

2018

Transportation

Congestion Management/Performance Measures Report



Table of Contents

INTRODUCTION	1
CMP NETWORK IDENTIFICATION	2
TRANSPORTATION PERFORMANCE MEASURES.....	3
PERFORMANCE SCORECARD	5
MOTOR VEHICLE TRAVEL	7
FEDERAL REQUIREMENTS	10
STATE REQUIREMENTS.....	11
PUBLIC TRANSIT	21
Votran Ridership	21
Transit/Utilization	22
Percent of Congested Roadway Centerline Miles with Transit Service	25
SUNRAIL.....	26
SAFETY	28
APPENDIX	36
ABBREVIATIONS AND ACRONYMS	38
DEFINITIONS	38

List of Tables

Table 1 Transportation System Performance Scorecard	6
Table 2 FDOT MAP-21 Mobility Performance Measures Development	8
Table 3 Flagler County Off-System Arterials & Collectors Measures	9
Table 4 Volusia County Off-System Arterials & Collectors Measures	9
Table 5 Congested Road in Flagler County 2013.....	12
Table 6 Severely Congested Roads in Volusia County 2015.....	12
Table 7 Severely Congested Roads in Volusia County 2016.....	13
Table 8 Severely Congested Roads in Volusia County 2017	14
Table 9 Congested Roads in Volusia County 2015	14
Table 10 Congested Roads in Volusia County 2016	15
Table 11 Congested Roads in Volusia County 2017	15
Table 12 Roadway Deficiencies for 2040	16
Table 13 Votran Ridership.....	21
Table 14 Votran Revenue Mile.....	22
Table 15 Votran Revenue Hour.....	22
Table 16 Votran Passenger Trips per Revenue Mile	23
Table 17 Votran Passenger Trips per Revenue Hour.....	23
Table 18 Votran Safety Data	24
Table 19 Severely Congested Roadways Served by Votran Transit – 2014-2017	25
Table 20 SunRail Average Daily Ridership by Month	26

Table 21 SunRail On-Time Performance	27
Table 22 SunRail Crashes.....	27
Table 23 Flagler and Volusia County Auto Crashes.....	28
Table 24 Flagler and Volusia County Bicycle Crashes.....	29
Table 25 Flagler and Volusia County Pedestrian Crashes.....	30
Table 26 Intersection Related Crashes.....	31
Table 27 Intersection Related Bike/Ped High Crash Locations – 2015.....	32
Table 28 Intersection Related Bike/Ped High Crash Locations – 2016.....	32
Table 29 Intersection Related Bike/Ped High Crash Locations - 2017	32

List of Figures

Figure 1 Volusia County Critical & Near Critical to include vested trips 2016	19
Figure 2 Updated Volusia County Critical & Near Critical to include vested trips 2017.....	20
Figure 3 Votran Ridership.....	21
Figure 4 Votran Passenger Trips per Revenue Mile	22
Figure 5 Votran Revenue Hour.....	22
Figure 6 Votran Revenue Mile.....	23
Figure 7 Votran Passenger Trips per Revenue Hour	23
Figure 8 Votran Safety Data	24
Figure 9 SunRail Average Daily Ridership by Month	26
Figure 10 SunRail On-Time Performance	27
Figure 11 Flagler County Auto Crash Rate per 100 Million VMT.....	28
Figure 12 Volusia County Auto Crash Rate per 100 Million VMT.....	28
Figure 13 Flagler County Bicycle Crashes	29
Figure 14 Volusia County Bicycle Crashes	29
Figure 15 Flagler County Pedestrian Crashes	30
Figure 16 Volusia County Pedestrian Crashes.....	30
Figure 17 Flagler County Intersections Related Crashes	31
Figure 18 Volusia County Intersections Related Crashes	31
Figure 19 Intersection Related Bike/Ped High Crash Locations – 2015.....	33
Figure 20 Intersection Related Bike/Ped High Crash Location - 2016.....	34
Figure 21 Intersection Related Bike/Ped High Crash Location 2017.....	35
Figure 22 National Highway System (NHS).....	40
Figure 23 Strategic Intermodal System (SIS)	41
Figure 24 State Highway System (SHS).....	42
Figure 25 Off-System Arterials and Collectors	43

2018
TRANSPORTATION
CONGESTION MANAGEMENT/PERFORMANCE MEASURES REPORT
RIVER TO SEA TRANSPORTATION PLANNING ORGANIZATION

INTRODUCTION

Congestion management has been a required activity for MPOs since the early 1990s. However, the 2012 federal transportation funding and authorization bill, Moving Ahead for Progress in the 21st Century Act (MAP-21), made it clear that congestion is just one aspect of transportation system performance that requires monitoring. MAP-21 required states and MPOs to develop transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning. Hence, transportation system performance monitoring must now include consideration of safety, physical condition, environmental quality, economic development, quality of life and customer satisfaction as part of a comprehensive performance-based planning and programming process.

The River to Sea Transportation Planning Organization (R2CTPO) updated and refined its Congestion Management Process (CMP) in concert with its 2040 Long Range Transportation Plan (LRTP). It was adopted by the TPO Board on August 26, 2015, by Resolution 2015-16. The CMP and the LRTP share the same goals and objectives; but the CMP provides performance measures to evaluate changes in congestion and other important aspects of transportation system performance over time. These changes will serve as an indication of whether or not the TPO's transportation improvement strategies are succeeding.

Following adoption of the CMP, the TPO staff, with guidance from the Technical Working Group (TWG), developed the initial performance evaluation of the transportation system as prescribed in the adopted CMP. This exercise will be repeated annually to provide regular progress reports. In subsequent years, as additional guidance is provided the data and measures will be refined and enhanced as necessary to improve the decision-making process.

Having a congestion management process and an on-going evaluation of transportation system performance is important to:

- inform decision-making;
- improve return on investments and resource allocation;
- measure transportation system performance;
- increase transparency and accountability; and
- provide support for potential mitigation measures.

The Performance Based Planning Process established in MAP-21 continues in the FAST Act:

- Requires MPOs and States to develop transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning.
- Requires MPOs to establish performance targets that address both the surface transportation measures set forth in 23 U.S.C 150(c), in coordination with the state and public transportation performance measures in coordination with providers of public transportation, to ensure consistency with performance targets related to transit asset management and transit safety, as set forth in 49 U.S.C. 5326(c) and 5329(d).
- MPO plans must include performance targets that address performance measures and standards and a system performance report
- Transportation Improvement Programs (TIP) must include a description of the anticipated progress brought about by implementing the TIP toward achieving the performance targets.
- DOTs and MPOs have begun implementing performance measures and targets as required. A baseline report will be submitted by FDOT in October 2018 and activities to implement performance-based planning and programming will continue.

The measures reported in this document pertain to motor vehicle travel, non-motorized travel (bicycling and walking), public transit service, and freight movements. They aim to evaluate the multiple dimensions of mobility including quantity and quality of travel, accessibility, and utilization. Most importantly, they address safety. They are primarily based on data collected and managed by other agencies. When possible, data from different agencies have been normalized to allow for comparison from one area to another or from one transportation network to another. In some cases, differences remain which prevent direct comparisons. Where these differences occur, they are noted.

CMP NETWORK IDENTIFICATION

The River to Sea TPO's Metropolitan Planning Area (MPA) is comprised of Volusia County and the urbanized eastern portion of Flagler County (including Flagler Beach, Beverly Beach and portions of the cities of Palm Coast and Bunnell, as well as some portions of unincorporated Flagler County).

The CMP addresses the multimodal transportation network within the TPO's MPA that includes the National Highway System (NHS), Interstate System, Strategic Intermodal System (SIS), State Highway System (SHS), and Off-System Arterial and Collector roadways. For the evaluation of fatalities and injuries, the network is comprised of all public roads as prescribed by federal regulations. In addition to evaluating congestion and safety on roadways, the CMP evaluates auto and bicycle/pedestrian facilities, Votran transit services on the current fixed routes and SunRail services. These various systems are described below and displayed on maps in the appendix.

National Highway System (NHS) - A system designated by Congress that includes all Interstate routes, urban and rural principal arterials, the Strategic Highway Network (STRAHNET) and Strategic Highway Network Connectors, and connectors to approved Intermodal Facilities.

Strategic Intermodal System (SIS) - Highways and other modes important for transportation in Florida.

State Highway System (SHS) - Roads under the jurisdiction of the Florida Department of Transportation, state-chartered expressway authorities, and other state agencies

Off-System Arterial & Collectors - Off-System network includes all functionally classified roadways, and these roads are not located on the NHS, SIS, and SHS systems.

TRANSPORTATION PERFORMANCE MEASURES

Performance Management is a strategic approach to connect investment and policy decisions to help achieve performance goals. Performance measures are quantitative criteria used to evaluate progress. Performance measure targets are the benchmarks against which collected data is gauged. The Moving Ahead for Progress in the 21st Century Act (MAP-21) requires State DOTs and MPOs to conduct performance-based planning by tracking performance measures and setting data-driven targets to improve those measures. Performance-based planning ensures the most efficient investment of federal transportation funds by increasing accountability, transparency, and providing for better investment decisions that focus on key outcomes related to seven national goals:

- Improving Safety;
- Maintaining Infrastructure Condition;
- Reducing Traffic Congestion;
- Improving the Efficiency of the System and Freight Movement;
- Protecting the Environment; and,
- Reducing Delays in Project Delivery.

The Fixing America's Surface Transportation (FAST) Act supplements the MAP-21 legislation by establishing timelines for State DOTs and MPOs to comply with the requirements of MAP-21. State DOTs are required to establish statewide targets, and MPOs have the option to support the statewide targets or adopt their own.

Safety is the first national goal identified in the FAST Act. In March of 2016, the Highway Safety Improvement Program (HSIP) and Safety Performance Management Measures Rule (Safety PM Rule) was finalized and published in the Federal Register. The rule requires MPOs to set targets for the following safety-related performance measures and report progress to the State DOT:

- Fatalities;
- Serious Injuries;
- Nonmotorized Fatalities and Serious Injuries;
- The rate of Fatalities per 100M Vehicle Miles Traveled (VMT); and
- Rate of Serious Injuries per 100M VMT.

The annual safety target was set by FDOT in August 2017 and updated in August 2018. It remains zero (0). The SHSP was developed in coordination with Florida's 27 metropolitan planning organizations (MPOs) through Florida's Metropolitan Planning Organization Advisory Council (MPOAC). The SHSP development process included a review of safety-related goals, objectives, and strategies in MPO plans. The SHSP guides FDOT, MPOs, and other safety partners in addressing safety and defines a framework for implementation activities to be carried out throughout the State.

The Florida SHSP and the Florida Transportation Plan (FTP) both highlight the commitment to a vision of zero deaths. The FDOT Florida Highway Safety Improvement Program (HSIP) annual report documents the statewide interim performance measures toward that zero deaths vision. The River to Sea Transportation Planning Organization has had a longstanding commitment to improving transportation safety which is demonstrated through planning and programming activities. Activities included in the Unified Planning Work Program such as the completion of school safety studies for all elementary and middle schools within the planning area, pedestrian law enforcement training, and exercises, health, and safety partnerships with local agencies, participation on the Community Traffic Safety Teams and helmet distribution programs have led to

increased safety awareness and project specific recommendations to reduce injuries and fatalities throughout the planning area.

In January 2018, the River to Sea TPO adopted safety performance targets in support of the FDOT statewide HSIP safety performance measures and FDOT's 2018 safety targets. The TPO targets include a decrease in each of the safety measurements of 2% per year. In order to achieve the reduction established by the safety targets, the TPO has evaluated projects that fall into specific investment categories established by the MPO in the project application, evaluation and ranking process. All new projects added to the TIP by the TPO that will improve safety and help the TPO reach its safety targets include a statement to that effect.

The TPO also reviewed safety related projects that have been identified and added to the work program and TIP by other agencies such as Bicycle and Pedestrian Safety, Safe Routes to School projects, and Community Traffic Safety Team initiatives. However, the TPO is not prepared to add statements regarding the selection methods for these projects at this time. Additional commentary may be added in the future pending guidance from federal and state agencies.

The current TIP includes specific investment priorities that support all of the TPO's goals including safety, using a prioritization and project selection process established previously in the LRTP. The TPO's goal of reducing fatal and serious injury crashes is linked to this investment plan, and the process used in prioritizing the projects is consistent with federal requirements. The TPO has long utilized an annual project ranking criteria that identify and prioritizes projects aimed at improving transportation safety. The ranking criteria are included in the appendices of the TIP. Going forward, the project evaluation and prioritization process will continue to use a data-driven strategy that considers stakeholder input to evaluate projects that have an anticipated effect of reducing both fatal and injury crashes. The TPO's goal of reducing fatal and serious injury crashes is linked to the TIP and the process used in prioritizing the projects is consistent with federal requirements.

The River to Sea TPO also recognizes that continued efforts must be made to continue incorporating transportation system performance into the institutional decision-making and documents of the organization. This includes using a project selection and prioritization process that supports the FDOT goals outlined in both the State Asset Management Plan and the State Freight Plan.

The TPO will continue to coordinate with FDOT and transit providers to take action to further modify evaluation criteria to incorporate performance measures as they are established and are more fully understood. As further guidance is provided and transportation data reports are developed, the TPO expects to expand references in the TIP to connect project programming with improved performance of the transportation system as required. This includes establishing targets for: System, Bridge, and Pavement Performance measures before the November 2018 deadline.

PERFORMANCE SCORECARD

The following is an overall “Performance Scorecard” that shows key performance measures for the Flagler and Volusia County transportation system. The Performance Scorecard provides users a quick look at how well the transportation system is functioning with regard to the performance measures that have been or will be established by FHWA pursuant to MAP-21. With these key performance measures, the TPO will track year-to-year performance of the transportation system, and improvements will be planned and prioritized accordingly.

MAP-21 prescribes that FHWA will establish certain performance measures for state departments of transportation and MPOs to use to assess the performance of the transportation system for the purpose of advancing the objectives of the federal transportation program. Required performance measures have received final approval and target setting and reporting for safety congestion reduction, system reliability, on road mobile source emissions, the condition of pavement and bridges, and freight mobility will be approved in the coming months. These will be added to the Performance Scorecard. A detailed description of the performance measures is provided in a particular section.

Following approval of the performance measures by FHWA, the states and, in turn, the MPOs/TPOs will establish performance targets as required by federal law. Relating performance measures to specific targets will provide a clear indication of whether the TPO's strategies and investments in the transportation system are achieving the desired outcomes.

As these key performance measures are intended only to provide a "high level" view of general transportation system performance, additional performance measures included in the following report sections, will be used to evaluate and monitor the performance of specific aspects of the transportation system.

