

Florida Department of Transportation 2015 Performance Report

# Mobility

Efficient Movement of People and Goods



Produced by the Florida Department of Transportation  
Office of Policy Planning  
For further information, contact:  
David Lee  
(850) 414-4802  
[david.lee@dot.state.fl.us](mailto:david.lee@dot.state.fl.us)

## MOBILITY

*This report is part of the Performance-Based Planning and Programming Process used by the Florida Department of Transportation (FDOT). For a description of that process, updates to this report and other FDOT transportation performance reporting initiatives, go to [FDOTPerforms.org](http://FDOTPerforms.org).*

## INTRODUCTION

Mobility, the movement of people and goods, is transportation's essential function. Moving people and goods efficiently, affordably, and reliably is vital to Florida's economic prosperity. As travel demand increases and changes, Florida continues to improve the planning, development, and operation of our multimodal transportation system. By providing mobility, FDOT and other transportation system operators make a significant contribution to Florida's economic competitiveness and quality of life.

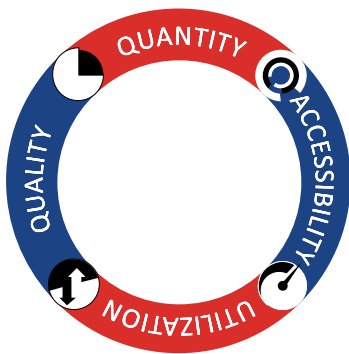
Florida travel is diverse. People use multiple modes of transportation to commute to jobs, conduct business, and obtain services for many other purposes. Raw materials, finished products, and packages comprise a robust freight movement system of air cargo, trucking, seaports, and freight railroads—and the connections between these modes. Because mobility is so vital, measuring mobility performance is likewise essential.

FDOT's core mobility measures include:

- Travel Quantity
- Travel Quality
- Accessibility
- System Utilization

Together they provide a multimodal picture of how much the transportation system is being used, how travelers experience the system, how easy or hard it is to engage in activities using the system, and what capacity remains in the system. In order to adequately address mobility by mode or from a multimodal perspective, all multimodal performance measures from all four core measures should be considered.

Each year as new data is available, FDOT attempts to provide a more complete and diverse presentation of mobility performance. The measures contained in this report utilize the most recent available data. If you have any questions regarding data comparisons of prior year performance reports, please contact FDOT's Transportation Statistics Office at [www.dot.state.fl.us/planning/statistics/](http://www.dot.state.fl.us/planning/statistics/).



*Core Measures cover the 4 dimensions of mobility*

*In order to adequately address mobility by mode from a multimodal perspective, all four mobility core measures should be considered.*

## 2015 PERFORMANCE HIGHLIGHTS

Mobility is a strategic FDOT priority. Key performance highlights are:

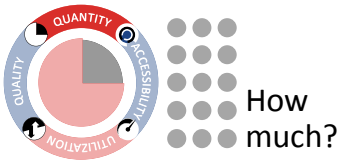
- While overall vehicle miles traveled (VMT) remained relatively stable between 2005 and 2014, VMT per capita decreased by 9.4 percent on the State Highway System (SHS) and 3.9 percent on the Strategic Intermodal System (SIS). Florida population continues to grow, but Floridians are travelling less.
- Public transit ridership decreased slightly in 2014 from the prior year—although ridership has generally trended upwards since 2010.
- Florida’s Amtrak ridership has increased by 29 percent since 2005, but declined from 1.2 to 1.1 million trips over the past two years.
- Freight truck tonnage has trended upwards since 2011, but decreased slightly in 2014. Air cargo tonnage remains relatively flat, sea freight tonnage has decreased steadily since 2005, while rail freight tonnage has increased since 2008.
- Vehicle hours of delay during the peak period on the SHS and the SIS has been decreasing since 2009—from 107.6 to 79.1 thousand delay hours on the SHS and from 51.5 to 43.1 thousand delay hours on the SIS. Delay reduction on higher travelled roads translates into time and cost savings for users.
- Travel time reliability on freeways during the peak period trended upward between 2005 and 2014—from 79.5 to 81.3 percent for all vehicles and from 76.7 to 78.6 percent for trucks.
- On-time airport departures increased from 77.5 to 80.5 percent, while on-time overall Amtrak rail departure reliability from Florida stations between 2005 and 2014 decreased dramatically from 64.9 to 32.9 percent.
- Florida roads are more accommodating of pedestrians and bicyclists as sidewalk mileage on the SHS in urban areas increased from 59.4 to 63.6 percent between 2011 and 2014, while bike lane and shoulder mileage increased from 57.6 to 60.3 percent.
- Miles of severely congested roads have decreased over the past decade from 5.4 to 4.7 percent and from 3.1 to 1.9 percent respectively on the SIS and the SHS—although the percentage of miles of severely congested roads on the SIS has increased since 2012.

## TRAVEL QUANTITY



FDOT has identified a series of core measures and supporting measures related to transportation system mobility. Travel quantity, as a core measure, reflects the magnitude of travel on the system, or a particular facility or transportation service—how many people are served and how much freight is moved. The supporting measures for travel quantity are:

- Vehicle Miles Traveled During Peak Period
- Vehicle Miles Traveled During Peak Period Per Capita
- Combination Truck Miles Traveled
- Transit Passenger Trips
- Aviation, Seaport, and Rail Passenger Trips
- TEU (20-foot equivalent unit) Containers
- Freight (Truck, Seaport, Rail, Aviation) Tonnage



## Vehicle Miles of Travel



**Figure 1** shows State Highway System (SHS) and Strategic Intermodal System (SIS) vehicle miles traveled (VMT) in millions of miles during the peak period over a ten year period. VMT during the peak period is an indicator of system demand at the time of greatest need/use. Overall, VMT has remained relatively stable with a slight dip beginning in 2008 around the time the economic recession was at its deepest. VMT has increased slightly since 2012 on both the SHS and the SIS.

Growing—or even steady—VMT underscores the importance of continued investment in maintenance, capacity improvements, and improved operations to maximize the efficiency of the transportation system. Asset management and performance management/measurement are closely connected.

### Will VMT Grow?

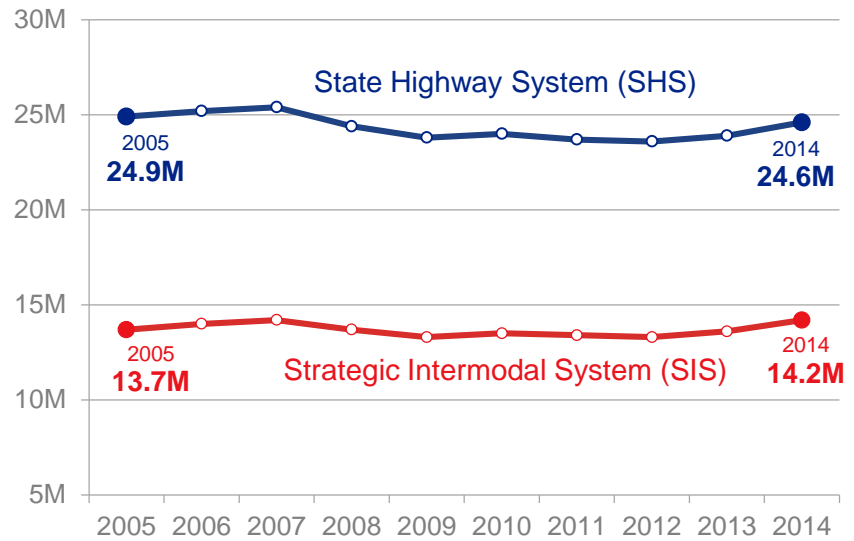
Transportation agencies are responding to a wide variety of global and domestic events and trends—economic, environmental, political, safety, social, and technological—that impose new challenges and present new opportunities. Transportation planning, performed by professionals with the necessary knowledge and expertise, can play a key role in helping agencies making transformative changes by supporting and enabling them to successfully address the complex issues facing state DOTs.

NCHRP Report 798: Supporting Strategic Decisionmaking



Vehicle miles traveled (VMT) during the peak period is an indicator of system demand at the time of greatest need/use. VMT has increased slightly since 2012 for both the SHS and the SIS.

**Figure 1: Vehicle Miles Traveled During Peak Period (millions)**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

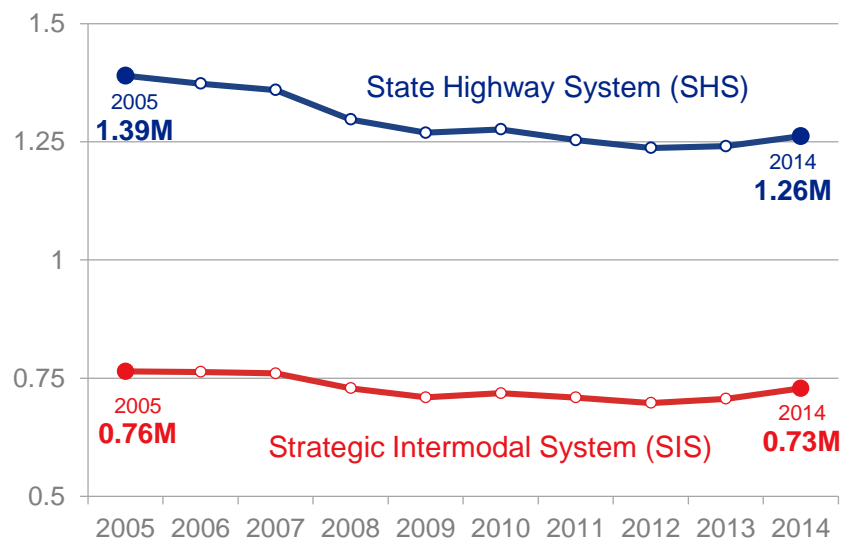
## Vehicle Miles Traveled per Capita



Figure 2 shows that VMT during the peak period per capita (i.e., per person) declined on both the SHS and the SIS over the past decade (9.4 and 3.9 percent respectively), but began to move upward in 2013. Depending on the extent to which this trend will continue, it could have a significant impact on satisfying future system capacity needs.

