



JOINT FLORIDA  
Model Task Force & Transportation  
Data and Analytics Workshop



# Freight Data Subcommittee Updates

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## Presentation Outline

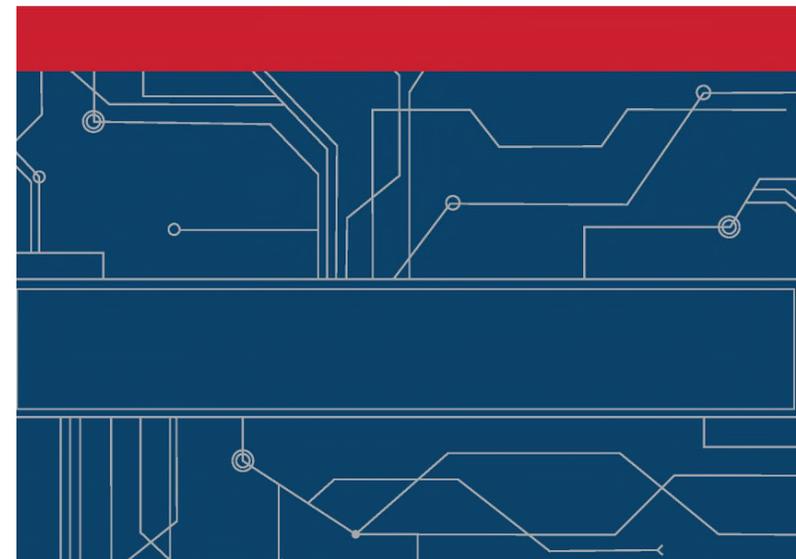
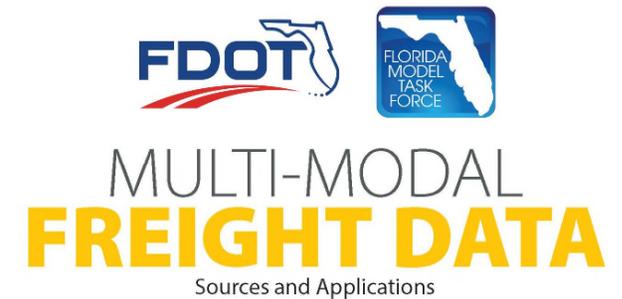
- Freight Data Brochure
- Freight Mobility and Trade Plan
- Statewide Truck Parking Studies
- Seaport Berth Utilization Analysis
- Statewide Freight Cluster Analysis
- Statewide Freight and Commodity Analysis





## Freight Data Brochure

- Twelve page brochure for MTF
- Highlights Freight Data Subcommittee and Multimodal and Freight Data program
- Includes infographics on:
  - Modal statistics;
  - Traffic characteristics inventory;
  - Application of vehicle probe data sets;
  - Commodity Flow information;
  - Statewide Freight Facilities;
  - Bluetooth data collection; and
  - Multimodal freight issues.





# Freight Mobility and Trade Plan (Datasets)

## FDOT Programs

- Highway Performance Monitoring System (HPMS)
- Transportation Asset Management Plan (TAMP)
- Florida Transportation Plan (FTP)
- Transportation Performance Management (TPM)
- FDOT Source Book

## FDOT Datasets

- Crash Analysis Reporting System (CARS)
- Roadway Characteristics Inventory
- Traffic Monitoring Program
- Railroads Highway Crossing Inventory
- Florida Ports Council
- Florida Bridge Information

## Other Florida Datasets

- Florida Department of Revenue
- Florida Department of Economic Opportunity
- Enterprise Florida

## Federal and National Datasets

- Federal Highway Administration - National Performance Research Dataset
- Federal Highway Administration - Freight Analysis Framework
- Bureau of Transportation Statistics T-100
- U.S. Census
- Foreign Data
- Federal Aviation Administration
- Federal Rail Administration
- Association of American Railroads
- Fatality Analysis Reporting System

## PERFORMANCE AND CONDITIONS

Performance measures are indicators of progress toward attaining a goal, objective or target (a desired level of future performance). A set of freight performance measures were developed consistent with the FDOT performance measures program, which informed the FMTP project prioritization process. A live dashboard was created to monitor freight system performance on a continual basis.



### SYSTEM PERFORMANCE MEASURES

- Truck Miles Traveled
- Combination Truck Miles Traveled
- Combination Truck Ton Miles
- Combination Truck Planning Time Index\*
- Combination Truck Hours of Delay\*
- Truck Travel Time Reliability\*
- Percent of Travel Meeting LOS
- Highway Pavement Conditions
- Bridge Conditions
- Highway Safety
- Truck Empty Backhaul
- Truck Parking Utilization
- Rail Tonnage
- Rail Crashes
- Seaport Tonnage
- Aviation Tonnage
- Aviation Departure Reliability

\* Federal Measures

[Link to Dashboard](#)



The live dashboard is for internal FDOT use at this time

## MEASURES/CRITERIA USED IN PROJECT PRIORITIZATION

QUANTITATIVE	QUALITATIVE
(Truck Injuries/Truck VMT) *1000	Does this project implement safety or security enhancements?
(Truck Fatalities/Truck VMT) *1000	
Crime Index	
Roadways within 100 Year Flood Zones	Does this project improve the State's data gathering efforts?
Presence of Structurally Deficient Bridges	Does this project address the environmental or economic resiliency of the freight system?
Presence of Poor Pavement Condition Segments	
Roadways with Top Bottlenecks	Does this project optimize the functionality and efficiency of existing roadways?
Truck AADT	
Vicinity to Hubs	Does this project preserve the existing State Highway System?
Roadways within Freight Intensive Areas	Does this project address truck parking?
Labor Force Size (Ratio of labor force by county population relative to average statewide ratio)	Does this project address grade separation?
County GRP Level (Relative to the average county GRP level in FL)	Is this a technology driven or TSM&O project?
Transportation and Warehousing Industry Share of Total Employment	Does this project improve multimodal freight connectivity?
County Population Density (Relative to the average county-level population density in FL)	Does this project use public/private partnerships (P3)?
On Designated Alternative Fuels Corridors	Does this project capitalize on emerging freight trends?
Number of Alternative Fueling Stations within 1 Mile of Roadway	Is this project on the MPOAC freight project list?
	Does this project promote the use of LNG/CNG/electric vehicles?





