Technical Memorandum

Florida Statewide Operations Performance Measures and Data Collection

October 28, 2008
Final Version

Prepared for:
Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600
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Florida's Statewide Operations Performance Measures and Data Collection

2008 Year End Summary of Activities Report

Task 1: Prepare FY 2007-08 Performance Measures Report

Cambridge Systematics (CS) completed the data collection and reporting of ITS performance measures for the 2008 fiscal year (July 1, 2007-June 30, 2008). The report included statewide data collected for the three output performance measures: annual 511 calls, annual Road Ranger stops, miles managed by ITS, and for the three outcome measures: incident duration, reliability, and customer satisfaction. The final report is included in Appendix A.

Task 2: Conduct Incident Duration and Travel Time Reliability Performance Measure Activities

In fall 2007, CS assisted the FDOT ITS Program in developing, reviewing and interpreting requirements for the incident management module of SunGuide version 3.0. CS staff also attended the SunGuide Factory Acceptance Test (FAT) in Ft. Lauderdale on November 27-28, 2007.

CS worked throughout the year with FDOT Central Office and District staff, PBS&J staff, and the SunGuide software contractor Southwest Research Institute (SWRI) to refine the incident duration performance measures and the software requirements to report on incident duration through SunGuide.

Incident Duration Activities

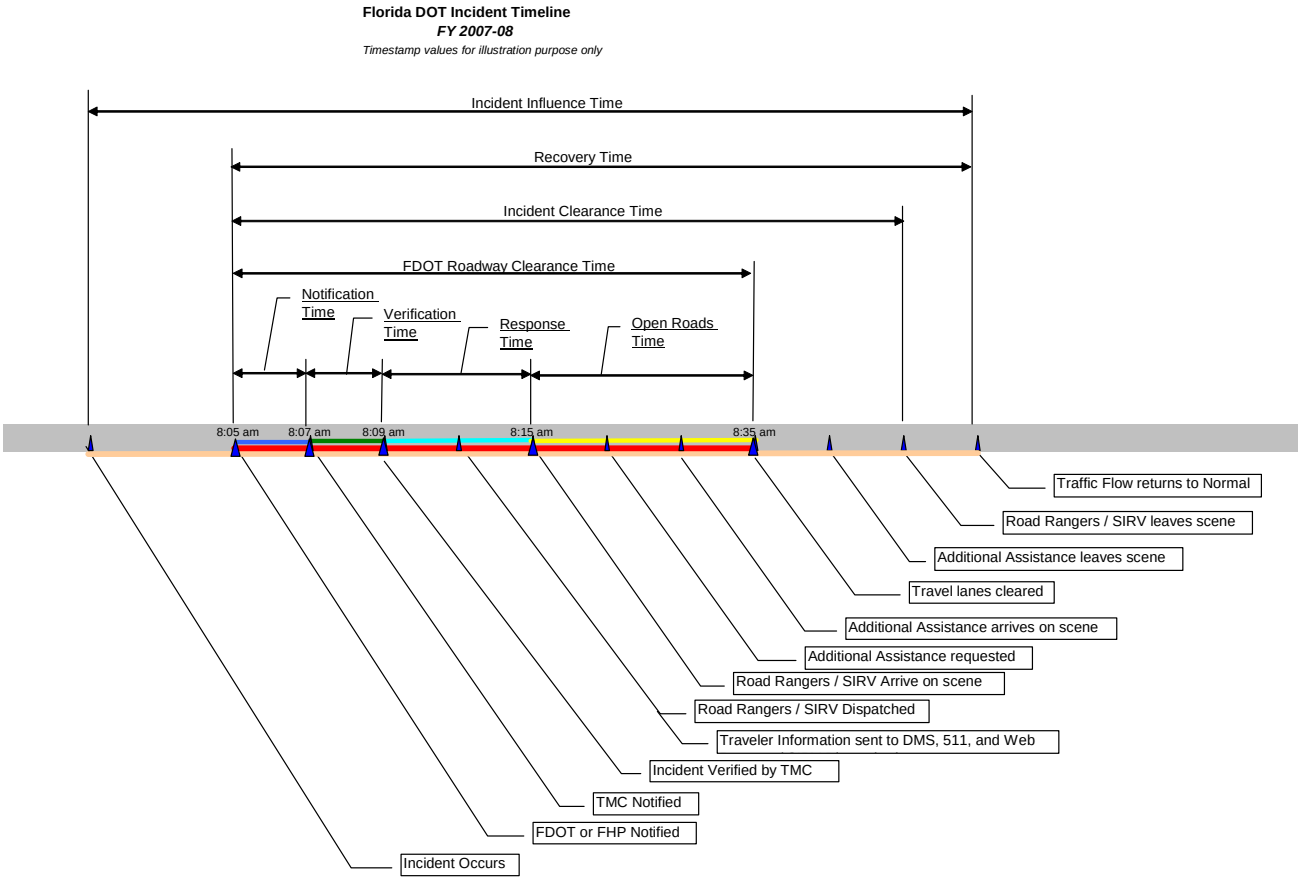
On March 10-11, 2008, CS met with FDOT District 6 SunGuide Transportation Management Center staff in Miami to review and obtain incident duration data. A pilot test was conducted to see if incident duration could be collected and reported automatically through the SunGuide software. The pilot test included a review of quality control procedures in place in District 6, major timestamps recorded by operators during incidents, and SunGuide version 3.0 incident duration reports. CS reviewed an event chronology for a recent crash, and found that District 6 was collecting all the major timestamps needed to produce the incident duration timeline. CS noted the need for validation of the SunGuide reports to ensure that all incident duration components are being calculated correctly, as well as development of standard operating guidelines to ensure TMC operators across all districts are following the same procedures for incident

reporting. A technical memorandum detailing the results of the incident duration data collection pilot study was delivered to FDOT on March 14, 2008.

CS also worked with FDOT Central Office staff to refine the FDOT incident duration terminology to more closely align with national Traffic Incident Management (TIM) definitions. It was determined that the "FDOT Incident Duration" component should be renamed "FDOT Roadway Clearance Time." FDOT Roadway Clearance Time is defined as the time between first awareness of the incident and the time all main lane travel lanes are cleared. This component includes notification, verification, and response times, as well as the Open Roads clearance time. The "Open Roads Clearance Time" component which was previously termed, "Clearance Time," is defined as the time that begins with the arrival of the first responder, either Florida Highway Patrol or FDOT, and ends when all main lane travel lanes are cleared. This is directly comparable with Florida's Open Roads Policy of clearing all travel lanes in 90 minutes or less. A workshop was held in the ITS Office in Tallahassee on May 29, 2008 to discuss the revised terminology for incident reporting; FDOT Districts attended the workshop via video conference. In addition, CS prepared a memorandum outlining the revised incident data definitions, as well as graphics of the revised timeline. Figure 1 depicts the data points included in the FDOT incident duration timeline. It should be noted that although the terminology changed for FY 2008, the definitions for the individual components of the timeline are still the same as that used for FY 2007 reporting. The deliverable for this task was a draft FDOT policy statement that establishes guidelines and standards for reporting on incident duration, as well as quality assurance procedures for reviewing incident duration data.

CS worked with FDOT ITS Office and SWRI staff to develop an electronic process to receive incident duration data produced by a district through the SunGuide software and have that data posted into reporting format for a quarterly incident duration report. The report templates were released as part of the SunGuide version 3.1.2 software in July 2008 and incorporated the revised terminology for reporting incident duration. CS assisted in the review and verification of the reports using test case incident data. For FY 2007-08, FDOT Districts 2, 4, 5, 6, 7, and the Turnpike were able to report on incident duration for the period from January to June 2008. Quarterly incident duration reports for these districts were produced on July 31 and August 4, 2008.

Figure 1 - Florida DOT Incident Timeline



Travel Time Reliability Activities

On February 12, 2008, CS met with FDOT District 5 SunGuide Transportation Management Center staff in Deland to obtain and review their speed detector data. A pilot test was conducted to collect and analyze travel time data using the speed data. The test included an evaluation of the usability of the data, adequacy of data format and data quality, as well as defining the steps to analyze and report travel time reliability and congestion. CS was able to obtain speed data for District 5 for the periods from January 1-18 and February 5-12, 2008, along with their detector configuration file. CS found that the configuration file contained considerable missing detector locations, and requested a cleaned up version from the district. The detector locations are needed to determine distance between detectors, which is then used to convert the raw speed data into travel times. Although a number of detector locations were missing in the revised configuration file, CS determined that the file had enough data points and CS was able to estimate detector locations in order to adequately calculate travel time reliability.

A review of the usability of the speed data determined that the January data was unusable because the files were not configured properly. The February speed data files were found to have missing data points and out of range data, which is not uncommon

for speed data files. The results of the pilot test indicated that with proper data quality procedures in place, travel time reliability could be produced for District 5 for the period from February 5 through June 30. A technical memorandum detailing the results of the detector data collection pilot study was delivered to FDOT on March 14, 2008.

In discussions with several District TMC staff across the State, it was determined that the Districts are having trouble obtaining complete and accurate data from roadside sensors and, therefore, cannot assure the quality of reliability data. A review of available sensor data from Districts 2 and 4 indicated that there are many gaps in the data and many of the sensor stations are reporting inaccurate or non-logical speeds. CS was able to perform gap filling and data quality checks in order to report the data for the FTC report. CS developed an ITS Data Plan White Paper in March 2008 that describes these and other data quality issues related to speed data and travel time. The white paper also proposes a framework for FDOT to establish an ITS Data Plan. An ITS Data Plan would provide guidelines and standards for FDOT to use when collecting/using operations data and reporting ITS performance measures. Additional detail on the activities needed to establish an ITS Data Plan are described in the white paper.

CS coordinated closely with FDOT Districts that implemented detector data collection in FY 2007-08. As each district made detector data available, CS began collecting and analyzing that data. A report was prepared that describes the reliability and congestion findings for each district, including Travel Time Index and Buffer Time Index results. For annual reporting purposes, FDOT Districts 2 and 5 were able to report on travel time reliability and congestion for the period from March to June 2008, while FDOT District 7 was able to report for the period from January to June 2008. Reliability results for these districts are included in the FY 2007-08 Annual Performance Report, which is provided in Appendix A.

Recommendations for FY 2009 ITS Performance Measures Program

1. Continue working with the Central Office, the Districts and SWRI to validate SunGuide reports to ensure that all incident duration components are being calculated correctly.

2. Review current Standard Operating Guidelines for incident data collection across the Districts and develop statewide standard procedures to ensure that TMC operators are all following the same procedures for incident reporting. As an example, an incident may start out on the shoulder and then evolve into a lane blocking incident, guidelines need to be developed on how this should be handled in SunGuide to enable consistent calculations of incident duration. Conduct training with District TMC operations staff on the incident definitions and the Standard Operating Guidelines for incident data collection.

3. Develop a scope for Detector Data Quality and Maintenance Guidelines. The Guidelines must include a detector configuration file template and procedures, data quality procedures and metadata reporting requirements, a process to

define SunGuide reports for speed, travel time, volumes and reliability, a template for reporting travel time reliability to the Central Office and guidelines for maintaining detectors. The report templates will be defined through the development of the SunGuide Report Repository by the Central Office.

4. As a first step in developing the guidelines for detector data quality, convene a meeting or video conference of District staff involved in producing detector data and staff involved in maintaining detectors to obtain input into the guidelines. Based on the initial input, CS, working with PBS&J, will develop draft guidelines for FDOT detector data quality. The draft guidelines will then be reviewed by the Central Office and the Districts prior to developing the final guidelines.

5. Cambridge Systematics/PBS&J conduct training in each District TMC on use of the guidelines.

6. Continue to work with FDOT Districts on acquiring data for travel time reliability and incident duration.

7. Report on incident duration and reliability measures along with the output measures in 2009 with data available.

8. Assess options for further automation of performance measure reporting.

Task 3: Stakeholder Coordination

Stakeholder coordination is an element critical to ensuring the successful implementation of FDOT's performance measures program. A key component of this task included working with the FTC to ensure their needs (timeliness) were met with the performance measures report. CS prepared the ITS performance measures report in July/August 2008 and submitted the final version to FDOT on August 8, 2008 (see Appendix A).

CS provided coordination with FDOT management primarily through the activities of the Florida Travel Time Reliability Task Force. CS provided logistical assistance with meetings and presented on reliability efforts within the FDOT ITS Office. We also prepared presentations and materials for ITS Office staff. Reliability Task Force Meetings took place in Tallahassee on November 19, 2007 and May 23, 2008.

CS also prepared for and attended ITS Working Group Meetings in Tampa Florida on December 12, 2007 and March 20, 2008 and a video workshop held on May 29, 2008. For the December meeting, CS prepared presentations and materials for FDOT presenters at the Performance Measures workshop of the FDOT ITS Working Group meeting. CS presented on the definitions of the six performance measures used for FTC reporting, as well as tasks for FY 2007-08 related to reliability, incident duration, customer satisfaction, and stakeholder coordination. At the March meeting, CS presented on incident duration and travel time reliability, highlighting key points from the

last ITS working group meeting and providing a progress report and action items for upcoming tasks related to these areas. At the conclusion of each meeting, CS prepared a summary of questions and comments received by FDOT District staff. CS prepared for and conducted a performance measures video conference on May 29, 2008. The video workshop included a performance measures status report, definitions of the incident duration timeline, the process for collecting data for the FY 08 data collection cycle and a discussion of issues from the Districts.

CS also prepared a performance measures section for the FDOT ITS Office Annual Report in June 2008. The focus of the report was ITS Customer Satisfaction, and excerpts were provided from the June 2008 FDOT Customer Tracking Study draft report indicating some of the most interesting findings from the customer satisfaction survey.

Task 4: Continuing Operations Performance Measure Activities

CS coordinated with The Schapiro Group (TSG) staff throughout the survey process between January and June 2008 to oversee activities associated with conducting the FDOT customer satisfaction survey. CS reviewed the survey instrument, the sampling methodology used to conduct the survey and the draft summary report. We also developed a summary document of the survey results for inclusion in the ITS Performance Measures Report.

During FY 2007-08, CS developed newsletter and media articles related to ITS performance measure results. An article for the AASHTO newsletter was developed in December 2007 and included relevant results from the FY 2006-07 ITS Performance Measures report.

The deliverable for this task is this 2007/08 Summary of Activities report.

