

# TRANSTAT MULTIMODAL FREIGHT DATA INVENTORY AND MANAGEMENT

*JUNE 2016*



# TRANSTAT MULTIMODAL FREIGHT DATA INVENTORY AND MANAGEMENT

JUNE 2016

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Prepared by RS&H, Inc. at the direction of  
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Department of Transportation



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# MULTIMODAL FREIGHT DATA INVENTORY AND MANAGEMENT EXECUTIVE SUMMARY

*JUNE 2016*



**TRANSTAT  
OFFICE**



## EXECUTIVE SUMMARY

This document details the work efforts of the Florida Department of Transportation's (FDOT) Transportation Statistics Office (TRANSTAT) towards the development of a freight and modal data program. The subtasks and analysis completed within this report seek to enhance coordination, planning, development, and reporting of the freight and modal data programs of importance to FDOT. The Department's priority of creating reliable, organized, accurate data sharing for internal and external users has capitalized on solving the growing data issues. This Task Work Order has taken the leap into defining the current picture of what data is available and what steps are needed to enhance TRANSTAT's support of freight planning and operations through efficient data collection methods, data management, database enhancements, and efficient data reporting. The freight and modal data analysis completed within this report include the following components:

- » Multimodal Freight Data Inventory Matrix
- » Multimodal Freight Data Source Profiles
- » Multimodal Freight Data Roadmap
- » Review of Freight Data Clearinghouses

The tasks and analysis outlined within this document sought to increase the industry intelligence and provide an overview summary of freight and modal data resources available to FDOT. The goal of the report is to build upon previous freight data resources analysis of TRANSTAT and serve as a supplementary resource for future analyses, development and guidance to coordinate decisions to incorporate new data sources into FDOT data collection routines and data management programs. Additionally, the coordination efforts completed in these tasks inside and outside the agency discovered the need for new data sources and data collection; it also produced collaborative discussions regarding the importance of data quality and data management.

### *MULTIMODAL FREIGHT DATA INVENTORY MATRIX*

The Multimodal Freight Data Inventory Matrix, hereafter referred to as Data Inventory Matrix, is presented in Section 1. The Data Inventory Matrix expands upon the current freight data inventory for the freight and modal data program and summarizes the relevant data source information. Development of an inventory of data sources within departments is a living task. Various attempts to discover, define, and disseminate this information has taken hours of research, coordination, interviews, and analysis. Building a solid foundation for the inventory required a coordinated effort to focus on the purpose and intent of discovering how a dataset is created, maintained, disseminated and used. The FDOT Central Office stores and maintains many data collection programs and defines the policy and procedures to accompany the ongoing investment into these programs that support Districts, MPOs/TPOs, and other state and federal agencies. Section 1 also provides a summary of the methodology and an overview of the information included within the Data Inventory Matrix. The Data Inventory Matrix is presented as an attachment within Section 1 as a six-page table summarizing the 89 data sources reviewed as part of the freight and modal data inventory analysis. Additionally, hyperlinks for the different data sources are provided within the matrix as the data source titles and within Appendix A of this report.

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## MULTIMODAL FREIGHT DATA SOURCE PROFILES

The Multimodal Freight Data Source Profiles, hereafter referred to as Data Source Profiles, are presented in Section 2. These Data Source Profiles build upon the analysis completed within the Data Inventory Matrix and provide further detail on data sources important to FDOT freight and modal offices. The purpose to define and inventory data sources also created the opportunity to educate users and non-users on the availability of data and information. The gap of understanding what is available through data is limited in words and requires a visual representation to communicate the important elements of data. With the support of Geographic Information Systems (GIS), geospatial and spatial concepts enhance the communication through cartographic design and web mapping services. The enhanced we design and programming capabilities through languages such as HTML and CSS, interactive dashboards create a hands-on experience for users to capture the data in customizable ways.

The profiles for each data source include a visual representation of the data, existing uses of the data source within FDOT if applicable, and potential future applications of the data source. The Data Source Profiles analysis presents 43 data profiles as an attachment within Section 2. Section 2 also provides a summary and methodology for the development of the profiles including an explanation regarding the complexity measure of a particular data source. Furthermore, the section includes an overview of Freight and Modal Data Inventory Feedback Survey administered within FDOT to better understand freight and modal data application and needs. The survey results from the 19 respondents are highlighted within Section 2.1. The survey questionnaire and the raw data results from the survey are presented within Appendix B. The meeting minutes along with a general presentation outline used for each meeting with FDOT offices are provided in Appendix C.

## MULTIMODAL FREIGHT DATA ROADMAP

The Multimodal Freight Data Roadmap, hereafter referred to as Data Roadmap, is presented in Section 3. The purpose of the Data Roadmap is to provide a visual representation of how data sources and active data collection systems relate to users across the FDOT offices. The roadmap provides an overview of data sources utilizing a tiered approach to highlight data source workflows. The representation takes on a high-level approach to establishing the general relationships of data sources immediately used by FDOT that support freight planning and operations offices. The tiers are broken down into three categories related to sources of data: Tier 1 - FDOT & Other State Offices; Tier 2 – Federal Offices; Tier 3 – Private Sector. The tiered approach helps differentiate proprietary data versus data from public sector and data internal to FDOT. The Data Roadmap is presented as an attachment within Section 3 and an ARCH E (36in x 48in) sized PDF is provided within Appendix D.

## REVIEW OF FREIGHT DATA CLEARINGHOUSES

The Review of Freight Data Clearinghouses is presented in Section 4. The analysis provided within includes analytical and technical recommendations for freight data clearing houses, data fusion analysis, and data visualization to increase the accessibility and dissemination of freight and modal data. The Review of Freight Data Clearinghouses includes four subsections:



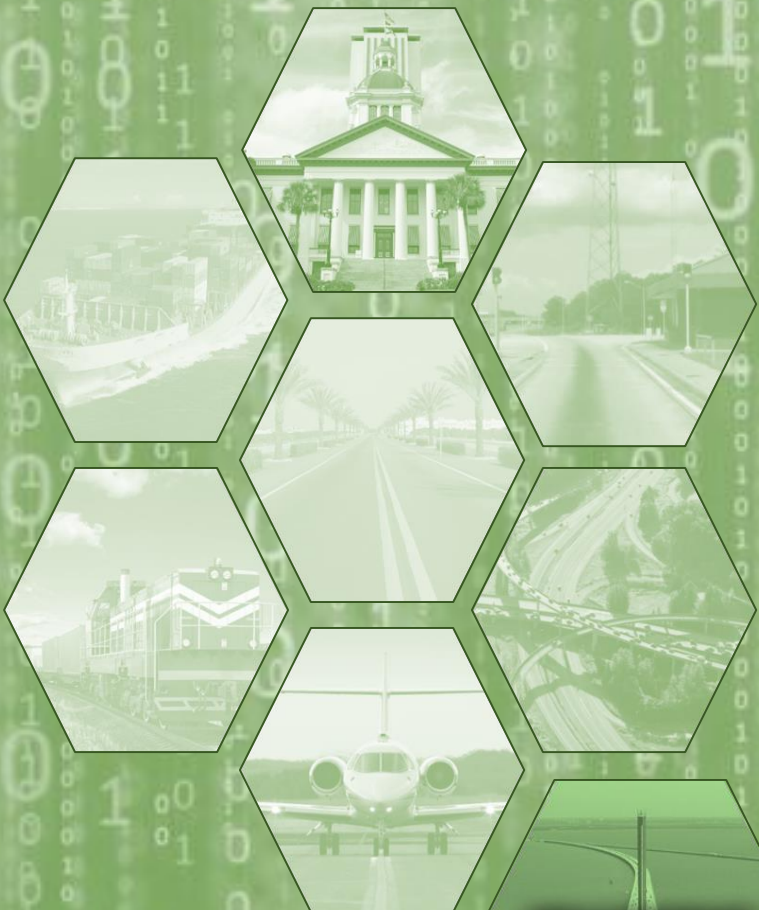
- » Background of Data Clearinghouses;
- » Guidelines for Evaluation of Data Clearinghouses;
- » Data Clearinghouse Evaluation; and,
- » Data Fusion Analysis.

The need for available data creates a purpose to discover how FDOT can support data users internal and external to the agency. The public and private sectors users desire having this information immediately and refer to efficiencies like a data clearinghouse to serve as “one-stop shop” for data needs. This section of the report defines what elements are necessary to be defined as a clearinghouse and to undertake the comprehensive task to discover and culminate the clearinghouse efforts taken throughout the nation by other public agencies and universities. Section 4 further provides the methodology and analysis conducted as part of the Review of Data Clearinghouses. The guidelines utilized in the analysis as well as other important guidelines for evaluating data clearinghouses are provided in Appendix E. These guidelines were utilized to evaluate the list of 52 data clearinghouses and the evaluation matrix is provided in Appendix F.

The conclusion and recommendations portion of the report focuses on action items moving forward for management and coordination of multimodal freight data within FDOT. It also includes a discussion of ongoing freight data inventory related projects and how the work efforts highlighted within this summary report can supplement future work efforts.

Additionally, the Appendices of the report include meeting minutes from meetings with FDOT internal offices to better understand their multimodal freight data needs and requirements and a complete list of abbreviations throughout all tasks. Below is an overview of times included within the Appendices:

- » Appendix A – Multimodal Freight Data Inventory Matrix Hyperlinks
- » Appendix B – Freight and Modal Data Inventory Feedback Survey Questionnaire and Data Results
- » Appendix C – Meeting Minutes from FDOT Freight and Modal Data Meetings
- » Appendix D – Multimodal Freight Data Roadmap ARCH E PDF
- » Appendix E – Guidelines for Evaluating Data Clearinghouses
- » Appendix F – Evaluation Matrix of Data Clearinghouses
- » Appendix G – List of Abbreviations



# MULTIMODAL FREIGHT DATA INVENTORY MATRIX

JUNE 2016



# SECTION 1

## MULTIMODAL FREIGHT DATA INVENTORY MATRIX

DATA INFORMATION	
	DEVELOPER
<a href="#">[Link]</a> can be accessed by clicking <a href="#">[Link]</a>	
<a href="#">INTERNATIONAL (ACI)</a>	Airport Council International (ACI)
<a href="#">TRANSPORTATION RESEARCH INSTITUTE</a>	American Transportation Research
<a href="#">AMERICAN RAILROADS (AAR)</a>	Association of American Railroads
<a href="#">IDENTIFICATION SYSTEM (AIS)</a>	United States Coastal Guard Bureau of Ocean Energy Management National Oceanic Atmospheric Administration
<a href="#">ECONOMIC ACCOUNTS</a> 108	Bureau of Economic Analysis (BEA)
<a href="#">CARRIER STATISTICS (FORM 41 TRAFFIC)</a> 11(C)(2)	Bureau of Transportation Statistics
<a href="#">NATIONAL TRANSPORTATION ATLAS DATABASE</a> 111 (C) (2)	RITA, BTS, and USDOT
<a href="#">NORTH AMERICAN TRANSBORDER FREIGHT DATA</a> FR 111 (C) (2)	RITA, BTS, and USDOT
<a href="#">UNIVERSITY OF ECONOMIC AND BUSINESS RESEARCH (BEBR)</a>	University of Florida College of Business
<a href="#">BUREAU OF LABOR STATISTICS</a> 9 USC 2	US Department of Labor
<a href="#">BUSINESS REGISTER</a> 13 USC, 26 USC	US Census Bureau
<a href="#">CENSUS COMMUTING DATA</a> R: 13 USC	US Census Bureau
<a href="#">CENSUS OF POPULATION</a> LR: 13 USC, 26 USC	US Census Bureau
<a href="#">CHAIN STORE GUIDE</a>	Chain Store Guide
<a href="#">COMMITTEE ON THE MARINE TRANSPORTATION SYSTEM (CMTS) TRANSPORTATION INFRASTRUCTURE FUNDING MAP</a>	Marine Administration and US Department of Transportation

Update Frequency Legend:

H - Hourly

M - Monthly

A - Annually

D - Daily

Q - Quarterly

5Y - Every 5 Years

## 1.0 MULTIMODAL FREIGHT DATA INVENTORY MATRIX

The Data Inventory Matrix expands upon the current freight data inventory for the freight and modal data program and summarizes relevant data source information. The six-page matrix provided as an attachment to this section summarizes 89 data sources reviewed and analyzed as part of this work effort. Of the 89 data sources reviewed, 61 multimodal freight data sources are currently utilized by FDOT and 28 data sources not currently used by FDOT. The purpose of the task was to provide a comprehensive list of multimodal freight data sources and provide some important information regarding the data source and its usability within FDOT. Therefore the Data Inventory Matrix provides a snapshot view of the following categories for each data source:

- » Data Source Title – The title includes a hyperlink to the data source website.
- » Developer – The developer identified the primary creator and manager of each particular data source.
- » Used by FDOT – As mentioned above, this column identifies if the data source is currently being used within FDOT or not.
- » Update Frequency – The update frequency category provides information on how often the data is updated and includes the following categories:
  - » Hourly (H)
  - » Daily (D)
  - » Weekly (W)
  - » Monthly (M)
  - » Quarterly (Q)
  - » Bi-Annually (BA)
  - » Annually (A)
  - » Every 5 Years (5Y)
  - » Every 10 Years (10Y)
  - » Real Time (R)
  - » Discontinued (DC)
  - » Variable (V)
- » Geographic Coverage – The geographic coverage includes information regarding geographic and spatial coverage of the data source broken down into the following categories:
  - » Worldwide (WW)
  - » Nationwide (NW)
  - » Statewide (SW)
  - » Countywide (CW)
  - » Traffic Analysis Zone (TAZ)
  - » Enterprise Florida Regions (EFI)
- » Modal Coverage – The modal coverage column identifies if the data source includes multimodal information or if the data includes information on a particular mode. The modal coverage categories include: All, Road, Rail, Water, Air, Pipeline, and Space.
- » Data Access – The data access information includes important cost and licensing agreement overview for each data source:
  - » Free Data – Indicates if a data source is free to acquire or if there is a cost associated.
  - » User Licensing Agreement – Indicates if a licensing agreement is required to acquire particular data source or not.
- » Used by Florida Systems Plan: This column identifies if a particular data source is used by one of the major Florida Systems Plans including: Aviation, Transportation, Freight Mobility & Trade, Rail, Seaport, SIS, and Waterways.

The Data Inventory Matrix attachment is presented on the following pages:

# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">AIRPORT COUNCIL INTERNATIONAL (ACI)</a>	Airport Council International (ACI)	✓	M	WW				✓			✗	✓	✓		✓			✓		
<a href="#">AMERICAN TRANSPORTATION RESEARCH INSTITUTE (ATRI)</a>	American Transportation Research Institute (ATRI)	✓	M	NW		✓					✗	✓		✓				✓		
<a href="#">ASSOCIATION OF AMERICAN RAILROADS (AAR)</a>	Association of American Railroads (AAR)	✓	W, Q, A	NW			✓				✗	✓			✓					
<a href="#">AUTOMATED IDENTIFICATION SYSTEM (AIS)</a>	United States Coastal Guard Bureau of Ocean Energy Management National Oceanic Atmospheric Administration	✓	A	NW			✓				✓	✗				✓			✓	
<a href="#">BEA INDUSTRY ECONOMIC ACCOUNTS</a> <i>LR: 15 USC 4908</i>	Bureau of Economic Analysis (BEA)	✓	A	NW							✓	✗		✓	✓			✓		
<a href="#">BTS – AIR CARRIER STATISTICS (FORM 41 TRAFFIC)</a> <i>LR: 49 CFR 111(C)(2)</i>	Bureau of Transportation Statistics (BTS)	✓	M	NW				✓			✓	✗	✓							
<a href="#">BTS NATIONAL TRANSPORTATION ATLAS DATABASE (NTAD)</a> <i>LR: 49 CFR 111 (C) (2)</i>	RITA, BTS, and USDOT	✓	A	NW	✓						✓	✗		✓				✓		
<a href="#">BTS NORTH AMERICAN TRANSBORDER FREIGHT DATA</a> <i>LR: 49 CFR 111 (C) (2)</i>	RITA, BTS, and USDOT	✗	M	NW	✓						✓	✗								
<a href="#">BUREAU OF ECONOMIC AND BUSINESS RESEARCH (BEBR)</a>	University of Florida College of Liberal Arts and Sciences	✓		SW, CW							✓	✗		✓				✓		
<a href="#">BUREAU OF LABOR STATISTICS</a> <i>LR: 29 USC 2</i>	US Department of Labor	✓	M	NW							✓	✗	✓	✓	✓	✓	✓	✓	✓	
<a href="#">BUSINESS REGISTER</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✓	Q	NW							✓	✗	✓	✓	✓			✓		
<a href="#">CENSUS COMMUTING DATA</a> <i>LR: 13 USC</i>	US Census Bureau	✗	A	NW		✓					✓	✗								
<a href="#">CENSUS OF POPULATION</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✓	10Y	NW							✓	✓	✓	✓	✓	✓	✓	✓	✓	
<a href="#">CHAIN STORE GUIDE</a>	Chain Store Guide	✓	R	NW							✗	✓								
<a href="#">COMMITTEE ON THE MARINE TRANSPORTATION SYSTEM (CMTS) TRANSPORTATION INFRASTRUCTURE FUNDING MAP</a>	Marine Administration and US Department of Transportation (US DOT)	✓		NW			✓				✓	✗								

**Update Frequency Legend:**

H - Hourly      M - Monthly      A - Annually      R - Real Time  
 D - Daily      Q - Quarterly      5Y - Every 5 Years      DC - Discontinued  
 W - Weekly      BA - Bi-Annually      10Y - Every 10 Years      V - Variable

**Geographic Coverage Legend:**

WW - Worldwide      CW - Countywide  
 NW - Nationwide      TAZ - Traffic Analysis Zone  
 SW - Statewide      EFI - Enterprise Florida Regions

**Notes:**

» LR - Legal Reference



# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">COMMITTEE ON THE MARINE TRANSPORTATION SYSTEM (CMTS) DATA INVENTORY</a>	Marine Administration and US DOT	✓		NW			✓				✓	✗								
<a href="#">CONTAINER NUMBER DATABASE (CND)</a>	FDOT Motor Carrier Size and Weight System Florida Department of Agriculture and Consumer Services	✓	D	SW		✓					✓	✓								
<a href="#">CRASH ANALYSIS REPORTING SYSTEM (CARS)</a>	FDOT Safety Office and Department of Highway Safety and Motor Vehicles (DHSMV)	✓	A	SW		✓					✓	✗								
<a href="#">ELECTRONIC FREIGHT THEFT MANAGEMENT SYSTEM</a>	FDOT Motor Carrier Compliance Florida Highway Patrol	✗			✓						✓	✓								
<a href="#">ENERGY INFORMATION ADMINISTRATION DATA SERVICES</a> <i>LR: 42 USC</i>	US Energy Information Administration	✓	M	NW					✓		✓	✗								
<a href="#">EXPORTS FROM MANUFACTURING ESTABLISHMENTS</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✗	A	NW	✓						✓	✗								
<a href="#">FATALITY ANALYSIS REPORTING SYSTEM (FARS)</a> <i>LR: 49 USC 301</i>	National Highway Traffic Safety Administration	✗	M	NW		✓					✓	✗								
<a href="#">FDEP GIS DATA AND TOOLS</a>	Florida Department of Environmental Protection (FDEP)	✓	V	SW							✓	✗								
<a href="#">FDOT REST AREAS AND SERVICE AREA LOCATIONS – OFFICE OF MAINTENANCE</a>	FDOT Office of Maintenance	✓		SW		✓					✓	✗								
<a href="#">FDOT TRAFFIC DATABASE</a> <i>LR: 23 CFR 420.105 (B)</i>	FDOT TRANSTAT	✓	A	SW		✓					✓	✗	✓							
<a href="#">FDOT TRUCK LANE RESTRICTIONS MAP</a>	FDOT Traffic Engineering and Operations Office	✓		SW		✓					✓	✗								
<a href="#">FDOT WEIGH STATIONS</a>	FDOT Office of Maintenance	✓	W	SW		✓					✓	✗								
<a href="#">FEDERAL AVIATION ADMINISTRATION DATABASE</a> <i>LR: 14 USC</i>	Federal Aviation Administration (FAA)	✓	A	NW				✓			✓	✗	✓							
<a href="#">FLIGHTWARE DATA</a>	Flightware	✗	R	WW				✓			✗	✓								
<a href="#">FLORIDA DEPARTMENT OF HEALTH GIS DATA</a>	Florida Department of Health (DOH)	✓	A	SW							✓	✗								
<a href="#">FLORIDA DEPARTMENT OF REVENUE TAX PARCEL DATA</a>	Florida Department of Revenue (DOR)	✓	BA	SW							✓	✗		✓						

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 D - Daily      Q - Quarterly      5Y - Every 5 Years      DC - Discontinued  
 W - Weekly      BA - Bi-Annually      10Y - Every 10 Years      V - Variable

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WW - Worldwide      CW - Countywide  
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 SW - Statewide      EFI - Enterprise Florida Regions

**Notes:**

» LR - Legal Reference



# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">FLORIDA FREIGHT SUPPLY-CHAIN INTERMODAL MODEL (FREIGHTSIM)</a>	FDOT TRANSTAT	✓	V	SW, TAZ		✓	✓	✓	✓			✓	✗							
<a href="#">FLORIDA GEOGRAPHIC DATA LIBRARY (FGDL)</a>	University of Florida's GeoPlan Center	✓	V	SW, CW	✓							✓	✗							
<a href="#">FLORIDA PORTS COUNCIL (FPC)</a>	Florida Ports Council Florida Seaport Transportation and Economic Development Council	✓	A	SW			✓					✓	✗				✓		✓	
<a href="#">FLORIDA'S STRATEGIC INTERMODAL SYSTEM (SIS) PORTAL</a>	FDOT Systems Planning Office	✓	V	SW	✓							✓	✗	✓	✓	✓	✓	✓	✓	
<a href="#">FREIGHT ANALYSIS FRAMEWORK (FAF)</a> <i>LR: 23 USC</i>	Federal Highway Administration (FHWA)	✓	5Y	WW, NW	✓							✓	✗		✓			✓		
<a href="#">GEOPLATFORM</a>	Federal Geographic Data Committee	✓		NW	✓							✓	✗							
<a href="#">HIGHWAY PERFORMANCE MONITORING SYSTEM (HPMS)</a> <i>LR: 49 CFR 111 (C) (2)</i>	Florida Office of Highway Policy Information	✓	A	NW		✓						✓	✗					✓		
<a href="#">INFOGROUP</a>	Infogroup	✓		NW	✓							✗	✓							
<a href="#">INTERMODAL ASSOCIATION OF NORTH AMERICAN SERVICES (IANA)</a>	Intermodal Association of North America	✗	M	NW	✓							✓	✗							
<a href="#">INTERNATIONAL MONETARY FUND (IMF) DATA MAPPER</a>	International Monetary Fund	✗	A	WW								✓	✗							
<a href="#">JASON'S LAW SURVEY (JLS) – TRUCK PARKING INFORMATION</a>	USDOT FHWA	✗		NW		✓						✓	✗							
<a href="#">LEONARD'S GUIDE</a>	Leonard's Guide	✗	A	NW	✓							✗	✓							
<a href="#">LONGITUDINAL EMPLOYER – HOUSEHOLD DYNAMICS (LEHD)</a>	US Census Bureau	✗	5Y									✓	✓							
<a href="#">MOTOR CARRIER FINANCIAL AND OPERATING DATA</a> <i>LR: 49 CFR 369</i>	Federal Motor Carrier Safety Administration, and US DOT	✗		NW		✓						✓	✗							
<a href="#">MOTOR CARRIER SAFETY MEASUREMENT SYSTEM</a>	Federal Motor Carrier Safety Administration, and US DOT	✗	M	NW		✓						✓	✗							

**Update Frequency Legend:**

H - Hourly      M - Monthly      A - Annually  
 D - Daily      Q - Quarterly      5Y - Every 5 Years  
 W - Weekly      BA - Bi-Annually      10Y - Every 10 Years

R - Real Time  
 DC - Discontinued  
 V - Variable

**Geographic Coverage Legend:**

WW - Worldwide      CW - Countywide  
 NW - Nationwide      TAZ - Traffic Analysis Zone  
 SW - Statewide      EFI - Enterprise Florida Regions

**Notes:**

» LR - Legal Reference



# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">MULTIMODAL PERFORMANCE MEASURES SOURCEBOOK</a> <i>LR: 23 CFR 420.105 (B)</i>	FDOT TRANSTAT	✓	A	SW	✓						✓	✗		✓				✓		
<a href="#">MULTIMODAL TRANSPORTATION INDICATORS</a> <i>LR: 49 CFR 111 (C)(2)</i>	Research Innovative Technology Administration (RITA), BTS, and USDOT	✗	M	NW	✓						✓	✗								
<a href="#">NATIONAL AUTOMOTIVE SAMPLING SYSTEM</a>	National Highway Traffic Safety Administration	✗	M	NW		✓					✓	✗								
<a href="#">NATIONAL HAZARDOUS MATERIAL ROUTE REGISTRY</a>	Federal Motor Carrier Safety Administration	✗				✓					✓	✗								
<a href="#">NATIONAL HIGHWAY PLANNING NETWORK (NHPN)</a>	US DOT FHWA Office of Planning, Environment, & Realty (HEP)	✓		NW	✓						✓	✗		✓				✓		
<a href="#">NATIONAL HIGHWAY SYSTEM</a> <i>LR: 23 CFR 470</i>	US DOT FHWA HEP FDOT TRANSTAT	✓		NW		✓					✓	✗		✓				✓		
<a href="#">NATIONAL HOUSEHOLD TRAVEL SURVEY</a>	FHWA and US DOT	✓		NW		✓					✓	✗		✓						
<a href="#">NATIONAL PERFORMANCE MANAGEMENT RESEARCH DATA SET (NPMRDS)</a> <i>LR: 49 CFR 111 (C) (2)</i>	HERE Traffic	✓	M	NW		✓					✓	✓								
<a href="#">NATIONAL PIPELINE MAPPING SYSTEM</a>	Pipeline and Hazardous Materials Safety Administration, and US DOT	✗	A	NW					✓		✓	✓								
<a href="#">NATIONAL SURVEY OF US EXPEDITED CARGO - COLOGRAPHY</a>	Colography	✗	A	NW	✓						✗	✓								
<a href="#">NATIONAL TRANSIT DATABASE</a> <i>LR: 49 USC 5335</i>	Federal Transit Administration US DOT	✓	M	NW		✓					✓	✗								
<a href="#">NATIONAL TRANSPORTATION STATISTICS</a> <i>LR: 49 CFR 111 (C)(2)</i>	RITA, BTS, and USDOT	✓		NW	✓						✓	✗								
<a href="#">NAVIGATION DATA CENTER (NDC)</a> <i>LR: 33 CFR PART 207</i>	US Army Corp of Engineers (USACE)	✓	A	NW			✓				✓	✗					✓		✓	
<a href="#">OFFICIAL AIRLINE GUIDE'S DATABASE</a>	Official Airline Guide (OAG)	✓	D	WW							✗	✓	✓							

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# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">PERMIT APPLICATION SYSTEM FOR OVERWEIGHT AND OVER-DIMENSIONAL VEHICLES</a> <i>LR: RULE 14-26, F.A.C.</i>	FDOT Permits Office	✓		SW		✓						✓	✓							
<a href="#">PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION DATABASES</a>	Pipeline and Hazardous Materials Safety Administration, and US DOT	✗	A	NW					✓			✓	✗							
<a href="#">PORT IMPORT/EXPORT REPORTING SERVICES (PIERS)</a>	JOC Group (IHS Inc.)	✓	D	WW, NW			✓					✗	✓	✓	✓		✓	✓	✓	
<a href="#">PORT OF ENTRY LIST</a>	US Customs and Border Protection	✗		NW			✓	✓				✗	✓							
<a href="#">PUBLIC USE WAYBILLS SAMPLE (PUWS) - CONFIDENTIAL</a>	Surface Transportation Board (STB)	✓	A	NW				✓				✓	✓							
<a href="#">PUBLIC USE WAYBILLS SAMPLE (PUWS) - PUBLIC</a>	STB	✓	A	NW				✓				✓	✗							
<a href="#">QUICK TSI</a>	Quick TSI	✗				✓						✓	✗							
<a href="#">RAIL NETWORK DEVELOPMENT</a>	Federal Railroad Administration (FRA)	✗		NW				✓				✓								
<a href="#">RAILROAD HIGHWAY CROSSING INVENTORY (RHCI)</a> <i>LR: RULE 14-75, F.A.C.</i>	FDOT Rail and Motor Carrier Operations Office	✓	V	SW				✓				✓	✗			✓				
<a href="#">RAILROAD PERFORMANCE MEASURES</a>	AAR	✗	W	NW				✓				✗								
<a href="#">RAND MCNALLY (RM) SAMPLE DATASET</a>	Rand McNally	✓	M, A	SW		✓						✗	✓							
<a href="#">ROADWAY CHARACTERISTICS INVENTORY (RCI)</a> <i>LR: 23 CFR 420.105 (B)</i>	FDOT TRANSTAT	✓	W	SW		✓						✓	✗	✓				✓		
<a href="#">SERVICE ANNUAL SURVEY (SAS)</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✗	A	NW								✓	✗							
<a href="#">SERVICE QUARTERLY SURVEY (SQS)</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✗	Q	NW								✓	✗							

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# Multimodal Freight Data Inventory Matrix

DATA INFORMATION			UPDATE FREQUENCY	GEOGRAPHICAL COVERAGE	MODAL COVERAGE							DATA ACCESS		USED BY FLORIDA SYSTEMS PLANS						
DATA SOURCE <i>Websites for data sources can be accessed by clicking on the data source title</i>	DEVELOPER	USED BY FDOT			ALL	ROAD	RAIL	WATER	AIR	PIPELINE	SPACE	FREE DATA	USER LICENSING AGREEMENT	AVIATION SYSTEM PLAN	TRANSPORTATION PLAN	FREIGHT MOBILITY & TRADE PLAN	RAIL SYSTEM PLAN	SEAPORT SYSTEM PLAN	SIS PLANS	WATERWAY SYSTEM PLAN
<a href="#">SYSTEMS PLANNING OFFICE BROCHURES AND MAPS</a>	FDOT TRANSTAT and Systems Planning Office	✓	V	SW	✓						✓	✗	✓	✓	✓	✓	✓	✓		
<a href="#">TRADESTATS EXPRESS</a>	International Trade Administration with Department of Commerce	✗	Q	NW	✓						✓	✗								
<a href="#">TRANSEARCH</a>	IHS Global Insight Inc.	✓	A	NW	✓						✗	✓		✓						
<a href="#">TRANSPORTATION SERVICE INDEX (TSI)</a> <i>LR: 49 USC 111 (C) (2)</i>	RITA, BTS, and USDOT	✗	M	NW	✓						✓	✗								
<a href="#">TRANSTATS</a> <i>LR: 49 USC 101</i>	RITA, BTS, and US DOT	✓	M	NW	✓						✓	✗	✓	✓	✓	✓	✓	✓	✓	
<a href="#">TRUCKER'S FRIEND</a>	The Trucker's Friend	✗		NW		✓					✓	✗								
<a href="#">US CENSUS COMMODITY FLOW SURVEY (CFS)</a> <i>LR: 13 USC</i>	US Census Bureau	✓	5Y	NW	✓						✓	✗		✓						
<a href="#">US CENSUS COUNTY BUSINESS PATTERNS (CBP)</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✓	A	NW							✓	✗	✓	✓	✓		✓			
<a href="#">US CENSUS FOREIGN TRADE</a> <i>LR: 13 USC, 26 USC</i>	US Census Bureau	✓	M	NW	✓						✓	✗	✓			✓		✓		
<a href="#">US CENSUS VEHICLE INVENTORY AND USE SURVEY (VIUS)</a> <i>LR: 13 USC</i>	US Census Bureau	✓	DC	NW		✓					✓	✗		✓			✓			
<a href="#">US GOVERNMENT OPEN DATA</a>	US General Services Administration Office of Citizen Services and Innovative Technologies	✓	V	NW	✓						✓	✗								
<a href="#">USDA ECONOMIC RESEARCH SERVICE</a> <i>LR: 7 USC 55</i>	United States Department of Agriculture (USDA) Economic Research Service	✓	A	NW							✓	✗								
<a href="#">USDA NATIONAL AGRICULTURAL STATISTICS SERVICE</a> <i>LR: 7 USC 55</i>	USDA National Agricultural Statistics Service	✓	M	NW							✓	✗								
<a href="#">WEIGH IN MOTION (WIM) AND WEIGH STATIONS</a>	WIM Stations (30) – FDOT TRANSTAT* * WIM Stations are handled independently from Weigh Stations	✓	W	SW		✓					✓	✗								
<a href="#">WORKFORCE INFORMATION DATABASE</a>	US Department of Labor	✓									✓	✗								

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# MULTIMODAL FREIGHT DATA SOURCE PROFILES

JUNE 2016



# SECTION 2

## MULTIMODAL FREIGHT DATA SOURCE PROFILES

### AIRPORT COUNCIL INTERNATIONAL (ACI)

Airport Council International (ACI) is a non-profit organization focused on providing information and services to airports worldwide. ACI is recognized for its professional excellence in airport operations. ACI collects and analyzes data and statistics on cargo and passenger air traffic. Data include annual and monthly traffic information which provides a comprehensive overview of passenger, cargo and air traffic trends, airports economics and performance, customized statistics packages, reports, publications, and user charges. ACI also provides a web portal which allows members to view the distribution of aeronautical revenues across various airports and countries. Their cargo traffic data includes international and domestic cargo, loaded and unloaded mail and express, and total freight and cargo statistics for all airports worldwide.

**MORE ABOUT THE DATA:**

- Developer:** Airport Council International
- Update Frequency:** Monthly
- Latest Year Available:** 2014
- Temporal Coverage:** Daily
- Geographical Coverage:** Worldwide
- Geographical Resolution:** Airports
- Modal Coverage:** Air
- Data Format:** MS Excel
- Licensing Agreement:** Required
- Acquisition Cost:** Variable
- Contact:**  
[FDOT TRANSTAT](#)  
 (850) 414-4848

**CURRENT APPLICATIONS**

- » Office of Policy Planning
- » Transportation System Planning
- » Passengers and Freight
- » Systems Planning Office
- » Adopted SIS Criteria and
- » Office of Freight, Logistics
- » Florida Air Cargo System

**POTENTIAL APPLICATIONS**

- » Freight Performance Measure
- » Safety Planning and Analysis
- » Regulation and Enforcement
- » Terminal and Border Access
- » Multimodal Freight Mode
- » Sustainable Transportation
- » Freight Transportation and

**Actual Tonnage**



Source: Florida Air Cargo System Plan

Complexity  
Measure  
Rating

## 2.0 MULTIMODAL FREIGHT DATA SOURCE PROFILES

The Data Source Profiles build upon the analysis completed within the Data Inventory Matrix and provide further detail on select data sources. The Data Source Profiles analysis includes development of 43 individual profiles of data sources selected from the Data Inventory Matrix (presented as an attachment on the following pages). The profiles provide summaries for multimodal freight data sources and generally highlight the following information about each data source:

- » Developer
- » Update Frequency and Availability
- » Geographic and Modal Coverage
- » Data Format
- » Licensing Agreement Requirements
- » Acquisition Cost

The data source profiles also include overview of current applications of each data source for analyses; including: studies, plan updates, models, trends, and performance measures. Potential applications of each data source within FDOT, if applicable for the data source, are also identified. Additionally, a complexity measure was developed to assess the different data sources. The methodology for this effort was adopted from *National Cooperative Freight Research Program Report 22 – Freight Data Cost Elements*. The complexity measure was broken down into ten different categories:

- » Spatial Coverage/Resolution: Rating increases or decreases based on level of spatial coverage; high/detail in spatial coverage is rated excellent.
- » Commodity Coverage: Rating increases or decreases based on number of commodities covered; majority commodities included is rated excellent.
- » Industry Coverage: Rating increases or decreases based on diversity of industries covered; higher diversity of industries covered is rated excellent.
- » Temporal Coverage/Resolution: Rating increases or decreases based on temporal disaggregation; higher frequency temporal data is rated excellent.
- » Data Collection Frequency/Update rate: Rating based on update frequency of dataset; higher frequency in dataset updates is rated excellent.
- » Modal Coverage: Rating based on modal coverage of dataset; multimodal coverage and higher number of modes covered is rated excellent.
- » Data Accuracy: Rating increases or decreases based on number of estimations; lower estimations and assumptions used are rated excellent.
- » Cost: Rating based on the cost of dataset; free datasets are rated excellent.
- » Data Access: Rating based on access of dataset; datasets easier to obtain with low or no restrictions to access are rated excellent.
- » Data Usability: Rating based on usability of dataset; datasets easier to use and analyze without complex querying are rated excellent.

The possible ratings for each measure are shown in the example table:

- » Excellent: ●
- » Medium: ◐
- » Low: ○
- » Not Applicable: —

**SUMMARY**

The Airport Council International (ACI) is a non-profit organization focused on supporting airports worldwide promoting professional excellence in airport operations. ACI collects and provides data and statistics on cargo and passenger air traffic. Data include annual and monthly traffic information which provides a comprehensive overview of passenger, cargo and air traffic movements, airports economics and statistics, customized statistics packages, aviation publications, and user charges calculator which allows members to compare the distribution of aeronautical charges across various airports and countries. Their cargo traffic data includes international and domestic tons, loaded and unloaded mail statistics, as well as total freight and cargo statistics for all airports worldwide.

**MORE ABOUT THE DATA:**

**Developer:** [Airport Council International](#)

**Update Frequency:** Monthly

**Latest Year Available:** 2014

**Temporal Coverage:** Daily

**Geographical Coverage:** Worldwide

**Geographical Resolution:** Airports

**Modal Coverage:** Air

**Data Format:** MS Excel

**Licensing Agreement:** Required

**Acquisition Cost:** Variable

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

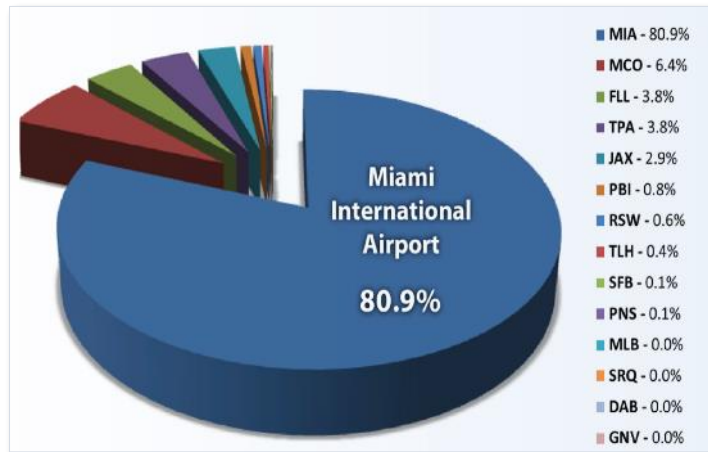
**CURRENT APPLICATIONS**

- » Office of Policy Planning
  - » Transportation System: Air Facilities – Passengers and Freight, 2013
- » Systems Planning Office
  - » Adopted SIS Criteria and Thresholds, 2010
- » Office of Freight, Logistics & Passenger Operations
  - » Florida Air Cargo System Plan Update, 2013

**POTENTIAL APPLICATIONS**

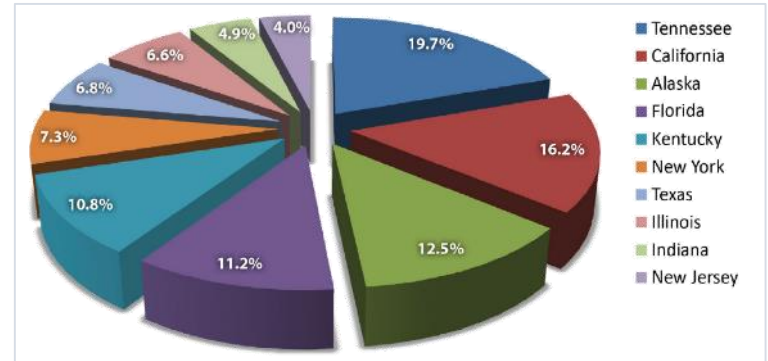
- » Freight Performance Measures
- » Safety Planning and Analysis
- » Regulation and Enforcement
- » Terminal and Border Access Planning
- » Multimodal Freight Modeling
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

**Actual Tonnage by Airport within Florida, 2011**



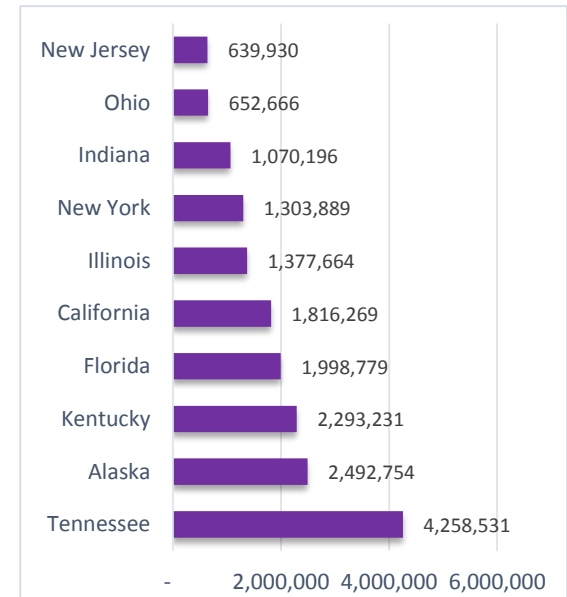
Source: Florida Air Cargo System Plan Update, 2012.

**Top 10 Air Cargo Market Share, 2011**



Source: Florida Air Cargo System Plan Update, 2012.

**Top 10 Air Cargo States by Total Annual Tonnage, 2014**



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/Update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	◐	●

**SUMMARY**

ATRI provides GPS-based spatial and temporal information for a large sample of trucks with onboard, wireless communication systems in the U.S. Data includes geospatial (coordinates) and temporal (time/date stamp) information for the corresponding trucks. Other information such as spot speed and heading are also provided in the data. The data does not provide information on commodity type, TL/LTL, # of axles, travel purpose or other details of individual trucks. Currently, more than 100 million GPS data points are collected per day by ATRI. The data has been collected since 2002. FDOT retains a sample of processed ATRI data for 2010 which was used by the Systems Planning Office for a freight planning research study ([Final Report BDK84-977-20](#)).

**MORE ABOUT THE DATA:**

**Developer:** [American Transportation Research Institute](#)

**Update Frequency:** Monthly

**Latest Year Available:** 2016

**Temporal Coverage:** Real-time data

**Geographical Coverage:** North America

**Geographical Resolution:** XY coordinates

**Modal Coverage:** Truck (classes 8-13 in FHWA Scheme F classifications)

**Data Format:** CSV

**Licensing Agreement:** Required

**Acquisition Cost:** Variable depending on the sample size

**Contact:**

[FDOT TRANSTAT](#)

Modeling Section

(850) 414-4848

**CURRENT APPLICATIONS**

- » FDOT – District 4 – SHRP2 C20
  - » SHRP2 C20: Analysis of Truck Route Choice using Truck-GPS Data, 2015
- » Systems Planning Office
  - » Using Truck Fleet Data in Combination with Other Data Sources for Freight Modeling and Planning, 2014 - [Final Report BDK84-977-20](#)  
Final Report info at [http://www.dot.state.fl.us/research-center/Completed\\_Proj/Summary\\_PL/FDOT-BDV25-977-17-sum.pdf](http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_PL/FDOT-BDV25-977-17-sum.pdf)

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Regulation and Enforcement
- » Model Validation
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Urban Tour-based Freight Modeling
- » Roadway Pavement and Bridge Maintenance Planning

**Location Visited During One Week by 1000 Trucks Starting in Miami\***

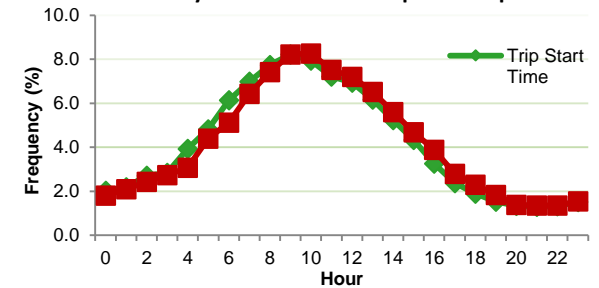


\* Source: Analysis of Truck Route Choice using Truck-GPS Data, 15<sup>th</sup> TRB National Planning Applications Conference, 2015

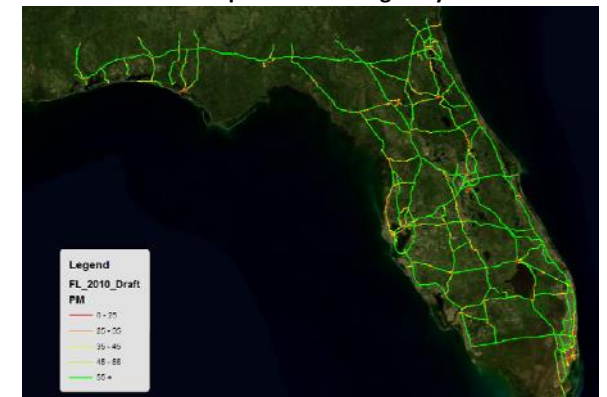
**One day ATRI truck GPS data coverage, 2010\***



**Time of Day Profile for Truck Trips in Tampa\***



**PM Peak Period Speeds on SIS Highway Network\***



Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	◐	◐	◐

**SUMMARY**

The Association of American Railroads (AAR) is a railroad policy, research, standard setting and technology organization that focuses on the safety and productivity of the U.S. freight rail industry. AAR's data center prepares and publishes weekly, quarterly and annual rail industry data and statistics for major freight railroads in North America as well as Amtrak. The data includes economic, financial, policy, traffic, safety and general statistical information which provide a comprehensive insight into the operations of North America's freight railroads. AAR also provides publications catalogs and research reports covering many aspects of freight railroad from North America's freight rail network attributes and investment and economic statistics to the correct means of loading and securing various freight shipments.