In the performance scorecard, the green color shows performance is trending in a favorable direction. The yellow color shows the trend is holding and the red color shows performance is trending in an unfavorable direction.

Table 1 Transportation System Performance Scorecard

PERFORMANCE (All Public Roads)						
Measure	2012	2013	2014	2015	2016	Trend
Flagler County						
Auto Demand						
Daily vehicle miles traveled ^{1 2}	2,887,406	2,882,235	3,554,788	3,679,679	3,766,531	
Total centerline miles ¹	984	986	986	986	986	
Auto Safety						
Total Fatalities	15	16	24	12	25	
Total Injuries	765	849	817	1,023	828	
Total Property damage only	335	466	619	709	594	
Bicycle Safety						
Fatalities	0	2	1	0	1	
Injuries	23	31	29	34	23	
Pedestrian Safety						
Fatalities	2	0	0	2	5	
Injuries	26	26	18	25	19	
Intersection Related Crashes						
Total Crashes	342	415	507	601	621	
Volusia County						
Auto Demand						
Daily Vehicle Miles Traveled ¹	14,723,818	14,872,278	15,194,907	15,688,513	16,280,142	
Total centerline miles ¹	3,361	3,357	3,362	3,400	3,357	
Auto Safety						
Total Fatalities	97	90	86	87	122	
Total Injuries	4,702	5,210	5,251	5,750	5,872	
Total Property Damage Only	3,178	4,339	4,607	4,840	4,824	
Transit Demand						
Votran Ridership (fixed routes)	3,570,329	3,734,117	3,729,307	3,357,743	3,248,466	
Votran Revenue Miles	1,283,544	1,299,359	1,285,442	1,459,211	1,525,423	
Votran Revenue Hours	80,003	82,555	81,522	94,468	101,968	
Passenger Trips per Revenue Mile	1.37	1.46	1.41	1.29	1.23	
Passenger Trips per Revenue Hour	22.86	23.62	22.46	20.28	18.92	
SunRail Ridership	NA	NA	29,147	44,715	40,969	
Transit Safety						
Votran Collision	2	3	5	10	11	
Votran Total Fatalities	0	0	0	0	0	
Votran Total Injuries	8	16	19	23	24	
SunRail Crashes	NA	NA	14	11	12	
Bicycle Safety						
Fatalities	1	5	4	4	5	
Injuries	180	201	175	192	171	
Pedestrian Safety						
Fatalities	16	19	25	17	16	
Injuries	179	224	213	199	221	
Intersection Related Crashes						
Total Crashes	2,104	2,944	3,060	3,274	3,457	

Favorable
Neutral
Unfavorable



¹ Florida Highway Mileage Reports - Public Roads, Transportation Statistics Office, Florida Department of Transportation

² The increase in VMT between 2013 and 2014 resulted primarily from expansion of the Census designated urban boundary, the concomitant reclassification of many local roads from "rural" to "urban", and use of a higher estimated traffic count on all reclassified urban local roads.

The following section looks more closely at transportation system performance by mode, including motor vehicle travel, bicycling and walking, and public transit. For each mode, data is included (if available) to gauge quantity of travel, the quality of the travel experience, accessibility to travel opportunities, the degree to which the transportation system is utilized, and safety.

MOTOR VEHICLE TRAVEL

Daily Vehicle Miles Traveled (DVMT): This is simply a measure of how much traffic is traveling over the roadways during an average 24 hour period. It is calculated as the product of vehicle average annual daily (AADT) traffic volume and road (segment) length. Because traffic counts are rarely available for local roads, FDOT currently uses an estimated count applied to all local roads. The estimated count varies depending on classification of the area as rural, small urban (5,000 – 49,000 pop.), small urbanized (50,000 – 199,000 pop.), or large urbanized (200,000 or more pop.).

$\sum (\text{segment length} * \text{Volume}), \text{Volume} = \text{AADT data}$

DVMT is directly affected by changes in population and economic activity. It is also affected by changes in per capita trip length and/or frequency. Increasing DVMT contributes to air pollution and, without improvements to the roadways, may also contribute to congestion and crashes.

Level of Service: This is a quantitative measure of the quality of service provided by a transportation facility based on a traveler's perception of how well a facility is operating. Here, it is described as one of six letter grade levels, A through F, with A being the best and F being the worst.

Percent travel meeting LOS criteria in the peak hour: The percent of average annual daily travel (AADT) meeting generally acceptable operating conditions is determined by summing the Daily Vehicle Miles Traveled (DVMT) on roadways operating acceptably and then dividing by the total system Daily Vehicle Miles Traveled. "Acceptably" is defined as LOS D (two-hour peak) for the 7 largest counties, LOS D (one-hour peak) for other urbanized areas, and LOS C (one-hour peak) everywhere else.

$\sum (\text{VMT} | \text{Peak Hour Volumes} < \text{Acceptable LOS Volume Threshold}) / \sum (\text{VMT}) * 100$

Percent centerline miles severely congested: The percentage of miles severely congested is determined by summing the miles of roadway operating at LOS F in the peak hour and then dividing by the total highway miles.

$\sum (\text{Segment Length} | \text{Peak Hour Volumes} < \text{Acceptable LOS Volume Threshold}) / \sum (\text{Segment Length}) * 100$

The table below shows the Mobility Performance Measures Development matrix. On May 20, 2017, the Federal Highway Administration (FHWA) made effective the rule titled Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program, referred to as PM3. To assess the performance of the National Highway System (NHS), the PM3 rule establishes three performance measures:

- Percent of Person-Miles Traveled on the Interstate That Are Reliable
- Percent of Person-Miles Traveled on the Non-Interstate NHS That Are Reliable
- The Truck Travel Time Reliability Index

The Interstate Reliability measure remained stable for the River to Sea TPO. However, Non-Interstate Reliability continues to show erratic results, The River to Sea TPO experiencing dramatic upward swings in reliability from 2016 to 2017. The Truck Travel Time Reliability Index (an Interstate only measure) also remained relatively stable.

These erratic trends can largely be attributed to the data sources. The measures for 2014 to 2016 were calculated using the National Performance Management Research Data Set Version 1 (NPMRDS v1), provided to the states by FHWA. A new vendor was chosen by FHWA to provide travel time data beginning in February 2017, commonly referred to as NPMRDS v2.

While both versions of NPMRDS use GPS probes to obtain travel times, a number of differences exist between the two.

NPMRDS v2 farms from a different set of GPS probes and uses a different Traffic Message Channel segmentation. A small number of segments that are not a part of the NHS are included though this amount is 26% less than v1. NPMRDS v2 also uses different data processing and aggregation methods. Most notably, NPMRDS v2 uses path processing to derive more accurate travel times between two points while v1 uses the older spot speed approach.

Table 2 FDOT MAP-21 Mobility Performance Measures Development

River to Sea TPO				
Measures	2014	2015	2016	2017
Percent of Person-Miles Traveled on the Interstate that are reliable	100%	100%	100%	100%
Percent of Person-Miles Traveled on the Non-Interstate NHS that are reliable	51%	47%	39%	89%
Truck Travel Time Reliability Index on the Interstate	1.12	1.20	1.19	1.2

Source: Florida Department of Transportation

Table 3 Flagler County Off-System Arterials & Collectors Measures

Flagler Off System Arterials & Collectors⁶			
Year	2013	2015	2017
Daily vehicle miles traveled (millions) ⁷	0.68	0.69	0.74
Percent daily travel meeting LOS criteria	100%	99.71%	99.68%
Percent roadway centerline miles severely congested	0%	0%	0%
Total centerline miles	117.88	117.88	117.88

Table 4 Volusia County Off-System Arterials & Collectors Measures

Volusia Off-System Arterials & Collectors⁶				
Year	2014	2015 ⁸	2016 ⁸	2017 ⁸
Daily vehicle miles traveled (millions) ⁷	2.48	2.69	2.85	<u>2.90</u>
Percent daily travel meeting LOS criteria	96.90%	93.68%	92.09%	<u>93.37%</u>
Percent roadway centerline miles severely congested	1.02%	1.58%	2.59%	<u>2.12%</u>
Total centerline miles	515.45	515.45	515.45	<u>515.45</u>

⁶The Data for Off-System Arterials & Collectors is only available for Volusia County 2014, 2015, 2016 and 2017, Flagler 2013, 2015 and 2017 (PMPH). PMPH = P.M. Peak Hour

⁷Florida Department of Transportation, Flagler & Volusia Counties AADT data, Flagler County street network GIS shape file & Volusia County Public Works GIS shape file

⁸Some roadways do not have 2015, 2016 and 2017AADT data, it has been calculated based on previous year AADT data to get a more accurate result, and due to lack of data, all roadways are not included in the calculation.

A Congestion Management Process (CMP) employs strategies that work to reduce travel demand, encourage multimodal transportation, and help identify operational improvements. Therefore, it is imperative that the CMP be considered part of an overall transportation management program.

FEDERAL REQUIREMENTS

Federal law requires Metropolitan Planning Organizations with urbanized area population exceeding 200,000 to "...address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities...through the use of travel demand reduction and operational management strategies."⁹

The congestion management process (CMP) is defined as a systematic process that provides for safe and effective integrated management and operation of the multimodal transportation system. The process includes:

- Development of congestion management objectives
- Establishment of measures of multimodal transportation system performance
- Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion
- Identification of congestion management strategies
- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy

With the enactment of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21) state departments of transportation and MPOs were required to give greater emphasis to performance- and outcome-based planning and programming. In order to accomplish this, the law directed the US DOT to establish performance measures in these areas:

- Pavement condition on the Interstate System and on remainder of the National Highway System (NHS)
- Performance of the Interstate System and the remainder of the NHS
- Bridge condition on the NHS
- Fatalities and serious injuries—both number and rate per vehicle mile traveled--on all public roads
- Traffic congestion
- On-road mobile source emissions (for areas with air quality issues)
- Freight movement on the Interstate System

The law further required states to set performance targets in support of those measures not more than one year from when the US DOT adopts the final rule(s) on the performance measures. MPOs then have not more than 6 months to set performance targets in relation to the performance measures (where applicable).

The FDOT safety performance measures targets were adopted in 2017 and updated in 2018. They have identified "Vision Zero" targets for all five of the safety performance measures. Departments of Transportation have established their targets for infrastructure conditions (PM2) and system performance measures (PM3). The target reporting deadline for all measures in the PM2 and PM3 rules, including GHG (Greenhouse Gas), for the first performance period is October 1, 2018 [23 CFR 490.107(b)(1)(i)].

⁹ 23 CFR 450.320(a) and (b). Metropolitan Transportation Planning, Final Rule, February 14, 2007.

An MPO has 180 days to establish the MPO targets from the time the respective State DOTs establish their targets for the measures under the PM 2 and PM 3 rules, provided in 23 CFR 490.105(c). The River to Sea TPO will adopt the target in November 2018.

Congestion reduction - To achieve a significant reduction in congestion on the National Highway System (NHS);

- System reliability - To improve the efficiency of the surface transportation system;
- Freight movement and economic vitality - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development; and
- Environmental sustainability - To enhance the performance of the transportation system while protecting and enhancing the natural environment.

The safety performance measures final rule establishes five performance measures to carry out the HSIP: the five-year rolling averages for: 1) Number of Fatalities, 2) Rate of Fatalities per 100 million vehicle miles traveled (VMT), 3) Number of Serious Injuries, 4) Rate of Serious Injuries per 100 million VMT, and 5) Number of Non-motorized Fatalities and Non-motorized Serious Injuries. These safety performance measures are applicable to all public roads regardless of ownership or functional classification.

STATE REQUIREMENTS

Relevant portions of the applicable Florida Statutes are provided below. These requirements guide the development and application of the R2CTPO Congestion Management Process.

- Chapter Title XXVI, Chapter 339.175, Metropolitan Planning Organization “In order to provide recommendations to the department and local government entities regarding transportation plans and programs, each MPO shall prepare a congestion management system for the metropolitan area and cooperate with the department in the development of all other transportation management systems required by state or federal law.”
- Chapter Title XXVI, Chapter 339.177, Transportation Management Programs “Each MPO within the state must develop and implement a congestion management system.” It continues that the CMS “should be developed and implemented so as to provide the information needed to make informed decisions regarding the proper allocation of transportation resources.” The CMS “must use appropriate data gathered at the state or local level to define problems, identify needs, analyze alternatives, and measure effectiveness.”

The purpose of the CMP is to provide data to assist in identifying actual projects. The CMP involves selecting congested corridors to be evaluated for potential projects/programs that could be implemented to reduce the congestion identified.

Annual monitoring will review the level of service on the roads to identify recurring congestion. Roadways that are severely congested today or forecasted to be congested in five years are considered for review through the CMP. Corridors are identified in the following two categories:

- Severely congested: Roadways with a volume to capacity ratio of 1.00 and greater are deemed to be severely congested.
- Congested: Roadways with a volume to capacity ratio of greater than 0.90 and less than 1.00 are deemed to be congested.

Since congestion mitigation strategies cannot be implemented for all of the congested facilities simultaneously, and congestion management strategies are not one size fits all, the projects and strategies must be evaluated logically. The congested roadways or intersections must be examined carefully to determine which management strategy will best address the particular problems. Strategies can be selected and evaluated by a CMP Review Team. The strategies will include (but will not be limited to):

- Improvements to the management and operation of the transportation system, including the implementation of Intelligent Transportation Systems (ITS)
- Smart transportation policies that promote alternate modes of transportation to automobile travel and assist in the development of more livable communities
- Transportation demand management (TDM), including growth management
- Where necessary, additional of road and transit capacity
- Improvements to transit, pedestrian, and bicyclist facilities

The table below shows total miles of severe congestion in Volusia County was 13 miles in 2015, 25.4 miles in 2016 and 30 miles in 2017. The trend shows that severely congested roads have been increasing in Volusia County. For Flagler County, 0.12 miles of the centerline miles are congested in 2013 and 2017, and no roads are severely congested.

The severely congested and congested roadways identified here are based on the latest available average annual daily traffic counts. It is important to note that traffic volumes can vary significantly on a seasonal, daily, and even hourly basis. An evaluation of roadway performance on the basis of average annual daily traffic alone does not always identify congestion that occurs only during peak travel demand periods or as a result of traffic incidents. For this reason, the TPO often relies on other, more sensitive techniques to identify congestion including measuring level of service at peak periods. One of the more promising techniques is the use of vehicle probe data that can very effectively and efficiently measure congestion and travel time reliability (as indicated by variations in average vehicle speed). The R2CTPO is investigating the use of vehicle probe data and other techniques that might be used in the future to better identify the occurrence and cause of congestion and delay.