VMT per capita has decreased by 9.4 and 3.9 percent respectively on the SHS and the SIS between 2005 and 2014.

**Figure 2: Vehicle Miles Traveled During Peak Period Per Capita**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

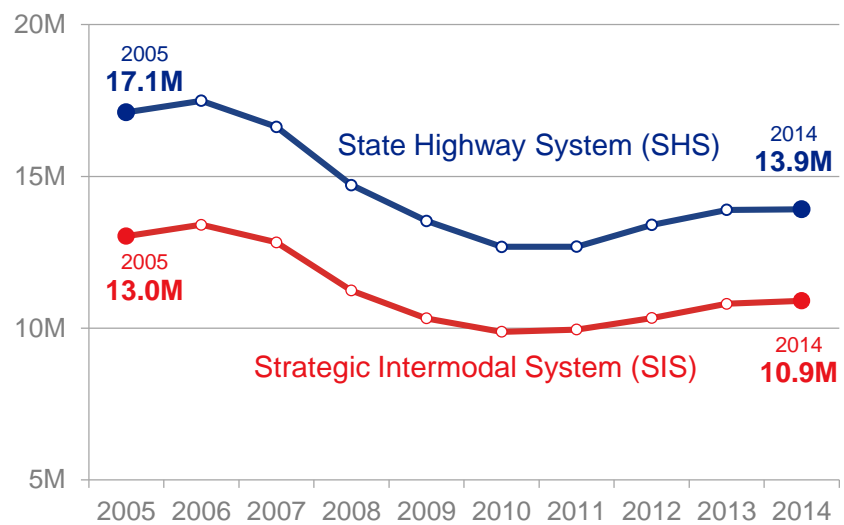
## Combination Truck Miles Traveled



Combination truck miles traveled is a measure of transportation system usage to move the vast quantity of goods and materials needed by consumers and producers. Combination vehicles typically consist of a tractor and a trailer. As shown in **Figure 3** combination truck miles traveled was nearly level for the past year on the SHS and the SIS. While miles traveled have been trending upward recently, they are still below 2005/2006 levels. Notably, as truck miles traveled increases, economic growth increases as well, along with the need to add system capacity.

*Combination truck miles traveled is a measure of transportation system usage to move vast quantities of goods and materials. While miles traveled have been trending upward, they are still below 2005/2006 levels.*

**Figure 3: Combination Truck Miles Traveled (millions)**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Freight Mobility and Trade Plan

FDOT’s Office of Freight, Logistics and Passenger Operations (FLP) serves as a resource to better connect, develop, and implement the freight planning process. That process is aimed at maximizing the use of existing facilities while integrating and coordinating the various modes of transportation, including the combined utilization of public and private facilities and services.

Annually, the FLP Office allocates funds toward transportation infrastructure improvements spanning all transportation modes. It aligns multimodal transportation initiatives with the statewide priority to transform Florida into a global hub for trade, logistics, and manufacturing-oriented activities.



## Transit Passenger Trips



Transit options and access can improve local and regional mobility and livability for many Florida communities. FDOT’s target is to increase transit ridership at twice the rate of population growth.

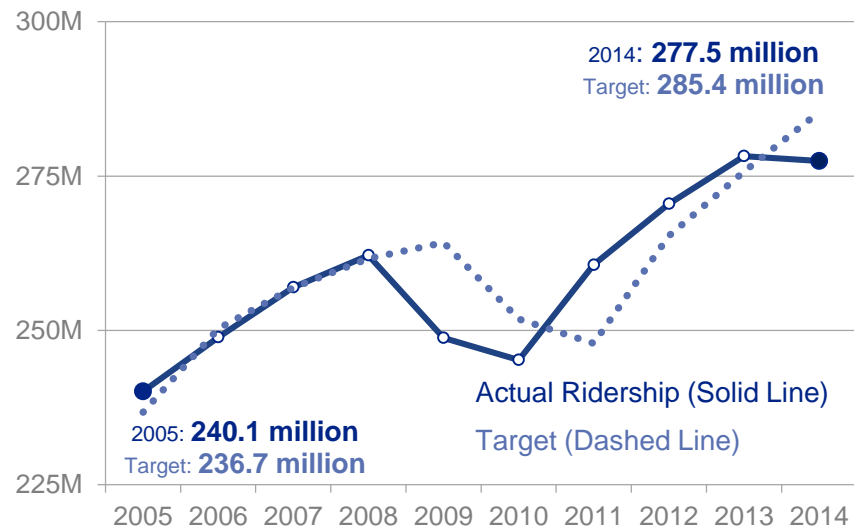
FDOT is committed to assisting its partners to increase transit ridership. Approximately 91 percent of Floridians live in urban areas and 80 percent live in transit-served areas. Increased reliance on transit, particularly when combined with less reliance on auto travel, helps to reduce greenhouse gas emissions while providing a sustainable transportation system.

**Figure 4** shows that passenger trips served by transit throughout Florida’s 31 fixed-route transit systems<sup>1</sup> (including Tri-Rail and SunRail, but not Amtrak) have been increasing over the past decade, albeit with slight dips in 2009, 2010 and 2014. In 2014 there were approximately 277.5 million transit trips in Florida, a slight decrease (less than 0.3 percent) from 2013—falling short of the target of 285.4 million transit trips.

FDOT uses the ratio of transit growth to population growth as a measure to evaluate transit ridership performance. For most of the past decade Florida’s transit ridership growth was near to, or more than, the target of twice the state’s population growth rate.

*In 2014 there were over 277.5 million transit trips in Florida, a decrease of nearly 0.3 percent from 2013.*

**Figure 4: Annual Transit Passenger Trips**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Note: Population data used to assess the ridership target came from the Office of Economic and Demographic Research.

<sup>1</sup> In 2015 Florida had 31 fixed route transit agencies. Only the urban systems are reported in these ridership numbers.



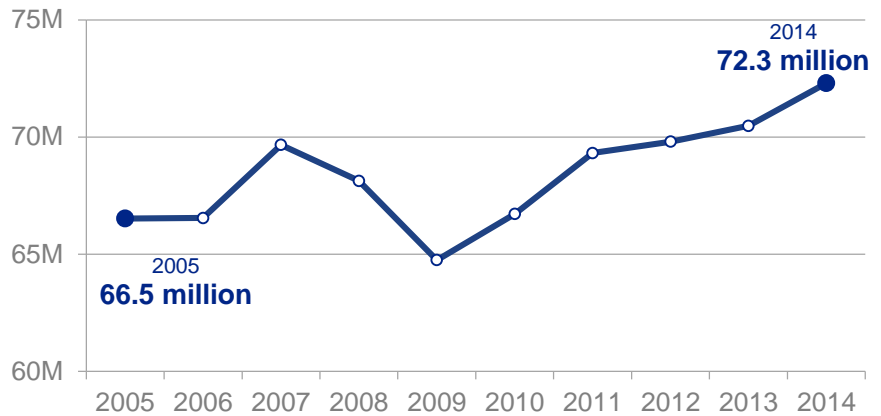
## Aviation Passenger Boardings



Aviation boardings increased to 72.3 million in 2014.

Figure 5 illustrates Florida’s overall growth in aviation passenger boardings between 2005 and 2014. The number of passenger boardings increased in 2014 to 72.3 million, with decreases occurring in 2008 and 2009, along with increases occurring thereafter. The five-year upward trend since 2009 underscores Florida’s special attraction as both a tourist and a business origin/destination—bolstering the state’s competitive position.

Figure 5: Annual Aviation Passenger Boardings



SOURCE: FDOT; Florida Transportation Indicators: Annual Enplanements at Major Florida Commercial Airports, [www.floridatransportationindicators.org](http://www.floridatransportationindicators.org)

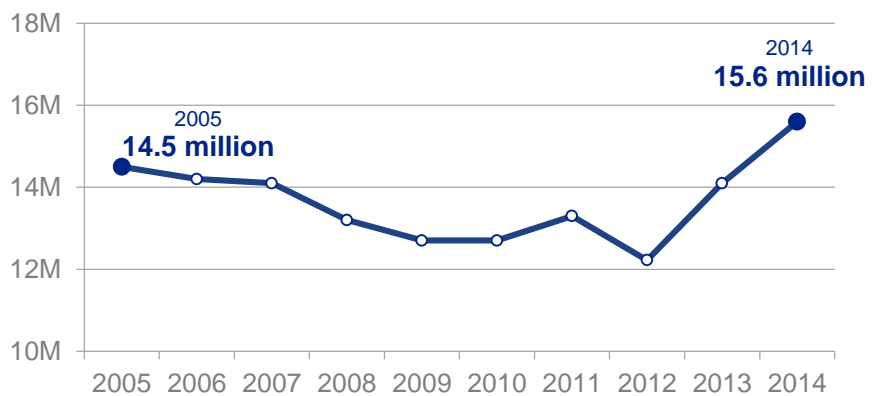
## Seaport Passenger Trips



60 percent of all U.S. cruise passengers embark from Florida seaports.