# Freight Mobility and Trade Plan (Analysis)

## SYSTEM PERFORMANCE STATISTICS

MEASURE	PERFORMANCE	YEAR
Truck Miles Traveled	29.6 million daily truck miles traveled on State Highway System	2017
Combination Truck Miles Traveled	16 million daily combination truck miles traveled	2017
Combination Truck Ton Miles	63 billion ton miles	2017
Combination Truck Planning Time Index*	1.39 planning time index; For a trip that would take 10 minutes in free-flow conditions, the 95th percentile travel time is 14 minutes	2017
Combination Truck Hours of Delay*	19,100 daily hours of delay	2017
Truck Travel Time Reliability*	90.2 percent truck travel time reliability	2017
Percent of Travel Meeting LOS Standard	77.4 percent (on the State Highway System during peak hour)	2017
Highway Pavement Conditions	91.3 percent of the SHS pavements met Department standards	2018
Bridge Conditions	66 percent of the total NHS deck area is in good condition; less than 2 percent is in poor condition	2019
Highway Safety	4,068 traffic crashes involving a truck	2016
Truck Empty Backhaul	>50 percent of trucks coming into the state were full, compared to 38 percent of trucks leaving the state	2015-17
Truck Parking Utilization	during peak periods truck parking demand can exceed 150 percent in some areas	2018

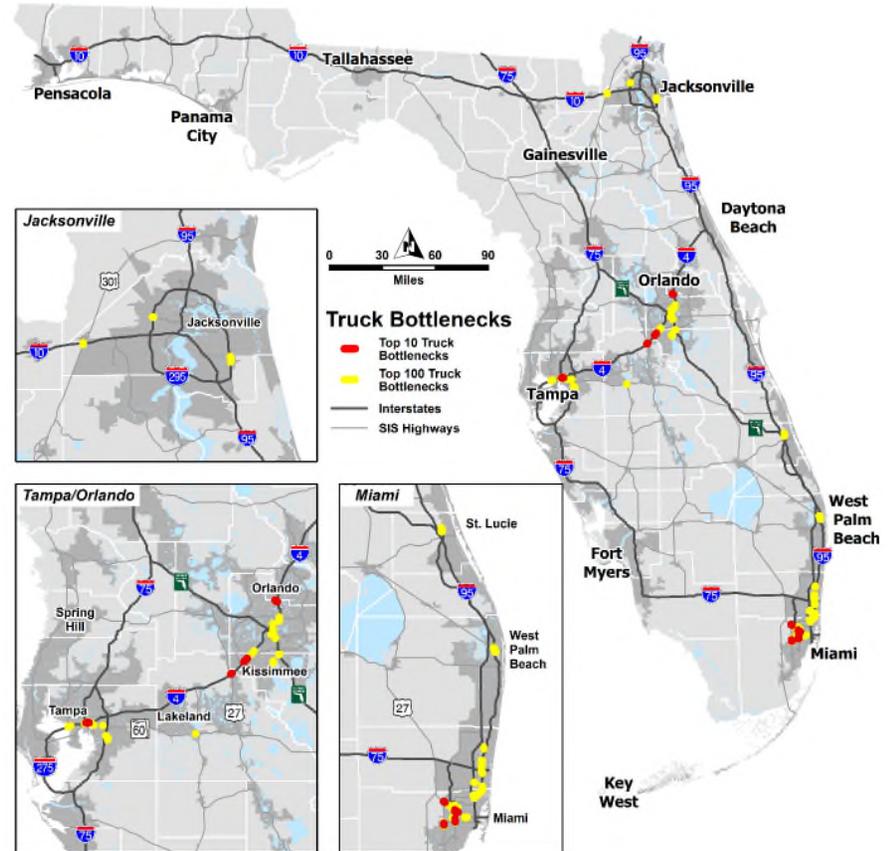
MEASURE	PERFORMANCE	YEAR
Rail Tonnage	44.1 million originated rail tons, 72.3 million rail terminated tons	2017
Rail Crashes	108 highway railroad incidents including 21 fatalities	2017

MEASURE	PERFORMANCE	YEAR
Seaport Tonnage	4.1 million twenty-foot equivalent units (TEUs)	2018

MEASURE	PERFORMANCE	YEAR
Aviation Tonnage	2.5 million tons	2017
Aviation Departure Reliability	81.5% departure reliability	2017



