

Trends and Conditions Research Support



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Final Report BC-544-21, December 2005

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TRENDS AND CONDITIONS RESEARCH

INTRODUCTION

The Florida Statutes (F.S.) mandate that state agencies conduct Trends and Conditions analysis in their annual Long Range Program Plan (LRPP). “By analyzing the trends and conditions, goals and objectives, and current facilities inventory, each agency and the judicial branch shall determine its unmet and forecasted future needs.” (216.0158 (1), F.S.) As a support to the 2025 Florida Transportation Plan (FTP), the Short Range Component (SRC) and the LRPP, the FDOT Trends and Conditions process is a continuing effort that assesses the needs of stakeholders as well as monitoring the external and internal environment. Knowledge of key trends and conditions assists policy makers by identifying trends that should be acknowledged as entities prepare their long range transportation plans. With this information, policy makers and transportation professionals will be better equipped to make wise and informed decisions.

This project addresses the key trends and conditions of Florida’s transportation system. The project included 5 major tasks in 2005, designed to provide planners and policy makers with supportive information and analysis.

TASK 1 - TRENDS AND CONDITIONS RESEARCH REPORTS

This initiative is a major element in the ongoing work program. Several major reports were completed in 2005: *Policy Considerations (final)*, *Strategic Intermodal System Report (draft, provided to FDOT for input to planned consultant finalization of this report)*, *Population Growth and Characteristics (major update)*, *The Roadway System (major update)*, *Travel Demand and Travel Behavior (major update)*, and *Tourists and Visitors (major update)*.

There are currently 16 major reports, an *Introduction*, and an *Executive Summary* on the Web site. One additional report, *Strategic Intermodal System Report*, is in production. The substantive reports are rewritten approximately every two years. When completed or updated, each report is posted on the Web. The reports have extensive color tabular and graphic information. They are intended to be reference documents able to be updated systematically or when necessary if new information becomes available.

The reports can be found at the following web link:
<http://www.dot.state.fl.us/planning/policy/trends/tc-report/>

TASK 2 – FDOT TRANSPORTATION INDICATORS WEBSITE

This task involves the development and updating of a Web site designed to give current information on relevant transportation trends for Florida. Much of this data is subsequently used in other task efforts. This reference website is regularly updated on a monthly or more frequent basis as pertinent data becomes available. The site is hosted and maintained by CUTR and is accessible at: <http://www.indicators.cutr.usf.edu>. Figures 1 and 2 below are examples of the content of the site.