Appendix A

FY 2007-08 ITS Program

Performance Measures Review

Intelligent Transportation System (ITS) Program

Performance Measures Review

Florida Department of Transportation
Traffic Engineering and Operations Office

August 2008

Intelligent Transportation Systems

Performance Measures Section for FDOT ITS Annual Report

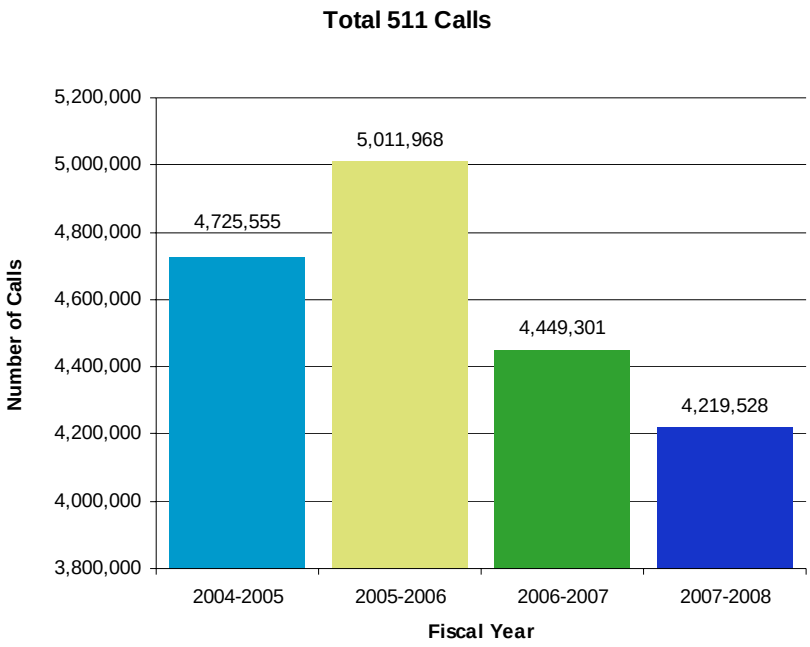
The Florida Department of Transportation (FDOT) is committed to implementing a statewide, fully integrated Intelligent Transportation Systems (ITS) in a cost-efficient manner to better accommodate our rapid growth in population, tourism, and commerce. ITS represents the use of real-time information systems and advanced technologies as transportation management tools to improve the movement of people, goods, and services. ITS uses advanced technologies to remedy mobility and safety problems, so the building of new roads and expansion of existing ones is accomplished efficiently.

As ITS is evolving in Florida, the development and reporting of operations performance measures is a high priority for FDOT to demonstrate and document the benefits of ITS. When the ITS Program began addressing performance in 2004, the Districts had no automated data collection systems and were initially limited to measures of basic production and usage (*output*). The initial output measures reported statewide were: 1) 511 calls, 2) Road Ranger assists and 3) centerline miles of limited access highways managed by ITS.

As ITS deployment and integration proliferate, measures of performance and resulting benefits (or *outcome*) can be more accurately documented and reported. Three ITS *outcome* performance measures were identified by FDOT and subsequently approved by the Florida Transportation Commission (FTC) in 2005. These measures are: 1) incident duration; 2) travel-time reliability; and 3) customer satisfaction. Available data for the incident duration and customer satisfaction measures were collected and reported beginning in 2006. For 2008, all three output and three outcome measures will be reported. The data for all of the 2008 measures was collected for the period beginning July 1, 2007 and ending June 30, 2008.

Total Annual 511 Calls

Background: In July 2000, the Federal Communications Commission designated 511 as the national three-digit telephone number for traveler information. To date, over 112 million calls have been made to 511 systems throughout the country. The ultimate national goal is to provide coverage throughout the United States by 2010. Over 2.3 million calls per month are now being made to these existing systems (43 locations in 33 states) and the 511 system is available to over 128 million people.[1] In Florida, most urban areas of the State currently offer this service to travelers. Following are the coverage areas and launch dates: Southeast (2002) - Miami-Dade, Monroe, Broward, Palm Beach, Indian River, Martin, and St Lucie counties; Central (2002) - along I-4 in greater Orlando; Tampa Bay (2004) - Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk and Sarasota counties; Northeast (November 2006) - Duval, St. Johns, Clay and Nassau counties; and Southwest (April 2007) - Charlotte, Lee and Collier counties. The Statewide service covers all areas not covered by regional services and was launched in November 2005. In 2008, Florida's statewide 511 service will integrate all the Florida regional 511 services into one statewide system. Since inception of the aforementioned systems, over 23 million 511 calls have been made in Florida.



Purpose: To provide accurate, real-time information on traffic and road conditions, alternate route information (during incidents), construction information, weather-related problems, and public transportation information/options.

Objective: To reduce traveler delay and improve the overall quality of trip-making as evidenced by growth in the number of 511 calls and different callers, and maintaining a high level of user satisfaction.

Methodology: Compilation of annual monthly (and ultimately, annual hourly) 511 service calls by each of the service providers. Currently, *Logic Tree* manages the Statewide, Southeast, and Central Florida systems. The Tampa Bay area system and the Southwest system are both managed by *Mobility Technologies (now Traffic.Com)* and Smartroutes manages the Northeast

[1] www.deploy511.org, July 2007.

system. FDOT is responsible for assessing statewide user satisfaction, including 511 impact on travel behavior, and the extent of **different** callers utilizing the service. The results of customer satisfaction for the 511 service are included in another section of this document.

511 calls

July 1, 2007 – June 30, 2008

	2007					
	July	**August**	**September**	**October**	**November**	**December**
Central Florida	109,159	95,234	71,154	93,007	114,499	115,559
S.E. Florida	152,003	158,550	175,470	197,807	185,723	163,628
Tampa Bay	28,684	32,882	29,801	36,328	36,241	28,545
Statewide	41,210	37,200	35,361	41,612	43,212	38,570
N.E. Florida	5,015	3,814	3,889	6,530	6,162	4,655
S.W. Florida	1,203	1,629	1,253	1,548	2,447	2,017
State Total	337,274	329,309	316,928	376,832	388,284	352,974
National Total	1,743,296	1,748,132	1,575,278	2,607,382	2,662,488	4,745,867

	2008					
	January	**February**	**March**	**April**	**May**	**June**
Central Florida	105,643	88,955	98,441	73,996	110,934	69,494
S.E. Florida	188,980	198,374	213,776	171,407	182,726	139,818
Tampa Bay	43,389	37,548	41,018	34,839	29,726	33,619
Statewide	30,064	36,881	43,645	29,024	33,574	34,700
N.E. Florida	3,307	7,749	10,914	5,197	4,441	4,915
S.W. Florida	1,476	2,211	1,902	1,346	2071	1,827
State Total	372,859	371,718	409,696	315,809	363,472	284,373
National Total	4,166,661	4,232,197	2,982,155	2,471,742	N/A**	N/A**

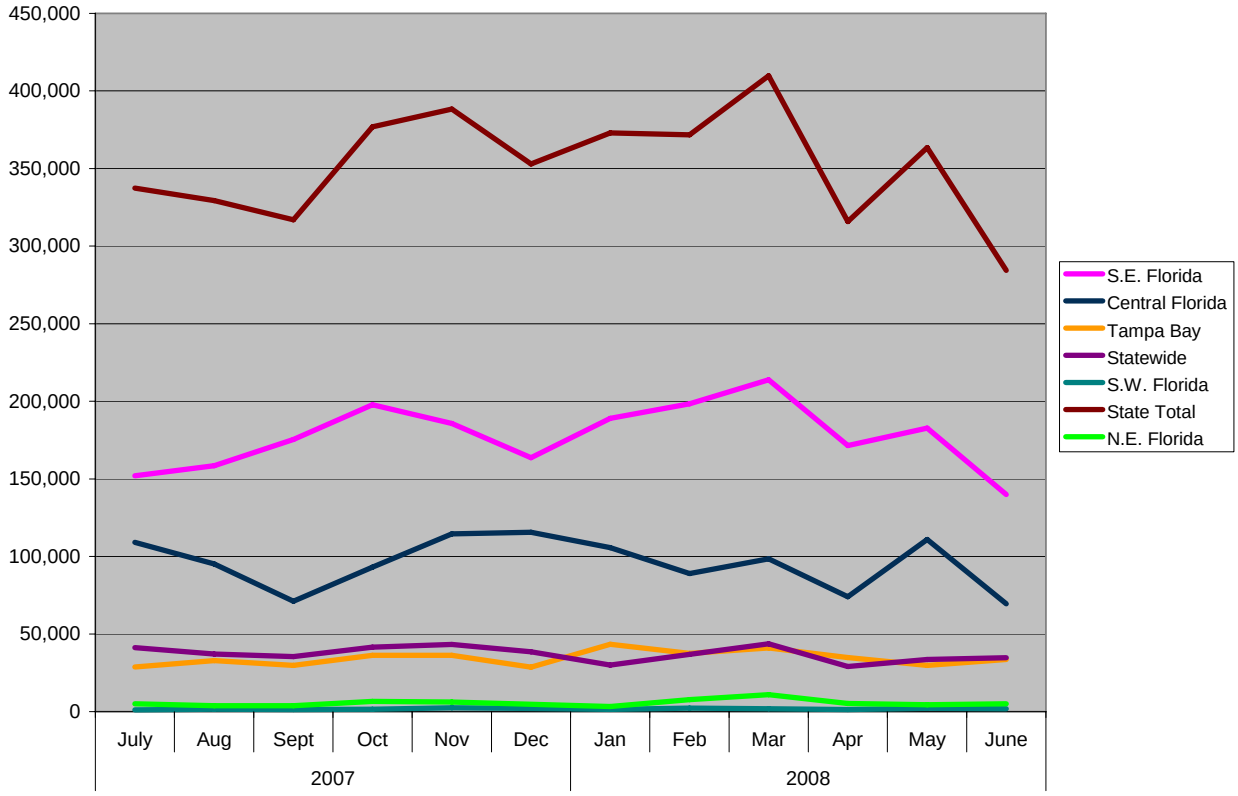
Totals	
Central Florida	1,146,075
S.E. Florida	2,128,262
Tampa Bay	412,620
Statewide	445,053
N.E. Florida	66,588
S.W. Florida	20,930
State Total	4,219,528
National Total	28,935,198* *

** May and June 2008 National Total is not available

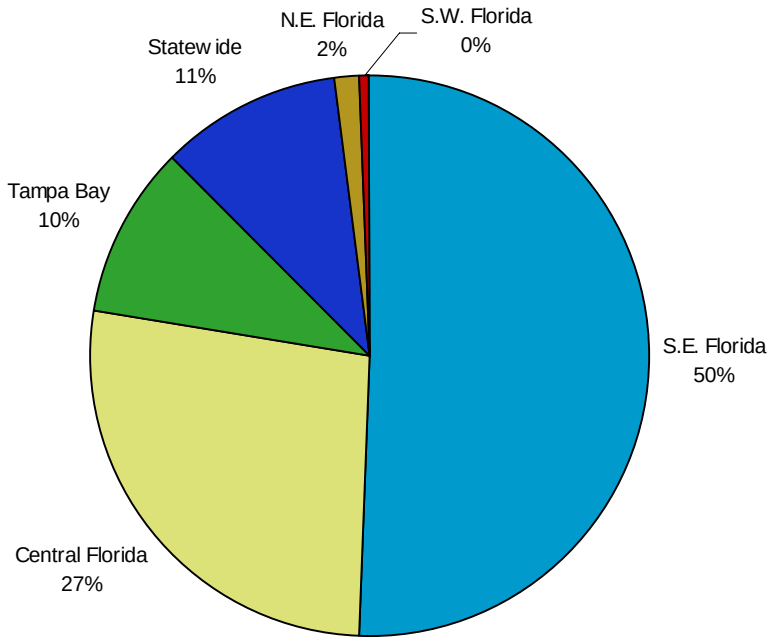
Results: Approximately 4.2 million 511 calls were made during the 12-month period from July 2007 through June 2008 under the six Florida systems. This represents 15 percent of the total 511 calls made in the entire country during this same period. As can be seen in the graphic and corresponding table below, the number of total monthly 511 calls now being made in Florida is approaching one-half million. Total statewide calls have a five percent overall decrease over 2007. This could be attributed to significantly less hurricane activity during the 2007 season.

15 % of the total 511 calls made in the entire country occurred under the six Florida systems in fiscal year 2007-08.

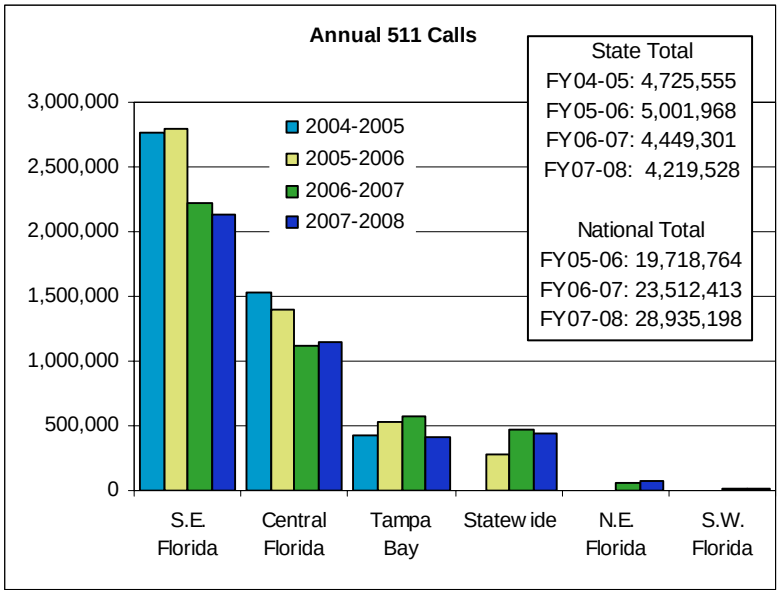
Monthly 511 Calls



Annual 511 Calls by System



Additional Comments: There were two monthly spikes in 511 call activity in Florida in this period. One was in October 2007 where the largest increase in calls was in Central and Southeast Florida, likely due to winter residents traveling to Florida. The other peak month was May 2008, which was caused by large wildfires in north and central Florida and in the Everglades occurring in May. The largest increases in calls at that time were in Central Florida.



Nationally, peak activities occur during winter months when weather causes delays and road closures.

Significant improvements (e.g., , intensified awareness marketing, trip planning applications, expanded real-time speed and travel-time data gathering capabilities, and related Web site enhancements) are underway for the six systems.