Figure 6 shows Florida’s increase in seaport passenger (cruise) trips between 2005 and 2014. The number of trips surpassed the previous high in 2005 of 14.5 million, with slight decreases thereafter to 12.2 million in 2012. However, 2014 saw a sharp 27.6 percent increase over 2012 levels to 15.6 million. Significantly, 60 percent of all U.S. cruise passengers embark from Florida seaports. If this trend continues it will have an even greater impact on the state’s economy.

Figure 6: Annual Seaport Passenger Trips



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

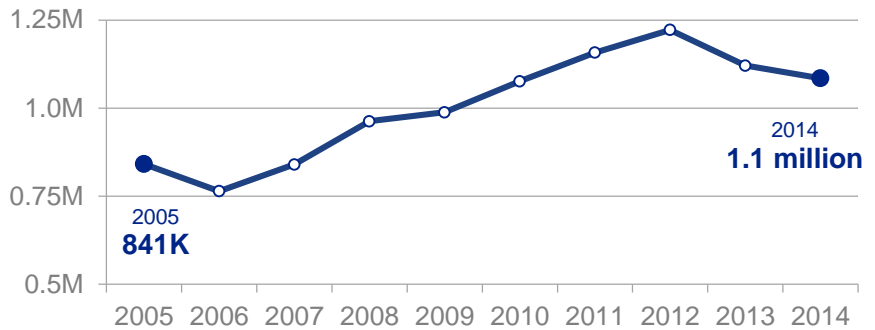
## Rail Passenger Trips



*Amtrak rail ridership has been generally trending upward, with 1.1 million trips in 2014.*

The rail passenger measure is the annual number of revenue paying Amtrak passengers (this does not include Tri-Rail or SunRail). As **Figure 7** shows, ridership started trending upward after 2006, but declined over the past two years to 1.1 million trips in 2014.

**Figure 7: Annual Rail Passenger Trips on Amtrak**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## TEU (20-foot equivalent unit) Containers

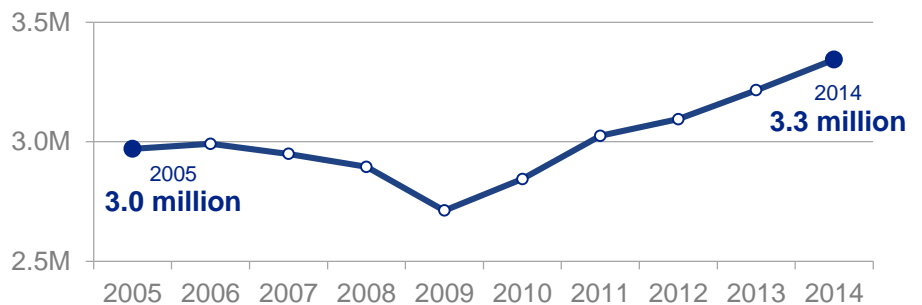


*Since 2009 Florida has experienced about a 23 percent increase in TEUs moved through Florida seaports.*

The safe, effective and efficient movement of goods is key to Florida’s economic strength and growth. The 20-foot equivalent unit (TEU) container provides an approximate gauge of intermodal container movements. The TEU is based on the volume of a 20-foot-long intermodal container, a standard-sized metal box which can be easily transferred between different modes of transportation, such as ships, trains and trucks.

**Figure 8** shows that since 2009 Florida has experienced about a 23 percent increase in TEUs moved through Florida seaports, reflecting a number of positive trends including expanded economic activity/trade, and use of intermodal transportation. If this rate of growth continues over the next decade and beyond, the state’s investments in system capacity, intermodal connectivity, and improved transportation operations will become even more important to accommodate economic expansion.

**Figure 8: TEU Containers Moved Through Florida Seaports**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Freight Tonnage

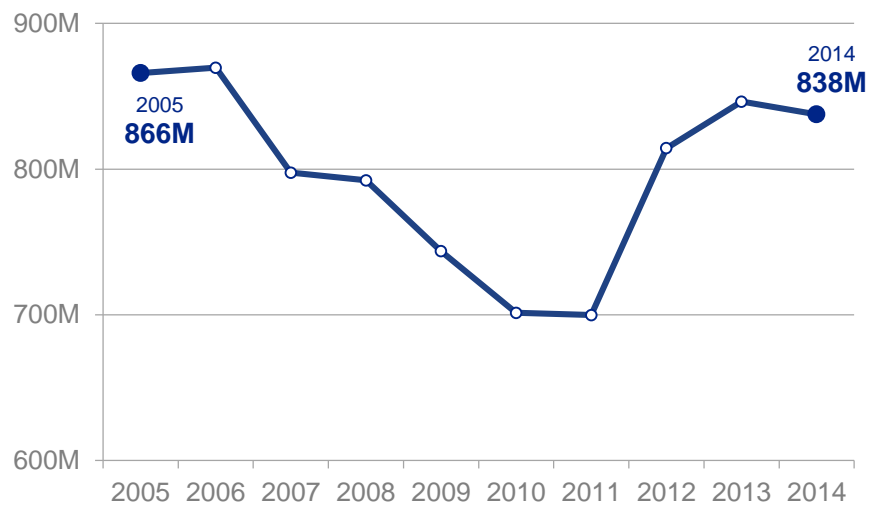


*Freight tonnage indicates the extent to which freight is moving on Florida's transportation system. Products and raw materials increasingly are moving between origins and destinations using more than one mode of transportation.*

This measure indicates the extent to which freight is moving on Florida's transportation system across the various modes of transportation. It is useful in terms of identifying any overall trends.

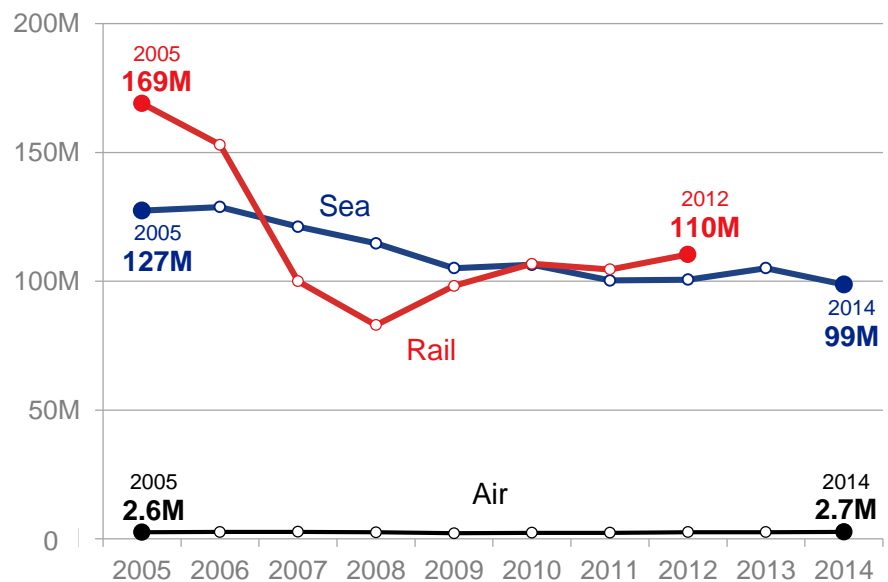
**Figures 9(a) and 9(b)** provide a ten year trend of Florida freight tonnage by mode. Products and raw materials increasingly are moving between origins and destinations using more than one transportation mode—making connectivity with the Strategic Intermodal System (SIS) of particular significance (data for rail tonnage is not available for 2013 or 2014).

**Figure 9(a): Freight Tonnage by Truck**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

**Figure 9(b): Freight Tonnage by Sea, Rail, and Air**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Goods movement is part of a dynamic and fluid logistics system in which shippers and receivers of goods and raw materials strive to make the most cost-effective use of each available mode. Florida is well positioned to meet these flexible requirements, particularly through its extensive SIS. As seen above in **Figures 9(a)** and **9(b)**, Florida freight trends indicate that:

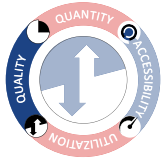
- Tonnage by truck was uneven from 2005 to 2014, but generally has been increasing over the past three years—as the economy has improved and intermodal movements have increased.
- Warehousing and distribution rely heavily on trucking, and some of this growth may reflect the advantages of improved logistics favoring surface movement of goods and materials.
- An increase in truck tonnage also translates generally into a trade-off relationship between economic growth inputs and additional roadway and bridge maintenance to accommodate economic expansion.
- Air cargo tonnage has remained flat over the ten-year period. Typically air cargo is low weight/high value, so measuring it in terms of tonnage underestimates its economic importance. Nationally, advances in ground distribution seem to have lessened the overall demand for air freight.