Figure 1

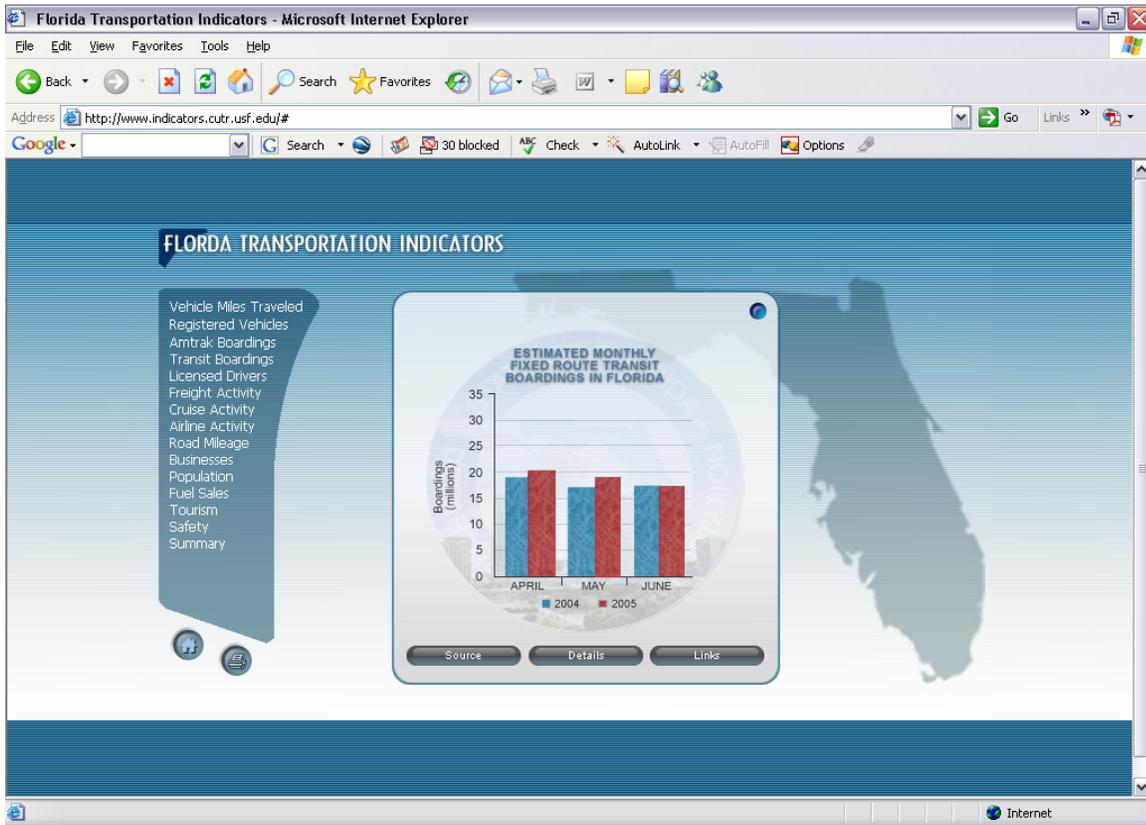
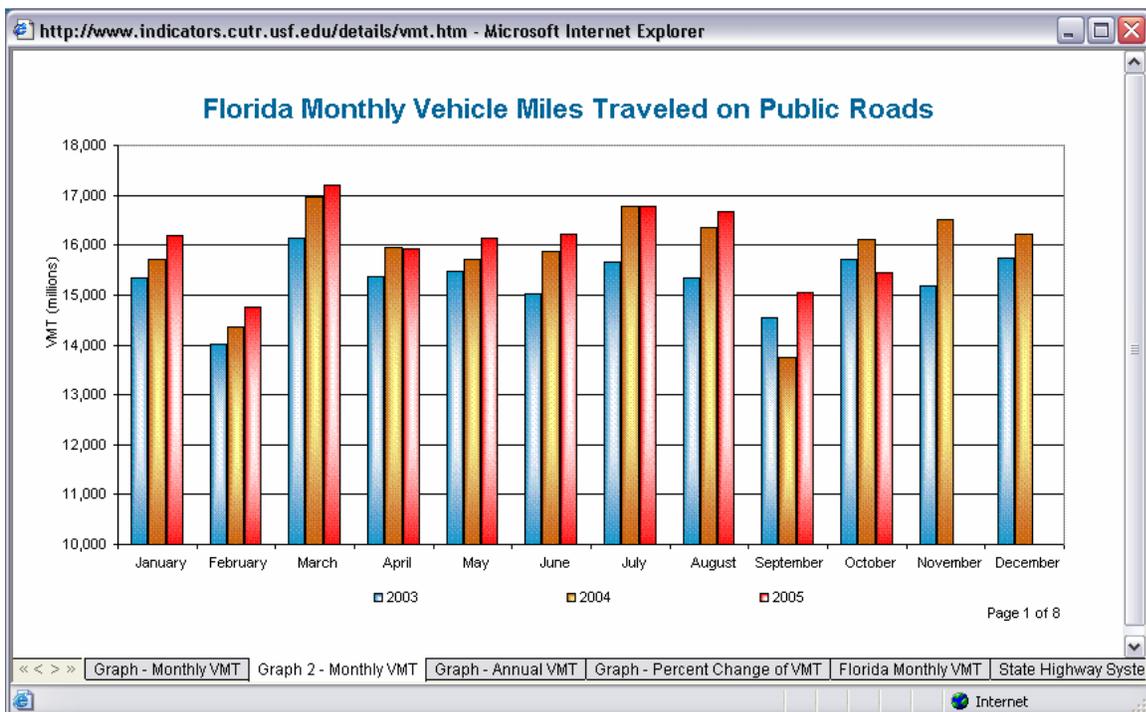


Figure 2



TASK 3 – FLORIDA TRANSPORTATION TRENDS AND CONDITIONS POCKET GUIDE – 2005

This widely distributed and read document was complete in the fall of 2005 and was distributed late in the year. This document is a collaborative effort of CUTR and FDOT. As the resource data becomes available, it is compiled into databases and graphics that are subsequently assembled into the pocket guide report. The document is also available on the Web, <http://www.dot.state.fl.us/planning/policy/trends/pg05.pdf> Figure 3 and 4 are screen captures of examples of the pocket guide content. A copy of the printed document is attached.