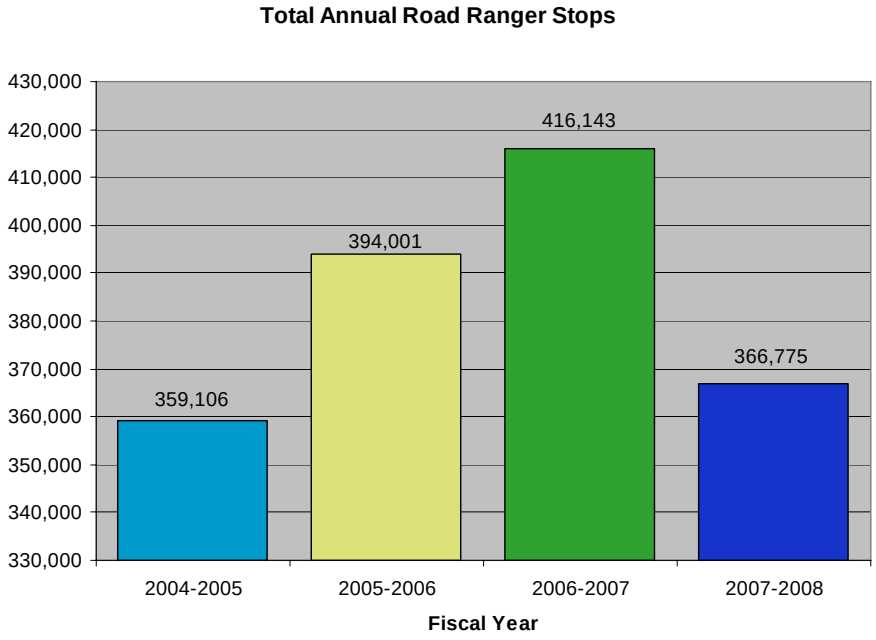
Total Annual Road Ranger Stops

Background: The Department began funding the Road Ranger Program in December 1999. Except for District 5, which is contracted to the local transit provider, LYNX, Road Ranger Services are contracted to private contractors. The Road Rangers are roving vehicles which patrol congested areas and high-incident locations of the urban freeway, and provide highway assistance services during incidents to reduce delay and improve safety for the motoring public and responders. All of the districts and the Turnpike Enterprise currently operate a Road Rangers Program. However, the specific services provided, hours of operation, fleet size, and area coverage differs among these entities. Some districts routinely break down assists by Road Ranger route, shift, or corridor.

Purpose: The primary mission of the Road Rangers is to support emergency response personnel during incidents though establishing Maintenance of Traffic (MOT) for the incident and providing other assistance as needed for the incident. By providing quick response and clearance the number of secondary incidents will be reduced and the roadways will return to capacity sooner. Road Rangers will be called upon to assist in hurricane evacuations by providing support to evacuees and responders. Road Rangers still also provide service to disabled vehicles.

Objective: To help reduce the overall travel delay associated with incidents by providing quick response to motorists in need and assistance to other emergency responders.

Methodology: Compilation and summary of Road Ranger Log Forms (mostly in electronic format). All of the districts are now providing Road Ranger data to the Central Office on a quarterly basis.



Results: For the period July 2007-June 2008, there were 366,775 Road Ranger stops made statewide along 1,062.4 miles of coverage, as summarized in the table and graphic on the following page. Five of the Districts currently provide Road Ranger service on a "24/7" basis. Also, 70 percent of the 109 total statewide Road Ranger vehicle fleet is operating with automatic vehicle location (AVL) capabilities.

Additional Comments: The general motorist reaction has been overwhelmingly positive regarding this service. The specific findings for existing Road Ranger customer satisfaction is reported in the customer satisfaction section of this report.

Compared to the previous period of documentation (July 2006-June 2007), the total annual stops decreased by 12 percent. One reason for this decrease is that District 3 has discontinued the I-10/I-110 service during construction and has not yet started permanent services in the Pensacola area (planned for 2009). Another reason is that the definition of a Road Ranger stop has been refined as the program has progressed, so the new definition may now indicate lower stops numbers in some Districts. The previous year's stops numbers have not been changed to reflect the current definition. Also the District 6 stops are lower than past years since MDX Road Ranger service is not included in the 2008 figures.

Road Ranger Stops

July 1, 2007 to June 30, 2008

District	Total Annual Stops	Total Fleet Vehicles[a]	Fleet Coverage (Centerline-Miles)	Hours of Operation
1	29,270	13 (11 with AVL)[b]	222.9	5:00 AM to 9:00 PM, Mon. – Fri. 7:00 AM to 11:00 PM, Sat. – Sun.
2	18,255	8 (all with AVL)	103.5	6:30 AM to 6:30 PM, 5 days/week
3	1,831[c]	2 (without AVL)	16	24/7
4	82,968	30 (without AVL)	111	24/7
5	33,340	12 (all with AVL)	74	24/7
6	69,869	16 (all with AVL)	66[e]	24/7
7	34,134	9 (all with AVL)	101	24/7
Turnpike Enterprise	97,108	19 (all with AVL)	368	Varies[d]
Statewide	**366,775**	**109**	**1062.4**	**Varies**

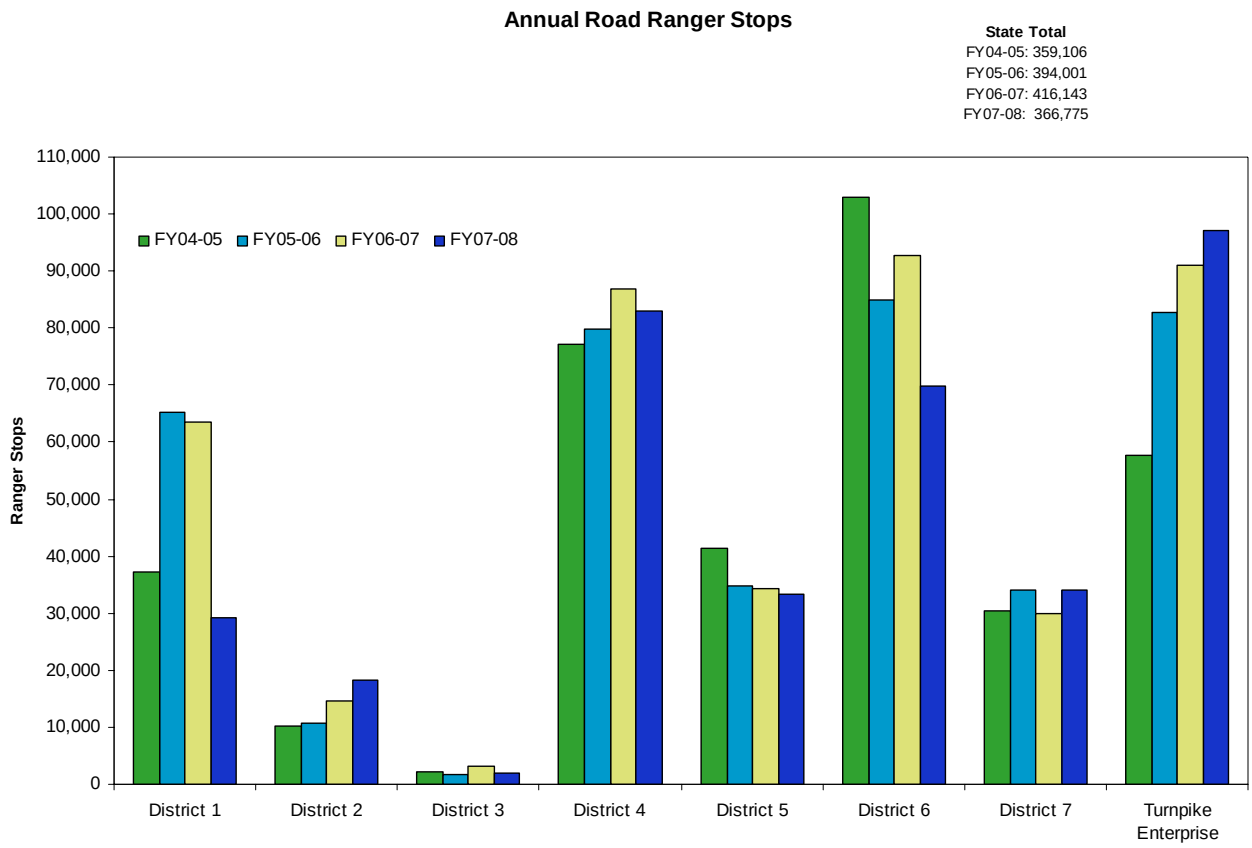
a The total fleet vehicles is defined as the vehicles available as defined in the contractual agreement with the service provider.

b District 1 has 2 additional vehicles that are provided under an interstate construction project (IROX) in Lee County.

c These numbers are for the I-10 construction project Road Ranger service in Tallahassee. The I-10/I-110 construction project in Pensacola was completed in 2007.

d 24/7 on Florida's Turnpike mainline and Sawgrass Expressway; 6:00 a.m.-7:30 p.m. on weekdays and 6:00 a.m. – 10:00 a.m. and 3:30 p.m. to 7:30 p.m. on weekends on OOCEA partnership roadways (Toll 417/Central Florida Greenway, Toll 528/Bee Line Expressway, Toll 408/East-West Expressway) and on Veteran's Expressway.

e 2008 figures for District 6 does not include MDX Road Ranger services and stops. MDX data was included in past years' data.

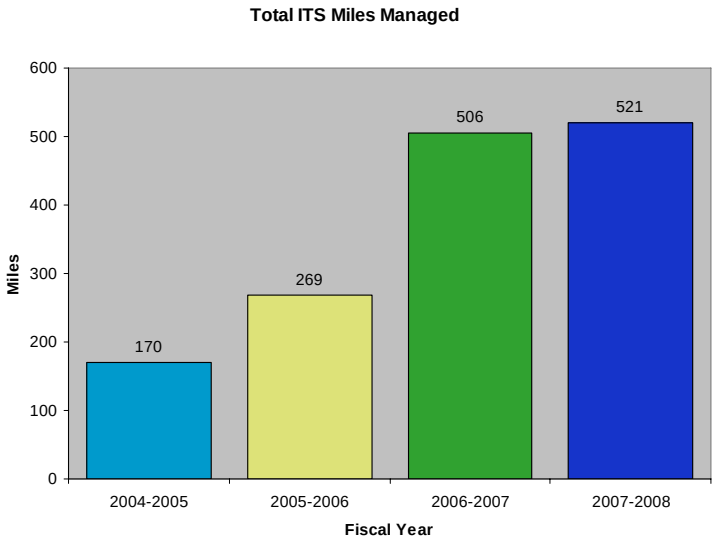

Annual Road Ranger Stops
State Total
FY04-05: 359,106
FY05-06: 394,001
FY06-07: 416,143
FY07-08: 366,775
Ranger Stops
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
FY04-05
FY05-06
FY06-07
FY07-08
District 1
District 2
District 3
District 4
District 5
District 6
District 7
Turnpike Enterprise

Miles Managed By ITS

Background: All districts and the Turnpike Enterprise are committed to the deployment of ITS, and each has embarked with this deployment in varying stages and pace in accordance with the *FDOT Ten-Year ITS Cost Feasible Plan*. As a percent of the limited-access Florida State Highway System (SHS) mileage in each district, "miles managed by ITS" has been defined as centerline mileage that must include ALL of the following attributes:

1. Traffic probes and/or sensors;
2. Real-time traffic information reporting coverage;
3. Real-time incident response capabilities; and
4. Availability of real-time traffic data to FDOT.

Additionally, all of these attributes must be continuously operated and maintained, permitting contiguous coverage of the mileage noted in order to meet the definition.



Purpose: Report progress in completing deployment of the *FDOT Ten-Year ITS Cost Feasible Plan*, and beyond as appropriate.

Objective: To initially deploy ITS across the limited-access portion of the SHS, and ultimately to integrate all ITS and ITS-related user services across the entire state in a seamless, fully operational, real-time fashion. This deployment will help improve mobility and safety throughout the State.

Methodology: Deployment progress, on an annual basis, as reported by each district and the Turnpike Enterprise. Corresponding geographic coverage also should be reported and mapped in terms of mile point limits.

Results: As of the end of June 2007, 643.6 miles (520.6 miles on Limited Access FIHS, 27.9 miles on Controlled Access FIHS, and 95.0 miles on Arterial Facilities) are managed by ITS, as summarized by the table and graphic below. The limited access FIHS is now 25 percent managed by ITS. Extensive ITS deployment will be taking place during the next year in all districts, as well as the Turnpike Enterprise. Compared to the previous period of documentation (June 2006-July 2007), the Miles Managed on limited access facilities by ITS have increased 3 percent statewide. This percentage would have been greater except that Districts 1 and 3 removed portable systems that were in place during construction that was completed in 2007.

Miles Managed by ITS by District

District	Total ITS Miles on Limited Access Facilities	Limited-Access FIHS Miles**	Facility, Extent, and Location
1	0 (0%)	222.9	See note[a]
2	63.4 (17%)	372.3	I-10: 9 miles (MM 354 to MM 363 in Duval County). I-295: 20.4 miles I-95: 34 miles (MM 332 to MM 366 in Duval County).
3	0 (0%)	242.2	See note[b]
4	89.3 (44%)	203.2	I-95: 46 miles (MP 0 to MP 46 in Palm Beach County) I-95: 40 miles (in Broward County) I-595: 6 miles (in Broward County).[c]
5	243.2 (63%)	386.1	I-4: 74.5 miles I-95: 124.7 miles SR 528: 44 miles.
6	52.2 (98%) + *123 on controlled access FIHS and arterial facilities*	53.5	I-75: 5.44 miles (SR 826/Palmetto Expressway to Miami-Dade/Broward County Line) I-95 :17.26 miles (SR 5/US 1 to Miami-Dade/Broward County Line) I-195 :4.91 miles (NW 11 Avenue to SR 907/Alton Road) SR 826: 24.57 miles (SR 5/US 1 to Golden Glades Interchange)[d] *SR 836: 11.8 miles*[e] *SR 5/US 1: 123 miles in Dade and Monroe Counties*[f]
7	46.5 (28%)	166.5	I-275: 24 miles (MP 25.5 to MP 38.5, MP 43.0 to MP 54.0) I-4: 22.5 miles (MP 0.0 to MP 22.5)
FTE	26 (6%)	460	Sawgrass Expressway: 22 miles (I-595 to SW 10 Street in Broward county). Beachline Expressway/SR 528: 4 miles (I-4 to Florida's Turnpike in Orange County)
Statewide	**520.6 (25%)**	**2106.7***	

Percent indicated under "Total ITS Miles" column is based on the percentage ITS miles on Limited Access FIHS over District total FIHS limited-access miles.

