

FDOT FREIGHT PERFORMANCE MEASURES



	MODE	QUANTITY	QUALITY	ACCESSIBILITY	UTILIZATION
PEOPLE	Auto/Truck 	Vehicle Miles Traveled Person Miles Traveled	% Travel Meeting LOS Criteria % Miles Meeting LOS Criteria Travel Time Reliability Travel Time Variability Vehicle Hours of Delay Person Hours of Delay Average Travel Speed	Time Spent Commuting	% Miles Severely Congested % Travel Severely Congested Hours Severely Congested Vehicles Per Lane Mile
	Transit 	Passenger Miles Traveled Passenger Trips	Average Headway		
	Pedestrian 		Level of Service (LOS)	% Sidewalk Coverage	
	Bicycle 		Level of Service (LOS)	% Bike Lane/Shoulder Coverage	
	Aviation 	Passengers	Departure Reliability	Highway Adequacy (LOS)	Demand to Capacity Ratios
	Rail 	Passengers	Departure Reliability	Highway Adequacy (LOS)	
	Seaports 	Passengers		Highway Adequacy (LOS)	
FREIGHT	Truck 	Combination Truck Miles Traveled Truck Miles Traveled Combination Truck Tonnage Combination Truck Ton Miles Traveled Value of Freight	Travel Time Reliability Travel Time Variability Combination Truck Hours of Delay Combination Truck Average Travel Speed		% Miles Severely Congested Vehicles Per Lane Mile Combination Truck Backhaul Tonnage
	Aviation 	Tonnage Value of Freight		Highway Adequacy (LOS)	
	Rail 	Tonnage Value of Freight		Highway Adequacy (LOS) Active Rail Access	
	Seaports 	Tonnage Twenty-Foot Equivalent Units Value of Freight		Highway Adequacy (LOS) Active Rail Access	MAP-21 in Bold
					2



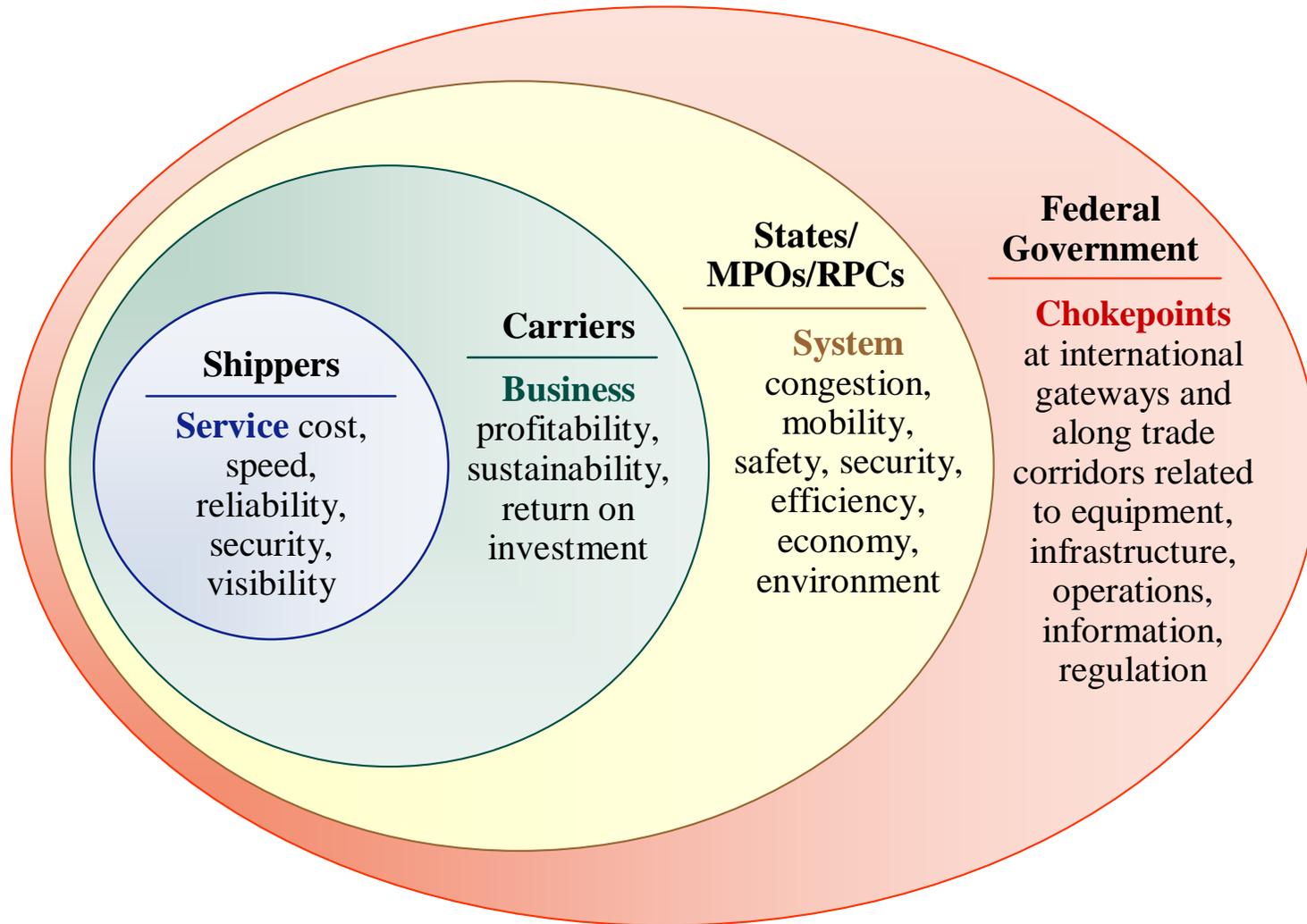
Why Do We Need Performance Measures?

