a report on

FLORIDA TRANSPORTATION TRENDS AND CONDITIONS

IMPACT OF TRANSPORTATION

Transportation System Performance

FDOT

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Impact of Transportation: System Performance

Introduction

Be it report cards in grade school, personnel evaluations at work, elaborate measurement and monitoring systems for corporate performance, or voters going to the polls to cast ballots, virtually all aspects of society involve feedback mechanisms that are used to report on performance. Feedback helps ensure accountability and is an input leading to change and improvement. The planning, operation and delivery of transportation are not exempt from performance measurement. The fundamental premise forming the basis for performance measurement is that a mission exists and various goals and objectives are established that define expectations. Performance measurement in its various forms compares the outcome and consequences of various actions and programs against the goals and objectives.

Transportation impacts virtually all aspects of our lives from the environment to the economy to safety and individuals' freedoms and access to opportunities. The increasingly broad and diverse set of goals for transportation reflects a growing understanding of how important transportation is to many aspects of our quality of life. The diversity of goals creates a complicated performance measurement challenge. There is no single correct way to measure performance. Its measurement is impacted by the perspectives and goals of the performance evaluation. This report is designed to provide a summary of the performance of the Florida transportation system.

Performance Measurement

The mission of the Florida Department of Transportation (FDOT) states:

> *The Department will provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities.*

Goals of the 2060 Florida Transportation Plan

- ***Invest in transportation systems to support a prosperous, globally competitive economy***
- ***Make transportation decisions to support and enhance livable communities***
- ***Make transportation decisions to promote responsible environmental stewardship***
- ***Provide a safe and secure transportation system for all users***
- ***Maintain and operate Florida's transportation system proactively***
- ***Improve mobility and connectivity for people and freight***

The Florida Transportation Plan (FTP) elaborates on transportation goals and objectives. These goals and objectives represent the fundamental guiding factors for the long range plan.

The 2060 FTP (http://www.dot.state.fl.us/planning/ftp) provides several possible points of measurement for performance evaluation many of which are the same as or similar to prior objectives and fundamental to the provision of transportation.

The 2011 Annual Performance Report concentrates on short-term objectives and strategies to implement the goals and objectives set by 2060 FTP. The 2012 Performance Report is currently underway.

Also, the Florida Transportation Commission (FTC) produces an annual report that evaluates aspects of the department's operations. This report covers measurement of those FDOT responsibilities that the Commission is statutorily required to monitor and provides another perspective on performance evaluation (http://www.ftc.state.fl.us/reports.htm).

The concept of performance measurement is implicitly related to program goals and there are a host of parties involved in establishing goals for transportation investments. The federal government both directly and indirectly outlines its program goals through processes, regulation and resource programming. The FDOT's goals are established through the influence of the legislature, the executive branch, the Florida Transportation Commission, FDOT professional staff and others. Similarly, local communities and regional agencies such as Metropolitan Planning Organizations set goals that govern transportation policies and investment decisions. Port authorities, airports, transit agencies and others also have various goal sets. Thus, transportation system performance measurement attempts to identify measures that can capture common priorities of the myriad stakeholders.

Florida Transportation Commission

FY 2010/2011 Performance and Production Review

- ***Cost Efficient & Effective Business Practices: Production***
- ***Preservation of Current State Highway System***
- ***Capacity Improvements: Highway & All Public Transportation Modes***
- ***Cost Efficient & Effective Business Practices: Finance & Administration***
- ***Minority & Disadvantaged & Business Programs***
- ***Safety Initiatives***
- ***Turnpike Enterprise***

Figure 1 portrays typical evaluation or performance measurement opportunities throughout the sequence of actions and decisions that enable transportation of people and goods. These activities start with goals and resource commitments and end with impacts on the society. As is

exemplified in the graphic, one can choose to measure various outputs of steps in the process against various inputs to the process. Each combination of possible measurement points is a possible way to evaluate performance. Most often a combination of measurement strategies is most helpful in monitoring performance. Ultimately performance is strongly influenced by how an entity deploys its resources.

Figure 1 – Example Perspectives on Transportation Performance Measurement

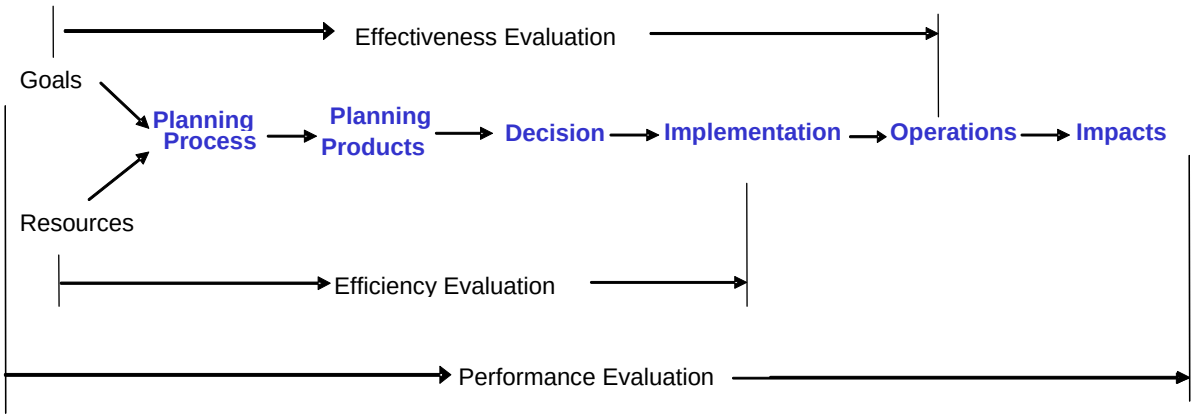
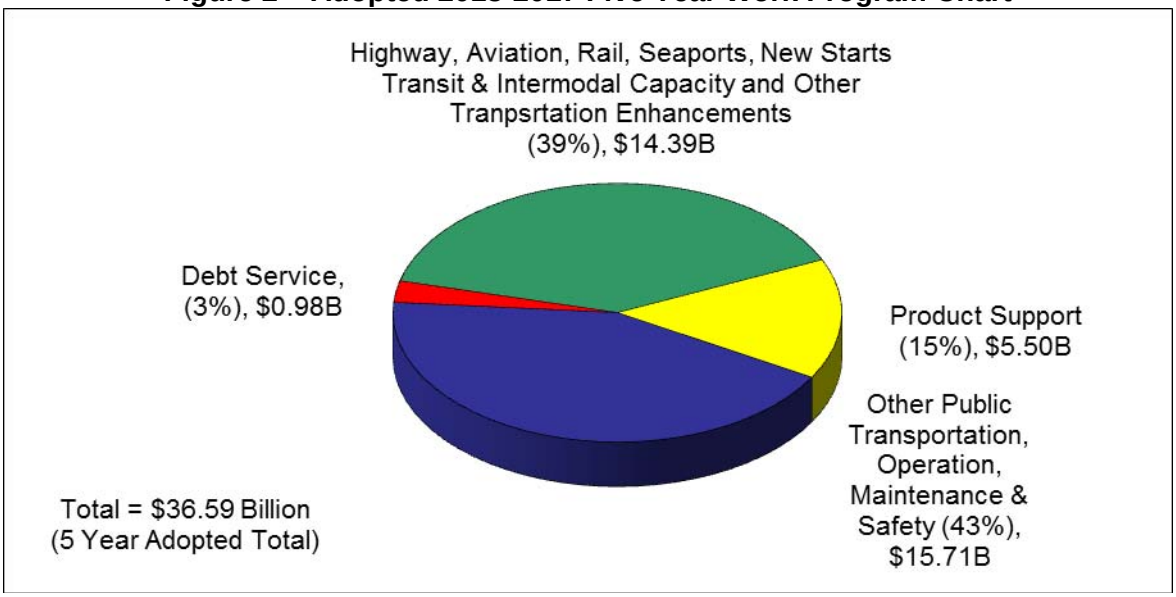


Figure 2 – Adopted 2013-2017 Five Year Work Program Chart



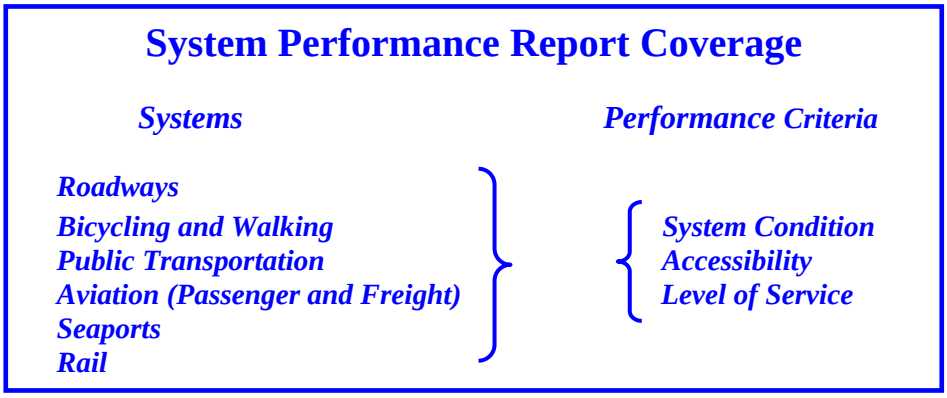
Source: Florida Department of Transportation, *Five Year Work Program*, Fall 2012.

Figure 2 reports planned transportation investments of state and federal funds from 2013 through 2017. The figure shows both the magnitude of investment (dollar amounts) and the allocations across programs. Recent declines in revenues are significantly impacting the work

program's overall size. About 39 percent of the funds will be spent on adding capacity, including adding new lanes and other construction on the State Highway System and assisting airports, seaports, transit systems, rail and other intermodal initiatives. Another 43 percent is planned for other public transportation, operations, maintenance and safety. Debt service and product support comprise the balance of the spending.

FDOT has developed a mobility performance measures program within its Transportation Statistics Office to assess various dimensions of mobility. These dimensions are grouped into 1) quantity of travel, 2) quality of travel, 3) accessibility, and 4) utilization. Each dimension has various performance measures that are different for each mode. Many performance measures have been developed for highways whereas other modes may not have standardized measures for each dimension of mobility. One reason for the attention to roadway performance is its dominant role and the fact that FDOT owns and operates the vast majority of the State Highway System (SHS)[1]. Other transportation systems, including local roadways, transit systems, airports, seaports and railways, are owned primarily by local governments, public authorities and private companies. FDOT regularly has investments in these facilities as well though is not directly responsible for building or maintaining these systems.

Acknowledging the myriad of possible perspectives and methods to assess performance and the other existing documents, the remainder of this report on system performance is organized by system of transportation. To the extent possible, the performance information of each system is organized into three sections: 1) system condition, 2) accessibility, and 3) level of service. This approach complements other evaluation efforts and provides a systematic overview across all modes.



[1] Some elements of the State Highway System are owned by local or regional expressway authorities.