**MORE ABOUT THE DATA:**

**Developer:** [Association of American Railroad \(AAR\)](#)

**Update Frequency:** Weekly, Quarterly, and Annually

**Latest Year Available:** 2016

**Temporal Coverage:** Annual

**Geographical Coverage:** North America

**Geographical Resolution:** Major Freight Railroads and Amtrak

**Modal Coverage:** Rail

**Data Format:** Tabular

**Licensing Agreement:** Required

**Acquisition Cost:** Variable (free for Members)

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

**CURRENT APPLICATIONS**

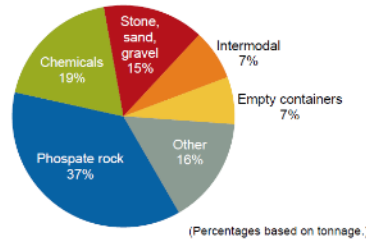
- » Rail and Motor Carrier Operations Office
  - » 2010 Florida Rail System Plan, 2010
- » Office of Policy Planning
  - » Transportation System: Rail Facilities- Freight and Passenger, 2011

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Mobility Planning
- » Emergency Preparedness and Security Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Regulation and Enforcement
- » Hazardous Material Planning

**Freight Rail Tonnage Starting and Ending In Florida, 2012\***

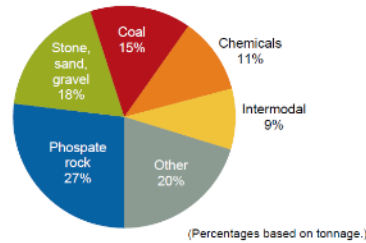
**Rail Traffic Originated in 2012** Total Tons: 43.7 million Total Carloads: 764,700



Commodity	Tons	Carloads
Phosphate rock	16,095,000	147,500
Chemicals	8,173,000	94,900
Stone, sand, gravel	6,438,000	66,500
Intermodal	3,220,000	196,100
Empty containers	3,010,000	116,000
Other	6,785,000	143,600

Phosphate rock is used mainly in the production of fertilizers and animal nutrient supplements. Florida was sixth nationally in 2012 in originated rail tons of chemicals (primarily fertilizers), and ninth in intermodal traffic originated.

**Rail Traffic Terminated in 2012** Total Tons: 66.7 million Total Carloads: 1,221,000



Commodity	Tons	Carloads
Phosphate rock	17,960,000	166,600
Stone, sand, gravel	12,085,000	120,900
Coal	9,804,000	84,200
Chemicals	7,414,000	89,700
Intermodal	5,913,000	385,200
Other	13,501,000	374,300

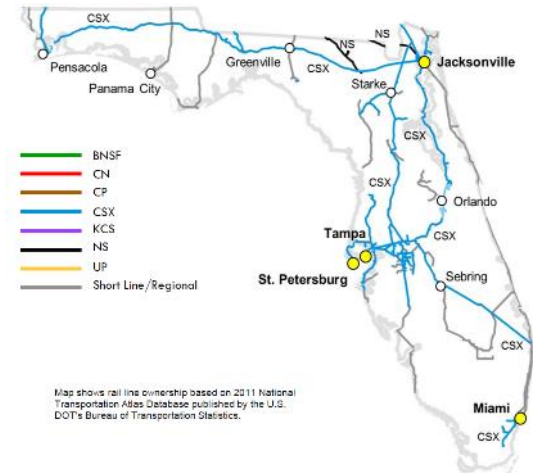
Florida was second nationally in 2012 in terminated rail tons of crushed stone, sand, and gravel, used mainly for construction. Florida was also the nation's 12th-largest electricity generator from coal in 2012. Railroads delivered most of that coal.

**Summary Of Freight Railroads in Florida, 2012\***

14	2,900	4,981	\$106,110	28,642
Number of Freight Railroads	Freight Railroad Miles	Freight Railroad Employees	Ave. Wages and Benefits Per Freight Railroad Employee	Railroad Retirement Beneficiaries

Florida 2012 Totals	Number of Freight Railroads	Miles Operated	
		Excluding Trackage Rights	Including Trackage Rights
Class I	2	1,693	1,793
Regional	2	431	431
Local	9	774	782
Switching & Terminal	1	2	2
<b>Total</b>	<b>14</b>	<b>2,900</b>	<b>3,008</b>

**Florida Rail Lines, 2012\***



\* Source: <https://www.aar.org/data-center/railroads-states#state/FL>

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	◐	◑	●	●	◐	●





## SUMMARY

The Automatic Identification Systems (AIS) monitors ship traffic for the purpose of improving safety of navigation worldwide. This system provides coastal planners with insight into marine transportation patterns over long periods of time. The National AIS program was initiated in response to the **Maritime Transportation Security Act of 2002**. The NAIS system currently receives 92 million AIS messages per day from approximately 12,700 unique vessels.

## MORE ABOUT THE DATA

**Developer:** [United States Coastal Guard, Bureau of Ocean Energy Management,](#) and [National Oceanic and Atmospheric Administration](#)

**Update Frequency:** Annually

**Temporal Coverage:** Per minute

**Geographical Coverage:** National

**Geographical Resolution:** Ship Location

**Modal Coverage:** Marine (Water)

**Data Range:** 2009-present

**Data Format:** File Geodatabases

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Legal Reference:** Maritime Transportation Security Act, 2002

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

## CURRENT APPLICATIONS

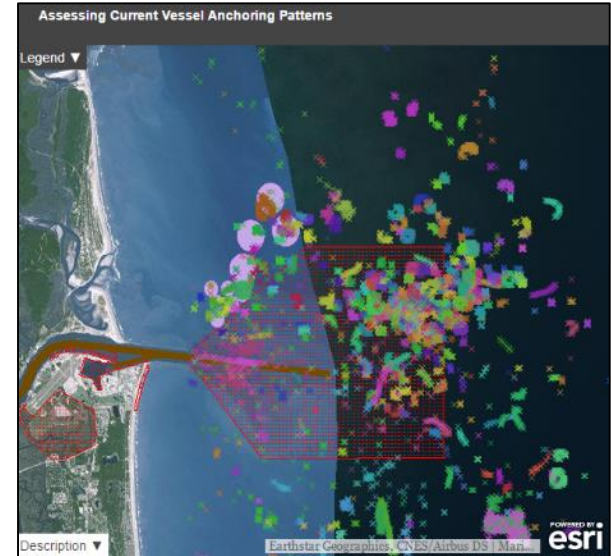
- » North Carolina Wind Energy Task Force
  - » Identify outer continental shelf lease blocks for offshore wind energy siting
- » Eastern Research Group
  - » 2007 commercial vehicle emissions in Texas
- » U.S Coast Guard
  - » Training in workshops
- » Jacksonville
  - » Studying Anchorage patterns

## POTENTIAL APPLICATIONS

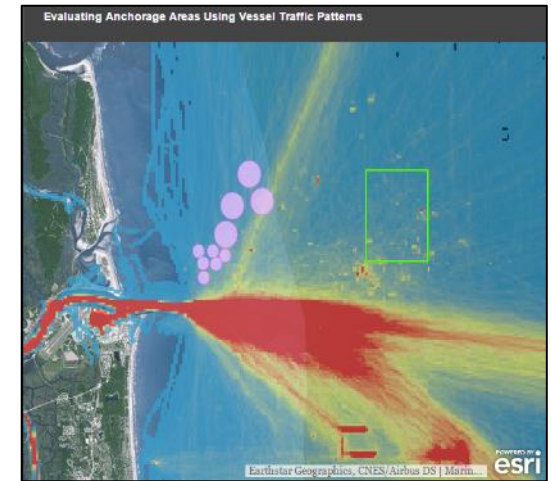
- » Data fusion of PIERS and AIS
- » Anchorage patterns
- » Port volume and capacity
- » Model vessel noise
- » Temporal trends
- » Shipping lanes and regulations
- » Infrastructure evaluation
- » Determine potential location-based conflicts
- » Developing and tracking port performance measures

## DESCRIPTION OF DATA

- » AIS database contains vessel traffic data for security and planning purposes within the U.S. coastal waters.
- » Broadcast point feature class contains the position reports, which have been pre-filtered to a one-minute time stamp.
- » AIS is required on ships of 300 gross tons or more and for ships greater than or equal to 65 feet in length and towing vessels greater than 26 feet in length.
- » AIS data do not include recreational boats or other small craft. Vessels owned, leased, or operated by the military or other U.S. government entities are also exempt from the carriage requirement.
- » NAIS collects valuable maritime data in 58 critical ports throughout the United States and collect safety and security data from AIS-equipped vessels in the nation's territorial waters and adjacent sea areas.
- » AIS is a ship-to-ship collision avoidance system that allows for communication of position, speed, and other ship data.
- » Major attributes are Vessel Identifier, Purpose, Course, Vessel location, MMSI, and Speed, Heading, Vessel Information, Timestamp, Draft.



A. Point Vessel Data (Anchorage Patterns)



B. Vessel Density (Density Maps)

Case Study: Jacksonville – Studying anchorage patterns

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	◐	○	●	●	●	●	●	●

**SUMMARY**

The BEA Industry Economic Accounts enable users to track and understand industry interactions, productivity trends, and the changing structure of the U.S. economy. Economic accounts covers industry classes in NAICS and SIC system and comprises a variety of economic datasets including:

**“GDP by Industry Accounts”:** estimate contribution of each industry to the Nation’s GDP. (Latest update 2014)

**“Annual Input-Output (IO) Accounts”:** provide a time series of detailed information on the flow of goods and services between industries and final users in form of make and use tables. (Latest update 2013)

**“Benchmark Input-Output Accounts”:** are based on the economic census data and provide similar information as the Annual IO Accounts but with more industry detail. (Latest update 2007)

**MORE ABOUT THE DATA:**

**Developer:** Bureau of Economic Analysis

**Update Frequency:** Annually

\*Benchmark IO: Every 5 years

**Latest Year Available:** Variable

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** N/A

**Modal Coverage:** N/A

**Data Format:** MS Excel

**Licensing Agreement:** N/A – Citations are required using BEA guideline

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 15 USC 4908

**Contact:**

[FDOT TRANSTAT](http://FDOT.TRANSTAT)  
(850) 414-4848

**CURRENT APPLICATIONS**

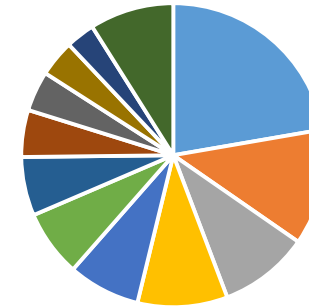
- » Transportation Statistics Office
  - » Florida Statewide Freight Model (FreightSIM), 2015
- » Rail and Motor Carrier Operations Office
  - » Economic Impacts FEC Rail Corridor Program, 2009
- » Office of Policy Planning
  - » Macroeconomic Analysis of Florida’s Transportation Investments, 2015

**POTENTIAL APPLICATIONS**

- » Economic Development Planning and Analysis
- » Freight Transportation and Land Use Planning
- » Freight Mobility Planning
- » Sustainable Transportation Investment
- » Freight Demand and Supply Chain Analysis

**Florida GDP Share By Industry 2013**

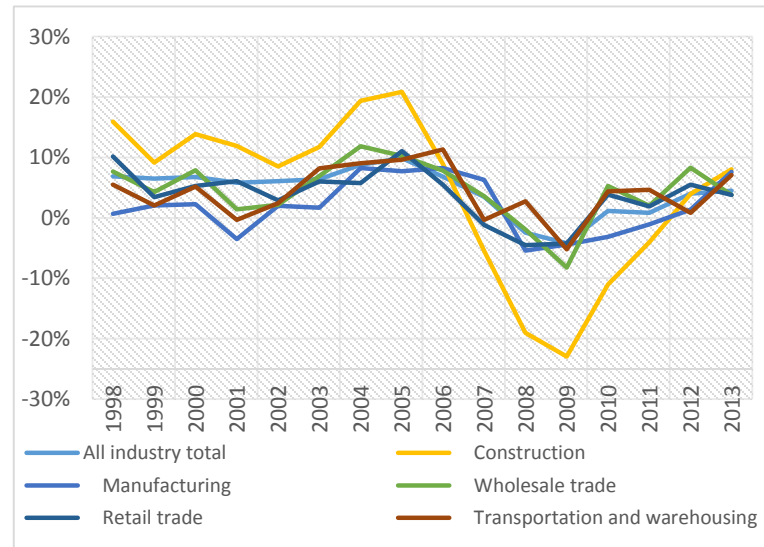
Total GDP = 800,697 million \$



- Finance, insurance, real estate, and leasing (22%)
- Professional and business services (12%)
- State and local (10%)
- Educational services, health and social assistance (10%)
- Retail trade (8%)
- Wholesale trade (7%)
- Arts, entertainment, recreation, and food services (6%)
- Manufacturing (5%)
- Construction (4%)
- Information (4%)
- Transportation and warehousing (3%)
- Other Industry sectors (9%)

Source: RS&H, Inc.

**Annual Growth in GDP in Florida State**



Source: RS&H, Inc.

**Inputs value by Industry Required to Deliver One Dollar of Construction Industry Output**



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	○	○	●	○	◐	◐	●	●	●



**SUMMARY**

Air Carrier Statistics is a monthly data reported by certificated U.S. and foreign air carriers on passengers, freight and mail transported. The other indicators include aircraft type, service class, available capacity and seats, and aircraft hours ramp-to-ramp and airborne. There are 6 datasets:

- » T-100 Market - Domestic Carrier
- » T-100 Market - International Carrier
- » T-100 Market - All Carrier
- » T-100 Segment - Domestic Carrier
- » T-100 Segment- International Carrier
- » T-100 Segment - All Carrier

In market data, a passenger is "enplaned" and is counted only once as long as he/she remains on the same flight number. In segment data, a passenger is "transported" and is counted for each leg of the trip. The data was established under Intermodal Surface Transportation Efficiency Act of 1991 Section 6006.

**MORE ABOUT THE DATA:**

**Developer:** [Bureau of Transportation Statistics](#)

**Update Frequency:** Monthly

**Geographical Coverage:** U.S

**Temporal coverage:** 1990 - present

**Geographical Resolution:** Airport

**Modal Coverage:** Air

**Data Format:** CSV

**Licensing Agreement:** N/A

**Acquisition Cost:** N/A

**Legal Reference:** 49 CFR 111(c) (2)

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

**CURRENT USERS**

- » Florida Department of Transportation:
  - » Florida Aviation System Plan
- » U.S.Department of Transportation:
  - » U.S International Air Passenger and Freight Statistics
- » National Cooperative Freight Research Program Reports
- » Federal Aviation Administration:
  - » One of the data sources for FAA Database: Air Carrier Activity Information System (ACAIS)

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Regulation and Enforcement
- » Demand Forecasting
- » Demand/Capacity analysis
- » Return on investment on infrastructure

Code	Description	Summary
FX	Federal Express Corporation	12,575,513,752
SX	United Parcel Service	7,736,997,469
SY	Atlas Air Inc.	1,498,607,686
DL	Delta Air Lines Inc.	1,042,336,072
UA	United Air Lines Inc.	925,012,179
AA	American Airlines Inc.	915,696,993
PO	Polar Air Cargo Airways	787,125,358
KE	Korean Air Lines Co. Ltd.	761,944,366
CX	Cathay Pacific Airways Ltd.	719,743,467
ABX	ABX Air Inc	698,195,276

T-100 Market Freight (pounds) for Major Air Carriers (2014)

Rank	Origin Airport	Summary
1	Miami International Airport	1806910612
2	Orlando International Airport	160176297
3	Fort Lauderdale–Hollywood International Airport	95372540
4	Tampa International Airport	89338692
5	Jacksonville International Airport	75794736
6	Palm Beach International Airport	22641689
7	St. Pete–Clearwater International Airport	17110950
8	Southwest Florida International Airport	12234392
9	Tallahassee International Airport	8988681
10	Pensacola International Airport	4375565
11	Ocala International Airport	562463
12	Orlando Sanford International Airport	433630
13	Key West International Airport	284359
14	Sarasota–Bradenton International Airport	267901
15	Florida Keys Marathon Airport	202186
16	Melbourne International Airport	175650
17	Daytona Beach International Airport	127948
18	Northwest Florida Beaches International Airport	35506
19	Cecil Airport	15000
20	Destin - Fort Walton Beach Airport	11473

T-100 Market Freight (pounds) for Major Florida Origin Airports (2014)

Rank	Destination Airport	Summary
1	Miami International Airport	2280943532
2	Orlando International Airport	190955443
3	Fort Lauderdale–Hollywood International Airport	100449098
4	Tampa International Airport	95686454
5	Jacksonville International Airport	75278136
6	Palm Beach International Airport	31319811
7	St. Pete–Clearwater International Airport	24949756
8	Southwest Florida International Airport	23287891
9	Tallahassee International Airport	10458790
10	Pensacola International Airport	8646923
11	Orlando Sanford International Airport	881005
12	Key West International Airport	713527
13	Florida Keys Marathon Airport	368512
14	Melbourne International Airport	194812
15	Sarasota–Bradenton International Airport	181217
16	Ocala International Airport	175304
17	Daytona Beach International Airport	164148
18	Space Coast Regional Airport	121440
19	Northwest Florida Beaches International Airport	59601
20	Gainesville Regional Airport	36583

T-100 Market Freight (pounds) for Major Florida Destination Airports (2014)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	●	●



**SUMMARY**

The National Transportation Atlas Database (NTAD) provides nationwide geographic datasets of transportation facilities, transportation networks, associated infrastructure for different modes of transportation and other geographical information related to transportation. The geographic datasets include spatial information for transportation networks by mode, intermodal logistics terminals and the related attribute information for these facilities. For each database, a metadata documentation is also. The data can be used for modal transportation analysis to support decision-making procedures at national, regional, state and local level.

*The new NTAD data will be released by the end of June 2016; this includes the North American Rail Network (NARN).*

**MORE ABOUT THE DATA:**

**Developer:** Bureau of Transportation Statistics (USDOT)

**Update Frequency:** Variable amongst datasets

**Latest Year Available:** 2015

**Temporal Coverage:** N/A

**Geographical Coverage:** National

**Geographical Resolution:** County-level

**Modal Coverage:** Multimodal

**Data Format:** GIS Layers

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 49 CFR. 111(c)(2).

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

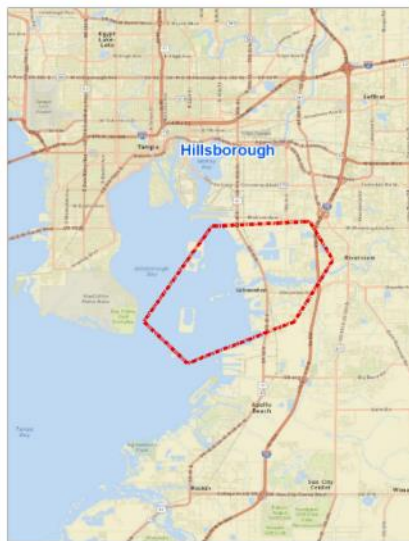
**CURRENT APPLICATIONS**

- » Systems Planning Office
  - » Identification of Corridor Conditions and Needs, 2012
  - » US 27 Transportation Alternatives Study, 2012
- » Safety Office
  - » Transportation Issues: Pedestrian Safety, 2003

**POTENTIAL APPLICATIONS**

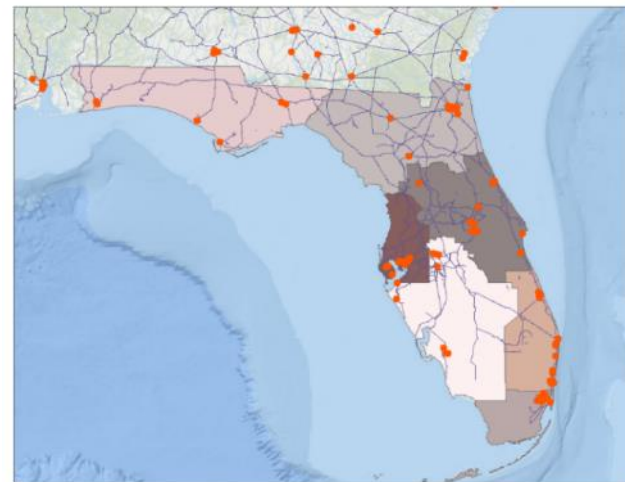
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Mobility Planning
- » Modal Shift Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Freight Transportation and Land Use Planning
- » Intermodal Trade Corridor Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Freight Performance Measurements
- » Economic Development Planning
- » Sustainable Transportation Investment

**SO2 Non-Attainment Area in Port Tampa Bay Area, District 7, 2010**



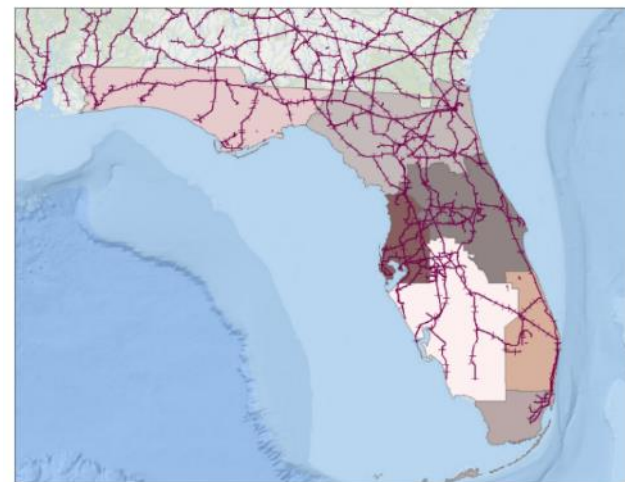
[http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_atlas\\_database/2015/polygon](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_atlas_database/2015/polygon)

**Florida Intermodal Terminal Facilities, 2015**



[http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_atlas\\_database/2015/point](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_atlas_database/2015/point)

**Florida Rail Network, 2015**



[http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_atlas\\_database/2015/polyline](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_atlas_database/2015/polyline)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	●	○	●	●	●	●



**SUMMARY**

The North American TransBorder Freight Database contains freight flow data by commodity type and by mode of transportation including rail, truck, pipeline, air, and vessel for U.S. exports to and imports from Canada and Mexico. The database includes two sets of tables; one is commodity based while the other provides geographic detail. The database provides transportation information on North American trade flows. The information is used to monitor freight flows and changes to these since the enacting of the North American Free Trade Agreement (NAFTA) in 1993. The database is also used for trade corridor studies, transportation infrastructure planning, marketing and logistics plans and other purposes. It allows users to analyze movement of merchandise by all modes.

**MORE ABOUT THE DATA:**

**Developer:** [Bureau of Transportation Statistics \(USDOT\)](#)

**Update Frequency:** Monthly

**Latest Year Available:** 2015

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** U.S. exports to and imports from Canada and Mexico

**Modal Coverage:** Multimodal

**Data Format:** Tabular, Interactive Maps

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 49 CFR 111(c)(2).

**Contact:**

[FDOT TRANSTAT](#)  
(850) 414-4848

**CURRENT APPLICATIONS**

- » Systems Planning Office
  - » Florida Transportation Trends and Conditions, Travel Demand: Trade and Freight Transportation Demand, 2012

**POTENTIAL APPLICATIONS**

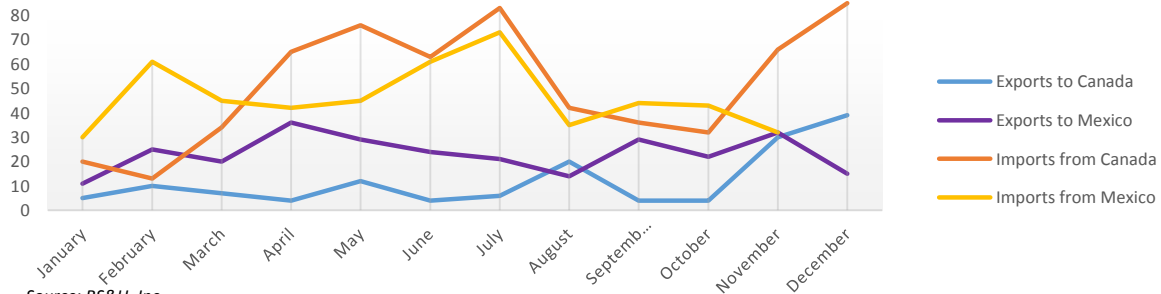
- » Economic Development Planning
- » Modal Shift Analysis
- » Intermodal Trade Corridor Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Freight Mobility Planning
- » Hazardous Material Planning
- » Freight Demand Modeling

**Top Five Exporter States to Canada and Mexico for Fertilizers Commodity, 2014**



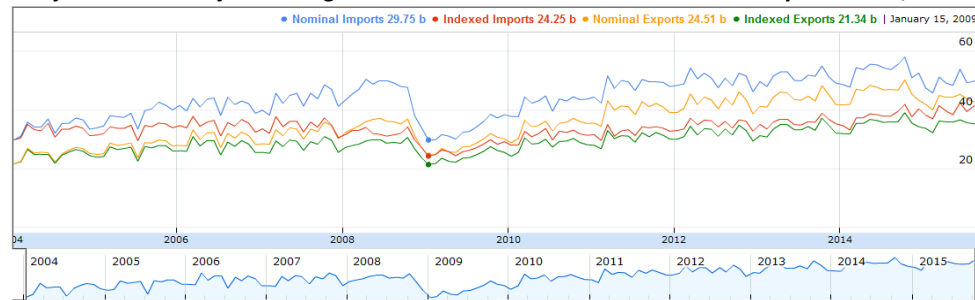
[http://transborder.bts.gov/programs/international/transborder/TBDR\\_quickPC.html](http://transborder.bts.gov/programs/international/transborder/TBDR_quickPC.html)

**Tampa, FL Annual Import/Export in Million Dollars, 2014**



Source: RS&H, Inc.

**Adjusted and Unadjusted Freight Flow Data: U.S.-Canada and U.S.-Mexico by all modes, 2004-2015**



[http://transborder.bts.gov/programs/international/transborder/index/Index\\_Interface.html](http://transborder.bts.gov/programs/international/transborder/index/Index_Interface.html)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	●	●	●	●	●	●



## SUMMARY

The CND database provides Motor Carrier Size and Weight System (MCSAW) weigh stations, Department of Agriculture and Consumer Services (DACS) interdiction stations and Florida Highway Patrol – Commercial Vehicle Enforcement (FHP-CVE) with real-time information needed to identify carriers with and out of service status or carriers that have overdue fines. FHP-CVE also uses the system to verify log books during stops. The database system stores commercial vehicle identification, license plate numbers and USDOT numbers for use by FDOT weigh stations and DACS agricultural interdiction stations. Retrieval and display of this data is limited to users authorized by FDOT's Commercial Vehicle Operations (CVO). There are 36 LPR cameras deployed statewide and images/data is retained for 30 days.

## MORE ABOUT THE DATA:

**Developer:** [FDOT – MCSAW and Florida DACS](#)

**Update Frequency:** Daily

**Temporal Coverage:** Daily-Hourly

**Geographical Coverage:** Statewide

**Geographical Resolution:** Roadway

**Modal Coverage:** Trucks

**Data Format:** Web format

**Licensing Agreement:** Need permission

**Acquisition Cost:** Free

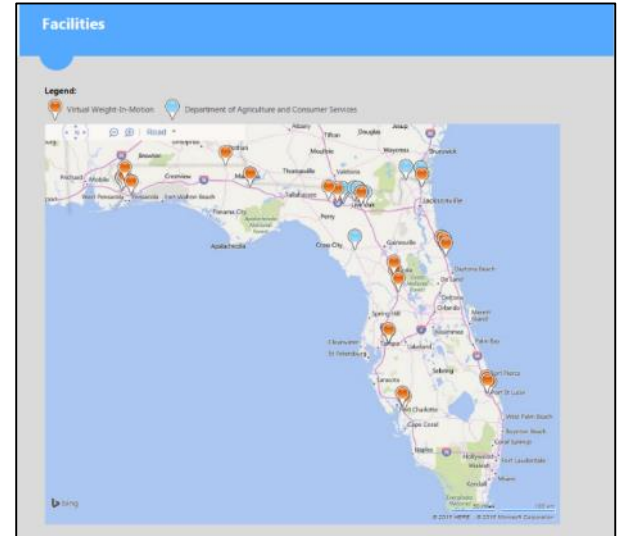
**Contact:**

[FDOT TRANSTAT](#)

(850)-414-4848

## POTENTIAL APPLICATIONS

- » Database can filtered as per date range, reader stations, violators/non-violators, vehicle information (USDOT Number, Make and Year) and reasons for citation.
- » The database will allow users to query container numbers and ancillary data and develop software for tracking the container movements and presenting this data graphically.
- » Ancillary data includes location of the container and a time-stamp.
- » Potentially will involve links to other databases such as Florida's Electronic Freight Theft Management Systems, to check for stolen cargo activity and aid recovery.
- » Real time notifications for a registered investigator or an enforcement officer of specific commercial vehicles.
- » This database can be used as an important component to determine origin and destination information of commercial vehicles.
- » Future Potential of tracking back haul truck movements



Data Collection/Reader Stations



Travel Characteristics of a Commercial Vehicle



License Plate scans of the Commercial Vehicle

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	◐	●



## SUMMARY

The CARS database is generated generally by merging crash data from Department of Highway Safety and Motor Vehicles (DHSMV) with roadway information from FDOT. The database contains all the information recorded in the long form crash report. All reported crashes with a fatality, an injury and high property damage that occurred on state roads are included in the database.

## MORE ABOUT THE DATA:

**Developer:** [FDOT – Safety Office](#) and [Department of Highway Safety and Motor Vehicles \(DHSMV\)](#)

**Update Frequency:** Annually

**Temporal Coverage:** Daily-Hourly

**Geographical Coverage:** Statewide

**Geographical Resolution:** Roadway/Point file

**Modal Coverage:** Auto/Non-auto

**Range of Data:** 1994-present

**Data Format:** CSV, Shape files, Oracle SQL Databases

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Legal Reference:** Florida Senate’s statute 316.066

**Contact:**

[FDOT TRANSTAT](#)  
850-414-4848

## CURRENT USERS/APPLICATIONS

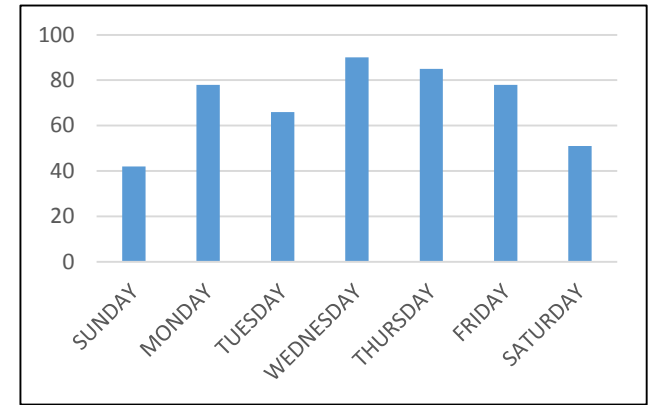
- » Florida Department of Transportation
  - » Safety Office
  - » Office of Policy Planning
  - » Design Office
- » University
  - » Signal Four Analytics
  - » Safety Analyst tool
  - » Florida’s Integrated Report Exchange tool

## POTENTIAL APPLICATIONS

- » Identification of risky locations
- » Engineering countermeasures
- » Pavement friction performance analysis
- » Sustainability studies
- » Analysis for complete street projects
- » Infrastructure needs assessment
- » Evaluation of safety reduction technologies
- » Developing freight and bicycle routes
- » Policy actions
- » Safety performance measures

## MAJOR ATTRIBUTES IN CARS

For each crash, there are more than 300 variables used to describe the site and time of the crash, the geometric conditions, the traffic control, and drivers/pedestrian’s characteristics. The variables can be classified into three major categories, including person, vehicle and crash. For each variable, several code values were assigned to represent different categories of the variable. For example, for the variable “Light”, the code value is used to denote “daylight”, 02 denotes “dusk”, 03 denotes dawn, 04 denotes dark with street light, 05 denotes dark with no street light and 8 denotes unknown.



Fatal Crashes involving Commercial Vehicles (2011-2013)



Fatal Crashes Involving Commercial Vehicles (2011-2013)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	◐	●

## SUMMARY

An electronic freight theft management system was developed for Florida by the Center for Advanced Transportation Systems Simulation in 2005. The system is a comprehensive online application for the reporting, documentation, inventory, and distribution of information on intermodal freight theft and related occurrences. The system provides law enforcement with the immediate distribution of freight related theft information. The online archived database can assist law enforcement in prioritizing theft investigations and conduct recovery operations by the importance of the stolen cargo. The online application was updated in 2008.

## MORE ABOUT THE DATA:

**Developer:** [FDOT Traffic Engineering and Operations Office](#)

**Update Frequency:** Unknown

**Latest Year Available:** 2016

**Temporal Coverage:** Date/Time

**Geographical Coverage:** Statewide

**Geographical Resolution:** Roadways

**Modal Coverage:** Truck

**Data Format:** Tabular and Spatial

**Licensing Agreement:** Required

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 49 USC 31106, SAFETEA-LU section 4126

**Contact:**

[FDOT TRANSTAT](#)  
(850) 414-4848

## CURRENT APPLICATIONS

- » Department of Highway Safety and Motor Vehicles
- » Traffic Engineering and Operations Office
  - » Commercial Vehicle Operations Program
  - » Traffic Incident Management
  - » Commercial Vehicle Information Systems and Networks

## POTENTIAL APPLICATIONS

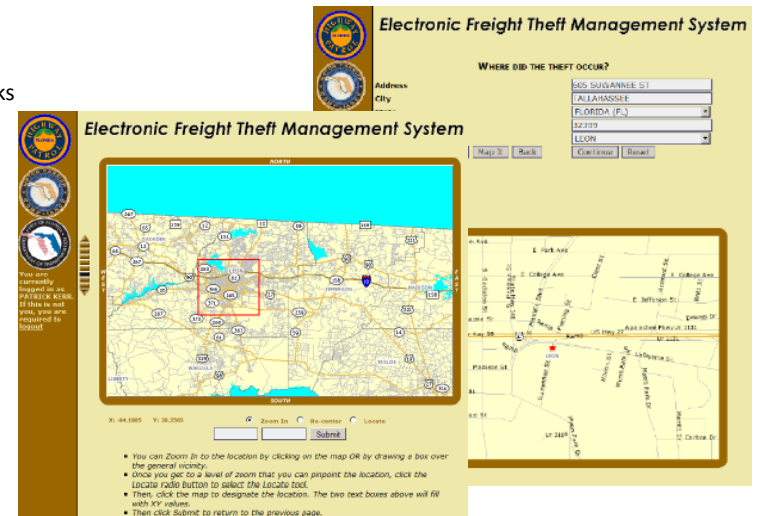
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Performance Measures
- » Regulation and Enforcement
- » Freight Transportation and Land Use Planning

### Theft/Recovery Activities, Lee County, 2008



Source: The Enhancement and Upgrade of The EFTMS, University of Central Florida, 2008

## Online Tool for Geocoding the Theft/Recovery Location Using the Address or Map



Source: The Enhancement and Upgrade of The EFTMS, University of Central Florida, 2008

## Freight Theft GIS Tool



Source: The Enhancement and Upgrade of The EFTMS, University of Central Florida, 2008

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	◐	●	◐	◐	◐	●



**SUMMARY**

Florida Department of Transportation (FDOT) operates 53 rest areas at 35 sites along Florida's interstate highways to provide safe, secure and comfortable rest stops for Florida travelers. Rest areas are generally located about 45 minutes traveling time apart. These rest areas provide restrooms, picnic areas (in most locations), pet walk areas, telephones and vending machines to aid travelers seeking a break from a long drive.

**MORE ABOUT THE DATA:**

**Developer:** [FDOT – Maintenance Data](#)

**Update Frequency:** Annually

**Temporal Coverage:** 2014

**Geographical Coverage:** Statewide

**Geographical Resolution:** Point

**Modal Coverage:** Trucks/Cars

**Data Format:** GIS, Tabular

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Legal reference:** 334.044(2), 337.405, 337.406

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

**MAJOR ATTRIBUTES**

- » Florida Department of Transportation
- » Traffic Operations
- » Safety Office
- » TRANSTAT
- » Office of Maintenance
- » Office of Policy and Planning

**POTENTIAL APPLICATIONS**

- » Emergency Response
- » Regulatory Management and Compliance
- » Smart Growth Planning
- » Environmental Planning
- » Commercial Vehicle Safety Evaluation
- » Parking Studies

**CURRENT USERS**

Number of facilities:

- » **Rest Areas:** 53 Units (2 are closed for remodeling)
- » **Service Plazas:** 8 Units
- » **Truck Comfort Stations (WIM):** 19 units
- » **Welcome Centers:** 4 units

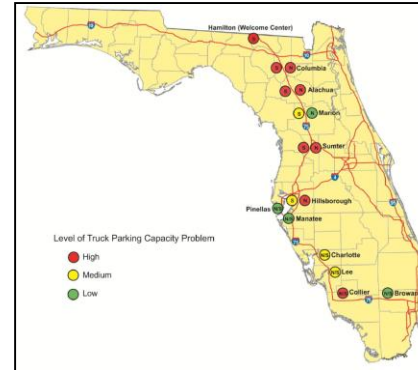
Total number of parking spaces in rest areas, WIMs and welcome centers is 2529 (from Jason's law study)

Additional remarks:

- » Welcome Centers are operated by Visit Florida, Inc. (FLAUSA)
- » The facilities in our Welcome Centers and Interstate Rest Areas are open and maintained 24 hours a day, 7 days a week

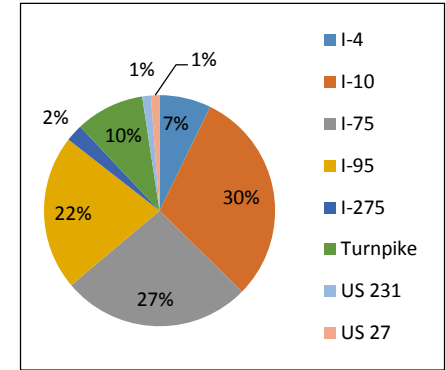
Major Attributes:

- » Presence of family restrooms
- » Presence of nighttime security
- » Interstate information



I-75 truck capacity parking problem

Source: [Commercial Motor Vehicle Parking Trends at Rest Areas and Weight Stations](#)



Percent of facilities on different corridors



Rest Areas and Service Area Facility

Source: [Office of Maintenance](#)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	○	◐	◑	●	●	●	◐	●

**SUMMARY**

FDOT’s Transportation Statistics Office conducts traffic data collection to obtain, compile, and maintain traffic data including volumes, types of vehicles, and the weight of trucks using the state highway network. The office also conducts an Annual Traffic Data Collection program to obtain traffic surveys, process raw counts, and maintain current and historic databases for the State Road System. This program is supplemented with additional counts that are performed as needed for special purposes. FDOT operates over 300 permanent Telemetered Traffic Monitoring Sites (TTMS) and over 12,000 Portable Traffic Monitoring Sites (PTMS). The data collected through these stations are provided via different mediums including, Traffic Data Shapefiles, Florida Transportation Information DVDs, Real-time Traffic Information, and Florida Traffic Online.

**MORE ABOUT THE DATA:**

**Developer:** [FDOT TRANSTAT Traffic Data Section & GIS Section](#)

**Update Frequency:** Annually

**Latest Year Available:** 2015

**Temporal Coverage:** Annual

**Geographical Coverage:** Statewide

**Geographical Resolution:** Roadways

**Modal Coverage:** Truck

**Data Format:** Tabular and Spatial

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 23 CFR 420.105 (b)

**Contact:** [FDOT TRANSTAT](#)  
(850) 414-4848

**CURRENT APPLICATIONS**

- » Transportation Statistics Office (TRANSTAT)
  - » FDOT Truck Volume Maps, 2015
  - » Traffic Demand Forecasting
  - » Florida Traffic Online
  - » Florida Traffic Information Mobile App (App Store)
  - » Freight Performance Metrics Development, 2015
  - » Emergency Management Planning and Operations
  - » Florida Commercial Vehicle Information Systems and Networks
  - » Florida Port of Entry Feasibility Study
  - » Traffic Studies

**POTENTIAL APPLICATIONS**

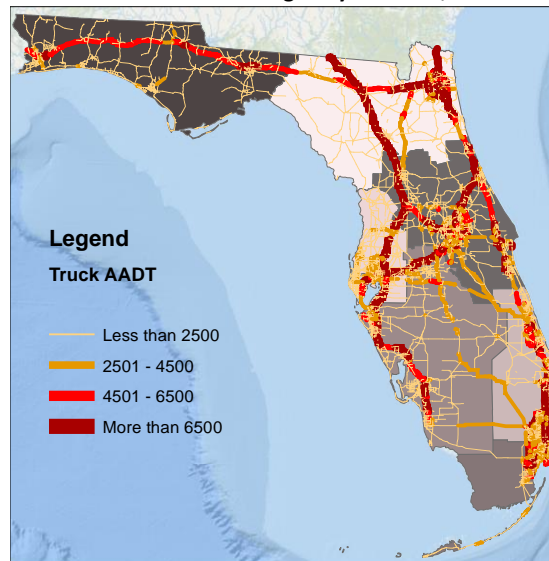
- » Congestion Management
- » Traffic Operations/Services
- » Freight Performance Measures
- » Safety Planning and Analysis
- » Environmental Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

Florida Traffic Online Interface, 2014



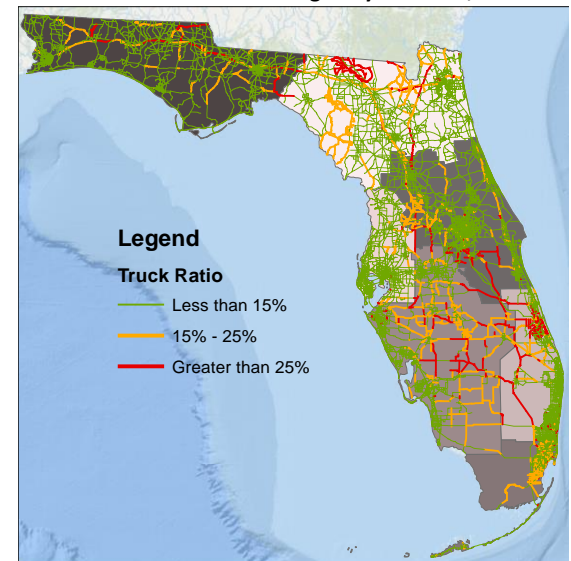
Source: <http://www2.dot.state.fl.us/FloridaTrafficOnline/viewer.html>

Truck AADT on Florida Highway Network, 2014



Source: RS&H, Inc.

Truck Factor on Florida Highway Network, 2014



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	◐	◐	●	●	●

**SUMMARY**

The Motor Carrier Size and Weight program is designed to assist FDOT in providing a safe transportation system by enforcement of commercial vehicle size and weight regulations. The program operates 20 fixed weigh station and several mobile enforcement location with portable scales throughout the state. More than 20 million vehicles are weighted annually at these stations. The primary objective of the program is to reduce the damage from overweight vehicles on Florida’s highway system and bridges. The program provides detailed information on weight stations and data collected at each station.

