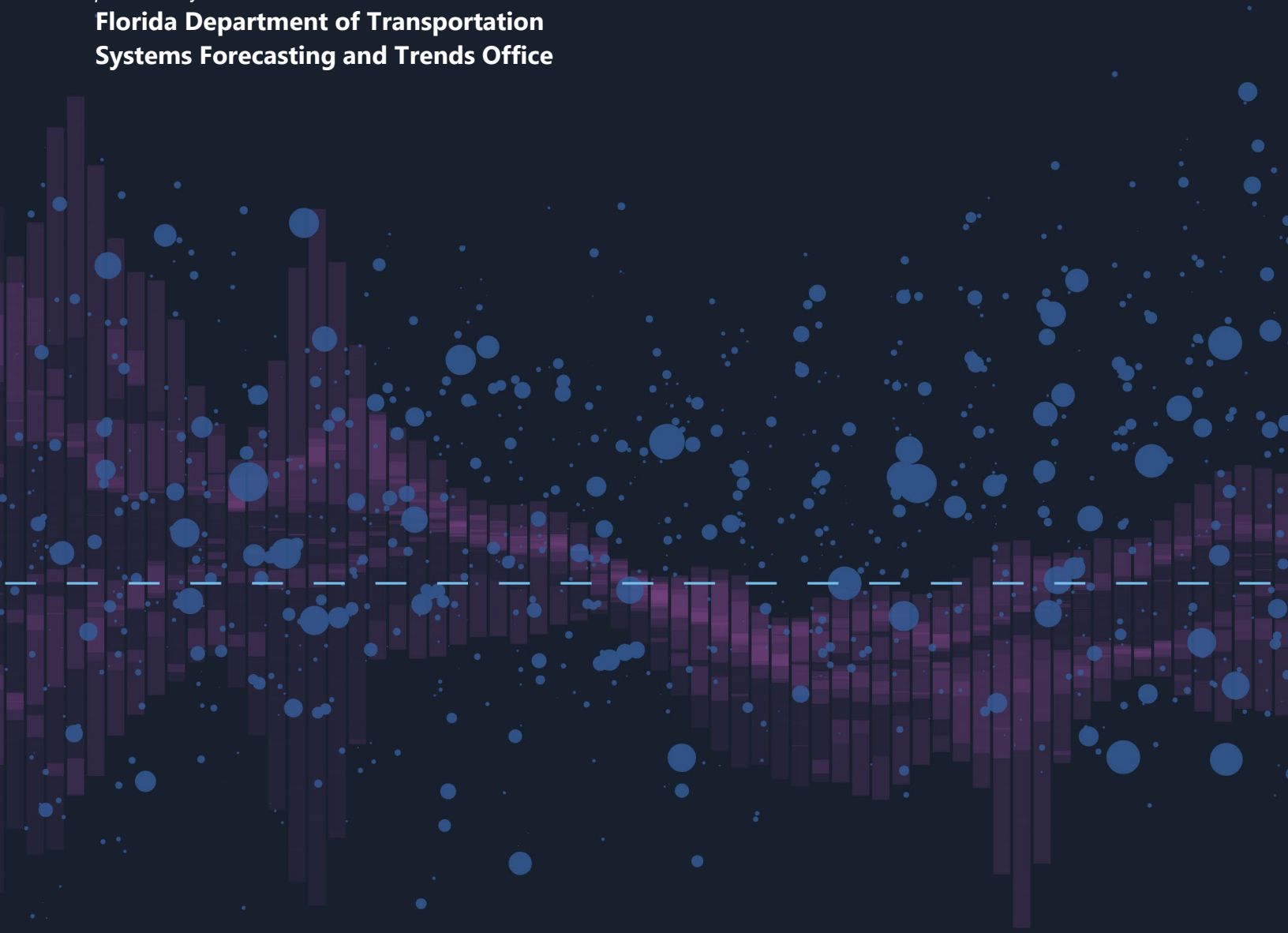
FDOT SOURCE BOOK METHODOLOGIES

A Technical Report - 2024

produced by
Florida Department of Transportation
Systems Forecasting and Trends Office



Systems Forecasting & Trends Office

FDOT

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1.0 Executive Summary

The FDOT Source Book (Source Book) is an easy-to-use compendium of safety, mobility and asset condition data to measure Florida's transportation system performance. The objective of this document is to detail the methodologies used to develop the measures and factors presented in the Source Book.

Performance measures provide the consumer with information to draw an understanding of the current and historical state of the system, and in turn adapt policies, plans, and programs to help accomplish performance goals. Performance measures are critical for evaluating the system conditions and linking performance to investment decisions and outcomes. The Florida Department of Transportation Source Book reports on a robust set of multimodal performance measures to capture the trends for safety, asset condition, and mobility.

Calculation of mobility measures in the Source Book is based on a combination of measured (archived field-measured travel speed data) and modeled results. Most of the data are obtained from existing sources such as the Department's Roadway Characteristics Inventory (RCI), Traffic Characteristics Inventory (TCI), Weigh-in-Motion (WIM), and the archived field-measured travel probe speed data provided by HERE through the Regional Integrated Transportation Information System (RITIS). These data sources provide information on the roadway geometry (such as the number of lanes, posted speed limit, and functional classification), demand for the roadway (traffic volume and vehicle classification) and field-measured roadway travel speed information.

The full list of multimodal mobility performance measures is shown in **Table ES.1**. Most of these are calculated from 2016 to 2023 using the methodologies discussed in this document. **Table ES.2** presents a summary of the calculation routines, methodology, sources and reporting periods for all the measures. **Section 2.0** to **Section 4.0** defines key inputs and data processing procedures. **Section 5.0** to **Section 12.0** documents the methodology for computing mobility performance measures. **Section 13.0**, **Section 14.0** and **Section 15.0** discuss the infrastructure, safety and federal performance measures in sequence.

Table ES.1 Multimodal Performance Measures

Mobility

Auto
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- Pavement
- System Performance

Table ES.2 Summary of Multimodal Performance Measures

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
MOBILITY MEASURES: AUTO				
Vehicle Miles Traveled	Vehicle miles traveled (VMT) is the mileage traveled by all vehicles on a road system over a period of time such as daily or yearly. It is determined using vehicle traffic volume and segment length.	$\sum(Segment\ Length \times Vehicular\ Traffic\ Volume)$	■ Peak Hour ■ Daily	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ Highway Statistics Series - *Policy | Federal Highway Administration (dot.gov)*
Person Miles Traveled	Person Miles Traveled (PMT) is defined as the average miles traveled by a person. It's determined by multiplying VMT by the average vehicle occupancy.	$\sum \text{Segment Length} \times \text{Vehicular Traffic Volume} \times \text{Average Vehicle Occupancy}$	■ Peak Hour ■ Daily	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ FDOT - *Vehicle Occupancy Factor Calculation Technical Report*
Average Travel Speed	Average travel speed is the average of all hourly segment travel speeds captured by probe data or modeled through speed-volume functions, weighted by the segment's VMT.	$\frac{\sum_{i=1}^{\#\ Segments}(VMT_i \times Average\ Travel\ Speed_i)}{\sum_{i=1}^{\#\ Segments} VMT_i}$ where $Average\ Travel\ Speed_i = (HCSpeed_i \times \%\ of\ travel\ @\ HCSpeed_i) + (MCSpeed_i \times \%\ of\ travel\ @\ MCSpeed_i) + (UCSpeed_i \times \%\ of\ travel\ @\ UCSpeed_i)$	■ Peak Hour ■ Peak Period	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ HERE Technologies – *Travel Time Data*

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MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Vehicle Hours of Delay	Vehicle hours of delay is estimated hourly by determining the difference between actual travel time and the delay threshold travel time along a facility. Delay threshold travel time is the travel time for a motorist during uncongested conditions.	$\Sigma_{i=1}^{\#\ Segments}\ (\text{Travel Time}_i - \text{Threshold Travel Time}_i) \times \text{Vehicular Traffic Volume}_i$	■ Peak Hour ■ Daily ■ Yearly	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ HERE Technologies – *Travel Time Data*
Person Hours of Delay	Person hours of delay is estimated by multiplying the average vehicle occupancy by the vehicle hours of delay.	$\sum(\text{Travel Time} - \text{Threshold Travel Time}) \times \text{Vehicle Traffic Volume} \times \text{Average Vehicle Occupancy}$	■ Peak Hour ■ Daily ■ Yearly	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT - *Vehicle Occupancy Factor Calculation Technical Report* ■ HERE Technologies – *Travel Time Data*
Planning Time Index	Planning time index is the ratio of the 95th percentile travel time to the travel time at reference speed defined as the 85th percentile speed during weekday off-peak hours (9:00 am to 4:00 pm and 7:00 to 10:00 pm). This measure represents the total travel time that a traveler should budget to ensure on-time arrival 95 percent of the time.	$\frac{\text{Travel Time}_{95\text{th percentile}}}{\text{Travel Time}_{\text{reference speed}}}$	■ Peak Hour ■ Peak Period ■ Daily	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ HERE Technologies – *Travel Time Data*

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MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
% Miles by Congestion Level	This measure reports the percent miles of roadway categorized as heavily congested, mildly congested, or uncongested. Each congestion category is based on average travel speeds meeting the corresponding congestion threshold. This measure estimates the percent miles by the three levels of congestion for the reporting periods of peak hour and peak period.	$\frac{\sum Segment\ length\ whose\ travel\ speeds\ meet\ congestion\ threshold}{\sum \text{Segment Length}} \times 100$	■ Peak Hour ■ Peak Period	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits)* ■ HERE Technologies – *Travel Time Data*
Duration of Congestion	The duration of congestion is the average length of time during a weekday when roadways subject to congestion operate at heavily congested speeds. Segments are assumed "subject to congestion" when at least 15 minutes of the day have an average speed below the heavily congested thresholds.	$\frac{\sum_{i=1}^{\#\ Segments} \text{Lane Miles}_i \times \sum_{j=1}^{24} \text{Probability Hour is Heavily Congested}_{ij}}{\sum_{i=1}^{\#\ Segments} \text{Lane Miles}_i}$ given that Segment i has at least 15 minutes of heavy congestion	■ Daily	■ FDOT, *Traffic Characteristics Inventory* ■ FDOT, *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)* ■ HERE Technologies – *Travel Time Data*
Average Speed vs. Posted Speed	This measure is expressed as the ratio of average peak hour speed against the posted speed limit. The output represents the percent of the posted speed limit achieved during the peak hour (5:00 to 6:00 pm on a weekday).	$\frac{\sum VMT \times \left(\frac{\text{Peak Hour Speed}}{\text{Posted Speed Limit}}\right)}{\sum VMT}$	■ Peak Hour	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 311 (Speed Limits)* ■ HERE Technologies – *Travel Time Data*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Vehicles Per Lane Mile	The vehicles per lane mile is calculated as the summation of each roadway segment's peak hour volume divided by the number of lanes weighted by the aggregate lane miles of each segment.	$\frac{\sum_{i=1}^{\#\ Segments}\left(\frac{Volume_i}{Number\ of\ Lanes_i} \times Lane\ Miles_i\right)}{\sum_{i=1}^{\#\ Segments} Lane\ Miles_i}$	■ Peak Hour	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 212 (Through Lanes)*
Level of Travel Time Reliability	This measure is computed as the ratio between the 80th percentile travel time to the 50th percentile travel time for each of the following time periods – AM peak, Mid-day, PM peak, and Weekends.	$\frac{Travel\ Time_{80th\ percentile}}{Travel\ Time_{50th\ percentile}}$	■ AM Peak (6 am to 10 am on Mon-Fri) ■ Mid-day (10 am to 4 pm on Mon-Fri) ■ PM Peak (4 pm to 8 pm on Mon-Fri) ■ Weekends (6 am to 8 pm on Sat, Sun)	■ HERE Technologies – *Travel Time Data*
MOBILITY MEASURES: TRUCK				
Combination Truck Miles Traveled	Combination Truck Miles Traveled (CTMT) is computed by multiplying VMT by the combination truck factor.	$\sum(VMT \times Combination\ Truck\ Factor)$	■ Daily	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory*

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MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Combination Truck Average Travel Speed	Combination truck average travel speed is the average of all hourly segment travel speeds captured by probe data or modeled through speed-volume functions. The combination truck average speed is estimated assuming that the free flow speed for automobile is set as the posted speed limit plus 5 mph, and the free flow speed for combination trucks is the posted speed limit.	$\frac{\sum(CTMT \times Combination\ Truck\ Average\ Travel\ Speed)}{\sum CTMT}$	■ Peak Hour	■ FDOT – *Traffic Characteristics Inventory* FDOT – *Roadway Characteristics Inventory* ■ HERE Technologies – *Travel Time Data*
Combination Truck Hours of Delay	Combination Truck Hours of Delay is estimated on an hourly basis by determining the difference between delay threshold travel time and actual travel time along a facility.	$\sum Combination\ Truck\ Volume \times (Combination\ Truck\ Travel\ Time - Threshold\ Travel\ Time)$	■ Daily	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory* ■ HERE Technologies – *Travel Time Data*
Combination Truck Cost of Delay	Cost of delay comes from calculating the average marginal cost of labor per hour and multiplying that by the number of hours of delay for combination trucks.	$\sum Combination\ Truck\ Hours\ of\ Delay \times Average\ Marginal\ Cost\ of\ Labor\ Per\ Hour$	■ Yearly	■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Roadway Characteristics Inventory* ■ HERE Technologies – *Travel Time Data* ■ American Transportation Research Institute (ATRI) – *An Analysis of the Operational Costs of Trucking*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Combination Truck Planning Time Index	Combination Truck Planning Time Index is the same as Planning Time Index (PTI), defined as a ratio of the 95th percent peak period/hour travel time to the free flow travel time. This measure represents the additional time that a shipper should budget to ensure on-time arrival 95% of the time.	$\frac{Travel\ Time_{95th\ percentile}}{Travel\ Time_{reference\ speed}}$	■ Peak Hour ■ Peak Period ■ Daily	■ FDOT – Traffic Characteristics Inventory ■ HERE Technologies – Travel Time Data
Combination Truck Tonnage	Combination truck tonnage refers to tons of freight carried by combination trucks on Florida's SHS. This value is calculated using WIM weight measurements and permanent count stations.	$\sum Unique\ Combination\ Truck\ Counts \times Average\ Weight\ of\ Freight$	■ Yearly	■ FDOT – Telemetered Traffic Monitoring Sites ■ FDOT – Weigh-in-Motion Data ■ FDOT – *Traffic Characteristics Inventory* ■ FDOT – *Statewide Travel Demand Model*
MOBILITY MEASURES: TRANSIT				
Transit Passenger Trips	Annual number of passengers boarding transit vehicles. A trip is counted each time a passenger boards a transit vehicle. Thus, each time a passenger transfers between buses to reach a destination, it is counted as a passenger trip.	$\sum Passengers\ Boading\ Transit\ Vehicles$	■ Yearly	■ FDOT – *Florida Transit Information and Performance Handbook*
Transit Revenue Miles	The number of annual miles a transit vehicle travels while in active service (available to pick up revenue passengers).	$\sum Revenue\ Miles\ of\ Vehicle\ Operation\ while\ in\ Active\ Service$	■ Yearly	■ FDOT – *Florida Transit Information and Performance Handbook*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Transit Passenger Trips Per Revenue Mile	The ratio of annual transit passenger trips to total annual transit revenue miles of service; a key indicator of service effectiveness that is influenced by the levels of demand and the supply of service provided.	$\frac{\sum Annual\ Transit\ Passenger\ Trips}{\sum Annual\ Transit\ Revenue\ Miles}$	▪ Yearly	▪ FDOT – *Florida Transit Information and Performance Handbook*
Transit Revenue Miles Between Failures	The number of total annual revenue miles divided by the number of revenue vehicle system failures, an indicator of the average frequency of delays because of a problem with the equipment. A failure is classified as the breakdown of either a major or minor element of the revenue vehicle's mechanical system.	$\frac{Total\ Annual\ Revenue\ Miles}{Number\ of\ Revenue\ Vehicle\ System\ Failures}$	▪ Yearly	▪ FDOT – *Florida Transit Information and Performance Handbook*
Transit Weekday Span of Service	The number of hours that transit service is provided on a representative weekday in the operation of the transit agency. This indicator is determined by computing the number of hours between the time service begins and the time service ends for an average weekday.	$\frac{\sum Tansit\ Service\ Spans}{\sum Number\ of\ Transit\ Modes}$	▪ Yearly	▪ FDOT – *Florida Transit Information and Performance Handbook*
MOBILITY MEASURES: PEDESTRIAN/BICYCLE				
% Pedestrian Facility Coverage	The pedestrian facilities include urban non-limited access State Highway System (SHS) with a sidewalk or a shared-use path on either side of a roadway.	$\frac{\sum Pedestrian\ Facility\ Miles\ in\ Urban\ Area}{\sum Non-Limited\ Access\ Centerline\ Miles\ in\ Urban\ Area} \times 100$	▪ Yearly	▪ FDOT – *Roadway Characteristics Inventory Feature 216 (Bike Lanes/Pedestrian Facilities)*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
% Bicycle Facility Coverage	Bicycle facilities include non-limited SHS roadway with a paved shoulder ≥ 4' and < 7' or a shared-use path on either side.	$\frac{\sum Bicycle\ Facility\ Miles}{\sum Non-Limited\ Access\ Centerline\ Miles} \times 100$	▪ Yearly	▪ FDOT – *Roadway Characteristics Inventory Feature 214 (Outside Shoulders) and Feature 216 (Bike Lanes/Pedestrian Facilities)*
Nonmotorized Traffic Counts	This website include pedestrian and bicycle counts from spot locations around Florida	$\sum Bicyclists\ Crossing\ a\ Counter$ $\sum Pedestrians\ \ Crossing\ a\ Counter$	▪ Monthly	▪ FDOT – *Statewide Non-Motorized Traffic Monitoring Program*
MOBILITY MEASURES: AVIATION				
Aviation Passenger Boardings	The total number of revenue-generating passengers who board an aircraft at a Florida commercial service airport. If a passenger transfers between planes to reach a destination within Florida, the passenger is counted as making two passenger boardings.	$\sum Number\ of\ Enplanement\ on\ An\ Aircraft$	▪ Yearly	▪ U.S. Federal Aviation Administration, *Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Aviation Departure Reliability	A departure is deemed reliable if the flight departs within 15 minutes of the scheduled time shown in the carrier's Computerized Reservations Systems (CRS). In the aviation industry, this is considered an on-time departure. Departure reliability is based on departure from the gate and can be influenced by various factors such as heavy traffic volume, weather, and mechanical reasons beyond the control of the airport or the air carrier. Aviation departure reliability is reported for all commercial service airports.	$\frac{\sum(Departures < 15\ Minutes\ of\ Schedule)}{\sum Departures} \times 100$	▪ Yearly	▪ U.S. Department of Transportation, Bureau of Transportation Statistics, *Reporting Carrier On-Time Departure*
Aviation Tonnage	Aviation tonnage is the weight of all reported air cargo and mail handled at Florida airports which includes commercial service, general aviation, and non-military freight movements at military aviation.	$\sum Weight\ of\ Mail\ and\ Air\ Cargo\ Handled\ at\ Florida\ Airports$	▪ Yearly	▪ U.S. Bureau of Transportation Statistics - T100 Market (all Carriers)
MOBILITY MEASURES: RAIL				
Rail Passengers	Rail passengers refer to the annual number of revenue-paying rail passengers. For the purpose of this performance measure, rail passengers include those riding on Amtrak as well as inter-regional transit services, such as SunRail and Tri-Rail.	$\sum Rail\ Passengers\ on\ Amtrak, SunRail\ and\ Tri-Rail$	▪ Yearly	▪ Amtrak – *Amtrak Fact Sheet* ▪ SunRail, Tri-Rail –*FDOT Public Transit Office*

