323.6	-8.6
7	Knit apparel	1,255.6	-24.0
8	Fertilizers	1,188.1	6.4
9	Plastic	776.2	8.6
10	Woven apparel	718.6	-22.8

Source: Enterprise Florida, Inc., Florida's Top 50 Merchandise Export Commodities (2HS), 2000-2002.
http://www.eflorida.com/infocenter/trade/MerchAnnual/AnnualTop50MerchExports2HS.pdf

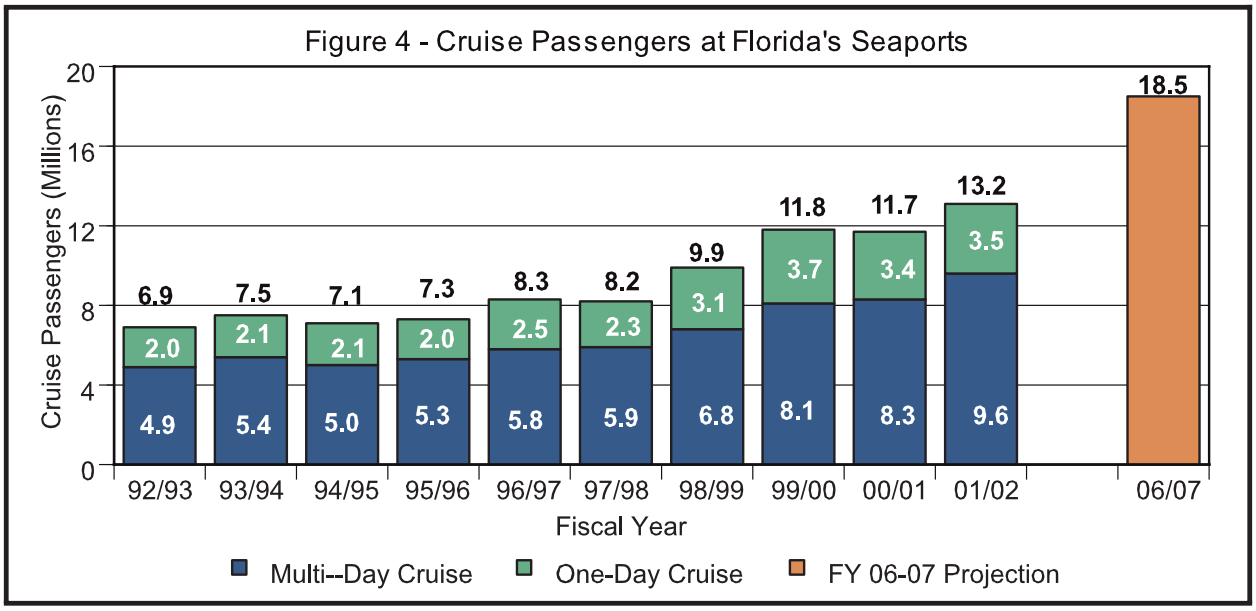
Table 3 –Florida's Top 10 Import Commodities, 2002 ($million)

Rank	Commodity	Trade Value (2002)	Percent Change over 2001
1	Vehicles (not railway)	$7,957.8	0.9
2	Knit apparel	4,198.7	-1.2
3	Woven apparel	3,456.4	-4.7
4	Electrical machinery	2,547.1	30.1
5	Aircraft, spacecraft	2,419.9	16.2
6	Mineral fuel, oil, etc.	1640.0	-11.1
7	Machinery	1,539.2	-4.9
8	Fish and seafood	1,212.2	3.2
9	Special other	1,076.5	0.3
10	Organic chemicals	980.7	31.1

Source: Enterprise Florida, Inc. Florida's Top 50 Merchandise Import Commodities (2HS), 2000-2002.
http://www.eflorida.com/infocenter/trade/MerchAnnual/AnnualTop50MerchImports2HS.pdf

Cruise

The operation of cruise boats is another major component of Florida's port activities. With the world's three busiest cruise ports (Port of Miami, Port Canaveral, and Port Everglades), Florida serves about 79 percent of all North American homeport passenger movement. In FY 01/02, these three ports handled 10,953,087 passenger embarkations and disembarkations while 13,118,938 occurred at all eight seaports that had cruise operations. It is forecasted that Florida's seaports will host about 18.5 million passengers by FY 06/07.



Source: FSTEDC, The 5-Year Mission Plan (FY 02/03-FY 06/07)

About 79 percent of all North American homeport passenger movement is served through Florida ports. Port of Miami, Port Canaveral, and Port Everglades are the world's busiest cruise ports.

Table 4 shows that over 73 percent of the cruise activities were multi-day cruises for FY 01/02. Only three seaports had one-day cruise activities – Port Canaveral, Port Everglades and Port of Palm Beach. Compared to FY 00/01, a total of 1,369,970 more passengers embarked and disembarked the eight passenger ports.

Table 4 – Cruise Activities at Florida's Seaports FY 01/02 (Embarkations and Disembarkations)

Ports	One-Day Cruise	Multi-Day Cruise	Total (FY 01/02)	Total (FY 00/01)
Canaveral	1,873,044	1,951,196	3,824,240	3,593,424
Everglades	1,030,665	2,455,192	3,485,857	3,072,343
Fernandina	0	454	454	300
Key West	0	927,746	927,746	619,493
Manatee	0	63,042	63,042	56,622
Miami	0	3,642,990	3,642,990	3,391,091
Palm Beach	591,338	141	591,479	498,460
Tampa	0	583,130	583,130	517,235
Total	**3,495,047**	**9,623,891**	**13,118,938**	**11,748,968**

Source: FSTEDC, The 5-Year Mission Plan (2002/2003-2006/2007)

As the capital of the North America cruise industry and the corporate home or administrative office for 15 cruise lines, Florida enjoys substantial economic benefits from cruise operations at the eight seaports. These benefits include $3 billion in direct expenditures, more than 8,400 jobs and local and state tax revenues.

In 2002, North America's seaports hosted 7.6 million cruise passengers with Florida seaports in the lead. With 13 new cruise ships added to the fleet in 2002 and 14 more added in 2003, the number of cruise passengers is projected to reach 8.3 million in 2003. Several traditional cargo ports in Florida, such as the Port of Jacksonville, are actively pursuing cruise operations. With the additions and the new cruise ports, it is very likely that Florida's seaports will host an additional million cruise passenger embarkations and disembarkations in FY 02/03.

Conclusions

With growing globalization of manufacturing and commerce, seaports will remain critical infrastructure elements for the provision of food, fuels, materials and manufactured products as well as playing an increasing role in meeting the tourism/entertainment desires of the population. Florida's natural orientation positions the state to remain an important avenue for commerce and economic activity.

To support the current seaport cargo and cruise operations, and enable them to meet evolving needs, the Florida seaports will require ongoing investment to maintain and expand the capacity necessary to meet these growing needs. Similarly, the interconnection of the seaports with the broader passenger and freight transportation networks will be critical to sustaining effective functioning of the overall transportation system. The *Impact of Transportation: System*

Performance report in this series contains a rich discussion of the needs and concerns in these areas at Florida's seaports.

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Trends and Conditions Report – 2003

TRANSPORTATION SYSTEM:
Transit and Transportation Disadvantaged
September 2003

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List of Tables and Figures

Transportation System: Transit and Transportation Disadvantaged

Introduction to Public Transportation Services

Public transit services in Florida consist of two major programs, the fixed route and demand responsive services for the general public provided in numerous urban areas and the paratransit services for special population groups provided in all of the counties in the state. Public transportation services are intended to serve the needs of those persons who are unable to make use of auto travel, as well as to provide a choice option for travelers, and provide a resource efficient public mode in higher volume applications where accommodating auto travel is resource intensive. Public transit is most prevalent in urban areas, in peak periods and for trips to the urban core or downtown area, thus it meets needs that are often difficult or expensive to meet with other travel options. Public transportation is provided by local government entities but supported by passenger fares, and local, state and federal governmental resources.

This section provides overview materials for the fixed route and demand responsive transit systems in Florida. The next section provides information on the services for transportation disadvantaged.

Florida Fixed Route Public Transportation Services

Table 1 provides summary information on public transportation services in Florida. Florida currently has fixed routes services in 26 counties provided by 28 different entities. Figure 1 shows the areas served by Florida transit services. In the recent past, several new areas have added fixed route services including: Collier County, Charlotte County, Highlands, Lake Worth and Boynton Beach.

Transit service in Florida has been growing at a rate faster than auto travel in the past few years, but overall transit use in Florida remains modest. Florida transit trips comprise approximately 2 percent of national transit use, while Florida has nearly 6 percent of the nation's population. Transit use in all of Florida approximates that in Atlanta, Georgia and is about half that in the Washington D.C. area. The availability of services and infrastructure, the densities, the CBD concentration of employment and various other factors have resulted in historically modest transit use in Florida. However, recent events, such as new areas offering services, the 2002 referendum resulting in a larger resource commitment to transit in Miami-Dade County and other service expansions as well as continued strong population growth are suggesting a growing role for transit in providing transportation to Floridians.

Of the 17 million Floridians, over 12 million live within the service area of one of the fixed route transit operators. These operators provide services to the larger urban areas, and hence, the large majority of the Florida population has access to some fixed route services. Geographically, service covers 11,656 square miles, about 21.6 percent of the area of

the state. The 13,419 route miles compares to almost 5,000 miles of urban interstate facilities, including expressways and freeways, and over 21,000 miles of urban arterials.

The most recent data shown in Table 1 indicate substantial growth in service miles in 2001. Multiyear data are shown in subsequent graphics. This table provides a summary of key indicators of public transportation service supply and demand.

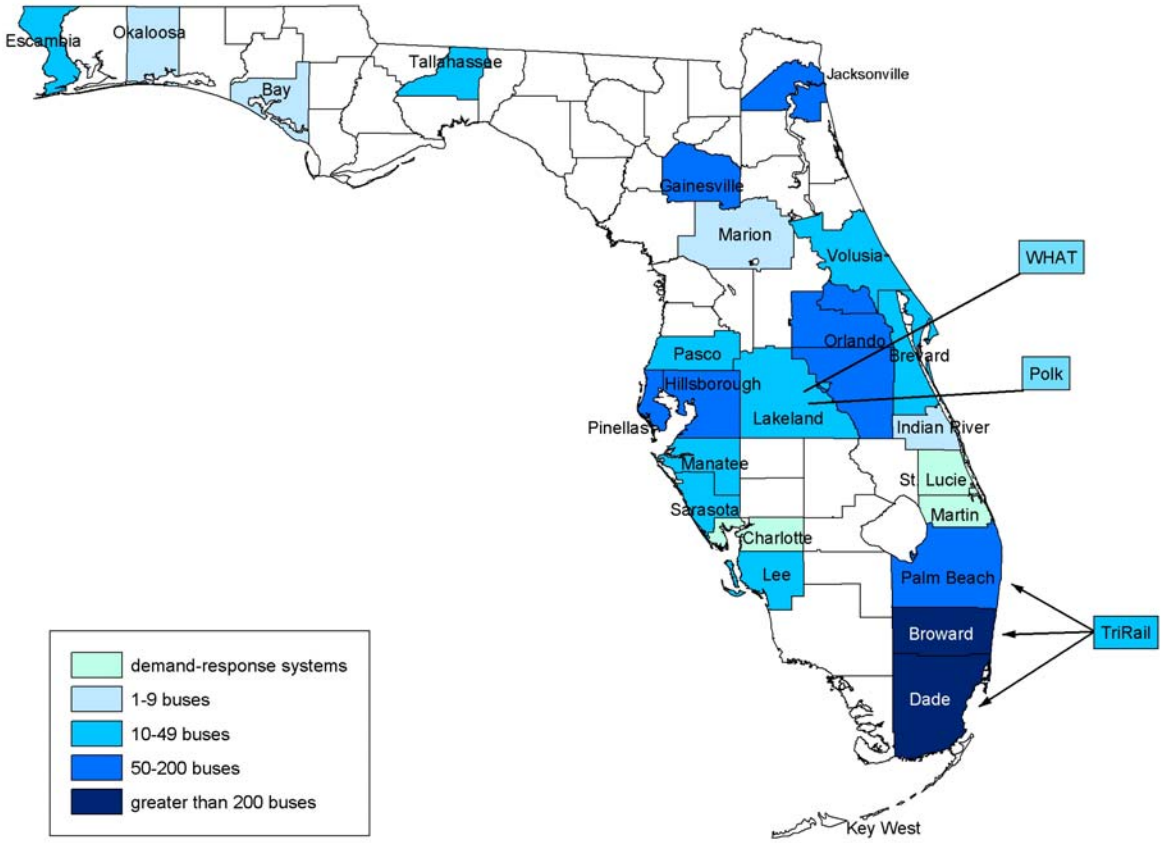
Table 1- Statewide Florida Transit System Totals, 2000 and 2001