Truck Bottlenecks





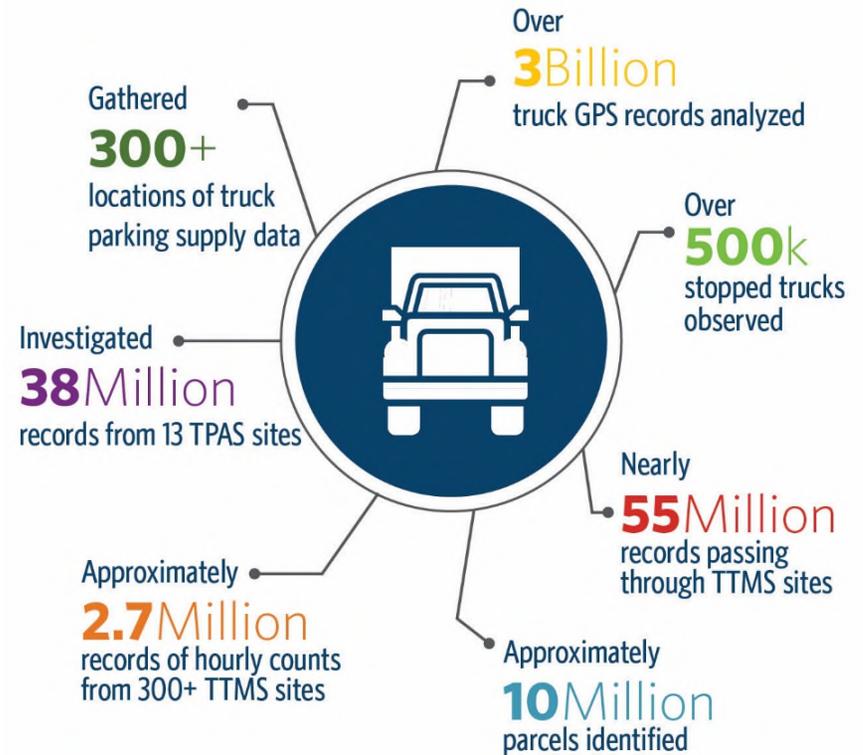
# Truck Parking Study – GPS Data Analysis (Datasets)

## Existing Work

- ✓ Statewide and District truck parking studies
  - ✓ Statewide and District Freight plans
  - ✓ Truck Parking Availability System
  - ✓ FDOT Rest Area program
- ! Biggest knowledge gap was where, when, and how much is truck parking an issue in Florida – truck parking utilization is not quantified

## Study Objectives

- Understand how public and private truck parking locations are utilized.
- Identify unauthorized truck parking locations.