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Passenger Rail On-time arrival	Rail on-time arrival (Amtrak, SunRail and Tri-Rail) captures the passenger trains that arrive on-time for rail systems operating within Florida. A train is considered on-time if arrival is within a specified threshold time frame of scheduled arrival time. The threshold for on-time arrival varies between the operators. For long distance trips, on Amtrak, the time frame is wide (e.g., 30 minutes). For commuter trains, the time frame is narrow (e.g., 15 minutes).	$\frac{\sum On-Time\ Trains}{\sum Trains} \times 100$	▪ Yearly	▪ Amtrak – *Amtrak Fact Sheet* ▪ FDOT Freight & Rail Office
MOBILITY MEASURES: SEAPORT				
Seaport Passenger Movements	Seaport passenger movements refer to passengers embarking and disembarking a cruise ship at a Florida seaport. For example, when a cruise passenger departs on a cruise ship from PortMiami, they are counted. When the same cruise passenger arrives back at PortMiami, they are counted again.	$\sum Cruise\ Passengers\ Embarking\ and\ Disembarking\ a\ Cruise\ Ship\ at\ Florida\ Seaports$	▪ Yearly	▪ FDOT Seaport Office
Seaport Tonnage	International and domestic waterborne tons of cargo handled at Florida's public seaports.	$\sum Cargo\ Tonnage\ Handled\ at\ Florida's\ Public\ Seaports$	▪ Yearly	▪ FDOT Seaport Office

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Seaport Twenty-Foot Equivalent Units	Twenty-foot equivalent unit (TEU) represents the cargo capacity of a standard intermodal container, twenty feet long and eight feet wide. It is the standardized unit of the capacity of a container ship, or a container terminal.	$\sum Twenty - Foot\ Equivalent\ Units$	■ Yearly	■ FDOT Seaport Office
MOBILITY MEASURES: SPACEPORT				
Space Launches	Space launches account for all the successful mission launches from Cape Canaveral Spaceport, aside from any test flights.	$\sum Successful\ Orbital\ Launches$	■ Yearly	■ Space Florida
Active Launch Sites in Florida	Launch sites include active launch sites at Florida's civilian and military spaceports.	$\sum Active\ Launch\ Sites$	■ Yearly	■ Space Florida
Space Payloads	The space payloads describe the amount of military, civil, and commercial cargo launched into space. Payloads may include cargo, a flight crew, scientific experiments, munitions, or other equipment.	$\sum Civil, Commercial\ and\ DoD\ payloads$	■ Yearly	■ Space Florida
Payload Weight in Orbit	Payload weight represents weight being sent to orbit through Florida's spaceports.	$\sum Pounds\ in\ Orbit$	■ Yearly	■ Space Florida

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MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
INFRASTRUCTURE PERFORMANCE MEASURES				
Pavement Condition	The state of pavement in terms of ride quality, crack extent and severity, and average depth of wheel-path ruts through FDOT's annual pavement condition survey.	$\frac{\sum SHS\ Miles\ with\ Pavement\ Meeting\ FDOT\ Standards}{\sum Pavement\ Miles\ on\ the\ SHS} \times 100$	■ Yearly	■ FDOT State Materials Office
Bridge Condition	The state of a bridge is based on a 0 to 9 scale with 0 indicating a failed condition and 9 indicating an excellent condition. Target Bridge Condition is percent of bridges on the SHS meeting FDOT standards with a National Bridge Inventory (NBI) rating of 6 or higher.	$\frac{\sum FDOT-Maintained\ Bridges\ on\ the\ SHS\ with\ NBI \geq 6}{\sum FDOT-Maintained\ Bridges\ on\ the\ SHS} \times 100$	■ Yearly	■ FDOT Office of Maintenance
Maintenance Condition	Maintenance condition is determined by evaluating each of the following five highway components: roadway, roadside, traffic services, drainage, and vegetation/aesthetics.	$\frac{\sum Maintenance\ Miles\ on\ the\ SHS\ with\ Rate\ \geq 80}{\sum Maintenance\ Miles\ on\ the\ SHS} \times 100$	■ Yearly	■ FDOT Office of Maintenance

MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
SAFETY PERFORMANCE MEASURES				
Number of Fatalities	The total number of fatalities on Florida's roadways as a direct result of a traffic crash within thirty days of the crash occurrence.	$\sum People\ Killed\ Due\ to\ Traffic\ Crashes$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Number of Serious Injuries	The number of disabling/incapacitating injuries from traffic crashes that prevent the injured individuals from engaging in normal activities and which usually require transport to a medical facility and hospitalization.	$\sum People\ Seriously\ Injuried\ Due\ to\ Traffic\ Crashes$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Rate of Fatalities	The total number of fatalities on Florida's roadways per 100 million VMT.	$\frac{\sum Fatalities}{\text{Annual } VMT} \times 100\ million$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Rate of Serious Injuries	The total number of serious injuries (non-fatal) on Florida's roadways per 100 million VMT.	$\frac{\sum Serious\ Injuries}{Annual\ VMT} \times 100\ million$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*

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MEASURE	DESCRIPTION	CALCULATION	REPORTING PERIOD	SOURCES
Motorcyclist Fatalities and Serious Injuries	These safety measures capture the number of fatalities and incapacitating injuries of both motorcyclists and their passengers.	$\frac{\sum Motocyclist\ and\ Passenger\ Fatalities}{\sum Motocyclist\ and\ Passenger\ Serious\ Injuries}$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Pedestrian Fatalities and Serious Injuries	This measure is the total number of pedestrian fatalities and serious injuries (incapacitating) that are reported on Florida's public roads.	$\frac{\sum Pedestrians\ Killed\ from\ Traffic\ Crashes}{\sum Pedestrians\ Serious\ Injuried\ (Incapacitated)\ from\ Traffic\ Crash}$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Bicycle Fatalities and Serious Injuries	The total number of bicyclist and passenger fatalities and serious injuries (incapacitating) on all of Florida's roadways.	$\frac{\sum Bicyclists\ and\ Passengers\ Killed\ from\ Traffic\ Crashes}{\sum Bicyclists\ and\ Passengers\ Seriously\ Injuried\ (Incapacitated)\ from\ Traffic\ Crashes}$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*
Safety Belt Usage	A field survey of a one-hour observation at each of the 165 selected sites across 15 counties.	$\frac{\sum Observed\ Safety-Belt-Using\ Drivers\ and\ Passengers}{Total\ Observations} \times 100$	▪ Yearly	▪ Florida Department of Highway Safety and Motor Vehicles – *Traffic Crash Facts Annual Report* ▪ FDOT State Safety Office – *Signal Four Analytics database as of November 14, 2023 for 2022 data*

2.0 Use of Probe Data in the Source Book

The FDOT Source Book (Source Book) uses field-measured travel speed data, provided by HERE Technologies through the Regional Integrated Transportation Information System (RITIS) at the University of Maryland's Center for Advanced Transportation Technology Laboratory (CATT Lab), for all its speed-based measures. The field-measured travel speed data covers most of the State Highway System (SHS), Strategic Intermodal System (SIS), and National Highway System (NHS) roadways. Where the speed data does not cover the SHS or NHS, the reported mobility measures for the Source Book are calculated based on speeds estimated from speed-volume functions. The modeled and field-measured travel speeds as described below:

Modeled Mobility Measures Calculations: Mobility measures for the years of 2016 to 2023 are first calculated without using field-measured travel speed data. Speeds for each roadway segment are estimated using the traffic volume data and speed-volume functions discussed in **Section 4.6.2**.

Field Mobility Measures Calculations: Mobility measures for the years 2016 to 2023 are calculated using field-measured travel speed data and traffic volume data. Since some measures are not dependent on travel speeds, the method for applying modeled and field-measured travel speeds is only applicable to the following measures:

- Average Travel Speed: Auto and Combination Truck
- Average Speed vs. Posted Speed Limit: Auto
- Duration of Congestion: Auto
- Vehicle Hours of Delay: Auto and Combination Truck
- Person Hours of Delay: Auto
- Planning Time Index: Auto and Combination Truck
- % Miles by Congestion Level: Auto

3.0 Source Book Segmentation

Roadway segmentation is developed to create appropriate segment lengths for analysis purposes. On an annual basis Source Book segmentation is revisited to ensure accuracy. Source Book segments are updated when roads are removed from or added to the State Highway System and National Highway System. Segmentation also changes to accommodate new attributes, if needed. Details for the segment consolidation are discussed below. The Source Book uses a uniform approach to segmenting arterial, highway, and freeway facilities for all speed related measures.

In 2023, data on travel speeds on specific managed lanes (such as I-95, I-75, and SR 826) became available. These express lanes were examined and included in the Source Book, starting with the 2024 edition after assessing input availability.

For all 8 years of data from 2016 through 2023, roadways are segmented and consolidated from the RCI Top 30 table.[1] The segment consolidation is only completed on adjacent segments with the same roadway characteristics listed below:

- Roadway ID
- Number of Lanes
- Annual Average Daily Traffic (AADT)
- Posted Speed Limit
- County
- Context Classification
- State Highway System (SHS)
- National Highway System (NHS)
- Strategic Intermodal System (SIS)

[1] For more information, see section 8.3.5 of RCI Handbook at https://ftp.fdot.gov/public/file/i9i09RG8GkK4hWk_IQSCiA/FDOT_RCI_Handbook_Chapter_8.pdf

4.0 Intermediate Calculation Routines

The intermediate calculation routines used by multiple measures in the Source Book are discussed below.

4.1 Context Classification (Class)

FDOT has adopted a roadway classification system comprised of eight context classifications for all non-limited-access state roadways. The context classification denotes the criteria for roadway design elements for streets that promote safety, economic development, and quality of life. All non-limited access state facilities will be evaluated and assigned a preliminary current context classification. Preliminary context classifications are captured within RCI Feature 126. The preliminary Context Classification is assigned by the district to each roadway segment. For final context classification to be used at the project level, contact the District Complete Streets Coordinator. The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited- access state roadways. RCI Feature 126 context classifications were used in the creation of the Source Book in 2023. **Table 4.1** provides further description on each of the context classes.

Table 4.1 Context Classification

CLASSIFICATION	ADDITIONAL INFORMATION
C1-Natural	Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.
C2-Rural	Sparsely settled lands, may include agricultural land, grassland, woodland, and wetlands.
C2T-Rural Town	Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.
C3R-Suburban Residential	Mostly residential uses within large blocks and a disconnected/sparse roadway network.
C3C-Suburban Commercial	Mostly non-residential uses with large building footprints and large parking lots. Buildings are within large blocks and a disconnected/sparse roadway network.
C4-Urban General	Mix of uses set within small blocks with a well-connected roadway network. The roadway network usually connects to residential neighborhoods immediately along the corridor and/or behind the uses fronting the roadway.
C5-Urban Center	Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of the civic or economic center of a community, town, or city.
C6-Urban Core	Areas with the highest densities and building heights and within FDOT classified Large Urbanized Areas (population> 1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadways, and are within a well-connected roadway network.
LA-Limited Access	Roadways with grade separation and limited access such as Interstates and Expressways.

4.2 D Factors

The directional factor, or D factor, is the percentage of the hourly volume in the predominant direction. For the 2016-2023 mobility measures calculations, directional Annual Average Daily Traffics (AADTs), when available, are used to estimate traffic volume in both the peak (with higher directional AADT) and off-peak directions. When the directional AADTs are not available, D factors are applied to the AADT to assign directional volumes.

For those roadway segments without directional AADTs in the 2016-2023 calculations, peak and off-peak directional volumes are estimated with the assigned D factors based on lane equality, time of day and context classification. Specifically, D factors are assigned based on the criteria summarized in **Table 4.2**.

Table 4.2 D Factors

LANE EQUALITY	CONTEXT CLASS[2]	TIME PERIOD	D FACTOR
One-Way	All	All	100%
Equal number of lanes in both travel directions	C1	5 – 6 p.m.	64%
		All others	57%
	C2	5 – 6 p.m.	63%
		All others	56%
	C2T	5 – 6 p.m.	64%
		All others	57%
	C3C	5 – 6 p.m.	63%
		All others	56%
	C3R	5 – 6 p.m.	63%
		All others	56%
	C4	5 – 6 p.m.	63%
		All others	56%
	C5	5 – 6 p.m.	63%
		All others	56%
	C6	5 – 6 p.m.	62%
		All others	55%
	LA	All	55%
Unequal number of lanes in both travel directions	All	All	Max (55%[3], D factor from TCI)

[2] For more information on context classification, please visit: Context Classification Guide 2022_lo-res.pdf (nflr2.com)
[3] If D factor is not available in the RCI database, then D factor = 55% is used

Measures that use a D factor are identified below:

- Average Travel Speed
- % Miles by Congestion Level
- Vehicle Hours of Delay
- Person Hours of Delay

4.3 Hourly Factors

The FDOT Transportation Data and Analytics Office (TDA) compiles Florida continuous traffic data every year. To achieve the hourly factors (i.e., the ratio of hourly volumes to daily volumes) for each context class, 2019 and 2021 traffic data were obtained from FDOT telemetered and portable traffic monitoring sites. Hourly factors are applied to daily volume to obtain hourly volume for each segment. Thus, the results for the Source Book are affected by the hourly factor used.

In addition, a set of weekend hourly factors are used to better represent traffic volumes on Saturdays and Sundays (see section below). **Appendix A** contains the weekday and weekend hourly factors for all context classifications.

Performance measures that use an hourly factor are identified below:

- Average Travel Speed
- % Miles by Congestion Level
- Person Hours of Delay
- Person Miles Traveled
- Planning Time Index
- Vehicle Hours of Delay
- Vehicle Miles Traveled
- Vehicle per Lane Mile

4.4 Day of Week Variance

Traffic data gathered from FDOT count sites provides volumes for weekdays, Saturdays, and Sundays. Typically, roadways have higher volumes on weekdays, lower volumes on Saturdays, and even lower volumes on Sundays. There are occasional deviations from this pattern, but the volume data consistently shows this traffic pattern. To incorporate day of week variance, factors are developed for weekdays, Saturdays, and Sundays, allowing for a more precise representation of overall traffic conditions. **Table 4.3** summarizes the day of week variance for volumes used in the Source Book.

Table 4.3 Day of Week Variance Factors

WEEKDAY	SATURDAY	SUNDAY
106%	92%	78%

Note: The application of day of week variance factors does not change the annual average daily traffic (i.e., the weighted-average of factors is equal to 100%).

For peak hour and peak period performance measures, only the weekday traffic volumes and results are used. For measures reported on a daily basis, a seven-day average was calculated by weighting the weekday (5x), Saturday (1x), and Sunday (1x) results. Measures that are reported daily and weighted by vehicle miles traveled (VMT) (e.g., average travel speed) give additional importance to weekday results and less importance to weekend, as there are not only more weekdays than weekend days but traffic volumes (and thus, VMT) are higher on weekdays. **Appendix B** presents a flowchart of the day of week variance computation routine used in the Source Book calculations.

Measures that use day of week variance are identified below:

- Average Travel Speed
- Duration of Congestion
- Person Hours of Delay
- Person Miles Traveled
- Planning Time Index
- Vehicle Hours of Delay
- Vehicle Miles Traveled
- Vehicles Per Lane Mile

4.5 Vehicle Occupancies

Vehicle Occupancy Factors (VOFs), also referred to as average vehicle occupancies or vehicle occupancy rates, are estimates of the average number of occupants in a single vehicle. In the Source Book, the vehicle occupancies are taken from the 2022 FDOT Vehicle Occupancy Factor and Transit Occupancy Factor Calculation Technical Report which follows the FHWA methodology (**Appendix C**). Using crash records which are readily available to Departments of Transportation, the approach extracts vehicle occupants' information from the Crash Analysis Reporting System (CAR) and infers the average vehicle occupancy for the entire population by accounting for estimation bias and prevalence from crash data.

Measures that use vehicle occupancies are identified below:

- Person Hours of Delay
- Person Miles Traveled

4.6 Travel Speeds

Field-measured HERE data are used to estimate speeds for the Source Book measures. Model calculations are used to estimate speeds for segments that had no HERE coverage.

4.6.1 Field Mobility Measures' Calculations: Field-Measured Speeds

Speed-volume functions were used historically to compute measures. Travel speeds for 2016-2023 are obtained from field-measured data provided by HERE rather than the speed-volume functions. For each Source Book roadway segment, field-measured travel speeds are obtained in 15-minute increments from the archive of the real-time HERE speeds between January 1 and December 31 of the corresponding year. HERE removed outliers and provided imputation where there were not enough observations.

The following processes are conducted to conflate HERE speeds to the RCI segmentation:

- A data repository and analytical tool, developed by the Regional Integrated Transportation Information System (RITIS) at the University of Maryland, receives data feeds through an XML file from FDOT.
- These "uncapped speeds", from the real-time dataset, are averaged to create 15-minute travel speeds per the Traffic Message Channel (TMC) and downloaded as a text file.
- TMC segments are conflated to Source Book segmentation along FDOT's Linear Referencing System using conflation process built upon the one developed by FDOT's State Safety Office.
- Source Book segments' speeds are calculated.

The resulting dataset is one containing directional speeds in 15-minute increments for the Source Book segmentation. This dataset is used to compute Planning Time Index, while the rest of the speed-based measures use an aggregated dataset that summarizes speeds by hour, direction, day type, and congestion threshold. For segments where field-measured speeds are not available, speeds calculated from the speed-volume functions are used.

The **day type** criteria classify days into four types: regular weekdays, Saturdays, Sundays, and holidays. These holidays are excluded from speed calculations:

- New Year's Day
- Martin Luther King, Jr. Day
- Memorial Day
- Independence Day
- Labor Day
- Veterans Day
- Thanksgiving Day
- Day after Thanksgiving Day
- Christmas Day

The **congestion threshold** criteria identify speed ranges applicable for Heavily Congested (HC), Mildly Congested (MC), and Uncongested (UC) travel conditions based on the segment's area and roadway type, as shown in the table below.

Table 4.4 Speed Ranges for Congestion Threshold

Free Flow Speed (FFS) is defined as the 85th percentile of speeds during overnight hours (10:00 p.m. to 5:00 a.m.) on all days.

AREA TYPE	ROADWAY TYPE	HEAVILY CONGESTED	MILDLY CONGESTED	UNCONGESTED
Urbanized Areas	Arterial PSL ≤ 35 mph	≤ 13 mph	> 13 and ≤ 22 mph	> 22 mph
	Arterial PSL ≥ 40 mph	≤ 18 mph	> 18 and ≤ 31 mph	> 31 mph
	Two-Lane Highway	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Multilane Highway	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Freeway (PSL ≤ 50 mph)	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Freeway (PSL 55 mph)	≤ 45 mph	> 45 and ≤ 50 mph	> 50 mph
	Freeway (PSL 60 mph)	≤ 45 mph	> 45 and ≤ 55 mph	> 55 mph
	Freeway (PSL 65 mph)	≤ 45 mph	> 45 and ≤ 60 mph	> 60 mph
	Freeway (PSL 70 mph)	≤ 45 mph	> 45 and ≤ 65 mph	> 65 mph
Non-Urbanized Areas	Arterial PSL ≤ 35 mph	≤ 17 mph	> 17 and ≤ 22 mph	> 22 mph
	Arterial PSL ≥ 40 mph	≤ 23 mph	> 23 and ≤ 31 mph	> 31 mph
	Two-Lane Highway	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Multilane Highway	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Freeway (PSL ≤ 55 mph)	≤ 66.7% of FFS	> 66.7% and ≤ 83.3% of FFS	> 83.3% of FFS
	Freeway (PSL 60 mph)	≤ 50 mph	> 50 and ≤ 55 mph	> 55 mph
	Freeway (PSL 65 mph)	≤ 50 mph	> 50 and ≤ 60 mph	> 60 mph
	Freeway (PSL 70 mph)	≤ 50 mph	> 50 and ≤ 65 mph	> 65 mph
	Freeway (PSL 75 mph)	≤ 50 mph	> 50 and ≤ 70 mph	> 70 mph

Note: PSL = Posted Speed Limit

4.6.2 Modeled Mobility Measures Calculations: Speed-Volume Functions

As mentioned previously, speed-volume functions are only used in calculating the modeled mobility measures. The speed-volume functions are applied as follows:

- **Freeway travel speeds** are calculated using the Modified Davidson curve for both under-saturated and over-saturated conditions (see **Appendix D**). A comparison of the performance of different speed-flow functions in the Orlando Urban Area Transportation Study (OUATS) travel demand model suggests that the modified Davidson equation has the highest average coefficient of determination (R^2) out of the study functions. The minimum speed is set at 10 mph.

- **Arterial travel speeds** are calculated using different methodologies for under-saturated and over-saturated conditions (see **Appendix E**).
    - For under-saturated conditions (demand less than capacity), operating speeds are calculated based on the latest set of Generalized Service Volume Tables (**Appendix F**).
    - For over-saturated conditions (demand greater than capacity), a Bureau of Public Roads (BPR) curve (with Greater Treasure Coast Regional Planning Model parameters) is used to determine average travel speed given vehicle volume and segment capacity. The BPR curve is calibrated such that the V/C = 1.0 speed matches the Generalized Service Volume Tables LOS E speed. The V/C = 2.0 speed is set at a minimum of 7 mph.
- **Two-lane highway travel speeds** are calculated assuming a linear relationship between speed and flow according to the Highway Capacity Manual 6th Edition (HCM). Chapter 15: Two-Lane Highways of the HCM provides guidance on estimating average speeds on two-lane highways. The minimum speed is set at 10 mph (see **Appendix G**).