- Efficient and competitive freight transportation is critical to Florida's economy
- The state is investing significantly in its freight transportation system
- Investments must be targeted to advance economic and community development as cost-effectively as possible while meeting social and environmental goals
- An effective freight performance monitoring program ensures state investments are focused to best position Florida for the future





Freight Performance Measures Vary by Stakeholder





Recommended Performance Measures

Performance Measure	Category
Truck Reliability Index	Efficiency
Average Travel Speed	Efficiency
Average Delay per Vehicle	Efficiency
Pavement Conditions	Pavement
Bridge Conditions	Bridges
Truck Injury Fatal Crashes	Safety
Highway-Rail At-Grade Crashes	Safety
Unfunded Freight Needs Versus Investment	Economic
Cost of Delay – Driver	Economic
Cost of Delay – Fuel	Economic



Recommended Performance Measures

Performance Measure	Category
Truck Tonnage	Demand
Truck Backhaul Tonnage	Demand
Truck Forecast	Demand
Truck Vehicle Miles Traveled	Demand
Truck Ton-Miles	Demand
Average Annual Daily Truck Traffic	Demand
Vehicles/Lane Mile	Demand
Percent of Miles Severely Congested	Demand
Annual Hours of Truck Delay	Efficiency



Truck LOS

Service measure as the primary indicator of how well a given roadway accommodates truck mobility



In comparison, automobile LOS is the service measure which determines initial mobility need, project alternative selection, design, and mitigation fees.





NCFRP 31 research



Truck
LOS is a
function
of:

The probability of on-time arrival;