	2000	2001	% Change 2000-2001
Public Transportation Supply			
Service Area Population	11,685,752	12,119,293	3.7%
Service Area Size (square miles)	10,246	11,656	13.8%
Route Miles	12,954	13,419	3.6%
Revenue Miles	138,799,065	158,226,379	14.0%
Revenue Hours	9,502,284	10,804,286	13.7%
Vehicles Available for Max Service	4,248	4,995	17.6%
Vehicles Operated in Max Service	3,340	3,955	18.4%
Average Speed (RM/RH)	14.61	14.64	0.2%
Average Headway (minutes)	56.9	56.4	-0.9%
Average Age of Fleet (years)	6.0	5.4	-9.8%
Revenue Miles per Route Mile	7,636	7,778	1.9%
Weekday Span of Service (hours)	15.6	15.5	-0.3%
Route Miles per Square Mile of Service Area	1.3	1.2	-8.7%
Average Fare	$0.74	$0.80	8.1%
Fare Box Recovery	25.2%	24.5%	-3.0%
Public Transportation Demand			
Passenger Trips	195,701,285	203,215,335	3.8%
Passenger Miles	999,641,009	1,061,808,594	6.2%
Passenger Trips per Capita	16.7	16.8	0.1%
Passenger Trips per Revenue Mile	1.4	1.3	-9.2%
Passenger Trips per Revenue Hour	20.6	18.8	-8.6%
Passenger Fare Revenues	$147,513,506	$163,003,819	10.5%

Source: Florida Transit Information System (FTIS), Version 2003
Note: System-wide aggregate includes all transit systems (fixed-route and demand-response) and all modes listed in the Florida Transit Information System for Florida for 2001.

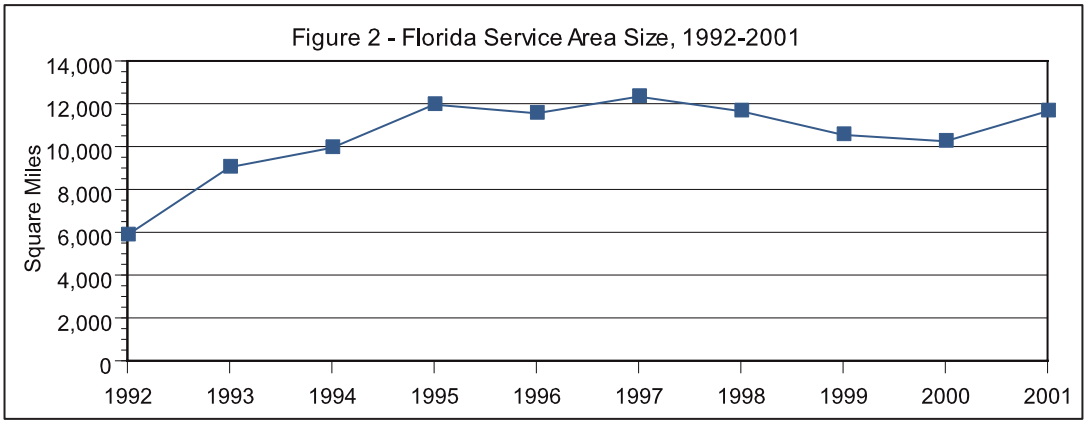
Overall transit use in Florida comprises approximately 2 percent of national transit use, while Florida has nearly 6 percent of the nation's population

Figure 1 – Florida Transit Service Availability by County, 2001



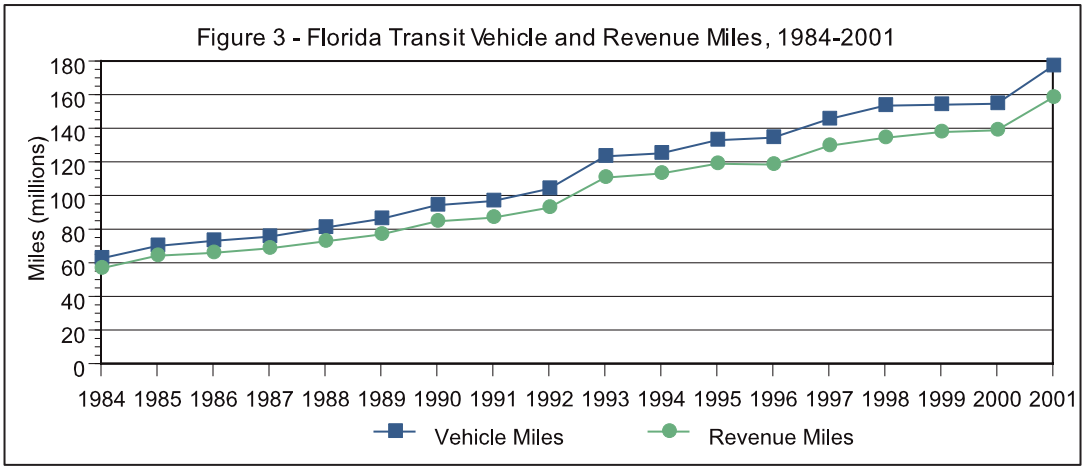
Source: National Transit Database (NTD), 2001
Note: This figure contains only transit agencies that are required to fill out NTD forms. Numbers are for motorbuses operated in maximum service, except for the demand-response systems that do not operate buses.

Figure 2 provides the size of the service area covered by public transportation in Florida. In 2001, transit service covered 21.6 percent of Florida's land area. Measures of area coverage are sometimes difficult to understand as various agencies report coverage differently. Some measures of service coverage report the actual land area within vicinity of fixed routes, while others report geographic areas that are within the jurisdiction of the agency. Certain transit services, such as park and ride facilities, can provide services to travelers from a great distance away, even across jurisdictional lines. Nonetheless, these indicators give the reader a sense of the relative geographic availability of service.



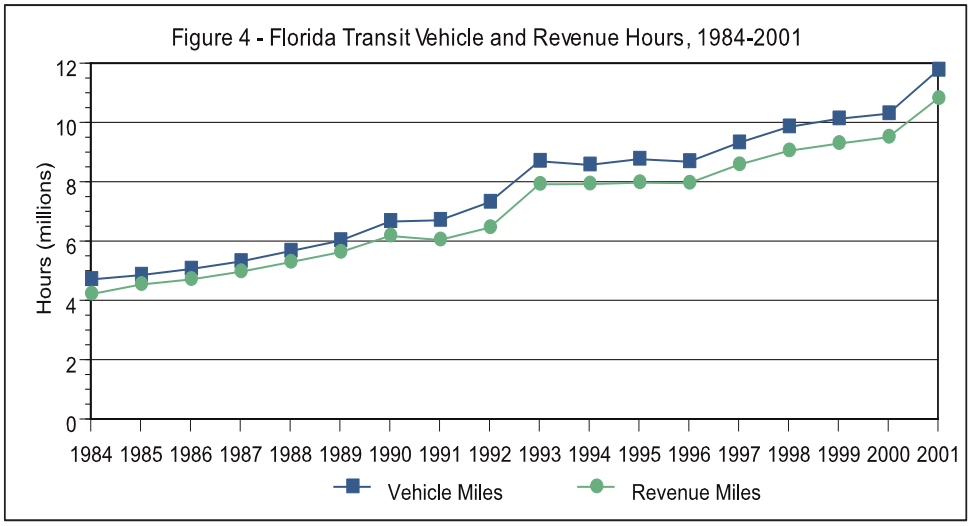
Source: FTIS 2003

Figure 3 shows the trend in service supply using measures of both vehicle and revenue miles. Revenue miles refers to the actual miles of bus operation when the vehicle is available for passenger use whereas vehicle miles includes the mileage to get to and from the ends of the route as well as vehicle mileage for training or other purposes. Since 1984, service supply has grown at an annualized average rate of 6.23 percent.



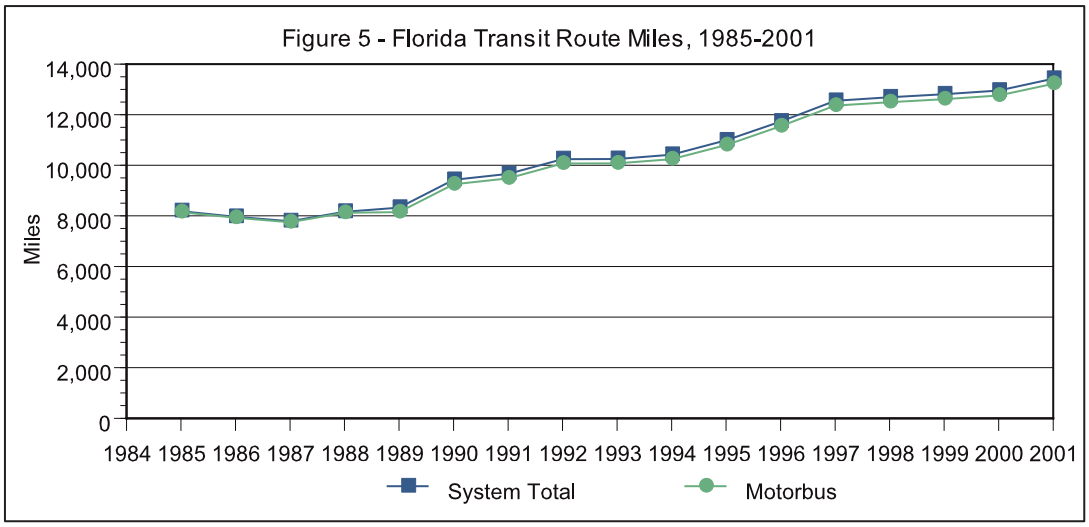
Source: FTIS 2003

Similarly, Figure 4 shows the trend in vehicle hours of service. Hours of service has a more direct relationship to the cost of providing service and may not track exactly the same as service miles as reorientation of service can shift the service to roadways that are slower or faster than previously. Typically, as roads become more congested the service slows down; however, some of this downward pressure on speeds is offset by expansion of service to more distant suburban areas with generally faster travel, an increase in express services, or special treatments to enable faster transit travel.