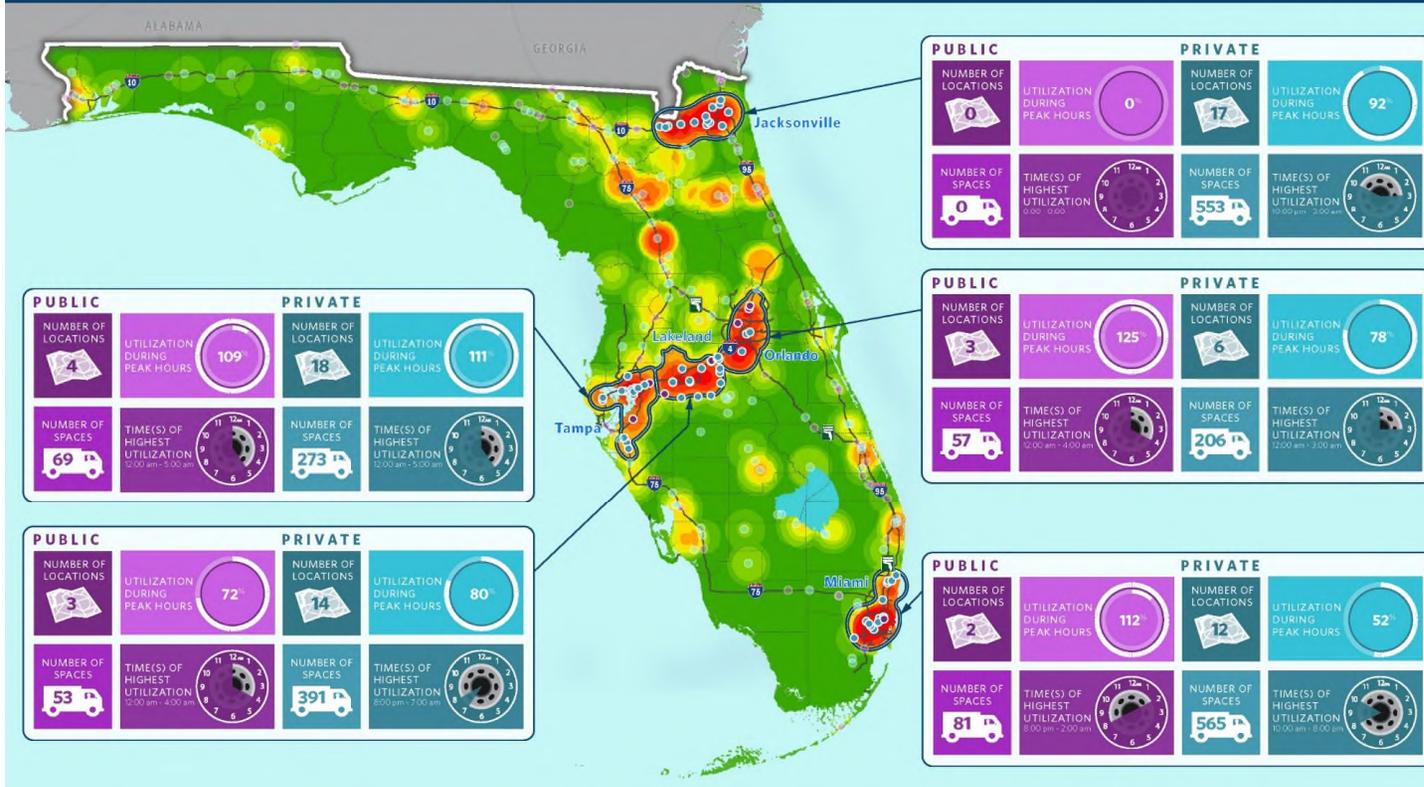




# Truck Parking Study – Phase 1 (Hot Spot Analysis)

## TRUCK PARKING HOTSPOTS - DESIGNATED & UNAUTHORIZED LOCATIONS

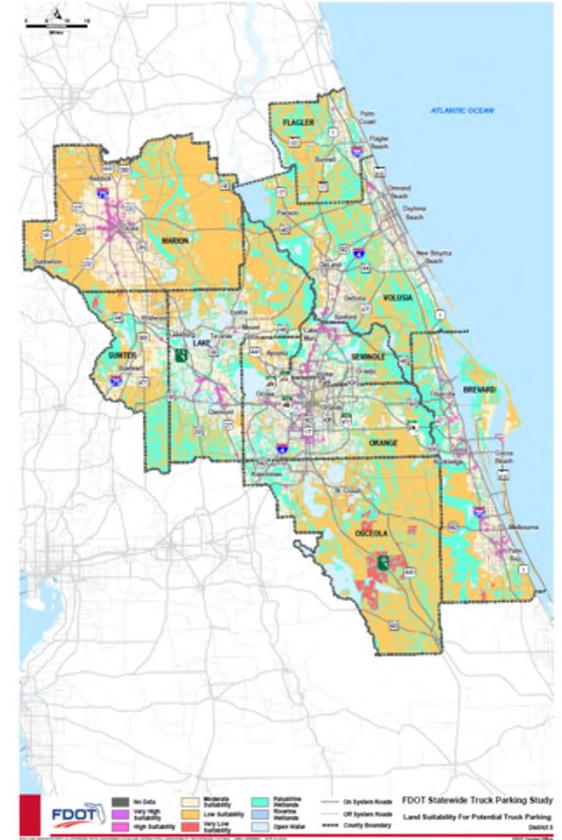
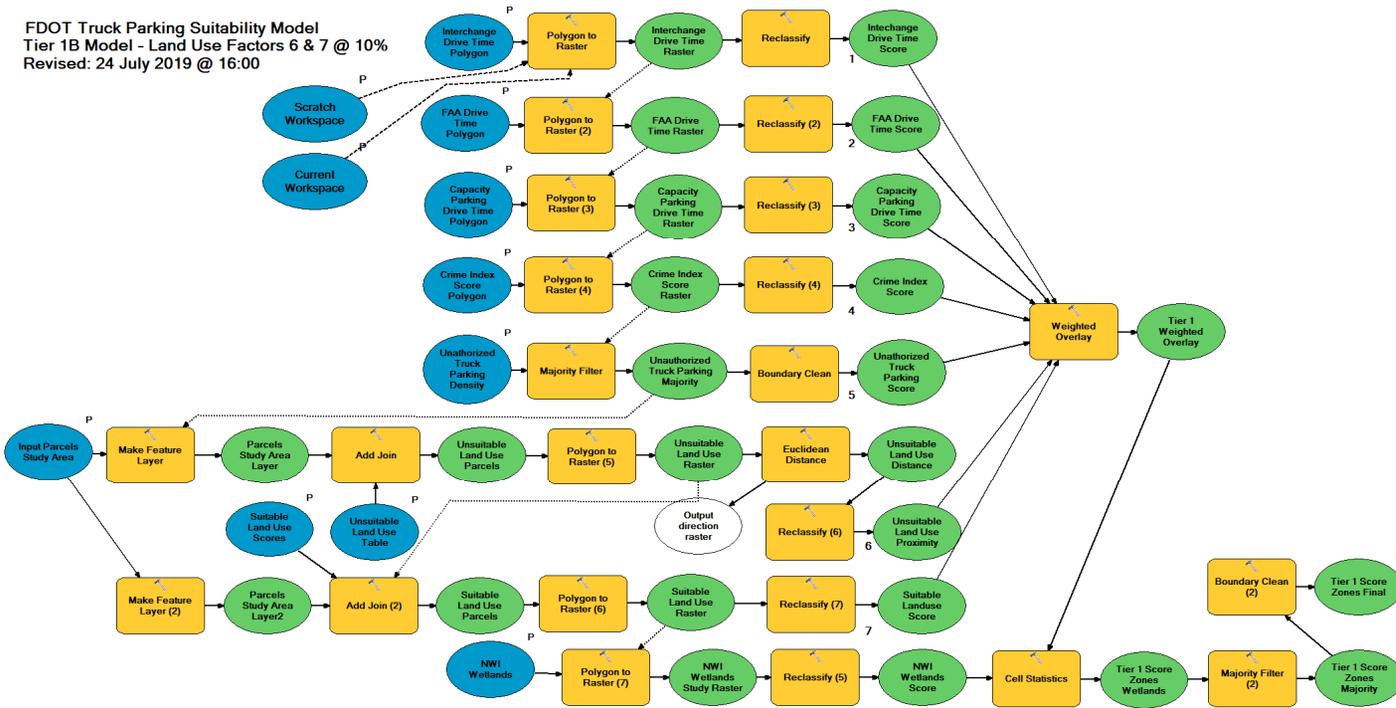
ANALYSIS PERIOD: SEPTEMBER 2017 - AUGUST 2018