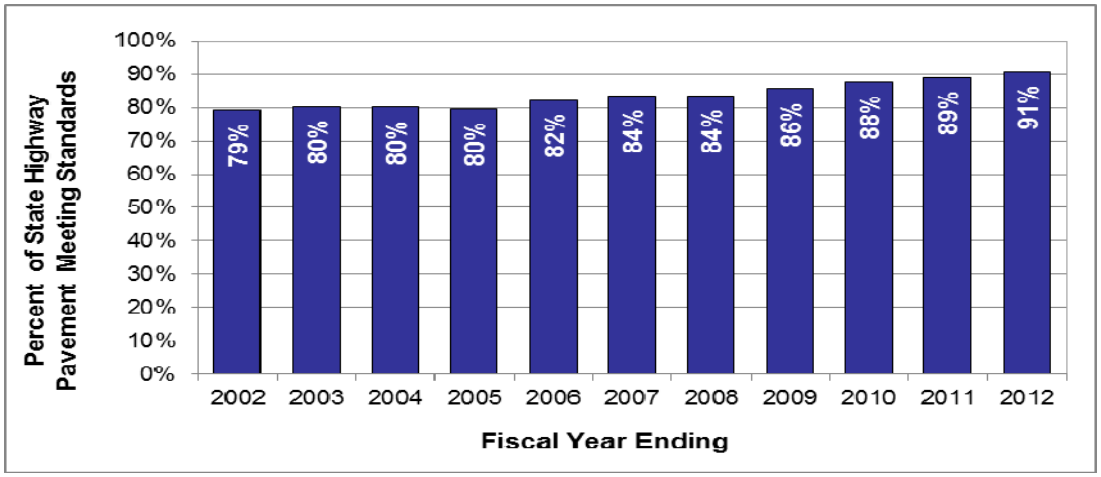
Roadways

The roadway system comprises roadways that serve various primary purposes ranging from Interstate and interregional to local roads and the system elements are owned by various governments including local jurisdictions and the state. As mentioned earlier, FDOT is responsible for the vast majority of the State Highway System (SHS). The SHS consists of less than ten percent of all public road centerline miles in Florida, but carries about 54 percent of the traffic[2]. Most roadway performance measures are developed for the SHS or subcategories of the SHS such as the highway component of the Strategic Intermodal System (SIS).

System Condition

One of FDOT's main responsibilities is to meet the legislatively mandated standards for physical condition of the SHS to accomplish this; FDOT resurfaces roads, conducts routine maintenance and repairs or replaces bridges. FDOT is committed to keeping the pavement on the SHS in acceptable condition to ensure that at least 80 percent of the lane miles meet FDOT standards. Figure 3 presents the share of highway lane miles meeting the standard from FY 2001-02 through FY 2011-12. Pavements are rated based on ride quality, crack severity and rutting. Ride quality is a measure of the smoothness of the ride. Crack severity refers to the structural deterioration of the pavement. Rutting measures the average depth of wheel paths, which are caused by heavy use. FDOT conducts annual Pavement Condition Surveys (PCS) for 100 percent of the SHS. The pavements are rated on a scale from 1 to 10, with 10 being the best. The FDOT standard is for pavements to rate 6.5 or above on this 10-point scale.

Figure 3 – Percent of State Highway Pavement Meeting Department Standards

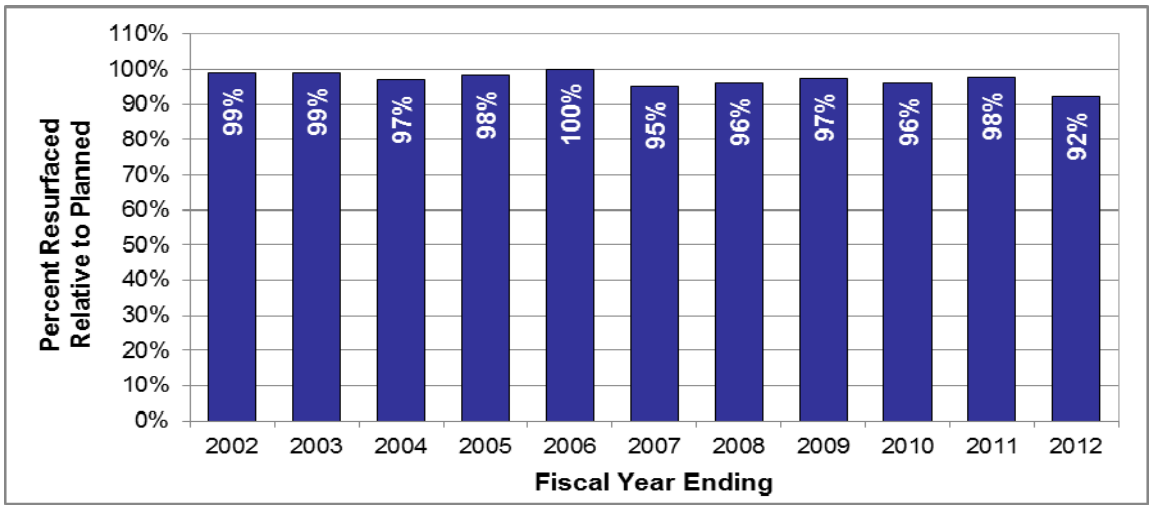


Source: Florida Department of Transportation (FDOT).

[2] As per analysis of the 2011 *FDOT Public Road Mileage and Travel Report* and *State Highway System Mileage and Travel Report*.

The type and volume of traffic are critical factors in determining the expected life of pavement. Heavy vehicles and truck traffic have a significant impact on pavement deterioration. FDOT attempts to limit the number of vehicles that exceed legal weight limits in order to reduce the impact to pavements and extend the useful life of the roadway system.

Figure 4 – Percent of SHS Lane Miles Resurfaced Compared to the Number Planned



Source: FDOT

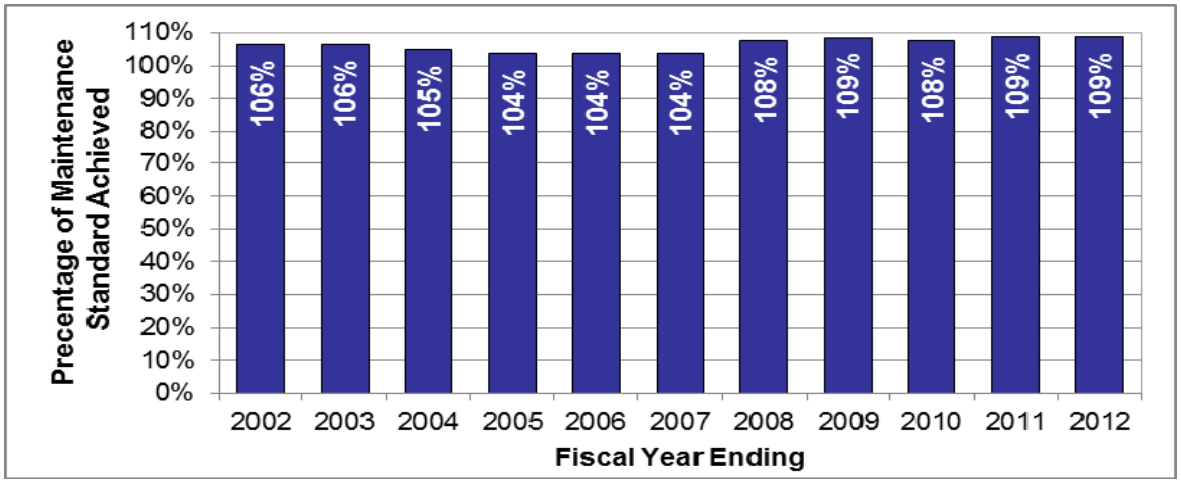
Another aspect of pavement preservation is roadway resurfacing. Pavements that do not meet FDOT standards are scheduled for repair in the Five-Year Work Program. Resurfacing pavements prolongs the useful life of the roadways and helps to prevent damage to the road base which otherwise would result in costly reconstruction. Each year approximately five percent or 2,200 lane miles on the SHS need to be resurfaced. Figure 4 shows the share of substandard lane miles resurfaced during the year. The department's objective is to resurface at least 95 percent of the scheduled lane miles each year.

Roadway maintenance is also an integral part of preserving the SHS. Routine maintenance includes highway repairs, roadside upkeep, drainage management and traffic services. Through maintenance programs, rest stops are maintained, wildflowers are planted, potholes are filled, grass is mowed, ditches are cleaned out, signs are installed or replaced and many other jobs are completed. These areas are critical to maintaining a safe and comfortable roadway system. Annual field evaluations are completed using the Maintenance Rating Program.

FDOT is required to achieve 100 percent of the acceptable maintenance standard on the SHS. This legislatively mandated maintenance standard is a composite state score of 80 based on the five maintenance elements of the Maintenance Rating Program. Figure 5 shows the percent

of maintenance standard achieved on the SHS. Since 1995, FDOT has met or exceeded the acceptable maintenance standards.

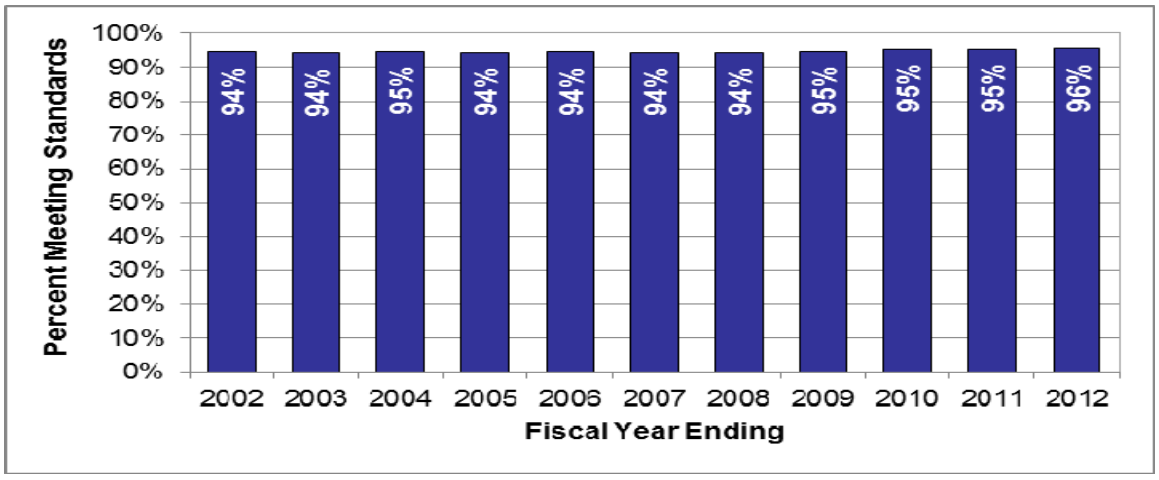
Figure 5 – Percent of Maintenance Standard Achieved



Source: FDOT

In addition to the SHS, FDOT is also responsible for maintaining 6,661 of the 11,987 bridges throughout Florida. All of these bridges are inspected at least once every two years (bridges with certain identified deficiencies are inspected more frequently). Florida Statute 334.046 mandates that at least 90 percent of all bridge structures maintained by the department meet the standards. The remaining 10 percent, while in need of repair or replacement, remain safe for public use. Figure 6 shows the share of bridges meeting the standards from fiscal year 2002 to 2012.