The following description summarizes the speed estimation technique.

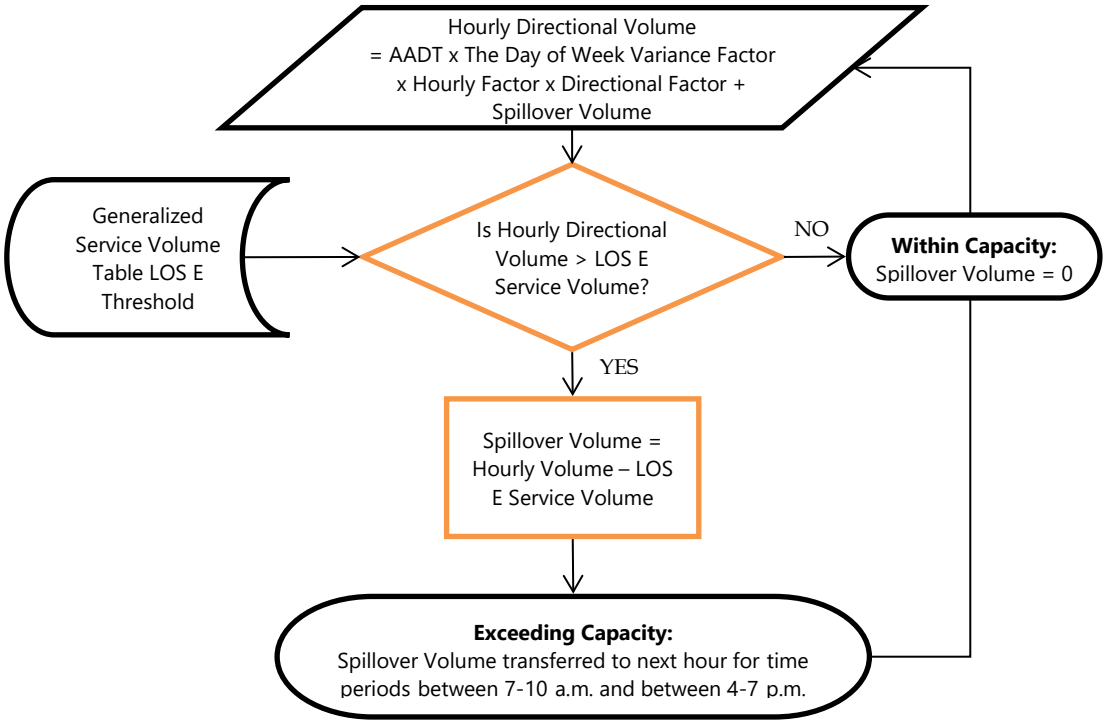
Step 1: Obtain Hourly Directional Vehicle Volume

Daily volume is obtained from TDA AADT dataset. For purposes of estimating speed, AADT is first converted to hourly directional volumes, based on the day of week variance factor, updated hourly factor and directional factor presented in the appendices.

Step 2: Adjust for Spillback

Hourly vehicle volumes calculated from Step 1 are adjusted to consider queuing that occurs under saturated flow conditions. For each hour between 7:00 a.m. and 10:00 a.m. and between 4:00 p.m. and 7:00 p.m. where saturated conditions exist, it is assumed that the unserved part of the queue will spill back to the next hour. This unserved demand is added to the volume of the next hour and this total volume is used to calculate speed. The process is repeated until demand (including that from previous hour(s)) is less than the capacity. **Figure 4.1** presents the algorithm in a flowchart graphical format.

Figure 4.1 Queue Spillover Algorithm



Step 3: Determine Whether Undersaturated or Oversaturated Conditions Prevail

The adjusted hourly volumes computed in Step 2 are compared with capacities obtained from the Generalized Service Volume Tables (**Appendix H**). If volume is greater than the capacity, oversaturated condition is assumed.

Step 4: Select Appropriate Travel Speed Estimation Technique

A speed estimation technique is then chosen based on the facility type and whether the facility is operating within capacity or over capacity. **Figure 4.2, Figure 4.3** and **Figure 4.4** provide a summary of the estimation techniques that are used in the Source Book for the modeled mobility measures calculations.

Figure 4.2 Estimation of Average Travel Speed on Freeways

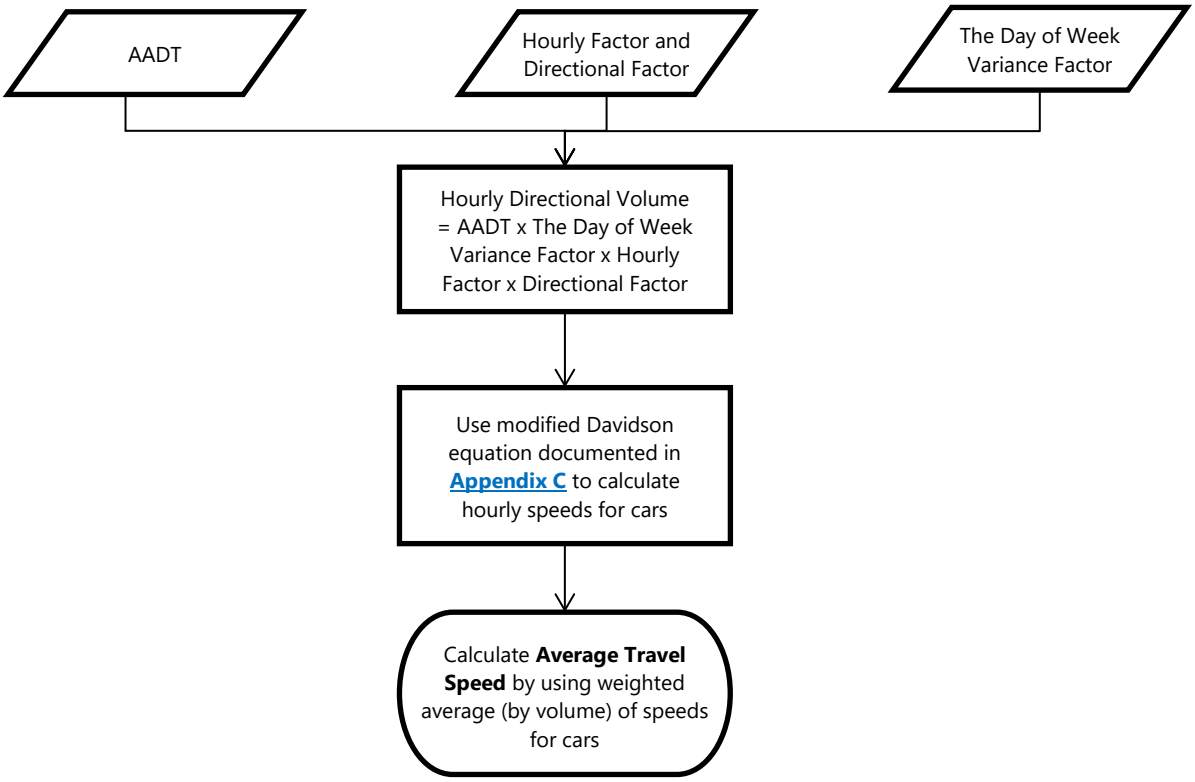


Figure 4.3 Estimation of Average Travel Speed on Arterials

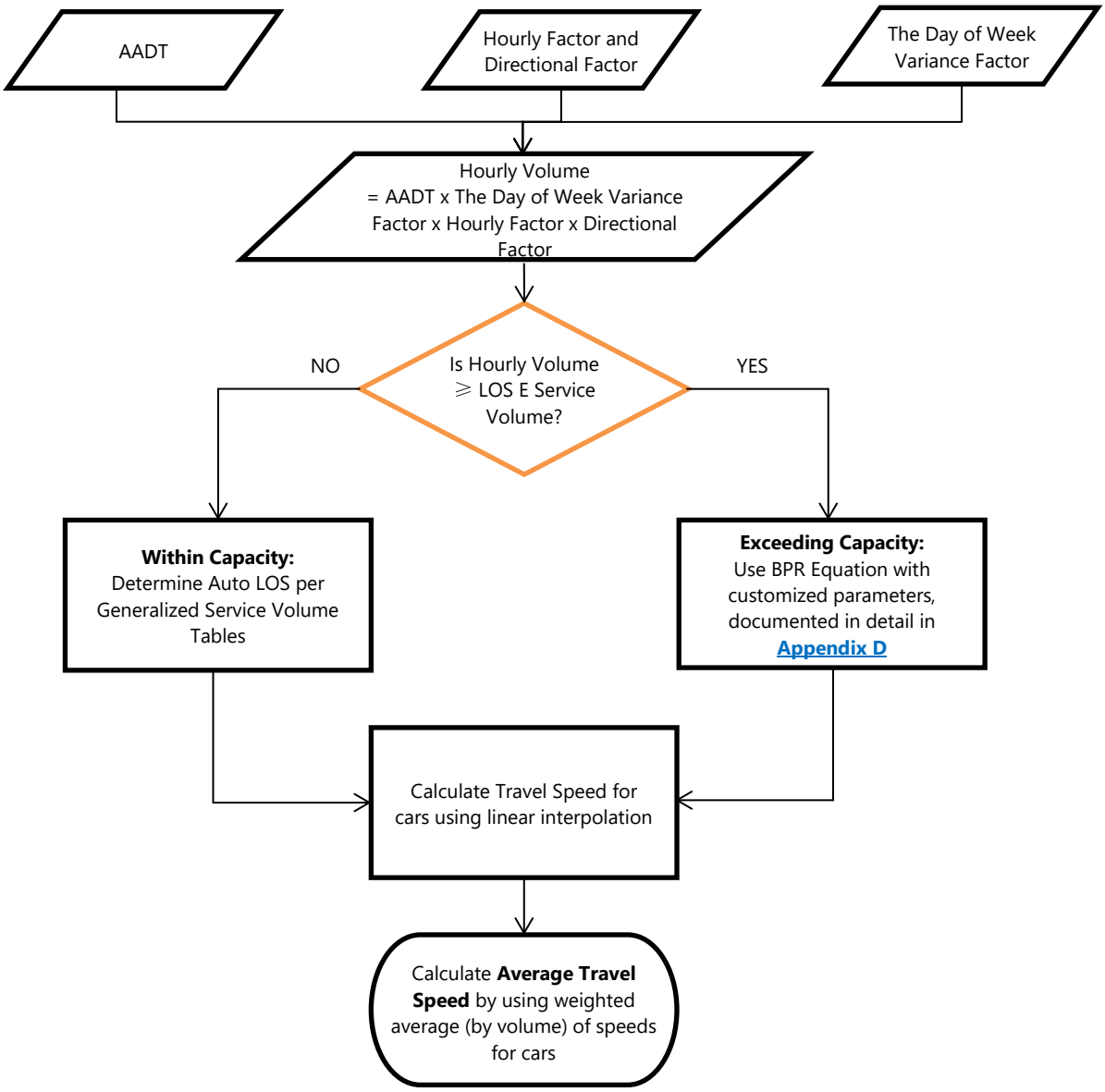
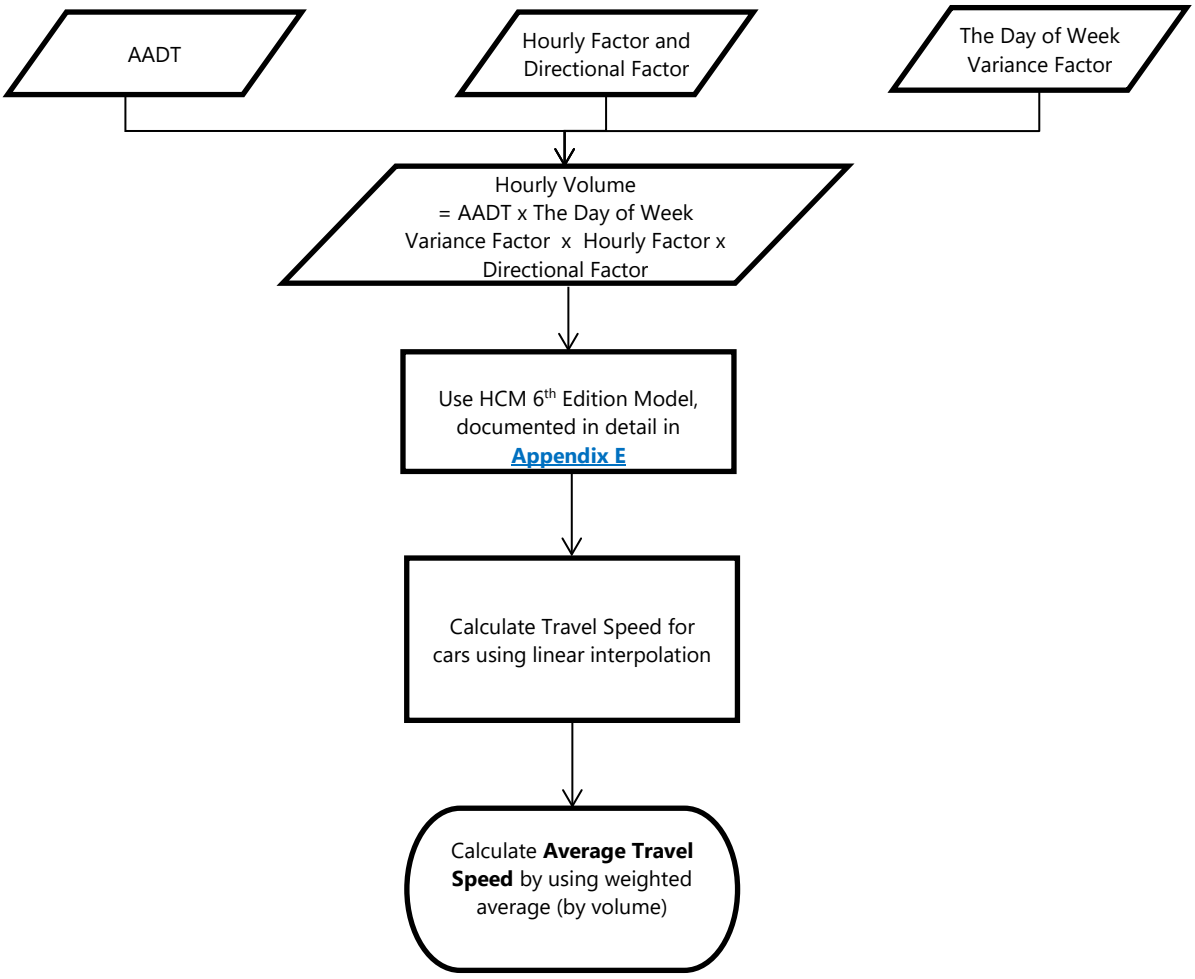


Figure 4.4 Estimation of Average Travel Speed on Two-Lane Highways



4.7 Peak Hour vs Peak Period

Peak Hour is defined as 5:00 p.m. to 6:00 p.m. on a weekday for all context classes. This hour is chosen to allow consistent comparisons among transportation modes. It may not be the hour of greatest travel for any given roadway, mode, or area.

Peak Period is defined as 4:00 p.m. to 6:00 p.m. on a weekday for all context classes.

The peak hour was selected to best align with the typically peak hour used in planning, design, and construction. The peak period represents the additional time where traffic volumes remain exceedingly high.

5.0 Mobility Measures: Auto

The calculation methodology for each individual Auto mobility measure is discussed in this section.

5.1 Vehicle Miles Traveled

The following steps describe the process used to obtain Vehicle Miles Traveled (VMT) on a single segment:

Step 1: Obtain Daily and Peak Hour Vehicle Volume

Daily vehicle volume is represented by the Annual Average Daily Traffic (AADT), while the peak hour volume is the product of the AADT volume and the hourly factor for the time period 5:00 p.m. to 6:00 p.m.

Step 2: Obtain Vehicle Miles Traveled (VMT)

VMT is determined using vehicle traffic volume and segment length. The number of vehicle-miles traveled is based on data obtained from FDOT's traffic monitoring sites and Roadway Characteristics Inventory (RCI) Features 111 and 147. Vehicle Miles Traveled is equal to the product of the daily or hourly volume and the roadway's length in miles as shown in **Equation 1**:

Equation 1

$$VMT = \sum(Segment\ Length \times Vehicular\ Traffic\ Volume)$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*

5.2 Person Miles Traveled

Person Miles Traveled (PMT) is computed by multiplying VMT by the average vehicle occupancy. Average vehicle occupancies in the Source Book were developed for each individual county using the 2022 FDOT Vehicle Occupancy Factor and Transit Occupancy Factor Calculation Technical Report (see **Table 5.1**) with data from the Crash Analysis Reporting System. PMT was computed using **Equation 2**:

Equation 2

$$PMT = \sum Segment\ Length \times Vehicular\ Traffic\ Volume \times Average\ Vehicle\ Occupancy$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*
- FDOT Crash Analysis Reporting System

Table 5.1 Average Vehicle Occupancies

COUNTY	OCCUPANCY	COUNTY	OCCUPANCY	COUNTY	OCCUPANCY
Alachua	1.74	Hardee	1.78	Okeechobee	1.89
Baker	1.91	Hendry	1.81	Orange	1.69
Bay	1.64	Hernando	1.73	Osceola	1.72
Bradford	1.76	Highlands	1.72	Palm Beach	1.55
Brevard	1.63	Hillsborough	1.69	Pasco	1.63
Broward	1.50	Holmes	1.76	Pinellas	1.54
Calhoun	1.54	Indian River	1.70	Polk	1.67
Charlotte	1.67	Jackson	1.77	Putnam	1.68
Citrus	1.68	Jefferson	1.70	Saint Johns	1.65
Clay	1.42	Lafayette	1.69	Saint Lucie	1.63
Collier	1.71	Lake	1.49	Santa Rosa	1.56
Columbia	1.81	Lee	1.65	Sarasota	1.74
DeSoto	1.85	Leon	1.62	Seminole	1.52
Dixie	1.79	Levy	1.78	Sumter	1.66
Duval	1.54	Liberty	1.69	Suwannee	1.80
Escambia	1.58	Madison	1.65	Taylor	1.67
Flagler	1.70	Manatee	1.66	Union	1.66
Franklin	1.51	Marion	1.76	Volusia	1.65
Gadsden	1.66	Martin	1.71	Wakulla	1.69
Gilchrist	1.74	Miami-Dade	1.52	Walton	1.76
Glades	1.73	Monroe	1.84	Washington	1.69
Gulf	1.57	Nassau	1.78	**FLORIDA**	**1.68**
Hamilton	1.73	Okaloosa	1.61		

Source: FDOT Vehicle Occupancy Factor and Transit Occupancy Factor Calculation Technical Report

5.3 Average Travel Speed

Field-measured data are used to capture average speed for most segments for the Source Book. However, speed-volume functions are used to capture speeds where the probe data network has no coverage. Field-measured travel speeds are obtained from HERE, downloaded at the granular level. The granular level field-measured speeds are aggregated for each Source Book segment by hour, direction, day type, and congestion thresholds (i.e., heavily congested, mildly congested, and uncongested – see **Table 4.4**). The following equation is used to calculate average travel speed:

Equation 3

$$Average\ Travel\ Speed = \frac{\sum_{i=1}^{\#\ Segments}(VMT_i \times Average\ Travel\ Speed_i)}{\sum_{i=1}^{\#\ Segments} VMT_i}$$

$$Average\ Travel\ Speed_i = (HCSpeed_i \times \%\ of\ travel\ @\ HCSpeed_i) + (MCSpeed_i \times \%\ of\ travel\ @\ MCSpeed_i) + (UCSpeed_i \times \%\ of\ travel\ @\ UCSpeed_i)$$

The HERE dataset does not span all the State Highway System (SHS), Strategic Intermodal System (SIS), and National Highway System (NHS) networks, leaving several road segments without field-measured speeds. For segments where field-measured speeds are not available, speeds calculated from the speed-volume functions are used. The process for calculating speeds is described in **Appendix D** for freeways and multilane highways, **Appendix E** for arterials, and **Appendix G** for 2 lane highways.