Figure 3

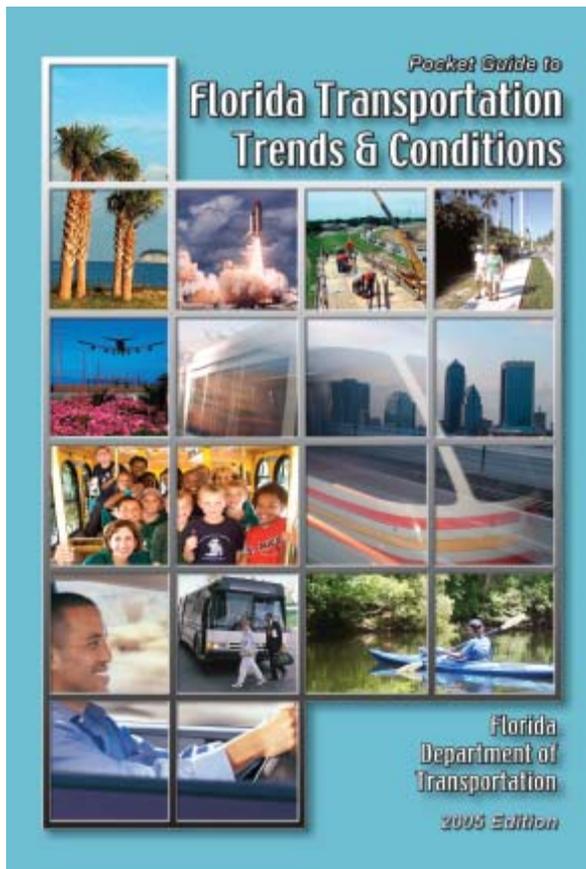
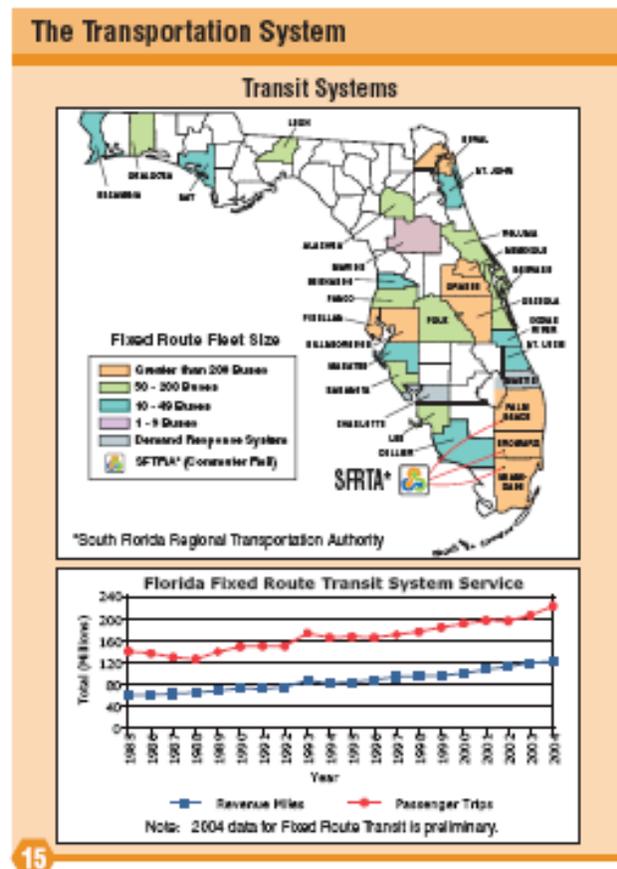


Figure 4



TASK 4 - FLORIDA COMMUTING WORKER FLOW WEBSITE

This website presents information on commuting flows in Florida. It was completed in 2005 and is continuously maintained as part of the ongoing Trends and Conditions work program. The database was developed by CUTR based on the CTPP data from the census. The site is hosted by the Florida Design Center at USF. The site is accessible at <http://www.j2w.usf.edu/default.asp>. Figure 5 and 6 are screen captures from that site.