* includes all expressways managed by toll authorities

a The I-4 Portable Intelligent Transportation System, which was deployed and utilized during the widening of I-4 in Polk County was retained and remained operational after construction. This system became operational in January 2004, and remained in place until June 2007. The systems were removed and users of the Web site were directed to the statewide 511 website for traveler information.

b The I-10/I-110 Portable Intelligent Transportation System was utilized through the I-10/I-110 Interchange Improvement construction work zones in Escambia County. This temporary system became operational in 2004, and was removed in 2007. It is the intention of District 3 to transition to a continuously operated and maintained permanent system at the beginning of 2009.

c This I-95 portable system will be in place until 2008 (anticipated completion of widening). It is the intention of District 4 to immediately transition to a continuously operated and maintained permanent system beyond 2008.

d SR 826 from SR 5/US 1 (BMP 0.000) to NW 122 Street (EMP 14.100) in Miami-Dade County has 14.1 Total Centerline ITS Miles operated and maintained with the exception of traffic probes and/or sensors present..

e MDX Facility – SR 836 (MP 0.000 to MP 11.756). Total ITS Miles 11.756 – currently traffic probes and/or sensors are not available within the specified limits.

f SR 5/US 1 from 0.5 Mi. South of McDonald Avenue in Monroe County to SR 5/US 1 in Miami-Dade County at SR 821/HEFT has 122.97 Total Centerline ITS Miles operated and maintained with the exception of traffic probes and/or sensors present. This includes sections of both controlled access FIHS roadways and arterial roadways.

Incident Duration

Background: In 2005, the FDOT ITS Program identified incident duration as an outcome measure to be reported to the Florida Transportation Commission. Initially an effort was conducted to collect incident timeline data from manual (paper) records. The pilot test results determined that collecting incident timeline data was too complex and time-consuming to be done manually. In 2006, the SunGuide statewide TMC software was modified to include the data collection and reporting requirements for obtaining incident duration data. Last reporting period (FY 2006-07), FDOT District 4 was able to collect this data for the entire year using the modified SunGuide software, while District 6 was able to collect several months of data. In fiscal year 2007-2008, Districts 2, 4, 5, 6, 7, and the Florida Turnpike Enterprise were able to collect and report incident duration data.

Purpose: Report the total time of impact on traffic for an incident.

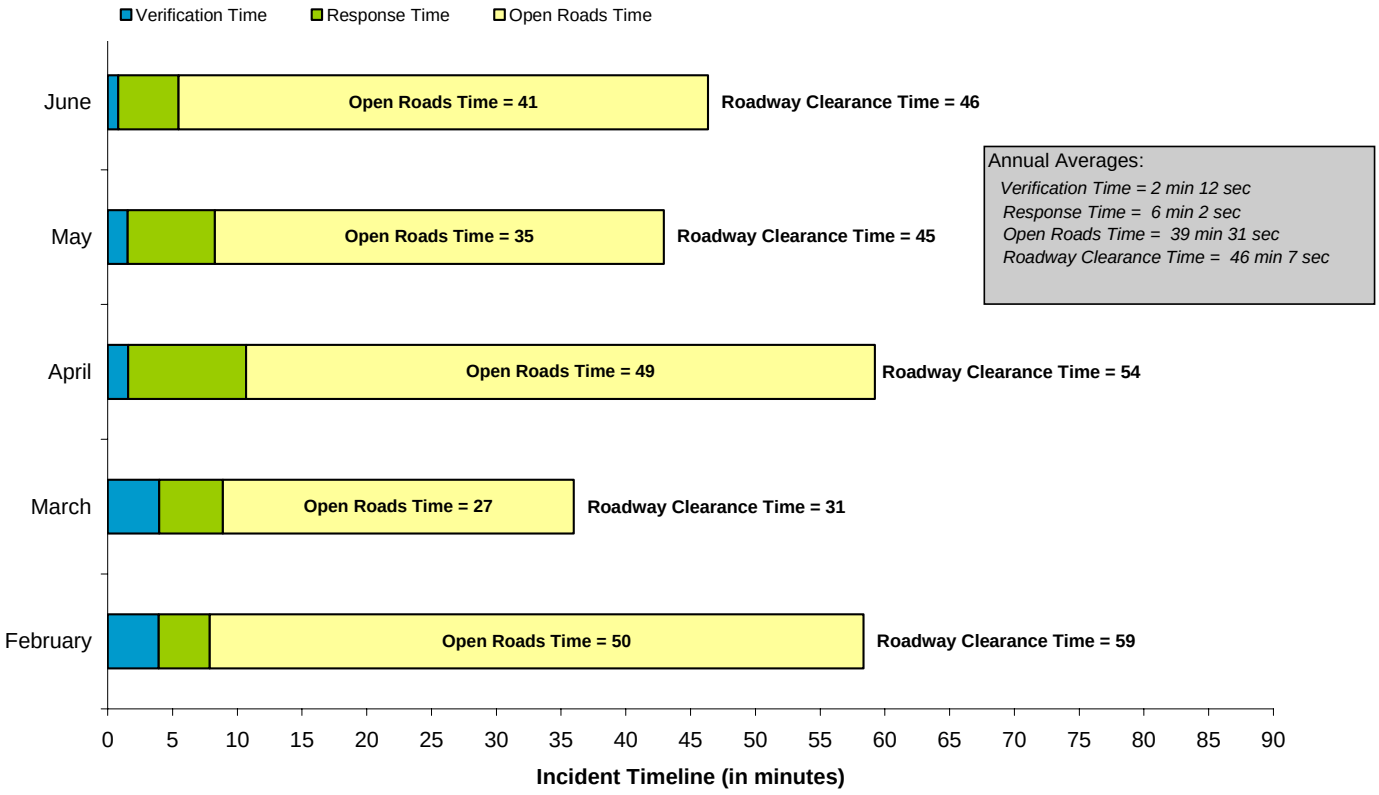
Objective: To minimize the incident timeline from the time any FDOT or FHP staff is notified to the time that all travel lanes are cleared.

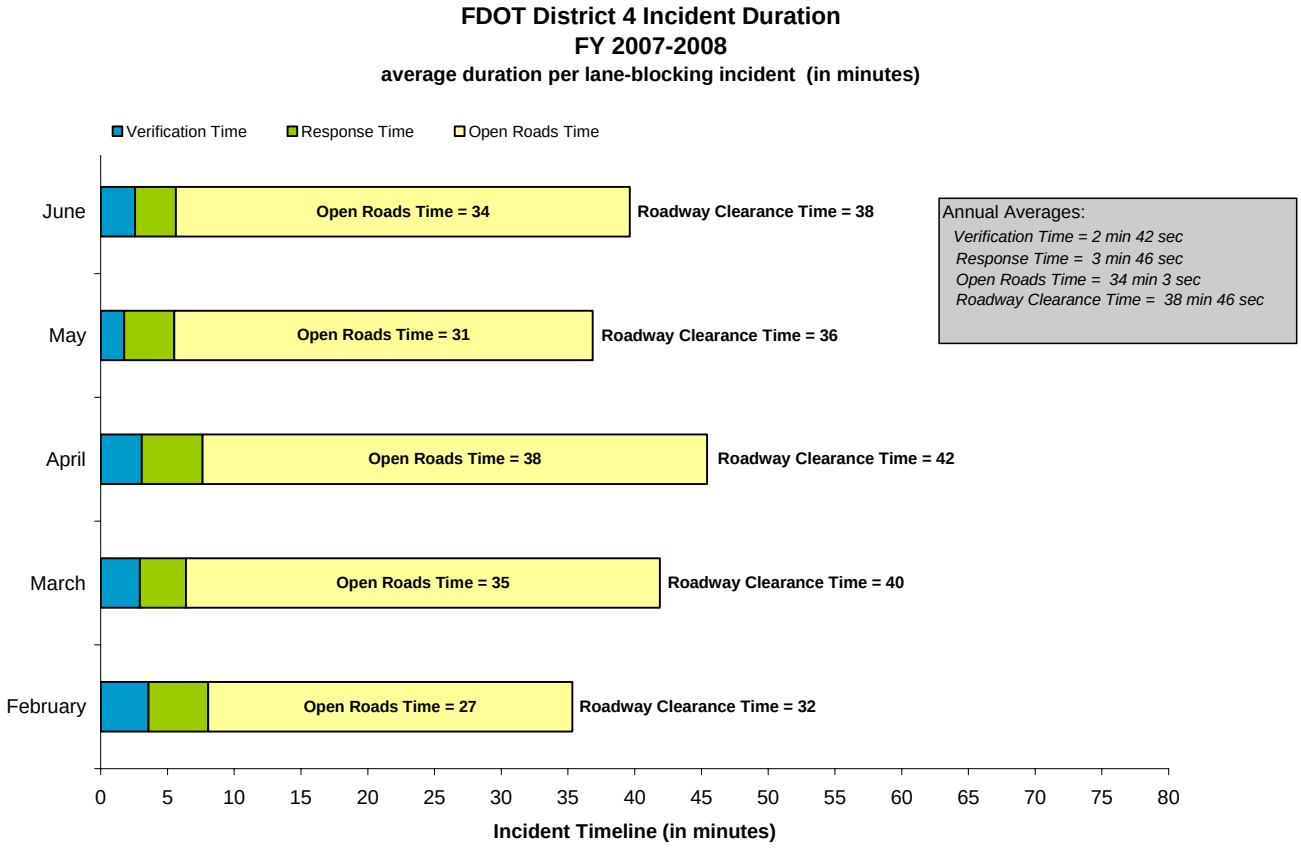
Methodology: In 2008, the terminology for reporting incident duration was modified to more closely align with National Traffic Incident Management definitions. The FDOT incident duration timeline includes the following components: notification/verification time, response time, and Open Roads time. The Open Roads time is defined as the time that begins with the arrival of the first responder, either Florida Highway Patrol or FDOT, and ends when all mainlane travel lanes are cleared. The Open Roads time is directly comparable with Florida's Open Roads Policy of clearing all travel lanes in 90 minutes or less. FDOT Roadway Clearance Time is an overall component of incident duration and is defined as the time between first awareness of the incident and the time all mainlane travel lanes are cleared. This component includes notification, verification, and response times, as well as the Open Roads clearance time. Although the terminology changed for FY 2008, the individual components of the incident duration timeline are still the same as that used for FY 2007 reporting.

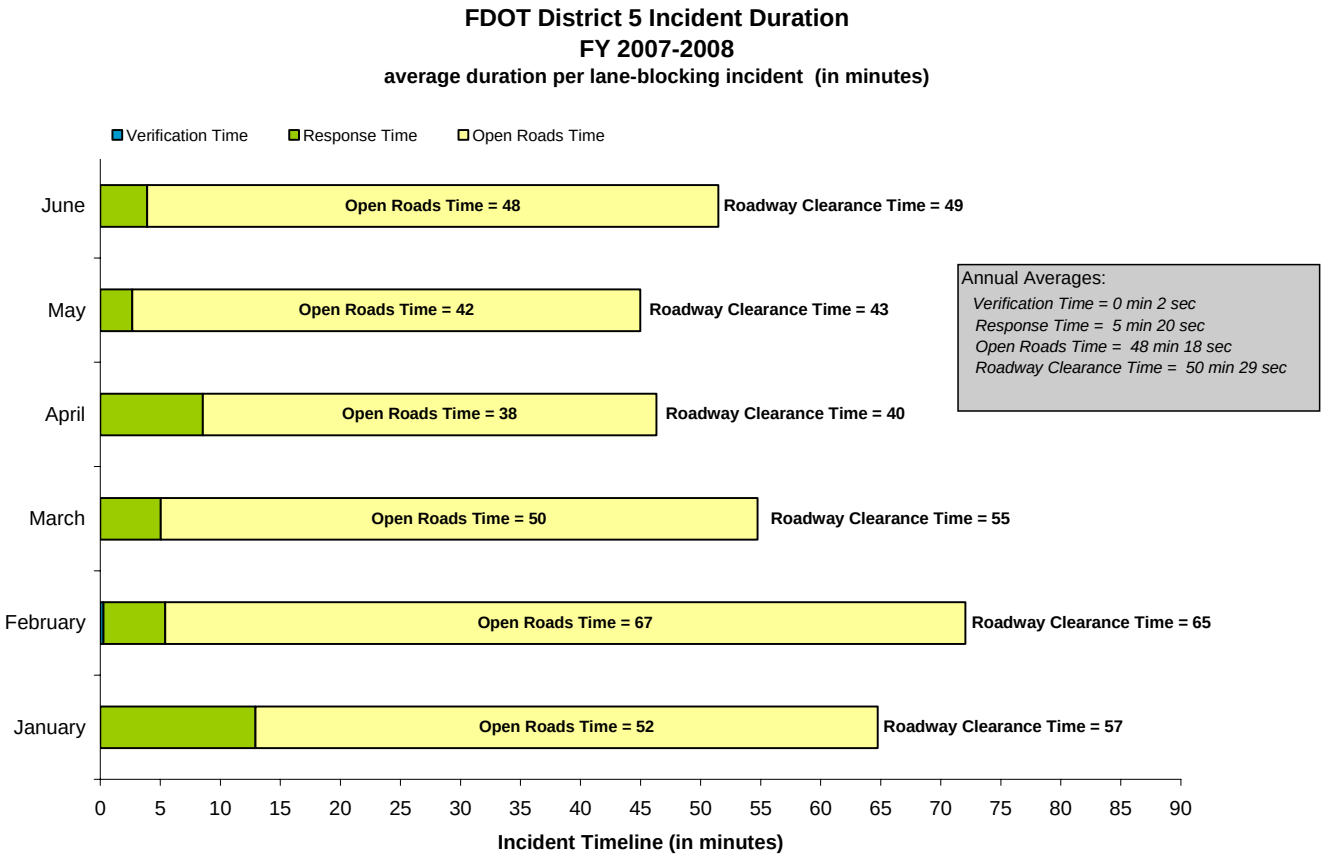
Districts 2, 4, 5, 6, 7 and Florida's Turnpike Enterprise collected incident duration information for portions of the year from July 2007 to June 2008, depending upon the availability of data collection software. This report shows the data collected from January through June 2008 because these six Districts were able to report that time period. The District incident data was collected directly from reports that are included in the SunGuide version 3.1.2 software. The Turnpike uses SunNav software to collect incident data. District 4 also posts weekly and quarterly performance measure reports on the Smart SunGuide web site.