The peak hour truck travel time index

Truck tolls to use the facility

Truck friendliness index

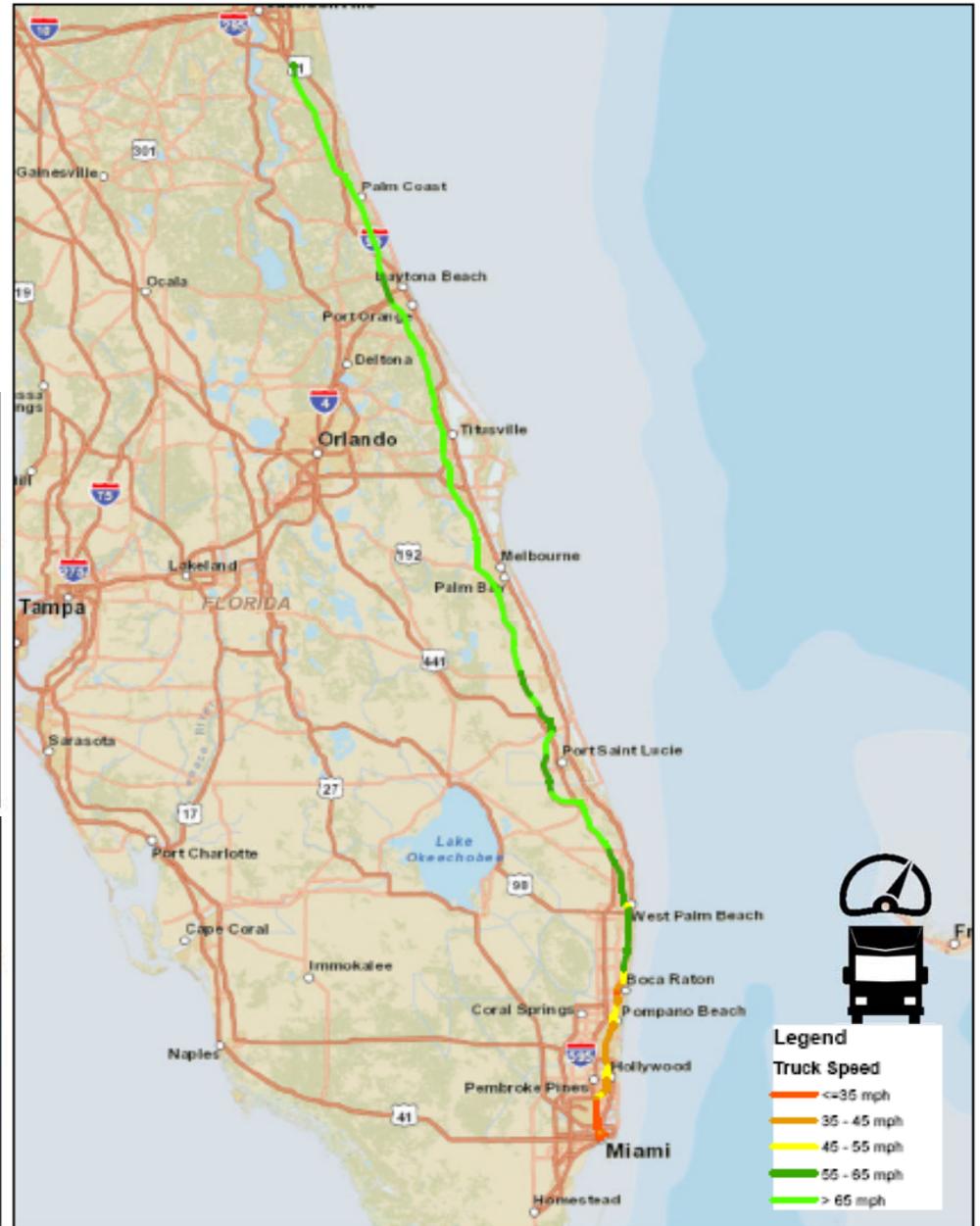


Truck LOS Thresholds are Based on Percent of Ideal Conditions

LOS	Class I Primary Freight Facility	Class II Secondary Facility	Class III Tertiary Facility
A	≥90%	≥85%	≥80%
B	≥80%	≥75%	≥70%
C	≥70%	≥65%	≥60%
D	≥60%	≥55%	≥50%
E	≥50%	≥45%	≥40%
F	<50%	<45%	<40%



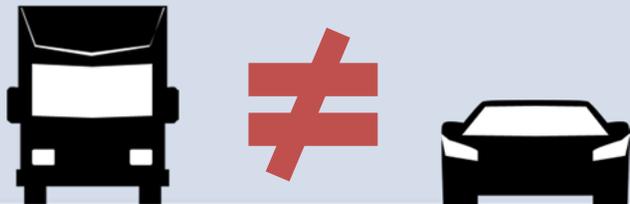
Truck LOS on I-95 from Miami to Jacksonville



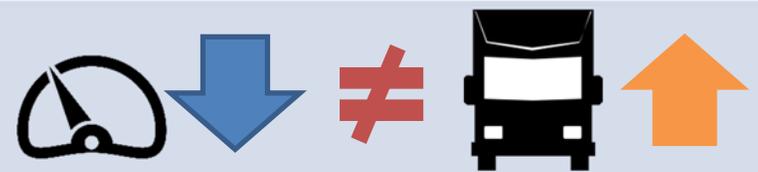
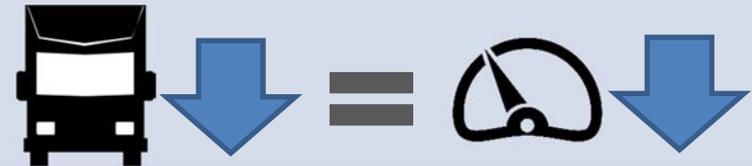


Results

Trucks and auto can often have different LOS experience on same roadway under the same roadway conditions.