Figure 6 – Percent of FDOT Maintained Bridges Meeting Standards



Source: FDOT

Tables 1 and 2 present the number of bridges scheduled for repair or replacement and the number completed each fiscal year. The department's objective is: "Through 2015, ensure that 90 percent of FDOT-maintained bridges meet department standards while keeping all FDOT-maintained bridges open to the public safe." If a bridge repair that has been scheduled in a future year is advanced into the time window of the fiscal year being reported, it is reported as advanced from future years (Advanced FY).

Table 1 – Number of FDOT and Local Maintained Bridges Repaired

Fiscal Year	Plan	Actual	% of Plan	Advanced FY	Additions	Total
02/03	125	115	92%	9	27	151
03/04	72	72	100%	4	12	88
04/05	86	77	90%	1	6	84
05/06	78	73	94%	0	6	79
06/07	115	106	92%	0	26	92
07/08	67	70	105%	0	5	75
08/09	68	73	107%	2	17	92
09/10	100	100	100%	4	27	131
10/11	82	73	89%	9	38	120
11/12	103	90	87.4%	9	14	113

Source: *FTC Performance and Production Review Report 2012*

Table 2 – Number of FDOT and Local Maintained Bridges Replaced

Fiscal Year	Plan	Actual	% of Plan	Advanced FY	Additions	Total
02/03	20	19	95%	0	2	21
03/04	23	16	70%	0	1	17
04/05	21	13	62%	0	0	13
05/06	24	15	62%	1	0	16
06/07	14	7	50%	0	0	7
07/08	16	12	75%	0	0	12
08/09	19	19	100%	2	2	23
09/10	20	19	95%	0	5	24
10/11	12	8	67%	0	6	14
11/12	12	13	108.3%	2	3	18

Source: *FTC Performance and Production Review Report 2012*

A first step to ensure quality roadway performance is to maintain the existing system. A comprehensive program with performance measures is in place to monitor the system condition.

Accessibility

A principal objective of the state transportation system is to connect centers of population and employment in a way that enables economic health and supports the public welfare by meeting the needs for emergency evacuation, military transportation, international commerce and related public purposes. One measure of how well this is being carried out is by reporting on the accessibility of the population and employment to the various modes that serve the state. For purposes of analysis, the first measure of accessibility looks at the share of population and employment within a specific distance of the SHS. The larger the shares and numbers of persons and jobs that are in proximity to the SHS, the greater the opportunities they have to avail themselves of the performance of this system (as opposed to being restricted to travel on local roads). Accessibility is a prerequisite to mobility.

Table 3 summarizes the share of Florida's population (represented by dwelling units) and employment that is located within a specified proximity of the various Florida roadway systems. The vast majority of the population and commercial employment are within five miles of Florida's State Highway System. While national or time series data are not available for this comparison, the table, nonetheless, gives a sense of the ability of Floridians to access the roadway system. As the most pervasive mode of travel accommodating the vast majority of demand and providing a feeder/distributor system for all other motorized modes, the roadway system has the greatest accessibility. Local and connector streets complete the roadway network by providing direct access to individual land parcels.

Table 3 – Florida Roadway System Accessibility

System	SHS	SIS
Lane Miles of System (2011)	42,965	18,297
Centerline Miles (2011)	12,076	4,296
Daily Vehicle-Miles of Travel (2011)	284,969,200	158,090,000
Dwelling Units within 1 Mile (2009)*	4,829,336	2,140,101
Dwelling Units within 5 Miles (2009)*	6,413,765	5,480,103
Dwelling Units Statewide, Estimated Total	6,497,626	
Total Employment within 1 Mile (2007)	8,022,395	4,228,377
Total Employment within 5 Miles (2007)	8,863,497	8,118,234
Total Employment Statewide, Estimated Total	8,898,037	

*Note: Hendry County data was unavailable; statistically its population is 0.2% of the total population of the State of Florida.

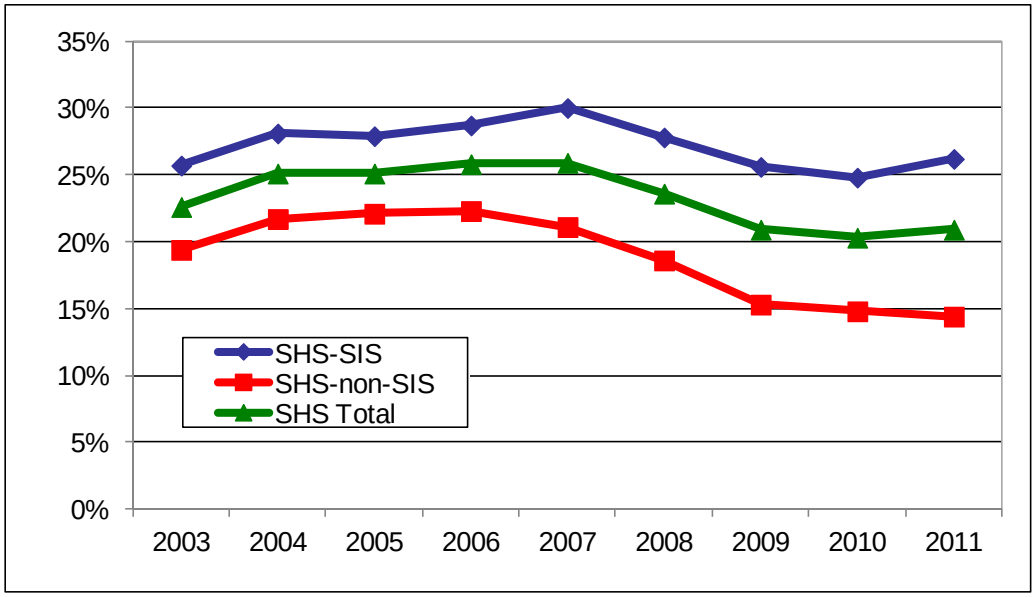
Source: infoUSA.com, *2007 Employment Data;* Department of Revenue, *2009 Parcel Repository*; FDOT, *Annual Mileage Reports*; Florida Geographic Data Library. GIS data analysis by CUTR.

Level of Service

The third basic measure of performance in this report is the level of service of the respective mode. For this report, the level of service (LOS) is defined as a measure of the quality of service provided by the transportation system to a typical traveler. For roadway systems, capacity adequacy is best measured by understanding the extent to which congestion impacts travel speed.

The share of congested travel had increased since the early 2003 through 2011 after which the effects of high fuel prices and a slowing economy reduced travel and hence congestion. Figure 7 presents the percentage of peak hour travel on the SIS that is congested. The share of travel that is congested is defined as the Vehicle Miles Traveled (VMT) during the peak hour that occur under congested condition, i.e. at level of service (LOS) E (near capacity) or LOS F (flow breakdown), divided by the total number of VMT during that hour.

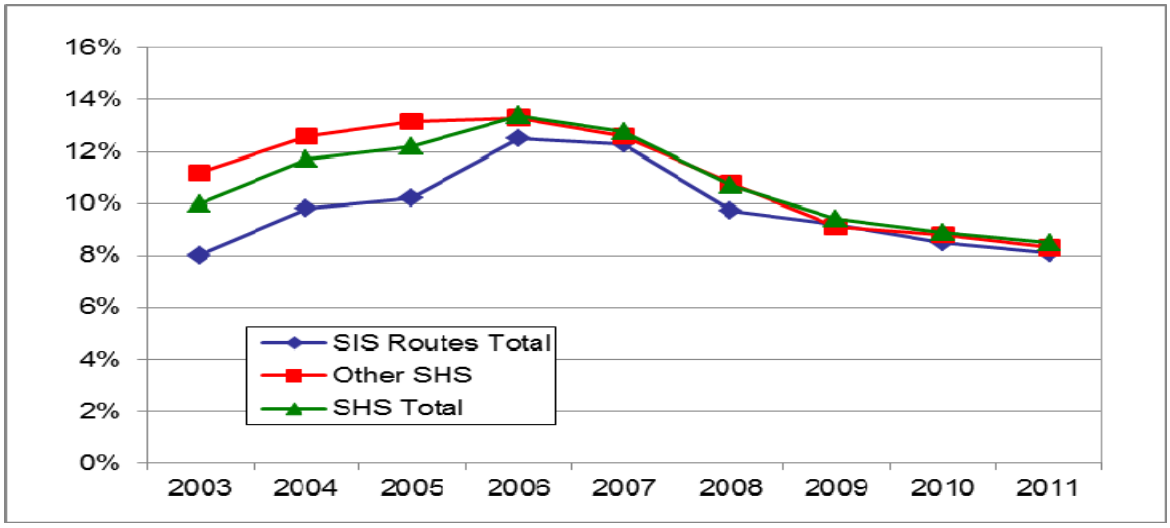
Figure 7 – Percentage of Congested Vehicle Miles of Travel during Peak Hours



Source: FDOT, *2011 Florida Highway Data Source Book, 2011.*

The share of congested VMT during peak hour started to decline in 2007 for the SHS-non-SIS and in 2008 for the SIS and Total SHS. These shares of VMT then started to show an increase in 2011. Connecting strategic locations for flow of goods and commodities as well as access for long distance passenger travel, the SIS highways is composed of Interstate Highways, Florida's Turnpike, selected urban expressways, major arterial highways, and Intermodal connectors between SIS and Emerging SIS hubs and SIS corridors. In comparison, roadways on the other SHS (non SIS) include more local travel. Figure 7 indicates that person travel on non-SIS roadways was impacted by the economy first, followed shortly after by travel on the SIS.

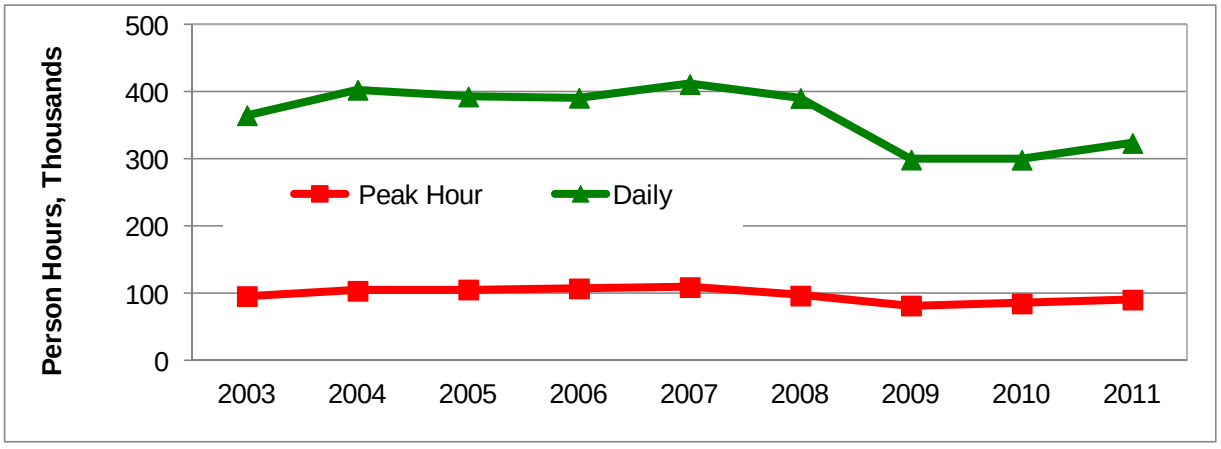
Figure 8 – Percentage of SHS Roadway Centerline Miles Congested During Peak Hours



Source: FDOT, *Florida Highway Data Source Book,* 2011

A similar trend is observed on the share of centerline miles congested during peak hour in Figure 8. The share of roadway miles that are congested during the peak hour increased annually up to 2006 across the entire SHS, started to decline in 2007 and witnessed a sharp drop from 2007 to 2009. The rate of decline appears to have moderated since 2009. This trend could be primarily attributed to the current economic conditions.