## KEY STRATEGIES TO IMPROVE TRAVEL QUANTITY

FDOT will help ensure continued progress to improve its core measure of travel quantity through strategies such as those listed below. It is also important to note that travel quantity is impacted by trends beyond FDOT's control including fuel prices and economic conditions:

- Promote multi-modal options, including non-motorized travel, for people movement within existing and future corridors.
- Implement FDOT's Complete Streets Policy to improve access and mobility for public transit riders, pedestrians and bicyclists.
- Introduce new modal options or develop new transportation hubs or corridors when existing facilities cannot meet mobility or connectivity needs.
- Enhance Florida's role as a global hub that provides efficient and reliable connectivity for trade and visitors.
- Ensure connectivity between the Strategic Intermodal System (SIS) and regional and local transportation facilities to support complete end-to-end trips.
- Promote options that increase vehicle occupancy.

## TRAVEL QUALITY



How good or bad?

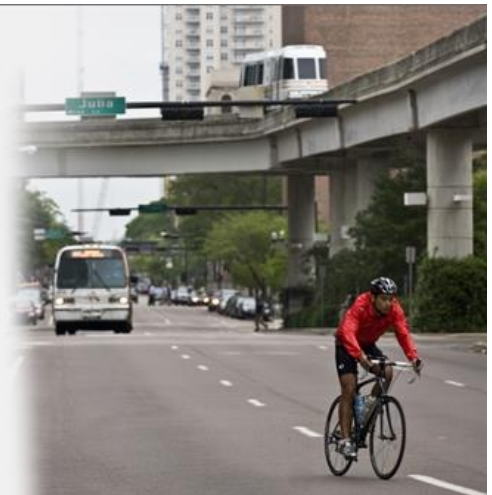
FDOT has identified a series of core measures and supporting measures related to transportation system mobility. The travel quality core measure helps to assess how good or bad the travel experience is using a range of supporting measures:

- Level of Service (LOS)
- Pedestrian and Bicycle LOS
- Vehicle Hours of Delay
- Combination Truck Hours of Delay
- Travel Time Reliability
- Aviation and Rail Departure Reliability
- Transit Headways

Level of Service (LOS), delay and reliability each describe the quality of our transportation system in different ways. At a facility level, LOS is an excellent measure of a user's perspective of how well the facility is operating, and can provide insight into its capacity utilization. Travel time reliability is important because most travelers are less tolerant of unexpected delays, because such delays have larger consequences than drivers face with everyday congestion. Travelers also tend to remember the few bad days they spent in traffic, rather than an average time for travel throughout the year.

### Multimodal Performance Measures

Since moving people and goods is the core function of transportation agencies, performance measures are essential. To adequately address this topic, mobility has been divided into four conceptual dimensions: quantity of travel, quality of service, accessibility, and utilization. There are several FDOT research studies to develop and improve travel time reliability measures and reporting techniques. There are subtle differences between travel time variability (the difference in travel time) and reliability (which uses statistical measures to quantify).



## Level of Service (LOS)



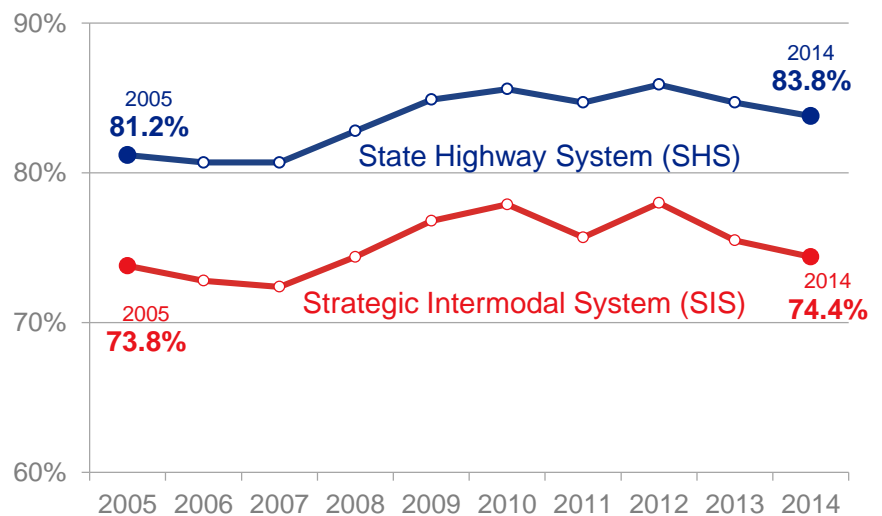
Level of Service (LOS) provides a measure for evaluating roadway performance by relating travel demand to roadway capacity. Various LOS grades are established along with thresholds that provide a basic standard of acceptability.

FDOT’s policy is to plan and operate the State Highway System (SHS) at acceptable operating conditions.

The overall LOS trend since 2005 is one of generally steady travel improvement, but a decrease on both the SHS and the Strategic Intermodal System (SIS) began after 2012. During 2014, 83.8 percent of the SHS and 74.4 percent of the SIS during the peak period of travel met or exceeded acceptable LOS criteria—a decrease of 1.1 percent and 1.5 percent respectively over the prior year (as shown in **Figure 10**). Maintaining acceptable LOS performance is important for Florida to support the effective and efficient movement of people and goods.

*The overall LOS trend since 2005 is one of generally steady travel improvement, but a decrease occurred on both the SHS and the SIS after 2012.*

**Figure 10: Travel Meeting Acceptable LOS During Peak Period**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Bicycle & Pedestrian LOS



84 percent of SHS roads in urban areas had a bicycle LOS of “C” or better in 2013.

45 percent of SHS roads in urban areas had a pedestrian LOS of “C” or better in 2013.

Bicycle LOS is a measure of the quality of service a roadway provides to bicyclists. Unlike automobile LOS which is largely affected by the number of motorized vehicles on the road, bicycle LOS is based on factors and conditions that are particularly important to bicyclists:

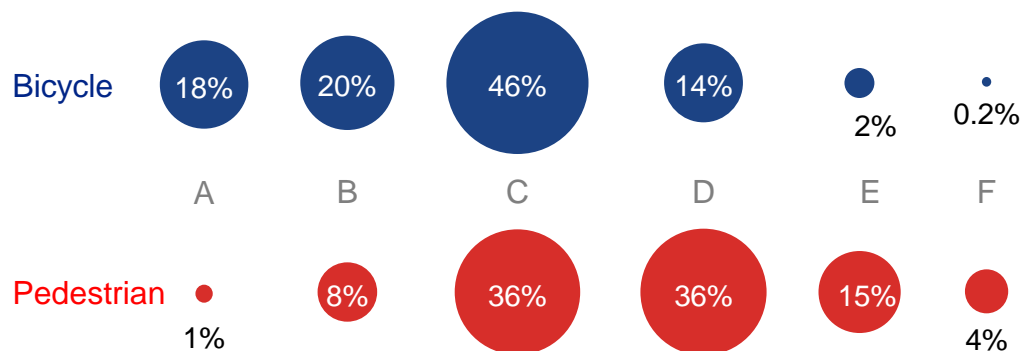
- Presence of bike lanes/shoulders and other outside travel lane considerations
- Motorized vehicle volumes (less being better)
- Motorized vehicle speeds (lower being better)
- Heavy vehicle (truck) volumes (less being better)
- Pavement conditions

Pedestrian LOS is a measure of the quality of service a roadway provides to pedestrians. Similar to bicycle LOS, pedestrian LOS is based on factors and conditions that are important to pedestrians:

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volumes (less being better)
- Motorized vehicle speeds (lower being better)

**Figure 11** highlights that 84 percent of SHS roads in urban areas had a bicycle LOS of “C” or better in 2013 (data for 2014 is not available), while only 45 percent of SHS roads in urban areas had a pedestrian LOS of “C” or better.

**Figure 11: Bicycle and Pedestrian LOS on the State Highway System in Urban Areas in 2013**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Vehicle Hours of Delay



*Vehicle hours of delay on the SHS and the SIS have generally been declining over the past decade. Reduction in delay translates into savings for companies and individuals.*

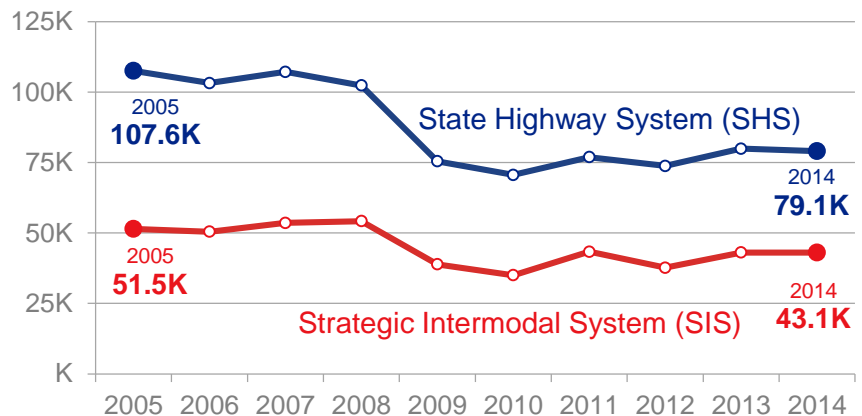
As shown in **Figure 12a**, vehicle hours of delay on the SHS and the SIS have generally been declining over the past decade. Delay is important because it equates to cost in time and money for individuals and businesses.