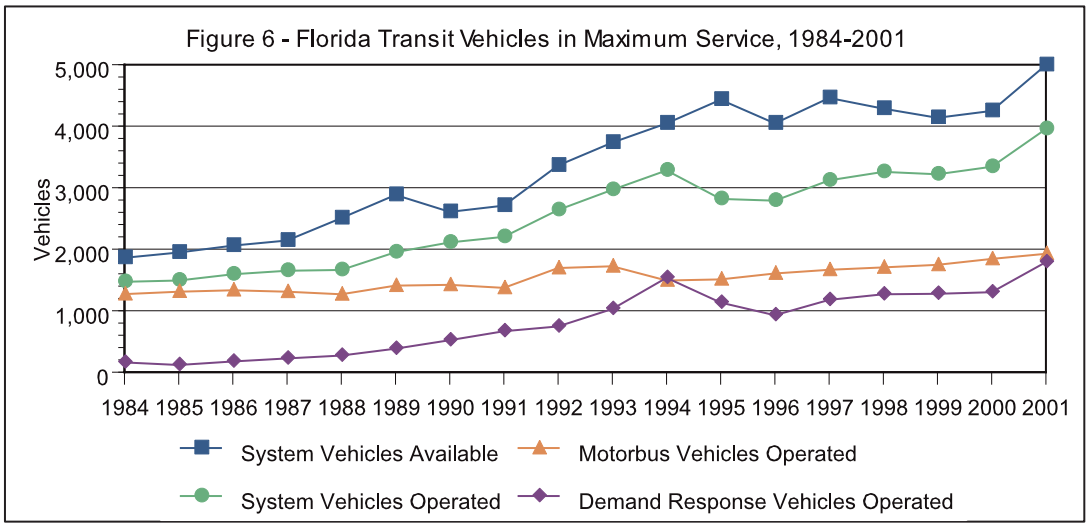
Source: FTIS 2003

Figure 5 shows the mileage of routes in Florida. This is an indication of the prevalence of transit in the community. As multiple routes can serve on the same street and the mileage is reported by direction, it is not a direct measure of the share of roadway centerline miles that have transit service available, but provides a gauge of the availability of service.



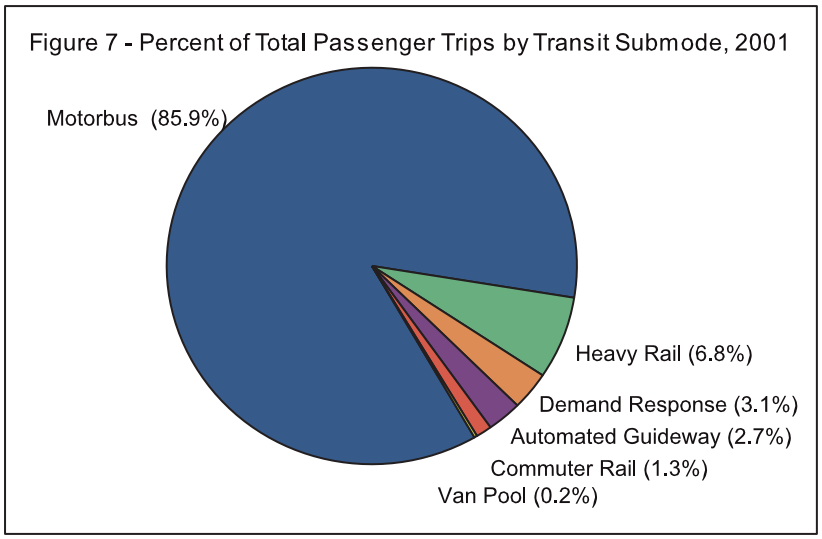
Source: FTIS 2003

Figure 6 shows the trend in the number of vehicles in service at Florida transit properties. This number refers to the number of vehicles simultaneously in service in the busiest times (almost always the peak periods).



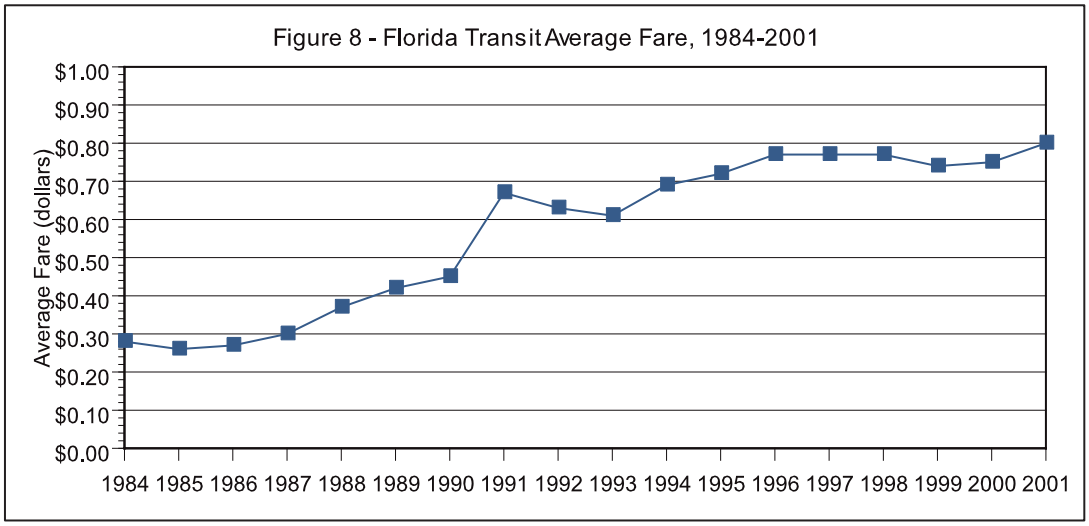
Source: FTIS 2003

Figure 7 shows the role that each of the submodes of transit provide in moving people in Florida. Not surprisingly, the bus is the dominant technology for public transit in Florida.



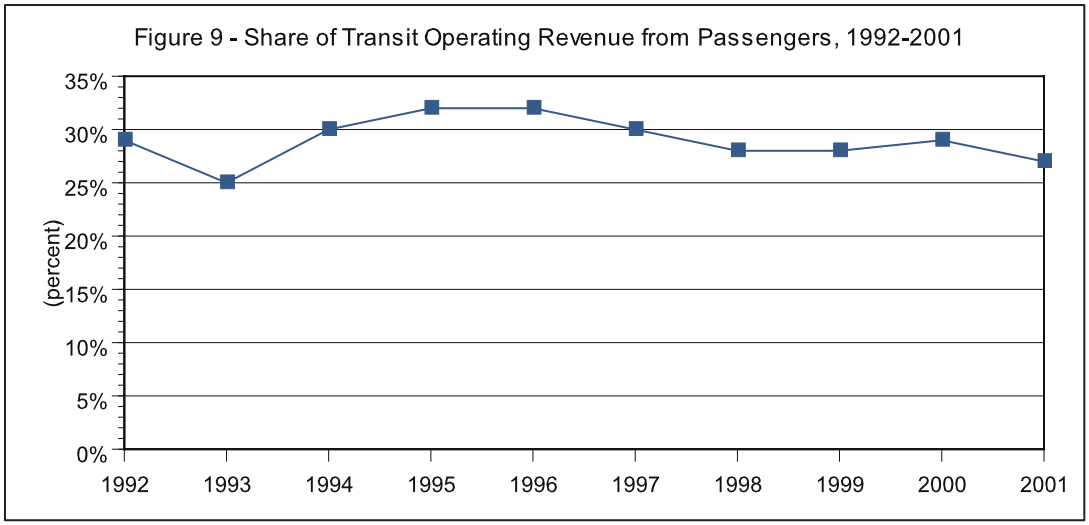
Source: FTIS 2003

Figure 8 shows the average fare for using transit in Florida. This is calculated by dividing total fare revenues by the total number of trips. Thus, various discounts for transfers, students, older adults, disadvantaged groups, pass users and other are included in the calculation.



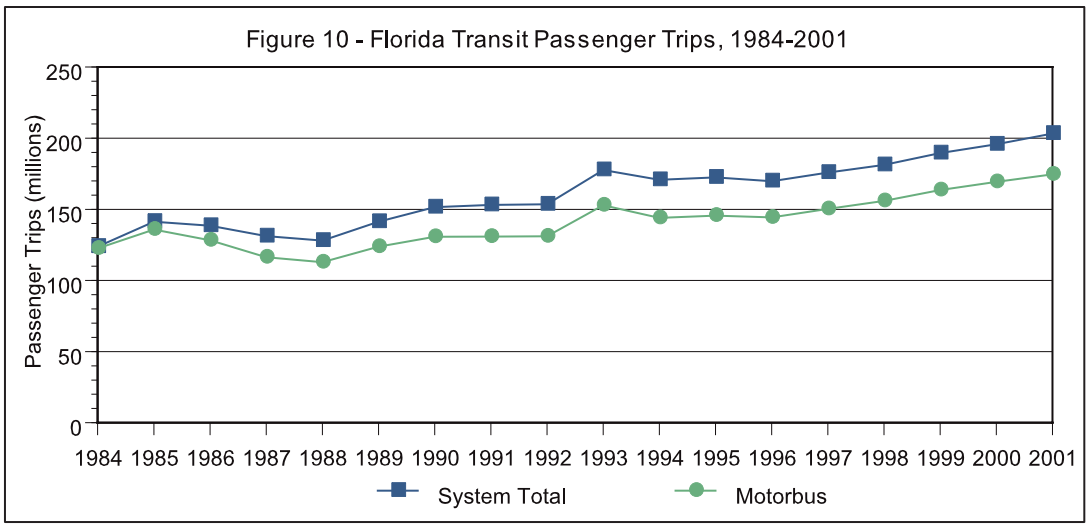
Source: FTIS 2003

Figure 9 shows the share of transit operating revenues that are derived from passenger fares. This share has remained near 30 percent in the recent past. Various transit properties have different strategies regarding passenger revenues. Since transit provides a public value to more than just the travelers, revenues from other sources are also used to support service.



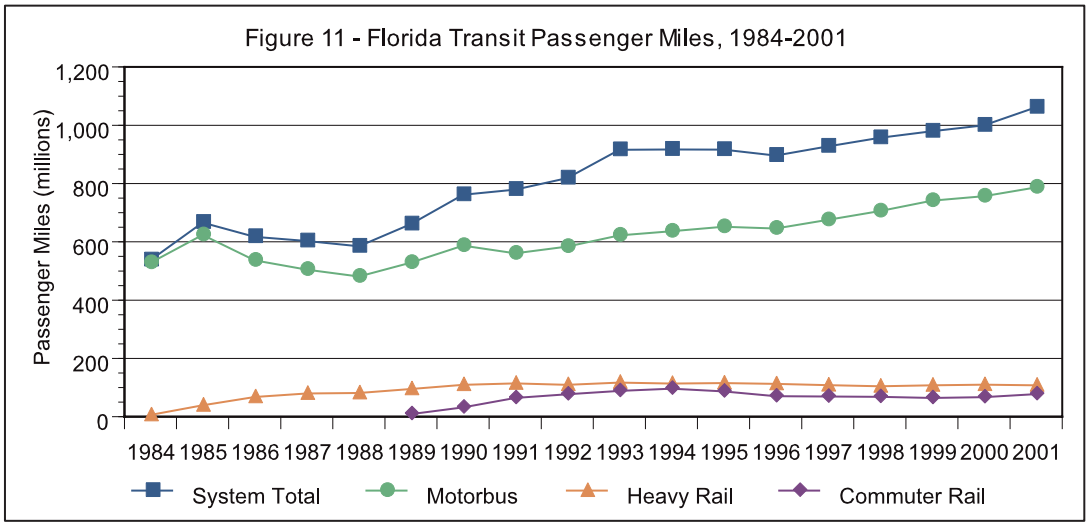
Source: FTIS 2003

Figure 10 shows the trend in passenger trips, a measure of transit use or consumption. Transit use has grown, since 1984, at an average annual rate of growth of 2.96 percent.