Figure 9 – Person Hours of Delay on SIS



Note: Delay is measured based on 3 Year Moving Average.

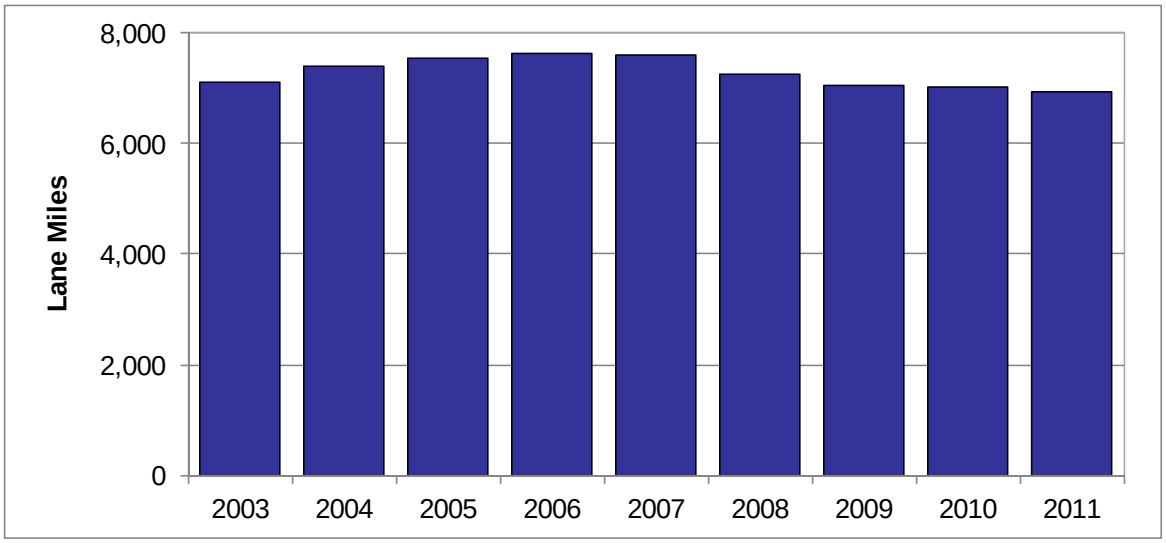
Source: FDOT, *Florida Highway Data Source Book,* 2011.

Figure 9 presents daily and peak person hours of delay on the SIS over the past several years. Daily person hours of delay fluctuated, but was still above the base year (2003) value. Starting in 2009, the value dropped below the 2003 value. The same was true for peak person hours of

delay except that they had been on the rise until 2008. This could also be explained by the economic conditions that spiraled down nationally and particularly in Florida.

Another measure used to gauge roadway performance is daily vehicles per lane mile. Daily vehicles per lane mile are calculated by dividing the vehicle miles traveled on a road segment by the number of lane miles on that segment. The number of vehicles per lane mile gradually increased over the early part of the past decade to peak in 2006, but has since declined (Figure 10). The annual decline in 2011 is modest compared to previous years.

Figure 10 – Daily Vehicles per Lane Mile on Florida SHS



Source: FDOT, *Florida Highway Data Source Book.*

Bicycling and Walking

Historically, performance measures for pedestrians and bicyclists have been limited to safety (See "Impact of Transportation: Transportation Safety" report of the Trends and Conditions series) and ratings of user ability to proceed without delay (i.e., due to crowding, or need to wait for a signal). The majority of bicycling and walking facilities are on the local roadways and not part of a statewide inventory. As a result, level of service performance measures for bicycling and walking modes are not systematically collected as statewide measures, but FDOT collects data on bicycle and pedestrian facilities on the SHS. The FDOT Roadway Characteristics Inventory includes data on bicycle and sidewalk facilities on the non-limited access SHS (Table 4). Of the 9,858 centerline miles of non-limited access SHS, there are 2,949 miles of sidewalks, 160 miles of shared paths, 729 miles of bike lanes, and a total of 7,292 miles that have at least 4 feet of shoulder pavement (not necessarily designated as bike lanes).

Table 4 – Miles of Florida Bicycle and Pedestrian Facilities on Non-Limited Access SHS

Facilities	Centerline Miles		Percent of SHS Mileage (9,857.8)	
	Urban	Rural	Urban (4,826.5)	Rural (5,031.3)
Sidewalks	2,764.4	184.5	57%	4%
Shared Paths	115.1	44.9	2%	1%
Bike Lanes	640	88.5	13%	2%
Paved Shoulders	3,104.7	4,186.9	64%	83%

Source: Florida Department of Transportation, *Roadway Characteristics Inventory*

System Condition

FDOT reports some roadside condition information in its Maintenance Rating Program for sidewalks and shoulders on the SHS. However, the facility condition for bicycling and walking off the SHS may be maintained by local jurisdictions but are not reported at the state level.

Accessibility

The Florida Pedestrian and Bicycle Program supports initiatives and programs to improve the environment for practical, comfortable, and convenient walking and bicycling trips. In Florida, every public transit agency that operates buses provides bike-on-bus services. The ability of bicyclists to use transit extends the potential range of travel for this group and increases the service coverage area for transit ridership (Table 5).

Table 5 – Florida Annual Bikes on Bus Boarding, 2011

Agency	Bike Boardings
PSTA, St. Petersburg	27,557
HART, Tampa	19,354
Space Coast, Brevard	13,545
Star Metro, Tallahassee	2,325

Source: Individual Transit Agency Survey Data.

Tables 5 and 6 provide select information exemplifying the growing attention to the travel and recreational needs of bicyclists and pedestrians. A statewide inventory, available at http://appprod.dep.state.fl.us/www_orp/Total/Total_Q.asp, allows the user to query recreational resources to better understand the existing inventoried supply of facilities (Table 6).

Many metropolitan jurisdictions have active bicycling and pedestrian plans to improve conditions for, and use of, “active transportation” options. Pedestrians include many users besides walkers, e.g., runners, skaters, wheelchair users. The plans typically involve both engineering (facility) and non-engineering elements, such as education and enforcement activities. For example, the Hillsborough Metropolitan Planning Organization has an active planning program

for bicycle and pedestrian facilities (http://hillsboroughmpo.org/pubmaps/pubmaps_folders/walk-bike-plans-studies).

Table 6 – Outdoor Recreation Trail Facilities in Florida, 2011

Owner/ Operator	Shared-use paths (paved miles)	Bike Trails or Shared-use paths (unpaved miles)	Hiking Trails (miles)	Jogging Trails (miles)
Federal	73.5	122.2	556.1	71.4
State	357.2	2,293.9	3,768.8	324.0
County	427.0	501.70	2,096.4	504.6
Municipal	4,492.0	206.80	2,389.6	7,142.0
Comercial	39.3	34.00	125.2	13.5
Total	5,389.0	3,158.60	8,936.1	8,055.5

Source: Florida Department of Environmental Protection (FDEP), Division of Parks and Recreation, *Outdoor Recreation Inventory,* 2011.

Level of Service

The State of Florida has been active in moving toward multimodal planning via development of multimodal Level of Service (LOS) measures. FDOT's *2009 Quality/Level of Service Handbook* provides tools to quantify multimodal transportation services inside the roadway environment. It successfully unifies the nation's leading automobile, bicycle, pedestrian, and bus Q/LOS evaluation techniques into a common transportation analysis at the facility and segment levels. The bicycle LOS model employs variables such as average effective width of the outside thru lane, motorized vehicle volumes and speeds, volume of heavy trucks, and pavement conditions. The pedestrian LOS model considers variables such as existence of sidewalk, lateral separation from motorized vehicles, and vehicle volume and speeds.

Public Transportation

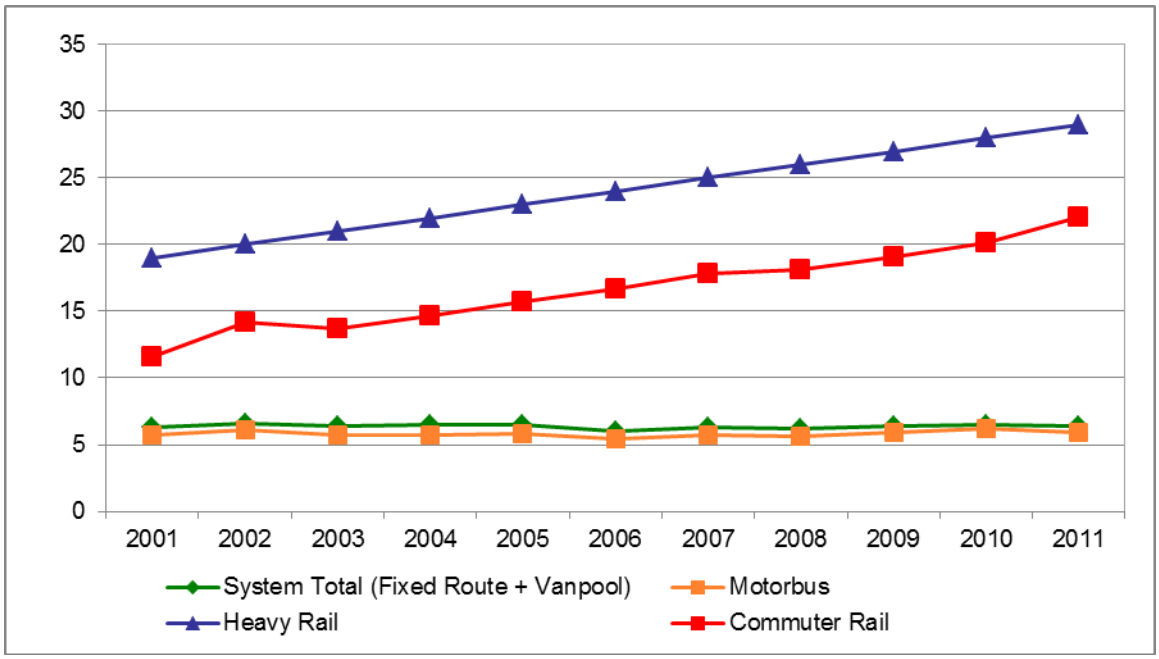
Public transportation is a fundamentally different mode in that it is highly dependent on ongoing public operating support as well as the investment in and maintenance of the capital infrastructure required to provide services. Public resources from federal, state and local sources are combined with passenger fares and other locally-derived revenues to fund the overall program of system operation and capital infrastructure. Thus, for this mode more so than others, the performance of the system is impacted by both the condition of the capital infrastructure and the extent and stability of operating revenues. Performance reporting for public transportation is similarly complicated by the fact that the goals for public transportation include a host of considerations such as providing a mobility choice, supplying a contingency mode, influencing land development patterns, and meeting the needs of individuals who do not have mobility alternatives. Thus, measuring performance in the context of this larger and

perhaps more qualitative goal set becomes more difficult. This section uses a variety of available aggregate industry data to report on public transportation performance. The focus is on fixed route services.