Delay is the difference between a relatively uncongested travel time (at a reasonable/safe speed, including effects of signals, other road conditions, and moderate traffic) and the estimated travel time (using estimated average speed for traffic and road conditions). By measuring delay on the state’s roadways, insight can be gained into questions such as:

- How can transportation be improved to better serve people and commerce?
- What is the state getting from its investments in transportation (in terms of delay reduction)?
- Is the state investing in transportation as efficiently as possible?
- To what extent is delay or its reduction impacting economic activity?

Delay, however, should not be considered in isolation from other factors. Note, for example, the steep drop in delay between 2007 and 2012. This demonstrates that while delay reduction is desirable from a transportation operations perspective, that reduction is undesirable if it is due to an economic recession (which explains much of the drop during that period).

**Figure 12a: Vehicle Hours of Delay During Peak Period**

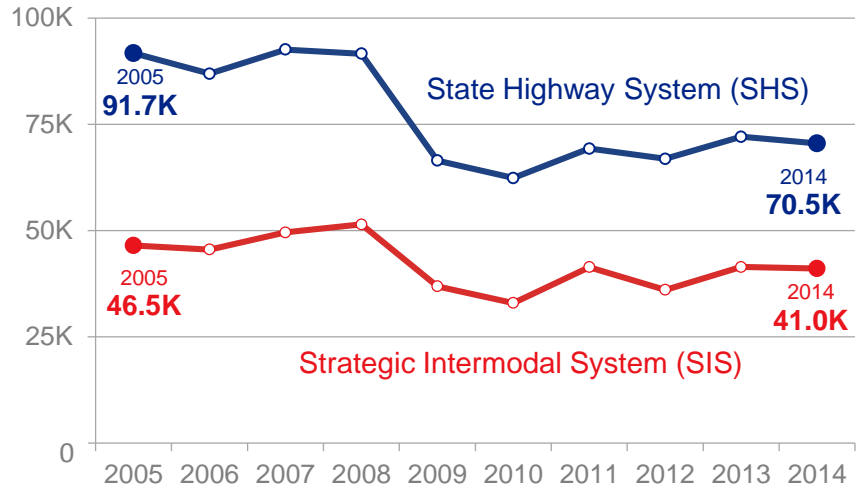


SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Since 2010, vehicle hours of delay in the seven most populous counties has increased (**Figure 12b**), indicative of the economic recovery and population growth. The hours of delay, however, are still well below the levels of the early 2000’s. As such, Florida’s transportation system appears to be accommodating the economic recovery with capacity for supporting further economic growth.



**Figure 12b: Vehicle Hours of Delay During Peak Period — 7 Most Populous Counties**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

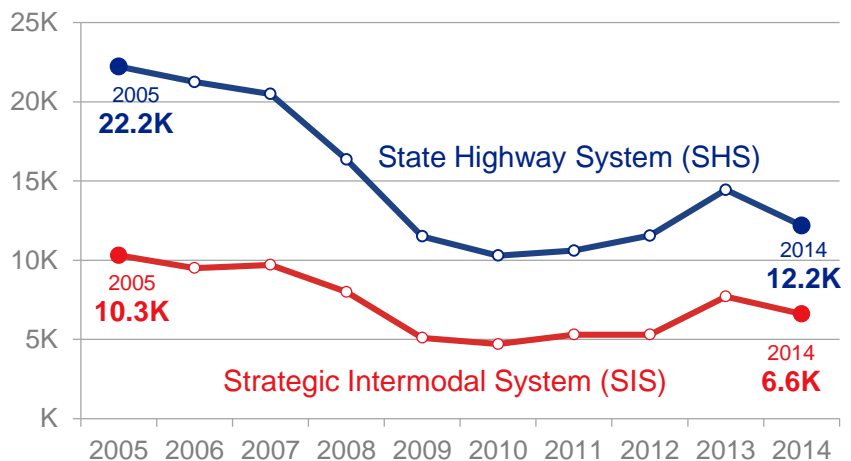
## Combination Truck Hours of Delay



Truck hours of delay have generally been trending downward on Florida roads over the past decade. This is particularly important for efficient goods movement where time does translate into money—additional cost to shippers, carriers, and consumers, or cost savings for each. For the SHS, the decrease in truck hours of delay has been particularly significant—see **Figure 13**. Truck hours of delay on the SIS also trended downward over the past decade but at a lesser rate than on the SHS. Although the highway component of the SIS is primarily a sub-set of the SHS, it accounts for 70 percent of the SHS’s truck traffic.

*Truck hours of delay have generally been trending downward on Florida roads over the past decade. There was a notable decrease between 2013 and 2014. This could reflect to some extent greater transportation system operating efficiency as vehicle miles of travel increased over the same period.*

**Figure 13: Combination Truck Hours of Delay**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

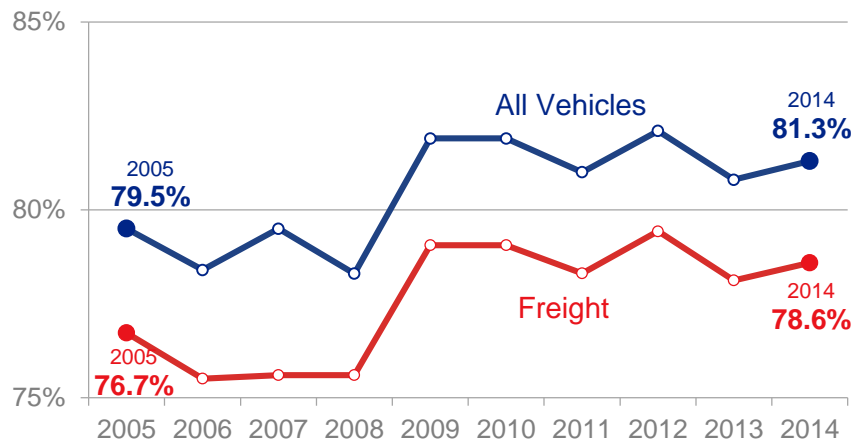
## Travel Time Reliability



Travel time reliability is especially important to transportation system users for the movement of people and freight. FDOT began tracking this measure for freeways in 2005 as shown in **Figure 14**. Travel time reliability is the percentage of travel occurring at the posted speed limit (or higher) on freeways. Travel time reliability on freeways during the peak period of travel improved from 79.5 to 81.9 percent and from 76.7 to 79.1 percent between 2005 and 2009 respectively for all vehicles and for freight. From 2009 through 2014 travel time reliability has been generally flat. This measure is particularly important, translating to time and cost savings for shippers and carriers that rely on the timely movement of finished goods and raw materials/commodities as trucks move approximately 83 percent of all Florida manufactured tonnage. Travel time reliability is a performance measure that can be used to promote economic development and investment.

*Travel Time Reliability on freeways improved—translating to time and cost savings for shippers and carriers.*

**Figure 14: Travel Time Reliability on Freeways During Peak Period**

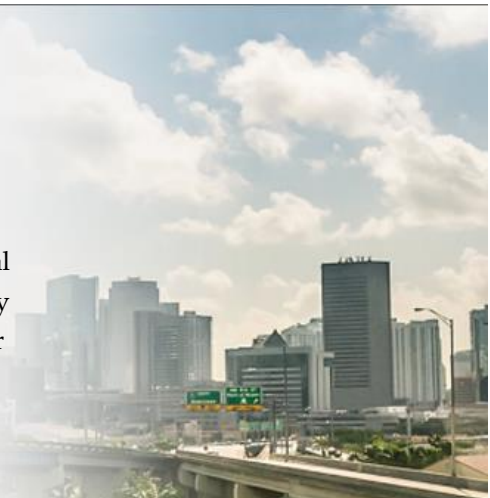


SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

### Florida develops a new tool for Travel Time Reliability

A new tool is being developed to identify travel-time reliability and safety deficiencies to predict the impact of proposed transportation improvements. This new tool is compatible with travel demand models used by Florida Metropolitan Planning Organizations (MPOs).

The new tool uses reliability and safety prediction procedures from the National Highway Safety Manual. Benefits are measured in terms of improved reliability and reduction in crash types (i.e., fatal, injury, property damage, bicycle, and/or pedestrian). As a result, MPOs can provide information to citizens and elected officials about the measurable benefits of scenarios that prioritize safety and reliability investments.