Figure 5

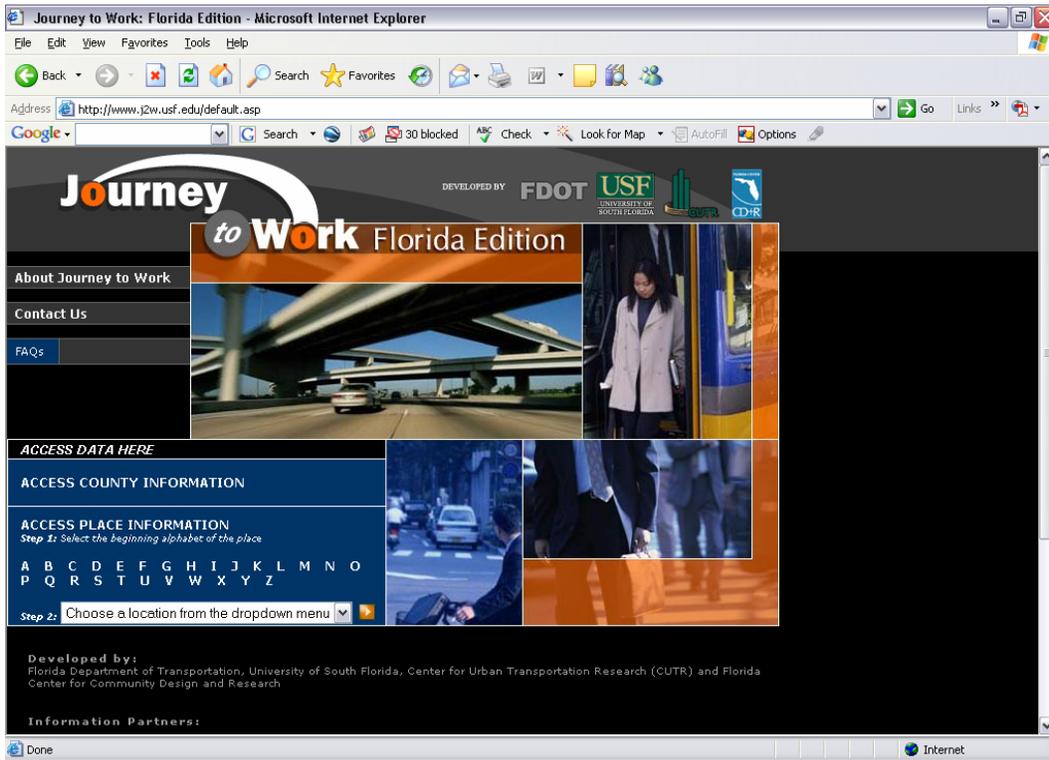
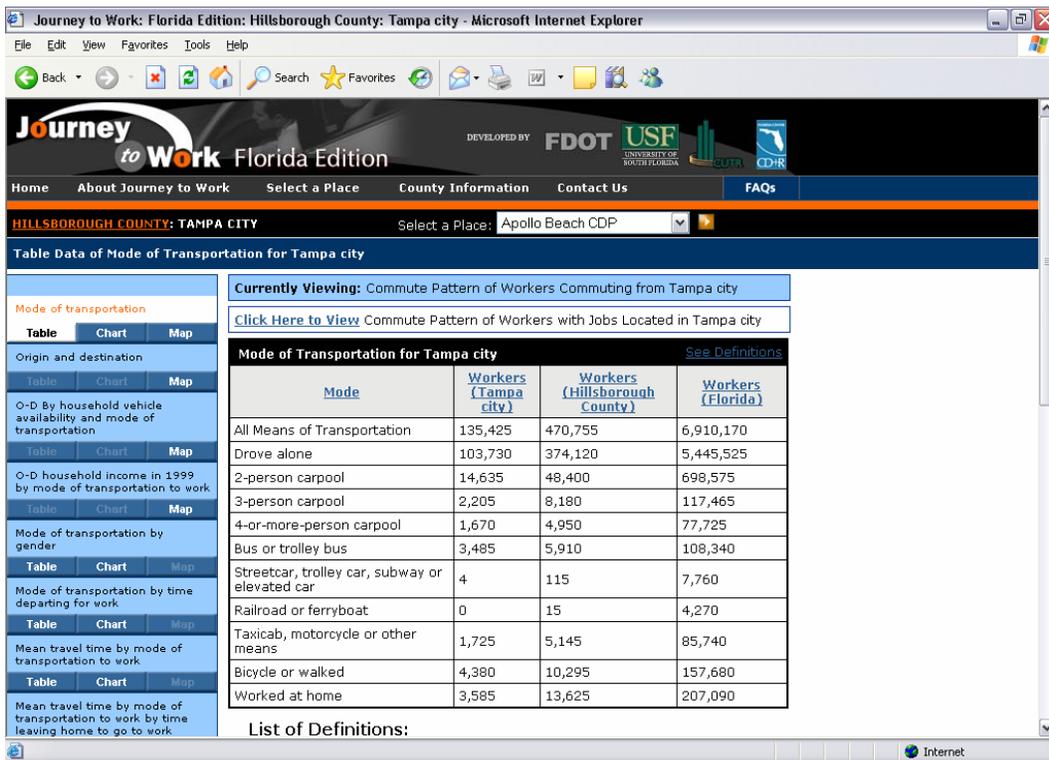


Figure 6



TASK 5 - POLICY RESEARCH ON FLORIDA TRANSPORTATION POLICY ISSUES

CUTR monitors transportation policy issue of relevance to trends and conditions research including monitoring new data releases and national and state information products. Policy Research also includes support for FDOT in the development of the Florida Transportation Cost Report, support for various presentations and support for planning activities such as the FTP update. In 2005, recently released 2004 American Community Survey results were analyzed in a research note provided to FDOT. Additionally, a review of Florida VMT trends was carried out and a research note was provided to FDOT that explored Florida travel growth. Those reports are on the subsequent pages. In addition, work was carried out to provide PowerPoint materials for presentation and to address various queries from FDOT including providing materials to support the development of the Florida Transportation Plan.

COMMUTING IN FLORIDA ~ GENERALLY A LONGER DRIVE

The newly released results of the 2004 American Community Survey (ACS) show that Florida's commuting trends are not in sync with the national trends. In general, Florida has fewer zero-vehicle households than the nation, more people drive alone to work, fewer people use public transportation, and Florida's commute time is longer than the national average. The ACS is a replacement survey for the Census Long Form and is conducted annually. In Florida, more than 35,000 respondents were interviewed in 2004 to obtain the data. Details of the sampling procedures are available from the ACS:

<http://www.census.gov/acs/www/Downloads/ACS/accuracy2004.pdf>. Current plans (subject to funding availability that remains uncertain) envision ongoing annual surveys with a full program rollout starting in 2005. Many but not all of the data presented below are significant at the 90 percent confidence levels. Table 1 shows the trend for the transportation-related responses that are part of the ACS. Data are provided for both Florida and the nation. Interestingly, the Florida trends do not track the national trends in a number of cases.