**MORE ABOUT THE DATA:**

- Developer:** [FDOT Office of Maintenance](#)
- Update Frequency:** Weekly
- Latest Year Available:** 2016
- Temporal Coverage:** 1974-present
- Geographical Coverage:** Statewide
- Geographical Resolution:** Roadways
- Modal Coverage:** Truck
- Data Format:** Tabular, Spatial
- Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free  
**Legal Reference:** 49 USC, Chapter 316 of the Florida Statutes

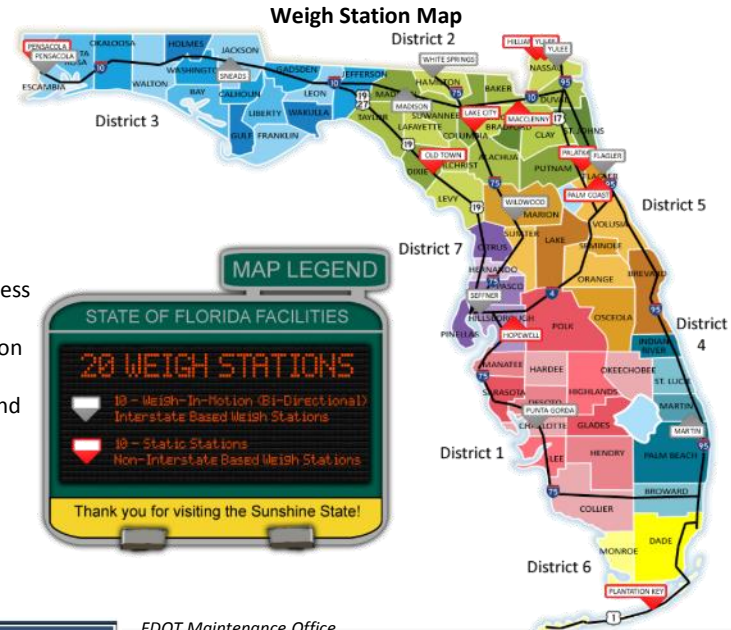
**Contact:**  
[FDOT TRANSTAT](#)  
 (850) 414-4848

**CURRENT APPLICATIONS**

- » Traffic Engineering and Operations Office
  - » Commercial Vehicle Information Systems and Networks
  - » Florida Port of Entry Feasibility Study, 2014
- » Research Center
  - » Commercial Motor Vehicle Parking Trends At Rest Areas And Weigh Stations, 2012

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Mobility Planning
- » Emergency Preparedness and Security Planning
- » Hazardous Material Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Regulation and Enforcement



**Seffner I-4 Weigh Station (WIM) with Driver Facility**



Seffner I-4 Weigh Station (WIM) with Truck Comfort Station			
Mile Marker	13 - Hillsborough Co. - D7	Supervisor	Staff Directory
Parking Spaces EB	15 Truck, 19 Standard	Parking Spaces WB	15 Truck, 19 Standard
Lat./Long. EB	28.015546, -82.265185	Lat./Long. WB	28.018564, -82.272593
Phone Number EB	(813) 657-7780	Phone Number WB	(813) 651-2143
Address (EB) 1251 Interstate 4, Seffner, Fl. 33584			
Address (WB) 1250 Interstate 4, Seffner, Fl. 33584			

FDOT Maintenance Office,  
<http://www.dot.state.fl.us/statemaintenanceoffice/motorcarrier.shtm>

FDOT Maintenance Office,  
<http://www.dot.state.fl.us/statemaintenanceoffice/motorcarrier.shtm>

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	●	●



**SUMMARY**

The Federal Aviation Administration (FAA) conducts research to ensure efficient and safe commercial and general aviation. FAA also compiles information on various datasets including Accident & Incident Reports, Aviation Data & Statistics, Commercial Space Data, Forecast Data, Passenger & Cargo Data, Safety, and Funding & Grant Data. The Passenger & Cargo Data provides information on all cargo airports including location, service level, hub size, and total annual landed weight. FAA provides archived historical data from 2000 to the present and All-Cargo reporting which includes reports on aircraft operations dedicated to the transport of cargo.

**MORE ABOUT THE DATA:**

**Developer:** [Federal Aviation Administration](#)

**Update Frequency:** Annually  
**Latest Year Available:** 2014

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** Airports

**Modal Coverage:** Air

**Data Format:** MS Excel, PDF

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly Available

**Legal Reference:** 14 USC

**Contact:**

[FDOT TRANSTAT](#)

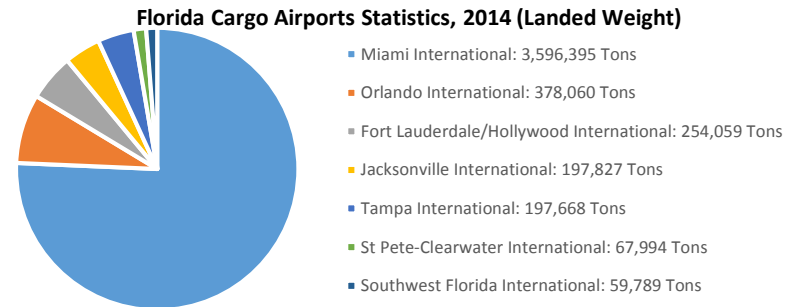
(850) 414-4848

**CURRENT APPLICATIONS**

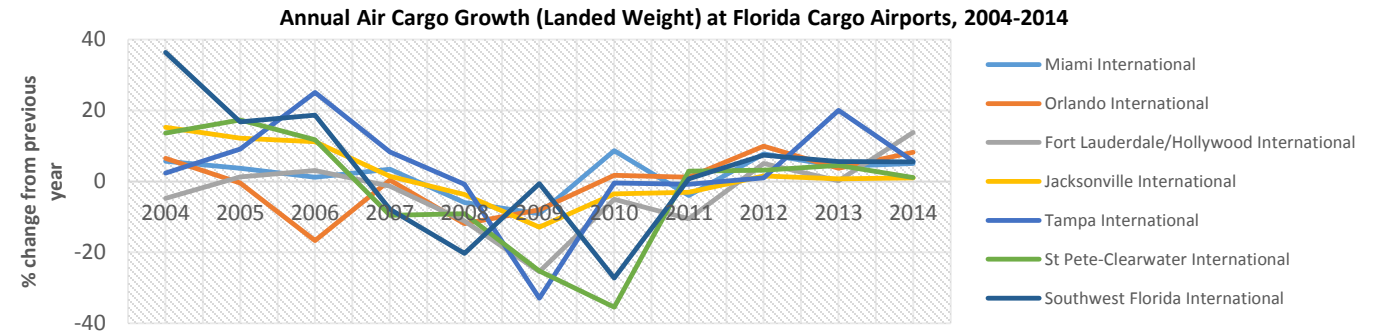
- » Aviation and Spaceports Office: Projects & Publications

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Regulation and Enforcement
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning



Source: RS&H, Inc.



Source: RS&H, Inc.

**Top 10 US Cargo Airports by Landed Weight, 2014**

Rank	ST	Airport Name	City	Service Level	Hub	2014 Landed Weight (lbs.)
1	TN	Memphis International	Memphis	P	M	22,774,592,279
2	AK	Ted Stevens Anchorage International	Anchorage	P	M	15,867,941,046
3	KY	Louisville International-Standiford Field	Louisville	P	S	11,568,369,154
4	IL	Chicago O'Hare International	Chicago	P	L	7,541,411,779
5	FL	Miami International	Miami	P	L	7,192,790,882
6	IN	Indianapolis International	Indianapolis	P	M	5,355,984,715
7	CA	Los Angeles International	Los Angeles	P	L	4,297,359,912
8	KY	Cincinnati/Northern Kentucky International	Greater Cincinnati International Airport	P	M	3,644,404,568
9	NY	John F Kennedy International	New York	P	L	3,170,996,874
10	TX	Dallas/Fort Worth International	Fort Worth	P	L	3,140,733,270

Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	●	●	●	●	●	●



**SUMMARY**

Flightware offers flight tracking data for both private and commercial air traffic, airport status for air travelers, as well as other Automatic Dependent Surveillance – Broadcast (ADS-B) related data and statistics. It combines over 100 real-time worldwide data and integrates them with the web-based interface to provide its flight tracking application. The data include ADS-B Flight Position Data Feed, Fixed Base Operator (FBO) Database, FBO Fuel Prices Data, Airport Database, Air Operations/Airline Database, and METAR (weather information) Reports.

**MORE ABOUT THE DATA:**

**Developer:** [Flightware](#)

**Update Frequency:** Real time data

**Latest Year Available:** 2016

**Temporal Coverage:** Real time data

**Geographical Coverage:** Worldwide

**Geographical Resolution:** Airports, Aircrafts

**Modal Coverage:** Air

**Data Format:** CSV, XML, JSON, TSV

**Licensing Agreement:** Required

**Acquisition Cost:** Variable

**Contact:**

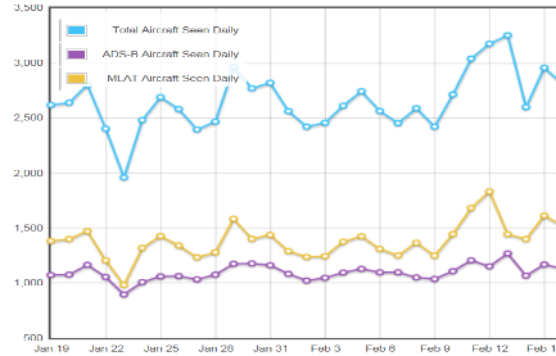
[FDOT TRANSTAT](#)

(850) 414-4848

**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Safety Planning and Analysis
- » Regulation and Enforcement
- » Terminal and Border Access Planning
- » Multimodal Freight Modeling
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

**Distribution of Daily Aircraft Seen in Orlando Intl. Airport, 2016**



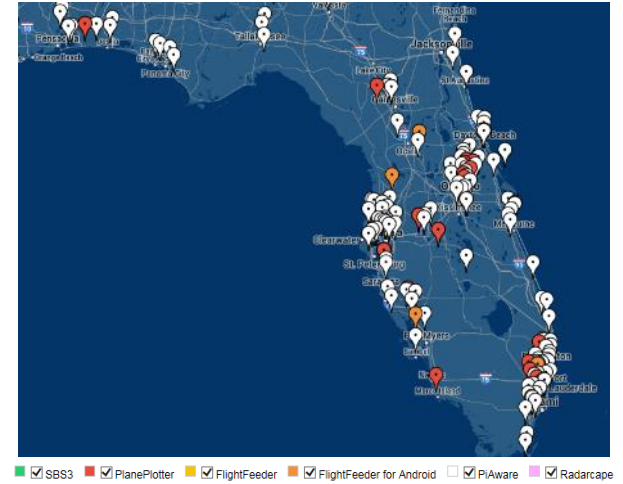
Source: <http://flightware.com/adsb/stats/>

**Misery Map (Delayed Flights in Major Airports), April 17<sup>th</sup> 2016**



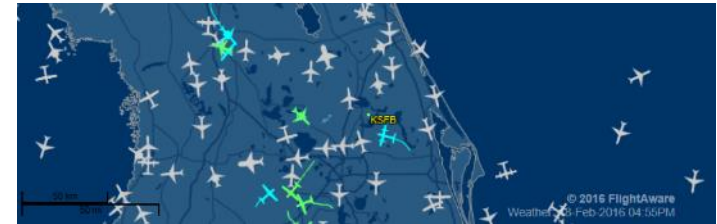
Source: <http://flightware.com/miserymap/all/1460995200>

**Active ADS-B sites in Florida, 2016**



Source: <http://flightware.com/adsb/coverage>

**Snapshot of Arrival and Departure Flights in Orlando-Sanford Intl. Airport, 2016**



ARRIVALS (HSB)					DEPARTURES (HSB)				
Ident	Type	From	Depart	Arrive	Ident	Type	To	Depart	Arrive
CONN438	SR20	Orlando Sanford Int'l (OSF)	10:35w est	11:34w est	CONN437	SR20	Labelled Leader Flight (SAL)	11:35w est	12:19w est
CONN450		Orlando Sanford Int'l (OSF)	10:16w est	11:10w est	NCR321	ERJ2	Windsor (CGR)	11:25w est	01:41w est
CONN452		Orlando Sanford Int'l (OSF)	11:15w est	11:15w est	CONN453		Orlando Sanford Int'l (OSF)	11:15w est	11:15w est
CONN451		Orlando Sanford Int'l (OSF)	09:25w est	10:58w est	CONN452		Orlando Sanford Int'l (OSF)	11:15w est	11:45w est
ME4602	ULS	Dorham Rgnl (DOR)	02:27w est	10:30w est	CONN427	SR20	Orlando Sanford Int'l (OSF)	11:02w est	12:16w est
CONN437		Orlando Sanford Int'l (OSF)	08:41w est	10:17w est	CONN441	SR20	Orlando Sanford Int'l (OSF)	10:57w est	12:00w est
CONN450	BE36	Harry TR Mwra (ACT)	08:41w est	10:00w est	CONN444	SR20	Ocala Int'l (OCF)	10:49w est	11:24w est
M64145	G415	Tolson Int'l (MIL)	07:54w est	09:30w est	CONN444		Ocala Int'l (OCF)	10:49w est	11:03w est
CONN444		Orlando Sanford Int'l (OSF)	09:07w est	09:02w est	CONN436	SR20	Orlando Sanford Int'l (OSF)	10:30w est	11:24w est
M4311	HE35	Irwin Beach Int'l (IRB)	08:12w est	08:10w est	CONN436		Orlando Sanford Int'l (OSF)	10:30w est	11:10w est
CONN432	SR20	Orlando Sanford Int'l (OSF)	08:10w est	08:41w est	CONN435	H36	Wilton Int'l (WIL)	08:50w est	10:00w est

Source: <http://flightware.com/adsb/stats/>

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	◐	●	◐	◐



**SUMMARY**

Florida Department of Health tracks GIS public establishment locations and health business data. The website hosts two web base visualization tools incorporating Florida DOH data and demographic data provided by Florida Legislature’s Office of Economic and Demographic Research (EDR).

**MORE ABOUT THE DATA:**

**Developer:** [Florida Department of Health](#)

**Update Frequency:** Annually

**Temporal Coverage:** Annual

**Geographical Coverage:** State

**Geographical Resolution:** Variable

**Modal Coverage:** N/A

**Data Range:** Unknown

**Data Format:** Shape file, pdf copies, html

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Contact:**

[FDOT TRANSTAT](#)

(850)-414-4848

**CURRENT APPLICATIONS**

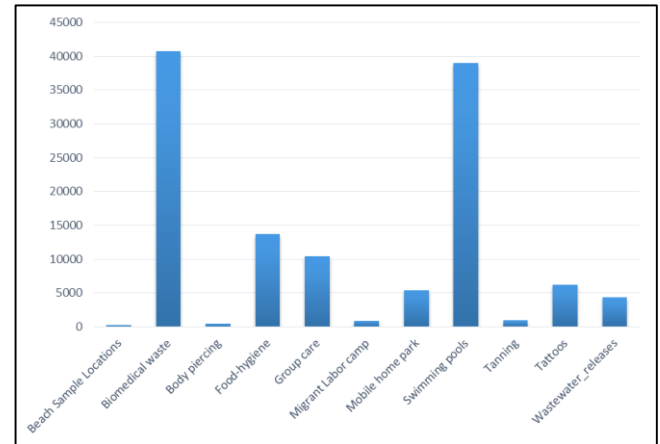
- » Florida Department of Health
  - » Florida MAPP is a community-wide strategic planning process for improving community health and local public health systems.
  - » Vital Statistics Annual and Provisional Reports
  - » Florida Health Impact Report

**POTENTIAL APPLICATIONS**

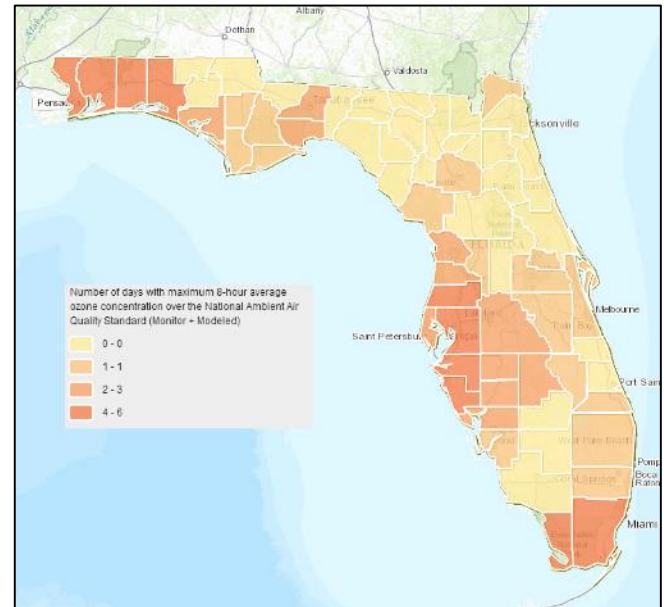
- » Freight Planning and Applications
- » Air Quality Standards
- » Emergency Evacuation models
- » Community Health Impacts
- » Temporal trends

**DIFFERENT RELEVANT DATASETS**

- » Environmental GIS Health provides establishment data. It has attribute information which includes county, location, company details, program types and owner details
- » Distributors and Wholesaler list by product type through Florida Department of Health, WIC program
- » Number of Health providers, facilities for every county for a year (Available years – 2003 to 2014)
- » Florida Chart web based visualization tool is a community health assessment resource tool set which provides county level socio-economic and demographic characteristics.
- » Florida Environmental Public Health tracking is a visualization tool which provides county level information about air quality, built environment, housing and population



Number of Establishments (Specific types) in State of Florida



Visualization map for Florida Environmental Public Health Tracking tool: Air Quality Data

**SUMMARY**

The DOR dataset contains parcel boundaries and associated tax information from the Florida Department of Revenue's tax database. The main purpose of parcel maps and data is tax assessment. The Property Appraiser's office assigns a market value to each property once per year based on recent sales of similar properties. Property taxes for each parcel are then levied based on market value, exemptions, and millage rates defined by local governments. Total number of parcels assessed in Florida during 2015 are 11,335,100

**MORE ABOUT THE DATA:**

- Developer:** [Florida Department of Revenue](#)
- Update Frequency:** Bi-Annually (twice in year; July and October)
- Temporal Coverage:** Annual
- Range of Data:** 2011-present (Tax data collected since 1976 but not available in GIS/parcel format)
- Geographical Coverage:** State
- Geographical Resolution:** Parcel level
- Data Format:** Tabular CSV, GIS Shapefiles
- Licensing Agreement:** N/A
- Acquisition Cost:** Free
- Contact:**  
[FDOT TRANSTAT](#)  
(850)-414-4848

**CURRENT APPLICATIONS**

- » FDOT Office of Systems Planning
  - » Florida statewide model
  - » Warehouses/Distribution Centers Inventory List
- » FDOT – District 7
  - » Tampa Bay Regional Goods Movement Study Website: Comprehensive Freight Improvement Database (CFID) Map Viewer

**POTENTIAL APPLICATIONS**

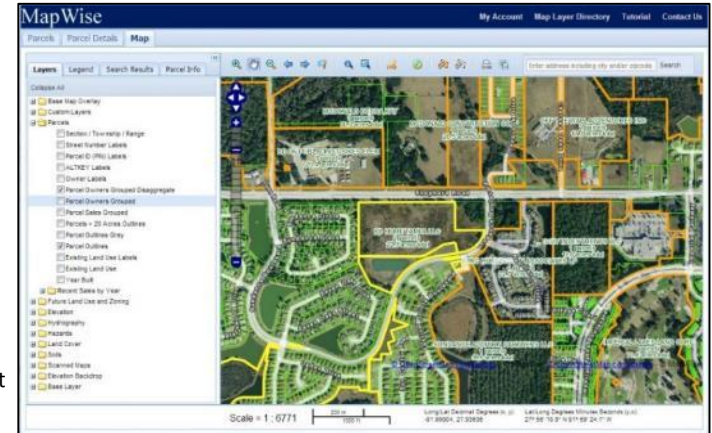
- » Economic Development Planning
- » Land use Travel Demand Models
- » Developing Freight Facilities list
- » Economic Impact Studies
- » Analyze real estate sales
- » Find vacant land for development
- » Perform due diligence on properties
- » Generate mailing lists that target specific geographic areas
- » Freight Transportation & Land Use Planning

**MAJOR ATTRIBUTES**

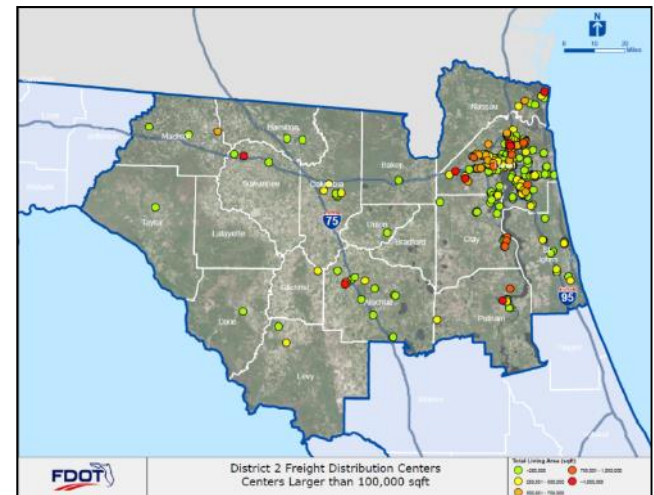
- » Land use type of property (100 categories)
- » Property Market Value
- » Land Value
- » Square footage of site
- » Construction Class
- » Effective year built
- » First year of primary structure built
- » Total Living or usable area
- » Number of buildings
- » Official record book number of sale
- » Sale price
- » Owner details
- » Fiduciary details



Example application: Identification of residential parcels with DOR data, aerial imagery and county zoning analysis.



MapWise: Online GIS Application for Florida's parcel data



District 2 Freight Distribution Centers obtained from 2015 DOR's parcel data

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	●	○	●	●	●	●	●



## SUMMARY

Florida's FreightSIM is a travel demand model component integrated into the Florida Statewide Model (FLSWM). It simulates the transport of freight between supplier and buyer business in United States, focusing on movements that involve Florida. FreightSIM produces a list of commodity shipments by mode and converts those to daily vehicle trip tables.

## MORE ABOUT THE DATA

**Developer:** [Traffic Modeling Section](#) – Transportation Statistics Office

**Update Frequency:** 5 years (Approx.)

**Temporal Coverage:**

- » Yearly – Shipments
- » Daily – Truck traffic

**Geographical Coverage:** World (mainly Florida)

**Geographical Resolution:**

- » Traffic Analysis Zone (TAZ) for Florida, Alabama and Georgia
- » FAF zones for rest of the country and world

**Modal Coverage:** Water, Air, Trucks, Rail

**Data Range:** 2010 (Forecast year:2040)

**Data Format:** CSV, Access database, Cube outputs and GIS shapefiles

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Contact:**

[FDOT TRANSTAT](#)

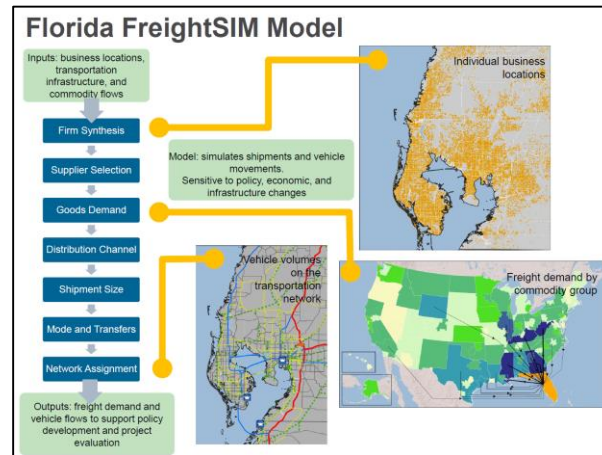
(850)-414-4848

## POTENTIAL APPLICATIONS

- » Infrastructure investment decisions in Strategic Intermodal System (SIS)
- » Congestion Management
- » Policy effectiveness on mobility and economy
- » Performance Metrics and Outreach
- » Private Sector Decisions
- » Regional Projects
- » Environmental emissions applications

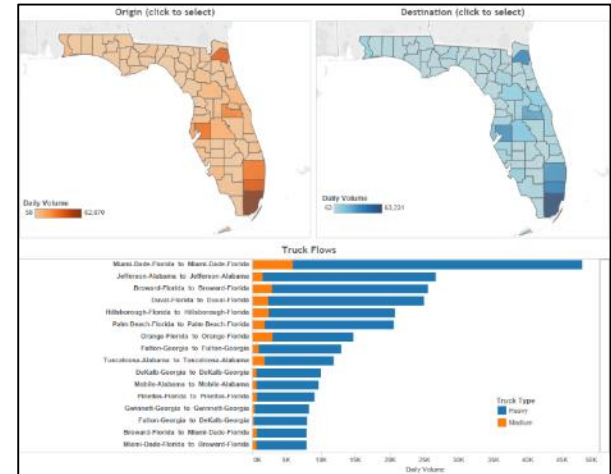
## DESCRIPTION OF DATA

- » FreightSIM produces numerous outputs (datasets) describing freight performance:
  - » Domestic and international (import/export) shipment movements by mode (road, rail, water, air) with truck based shipments converted to truck trips.
  - » Commodity and truck (heavy and medium trucks) zone to zone trip tables
  - » Loaded road transportation networks with truck traffic on different network links.

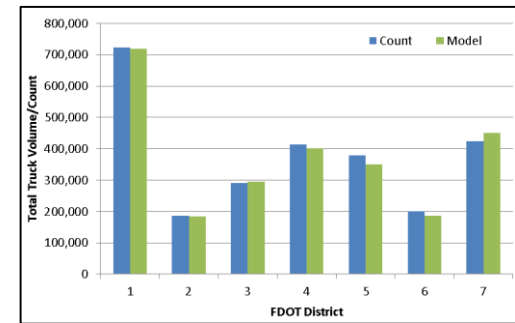


Florida FreightSIM Model Framework

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	●	●	●	◐	◐	◐	●	●



Origin-Destination Truck Trip Table (2010)



FreightSIM (2010) Truck Volume VS. Traffic count by FDOT District



**SUMMARY**

The Strategic Intermodal System (SIS) is Florida's network of transportation facilities important to the state's economy. The SIS facilities includes commercial service airports, spaceports, seaports, intermodal freight rail terminals, passenger rail terminals, state highway system, active rail lines and intracoastal and inland waterways. The [Systems Planning Office](#) implements SIS through the development of the SIS Needs, Cost Feasible, and Ten Year Project Plans and Work Program. It also provides policies, procedures, tools, training and technical assistance. The [TRANSTAT](#) provides freight and modal data and GIS shapefiles of SIS network to be used in the SIS planning process. The office also provides data that supports interactive online mapping tools such as the SIS Project Management tool and eSIS.

**MORE ABOUT THE DATA:**

**Developer:** [FDOT TRANSTAT & Systems Planning Office](#)

**Update Frequency:** Variable

**Latest Year Available:** 2015

**Temporal Coverage:** Annual

**Geographical Coverage:** Statewide

**Geographical Resolution:** SIS facilities

**Modal Coverage:** Multimodal

**Data Format:** Shapefile (ESRI), SIS Maps

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Contact:**

[FDOT Systems Planning Office](#)

(850) 414-4900

[FDOT TRANSTAT](#)

(850) 414-4848

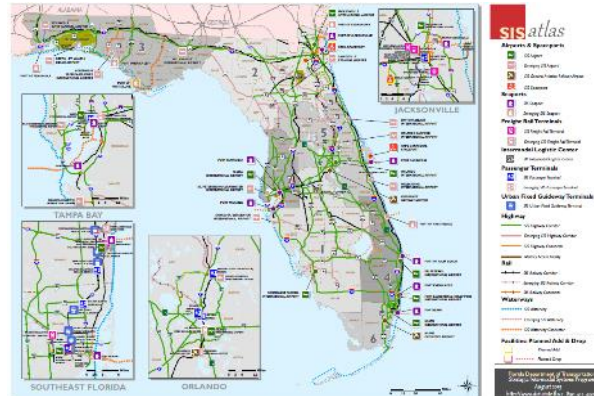
**CURRENT APPLICATIONS**

- » Office of Policy Planning
  - » Strategic Intermodal System Policy Plan, 2016
- » Transportation Statistics Office
  - » Ready-to-use SIS Maps
- » Other SIS Projects
  - » Northwest Florida Beaches International Airport
  - » JAXPORT Intermodal Container Transfer Facility
  - » SunRail
  - » I-4/Selmon Expressway connector
  - » I-95 Corridor Mobility Planning Project
- » Tools and Resources ([SIS Plan](#))
  - » SIS PM Tool
  - » eSIS I-Map
  - » [SIS Atlas](#)
  - » [SIS at 10 – Performance Highlights](#)
  - » [SIS Funding Eligibility Guide](#)
  - » [SIS Adopted 5-year Plan](#)

**POTENTIAL APPLICATIONS**

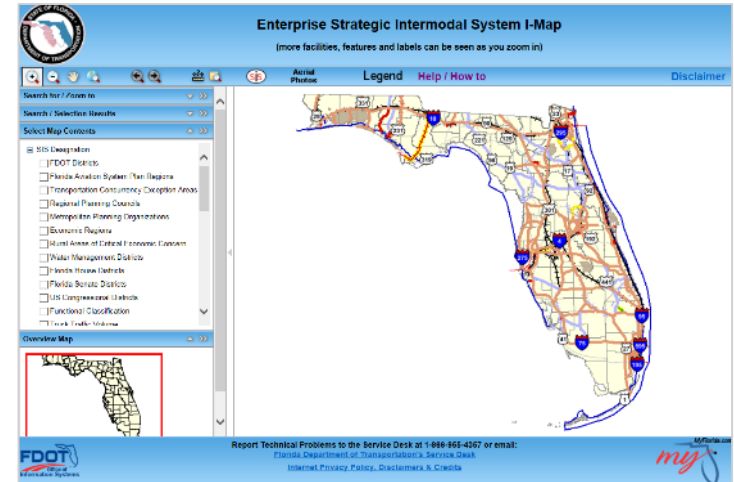
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Environmental Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Emergency Preparedness and Security Planning

SIS Atlas



Source: FDOT, Strategic Intermodal System, 2015

**eSIS (Enterprise Strategic Intermodal System) I-Map Interface\***



NOTE: \* Site is internal to FDOT business, please contact TRANSTAT for more information.

**Transportation Activity Level on SIS**



Source: FDOT, Strategic Intermodal System Policy Plan, FTP-SIS, 2016

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	●	○	●	●	●	●



**SUMMARY**

FAF data include annual commodity flows (quantity, dollar volume, and ton-mile) between FAF origin and destination zones by commodity type for truck, rail, airline, pipeline, ship and multi-modal modes. FAF integrates data from a variety of sources and uses a complex modeling approach to create a comprehensive picture of freight movements among states and major metropolitan areas. The Commodity Flow Survey is one of the major data sources used in FAF. The latest version, FAF4, was developed for the base year of 2012 and includes forecasts of commodity flows and network assignment results.

**MORE ABOUT THE DATA:**

**Developer:** [Federal Highway Administration](#)

**Update Frequency:** Every 5 years

**Latest Year Available:** 2012

**Temporal Coverage:** Annual

**Geographical Coverage:** National & International

**Geographical Resolution:** 123 domestic FAF zones - 8 international FAF zones

**Modal Coverage:** Multimodal (incl. pipeline)

**Data Format:** Microsoft Access Database ESRI/TransCAD Network Data

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 23 USC

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

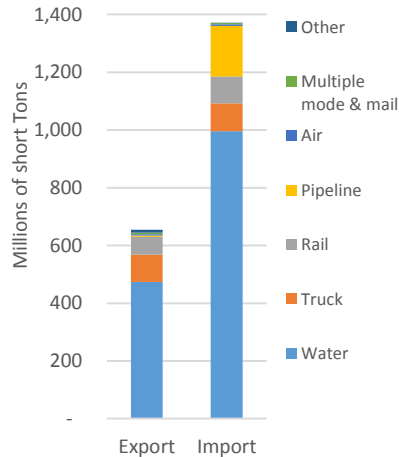
**CURRENT APPLICATIONS**

- » Transportation Statistics Office
  - » Florida Statewide Freight Model (FreightSIM), 2015
  - » I-75 Sketch Interstate Plan, Freight Mobility, 2010
  - » Multimodal Mobility Performance Measures Source Book, 2015
- » Freight, Passenger, and Logistics Office
  - » Freight Trade and Mobility Plan, 2013
- » Office of Policy Planning
  - » Impact Of Transportation: Transportation and the Economy, 2015
  - » Travel Demand: Trade and Freight Transportation, 2012
  - » Florida Transportation Trends and Conditions

**POTENTIAL APPLICATIONS**

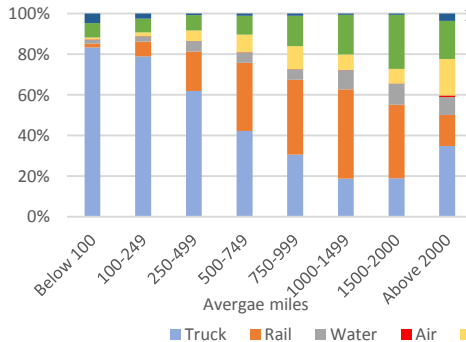
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Modal Shift Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Intermodal Trade Corridor Planning

**International Trade 2011**



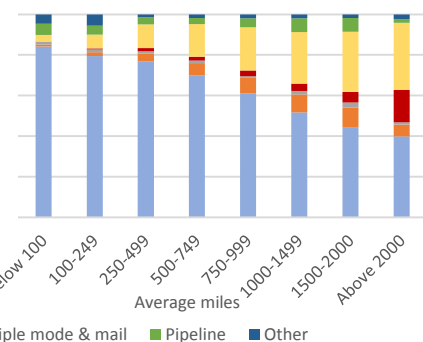
Source: RS&H, Inc.

**Modal Split of Freight Tonnage by Distance**



Source: RS&H, Inc.

**Modal Split of Freight Value by Distance**

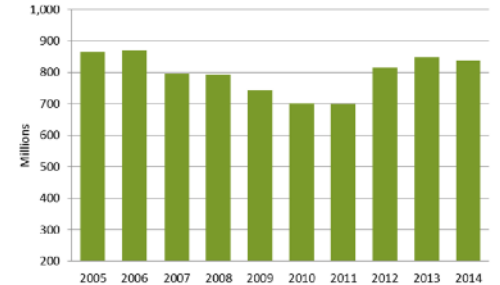


**Average Daily Long-Haul Truck Traffic on the NHS 2011**



Source: FHWA, Freight Facts and Figures 2013

**Combination Truck Tonnage on Florida Highway System**



Source: FDOT Multimodal Mobility Performance Measures Source Book, 2015

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	●	●	●	●	●	●



## SUMMARY

The HPMS is a national level highway information system that includes data on the extent, condition, performance, use and operating characteristics of the nation's highways. The HPMS contains system information on all public roads, and information on characteristics of arterial and collector functional systems. Limited information on travel and paved miles for the lowest functional systems is also provided in the data. The major purpose of the HPMS is to support a data driven decision process within FHWA, the DOT, and the U.S. Congress. The data are used extensively in the analysis of highway system condition, performance, and investment needs.

## MORE ABOUT THE DATA:

**Developer:** [Office of Highway Policy Information \(FHWA\)](#)

**Update Frequency:** Annually

**Latest Year Available:** 2013

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** State

**Modal Coverage:** Road

**Data Format:** Tabular, Maps

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 49 CFR. 111(c)(2).

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

## CURRENT APPLICATIONS

- » Transportation Statistics Office
  - » Highway Performance Monitoring System Video Training
  - » Development of Road Characteristics Inventory (RCI)

## POTENTIAL APPLICATIONS

- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Modal Shift Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Intermodal Trade Corridor Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

### Florida Vehicle Miles Traveled by Functional System Class, 2013

Vehicle Miles Traveled by Functional System (Millions- VM-2)	Distribution	% of National
Interstate	35,398	18.4%
Other Freeways/Expressways	13,651	7.1%
Other Principal Arterial	46,378	24.1%
Minor Arterial	30,734	15.9%
Major Collector	22,084	11.5%
Minor Collector	1,572	0.8%
Local	42,885	22.3%
<b>Total</b>	<b>192,702</b>	<b>100.0%</b>

<http://www.fhwa.dot.gov/policyinformation/statistics/abstracts/2013/state.cfm?loc=fl>

### Florida Functional System Lane Length, 2013

Functional System Lane Length (HM-60)	Distribution	% of National
Interstate	7,964	2.9%
Other Freeways/Expressways	3,537	1.3%
Other Principal Arterials	23,741	8.8%
Minor Arterial	19,016	7.0%
Major Collector	25,292	9.3%
Minor Collector	6,591	2.4%
Local	184,883	68.2%
<b>Total</b>	<b>271,024</b>	<b>100.0%</b>

<http://www.fhwa.dot.gov/policyinformation/statistics/abstracts/2013/state.cfm?loc=fl>

## Florida Primary Highway Freight System, 2015



[http://ops.fhwa.dot.gov/freight/infrastructure/ismt/state\\_maps/states/florida.htm](http://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/florida.htm)

### Florida Vehicle Registration Distribution, 2013

Vehicle Registrations - (MV-1)	Distribution	% of National
Autos	7,425,492	49.07%
Buses	58,744	0.39%
Trucks	7,102,047	46.93%
<b>Total</b>	<b>14,586,283</b>	
Motorcycles	545,452	3.60%
<b>Grand Total</b>	<b>15,131,735</b>	<b>100.00%</b>

<http://www.fhwa.dot.gov/policyinformation/statistics/abstracts/2013/state.cfm?loc=fl>

## SUMMARY

Jason's Law directed the U.S. Department of Transportation (DOT) to conduct a survey and a comparative assessment to:

1. Evaluate the capability of each State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
2. Assess the volume of commercial motor vehicle traffic in each State; and,
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each State.

## MORE ABOUT THE DATA:

**Developer:** USDOT – Federal Highway Administration (FHWA)

**Update Frequency:** N/A

**Temporal Coverage:** 2015

**Geographical Coverage:** Nationwide

**Geographical Resolution:** Point

**Modal Coverage:** Truck

**Data Format:** GIS, Tabular

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Legal reference:** MAP-21; P.L. 112-141

**Contact:**

[FDOT TRANSTAT](http://FDOT.TRANSTAT)

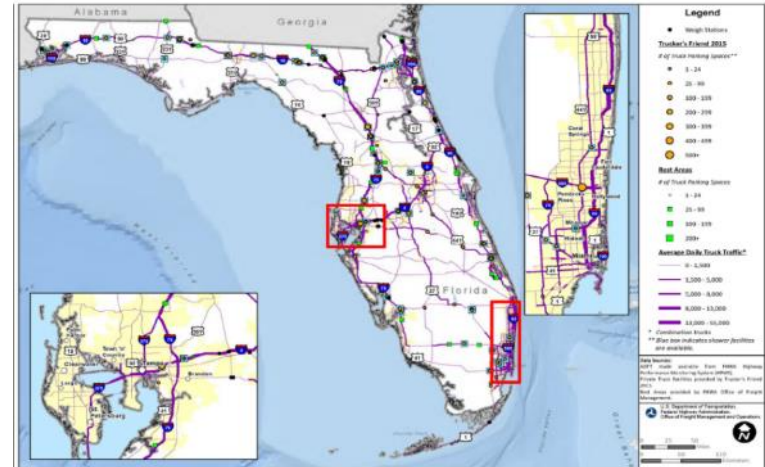
(850)-414-4848

## POTENTIAL APPLICATIONS

- » Emergency Response
- » Regulatory Management and Compliance
- » Smart Growth Planning
- » Environmental Planning
- » Critical Infrastructure Protection Assessment

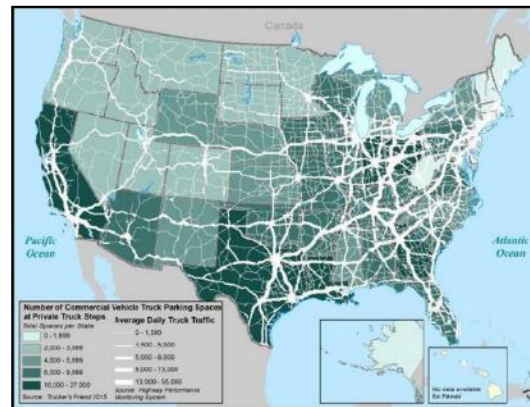
## MAJOR ATTRIBUTES

- » Private parking facilities were acquired from 2015 Trucker's Friends directory.
- » Public parking facilities were obtained from state DOTs and NATSO provided Service plazas information.



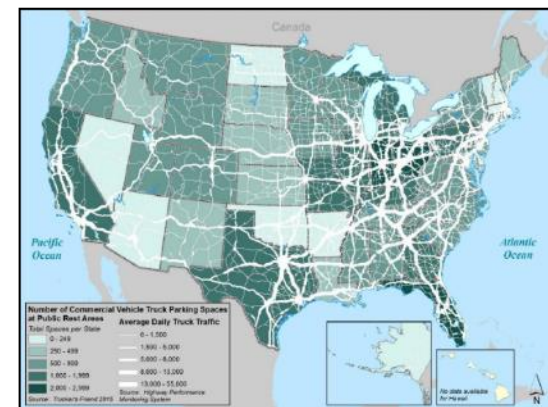
Truck Parking Locations (2015)

Source: [Jason's Law Truck Parking Survey Results and Comparative Analysis](#)



Commercial Vehicle Truck Parking at Private Truck Stops

Source: [Jason's Law Truck Parking Survey Results and Comparative Analysis](#)



Commercial Vehicle Truck Parking at Public Rest Areas

Source: [Jason's Law Truck Parking Survey Results and Comparative Analysis](#)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	○	◐	◑	●	●	●	◐	●

## SUMMARY

FDOT's Transportation Statistics Office publishes two Source Books: the Multimodal Mobility Performance Measures Source Book and a companion General Interest Highway Statistics Source Book that includes data on public roads. The Multimodal Mobility Performance Measures Source Book, is a compilation of current and historical transportation related data and analyses describing the performance of Florida's transportation system in moving people and freight. It is intended to be the primary source of mobility performance measure results for the State of Florida. The data represents the State Highway System (SHS) including the Strategic Intermodal System (SIS) facilities and provides data for all modes of travel.

## MORE ABOUT THE DATA:

**Developer:** [FDOT TRANSTAT](#)

**Update Frequency:** Annually

**Latest Year Available:** 2015

**Temporal Coverage:** Annual

**Geographical Coverage:** SHS

**Geographical Resolution:** Roadways

**Modal Coverage:** Multimodal

**Data Format:** MS Excel

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 23 CFR 420.105 (b)

**Contact:**

[FDOT TRANSTAT](#)

Performance Measure Section

(850) 414-4848

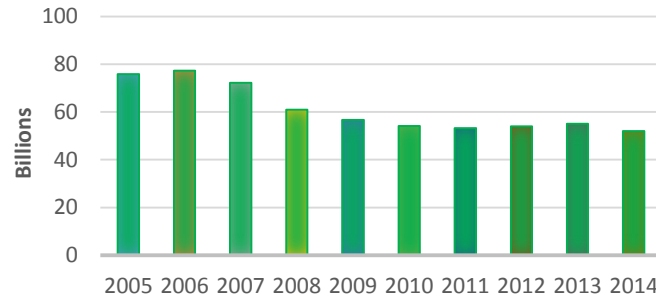
## CURRENT APPLICATIONS

- » FDOT Performance Reports
- » Freight Mobility and Trade Plan, 2013

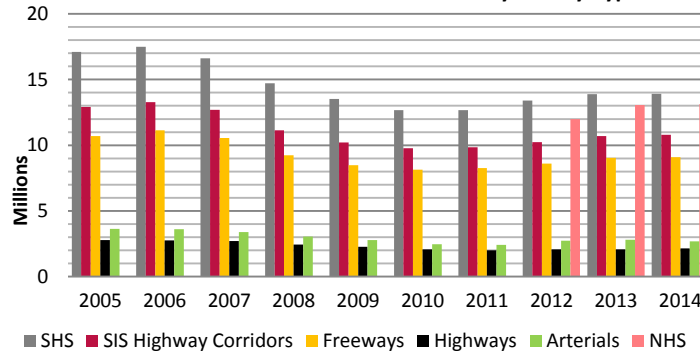
## POTENTIAL APPLICATIONS

- » Congestion Management
- » Traffic Operations/Services
- » Freight Performance Measures
- » Safety Planning and Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Freight Mobility Planning

**Combination Truck Ton Miles Traveled\***



**Combination Truck Miles Traveled By Facility Type\***



\* Source: FDOT Multimodal Mobility Performance Measure Source Book, 2015

**SHS Stats By Geographical District, 2014\***

District	Population*	Land Area**	People / Square Mile
1	2,757,100	11,579	238
2	2,014,400	11,797	171
3	1,407,100	11,263	125
4	3,736,500	4,798	779
5	3,874,400	8,212	472
6	2,687,700	2,881	933
7	3,030,300	3,095	979
Florida Total	19,507,500	53,625	364

\*April 2014 estimate, from FDOT Office of Policy Planning  
\*\*Square miles, from Florida Statistical Abstract 2010, (<http://www.bebr.ufl.edu/ecodb/localities/617/county>)

District	SHS CLM	CLM per Million People	CLM per 1000 Sq. Miles
1	1,870.6	678	162
2	2,555.5	1,209	217
3	2,408.5	1,712	214
4	1,377.3	369	287
5	2,124.0	548	250
6	700.1	260	243
7	1,079.9	356	349
Florida Total	12,115.9	621	226

\*2014 State Highway System Mileage Report

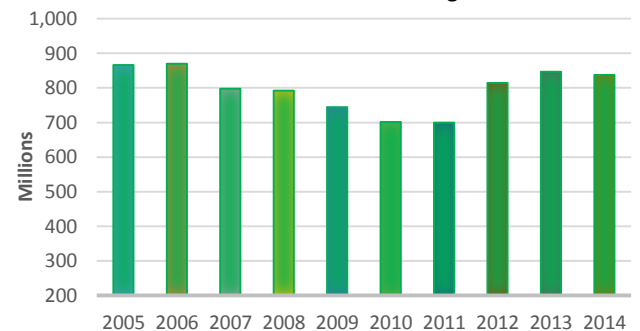
District	SHS LM	LM per Million People	LM per 1000 Sq. Miles
1	6,309.7	2,289	545
2	8,239.3	4,090	698
3	6,748.5	4,796	599
4	6,433.5	1,722	1,341
5	8,314.1	2,146	1,012
6	3,009.2	1,120	1,044
7	4,538.2	1,498	1,466
Florida Total	43,592.5	2,235	813

\*2014 State Highway System Mileage Report

District	SHS DVMT	DVMT/CLM	DVMT/LM
1	37,721.2	20.2	6.0
2	42,459.7	16.6	5.2
3	27,203.8	11.3	4.0
4	56,409.0	41.0	8.8
5	60,777.5	28.6	7.3
6	32,895.2	47.0	10.9
7	38,796.7	35.9	8.5
Florida Total	296,263.1	24.5	6.8

\*2014 State Highway System Mileage Report

**Combination Truck Tonnage\***



Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	●	●	●	●	●	●



**SUMMARY**

NPRMDS provides vehicle probe-based travel time data for passenger autos and trucks. The data is made up of HERE and ATRI databases. The real-time probe data are collected from a variety of sources including mobile devices, connected autos, portable navigation devices, commercial fleet and sensors. NPRMDS includes historical average travel times in 5 minutes increments on daily basis covering the National Highway System (NHS). The data is provided in two parts. The first part is a Traffic Message Channel (TMC) static file that contains TMC information that does not change frequently. The second part includes travel times and identifies roadways geo-referenced to TMC location codes. The two datasets need to be joined in GIS-based software to provide the full picture.