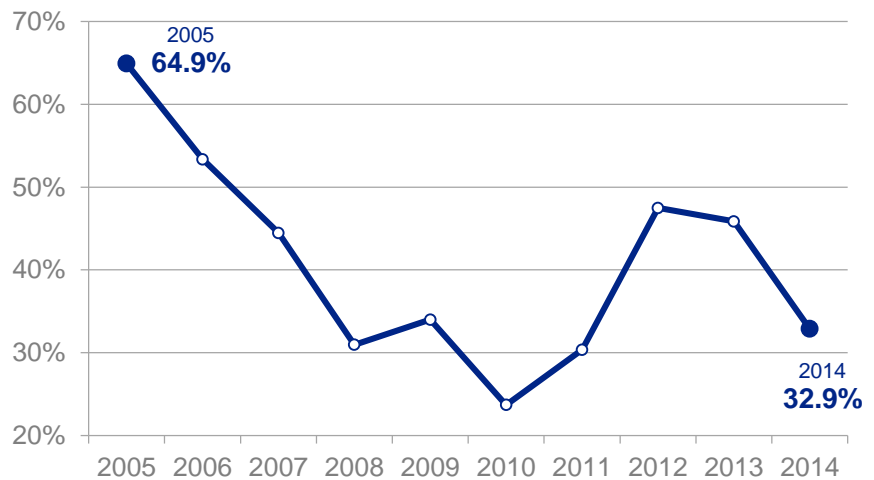
## Rail Departure Reliability



Rail departure reliability captures the average on-time performance of Amtrak. **Figure 15** shows that on-time departure performance for Amtrak decreased dramatically between 2005 and 2014. On-time performance is defined as a train departing the station within an acceptable margin of the published schedule. While FDOT does not have control over the performance associated with this measure, the public expects reliable departure times, and the extent to which they will make this mode choice relies considerably on this measure. **Figure 7** shows a decrease in Amtrak ridership, which to some extent may reflect consumer response to this level of reliability.

*On-time departure performance for Amtrak decreased dramatically from 64.9 to 32.9 percent between 2005 and 2014.*

**Figure 15: Rail Departures On-Time**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

### Amtrak service for North Florida

After a decade of suspended service, there have been discussions to restore service from New Orleans to Jacksonville to Orlando. Doing so would complete the transcontinental Sunset Limited route that already extends westward from New Orleans to Los Angeles.



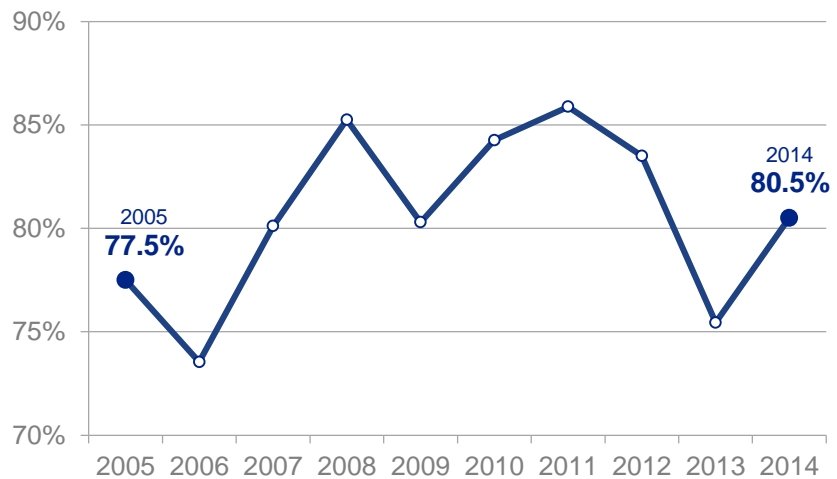
## Airport Departure Reliability



Florida airport users expect reliable travel with minimal delay. Departure reliability at Florida’s commercial airports is defined as "on time" if a flight departs less than 15 minutes after the scheduled time in the airlines’ Computerized Reservations Systems. As shown in **Figure 16**, this measure generally has been improving, although there has been considerable fluctuation over the past ten years. By 2011, on-time departures stood at 85.9 percent, while in 2013 it dipped down to 75.4 percent—the lowest percent since 2006. In 2014 on-time departures increased to 80.5 percent. Aviation is critical to Florida’s economy. While FDOT does not have control over the performance associated with this measure, it recognizes that on-time aviation performance is important to the business community, residents and millions of visitors. Continued federal and state investment in expanding and modernizing airport infrastructure and technology (e.g., air traffic control modernization) will be key to the long term improvement in airport departure reliability.

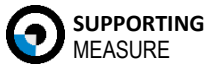
**Figure 16: Airport Departures On-Time**

*Airport on time departures varies from year to year, but has generally improved since 2005.*



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Transit Headways

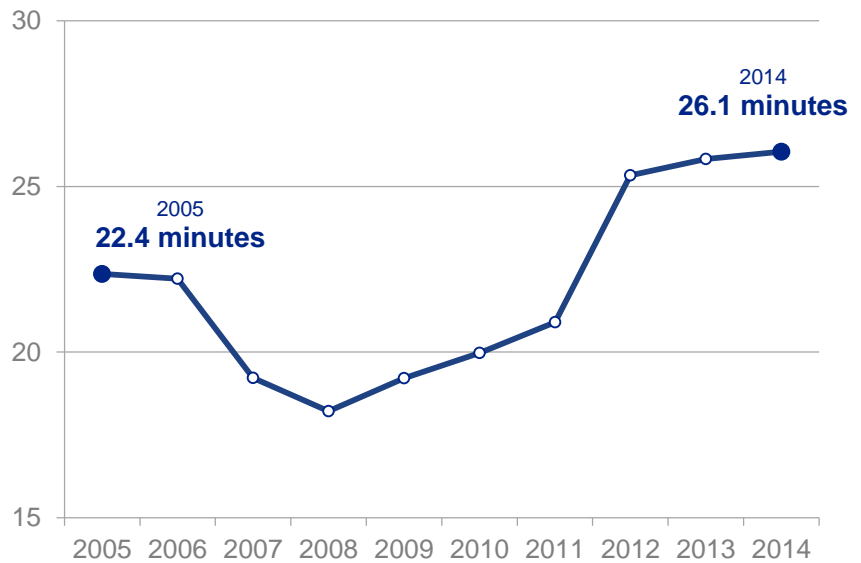


Average transit headway is a performance measure of the average duration (or time) between transit vehicles arriving at a stop. The average headway is measured for the transit system as a whole using: directional route miles, revenue miles, revenue hours, and the number of vehicles operated in maximum service (peak vehicles). Anyone who has missed a bus is eager for the next bus to arrive, making short headways an important measure. Technology, such as transit signal priority, is helpful in reducing travel time for buses operating in congested traffic—even if headway time remains unchanged. Better transit performance also positively impacts other road users.

Public transportation’s value is largely dependent upon service frequency. As shown in **Figure 17**, the estimated average headway for all transit systems in Florida has been increasing (i.e., worsening) since 2008.

*The average headway for transit systems in Florida has been increasing (i.e., worsening) since 2008. The change over the past ten year period mirrors economic trends over the same period.*

**Figure 17: Average Transit Headways (minutes)**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## KEY STRATEGIES TO IMPROVE TRAVEL QUALITY

FDOT will help ensure that continued progress is made to improve its core measure of travel quality through these actions:

- Implement FDOT's Freight Mobility and Trade Plan.
- Continue to promote greater interaction among FDOT Districts, MPOs and Freight Stakeholders throughout the state as well as holding freight forums at key venues such as TRANSPLEX.
- Add capacity to existing SIS facilities to support growth and relieve congestion, consider new SIS facilities when needed to fill major gaps in connectivity, and/or increase efficiency through innovation and technology.
- Incorporate travel time reliability into the planning and programming processes to enable analysis and programming of operations improvements that improve travel time reliability.
- Continue Transportation System Management and Operations (TSM&O) initiatives to ensure that operations improvements are implemented in all FDOT processes.
- Implement FDOT's Complete Streets Policy to improve access and mobility for public transit riders, pedestrians, and bicyclists.

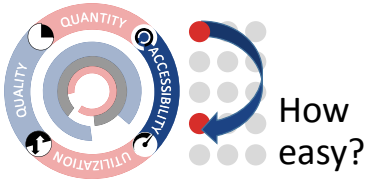
Go to <http://transplex.org/> for information on the freight and logistics forum held at TRANSPLEX 2015.

### Complete Streets Policy

The Complete Streets Policy incorporates context-appropriate roadway designs that accommodate users of all ages and abilities, including bicyclists, pedestrians, motorists, transit riders, and freight. FDOT recognizes that 21<sup>st</sup> Century demographics, travel preferences, business practices, and development patterns require a broad focus beyond just the automobile.