Table 1 FLORIDA - Five Year ACS Trend					
	2000	2001	2002	2003	2004
VEHICLES AVAILABLE - FL					
No vehicles available	7.2%	7.1%	6.8%	7.0%	6.5%
1 vehicle available	40.9%	41.8%	40.9%	40.5%	40.3%
2 vehicles available	38.8%	38.1%	38.4%	38.7%	39.7%
3 or more vehicles available	13.0%	13.0%	13.9%	13.9%	13.5%
VEHICLES AVAILABLE - US					
No vehicles available	8.8%	9.0%	9.2%	9.4%	9.4%
1 vehicle available	33.2%	33.3%	33.6%	34.0%	33.8%
2 vehicles available	38.5%	38.4%	38.4%	38.3%	38.5%
3 or more vehicles available	19.5%	19.2%	18.9%	18.2%	18.3%
COMMUTING TO WORK - FL					
Car, truck, or van -- drove alone	79.1%	79.9%	80.6%	81.3%	81.0%
Car, truck, or van -- carpooled	12.0%	11.4%	10.7%	10.7%	10.1%
Public transportation (excluding taxicab)	2.0%	2.1%	1.9%	1.8%	1.7%
Walked	1.9%	1.7%	1.5%	1.3%	1.5%
Other means	1.9%	1.9%	1.8%	1.5%	1.7%
Worked at home	3.2%	3.1%	3.5%	3.4%	4.0%
COMMUTING TO WORK - US					
Car, truck, or van -- drove alone	77.7%	77.8%	77.4%	76.8%	76.3%
Car, truck, or van -- carpooled	10.1%	10.4%	10.4%	10.7%	11.2%
Public transportation (excluding taxicab)	4.6%	4.7%	4.8%	4.9%	5.0%
Walked	2.4%	2.3%	2.5%	2.6%	2.7%
Other means	1.4%	1.3%	1.4%	1.5%	1.6%
Worked at home	3.8%	3.5%	3.5%	3.4%	3.2%
Mean travel time to work (minutes) - FL	24.3	24.5	24.8	24.8	25.4
Mean travel time to work (minutes) - US	24.7	24.3	24.4	24.3	24.4

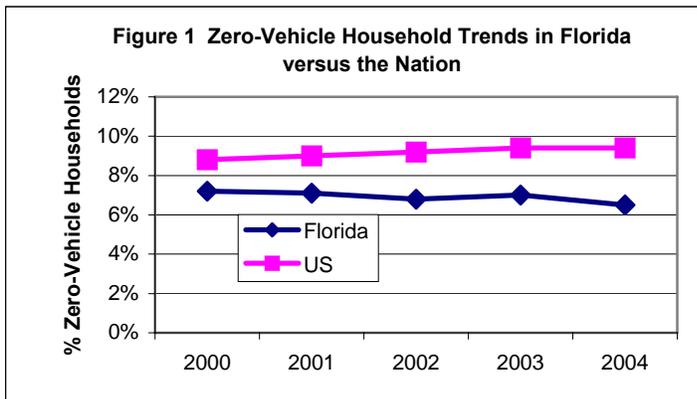
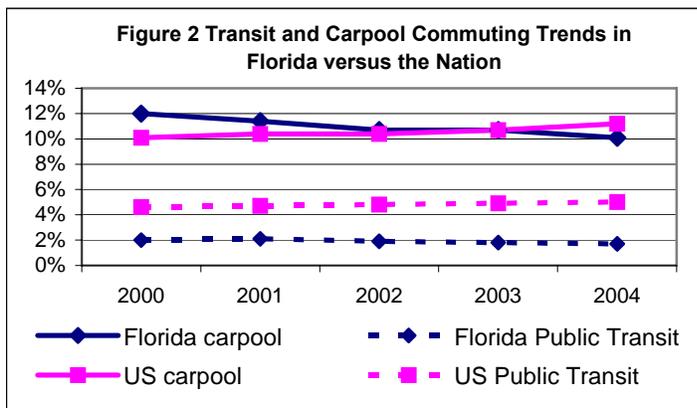


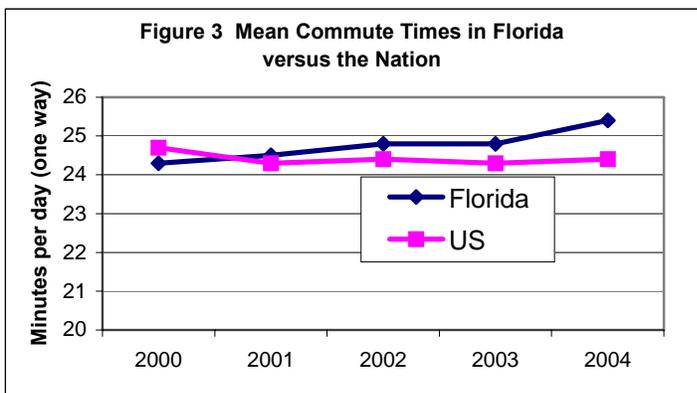
Figure 1 contrasts Florida and national zero-vehicle household trends. Vehicle availability is improving in Florida with fewer zero-vehicle households and more two-vehicle households. This differs from national trends that show slight declines in vehicle availability and increases in zero-vehicle households.

Reliance on driving or being a private vehicle passenger remains the dominant means of travel in Florida and



the country. However, in Florida, “drove alone” is higher than in the rest of the country and is increasing while it is declining slightly nationwide. Both public transit commuting and walk in Florida remain below national average and are declining over time while growth is manifested nationwide. Work at home appears to get stronger in Florida, but it is declining nationwide.

Figure 2 contrasts Florida and national



trends with respect to shared ride and transit use. Florida has witnessed a decline in both commuting modes whereas the nation has observed some growth.

Figure 3 contrasts Florida and national trends with respect to commute time. Although the national trend indicates an 18-second decline nationwide from 2000 to 2004, the Florida trend presents a 1.1-minute increase in commute time.