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*
- HERE Technologies. *Travel Time Data*

5.4 Hours of Delay

In the Source Book, Vehicle Hours of Delay and Person Hours of Delay are estimated on an hourly basis by determining the difference between delay threshold travel time and actual travel time along a facility. Delay threshold travel time/speed considers the additional travel time experienced by a motorist beyond what would be experienced under uncongested conditions. The delay threshold speeds for the Source Book are provided in **Table 5.2** below.

Table 5.2 Summary of Delay Threshold Speeds

AREA TYPE	ROADWAY TYPE	UNCONGESTED
Urbanized Areas	Arterial PSL ≤ 35 mph	> 22 mph
	Arterial PSL ≥ 40 mph	> 31 mph
	Two-Lane Highway	> 83.3% of FFS
	Multilane Highway	> 83.3% of FFS
	Freeway (PSL <50 mph)	> 83.3% of FFS
	Freeway (PSL 55 mph)	> 50 mph
	Freeway (PSL 60 mph)	> 55 mph
	Freeway (PSL 65 mph)	> 60 mph
	Freeway (PSL 70 mph)	> 65 mph
Non-Urbanized Areas	Arterial PSL ≤ 35 mph	> 22 mph
	Arterial PSL ≥ 40 mph	> 31 mph
	Two-Lane Highway	> 83.3% of FFS
	Multilane Highway	> 83.3% of FFS
	Freeway (PSL <50 mph)	> 83.3% of FFS
	Freeway (PSL 60 mph)	> 55 mph
	Freeway (PSL 65 mph)	> 60 mph
	Freeway (PSL 70 mph)	> 65 mph
	Freeway (PSL 75 mph)	> 70 mph

Delay estimation considers unserved demand from the preceding hours for the time periods between 7:00 a.m. and 10:00 a.m. and between 4:00 p.m. and 7:00 p.m. During oversaturation, the undischarged queue—the difference between demand and capacity—from an oversaturated hour is added to the next hour. The process is repeated until demand (including that from previous hour(s)) is less than the capacity.

The following description summarizes the technique to calculate the Vehicle Hours of Delay. The Person Hours of Delay is calculated by multiplying the average vehicle occupancy rate by the Vehicle Hours of Delay.

Step 1: Obtain Hourly Directional Vehicle Volumes

AADT is first converted to hourly directional volumes, based on the day of week variance factor, hourly factor and directional factor (if directional AADT is not available). Hourly directional volumes used for delay calculation are adjusted for queue spill-back under over-saturation conditions for the time periods between 7 a.m. and 10:00 a.m. and between 4:00 p.m. and 7:00 p.m.

Step 2: Obtain Delay Threshold Travel Time

A segment's delay threshold travel time is obtained by dividing the segment length by the threshold speeds presented above.

Step 3: Compute Hourly Directional Total Vehicle Delay

Average vehicle delay (in time units per vehicle) is computed as the difference between the actual travel time and the delay threshold travel time. It should be noted that when the actual travel time is less than the delay threshold travel time, there is no delay on the roadway segment. Total vehicle hours of delay (in vehicle-time units) are the sum of all segment products of additional travel time an average vehicle experienced beyond uncongested conditions and the vehicle volume. The actual travel time is computed based on the average travel speed calculations described in the following section. On a single segment and for a single hour, the delay calculation is presented in the following equations:

Equation 4

$$Vehicle\ Hours\ of\ Delay = \Sigma_{i=1}^{\#\ Segments}\ (Travel\ Time_i - Threshold\ Travel\ Time_i) \times Vehicular\ Traffic\ Volume_i$$

Equation 5

$$Person\ Hours\ of\ Delay = \sum (Travel\ Time - Threshold\ Travel\ Time) \times Vehicle\ Traffic\ Volume \times Average\ Vehicle\ Occupancy$$

Note: Average vehicle occupancies are discussed in **Section 5.2**.

Step 4: Obtain Daily Total Delay and Hours of Delay per Mile

The daily total hours of delay are the sum of hourly totals. The daily vehicle hours of delay are calculated as shown below:

Equation 6

$$Daily\ Vehicle\ Hours\ of\ Delay = \sum_{t=1}^{24} Total\ Hourly\ Vehicle\ Delay_t$$

where, t=a single hour, 24=24 hours

Equation 7

$$Daily\ Vehicle\ Hours\ of\ Delay\ per\ Mile = \frac{\sum_{t=1}^{24} Total\ Hourly\ Vehicle\ Delay_t}{Segment\ Length} \times 100$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)*
- HERE Technologies, *Travel Time Data*
- U.S. Department of Transportation (USDOT), *National Household Travel Survey, Florida Add-On, 2009*

5.5 Planning Time Index

Unlike the other speed-based measures, the computation of Planning Time Index (PTI) is based upon the granular speed dataset comprised of 15-minute epochs for each Source Book segment.

The Planning Time Index (PTI) is the ratio of the 95th percentile travel time to the travel time at reference speed. The reference speed is defined as the 85th percentile unmodified speed during weekday off-peak hours (9:00 a.m. to 4:00 p.m. and 7:00 p.m. to 10:00 p.m.) excluding holidays. This applies to all vehicles. The following equation is used to calculate the PTI:

Equation 8

$$Planning\ Time\ Index = \frac{Travel\ Time_{95th\ percentile}}{Travel\ Time_{reference\ speed}}$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*
- HERE Technologies. *Travel Time Data*

5.6 % Miles by Congestion Level

The % of Miles by Congestion Level for all vehicles is determined by summing the miles of roadway in the congestion category and then dividing it by the total system miles. **Equation 9** computes the percent of miles heavily congested, mildly congested, and uncongested using speed thresholds for congestion provided in **Table 4.4**.

Equation 9

$$\%\ Miles\ Heavily\ Congested = \frac{\sum Segment\ length\ whose\ travel\ speeds\ meet\ heavily\ congested\ threshold}{\sum Segment\ length} \times 100$$

$$\%\ Miles\ Mildly\ Congested = \frac{\sum Segment\ length\ whose\ travel\ speeds\ meet\ mildly\ congested\ threshold}{\sum Segment\ length} \times 100$$

$$\%\ Miles\ Uncongested = \frac{\sum Segment\ length\ whose\ travel\ speeds\ meet\ uncongested\ threshold}{\sum Segment\ length} \times 100$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 311 (Speed limits)*
- HERE Technologies. *Travel Time Data*

5.7 Duration of Congestion

The duration of congestion is the average length of time during a weekday when roadways subject to congestion operate at heavily congested speeds. Segments are assumed "subject to congestion" when at least 15 minutes of the day have an average speed below the heavily congested thresholds. The average number of minutes heavily congested—weighted by lane-miles—is the area's duration of congestion. To account for directional travel, the direction of travel with more heavy congestion is chosen for the total duration measure.

Equation 10

$$Duration\ of\ Congestion = \frac{\sum_{i=1}^{\#\ Segments} Lane\ Miles_i \times \sum_{j=1}^{24} hours\ in\ a\ day\ experienceing\ heavy\ congestion_{ij}}{\sum_{i=1}^{\#\ Segments} Lane\ Miles_i}$$

$$given\ that\ Segment\ i\ has\ at\ least\ 15\ minutes\ of\ heavy\ congestion$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System)*
- HERE Technologies, *Travel Time Data*

5.8 Average Peak Hour Speed vs. Posted Speed Limit

This measure is calculated by comparing the average peak hour speed against the posted speed limit. The output represents the overall percentage of the speed limit achieved in the peak hour. Average travel speed is the average of all peak hour segment travel speeds captured by probe data or modeled through speed-volume functions.

Equation 11

$$Average\ Speed\ vs.\ Posted\ Speed\ Limit = \frac{\sum VMT \times \left(\frac{Peak\ Hour\ Speed}{Posted\ Speed\ Limit}\right)}{\sum VMT}$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*
- HERE Technologies. *Travel Time Data*

5.9 Vehicles per Lane Mile

The most commonly used mobility performance measure to describe utilization is vehicles per lane mile, which represents the average density on a roadway. It is calculated as the roadway segment's peak hour volume divided by the number of lanes weighted by the aggregate lane miles of each segment. Vehicles per lane mile is reported only for peak hour.

Step 1: Obtain Peak Hour Vehicle Volume and Number of Lanes

Peak hour volume is the product of the AADT, the day of week variance factor and the highest hourly factor. Total number of lanes (in both directions) is obtained by summing the number of lanes on the right and left sides of the roadway segment, which are obtained directly from the RCI database.

Step 2: Obtain Vehicles per Lane and Vehicle per Lane Mile

Vehicles per lane mile is calculated as:

Equation 12

$$Vehicles\ per\ Lane\ = \frac{Volume}{Number\ of\ Lanes}$$

Equation 13

$$Vehicles\ per\ Lane\ Mile = \frac{\sum_{i=1}^{\#Segmetns}\left(\frac{Volume_i}{Number\ of\ Lanes_i} \times Lane\ Miles_i\right)}{\sum_{i=1}^{\#Segments} Lane\ Miles_i}$$

Data Sources

- FDOT Transportation Data and Analytics Office. Traffic Characteristics Inventory
- FDOT Transportation Data and Analytics Office. Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 212 (Through lanes)

5.10 Level of Travel Time Reliability

This measure is computed as the ratio between the 80th percentile travel time to the 50th percentile travel time. This measure is calculated for the following time periods: AM Peak (6:00am – 10:00am on Monday – Friday), Mid-day (10:00am – 4:00pm on Monday – Friday), PM Peak (4:00pm – 8:00pm on Monday – Friday), and Weekends (6:00am – 8:00pm on Saturday and Sunday). Additionally, for area-wide aggregation of this measure, a Person Miles Traveled (PMT)-weighted average technique is used.

Equation 14

$$Level\ of\ Travel\ Time\ Reliability = \frac{Travel\ Time_{80th\ percentile}}{Travel\ Time_{50th\ percentile}}$$

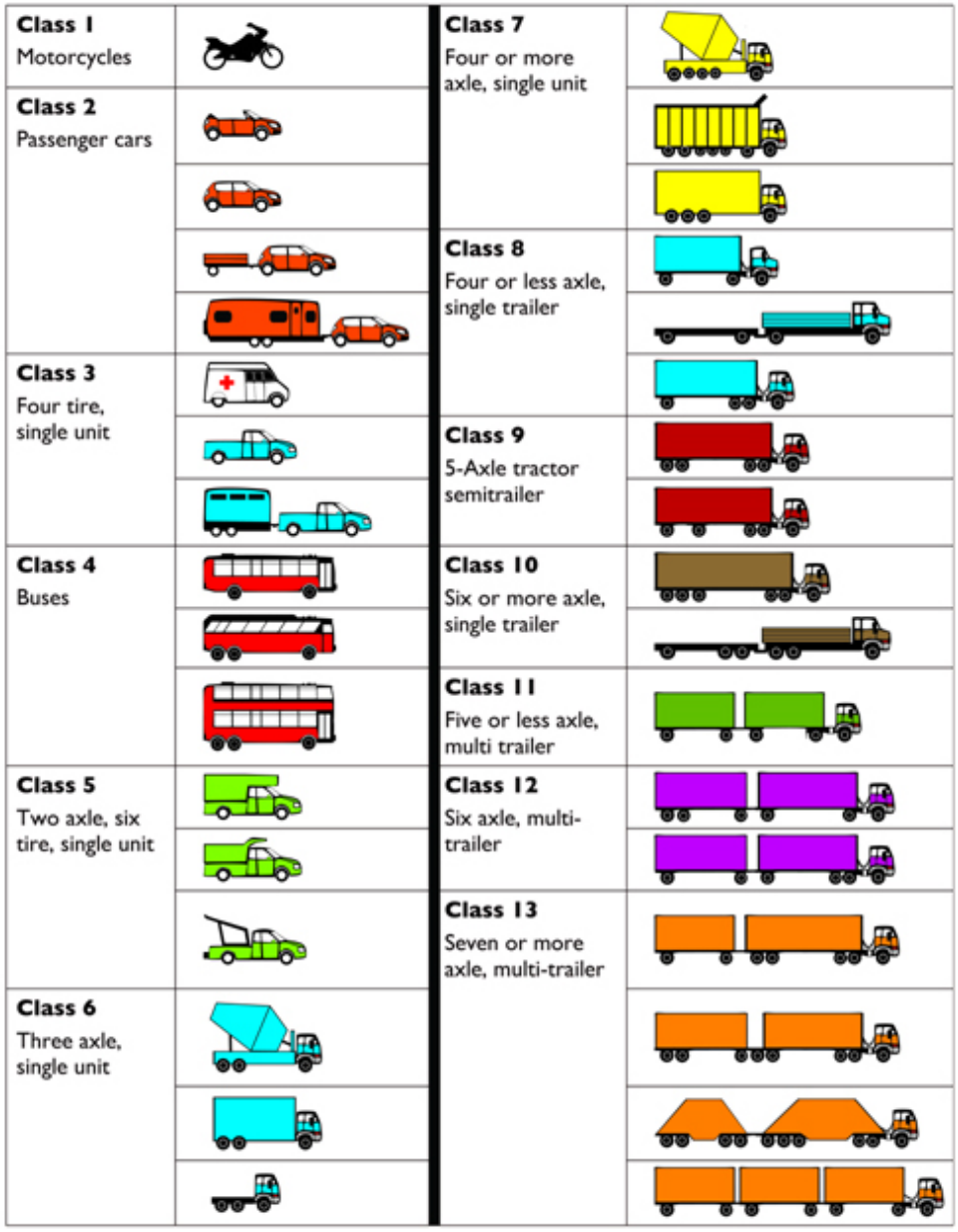
Data Sources

- HERE Technologies. *Travel Time Data*
- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*

6.0 Mobility Measure: Combination Truck

A combination truck is defined as a truck tractor pulling any number of trailers (including a "bobtail" truck tractor not pulling any trailers) or a straight truck pulling at least one trailer. These are vehicles classified as Classes 8-13 by FHWA[4]. The calculation methodology for combination truck mobility measures is discussed in this section.

Figure 6.1 FHWA 13 Vehicle Category Classification



Source: Federal Highway Administration

[4] For more information about FHWA 13 vehicle category classification, please visit: https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/vehicle-types.cfm

6.1 Combination Truck Miles Traveled

Combination Truck Miles Traveled (CTMT) is the total number of miles driven by combination trucks on a roadway within a region. It is computed by multiplying VMT by the combination truck factor (**Appendix H**). The combination truck factor is provided on a county-by-county basis from TDA and represents the proportion of heavy vehicles that are combination trucks.

Equation 15

$$Combination\ Truck\ Miles\ Traveled\ = \sum(VMT\ \times Combination\ Truck\ Factor)$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory, Feature 147*

6.2 Combination Truck Average Travel Speed

The combination truck travel speed is estimated using samples of field-measured speed. The methodologies are different for arterials, and freeways and highways.

- For arterials, if the HERE speed for all vehicles is at least 5 mph over the posted speed limit (PSL), then the combination truck travel speed is assumed to be the same as the PSL, which means combination truck travel speed is capped at the PSL. If the field-measured speed for all vehicles is 7 mph below the PSL or lower, then the combination truck travel speed is assumed to be the same as the field-measured speed. Linear interpolation is used to estimate the combination truck travel speed for field-measured speed between 7 mph below the PSL and the speed limit plus 5 mph.
- For freeways or highways, if the field-measured speed for all vehicles is at the speed limit plus 5 mph, then the combination truck travel speed is assumed to be at the speed limit. Linear interpolation is used to estimate the combination truck travel speed when the field-measured speed is between 45 mph and the speed limit plus 5 mph. If the field-measured speed is at or below 45 mph, the combination truck travel speed is assumed to be the same as the field-measured speed.

CTMT weights the resulting adjusted speed for each roadway segment and the average travel speed for combination trucks is determined using the following equation:

Equation 16

$$Combination\ Truck\ Average\ Travel\ Speed\ = \frac{\sum CTMT\ \times Combination\ Truck\ Average\ Travel\ Speed}{\sum CTMT}$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory, Feature 147*
- HERE Technologies. *Travel Time Data*

6.3 Combination Truck Hours of Delay

In the Source Book, Combination Truck Hours of Delay is estimated on an hourly basis by determining the difference between delay threshold travel time and actual travel time along a facility. The calculation for obtaining combination truck hours of delay is similar to the ones for obtaining all vehicles' delay. The difference is Combination Truck Hours of Delay uses the combination truck average travel speed. The methodology of this measure can be referenced in Chapter 5.4 Hours of Delay. In the 3rd step of the methodology, the equation used to calculate the combination truck delay for a single segment and a single hour is presented as follows:

Equation 17

$$Combination\ Truck\ Hours\ of\ Delay = \sum Combination\ Truck\ Volume \times (Combination\ Truck\ Travel\ Time - Threshold\ Travel\ Time)$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 147 (Strategic Intermodal System) and Feature 111 State Road System*
- HERE Technologies. *Travel Time Data*

6.4 Combination Truck Cost of Delay

This measure monetizes the cost of delay experienced by the freight industry by (1) calculating the average marginal cost of labor per hour and (2) multiplying that by the number of hours of delay for combination trucks. The average marginal cost of labor per hour is obtained as the sum of marginal driver wages and driver benefits from the American Transportation Research Institute (ATRI) annual report titled An Analysis of the Operational Cost of Trucking. The number of hours of delay for combination trucks is taken from the process used for the Source Book to calculate the said measure (see Chapter 5.4 Hours of Delay).

Equation 18

$$Combination\ Truck\ Cost\ of\ Delay = \sum Combination\ Truck\ Hours\ of\ Delay \times Average\ Marginal\ Cost\ of\ Labor\ Per\ Hour$$

Data Sources

- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory*
- HERE Technologies. *Travel Time Data*
- American Transportation Research Institute (ATRI) –*An Analysis of the Operational Costs of Trucking*

6.5 Combination Truck Planning Time Index

The computation of Planning Time Index (PTI) is based upon the granular speed dataset comprised of 15-minute epochs for each Source Book segment. While this dataset is used unmodified for all-traffic PTI, it is modified for combination truck PTI, as described below.

If the field-measured speed is at or above the posted speed limit plus 5 mph, then the combination truck travel speed was assumed to be 5 mph below field-measured speed. If the field-measured speed is at or below 60 mph, then the combination truck travel speed is assumed to be the same as the field-measured speed. Linear interpolation is used to estimate the combination truck travel speed for field-measured speed between 60 mph and the posted speed limit plus 5 mph. For example, if the posted speed limit is 70 mph and the field-measured speed is 75 mph, then the combination truck speed is 70 mph (75 mph - 5 mph). If it is the same posted speed limit and the field-measured speed is 55 mph, then the combination truck speed is 55 mph (since it is below 60 mph).

The Planning Time Index (PTI) is the ratio of the 95th percentile travel time to the travel time at reference speed. The reference speed is defined as the 85th percentile unmodified speed during weekday off-peak hours (9 am to 4 pm and 7 pm to 10 pm). The following equation is used to calculate the PTI:

Equation 19

$$Combination\ Truck\ Planning\ Time\ Index = \frac{Travel\ Time_{95th\ percentile}}{Travel\ Time_{reference\ speed}}$$

Data Sources

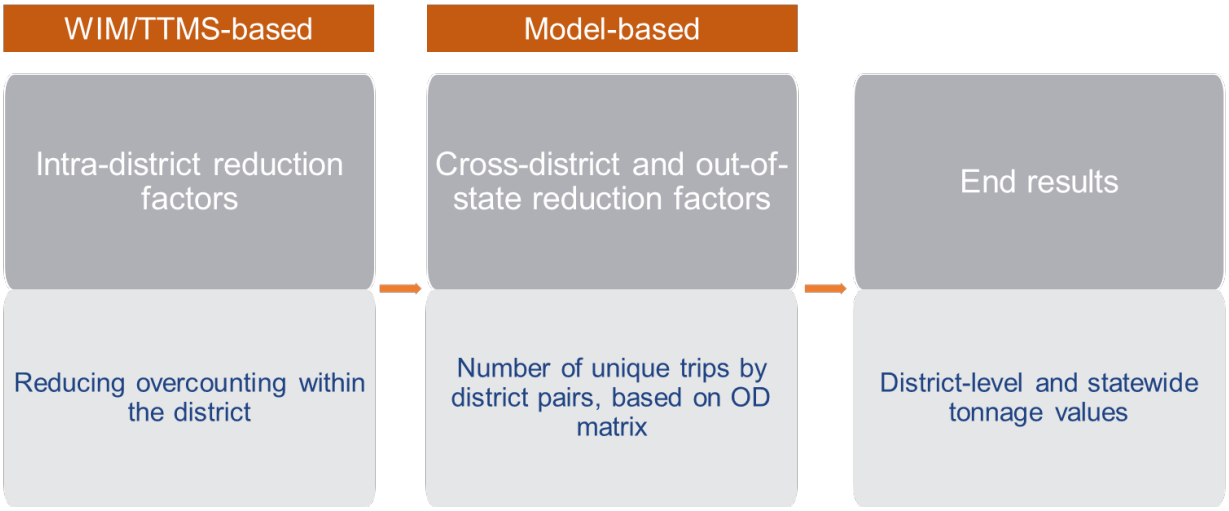
- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Transportation Data and Analytics Office, *Roadway Characteristics Inventory, Feature 147*

6.6 Combination Truck Tonnage

Combination truck tonnage refers to tons of freight carried by combination trucks on Florida's SHS. This measure uses Weigh-In-Motion (WIM) stations to obtain an average truck weight by class, and Telemetered Traffic Monitoring Sites (TTMSs) to account for all trucks traveling in the state. To associate TTMS to WIM devices, a network analysis is conducted to associate devices based on proximity, as well as on roadway functional classification.