# Truck Parking Study – Land Use Suitability

FDOT Truck Parking Suitability Model  
 Tier 1B Model - Land Use Factors 6 & 7 @ 10%  
 Revised: 24 July 2019 @ 16:00

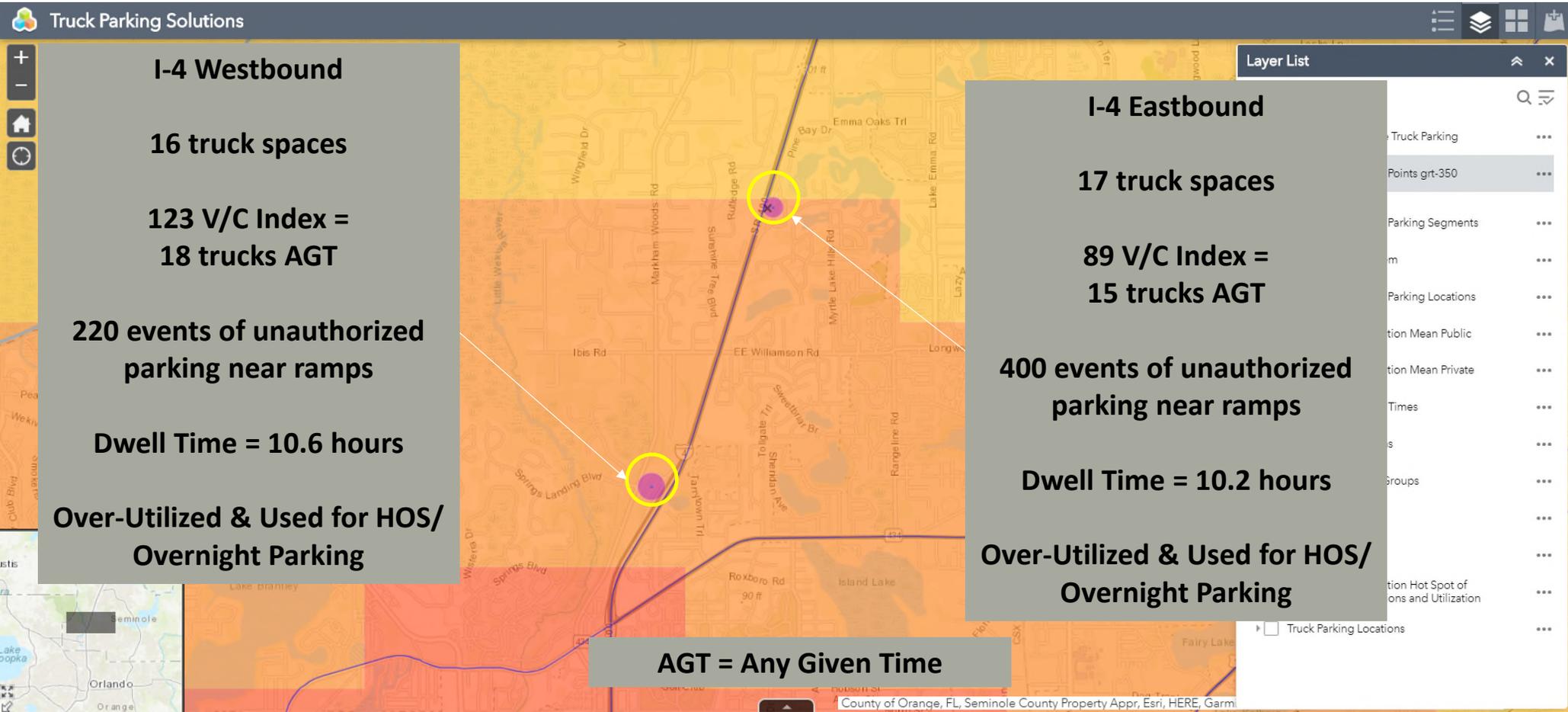


\*Not included in analysis



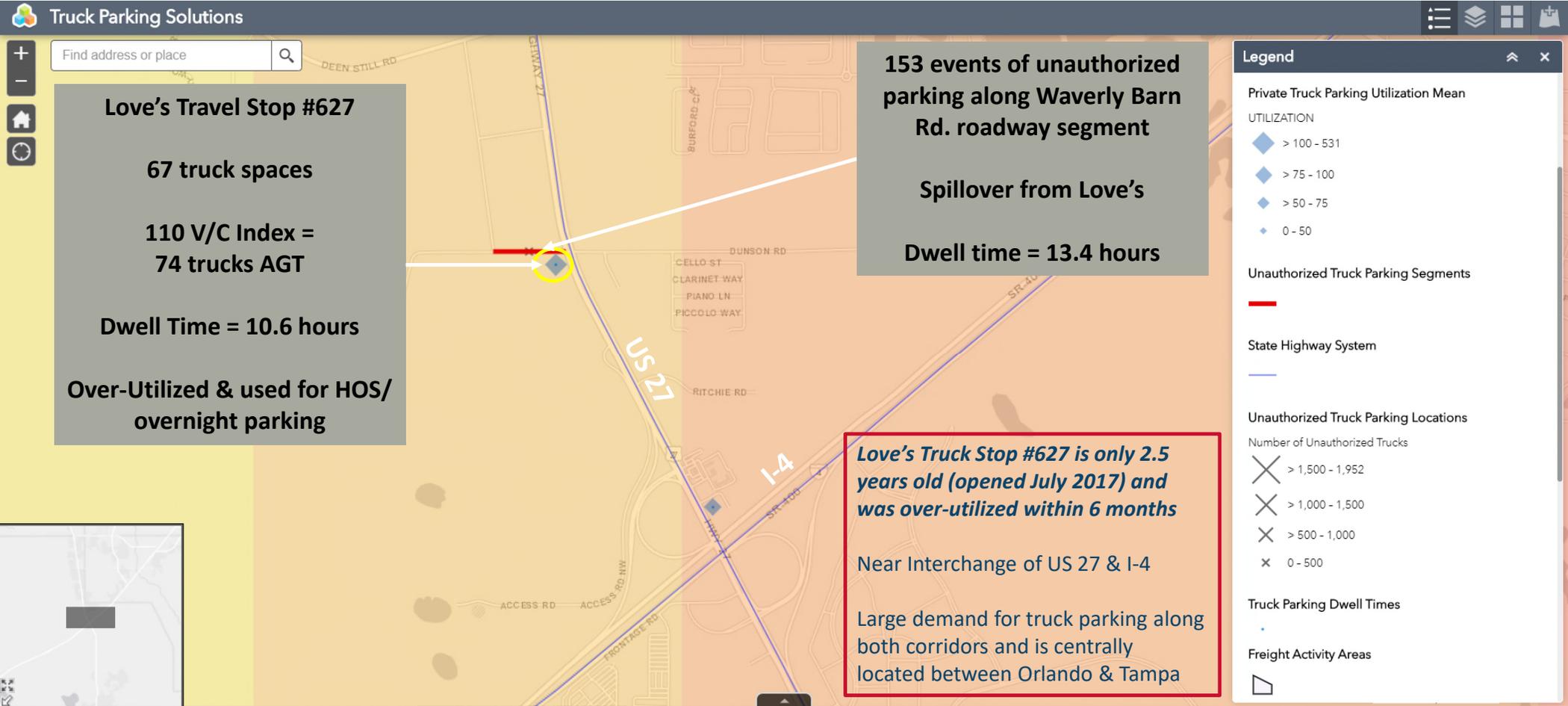


# Longwood Rest Area Utilization & Unauthorized Parking





# Private Truck Parking Facility – Utilization & Unauthorized Parking





# Statewide Truck Parking Study – Recommendations

## 1) Add Capacity:

- Optimize space & design of rest areas and other state-owned facilities
- Develop new facilities

## 2) Leverage Technology:

- Expand Truck Parking Availability System (TPAS)
- Create awareness about under-utilized facilities, including weigh stations