Source: FTIS 2003

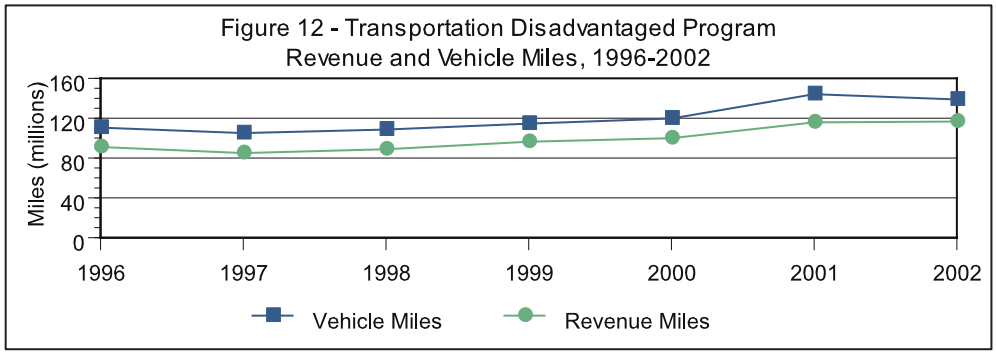
Figure 11 shows another measure of service consumption, passenger miles. Passenger miles is the most relevant measure of the role that transit plays in relieving the demand on the roadway system as it accounts for both the number of trips on transit and their length. Serving longer trips on transit provides a greater benefit in terms of lessened vehicle demand on the roadway.



Source: FTIS 2003

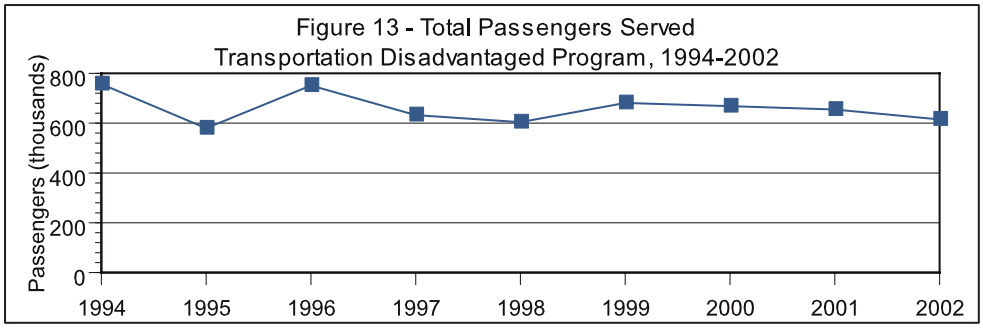
Services for Transportation Disadvantaged

The Commission for the Transportation Disadvantaged was created by the Florida Legislature in 1989 to coordinate transportation services provided to the transportation disadvantaged. The mission of the Commission is to "ensure the availability of efficient, cost-effective, and quality transportation services for transportation disadvantaged persons." For the purposes of the Commission, transportation disadvantaged persons are defined as "those persons who because of physical or mental disability, income status, or age, are unable to transport themselves or to purchase transportation and are, therefore, dependent upon others to obtain life-sustaining activities." Transportation disadvantaged services are provided in all 67 Florida counties by 468 transportation operators. Figure 12 shows the total vehicle and revenue miles provided by the program from 1996 through 2002. The miles of service have been increasing over time.



Source: Commission for the Transportation Disadvantaged, Annual Performance Report

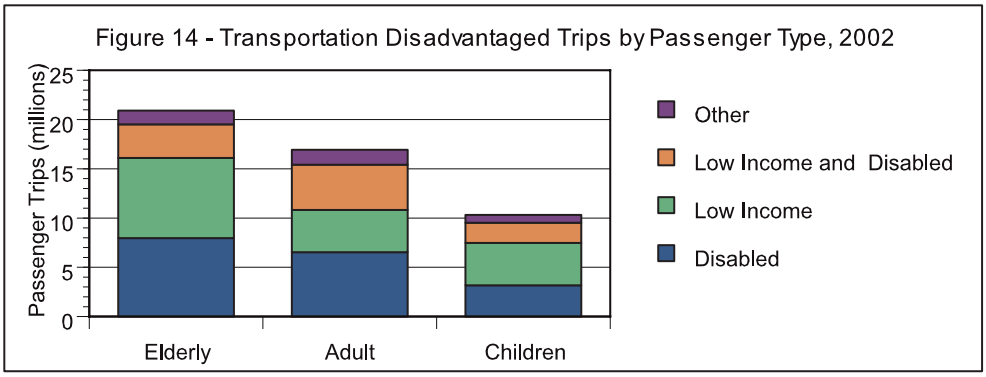
In 2002, transportation disadvantaged services provided service to 615,091 passengers in Florida. Figure 13 provides the passenger trend for the Transportation Disadvantaged program from 1994 through 2002. Over this time period, the number of passengers served has been decreasing. Between 2001 and 2002 the number of passengers declined by 6 percent.



Source: Commission for the Transportation Disadvantaged, Annual Performance Report

The potential users of the transportation system will continue to increase over time. In 2002, an estimated 6.2 million persons were considered transportation disadvantaged and, thus, potential users of the system. This number is expected to increase to 7.3 millions persons by 2010.

The number of passenger trips provided also declined 6 percent in 2002. The number of reported one-way passenger trips for 2002 was 48,176,142. Figure 14 shows the distribution of trips by passenger type for 2002. The elderly population of Florida accounts for approximately 43 percent of all passenger trips. The average number of trips taken per passenger increased from 28.9 in 2001 to 33.4 in 2002.



Source: Commision for the Transportation Disadvangtaged, 2002 Annual Performance Report

Table 2 provides the distribution of trips by trip purpose for 2001 and 2002. Medical trips accounted for 38 percent of all passenger trips in 2002, an increase of 25 percent from 2001. The number of trips classified as nutritional increased dramatically from 2001 and contributed 15 percent of all passenger trips.

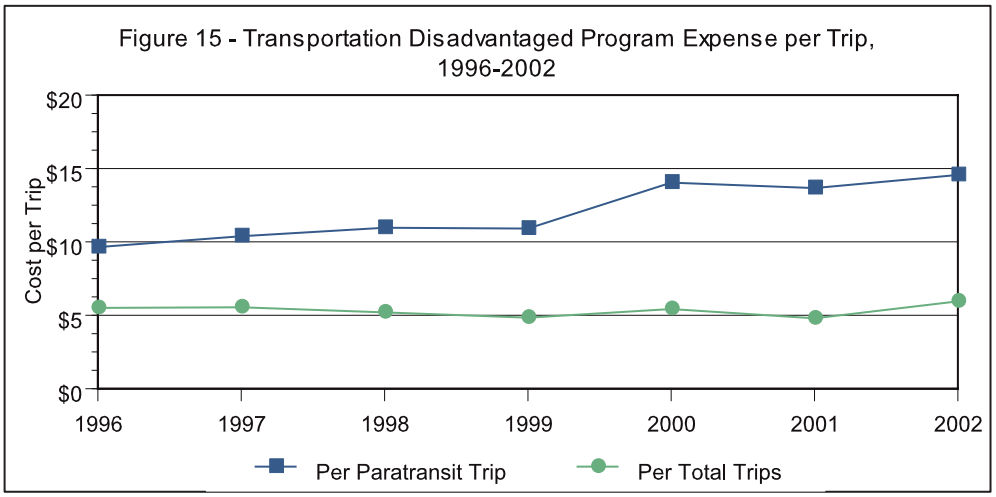
Table 2 – Transportation Disadvantaged One-Way Passenger Trips by Trip Purpose, 2001 and 2002

Trip Purpose	2001	2002	Percent Change
Medical	14,681,180	18,359,937	25%
Employment	8,257,662	4,876,886	-41%
Education/Training	11,975,791	11,029,587	-8%
Nutritional	2,420,633	7,342,518	203%
Life-Sustaining/Other	14,142,626	6,567,214	-54%
Total	51,477,892	48,176,142	-6%

Source: Florida Commission for the Transportation Disadvantaged, *2002 Annual Performance Report*

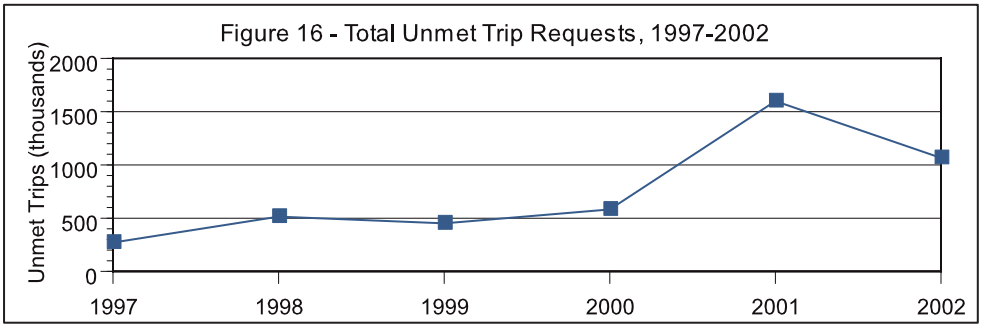
In 2002, an estimated 6.2 million persons were considered transportation disadvantaged and, thus, potential users of the system. This number is expected to increase to 7.3 millions persons by 2010.

One limiting factor for serving transportation-disadvantaged persons of Florida is the operating cost per passenger trip. The trend of expense per passenger trip is shown in Figure 15. Generally, the average cost per trip has been increasing over time. The operating cost per total passenger trip was $5.95 in 2002, while the cost per paratransit trip was $14.56. These costs increased from 2001 by 24 percent and 7 percent respectively. A paratransit trip is defined as a trip from a specific origin to a destination at a certain time as agreed upon by the provider and user of the service.



Source: Commission for the Transportation Disadvantaged, Annual Performance Report

As the cost per passenger trip has gone up, the number of unmet trip requests has also increased. Figure 16 presents the total number of unmet trip requests from fiscal year 1997 through 2002. Unmet trips are those that have been requested, but were unable to be provided when desired. The overall upward growth trend in unmet trips has been punctuated with declines in 1999 and 2002.



Source: Commission for the Transportation Disadvantaged, Annual Performance Report

Summary

Public transportation has and is continuing to play an important role in meeting mobility needs of Floridians. This includes meeting the needs of those who do not have an alternative means of travel, providing a travel choice for individuals, and providing a resource efficient means of travel in high volume corridors where auto and parking capacity are not cost or space efficient in meeting mobility needs.

In Florida, the rate of growth in use of public transportation has outpaced the growth in population and the growth in roadway travel over the past several years. This suggests that Florida is maturing as a public transit market. Currently transit service levels and use in Florida's urban areas are below levels in some of the older large U.S. cities that have a history of transit service, infrastructure, and use, and had higher overall densities and greater concentration of employment and activity in their central core areas. As Florida continues its rapid growth, development density increases are occurring and activity concentration such as entertainment and residential growth in downtown areas, are enhancing transit's opportunities to play a more significant role in Florida's mobility. Transit's future role in Florida will be partially dependent on the concentration of future growth in Florida, as well as on the willingness of federal, state and local governments to provide the resources necessary to expand public transit services in concert with the growth in demand that might materialize with higher population and higher densities. Existing transit service concepts are not speed or convenience competitive with auto travel for those travelers who have autos available and live in dispersed, low-density areas. However, evolving technologies for delivering transit services combined with increasing densities provide the prospect of a larger share of the travel market finding transit service options competitive and attractive.

Transit's future role in Florida will be partially dependent on the concentration of future growth in Florida, as well as on the willingness of federal, state and local governments to provide the resources necessary to expand public transit services in concert with the growth in demand that might materialize with higher population and higher densities.

The demand for publicly coordinated paratransit services will depend on the growth in eligible population segments and the funding available. It is anticipated that there will be substantial growth in these eligible population segments, and paratransit services will need adequate financial support to sustain itself, as an attractive transit service option for meeting the travel needs of the eligible segments of the population.

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http://www.eng.fiu.edu/LCTR/Ftis/ftis.htm

Links to Additional Data:

American Public Transportation Association - http://www.apta.com/

Federal Transit Administration - http://www.fta.dot.gov/

Florida Department of Transportation, Public Transit Office - http://www11.myflorida.com/transit/

Florida Transportation Indicator Web Page - http://www.indicators.cutr.usf.edu/

Florida Public Transportation Association - http://www.floridatransit.org/

National Transit Database - http://www.ntdprogram.com/NTD/ntdhome.nsf/

Trends and Conditions Report – 2003

IMPACT OF TRANSPORTATION:
Transportation Safety
November 2003

This "Trends and Conditions" report was prepared jointly by the Office of Policy Planning of the Florida Department of Transportation and the Center for Urban Transportation Research at the University of South Florida. It is part of a continuing process to support the needs of decision makers, transportation professionals and the interested public.