Since a truck may pass through more than one counter, this measure seeks to eliminate duplicate counts using TTMS clusters and number of unique trips by district pairs. This was done at the district and statewide level: Within each district, a sample-based process was used to remove likely overcounted counts within the district based on device location and truck traffic patterns. Moreover, the statewide model's Origin-Destination (OD) matrix was used to account for unique trips that start in one district and end in another. The resulting method is thus a three-step process that develops one reduction factor for intra-district, another one for inter-district trips, and combines the two to estimate total statewide tonnage (see **Figure 6.2** below).

Figure 6.2 Calculation of Combination Truck Tonnage



Equation 20

$$Combination\ Truck\ Tonnage = \sum Unique\ Combination\ Truck\ Count \times Average\ Weight\ of\ Freight$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Telemetered Traffic Monitoring Sites*
- FDOT Transportation Data and Analytics Office. *Weigh-in-Motion Data*
- FDOT Transportation Data and Analytics Office, *Traffic Characteristics Inventory*
- FDOT Systems Forecasting and Trends Office, *Statewide Travel Demand Model*

7.0 Mobility Measures: Transit

Transit is defined as transportation provided by an agency to the public. It includes motor buses and rail-based service and excludes school and charter buses. The calculation methodology for each transit mobility measure is discussed in this section. For reporting purposes, the federal fiscal year (FFY) is used.

7.1 Transit Passenger Trips

Transit passenger trips are the annual number of passengers boarding transit vehicles. A trip is counted each time a passenger boards a transit vehicle. Thus, each time a passenger transfers between buses to reach a destination, it is counted as a passenger trip.

Equation 21

$$Transit\ passenger\ Trips = \sum Passengers\ Boarding\ Transit\ Vehicles$$

Data Sources

- FDOT Public Transit Office. *Florida Transit Information and Performance Handbook*

7.2 Transit Revenue Miles

Transit revenue miles is the number of annual miles a transit vehicle travels while in active service (available to pick up revenue passengers). This number is smaller than vehicle miles because of the exclusion of deadhead miles such as vehicle miles from the garage to the start of service, vehicle miles from the end of service to the garage, driver training, and other miscellaneous miles that are not considered to be in direct revenue service.

Equation 22

$$Transit\ Revenue\ Miles = \sum Revenue\ Miles\ of\ Vehicle\ Operation\ while\ in\ Active\ Service$$

Data Sources

- FDOT Public Transit Office, *Florida Transit Information and Performance Handbook*

7.3 Passenger Trips per Revenue Mile

Transit passenger trips per revenue mile is the ratio of annual passenger trips to total annual transit revenue miles of service, a key indicator of service effectiveness that is influenced by the levels of demand and the supply of service provided.

Equation 23

$$Transit\ Passenger\ Trips\ per\ Revenue\ Mile = \frac{\sum Annual\ Transit\ Passenger\ Trips}{\sum Annual\ Transit\ Revenue\ Miles}$$

Data Sources

- FDOT Transit Office. *Florida Transit Information and Performance Handbook*

7.4 Transit Revenue Miles between Failures

Transit revenue miles between failures refers to the average revenue miles traveled from one equipment failure to the next, an indicator of the average frequency of delays caused by revenue vehicle system failure, or the failure of mechanical element of the revenue vehicle that, because of local agency policy, prevents the vehicle from completing or starting a scheduled revenue trip. Revenue vehicle system failures is total number of failures that occur during revenue service, deadheading, and layovers. A failure is classified as the breakdown of either a major or minor element of the revenue vehicle's mechanical system.

Equation 24

$$Transit\ Revenue\ Miles\ between\ Failures = \frac{Total\ Annual\ Revenue\ Miles}{Number\ of\ Revenue\ Vehicle\ System\ Failures}$$

Data Sources

- FDOT Public Transit Office. *Florida Transit Information and Performance Handbook*

7.5 Transit Weekday Span of Service

Transit weekday span of service is the number of hours that transit service is provided on a representative weekday in the operation of the transit agency. This indicator is determined by computing the number of hours between the time service begins and the time service ends for an average weekday.

Equation 25

$$Transit\ Weekday\ Span\ of\ Service = \frac{\sum Tansit\ Service\ Spans}{\sum Number\ of\ Transit\ Modes}$$

Data Sources

- FDOT Transit Office. *Florida Transit Information and Performance Handbook*

8.0 Mobility Measures: Pedestrian/Bicycle

This section discusses the calculation methodology for performance measures related to non-motorized modes, including pedestrian and bicycle. Measures cover the quantity of the sidewalk, shared use paths, and bicycle infrastructure available and the demand for that infrastructure. These measures are assessed on an annual basis for the calendar year.

8.1 % Pedestrian Facility Coverage

This measure reports the percentage of centerline miles of non-limited access SHS facilities in urban areas (5,000+ population) with a sidewalk 5 feet wide or greater or a shared-use path on either side of roadways. The pedestrian facilities include urban non-limited access SHS roadways and a limited number of non-SHS roadways deemed of interest to FDOT with a sidewalk or a shared path on either side. In the formula below, urban non-limited access centerline miles include those non-SHS roadway miles with pedestrian facilities.

Equation 26

$$\%\ Pedestrian\ Facility\ Coverage = \frac{\sum Pedestrian\ Facility\ Miles\ in\ Urban\ Areas}{\sum\ Non-Limited\ Access\ Centerline\ Miles\ in\ Urban\ Area} \times 100$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 216 (Bike Lanes/Pedestrian Facilities)*

8.2 % Bicycle Facility Coverage

This measure reports the percentage of centerline miles of non-limited access SHS facilities with designated bike lanes, paved shoulders, or shared pathways available to bicyclists. The bicycle facilities include non-limited access SHS roadways and a limited number of non-SHS roadways deemed of interest to FDOT, with a paved shoulder $\geq$ 4' and < 7' or a shared path on either side. In the formula below, non-limited access centerline miles include those non-SHS roadway miles with bicycle facilities.

Equation 27

$$\%\ Bicycle\ Facility\ Coverage = \frac{\sum\ Bike\ Facility\ Miles}{\sum Non-Limited\ Access\ Centerline\ Miles} \times 100$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Roadway Characteristics Inventory, Feature 216 (Bike Lanes/Pedestrian Facilities) and Feature 214 (Outside shoulder)*

8.3 Non-Motorized Traffic Counts

Bicyclists and pedestrians are counted at FDOT's 13 non-motorized continuous counters statewide by TDA office Non-Motorized Traffic Monitoring Program (NMTMP)[5]. Continuous count data collection follows national guidelines, so the data collected can be submitted to FHWA. In addition to continuous counters, short-term counts are supplied at spot locations throughout Florida. Short-term counts are two-week counts broken down by day and hour.

Equation 28

$$Bicycles = \sum Bicyclists\ Crossing\ a\ Counter$$

Equation 29

$$Pedestrians = \sum Pedestrians\ Crossing\ a\ Counter$$

Data Sources

- FDOT Transportation Data and Analytics Office. *Statewide Non-Motorized Traffic Monitoring Program*

[5] For more information on NMTMP, please visit: https://www.fdot.gov/statistics/trafficinfo/florida-non-motorized-traffic-monitoring and https://fdot.maps.arcgis.com/apps/webappviewer/index.html?id=df6696c128514bb6b0c6710758fd050b#/performance-measures/pedestrian/non-motorized-counts#

9.0 Mobility Measures: Aviation

Aviation refers to air transportation, which includes the movement of passengers and cargo by air. This can encompass commercial and general aviation, as well as air cargo operations. For reporting purposes, the calendar year (CY) is used. The methodologies described in this section are for measures that account for airborne freight and passenger operations in Florida.

9.1 Aviation Passenger Boardings

Aviation passenger boardings are the total number of enplanements on an aircraft at a Florida commercial service airport. If a passenger makes a transfer between flights to reach a destination within Florida, the passenger is counted as making two passenger boardings.

Equation 30

$$Aviation\ Passenger\ Boardings = \sum Number\ of\ Enplanements\ on\ An\ Aircraft$$

Data Sources

- U.S. Federal Aviation Administration. *Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports*

9.2 Aviation Departure Reliability

Departure reliability is based on a flight's take-off time from the gate of a Florida commercial service airport. A departure is deemed reliable if the flight departs within 15 minutes of the scheduled time shown in the carrier's Computerized Reservations Systems. In the aviation industry, this is commonly known as an on-time departure. Departure reliability can be influenced by various factors such as heavy traffic volume, weather, and mechanical reasons beyond the control of an airport or an airline.

Equation 31

$$Aviation\ Departure\ Reliability = \frac{\sum(Departures < 15\ Minutes\ of\ Schedule)}{\sum Departures} \times 100$$

Data Sources

- U.S. Bureau of Transportation Statistics, *Reporting Carrier On-Time Performance*

9.3 Aviation Tonnage

Aviation tonnage comes from the BTS T-100 Market report. This is the weight of all air cargo and mail handled at Florida airports, including commercial service, general aviation, and military aviation facilities handling non-military freight movements. This measure includes mail and freight cargo originated and terminated at Florida airports.

Equation 32

$$Aviation\ Tonnage = \sum Weight\ of\ Mail\ and\ Air\ Cargo\ Handled\ at\ Florida\ Airports$$

Data Sources

- U.S. Bureau of Transportation Statistics (BTS). *T100 Market (All Carriers)*

10.0 Mobility Measures: Rail

Amtrak operates three train routes in the state of Florida: Amtrak's Auto Train, Silver Meteor, and Silver Star routes. Amtrak's Auto Train is an 855-mile (1,376 km) scheduled daily train service for passengers and their automobiles operated by Amtrak between Lorton, Virginia (near Washington, D.C.), and Sanford, Florida (near Orlando). Amtrak's Silver Meteor route travels between New York City and Miami in approximately 28 hours, stopping at many popular vacation destinations and cities including Philadelphia, Baltimore, DC, Savannah, Jacksonville, and Orlando. Amtrak's Silver Star route travels daily between New York City and Miami with multiple stops in Florida. The Silver Star route shares multiple stations with the Silver Meteor; therefore, these two routes are called the Silver Service. The main difference between the Silver Meteor and the Silver Star routes is that the Silver Star makes additional stops in North Carolina and travels to Tampa.

SunRail is a rail service moving people throughout the East Central Florida region by providing work and leisure travel opportunities and connecting communities. The system currently operates over 49 miles with 16 stations through Volusia, Seminole, Orange and Osceola counties.

Tri-Rail is a commuter rail line linking Miami, Fort Lauderdale and West Palm Beach in Southeast Florida. The 73.5 -mile-long system has 18 stations in three South Florida counties, and connects directly to Amtrak at numerous stations, and to Metrorail at the Tri-Rail and Metrorail Transfer station and at Miami Intermodal Center.

10.1 Rail Passengers

This measure provides the annual number of revenue-paying rail passengers on Florida's interregional rail system. For the purpose of this performance measure, rail passengers include those riding on Amtrak, SunRail, and Tri-Rail.

Equation 33

$$Rail\ Passengers = \sum Rail\ Passengers\ on\ Amtrak, SunRail\ and\ Tri - Rail$$

Data Sources

- Amtrak. *Amtrak Fact Sheet*
- SunRail, Tri-Rail. FDOT Public Transit Office

10.2 Passenger Rail On-time Arrival

Rail on-time arrival captures the on-time performance of a passenger rail system operating within Florida. It represents percent of Amtrak, SunRail, and Tri-Rail trains that arrive on time. A train is considered on-time if arrival at endpoint is within a specified threshold timeframe of scheduled arrival time. The threshold timeframe varies based on the trip length. For long-distance trips, the timeframe is wide (e.g. 30 minutes). For commuter trains and local heavy rail systems, the time frame is narrow (e.g. 15 minutes).

Equation 34

$$Rail\ On\text{-}Time\ Arrival = \frac{\sum On - Time\ Trains}{\sum Trains} \times 100$$

Data Sources

- Amtrak. *Amtrak Fact Sheet*
- FDOT Freight & Rail Office

11.0 Mobility Measures: Seaport

11.1 Seaport Passenger Movements

Seaport passenger movements refer to passengers embarking and disembarking at a Florida seaport. For example, when a cruise passenger departs on a cruise ship from PortMiami, they are counted. When the same cruise passenger arrives back at PortMiami, they are counted again. The measure is reported by municipal fiscal year (i.e., October 1st – September 30th).

Equation 35

$$Seaport\ Passenger\ Movements = \sum Cruise\ Passengers\ Embarking\ and\ Disembarking\ a\ Cruise\ Ship\ \ at\ Florida\ Seaports$$

Data Sources

- FDOT Seaport Office

11.2 Seaport Tonnage

Seaport tonnage is the international and domestic waterborne tons of cargo handled at both public and private terminals in port areas of Florida.

Equation 36

$$Seaport\ Tonnage = \sum Cargo\ Tonnage\ Handled\ at\ Florida^{'}s\ Public\ Seaports$$

Data Sources

- FDOT Seaport Office

11.3 Seaport Twenty-Foot Equivalent Units

Twenty-Foot Equivalent Unit (TEU) represents the cargo capacity of a standard intermodal container, twenty feet long, eight feet tall, and eight feet wide. It is the standardized unit of the capacity of a container ship, or a container terminal.

Equation 37

$$Seaport\ TEUs = \sum Twenty - Foot\ Equivalent\ Units$$

Data Sources

- FDOT Seaport Office

12.0 Mobility Measures: Spaceport

Calculation methodologies for each space measure are discussed in this section. The methodologies presented here are for measures accounting for military and civilian space operations in Florida. Most launches are of unmanned vessels and similarly most payloads launched into space from Florida are unmanned.

12.1 Space Launches and Sites

Space launches accounts for all the successful mission launches from Cape Canaveral Spaceport, aside from any test flights:

Equation 38

$$Space\ Launches\ = \sum Successful\ Orbital\ Launches$$

Space launch sites are all active launch sites at Florida's civilian and military spaceports.

$$Number\ of\ Sites\ = \sum Active\ Launch\ Sites$$

Data Sources

- Space Florida

12.2 Space Payloads

The number of payloads describes the amount of military, civil, and commercial cargo launched into space. Payloads may include cargo, flight crews, scientific experiments, munitions, or other equipment. The collective weight of the payloads represents weight being sent to orbit through Florida's spaceports.

Equation 39

$$Number\ of\ Payloads\ = \sum Civil, Commercial, and\ DoD\ paylaods$$

$$Payload\ Weight\ = \sum Pounds\ in\ Orbit$$

Data Sources

- Space Florida

13.0 Infrastructure

The methodologies presented here are for measures accounting for FDOT's infrastructure preservation targets to meet the mandate of 334.046(4), F.S. Per Florida Statute 334.046, FDOT has responsibility for the SHS. That responsibility includes "providing a safe system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of Florida's environment and communities." These measures report on the maintenance of roads and bridges on the SHS, which carries over half of all traffic within Florida.

13.1 Pavement Condition

Florida Statute 334.046(c4), F.S. requires FDOT to achieve acceptable pavement standards on at least 80% of the SHS. The FDOT State Materials Office's Pavement Condition Unit conducts annual surveys of the entire SHS in support of the Department's Pavement Management Program. This survey evaluates pavement conditions in terms of ride quality, crack extent and severity, and average depth of wheel-path ruts.

- "Ride quality" is what the motorist experiences (i.e., smoothness of the ride).
- Crack extent and severity or "cracking" refers to the deterioration of the pavement through the formation of cracks or loss of aggregate or surface texture caused by repeated heavy use, which leads to loss of smoothness and, ultimately, deterioration of the road base by water seepage if not corrected.
- Wheel-path ruts or "rutting" are pavement depressions caused mainly by heavy use. These depressions or ruts can collect water, creating potential safety hazards.

Data are annually collected from January 1 to December 31 and reported for the state fiscal year in which December 31 falls. For details, please visit the FDOT Flexible Pavement Condition Survey Handbook or the Rigid Pavement Condition Survey Handbook.

Note: For federal performance reporting purposes, pavement conditions are calculated using a different method. For the purposes of the Source Book reporting, Florida Turnpike is excluded.

Equation 40

$$Pavement\ Condition = \frac{\sum Miles\ Meeting\ Pavement\ Thresholds}{\sum Pavement\ Miles} \times 100$$

Data Sources

- FDOT State Materials Office. *Pavement Condition Survey Program*

13.2 Bridge Condition

FDOT's core bridge measure is the percentage of bridges on the SHS meeting FDOT standards. The target is to have at least 90% of bridges maintained by the Department achieve a National Bridge Inventory (NBI) rating of 6 or higher to meet the mandate of 334.046(c4), F.S..

The NBI is a FHWA requirement for evaluating bridge conditions, based on a 0 to 9 scale, with 0 indicating a failed condition and 9 indicating an excellent condition. An NBI rating of 6 or 7 means a bridge is in good condition.

The Department takes a proactive approach to bridge maintenance, so that bridges will not deteriorate to a level that will require greater repair costs. This helps FDOT-maintained bridges meet or exceed their life expectancy, resulting in a lower frequency of replacements. Data is annually collected from July 1 to June 30. More information is available in the Bridge Load Rating Manual.

Equation 41

$$Bridge\ Condition = \frac{\sum FDOT - Maintained\ Bridges\ with\ NBI\ \geq 6}{\sum FDOT - Maintained\ Bridges} \times 100$$

Note: Bridge conditions are calculated using a different method for federal performance reporting purposes.

Data Sources

- FDOT Office of Maintenance. *AASHTOWare Bridge Management software (BrM) Version 5.3*

13.3 Maintenance Condition

Florida Statute 334.046(c4), F.S. requires FDOT to ensure that 100% of the acceptable maintenance standard on the State Highway System (SHS) is achieved. The Department's maintenance rating standard is 80 and was derived over time from the use of output measures and engineering input to evaluate the performance of the transportation system.

To determine the maintenance rating, field conditions are evaluated by rating each highway component to develop an overall maintenance condition score. Conditions are compared to FDOT standards, and a composite state score is set. The maintenance condition rating system evaluates five highway components:

- Roadway – potholes, pavement joints, paved shoulders, and pavement distress
- Roadside – unpaved shoulders, slopes, sidewalks, and fences
- Traffic services – signs, lighting, guardrails, striping, attenuators, handrail, and pavement markers
- Drainage – storm drains, ditches, roadway sweeping, inlets, and pavement edge drain outlets
- Vegetation/aesthetics – landscaping, litter removal, turf condition, and tree trimming

Data is annually collected from July 1 to June 30. More information is available in the Maintenance Rating Program Handbook.

Equation 42

$$Maintenance\ Condition \frac{\sum Maintenance\ Miles\ with\ Rate\ \geq 80}{\sum Maintenance\ Miles} \times 100$$

Data Sources

- FDOT Office of Maintenance. *Maintenance Rating Program*

14.0 Safety Measures

The calculation methodology for each safety measure is discussed in this section.

14.1 Number of Fatalities

This measure is the total number of fatalities on Florida's roadways that are a direct result of a traffic crash within thirty days of the crash occurrence.

Equation 43

$$Number\ of\ Fatalities = \sum People\ Killed\ Due\ to\ Traffic\ Crashes$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*

14.2 Number of Serious Injuries

The number of disabling/incapacitating injuries from traffic crashes that prevent the injured individuals from engaging in normal activities and usually requiring transport to a medical facility and hospitalization within thirty days of the crash occurrence.