Table 5 Congested Road in Flagler County 2013 and 2017

Road Name	Limits	Centerline miles congested	V/C
Cypress Point Parkway	Cypress Edge (N) to Palm Coast Parkway	0.12	0.92
Cypress Point Parkway	Cypress Edge (N) to Palm Coast Parkway	0.12	0.96

Source: 2013 and 2017 Palm Coast Transportation Facility Status Report

Table 6 Severely Congested Roads in Volusia County 2015

Road Name	Limits	Centerline miles severely congested	V/C
*Catalina Blvd	Howland Blvd to Sixma Rd	0.5	1.18
*Catalina Blvd	Sixma Rd to Lake Helen-Osteen Rd	0.4	1
Dirksen/DeBary/Doyle	I-4 to Deltona Blvd	0.1	1.03
Graves Av/CR 4145	Veteran's Memorial Pkwy to Kentucky Av	0.3	1.05

Road Name	Limits	Centerline miles severely congested	V/C
Hand Av	Clyde Morris Blvd to Shangri La Dr	0.75	1.09
Howland Blvd	Providence Blvd to Elkcarn Blvd	2.1	1.23
I-4	Dirksen Dr to Saxon Blvd	2.79	1.15
LPGA Blvd (DB)	Jimmy Ann Dr to Derbyshire Rd	0.25	1.39
*Normandy Blvd	Saxon Blvd to Deltona Blvd	0.7	1
Saxon Blvd	FDOT Park & Ride to I-4	0.3	1.06
Saxon Blvd	I-4 to Finland Dr	0.35	1.07
Saxon Blvd	Finland Dr to Normandy Blvd	0.35	1.04
*Tivoli Dr	Saxon Blvd to Providence Blvd	0.85	1.16
US 17/92	Euclid Av to Beresford Av	0.49	1.04
W Volusia Bldwy(Veteran's Memorial Pkwy)	Graves Av to Rhode Island Av	1.5	1.03
W Volusia Bldwy(Veteran's Memorial Pkwy)	Rhode Island Av to Harley Strickland Blvd	1.22	1.1

Source 2015 Volusia County AADT Spreadsheet

Table 7 Severely Congested Roads in Volusia County 2016

Road Name	Limits	Centerline miles congested	V/C
*Catalina Blvd	Howland Blvd to Sixma Rd	0.5	1.18
*Catalina Blvd	Sixma Rd to Lake Helen-Osteen Rd	0.4	1
Dirksen/DeBary/Doyle	Sunrise Blvd to WB I-4 Ramps	0.20	1.06
Dirksen/DeBary/Doyle	Providence Blvd. to Garfield Rd.	1.20	1.00
Graves Av/CR 4145	Veteran's Memorial Pkwy. to Kentucky Ave.	0.30	1.07
Hand Ave.	Clyde Morris Blvd. to Shangri La Dr.	0.75	1.13
Highbanks Rd. (DB)	Westside Connector to US 17/92	1.00	1.06
Howland Blvd.	Providence Blvd. to Elkcarn Blvd.	2.10	1.26
I-4	Dirksen Dr. to Saxon Blvd.	2.79	1.16
LPGA Blvd. (DB)	Jimmy Ann Dr. to Derbyshire Rd.	0.25	1.45
Providence Blvd	Elkcarn Blvd to Ft Smith Blvd	0.8	1.08
Providence Blvd.	Anderson Dr. to Doyle Rd.	0.55	1.01
Saxon Blvd.	FDOT Park & Ride to I-4	0.30	1.04
Saxon Blvd.	I-4 to Finland Dr.	0.35	1.05
SR 40	US 1 to Halifax Av	1.11	1.06
SR 44	Kepler Rd. to Summit Ave.	1.18	1.02
*Tivoli Dr	Saxon Blvd to Providence Blvd	0.85	1.16
US 17	SR 40 to Lake Winona Rd	4.93	1.10
US 17/92	SR 44 (New York Av) to Euclid Av	0.49	1.10
US 17/92	Euclid Ave. to Beresford Ave.	0.49	1.00
W Volusia Bldwy (Kepler Rd)	Minnesota Av to SR 44	0.75	1.01
W. Volusia Bldwy (Veteran's Memorial Pkwy)	Rhode Island Ave. to Harley Strickland Blvd.	1.22	1.18
Williamson Blvd	SR400/Beville Rd to Madeline Av	1.5	1.02
Williamson Blvd	Madeline Av to Willow Run Blvd	1.1	1.03
Williamson Blvd	Willow Run Blvd Townwest Blvd	0.25	1.07

Source: 2016 Volusia County AADT Spreadsheet

*Deltona's traffic counts on Catalina Blvd, Normandy Blvd and Tivoli are based on traffic counts from 2015

Table 8 Severely Congested Roads in Volusia County 2017

Road Name	Limits	Centerline miles congested	V/C
*Catalina Blvd	Howland Blvd to Sixma Rd	0.5	1.18
*Catalina Blvd	Sixma Rd to Lake Helen-Osteen Rd	0.4	1
Dirksen/DeBary/Doyle	I-4 to Deltona Blvd.	0.10	1.19
Dirksen/DeBary/Doyle	Providence Blvd. to Garfield Rd.	1.20	1.04
Graves Av/CR 4145	Veteran's Memorial Pkwy. to Kentucky A	0.30	1.07
Hand Ave.	Clyde Morris Blvd. to Shangri La Dr.	0.75	1.22
Howland Blvd.	I-4/SR 472 to Wolf Pack Run	0.40	1.01
Howland Blvd.	Providence Blvd. to Elkcarn Blvd.	2.10	1.38
I-4	SR 46 to Volusia Co.	1.90	1.04
I-4	Seminole Co. to Dirksen Dr.	3.58	1.00
LPGA Blvd. (DB)	Jimmy Ann Dr. to Derbyshire Rd.	0.25	1.39
Main St. (Lake Helen)	I-4 to Lakeview Dr.	0.95	1.60
Providence Blvd.	Elkcarn Blvd. to Ft Smith Blvd.	0.80	1.00
Providence Blvd.	Normandy Blvd. to Anderson Dr.	0.80	1.00
Saxon Blvd.	FDOT Park & Ride to I-4	0.30	1.17
Saxon Blvd.	I-4 to Finland Dr.	0.35	1.19
SR 40	US 1 to Halifax Ave.	1.11	1.19
*Tivoli Dr	Saxon Blvd to Providence Blvd	0.85	1.16
Taylor Rd. (PO)	Dunlawton Ave. to Clyde Morris Blvd.	0.55	1.03
US 17	Washington Ave. to SR 40	5.02	0.40
US 17	SR 40 to Lake Winona Rd.	4.93	1.02
US 17/92	SR 44 (New York Ave.) to Euclid Ave.	0.49	1.14
US 17/92	Euclid Ave. to Beresford Ave.	0.49	1.13
W. Volusia Bldwy (Veteran's Memorial)	Rhode Island Ave. to Harley Strickland Bl	1.22	1.13
Williamson Blvd.	Madeline Av to Willow Run Blvd.	1.10	1.01

Source: 2017 Volusia County AADT Spreadsheet

*Deltona's traffic counts on Catalina Blvd, Normandy Blvd and Tivoli Dr. are based on traffic counts from 2015. The data for those segments was not able to be updated during the drafting of this report.

Table 9 Congested Roads in Volusia County 2015

Road Name	Limits	Centerline miles congested	V/C
Dirksen/DeBary/Doyle	Providence Blvd to Garfield Rd	1.2	0.96
Elkcarn Blvd	Montecito Av to Howland Blvd	1	0.96
Elkcarn Blvd	Providence Blvd to Montecito Av	1.05	0.95
Howland Blvd	I-4/SR 472 to Wolf Pack Run	0.4	0.96
I-4	Saxon Blvd to SR 472	3.15	0.99
I-4	SR 44 to US 92 Connector	10.31	0.93
*Normandy Blvd	Deltona Blvd to Tivoli Dr	1.1	0.95
Providence Blvd	Elkcarn Blvd to Ft Smith Blvd	0.8	0.98
SR 40	US 1 to Halifax Av	1.11	0.96
US 1	Fairview/Main St to US 92/ISB	0.66	0.97
US 17	SR 40 to Lake Winona Rd	4.93	0.96
US 17/92	SR 44 (New York Av) to Euclid Av	0.49	0.99

W Volusia Bltwy (Kepler Rd)	Minnesota Av to SR 44	0.75	0.95
Williamson Blvd	SR 400/Beville Rd to Madeline Av	1.5	0.93
Williamson Blvd	Madeline Av to Willow Run Blvd	1.1	0.92
Williamson Blvd	Willow Run Blvd Townwest Blvd	0.25	0.98

Table 10 Congested Roads in Volusia County 2016

Road Name	Limits	Centerline miles congested	V/C
Big Tree Rd.	Nova Rd. to Magnolia Ave.	0.4	0.93
Dirksen/DeBary/Doyle	I-4 to Deltona Blvd.	0.1	0.91
Dunn/George Engram/Fairview/Main	Bill France Blvd. to Clyde Morris Blvd.	0.85	0.92
Plymouth Ave.	Clara Ave. to US 17/92	0.2	0.99
Providence Blvd.	Normandy Blvd. to Anderson Dr.	0.8	0.94
Taylor Rd. (VC)	Crane Lake Blvd. to Summertree Rd.	0.75	0.93
Taylor Rd. (PO)	Dunlawton Ave. to Clyde Morris Blvd.	0.55	0.96
*Normandy Blvd	Deltona Blvd to Tivoli Dr	1.1	0.95
US 1	US 92/ISB to Orange Ave.	0.3	0.96
US 17/92	Plymouth Ave. to SR 44 (New York Ave.)	1.01	0.95
W. Volusia Bltwy (Veteran's Memorial Pkwy)	Graves Ave. to Rhode Island Ave.	1.5	0.92

Source: 2016 Volusia County AADT Spreadsheet

*Deltona's traffic counts on Catalina Blvd, Normandy Blvd and Tivoli are based on traffic count from 2015

Table 11 Congested Roads in Volusia County 2017

Road Name	Limits	Centerline miles congested	V/C
Dirksen/DeBary/Doyle	Enterprise St. to Main St.	0.15	0.95
Providence Blvd.	Anderson Dr. to Doyle Rd.	0.55	0.96
Saxon Blvd.	VMP to FDOT Park & Ride	0.30	0.92
Saxon Blvd.	Finland Dr. to Normandy Blvd.	0.35	0.99
SR 40	I-95 to Clyde Morris Blvd.	1.58	0.95
SR 44	Kepler Rd. to Summit Ave.	1.18	0.98
SR 430 - Mason Ave.	SR 483/Clyde Morris Blvd. to SR 5A/Nov	0.99	0.91
SR 430 - Mason Ave.	SR 5A/Nova Rd. to US 1	1.08	0.91
Taylor Rd. (CO)	Crane Lake Blvd. to Summertree Rd.	0.75	0.95
*Normandy Blvd	Deltona Blvd to Tivoli Dr	1.1	0.95
W. Volusia Bltwy (Kepler Rd)	Minnesota Ave. to SR 44	0.75	0.95
Williamson Blvd.	SR 400/Beville Rd. to Madeline Ave.	1.50	0.99
Williamson Blvd.	Willow Run Blvd. Townwest Blvd	0.25	0.99

Source: 2017 Volusia County AADT Spreadsheet

*Deltona's traffic counts on Catalina Blvd, Normandy Blvd and Tivoli Dr. are based on traffic count from 2015. The data for those segments was not able to be updated during the drafting of this report.

The table below shows roadway segments identified in the 2040 Long Range Transportation Plan (LRTP) that are currently congested or are expected to become congested in the future. The V/C ratios presented there reflect the Central Florida Regional Planning Model's adjusted 2040 traffic volumes on the Existing-Plus-Committed Highway Network. These roadways should be monitored closely to determine when improvements may be needed, and to confirm that any improvements, once completed, actually produce the desired results.

*Some projects listed in the table are included in the 2040 LRTP, FY 2018/19-2022/23 TIP and 2018 List of Priority Projects for improvement to address the deficiency.

Table 12 Roadway Deficiencies for 2040

Road Name	Limits	2040 V/C ¹⁰	*Mitigation Projects
Beach/Riverside/Beach (HH)	LPGA Blvd to 5th St	1.47	
Beach/Riverside/Beach (OB)	Wilmette Av. to SR 40	1.06	
Beach/Riverside/Beach (OB)	SR 40 to Division Av.	1.33	
Belle Terre Parkway	Bird of Paradise Drive to Pine Lakes Pkwy (North)	1.73	
Belle Terre Parkway	Palm Coast Pkwy (EB) to Cypress Point Pkwy	1.32	
Cypress Point Pkwy	Belle Terre Pkwy to Pine Cone Dr	1.12	
Cypress Point Pkwy	Pine Cone Dr to Cypress Edge (S)	1.11	
Cypress Point Pkwy	Cypress Edge (S) to Cypress Edge (N)	1.11	
Cypress Point Pkwy	Cypress Edge (N) to Palm Coast Pkwy	1.17	
Dirksen/DeBary/Doyle	US 17/92 to Sunrise Blvd	2.18	
Dirksen/DeBary/Doyle	Sunrise Blvd to WB I-4 Ramps	1.34	
Dirksen/DeBary/Doyle	I-4 to Deltona Blvd	1.05	
Dirksen/DeBary/Doyle	Enterprise St to Main St	1.04	
Dirksen/DeBary/Doyle	Providence Blvd to Garfield Rd	1.18	
Dunn/George Engram/Fairview/Main	Bill France Blvd to Clyde Morris Blvd	1.13	Local (Volusia County) Projects
Graves Av/CR 4145	Veteran's Memorial Pkwy to Kentucky Av	1.16	
Hand Av	Clyde Morris Blvd. to Shangri La Dr	1.23	
Howland Blvd	Providence Blvd to Elkcarn Blvd	1.36	Widening from 2 lanes to 4-2018 TIP
I-4	Dirksen Dr to Saxon Blvd	1.21	2040 LRTP SIS Cost Feasible projects List
I-4	Saxon Blvd to Rhode Island Slip Ramp	1.08	2040 LRTP SIS Cost Feasible projects List
I-4	Rhode Island Slip Ramp to SR 472	1.08	2040 LRTP SIS Cost Feasible projects List
I-4	SR 472 to Orange Camp Rd	1.02	2040 LRTP SIS Cost Feasible projects List
I-95	SR 40 to US 1	1.01	
I-95	Old Dixie Hwy to SR 100	1.04	
LPGA Blvd (HH)	SR 5A/Nova Rd to US 1	1.06	Intersection Improvement – 2018 TIP
LPGA Blvd (DB)	Tomoka Farms Rd to Williamson Blvd	1.04	
Mason Av	Fentress Blvd to Bill France Blvd	1.01	
Matanzas Woods Pkwy	US 1 to Belle Terre Pkwy	1.1	Roundabout at Matanzas Woods Parkway – 2018 TIP
Matanzas Woods Pkwy	Bird of Paradise Dr to I-95 SB Ramps	1.27	Widening R2CTPO List of Prioritized Significant Non-SIS
Normandy Blvd	Graves (old Howland) to Rhode Island Av	1.14	
Normandy Blvd	Rhode Island Av to Firwood Dr	1.04	
Old Dixie Hwy	I-95 to Old Kings Rd	1.25	
Orange Camp Rd	US 17/92 to Princeton	1.11	
Orange Camp Rd	Blue Lake Av to W Volusia Bldwy (Dr MLK Jr)	1.12	