Table 2 shows the comparative transit mode shares for commuting for consolidated metropolitan statistical areas (CMSA) and metropolitan statistical areas (MSAs). Transit use in all Florida CMSAs and MSAs is below the national average.

Table 3 provides the same data for counties. At the county level, only Miami-Dade County has a transit share that exceeds the national average.

Rank	City - Area	Transit %
1	Miami--Fort Lauderdale, FL CMSA	4.30%
2	Orlando, FL MSA	1.49%
3	Jacksonville, FL MSA	1.47%
4	West Palm Beach--Boca Raton, FL MSA	1.37%
5	Tampa--St. Petersburg--Clearwater, FL MSA	0.97%
6	Sarasota--Bradenton, FL MSA	0.73%
7	Tallahassee, FL MSA	0.55%
8	Lakeland--Winter Haven, FL MSA	0.47%
9	Melbourne--Titusville--Palm Bay, FL MSA	0.46%
10	Fort Pierce--Port St. Lucie, FL MSA	0.45%
11	Fort Myers--Cape Coral, FL MSA	0.44%
12	Pensacola, FL MSA	0.30%
	United States	4.75%
	Florida	1.79%

Rank	County	Transit %
1	Miami-Dade County, Florida	5.13%
2	Broward County, Florida	3.28%
3	Orange County, Florida	2.14%
4	Duval County, Florida	1.84%
5	Palm Beach County, Florida	1.37%
6	Pinellas County, Florida	1.19%
7	Volusia County, Florida	1.12%
8	Sarasota County, Florida	1.09%
9	Hillsborough County, Florida	0.95%
10	Pasco County, Florida	0.72%
11	Seminole County, Florida	0.70%
12	Polk County, Florida	0.47%
13	Brevard County, Florida	0.46%
14	Lee County, Florida	0.44%
15	Manatee County, Florida	0.33%
	United States	4.75%
	Florida	1.79%

Florida Rank	County	Minutes	US Rank
1	Miami-Dade County	30.5	28
2	Pasco County	30.1	32
3	Broward County	26.8	73
4	Lake County	26.8	73
5	Hillsborough County	25.5	93
6	Palm Beach County	25.2	99
7	Seminole County	25.2	99
8	Orange County	25.1	101
9	Volusia County	24.0	121
10	Brevard County	23.4	131
11	Duval County	23.4	131
12	Lee County	23.2	136
13	Pinellas County	22.7	142
14	Escambia County	22.1	154
15	Manatee County	21.9	159
	United States	24.7	
	Florida	25.4	

Table 4 provides commute times for Florida Counties. The county averages range from about five minutes longer than the national average to about five minutes shorter.

Table 5 provides the same data for Florida cities with a large enough sample to be reported.

Florida Rank	City	Minutes
1	Miami, FL	27.7
2	Jacksonville, FL	23.4
3	Tampa, FL	21.9
	United States	24.7
	Florida	25.4

What Might it All Mean?

Travel is highly linked with economic activity. Increase in travel typically is a sign of robust economic growth. Clearly, Florida's travel growth indicates strong development in economic activity - in concert with or in response to Florida's population increase. In many ways, Florida's travel growth is characteristic of the country a few decades ago: more cars and single occupant travel, longer commutes, and less transit commuting or walking. This rapid growth, often led by residential development on the periphery of developed areas outpacing the dispersion of employment and commercial development, may be exacerbating the growing dependency on longer SOV commute trips. At the same time, urban development patterns, availability of alternatives, specific characteristics of growth, and immigration may be influencing our relative growth compared to national norms.

What is eminently clear is that there has been growing demand for roadway travel outpacing the current ability to accommodate it with enhanced roadway capacity or entice it to divert to other modes. In order to avoid continued deterioration in the performance of the transportation system there must be changes in the supply or demand trends that currently exist. This situation is not unique to Florida but is exacerbated here due to the pace of growth.

The sky isn't falling but it is heavily overcast.

**Average Florida work commute time
increased nearly 4.5% since 2000.**

Florida's VMT Growth Outpaces National Trends

In 2004, Florida had an increase in vehicle miles of travel (VMT) of 5.73 percent, which far outpaced the national trend of 1.14 percent VMT growth. If sustained over coming years, this will quickly exacerbate roadway congestion levels, as roadway capacity supply is not keeping pace. In order to more fully understand VMT growth it is important to review its contributing factors:

- 1) growth in freight and commercial vehicle travel,
- 2) growth in tourism and business visitors,
- 3) growth in the amount of travel each resident makes, and,
- 4) growth in population.

By examining each component, this exercise helps diagnose the underlying sources of travel growth in Florida. In simple mathematical terms the growth in VMT in 2004 can be characterized as follows:

$$\begin{aligned} & (2003 \text{ commercial and freight VMT}) \times (\text{growth rate}) \\ & + (2003 \text{ tourist and visitor VMT}) \times (\text{growth rate}) \\ & + (2003 \text{ population}) \times (\text{population growth rate}) \times (2003 \text{ VMT per capita}) \times (\text{per capita growth rate}) \\ & = 2004 \text{ Total VMT} \end{aligned}$$

The component factors are each derived from different sources as discussed below. Each data source is subject to various qualifications, limitations and caveats; thus, this exercise does not provide a definitive answer but does shed significant light on the growth in travel in Florida. The unknown variable is the per capita travel growth rate as there are no data sources that track person travel on an annual basis. Therefore, this is estimated after accounting for the factors for which information is available.