## ACCESSIBILITY



FDOT has identified a series of core measures and supporting measures related to transportation system mobility. Accessibility, as a core measure, deals with the ease in engaging in activities from a transportation standpoint. The supporting measures for accessibility are:

- Commute Times Less Than 30 Minutes
- Bicycle and Pedestrian Facilities
- Aviation, Rail, and Seaport Highway Adequacy

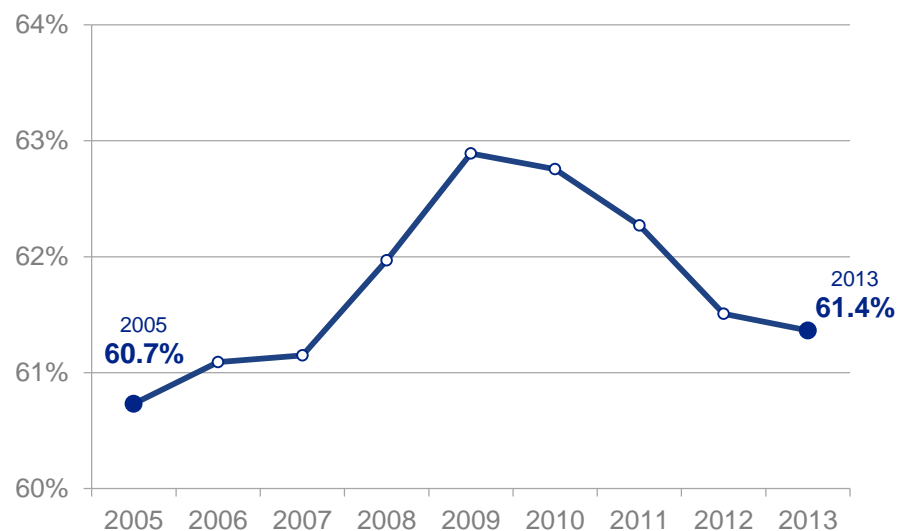
### Commute Times Less Than 30 Minutes



The decentralization of jobs and housing into the suburbs and beyond has led to increased travel commute times. As a result, when choosing a location, families and businesses must balance location against travel times to jobs, schools, shopping and recreational activities. **Figure 18** shows that worker commute times have both fallen and risen over the past ten years. The percentage of people with commute times less than 30 minutes increased from 60.7 percent in 2005 to 61.4 percent in 2013, which means more people had shorter commutes. Interestingly, as Florida (along with the nation as a whole) recovers from the economic recession, commute times have been increasing since 2010 (i.e., since commute times less than 30 minutes have decreased). From a demographic standpoint, both millennials and baby boomers (each a substantial population cohort) are showing a growing preference to working close to home.

*The percentage of people with commute times less than 30 minutes increased from 60.7 percent in 2005 to 61.4 percent in 2013—more people had shorter commutes. As Florida recovers from the economic recession, commute times have begun to rise since 2010.*

**Figure 18: Commute Times Less Than 30 Minutes**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## Bicycle and Pedestrian Facilities

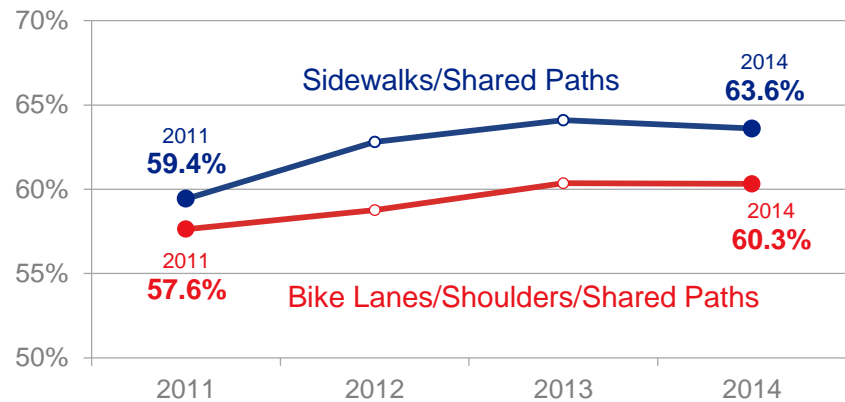


Florida regions and communities place a premium on quality of life, including more transportation choices, and have incorporated improved bicycle and pedestrian facilities/networks as a part of their regional and community visions. The bicycle and pedestrian facilities measures demonstrate FDOT’s commitment to non-motorized modes of transportation, including the role they play in providing access to transit and improving public health. **Figure 19** highlights the percentage of the SHS in urban areas with sidewalks, bike lanes, shoulders, or shared pathways on at least one side of the road<sup>2</sup>.

- In 2011 FDOT began measuring the percent of sidewalk, bicycle lane, and shared pathway coverage on SHS facilities in urban areas.
- Between 2011 and 2014 sidewalks facilities increased from 59.4 percent to 63.6 percent on SHS roads in urban areas.
- Over the same period the percentage of bike lane, shoulders, and shared path coverage increased from 57.6 percent to 60.3 percent.

**Figure 19: Bicycle and Pedestrian Facility Coverage on the State Highway System in Urban Areas**

*Between 2011 and 2014 sidewalk facilities increased from 59.4 to 63.6 percent, while bicycle facilities increased from 57.6 to 60.3 percent on the SHS in urban areas. This is substantial progress over a relatively short period of time.*



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

<sup>2</sup> Shared pathways are included in both bicycle and pedestrian facility calculations.



## Aviation, Rail, and Seaport Highway Adequacy

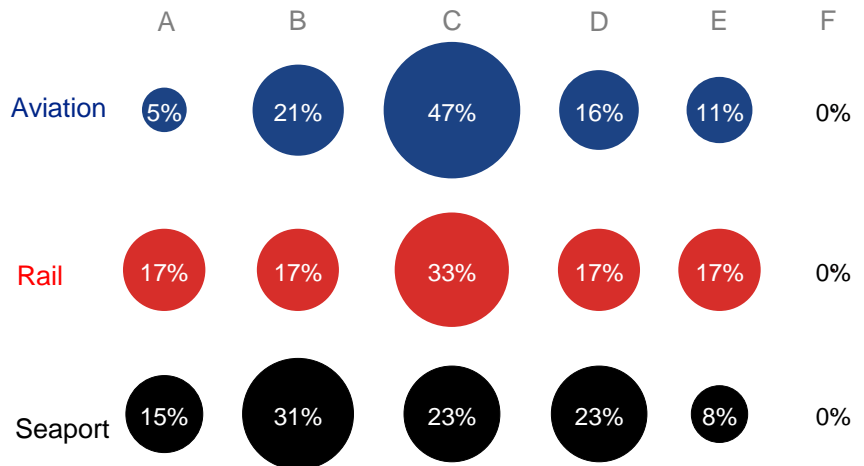


SUPPORTING MEASURE

Intermodal connectivity is important to moving people and goods. This measure addresses the adequacy of highways that provide connections to SIS hubs including airports, rail terminals, and seaports for both passengers and freight. Level of service (LOS) planning software was used to calculate average highway speed, while highways were aggregated to calculate overall connector travel time and speed. This supporting measure covers LOS for those highways that provide connection to airports, rail terminals and seaports. As shown in **Figure 20**, the vast majority of SIS intermodal connectors are performing at an acceptable level of service. **Figure 20** highlights that 73 percent of aviation roadway connections had a LOS of “C” or better, 67 percent of rail roadway connections had a LOS of “C” or better, while 69 percent of seaport roadway connections had a LOS of “C” or better.

**Figure 20: Aviation/Rail/Seaport Highway LOS Adequacy**

*The vast majority of SIS intermodal connectors are performing at an acceptable level of service.*



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## KEY STRATEGIES TO IMPROVE ACCESSIBILITY

FDOT will help ensure that continued progress is made to improve its core measure of accessibility through these actions:

- Maximize the use of existing SIS facilities, including improving the efficiency of these facilities through the use of technology and operational decisions.
- Add capacity to existing SIS facilities where needed to support growth in demand and relieve congestion, or consider new SIS facilities when needed to fill major gaps in connectivity.
- Ensure connectivity between the SIS and regional and local transportation facilities to support complete end-to-end trips.
- Continue to look for ways to improve pedestrian and bicycling access as part of the implementation of FDOT's Complete Streets Policy.
- Identify freight bottlenecks and connection gaps through FDOT's ongoing freight planning and outreach to freight stakeholders.
- Coordinate with local governments to promote land use and development decisions that are consistent with and supportive of transportation infrastructure that provide citizens with transportation choices.

### Managed Lanes and Express Lanes

Express lanes are a type of managed lane, consisting of lanes that are proactively managed by controlling access to adjust to actual travel demand. Express lanes improve travel time reliability for the traveling public in both toll and general use lanes.

The 95 Express lanes project in Broward and Miami-Dade counties combines tolling, transit, travel-demand management and technology to increase the people-moving capability of I-95. Included is a toll-free option for those who ride in registered carpools or van pools. Combined with Bus-Rapid Transit (BRT) service, the 95 Express lanes project is reducing the number of cars during peak periods, while improving travel reliability.



## UTILIZATION



FDOT has identified a series of core measures and supporting measures related to transportation system mobility. Utilization, as a core measure, describes how much of the transportation system is used and conversely what capacity or availability remains. This relates to user perceptions of the degree to which transportation facilities or services are congested. The supporting measures for utilization are:



- Miles Severely Congested
- Travel Severely Congested

## Miles Severely Congested

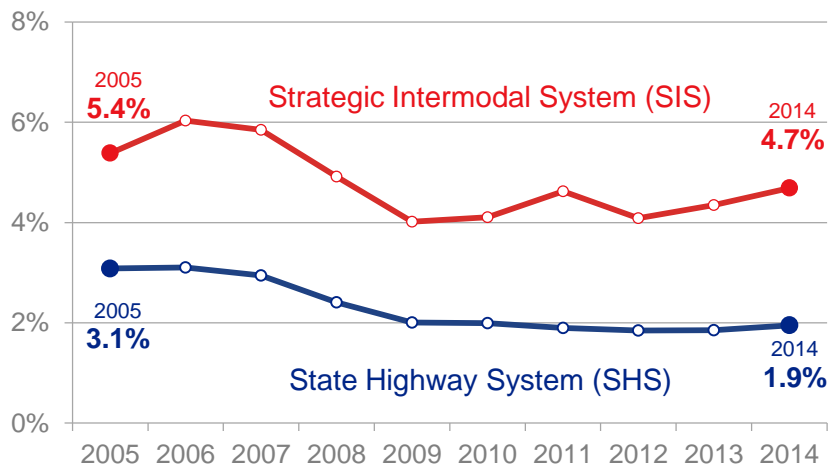


Florida has experienced a notable reduction in the number of miles that are severely congested<sup>3</sup> during the peak period on the SHS and on the SIS as shown in **Figure 21**. This reduction began after 2006.