Road Name	Limits	2040 V/C ¹⁰	
Orange/Silver Beach Av	City Island Pkwy to Peninsula Dr	1.44	
Orange/Silver Beach Av	Peninsula Dr to SR A1A	1.11	
Palm Coast Pkwy	US 1 to Pine Lakes Pkwy	1.12	
Palm Coast Pkwy	Cypress Point Pkwy to I-95 SB Ramps	1.16	
Palm Coast Pkwy	I-95 SB Ramps to I-95 NB Ramps	1.07	
Palm Coast Pkwy (WB)	Old Kings Rd to Florida Park Dr	1.7	
Palm Coast Pkwy (WB)	Florida Park Dr to Club House Dr	1.4	
Palm Coast Pkwy (WB)	Club House Dr to Colbert	1.4	
Providence Blvd	Howland Blvd to Elkcarn Blvd	1.05	
Providence Blvd	Elkcarn Blvd to Ft Smith Blvd	1.25	
Providence Blvd	Normandy Blvd to Anderson Dr	1.28	
Providence Blvd	Anderson Dr to Doyle Rd	1.12	
Royal Palms Pkwy	US 1 to Rymfire Dr	1.01	
Saxon Blvd	I-4 to Finland Dr	1.05	Ramp Improvement - R2CTPO LOPP SIS Project
SR 100	US 1/SR 5/SR 100 to Inside City (Urban)	1.07	
SR 100	Seminole Woods Pkwy to SR 9/I-95	1.26	
SR 11	CR 15A to SR 40	2.38	
SR 11	SR 40 to Flagler County Line	2.68	
SR 11	Volusia County Line to CR 304	1.37	
SR 15/US 17	Lake Winona Rd to SR 40	1.43	Widening - R2CTPO LOPP SIS Project
SR 15/US 17	SR 40 to Washington Av	1.46	
SR 15/US 17	Washington Av to CR 305/Lk George Rd	1.3	
SR 20/SR 100	Putnam County Line to SR 5/US 1	1.48	
SR 40	Lake County Line to Emporia Rd	1.1	
Clara aveSR 40	SR 11 to Cone Rd	2.95	Widening from 2 lanes to 4 lanes – 2018 TIP
SR 40	SR 9/I-95 to Williamson Blvd	1.21	2040 LRTP Other Arterial Cost Feasible Projects List
SR 40	SR 5/US 1 to Halifax Dr	1.73	
SR 40	Halifax Dr to SR A1A	1.01	
SR 44	Clara Av to Amelia Av	1.47	
SR 44	Lake County Line to Shell Rd	3.74	
SR 44	CR 4053/Grand Av to Old New York Av	1.18	
SR 44	Old New York Av to Woodward Av	1.32	
SR 44	Woodward Av to Amelia Av	1.32	
SR 44	Old New York Av to SR 15A/Spring Garden Av	1.32	
SR 44	Clara Av to Amelia Av	1	
SR 5/US 1	SR 9/I-95 - SB exit ramp to Flagler County Line	1.39	
SR 5/US 1	White View Pkwy to Royal Palms Pkwy (Urban Boundary)	1.06	
SR 5/US 1	Royal Palms Pkwy (Urban Boundary) to Palm Coast Pkwy	1.06	
SR 5/US 1	Palm Coast Pkwy to Matanzas Wood Pkwy	1.06	
SR 5/US 1 ¹¹	Railroad St to Moody Blvd	2.93	
SR 5/US 1 ¹⁴	Moody Blvd to SR 20/SR 100	3.89	

2018 Transportation Congestion Management/Performance Measures Report

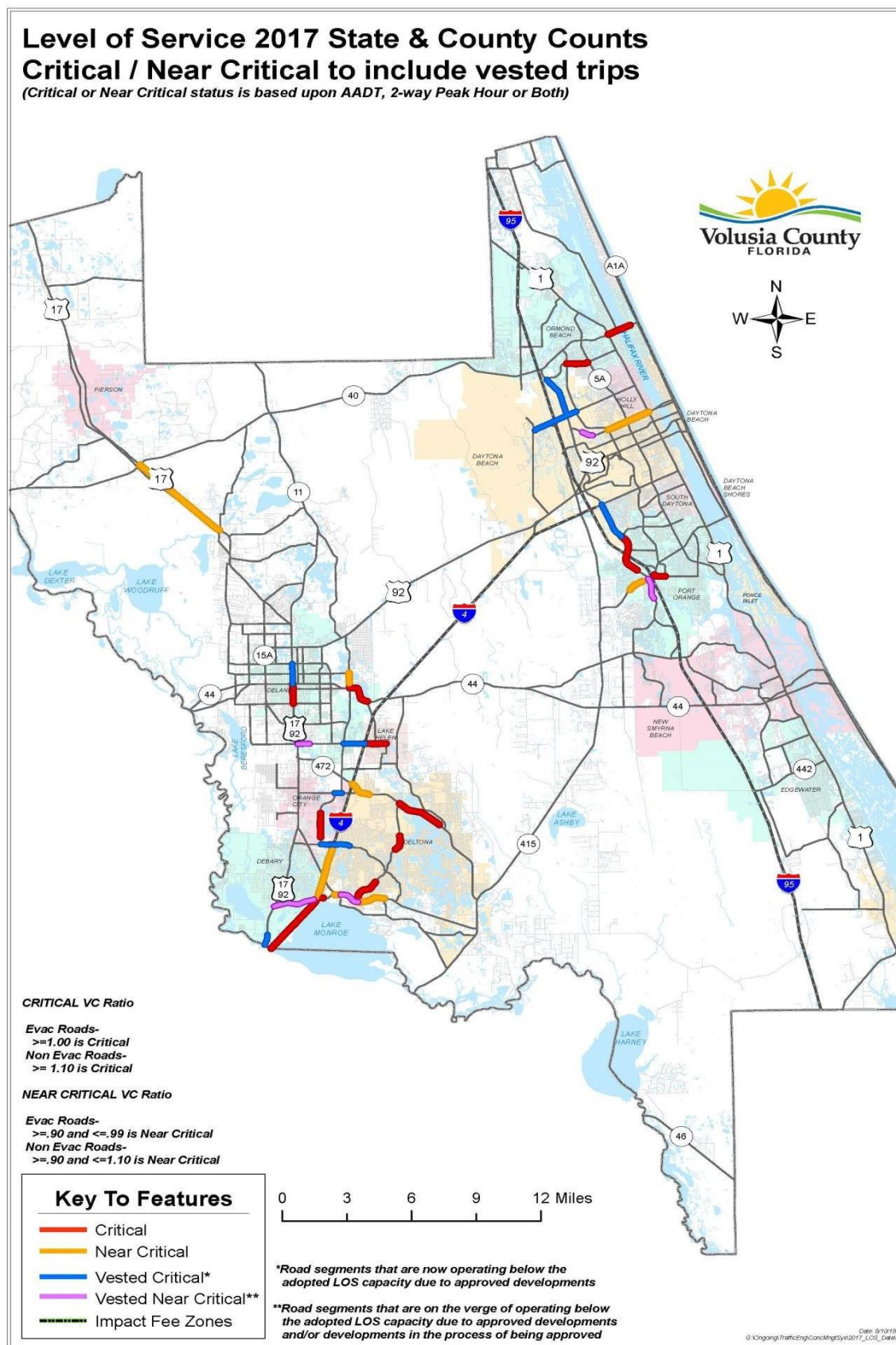
SR A1A	SR 5/US 1 to Atlantic Av / Dunlawton Av	1.02	
SR A1A	SR 40/Granada Blvd to Amsden Rd	1	
US 17-92/SR 600/SR15	N. End of St. John's River Bridge to Rd	2.11	
US 17-92/SR 600/SR15	Barwick Rd to Florida Rd	1.09	
S 17-92/SR 600/SR15	Beresford Av to Euclid Av	1.17	
US 17-92/SR 600/SR15	Euclid Av to SR 44/New York Av	1.04	
US 17-92/SR 600/SR15	SR 44/New York Av to Plymouth Av	1.11	
Williamson Blvd	Willow Run Blvd to McGinnis Av	1.37	

Source: River to Sea Transportation Planning Organization 2040 Long Range Transportation Plan

¹⁰ 2040 Central Florida Regional Planning Model, Version 6, volume to capacity ratio (V/C) using adjusted 2040 volumes on the Existing plus Committed Highway Alternative Network.

¹¹ FDOT has changed the classification for these congested roadways from “rural” or “transitioning” to “urban.” That, in turn, changed the LOS standards from C to D

Figure 2 Updated Volusia County Critical & Near Critical to include vested trips 2017



Source: Volusia County Traffic Engineering Department

PUBLIC TRANSIT

This report addresses three public transit service providers: Votran, Flagler County Public Transportation, and SunRail.

Votran serves as Volusia County's transit service provider, offering both fixed route and paratransit service with the mission of safely and dependably meeting the community's mobility needs at an affordable price. Fixed route buses are the predominant transit service that provides mobility to citizens across the county. In addition, paratransit service is available to people who are elderly or live with disabilities within the planning area. Votran Gold, a local paratransit service provides door-to-door service to individuals with a disability who cannot use Votran's regular bus service or are unable to obtain or arrange for transportation through their own efforts or those of their friends, family, or volunteers.

Votran added a new fixed-route service on SR 44. Route 44 serves the main corridor of New Smyrna Beach, running east west on SR 44.

Flagler County Public Transportation currently provides only demand-responsive door-to-door service.

SunRail provides commuter rail service in Orange, Seminole, Volusia, and Osceola Counties in Central Florida. The first phase of service began in May 2014, included 12 stations, and spanned 32 miles from DeBary in southwest Volusia County to Sand Lake Road south of Orlando. The second phase of construction was completed in 2018, adding 17 miles and 4 new stations. The service opened on July 30, 2018, linking Sand Lake Road in Orange County to Poinciana in Osceola County.

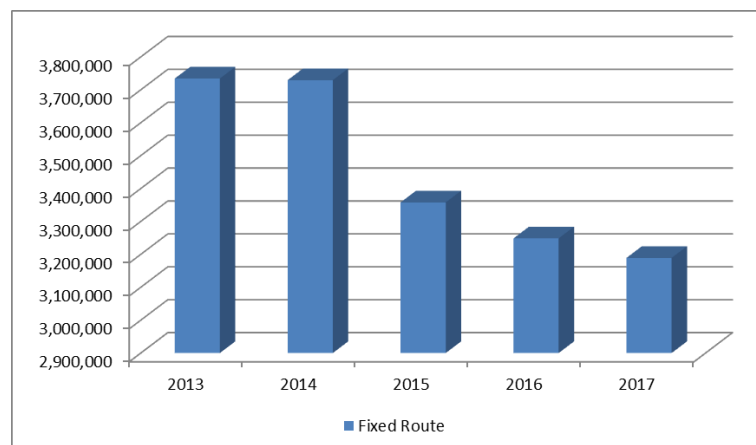
Votran Ridership

Ridership shows the annual number of passengers utilizing Votran's fixed route service. Votran ridership decreased in recent years, the slight decrease may be attributed to increase in fare from 2013 to 2014, which has affected the total ridership. However, the trend being experienced by many other transit agencies throughout the United States, which has been attributed to the improved economy, lower fuel prices, and an introduction of additional alternative travel modes.

Table 13 Votran Ridership

Year	Fixed Route
2013	3,734,117
2014	3,729,307
2015	3,357,743
2016	3,248,466
2017	3,189,082

Figure 3 Votran Ridership



Source: National Transit Database

Transit/Utilization

Transit utilization is expressed as the ratio of total passengers transported to total revenue or service miles and the ratio of total passengers transported to total revenue or service hours. The table below shows the revenue miles and revenue hours.

Table 16 and 17 show the passenger trips per revenue miles from 2013-2014 but indicate a slight decrease between 2015 and 2016.

The 5-year trend of passenger trips per revenue hour has shown a steady decrease from 2012-2016 and except for an increase in 2013.