This and other reports are being maintained on the Internet at:
www.dot.state.fl.us/planning/policy/trends

List of Figures and Tables

Impact of Transportation: Transportation Safety

Introduction

For years all levels of government have articulated the priority of transportation safety as one of the highest goals for transportation policy. The fact that transportation is such a critical aspect of everyone's life contributes to the recognition that transportation safety is an important factor in the overall quality of life. Virtually everyone has a friend, family member or associate who has been involved in a transportation crash. On average Americans spend approximately 75 minutes per day in personal travel. Obviously, safety during this substantial period of time is critical.

In light of the importance of transportation safety, extensive efforts are invested in researching, monitoring, reporting and improving safety. Transportation safety is perhaps the most complex aspect of transportation policy as it is affected by a multitude of factors such as: human traits and behaviors, technology, communications, enforcement, education, design, investment, and the natural environment and weather. The interactions of the individual, the vehicle, the infrastructure system, and the rest of the natural environment influence safety. Safety is an issue for every mode of transportation. There is a particularly strong interest in transportation safety in Florida due to the fact that crash and fatality rates for vehicle travel in Florida are above national averages. Florida also has a high level of pedestrian and bike fatalities.

Safety is one of the highest priorities for national, state, and local transportation policy.

The importance of travel safety has resulted in an extensive database on safety performance of the transportation system. The following pages in this section present safety performance information for each travel mode. The complex set of factors that influence safety makes it very difficult to determine the causal factors that influence safety rates and complicate the challenge of determining the appropriate investment priorities for education, enforcement, design, operation, and infrastructure investment to improve travel safety levels. While a combination of factors have resulted in substantial declines in transportation accident and fatality rates, the magnitude of this problem compounded by the challenges of more congested transportation system will ensure continued attention to this priority area for some time to come.

Roadway Safety

Each year hundreds of lives are lost, thousands of injuries are suffered, and millions of dollars are spent as a result of traffic crashes on Florida's roadways. Continually improving the safety of users of the roadway system is part of the Florida Department of Transportation's mission. Particular attention is being paid to auto, pedestrian and bicycle safety.

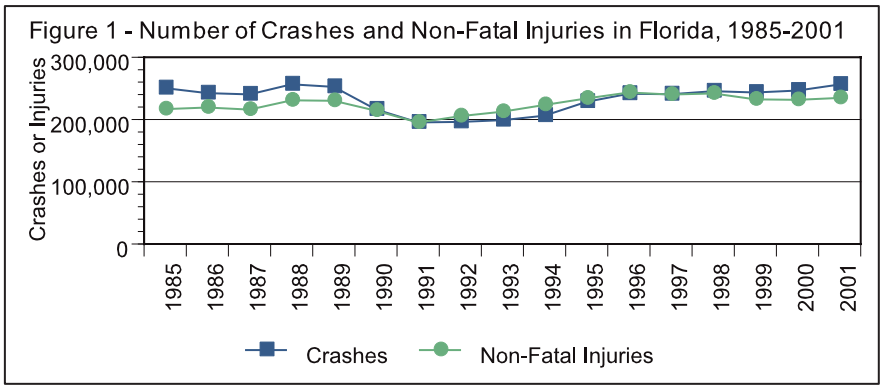
Table 1 provides a summary of traffic crash statistics in Florida for 2000 and 2001. Although the mileage death rate decreased between 2000 and 2001, the number of crashes increased by 10,000 and totaled 256,169.

Table 1 – Florida Traffic Crash Statistics, 2000 and 2001

	2000		2001	
Traffic Crashes				
Fatal	2,733		2,717	
Injury	144,096		145,208	
Property Damage Only	99,712		108,244	
Total	246,541		256,169	
Traffic Crash Victims	Killed	Injured	Killed	Injured
Drivers	1,495	144,845	1,449	145,339
Passengers	688	69,869	695	71,790
Pedestrians	506	7,782	510	7,894
Bicyclists	83	4,618	107	4,476
Motorcyclists	227	4,474	252	5,101
Total	2,999	231,588	3,013	234,600
Other Statistics				
Vehicle Miles Traveled (millions)	149,865		171,029	
Resident Population	15,982,378		16,396,515	
Registered Vehicles	11,781,010		14,340,102	
Licensed Drivers	12,853,428		12,743,403	
Rates: Fatalities				
Per 100 million VMT	2.0		1.8	
Per 100,000 Population	18.8		18.4	
Per 100,000 Registered Vehicles	25.5		21.0	
Per 100,000 Licensed Drivers	23.3		23.6	
Rates: Injury				
Per 100 million VMT	154.5		137.2	
Per 100,000 Population	1,449.0		1,430.8	
Per 100,000 Registered Vehicles	1,965.8		1,636.0	
Per 100,000 Licensed Drivers	1,801.8		1,841.0	

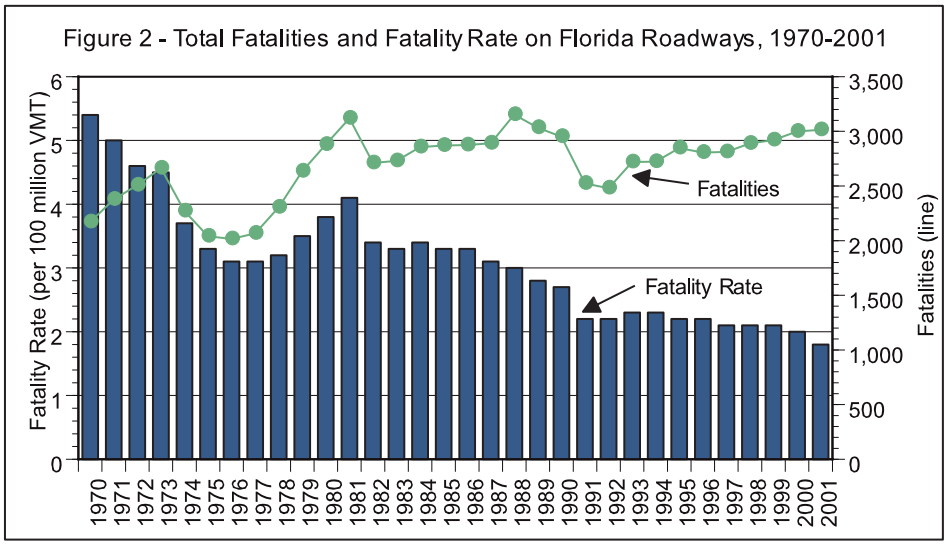
Source: Florida Department of Highway Safety and Motor Vehicles, Florida Traffic Crash Statistics, 2000 and 2001; U.S. Census Bureau; Florida Highway Data Source Book 2002; FHWA Highway Statistics Series

Figure 1 displays the trend of the number of crashes and non-fatal injuries from 1985 through 2001. Since 1991, the number of crashes and injuries in Florida has been increasing.



Source: Florida Department of Highway Safety and Motor Vehicles, Traffic Crash Facts 2001

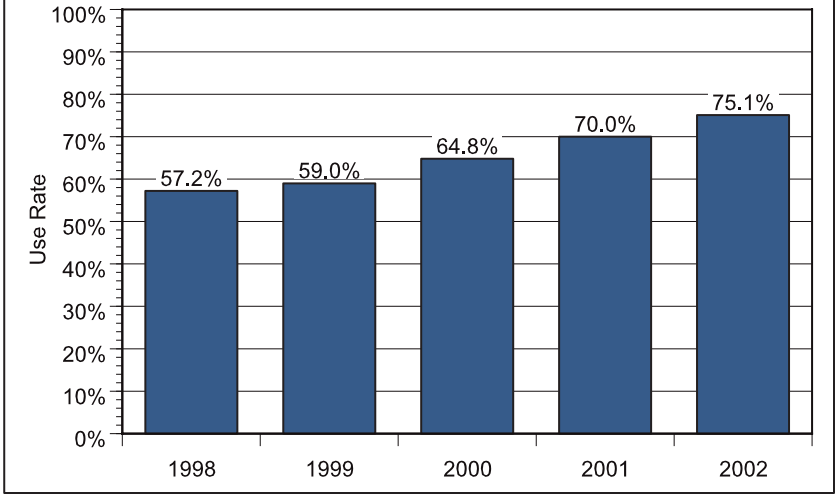
Over the past several decades, improvements in safety, as measured by the number of roadway fatalities per 100 million vehicle miles traveled (VMT), have been made. In 2001, the mileage death rate reached the lowest point of the past three decades. The declining trend reflects the host of safety improvements from vehicle technology and design to improved medical care to better roadway design. The total number of fatalities, however, has been increasing since the early 1990's. The increase in highway deaths has not been at the same rate as growth in vehicle travel. Between 2000 and 2001, VMT increased 14%, while the number of fatalities increased by 0.5%. Figure 2 displays the historical trends for both the fatality rate and the number of fatalities. A traffic fatality is defined as the death of a person within thirty days of the incident as a direct result of a traffic crash.



Source: Florida Department of Highway Safety and Motor Vehicles, Annual Florida Traffic Crash Facts

In Florida, it is against the law not to buckle up when traveling in a passenger vehicle. As Figure 3 shows, the safety belt use rate has increased since 1998. In 2002, 75.1% of front seat outboard passengers in Florida used a safety belt. The National Highway Traffic Safety Administration estimates that if the safety belt use rate increased to 80%, 95 fatalities and 1,845 injuries could be avoided and a total of $163,669,788 would be saved in a single year. Safety belts and child safety seats help to prevent injuries by preventing ejection, redistributing the forces placed on the body during a crash, allowing the body to slow down gradually and protecting the head and spinal cord. Table 2 presents the injury severity and the safety equipment used by vehicle occupants in Florida. Almost 59% of fatalities occur when the vehicle occupant is not using safety equipment. Approximately 38% of vehicle occupants involved in a crash have non-fatal injuries or possible injuries, while 62% have no injuries reported.

Figure 3 - Florida Reported Safety Belt Use Rate for Front Seat Outboard Passengers in Passenger Vehicles, 1998-2002



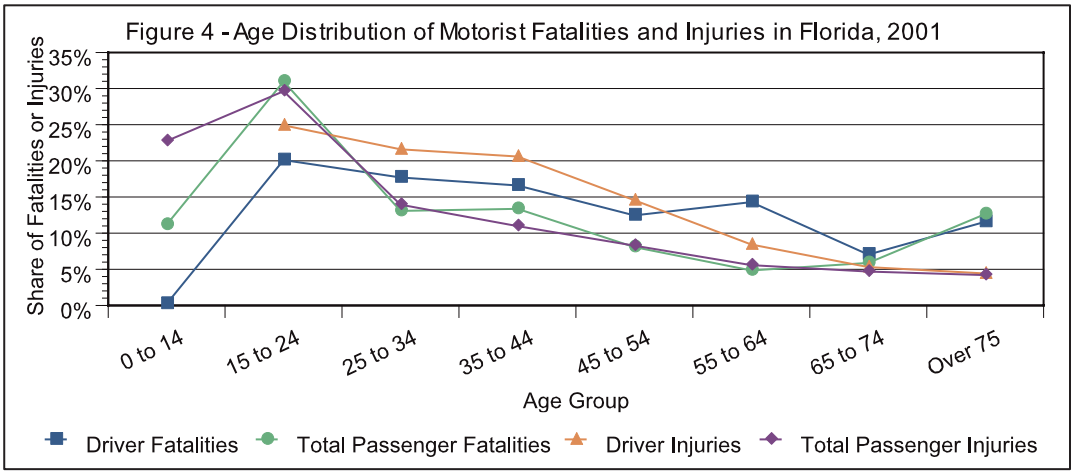
Source: U.S. Department of Transportation, National Highway Traffic Safety Administration. State Shoulder Belt Use Survey Results (1998-2002).