Commercial and Freight VMT

Commercial and freight VMT growth is estimated from FDOT Truck Miles Traveled reports published in the Highway Data Sourcebook developed by Florida Department of Transportation (FDOT). The data are based on truck VMT on Florida State Highway System (SHS). Truck VMT on all Florida public roads is not available. The VMT growth rate on Florida SHS is then assumed to apply to all public roads to produce an estimate of total commercial and freight VMT.

Table 1 – Commercial VMT Growth

Year	Truck Miles Traveled (in thousands)	Truck Miles Traveled % Δ /YR
2002	9,329,897	4.34%
2003	9,695,948	3.92%
2004	10,366,000	6.91%

Table 1 indicates that in 2004, a significant increase in Truck miles of travel was observed on Florida's highways; truck miles increased 6.91 percent over 2003.

Tourist and Visitor Travel

Table 2 – Tourist and Visitor VMT Growth

Year	Visitor VMT (in thousands)	Visitor VMT % Δ /YR
2002	12,909,985	13.88%
2003	15,989,310	23.85%
2004	17,019,077	6.44%

the 2003 visitor VMT displayed a very significant increase of 23.85 percent growth from 2002. This growth was predominately a result of a shift of visitor traffic from arriving in Florida by air to driving to Florida. In contrast, visitor volumes increased more in 2004 but the increase appears to be more uniformly split between air and auto arrivals, hence the more moderate estimated increase in visitor VMT in 2004 of 6.44 percent.

Visitor growth is derived from visitor data obtained from *Visit Florida*. This is then used as an input to calculate visitor automobile VMT using the methods developed in “An Application for Measuring Vehicle Travel by Visitors,” a CUTR publication. Table 2 indicates that

Population Growth

Table 3 – Population Growth

Year	Florida Population	Pop % Δ /YR
2002	16,674,900	2.10%
2003	17,071,400	2.38%
2004	17,516,500	2.61%

logical to conclude that VMT grows in proportion to population growth. Census data, displayed in Table 3, indicate a population growth in Florida of 2.61 percent, the highest since 2000. Bolded are the 2003 population and 2004 percentage considered in our calculation.

Population growth contributes to the increase in total VMT proportionately. For purposes of analysis, we assume that the amount of travel per person is the same for the new residents as it was for pre-existing residents. It is

Total VMT Growth

Total Florida VMT is derived and provided by the Florida Department of Transportation (FDOT). The total Florida (FDOT) VMT growth rate is an astounding 5.73 percent - a magnitude that makes it important to understand the sources of the growth. Using this value and the above estimates, one can derive the estimate of the extent of travel increase per capita.

Per Capita Travel Growth Rate

Table 4 – VMT Growth per Capita

Year	Resident Automobile VMT per Capita	VMT % Δ /YR
2002	9,382	2.43%
2003	9,365	-0.18%
2004	9,633	2.86%

subtracting commercial and visitor VMT from the total and dividing the remainder by the resident population. Table 4 indicates that automobile VMT per person in Florida is estimated to have increased 2.86 percent in 2004, nearly 300 miles more per year for each resident. This number

Since freight, visitor and growth in population alone do not completely account for the total increase in VMT, the balance must be explained by per capita travel growth – each person traveling more on average. Per capita VMT in Table 4 is derived by

compares to national trends that indicate a very modest per capita increase in travel of approximately 0.15 percent in 2004. Bolded in Table 4 are 2003 resident VMT per Capita and 2004 VMT percent growth, both of the remaining components for use in the calculation.

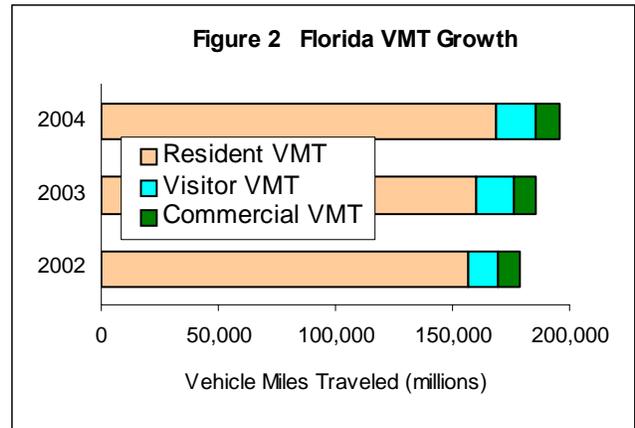
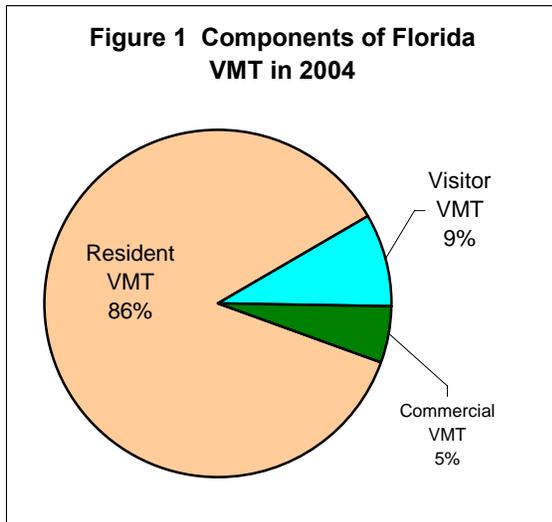