**MORE ABOUT THE DATA:**

**Developer:** [HERE Traffic](#)  
**Update Frequency:** Annually, with monthly release  
**Latest Year Available:** 2016  
**Temporal Coverage:** Daily Speed Info with 5 minutes increments  
**Geographical Coverage:** NHS  
**Geographical Resolution:** States/Region  
**Modal Coverage:** Truck and car  
**Data Format:** CSV & ArcGIS shapefiles  
**Licensing Agreement:** Required  
**Acquisition Cost:** Free for DOTs & MPOs  
**Legal Reference:** 49 CFR 111(c)(2).  
**Contact:**  
[FDOT TRANSTAT](#)  
 (850) 414-4848

**CURRENT APPLICATIONS**

- » Transportation Statistics Office
  - » Express Lanes Reliability Measures, 2014
  - » Data for Florida’s Mobility Performance Measures, 2015
- » Turnpike
  - » Performance Scorecard

**POTENTIAL APPLICATIONS**

- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Environmental Planning
- » Economic Development Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Emergency Preparedness and Security Planning

**Sample NPMRDS Data**

TMC	Date	Epoch	Travel time All vehicles	Travel time Passenger vehicles	Travel time Freight trucks
118N04174	11132013	180	113	115	113
118N04174	11132013	181	108	105	115
118N04174	11132013	182	110		110
118N04174	11132013	183	113	110	113
118N04174	11132013	184	117	115	122
118N04174	11132013	185	113	112	114
118N04174	11132013	186	109	108	110
118N04174	11132013	187	111	111	113

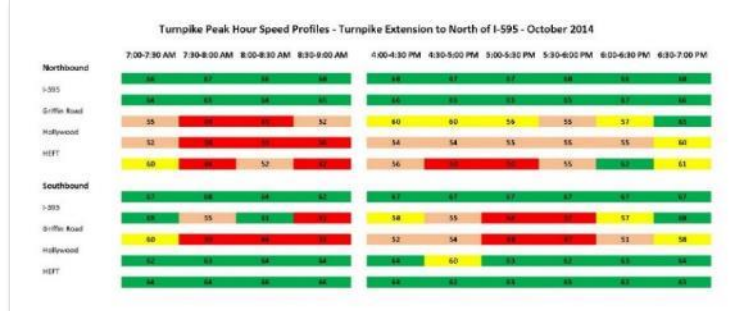
Source: Using NPMRDS to Generate Statewide Performance Measures, Chen-Fu Liao, University of Minnesota

**Broward County October 2013 AM Peak Average Speeds**



Source: FDOT-D4, Application of the NPMRDS

**AM Peak Hour Speed Profiles – Turnpike Extension to North of I-595, 2014**



Source: Turnpike Uses of NPMRDS Data, FDOT-Turnpike



Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	◐	●



## SUMMARY

The National Pipeline Mapping System (NPMS) is a dataset containing locations of and information about gas transmission and hazardous liquid pipelines and Liquefied Natural Gas (LNG) plants which are under the jurisdiction of the Pipeline and Hazardous Materials Safety Administration (PHMSA). The NPMS also contain voluntarily submitted breakout tank data. There are three major databases: NPMS Public Map Viewer, Pipeline Information Management Mapping Application (PIMMA) and pipeline owner details database.

## MORE ABOUT THE DATA:

**Developer:** [USDOT – Pipeline and Hazardous Materials Safety Administration \(PHMSA\)](#)

**Update Frequency:** Annually

**Temporal Coverage:** 1999-present

**Geographical Coverage:** Nationwide

**Geographical Resolution:** Pipeline network/point locations

**Modal Coverage:** Pipeline

**Data Format:** GIS, CAD, Tabular

**Licensing Agreement:** N/A for public data, necessary for PIMMA

**Acquisition Cost:** Free

**Legal reference:** Pipeline Safety: Miscellaneous Changes to Pipeline Safety Regulations – Section 195.61

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

## CURRENT USERS

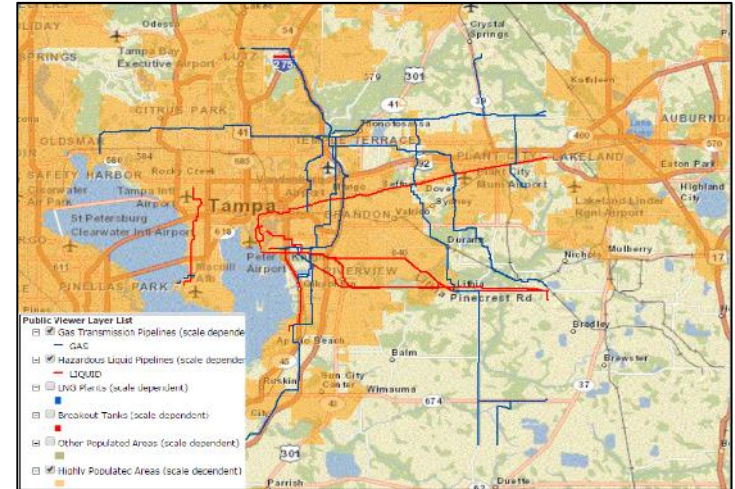
- » Florida Southeast Connection Project
- » Florida Pipeline Awareness
- » Florida City Gas
- » Office of Pipeline Safety
- » U.S Energy Information Administration

## POTENTIAL APPLICATIONS

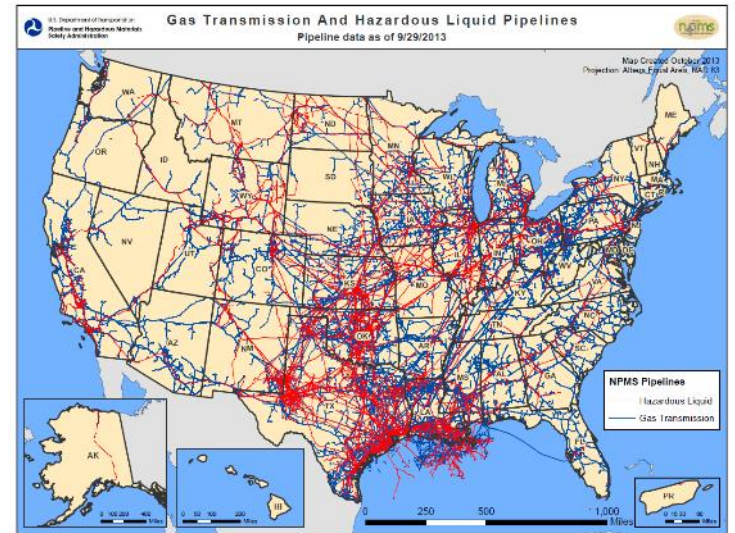
- » Emergency Response
- » Pipeline Inspections
- » Regulatory Management and Compliance
- » Smart Growth Planning
- » Environmental Planning
- » Critical Infrastructure Protection Assessment
- » Freight Demand Models

## MAJOR ATTRIBUTES IN NPMS

- » Public Map Viewer provides information one county at a time and is for reference purposes. It should not be used as substitute for in-depth studies or calling 811.
- » Dataset provides GIS data layers for gas transmission and hazardous liquid pipelines. These layers provides information about operators, commodity, interstate presence, nominal diameter and pipeline status code.
- » Other data layers are LNG plants and break-out tanks which provide information about operator details, plant name and status of plants.
- » PIMMA is a password protected application, needs licensing agreement and is available to federal government users and state officials (limited capabilities).
- » The following data layers derived from a study (Natural Disaster Study, 1996) conducted by the Federal Emergency Management Agency (FEMA) are included: Earthquake Hazard Rank, Hurricane Hazard Rank, Flood Hazard Rank, Landslide Hazard Rank, Natural Pipeline Risk Index



Snapshot of NPMS Public Map Viewer  
Source: [NPMS Viewer](#)



Gas Transmission and Hazardous Liquid Pipelines (2013)

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	◐	◐	◐	●	●	●	◐	●

## SUMMARY

The Colography Group was established in 1983 and they conducted National Survey of U.S. Expedited Cargo. The survey captures a rich variety of shipping needs and behaviors for over 450,000 U.S. business establishments in a time-series database. The survey is based on detailed interviews with transport and logistics decision-makers who collectively control more than 75% of U.S. expedited cargo shipping activity. The Colography Group statistical and survey methods are accredited by Master of Marketing Research (MMR) faculty at The University of Georgia.

### MORE ABOUT THE DATA:

**Developer:** [Colography Group](#)

**Update Frequency:** Annually

**Temporal Coverage:** 1993 - present

**Geographical Coverage:** Nationwide

**Geographical Resolution:** Establishment

**Modal Coverage:** Multimodal

**Data Format:** CSV

**Licensing Agreement:** Yes

**Acquisition Cost:** Yes

**Contact:**

[FDOT TRANSTAT](#)

(850)-414-4848

## MAJOR SURVEY ATTRIBUTES

The National Survey of U.S. Expedited Cargo is stratified across 520 statistical groups or cells in order to representatively size and segment the U.S. shipping market with a high degree of statistical confidence.

- » 5 employment sizes (businesses with 1 to 4, 5 to 19 employees, 20 to 99 employees, 100 to 499 employees and those with 500 or more employees)
- » Mode of transport (domestic air, domestic ground parcel, domestic LTL, domestic TL export air, import air, rail, vessel, etc.)

Shipment volume and weight separately for domestic air, domestic ground parcel, export ground parcel, export air and import air by:

- » Letters, packages 0-2 pounds, packages 2-70 pounds, freight 71-150 pounds and freight 151 pounds or more
- » Carrier used
- » Destination type (business vs. residential address)
- » How the shipment is tendered to carrier (drop box, pickup, carrier sort dock, etc.)
- » For domestic shipments: mileage bands the shipment travels (less than 150 miles, 150 to 350 miles, 1,800 or more miles, etc.)
- » For international shipments: world area of origin or destination (Africa, Europe, Asia, etc.)
- » Transit time: overnight, 2 days, 3 or more days (for domestic air only)

The survey excludes government locations and home-based businesses.

## APPLICATIONS

- » Quarterly Traffic And Yield Analyses and Market Share reports: U.S. Domestic & Export Air, Domestic Ground, LTL
- » Domestic Air Cargo Trends
- » U.S. International Trade Lanes

## OTHER SURVEYS CONDUCTED BY COLOGRAPHY

- » Customer Value Analysis
- » Critical Buying Factors
- » U.S. domestic and international business shipping practices
- » Customer churn: frequency and nature of carrier-switching behavior
- » NAFTA multimodal expedited transportation market
- » U.S. domestic air and ground parcel returns
- » U.S. air import market
- » Same-day shipping demand



**SUMMARY**

The Navigation Data Center (NDC) is responsible for establishing and maintaining databases of waterborne commerce, domestic commercial vessels, port facilities, lock facilities, lock operations, and navigation dredging projects. The NDC data collection and dissemination efforts encompass all the commercially navigable waterways of the United States. The sources of these data include monthly reporting from more than 1,500 vessel operating companies, lockage and dredging statistics from Army Corps' and Engineers personnel at locks and district offices, and commercial port and terminal characteristics from on-site surveys conducted by NDC engineers

**MORE ABOUT DATA**

**Developer:** [U.S. Army Corps of Engineers Institute for Water Resources](#)

**Update Frequency:** Annually; except dredging projects (monthly)

**Geographical Coverage:** Nationwide

**Geographical Resolution:** Ports/waterway network

**Modal Coverage:** Waterborne

**Data Format:** Printed publications, CSV, Shape files, Oracle Databases

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

**WATER-BORNE COMMERCE STATISTIC CENTER DATA:**

**Temporal Coverage:** 1922 - present

**Legal Reference:** River and Harbor Act, September 22, 1922 (42 Stat; 1043)

**Important attributes of data: For domestic:** vessel name, vessel type, commodity carried (SITC), tonnage, origin-destination (port, dock, date departed, draft)

**PORTS AND WATERWAYS DIVISION DATA:**

**Temporal Coverage:** 1922 - present

**Legal Reference:** Section 7 of the River and Harbor Act of 1918, Section 8 of the Merchant Marine Act of 1920, Section 500 of the Transportation Act of 1920

**Important attributes of data:** Location, operation characteristics, types and dimensions of construction, water body name

**LOCK PERFORMANCE MONITORING SYSTEM DATA:**

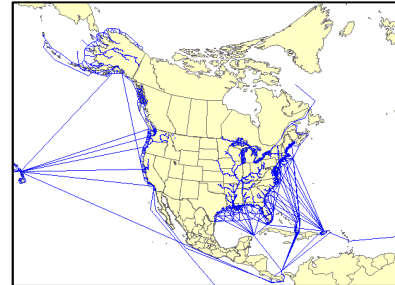
**Temporal Coverage:** 1975 - present

**Legal Reference:** Engineering Regulation 1130-2-429

**Important attributes of data:** number of vessels and barges using the lock; type, dates, and times of lockage, entry and exit types; number of cuts

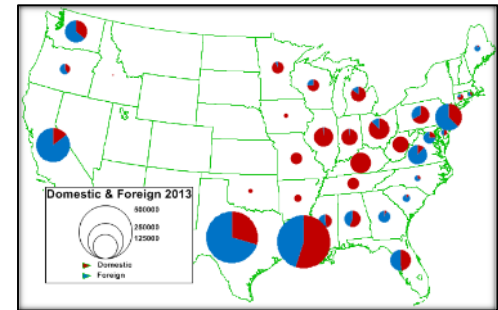
**LOCK PERFORMANCE MONITORING SYSTEM DATA:**

Lock Characteristics data base contains information on physical aspects of all USACE locks. Data base relies on updates from field surveys and District personnel to provide the most current and accurate data about the physical aspects of locks.



U.S Waterway Network

Domestic and Foreign Commodity tonnage (2013)



**CURRENT APPLICATIONS**

- » Florida DOT – Office of Policy Planning
  - » Florida Transportation Trends and Conditions
- » Florida DOT – Design Office
  - » Structures Design Guidelines
- » Florida DOT – Systems Planning
  - » Structures Design Guidelines
- » Florida DOT – Seaport Office
  - » South Florida Inland Port Feasibility Study
  - » Florida Seaport System Plan

**POTENTIAL APPLICATIONS**

- » Managing dredging and locking operations
- » Support U.S Customs Service in collecting harbor maintenance
- » Freight travel demand models
- » Seaports planning
- » Intermodal Trade Corridor Planning
- » Environmental Planning
- » Modal Shift Analysis
- » Terminal and Border Access Planning
- » Economic Development Planning
- » Sustainable Transportation Investment
- » Structural Design

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access	Usability
Rating	●	●	●	●	●	●	●	●	●



**SUMMARY**

The Official Airline Guide (OAG) is an air travel intelligence reference that provides data on airline schedules, cargo and aviation analytics. OAG's databases include cargo flight information updated daily, worldwide cargo schedules from freighter aircraft to road feeder services, origin/destination information, flight details, airline code, airport, and aircraft type. Furthermore, OAG offers a comprehensive reference guide for cargo flights that is updated monthly to provide visibility of all flight options available. Data can be customized to specifically contain the parameters desired by the user.

**MORE ABOUT THE DATA:**

Developer: [Official Airline Guide](#)

Update Frequency: Daily

Latest Year Available: 2015

Temporal Coverage: Up-to-the-minute

Geographical Coverage: Worldwide

Geographical Resolution: Airport

Modal Coverage: Air

Data Format: Web based, XML, Online Server with secure access, Printed

Licensing Agreement: Required

Acquisition Cost: Variable

Contact:

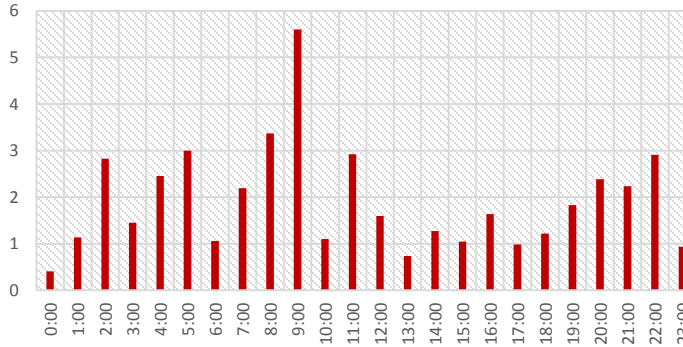
[FDOT Transportation Statistics Office](#)

(850) 414-4848

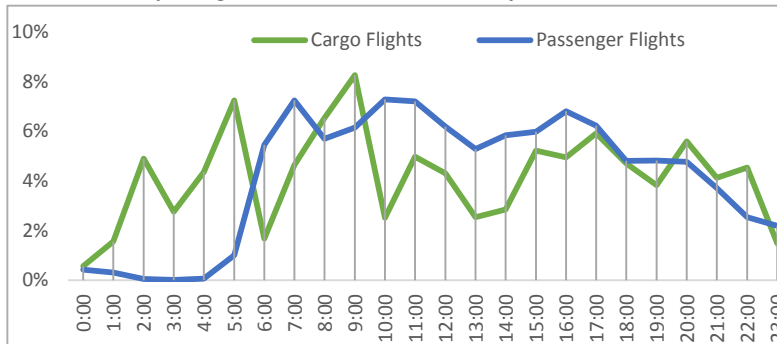
**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Emergency Preparedness and Security Planning
- » Regulation and Enforcement
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

**Average Daily Cargo Flights Departed from Miami Intl. Airport by Hour, 2013\***



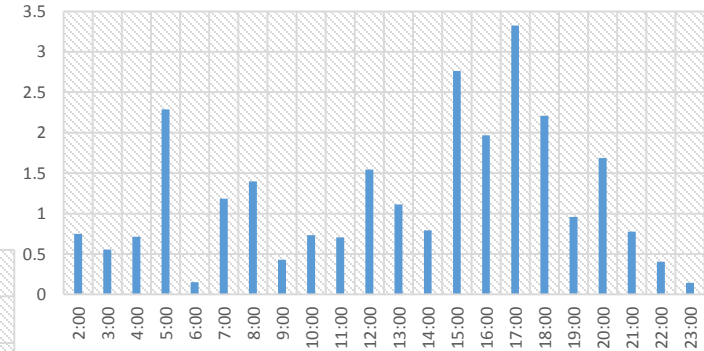
**Comparison of Average Daily Cargo and Passenger Flights Arriving and Departing from Miami International by Hour, 2013\***



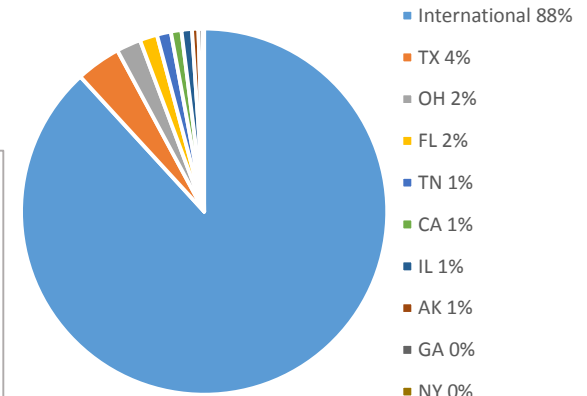
\* Source: FDOT Aviation Office

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	○	◐	●	●	●	◐	●

**Average Number of Daily Cargo Flights Arrived in Miami International by Hour, 2013\***



**Average Daily Air Cargo Destination Market Share from Miami International, 2013\***



**SUMMARY**

The Overweight and Over-Dimensional Vehicle Permit Program provides required permits for vehicles that exceed the maximums specified weight and size limits in Sections 316.515 and 316.535, Florida Statutes. New features in the automated Permit Application System (PAS) include the creation of an account profile to store user data, automated permit delivery, vehicle analysis, route analysis, and payment processing. Based on the input information, a database on oversize and overweight vehicles is created. Different attributes are included in the data such as permit application number, vehicle type, load description, vehicle dimension, gross weight, number of axles and route information. The data can be used to identify segments of highway system that undergo stress from overweight and oversize freight vehicles.

**MORE ABOUT THE DATA**

**Developer:** [FDOT Office of Maintenance](#)

**Update Frequency:** Variable (Based on construction projects)

**Latest Year Updated:** 2016

**Temporal Coverage:** N/A

**Geographical Coverage:** Statewide

**Geographical Resolution:** Highways/Bridges

**Modal Coverage:** Truck

**Data Format:** Online Application Tool

**Licensing Agreement:** Required

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** Rule 14-26, F.A.C.

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

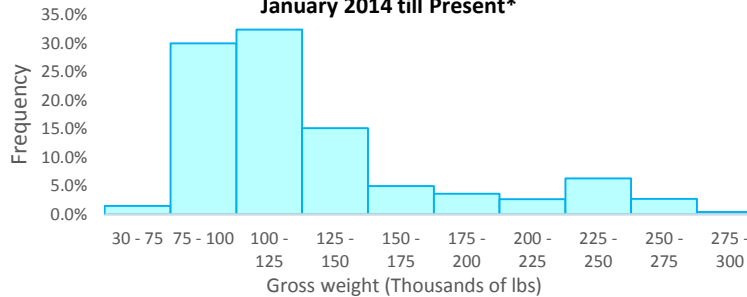
**CURRENT APPLICATIONS**

- » Office of Inspector General
  - » Annual Report FY 2014-2015
- » Traffic Engineering and Operations Office
  - » Commercial Vehicle Information Systems and Networks
  - » Florida Port of Entry Feasibility Study, 2014
- » Office of Maintenance
  - » Bridge Load Rating Manual, 2012

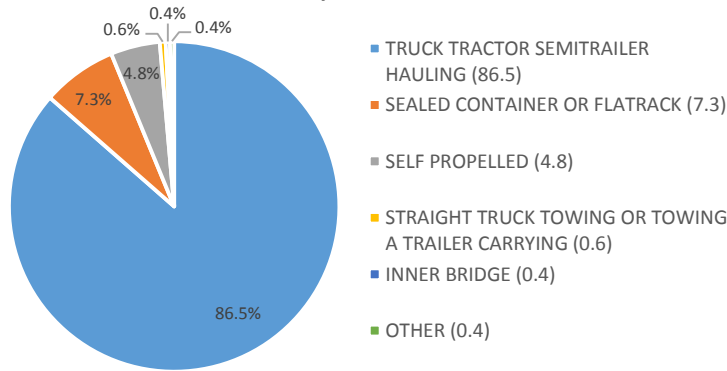
**POTENTIAL APPLICATIONS**

- » Freight Performance Measures
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Mobility Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning
- » Regulation and Enforcement

**Distribution of Overweight Vehicles by Weight January 2014 till Present\***

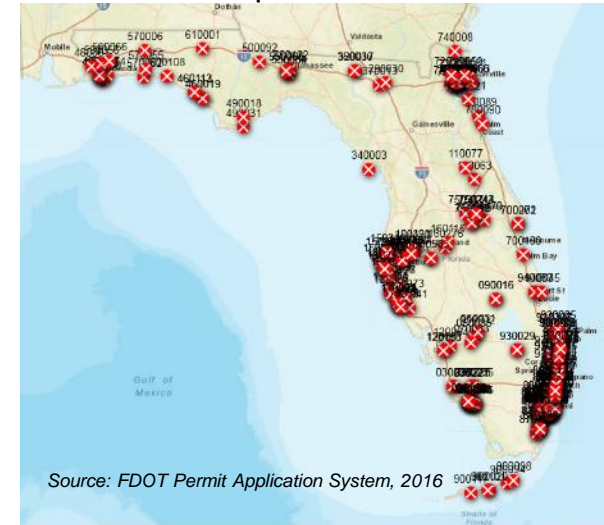


**Share of Overweight Vehicles By Vehicle Configuration January 2014 till Present\***



\* Source: FDOT Permit Office

**Blanket Map Restrictions for TTT2**



**Log-on Web Page for PAS Application Submittal**

**PERMIT APPLICATION SYSTEM**

**Log On**

**FDOT Disclaimer**

By logging on to a FDOT system, you acknowledge your responsibility to comply with all laws, rules, directives, policies, and procedures related to the use and security of information technology resources. Unauthorized use is strictly prohibited. You are hereby on notice that you should have no expectation of privacy as to your use of Department information technology resources as all data is potentially subject to Florida's public records law.

Permits are issued for travel on the State and Federal network only. Do not attempt to obtain a permit for travel on the local network using this system.

**Account Information**

Please enter your username and password.  
[Create New Account](#), if you don't have an account.

User name:

Password:

Reset Password (External Accounts)

Florida Department of Transportation, Office of Information Systems  
 Permit Assistance Contact: Road User Permits Office at (850) 414-6777  
 Technical Help Contact: Service Desk or call 1 866 955 1527 (HELP7)  
[Internet Privacy Policy](#), [Disclosures & Confidentiality](#), [Accessibility Statement](#) - [Get Adobe PDF Reader](#)

<https://gis.dot.state.fl.us/PermitApplicationSystem/Account.aspx/Login?ReturnUrl=%2fPermitApplicationSystem>



**SUMMARY**

PIERS collects import/export data from Bills of Lading for all waterborne cargo vessels that enter or exit U.S. ports. This data is analyzed and augmented with supplementary datasets to produce the PIERS trade intelligence data resources. PIERS provides comprehensive trade data that contains detailed information on commodity description, tonnage shipped, TEUs, estimated value, and import/export companies profiles. It also provides historical records dating from 1950. PIERS data can be used for multiple purposes including market share and trend analysis by different users such as manufacturing industries or government agencies.

**MORE ABOUT THE DATA**

**Developer:** JOC Group (IHS Inc.)

**Update Frequency:** Daily

**Latest Year Available:** 2016

**Temporal Coverage:** Annual

**Geographical Coverage:** National & Worldwide

**Geographical Resolution:** Major U.S. Ports

**Modal Coverage:** Maritime (Water)

**Data Format:** MS Excel, PDF

Automated platform (Dashboards, Online Queries)

**Licensing Agreement:** Subscription agreement required

**Acquisition Cost:** Variable

**Contact:**

[FDOT Seaports and Waterways Office](#)

(850) 414-4527

[FDOT TRANSTAT](#)

(850) 414-4848

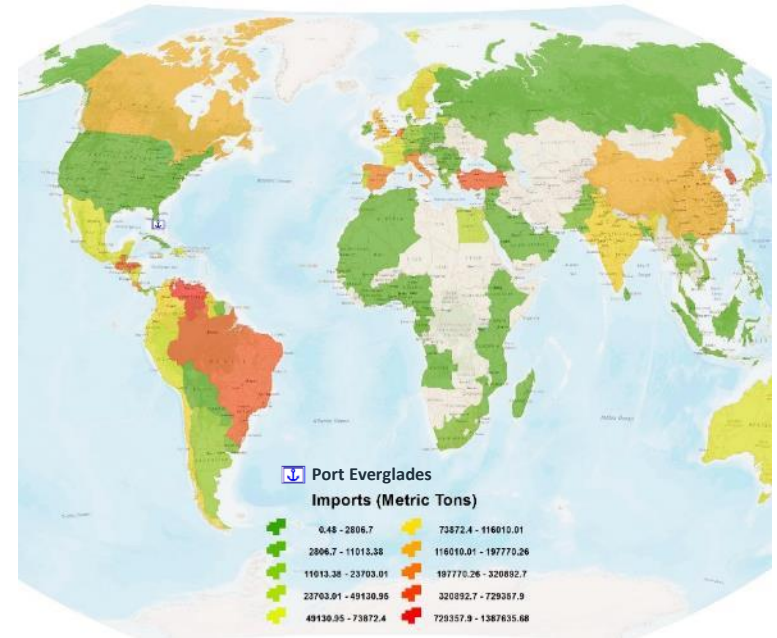
**CURRENT APPLICATIONS**

- » State Seaport and Waterways Office
  - » Florida Seaport System Plan, 2015
  - » Florida Seaport System Plan, 2010
  - » Office Research and Statistical Analysis, Ongoing
- » Florida Ports Council and Individual Florida Ports
  - » Five-year Florida Seaport Mission Plan, Annual
  - » Analysis of Global Opportunities and Challenges for Florida Seaports, 2013
- » Florida Chamber Foundation
  - » Florida Trade and Logistics Study 2.0, 2012
  - » Florida Trade and Logistics Study, 2010
- » TRANSTAT
  - » Florida Statewide Freight Model (FreightSIM), 2015
  - » Reducing Traffic Congestion in South Florida, 2008

**POTENTIAL APPLICATIONS**

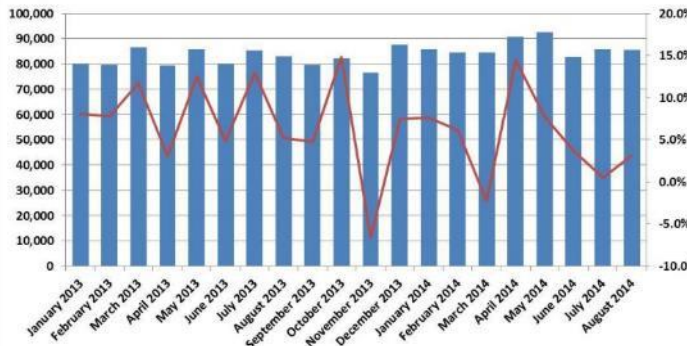
- » Economic Development Planning
- » Modal Shift Analysis
- » Environmental Planning
- » Intermodal Trade Corridor Planning
- » Freight Mobility Planning
- » Operations/Services
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Land Use Planning
- » Congestion Management

Port Everglades Import Commodity Flows, 2013

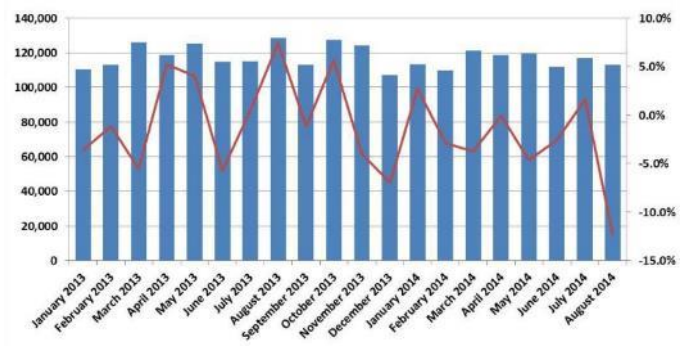


Source: FDOT TRANSTAT, GIS Section

Import Volume in TEUs



Export Volume in TEUs



Source: Florida Seaports Market Trends: Extracting Intelligence From Trade Data, 2014

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	●	◐	●	◐	●	◐	●



**SUMMARY**

The Public Use Waybills Sample (PUWS) data provides rail traffic information by rail carriers that terminate at least 4,500 revenue carloads annually. The PUWS provides detail information on rail freight movements in the U.S., Canada and Mexico. The data includes origin and destination, number of carload, car type, commodity type, tonnage, revenue, charges, line miles, number of interchanges, intermodal flag, etc. The PUWS is derived from a confidential Waybill Sample File which contains more detailed and proprietary information.

**MORE ABOUT THE DATA:**

**Developer:** [Surface Transportation Board \(STB\)](#)

**Update Frequency:** Annually

**Latest Year Available:** 2014

**Temporal Coverage:** Annual

**Geographical Coverage:** National, Canada & Mexico

**Geographical Resolution:** Business Economic Area (BEA)

**Modal Coverage:** Rail - Carload

**Data Format:** Text

**Licensing Agreement:** N/A

\*Access of confidential Waybills Sample requires agreement

**Acquisition Cost:** Publicly available/Free

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

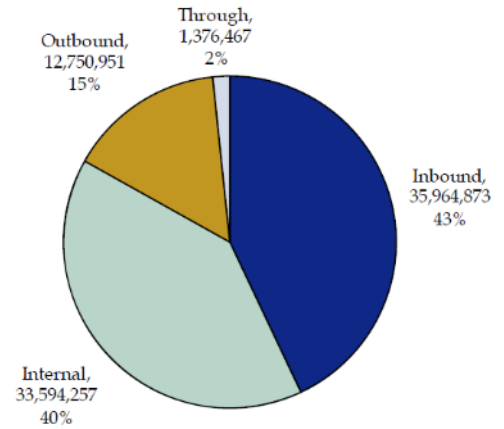
**CURRENT APPLICATIONS**

- » Intermodal Systems Development Office
  - » The Florida Rail System Plan: Investment Element, 2010
- » Systems Planning Office
  - » Adopted SIS Facility Types, Criteria, and Thresholds, 2014
  - » Transportation Systems: Rail Facilities-Freight and Passengers, 2011
- » TRANSTAT
  - » Multimodal Mobility Performance Measures Source Book, 2015
- » Florida Chamber Foundation
  - » Florida Trade and Logistics Study, 2010

**POTENTIAL APPLICATIONS**

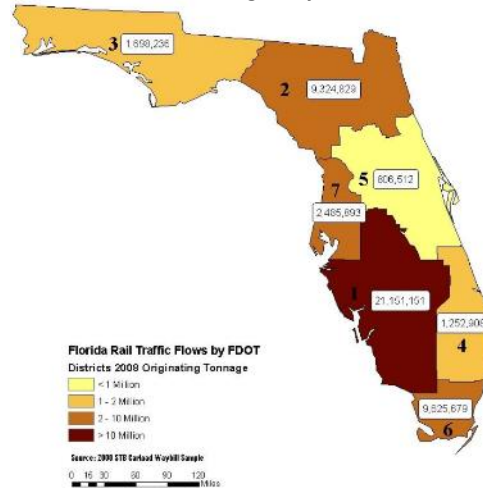
- » Safety Planning and Analysis
- » Modal Shift Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Intermodal Trade Corridor Planning
- » Terminal and Border Access Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

**Florida Freight Rail Tonnage by Direction, 2008**

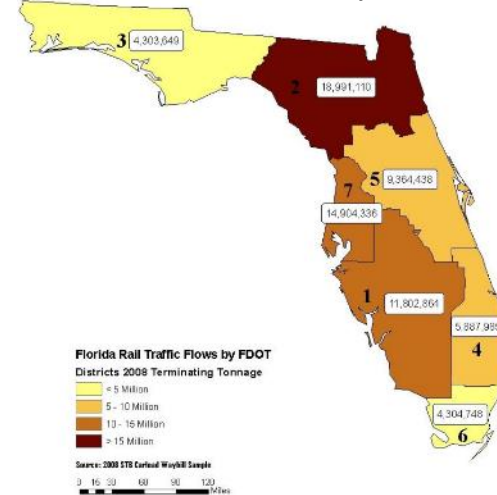


Source: The Florida Rail System Plan: Investment Element, Cambridge Systematics, Inc. 2010

**Florida Rail Traffic Origins by District, 2008**



**Florida Rail Traffic Termination by District, 2008**



Source: The Florida Rail System Plan: Investment Element, Cambridge Systematics, Inc. 2010

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	●	●	●	●	●	●



**SUMMARY**

Rand McNally GPS devices provide mileage and routing information to truck drivers. It also provides advanced lane guidance, estimated toll costs, fuel log, speed warnings, service/maintenance alerts, and route logs. For fleets, Rand McNally provides receivers which provides tracking, speeding and braking events information/alerts to drivers as well as fleet operators. These features help drivers/operators to improve safety and efficiency. To monitor performance of trucks and vehicles, the device provides hours of service compliance alerts and electronic vehicle inspection routing. Rand McNally data is a GPS point data for trucks with FHWA vehicle classes 5-13. GPS information is collected by a Rand McNally receiver in variable intervals of 10-20 min (determined by fleet owners). GPS device accuracy is approximately 1 m to 5 m. Rand McNally does not provide: truck identifier data, sample size, route, nor directionality.

**MORE ABOUT THE DATA:**

- Developer:** [Rand McNally](#)
- Update Frequency:** Monthly/Annually
- Temporal Coverage:** Month/Annual
- Geographical Coverage:** Statewide
- Geographical Resolution:** Point Location
- Modal Coverage:** Truck
- Data Format:** CSV
- Licensing Agreement:** Required
- Acquisition Cost:** Variable
- Contact:**
- [FDOT TRANSTAT](#)  
(850)-414-4848

**CURRENT APPLICATIONS**

- » TRANSTAT (FDOT – Central Office)
  - » Pilot study with a sample data

**POTENTIAL APPLICATIONS**

- » Identification of major freight activity-centers parking locations, warehouses and distribution centers
- » Supplement local network speed profiles to National Performance Management Research Data Set which covers speed profiles for National Highway System Network
- » Identify and validate truck bottlenecks.
- » Data cannot provide truck identifier, sample size or directionality information.

**DATA ANALYSIS**

- » Utilization of Rand McNally Data on the network requires GIS spatial assignment to the NAVTEQ road network.
- » Rand McNally technical support recommends a 10 m (32.81 ft.) tolerance be used.

Number of records per county

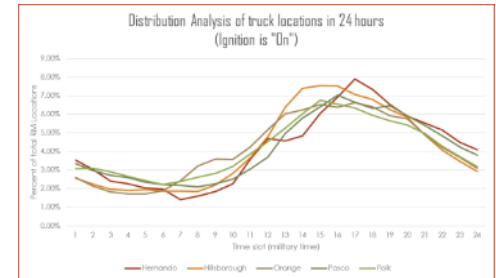
Number of RM locations as per county	Total Number of RM locations
Hernando	37315
Hillsborough	245723
Orange	291999
Pasco	415576
Polk	537325

**VARIABLES**

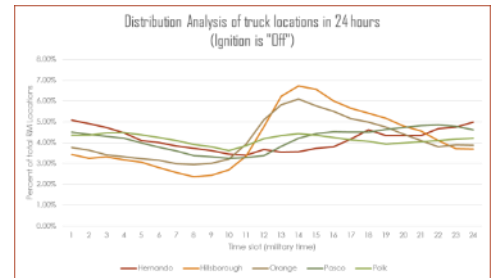
- » Spot Speed (mph)
- » Time stamp (hh:mm)
- » Date (mmddyyy)
- » Ignition On (Yes/No)



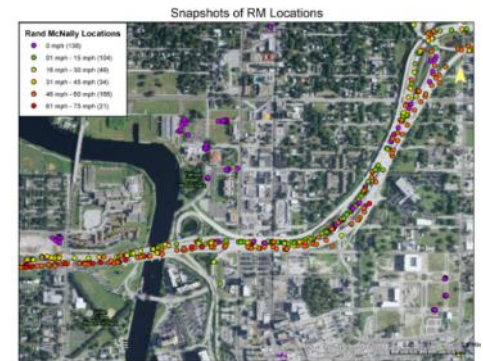
Annual Average Truck Speed on NAVTEQ Network (Sample Data)



Distribution of Analysis of Truck Locations in 24 hours (Ignition is 'Off')



Distribution of Analysis of Truck Locations in 24 hours (Ignition is Off)



Snapshot of Rand McNally Locations

## SUMMARY

RCI is a database of roadway physical, administrative and conditions. RCI also contains information on rail lines and non motorized ways. RCI is one of the most influential databases used at FDOT. It is linked to and used by many departmental offices and other governmental agencies. RCI is maintained by District and Central Office personnel and it includes more than 12 million records and growing.

## MORE ABOUT THE DATA:

**Developer:** FDOT Office of Information Technology (OIT)

**First year:** 1977

**Recent year:** 2016

**Data Sponsors:** Maintenance, Transportation Statistics, Traffic Operations, Rail and Systems Planning

**RCI Update Frequency:** Live

**Shapefile Update Frequency:** Weekly

**Temporal Coverage:** N/A

**Geographical Coverage:** Statewide

**Geographical Resolution:** Roadway

**Modal Coverage:** Multimodal

**Data Format:** CSV, Shapefiles, Oracle SQL Databases

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Legal Reference:** 23 CFR 420.105 (b)

**Contact:**

[FDOT TRANSTAT](#)

(850)-414-4848

## CURRENT APPLICATIONS

Funding apportionment, Highway Performance Monitoring System (HPMS), Demand Models, Safety Analyst tool, MOVES emission tool, Work Program Roadway Information

## IMPORTANT DOCUMENTS

- » RCI Features and Characteristics Handbook
- » RCI Planning Data Handbook
- » RCI User Manual

## MAJOR FEATURES IN RCI

Functional Classification, Highway Maintenance Class, Service Plazas, Parking restrictions, Rail Line Facility, AASHTO, HPMS, Federal System, State Road System, Facility Class, Stationing Exceptions, Managed Lanes, Strategic Intermodal System, AADT Type, Direction, High Occupancy Vehicle Lanes, Number of rest areas without facilities/with facilities, urban size, number of lanes in peak direction, Traffic monitoring sites, turning restrictions, railroads, crossovers, signals, mile-marker signs, intersections and interchanges

## RCI USERS

**In FDOT:** General Counsel Office , Office of Maintenance , Outdoor Advertising Office , Public Transit Office, Right of Way Office , Safety Office , Systems Planning Office, Rail and Motor Carrier Operations Office, Traffic Engineering and Operations and Work Program.

**Outside FDOT:** General public, local governments, engineers, mapping companies, law enforcement agencies, the legal profession, realtors, developers, theme park operators, the media, emergency medical service providers.

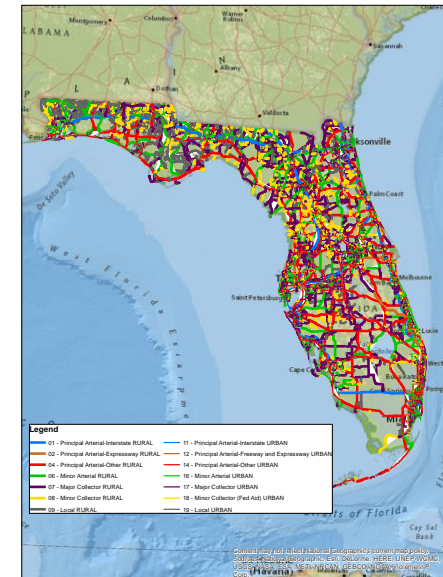
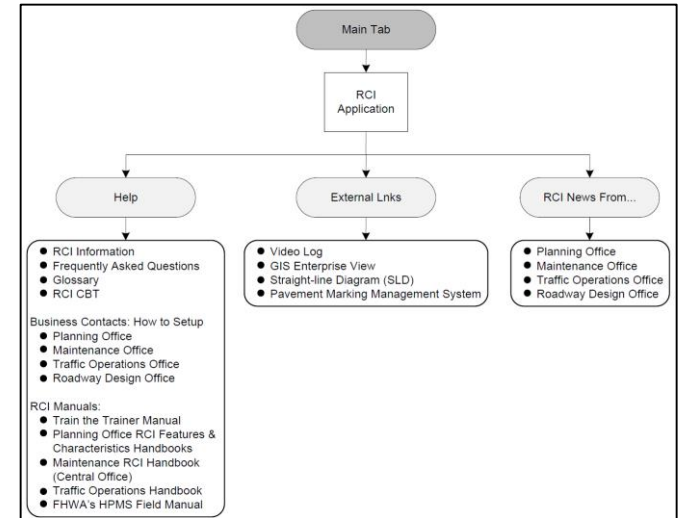


Figure: RCI Functional Classification

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	◐	◐	●	●	●	●	●	●

**SUMMARY**

TranSearch (TS) data includes annual commodity flows (tons, \$ value, units and ton-miles) between US counties by commodity type and mode of transportation, including truckload, less-than-truckload, private truck, rail carload, rail/highway intermodal, air and water. The data relies on economic models and provides very detailed information about most domestic shipments and more than 340 commodity types. The most recent TRANSEARCH data purchase for FDOT is for 2011 with forecasts for 2015, 2020, 2025, 2030, 2035 and 2040.

**MORE ABOUT THE DATA:**

**Developer:** [IHS Global Insight Inc.](#)

**Update Frequency:** Annually

**Latest Year Available:** 2015

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** County-level

\*Apportionment option at TAZ-level

**Modal Coverage:** Multimodal

**Data Format:** MS Access Database, ESRI Network Data

**Licensing Agreement:** Required

**Acquisition Cost:** Variable

\*Depending on level of details requested

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

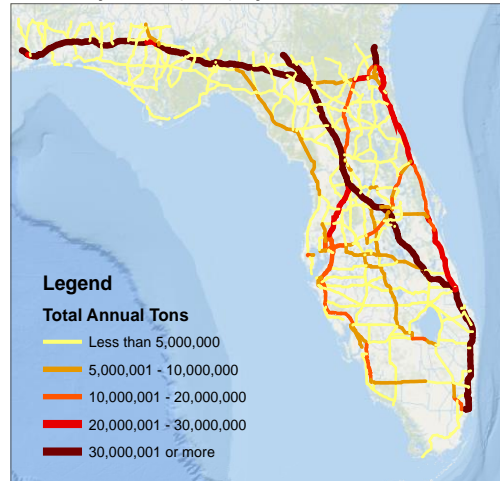
**CURRENT APPLICATIONS**

- » Systems Planning Office
  - » I-75 Sketch Interstate Plan, Freight Mobility, 2010
  - » Urban Highway Freight Modeling Including Intermodal Connectors For Florida, 2002
- » Transportation Statistics Office
  - » Freight Intensity Measures, 2015
  - » Florida Statewide Freight Model (FreightSIM), 2015
- » Freight Logistics and Passenger Operations Office
  - » County-wide Freight & Logistics Overview, 2012

**POTENTIAL APPLICATIONS**

- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Modal Shift Analysis
- » Environmental Planning
- » Emergency Preparedness and Security Planning
- » Freight Transportation and Land Use Planning
- » Intermodal Trade Corridor Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Terminal and Border Access Planning
- » Economic Development Planning
- » Sustainable Transportation Investment

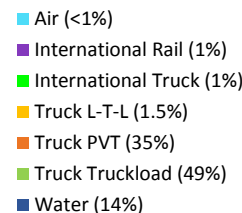
**Commodity Flows (tons) by Trucks on Florida SHS 2011**



Source: RS&H, Inc.