Equation 44

$$Number\ of\ Serious\ Injuries = \sum People\ Seriously\ Injuried\ Due\ to\ Traffic\ Crashes$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*

14.3 Rate of Fatalities

This measure is the total number of fatalities on Florida's roadways per 100 million VMT.

Equation 45

$$Rate\ of\ Fatalities = \frac{\sum Fatalities}{Annual\ VMT} \times 100\ million$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*
- FDOT Transportation Data and Analytics Office. *Public Road Mileage and Travel Report, State Highway System Mileage and Travel Report*

14.4 Rate of Serious Injuries

This measure is the total number of serious injuries on Florida's roadways per 100 million VMT.

Equation 46

$$Rate\ of\ Serious\ Injuries = \frac{\sum Serious\ Injuries}{Annual\ VMT} \times 100\ million$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*
- FDOT Transportation Data and Analytics Office. *Public Road Mileage and Travel Report, State Highway System Mileage and Travel Report*

14.5 Motorcycle Fatalities and Serious Injuries

These safety measures capture the number of incapacitating injuries and fatalities of both motorcyclists and their passengers within thirty days of the crash occurrence.

Equation 47

$$Motorcycle\ Facilities = \sum Motocyclist\ and\ Passenger\ Fatalities$$
$$Motorcycle\ Serious\ Injuries = \sum Motocyclist\ and\ passenger\ Serious\ Injuries$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*

14.6 Pedestrian Fatalities and Serious Injuries

This measure is the total number of pedestrian serious (incapacitating) injuries and fatalities that are reported on Florida's public roads within thirty days of a crash.

Equation 48

$$Pedestrian\ Fatalities = \sum Pedestrians\ Killed\ from\ Traffic\ Crashes$$

$$Pedestrian\ Serious\ Injuries = \sum Pedestrians\ Seriously\ Injuried\ (Incapacitated)\ from\ traffic\ crashes$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*

14.7 Bicycle Fatalities and Serious Injuries

This measure is the total number of bicycle serious (incapacitating) injuries and fatalities on all of Florida's roadways within thirty days of the crash occurrence.

Equation 49

$$Bicycle\ Fatalities = \sum Bicyclists\ and\ Passengers\ Killed\ from\ Traffic\ Crashes$$

$$Bicycle\ Serious\ \ Injuries = \sum Bicyclists\ and\ Passengers\ Seriously\ Injuried\ (\text{Incapacitated})\ \text{from Traffic Crashes}$$

Data Sources

- Florida Department of Highway Safety and Motor Vehicles. *Traffic Crash Facts Annual Report*
- FDOT State Safety Office. *Signal Four Analytics database as of March 1, 2024 for 2023 data and November 14, 2023 for 2022 data*

14.8 Safety Belt Use

FDOT conducts Florida's annual statewide safety belt use survey. The statewide survey follows National Highway Traffic Safety Administration (NHTSA) procedures in determining the outboard, front-seat occupant belt use rate. Every five years, NHTSA requires that statewide surveys include newly sampled survey sites based on the most recent traffic fatality counts. These sites were selected randomly to represent all the traffic on various roadway types around the State of Florida. This measure is the percentage of driver and front seat passengers observed to be using a safety belt. Observations were recorded at 165 sites across 15 counties and occurred at random one-hour periods on all days of the week during daylight hours.

Equation 50

$$Percent\ Safety\ Belt\ Use = \frac{\sum Observed\ Safety - Belt - Using\ Drivers\ and\ Passengers}{\text{Total Observations}} \times 100$$

Data Sources

- FDOT State Safety Office. *Safety Belt Use in Florida 2023*

15.0 Federal Measures

Federal transportation law requires state departments of transportation (DOT), metropolitan planning organizations (MPO), and public transportation providers to conduct performance-based planning by tracking performance and establishing data-driven performance targets to assess progress toward achieving goals. This Transportation Performance management (TPM) approach aims to link investment decisions to key outcomes related to seven national goals established by Congress in the areas of safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays.

This section provides an overview of the performance measures for Safety (PM1), Bridge and Pavement Condition (PM2), System Performance (PM3).

15.1 PM1 – Safety

The Safety (PM1) Final Rule establishes the following five performance measures that support the data-driven performance framework outlined in the Highway Safety Improvement Program (HSIP) Final Rule:

- Number of Fatalities: The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.
- Rate of Fatalities: The ratio of total number of fatalities to the number of vehicle miles traveled (VMT, in 100 Million VMT) in a calendar year.
- Number of Serious Injuries: The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.
- Rate of Serious Injuries: The ratio of total number of serious injuries to the number of VMT (in 100 Million VMT) in a calendar year.
- Number of Non-motorized Fatalities and Non-motorized Serious Injuries: The combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

Details of the first performance rule (PM1) are available here.

15.2 PM2 – Pavement and Bridge

The Bridge and Pavement Condition (PM2) Final Rule establishes six performance measures (two for bridges and four for pavement) that FDOT must use to manage bridge and pavement performance on the National Highway System (NHS).

Bridge performance measures include:

- Percentage of NHS bridges classified as in Good condition
- Percentage of NHS bridges classified as in Poor condition

Pavement performance measures include:

- Percentage of pavements of the Interstate System in Good condition
- Percentage of pavements of the Interstate System in Poor condition
- Percentage of pavements of the non-Interstate NHS in Good condition
- Percentage of pavements of the non-Interstate NHS in Poor condition

Details of the second performance rule (PM2) are available here.

15.3 PM3 – System Performance

The System Performance (PM3) Final Rule is intended to carry out the NHPP, National Highway Freight Program (NHFP), and Congestion Mitigation and Air Quality Improvement Program (CMAQ) through six performance measures that address travel-time reliability, freight movement, peak-hour excessive delay, non-SOV travel, and on-road mobile source emissions reductions. Because Florida does not have any air quality nonattainment or maintenance areas, three of the six performance measures related to the CMAQ program (peak-hour excessive delay, non-SOV travel, and on-road mobile source emissions reductions) are not currently required to be calculated by FDOT nor by Florida's MPOs.

System performance measures include:

- Percent of person-miles traveled on the Interstate that are reliable
- Percent of person-miles traveled on the non-Interstate National Highway System (NHS) that are reliable
- Truck Travel Time Reliability (TTTR) Index

Details of the third performance rule (PM3) are available here.

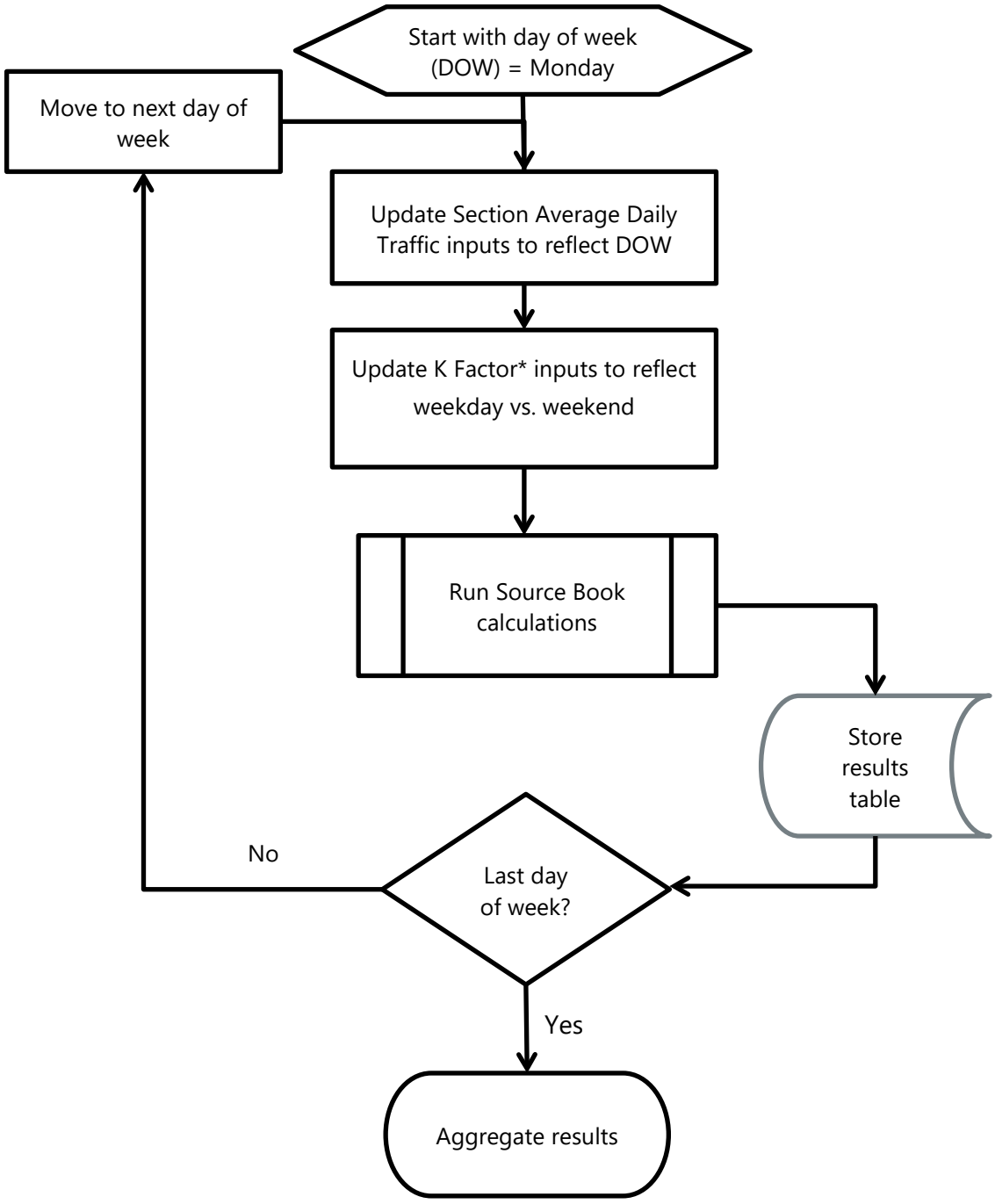
Appendix A. Hourly Factors (K Factors)

TIME PERIOD	LIMITED ACCESS	
	WEEKDAY	WEEKEND
12 a.m. – 1 a.m.	0.84%	1.57%
1 a.m. – 2 a.m.	0.57%	1.04%
2 a.m. – 3 a.m.	0.48%	0.78%
3 a.m. – 4 a.m.	0.56%	0.68%
4 a.m. – 5 a.m.	0.97%	0.78%
5 a.m. – 6 a.m.	2.26%	1.24%
6 a.m. – 7 a.m.	4.77%	2.17%
7 a.m. – 8 a.m.	6.70%	3.09%
8 a.m. – 9 a.m.	6.42%	4.18%
9 a.m. – 10 a.m.	5.62%	5.35%
10 a.m. – 11 a.m.	5.51%	6.38%
11 a.m. – 12 p.m.	5.67%	7.00%
12 p.m. – 1 p.m.	5.87%	7.34%
1 p.m. – 2 p.m.	5.95%	7.31%
2 p.m. – 3 p.m.	6.32%	7.23%
3 p.m. – 4 p.m.	6.96%	7.12%
4 p.m. – 5 p.m.	7.44%	6.91%
5 p.m. – 6 p.m.	7.49%	6.60%
6 p.m. – 7 p.m.	5.88%	5.96%
7 p.m. – 8 p.m.	4.32%	5.05%
8 p.m. – 9 p.m.	3.35%	4.17%
9 p.m. – 10 p.m.	2.63%	3.38%
10 p.m. – 11 p.m.	2.00%	2.68%
11 p.m. – 12 a.m.	1.42%	1.97%

TIME PERIOD	C1		C2		C2T		C3C	
	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND
12 a.m. – 1 a.m.	0.62%	1.24%	0.87%	1.56%	0.52%	1.56%	0.66%	1.44%
1 a.m. – 2 a.m.	0.43%	0.81%	0.60%	1.01%	0.36%	1.01%	0.43%	0.96%
2 a.m. – 3 a.m.	0.39%	0.65%	0.49%	0.76%	0.41%	0.76%	0.38%	0.76%
3 a.m. – 4 a.m.	0.45%	0.54%	0.57%	0.72%	0.60%	0.72%	0.45%	0.65%
4 a.m. – 5 a.m.	0.89%	0.65%	0.92%	0.76%	1.12%	0.76%	0.84%	0.67%
5 a.m. – 6 a.m.	2.24%	1.10%	2.10%	1.29%	2.79%	1.29%	2.07%	1.07%
6 a.m. – 7 a.m.	4.85%	2.02%	4.48%	2.11%	4.99%	2.11%	4.53%	1.91%
7 a.m. – 8 a.m.	6.56%	3.11%	6.54%	3.05%	6.92%	3.05%	6.44%	2.86%
8 a.m. – 9 a.m.	6.17%	4.35%	5.90%	4.11%	5.99%	4.11%	6.15%	4.05%
9 a.m. – 10 a.m.	5.63%	5.73%	5.45%	5.45%	5.96%	5.45%	5.53%	5.39%
10 a.m. –11 a.m.	5.79%	6.79%	5.63%	6.54%	6.34%	6.54%	5.62%	6.52%
11 a.m. –12 p.m.	6.23%	7.52%	6.03%	7.26%	6.39%	7.26%	5.97%	7.23%
12 p.m. – 1 p.m.	6.62%	7.95%	6.32%	7.67%	6.33%	7.67%	6.33%	7.74%
1 p.m. – 2 p.m.	6.65%	7.86%	6.39%	7.67%	6.26%	7.67%	6.33%	7.65%
2 p.m. – 3 p.m.	6.92%	7.58%	6.69%	7.58%	6.78%	7.58%	6.64%	7.46%
3 p.m. – 4 p.m.	7.37%	7.32%	7.17%	7.39%	7.16%	7.39%	7.28%	7.28%
4 p.m. – 5 p.m.	7.44%	6.92%	7.56%	7.09%	7.20%	7.09%	7.69%	7.03%
5 p.m. – 6 p.m.	7.12%	6.46%	7.51%	6.61%	7.42%	6.61%	7.66%	6.67%
6 p.m. – 7 p.m.	5.35%	5.77%	5.63%	5.76%	5.46%	5.76%	5.89%	6.01%
7 p.m. – 8 p.m.	3.92%	4.81%	4.14%	4.68%	4.06%	4.68%	4.31%	5.04%
8 p.m. – 9 p.m.	3.02%	3.85%	3.23%	3.79%	2.95%	3.79%	3.29%	4.07%
9 p.m. – 10 p.m.	2.36%	3.05%	2.51%	3.05%	1.86%	3.05%	2.51%	3.23%
10 p.m. –11 p.m.	1.80%	2.31%	1.87%	2.34%	1.27%	2.34%	1.79%	2.51%
11 p.m. –12 a.m.	1.20%	1.61%	1.40%	1.71%	0.85%	1.71%	1.21%	1.79%

TIME PERIOD	C3R		C4		C5		C6	
	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND	WEEKDAY	WEEKEND
12 a.m. – 1 a.m.	0.70%	1.44%	0.83%	1.90%	1.01%	1.90%	1.41%	1.90%
1 a.m. – 2 a.m.	0.47%	0.98%	0.50%	1.21%	0.58%	1.21%	0.86%	1.21%
2 a.m. – 3 a.m.	0.39%	0.74%	0.36%	0.85%	0.40%	0.85%	0.56%	0.85%
3 a.m. – 4 a.m.	0.48%	0.65%	0.34%	0.66%	0.38%	0.66%	0.43%	0.66%
4 a.m. – 5 a.m.	0.85%	0.72%	0.56%	0.68%	0.56%	0.68%	0.53%	0.68%
5 a.m. – 6 a.m.	1.89%	1.05%	1.42%	1.02%	1.49%	1.02%	1.20%	1.02%
6 a.m. – 7 a.m.	3.94%	1.80%	3.45%	1.84%	3.20%	1.84%	2.93%	1.84%
7 a.m. – 8 a.m.	6.23%	2.82%	5.95%	2.99%	5.25%	2.99%	5.90%	2.99%
8 a.m. – 9 a.m.	6.19%	4.16%	6.59%	4.23%	5.95%	4.23%	6.96%	4.23%
9 a.m. – 10 a.m.	5.66%	5.61%	5.86%	5.41%	5.69%	5.41%	5.87%	5.41%
10 a.m. –11 a.m.	5.74%	6.77%	5.72%	6.34%	5.88%	6.34%	5.43%	6.34%
11 a.m. –12 p.m.	6.12%	7.37%	6.15%	7.01%	6.08%	7.01%	5.73%	7.01%
12 p.m. – 1 p.m.	6.42%	7.87%	6.50%	7.33%	6.33%	7.33%	5.91%	7.33%
1 p.m. – 2 p.m.	6.45%	7.68%	6.46%	7.25%	6.32%	7.25%	5.87%	7.25%
2 p.m. – 3 p.m.	6.83%	7.46%	6.72%	7.16%	6.65%	7.16%	5.97%	7.16%
3 p.m. – 4 p.m.	7.32%	7.27%	7.21%	7.02%	7.06%	7.02%	6.54%	7.02%
4 p.m. – 5 p.m.	7.64%	7.02%	7.50%	6.70%	7.24%	6.70%	7.17%	6.70%
5 p.m. – 6 p.m.	7.61%	6.66%	7.46%	6.41%	7.17%	6.41%	7.61%	6.41%
6 p.m. – 7 p.m.	5.88%	5.94%	5.95%	5.94%	6.21%	5.94%	6.21%	5.94%
7 p.m. – 8 p.m.	4.38%	4.94%	4.49%	5.09%	5.04%	5.09%	4.74%	5.09%
8 p.m. – 9 p.m.	3.34%	3.96%	3.51%	4.27%	3.93%	4.27%	3.93%	4.27%
9 p.m. – 10 p.m.	2.47%	3.04%	2.76%	3.49%	3.14%	3.49%	3.35%	3.49%
10 p.m. –11 p.m.	1.76%	2.34%	2.17%	2.90%	2.59%	2.90%	2.77%	2.90%
11 p.m. –12 a.m.	1.22%	1.71%	1.55%	2.26%	1.86%	2.26%	2.11%	2.26%

Appendix B. Day of Week Calculation



*Refer to **Appendix A** for the specific K-factors by time-of-day, facility type, and weekday/weekend day.

Appendix C. County Vehicle Occupancy Factors

COUNTY NAME	VEHICLE OCCUPANCY FACTOR	COUNTY NAME	VEHICLE OCCUPANCY FACTOR	COUNTY NAME	VEHICLE OCCUPANCY FACTOR
Alachua	1.74	**Hardee**	1.78	**Okeechobee**	1.89
Baker	1.91	**Hendry**	1.81	**Orange**	1.69
Bay	1.64	**Hernando**	1.73	**Osceola**	1.72
Bradford	1.76	**Highlands**	1.72	**Palm Beach**	1.55
Brevard	1.63	**Hillsborough**	1.69	**Pasco**	1.63
Broward	1.50	**Holmes**	1.76	**Pinellas**	1.54
Calhoun	1.54	**Indian River**	1.70	**Polk**	1.67
Charlotte	1.67	**Jackson**	1.77	**Putnam**	1.68
Citrus	1.68	**Jefferson**	1.70	**Santa Rosa**	1.65
Clay	1.42	**Lafayette**	1.69	**Sarasota**	1.63
Collier	1.71	**Lake**	1.49	**Seminole**	1.56
Columbia	1.81	**Lee**	1.65	**St. Johns**	1.74
Desoto	1.85	**Leon**	1.62	**St. Lucie**	1.52
Dixie	1.79	**Levy**	1.78	**Sumter**	1.66
Duval	1.54	**Liberty**	1.69	**Suwannee**	1.80
Escambia	1.58	**Madison**	1.65	**Taylor**	1.67
Flagler	1.70	**Manatee**	1.66	**Union**	1.66
Franklin	1.51	**Marion**	1.76	**Volusia**	1.65
Gadsden	1.66	**Martin**	1.71	**Wakulla**	1.69
Gilchrist	1.74	**Miami-Dade**	1.52	**Walton**	1.76
Glades	1.73	**Monroe**	1.84	**Washington**	1.69
Gulf	1.57	**Nassau**	1.78	**Florida**	**1.68**
Hamilton	1.73	**Okaloosa**	1.61		

Appendix D. Freeway Speed Model

This Appendix discusses the modified Davidson Equation used in developing modeled speeds in the Source Book for freeway facilities.