- 4.7 percent of SIS miles were severely congested during the peak period in 2014—this had been as high as 6.0 percent in 2006.
- By comparison, 1.9 percent of SHS miles were severely congested in 2014 as compared to 3.1 percent in 2005.

*Florida has experienced a notable reduction in the number of miles that are severely congested during the peak period on the SIS and the SHS.*

**Figure 21: Miles of Severely Congested Roads During Peak Period**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

<sup>3</sup> Severe congestion is travel on roadways operating at a level-of-service (LOS) F.

## Travel Severely Congested



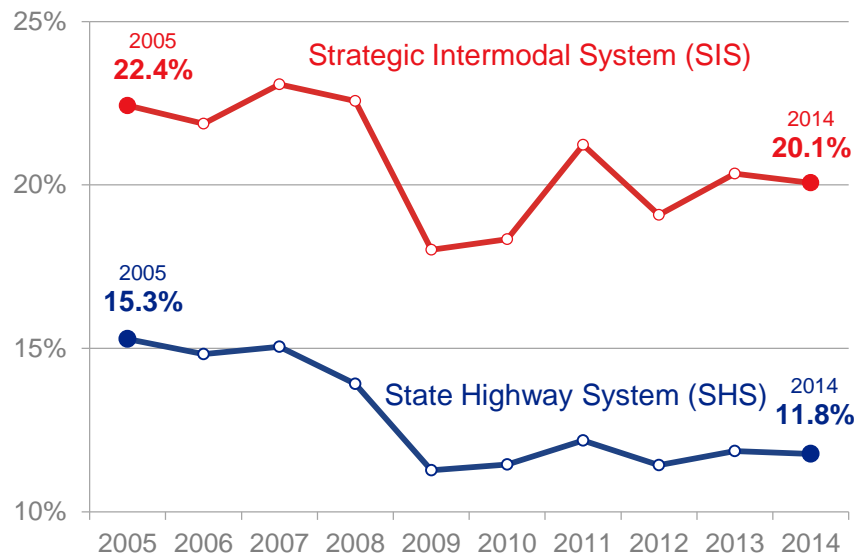
SUPPORTING MEASURE

Florida has experienced a marked reduction in severe peak period travel congestion on the SHS and on the SIS as seen in **Figure 22**. Whereas the measure of miles severely congested is based on roadway mileage, travel severely congested is based on vehicle miles of travel (VMT). The reduction in travel severely congested began in 2008.

- In 2014, 11.8 percent of the SHS was severely congested during the peak period—this had been as high as 15.3 percent in 2005.
- By comparison, in 2014, 20.1 percent of SIS highway corridors were severely congested—this had been as high as 23.1 percent in 2007.
- Severe congestion on the SHS and on the SIS in Florida’s non-urbanized areas is negligible, even during the peak period.

*Severe congestion on the SHS and the SIS in Florida’s non-urbanized areas is negligible.*

**Figure 22: Travel on Severely Congested Roads During Peak Period**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

## KEY STRATEGIES TO IMPROVE UTILIZATION

FDOT will help ensure that continued progress is made to improve its core measure of utilization through these actions:

- Identify and invest in “first-mile” and “last-mile projects” (e.g., improvements such as turn lanes and intersection geometry to improve truck movements, enhanced pedestrian connections to transit stations, etc.).
- Implement managed lanes to manage congestion.
- Coordinate with local governments to promote land uses and development that are consistent with and supportive of transportation infrastructure and more transportation choices.
- Continue to advance intelligent transportation systems (ITS) and access management investments that improve system performance.
- Maximize the use of existing SIS facilities, including improving the efficiency of these facilities through the use of technology and operational decisions.
- Focus on new and emerging technologies that have potential for improving transportation operating efficiency.
- Promote and/or support efforts of MPOs and others that encourage ride sharing, expanded transit use, flexible work times, and telecommuting.

### Additional Mobility Performance Measures

The Multimodal Mobility Performance Measures (MMPM) Program measures and reports on transportation system performance to enable a better understanding of how to improve mobility. Florida leads the nation in developing mobility performance measures that can be used in statewide and metropolitan transportation planning to identify the location, scale, and the nature of transportation problems to help identify possible solutions.

More information can be found at [floridampms.com](http://floridampms.com).

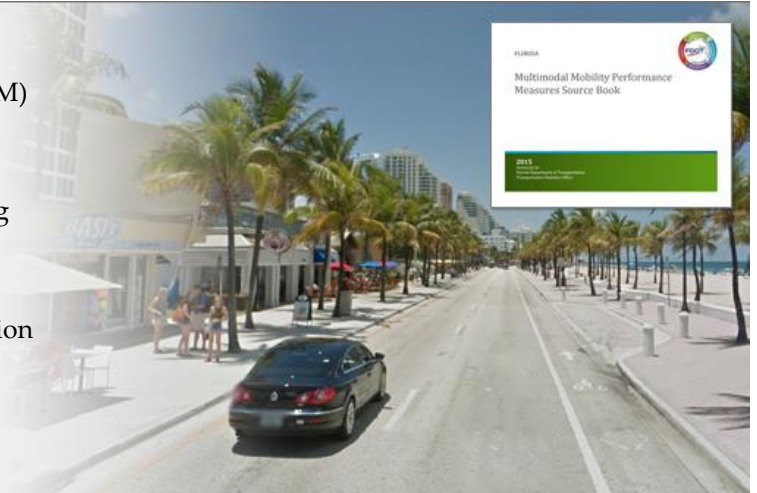


Figure 23: Multimodal Mobility Performance Measures Matrix

	MODE	QUANTITY	QUALITY	ACCESSIBILITY	UTILIZATION
PEOPLE	Auto/Truck 	Vehicle Miles Traveled Person Miles Traveled	% Travel Meeting LOS Criteria % Miles Meeting LOS Criteria Travel Time Reliability Travel Time Variability Vehicle Hours of Delay Person Hours of Delay Average Travel Speed	Time Spent Commuting	% Miles Severely Congested % Travel Severely Congested Hours Severely Congested Vehicles Per Lane Mile
	Transit 	Passenger Miles Traveled Passenger Trips	Average Headway		
	Pedestrian 		Level of Service (LOS)	% Sidewalk Coverage	
	Bicycle 		Level of Service (LOS)	% Bike Lane/Shoulder Coverage	
	Aviation 	Passengers	Departure Reliability	Highway Adequacy (LOS)	Demand to Capacity Ratios
	Rail 	Passengers	Departure Reliability	Highway Adequacy (LOS)	
	Seaports 	Passengers		Highway Adequacy (LOS)	
FREIGHT	Truck 	Combination Truck Miles Traveled Truck Miles Traveled Combination Truck Tonnage Combination Truck Ton Miles Traveled Value of Freight	Travel Time Reliability Travel Time Variability Combination Truck Hours of Delay Combination Truck Average Travel Speed		% Miles Severely Congested Vehicles Per Lane Mile Combination Truck Backhaul Tonnage
	Aviation 	Tonnage Value of Freight		Highway Adequacy (LOS)	
	Rail 	Tonnage Value of Freight		Highway Adequacy (LOS) Active Rail Access	
	Seaports 	Tonnage Twenty-Foot Equivalent Units Value of Freight		Highway Adequacy (LOS) Active Rail Access	

## FOR THE FUTURE



FDOT strives to be forward thinking in regards to performance measurement. Many measures can be valuably used year after year. But DOTs and the states they serve continue to both lead change and adapt to change. This year we are introducing a section in each performance chapter that identifies potential measurement considerations for the future.

***Person Miles Traveled***

There is an opportunity to further focus on people movement instead of vehicles and to factor in telecommuting and key aspects of travel.

***Express Lanes***

Express Lanes are becoming a key mobility strategy for FDOT and are a benefit to our customers. Performance measurement will be valuable in assessing their effectiveness in managing congestion, supporting express bus service, etc.

***Complete Streets***

The broad-based interest in Complete Streets provides an opportunity to explore measures that reflect the benefits of this strategic direction and the importance of context sensitive implementation.

***Transit Accessibility Measure***

Dimensions such as distance to jobs and access to jobs tell an important story related to access to jobs by transit.

***Transportation Choice***

One key focus in implementing the new Florida Transportation Plan will be on providing more transportation choices, with millennials and seniors in particular, placing a premium on transportation options.

***Congestion and VMT Comparison / Compare the Two Over Time***

Congestion and Vehicle Miles of Travel are key measures on their own and even more useful in combination to get a more complete picture of travel trends in relation to congestion trends.

***Future Corridors and Strategic Intermodal System (SIS)***

Florida continues to grow, and as it does we plan for Future Corridors as well as ensuring the SIS can serve its interregional and statewide mobility functions. This will necessitate the need for meaningful multi-dimensional measures.

***Arterial Roadway Reliability***

FDOT is developing reliability measures specific to arterial roadways.