**Modal Split of Freight Tons Entering/Leaving/Within Florida**

370 Million Total Tons



Source: RS&H, Inc.

**Commodity Flow Patterns Between Florida and Other Business Economic Areas**



Source: FDOT Transtat Office, IHS TRANSEARCH TRAINING, 2014

**Top 10 Outbound Truck Routes Florida 2011**

Rank	Origin	Destination	Annual Tonnage
1	Jacksonville, FL	Savannah, GA	1,548,900
2	Pensacola, FL	Mobile, AL	1,216,520
3	Miami, FL	New York, NY	1,032,824
4	Jacksonville, FL	Albany, GA	926,617
5	Orlando, FL	New York, NY	907,335
6	Miami, FL	Atlanta, GA	638,690
7	Jacksonville, FL	Charleston, SC	606,938
8	Tampa, FL	New York, NY	582,104
9	Orlando, FL	Minneapolis, MN	577,696
10	Orlando, FL	Atlanta, GA	523,158

Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	●	●	●	●	●	●





**SUMMARY**

The TSI is a monthly measure of the volume of services performed by the for-hire transportation sector. The index covers the activities of for-hire freight carriers and for-hire passenger carriers. The TSI provides indicators of how transportation services have increased or decreased from month to month and can help to understand the current and future course of the economy. The movement of the index over time can be compared with other economic measures to understand the relationship of transportation to long-term changes in the economy. TSI is the only combined, multimodal, seasonally adjusted economic measure of transportation measured on a monthly basis.

**MORE ABOUT THE DATA:**

**Developer:** [Bureau of Transportation Statistics](#)

**Update Frequency:** Monthly

**Temporal Coverage:** 1996 - present

**Geographical Coverage:** Nationwide

**Geographical Resolution:** Nation

**Modal Coverage:** Multiple modes

**Data Format:** Graphs/Tabular format

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

**CURRENT APPLICATIONS**

- » **U.S DOT**
  - » Transportation Services Index and the Economy
  - » Transportation Trends in Focus

**POTENTIAL APPLICATIONS**

- » Economic Indicator
- » Monthly shifts in transportation services output and analyze short-term trends
- » Multimodal perspective of transportation growth

**IMPORTANT HIGHLIGHTS**

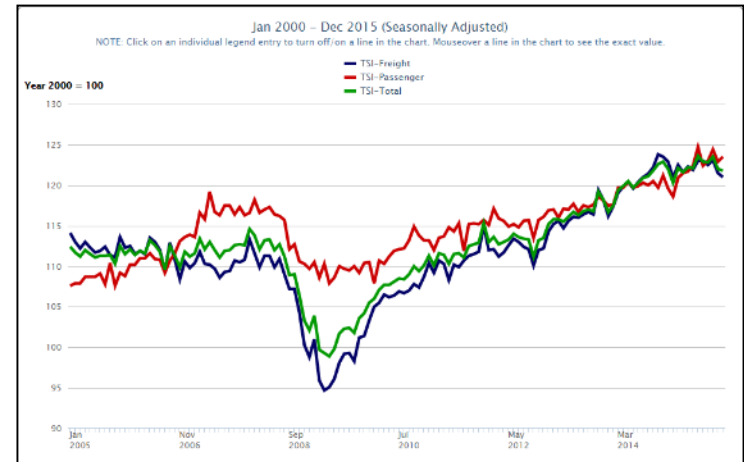
The freight transportation index consists of:

1. for-hire trucking (parcel services are not included)
2. freight railroad services (including rail-based intermodal shipments such as containers on flat cars)
3. inland waterway traffic
4. pipeline movements (including principally petroleum and petroleum products and natural gas)
5. air freight

- » The index does not include international or coastal steamship movements, private trucking, courier services, or the United States Postal Service.
- » By its nature, the TSI takes a macro-level view of transportation and cannot substitute for detailed data in examining local and mode-specific transportation issues.
- » The TSI does not yet cover 100% of the for-hire transportation industry.
- » The research findings on the relationship between the TSI and economic indicators revealed that the freight TSI acted as a strong leading economic indicator.

Index	Mode	Source	Measure
Freight	Trucking	American Trucking Association	Monthly Truck Tonnage Index
	Air	Bureau of Transportation Statistics	Air Revenue Ton-Miles of Freight and Mail
	Rail	Association of American Railroads	Weekly Carloads and Intermodal Units
		Federal Railroad Administration	Quarterly Rail Ton-Miles
	Water	US Army Corps of Engineers	Tons
	Pipeline	Energy Information Administration	Movement between PADDs plus Alaska field consumption
Natural Gas	Energy Information Administration	Monthly Consumption of Natural Gas	
Passenger	Air	Bureau of Transportation Statistics	Air Revenue Passenger Miles
	Rail	Federal Railroad Administration	AMTRAK and Alaska RR Corp. Passenger Miles
	Transit	American Public Transportation Association	Unlinked Passenger Trips

Data Sources used in TSI



TSI – 2005 to 2015

**SUMMARY**

CFS is the primary data source for national and state-level domestic freight shipments. The data is part of the Economic Census and is developed from various industry sectors including mining, wholesale, manufacturing, auxiliaries, and selected retail and service trade. It provides information on the type, origin and destination, value, weight, mode of transportation, distance shipped, and ton-miles of commodities shipped between origin-destination zones. CFS is the cornerstone of many other freight data sources such as FAF.

The 2012 CFS Public Use Microdata provides commodity flow data at firm level for individual shipper/seller firms. The CFS Microdata can be used for freight modeling and analysis at disaggregate (firm) level.

**MORE ABOUT THE DATA:**

**Developer:** [US Census Bureau](#)

**Update Frequency:** Every 5 years

**Latest Year Available:** 2012

**Temporal Coverage:** Annual

**Geographical Coverage:** National, Exports

**Geographical Resolution:** Metropolitan and state level

**Modal Coverage:** Multimodal

**Data Format:** CSV

**Licensing Information:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 13 USC and 26 USC

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

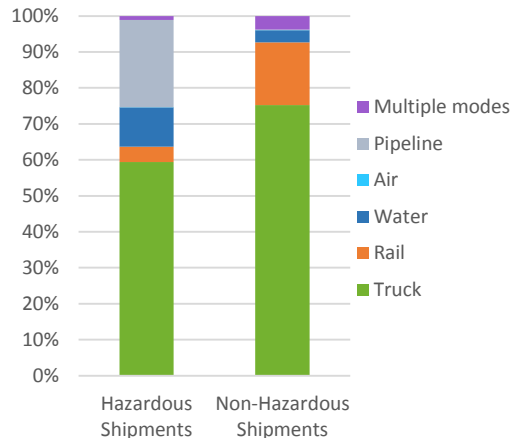
**CURRENT APPLICATIONS**

- » Transportation Statistics Office
  - » Florida Statewide freight Model (FreightSIM), 2015
- » Office of Policy Planning
  - » Travel Demand: Trade and Freight Transportation, 2012

**POTENTIAL APPLICATIONS**

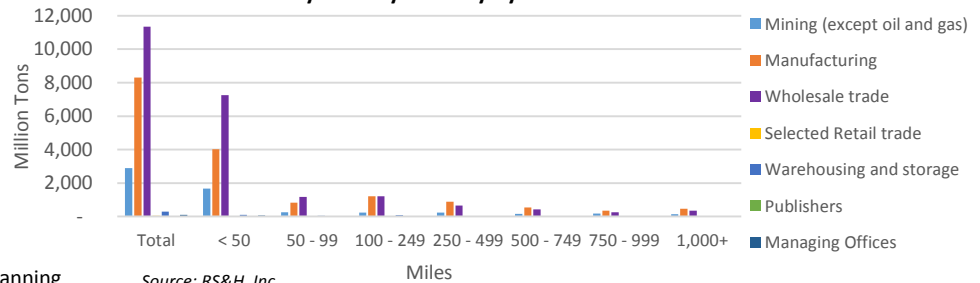
- » Freight Mobility Planning
- » Modal Shift Analysis
- » Freight Transportation and Land Use Planning
- » Emergency Preparedness and Security Planning
- » Environmental Planning
- » Congestion Management
- » Sustainable Transportation Investment
- » Safety Planning and Analysis
- » Intermodal Trade Corridor Planning
- » Terminal and Border Access Planning
- » Freight Performance Measurements
- » Economic Development Planning

**Hazardous Versus Non-hazardous Shipments by Mode 2012**



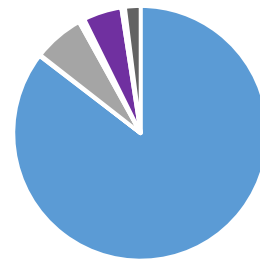
Source: RS&H, Inc.

**Commodity Flow by Industry by Distance 2012**



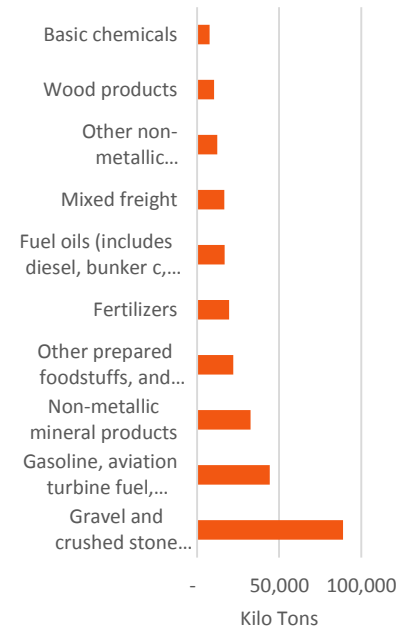
Source: RS&H, Inc.

**Hazardous Materials Shipments 2012 Total 2.6 Billion Tons**



Source: RS&H, Inc.

**Top Ten Commodity Shipments in Florida 2012**



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	●	●	●	●	●	●	●



**SUMMARY**

County Business Patterns (CBP) is an annual economic data source that provides detailed national and regional economic information. The data provides economic statistics for different industry classes including number of establishments, employment payroll. CBP can be used for various decision making and planning purposes such as economic development analysis, analyzing market potential, and studying temporal economic changes. Economic activity statistics are available for most of industry classes with 2-digit to 6-digit North American Industry Classification System (NAICS) codes. In addition, Census provides a web-based analysis tool, [Census Explorer](#), which can be used to develop maps using CBP data.

**MORE ABOUT THE DATA:**

**Developer:** [U.S. Census Bureau](#)

[Census Explorer](#)

**Update Frequency:** Annually

**Latest Year Available:** 2013

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** Variable Metropolitan, State, County, and Zip-code level

**Modal Coverage:** N/A

**Data Format:** .CSV, .TXT

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 13 USC, 26 USC

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

**CURRENT APPLICATIONS**

- » Transportation Statistic Office
  - » Florida Statewide Freight Model (FreightSIM), 2015
- » Office of Policy Planning
  - » IMPACT OF TRANSPORTATION: Transportation and the Economy, 2015
- » Transit Office
  - » Estimating Costs and Benefits of Emissions Reduction Strategies for Transit by Extending the TRIMMS Model, 2012

**POTENTIAL APPLICATIONS**

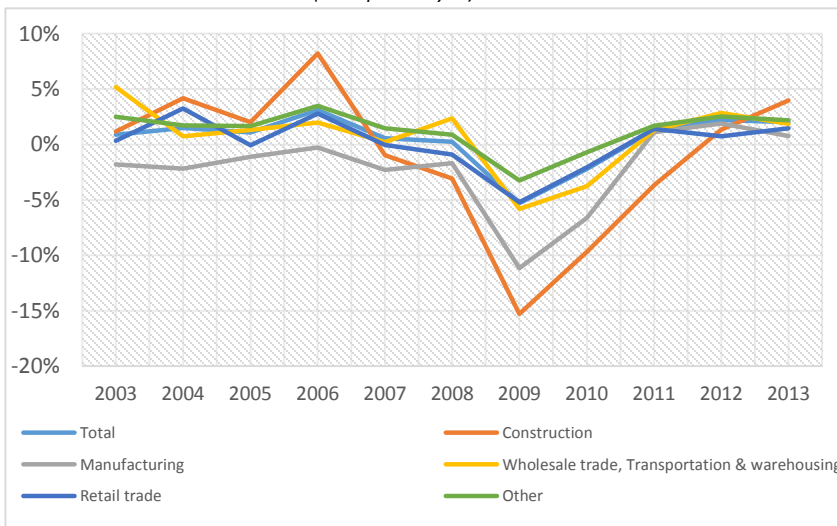
- » Economic Development Planning and Analysis
- » Freight Transportation and Land Use Planning
- » Sustainable Transportation Investment
- » Freight Demand Modeling and Supply Chain Analysis

**Economic Statistics 2013 (Example Analysis)**

Industry	Paid employees	Annual payroll (\$1,000)	Total establishments
Health Care and Social Assistance	15.7%	14.8%	1.3%
Retail Trade	12.7%	6.9%	14.2%
Accommodation and Food Services	10.5%	3.8%	9.0%
Manufacturing	9.5%	10.9%	3.9%
Administrative, Support, Waste Management and Remediation Services	8.6%	6.5%	5.3%
Professional, Scientific, and Technical Services	7.0%	11.2%	11.6%
Finance and Insurance	5.1%	9.6%	6.3%
Wholesale Trade	5.0%	6.9%	5.6%
Construction	4.6%	5.2%	8.8%
Other Services (except Public Administration)	4.5%	2.7%	9.8%
Transportation and Warehousing	3.6%	3.4%	2.9%
Educational Services	3.0%	2.2%	1.3%
Information	2.8%	4.9%	1.8%
Management of Companies and Enterprises	2.6%	5.8%	0.7%
Arts, Entertainment, and Recreation	1.8%	1.2%	1.7%
Real Estate and Rental and Leasing	1.7%	1.6%	4.8%
Mining, Quarrying, and Oil and Gas Extraction	0.6%	1.2%	0.4%
Utilities	0.5%	1.1%	0.2%
Agriculture, Forestry, Fishing and Hunting	0.1%	0.1%	0.3%
Industries not classified	0.0%	0.0%	0.2%
<b>Total for all sectors</b>	<b>118,266,253</b>	<b>5,621,697,325</b>	<b>7,488,353</b>

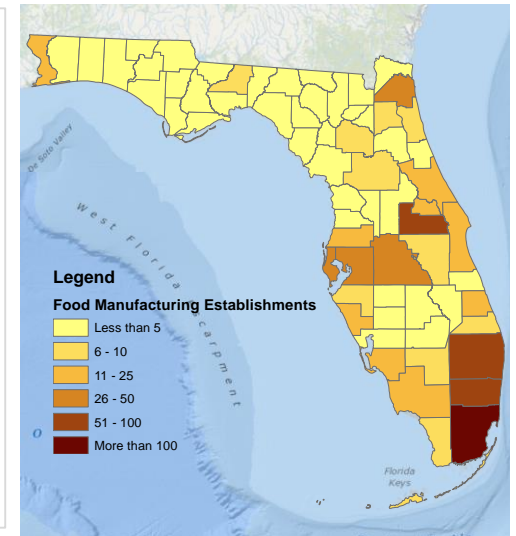
Source: RS&H, Inc.

**Changes in the Number of Paid Employees by Industry 2003-2013 (Example Analysis)**



Source: RS&H, Inc.

**Distribution of Food Manufacturing Firms, Florida 2013 (Example Analysis)**



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	○	●	○	◐	◐	◐	●	●



**SUMMARY**

The US Census Foreign Trade database is the official source for U.S. export and import statistics. The data contains detailed statistics on goods and estimates of services shipped from the U.S. to foreign countries. Data provides information on commodity classification, quantities, values, shipping weights, mode of transportation (air or vessel), state of (movement) origin, customs district, customs port, country of destination, and whether contents are domestic goods or re-exports. The US Census Foreign Trade also provides an online interactive [visualization tool](#) for presenting the data.

**MORE ABOUT THE DATA:**

**Developer:** [US Census Bureau](#)

**Update Frequency:** Monthly

**Latest Year Available:** 2016

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:**

Metropolitan and state level

**Modal Coverage:** Multimodal

**Data Format:** CSV, Tabular

**Licensing Information:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 13 USC, 26 USC

**Contact:**

[FDOT TRANSTAT](#)

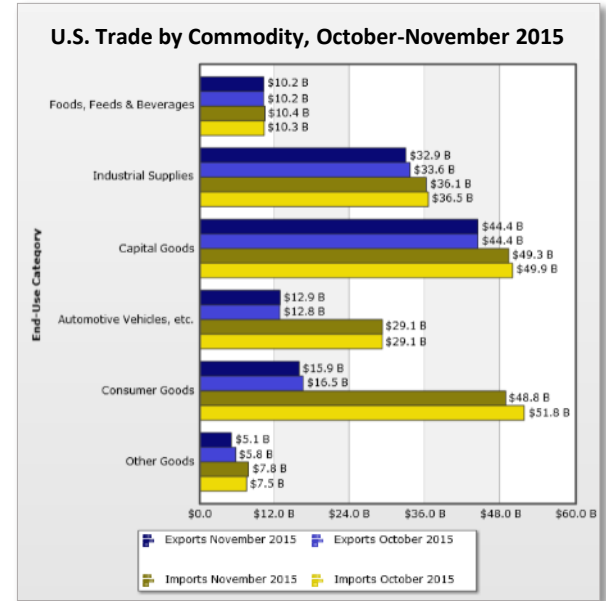
(850) 414-4848

**CURRENT APPLICATIONS**

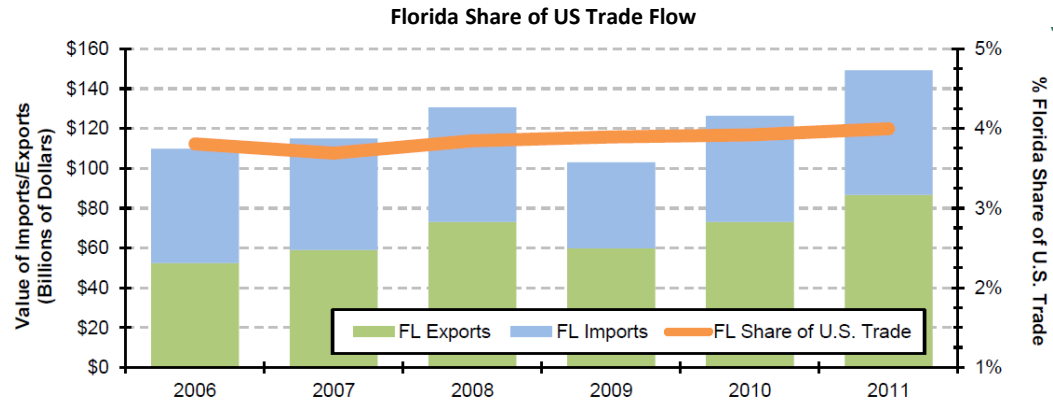
- » Policy Planning Office
  - » 2060 Florida Transportation Plan Scorecard, 2014
- » Systems Planning Office
  - » Impact Of Transportation: Transportation and the Economy, 2015
- » Traffic Engineering and Operations
  - » Economic Impacts Of Intelligent Transportation Systems In Florida, 1999

**POTENTIAL APPLICATIONS**

- » Freight Mobility Planning
- » Freight Transportation and Land Use Planning
- » Intermodal Trade Corridor Planning
- » Terminal and Border Access Planning
- » Freight Performance Measurements
- » Economic Development Planning
- » Sustainable Transportation Investment



Source: US Census Interactive Graphs <http://www.census.gov/foreign-trade/statistics/graphs/enduse.html>



Source: FDOT, 2060 FTP Scorecard, 2015

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	◐	◐	◐	◐	●	●	●

**SUMMARY**

The VIUS (formerly Truck Inventory and Use Survey) provides detailed information on physical and operating characteristics of a large sample of private and commercial truck population in the U.S. The collected data includes weight, number of axles, length, engine and body type, major use, operator classification, gas mileage, annual and lifetime miles driven, transported commodity type, and hazardous materials hauled. The data includes “weighting factors” to expand sample truck counts and miles to the total truck population in the country. The survey was conducted every 5 years following the census year but it is discontinued since 2002. However, restoring the survey by FHWA has been discussed recently.

**MORE ABOUT THE DATA:**

**Developer:** [U.S. Census Bureau](#)

**Update Frequency:** Discontinued

**Latest Year Available:** 2002

**Temporal Coverage:** Annual

**Geographical Coverage:** National Sample with Weight Factors

**Geographical Resolution:** N/A

**Modal Coverage:** Truck

**Data Format:** SAS & TEXT files

**Licensing Agreement:** NA

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 13 USC

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

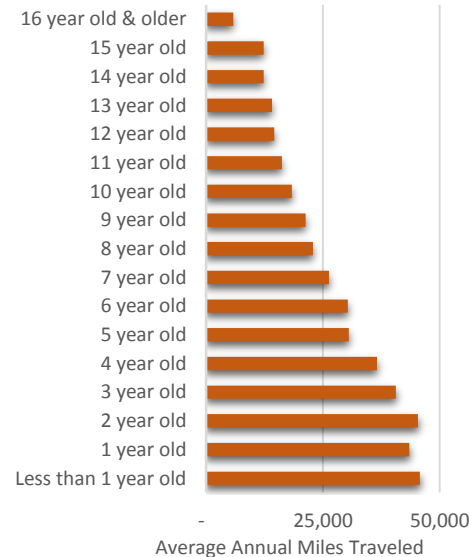
**CURRENT APPLICATIONS**

- » FHWA
  - » Estimation of Truck Flows in FAF data, 2010

**POTENTIAL APPLICATIONS**

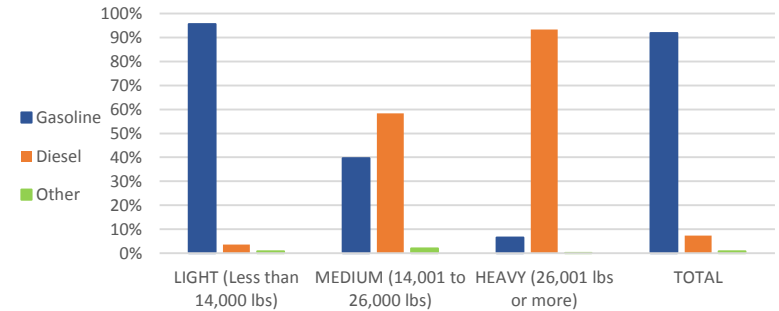
- » Congestion Management
- » Traffic Operations/Services
- » Safety Planning and Analysis
- » Freight Mobility Planning
- » Environmental Planning
- » Roadway Pavement and Bridge Maintenance Planning
- » Freight Performance Measurements
- » Sustainable Transportation Investment
- » Fuel Economy of Freight Trucks

**Average Annual Miles Traveled Per Truck by Truck Age**



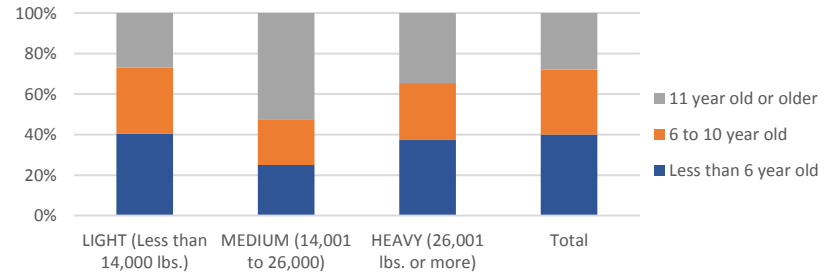
Source: RS&H, Inc.

**Distribution of Truck Gross Vehicle Weight Rating By Type of Fuel**



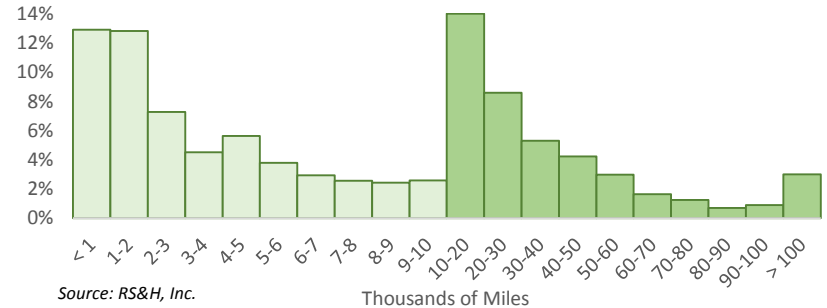
Source: RS&H, Inc.

**Distribution of Truck Gross Vehicle Weight Rating By Truck Age**



Source: RS&H, Inc.

**Annual Miles Traveled by Surveyed Truck Sample, 2002**



Source: RS&H, Inc.

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	○	●	○	○	●	●	●



**SUMMARY**

The United States Department of Agriculture (USDA) Economic Research Service provides historical data on farming, agriculture, forestry, and food in the U.S. The data covers a wide variety of agricultural topics including Animal Products, Crops, Farm Economy, Farm Practices and Management, Food and Nutrition Assistance, Food Choices & Health, Food Markets and Prices, Food Safety, International Markets and Trade, Natural Resources and Environment, and Rural Economy and Population. The data can help decision makers to meet the needs of farmers and ranchers, promote agricultural trade and production, assure food safety, protect natural resources, foster rural communities and end hunger in the US.

**MORE ABOUT THE DATA:**

**Developer:** [USDA Economic Research Service](#)

**Update Frequency:** Annually

**Latest Year Available:** 2014

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** States

**Modal Coverage:** N/A

**Data Format:** CSV, Tabular, Charts

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 7 USC 55

**Contact:**

[FDOT TRANSTAT](#)

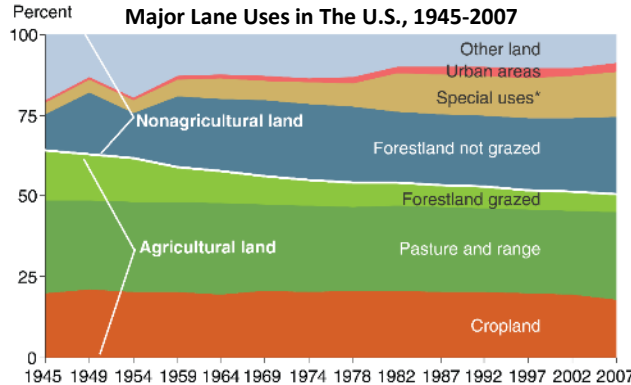
(850) 414-4848

**CURRENT APPLICATIONS**

- » Office of Aviation
  - » Florida Statewide Airport Stormwater Study, 2005

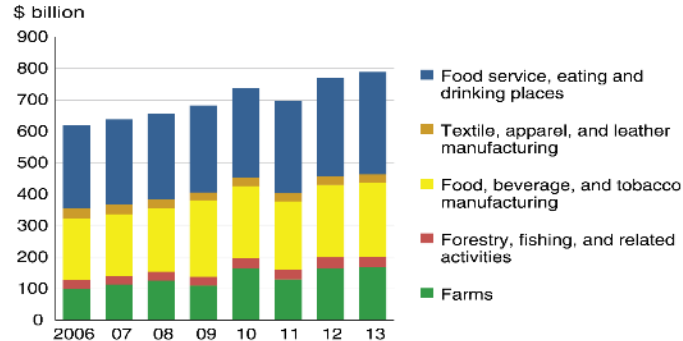
**POTENTIAL APPLICATIONS**

- » Environmental Planning
- » Economic Development Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning



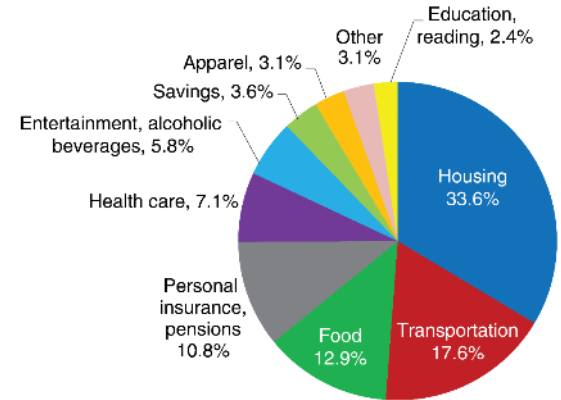
<http://ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40023&ref=collection&embed=True&widgetId=39734>

**Value Added to GDP by Agriculture and Related Industries, 2006-2013**



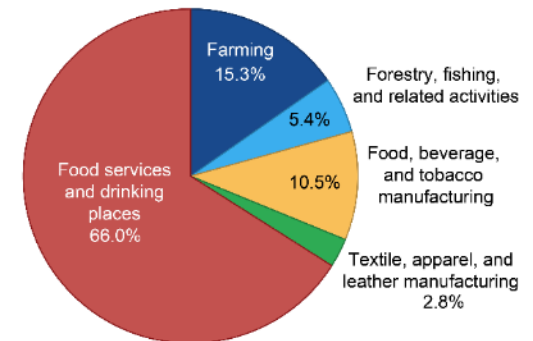
<http://ers.usda.gov/data-products/aq-and-food-statistics-charting-the-essentials.aspx>

**American Household Expenditures by Major Categories, 2013**



<http://ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40037&ref=collection&embed=True&widgetId=39734>

**Agriculture-related Industries Employment Share of Total of 17.3 million Jobs, 2014**



<http://ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40043&ref=collection&embed=True&widgetId=39734>

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	●	○	○	●	●	●	●



**SUMMARY**

The United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) provides agricultural statistics for every state and county in the U.S. The data is classified by commodity code, county and district geographic boundaries. The database contains various information including crops and plants, livestock and animals, demographics, economics and prices, environmental, and research, science and technology. The website provides an online tool that can be used to display data by charts and maps at state or county level.

**MORE ABOUT THE DATA:**

**Developer:** [USDA National Agricultural Statistics Service](#)

**Update Frequency:** Monthly

**Latest Year Available:** 2014

**Temporal Coverage:** Annual

**Geographical Coverage:** National

**Geographical Resolution:** County

**Modal Coverage:** N/A

**Data Format:** CSV, Tabular, Charts, GIS Layers

**Licensing Agreement:** N/A

**Acquisition Cost:** Publicly available/Free

**Legal Reference:** 7 USC 55

**Contact:**

[FDOT TRANSTAT](#)

(850) 414-4848

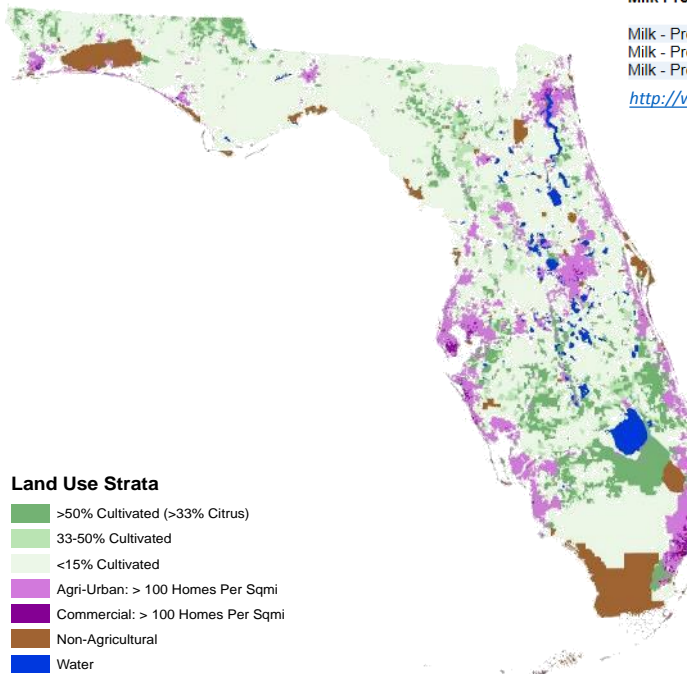
**CURRENT APPLICATIONS**

- » Office of Aviation
  - » Florida Statewide Airport Stormwater Study, 2005

**POTENTIAL APPLICATIONS**

- » Environmental Planning
- » Economic Development Planning
- » Sustainable Transportation Investment
- » Freight Transportation and Land Use Planning

**Stratification of Florida Land Use, 2010**



**Land Use Strata**

- >50% Cultivated (>33% Citrus)
- 33-50% Cultivated
- <15% Cultivated
- Agri-Urban: > 100 Homes Per Sqmi
- Commercial: > 100 Homes Per Sqmi
- Non-Agricultural
- Water

[http://www.nass.usda.gov/Research\\_and\\_Science/stratafront2b.php](http://www.nass.usda.gov/Research_and_Science/stratafront2b.php)

**2014 STATE AGRICULTURE OVERVIEW**

**Florida**

**Farms Operations** †

Farm Operations - Area Operated, Measured in Acres / Operation	200
Farm Operations - Number of Operations	47,600
Farm Operations - Acres Operated	9,500,000

**Livestock Inventory** †

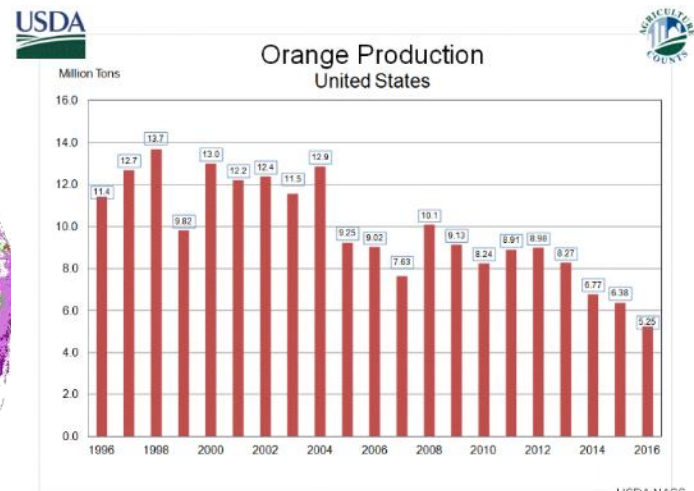
Cattle, Cows, Beef - Inventory ( First of Jan. 2015 )	916,000
Cattle, Cows, Milk - Inventory ( First of Jan. 2015 )	124,000
Cattle, Incl Calves - Inventory ( First of Jan. 2015 )	1,700,000
Goats, Meat & Other - Inventory ( First of Jan. 2015 )	45,000
Goats, Milk - Inventory ( First of Jan. 2015 )	6,400
Hogs - Inventory ( First of Dec. 2014 )	17,000
Chickens, Broilers - Production, Measured in Head	66,700,000

**Milk Production** †

Milk - Production, Measured in Lb / Head	20,382
Milk - Production, Measured in \$	706,974,000
Milk - Production, Measured in Lb	2,507,000,000

[http://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=FLORIDA](http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=FLORIDA)

**Utilized Orange Production by Year**



[http://www.nass.usda.gov/Charts\\_and\\_Maps/Citrus\\_Fruits/citrusvl.php](http://www.nass.usda.gov/Charts_and_Maps/Citrus_Fruits/citrusvl.php)

USDANASS  
1-12-16

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/update	Accuracy	Access	Usability
Rating	●	●	●	○	○	●	●	●	●



## SUMMARY

FDOT'S Transtat Office maintains an Oracle database which stores per-vehicle, time-stamped WIM data. The Transtat WIM stations are maintained independently from the MCSAW office's weigh stations. The primary purpose of the weight enforcement program is to protect Florida's highway system and bridges from damage from overweight vehicles. The following vehicles are required to use weigh stations: agricultural, motor vehicles except private passenger automobiles with no trailer in tow, travel trailers, camping trailers, and motor homes; any commercial vehicle (a) with a GWR of 10,000 lbs. or more, (b) designed to transport more than 10 passengers, (c) used to transport hazardous materials.

## MORE ABOUT THE DATA:

**Developer:** [FDOT TRANSTAT](#)

**Update Frequency:** Weekly

**Temporal Coverage:** 1974 - present

**Geographical Coverage:** Statewide

**Geographical Resolution:** Point

**Modal Coverage:** Trucks

**Data Format:** CSV, Shape files, Oracle SQL Databases, pdf files

**Licensing Agreement:** N/A

**Acquisition Cost:** Free

**Contact:**

[FDOT TRANSTAT](#)  
(850)-414-4848

## CURRENT APPLICATIONS

- » **FDOT TRANSTAT**
  - » Project Traffic Forecasting Handbook
  - » Traffic Performance Measures

## POTENTIAL APPLICATIONS

- » Synthesis of truck traffic by type and loading conditions using WIM data
- » Combining Container Number Database with Weigh-In Motion database
- » Useful in validation exercise in modeling and performance measures

## IMPORTANT HIGHLIGHTS

- » Currently, the FDOT TRANSTAT Office maintains 31 WIM stations within the state.
- » A 32<sup>nd</sup> WIM station is planned for I-75 at the Florida / Georgia state border but the site is not active yet. Some additional infrastructure installation is required before polling/data collection begins at the site.
- » WIM stations are maintained independently from the Office of Maintenance's Weight stations.
- » Oracle Database characteristics:
  - » WIM equipment collects the speed, volume, vehicle classification, axle weights, and axle spacing of every vehicle that passes over the sensors.
  - » The vehicle classification and speed data are binned similarly to the continuous speed and classification sites.
  - » The vehicle weight and axle spacing data are only saved for buses, vehicle classes 4 and higher, in order to conserve memory in the counters.
  - » Major attributes include weight, axle weight, volume, speed, FHWA classifications and time stamp of every truck crossing WIM stations.



Weigh in Motion Locations

Source: [Traffic Data Section](#)

A	B	C	D	E	F	G	H	I	J	K
COUNTY	SITE	DIR	LANE	BEGDATE	VEHNO	SCHEMEF_CODE	VEHTYP	SPEED	VEH_LENGTH	GROSS_W
74	9923	S	6	01/01/2016 00:00:00	38494	08	38	62	5614	18,739
74	9923	S	6	01/01/2016 00:00:00	38526	08	38	67	4941	15,232
74	9923	N	1	01/01/2016 00:00:00	38529	09	40	66	7352	74,433
74	9923	N	1	01/01/2016 00:00:00	38540	09	40	64	7277	41,855
74	9923	S	6	01/01/2016 00:00:00	38574	09	40	74	7910	71,094
74	9923	N	2	01/01/2016 00:00:00	38579	05	20	66	2274	9,754
74	9923	N	1	01/01/2016 00:00:00	38677	08	38	66	4695	14,667
74	9923	S	5	01/01/2016 00:00:00	38775	08	38	66	5397	17,750
74	9923	S	6	01/01/2016 00:00:00	38792	09	40	71	7986	75,198

Snapshot of WIM Data in Oracle database

Complexity Measure	Spatial Coverage	Commodity Coverage	Industry Coverage	Modal Coverage	Temporal Coverage	Collection Frequency/ update	Accuracy	Access
Rating	●	○	○	●	●	●	●	●



## 2.1 FREIGHT AND MODAL DATA FEEDBACK SURVEY

In order to gather and coordinate freight and modal data business intelligence used by various FDOT offices and identify the available freight and modal data and information, separate meetings with FDOT Central Office staffs were conducted. The survey questionnaire instrument and survey raw data results are presented in Appendix B. Appendix C provides minutes of meetings with the different offices. A survey was administered as follow up to those meetings and was aimed at gathering specific information about data which are used by the FDOT Central Office staff and are impacted by freight only.

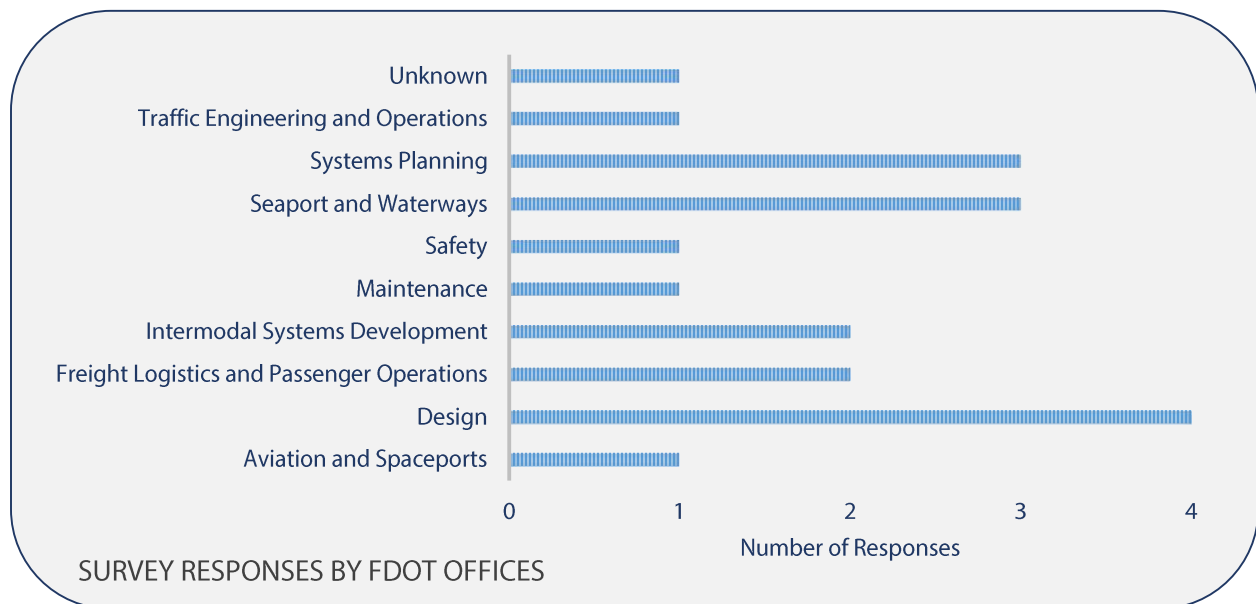
### 2.1.1: Design of the Survey

The purpose of the survey was to learn about the respondents’ freight and modal data usage, needs and procedures. The information they provided through this survey is expected to add valuable guidance to enhance FDOT’s Freight and Modal Data Program.

The survey link was sent to 11 different FDOT Central Office staffs on April 28, 2016 and was active for the period from April 28, 2016 to May 12, 2016. The sample size of respondents was approximately 50 FDOT Central Office staff and included the staff who attended the separate meetings. Survey questions included: general questions about where the respondents work; usage of freight and modal data; other FDOT offices where data is acquired; procedures used to request data; resources acquired from non-FDOT offices; tools used for data sharing; freight and modal data usage frequency; data usage needs; data gaps encountered; current communication tools; tools needed for daily business operations in future; where the data is hosted; and the location envisioned to host data in future.


### 2.1.2: Survey Results

The survey was sent to approximately 50 respondents, which included 11 different FDOT Central Office staffs. At least one response from every FDOT office, with the exceptions of Environmental Management Office and Rail & Motor Carrier Office, was received.




Of the respondents, 52.6% indicated that they have acquired freight and modal data from another FDOT office. Respondents indicated that they acquire many datasets from other FDOT offices which included free as well as proprietary data sets. They use simple forms of communications like phone call and an email to a direct point of contact for acquiring datasets. As per the responses, datasets acquired by an FDOT office from another FDOT offices is currently limited. This indicates lack of need or lack of sufficient information about different data resources available.

Every respondent indicated other FDOT offices provide their data using online services or email attachments. This question listed other response options which were portable devices like CDs, pen drives, etc. None of the respondents indicated usage of portable devices for acquiring data from other FDOT offices. This is an encouraging sign as it is evident that FDOT offices have migrated from traditional forms of data sharing and will be more receptive to new technologies for data sharing.



PHONE CALLS AND EMAIL COMMUNICATION WERE IDENTIFIED AS THE PREFERRED MEANS TO CONTACT OTHER OFFICES FOR ACQUIRING DATASETS



ALL RESPONDING FDOT OFFICES INDICATED THAT ONLINE FILE DELIVERY SERVICES WERE PRIMARY MEANS TO TRANSFERING DATA (EX. DROPBOX)




MAJORITY OF THE RESPONDES INDICATED THAT MULTIMODAL FREIGHT DATA INFORMATION IS NEEDED IN THEIR DAY-TO-DAY ACTIVITIES; WITH THE EXCEPTION OF THE DESIGN OFFICE




WITH THE DAILY NEED FOR MULTIMODAL FREIGHT DATA IT IS ALSO IMPORTANT THAT FREIGHT DATA SOURCES ARE REGULARLY UPDATED AND REFRESHED WITH UP-TO-DATE INDUSTRY IFORMATION

Modal offices, traffic engineering and operations and safety offices use data daily with the exception of ISD and Design who use data rarely and never respectively. They use freight and modal data for preparing their plan documents, analysis of specific case studies, performance measures and for major policy and decision-making.


Except Safety office, all other offices believe that there are "No" goals and objectives of their business plan which are not currently supported through the required freight and modal data and information. Respondents were asked if they have any big data gaps in their planning and reporting functions. They have identified funding constraints for data acquisition, data storage, maintenance and required analytics as the major big data gap. The other big data gap they have identified is lack of enough knowledge about available data sources and lack of tools for search of available data sources.




THE MAJOR GAPS RELATED TO MULTIMODAL FREIGHT DATA WERE IDENTIFIED AS:



FUNDING CONSTRAINTS FOR DATA ACQUISITION,



DATA STORAGE, MAINTENANCE AND REQUIRED ANALYTICS.