System Condition

The workhorse of the public transportation system is the fleet of buses responsible for moving the vast majority of passengers. In Florida, approximately 85 percent of public transit passengers are transported by bus. A bus of any size travels approximately 50,000 miles per year to transport passengers. The age of the bus fleet is an indication of the condition of the fleet. Standard 35- to 40-foot long transit buses are designed to have a 12-year life. Smaller buses and vans have a shorter design life. Figure 11 shows the average age of transit vehicles in Florida.

Figure 11 – Average Age of Florida Transit Vehicles in Maximum Service



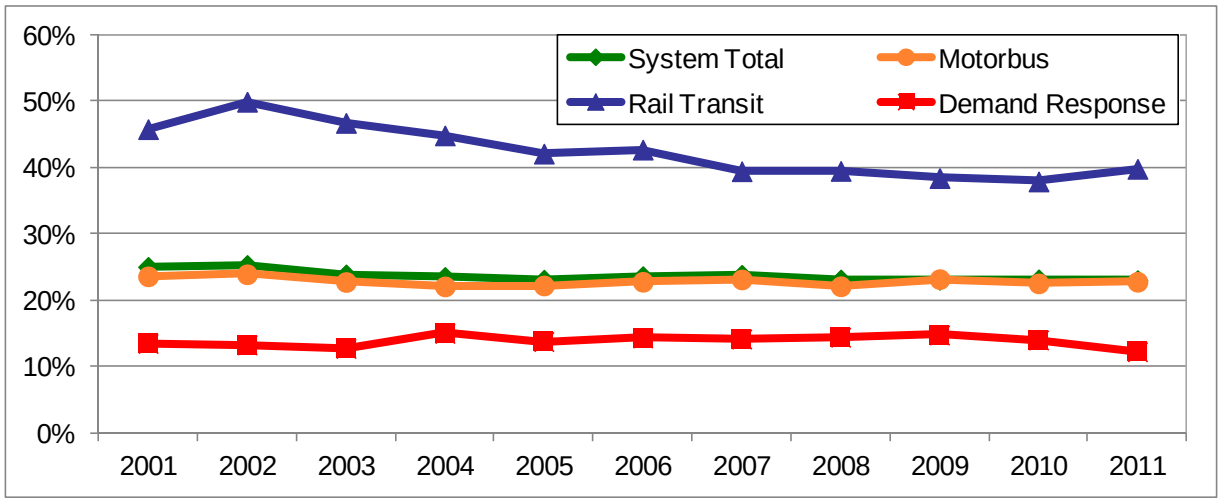
Source: Florida Transit Information System; National Transit Database.

The younger average age of the bus fleet reflects a combination of success in keeping the fleet in good condition and the introduction of a larger share of smaller (and shorter-lived) buses into Florida transit property fleets. Newer buses typically have higher reliability and improved handicapped accessibility (ramps instead of lifts), provide new amenities, and exhibit improved fuel efficiency and reduced emissions. Age data on the commuter rail vehicle fleet (Tri-Rail) and heavy rail fleet (Miami Metro) reflect the fact that these vehicles have longer lives. New Tri-Rail vehicles have reduced the average age of that fleet and recent vehicle purchases

through the American Recovery and Reinvestment Act (ARRA) should help buffer aging of bus fleets.

Figure 12 provides aggregate data on the share of the operating budgets that transit agencies devote to routine infrastructure maintenance. For bus operations, approximately 25 percent of the operating cost goes to vehicle and facility maintenance. For rail operations where there is more infrastructure and relatively less operating labor due to the operation of trains, the maintenance share of operating costs is approximately 40 percent.

Figure 12 – Share of Operating Expense Devoted to Maintenance



Source: Florida Transit Information System; National Transit Database.

The other major elements of transit infrastructure include the guideway systems. Examples include Metro-rail, Metro-mover, Tri-Rail, TECO[3] Historic Trolley in Tampa, the Jacksonville Sky-Train system, and exclusive right-of-way for bus operations such as the Lymmo system in Orlando and the busway in Miami. In addition to these, transit operations require capital investment for a host of supporting infrastructure such as park-and-ride lots, transfer centers, maintenance facilities, operations and administration facilities, communications infrastructure, and signage and shelter for patrons. There is no aggregate metric of the condition of these facilities as they are managed by the fixed route operators as well as by the multitude of other agencies and entities that provide specialized and paratransit services. Facility maintenance and upgrading is a regular expense as facilities age and new standards for environmental protection, worker safety and productivity require regular modernizations.

[3] The naming rights to the Tampa streetcar were sold to TECO, the Tampa Electric Company.

Accessibility

Accessibility of transit service can be characterized by a number of measures. As shown in Figure 13, the counties in Florida with concentrations of population are served by fixed route bus services. Measures of the share of population within a half-mile of fixed route bus service can be used to give a richer sense of the proximity of service to the population. Compiled data from Florida transit properties for the year 2008 indicated that approximately 14 million people or 75 percent of the population lives within what might be considered walking distance of fixed route transit service (quarter of mile). However, this measure does not indicate what share of destinations are within walking distance of service nor does it indicate the availability of service in terms of frequency of buses and hours of operation.

Figure 13 – Fixed Route Fleet Size

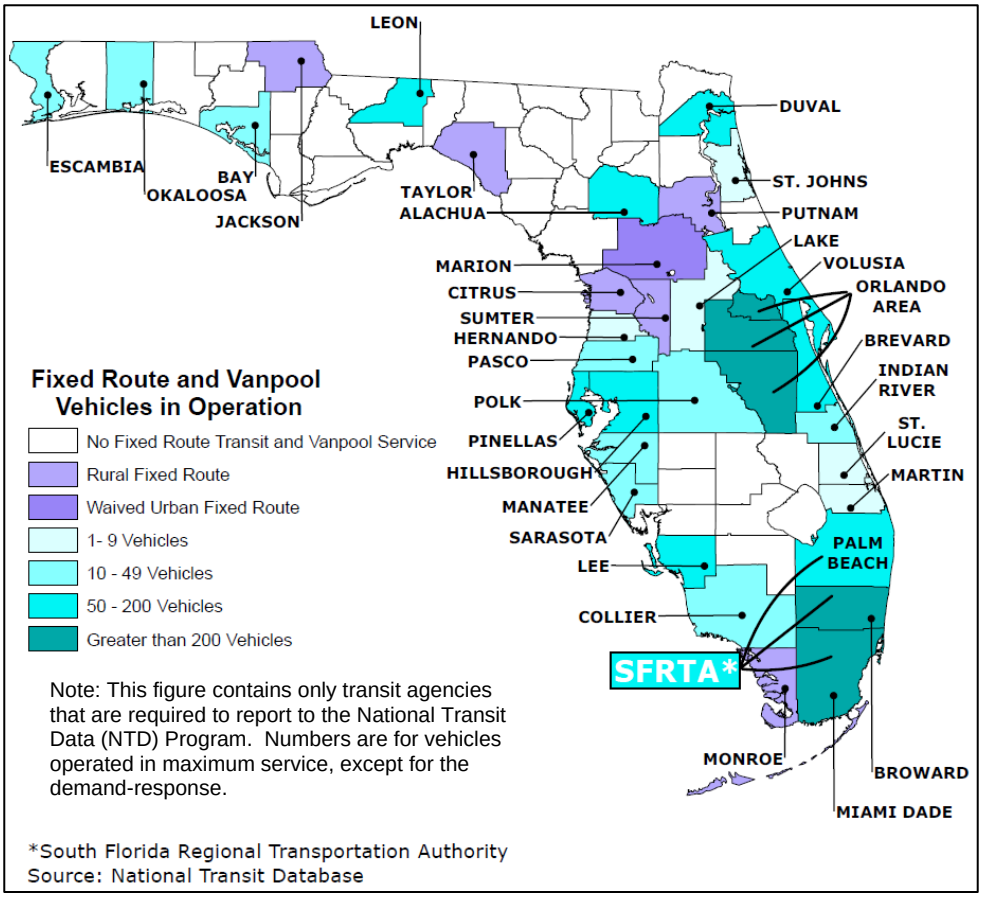
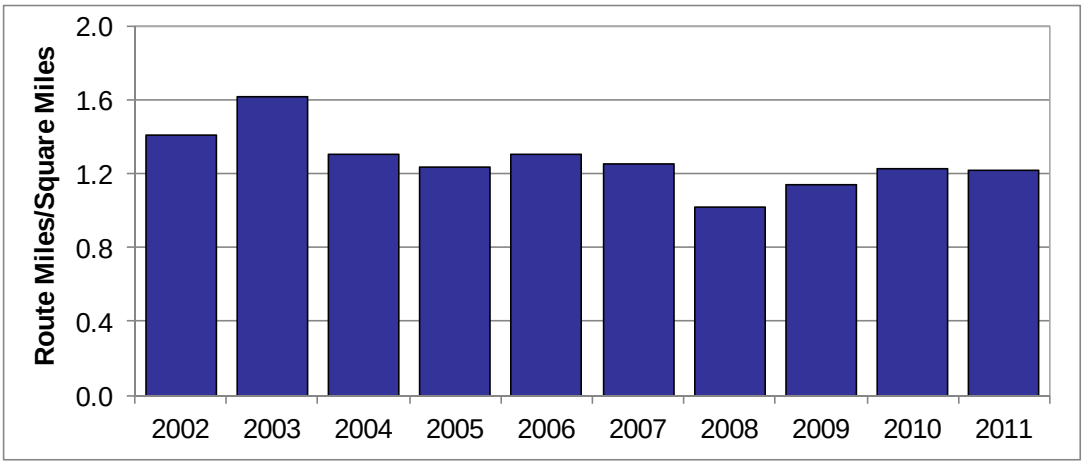


Figure 14 gives a measure of the coverage of transit service by noting the route miles of service per square mile of service area. This set of data indicates that for every square mile of land in a transit jurisdiction, there is a little over one mile of road with a transit route on it. The

declines in route miles per square mile of service area between 2004 and 2005 were a result of the addition of new transit services in counties with no service before. These small new systems expand the total area served but the new areas have comparatively modest service coverage and thus impact the overall coverage.

Figure 14 – Route Miles per Square Mile of Service Area – Fixed Route Transit

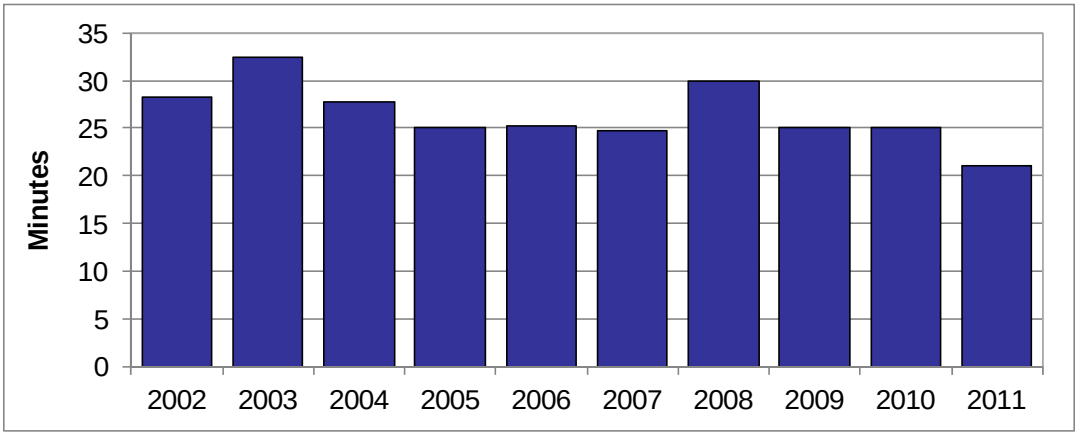


Note: Fixed Route Transit does not include Vanpool or Demand Response

Source: Florida Transit Information System; National Transit Database.