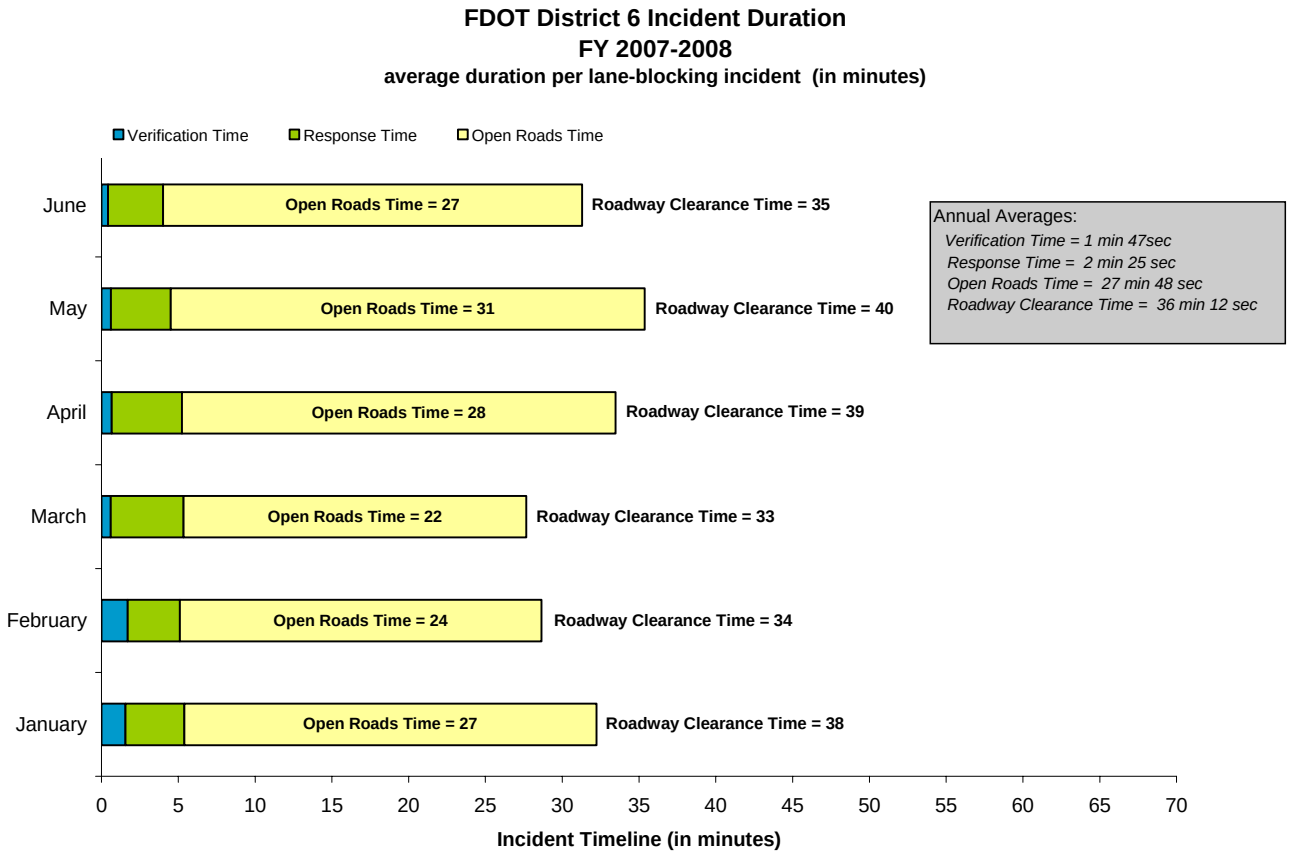
Results: FDOT Roadway Clearance Time varied from month to month but the average time from the reporting Districts is about 40 minutes, ranging from 31 minutes to 65 minutes for monthly averages. The Open Roads Clearance Time averages about 30 minutes for the reporting Districts. This is well under the Open Roads Policy target of 90 minutes. Graphics showing the Open Roads Time and FDOT Roadway Clearance Time for the five reporting Districts and the Florida Turnpike are below. It should be noted that the Roadway Clearance Times shown are weighted averages based on the number of incidents that occurred that month. Therefore, Roadway Clearance Times for each month will not necessarily correspond to the sum of the Verification, Response, and Open Roads averages.

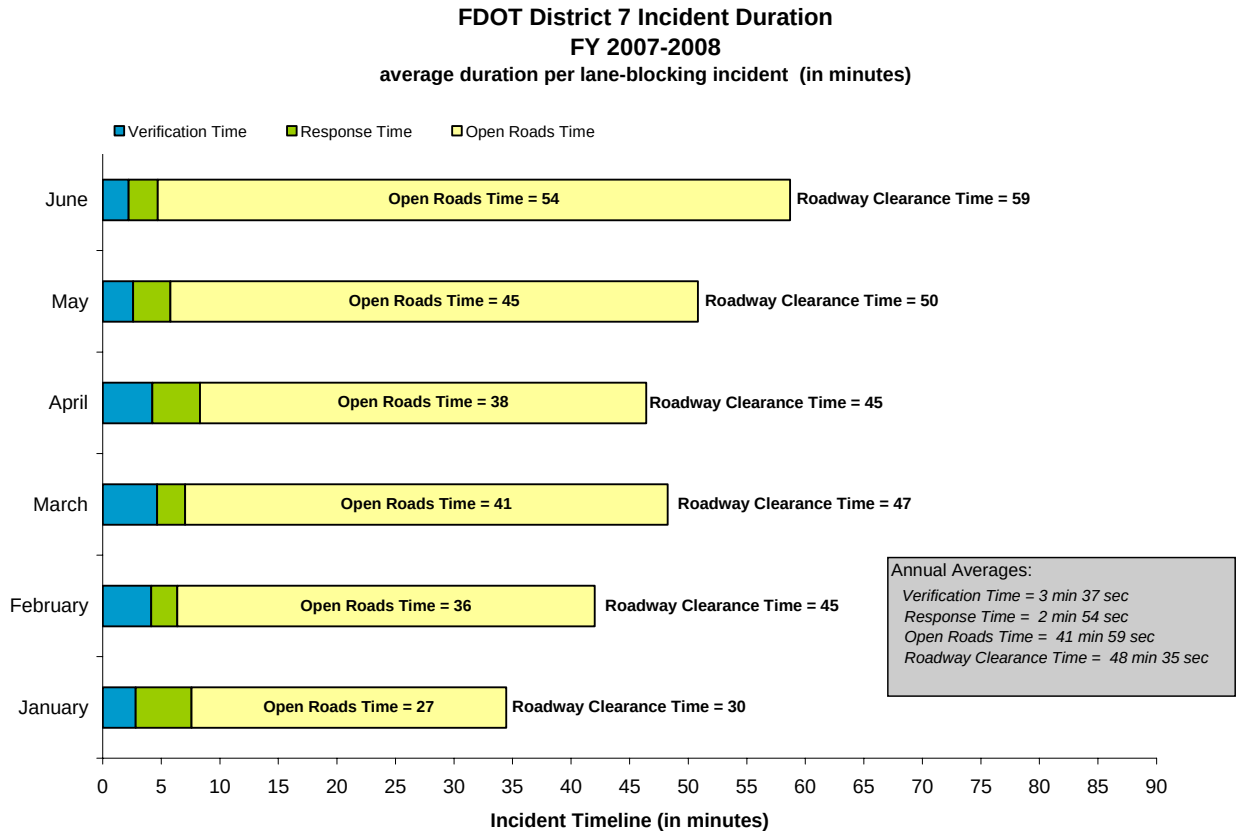
FDOT District 2 Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)

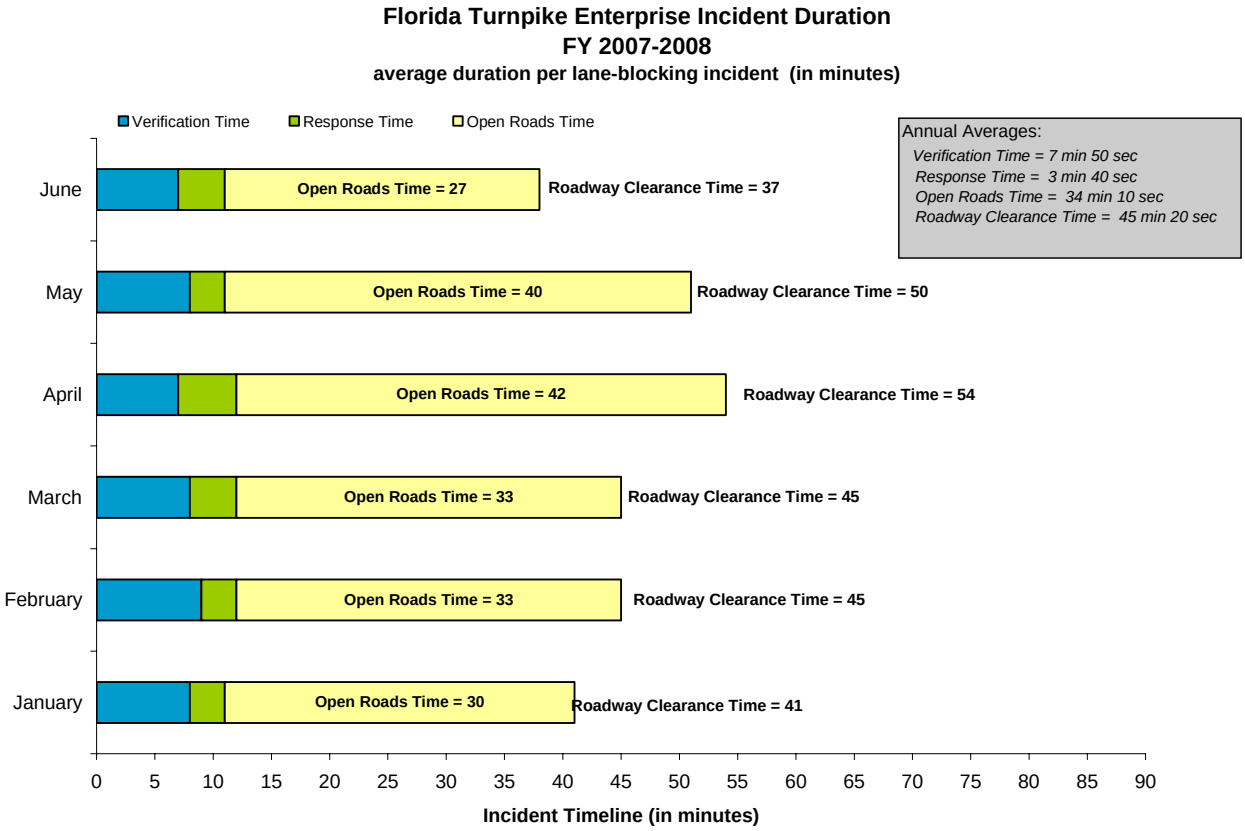



FDOT District 4 Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)
Verification Time
Response Time
Open Roads Time
June
Open Roads Time = 34
Roadway Clearance Time = 38
May
Open Roads Time = 31
Roadway Clearance Time = 36
April
Open Roads Time = 38
Roadway Clearance Time = 42
March
Open Roads Time = 35
Roadway Clearance Time = 40
February
Open Roads Time = 27
Roadway Clearance Time = 32
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80
Incident Timeline (in minutes)
Annual Averages:
Verification Time = 2 min 42 sec
Response Time = 3 min 46 sec
Open Roads Time = 34 min 3 sec
Roadway Clearance Time = 38 min 46 sec


FDOT District 5 Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)
Verification Time
Response Time
Open Roads Time
June
Open Roads Time = 48
Roadway Clearance Time = 49
May
Open Roads Time = 42
Roadway Clearance Time = 43
April
Open Roads Time = 38
Roadway Clearance Time = 40
March
Open Roads Time = 50
Roadway Clearance Time = 55
February
Open Roads Time = 67
Roadway Clearance Time = 65
January
Open Roads Time = 52
Roadway Clearance Time = 57
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
Incident Timeline (in minutes)
Annual Averages:
Verification Time = 0 min 2 sec
Response Time = 5 min 20 sec
Open Roads Time = 48 min 18 sec
Roadway Clearance Time = 50 min 29 sec


FDOT District 6 Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)
Verification Time
Response Time
Open Roads Time
June
Open Roads Time = 27
Roadway Clearance Time = 35
May
Open Roads Time = 31
Roadway Clearance Time = 40
April
Open Roads Time = 28
Roadway Clearance Time = 39
March
Open Roads Time = 22
Roadway Clearance Time = 33
February
Open Roads Time = 24
Roadway Clearance Time = 34
January
Open Roads Time = 27
Roadway Clearance Time = 38
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
Incident Timeline (in minutes)
Annual Averages:
Verification Time = 1 min 47sec
Response Time = 2 min 25 sec
Open Roads Time = 27 min 48 sec
Roadway Clearance Time = 36 min 12 sec


FDOT District 7 Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)
Verification Time
Response Time
Open Roads Time
June
May
April
March
February
January
Open Roads Time = 54
Roadway Clearance Time = 59
Open Roads Time = 45
Roadway Clearance Time = 50
Open Roads Time = 38
Roadway Clearance Time = 45
Open Roads Time = 41
Roadway Clearance Time = 47
Open Roads Time = 36
Roadway Clearance Time = 45
Open Roads Time = 27
Roadway Clearance Time = 30
Annual Averages:
Verification Time = 3 min 37 sec
Response Time = 2 min 54 sec
Open Roads Time = 41 min 59 sec
Roadway Clearance Time = 48 min 35 sec
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
Incident Timeline (in minutes)


Florida Turnpike Enterprise Incident Duration
FY 2007-2008
average duration per lane-blocking incident (in minutes)
Verification Time
Response Time
Open Roads Time
Annual Averages:
Verification Time = 7 min 50 sec
Response Time = 3 min 40 sec
Open Roads Time = 34 min 10 sec
Roadway Clearance Time = 45 min 20 sec
June
Open Roads Time = 27
Roadway Clearance Time = 37
May
Open Roads Time = 40
Roadway Clearance Time = 50
April
Open Roads Time = 42
Roadway Clearance Time = 54
March
Open Roads Time = 33
Roadway Clearance Time = 45
February
Open Roads Time = 33
Roadway Clearance Time = 45
January
Open Roads Time = 30
Roadway Clearance Time = 41
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
Incident Timeline (in minutes)

Travel Time Reliability

Background: In 2005, FDOT adopted reliability as an outcome performance measure to be reported to the Florida Transportation Commission on a statewide basis. Definitions and data needs for reporting reliability were identified in FY 2006. A limited amount of data were available for reporting reliability in FY 2007; however, speed detector data quality issues prohibited reporting of results. For FY 2008, travel time reliability and congestion results are available for Districts 2, 5, and 7.

Purpose: Report a qualitative measure of the variability or uncertainty in the performance of a facility over time.

Objective: To measure and track the variability of roadway congestion, measured through the use of the Buffer Index, as well as measure and track the congestion level, measured through the use of the Travel Time Index.