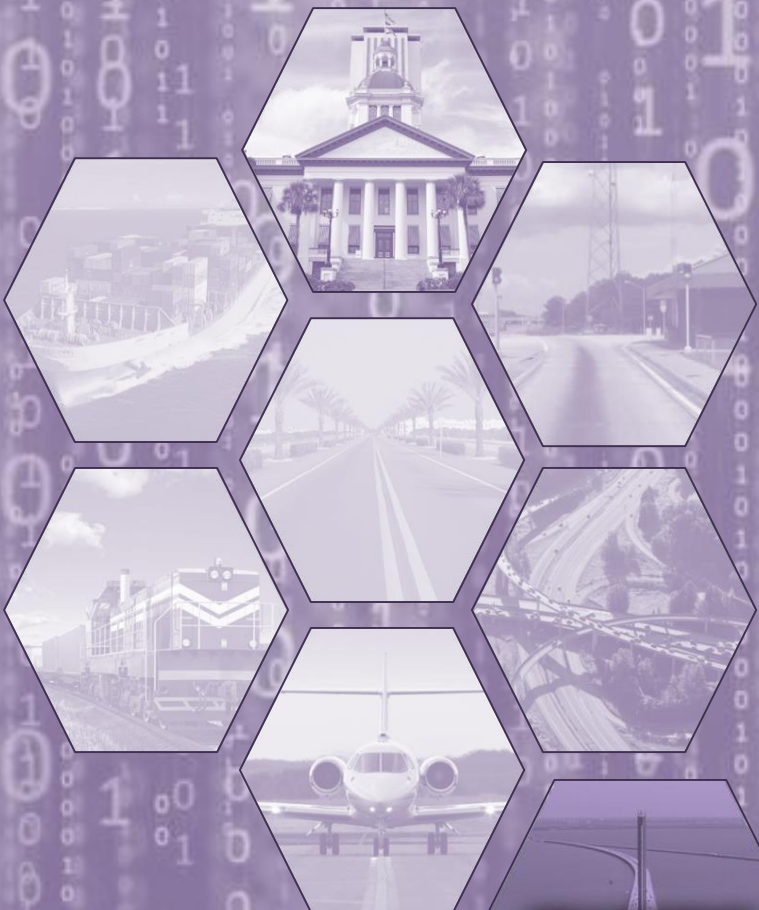


LACK OF KNOWLEDGE ABOUT AVAILABLE DATA SOURCES AND LACK OF TOOLS TO SEARCH FOR AVAILABLE DATA SOURCES.

Majority of respondents believe that a portal of feedback from users, web mapping viewer and web mapping functions like data download and dashboard reporting will be beneficial in their business operations. These resources will help in higher usage of the datasets by FDOT offices as well as other agencies. The respondents are more comfortable with the data and communication tool to be hosted in their office or under the firewall of Agency for State Technology (AST). The primary reason is the sensitive and proprietary nature of many data sources. This approach is definitely necessary for the nature of the data sources, but is expected to be less cost-friendly.

**Action Items:**

- » This survey has limited number of responses and was constrained to the FDOT Central Office. The survey and structured meetings should be conducted for a wider audience which includes District offices and other relevant agencies. Some of those agencies may include Department of Revenue, Department of Health and Department of Agriculture. A diverse group will help to understand the data needs, data availability and the perspectives of data usage better.
- » The survey responses indicated that reception of standard technology is very positive. It is important that significant efforts are implemented to improve technology capabilities.
- » The survey responses indicated additional datasets which are not included in the data inventory as well as data profiles. These additional datasets can be added in the products created in this task work order.
- » A sustainable plan is needed to host, maintain and disseminate the datasets by storing them in their respective offices. ROADS project is expected to provide guidance on this topic, but every office should have a new or a revised plan for the longevity of these resources.



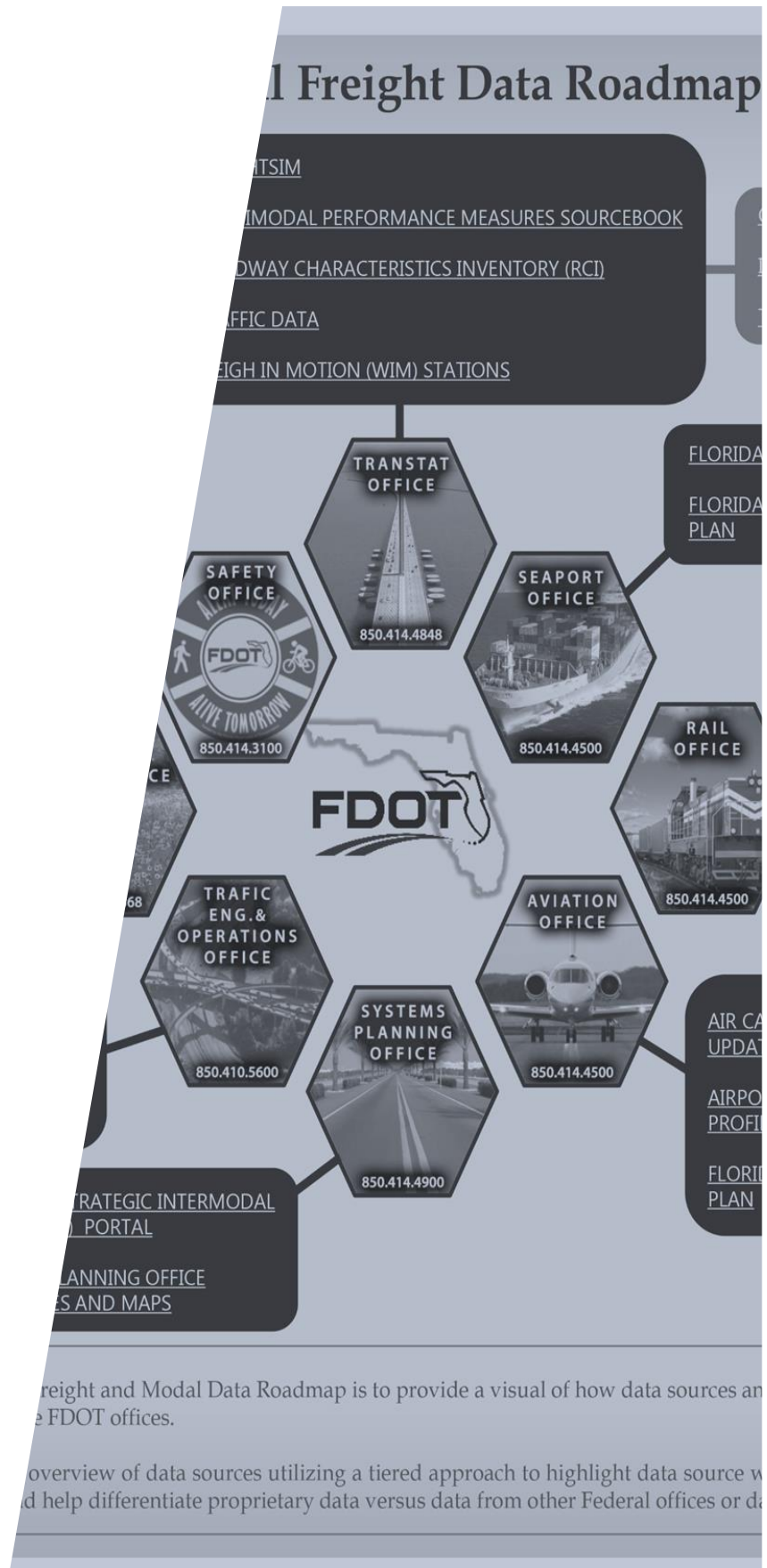
# MULTIMODAL FREIGHT DATA ROADMAP

JUNE 2016



# SECTION 3

## MULTIMODAL FREIGHT DATA ROADMAP



The Freight and Modal Data Roadmap is to provide a visual of how data sources are connected to the FDOT offices.

The overview of data sources utilizing a tiered approach to highlight data source ownership and help differentiate proprietary data versus data from other Federal offices or data

### 3.0 MULTIMODAL FREIGHT DATA ROADMAP

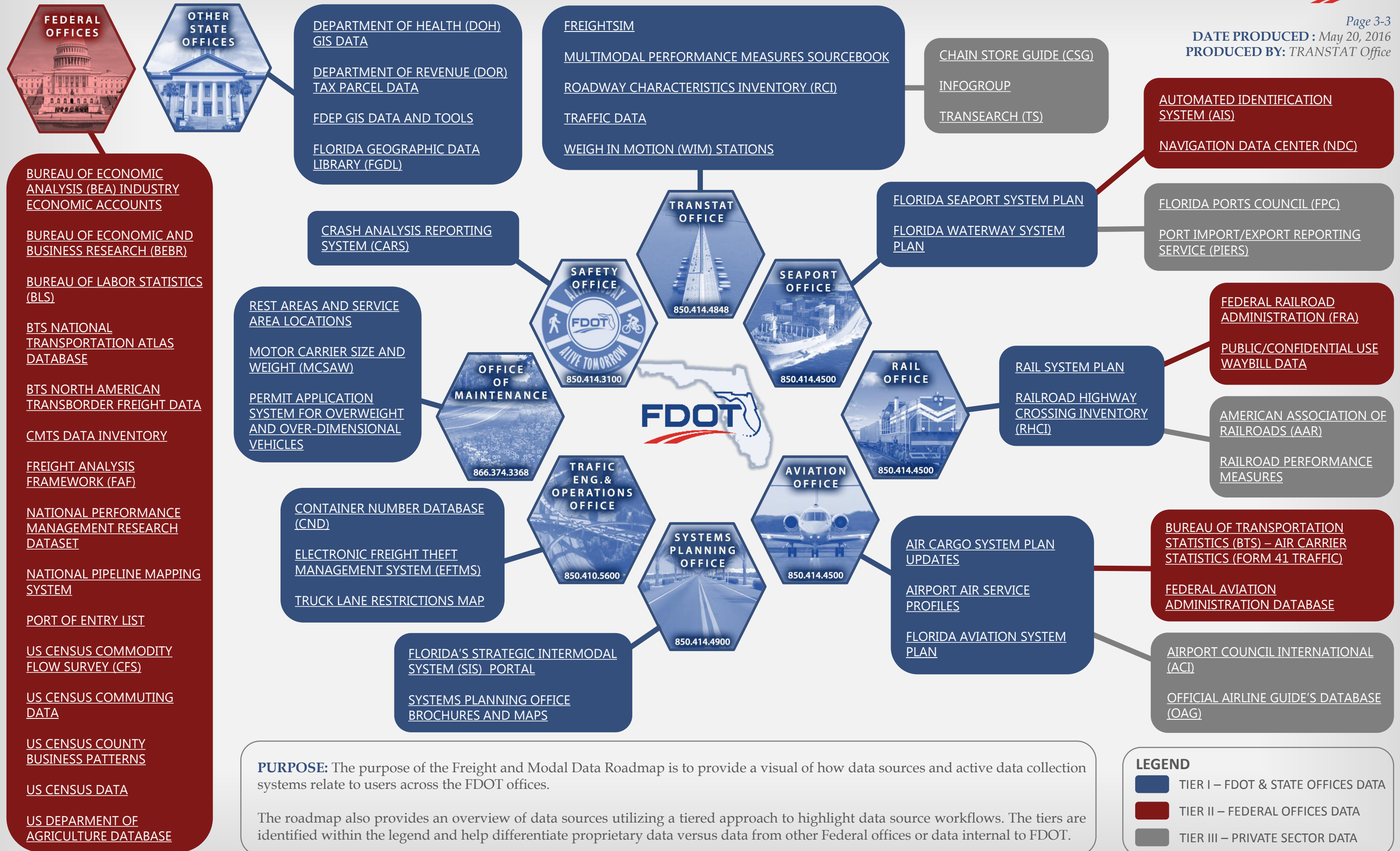
The Data Roadmap presented as an attachment within this section provides a visual representation of how data sources and active data collection systems relate to users across the FDOT offices. The roadmap provides an overview of data sources utilizing a tiered approach to highlight data source workflows. The tiers are broken down into three categories related to sources of data:

- » Tier 1 – FDOT Offices
  - » Aviation
  - » Office of Maintenance
  - » Rail and Motor Carrier
  - » Safety
  - » Seaport and Waterways
  - » Systems Planning
  - » Traffic Engineering & Operations
  - » TRANSTAT
- » Tier 1 – Other State Offices/Sources (examples below)
  - » Florida Department of Environmental Protection (FDEP)
  - » Florida Department of Health (DOH)
  - » Florida Department of Revenue (DOR)
  - » Florida Geographic Data Library (FGDL)
- » Tier 2 – Federal Offices (examples below)
  - » Bureau of Economic Analysis (BEA)
  - » Bureau of Labor Statistics (BLS)
  - » Bureau of Transportation Statistics (BTS)
  - » US Census
  - » US Department of Agriculture (USDA)
- » Tier 3 – Private Sector (examples below)
  - » Airport Council International (ACI)
  - » American Association of Railroads (AAR)
  - » Chain Store Guide (CSG)
  - » Infogroup
  - » Port Import/Export Reporting Service (PIERS)
  - » Transearch (TS)

The data sources represented within the Data Roadmap were selected from the Data Inventory Matrix. The tiered approach helps differentiate proprietary data versus data from public sector and data internal to FDOT. The purpose of the roadmap is to help the users of multimodal freight data identify data flow and determine the particular office or offices to coordinate with in regards to obtaining data from the different data sources outlined in the Data Roadmap.

The Data Roadmap graphic is provided on the following page and an ARCH E (36in x 48in) sized PDF plot of the Data Roadmap is provided within Appendix D.

# Multimodal Freight Data Roadmap



- [BUREAU OF ECONOMIC ANALYSIS \(BEA\) INDUSTRY ECONOMIC ACCOUNTS](#)
- [BUREAU OF ECONOMIC AND BUSINESS RESEARCH \(BEBR\)](#)
- [BUREAU OF LABOR STATISTICS \(BLS\)](#)
- [BTS NATIONAL TRANSPORTATION ATLAS DATABASE](#)
- [BTS NORTH AMERICAN TRANSBORDER FREIGHT DATA](#)
- [CMTS DATA INVENTORY](#)
- [FREIGHT ANALYSIS FRAMEWORK \(FAF\)](#)
- [NATIONAL PERFORMANCE MANAGEMENT RESEARCH DATASET](#)
- [NATIONAL PIPELINE MAPPING SYSTEM](#)
- [PORT OF ENTRY LIST](#)
- [US CENSUS COMMODITY FLOW SURVEY \(CFS\)](#)
- [US CENSUS COMMUTING DATA](#)
- [US CENSUS COUNTY BUSINESS PATTERNS](#)
- [US CENSUS DATA](#)
- [US DEPARTMENT OF AGRICULTURE DATABASE](#)

- [DEPARTMENT OF HEALTH \(DOH\) GIS DATA](#)
- [DEPARTMENT OF REVENUE \(DOR\) TAX PARCEL DATA](#)
- [FDEP GIS DATA AND TOOLS](#)
- [FLORIDA GEOGRAPHIC DATA LIBRARY \(FGDL\)](#)

- [FREIGHTSIM](#)
- [MULTIMODAL PERFORMANCE MEASURES SOURCEBOOK](#)
- [ROADWAY CHARACTERISTICS INVENTORY \(RCI\)](#)
- [TRAFFIC DATA](#)
- [WEIGH IN MOTION \(WIM\) STATIONS](#)

- [CHAIN STORE GUIDE \(CSG\)](#)
- [INFOGROUP](#)
- [TRANSEARCH \(TS\)](#)

- [AUTOMATED IDENTIFICATION SYSTEM \(AIS\)](#)
- [NAVIGATION DATA CENTER \(NDC\)](#)

- [CRASH ANALYSIS REPORTING SYSTEM \(CARS\)](#)

- [REST AREAS AND SERVICE AREA LOCATIONS](#)
- [MOTOR CARRIER SIZE AND WEIGHT \(MCSAW\)](#)
- [PERMIT APPLICATION SYSTEM FOR OVERWEIGHT AND OVER-DIMENSIONAL VEHICLES](#)

- [CONTAINER NUMBER DATABASE \(CND\)](#)
- [ELECTRONIC FREIGHT THEFT MANAGEMENT SYSTEM \(EFTMS\)](#)
- [TRUCK LANE RESTRICTIONS MAP](#)

- [FLORIDA'S STRATEGIC INTERMODAL SYSTEM \(SIS\) PORTAL](#)
- [SYSTEMS PLANNING OFFICE BROCHURES AND MAPS](#)

- [FLORIDA SEAPORT SYSTEM PLAN](#)
- [FLORIDA WATERWAY SYSTEM PLAN](#)

- [FLORIDA PORTS COUNCIL \(FPC\)](#)
- [PORT IMPORT/EXPORT REPORTING SERVICE \(PIERS\)](#)

- [RAIL SYSTEM PLAN](#)
- [RAILROAD HIGHWAY CROSSING INVENTORY \(RHCI\)](#)

- [FEDERAL RAILROAD ADMINISTRATION \(FRA\)](#)
- [PUBLIC/CONFIDENTIAL USE WAYBILL DATA](#)

- [AMERICAN ASSOCIATION OF RAILROADS \(AAR\)](#)
- [RAILROAD PERFORMANCE MEASURES](#)

- [AIR CARGO SYSTEM PLAN UPDATES](#)
- [AIRPORT AIR SERVICE PROFILES](#)
- [FLORIDA AVIATION SYSTEM PLAN](#)

- [BUREAU OF TRANSPORTATION STATISTICS \(BTS\) – AIR CARRIER STATISTICS \(FORM 41 TRAFFIC\)](#)
- [FEDERAL AVIATION ADMINISTRATION DATABASE](#)

- [AIRPORT COUNCIL INTERNATIONAL \(ACI\)](#)
- [OFFICIAL AIRLINE GUIDE'S DATABASE \(OAG\)](#)

**PURPOSE:** The purpose of the Freight and Modal Data Roadmap is to provide a visual of how data sources and active data collection systems relate to users across the FDOT offices.

The roadmap also provides an overview of data sources utilizing a tiered approach to highlight data source workflows. The tiers are identified within the legend and help differentiate proprietary data versus data from other Federal offices or data internal to FDOT.

**LEGEND**

- TIER I – FDOT & STATE OFFICES DATA
- TIER II – FEDERAL OFFICES DATA
- TIER III – PRIVATE SECTOR DATA

# REVIEW OF FREIGHT DATA CLEARINGHOUSES

JUNE 2016





# SECTION 4

## REVIEW OF FREIGHT DATA CLEARINGHOUSES

ATTACHMENT MATRIX OF DATA CLEARINGHOUSES

	State	Multiple years of data	Exportable files/formats	Query options personalize	Roadway Data (AADT and # of lanes minimum)	Basemap of roads	Georeference information	Tonnage, Value, TEUs	Intuitive Interface	Interactive	Navigation
	AL	1	1	1	0	1	1	0	1	2	2
	AL	1	1	0	0	0	1	0	1	2	2
	AK	0	1	0	0	1	1	0	1	2	2
	AZ	2	1	1	1	1	1	0	1	1	1
	AZ	0	1	1	0	0	1	0	1	2	2
	AR	0	1	1	1	1	1	0	1	2	2
	CA	2	1	0	1	1	1	1	1	3	3
	CA	2	1	0	1	1	1	0	1	2	2
	CT	2	1	0	0	1	1	0	1	2	2
10	DE	2	1	0	0	1	1	0	1	2	2
11	FL	2	1	1	0	0	1	0	1	3	2
12	FL	2	1		1	1	1	0	1	2	2
13	FL	0	1	0	1	1	1	0	0	2	2

## 4.0 REVIEW OF FREIGHT DATA CLEARINGHOUSES

The Review of Freight Data Clearinghouses provides analytical and technical recommendations for freight data clearinghouses, data fusion analyses, and data visualization to increase the accessibility and marketability of multimodal freight data. This section contains the following four subsections:

- » Background of Data Clearinghouses;
- » Guidelines for Evaluation of Data Clearinghouses (further detailed in Appendix E);
- » Data Clearinghouse Evaluation (further detailed in Appendix F); and,
- » Data Fusion Analysis.

The first subsection (Section 4.1) provides a background on data clearinghouses including major components of a data clearinghouse, which include: servers, datasets, metadata, search engines, collective metadata, advanced query functions, and data architecture. According to the Merriam Webster dictionary, a data clearinghouse is defined as: “A central agency for the collection, classification, and distribution especially of information; broadly: an information channel for distributing information or assistance”. The first subsection also provides information regarding the inventoried datasets and data architecture.

*Inventoried Datasets:* The Review of Freight Data Clearinghouses explored 89 major freight datasets. These datasets were heterogeneous in nature and can be differentiated in three forms: structure, syntax, and semantics. The inventoried data clearinghouses were categorized using a suitable classification method to determine their strengths and weakness. The utilization of a suitable classification method facilitated structured review of clearinghouses and ensured data architecture was consistent. *Data Architecture:* Based on literature review of national sources, Section 4.1 provides a comprehensive analysis of the different components of an ideal data architecture framework.

The second subsection (Section 4.2) focuses on selected guidelines for evaluation of data clearinghouses. The first set of guidelines are adopted from Data Archiving and Networked Services’ (DANS) methodology for “Data Seal of Approval”. DANS is an institute of the Royal Netherlands Academy of Arts and Sciences (KNAW). The evaluation of data clearinghouses also includes an intuitive methodology developed as part of this task. The guidelines utilized in this analysis as well as other important guidelines for evaluating data clearinghouses are provided in Appendix E.

The third subsection (Section 4.3) applies the guidelines described within Section 4.2 to evaluate 52 different data clearinghouses. A brief background of the process followed for the evaluation and major findings are summarized within this subsection. The complete rating evaluation matrix is provided in Appendix F.

Section 4.4 provides a discussion regarding the importance of data fusion within freight data analysis. Data fusion is an intuitive approach but utilization of a structure approach is imperative in assisting freight data analysts in choosing the most appropriate method to conduct data fusion. Several examples are highlighted within this subsection to provide better understanding of data fusion methods.

## 4.1 BACKGROUND OF DATA CLEARINGHOUSE

Freight data clearinghouses provide significant benefits for users who need to access data sources and related online services for freight analysis and visualizations. With majority of data sources available at one centralized location (clearinghouse), users can reduce their time and efforts in acquiring data, analyzing and assessing data and then changing the data format to suit their needs. It represents a potential solution to alleviate the data assessment, collection, and visualization burdens on analysts and modelers which will enable them to spend their time to provide cost-effective solutions for policy-makers at regional and local levels. Data clearinghouses also provide a benefit for private sector industry data analysts who use similar information for economic and financial optimization of their services. Examples include: Fleet routing, trip planning, obtaining permits, and performance measures for the transportation system.

### 4.1.1: What is a Data Clearinghouse?

According to the Merriam Webster dictionary, a data clearinghouse is defined as: “A central agency for the collection, classification, and distribution especially of information; broadly: an information channel for distributing information or assistance”.

The major components of data clearinghouse are explained below:

- » *Servers*: A data clearinghouse comprises of a distributed system of agency servers which are located on the Internet and they contain field-level descriptions of available and planned datasets, applications, and services.
- » *Datasets*: The datasets included in the clearinghouse form the main component of the data clearinghouse. They are inventoried and then may or may not be checked for their quality and size/space requirements.
- » *Metadata*: Metadata for the different datasets is collected in a standard format to facilitate query and consistent presentation across multiple participating sites.
- » *Search engine*: Clearinghouse search engine technology generally includes spatial query, text query and search of Metadata, field level search based on topics, geography, time and other important fields.
- » *Collective metadata*: The definition of a dataset generally corresponds to individual identifiable data products (e.g. file, layer, service) for which metadata are customarily collected. Collections of datasets may also have generalized metadata that could be inherited by individual datasets.
- » *Advanced query functions*: To provide search interoperability among different servers of geospatial metadata, a standard search and retrieve protocol specification has to be selected.
- » *Data architecture*: This component is not a quantifiable component of the clearinghouse but provides the framework for the manner in which datasets and other components of data clearinghouses should be organized and integrated for freight transportation-related applications or business processes.

Two important components, the inventoried datasets and data architecture are considered for further study in the sections below.

### 4.1.2: Inventoried Datasets

Section 1 and 2 of this report included a comprehensive assessment of different public and private datasets. This assessment aimed to assist local, regional, and state freight coordinators in freight transportation-related applications from a holistic perspective which included multiple modes, different levels of spatial and temporal details, all commodities and supply chain nature of freight data. The Data Inventory Matrix provided as an attachment in Section 1 illustrated the complete list of the inventoried datasets.

#### Heterogeneous Nature of Datasets

One of the challenges encountered while adding different datasets to a data clearinghouse is the heterogeneous nature of datasets. These heterogeneities can be classified in three forms - structure, syntax, and semantics.

- » *Structural heterogeneity* indicates differences in how the data is stored in the various databases.
- » *Syntactic heterogeneity* indicates differences in the representation of the data; in other words, data types and formats.
- » *Semantic heterogeneity* indicates differences in interpretation of the meaning of the data.

Resolving freight data heterogeneity across multiple data sources is necessary to facilitate the integration of data elements, enable interoperability between multiple systems, and smooth the exchange of data and information between clearinghouses. Many methodologies have been explored providing robust classification schemes for dataset. These classification schemes and their responsible developer are illustrated in Table 4.1 below.

**Table 4.1: Different Types of Freight Data Classification Schemes**

Title	Description	Developer
CODMRT	<ul style="list-style-type: none"> <li>» <b>Commodity</b>, which describes the type of freight being moved and contains information such as value, weight, and handling characteristics.</li> <li>» <b>Origin</b>, which describes the geographic starting point of a freight trip.</li> <li>» <b>Destination</b>, which describes the geographic ending point of a freight trip.</li> <li>» <b>Mode</b>, which describes the vehicles and infrastructure used to transport goods.</li> <li>» <b>Route</b>, which describes the sequence of specific individual facilities (e.g., sections of roads, railroad tracks, etc.) that are used to transport freight between the origin and destination on a specific mode.</li> <li>» <b>Time</b>, which is defined as the time period for which the freight data was collected (i.e., the freight forecast time period).</li> </ul>	TRB Committee on Freight Transportation Data (2003)

Title	Description	Developer
FFFN	<ul style="list-style-type: none"> <li>» Freight node data, which represents consolidated or individual endpoints that generate or receive freight flows and are the key points of production, consumption, or intermediate handling for goods.</li> <li>» Freight network data, which defines major route patterns and critical infrastructure being used to convey freight shipments through the various modal systems.</li> <li>» Freight flow data, which provides information on commodity flows and provides insight on the economic and trade environment of regions. Typical commodity flow records will contain information on the O-D of shipments, type of commodity, weight, and/or value of the commodity shipment, and mode of shipment.</li> <li>» Neighborhood freight data, which provides information on safety, congestion, land use, and emissions.</li> </ul>	NCFRP Report 14 [1]
Role-Based Classification Schema (RBCS)	<ul style="list-style-type: none"> <li>» Time</li> <li>» Place, which can be an identifier or a feature</li> <li>» Link</li> <li>» Mode:</li> <li>» Commodity:</li> <li>» Industry:</li> <li>» Event:</li> <li>» Human:</li> <li>» Unclassified</li> </ul>	NCFRP Report 35 [2]
Data Quality Assessment Framework (DQAF)	<ul style="list-style-type: none"> <li>» Prerequisites of quality</li> <li>» Integrity</li> <li>» Methodological soundness</li> <li>» Accuracy and reliability</li> <li>» Serviceability</li> <li>» Accessibility</li> </ul>	INTERNATIONAL MONETARY FUND
Complexity Measure	<ul style="list-style-type: none"> <li>» Spatial Coverage</li> <li>» Commodity Coverage</li> <li>» Industry Coverage</li> <li>» Modal Coverage</li> <li>» Temporal Coverage</li> <li>» Collection Frequency/Update</li> <li>» Accuracy</li> <li>» Access</li> <li>» Usability</li> </ul>	NCFRP 12 and RS&H

Utilization of these classification methods will provide the following benefits:

- » Designing a structured nature of data clearinghouse.
- » Refining components of data architecture (Refer Section 4.1.3 for more details).
- » Determining appropriate data fusion methods which are necessary to merge two or more datasets together.

RBCS is expected to be the one of the most user friendly classification scheme for building a robust data clearinghouse. The classification schemes can also be used for developing textual search and for building bridges among different datasets.

### 4.1.3: Data Architecture

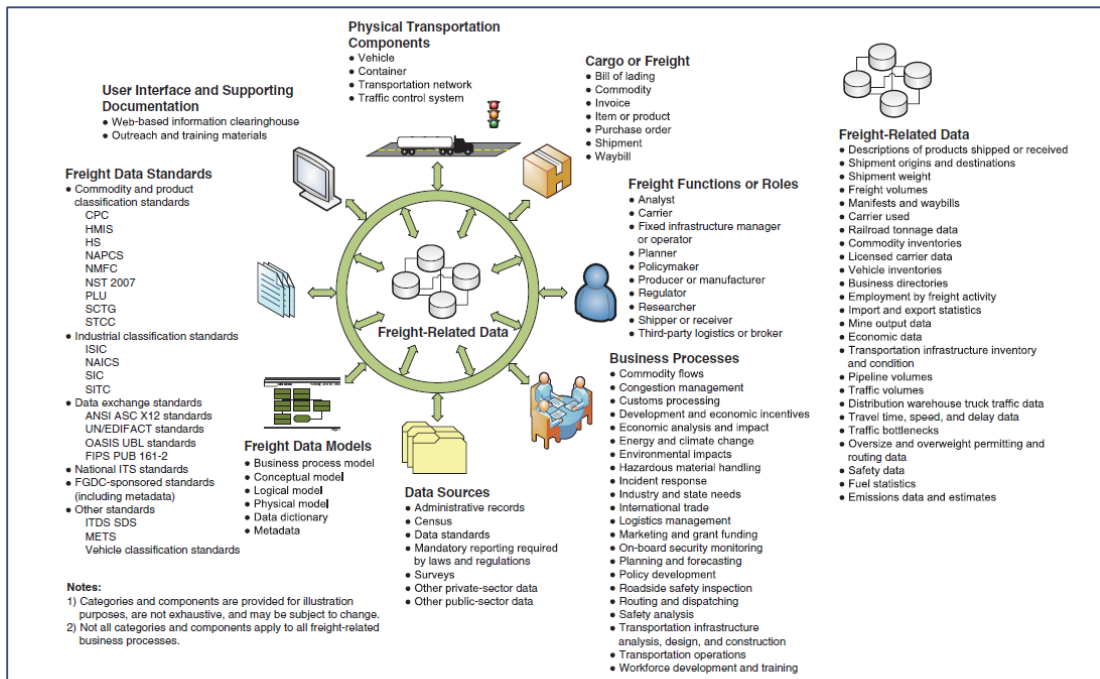
According to NCFRP 35 [2] data architecture is defined as:

*“The national freight data architecture is the manner in which data elements are organized and integrated for freight transportation-related applications or business processes. The data architecture includes the necessary set of tools that describe related functions or roles, components where those roles reside or apply, and data flows that connect roles and components at different domain and aggregation levels.”*

Figure 4.1 illustrates the different components of the proposed National Freight Data Architecture Framework. As per NCFRP 9 [3], data architecture includes following components:

- » Physical transportation components
- » Cargo or freight
- » Freight functions or roles
- » Business processes
- » Data sources
- » Freight-related data
- » Freight data models
- » Freight data standards
- » User interface and supporting documentation

Figure 4.1: National Freight Data Architecture Framework and Components



Standard frameworks of data architecture can be classified into centralized, distributed, decentralized and hierarchical. Data architecture for a state based data clearinghouse should include a holistic, all-encompassing approach with all data elements organized and integrated for multiple freight transportation-related applications or business processes. The FDOT handles a lot of public records requests and public information requests as part of day-to-day activities, a freight data clearinghouse can facilitate and enhance the coordination between FDOT, MPOs/TPOs, local governments, and freight industry. It can elevate how the FDOT responds to the freight industry's call for support. NCFRP 35 [2] identified freight data functions and applications. An overview of these freight related functions and applications is provided in Table 4.2. The freight functions listed in Table 4.2 were used to characterize current and potential applications of selected profile data sheets provided in Section 2 of this report.

**Table 4.2: Freight Planning and Decision-Making Public Sector Functions**

Function	Description
<b>Congestion Management</b>	Identify and monitor recurring and non-recurring congestion along road corridors and evaluate and recommend mitigation strategies
<b>Operations/Services</b>	Develop, operate, and maintain transportation modes; improve the movement of goods and people and increase the safety and efficiency of the transportation system through enhanced management and operations coordination
<b>Safety Planning and Analysis</b>	Implement and maintain integrated multimodal safety and transportation planning; the ultimate goal is to reduce crashes, injuries, and fatalities
<b>Freight Mobility Planning</b>	Incorporate goods movement into the regional transportation planning process
<b>Emergency Preparedness and Security Planning</b>	Increase the safety and security of the transportation system through enhanced coordination and communications among emergency responders
<b>Economic Development Planning</b>	Estimate the impacts of transportation planning on local population and employment
<b>Freight Transportation and Land Use Planning</b>	Coordinate regional freight transportation planning and land use development
<b>Environmental Planning</b>	Investigate activities involving mobile emissions planning, environmental protection, land use management, and air quality efforts
<b>Regulation and Enforcement</b>	Conduct activities such as licensing, inspection, size and load specifications, work hours regulation, and taxes/fares
<b>Intermodal Trade Corridor Planning</b>	Develop intermodal corridors to ensure efficient freight movement and reduce congestion
<b>Terminal and Border Access Planning</b>	Manage terminals and borders to ensure efficient movement of people and goods across modes

Function	Description
<b>Hazardous Materials Planning</b>	Improve safe movement and monitoring of hazardous materials transported using the freight system
<b>Roadway Pavement and Bridge Maintenance Planning</b>	Study the effects of fleet use on infrastructure, such as expected pavement deterioration
<b>Modal Shift Analysis</b>	Investigate policies and incentives that foster modal shift changes, including measuring the impact of shifting from one mode to another
<b>Freight Performance Measurements</b>	Develop measures to monitor the performance of the freight transportation system, including its subsystems and components
<b>Sustainable Transportation Investment</b>	Investigate ways to fund the existing transportation system and future projects
<b>Financial Planning</b>	Investigate grants, loans, and subsidies to support the transportation system; also involves tax policy, road user fee assessment, and other activities such as public-private partnerships
<b>Interregional Connectivity</b>	Develop intermodal corridors to ensure efficient freight movement and reduce congestion
<b>Security Planning</b>	Integrate emergency response and other calculations into transportation planning
<b>Transportation Equity Planning</b>	Incorporate transit equity principles and legislation such as SAFETEA-LU into regional transportation planning



## 4.2 GUIDELINES FOR EVALUATION OF DATA CLEARINGHOUSES

This subsection includes a discussion of the standard guidelines used for the evaluation of data clearinghouses, as well as, the methodology for the intuitive criteria developed specifically for the data clearinghouses analysis. The subsection also includes a discussion for literature review of other guidelines used and further detailed within Appendix E.

### 4.2.1: Standard Guidelines for Evaluation of Data Clearinghouses

Fundamental to the guidelines are six principles that together determine whether or not the data may be considered as sustainably archived:

- » The data is available on the Internet;
- » The data is accessible, while taking into account relevant legislation with regard to personal information and intellectual property of the data;
- » The data is available in a usable format;
- » The data is reliable;
- » The data can be referred to a published document; and,
- » The data is updated at a regular frequency.

These six principles are integral to the guidelines, which focus on three stakeholders: the data producer, the data clearinghouse and the data consumer.

- » The data producer is responsible for the quality of the data.
  - » Example: Florida Department of Transportation is a data producer for Roadway Characteristics Inventory (RCI) dataset.
- » The data repository is responsible for the quality of storage and availability of the data.
  - » Example: Transportation Statistics Office website is the data repository for road GIS data.
- » The data consumer is responsible for the quality of use of the digital data.
  - » Example: Florida Department of Transportation is a data consumer for Transearch dataset.

Tables 4.3 and Table 4.4 provide a list of guidelines and a list of rating metrics, respectively, which have been developed for self-assessment of data repositories to get a “Data Seal of Approval” [4]. A comprehensive review and analysis of these guidelines indicated that they are robust and attempt to eliminate any limitations within a data repository or a data clearinghouse.

A data repository is designated as Trusted Digital Repository (TDR) according to the requirements of the “Data Seal of Approval” if it meets guidelines 1-16. The guidelines can be categorized as follows:

- » Guidelines 1-3 are related to data producers;
- » Guidelines 4-13 are related to repositories; and,
- » Guidelines 14-16 are related to data consumers.

These guidelines are listed in Table 4.3 and a detail description of the guidelines 1-16 is provided within Appendix E.

Table 4.3: List of Guidelines for Evaluation of Data Clearinghouse

Category	Guideline Number	Guideline Details
	0	Clearinghouse context
Related to Data Producers	1	The clearinghouse has an explicit mission to provide access to and preserve data in its domain.
	2	The clearinghouse maintains all applicable licenses covering data access and use and monitors compliance.
	3	The clearinghouse has a continuity plan to ensure ongoing access to and preservation of its holdings.
Related to Repositories	4	The clearinghouse ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.
	5	The clearinghouse has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.
	6	The clearinghouse adopts mechanism(s) to secure ongoing expert guidance and feedback (either in-house, or external, including scientific guidance, if relevant).
	7	The clearinghouse guarantees the integrity and authenticity of the data
	8	The clearinghouse accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.
	9	The clearinghouse applies documented processes and procedures in managing archival storage of the data.
	10	The clearinghouse assumes responsibility for long-term preservation and manages this function in a planned and documented way.
	11	The clearinghouse has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.
	12	Archiving takes place according to defined workflows from ingest to dissemination
	13	The clearinghouse enables users to discover the data and refer to them in a persistent way through proper citation.
Related to Data Consumers	14	The clearinghouse enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.
	15	The clearinghouse functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.
	16	The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

The clearinghouse should analyze potential threats, assess risks, and create a consistent security system. It should describe damage scenarios based on malicious actions, human error, or technical failure that pose a threat to the repository and its data, products, services, and users. It should measure the likelihood and impact of such scenarios, decide which risk levels are acceptable, and determine which measures should be taken to counter the threats to the clearinghouse and its Designated Community. This should be an ongoing process.

The guidelines 3, 9 and 16 were not considered for the evaluation of example data clearinghouses within this report. These guidelines would need additional information requiring additional resources and time to conduct interviews or survey of the developers/owning agencies. But, all guidelines are recommended for a clearinghouse which would be developed in future through the Freight and Modal Program. Guideline 0 is a reference guideline and is not used in the evaluation.

Table 4.4 illustrates the rating system utilized, which is broken into four categories to develop a Strengths, Weaknesses, Opportunities, and Threats (SWOT) metrics as follows:

- » 4-5: Strengths
- » 2-3: Opportunities
- » 0-1: Weaknesses
- » -1: Threats

**Table 4.4: Ratings and SWOT Metrics**

SWOT Metric	Rating	Definition
Threats	-1	Cannot be implemented
Weaknesses	0	N/A: Not Applicable
Weaknesses	1	No: Not considered yet
Opportunities	2	Theoretical: Have a theoretical concept – URL needed for the initiation document
Opportunities	3	In progress: In the implementation phase provide a URL for the supporting document
Strengths	4	Implemented: This guideline has been fully implemented for the needs of the repository
Strengths	5	A URL for the supporting document is provided

#### **4.2.2: User Developed Guidelines**

Specific guidelines were developed to evaluate various clearinghouses and are classified in the following categories:

- » Data Coverage
- » Technical Support
- » User Interface
- » Standardization
- » Adaptability

Table 4.5 details the use of these guidelines and provides rating factors for analytical review of each clearinghouse. The rating system varies depending on the individual guideline but the system is consistent and homogenous throughout the list. Two overarching rating systems were employed:

- » Simple Binary Code System 0-1, where “0” indicates No and “1” indicates Yes; and,
- » Simple Likert Scale 0-4, where “0” is least/worst and “4” is most/best.

The guidelines which are marked in bold were not considered for the evaluation of example data clearinghouses in the analysis summarized in Section 4.3. Additional information is required which can only be gathered through interviews or survey of the developers/owning agencies.

**Table 4.5: List of Guidelines for Evaluation of Data Clearinghouse based on User Support**

Category	Guidelines	Ratings
Data Coverage	Multiple years of data	0 – No, 1 – 2-3 years, 2 – more than 3 years
	Roadway Data available (AADT and # of lanes minimum)	0-No, 1-Yes
	Base map of all public roads	0-No, 1-Yes
	Tonnage, Value, TEU Data Available	0-No, 1-Yes
	Relevance of Content	Scale 0-4 0 is worst and 4-best
Technical Support	Email Support / Telephone Support	0-No, 1-Yes
	Text Instructions	0-No, 1-Yes
	Online help	0-No, 1-Yes
	Frequently Asked Questions	0-No, 1-Yes
	Workshops	0-No, 1-Yes
	<b>System improvements after feedback</b>	0-No, 1-Yes
User Interface	Intuitive Interface	0-No, 1-Yes
	Interactive	Scale 0-4 0 is worst and 4-best
	Navigation	Scale 0-4 0 is worst and 4-best
	Visualization	Scale 0-4 0 is worst and 4-best
	Semantic search function	Scale 0-4 0 is worst and 4-best
	Query options	0-No, 1-Yes
	Data Analysis	0-No, 1-Yes
Standardization	Georeferenced information	0-No, 1-Yes
	<b>Usage of Standards</b>	0-No, 1-Yes
	<b>Standards for data transfer</b>	Scale 0-4 0 is worst and 4-best
	<b>Literature database</b>	0-No, 1-Yes

Category	Guidelines	Ratings
Adaptability	Use of computing resources	0-No, 1-Yes
	Flexible plug-ins	0-No, 1-Yes
	Upload routines	Scale 0-4, 0 – rare and 4- frequent
	Scalability of the system	Scale 0-4 0 is worst and 4-best
	Exportable files/formats	0-No, 1-Yes
	Mobile Device Functionality	0-No, 1-Yes

#### 4.2.3: Other Evaluation Criteria

There are several other methodologies developed by Open Archival Information Systems (OAIS) organizations to evaluate the repositories and clearinghouses, including:

- » NESTOR Seal for Trustworthy Digital Archives [5]
- » ISO16363: Audit and Certification of Trustworthy Digital Repositories [6]
- » Digital Repository Audit Method Based on Risk Assessment (DRAMBORA) [7]
- » PREPARDE, Guidelines on Recommending Data Repositories as Partners in Publishing Research Data
- » Interdisciplinary Body of the International Council for Science (ICSU) World Data System [8]
- » DIN 31644: Criteria for trustworthy digital archives [9]

Appendix E provides list of guidelines for the first five methodologies above. The guidelines for the final methodology are not available publicly. For more details, cited references should be explored. It is important to note that this list is not an exhaustive list but it provides a starting point for reviewing data clearinghouses.

### 4.3 DATA CLEARINGHOUSE EVALUATION

A comprehensive search was completed to compile a list of 84 data clearinghouses with a freight component or freight related data. All these clearinghouses are owned by a state or federal agency. After a detailed review of these clearinghouses, it was determined that 52 have satisfactory amount of datasets and user friendliness to further analyze. These data clearinghouses were evaluated using the guidelines outlined in Tables 4.3, 4.4, and 4.5. The rating matrices are included in Appendix F.

Important highlights of the rating matrices are as follows:

- » All data clearinghouses are evaluated for Guidelines based on user support. Some data clearinghouses were not evaluated for Standard Guidelines based on Data Seal of Approval as there was not enough information available.
- » The evaluation of example data suggests that none of the clearinghouses have ideal ratings for every guideline.
- » The following clearinghouses provided the highest overall evaluation ratings and are recommended for adoption/further exploration:
  - » [Massachusetts Department of Transportation GIS](#)
  - » [Minnesota Geospatial Information](#)
  - » [Washington Department of Transportation GeoPortal](#)
  - » [Virginia Economic Development Partnership GIS](#)
  - » [North Central Texas Council of Governments GIS](#)
  - » [Rhode Island GIS Data Catalog](#)
  - » [USDOT Bureau of Transportation Statistics TranStats](#)
  - » [Freight Analysis Framework Version 4 \(FAF4\)](#)
- » It is recommended that these data clearinghouses are further evaluated with interviews and surveys of the developers and owning agencies.

## 4.4 DATA FUSION ANALYSIS

Data fusion combines multiple sources to obtain improved information, for example data that is cheaper, higher quality, and/or more relevant. As per the Joint Directors of Laboratories (JDL) workshop [10] data fusion can be defined:

*“A multi-level process dealing with the association, correlation, combination of data and information from single and multiple sources to achieve refined position, identify estimates and complete and timely assessments of situations, threats and their significance”.*

It is noteworthy to introduce three different terms:

- » “Data Fusion”
- » “Information Fusion”
- » “Data Integration”

“Data Fusion” and “Information Fusion” are generally used as synonyms but the major difference between the two is that “Data Fusion” is synthesis of raw data and “Information Fusion” is combination of already processed data. For this analysis, both are considered synonyms as majority of the datasets considered in this report are processed data. The Data Integration primer [11] defines data integration as:

*“The method by which multiple datasets from a variety of sources can be combined or linked to provide a more unified picture of what the data mean and how they can be applied to solve problems and make informed decisions that relate to the stewardship of transportation infrastructure assets.”*

Data fusion and data integration are synonymous concepts. Some of the benefits of data integration are identified below:

- » Integrated decision-making
- » Safety analysis
- » Consistency
- » Clarity
- » Completeness
- » Lower data acquisition and storage costs
- » Informed and defensible decisions
- » Enhanced program development
- » Greater accountability

### 4.4.1: Data Fusion Classification Schemas

Data fusion can be classified into five different schemas [12]. Figure 4.2 illustrates this framework. A detail description of each schema can be found in the Appendix E.