Figure 15 provides the average headway (time between buses) of bus routes in Florida. The decline in headways is a positive improvement because buses are available more frequently. As a result, it shortens the waiting time and increases the convenience to riders.

Figure 15 – Average Headway for Motor Bus

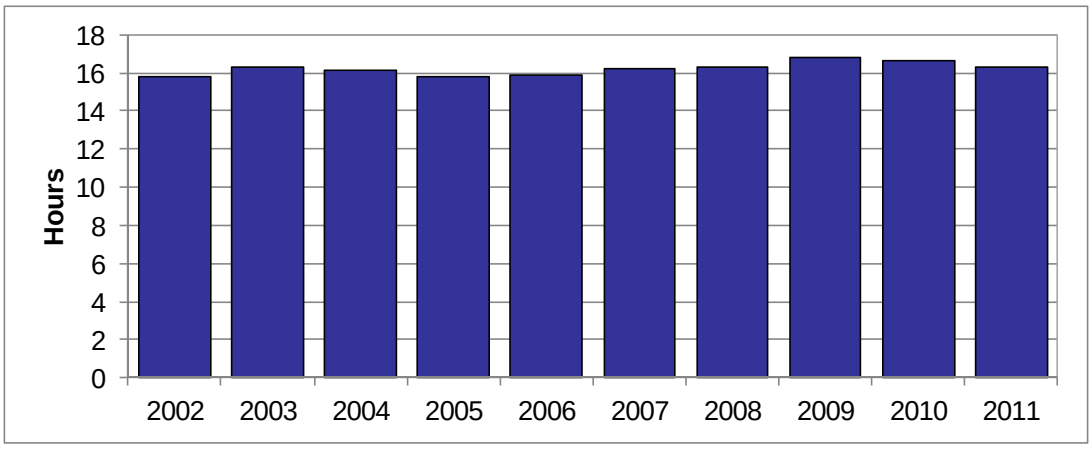


Source: Florida Transit Information System; National Transit Database.

The average span of service for fixed routes is shown in Figure 16. The trend indicates the hours of bus service availability have remained relatively steady. Caution must be used when

interpreting the information since these numbers indicate only system averages. Many routes do not have headways or service spans as good as the statewide averages shown in Figure 15 and Figure 16. An additional measure of accessibility would be to consider service availability on weekends and holidays. Typically, Saturday service levels are approximately half or less than those on weekdays, and Sunday/holiday service levels are even lower.

Figure 16 – Florida Transit Weekday Span of Service in Hours



Source: Florida Transit Information System; National Transit Database.

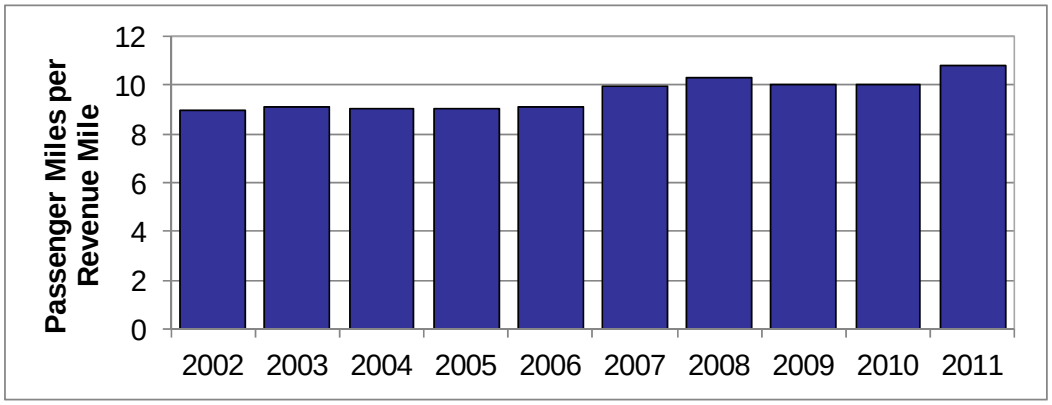
Another element of transit availability relates to the physical ability to get to and from the bus stops. While there is no available aggregate measure of physical access to transit, this is a subject receiving growing attention as urban development and transit planners increasingly realize the importance of the built environment to facilitating the use of alternative modes. Thus, the presence of sidewalks, curb cuts and other features to enable access to transit are being addressed in transit and urban design initiatives.

Level of Service

There are various strategies for addressing level of service for transit. Many of those consider service availability, as noted in the discussion above. Other measures address the adequacy of capacity and the comparative performance of transit with that of auto travel. The most readily available include measures of service utilization. These measures indicate the adequacy of capacity and provide a gauge of public demand for service. Figure 17, shows passenger miles per revenue mile of service which is a measure of the occupancy of the transit vehicles. Thus, a vehicle has, on average, about 10 passengers aboard. Given that a typical transit coach has approximately 34 seats, these data indicate that transit demand is well below capacity; however, this figure is an average for the whole year and for the whole day. It should be understood that sometimes during peak hours on weekdays, demand is much higher than the average demand and services may be at capacity for part of the trip. The temporal peaking in demand and the

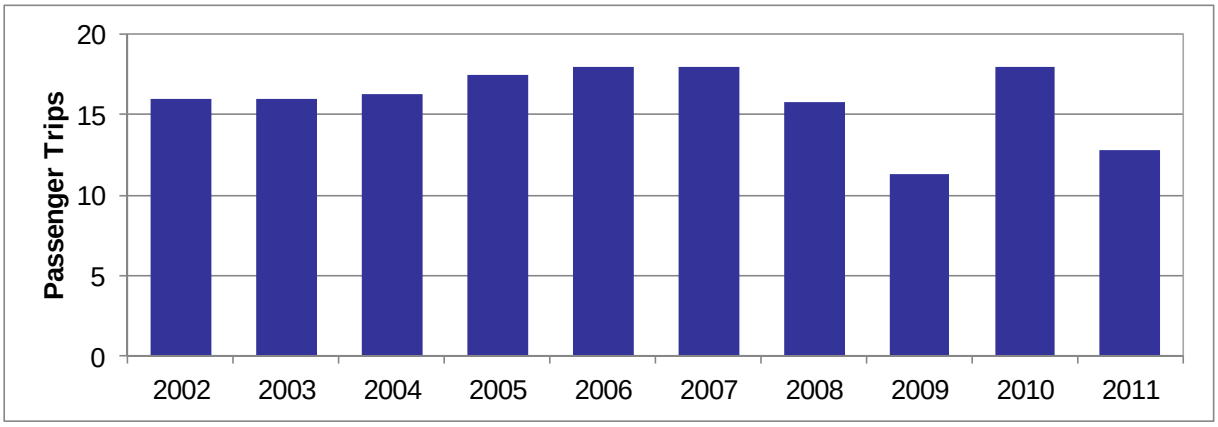
non-uniform directional balance in bus service demand (i.e. inbound busses may be full in the morning rush while outbound busses may be nearly empty) can result in the average utilization being modest in spite of full loads in the peak direction and at the peak load points. The trend also indicates that transit service capacity was growing as fast as or faster than utilization up until 2007 when average occupancy increased.

Figure 17 – Passenger Miles per Revenue Mile of Service



Source: Florida Transit Information System; National Transit Database.

Figure 18 – Passenger Trips per Service Area Population



Note: Total transit service area population is used. A transit trip is defined as boarding a transit vehicle. Many transit trips involve transfers and are thus counted as two transit trips.

Source: Florida Transit Information System (FTIS); National Transit Database.

Figure 18 provides a measure of transit trips per service area per capita. This indicates an average of about 18 transit trips per year per Floridian living in an area with transit. A transit trip is defined as boarding a transit vehicle. Considering many trips involve transfers and are thus counted as two transit trips, this equated to about 14 actual trips. This compares to a total of 1,000-1,500 trips per year per person by all modes.

The transit industry is continuing to work to develop other measures of service quality and level of service to better equate transit service with respect to other modes. Many individual properties monitor service quality with measures such as vehicle cleanliness, service reliability, travel speed and quality of customer information, in addition to those shown above. Similarly, paratransit service has a service-specific set of performance measures to track other features such as response time for calls, late arrivals, late deliveries and other specific measures. Another means of accessing transit is via bicycle. The FDOT transit LOS model considers factors that influence accessibility to stops such as physical barriers and roadway crossing difficulty, in addition to frequency and span of service. Table 5 in the previous section on Bicycling and Walking exemplifies data on bicycles being used to access transit.

Aviation

Aviation plays a critical role in interstate and intercity transportation for both persons and high-value products and materials. As a predominantly private sector mode, market forces are critical in influencing service availability and cost. The greatest public sector role is in administering ground infrastructure and access.

System Condition

For aviation, an indicator of System Condition is the condition of an airport's runways and taxiways. Maintenance of the facilities is the responsibility of the owner but some state and federal resources support that maintenance. System Condition is important to ensuring that airports remain competitive and operate safely and efficiently. The pavement condition of runways and taxiways directly impacts the ability of pilots to maneuver aircraft safely, often at high speeds. Structural integrity of the pavement is important to avoid compromising operational safety, including tire damage as a result of wide cracks or missing pavement, foreign object damage, water accumulation due to depressions, or rutting and skid problems from bleeding, rubber deposited from landing aircraft, or polished aggregate.

The Federal Aviation Administration (FAA) has developed two Advisory Circulars (AC) regarding airport pavement management. AC 150/5380-6~~A~~ B, Guideline and Procedures for Maintenance of Airport Pavements, provides guidelines and procedures for the maintenance of rigid and flexible airport pavements. AC 150/5380-7A discusses the Airport Pavement Management System (APMS) concept. An APMS provides consistent objectives and systematic procedures for pavement Maintenance and Rehabilitation (M&R), which allows for effective allocation of available funding for improvements.

FDOT uses a Pavement Condition Index (PCI) to rate the condition of individual pavement sections. The PCI value ranges from 0 to 100 and is assigned to the section by well-trained and experienced inspectors. The PCI, which is fully documented by the FAA and American Society

for Testing and Materials (ASTM), provides consistent and objective results. FDOT is using Micro PAVER as a software tool to compute PCI values and ratings, identify M&R needs, and prioritize M&R work based on available funds.

Accessibility

According to the Florida Aviation System Plan 2025 (FASP), the state's aviation vision includes maintaining an accessible airport system. Accessibility is related to both air and ground access and is a measure of how easily a location can be reached.