Table 14 Votran Revenue Miles

Year	Revenue Miles
2012	1,283,544
2013	1,299,359
2014	1,285,442
2015	1,459,211
2016	1,525,423

Table 15 Votran Revenue Hours

Year	Revenue Hours
2012	80,003
2013	82,555
2014	81,522
2015	94,468
2016	101,968

Figure 4 Votran Revenue Miles

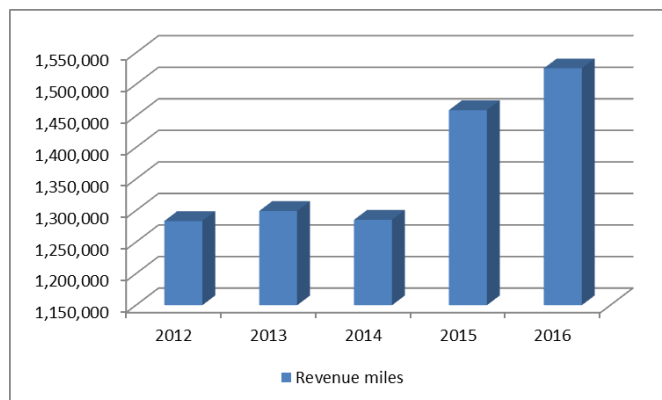
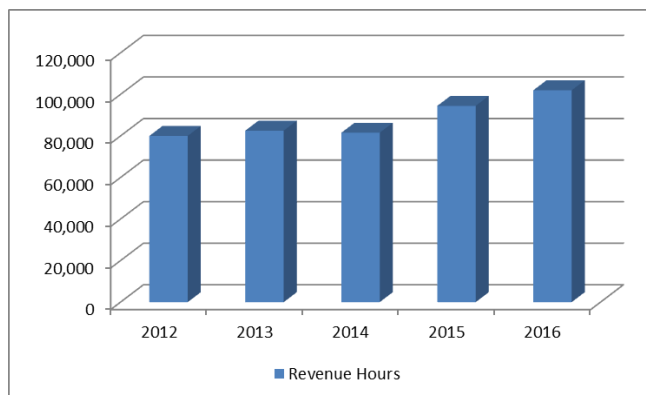


Figure 5 Votran Hours



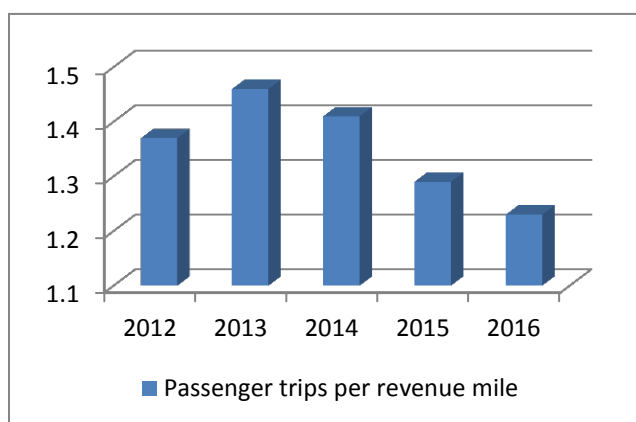
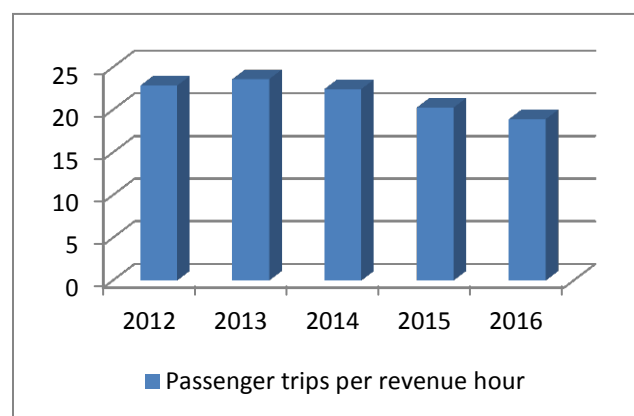
Source: Florida Transit Information System, Integrated National Transit Database Analysis System (INTDAS), Florida Department of Transportation

Table 16 Votran Passenger Trips per Revenue Mile

Year	Passenger Trips per Revenue Mile (million)
2012	1.37
2013	1.46
2014	1.41
2015	1.29
2016	1.23

Table 17 Passenger Trips per Revenue Hour

Year	Passenger Trips per Revenue Hour (million)
2012	22.86
2013	23.62
2014	22.46
2015	20.28
2016	18.92

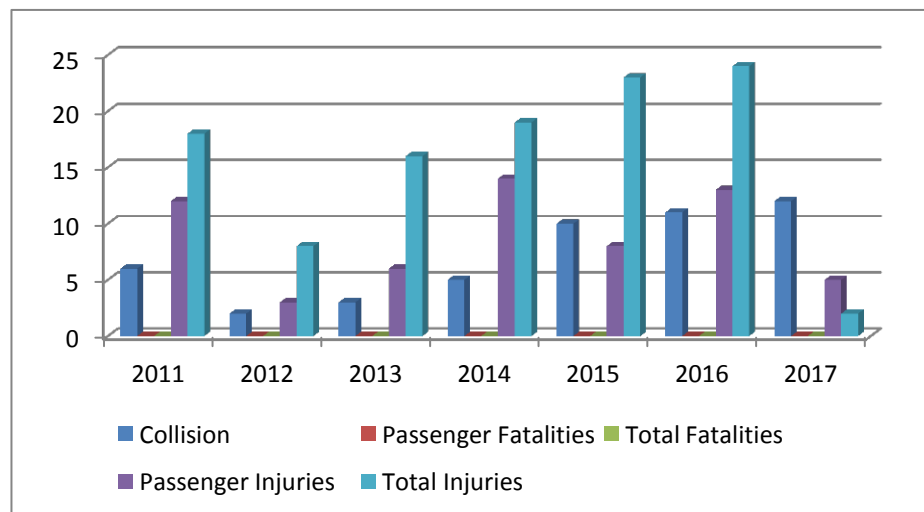
Figure 6 Votran Passenger Trips per Revenue Mile**Figure 7 Votran Passenger Trips per Revenue Hour**

Source: Florida Transit Information System, Integrated National Transit Database Analysis System (INTDAS), Florida Department of Transportation

Table 18 shows Votran collisions, passenger fatalities, total fatalities, passenger injuries, and total injuries. The total number of collisions peaked in 2016 and 2017, but no fatalities were reported. Passenger injuries decreased except an increase in 2015 and 2016 over the five-year period; but total injuries, including non-passengers, generally increased over the period to a 2016 peak, and then decreased in 2017.

Table 18 Votran Safety Data

Year	Events ¹²	Events per 100M Vehicle Revenue Mile	Passenger Fatalities	Passenger Fatalities per 100M Vehicle Revenue Mile	Total Fatalities	Total Fatalities per 100M Vehicle Revenue Mile	Passenger Injuries	Passenger Injuries 100M Vehicle Revenue Mile	Total Injuries	Total Injuries per 100M Vehicle Revenue Mile
2013	3	1.16	0	0	0	0	6	2.33	16	6.20
2014	5	1.88	0	0	0	0	14	5.26	19	7.14
2015	10	4.13	0	0	0	0	8	3.30	23	9.49
2016	11	4.54	0	0	0	0	13	4.60	24	8.50
2017	12	4.25	0	0	0	0	5	1.90	2	0.76

Figure 8 Votran Safety Data

Source: National Transit Database

Percent of Congested Roadway Centerline Miles with Transit Service

Where roadway congestion exists, providing public transit service will give travelers an effective alternative to personal motor vehicle travel, and it will help to ease congestion. The measure of performance in providing public transit service on these congested roadways is expressed as the ratio of centerline miles of severely congested roadways with scheduled transit service to centerline miles of all severely congested roadways.

The table shows, for Volusia County, the total 12.57-centerline miles of severely congested roadways in 2014, 17.62 miles in 2015, 23.96 and 28.69 centerlines miles of severely congested roadways in 2017, of which 4.45 centerline miles are served by scheduled (fixed-route) transit service.

¹² Changed from Collision to Events that being used in National Transit Database definition

Table 19 Severely Congested Roadways Served by Votran Transit – 2014-2017

	2015	2016	2017*
Total centerline miles of severely congested roadways	12.95	25.36	30.44
Centerline miles of severely congested roadways with Votran scheduled transit service	4.45	4.45	4.45
Percentage of total centerline miles of severely congested roadways with Votran scheduled transit service	34.36%	17.54%	14.61%

Source: Votran routes shapefile and Volusia County AADT data

* Votran routes shapefile is used an older one for the 2017 year's calculation

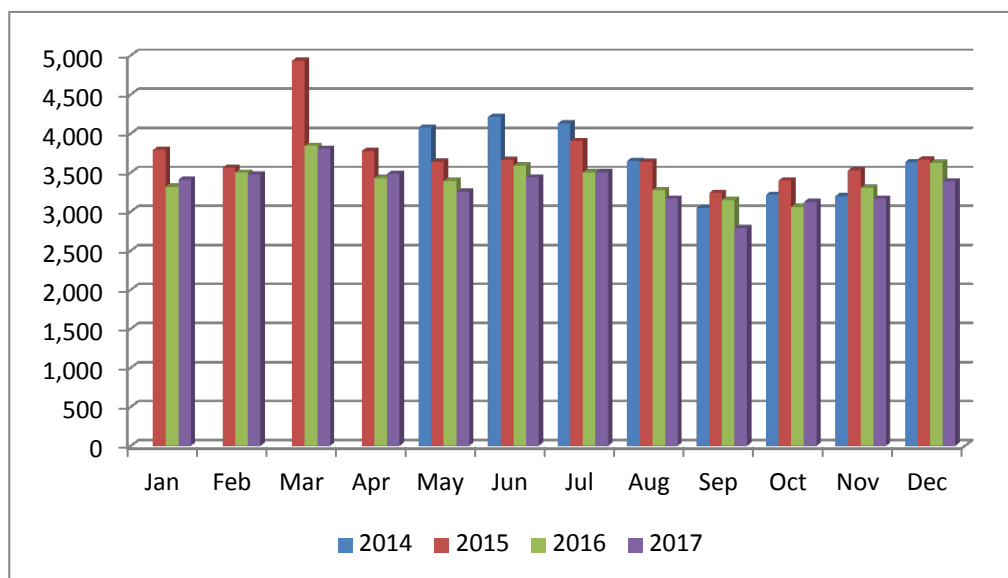
SUNRAIL

SunRail boarding data shows the monthly average daily ridership boarding has decreased in 2015, 2016, and 2017. The monthly average daily ridership decreased in September due to hurricane Irma, but it shows positive signs in October.

Table 20 SunRail Average Daily Ridership by Month

Month	Passenger Boarding			
	2014	2015	2016	2017
January		3,789	3,318	3,407
February		3,561	3,498	3,475
March		4,931	3,839	3,805
April		3,774	3,427	3,481
May	4,075	3,636	3,393	3,254
June	4,212	3,660	3,587	3,434
July	4,127	3,904	3,501	3,504
August	3,647	3,635	3,272	3,166
September	3,045	3,237	3,148	2,787
October	3,214	3,397	3,060	3,121
November	3,198	3,527	3,303	3,164
December	3,629	3,664	3,623	3,388

Figure 9 SunRail Average Daily Ridership by Month



Source: Florida Department of Transportation

An on-time train is a scheduled revenue train that arrives at its final destination no more than one minute early or five minutes later than its scheduled arrival time or the lateness is a result of circumstances not under the O&M firm's control and/or influence, as determined by the Department." The data shows the SunRail's monthly overall on-time performance increased in 2015, but is slightly lower in 2016 and it goes up again in 2017 except in a few months.

The table below shows SunRail's crashes from 2014-2017. The data appears to show the total number of crashes decreased in 2015 and increased slightly in 2016 but spiked in 2017.

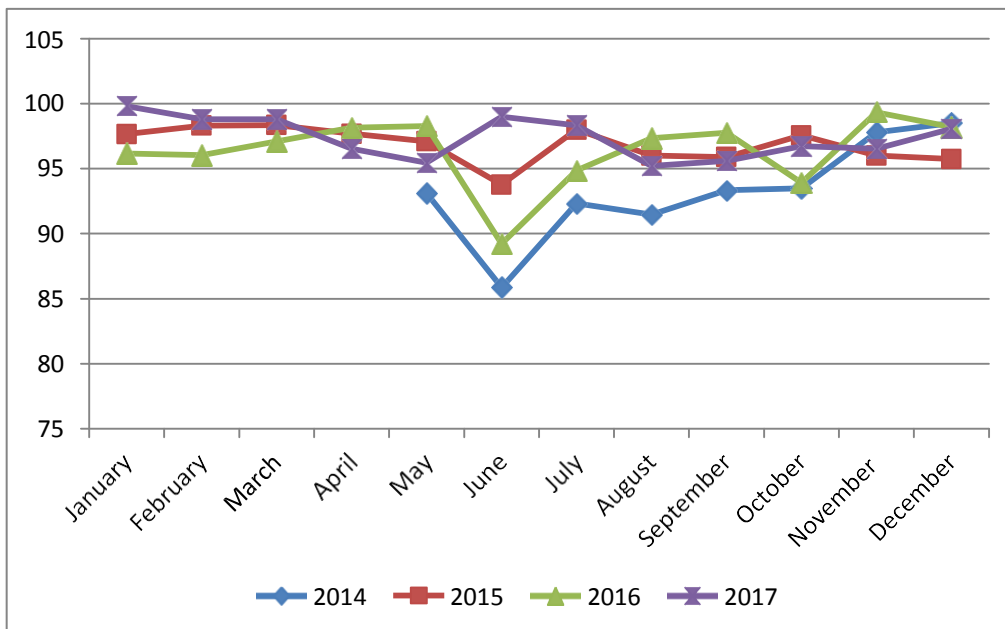
Table 21 SunRail On Time Performance

Month	% On Time Performance			
	2014	2015	2016	2017
January		97.65	96.17	99.81
February		98.3	96.03	98.78
March		98.36	97.1	98.78
April		97.68	98.15	96.52
May	93.11	97.1	98.28	95.45
June	85.86	93.77	89.23	98.99
July	92.32	98	94.85	98.33
August	91.46	96	97.34	95.21
September	93.33	95.9	97.75	95.59
October	93.48	97.55	93.93	96.72
November	97.79	96	99.34	96.52
December	98.5	95.73	98.19	98.06

Table 22 SunRail Crashes

Year	2014	2015	2016	2017
Total Crashes	14	11	12	22

Figure 10 SunRail On-Time Performance



Source: Florida Department of Transportation

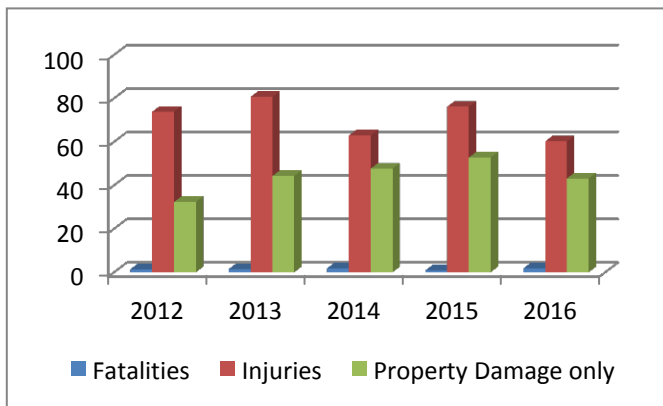
SAFETY

The main objective of the River to Sea TPO is to improve safety and security on roadways and to identify, and prioritize improvements to reduce the frequency and severity of crashes, and minimize injuries and fatalities. Crash rate is the number of crashes per 100 million vehicle miles traveled. The safety data figures in table are for all “public roads” as required for the performance measures.