### 4.4.2: Factors Impacting Data Fusion Methodology

The selection of technique varies and depends on following factors:

- » Cost which involves cost of data, data storage, data fusion software, operations and maintenance costs
- » Time
- » Accuracy of data fusion needed
- » Characteristics of data like level of detail, spatial coverage, temporal coverage, etc.

- » Availability of resources like skills, software, data platforms, etc.
- » Purpose of data fusion
- » Standards of data
- » Limitations in access and usage of data

Figure 4.3 provides an outline of the key activities in the data integration process, along with the factors affecting each activity of the process. Analyzing requirements is the first step in the process. Once the requirements are known, a data and process flow modeling can be developed leading to the definition, evaluation and selection of alternatives. After an alternative is selected, the database design and specification can be pursued. Finally, the development, testing and implementation of the chosen database integration strategy can be implemented.

Figure 4.2: Data Fusion Classification Schemas

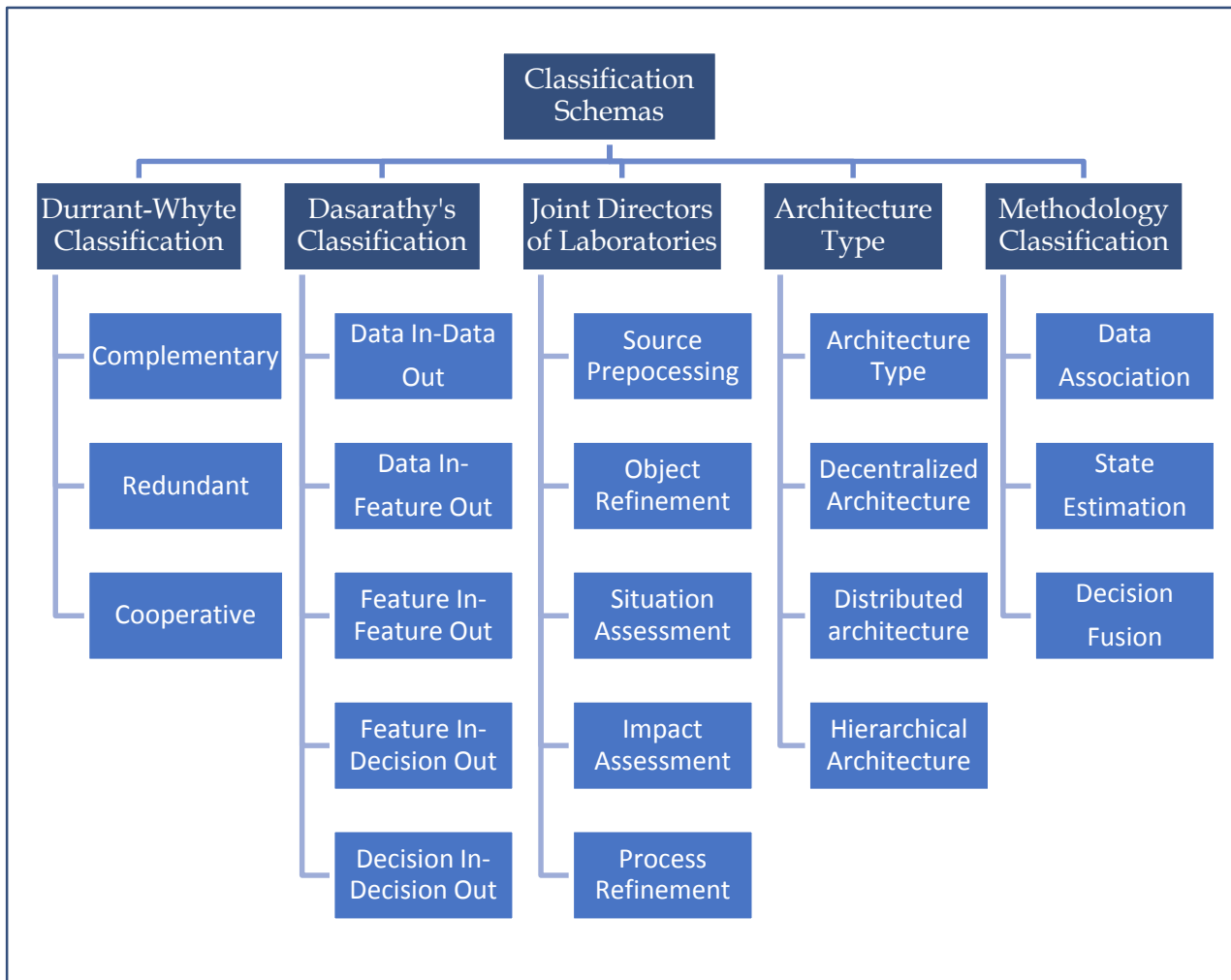
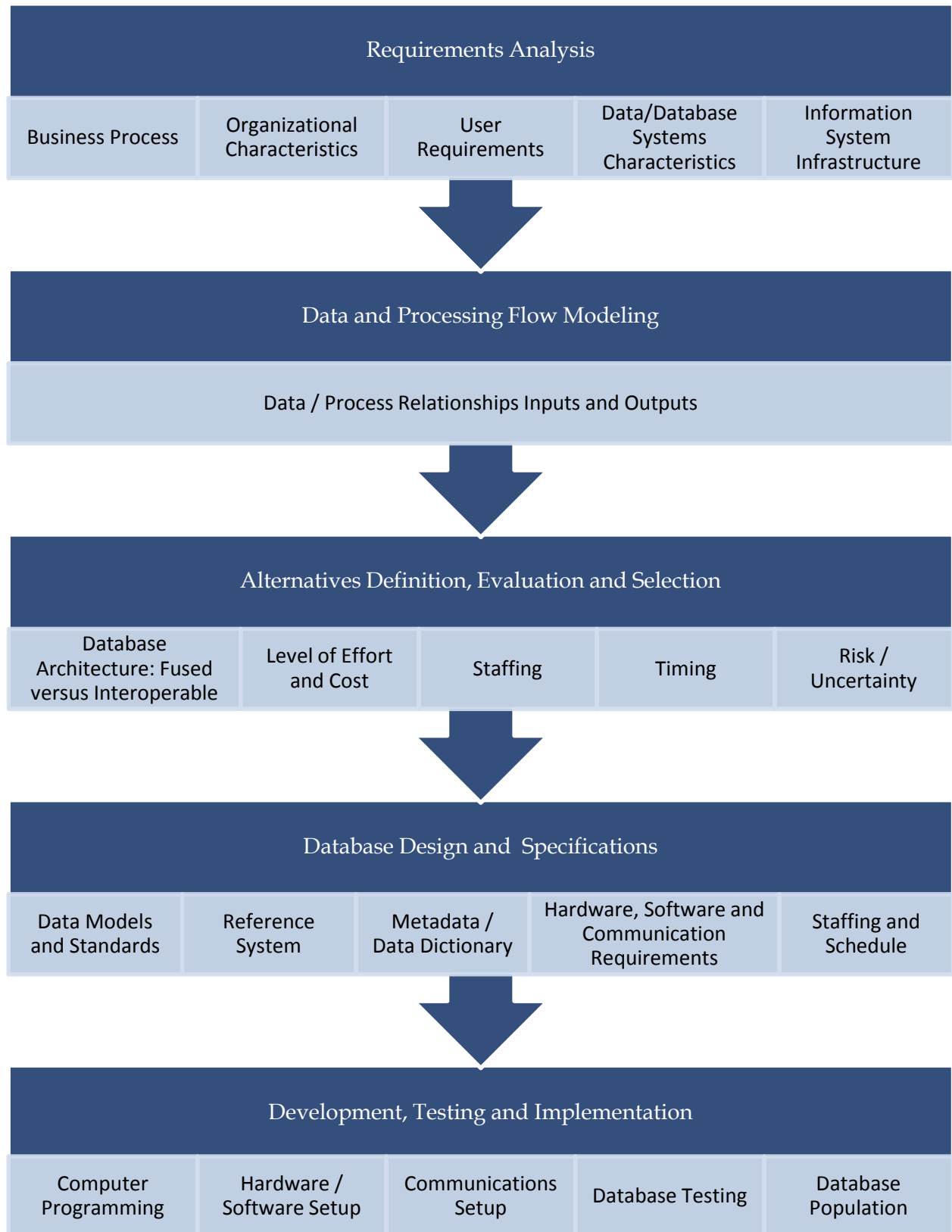




Figure 4.3: Activities of Data Integration/Fusion Process and Factors Impacting the Activities



# MULTIMODAL FREIGHT DATA INVENTORY AND MANAGEMENT RECOMMENDATIONS

JUNE 2016



## 5.0 RECOMMENDATIONS

The objective of this task was to provide analytical and technical recommendations for the inventoried data sources including data clearinghouse options, data fusion analyses and data visualization to increase the accessibility and dissemination of multimodal freight data. The importance of multimodal freight data is not only limited to FDOT, and includes the other public and private sector users of multimodal freight data, who use this information in their daily decision making process to make planning, operations, and logistics decisions. The purpose of the task was to provide a sponsor, such as a public agency, that has the resources to develop, store, and maintain a freight clearinghouse with the tools needed to present the data in a manner that is conducive, legal, supported, and accepted by the industry.

The Data Inventory Matrix explained the components of 89 multimodal freight data sources. These inventoried datasets were further analyzed through the development of 43 Multimodal Freight Data Profiles. These products are expected to add value to the multimodal freight data resources of FDOT and freight industry stakeholders. The Data Inventory Matrix and Data Source Profiles will help all users get a background of the different freight data sources available for their uses. Additionally, the Data Roadmap provides a visual representation of where the data sources reside within FDOT offices, federal sources, and proprietary data sources. Altogether, these tasks will help increase the marketability of multimodal freight data sources within FDOT and for freight industry stakeholders.

Additionally, the analysis presented within this report also described data fusion techniques with freight and freight-related data fusion examples. The classification systems of different data fusion techniques provide guidelines to data analysts and will help them explore different avenues to elevating their datasets with the help of data fusion.

The report also provides a description of data clearinghouses and the important components of data clearinghouse. There are multiple data clearinghouses created by states and federal agencies. The analysis within this report provides guidelines on how to evaluate data clearinghouses: Based on standard guidelines for data repositories (Refer Tables 4.3 and 4.4); and Based on user support (Refer Table 4.5).

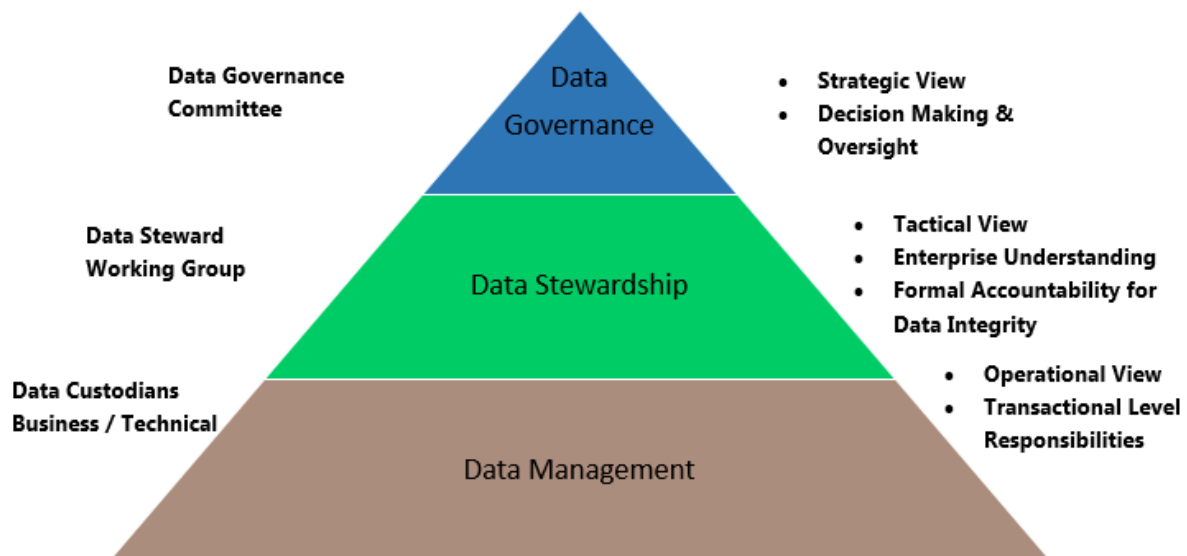
A comprehensive evaluation of 52 data clearinghouses across the country was conducted to analyze feasibility of these guidelines. The list of guidelines is robust and can be used for future developments of clearinghouses by FDOT. Further evaluation of highly rated data clearinghouses was recommended through interviews and surveys of the developers and owning agencies. This would help FDOT determine the next steps for developing a freight data clearinghouse. Roles played by different offices in the successful implementation of a data clearinghouse are identified below. The different offices can be categorized as:

- » Data providers/owners: The data providers include federal agencies, different modal offices and the owners of proprietary data sources. A roadmap created under sub task 3 helps to understand the different data providers or data owners. Other than providing datasets, the data providers should satisfy following responsibilities:
  - » Responsible office should provide metadata.

- » Responsible office should know the proprietary requirements of different datasets.
- » Responsible office must create a work plan to develop and maintain a clearinghouse through appropriate office staff and resources. Work plan should include their plan for funding through operating budget requests to legislature and also provide their roadmap of how they will continue the clearinghouse with maintenance support.
- » Data clearinghouse owner: The clearinghouse owner can either be the data providers or can be another office which reports multiple data sources. The Freight and Modal Data Program under Transportation Statistics Office envisions themselves to satisfy this role. They also have to satisfy following responsibilities:
  - » Responsible for continuous communication with data providers/owners for maintaining a regular update frequency and quality of the dataset.
  - » Responsible for coordinating with Agency of State Technology (Information Technology provider) as they will impact development and administrative authority for clearinghouse developments.
- » It is important to note here that this report is primarily focused to providing guidance to a data clearinghouse owner. The guidelines provided in this report will help smoother functioning of a data clearinghouse.

Data architecture and data governance are two important factors to be considered before developing a data clearinghouse. With FDOT’s Reliable Organized Accurate Data Sharing (ROADS) project responsible for providing recommendations on data governance, it is critical that a standard data architecture be constructed to develop a new data clearinghouse. Figure 5.1 illustrates the data governance overview as per the ROADS project. Future work can involve designing data architecture framework and data clearinghouse check-list using the guidelines provided in this report supplemented by the ROADS project framework. This task may be completed in the future through the Freight and Modal Data Program upon completion of the ROADS project.

Figure 5.1: ROADS Project Data Governance Overview



Required datasets and the characteristics of these datasets play a pivotal role in design of data clearinghouse. The Data Inventory Matrix developed and presented within Section 1 of this report should be considered in development of a data clearinghouse and will be useful for freight planning and operations functions. The list of inventoried data sources along with data fusion techniques explained in this report will facilitate work efforts of freight data analysts in conducting data fusion and reducing gaps presented in multimodal freight data sources.

For the FDOT, any consideration or development of a freight data clearinghouse should be coordinated through the Information Technology Strategic Plan (ITSP) and the Reliable, Organized, Accurate, Data Sharing (ROADS) Project. These sources along with this report provide a baseline understanding and knowledge to move forward with creating a FDOT data clearinghouse. Furthermore, the information within this Executive Summary report for the Multimodal Freight Data Inventory and Management can provide standalone value to freight industry stakeholders and FDOT freight data users in better coordination their efforts and enhancing freight data analysis efforts.



# APPENDIX A: DATA INVENTORY MATRIX HYPERLINKS

JUNE 2016



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**APPENDIX A: MULTIMODAL FREIGHT DATA INVENTORY MATRIX HYPERLINKS**

Airport Council International - <http://www.aci.aero/>  
American Transportation Research Institute (ATRI) - <http://atri-online.org/>  
Association of American Railroads (AAR) - <https://www.aar.org/>  
Automated Identification System (AIS) - <http://www.navcen.uscg.gov/?pageName=aismain>  
BEA Industry Economic Accounts - <http://www.bea.gov/industry/>  
BTS – Air Carrier Statistics (Form 41 Traffic) - [http://www.transtats.bts.gov/Tables.asp?DB\\_ID=111](http://www.transtats.bts.gov/Tables.asp?DB_ID=111)  
BTS National Transportation Atlas Database (NTAD) -  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\\_transportation\\_atlas\\_database/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_atlas_database/index.html)  
BTS North American Transborder Freight Data -  
<http://transborder.bts.gov/programs/international/transborder/>  
Bureau of Economic and Business Research (BEBR) - <https://www.bebr.ufl.edu/>  
Bureau of Labor Statistics - <http://www.bls.gov/>  
Business Register - <https://www.census.gov/econ/overview/mu0600.html>  
Census Commuting Data - <http://www.census.gov/hhes/commuting/>  
Census of Population - <http://www.census.gov/topics/population.html>  
Chain Store Guide - <https://www.chainstoreguide.com/>  
CMTS Transportation Infrastructure Funding Map - <http://www.cmts.gov/Maps/Index.aspx>  
CMTS Data Inventory - <http://www.marad.dot.gov/resources/cmts-portal/>  
Container Number Database (CND) -  
[http://www.dot.state.fl.us/trafficoperations/Traf\\_Incident/Projects\\_CVO/CVISN.shtm](http://www.dot.state.fl.us/trafficoperations/Traf_Incident/Projects_CVO/CVISN.shtm)  
Crash Analysis Report System (CARS) -  
<http://www.dot.state.fl.us/safety/11A-SafetyEngineering/SafetyEngineering1.shtm>  
Electronic Freight Theft Management System (EFTMS) -  
<https://services.flhsmv.gov/ReportCargoTheft/login.aspx?ReturnUrl=/ReportCargoTheft/>  
Energy Information Administration Data Services - <https://www.eia.gov/>  
Exports from Manufacturing Establishments - <https://www.census.gov/manufacturing/exports/>  
Fatality Analysis Reporting System (FARS) - <http://www.nhtsa.gov/FARS>  
FDEP GIS Data and Tools - <http://www.dep.state.fl.us/gis/contact.htm>  
FDOT Rest Areas and Service Area Locations -  
<http://www.dot.state.fl.us/statemaintenanceoffice/RestAreas.shtm>  
FDOT Traffic Database - <http://www.dot.state.fl.us/statemaintenanceoffice/RestAreas.shtm>  
FDOT Truck Lane Restrictions Map -  
[http://www.dot.state.fl.us/trafficoperations/Traf\\_Incident/Truck-Lane-Restriction-Map.shtm](http://www.dot.state.fl.us/trafficoperations/Traf_Incident/Truck-Lane-Restriction-Map.shtm)  
FDOT Weigh Stations - <http://www.dot.state.fl.us/statemaintenanceoffice/motorcarrier.shtm>  
Federal Aviation Administration (FAA) Database - [https://www.faa.gov/data\\_research/](https://www.faa.gov/data_research/)  
Flightware Data - <https://flightaware.com/>  
Florida Department of Health GIS Data -  
<http://www.floridahealth.gov/environmental-health/gis/gis-data.html>  
Florida Department of Revenue Tax Parcel Data - <http://dor.myflorida.com/dor/property/gis/>  
FreightSIM - <http://www.dot.state.fl.us/planning/statistics/>

Florida Geographic Data Library (FGDL) - <http://www.fgdl.org/metadataexplorer/explorer.jsp>

Florida Ports Council (FPC) - <http://flaports.org/>

SIS Portal - <http://www.dot.state.fl.us/planning/sis/>

Freight Analysis Framework (FAF) - [http://ops.fhwa.dot.gov/FREIGHT/freight\\_analysis/faf/index.htm](http://ops.fhwa.dot.gov/FREIGHT/freight_analysis/faf/index.htm)

Geoplatform - <https://www.geoplatform.gov/>

Highway Performance Monitoring System (HPMS) -  
<http://www.fhwa.dot.gov/policyinformation/hpms.cfm>

Infogroup - <http://www.infogroup.com/>

Intermodal Association of North American Services (IANA) - <http://www.intermodal.org/>

International Monetary Fund (IMF) Data Mapper - <http://www.imf.org/external/datamapper/index.php>

Jason's Law Survey – Truck Parking Information -  
[http://www.ops.fhwa.dot.gov/freight/infrastructure/truck\\_parking/jasons\\_law/truckparkingsurvey/index.htm](http://www.ops.fhwa.dot.gov/freight/infrastructure/truck_parking/jasons_law/truckparkingsurvey/index.htm)

Leonard's Guide - <http://www.leonardsguide.com/>

Longitudinal Employer-Household Dynamics (LEHD) - <http://lehd.ces.census.gov/>

Motor Carrier Financial and Operating Data -  
<https://www.fmcsa.dot.gov/mission/file-carrier-financial-and-operating-statistics>

Motor Carrier Safety Measurement System - <https://ai.fmcsa.dot.gov/sms/>

Multimodal Performance Measures Sourcebook -  
<http://www.dot.state.fl.us/planning/statistics/sourcebook/>

Multimodal Transportation Indicators -  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/multimodal\\_transportation\\_indicators/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/multimodal_transportation_indicators/index.html)

National Automotive Sampling System - <http://www.nhtsa.gov/NASS>

National Hazardous Material Route Registry -  
<https://www.fmcsa.dot.gov/regulations/hazardous-materials/national-hazardous-materials-route-registry>

National Highway Planning Network (NHPN) -  
<http://www.fhwa.dot.gov/planning/processes/tools/nhpn/index.cfm>

National Highway System - [http://www.fhwa.dot.gov/planning/national\\_highway\\_system/](http://www.fhwa.dot.gov/planning/national_highway_system/)

National Household Travel Survey - <http://nhts.ornl.gov/>

National Performance Management Research Data Set (NPMRDS) -  
[http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/perform\\_meas/vpds/npmrdsfaqs.htm](http://www.ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/vpds/npmrdsfaqs.htm)

National Pipeline Mapping System - <https://www.npms.phmsa.dot.gov/>

National Survey of US Expedited Cargo (Colography) - <http://www.colography.com/services/>

National Transit Database - <https://www.transit.dot.gov/ntd>

National Transportation Statistics -  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national\\_transportation\\_statistics/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/index.html)

Navigation Data Center (NDC) - <http://www.navigationdatacenter.us/>

Official Airline Guide's Database - <http://www.oag.com/>

Permit Application System for Overweight and Over-Dimensional Vehicles -  
<http://www3.dot.state.fl.us/OversizedVehiclePermitsGISpublic/>

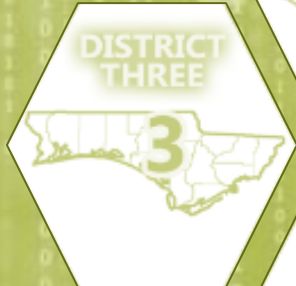


Pipeline and Hazardous Materials Administration Database - <http://www.phmsa.dot.gov/>  
PIERS - <https://www.ihs.com/products/piers.html>  
Port of Entry List - <https://www.cbp.gov/contact/ports>  
Public Use Waybills Sample - [https://www.stb.dot.gov/stb/industry/econ\\_waybill.html](https://www.stb.dot.gov/stb/industry/econ_waybill.html)  
Quick TSI - <http://www.quicktransportsolutions.com/>  
Rail Network Development - <http://www.fra.dot.gov/Page/P0056>  
Railroad Highway Crossing Inventory (RCHI) - <http://www.dot.state.fl.us/rail/publications.shtm>  
Railroad Performance Measures - <http://www.railroadpm.org/>  
Rand McNally (RM) Sample Dataset - <http://www.randmcnally.com/>  
Roadway Characteristics Inventory (RCI) - <http://www.dot.state.fl.us/planning/statistics/rci/>  
Service Annual Survey (SAS) - <https://www.census.gov/services/index.html>  
Service Quarterly Survey (SQS) - <https://www.census.gov/services/index.html>  
SIS Planning Brochures and Maps -  
<http://www.dot.state.fl.us/planning/systems/documents/brochures/default.shtm#brochure>  
Tradestats Express - <http://trade.gov/data.asp>  
Transearch - <https://www.ihs.com/products/transearch-freight-transportation-research.html>  
Transportation Service Index (TSI) - [http://www.rita.dot.gov/bts/transportation\\_services\\_index](http://www.rita.dot.gov/bts/transportation_services_index)  
Transtats - [http://www.transtats.bts.gov/databases.asp?Mode\\_ID=5&Mode\\_Desc=Rail&Subject\\_ID2=0](http://www.transtats.bts.gov/databases.asp?Mode_ID=5&Mode_Desc=Rail&Subject_ID2=0)  
Trucker's Friend - <http://www.truckstops.com/>  
US Census Commodity Flow Survey (CFS) -  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity\\_flow\\_survey/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/index.html)  
US Census County Business Patterns (CBP) - <http://www.census.gov/programs-surveys/cbp.html>  
US Census Foreign Trade - <https://www.census.gov/foreign-trade/index.html>  
US Census Vehicle Inventory and Use Survey (VIUS) -  
<https://www.census.gov/svsd/www/vius/products.html>  
US Government Open Data - <http://catalog.data.gov/dataset>  
USDA Economic Research Service - <http://www.ars.usda.gov/main/main.htm>  
USDA National Agricultural Statistics Service - <https://www.nass.usda.gov/>  
Weigh in Motion (WIM) and Weigh Stations -  
<http://www.dot.state.fl.us/statemaintenanceoffice/motorcarrier.shtm>  
Workforce Information Database - <http://www.workforceinfodb.org/19WIDatabase.cfm>



# APPENDIX B: SURVEY QUESTIONNAIRE AND RESULTS

JUNE 2016



## APPENDIX B: FREIGHT AND MODAL DATA INVENTORY FEEDBACK SURVEY QUESTIONNAIRE AND DATA RESULTS

### Appendix B.1: Survey Questionnaire Freight and Modal Data Inventory Feedback Survey

#### Feedback Survey

As part of the Transportation Statistics (TRANSTAT) Office Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate **freight and modal data** business intelligence through internal/external offices, and identify the available freight and modal data and information. Please note that this survey wants to gather information about data which are used in functions which are impacted by freight only.

This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. This survey aims to know about your freight and modal data usage, needs and procedures. The information you provide through this survey will add valuable guidance to enhance FDOT's Freight and Modal Data Program.

The survey will take around **10 minutes** to complete. If you have questions regarding the study, please contact the principal investigators Joel Worrell at [Joel.Worrell@dot.state.fl.us](mailto:Joel.Worrell@dot.state.fl.us)

#### Data Inventory

1. Do you work in the Florida Department of Transportation?
  - Yes (please go to Question. 2)
  - No (please go to Question. 11)
  
2. What office in Florida Department of Transportation do you belong to?  
\_\_\_\_\_
  
3. Do you acquire any freight data from another FDOT office?
  - Yes (please go to Question.4)
  - No (please go to Question.20)

#### Freight and Modal Data Inventory – Florida Department of Transportation Office

Please answer following questions about acquiring freight and modal data from other FDOT offices:

4. Which FDOT office/offices do you acquire data from? \_\_\_\_\_
5. What are the datasets you acquire from them?
6. With whom do you coordinate? \_\_\_\_\_
7. Is there a data request procedure which your office follows? \_\_\_\_\_
8. Is there a data request procedure which you require other FDOT offices to follow when requesting data from you? \_\_\_\_\_
9. Please list the data resources you acquire and use from entities outside of FDOT.  
\_\_\_\_\_

10. How do other offices provide you the freight and modal data? (Check all that apply)
- Compact Disc (CD) or Digital Versatile Disc (DVD) or pen drives or portable hard drives
  - Online File Delivery Services like File Transfer Appliance, drop box, one drive
  - Email attachments
  - Other (please specify) \_\_\_\_\_

**Freight and Modal Data Inventory – Other Agencies**

11. What state agency do you belong to? \_\_\_\_\_
12. If you don't belong to any state agency indicated in earlier question, please provide the name of your work organization/institution.  
\_\_\_\_\_
13. Do you acquire any freight and modal data from a FDOT office?
- Yes (please go to Question 14)
  - No (please go to Question 20)

Please answer the following questions about acquiring freight and modal data from FDOT:

14. Which FDOT office/offices do you acquire data from?  
\_\_\_\_\_
15. What are the datasets you acquire from them?  
\_\_\_\_\_
16. With whom do you coordinate?  
\_\_\_\_\_
17. Is there a data request procedure which your office follows?  
\_\_\_\_\_
18. Do you administer a data request procedure which you require other FDOT offices follow?  
\_\_\_\_\_
19. How do FDOT offices provide you the freight and modal data? (Check all that apply)
- Compact Disc (CD) or Digital Versatile Disc (DVD) or pen drives or portable hard drives
  - No Online File Delivery Services like File Transfer Appliance, drop box, one drive
  - Email attachments
  - Other (please specify) \_\_\_\_\_

**Planning, Studies, Analysis and Reporting Functions**

20. At what frequency do you need freight and modal data and information?
- Daily
  - Weekly
  - Monthly
  - Annually
  - Never
  - Other (please specify) \_\_\_\_\_
21. What planning, reporting, studies and analysis functions are you responsible for, that require freight and modal data? \_\_\_\_\_

22. Are there any goals and objectives of your business plan not currently supported through the required freight and modal data and information?  
\_\_\_\_\_

23. What are specific gaps in "big data" encountered in the planning and reporting functions within your organization? Examples include insufficient server space, licensing, acquisition costs, data maintenance, public information, etc. Please be specific. \_\_\_\_\_

**Data Collection and Management**

24. Please provide the contact information from whom to get data maintained by your office in future.  
\_\_\_\_\_

25. Do you conduct any freight or modal data collection(s) for any initiatives?

- Yes (please go to Question.26)
- No (please go to Question.29)

**Please list your top 3 freight and modal data collection initiatives and provide details about them.**

- **Freight and Modal Data Inventory Feedback Survey**

26. Please answer following questions about your data collection - 1

Name / Title of Data Collection \_\_\_\_\_

Purpose of the Data Collection \_\_\_\_\_

Methodology of the Data Collection \_\_\_\_\_

Update Schedule of the Data Collection \_\_\_\_\_

27. Please answer following questions about your data collection - 2

Name / Title of Data Collection \_\_\_\_\_

Purpose of the Data Collection \_\_\_\_\_

Methodology of the Data Collection \_\_\_\_\_

Update Schedule of the Data Collection \_\_\_\_\_

28. Please answer following questions about your data collection - 3

Name / Title of Data Collection \_\_\_\_\_

Purpose of the Data Collection \_\_\_\_\_

Methodology of the Data Collection \_\_\_\_\_

Update Schedule of the Data Collection \_\_\_\_\_

29. Where does your data currently reside? (Check all that apply)

- Server
- Computer
- Compact Disc (CD) or Digital Versatile Disc (DVD) or pen drives or portable hard drives
- Paper format
- Data Center or Other (please specify)

30. What freight and modal dataset requests do you get from other public, federal, university or industry entities?  
\_\_\_\_\_

**Data Services/Communication Tools**

31. What communication tools do you use in your daily operations?

\_\_\_\_\_

32. Which of the following communication tools features would be beneficial to your business operations? (Check all that apply)

- Web Mapping Viewer
- Customer Feedback
- Data Download
- Creating Analytics
- Dashboard Reporting
- Other (please specify) \_\_\_\_\_

33. Where would you envision your data be housed to be most effective to your business operations?

- Florida Agency for State Technology (AST)/ formerly Southwood Shared Resource Center (SSRC)
- University
- Consultant
- Your office
- Any other office (please specify) \_\_\_\_\_

34. Where would you envision your common operating freight and modal communication tool be housed to be most effective to your business operations?

- Florida Agency for State Technology (AST)/ formerly Southwood Shared Resource Center (SSRC)
- University
- Consultant
- Your office
- Any other office (please specify) \_\_\_\_\_

**Additional Comments and Suggestions**

35. Please provide any additional comments and suggestions. \_\_\_\_\_

**Contact Information**

36. Please provide your basic identification information

Name \_\_\_\_\_

Agency \_\_\_\_\_

Email Address \_\_\_\_\_

Phone Number \_\_\_\_\_

**Appendix B.2: Survey Raw Data Results**

Question 1 Results:

Do you work in the Florida Department of Transportation?		
Response	Number	Percent
Yes	19	100.00%
No	0	0.00%

Question 2 Results:

What office in Florida Department of Transportation do you belong to?		
Office	Number	Percent
Aviation and Spaceports	1	5.26%
Design	4	21.05%
Freight Logistics and Passenger Operations	2	10.53%
Intermodal Systems Development	2	10.53%
Maintenance	1	5.26%
Safety	1	5.26%
Seaport and Waterways	3	15.79%
Systems Planning	3	15.79%
Traffic Engineering and Operations	1	5.26%
Unknown	1	5.26%
Total Response	19	

Question 3 Results:

Do you acquire any freight and modal data from another FDOT office?		
Response	Number	Percent
Yes	10	52.63%
No	9	47.37%

Question 4 – Question 8 Results:

Which FDOT office/offices do you acquire data from?					
Responding FDOT Office	Offices Dataset is Acquired From	Dataset Acquired From	Person Contacted to Acquire Data	Data Request Procedure by the Offices, Data is Acquired From	Data Request Procedure Followed by Responding FDOT Office
Traffic Engineering and Operations	Motor Carrier Size and Weight	LPR info, USDOT camera info	This is an automated data feed	No	No
Freight Logistics and Passenger Operations	Central	Over 200 GIS layers	The consultants	No idea	No idea

Which FDOT office/offices do you acquire data from?					
Responding FDOT Office	Offices Dataset is Acquired From	Dataset Acquired From	Person Contacted to Acquire Data	Data Request Procedure by the Offices, Data is Acquired From	Data Request Procedure Followed by Responding FDOT Office
Safety	TranStat	Roadway Data (RCI) Volume Data (volumes, truck %, etc) Basemap	Tina Hatcher + Paul O'Rourke	No	Yes and No. Crash data is provided through multiple sources and applications. If an office or district needs a special analysis or can't pull the data themselves, they request it through a public website.
Seaport and Waterways	Seaport, Rail, Motor Carrier, FLP, ISD, Systems Planning, Policy Planning, Transtat, Bridges	Piers, FPC Mission Plan Annual Florida Ports Data, Waybill, Transearch (IHS), Bridge Data	Joel Worrell, Ed Hutchenson, Chris Edmonston, Ed Lee, Zack Teders, Mike Rubin (FPC)	Phone Call, In-person, e-mail	E-mail request, form completion for PIERs data.
Seaport and Waterways	ISD, FLP, Seaport, Rail, Motor Carrier, Transportation Statistics, Policy Planning, Systems Planning, Bridge Office	Freight Statistics, Rail Waybill data (Plan Results), Highway congestion and capacity, Truck counts, Commodity Data, PIERs Data, Import Export Data, IHS Global Insights Transearch Data, Domestic Freight Data, Traffic Counts Data, Bridge Allisions, Bascule Bridge schedules	Ed Hutchenson, Zack Teders, Joel Worrell, Ed Lee, Chris Edmonston	e-mail, phone call, in-person	Yes, data request and acquisition form for PIERs data requests.
Intermodal Systems Development	Transportation Statistics, Traffic Operation, Systems Planning	Truck counts, freight modeling results, crash data	FDOT Staff	No	No
Intermodal Systems Development	Office of Right of Way (D4), TranStat (D4), SIS (D4)	Surplus ROW, Truck Counts, SIS Network	D4 Offices		



Question 9 Results:

Please list the data resources you acquire and use from entities outside of FDOT.	
Responding FDOT office	Data Resources Acquired From Entities Outside of FDOT
Traffic Engineering and Operations	We also get LPR info and container number reads from the DACS interdiction station
Freight Logistics and Passenger Operations	Ask CO
Safety	Strava (running / cycling data)
Seaport and Waterways	FPC - Florida Ports Annual Statistics, CLIA Cruise Data, USACE - Waterborne Statistics, Waterborne Commerce, Bureau Economic Activity, NOAA Coastal Population, NOAA PORTS
Seaport and Waterways	PIERs, IHS Tran-search, AIS (USCG), Florida Ports Council (Annual FSTED Data, self-report FL Ports), CLIA Cruise Data (State to State Passenger Comparison), Bureau Economic Activity, Waterborne Commerce Statistics Center (USACE), NOAA (Coastal Population Data), NOAA (Navigational Information - NavCharts), Other miscellaneous web-based datasets.

Question 10 Results:

How do other offices provide you the freight and modal data?		
Responding FDOT office	Methods	
Traffic Engineering and Operations	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	
Freight Logistics and Passenger Operations	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	
	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	Email attachments
Safety	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	
Seaport and Waterways	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	Email attachments
Seaport and Waterways	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	Email attachments
Intermodal Systems Development	Online File Delivery Services like File Transfer Appliance, Dropbox, one drive	Email attachments
Intermodal Systems Development		Email attachments

Questions 11-19 were for respondents outside of FDOT. The survey was not circulated outside of FDOT Central Office but can be administered in the future to include other agencies.

Question 20 Results:

At what frequency do you need freight and modal data and information?	
Responding FDOT office	Frequency
Traffic Engineering and Operations	Daily
Maintenance	Never
Aviation and Spaceports	Daily
Freight Logistics and Passenger Operations	Daily
	Annually
Safety	Daily
Seaport and Waterways	Daily
Seaport and Waterways	Daily
Systems Planning	unsure
Systems Planning	Annually
Intermodal Systems Development	Monthly
Intermodal Systems Development	Weekly
Design	Never
Design	Never

Question 21 Results:

What planning, reporting, studies and analysis functions are you responsible for that require freight and modal data?	
Responding FDOT office	Planning, Reporting, Studies and Analysis Function
Traffic Engineering and Operations	The data that we get is fed into the container number database and then utilized by MCSAW, DACS and FHP CVE or possibly other law enforcement agencies if requested.
Aviation and Spaceports	Air Cargo Study, Air Service Study, Florida Aviation System Plan, Florida Statewide Aviation Economic Impact Study
Freight Logistics and Passenger Operations	I'm a freight coordinator
Safety	Crash analyses, HSIP Annual Report, SHSP Performance Measures to Executive Committee
Seaport and Waterways	Seaport System Plan, Waterways System Plan, Cruise Analysis, Executive Documents, Performance Metrics, Project reviews and updates
Seaport and Waterways	Performance Metrics, Executive decision making and policy documents, REM response data, Global Trade Volumes.
Systems Planning	SIS Planning.
Intermodal Systems Development	MultiModal Scoping checklist - utilize freight related data sets to visually analyze upcoming roadway projects for needed freight considerations (to be relayed to PM for consideration)
Design	None
Design	None

Question 22 Results:

Are there any goals and objectives of your business plan not currently supported through the required freight and modal data and information?	
Responding FDOT office	Goals and objectives of your business plan not currently supported through the required freight and modal data and information
Traffic Engineering and Operations	No
Aviation and Spaceports	No
Freight Logistics and Passenger Operations	No
Safety	Local road data, more roadway data for state roads and a comprehensive, agency-wide basemap.
Seaport and Waterways	Not currently, combining data sources for cross correlation would be beneficial
Seaport and Waterways	Not currently, only elements not currently supported is combination of data sources to correlate across modes and domestic vs. international trade.
Systems Planning	No
Design	No
Design	N/A

Question 23 Results:

What are specific gaps in "big data" encountered in the planning and reporting functions within your organization? Examples include insufficient server space, licensing, acquisition costs, data maintenance, public information, etc. Please be specific.	
Responding FDOT office	Gaps
Traffic Engineering and Operations	Funding is our biggest gap, funds to buy server space, system maintenance, etc.
Aviation and Spaceports	Acquisition costs of certain industry recognized data sources. For example, OAG data typically runs \$20,000 a year for a subscription, or even more depending on the modules utilized.
Freight Logistics and Passenger Operations	No idea
Safety	We need a more flexible way to stand up servers to host and analyze large (>1 million records) datasets. Analyzing using desktops is slow and frustrating.
Seaport and Waterways	Maintenance, staff, time resource allocations for developing existing data available.
Seaport and Waterways	Resource allocations, time and staff to understand, maintain and develop existing resources into usable outputs.
Systems Planning	Not knowing available sources and lack of metadata.
Design	None
Design	Data integration functionality and the ability to easily search across domains for the data needed.

Question 24 Results:

Please provide the contact information from whom to get data maintained by your office in future.	
Responding FDOT office	Contact Information
Traffic Engineering and Operations	Marie Tucker, 410-5619, marie.tucker@dot.state.fl.us
Aviation and Spaceports	Overall contact would be Aaron Smith, State Aviation Manager
Freight Logistics and Passenger Operations	Jeremy Dilmore
Safety	Shaun Davis or Ben Jacobs FDOT State Safety Office
Seaport and Waterways	Dan Fitz-Patrick (850) 414-4527 and Jimmy McDonald (850) 414-4509
Systems Planning	Paul Fang
Design	Quinton Tillman - 414-4894

Question 25 – Question 28 Results:

Data Collection – Question 26				
Responding FDOT Office	Name / Title of Data Collection	Purpose of the Data Collection	Methodology of the Data Collection	Update Schedule of the Data Collection
Safety	Non-Motorized Data Collection	Collect and aggregate non-motorized user counts across the state	Still in planning stages	Yearly? Still in planning stages.
Seaport and Waterways	Seaport System Plan 2015	Describe the history, current trends, and existing conditions of Seaport metrics including, tons, TEUs, passenger, etc...	Develop understanding of need, research available sources, download, analyses, report results	Annual
Intermodal Systems Development	Truck Parking Survey	To understand Truck Parking needs in D4	Survey	

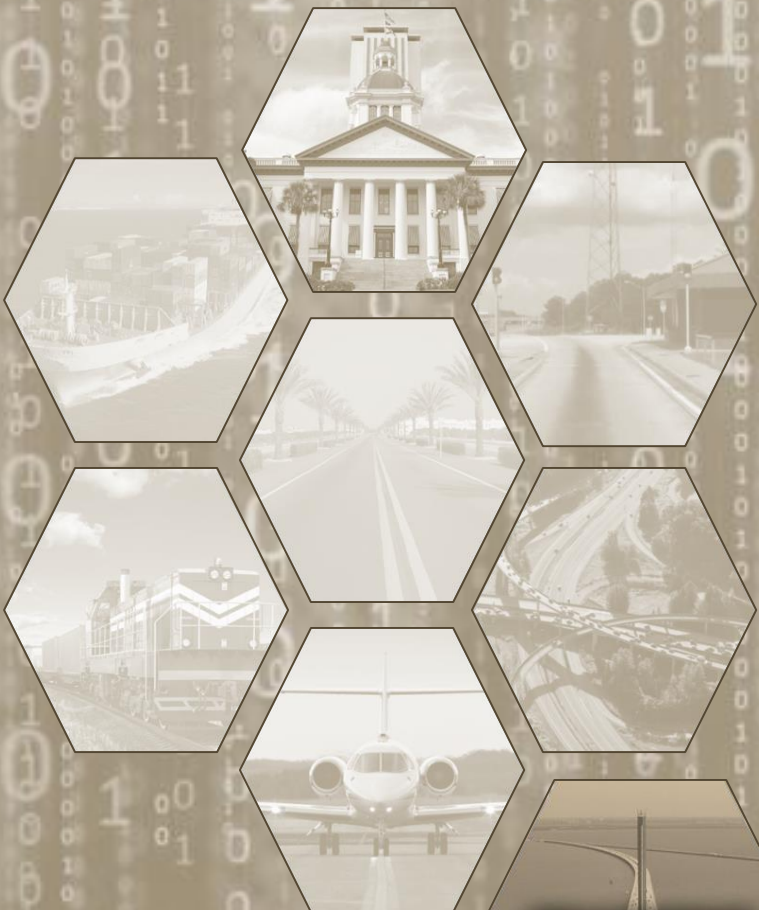
Data Collection – Question 27				
Responding FDOT Office	Name / Title of Data Collection	Purpose of the Data Collection	Methodology of the Data Collection	Update Schedule of the Data Collection
Safety	Model Inventory of Roadway Elements (MIRE) Data Collection - Local Roads	Collect roadway inventory data on local roads in response to federal requirements for safety analyses.	Still in planning stages.	Still in planning stages.