## 3) Build Partnerships:

- Collaborate with local government partners and private sector to encourage development of new facilities

## 4) Update Policies:

- Establish a Truck Parking Improvement Program (TPIP)
- Develop public-private partnership models for rural and urban Areas
- Identify both capital and operations/ maintenance funding
- Prepare for Automated, Connected, Electric and Shared (ACES) technologies



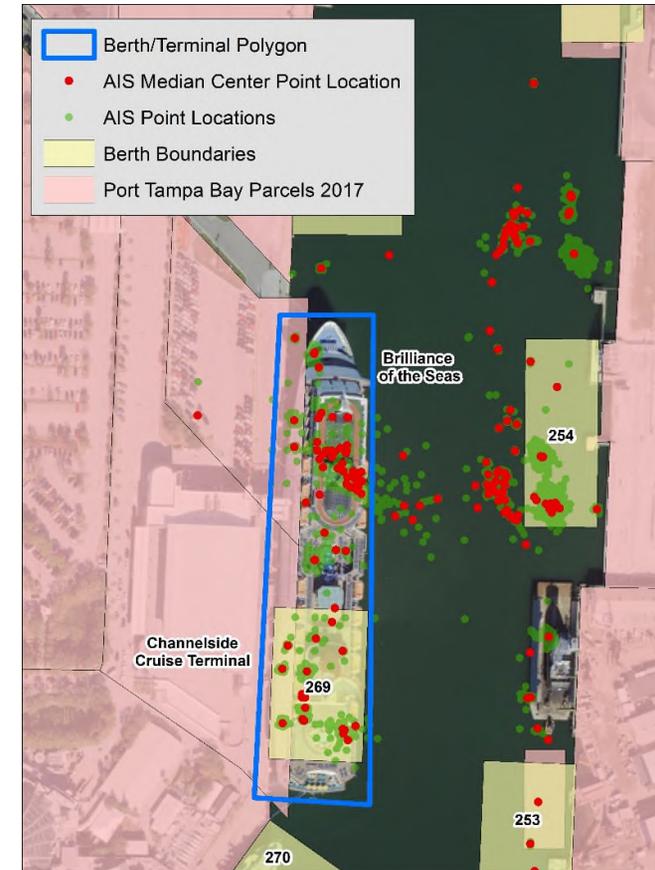


# Seaport Berth Utilization Analysis using AIS Data

## Study Objectives

- Define seaport performance measures to evaluate seaport berth utilization using Automatic Identification System (AIS) data.
- Develop procedures and framework to establish and maintain a statewide AIS dataset for analysis.