Methodology: FDOT has identified two metrics to measure travel time reliability and congestion. The Buffer Index is a measure of the reliability of travel service. The Buffer Index is calculated as the ratio between the difference of the 95th percentile travel time and the average travel time divided by the average travel time, i.e. (95th travel time - average travel time)/average travel time. For example, a value of 0.4 means that a traveler should budget an additional 8 minute buffer for a 20-minute average peak trip time to ensure 95 percent on-time arrival. A secondary metric is the Travel Time Index (TTI), which is a measure of traffic congestion. TTI is calculated as the ratio of average peak travel time to an off-peak (free-flow) standard, in this case 60 mph for freeways. For example, a value of 1.20 means that average peak travel times are 20 percent longer than off-peak travel times. Travel time, travel speed, and volume data are the basis of these measures. Travel time and speed data are obtained from either speed data from roadside detectors that communicate in real time to TMCs or probe data from various sources that report travel time directly. Volume data are used to compute vehicle miles traveled, which are then used as weights to compute an area wide or corridor wide measure average. The following data were obtained from Districts 2, 5, and 7 for reporting reliability results:

Districts	Data Available
District Two	March 2008, April 2008, May 2008, June 2008
District Five	March 2008, April 2008, May 2008, June 2008
District Seven	Jan 2008, Feb 2008, March 2008, April 2008, May 2008, June 2008

Results: The following tables summarize congestion and reliability results for ITS managed corridors Districts 2, 5, and 7. District 2 experiences the most congestion during the afternoon peak northbound on I-95, with a travel time index of 1.35. This is also the area and time period experiencing the most unreliable travel times, with a buffer index of 1.18. District 5 also experiences the most congestion during the afternoon peak on I-4 eastbound between the Florida Turnpike and SR 408, with a travel time index of 1.80. This is also the time period and area experiencing the most unreliable travel times, with a buffer index of 1.10. In District 7, the morning peak experiences the most congestion on I-275 southbound between Busch Blvd and the

Hillsborough River, with a travel time index of 1.49. The morning peak experiences the most unreliable travel times, with a buffer index of 1.06 on I-275 southbound between Livingston Avenue to Busch Blvd.

The following tables show the top five most congested and most unreliable freeway sections within Districts 2, 5, and 7.[2]

District 2 – Top Five Most Congested Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Travel Time Index
9	I-95	Northbound	From N Trout River Bridge to Airport	5.5 mile	Evening Off Peak	1.35
5	I-95	Northbound	From Acosta Bridge to 8th St.	4 miles	Afternoon Peak	1.33
6	I-95	Southbound	From 8th St to Acosta Bridge	4 miles	Afternoon Peak	1.18
3	I-95	Northbound	From JTB Blvd to Acosta Bridge	5.5 miles	Afternoon Peak	1.17
9	I-95	Northbound	From N Trout River Bridge to Airport	5.5 mile	Afternoon Peak	1.16

District 2 – Top Five Most Unreliable Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Buffer Index
9	I-95	Northbound	From N Trout River Bridge to Airport	5.5 mile	Evening Off Peak	1.18
9	I-95	Northbound	From N Trout River Bridge to Airport	5.5 mile	Afternoon Peak	0.99
3	I-95	Northbound	From JTB Blvd to Acosta Bridge	5.5 miles	Afternoon Peak	0.44
6	I-95	Southbound	From 8th St to Acosta Bridge	4 miles	Afternoon Peak	0.54
4	I-95	Southbound	From Acosta Bridge to JTB Blvd	5.5 miles	Afternoon Peak	0.40

[2] Due to the limited data availability, some sections' off-peak periods are more congested and more unreliable than peak periods.

District 5 – Top Five Most Congested Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Travel Time Index
4	I-4	Eastbound	From Turnpike to SR408	5.5 miles	Afternoon Peak	1.80
5	I-4	Eastbound	From SR408 to SR414	7.5 miles	Afternoon Peak	1.71
4	I-4	Eastbound	From Turnpike to SR408	5.5 miles	Morning Peak	1.52
17	I-4	Westbound	From Lake Mary Blvd to SR408	7.5 miles	Morning Peak	1.40
16	I-4	Westbound	From SR414 to SR408	7.5 miles	Afternoon Peak	1.37

District 5 – Top Five Most Unreliable Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Buffer Index
4	I-4	Eastbound	From Turnpike to SR408	5.5 miles	Afternoon Peak	1.10
4	I-4	Eastbound	From Turnpike to SR408	5.5 miles	Mid Day	0.68
14	I-4	Westbound	From Turnpike to SR528	5 miles	Afternoon Peak	0.65
15	I-4	Westbound	From SR408 to Turnpike	5.5 miles	Afternoon Peak	0.64
13	I-4	Westbound	From SR528 to Osceola Pkwy	8 miles	Afternoon Peak	0.63

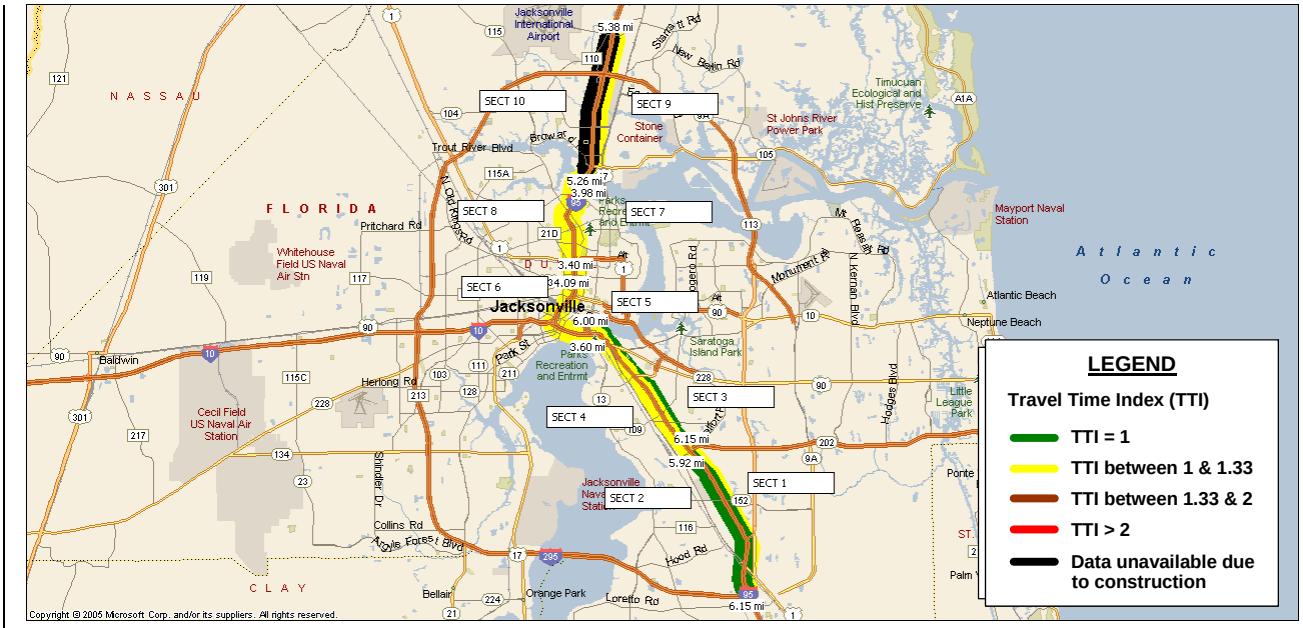
District 7 – Top Five Most Congested Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Travel Time Index
7	I-275	Southbound	from Busch Blvd to Hillsborough River in downtown	7 miles	Morning Peak	1.49
8	I-275	Southbound	from Livingston Av to Busch Blvd	4 miles	Morning Peak	1.46
2	I-275	Northbound	Howard Frankland Bridge	6.5 miles	Afternoon Peak	1.27
7	I-275	Southbound	from Busch Blvd to Hillsborough River in downtown	7 miles	Afternoon Peak	1.20
3	I-275	Northbound	from Hillsborough River in downtown to Busch Blvd	7 miles	Afternoon Peak	1.19

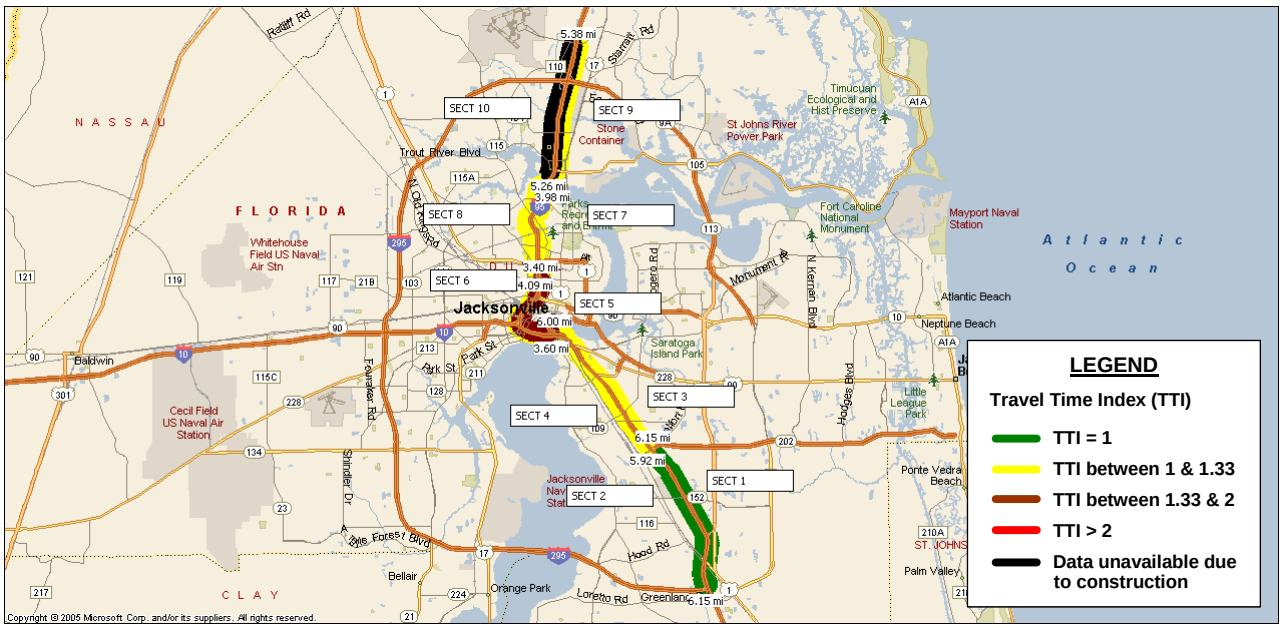
District 7 – Top Five Most Unreliable Freeway Sections

Sect ID	Route	Direction	From To	Length (miles)	Time Period	Buffer Index
8	I-275	Southbound	from Livingston Av to Busch Blvd	4 miles	Morning Peak	1.06
2	I-275	Northbound	Howard Frankland Bridge	6.5 miles	Afternoon Peak	0.68
10	I-4	Eastbound	from MLK Blvd to CR579	5 miles	Afternoon Peak	0.61
7	I-275	Southbound	from Busch Blvd to Hillsborough River in downtown	7 miles	Morning Peak	0.48
2	I-275	Northbound	Howard Frankland Bridge	6.5 miles	Morning Peak	0.36

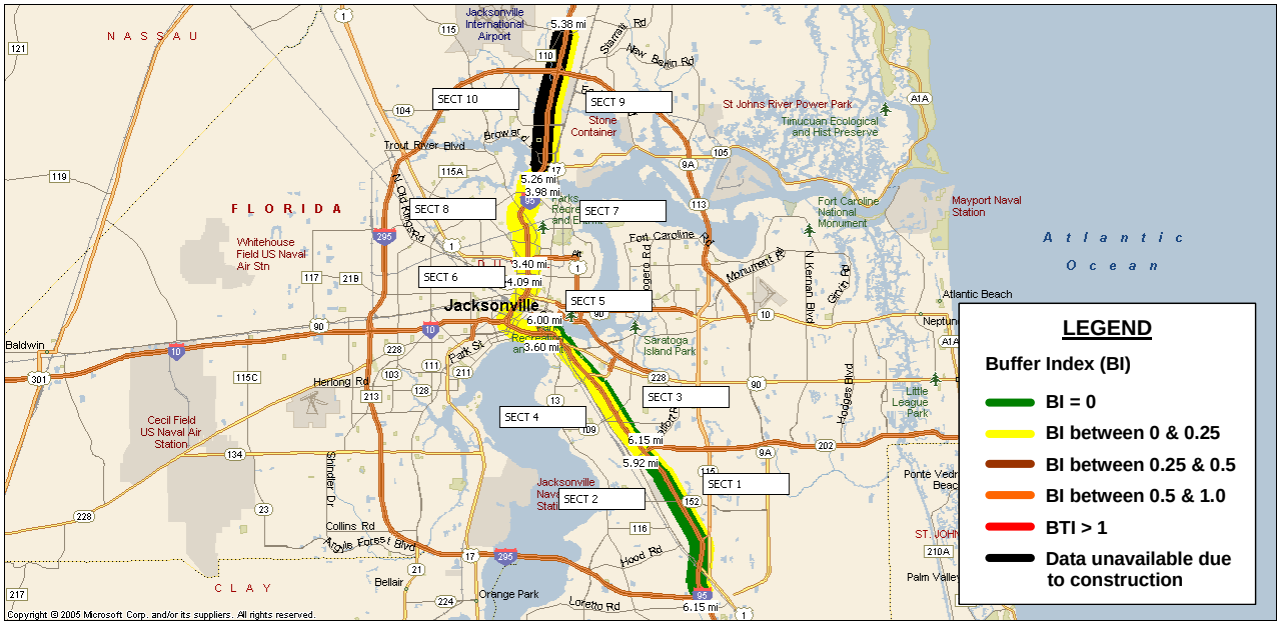
The following maps show categorized Travel Time Index and Buffer Index during peak hours for each District. Sections with inadequate data are coded as black.