Table 2 – Safety Equipment Used by Vehicle Occupants and Injury Severity in Florida, 2001

	No Injury	%	Possible Injury	%	Injury	%	Fatal	%	Total
With Safety Belt	250,848	65.7	79,969	21.0	50,382	13.2	448	0.1	381,647
With Safety Belt & Air Bag	50,718	51.4	24,954	25.3	22,778	23.1	308	0.3	98,758
With Air Bag Only	1,045	30.8	886	26.1	1,359	40.1	102	3.0	3,392
No Safety Equipment	43,287	55.0	14,676	15.7	19,498	24.8	1,223	1.6	78,684
Total	345,898	61.5	120,485	21.4	94,017	16.7	2,081	0.4	562,481

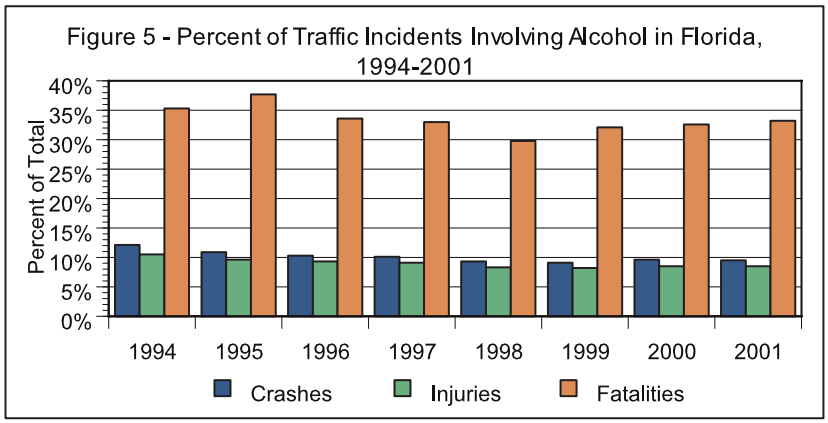
Source: Florida Department of Highway Safety and Motor Vehicles, Florida Traffic Crash Statistics, 2001

Figure 4 provides the share of fatalities and injuries by age group for drivers and passengers in 2001. The largest share of traffic fatalities for drivers and passengers is for persons between 15 and 24. The share of traffic crash fatalities and injuries typically decreases as age increases with the exception of fatalities for persons over 75. The elderly age groups may have the smallest share of injuries, but they also have the lowest travel rates as discussed in the *Travel Demand: Travel Behavior Trends* section of this report. As this age group increases in size and is expected to continue to have increased mobility, the exposure to traffic incidents will also increase, as older adults will represent a larger share of vehicle travel.



Source: Florida Department of Highway Safety and Motor Vehicles, Traffic Crash Facts 2001
Note: Drivers include motorcyclist and passengers are the total passengers on bicycles, motorcycles and in vehicles.

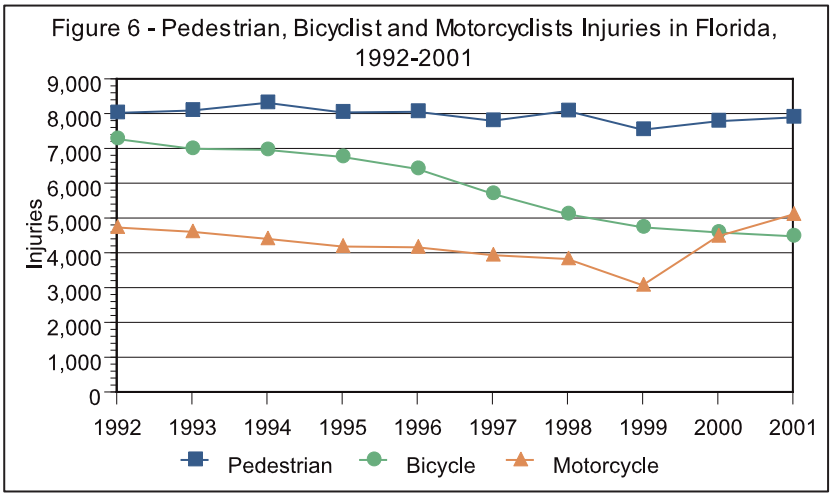
The influence of alcohol is a factor in many traffic incidents. Since 1998, the number of alcohol related crashes, injuries and deaths have increased. Figure 5 shows the share of all crashes, injuries and fatalities that involved alcohol. A third of all fatal traffic incidents involve alcohol use. This accounted for 1,000 deaths in 2001. Alcohol use was also involved in 24,411 crashes and 20,001 injuries in 2001.



Source: Florida Department of Highway Safety and Motor Vehicles, Annual Traffic Crash Facts

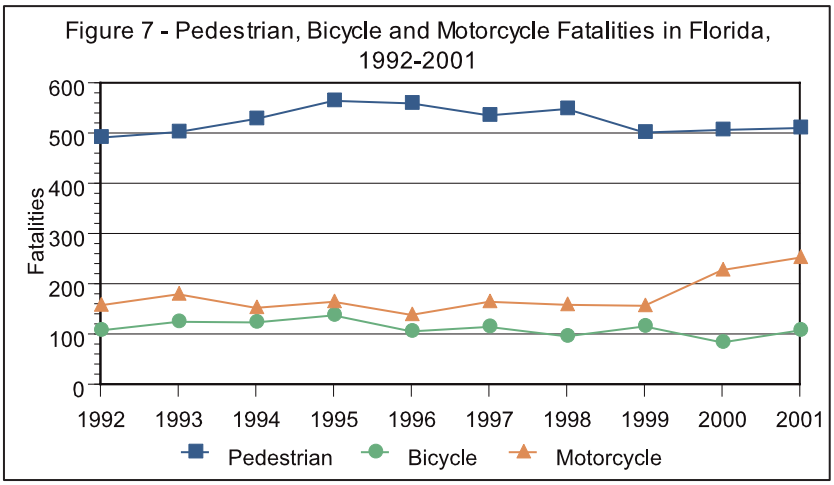
Bike, Pedestrian and Motorcycle Safety

The number of injuries for pedestrians has remained relatively constant over the past decade. Injuries to bicyclists due to motor vehicles have been decreasing, while motorcyclists' injuries have increased since 1999. The injury data for bicyclists only includes injuries involving a motor vehicle. Figure 6 provides the trend of injuries for these groups from 1992 through 2001.



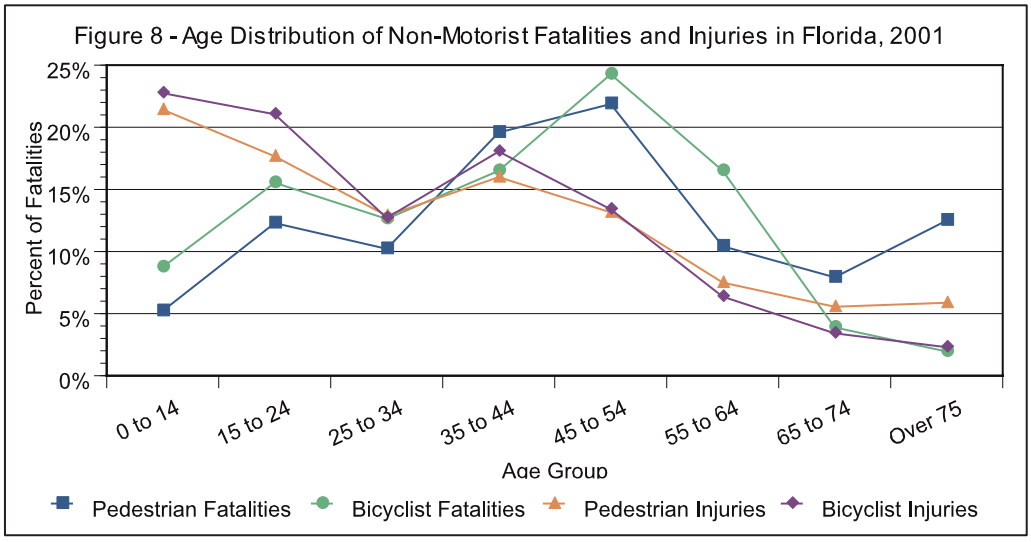
Source: Florida Department of Highway Safety and Motor Vehicles, Traffic Crash Facts 2001

The trend of the number of fatalities for pedestrians, bicyclist and motorcyclists from 1992 through 2001 is shown in Figure 7. Motorcycle fatalities have increased since 1999, while the number of bicycle fatalities has slightly decreased. Pedestrian fatalities have decreased since the mid 1990s. Fatality rates are not available for these groups, because reliable use data is not collected at this time.



Source: Florida Department of Highway Safety and Motor Vehicles, Traffic Crash Facts 2001

The age distribution of pedestrians and bicyclists killed or injured in traffic crashes is shown in Figure 8. Non-motorist fatalities peak for individuals 45 to 54 years old. The share of fatalities for pedestrians increases for persons over 75. The share of injuries decreases as age increases.



Source: Florida Department of Highway Safety and Motor Vehicles, Traffic Crash Facts 2001

While progress is being made in improving safety, continued improvements are necessary to reduce fatalities, injuries and economic losses on Florida's transportation system.

Railway Safety

The railroad system in Florida is another important mode when considering transportation safety. While safety on the rail system is an important issue, the connection of the roadway system to the railway system at grade crossings creates the greatest opportunity for incidents to occur. The incidents have the potential to be extremely dangerous, because of the size and speed differences between trains and cars or pedestrians. Florida has a total of 5,326 at-grade highway-rail crossings. Of these 3,965 are public, 1,302 are private and 59 are pedestrian crossings.

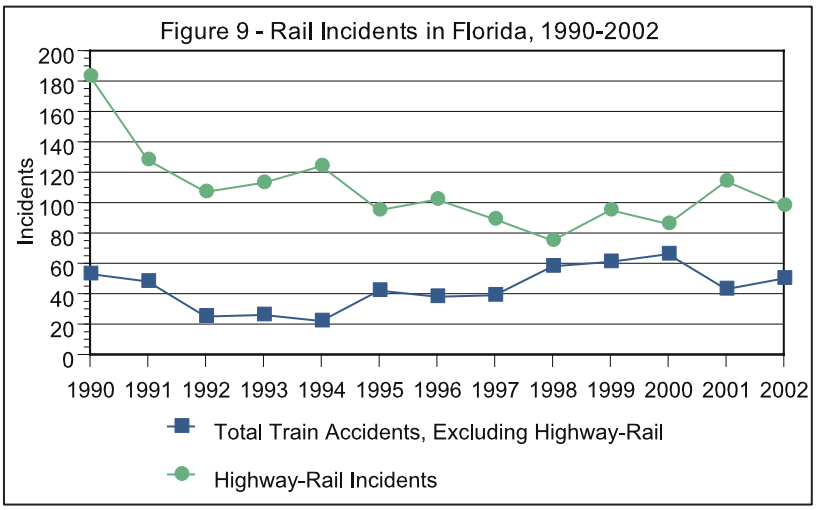
Table 3 shows the rates of motor vehicle incidents at public crossings in 2001 for Florida and the United States. Florida has a higher number of crashes, deaths and injuries per 100 crossings than the U.S., but lower rates per 100 thousand vehicles and average daily traffic (ADT).

Figure 9 shows the trend of rail incidents in Florida from 1990 through 2002. Since 1990, the number of highway-rail incidents has typically been decreasing, but has fluctuated over the past few years. The number of incidents involving highway users was double that of all other rail incidents in 2002.