<b>Parcel Polygon</b>	Florida Department of Revenue (DOR)
<b>Anchorage Areas</b>	National Oceanic and Atmospheric Administration (NOAA)
<b>Coastal Maintained Channels</b>	United States Army Corps of Engineers (USACE)
<b>Berth Polygon</b>	Digitized
<b>Automatic Identification System (AIS)</b>	United States Army Corps of Engineers (USACE)





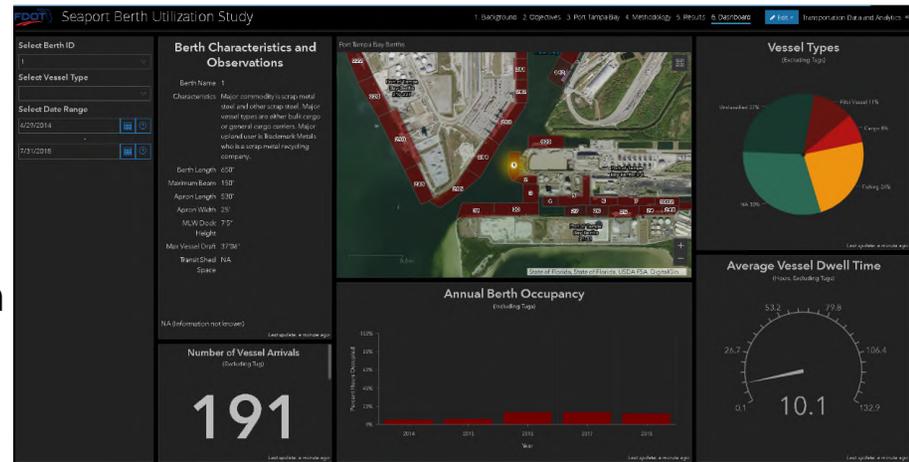
# Seaport Berth Utilization Analysis using AIS Data

## Performance Measures:

- **Arrival Rate:** The arrival rate is the total number of stopped vessels at a given berth. This arrival rate is computed for monthly as well as annual arrival rates.
- **Average Dwell Time:** Annual and monthly average dwell times are computed for every vessel type and berth.
- **Number of Unique Vessels:** The number of unique vessels (vessels with distinct MMSIs) stopping at a given berth are identified across year/s.
- **Berth Occupancy:** A berth is considered occupied if it has at least one vessel in a given epoch\*. This is aggregated to compute the number of hours a berth is occupied in a given time period.

Berth utilization performance measures can be explored and visualized using an interactive dashboard and web map tool

Example Berth Information



\*ArcGIS Online Dashboard created for internal use for clients at Florida Department of Transportation (FDOT)

$$\text{Berth Occupancy} = \frac{\text{Total number of hours a berth is occupied}}{\text{Total number of epochs in the selected time period}}$$



\*Epoch is a time interval of 1 hour. For example: Time interval of January 1, 2017 1:00 am to January 1, 2017 2:00 am is considered an epoch.