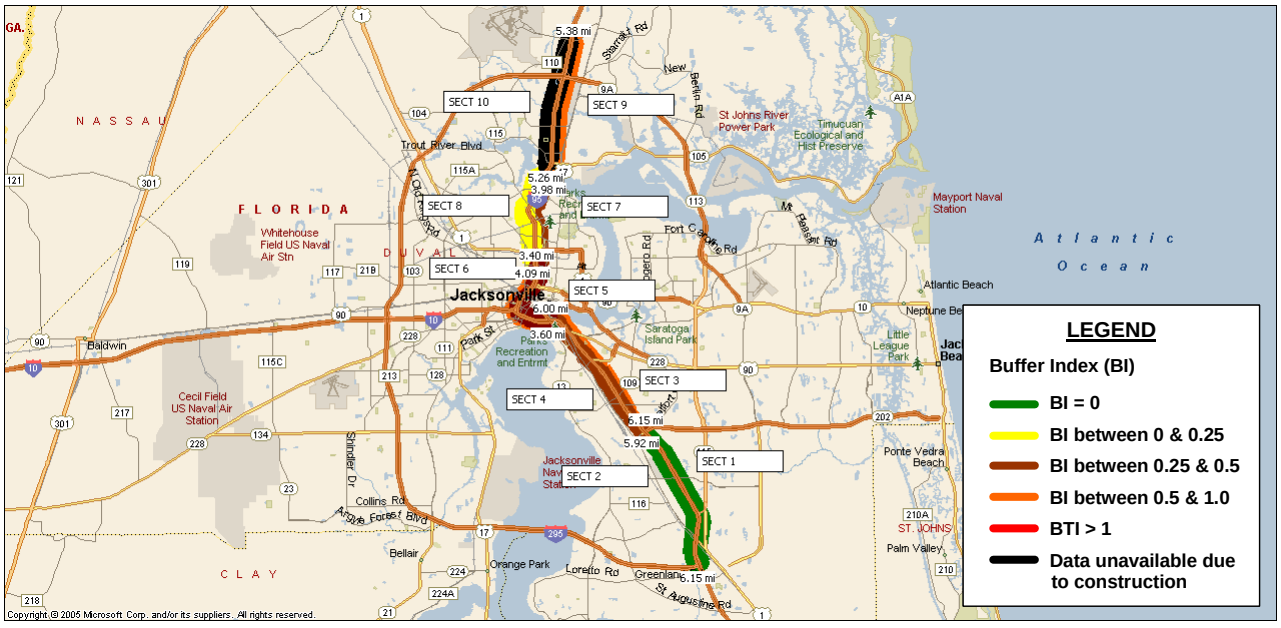
District 2 Travel Time Index - Morning Peak



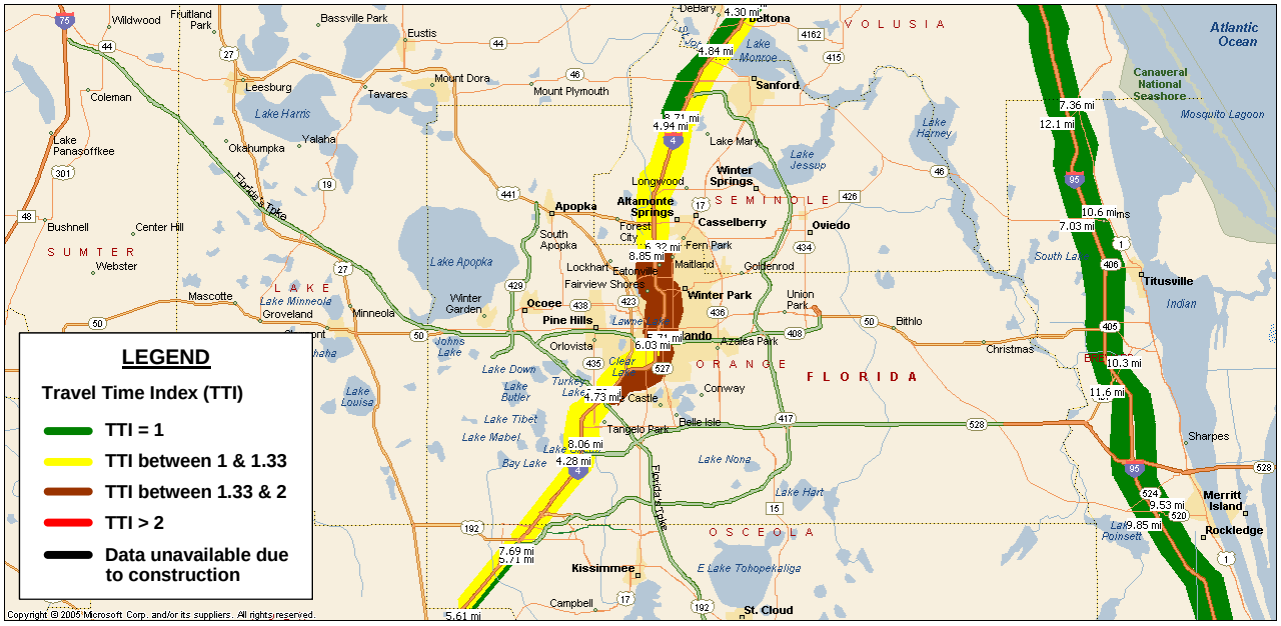
District 2 Travel Time Index - Afternoon Peak



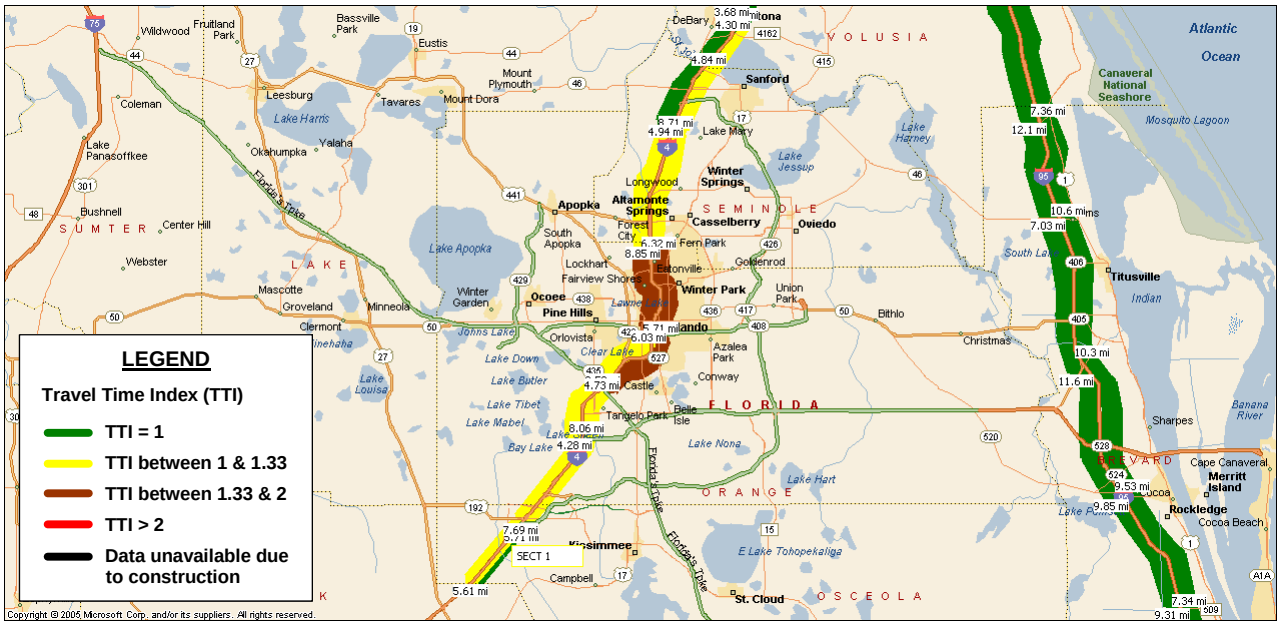
District 2 Buffer Index - Morning Peak



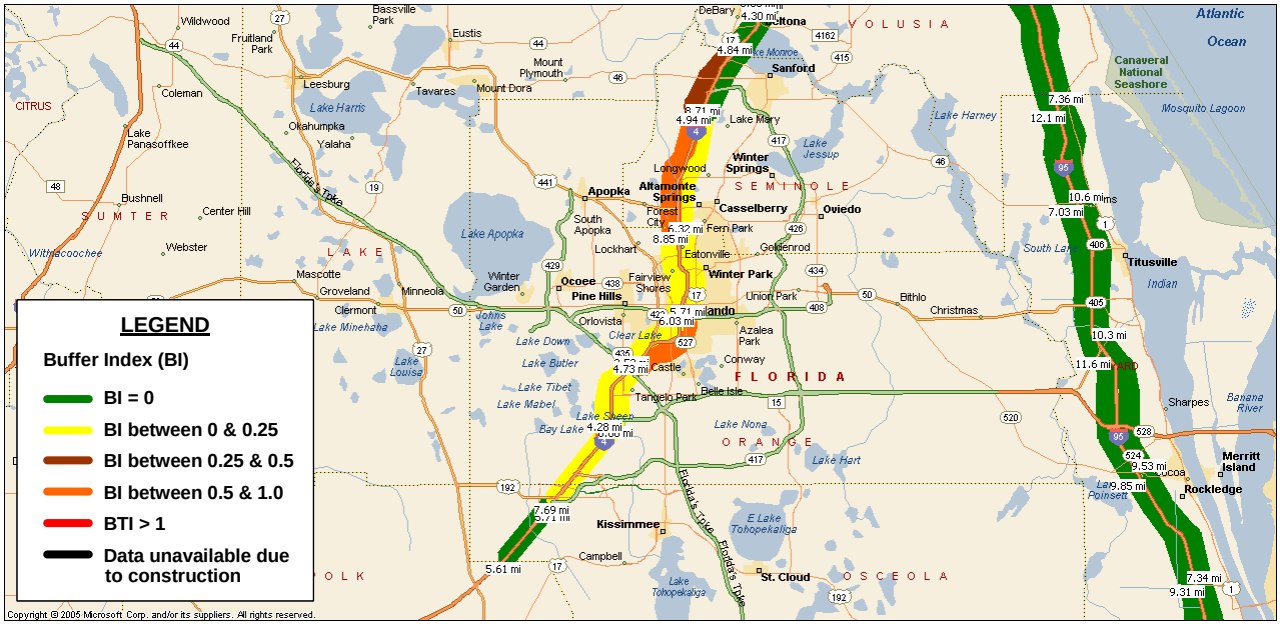
District 2 Buffer Index - Afternoon Peak



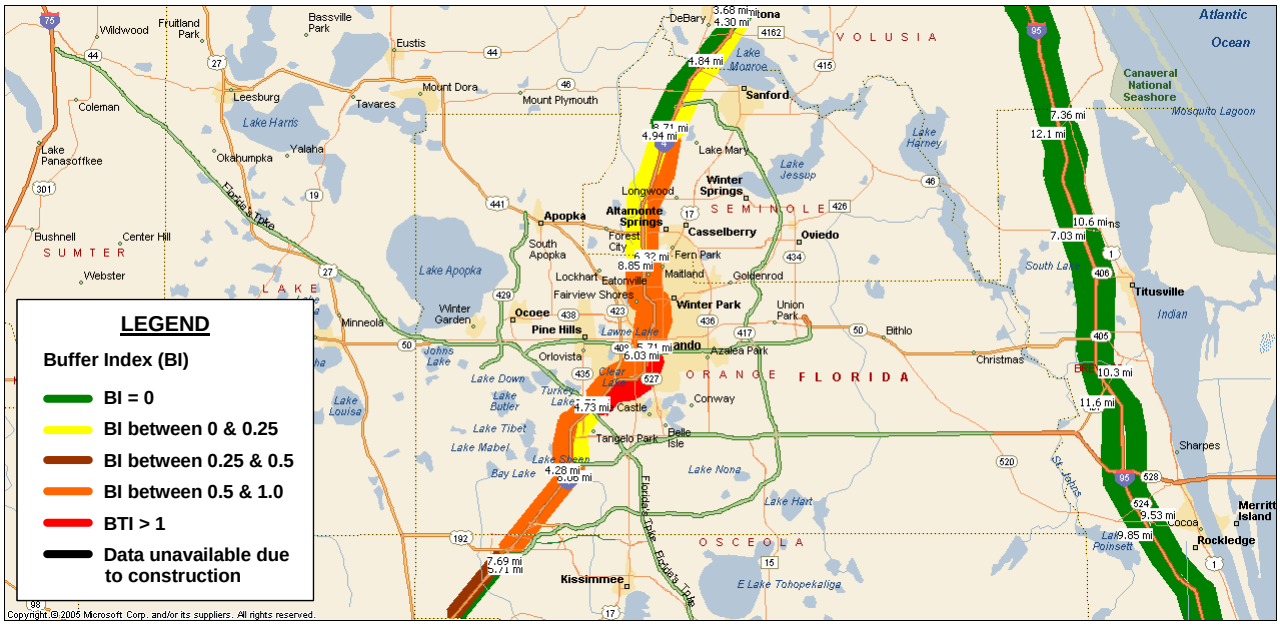
District 5 Travel Time Index - Morning Peak



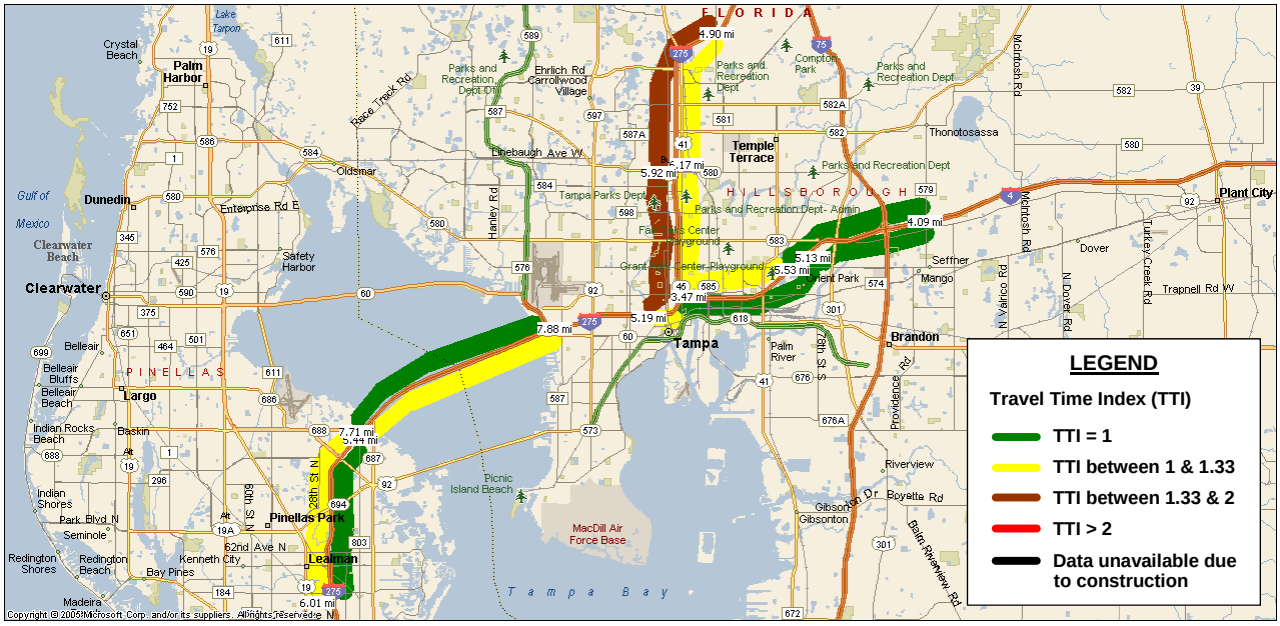
District 5 Travel Time Index - Afternoon Peak