Modified Davidson Equation

The travel time function proposed by Davidson (1966, 1978) for transport planning purposes has been subject to much discussion and efforts of calibration and improvement including some controversy over the meaning of its parameters. In a presentation on the *Development of Speed Models for Improving Travel Forecasting and Highway Performance Evaluation*, Moses et al. (December 5, 2012) presented a piecewise modified Davidson volume-delay function for use in a study of SR 9/I-95 data in Pompano Beach, Florida. **Table D.1** contains modified Davidson parameters applicable to freeways in Florida.

Equation 51

$$S = \begin{cases} \dfrac{S_0}{1 + \dfrac{J_D\left(\dfrac{V}{C}\right)}{1 - \dfrac{V}{C}}} & for \dfrac{V}{C} \le \mu \\ \dfrac{S_0}{1 + \dfrac{J_D \times \mu}{1-\mu} + \dfrac{J_D\left(\dfrac{V}{C} - \mu\right)}{(1-\mu)^2}} & for \dfrac{V}{C} > \mu \end{cases}$$

Where:

S	= predicted travel speed (mph)
S_o	= free flow speed (mph)
J_D	= a delay parameter,
V	= volume (veh/h)
C	= capacity (veh/h)
μ	= saturation threshold parameter

Table D.1 FDOT Parameter Values for Fitted Speed-Volume Functions

FUNCTION	PARAMETER	URBAN SPEED LIMIT (MPH)		
		SPEED LIMIT ≤ 60	60 < SPEED LIMIT ≤ 65	65 < SPEED LIMIT ≤ 70
Modified Davidson	J_D	0.0090	0.0092	0.0099
	μ	0.9500	0.9490	0.9510

Appendix E. Arterial Speed Model

This Appendix discusses the methods used to calculate modeled speeds on arterial facilities at various degrees of saturation.

Speed calculation when v/c < 1

For v/c < 1.0, speed calculations will be based on speeds given in the 2012 Generalized Level of Service Volume Tables. See **Appendix F**.

Speed calculation when v/c ≥ 1

The Bureau of Public Roads (BPR – the predecessor of Federal Highway Administration before 1967) speed-flow curve is used to estimate speeds at various volume/capacity (v/c) ratios. The standard BPR curve generally drops too soon before capacity is reached, and then drops too slowly when demand exceeds capacity. For the Source Book, alpha and beta parameters developed in Florida from the Greater Treasure Coast Regional Planning Model (GTCRPM III) were used, and then interpolated to force predicted speeds equal to 15 mph when v/c = 1 and 7 mph when v/c =2.

The BPR equation is shown below:

Equation 52

$$S = \frac{S_f}{1 + a\left(\frac{V}{C}\right)^b}$$

Where:

S	= predicted mean speed
S_f	= free flow speed
V	= volume
C	= capacity
b, a	= parameters

Table E.1 BPR Parameters

SOURCE	HIGH SPEED ARTERIAL (SPEED LIMIT ≥ 40 MPH)		LOW SPEED ARTERIAL (SPEED LIMIT ≤ 35 MPH)	
	ALPHA	BETA	ALPHA	BETA
Greater Treasure Coast Regional Planning Model (GTCRPM III)	0.71	2.1	0.83	5.5

Table E.2 Interpolated Speed

V/C	PREDICTED SPEED BY BPR	INTERPOLATED SPEED
1.0	26.32	15.00
1.1	24.10	13.83
1.2	22.05	12.75
1.3	20.16	11.76
1.4	18.45	10.86
1.5	16.89	10.04
1.6	15.49	9.30
1.7	14.22	8.63
1.8	13.08	8.03
1.9	12.05	7.49
2.0	11.13	7.00

Appendix F. 2012 Generalized Service Volume Tables

Although the Generalized Service Volume tables were updated in 2023, the Source Book used the 2012 version, which was the current version available at the time of publication. The 2012 Generalized Service Volume tables were also used for consistency in computation methodology with historical results.

TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's **Urbanized Areas**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	830	880	**
2	Divided	*	1,910	2,000	**
3	Divided	*	2,940	3,020	**
4	Divided	*	3,970	4,040	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	370	750	800
2	Divided	*	730	1,630	1,700
3	Divided	*	1,170	2,520	2,560
4	Divided	*	1,610	3,390	3,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	150	390	1,000
50-84%	110	340	1,000	>1,000
85-100%	470	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,260	3,020	3,660	3,940
3	3,360	4,580	5,500	6,080
4	4,500	6,080	7,320	8,220
5	5,660	7,680	9,220	10,360
6	7,900	10,320	12,060	12,500

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	420	840	1,190	1,640
2	Divided	1,810	2,560	3,240	3,590
3	Divided	2,720	3,840	4,860	5,380

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

2012 FDOT QUALITY/LEVEL OF SERVICE HANDBOOK TABLES

TABLE 7
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's
Urbanized Areas

12/18/12

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (lu, u)	lu	u	u	u	u	u	u	u	u
Number of through lanes (both dir.)	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n								
Median (n, nr, r)		n	r	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		80							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	4	5	5	2	2	1.9	1.8	2	2
Number of basic segments	4								
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.547	0.550	0.550	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)		1,700	2,100	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Local adjustment factor	0.91	0.97	0.98						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				4	4	10	10	4	6
Arrival type (1-6)				3	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	120	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, w)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 8

Generalized **Peak Hour Directional** Volumes for Florida's **Transitioning** and **Areas Over 5,000 Not In Urbanized Areas**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	710	800	**
2	Divided	*	1,740	1,820	**
3	Divided	*	2,670	2,740	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	330	680	720
2	Divided	*	500	1,460	1,600
3	Divided	*	810	2,280	2,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	140	320	1,000
50-84%	100	280	940	>1,000
85-100%	380	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,200	2,880	3,440	3,580
3	3,260	4,280	5,100	5,540
4	4,260	5,680	6,760	7,500
5	5,300	7,080	8,440	9,440

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	450	850	1,200	1,640
2	Divided	1,740	2,450	3,110	3,440
3	Divided	2,610	3,680	4,660	5,170

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1] Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

TABLE 8
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's **Transitioning** and **Areas Over 5,000 Not In Urbanized Areas**

12/18/12

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities			Interrupted Flow Facilities					
				State Arterials				Class I	
	Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS									
Area type (t,uo)	t	t	t	t	t	t	t	t	t
Number of through lanes (both dir.)	4-10	2	4-6	2	4-6	2	4-6	4	4
Posted speed (mph)	70	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	55	55	50	55	35	35	50	50
Auxiliary lanes (n,y)	n	n	n						
Median (n, nr, r)		n	r	n	y	n	y	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		60							
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)				n	n	n	n	n	n
Facility length (mi)	8	5	5	1.8	2	2	2	2	2
Number of basic segments	4								
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.555	0.550	0.550	0.550	0.570	0.570	0.565	0.570	0.570
Peak hour factor (PHF)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)		1,700	2,100	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	9.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0	3.0
Local adjustment factor	0.85	0.97	0.95						
% left turns				12	12	12	12	12	12
% right turns				12	12	12	12	12	12
CONTROL CHARACTERISTICS									
Number of signals				5	4	10	10	4	6
Arrival type (1-6)				4	3	4	4	4	4
Signal type (a, c, p)				c	c	c	c	c	c
Cycle length (C)				120	150	120	150	120	120
Effective green ratio (g/C)				0.44	0.45	0.44	0.45	0.44	0.44
CONTROL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)								n, 50%, y	n
Outside lane width (n, t, w)								t	t
Pavement condition (d, t, u)								t	
On-street parking (n, y)								n	n
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane %ffs	Multilane Density	Class I ats	Class II ats	Score	Score	Buses/hr.
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed ats = Average travel speed

TABLE 9

Generalized **Peak Hour Directional** Volumes for Florida's **Rural Undeveloped Areas** and **Developed Areas Less Than 5,000 Population**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Lanes	Median	B	C	D	E
1	Undivided	*	670	740	**
2	Divided	*	1,530	1,580	**
3	Divided	*	2,360	2,400	**

Non-State Signalized Roadway Adjustments
(Alter corresponding state volumes by the indicated percent.)
Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment
Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Rural Undeveloped

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	70	110	170
50-84%	60	120	180	580
85-100%	140	210	1,000	>1,000

Developed Areas

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	120	260	840
50-84%	100	240	720	1,000
85-100%	320	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	120	460
50-84%	*	80	430	770
85-100%	180	520	860	>1,000

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	1,680	2,500	3,040	3,500
3	2,500	3,720	4,560	5,400
4	3,360	4,980	6,080	7,200

Freeway Adjustments
Auxiliary Lanes Present in Both Directions
+ 1,000

UNINTERRUPTED FLOW HIGHWAYS

Rural Undeveloped

Lanes	Median	B	C	D	E
1	Undivided	240	430	740	1,490
2	Divided	1,340	2,100	2,660	3,020
3	Divided	2,020	3,150	4,000	4,530

Developed Areas

Lanes	Median	B	C	D	E
1	Undivided	450	850	1,200	1,640
2	Divided	1,350	2,120	2,730	3,110
3	Divided	2,020	3,180	4,090	4,670

Passing Lane Adjustments
Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:

Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

TABLE 9
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's
Rural Undeveloped Areas and
Developed Areas Less Than 5,000 Population

12/18/12

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities					Interrupted Flow Facilities				
	Freeways	Highways				Arterials		Bicycle		Pedestrian
ROADWAY CHARACTERISTICS										
Area type (ru, rd)	rural	ru	ru	rd	rd	rd	rd	ru	rd	rd
Number of through lanes (both dir.)	4-8	2	4-6	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	65	50	55	45	45	55	45	45
Free flow speed (mph)	75	60	70	55	60	50	50	60	50	50
Auxiliary lanes (n,y)	n									
Median (n, nr, r)		n	r	n	r	n	r	r	r	n
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone		20		60						
Exclusive left turn lanes (n, y)		[n]	y	[n]	y	y	y	y	y	y
Exclusive right turn lanes (n, y)						n	n	n	n	n
Facility length (mi)	14	10	10	5	5	1.9	2.2	4	2	2
Number of basic segments	4									
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.105	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Directional distribution factor (D)	0.555	0.550	0.550	0.550	0.550	0.550	0.550	0.570	0.570	0.550
Peak hour factor (PHF)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)		1,700	2,300	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	12.0	4.0	4.0	3.0	3.0	6.0	3.5	3.0
Local adjustment factor	0.84	0.88	0.73	0.97	0.82					
% left turns						12	12		12	12
% right turns						12	12		12	12
CONTROL CHARACTERISTICS										
Number of signals						5	6	2	4	4
Arrival type (1-6)						3	3	3	3	3
Signal type (a, c, p)						c	c	a	a	a
Cycle length (C)						90	90	60	90	90
Effective green ratio (g/C)						0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)								n,50%,y	n,50%,y	n
Outside lane width (n, t, w)								t	t	t
Pavement condition (d, t, u)								t	t	
Sidewalk (n, y)										n,50%,y
Sidewalk/roadway separation(a, t,w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways				
		Two-Lane ru		Two-Lane rd	Multilane ru	Multilane rd
	Density	%tsf	ats	%ffs	Density	Density
B	≤ 14	≤ 50	≥ 55	> 83.3	≤ 14	≤ 14
C	≤ 22	≤ 65	≥ 50	> 75.0	≤ 22	≤ 22
D	≤ 29	≤ 80	≥ 45	> 66.7	≤ 29	≤ 29
E	≤ 36	> 80	≥ 40	> 58.3	≤ 34	≤ 34

Level of Service	Arterials	Bicycle	Pedestrian
	Major City/Co.(ats)	Score	Score
B	> 31 mph	≤ 2.75	≤ 2.75
C	> 23 mph	≤ 3.50	≤ 3.50
D	> 18 mph	≤ 4.25	≤ 4.25
E	> 15 mph	≤ 5.00	≤ 5.00

%tsf = Percent time spent following %ffs = Percent of free flow speed ats = Average travel speed ru = Rural undeveloped rd = Rural developed

Appendix G. Two-Lane Highway Speed Model

Chapter 15: Two-Lane Highways of the Highway Capacity Manual 6th Edition (HCM) provides guidance on estimating average speeds on two-lane highways. This memorandum summarizes the HCM methodology and provides advice relevant to the Source Book project.

The HCM methodology considers several characteristics of a two-lane highway, including lane width, percentage of combination trucks, and no-passing zones, etc. However, the HCM's methodology is limited in its coverage of oversaturated conditions, with the HCM noting that it is rare to see two-lane highways operating at or near capacity (because most will have been expanded before demand reaches capacity), and thus there is a corresponding lack of data on oversaturated operations.

Classification of Two-Lane Highways

Because two-lane highways are versatile roadways that can serve a multitude of purposes, the HCM has subdivided this type of facility into three distinct classes: Class I, Class II, and Class III (**Figure G.1**). A brief discussion of the different classes is relevant to the Source Book project, as they have different methodologies for calculating performance measures.

Figure G.1 Two-Lane Highway Classification

Source: Derived from HCM: Chapter 15: Two-Lane Highways. Percent Time Spent Following (PTSF) is the average percent of total travel time that vehicles must travel in platoons behind slower vehicles due to inability to pass on a two-lane highway. It therefore represents the freedom to maneuver and convenience of travel.

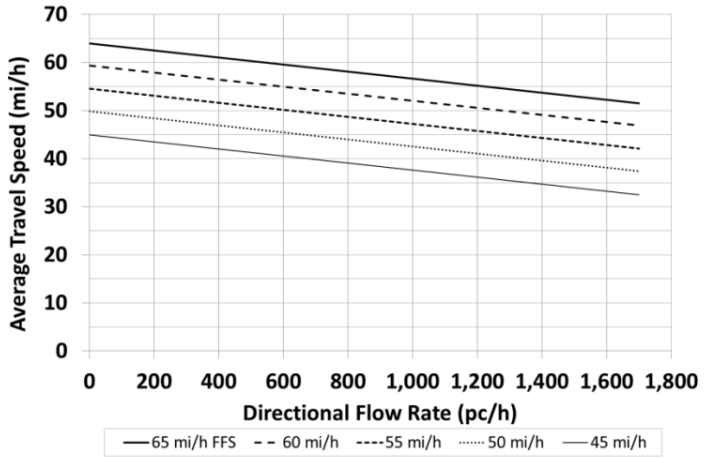
Basic Relationship

Figure G.2 presents the basic relationship between flow, average travel speed, and percent time spent following another vehicle or trailer for two-lane highways in "base conditions". Base conditions are defined by the HCM as the absence of restrictive geometric, traffic, or environmental factors. Therefore, base conditions are not to be confused with typical or default conditions. They more closely resemble ideal conditions.

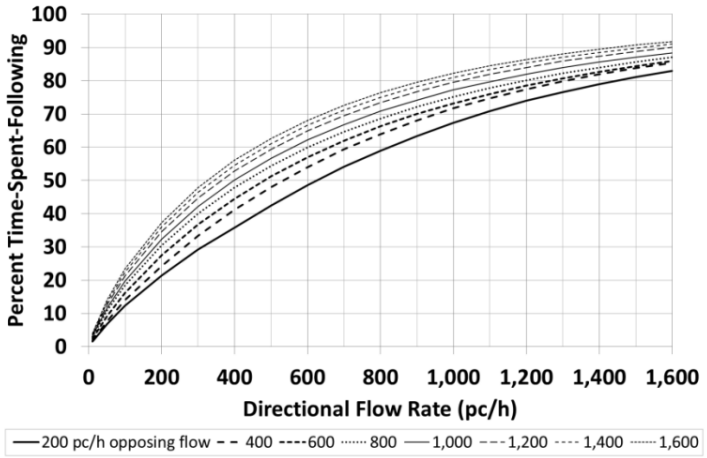
For the Source Book, the two-lane highway speed calculations are based on speed-flow relationships with base conditions (Exhibit 15-2 of HCM 6th Edition).

Figure G.2 Base (Ideal) Speed-Flow Relationship in Two-Lane Highways

Highway Capacity Manual: A Guide for Multimodal Mobility Analysis



(a) ATS Versus Directional Flow Rate



(b) PTSF Versus Directional Flow Rate

Exhibit 15-2
Speed–Flow and PTSF Relationships for Directional Segments with Base Conditions

Source: HCM 6th Edition, Chapter 15

Appendix H. County Combination Truck Factors

COUNTY NAME	COMBINATION TRUCK FACTOR	COUNTY NAME	COMBINATION TRUCK FACTOR	COUNTY NAME	COMBINATION TRUCK FACTOR
Alachua	0.72	**Hardee**	0.51	**Okeechobee**	0.52
Baker	0.72	**Hendry**	0.52	**Orange**	0.49
Bay	0.43	**Hernando**	0.72	**Osceola**	0.66
Bradford	0.53	**Highlands**	0.46	**Palm Beach**	0.49
Brevard	0.67	**Hillsborough**	0.50	**Pasco**	0.57
Broward	0.52	**Holmes**	0.72	**Pinellas**	0.49
Calhoun	0.53	**Indian River**	0.72	**Polk**	0.68
Charlotte	0.72	**Jackson**	0.72	**Putnam**	0.50
Citrus	N/A	**Jefferson**	0.72	**Santa Rosa**	0.67
Clay	0.35	**Lafayette**	0.53	**Sarasota**	0.63
Collier	0.69	**Lake**	0.41	**Seminole**	0.49
Columbia	0.72	**Lee**	0.55	**St. Johns**	0.72
Desoto	0.50	**Leon**	0.65	**St. Lucie**	0.67
Dixie	0.53	**Levy**	0.53	**Sumter**	0.72
Duval	0.50	**Liberty**	0.53	**Suwannee**	0.72
Escambia	0.65	**Madison**	0.72	**Taylor**	0.52
Flagler	0.65	**Manatee**	0.53	**Union**	N/A
Franklin	0.53	**Marion**	0.71	**Volusia**	0.67
Gadsden	0.71	**Martin**	0.71	**Wakulla**	0.53
Gilchrist	0.53	**Miami-Dade**	0.49	**Walton**	0.72
Glades	0.53	**Monroe**	0.47	**Washington**	0.72
Gulf	0.53	**Nassau**	0.72		
Hamilton	0.72	**Okaloosa**	0.72		

* For County without Combination Truck factor, 0.68 will be used for Principal Arterial – Interstate, 0.55 will be used for Principal Arterial – Freeway & Expressways, 0.44 will be used for all other roadways.