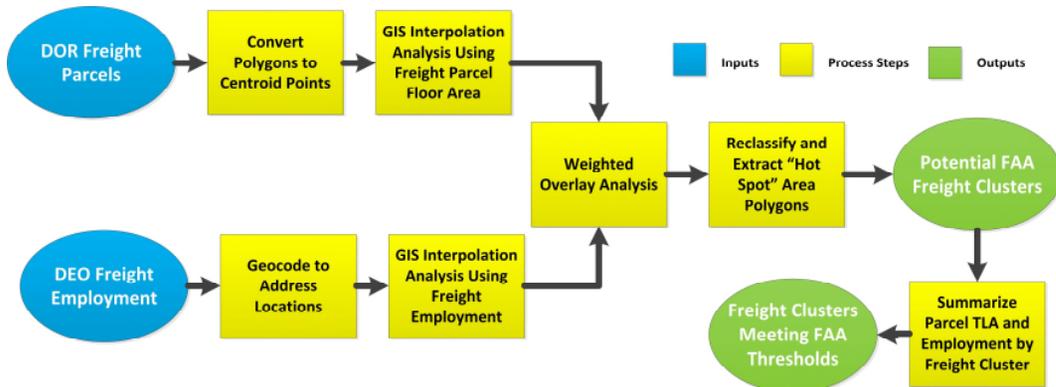




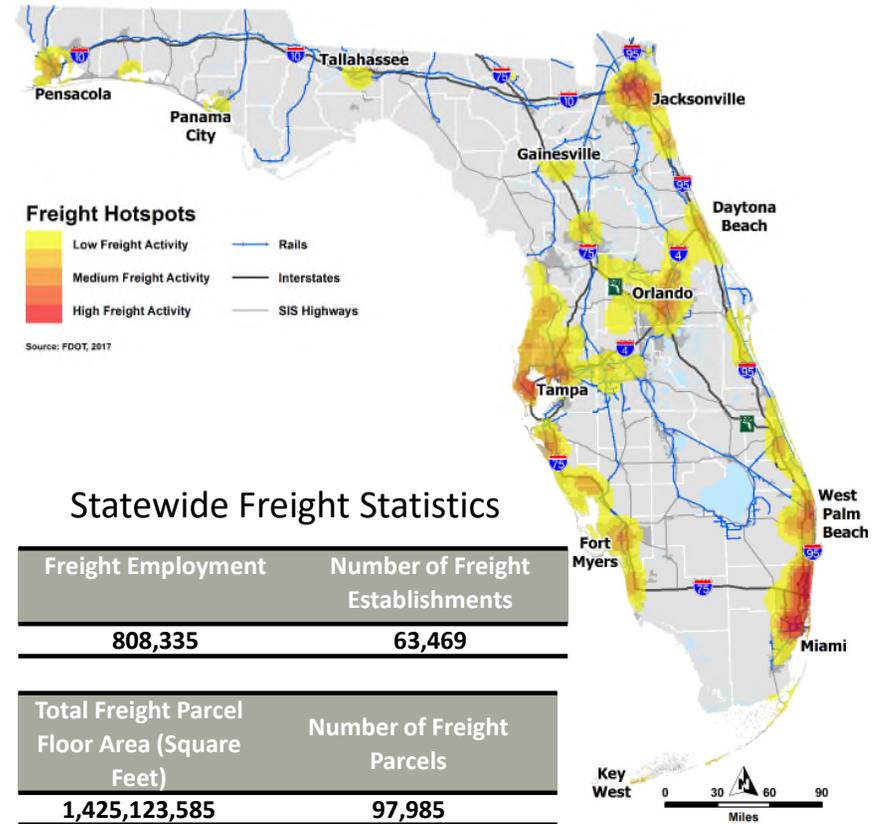
# Statewide Freight Cluster Analysis

## Definition

It is defined as a cluster/group of freight facilities which generate, distribute or attract significant freight activity and has a significant impact on Florida's transportation system and economic development.



Data Sources:  
 Parcel Data – Department of Revenue (DOR)  
 Employment Data – Department of Economic Opportunity (DEO)





# Statewide Freight Cluster Analysis (Example Cluster)

## MIAMI PERISHABLE GOODS DISTRICT

### FREIGHT ACTIVITIES

Characterized by several defined industrial parks, warehouses, distribution centers, light and heavy manufacturing establishments. Primary manufacturing establishments. Primary commodities are parcel, floral and perishable goods.

### FREIGHT STATISTICS

<b>18.81</b> Freight Floor Area (million sq ft)	<b>14,642</b> Freight Related Employment
<b>1.32%</b> Of Florida Freight Floor Area	<b>1.81%</b> Of Florida Freight Employment

### MAJOR FREIGHT ESTABLISHMENTS

	United States Postal Service
	United Parcel Service
	Passion Growers LLC
	Floral Logistics of Miami Inc.
	United States Medical Supply LLC

### NEAREST SIS HUBS FROM POLYGON BOUNDARY

- Miami International Airport (.83 mi)
- Miami Hialeah FED Intermodal Terminal (2.1 mi)
- Miami Greyhound Station (2.1 mi)
- Miami Airport Tri-Rail Station (2.5 mi)
- Miami Intermodal Center (2.5 mi)

### EXISTING SIS NETWORK



### LEGEND

- Interstate
- Freeway or Expressway
- Other Principal Arterial
- Minor Arterial
- SIS Rail
- SIS Corridor
- FAA Boundary

### FAA PARCEL-LAND USE

- Warehouse/Distribution
- Heavy Industrial/Manufacturing
- Light Industrial/Manufacturing
- Mineral Processing
- Open-Air Storage
- Food Processing
- Packing Facility
- Sewage Processing
- Utility Facility

### EXISTING SIS HUBS





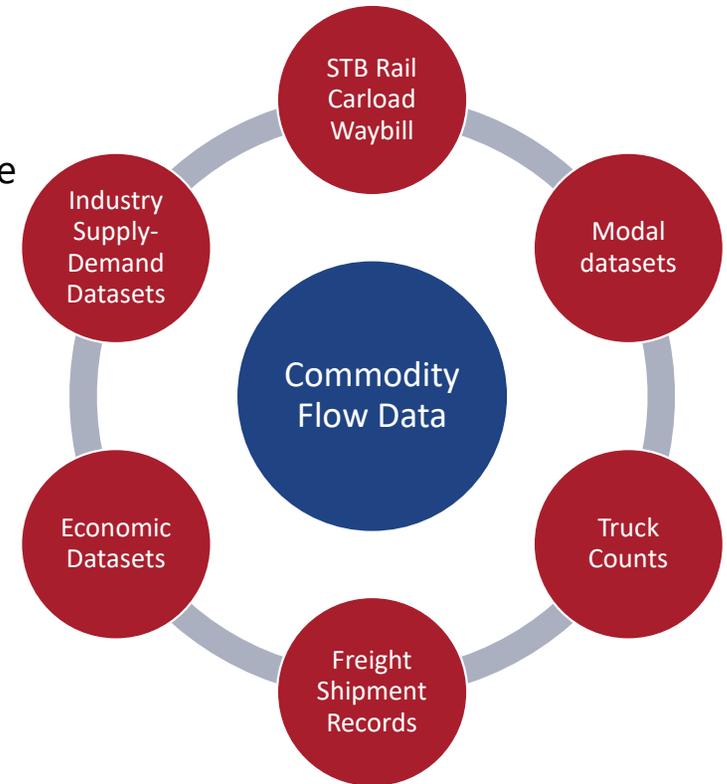
# Statewide Freight and Commodity Analysis

## Objectives:

- Develop a report on Florida's freight and commodities as it relates to the transportation system.
- Analyze IHS Global Commodity Flow data to develop a statewide commodity flow profile.

List of Attributes
<b>Origin and Destination:</b> County (FL) or BEA* (Outside FL) or Country Name (Outside U.S.)
<b>Commodity Type:</b> STCC4** or NAICS***
<b>Mode:</b> Truck, Water, Air, Rail, Space, Pipeline
<b>Quantity:</b> Annual Short Tons (2,000 lbs.) and Ton-Miles
<b>Units:</b> Number of truckloads or/and carloads or/and intermodal containers
<b>Value:</b> Million \$
<b>Year:</b> 2017, 2030 and 2050

\*BEA – Bureau of Economic Analysis Regions  
\*\*STCC4 – Standard Transportation Commodity Code – 4 digit  
\*\*\*NAICS – North American Industry Classification System



Raw Datasets for Data Fusion





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