A lower truck LOS grade appears to correspond to lower truck speed but not vice versa.





Freight Intensity Measure

1) Annual average truck volume

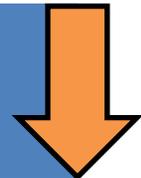
2) Type of truck shipment

High value of time shipments



VOT

Low value of time shipments





Value of Time Commodity Groupings

High-VOT shipments	Low-VOT shipments
▪ Apparel or Related Products	▪ Clay, concrete, glass or Stone
▪ Chemicals or Allied Products	▪ Coal
▪ Electrical Equipment	▪ Crude Petrol. or Natural Gas
▪ Fabricated Metal Products	▪ Farm Products
▪ Food or Kindred Products	▪ Forest Products
▪ Freight Forwarder Traffic	▪ Lumber or Wood Products
▪ Fresh Fish or Marine Products	▪ Metallic Ores
▪ Furniture or Fixtures	▪ Nonmetallic Minerals
▪ Hazardous Materials	▪ Petroleum or Coal Products
▪ Instruments, Photo Equipment, Optical Equipment	▪ Primary Metal Products
▪ Leather or Leather Products	▪ Pulp, paper or Allied Products
▪ Machinery	▪ Rubber or Miscellaneous Plastics
▪ Mail or Contract Traffic	▪ Shipping Containers
▪ Miscellaneous Freight Shipments	▪ Textile Mill Products
▪ Miscellaneous Manufacturing Products	▪ Transportation Equipment
▪ Miscellaneous Mixed Shipments	▪ Waste or Scrap Materials
▪ Ordnance or Accessories	
▪ Printed Matter	
▪ Secondary Traffic	
▪ Shipper Association Traffic	
▪ Small Packaged Freight Shipments	
▪ Tobacco Products	



Corridor Intensity Definitions

High Intensity Corridors:

Truck AADT \geq 6500

$4500 < \text{Truck AADT} < 6500$ and
 $\% \text{High_VOT} > 25\%$



Medium Intensity Corridors:

$4500 < \text{Truck AADT} < 6500$ and
 $\% \text{High_VOT} < 25\%$

$2500 < \text{Truck AADT} < 4500$ and
 $\% \text{High_VOT} > 25\%$



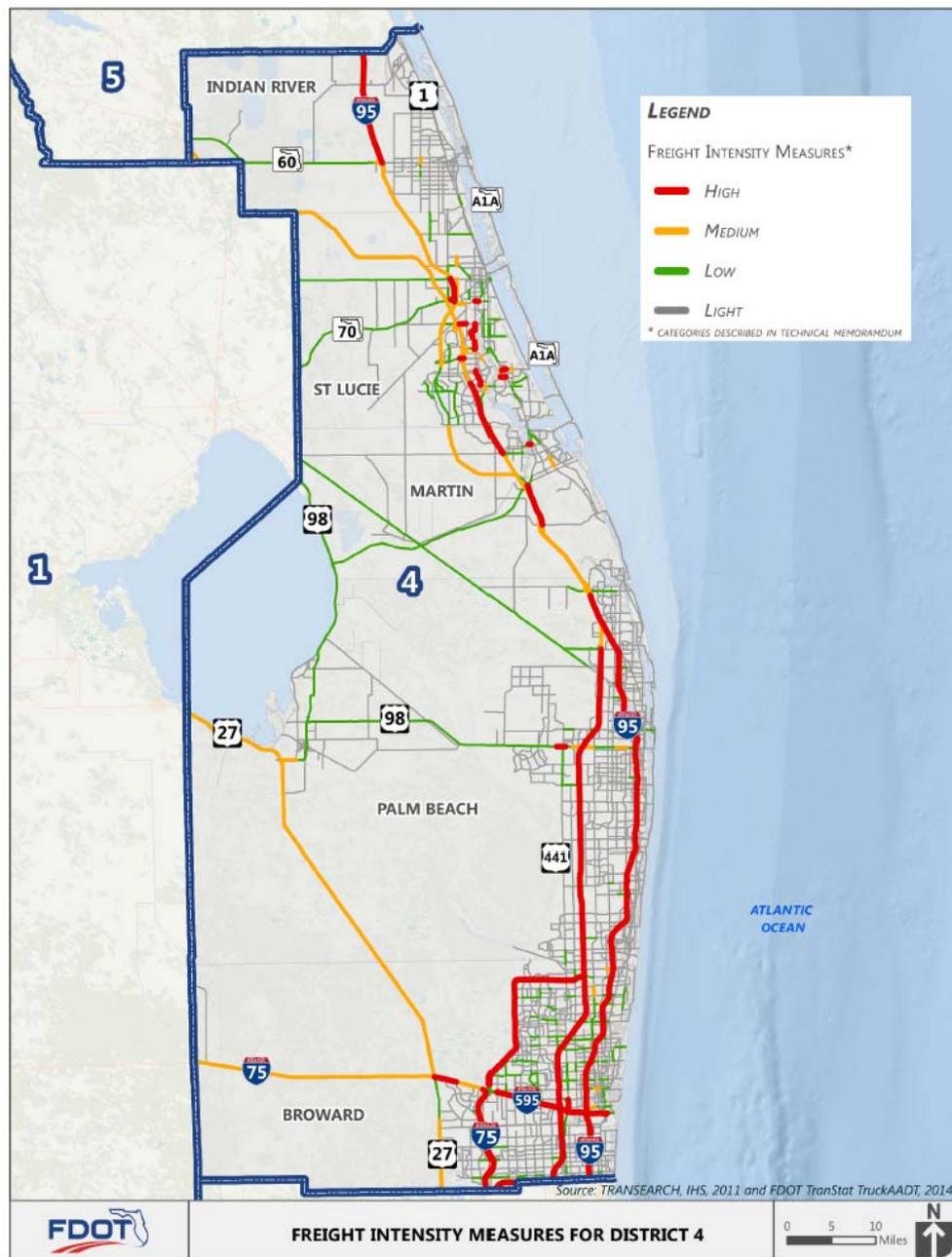
Low Intensity Corridors:

$2500 < \text{Truck AADT} < 4500$ and
 $\% \text{High_VOT} < 25\%$

Truck AADT < 2500



Freight Intensity Measure District 4





Supply Chain Measures

The freight fluidity performance measures go beyond links and nodes to reflect the entire supply chain.

Provide FDOT with recommendations on **what supply chain measures to use**

Describe the condition and performance of freight trips

Use a **“market basket” approach** appropriate for public sector decision-making



Supply Chain Performance Measures

Focus on Market-Driven Factors

Measure	Metric
Transit time	Travel time in days (or hours)
Reliability	95% travel time in days (or hours)
Cost	Dollars
Safety	Fatality and injury rate
Risk	Cargo loss and damage <i>(accidents, poor handling, theft...)</i>
	Disruption <i>(storms, labor, political forces...)</i>
	Capacity expansion delays <i>(physical, regulatory limitations and delays...)</i>



Examples of Work to Date

Supply Chain Measures





Retail Supply Chain Performance

Seattle to New York

Links and Nodes	Transit Time/Dwell Time (Hours)		
West Coast port (Seattle)			
Dray move	1.0	1.4	\$299
<i>Transload or Consolidation Center</i>			
Dray move	1.0	2.25	\$308
West Coast rail intermodal terminal			
Rail move	104	154	\$3,178
Midwest rail intermodal interchange			
Rail move	71	160	
East Coast rail intermodal terminal			
Dray move	1.1	1.4	\$318
<i>East Coast Regional Distribution Center</i>			
Truck P&D move	6.0	9.5	\$775
<i>Retail Store</i>			
Totals			\$4,878



Selected Florida Case Study Industries Under Development

- Fresh Flower Imports
- Supermarket Distribution
- Cattle Breeding
- Pharmaceutical Manufacturing
- Intermodal Logistics Center



Freight Dashboard



FOR ILLUSTRATIVE PURPOSES ONLY

An at-a-glance view of key freight performance measures

- Develop data packages of consumable information for public and private consumption
- Link freight performance measures with the state's FMTP