Appendix I. Source Book Data Dictionary

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
ROADWAYID	A unique 8-character identification number assigned to a roadway or section of a roadway either on or off the State Highway System for which information is maintained in the Department's Roadway Characteristics Inventory (RCI)	8-character ID, the first two characters are the county code, the next 3 are the section code, and final 3 characters are the subsection code	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Roadway ID
YR	Calendar year for which the calculated performance measure applies	The calendar year that applies to the calculated performance measure. Each Source Book publication reports each performance measure for five years counting back from the most current year of the publication. For example, the Source Book for 2023 measures contains all measures for five years from 2016-2023.	Florida Department of Transportation, Systems Forecasting and Trends Office	Source Book Performance Report Year
ID	Source Book Segment ID	The segments are generated by Florida Department of Transportation, Systems Forecasting and Trends Office, specifically for the Source Book calculations and reporting.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book segmentation	Source Book Segment ID
BEGIN_POST	Denotes the lowest milepoint for the record	Lowest milepoint for the record	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Begin Milepost
END_POST	Denotes the highest milepoint for the record	Highest milepoint for the record	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	End Milepost

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
DISTRICT	FDOT District Number (Geographic District)	1 - District 1 2 - District 2 3 - District 3 4 - District 4 5 - District 5 6 - District 6 7 - District 7	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	FDOT Geographic District Number
CNTYNAME	The county that contains the roadway	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, Desoto, Dixie, Duval, Escambia, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Hernando, Highlands, Hillsborough, Holmes, Indian, River, Jackson, Jefferson, Lafayette, Lake, Lee, Leon, Levy, Liberty, Madison, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, St. Lucie, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, Washington	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	County Name
USROUTE	USROUTE refers to U.S. Route, which is the United States Numbered Highway System. A US route number is assigned to a specific roadway that receives federal aid.	The US Route Number	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	US Route
STROUTE	STROUTE stands for state routes. A state route number is assigned to a specific roadway owned and maintained by the FDOT	State road route number from the STROADNO field of the RCI Top 30 feature service layer	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	State Route
LOCAL_NAME	LOCAL_NAME stands for the local name of facility	Local name of road	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Local Name

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
NHS	NHS stands for National Highway System, roads designated by Congress as nationally important for inter-regional travel, including roads designated as connectors to NHS intermodal facilities. This element denotes whether the roadway is on the National Highway System or not. Roads on the SHS, but not on NHS are assigned a 0 by the SFT.	0 - Not a National Highway System 1 - Is a National Highway System	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	National Highway System
SISFACTP	SISFACTP denotes Florida's Strategic Intermodal System (SIS) Facility Type level. It is roadway characteristics inventory (RCI) feature 149 (SISFCTPX).	0-off the SIS 11-Corridor 13-Corridor Future 14-Corridor Planned Drop 21-Connector 22-Connector Future 23-Connector Planned Drop 24-Military Access 25-Military Access Future 26-Military Access Planned Drop 27-SG Connector 28-SG Connector Future 29-SG Connector Planned Drop 31-Link 41-GIS Route 51-Managed/Express/Reversible	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Strategic Intermodal System (SIS) Facility Type
SPEED	SPEED provides information on the posted speed on HPMS sample sections. It is roadway characteristics inventory (RCI) feature 311.	NA	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Speed

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
URBTYPE	URBTYPE stands for urban area type. This data is included in the RCI Top 30 download but not referenced in the RCI Handbook. The criteria are discussed in FDOT's Urban Boundary and Functional Classification Handbook.	0 - Not urbanized UA -Urbanized area UC - Urban cluster	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Urban Area Type
FUNCLASS	FUNCLASS stands for Functional Classification, a description of how a road functions, using definitions and processes specified by the Federal Highway Administration (FHWA). A road may be classified as a principal arterial (including Interstates, Other Freeways and Expressways, or others), a minor arterial, a collector (major or minor), or a local road. The FDOT GIS Functional Classification Roadways shapefile provides spatial information on the assignment of roads into systems according to the character of the service they provide in relation to the total road network. This is used to identify the highway type for performance measures calculations. It is roadway characteristics inventory (RCI) feature 121 (FUNCLASS).	0 - No defined roads 1 - Principal Arterial-Interstate - RURAL 2 - Principal Arterial-Expressway - RURAL 4 - Principal Arterial-Other - RURAL 6 - Minor Arterial - RURAL 7 - Major Collector - RURAL 8 - Minor Collector - RURAL 9 - Local - RURAL 11 - Principal Arterial-Interstate - URBAN 12 - Principal Arterial-Freeway and Expressway - URBAN 14 - Principal Arterial-Other - URBAN 16 - Minor Arterial - URBAN 17 - Major Collector - URBAN 18 - Minor Collector (Fed Aid) - URBAN 19 - Local - URBAN	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Functional Classification
TOTLANES	TOTLANES stands for the total number of lanes. Count the number of through lanes excluding auxiliary lanes, parking lanes, or acceleration and deceleration lanes. For a divided roadway, there will be two values, one for the left roadway side and one for the right roadway side. For a composite roadway side, there will be one value. It is Roadway Characteristics Inventory (RCI) feature 212 (NOLANES).	NA	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Total Number of Lanes

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
URBNAME	URBNAME stands for urban area name. An urban area is defined as a geographical region comprising, as a minimum, the United States Bureau of Census boundary of an urban place with a population of 5,000 or more persons, expanded to include adjacent areas as provided for by FHWA regulations, Sub-section 334.003(27), F.S. It is derived from the feature (URBAREA) in RCI TOP 30 and RCI Feature 124. The attributes are the names of urban area, excluding the code.	0 - No defined area Arcadia-SE Arcadia Belle Glade Big Pine Key Chattahoochee Clewiston Crawfordville Crestview DeFuniak Springs Fellsmere Fernandina Beach Fort Meade Four Corners Frostproof Immokalee Indian Town Interlachen Jasper Jupiter Farms Key Largo Key West Keystone Heights Labelle-Port LaBelle Lake Butler Lake City Lake Placid Live Oak Macclenny Marathon Marianna Marion Oaks Nassau Village-Ratliff Okeechobee-Taylor Creek Orangetree Pahokee Palatka Panama City NE Perry Poinciana, Poinciana SW Quincy	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Urban Area Name

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
		Rainbow Lakes Estates Starke Sugarmill Woods Wauchula Woodville World Golf Village Yulee Deltona Fort Walton Beach-Navarre-Wright Gainesville Homosassa Springs-Beverly Hills-Citrus Springs Lady Lake-The Villages Leesburg-Eustis-Tavares North Port-Port Charlotte Ocala Panama City St. Augustine Sebastian-Vero Beach South-Florida Ridge Sebring-Avon Park Spring Hill Titusville Zephyrhills Bonita Springs Kissimmee Lakeland Palm Bay-Melbourne Palm Coast-Daytona Beach-Port Orange Pensacola, (FL–AL) Port Saint Lucie Tallahassee Winter Haven Cape Coral Jacksonville Miami Orlando Sarasota-Bradenton Tampa-St. Petersburg		

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
MPO_NAME	MPONAME stands for the Metropolitan Area where the segment is located in. MPOs are federally mandated transportation planning organizations (TPO) comprised of representatives from local governments and transportation authorities. It is derived from the feature (MPOAREA) in RCI TOP 30 and RCI Feature 124. The attributes are the names of MPO.	None (Outside of MPO Area Boundary and Within County of an MPO Area) Space Coast TPO Charlotte County-Punta Gorda MPO Broward MPO Okaloosa-Walton TPO Gainesville MTPO Hernando/Citrus MPO Hillsborough MPO Indian River County MPO North Florida TPO Polk TPO Lee County MPO Martin MPO Miami-Dade TPO Collier MPO Ocala/Marion County TPO MetroPlan Bay County TPO Pasco County MPO Florida-Alabama TPO Forward Pinellas Sarasota/Manatee MPO St. Lucie TPO Capital Region TPA River to Sea TPO Palm Beach TPA Lake-Sumter MPO Heartland Regional TPO N/A- Entire Counties outside of MPO Areas	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Metropolitan Planning Organization
CCTXTCLS	CCTXTCLS stands for context classification, which broadly identifies the various built environments existing in Florida. It denotes the criteria for roadway design elements for safer streets that promote safety, economic development, and quality of life.	C1-Natural C2-Rural C2T-Rural Town C3R-Surburban Residential C3C-Surburban Commercial C4-Urban General C5-Urban Center C6-Urban Core LA-Limited Access	Florida Department of Transportation, Transportation Data & Analytics Office. Included in the RCI Top 30 data	Context Classification

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
LOSAT	LOSAT stands for level of service area type. LOASAT is used to calculate Source Book performance measures which are reported by area type (i.e., VMT, Person Miles Traveled, Average Travel Speed, Vehicle Hours of Delay, Person Hours of Delay, Planning Time Index, % Travel by Congestion Type, % Miles by Congestion Type, % Time by Congestion Type, Duration of Congestion, Average Speed versus Speed Limit, Vehicles per Lane Mile). This information is provided by FDOT Systems Implementation Office.	R - rural area RD - rural developed area RU - rural undeveloped area TR - transitioning area UZ - urbanized area	Florida Department of Transportation, Systems Implementation Office	Level of Service Area Type
LOSFT	LOSFT stands for level of service facility type. LOSFT is used to calculate SB performance measures which are reported by facility type (i.e., VMT, Person Miles Traveled, Average Travel Speed, Vehicle Hours of Delay, Person Hours of Delay, Planning Time Index, % Travel by Congestion Type, % Miles by Congestion Type, % Time by Congestion Type, Duration of Congestion, Average Speed versus Speed Limit, Vehicles per Lane Mile). This information is provided by FDOT Systems Implementation Office.	A - arterial F - freeway H - highway 0 - no designated facility type	Florida Department of Transportation, Systems Implementation Office	Level of Service Facility Type
SHS	SHS is State Highway System, roads under the jurisdiction of the State of Florida, and maintained by Florida Department of Transportation or a regional transportation commission, including roads with Interstate, US, and State Road (SR) numbers. This element denotes whether the roadway is on State Highway System or not.	0 - Not a State Highway System 1 - Is a State Highway System	Florida Department of Transportation, Transportation Data & Analytics Office	State Highway System

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
SECTADT	SECTADT stands for section annual average daily traffic (AADT). According to the 2019 Project Traffic Forecasting Handbook, AADT is defined as the total volume of traffic passing a point or segment of a highway facility in both directions for one year divided by the number of days in the year.	The total volume of traffic on a segment of roadway for one year divided by the number of days in that year.	Florida Department of Transportation, Transportation Data & Analytics Office Annual Average Daily Traffic (AADT) feature service layer that displays the location of traffic breaks and affiliated annual average daily traffic volumes in the state of Florida as derived from event mapping selected traffic characteristics from the FDOT Traffic Characteristics Inventory's (TCI) Telemetered Traffic Monitoring Site (TTMS) data for the respective year.	Annual Average Daily Traffic
VMTPH	VMTPH represents vehicle miles traveled during peak hour. VMT refers to estimated amount of travel for all vehicles in a geographic region over a given period of time. It is calculated as the sum of the number of miles traveled by each vehicle.	This value is calculated by the Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory and FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicle Miles Traveled (Peak Hour)
PMTPH	PMTPH represents person miles traveled during peak hour. PMT refers to estimated miles each person travels in a vehicle. It is computed by multiplying vehicle miles traveled (VMT) by the average vehicle occupancy for the county in which the segment resides.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office for the purpose of providing the measure per each Source Book segment. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Person Miles Traveled (Peak Hour)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
VEHPLMPH	VEHPLMPH stands for Vehicles Per Lane Mile during Peak Hour. Vehicles per lane mile represents the average density of vehicles on a roadway segment. It was calculated as the summation of each roadway segment's peak hour vehicle miles traveled divided by the number of lane miles of that segment. VEHPLMPH represents vehicles per lane mile during weekday (excludes holidays) peak hour.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using RCI Feature 212 (Through Lanes) and VMTPH20.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicles Per Lane Mile (Peak Hour)
ASPEEDPH	ASPEEDPH stands for Average Peak Hour speed. It represents average travel speed during weekday (excludes holidays) peak hour. Average travel speed is calculated for each roadway segment by dividing the length of the segment by the average travel time of all vehicles traversing the segment, including the time when a vehicle is stopped. The average travel speed for an area is the average of all hourly segment travel speeds captured by probe data or modeled through speed-volume functions, weighted by the segment's vehicle miles traveled (VMT).	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Average Travel Speed (Peak Hour)
DELAYPH	DELAYPH represents vehicle hours of delay during weekday (excludes holidays) peak hour. Vehicle hours of delay was estimated hourly by determining the difference between actual travel time and the delay threshold travel time along a facility. Delay threshold travel time is the travel time for a motorist during uncongested conditions.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicle Hours of Delay (Peak Hour)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
PDELAYPH	PDELAYPH refers to Person Hours of Delay during the Peak Hour and represents person hours of delay during weekday (excludes holidays) peak hour.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), HERE Technologies - Travel Time Data, and U.S. Department of Transportation (USDOT – National Household Travel Survey, Florida Add-On, 2009). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Person Hours of Delay (Peak Hour)
ASPEEDPP	ASPEEDPP represents average travel speed during weekdays (excludes holidays) peak period. Average travel speed is calculated for each roadway segment by dividing the length of the segment by the average travel time of all vehicles traversing the segment, including the time when a vehicle is stopped. The average travel speed for an area is the average of all hourly segment travel speeds captured by probe data or modeled through speed-volume functions, weighted by the segment's vehicle miles traveled (VMT).	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data for. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Average Travel Speed (Peak Period)
VMTD	VMTD is Vehicle Miles Traveled Daily. It represents vehicle miles traveled during an average 24-hour day. VMT refers to the estimated amount of travel for all vehicles in a geographic region over a given period of time. It is calculated as the sum of the number of miles traveled by each vehicle.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory and FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicle Miles Traveled (Daily)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
PMTD	PMTD represents person miles traveled during an average 24-hour day. PMT refers to estimated miles each person travels in a vehicle. It is computed by multiplying vehicle miles traveled (VMT) by the average vehicle occupancy for the county in which the segment resides.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and U.S. Department of Transportation (USDOT – National Household Travel Survey, Florida Add-On, 2009). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Person Miles Traveled (Daily)
DELAYD	DELAYD represents vehicle hours of delay during an average 24-hour weekday (excludes holidays). Vehicle hours of delay was estimated hourly by determining the difference between actual travel time and the delay threshold travel time along a facility. Delay threshold travel time is the travel time for a motorist during uncongested conditions.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicle Hours of Delay (Daily)
DELAYYLY	DELAYYLY refers to annual delay, which represents vehicle hours of delay experienced on that segment during a year (includes all the calendar days in a year, excluding State of Florida holidays and weekends). Vehicle hours of delay was estimated hourly by determining the difference between actual travel time and the delay threshold travel time along a facility. Delay threshold travel time is the travel time for a motorist during uncongested conditions.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Vehicle Hours of Delay (Yearly)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
PDELAYD	PDELAYD represents person hours of delay during an average 24-hour weekday (excludes holidays). Person hours of delay was estimated by multiplying the average vehicle occupancy for the county in which the segment resides by the daily vehicle hours of delay experienced on that segment (DELAYD). Average vehicle occupancies were developed by county using the 2009 National Household Travel Survey (NHTS) Florida add-on dataset.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), HERE Technologies - Travel Time Data, and U.S. Department of Transportation (USDOT – National Household Travel Survey, Florida Add-On, 2009). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Person Hours of Delay (Daily)
PDELAYY	PDELAYY represents person hours of delay during a year (includes all the calendar days in a year, excluding State of Florida holidays and weekends). Person hours of delay was estimated by multiplying the average vehicle occupancy for the county in which the segment resides by the yearly vehicle hours of delay (DELAYYY). Average vehicle occupancies were developed by county using the 2009 National Household Travel Survey (NHTS) Florida add-on dataset.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), HERE Technologies - Travel Time Data, and U.S. Department of Transportation (USDOT – National Household Travel Survey, Florida Add-On, 2009). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Person Hours of Delay (Yearly)
PMIHCPH	PMIHCPH represents percent miles heavily congested during weekday (excludes holidays) peak hour. PMIHC refers to the percent roadway miles categorized as heavily congested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Heavily Congested (Peak Hour)
PMIMCPH	PMIMCPH represents percent miles mildly congested during weekday (excludes holidays) peak hour. PMIMC refers to the percent roadway miles categorized as mildly congested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Mildly Congested (Peak Hour)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
PMIUCPH	PMIUCPH represents percent miles uncongested during weekday (excludes holidays) peak hour. PMIUC refers to the percent roadway miles categorized uncongested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Uncongested (Peak Hour)
PMIHCPP	PMIHCPP represents percent miles heavily congested during weekday (excludes holidays) peak period. PMIHC refers to the percent roadway miles categorized as heavily congested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Heavily Congested (Peak Period)
PMIMCPP	PMIMCPP represents percent miles mildly congested during weekday (excludes holidays) peak period. PMIMC refers to the percent roadway miles categorized as mildly congested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Mildly Congested (Peak Period)
PMIUCPP	PMIUCPP represents percent miles uncongested during weekday (excludes holidays) peak period. PMIUC refers to the percent roadway miles categorized as uncongested.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System) and Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Percent Miles Uncongested (Peak Period)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
DURCONGD	DURCONGD stands for duration of congestion daily. It is the number of minutes a facility is categorized as heavily congested during a weekday (excluding holidays).	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Duration of Congestion (Daily)
SPDRATIO	SPDRATIO is expressed as the ratio of average weekday (excluding holidays) peak hour speed against the posted speed limit. The average peak hour speed for a roadway is the average of all hourly roadway segment travel speeds captured by HERE probe speed data or modeled through speed-volume functions, weighted by the segment's vehicle miles traveled (VMT).	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 311 (Speed Limits), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Average Speed versus Speed Limit (Peak Hour)
LOTTRAPH	Level of Travel Time Reliability during AM Peak Hour (LOTTRAPH) is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th percentile) over segments of all applicable roads, between the hours of 6 a.m. and 8 p.m. on Monday to Friday.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Level of Travel Time Reliability during AM Peak
LOTTRMDD	Level of Travel Time Reliability during Mid Day (LOTTRMDD) is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th percentile) over segments of all applicable roads, between the hours of 10 a.m. and 4 p.m. on Monday to Friday.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Level of Travel Time Reliability during Mid-day

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
LOTTRPPH	Level of Travel Time Reliability during PM Peak Hour (LOTTRPPH) is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th percentile) over segments of all applicable roads, between the hours of 4 p.m. and 8 p.m. on Monday to Friday.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Level of Travel Time Reliability during PM Peak
LOTTRWED	Level of Travel Time Reliability during Weekends (LOTTRWED) is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th percentile) over segments of all applicable roads, between the hours of 6 a.m. and 8 p.m. on Saturday and Sunday.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Level of Travel Time Reliability during Weekends
LOTTRM	The maximum Level of Travel Time Reliability of the four time periods (AM Peak, Mid-Day, PM Peak, and Weekends)	This value is calculated by Florida Department of Transportation, Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Level of Travel Time Reliability Maximum
TTIWDD	TTIWDD denotes the Planning Time Index (PTI) for a weekday (excludes holidays) daily condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Planning Time Index Weekday (Daily)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
TTIWDPP	TTIWDPP denotes the Planning Time Index (PTI) for a weekday (excludes holidays) peak period condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time during a weekday peak period.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Planning Time Index Weekday (Peak Period)
TTIWDPH	TTIWDPH denotes the Planning Time Index (PTI) for a weekday (excludes holidays) peak hour condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time during a weekday peak hour.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Planning Time Index Weekday (Peak Hour)
CTASPDPH	CTASPDPH stands for Combination Truck Average speed during weekday Peak Hour. It represents the average travel speed experienced by combination trucks during weekdays (excludes holidays) peak hour.	This value is calculated by the Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Average Speed (Peak Hour)
CTDELAYD	CTDELAYD represents combination truck (vehicles classified as Classes 8-13 by FHWA) hours of delay during an average 24-hour weekday (excludes holidays). This measures the additional travel time experienced by a combination truck beyond what would be experienced under uncongested conditions. The congestion thresholds are available here. Combination truck hours of delay was estimated hourly by determining the difference between actual travel time and the delay threshold travel time along a facility. Delay threshold travel time is the travel time for a truck during uncongested conditions.	This value is calculated by the Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Hours of Delay (Daily)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
CTMTD	CTMTD presents combination truck miles travel daily. It represents combination truck (vehicles classified as Classes 8-13 by FHWA) miles traveled during an average 24-hour weekday (excludes holidays).	This value is calculated by the Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory and FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Miles Traveled (Daily)
CTDECOST	CTDECOST represents the annual cost of delay for combination trucks (vehicles classified as Classes 8-13 by the FHWA), including holidays. This metric measures the monetary cost incurred due to additional travel time experienced by a combination truck beyond what would occur under uncongested conditions.	This value is calculated by Florida Department of Transportation, Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory and FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Cost of Delay (Yearly)
TMTD	TMTD presents truck miles traveled daily. It represents truck (vehicles classified as Classes 4-13 by FHWA) miles traveled during an average 24-hour weekday (excludes holidays).	This value is calculated by the Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory and FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System). Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Ton Miles Traveled (Daily)
TTITWDD	TTITWDD stands for Combination Truck Planning Time Index (PTI) for a weekday (excludes holidays) daily condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Planning Time Index (Weekday Daily)

FIELD NAME	DESCRIPTION	ATTRIBUTES	DATA SOURCE	DESCRIPTIVE NAME
TTITWDPP	TTITWDPP stands for Combination Truck Planning Time Index (PTI) for a weekday (excludes holidays) peak period condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time during a weekday peak period.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Planning Time Index (Weekday Peak Period)
TTITWDPH	TTITWDPH stands for Combination Truck the Planning Time Index (PTI) for a weekday (excludes holidays) peak hour condition. This measure represents the additional time that a traveler should budget to ensure on-time arrival 95 percent of the time during a weekday peak hour.	This value is calculated by Florida Department of Transportation, Systems Forecasting and Trends Office using FDOT - Traffic Characteristics Inventory, FDOT - Roadway Characteristics Inventory Feature 147 (Strategic Intermodal System), and HERE Technologies - Travel Time Data. Last two digits in field name represents the year of the calculated measure.	Florida Department of Transportation, Systems Forecasting and Trends Office Source Book calculated measure	Combination Truck Planning Time Index (Weekday Peak Hour)