Table 23 Flagler and Volusia County Auto Crashes

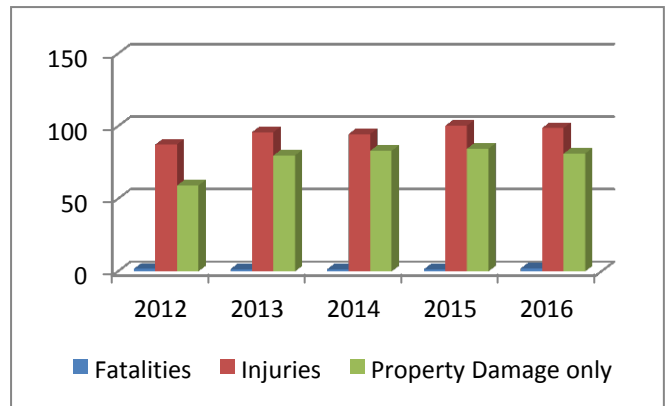
Year	2012	2013	2014	2015	2016	5-Yr Rolling Average
Flagler County						
Fatalities	15	16	24	12	25	18.4
Fatality Rate¹³	1.45	1.52	1.85	0.89	1.81	1.505
Injuries	765	849	817	1,023	828	856.4
Injury Rate¹⁴	73.87	80.70	62.97	76.16	60.22	70.787
Property Damage Only	335	466	619	709	594	198.06
Property Damage Only Rate¹⁵	32.35	44.30	47.71	52.78	43.21	40.067
Volusia County						
Fatalities	97	90	86	87	122	96.4
Fatality Rate¹³	1.80	1.66	1.55	1.51	2.05	1.715
Injuries	4,702	5,210	5,251	5,750	5,872	5357
Injury Rate¹⁴	87.49	95.98	94.68	100.41	98.81	95.475
Property Damage Only	3,178	4,339	4,607	4,840	4,824	4357.6
Property Damage Only Rate¹⁵	59.13	79.93	83.07	84.52	81.18	77.567

Figure 11 Flagler County Auto Crash Rate per 100 Million VMT



Source: Florida's Integrated Report Exchange System

Figure 12 Volusia County Auto Crash Rate per 100 Million VMT



Source: Florida's Integrated Report Exchange System

¹³ Fatality Rate (Per 100 Million VMT)

¹⁴ Injury Rate (Per 100 Million VMT)

¹⁵ Property Damage Only Rate (Per 100 Million VMT)

Auto fatalities reported in Flagler County indicate a slightly decreasing trend over the five-year period with an increase in fatalities reported in 2014 and 2016, injuries spiked in 2015 and property damage only indicates a steady increase over a five year period. Auto fatalities reported in the table above indicated some variation in the five year period spike in 2016, but auto injuries and property damage only indicate a steady increase in recent years in Volusia County.

The Metropolitan Planning Organizations (MPOs) shall establish performance targets for number of fatalities, rate of fatalities, number of serious injuries, rate of serious injuries and number of non-motorized fatalities and non-motorized serious injuries. Target means a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the FHWA. Each performance measure is based on a 5 year rolling average as described in table 21 above.

The River to Sea TPO developed a 2017 Crash Analysis Report to analyze the five-year crash history within the planning area. The report was identified the high crash intersections and segments locations based on crash severity and frequency. The report was described as a document that “provides an important step towards the identification of high crash areas that will require more detailed review to identify projects and programs that will reduce crash rates and severity.”

A General Planning Consultant to the TPO further refined this crash analysis in order to develop a process to address and mitigate the high volume of crashes within the MPA. The report titled “DRAFT Roadway Safety Evaluation & Improvement Study” (adopted 09-26-18) is available at:

<https://www.r2ctpo.org/wp-content/uploads/TPO-Roadway-Safety-and-Improvement-Study-Final-Draft.pdf>

Table 24 Flagler and Volusia County Bicycle Crashes

Year	2012	2013	2014	2015	2016	5-Yr Rolling Average
Flagler County						
Fatalities	0	2	1	0	1	0.8
Injuries	23	31	29	34	23	28
Volusia County						
Fatalities	1	5	4	4	5	3.8
Injuries	180	201	175	192	171	183.8

Figure 13 Flagler County Bicycle Crashes

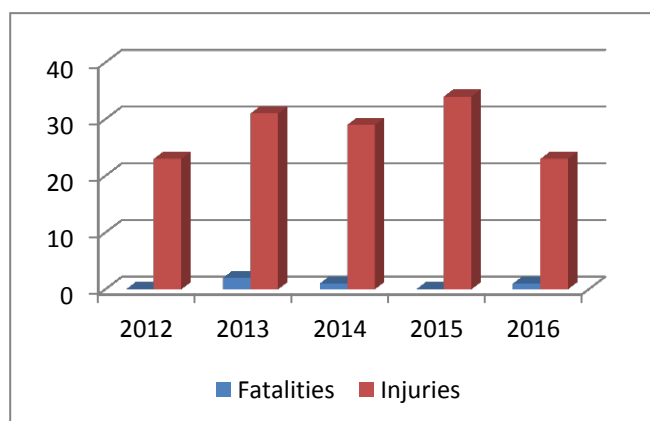
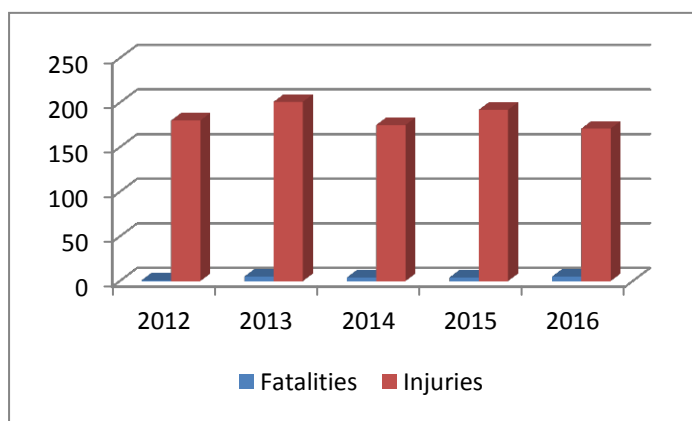


Figure 14 Volusia County Bicycle Crashes



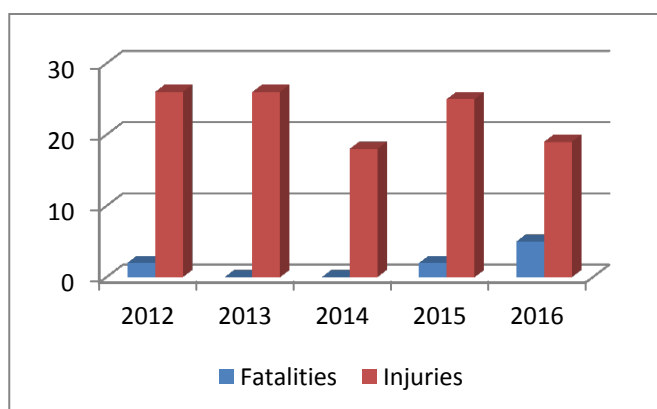
Source: Florida's Integrated Report Exchange System Source: Florida's Integrated Report Exchange System

Bicycle fatalities and injuries reported in Flagler and Volusia Counties are shown in the table above. Bicycle fatalities indicate some variation over the five year period with a spike in 2013, but bicycle injuries increased in recent years, except for a decrease in 2012 and 2016. The data appears to show a slight trend of increased bicycle fatalities, except for a decrease in 2012 and injuries data indicate some variation in recent years in Volusia County.

Table 25 Flagler and Volusia County Pedestrian Crashes

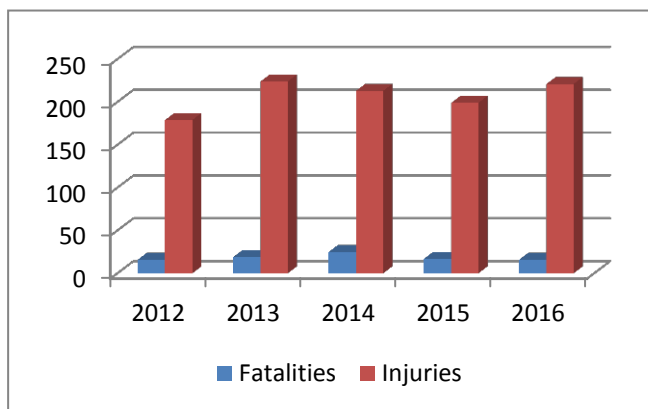
Year	2012	2013	2014	2015	2016	5-Yr Rolling Average
Flagler County						
Fatalities	2	0	0	2	5	1.8
Injuries	26	26	18	25	19	22.8
Volusia County						
Fatalities	16	19	25	17	16	18.6
Injuries	179	224	213	199	221	207.2

Figure 15 Flagler County Pedestrian Crashes



Source: Florida's Integrated Report Exchange System

Figure 16 Volusia County Pedestrian Crashes



Source: Florida's Integrated Report Exchange System

Pedestrian fatalities and injuries reported in Volusia and Flagler Counties are shown in the table above. In Flagler County, pedestrian fatalities spiked in 2016 but remained stable in other years, but injuries increased with a slight drop in 2014 and 2016. The data indicates pedestrian fatalities and injuries varied peaking in 2014 and injuries increased in Volusia County and a slight decrease in 2015.

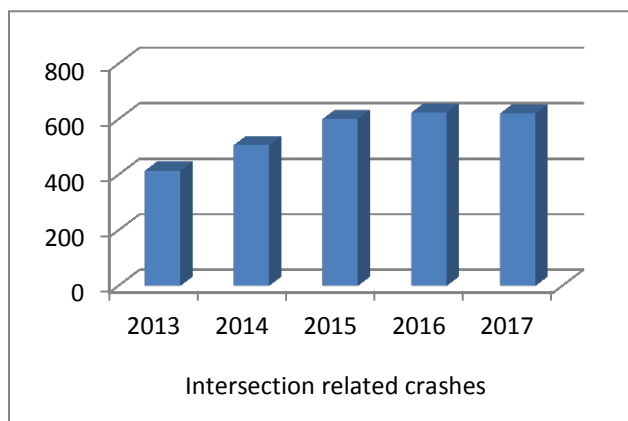
However, overall vehicular crashes continue to rise and crashes with injuries show quite an increase. Crashes resulting in fatalities do appear to have increased in Volusia, but they are generally stable over time. Fatalities in Flagler are lower in 2015, but increased in 2016.

Intersection related crashes reported in Volusia and Flagler Counties indicate an increasing trend over the five-year period.

Table 26 Intersection Related Crashes

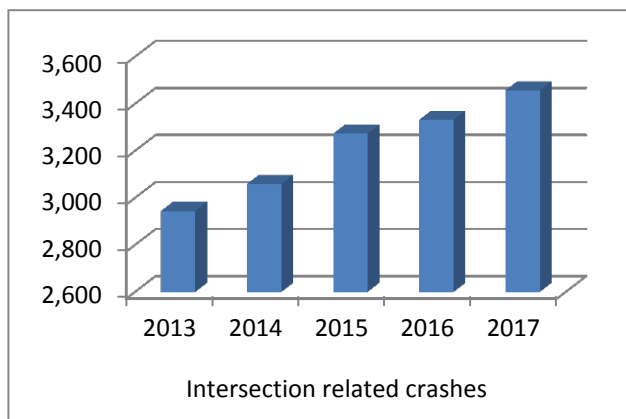
Year	Flagler County	Volusia County
2013	415	2,944
2014	507	3,059
2015	601	3,273
2016	624	3,332
2017	621	3,457

Figure 17 Flagler County Intersection Related Crashes



Source: Signal Four Analytics

Figure 18 Volusia County Intersection Related Crashes



Source: Signal Four Analytics

The tables below show the Bike/Ped high crash intersection locations. A minimum crash count is three.

Table 27 Intersection Related Bike/Ped High Crash Locations – 2015

Rank	Intersection Name	Crash Count	City
1	Mason Ave & Ridgewood Ave & N Ridgewood Ave	37	Holly Hill
1	S Ridgewood Ave & Bellevue Ave	19	Daytona Beach
2	Dunlawton Ave & S Nova Rd	41	Port Orange
2	Seabreeze Blvd & N Wild Olive Ave	22	Daytona Beach

Source: Signal Four Analytics

Table 28 Intersection Related Bike/Ped High Crash Locations – 2016

Rank	Intersection Name	Crash Count	City
1	S Nova Rd & Spruce Creek Rd	31	Port Orange
1	Cedar St & S Ridgewood Ave	8	Daytona Beach
1	Dr Mary McLeod Bethune Blvd & N Ridgewood Ave	7	Daytona Beach

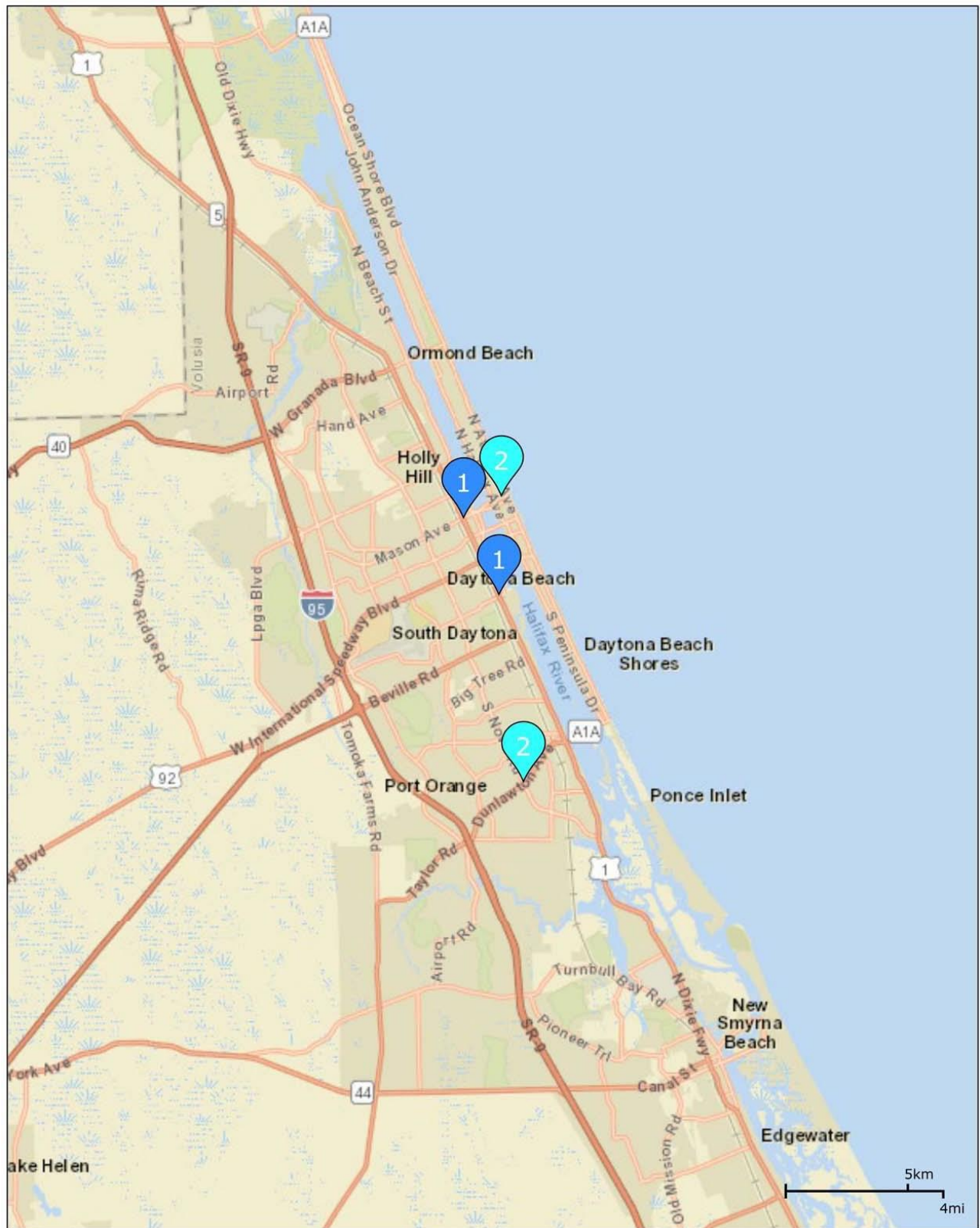
Source: Signal Four Analytics

Table 29 Intersection Related Bike/Ped High Crash Locations - 2017

Rank	Intersection Name	Crash Count	City
1	S Clyde Morris Blvd & Beville Rd	62	Daytona Beach
1	W International Speedway Blvd & N Keech St & S Keech St	22	Daytona Beach
1	US-1 & Dunlawton Ave & S Ridgewood Ave	21	Port Orange
1	Cypress Point Pkwy & Palm Coast Pkwy SW & Palm Coast Pkwy & Boulder Rock Dr & Palm Coast Pkwy NW	19	Palm Coast
1	S Clyde Morris Blvd & Richard Petty Blvd	15	Daytona Beach
1	S Halifax Ave & Main St & N Halifax Ave	10	Daytona Beach