Figure 1 illustrates that the Commercial VMT in 2004 was 5.0 percent of total VMT, the smallest component of VMT. Since 2001, both freight and visitor travel growth has been more rapid than resident travel growth, resulting in these components being a larger share of total VMT.

Figure 2 presents the historical trend.

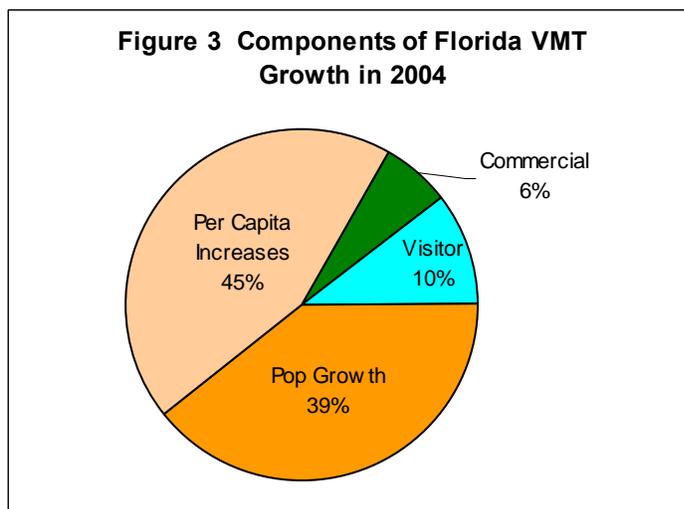


Figure 3 attributes VMT growth to the four factors noted in the equation above and indicates that per capita travel increases are the largest source of increases in VMT, accounting for nearly half of the total increase.

Understanding the sources of travel growth is important to a host of policy issues from growth management strategies to the fundamental issues associated with determining how best to fund necessary transportation infrastructure.

Fuel Sales Correlation

To further verify the VMT growth rate, which is more than double the national growth rate; Florida fuel sales data were reviewed and correlated to vehicle travel.

Table 5 Florida 2004 Fuel Sales

Year	Gasoline		Diesel		Total	
	Volume	Growth %	Volume	Growth %	Volume	Growth %
2002	7,835,936,471	2.90%	1,330,632,075	2.32%	9,166,568,546	2.82%
2003	8,180,597,000	4.40%	1,432,663,000	7.67%	9,613,260,000	4.87%
2004	8,554,133,927	4.57%	1,587,351,000	10.80%	10,141,484,927	5.49%

Table 5 displays fuel sales in Florida, data obtained from the Florida Department of Revenue. Interestingly, the growth in diesel and gasoline sales

in 2004 accounted for a total fuel growth increase of 5.49 percent. This growth closely correlates to the Florida VMT growth rate of 5.73 percent. However, in 2002 and 2003, annual fuel sales growth, and Florida VMT growth percentages did not correlate as well (2002: 2.82% fuel, 4.47% VMT, 2003: 4.87% fuel, 3.84% VMT). One explanation for a mathematical inconsistency prior to 2004 could be annual changes in fuel efficiency of the vehicle fleet.

Table 6 – Derived Vehicle Economy

Year	Auto VMT MPG	Truck VMT MPG
2002	21.61	7.01
2003	21.50	6.77
2004	21.72	6.53

Table 6 shows what the relative fuel efficiency, calculated using sales and VMT, would have had to have been to make the VMT and fuel sales numbers consistent. Unfortunately, the degree of precision in the various numbers is such that it is not possible to place confidence in the year-to-year variations but rather one has to look at longer term trends.

Conclusions

Understanding travel demand growth of Florida residents, tourists, and commerce will be critical to understanding future travel demand for Florida. Significant growth in each of the contributing factors is compounding vehicle travel growth at a very rapid rate compared to the rest of the country. With growing congestion, rising energy prices, rapid population growth, and increasing interest in growth management, it is imperative that transportation planners gain a rich understanding and have robust performance measures to fully understand travel demand growth. Florida's rate of growth may be being influenced by the nature of the immigrant population, the impact of the hurricane season in 2004, the rapid acceleration of land values creating more rapid housing dispersion for moderate income workers, and the ongoing trend to globalization of commerce among other factors. Strong travel demand is a sign of a robust economy but it jeopardizes the future if the travel behavior is not sustainable because of inadequate plans to expand transportation capacity or an incompatibility with trends toward higher energy costs and/or limited supply.

The current pace of VMT growth will significantly increase the challenge of meeting the mobility needs of Floridians. Fully understanding this trend is a prerequisite to anticipating and responding to growing travel demands.