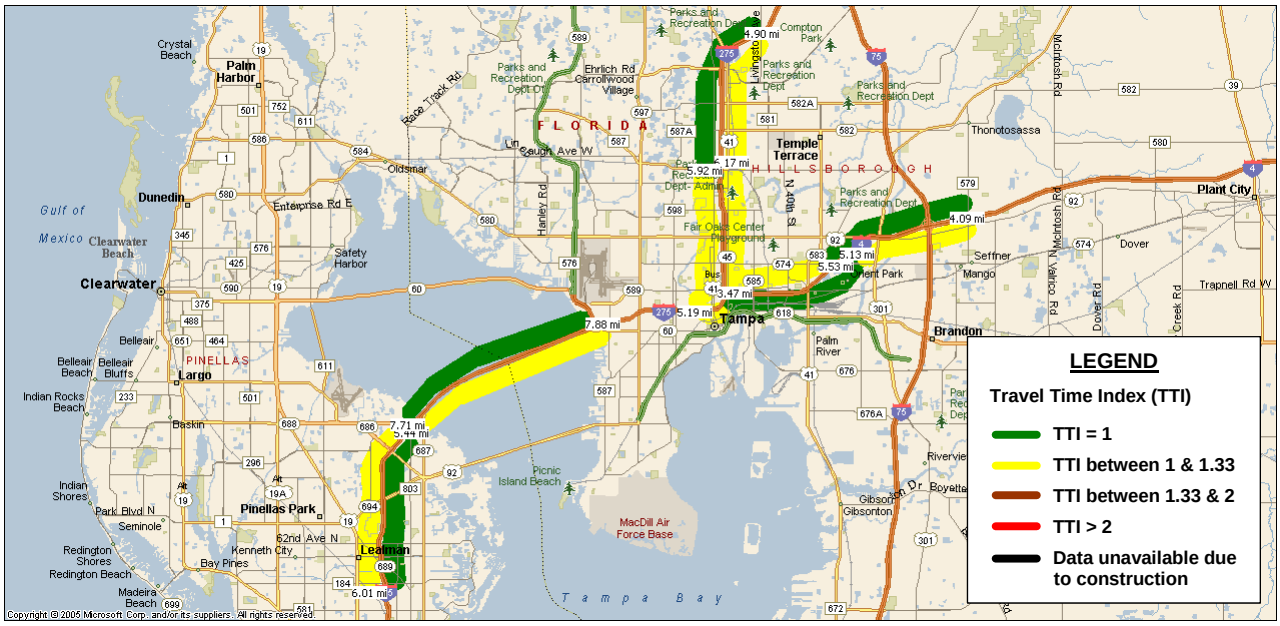
District 5 Buffer Index - Morning Peak



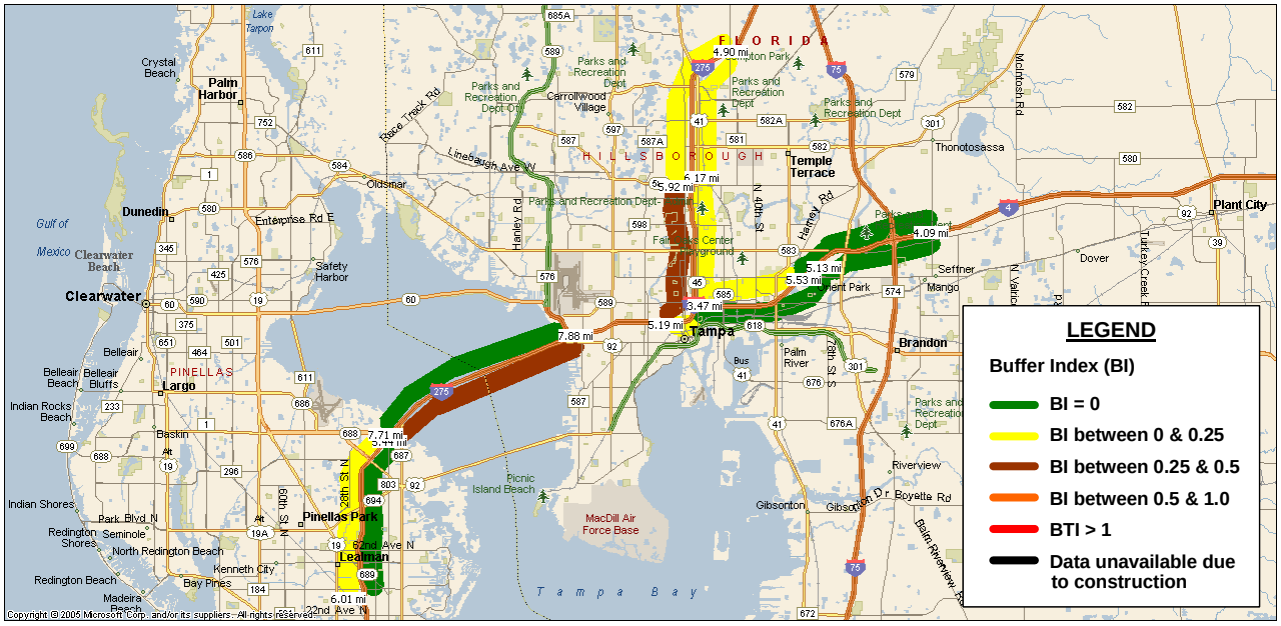
District 5 Buffer Index - Afternoon Peak



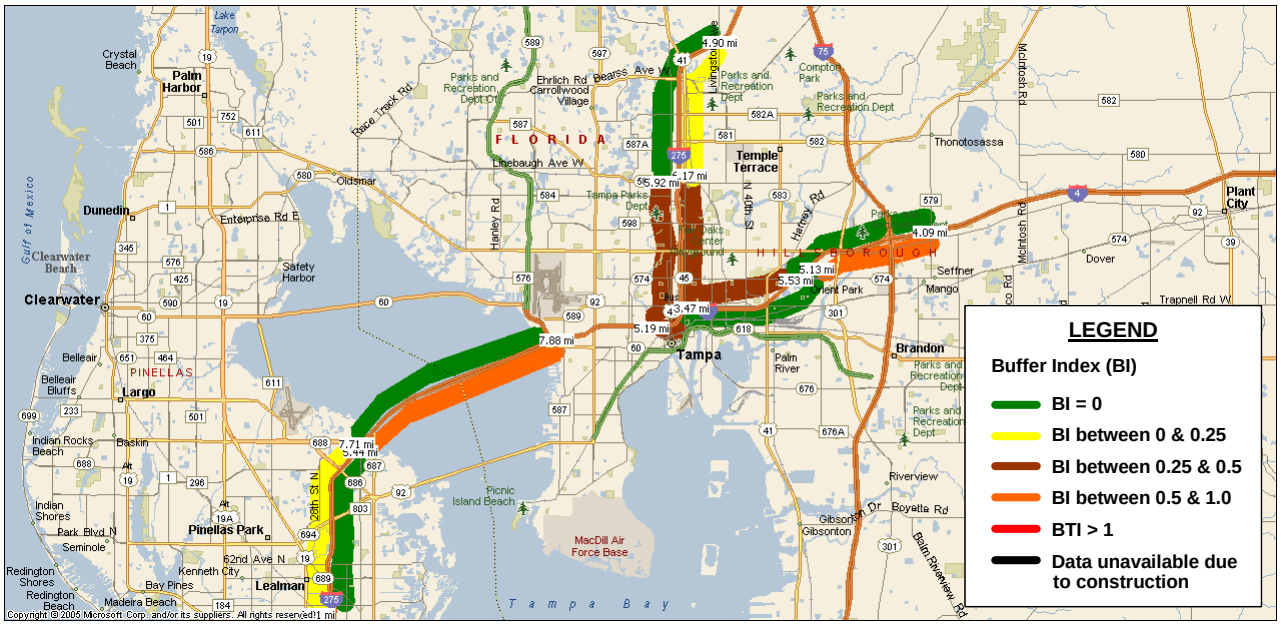
District 7 Travel Time Index - Morning Peak



District 7 Travel Time Index - Afternoon Peak



District 7 Buffer Index - Morning Peak



District 7 Buffer Index - Afternoon Peak

Customer Satisfaction

Background: FDOT contracted with a professional survey firm, The Schapiro Group (TSG), who interviewed 2,800 drivers across Florida to explore usage of, attitudes toward, and perceptions of the Florida Department of Transportation's (FDOT) Intelligent Transportation Systems (ITS) services. The contractor randomly sampled phone numbers within FDOT's seven districts to obtain telephone survey data during March 2008. The margin of sampling error for statewide results is ±1.8 percent. Because the survey instrument is nearly identical to the instrument FDOT and the contractor fielded in March 2006, most results may be used to track changes in opinions and usage of FDOT's ITS services over the past two years.

Purpose: Report a qualitative measure of public satisfaction with services provided by the FDOT ITS Program.

Objective: To monitor customer satisfaction with FDOT ITS services including Dynamic Message Signs (DMS) usage and performance, Road Ranger performance, 511 and traveler information web site usage and performance.

Methodology: Customer satisfaction was measured by collecting a statistically valid sample survey data from ITS users throughout the State. This task surveyed via telephone a random sample of 400 adults age 18 and over in each of the seven FDOT districts. Respondents must drive on freeways or the Florida Turnpike within their District three or more times per week to qualify. The purpose of the survey is to gauge awareness and perceived value of the traffic management services offered by FDOT, including Road Ranger services, DMS, and 511. The surveys provide a benchmark against which to measure changes in awareness and perceptions in the future.

Results: The following statements and graphics are excerpts from the June 2008 FDOT Customer Tracking Study draft report indicate some of the most interesting findings from the customer survey:

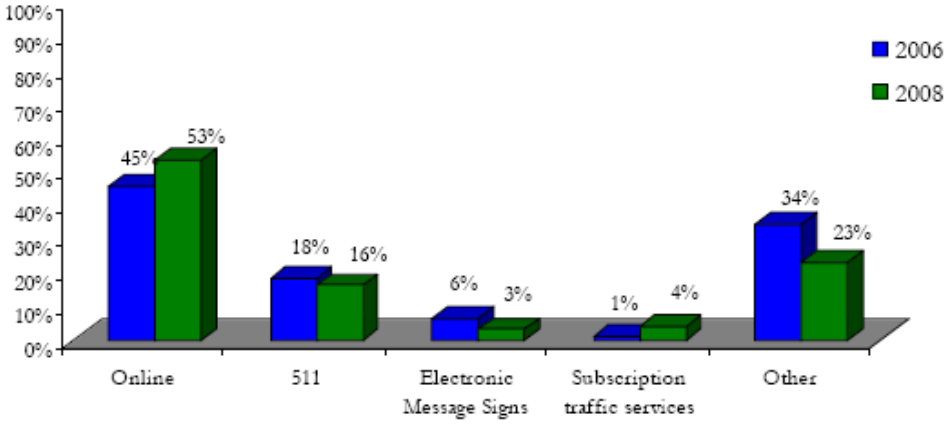
- Over half of drivers listen to radio traffic reports, and most of those listen more than three times per week.

- Just over half of drivers watch traffic reports on television, and most of those do so more than three times per week.

- Since the last study period, there has been a slight increase in the number of drivers who use information sources other than radio and television to obtain traffic information. However, the vast majority still do not use alternative information sources.

- Of that 15 percent who say they use alternate traffic information sources, most (53 percent) report relying on the internet, further intensifying the trend from the last study period (Figure 7). Not surprisingly, online traffic information continues to be especially popular among younger drivers ages 18-39. 511, on the other hand, draws most heavily on drivers in the 40-49 age group.

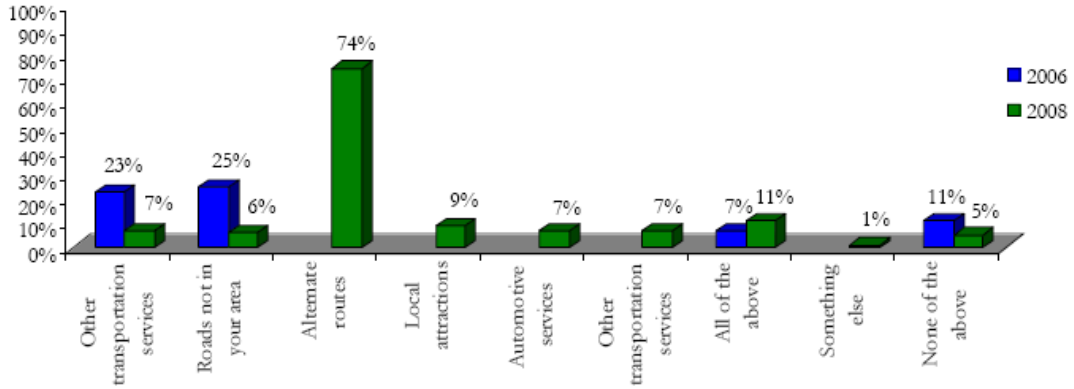
Figure 7: Where else do you go for traffic information?



*Note: This graph reflects the responses ONLY of the 15% of drivers from Figure 6 who report using alternate sources of traffic information aside from television and radio.

- When asked what additional types of traffic information FDOT should provide, most drivers say they would find information on alternate routes useful.

Figure 12: If FDOT were to provide new information to aid travelers in Florida, what would you like it to include?



*Note: Some of the response choices for this question are different between the two study periods. Only choices that were included in the 2008 survey are represented in this figure.

- Awareness of 511 remains about the same as in the last study period, with 23 percent of drivers knowing something about the service.

- Among those who know about 511, about one-third use it once per week or more, and 11 percent use it at least two to three times per week. Slightly more drivers in 2008 (5 percent) say they have never used 511.

- Despite low awareness, 511 has made significant progress in gaining consumers' trust. In 2008, 9 percent more 511 users say they are "very likely" to change their route based on the information they receive from 511.

- The vast majority of drivers read electronic message signs at least once per week.

- Because they are so visible, electronic message signs are an excellent way to display information about FDOT's ITS services when appropriate. In fact, since 2006 there has been a slight increase in the number of drivers who first learned about 511 through freeway signage.

- Although many drivers know about Road Rangers, they do not necessarily know how to contact one to request assistance.

- Not only do more drivers in 2008 know about Road Rangers, but they also see more value in the service. Since the last study period, there has been a 7 percent increase in the number of drivers who believe Road Rangers are "very useful".

Figure 31: How useful do you think the Road Ranger units are?