Table 3 – Rates for Motor Vehicle Incidents at Public Crossings, 2001

		Florida	U.S.
Crashes	Count	94	2,695
	Per 100 Crossings	2.37	1.75
	Per 100 thousand Vehicles	0.64	0.98
	Per 100 thousand ADT	0.49	0.82
Deaths	Count	9	315
	Per 100 Crossings	0.23	0.20
	Per 100 thousand Vehicles	0.06	0.11
	Per 100 thousand ADT	0.05	0.10
Nonfatal	Count	28	995
	Per 100 Crossings	0.71	0.65
	Per 100 thousand Vehicles	1.91	3.61
	Per 100 thousand ADT	0.01	0.03

Source: Federal Railroad Administration, Office of Safety Analysis. *Interim Railroad Safety Statistics Annual Report 2001.*
http://safetydata.fra.dot.gov/OfficeofSafety/



Source: Federal Railroad Administration, Office of Safety Analysis Website
http://safetydata.fra.dot.gov/officeofsafety/

Various types of warning devices at highway-rail crossings promote safety. Table 4 lists the number of crossings by type of warning device and the number of incidents that occurred in 2001. Fifty-seven percent of grade crossings in Florida have gates, and 68% of incidents occur at these crossings.

Florida has higher rates of accidents, deaths and injuries per 100 crossings than the U.S. average, but lower rates per 100 thousand vehicles and average daily traffic.

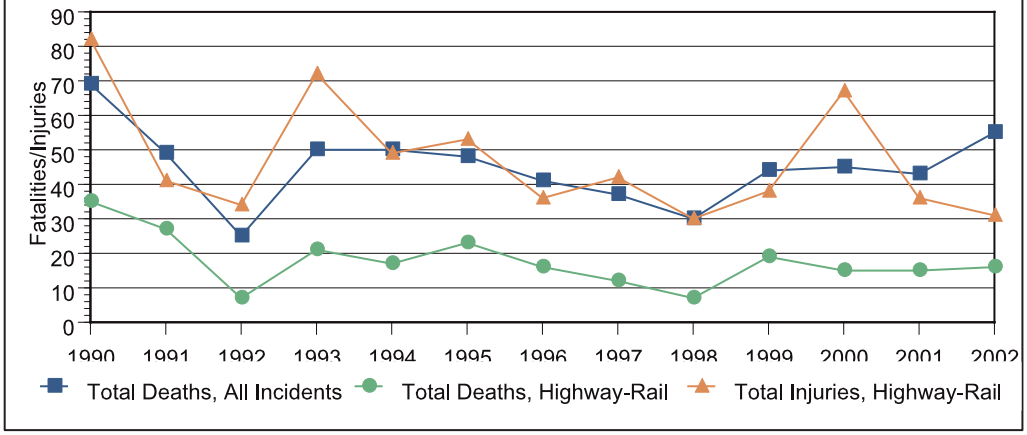
Table 4 – Warning Devices and Incidents at Public Highway-Rail Grade Crossing in Florida, 2001

Warning Device	Grade Crossings	Incidents
Gates	2,267	62
Cross Bucks	826	11
Flashing Lights	557	16
Stop Signs	155	2
Special warning	90	1
HWTS, WW, Bells	10	2
Unknown	55	-
Other	5	-
Total	3,965	94
Crossing AADT	19,134,870	N/a

Source: Federal Railroad Administration, Office of Safety Analysis. *Interim Railroad Safety Statistics Annual Report 2001.*
http://safetydata.fra.dot.gov/OfficeofSafety/
Note: HWTS (highway traffic signal), WW (wigwags) and AADT (Average Annual Daily Traffic)

In 2001, there were 94 highway-rail incidents, 28 nonfatal injuries and 9 deaths. Figure 10 shows the number of deaths and injuries from 1990 through 2002. The number of injuries and deaths vary from year to year. Since 2000, the number of highway-rail injuries has declined while the total number of rail related deaths has increased.

Figure 10 - Fatalities and Injuries from Rail Incidents, 1990-2002



Source: Federal Railroad Administration, Office of Safety Analysis Website
http://safetydata.fra.dot.gov/officeofsafety/

Persons are injured or die in rail incidents for different reasons. The context involved in a rail incident plays a role in determining the cause for the incident and subsequent injury. Table 5 details the number of injuries and fatalities in Florida for 2001. Thirty-nine out of 43 total deaths in 2001 were of persons trespassing on railroad property. The majority of injuries were to railroad employees.

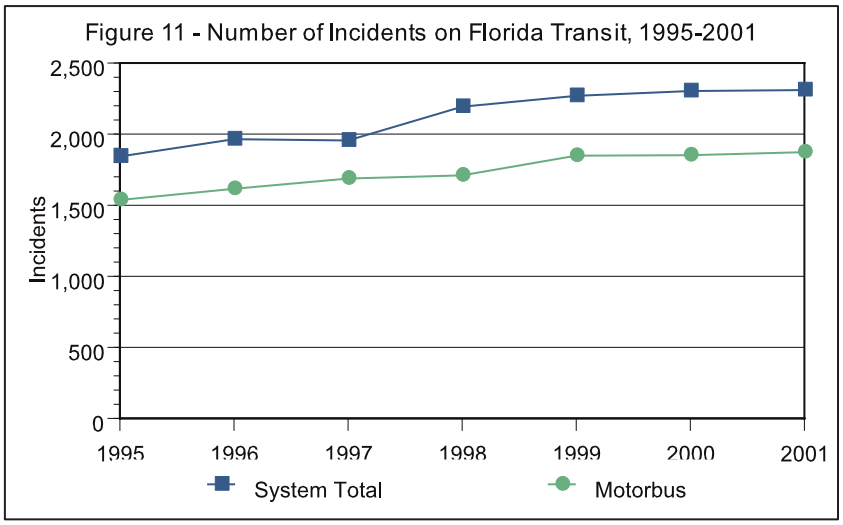
Table 5 – Type of Person Injured in Florida Railroad Incidents, 2001

Type of person	Fatalities	Injuries
Worker on duty (railroad employee)	0	182
Employee not on duty	0	7
Passenger on train	0	44
Nontrespasser	4	14
Trespasser	39	45
Worker on duty (contractor)	0	3
Contractor (other)	0	4
Worker on duty (volunteer)	0	0
Volunteer (other)	0	0
Nontrespasser (off railroad property)	0	0

Source: Federal Railroad Administration, Office of Safety Analysis. *Interim Railroad Safety Statistics Annual Report 2001.* http://safetydata.fra.dot.gov/OfficeofSafety/

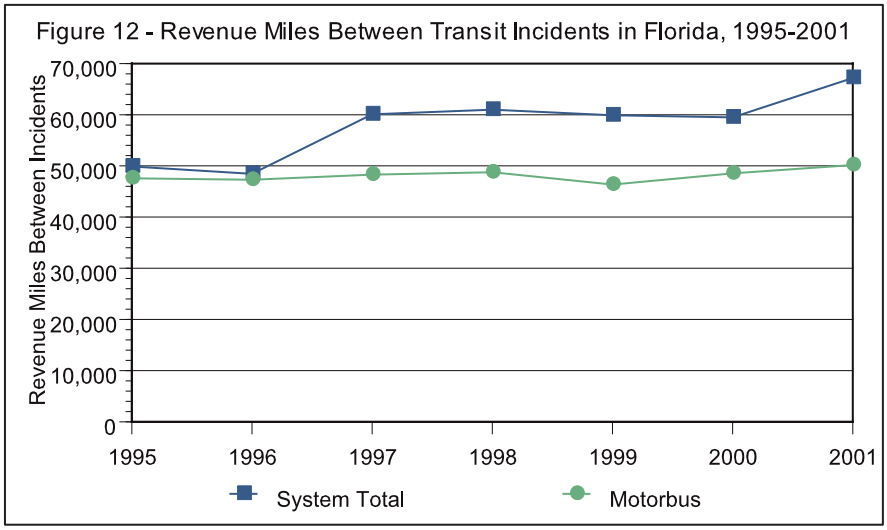
Public Transportation Safety

The majority of Florida's public transportation system operates on the roadway system. Therefore, roadway incidents can impact the operation of transit services and on time performance. Similarly, incidents with motorbuses in the roadway can impact the flow of traffic in that area. Figure 11 shows that the total number of transit incidents in Florida has gradually increased since 1995. For transit services, incidents are defined as unforeseen occurrences that result in injury, fatality, collision or property damage in excess of $1,000 that involve a transit vehicle or occur on transit property. Motorbus incidents account for 81% of all transit incidents in Florida for 2001. This is to be expected because motorbuses provide approximately 86% of public transportation passenger trips in Florida.



Source: FTIS 2003

Although the number of incidents has been increasing, the number of revenue miles between incidents has also been increasing. The increase in revenue miles of service between incidents is shown in Figure 12. The number of revenue miles has been increasing at a rate greater than the number of incidents over the past several years. The growth in transit service is discussed in the *Transportation System: Transit and Transportation Disadvantaged* section of this report.



Source: FTIS 2003

Table 6 presents the detailed data for transit safety statistics. In 2001 there were 1,199 collisions, which resulted in 10 fatalities and 1,081 injuries. An additional 1,083 incidents that were non-collisions caused 1 death and 1,125 injuries. Property damage caused by all incidents was estimated to be $1.52 Million.

Table 6 – Florida Transit Safety Data, 2001

	Collision			Non-collision			Total property damage ($ thousands)
Mode	Number of Incidents	Fatalities	Injuries	Number of incidents	Fatalities	Injuries	
Motorbus	1,024	2	968	830	0	873	1,224.8
Demand Response	153	0	105	149	0	149	249.4
Commuter Rail	14	8	5	1	1	0	31.0
Heavy Rail	0	0	0	88	0	88	0
Automated Guideway	0	0	0	15	0	15	0
Vanpool	8	0	3	0	0	0	16.0
Total	1,199	10	1,081	1,083	1	1,125	$1,521.2

Source: 2001 National Transit Database. http://www.ntdprogram.com/
Note: Collisions include at-grade crossings and suicides. Non-collisions include derailments/bus going off road, Personal casualties in parking facilities, inside vehicles, on right of way, boarding/alighting and in station/bus stops

Aviation Safety

In the United States, the aviation industry is critical to the economy and mobility of residents and visitors. Safety and security play important roles in determining the productivity of the industry. In 1996, the U.S. Senate requested that aviation safety data be made more available and accessible to the public. Today a variety of data are available. For example, detailed databases by the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) can be easily accessed online and contain information on accidents and incidents. According to the NTSB database, accidents result in a fatality or serious injury of a person in contact with an aircraft or substantial damage to an aircraft. Incidents are less severe occurrences "that affect or could affect the safety of operation". For analysis of aviation safety data, it is useful to convert the data into rates. Rates can be calculated by the number of flight hours or the number of flights measured by departures.

Table 7 contains safety statistics for U.S. air carriers and general aviation from 1983 through 2002. Incidents in 1986, 1987, 1988, 1994 and 2001 were a result of illegal or terrorist activities. These acts, such as suicide and sabotage, are included in the totals for accidents and fatalities, but are excluded from the accident rate computation. In the United States, general aviation accident rates per 100,000 flight hours are substantially greater than similar rates for air carriers. According to FAA's Office of System Safety, most researchers would prefer to use the number of flights, measured as departures, instead of hours or miles flown, because the risk of an accident in an aircraft is greatest at takeoff or landing. For example, while only six percent of flight time for a commercial aircraft is spent in the takeoff, initial climb, final approach and landing, approximately 70% of "hull loss" accidents occur in these stages. This is why normalizing the data based on hours-flown may be misleading.

Since major aviation accidents are rare events, only a few have occurred within Florida. Hence, accident rates are shown at the national level only. The last major air carrier accident in Florida occurred in 1996 near Miami when a ValuJet aircraft crashed minutes after takeoff due to improper transporting of hazardous materials. Unfortunately, 105 passengers lost their lives. Air carrier incidents, as defined above, occur more often than accidents, but are less severe. In 2002, 4 incidents occurred in Florida. General aviation operations in Florida also have a share of accidents, fatalities and incidents. In 2002, 112 accidents, 33 fatalities and 1 incident occurred in Florida.