Air access to airports is facilitated by working with the FAA. Airports in the system that are capable of supporting Part 135, 139 or 107 operations and have full precision approaches or at least some published approaches are high priorities in the FASP. Most large airports in Florida already have the most advanced approaches and navigation aids available. So while air access is important to these airports, it is not the top priority of planning initiatives. Another measure of air access is the number of weekly scheduled non-stop commercial flights. Table 7 details the average number of flights, seats and U.S. cities served for five time periods.

Table 7 – Florida's Domestic Nonstop Scheduled Service Summary

	2011-Q1	2011-Q2	2011-Q3	2011-Q4	2012-Q1
U.S. Cities Served	177	177	177	212	222
No. of Airlines Serving	35	35	34	35	34
Flights (average weekly)	21,912	21,583	19,521	20,616	22,162
Seats (average weekly)	2,935,490	2,858,425	2,566,905	2,679,607	2,932,384
Seats per Flight	134	132	132	130	132

Source: Bureau of Transportation Statistics, *Air Carriers, T-100 Domestic Segment (U.S. Carriers).*

Access to the airport from the ground is also part of the accessibility measure. Considerations for ground access include access to the highway system, a roadway network capable of serving the airport without undue user delay, multi-modal connection opportunities, signage, ground transportation services, and interfaces for ground/air cargo exchange.

Weaknesses of Florida's airport system, which relate to accessibility, consist of the lack of intermodal connections at airports and ground access constraints. Strengths of Florida's airport system include the number and distribution of the public-use airports. Florida has 129 public use airports. Nineteen of these provide commercial service and are distributed across the state. Table 8 reports the share of Florida's population and employment within proximity of Florida's commercial airports. The strong tourist travel demand, the location of Florida as an appendage to the contiguous states, and the large population result in very attractive air travel service levels

in Florida. A total of 99 percent of the dwelling units and 94 percent of the employment are within 40 miles of a commercial airport.

Table 8 – 2007 and 2009 Florida Commercial Airport System Accessibility

Accessibility Metric	
Dwelling Units within 20 Miles of Commercial Airport (2009)*	6,487,412
Dwelling Units within 40 Miles of Commercial Airport (2009)*	6,494,484
Dwelling Units Statewide, Estimated Total	6,497,626
Total Employment within 20 Miles of Commercial Airport (2007)	6,791,595
Total Employment within 40 Miles of Commercial Airport (2007)	8,322,818
Total Employment Statewide, Estimated Total	8,898,037

Note: *Hendry County data was unavailable; statistically its population is 0.2% of the total population of the State of Florida.

Source: Department of Revenue, *Parcel Repository*, 2009; infoUSA, *Employment Data,* 2007.

Level of Service

Among the level-of-service criteria traditionally used for air travel service are on-time statistics (Table 9), service availability where the connectivity and frequency of service to major destinations are noted, and other aspects of performance. On-time performance is influenced by numerous factors, including weather and airport construction programs, but is significantly influenced by the willingness of the airlines to schedule services at times that have adequate airport/airfield capacity. The desire to accommodate passengers' preferred travel times often conflicts with available capacity. Airlines attempt to plan service in the most preferred departure times and then have a higher probability of congested conditions causing delays. Weather and delays in other locations also affect performance at Florida airports.

Table 9 – Major Airports in Florida On-Time Performance, 2008-2011

Percent of On-Time Departures				
	2008	2009	2010	2011
Miami (MIA)	77.13%	80.79%	80.62%	81.44%
Orlando (MCO)	81.09%	83.05%	81.87%	78.52%
Tampa (TPA)	80.57%	82.38%	80.88%	82.08%
Fort Lauderdale (FLL)	79.58%	81.24%	79.33%	85.90%
Percent of On-Time Arrival				
	2008	2009	2010	2011
Miami (MIA)	70.91%	75.76%	77.98%	80.03%
Orlando (MCO)	77.81%	80.89%	80.81%	81.74%
Tampa (TPA)	78.01%	81.30%	80.96%	81.62%
Fort Lauderdale (FLL)	75.06%	78.01%	78.30%	82.53%

Note: Fifteen minutes or more behind schedule is considered late.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, *Airline On-Time Performance.*

Seaports

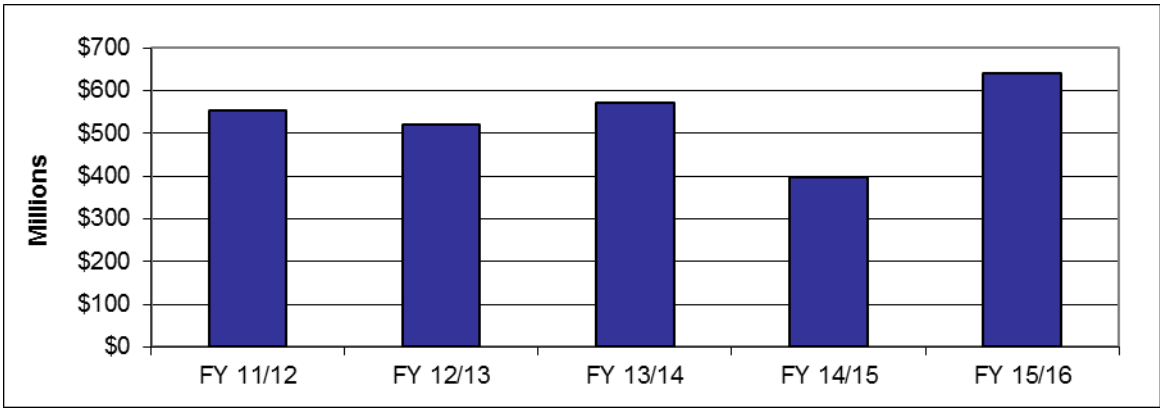
Florida has 15 deepwater seaports that are critical to the economy with over 98 percent of the population within 50 miles of one of the seaports. The vision in FDOT's 2010 Florida Seaport System Plan is driven by two overarching themes: freight and passenger transportation, and trade and economic development through the efficient movement of waterborne trade and passengers. To achieve the vision laid out in the plan, Florida seaports strive to carry out the mission, "Enhance the economic vitality and quality of life in Florida by fostering the growth of domestic and international waterborne commerce."

The key elements of the seaport system plan as per FDOT's goals, elements and objectives include: Markets and Services, Terminal Facilities and Capacities, Vessel Navigation, Landside Access, Land Use and Environment, Planning and Governance and Funding and Prioritization. Detailed discussion on these elements and their vision is presented in the 2010 Florida Seaport System Plan.

System Condition

Preserving and improving seaport facilities is an integral part of enabling Florida's seaports to remain competitive by efficiently moving passengers and freight. Industry parameters continue to require longer berths, larger terminals, deeper channels, and more sophisticated equipment. Historically, construction projects account for the largest share of capital expenditures. These projects, essential for movement of goods and passengers through each port, include bulkheads, cargo and cruise terminals, warehouses, and other structures.

Figure 19 – Collective Seaport 5-Year Capital Improvement Program Needs



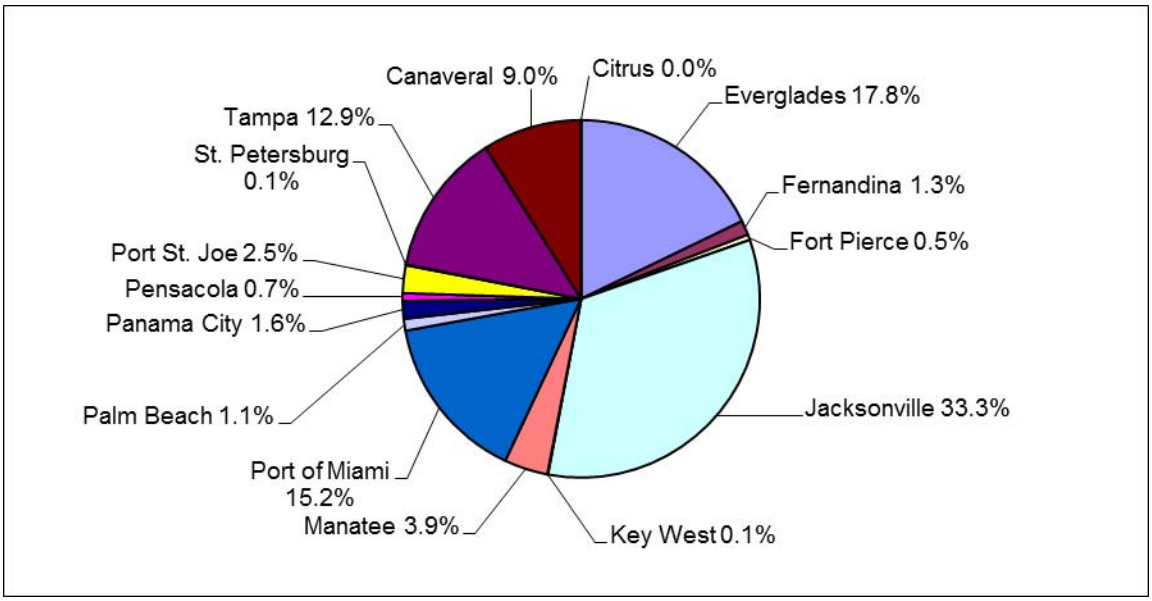
Source: Florida Seaport Transportation and Economic Development Council, *Charting a Course for Economic Success: The Five Year Florida Seaport Mission Plan 2012-2016*.

Other capital improvement needs include general site improvements, equipment, dredging and environmental programs, repairs and maintenance, land acquisition, security, off-port intermodal

projects, etc. Florida's seaports have programmed $2.6 billion in on-port capital improvement needs over the next five years (Figure 19).

Figure 20 shows how the capital improvement program needs are identified among the ports. The larger ports, including Everglades, Miami, Tampa, and Jacksonville, represent about 80 percent of the total, while the next tier, including Canaveral, Manatee, and Port St. Joe, totals 15 percent. The other eight ports share the remaining 5 percent with Port Citrus identified as Florida's next new port along the Cross Florida Barge Canal near Inglis.

Figure 20 – Florida's Seaport Capital Improvement Program Needs by Port



Source: Florida Seaport Transportation and Economic Development Council, *Charting a course for economic success: The Five Year Florida Seaport Mission Plan 2012-2016*.

In the future, funding availability will be the determining factor of Florida's seaports preservation and expansion. The state-seaport funding partnership, created by Chapter 311, Florida Statutes (F.S.) and expanded by Chapter 320, F.S., has provided a financial framework for seaport improvements through collaboration between the state and the seaports. The Florida Legislature has developed innovative funding mechanisms in response to Florida's freight transportation and trade corridor system needs.

Accessibility

Florida's seaports compete in a global market to provide accessibility for waterborne freight for domestic connections to the U.S. Accessibility to seaports is meeting current needs; however, projected growth in cargo and international trade will pressure the existing infrastructure. Efficient movement of cargo requires convenient integration of connections between multiple

modes such as air, water, and surface transportation (e.g.: highways and railroad networks). The container cargo, which primarily carries time sensitive and high value goods and is also the strongest component of waterborne freight growth, requires good landside connections to remain competitive. Changes induced by the Panama Canal expansion and U.S. policy towards Cuba could produce significant increases in waterborne freight flow. The challenging conditions that will need to be addressed include congested access roads, at-grade railroad crossings, railroad access issues, inadequate channel depth, and lack of truck-only routes.