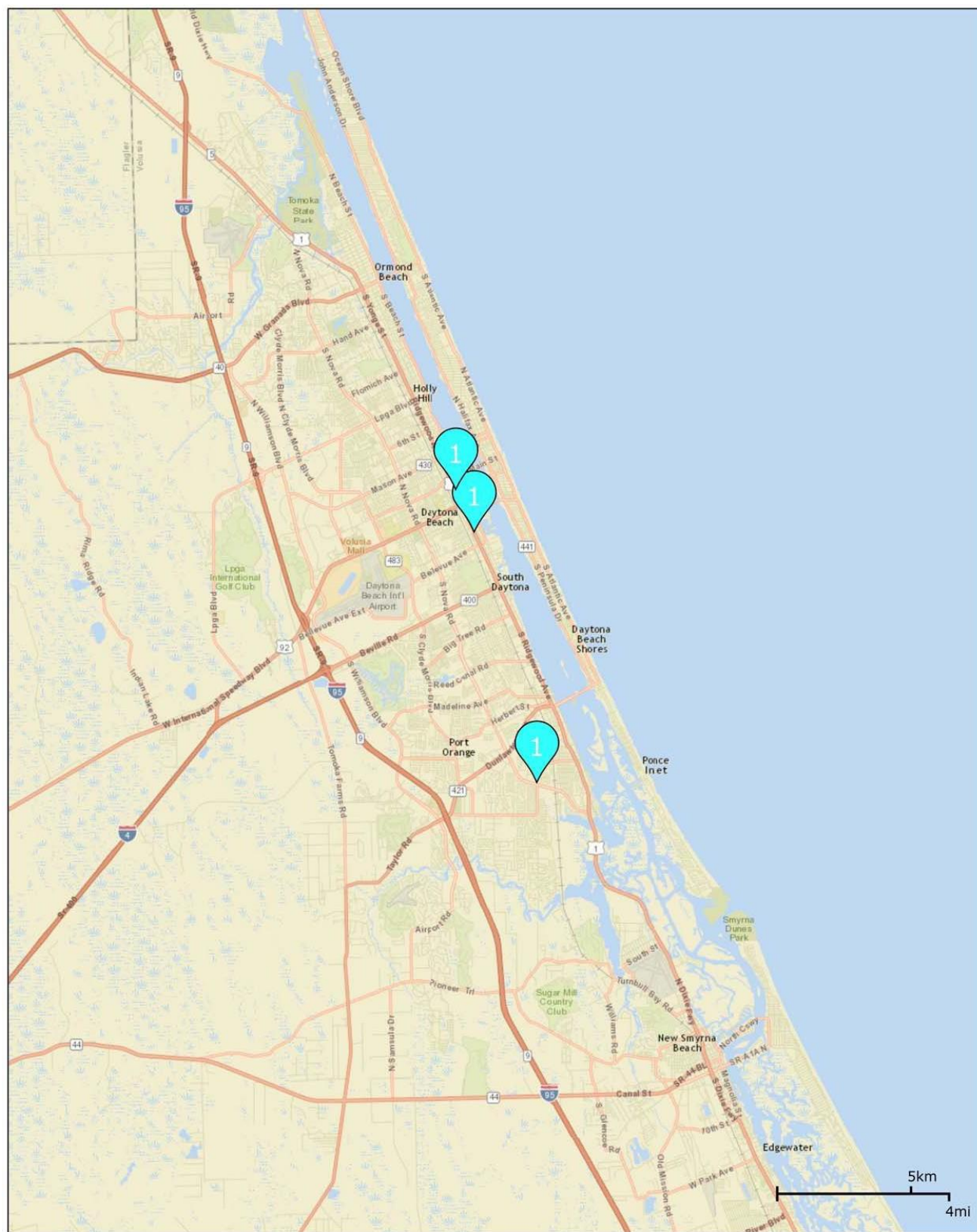
Source: Signal Four Analytics

Figure 19 Intersection Related Bike/Ped High Crash Locations – 2015



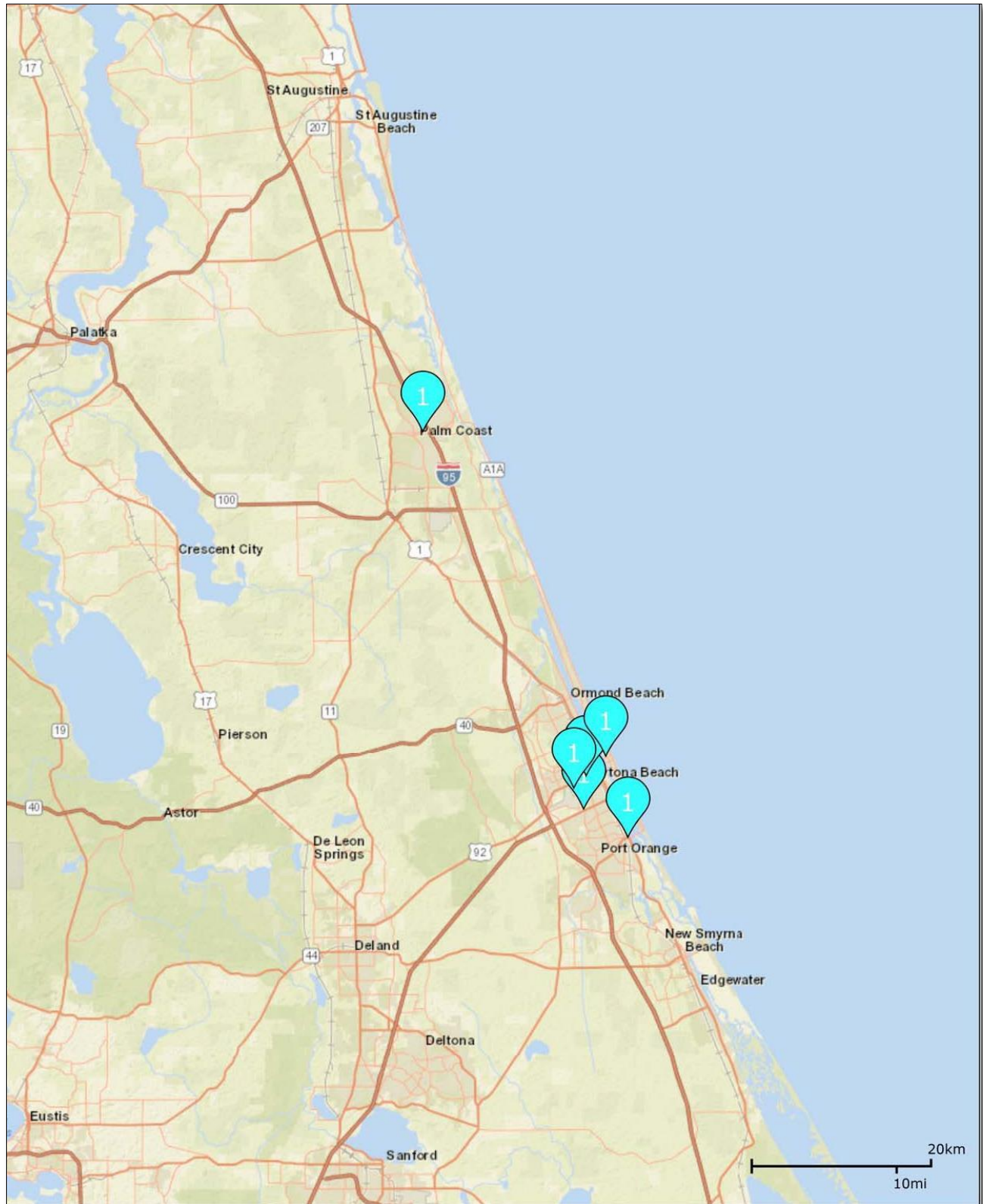
Source: Signal Four Analytics

Figure 20 Intersection Related Bike/Ped High Crash Location - 2016



Source: Signal Four Analytics

Figure 21 Intersection Related Bike/Ped High Crash Location 2017

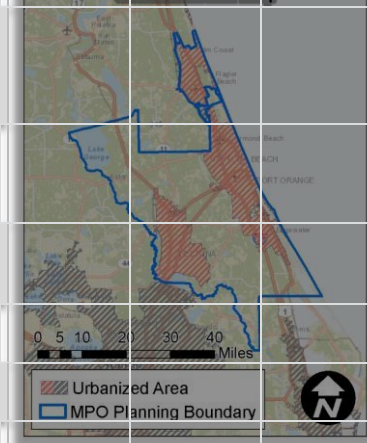


Source: Signal Four Analytics

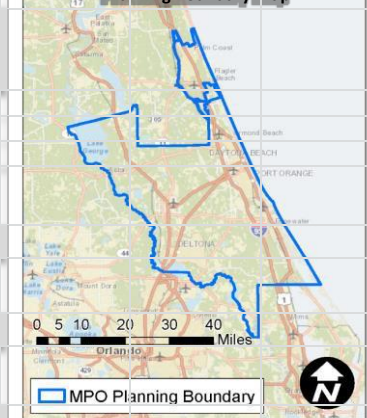
APPENDIX

Measures	Definitions					
A: Daily vehicle miles traveled	The product of vehicle traffic volume and road (segment) length.					
B: Percent travel meeting LOS criteria in the peak hour	The percentage of travel meeting FDOT's LOS standards is determined by summing the vehicle miles traveled on roadways operating acceptably and then dividing by the total system vehicle miles traveled. Acceptably is defined as LOS D (two-hour peak) for the 7 largest counties, LOS D (one-hour peak) for other urbanized areas, and LOS C (one-hour peak) everywhere else.					
C: Travel time reliability in the peak hour	For seven largest counties travel time reliability is defined as the percentage of freeway trips traveling at least 45 mph. For all others travel time reliability is defined as the percentage of freeway trips travelling at greater than or equal to 5 mph below the posted speed limit.					
D: Daily vehicle hours of delay	Delay is the product of directional hourly volume and the difference between travel time at "threshold" speeds and travel time at the average speed. The thresholds are based on LOS B as defined by FDOT.					
E: Percent miles severely congested	The percentage of miles severely congested is determined by summing the miles of roadway operating at LOS F in the peak hour and then dividing by the total highway miles.					
F: Daily combination truck miles traveled	Determined using combination truck traffic volume and segment length. Combination trucks are defined by FHWA as Classification 8-13.					
G: Freight travel time reliability in the peak hour	For seven largest counties freight travel time reliability is defined as the percentage of freeway trips by combination trucks traveling at least 45 mph. For all others travel time reliability is defined as the percentage of freeway trips by combination trucks travelling at greater than or equal to 5 mph below the posted speed limit.					
H: Daily combination truck hours of delay	Combination truck hours of delay is based on combination truck speed. Delay is calculated as the product of directional hourly volume and the difference between travel time at "threshold" speeds (at LOS B) and travel time at the average speed.					
Roadway Networks	Definitions					
A: National Highway System	Includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility					
B: Interstate	Includes all interstate highway system roadways					
C: Strategic Intermodal System	Florida's transportation system composed of facilities and services of statewide and interregional significance, including appropriate components of all modes.					
D: State Highway System	All roadways that the Florida Department of Transportation operates and maintains.					
E: Freeways	Multilane, divided highways with at least two lanes for exclusive use of traffic in each direction and full control of ingress and egress.					
F: Non-freeways (SHS)	Arterials and highways of the State Highway System which are not freeways					

River to Sea TPO
Urbanized Area Map



River to Sea TPO
Planning Boundary Map



Source: Florida Department of Transportation

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
CAC	Citizens Advisory Committee
CMP	Congestion Management Process
LOS	Level of Service
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
NHS	National Highway System
SHS	State Highway System
SIS	Strategic Intermodal System
TCC	Technical Coordinating Committee
TIP	Transportation Improvement Program
TMA	Transportation Management Area
TPM	Transportation Performance Measures
TPO	Transportation Planning Organization
TWG	Technical Working Group
VMT	Vehicle Miles Traveled

DEFINITIONS

- 1. ARTERIAL ROADS** - The group of roads constituting the highest degree of through traffic movement and largest proportion of total travel. The interstate highway system is part of the federal arterial highway system. The arterial road system is further broken down to principal and minor arterial roads.
- 2. CENTERLINE MILES** - Length of a road, without regard to number of lanes.
- 3. COLLECTOR ROADS** - The group of roads providing a link between through traffic movement and direct private property access functions, typically within a given county or urban area, linking major property uses to each other or to the arterial highway system. The collector road system is composed of rural major collector roads, rural minor collector roads, urban major collectors and urban minor collectors. The collector road system is further broken down to major and minor collector roads.
- 4. FEDERAL-AID ELIGIBLE ROADS** - Roads on the National Highway System (NHS) or functionally classified as Urban Collector / Rural Major Collector, or higher. They are eligible for federal aid from the Federal Highway Administration for disaster recovery and other purposes.
- 5. FUNCTIONAL CLASSIFICATION** - Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Five functional classification categories are common to rural and urban roads. The rural or urban designation is part

Urban	Rural
Principal Arterial	Principal Arterial
Minor Arterial	Minor Arterial
Major Collector	Major Collector
Minor Collector	Minor Collector
Local	Local

of the complete functional classification designation; e.g., Urban Minor Arterial.