The FAA, airlines, aircraft manufacturers, airports, flight crews, mechanics and other groups must work together to make the aviation system safe. The mission of FAA is to "provide a safe, secure, and efficient global aerospace system that contributes to national security and the promotion of U.S. aerospace safety." The FAA works to ensure safety by completing inspections and surveillance of aircraft. Strategic goals for safety include reducing the fatal air carrier and

over-all accident rates, reduce general aviation fatal accidents, increase survivability, reduce runway incursions and reduce operation errors.

Table 7 – U.S. Aviation Accident, Fatalities and Rate, 1983-2002

	U.S. Air Carrier, Scheduled and Nonscheduled			U.S. General Aviation		
Year	Accidents	Fatalities	Accidents per 100,000 Flight Hours	Accidents	Fatalities	Accidents per 100,000 Flight Hours
1983	23	15	0.315	3,075	1,068	10.67
1984	16	4	0.196	3,017	1,042	10.28
1985	21	526	0.241	2,739	956	9.63
1986*	24	8	0.231	2,581	967	9.49
1987*	34	232	0.310	2,494	837	9.18
1988*	30	285	0.260	2,388	797	8.65
1989	28	278	0.248	2,243	769	7.97
1990	24	39	0.198	2,241	767	7.85
1991	26	62	0.221	2,197	799	7.91
1992	18	33	0.146	2,111	867	8.51
1993	23	1	0.181	2,064	744	9.03
1994*	23	239	0.168	2,022	730	9.08
1995	36	168	0.267	2,056	735	8.21
1996	37	380	0.269	1,908	636	7.65
1997	49	8	0.309	1,845	631	7.19
1998	50	1	0.297	1,904	624	7.44
1999	51	12	0.291	1,906	619	6.40
2000	56	92	0.306	1,837	595	6.30
2001*	45	531	0.231	1,726	562	6.28
2002	41	0	0.228	1,714	576	6.56

Source: NTSB, Aviation Accident Statistics

Note: Years followed by * indicate that an illegal act was responsible for the occurrence.

Since September 11, 2001, safety and security of the aviation industry are often thought of in the same context. Prior to September 11, the United States had not had a major security incident since 1988. Now the FAA, the Transportation Security Administration (TSA) and the airlines have implemented new security measures to attempt to prevent future incidents. The FAA has separate strategic goals for security which include no security incidents, improved ability to detect explosive devices and weapons, improve airport security and increase the number of facilities meeting FAA security standards. Safety and security of the aviation industry will continue to be a major area of concern and investment.

Recreational Boating Safety

Boating is a common recreational activity in Florida. Safety on boats is important especially as the number of boats increases in Florida. Table 8 shows safety statistics on recreational boating for 2000 and 2001. Many boating incidents go unreported, but typically reporting increases as severity increases.

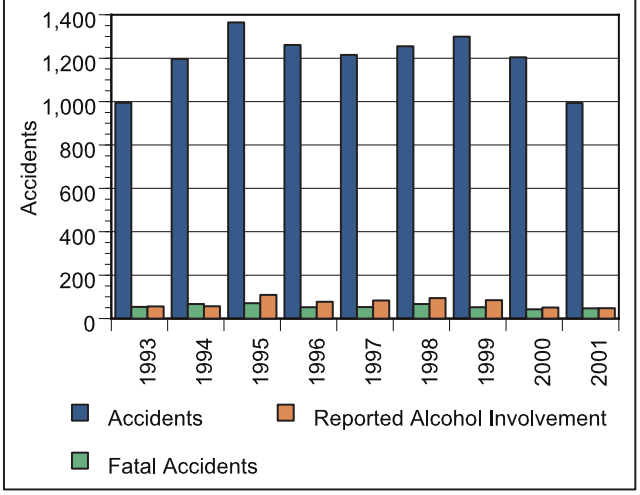
Table 8 – Florida Recreational Boating Safety Statistics, 2000 and 2001

	2000	2001
Total Numbered Boats	840,684	902,964
Total Reported Accidents	1,204	993
Fatal Accidents	43	47
Fatalities	46	52
Non-fatal Injury Accidents	483	392
Injuries	612	522
Property Damage Only	678	554
Property Damage	$8,148,920	$7,413,780

Source: U.S. Coast Guard, 2001 and 2000 Boating Statistics Publication

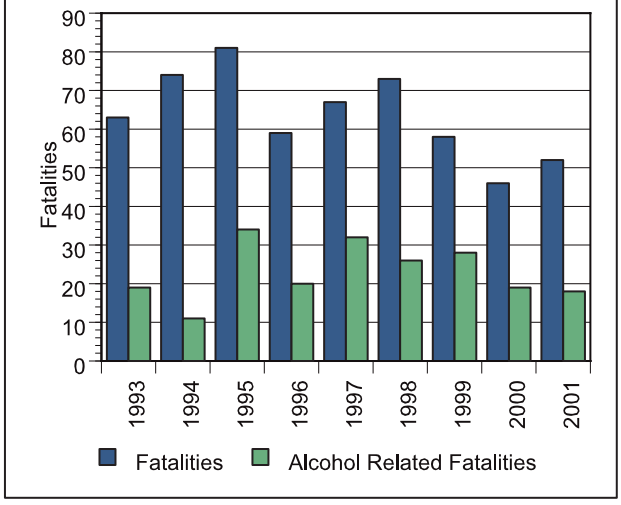
Figure 13 shows the trend in recreational boating accidents from 1993 through 2001. In the past several years, the number of reported accidents has declined. The number of boating related fatalities increased by 6 persons between 2000 and 2001. Figure 14 shows the trend in fatal accidents and those involving alcohol. Although, the number of fatalities increased between 2000 and 2001, the number of alcohol related fatalities decreased.

Figure 13 - Recreational Boating Accidents in Florida, 1993-2001



Source: U.S. Coast Guard, Annual Boating Statistics Publication

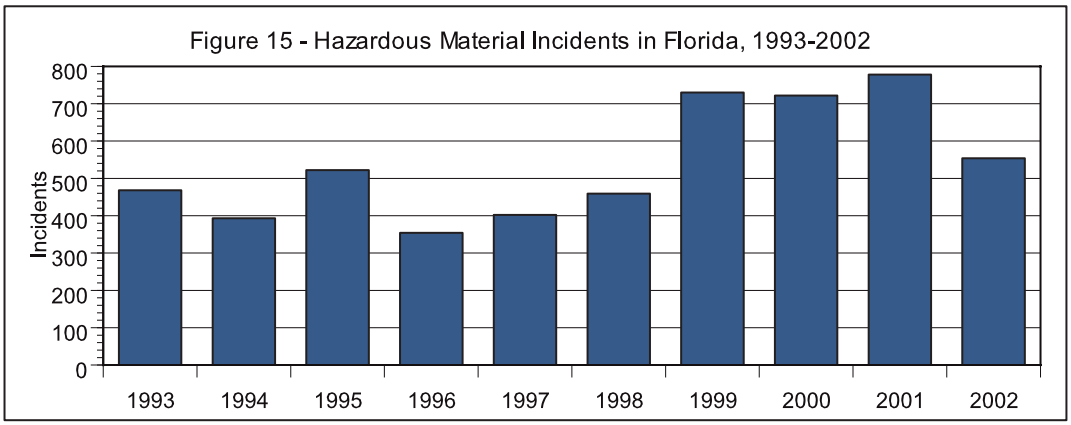
Figure 14 - Recreational Boating Fatalities in Florida, 1993-2001



Source: U.S. Coast Guard, Annual Boating Statistics Publication

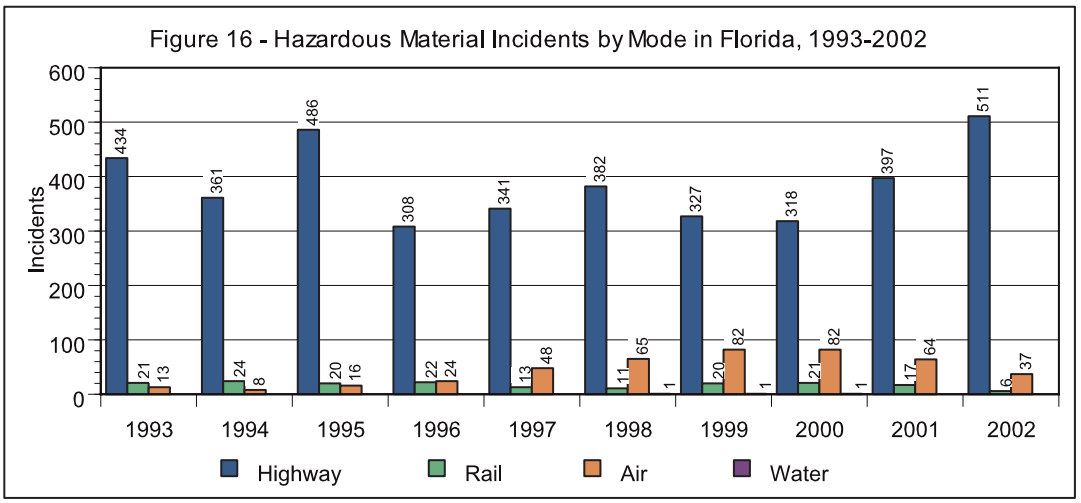
Hazardous Material Safety

Transporting hazardous materials, such as explosives, flammable gases or corrosive materials, can have serious implications to safety on the transportation network if incidents occur. The trend for the number of incidents varies over time and peaked in Florida in 2001. This set of data is shown in Figure 15. In 2002, the total number of hazardous material incidents in Florida dropped to 559 incidents from 779 in 2001. Of these incidents, four resulted in minor injuries and one resulted in death. The estimated damages caused by the incidents in Florida were over 2 million dollars.



Source: U.S. Department of Transportation, Hazardous Materials Safety, Annual HAZMAT Summary by Mode
Note: The number of incidents excludes pipelines.

The number of incidents varies across transportation modes. As Figure 16 shows, the highway system accounts for the majority of all hazardous material incidents in Florida.



Source: U.S. Department of Transportation, Hazardous Materials Safety, Annual HAZMAT Summary by Mode

Conclusion

As the transportation system becomes more intermodal and more congested, it is ever more important that efforts to enhance safety continue. As volumes increase for virtually every mode, exposure to incidents and crashes increases and the operating environment becomes more congested increasing the chances that an incident will occur or will involve multiple vehicles. Thus, the challenge in maintaining and improving safety requires enhancements to safety programs and investments. In order to offset the increased chance of incidents that is an inherent result of increasing travel. Also since the operating environments are more crowded facilities create greater probabilities of incidents.

As volumes increase for virtually every mode, exposure to incident and crashes increases and the operating environment becomes more congested increasing the chances that an incident will occu or will involve multiple vehicles.

Efforts to improve safety will certainly focus on improving the safety of every mode but can also encourage use of those modes that have lower safety risks. As shown in Table 9, different modes have meaningfully different rates of incidents and fatalities. A critical challenge for the providers of transportation will be to strive to continue to improve the levels of safety in the delivery of transportation capacity to meet the traveling public's needs without undue constraints on the cost, speed or other performance traits of the various modes.

Table 9 – Crash and Fatality Rates for Roadway, Rail, Transit and Air

	Crash Rate	Death Rate
Traffic Crashes (FL 2001)	149.78 per 100 million VMT	1.76 per 100 million VMT
Rail Incidents at Public Crossings (FL 2001)	0.64 per 100 thousand vehicles	0.06 per 100 thousand vehicles
Transit Incidents (FL 2001)	12.89 per million VMT	0.06 per million VMT
Air Incidents (U.S. 2002)	1.56 per million flight hours	0.51 per million flight hours

Source: Please see individual modes in this section

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