Container ports located in urban areas, such as Miami, Fort Lauderdale, Palm Beach and Jacksonville, are typically the first to experience intermodal access system stresses. The condition of other transportation systems, such as roadway or railway, directly impacts the accessibility of Florida's seaports for both passengers and freight. Current information regarding the conditions of these systems is discussed throughout this report. Improved access to ports requires ongoing investments in these systems. Some seaports have long-term intermodal infrastructure plans. For example, the Port of Miami has planned an access tunnel and connectors to improve overall access to the port, the Interstate System and Greater Miami downtown. Port Everglades also has a long-term plan for an airport-seaport connector to support cruise passenger transfers between the facilities. Tampa has truck-only lanes planned to improve interstate access to its port.

Florida's seaports are striving to overcome challenges in access. FDOT is addressing access and connectivity issues through the Strategic Intermodal System (SIS). The SIS identifies transportation corridors, hubs and connectors for both freight and cargo across the state in an effort to efficiently fund and plan the transportation system. The SIS integrates all modes of transportation to address future needs.

Table 10 – Access of Commercial Seaports to Florida Non-Service Employment

Accessibility Metric	
Non-Service Employment within 20 Miles of Commercial Seaports	2,034,676
Non-Service Employment within 40 Miles of Commercial Seaports	2,777,140
Non-Service Employment Estimated Statewide Total	3,730,570

Source: Department of Revenue, *Parcel Repository,* 2009; InfoUSA, *Employment Data*, 2007. Analysis by CUTR.

Table 10 reports the accessibility of Florida seaports to non-service employment (those types of jobs in manufacturing etc. that are more likely to benefit from access to ports). This gives an indication of the access of economic activity to Florida seaports. Proximity of seaports to population is less relevant, as cruise activity is predominately vacation travel and not dependent on access to resident population but rather accessibility to the intercity transportation system

that provides access for cruise passengers. Approximately 74% percent of non-service employment is within 40 miles of a commercial seaport.

Level of Service

As port activity is predominately a private sector function, the levels of service are substantially driven by market conditions and the ability and willingness of the industry to respond to such conditions. The public sector is a partner in intermodal accessibility to the ports and occasionally a partner in port infrastructure.

As the dominant hub of cruise activity in the domestic market, Florida offers numerous cruise itineraries, year-round departure schedules, and frequent departure opportunities. The variety of itineraries is enabled by the geographic orientation of Florida relative to possible tourist destinations.

Freight marine shipping levels of service also are influenced by the market conditions and demand. The commodity capabilities of each port, the number of shippers operating, and the destinations served are all influenced by the geographic orientation of the port, the nature of the facilities, and the accessible markets which source and consume products and determine the volume of port activity. The large number of Florida ports provides good market accessibility.

One way to reflect on level of service is to consider market share. Table 11 reviews the share of each Florida seaport (classified as Atlantic or Gulf) for four commodity types (liquid bulk, dry bulk, break bulk, and general cargo)[4] and three trade categories (import, export and domestic). The diversity of goods imported and exported across the ports indicates the influence of volume and specialization. As can be seen, the Atlantic and Gulf ports primarily trade manufactured products and raw materials, respectively. Gulf ports lead in the trading of dry bulk products, especially the Port of Tampa. In comparison, the Atlantic ports primarily are involved in trading break bulk and general cargo goods, with almost all of the general cargo being traded via the ports of Everglades and Miami. A similar tendency is observed for trade. A major share of imports and exports is undertaken on the Atlantic front from the ports of Everglades and Miami, whereas a major share of the domestic trade takes place along the Gulf, especially from the Port of Tampa. These observed trading patterns could change in the near future following the expansion of the Panama Canal, resulting in increased international trade along the Gulf ports.

[4] Liquid bulk comprises primarily of petroleum products, dry bulk includes fertilizers, cement and aggregates while break bulk is similar to general cargo involving products or goods that come in bags, boxes, drums or barrels.

Table 11 – Florida's Seaport Commodity Trade for FY 2010/2011

	Ports	Tonnage Share by Commodity Type				Tonnage Share by Trade			Total
		Dry Bulk	Liquid Bulk	Break Bulk	General Cargo	Imports	Exports	Domestic	Tonnage
Atlantic	Fernandina	0%	0%	10%	1%	0%	3%	0%	647,074
	Jacksonville	27%	14%	52%	16%	28%	9%	18%	19,424,444
	Canaveral	4%	6%	3%	0%	7%	1%	4%	4,547,724
	Fort Pierce	0%	0%	1%	1%	0%	1%	0%	243,560
	Palm Beach	2%	1%	1%	5%	1%	6%	1%	1,953,893
	Everglades	2%	29%	2%	30%	19%	17%	26%	21,739,653
	Miami	0%	0%	0%	43%	11%	22%	0%	8,221,756
	Atlantic	**36%**	**50%**	**68%**	**97%**	**67%**	**59%**	**48%**	**56,778,104**
Gulf	Pensacola	1%	0%	1%	0%	0%	0%	0%	262,591
	Panama City	3%	0%	10%	1%	2%	4%	0%	1,412,000
	St. Joe	0%	0%	0%	0%	0%	0%	0%	0
	Citrus	0%	0%	0%	0%	0%	0%	0%	0
	St. Petersburg	0%	0%	0%	0%	0%	0%	0%	0
	Tampa	54%	40%	13%	2%	15%	31%	52%	34,252,712
	Manatee	6%	10%	8%	1%	17%	6%	0%	7,247,449
	Key West	0%	0%	0%	0%	0%	0%	0%	0
	Gulf	**64%**	**50%**	**32%**	**3%**	**33%**	**41%**	**52%**	**43,174,752**
	Total Tonnage	**22,318,083**	**53,181,770**	**5,466,384**	**18,986,620**	**35,932,270**	**19,796,557**	**44,224,029**	**99,952,856**

Source: Florida Seaport Transportation and Economic Development Council, *Charting a course for economic success: The Five Year Florida Seaport Mission Plan 2012-2016*.

Rail

As with other modes, the railway system serves both passenger transport and freight transportation needs. The rail system is dominated by freight activity and also is a private-sector-dominated segment of the transportation system. Both infrastructure and operations are predominately owned and operated by the private sector. Hence, system performance is primarily dependent on market conditions and the willingness of the private sector to invest in services and infrastructure. Intercity rail passenger service is operated by Amtrak, an entity whose ability to operate is dependent on public resources. More descriptive information on the Florida rail system is presented in one of the Trends and Conditions reports, *Transportation System: Rail Facilities – Freight and Passengers.*

System Condition

While the condition of the rail system has been a private sector responsibility, there is a growing level of public participation through various programs from grade crossing enhancement to facilitating intermodal connections to direct ownership of rail corridors. In southeast Florida, the State of Florida purchased the corridor to enable Tri-Rail commuter service to share the corridor with Amtrak and freight services. In the Orlando area, the state has also acquired a corridor that will soon carry passengers on the SunRail service. The importance of rail to the performance of the overall transportation system -- specifically, the opportunity it provides to reduce truck demand for major roadways -- creates a growing level of public interest in the condition and performance of the rail system. The extent of the rail system in Florida had declined over the past century, as is the case in most other states as the industry has consolidated. The Florida rail system comprised 2,786 miles of track in 2010, down approximately 1,000 miles from its peak system size.

One measure of system condition is the operating speed of the track. This is affected by the physical condition and the original design. Track condition is controlled by the private company that owns and operates the track subject to the Federal Railroad Administration's guidelines for operating speed. An inventory of operating speed for Florida's trackage is not currently available.

Accessibility

The availability of rail service is dependent on the density of the track network and the frequency of services on the various lines. Florida's orientation with respect to the rest of the nation results in the Florida rail system serving predominately Florida-specific needs rather than through traffic, as is the case in many other states where services pass through the state. Nonetheless, the amount of rail trackage in Florida per 100 square miles of land area is slightly above the national average, with 5.3 miles of track versus 4.5 nationally and 3.4 for California.

Table 12 – Access to Intercity Rail Passenger Services in Florida

Accessibility Metric	
Dwelling Units within 20 Miles of Amtrak Station (2009)*	5,178,479
Dwelling Units within 40 Miles of Amtrak Station (2009)*	6,182,184
Dwelling Units Statewide, Estimated Total	6,497,626
Non-Service Employment within 20 Miles of Amtrak Station	2,034,676
Non-Service Employment within 40 Miles of Amtrak Station	2,777,140
Total Employment Statewide, Estimated Total	8,898,037

Note: *Hendry County data was unavailable; statistically its population is 0.2% of the total population of the State of Florida.

Source: The Department of Revenue, Parcel Repository, 2009; InfoUSA, Employment Data, 2007. Analysis by CUTR

Table 12 shows that 80 percent of Florida's dwelling units are within 20 miles proximity of the Amtrak stations in Florida and that 22.8 percent of Florida's employment is within 20 miles proximity of the Amtrak.

Capacity Adequacy

The adequacy of rail capacity is dependent on a number of factors, including the competing demands of shared freight and passenger services, the spacing of passing tracks and sidings and the presence of bottlenecks. Long range forecasts of demand for both freight and passenger services are reflective of Florida's population growth and indicate that additional track capacity will be required in the future.

Conclusions

This report on transportation system performance covers all modes by using a structure of performance measurement focusing on three main features: condition, accessibility, and level of service. For each mode, the availability of information varies and is not standard or consistent across modes. Nonetheless, the collective body of information, particularly in combination with the descriptive information in other Trends and Conditions reports, provides an overview of the performance of the transportation system. A number of themes are clear:

- As overall travel demand for both freight and passenger movement has grown faster than infrastructure and services, there has been pressure on all the modes to maintain adequate service capacity. More recent softening in demand provides some relief but will be short lived when demand growth resumes and capacity expansion doesn't keep pace.
- Growing demand forces greater multimodal planning and attention to intermodal connectivity. As a given mode reaches capacity, other modes may need to absorb the demand. The growth in demand and performance of the various modes changes the competitive positions and may influence mode choices for both passenger and freight transportation. For example, crowded roads may enhance the competitive position of freight rail services.
- Private sector transportation services are increasingly of interest to the public sector as they play an important role in meeting overall demand.
- System physical condition, while a significant financial challenge, is relatively good for Florida. Florida is less burdened with massive aging infrastructure than some other parts of the country.
- The challenge of providing adequate capacity and maintaining systems was exacerbated by the dramatic increases in infrastructure costs between approximately 2003 and 2007 and now is being impacted by declining revenues.

- System accessibility in Florida is generally good to very good. The density of Florida's transportation networks is above national averages as a result of its population size. The development pattern along the coasts with several large metropolitan areas has resulted in seaport and airport networks that are comparatively large and a reasonably well developed expressway system traversing the state.
- Ensuring sufficient capacity will be the largest single challenge to the future performance of the transportation system in Florida. Projections of continued growth in travel demand coupled with limited resources to provide capacity additions will continue to challenge the performance of existing systems. Meaningful increases in efficiency and/or additional investment in infrastructure and services will be required to maintain or improve existing performance.

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