6. **INTERMODAL FACILITIES** - Intermodal facility' means "a transportation element that accommodates and interconnects different modes of transportation and serves interstate, and international movement of people and goods.
7. **INTERSTATE HIGHWAY SYSTEM** - The Dwight D. Eisenhower National System of Interstate and Defense Highways (commonly known as the Interstate Highway System, Interstate Freeway System, Interstate System, or simply the Interstate) is a network of controlled-access highways that forms a part of the National Highway System of the United States.
8. **LANE MILES** - The length of a roadway (in miles) multiplied by the number of traffic lanes. Only pavement normally used should be included; shoulders should not be included, except if shoulders are legally used in peak hours.
9. **LOCAL STREETS** - The class of roads having direct property access as their primary purpose. Although providing the largest proportion of road miles, this system contributes little to total highway travel due to short trip lengths and low volumes.
10. **MOBILITY** - The ease with which people and goods move across the transportation network. This definition emphasizes mobility from the user perspective. It is often viewed as having the following dimensions:
 - a. quantity of travel - the magnitude of the use of a facility or service;
 - b. quality of travel - travel conditions and the effects of congestion;
 - c. accessibility - the ease with which people can connect to the multimodal transportation
 - d. system; and
 - e. utilization - whether or not a transportation system is properly sized and has the ability to accommodate growth.
11. **NATIONAL HIGHWAY SYSTEM (NHS)** - A system designated by Congress that includes all Interstate routes, urban and rural principal arterials, the Strategic Highway Network (STRAHNET) and Strategic Highway Network Connectors and connectors to approved Intermodal Facilities.
12. **SEVERELY CONGESTED** – a roadway segment operating with a volume to capacity ratio equal to or greater than 1.0.
13. **CONGESTED** – a roadway segment operating with a volume to capacity ratio greater than 9.0 and less than 1.0.
14. **STATE HIGHWAY SYSTEM (SHS)** - Roads under the jurisdiction of the Florida Department of Transportation, state-chartered expressway authorities, and other state agencies.
15. **STRATEGIC INTERMODAL SYSTEM (SIS)** - Highways and other modes important for transportation in Florida.
16. **STRATEGIC HIGHWAY NETWORK (STRAHNET)** - Interstate and non-Interstate highways essential to strategic mobility. These highways can support mobilization and sustainment of forces during a defense contingency. These routes constitute part of the NHS.
17. **VEHICLE MILES TRAVELED (VMT)** - The number of vehicle miles of travel (VMT) is an indicator of the travel levels on the roadway system by motor vehicles. VMT is estimated for the given time period. This estimate is based upon traffic volume counts and roadway length. A comparison of VMT for successive time periods is important for determining travel trends. An increase or decrease in population is one factor that can contribute to an increase or decrease in VMT. Other factors that can affect a change in VMT include economic growth, relatively affordable auto travel costs, tourism, low levels of public transit, sprawl, and related factors.

Figure 22 National Highway System (NHS)

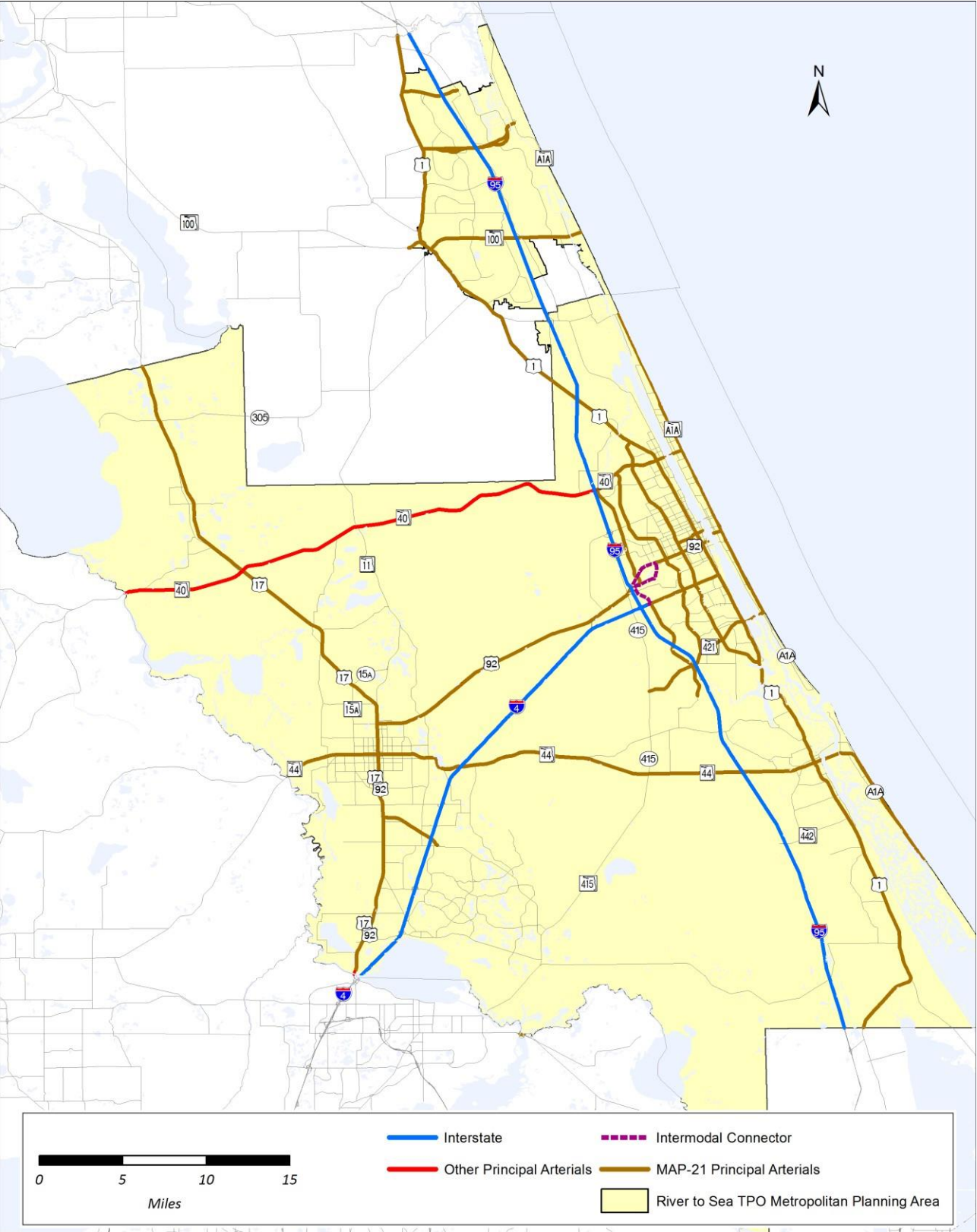


Figure 23 Strategic Intermodal System (SIS)

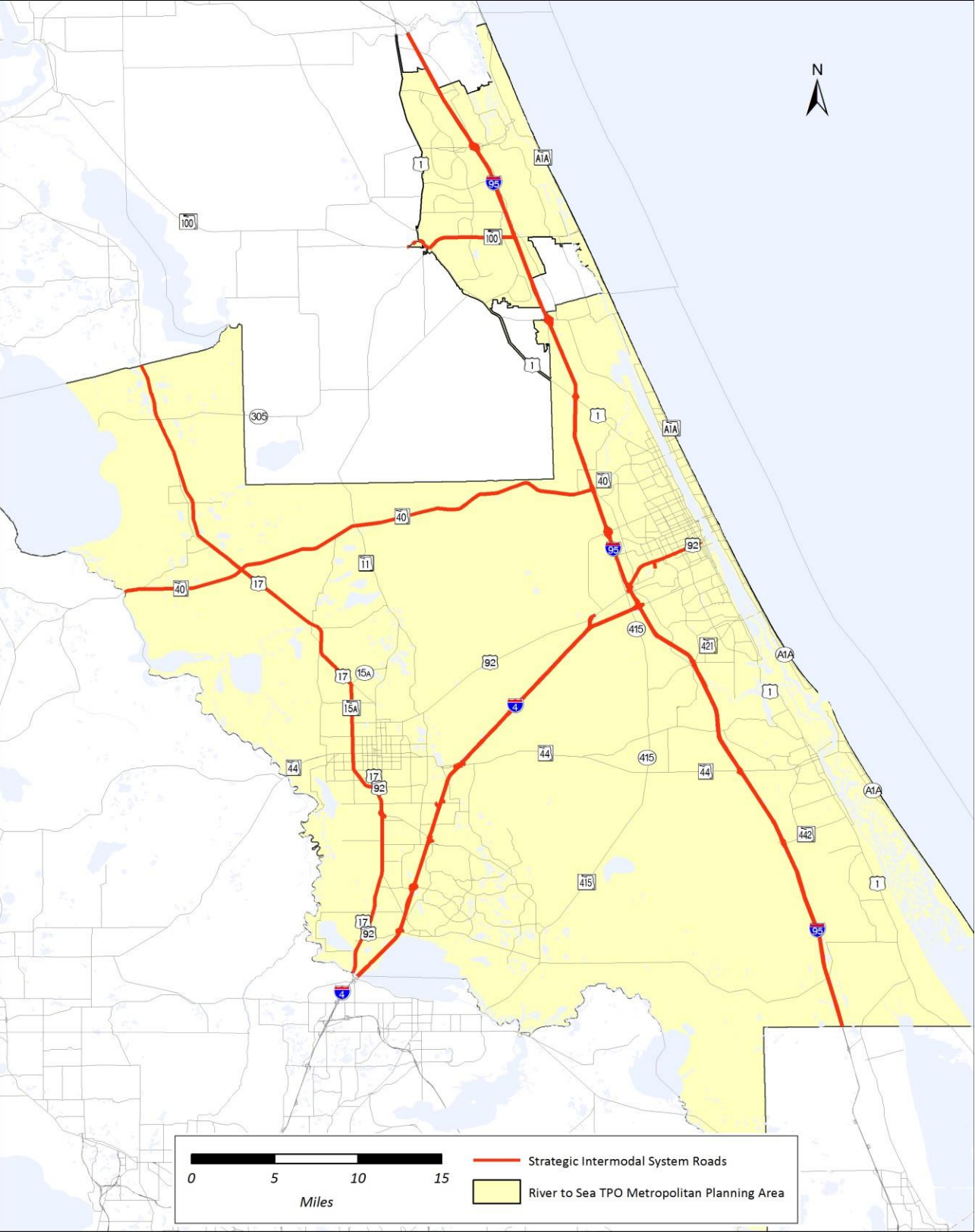


Figure 24 State Highway System (SHS)

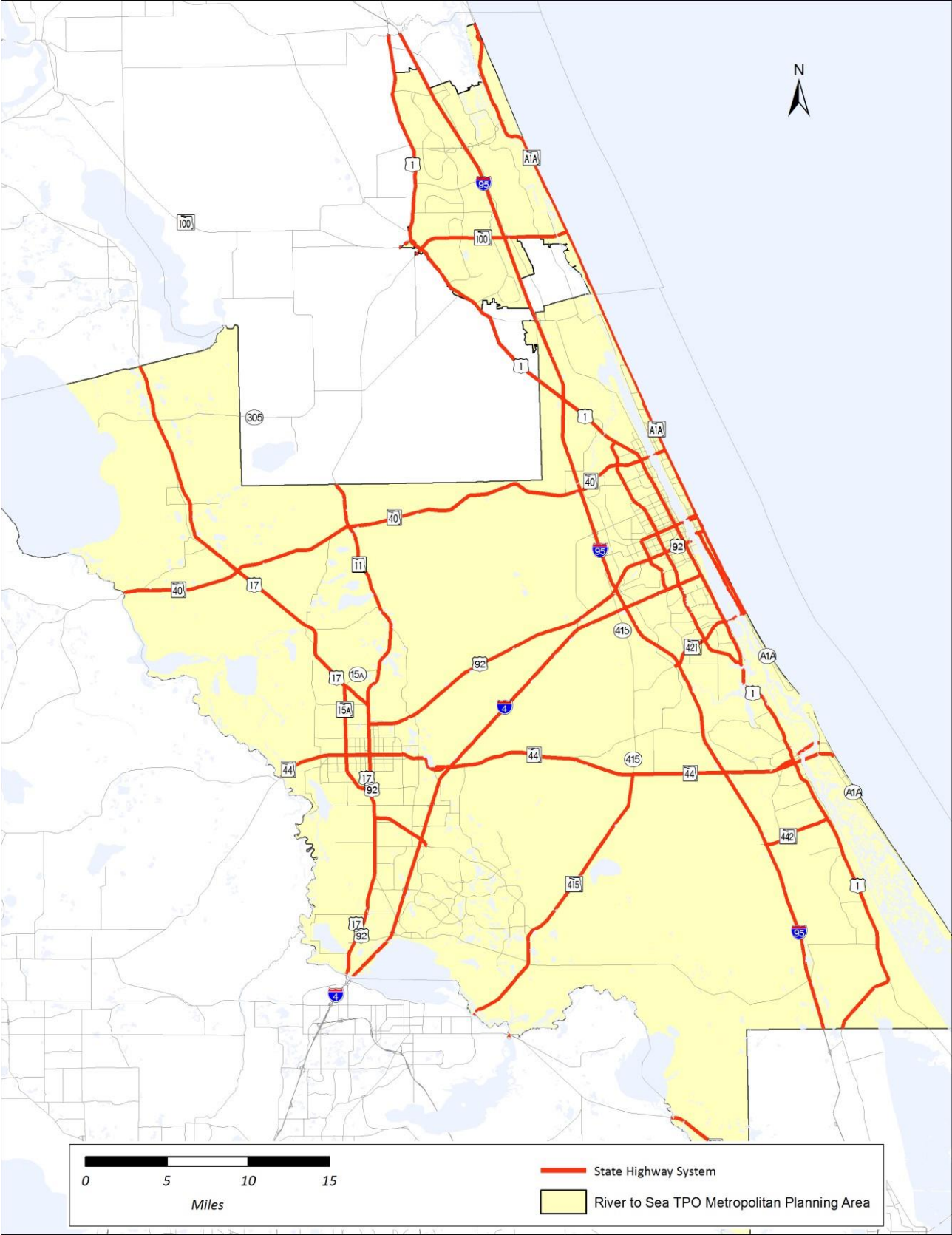


Figure 25 Off-System Arterials and Collectors