Data Collection – Question 27				
Responding FDOT Office	Name / Title of Data Collection	Purpose of the Data Collection	Methodology of the Data Collection	Update Schedule of the Data Collection
Seaport and Waterways	Waterways System Plan 2015	Describe the history, current trends, and existing conditions of Seaport metrics including, tons, TEUs, passenger, etc...	Develop understanding of need, research available sources, download, analyses, report results	Annual
Intermodal Systems Development	Railroad Crossing Delay Analysis	To measure amount of roadway delay at key railroad crossings in D4	Video	

Data Collection – Question 28				
Responding FDOT Office	Name / Title of Data Collection	Purpose of the Data Collection	Methodology of the Data Collection	Update Schedule of the Data Collection
Safety				
Seaport and Waterways	Seaport Cruise Provisioning Study	Report of Cruise provisioning, commodities that are loaded on a cruise ship for consumption.	Some research, some interviews and data collection by survey	
Intermodal Systems Development				

Question 29 Results:

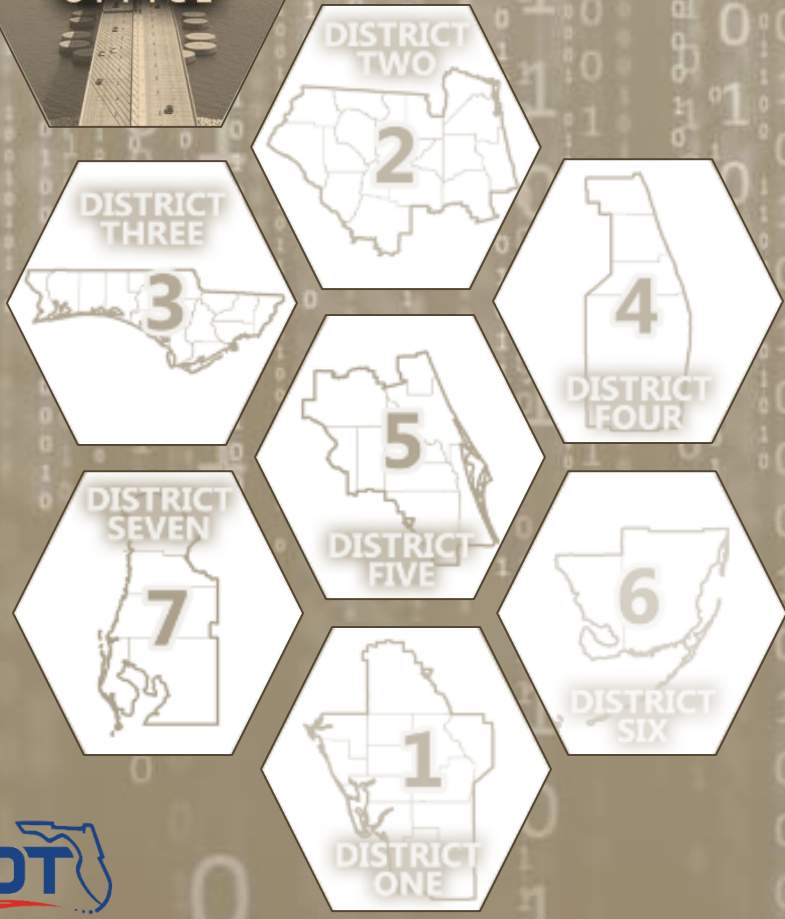
Where does your data currently reside? (Check all that apply)				
Responding FDOT office	Location where data resides			
Traffic Engineering and Operations	Server			
Maintenance	Server			
Aviation and Spaceports		Computer	Paper format	
Freight Logistics and Passenger Operations	Server			
Safety	Server	Computer		
Seaport and Waterways	Server	Computer		Web-based services, (i.e. PIERs)
Systems Planning	Server			
Intermodal Systems Development				
Intermodal Systems Development	Server			
Design	Server	Computer		



# APPENDIX C: MEETING MINUTES AND PRESENTATION

JUNE 2016

TRANSTAT  
OFFICE



*APPENDIX C: MEETING MINUTES FROM FDOT FREIGHT AND MODAL DATA MEETINGS*

The following meeting minutes are attached within this appendix in the order identified below:

- » Aviation and Spaceports Office
- » Cyber Strategies Meeting
- » Design Office
- » District Freight Coordinators Meeting
- » Environmental Management Office
- » Freight, Logistics, and Passenger Operations (FLP) Office
- » Maintenance Office
- » Policy Planning Office
- » Rail and Motor Carrier Office
- » Safety Office
- » Seaports Office
- » Systems Planning Office
- » Traffic Engineering and Operations Office
- » Work Program Office

Appendix C also includes an outline for the TranStat Road Map presentation that was part of many of the meetings identified above.



**Invited:**

- **Joel Worrell (FDOT)**
- **Aaron Smith (FDOT)**
- **Todd Cox (FDOT)**
- **Jim Halley (FDOT)**
- **Abdul Hatim (FDOT)**
- **Andy Keith (FDOT)**
- **Alan Meyers (PB)**
- **Makarand Gawade (RS&H)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the development and implementation of the Florida Aviation System Plan and other data needs and reporting services.

**Meeting Agenda**

3:00 p.m. – Greetings

3:15 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

3:30 p.m. – Aviation and Spaceports Office current and future business practices discussion

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *Does the office utilize the National Transportation Atlas Database from USDOT?*
4. *Does the office utilize the Freight Analysis Framework from FHWA?*
5. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*

3:45 p.m. – TWO 10 Freight Data Support System Discussion

4:00 p.m. – Meeting adjourn





1. Joel provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that the TRANSTAT office will serve as a “data distribution center” and provide value-added services to the Department. He also noted that one of the goals of the program is to identify a tool to provide that would consolidate all freight data into a web viewer format and provided an example of the Philly Freight Finder.
2. Todd Cox indicated that they are adding discussion pieces about data in their air services and air cargo plan.
3. Abdul and Keith mentioned that they can provide demand/capacity data, but the update is every 3 years. Todd Cox indicated performance measures group uses data from BTS and FAA based on their equations which may or may not be representation of correct demand/capacity ratios
4. Joel asked about freight return of investment for aviation. Todd indicated that the infrastructure for aviation is dependent on freight and passenger activity too. Hence, it is difficult to determine freight return of investment for aviation. There are rare cases where there is infrastructure development solely for freight. Other aspect is that freight comes by air freightliners and as belly cargo which carries passengers too. Freight activity depends on airport infrastructure and the surrounding road infrastructure too.
5. Florida airports are not major hub airports and hence, majority of air cargo coming at airport is distributed throughout state by trucks.
6. The other two air cargo data sources currently being used are data sources from OAG (has been submitted for LBR) and ACI data.
7. One major concern is other entities reporting aviation office data without conversation with the proper feedback from modal office and sometimes report incorrect information.
8. Joel explained the proprietary data sets; currently have a protocol of signing agreements as per the data sources.
9. Todd indicated the aviation freight industry has changed due to changes in air mail demand. He advised to create inventory of data with a focus on supply chain of freight movement.
10. Alan provided information about how different data sources like BTS-T100 can be visualized and analyzed using tools (Tableau)
11. Todd indicated that enplanements data from FAA and passenger information is provided from airports. They are starting to collect information of cargo in terms of tonnage.

**Attended:**

- **Joel Worrell**
- **Thomas Hill**
- **Bob Emerson**
- **Dan Fitz-Patrick**
- **Bob Butler – Baselayer**
- **Jimmy McDonald**
- **Steven Bentz**
- **Chris Francis**
- **Mike Rubin – Florida Ports Council**
- **Paul O’Rourke**
- **Makarand Gawade**
- **Lori Sellers**

**Meeting Purpose**

**Summary**

The meeting opened with greetings and introductions. Bob Butler gave an overview of the challenges and opportunities in supply chain, security, and energy efficiencies.

- Chris Francis talked about port management from his experience with VDOT– the role of the port landlord in terms of access management outside of the terminal gates, and technological solutions – TSSP = Continuity of Operations Plan
  - Without the TSSP, they couldn’t have identified the vulnerabilities
- Bob Butler discussed the issues around maritime awareness and how to maintain the continuity of government
  - DHS – Cyber resiliency with the ports
  - ISAC - Information sharing analysis center
  - Military traffic management center
- Jimmy McDonald discussed the maritime security committees that apply to each port, but don’t communicate statewide .

How do you use data and power to determine breaches in security?

**Baselayer – Enterprise Command and Control**

- provides a risk analysis and risk assessment in terms of the continuity of operations during surge events. Covered areas such as fuel, legal agreements,
- Baselayer doesn’t supplant other programs, provides information to support investments in maintaining operations
- 
- Joel noted that all state servers are subject to AST, stored in Southwood.
- 10+2 Customs and Border Protection – requires ship manifests be sent to CBP 24 hours prior to shipment. PIERS intercepts that data, but cannot release that data until one (1) week until after the shipment is delivered.



**Attended:**

- **Joel Worrell (FDOT)**
- **Bruce Dana (FDOT)**
- **Bob Crim (FDOT)**
- **Tim Lattner (FDOT)**
- **John Krause (FDOT)**
- **Michael Shepard (FDOT)**
- **Robert Robertson (FDOT)**
- **Makarand Gawade (RS&H)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the Design Office's business operations.

**Meeting Agenda**

10:30 a.m. – Introductions

10:45 a.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

11:00 a.m. – Design Office - Current and Future Business Practices Discussion

1. *What freight and modal data information are currently used by the Design Office and how?*
2. *How does the process differ for a freight project versus a non-freight project?*
3. *What freight and modal data could be obtained to support your office workflows?*
4. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*

11:30 a.m. – Meeting adjourn

1. Joel opened the meeting with providing an overview of the agenda
2. Joel provided overview presentation.
  - a. Transtat organization
  - b. Services which Transtat provide: Handbooks, TCI, Florida Traffic Online, FTI, performance measures source book.
  - c. Data for FAST act comes from FHWA.
  - d. Vision of the program
  - e. Consistent with ROADS project.
  - f. Data Supply chain model
3. Joel enquired about turning radius of existing locations and design parameters. As per design manual, there are radius thresholds for different percent of truck traffic. There is a big discussion about turning radius for roundabouts. It was asked if there are designated freight routes because design office currently uses truck counts. It was recommended assigning freight truck routes will help for design standards and for complete streets projects too. Design office mentioned the data extraction of design characteristics is possible but are not sure what can be applications of this data to other offices.
4. Lori discussed the different projects like FAF-Transearch, NPMRDS, and freight data profiles, being done in the program currently and what data sources are available currently.
5. Joel continued with other description of other projects like Freight-Sim, Tableau profiles of different data sets, inventory of distribution centers. Lori briefly discussed about applications of data for a City of Ocala study.
- 6. Lori mentioned that there will be a follow-up survey.**
- 7. Currently design office uses AADTT only. It will be good to have freight routes and truck classifications can be useful in pavement design and width of lanes.**
8. Design office doesn't classify freight or non-freight projects. For heavy truck traffic, concrete pavement is considered.
9. Navigation data is used for bridges. **Joel mentioned if it is possible to get access for the data.**
- 10. Dwayne Carver will be a good contact for roadway design office.**
- 11. Forecasts are obtained through PD&E studies which is done at district level.**



**Attended:**

- Joel Worrell (FDOT)
- Ed Hutchinson (FDOT)
- Rickey Fitzgerald (FDOT)
- Thomas Hill (FDOT)
- Gabe Matthews (FDOT)
- Frank Tabatabaee (FDOT)
- Chris Wigglesworth (FDOT)
- Keith Robbins (FDOT D1)
- Justin Ryan (FDOT D2)
- Jeremy Upchurch (FDOT D4)
- Ryan Marks (FDOT D5)
- Jim Wikstrom (FDOT D5)
- Rob Piatkowski (FDOT D6, RPG, for Carlos Castro)
- Makarand Gawade (RS&H)
- Lori Sellers (RS&H)

**Meeting Purpose**

Following up on the first round of outreach of the freight and modal data inventory in 2013, the Transportation Statistics (TRANSTAT) Office has undertaken the task of creating the **Freight & Modal Data Program** and created the new position of the **Freight & Modal Data Coordinator** to address the data needs to create an consistent and efficient Florida freight story with guidance from the Freight Mobility and Trade Plan and the Data Governance framework from the Reliable, Organized and Accurate Data Sharing (ROADS) Project.

The first task in establishing this program is to conduct the **Freight & Modal Inventory**. The Freight Data Support Team is tasked to identify and gather and coordinate FDOTs existing freight data sources through central and district offices as well as external offices. This information will be provided to FDOT personnel to enhance the Department's freight business intelligence and to establish efficiencies of coordinated data needs for development of datasets, tools, and applications

The Team would like to determine where TRANSTAT's Freight & Modal Data Support team can support the District Freight Coordinators' business operations. Through this process, the Freight Data Support Team requires your feedback on district data needs and service gaps that Central Office can further support your respective initiatives. Your input and continual support is critical for Central Office to identify and support current and future district office freight and modal data needs for routines, projects, plans and plan updates, documents, studies, resources, tools, training, workshops and practices.



## Meeting Agenda

10:00 a.m. – Introductions

10:05 a.m. – Freight & Modal Data Program Overview – Where we are, where we're going

10:15 a.m. – DFC - Current and Future Business Practices Discussion

\*To ensure we stay within the hour, please be prepared to briefly discuss the following issues. Opportunity for more detailed input will be provided at a later date.

1. *How does your district currently **use** freight and modal data?*
2. *What freight and modal data **gaps** do you see in your business operations?*
  - a. *Gaps could include: data availability, data acquisition process, investments for new data sources, standard business intelligence availability, communication, and training.*
3. *What freight and modal data **services** would benefit your business practices?*
  - a. *Services include: data analytics, research and special studies, provision of marketing materials, single point of contact for data, tool development. .*
4. *Is your District/MPO interested in using the Statewide Traffic Demand and Freight Model?*

10:45 a.m. – Next Steps

11:00 a.m. – Meeting adjourn

## Important Points

- Joel opened the Freight & Modal Data Inventory (Inventory) meeting noting the purpose is to present to the Freight & Modal Data Program (Program) program and to solicit feedback from the District Freight Coordinators (DFC) on their data needs.
- Information being collected through this Inventory includes data resource and process needs.
- Joel noted that a main goal of the Program is to provide data for use by statewide programs, District offices, and the DFCs in their respective freight programs.
- Need for consistent, affordable, efficient, and accessible data
  - Ex) FAST FACTs – capture and present data from an operational standpoint and from a policy standpoint
- Joel provided overview of Program Goals:
  1. Provide Consistent & Effective Access, Collection, & Reporting of Multimodal Data
  2. Integrate Operations & Planning Freight & Modal Data Resources
  3. Coordinate Investments & Improvements
  4. Provide Training & Awareness of Data, Datasets, Tools, & Models
- Joel provided an overview of the some of the strategies the program is undertaking to meet the larger program goals, such as:
  - Establishment of the Statewide Freight & Modal Data Coordinator position (Strategy 1.1)

- Joel stressed the value of the DFC's reach into the Districts for promoting the resources and services provided by the TRANSTAT office as well as being the interface with outside stakeholders and programs for District-level data needs and reporting
- Program supports FDOT's programs and system plan updates
- Inventory is being coordinated with the ROADS project.
  - Freight & Modal Data Coordinators is designated as a "Data Steward"
- Program seeks to optimize data supply chain, create efficiencies and consistencies
  - Freight data clearinghouse
- Focus is on multimodal data vs. highway centric
- Goal to ensure data is consistently collected, provided, and reported across the agency
- Create efficiencies in data collection, purchasing, and reporting
  - Ex) traffic counters, WIM, classification, and freight
- Support a coordinated Legislative Budget Request (LBR)
  - Next LBR will be submitted for the 2017 session with funding anticipated in 2018
- Lori provided an overview of the Inventory process, noting the current status and next steps.
  - Data Assessment
    - Finishing up with Central Office meetings.
    - Meeting with DFCs; will schedule District-level meetings - TBD.
  - Freight & Modal Data Profiles
    - In final QC.
  - Freight & Modal Data Governance Plan
    - In production following Inventory
- Freight data partnerships were also discussed, with reference to the Ocala Inland Freight Facility Feasibility Study
  - Offset costs to stakeholders
  - Made a local/regional freight study happen that otherwise might not have
  - Creates data of use to the FDOT and the District-level Freight Program
  - SWOT Analyses of various data products
    - Transearch & FAF SWOT Analysis in review
  - NPMRDS Travel Time Assessments
  - Freight Data Analysis Support Tools
  - Modeling applications and Data Visualization and Analyses
- Frank Tabatabaee noted that several data resources were used to validate the Florida Statewide Model (FLSWM), including Transearch, FAF, InfoGroup, Commodity Flow Service data, socioeconomic, etc.
  - Frank noted that the FLSWM would be published later in Spring 2016
  - Thomas Hill followed up with a note that FLSWM was never designed to be used at the TAZ-level the data used to validate the model were used to validate truck volumes and commodity flows, and to make a better product for the DFC's use

- Joel provided an overview of the Freight Facility Dataset created through the Program as a data resource to assist the DFCs, developed through freight data mining
  - Discussion was held about the final delivery of the data
- Joel also provided an overview of Data Products and Services provided by TRANSTAT
- Ed Hutchinson noted a data need is to provide truck counts on I-75 entering and leaving Florida.
  - A new WIM counter has been installed at the GA/FL line at I-75
- Ryan Marks noted that the volume of data resources makes the data inaccessible.
- Joel noted there will be resources made available through the Program to make information more accessible (ex, Freight Data Profiles, Freight Data Analysis Support tools, standardized data publications)
- Makarand Gawade provided an overview of the a variety of freight data resources provided through the Freight & Modal Data Program by data category
  - Ex) Traffic Characteristics Inventory – data variables: truck AADT, VMT, % factor, speed, age distribution; data resources: FAF, HPMS, Transearch, VIUS)
- Joel noted that the Inventory is establishing a baseline for the Program and enhancements will be created over time, including a Freight Data Viewer
- Rickey Fitzgerald noted:
  - Data information and any ultimate tool should be easy to operate to ensure that the DFCs can use most efficiently.
    - Rickey also mentioned the learning curve should be achieved in three steps.
  - Training is recommended
  - A “final” and consistent message should be published that can be shared from the Department Secretary to the DFCs and local agencies
- Joel wrapped up the meeting with Next Steps and an invitation to the DFCs to provide any venues and events with which they may need assistance for local coordination.

**Action Items:**

- Follow-up with meeting date for Freight Facility Dataset.
- Meet with DFC’s to discuss future meetings with their District personnel.





**Attended:**

- **Joel Worrell (FDOT)**
- **Dean Rogers (FDOT)**
- **Peter McGilvray (FDOT)**
- **Makarand Gawade (RS&H)**
- **Gabe Matthews**
- **Terry Alexander (FDOT)**
- **Thomas Hill (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the development and implementation of the Environmental Management Office's research and reporting needs.

**Meeting Agenda**

10:00 a.m. – Introductions

10:05 a.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

10:15 a.m. – Environmental Management Office - current and future business practices discussion

1. *What freight and modal data information are currently used by EMO and how?*
2. *What freight and modal data and information is required for current and future office projects and programs?*
3. *What are the current freight and modal data office workflows?*
4. *Does the office utilize the National Transportation Atlas Database from USDOT?*
5. *Does the office utilize the Freight Analysis Framework from FHWA?*
6. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*
7. *What lessons learned from the Environmental Screening Tool could be applied to a freight and modal data map viewer and analysis tool?*

11:00 a.m. – Meeting adjourn

## Important Points

- Dean Rodgers asked what the ultimate deliverable for this project will be. Joel responded that we're putting together an inventory of data sources and uses, such as truck parking counts.
  - Creating efficiencies
- Terry Alexander noted that they'd like to coordinate their model with the MOVES model. She noted there will be comprehensive planning and modelling training/meeting in May. She noted the timeline is over the next couple years.
- Joel noted that TRANSTAT is seeking input on the data that would be involved and how they can help.
- Peter McGilvray noted all the partners EMO works with (state, federal, M/TPOs), and how to develop the Purpose and Need and back that up with data. He noted he can see he sees an opportunity to use that freight and modal data would be helpful. Also, understanding how the data will be used and how it's collected will be helpful as well.
- Joel provided an example: Metro Plan Orlando wants GPS truck data. Joel stated that determining the appropriate data layers will be an important task.
- Peter – some data layers may be added to the EST would be beneficial to their specific use, but they would also open up the topic to the other M/TPO if that would be helpful if they would also use that information for their LRTP.
- Thomas Hill noted their model has an output trip table for freight and passenger vehicles. He stated it would be useful to have more exposure to have that data included as a layer in the EST. He also noted to add the NPRDMS data would be very powerful for their analysis, but it's a big data set.
- Peter noted there are approximately 550+ data layers in the EST and those were recommended/requested for analysis by stakeholder.
- Thomas noted the change in thought process from LOS to travel time reliability which is a different data set. Peter agreed that it would be useful data to support MPOs and districts to justify their projects. The data is used to analyze a project in terms of why it's proposed, potential impacts..... this data would be useful to supplement that decision-making and evaluation process.
- Peter stated – the reason why – have to take a snapshot of everything that was occurring at the time a particular project is proposed. A full snapshot needs to. When a project goes out for review:
  - What conditions were present at the time?
  - What data was available?
  - What was known at the time an event was happening?
  - Ultimately they're supporting an administrative record with providing a snapshot of what was known at the time a decision was made.

- Peter noted that there's a bi-annual survey, going out next week, that inventories what data is being used, needs, etc.
  - The recipients chosen were chosen as an expert based on their expertise for their agency. These experts validate the need for particular data and use. Then that data goes into the EST.
  - There may be duplication in the coverage of respective datasets, but the data that is used is what is validated as useful to the respective agency's process and they feel comfortable using for their uses.
- Peter noted that the EST has a subset of data that is purchased, proprietary ...
  - Not published and is used by agreement
- Thomas asked for survey results as that will help for Legislative Budget Request
  - Peter noted Jared Causey used the same process for NAVTEQ data. It was identified as a need by the local and other agencies and they all entered into the agreement for its scripted use.
  - Peter described the use of the NAVTEQ data – secure site, all partners can use in their analysis, but it's not shared out.
  - EMO manages the FGDL of the public data as well as the private site.
- Joel requested more information about the proprietary data. Peter noted the agreement spells out the specific criteria that assures the private vendor's data will be protected, the terms of use, and the users.
- Bluetooth discussion
  - Thomas explained BT project and its objectives.
  - Peter – not sure if the exact BT locations would help with project screening
- Joel discussed the NPRDMS data and its applicability in the EST. He noted FHWA and the Florida Turnpike Enterprise's uses. Peter stated it has the potential to be a very powerful data for analysis.
- **Peter stated it would be helpful to meet with the districts** who are developing data to discuss what we have and what could be helpful. Joel stated the freight and modal data inventory is working with the DFCs and will be meeting with them soon.
  - Peter – quick G2Mtg would be helpful
    - What we have – inventory of assets
    - What you may need to help with your process
- Joel asked about the ROADS project and how it's affecting EMO and the ETDM process.
- User agreement – peter noted they have to slap hands every once in a while because users aren't discarding the data after the specific use defined in the agreement.
  - NAVTEQ – do show on public site; use on internal site; don't provide outside
  - Agreement spells out the attributes, how often data is updated



- Lori asked if it is possible to get copy of data user agreements. **Peter mentioned that he can send them.**
- EMO uses RCI data but NAVTEQ provides the underlying network to provide context for a proposed improvement that may not be captured in RCI. It comes down to qualifying improvements.
  - ETDM Manual defines “Qualifying project” – funding and type of project
  - Is it reasonable? Work with state and federal partners

#### **Action Items**

- Peter to provide use agreements as example
- Joel will provide list of data layers
- Joel/Peter will set up statewide meeting with district offices.
- Survey – February – Results late spring/early summer
  - Module in the EST

**Attended:**

- **Joel Worrell**
- **Gerard O'Rourke**
- **Rickey Fitzgerald**
- **Todd Cox**
- **Lori Sellers**
- **James Golden**
- **Dave Snyder**
- **Makarand Gawade**
- **Armondo Moscoso**

**Meeting Purpose**

Determine freight and modal data and data service needs, uses, and gaps.

**Meeting Agenda**

11:00 a.m. – Greetings

11:15 a.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

11:30 a.m. – Guided Data Discussion

11:45 a.m. – Guided TranStat Webmapping Viewer Discussion

**Summary**

Attendees provided a quick introduction and which offices they represented. Joel Worrell and Lori Sellers gave a brief presentation overview of the Freight & Modal Data Inventory project and where the program is headed in the future. General discussion was held on the challenges the Department is facing with acquiring, disseminating, and properly utilizing freight and modal data purchased by the Department. Lori provided a recent example of the Ocala Inland Freight Facility Feasibility Study and the challenges with providing data to the study team. During the presentation, Joel provided an overview of the data categories in use by the Department. Joel also provided an overview of a dataset in production from other task work orders under this same contract, such as the Distribution Centers database.

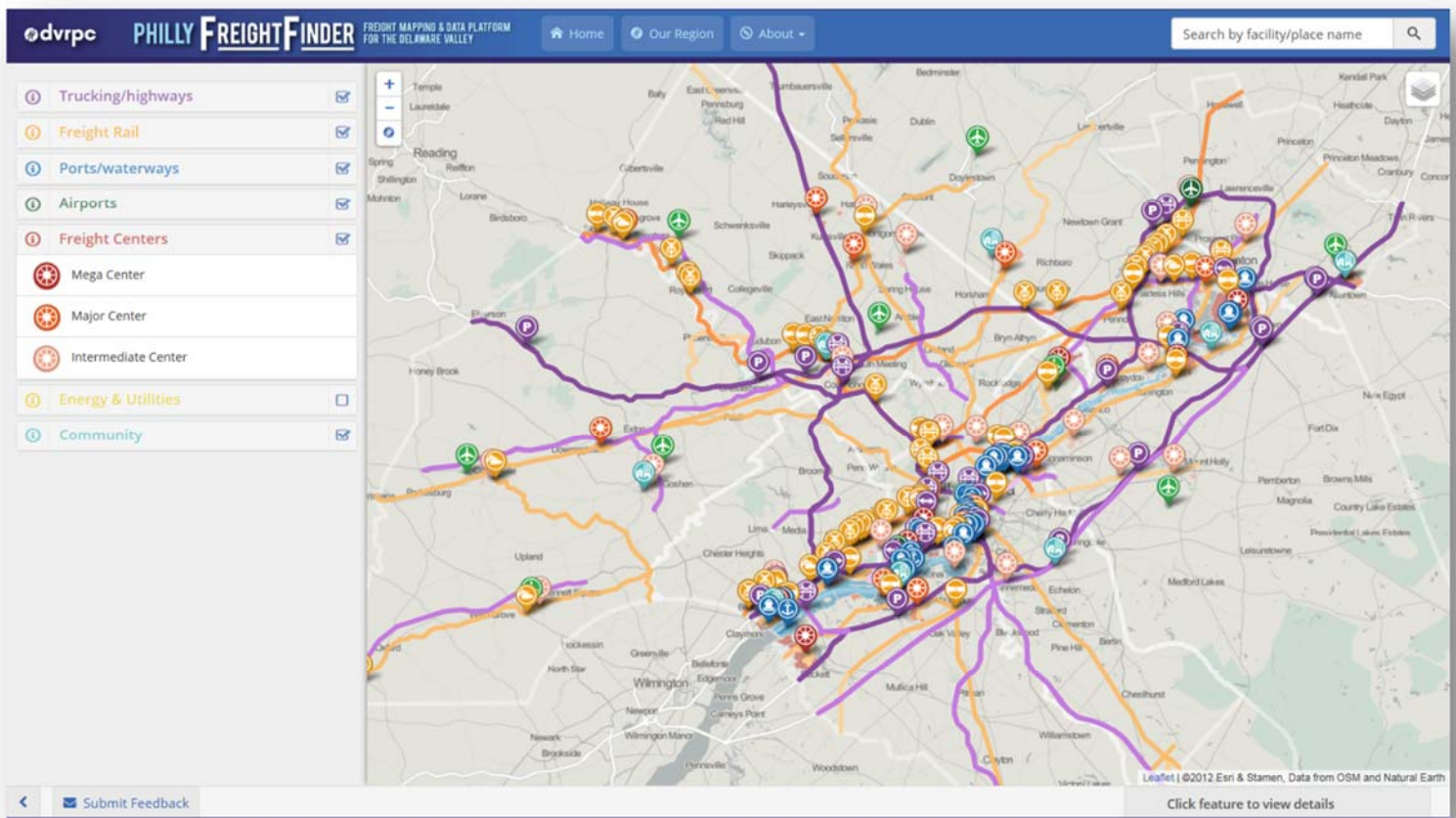
Specific areas of interest expressed by meeting attendees included interest in data that can be used to analyze operational characteristics of freight, such as temporal and travel time reliability data. Rickey Fitzgerald expressed interest in temporal data related to highway freight mobility. From an operations standpoint, it was agreed that determining when the best time of day for freight to move would be valuable information. Todd Cox also discussed the variability between the different aviation datasets. Gerard O'Rourke was also interested in the VMT reporting for legislative purposes.

Among the next steps, Lori notified the group that more detailed conversations would be scheduled in a tiered manner - starting with the modal offices in Central Office, then moving to the District Freight Coordinators, and then moving to the MPOs/TPOs. The more detailed conversations will be held to gather information about what specific

datasets are needed by the various offices, what challenges these offices may be experiencing in meeting their respective goals and missions, and to determine what the best outcome will be from this project in terms of a freight data viewer and services provided by the TranStat office.

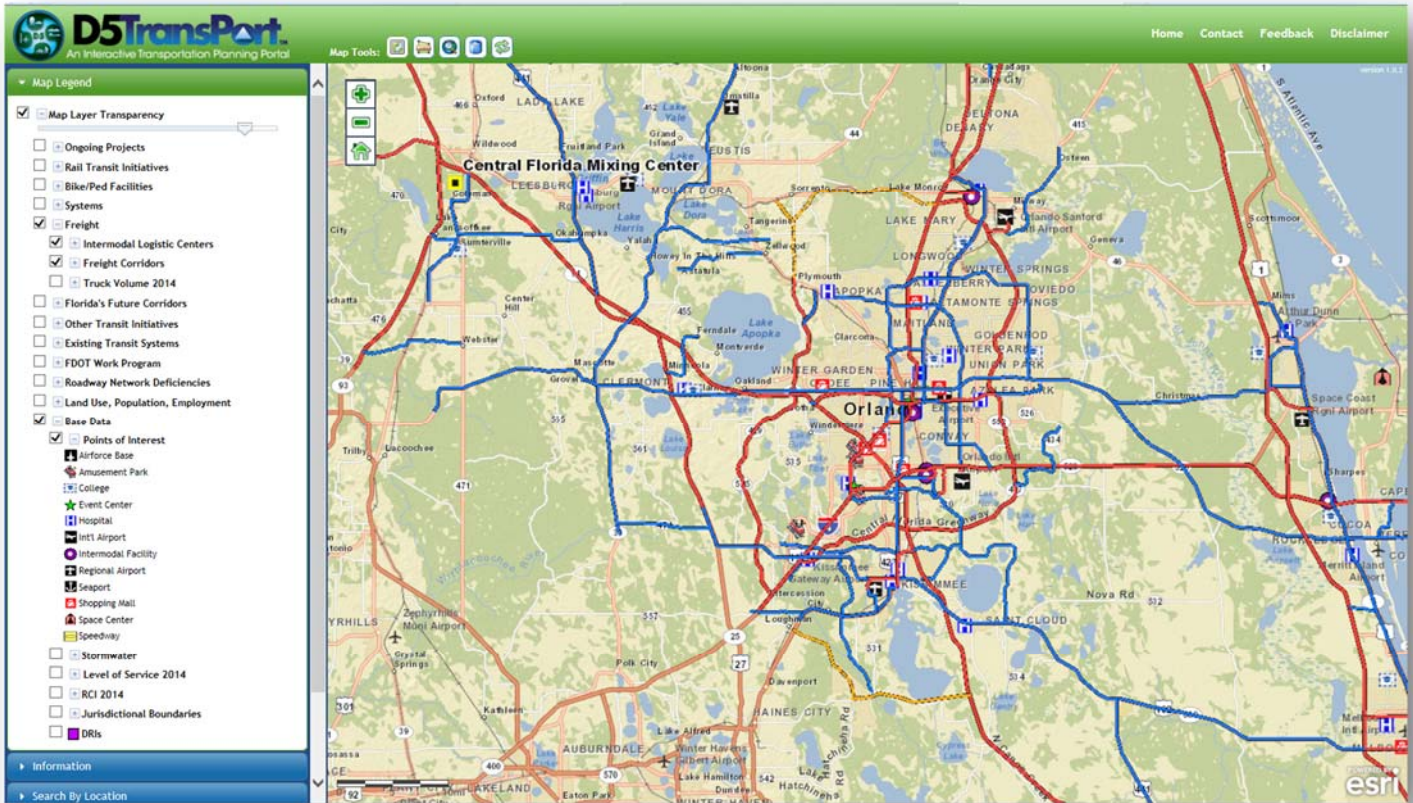
Examples of data viewers in operation today were provided to facilitate conversation. Those viewers included the Philly Freight Finder, the FDOT District Five TransPort tool, and Leonard’s Guide.

The **Philly Freight Finder** was developed by the Delaware Valley Regional Planning Council to provide “...a dynamic, web-based mapping application that pinpoints freight facilities and freight activity in the Philadelphia-Camden-Trenton region. In addition, this tool also highlights how the various freight system components intertwine and complement one another.” More information on the Philly Freight Finder can be located here: <http://www.dvrpc.org/webmaps/phillyfreightfinder/#home>



The **TransPort Tool** is an interactive transportation planning tool developed by FDOT District Five that provides access to transportation related data and information, and allows mapping and spatial analysis of transportation systems to inform decision making. The tool includes such data as the FDOT’s current Work Program, transit and freight systems, identified roadway and network deficiencies, the Strategic Intermodal Systems, etc.


More information on the TransPort tool, including a User Guide, can be found here: <http://fdot-d5-transport.hdrgateway.com/default.html>



Leonard's Guide provides an online directory to the freight transportation and warehousing industry covering segments such as Trucking, Warehousing, Domestic & International Air-Cargo, Logistics, NVOCC, Truck Brokerage, Fulfillment Warehousing, Food Grade Warehousing, Freight Forwarding and Intermodal/Rail.

More information about the Leonard's Guide Online National Warehouse Directory can be found here:

<http://www.leonardsguide.com/nwdd/>



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LEONARD'S GUIDE NATIONAL WAREHOUSE AND DISTRIBUTION DIRECTORY

**This is not an operational search page. It is only intended to demonstrate the search capabilities of the system. The example shows a user looking for a public warehouse in the Philadelphia area that has at least 50,000 square feet of storage space, handles paper, and provides pick & pack services. Click on "search" below to continue.**

**Select your search criteria :**

Company

City

State/Province

Zip minimum

Zip maximum

Area code

Storage area  to  sq.ft

Classification

or

Products handled



or

Distribution services

or

Number of rows per page

Sort results

 **Clear**     **Search**

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**Invited:**

- **Joel Worrell**
- **Deanna Hutchison**
- **Kirk Hutchison**
- **Lance Lankford**
- **Ed Hutchinson**
- **Tina Hatcher**
- **Paul O'Rourke**
- **Ryan Marks**
- **Robert Piatowski (for Carlos Castro)**
- **James Golden**
- **Makarand Gawade**
- **Lori Sellers**

**Meeting Purpose**

Discuss truck parking spaces available through our statewide facilities and what the current data collection process is. As part of the Freight and Modal Data Program and Task Work Order 6: Freight Data Inventory project, the Freight Data support team would like to determine freight and modal data resources, as well as provide for data collection and service needs, determine data users, discuss current data maintenance, and identify data gaps. The team would like to determine where the TranStat Freight and Modal Support Unit can support a data collection effort.

**Meeting Agenda**

9:00 a.m. – Greetings

9:15 a.m. – Freight & Modal Data Program Overview – Where we are, where we're going

9:30 a.m. – Jason's Law and Truck Parking Discussion

9:45 a.m. – Data Needs Survey Discussion

10:00 a.m. – Meeting adjourn

**Summary**

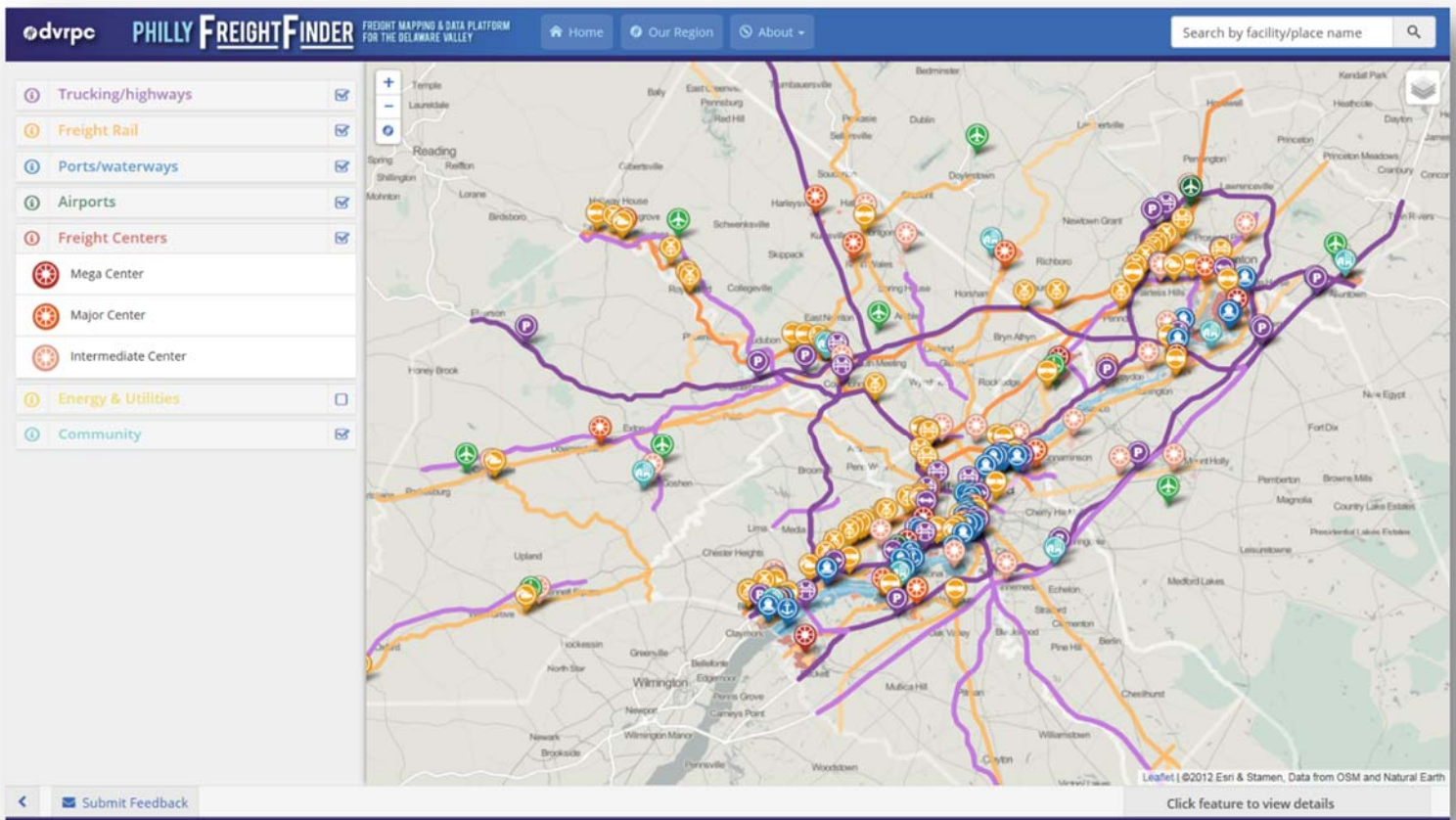
- Joel welcomed everyone to the meeting and explained the agenda and the purpose of the meeting.
- Joel started with an overview presentation of the Freight and Modal Data Program, and explained that this program aims to create a clearinghouse or a web viewer to get the data, services, and resources in one place. Examples of data viewers in operation today were provided to facilitate conversation. Those viewers included the Philly Freight Finder, the FDOT District Five TransPort tool, and Leonard's Guide.
  - Examples of viewers inspiring the TranStat freight and modal data viewer can be found below.

- Lori talked about how we will create a data inventory, which will consist of identifying the needs and opportunities within the current data supply chain, and develop a system to support the provision of data to FDOT's various offices and programs.
- Joel continued with noting challenges in acquiring different datasets, mentioning different data applications being undertaken, and how proprietary issues impact these applications.
- Ed Hutchinson inquired about the status of Task Work Order #6 which includes creating a statewide database of distribution centers. James Golden replied that the database is ready and only discussions regarding the format of output files remain. Formats currently considered are KMZ, My Maps, and ArcGIS Online. Joel added that there will be a kick off meeting with freight coordinators for the distribution center database. This data will be shared internally for further QA/QC and then will be shared externally.
- Joel continued the presentation and talked about different partnerships with MPOs, District for their projects/studies. Lori explained about how proprietary data acquired from Central office was used in the Ocala Inland Freight Facility Feasibility study which helped them considerably offset costs and develop their analysis.
- Joel asked Maintenance Office representatives about how parking data can be collected (aerial imagery vs. field collection), revised, and how the Freight and Modal Data Unit can help in maintaining this database.
- Kirk Hutchinson mentioned that a couple of rest areas are resurfacing their parking lots and changing the building structures. Tina Hatcher asked about how "live" the data needs to be. Joel mentioned that we need all potential parking spaces available to have a complete inventory. Joel referenced the Innovative Truck Parking Study.
- Joel inquired about discrepancies in the parking space count for a rest area when compared imagery from Google Maps and the spreadsheet provided to AASHTO for the Jason's Law Survey. Dianna Hutchinson mentioned that the numbers might vary because of infrastructure projects completed since that survey was conducted, and the spreadsheet gives more updated numbers.
- Joel asked if the numbers could be updated. Dianna mentioned that she has the complete list of project managers for rest areas, service plazas, and welcome centers, and she will email them to update the parking space counts. Kirk added that they will also include weigh-in-motion stations (WIMS) and weight stations.
- Tina asked if we can add the information into the Roadway Characteristics Inventory (RCI). Kirk agreed that it can be added.
- Joel noted rest areas locations in the RCI are based on Linear Referencing System which doesn't give the exact location of the parking locations. Kirk added that the attributes do give the information about whether it is right or left side of the road. He also added that they have information about the entry/exit points of these areas. Tina and Paul suggested to add latitude and longitude of exact locations in RCI database. Joel noted TranStat can assist in fixing the geospatial differences.

- There will be more discussions between Kirk, Tina, Dianna, and Joel to create this database.

**Example Freight and Modal Data viewers**

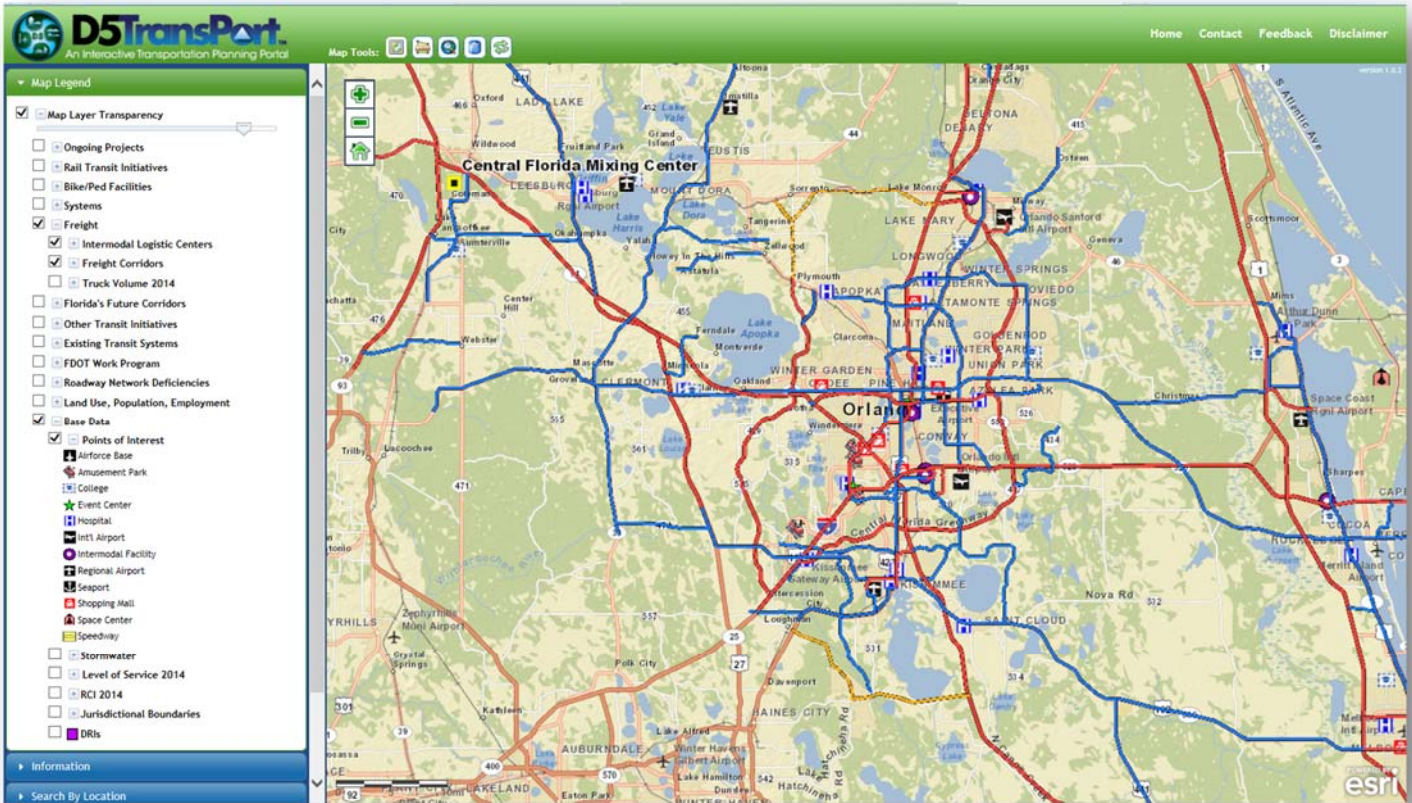
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- More information about the Leonard's Guide Online National Warehouse Directory can be found here: <http://www.leonardsguide.com/nwdd/>



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Search

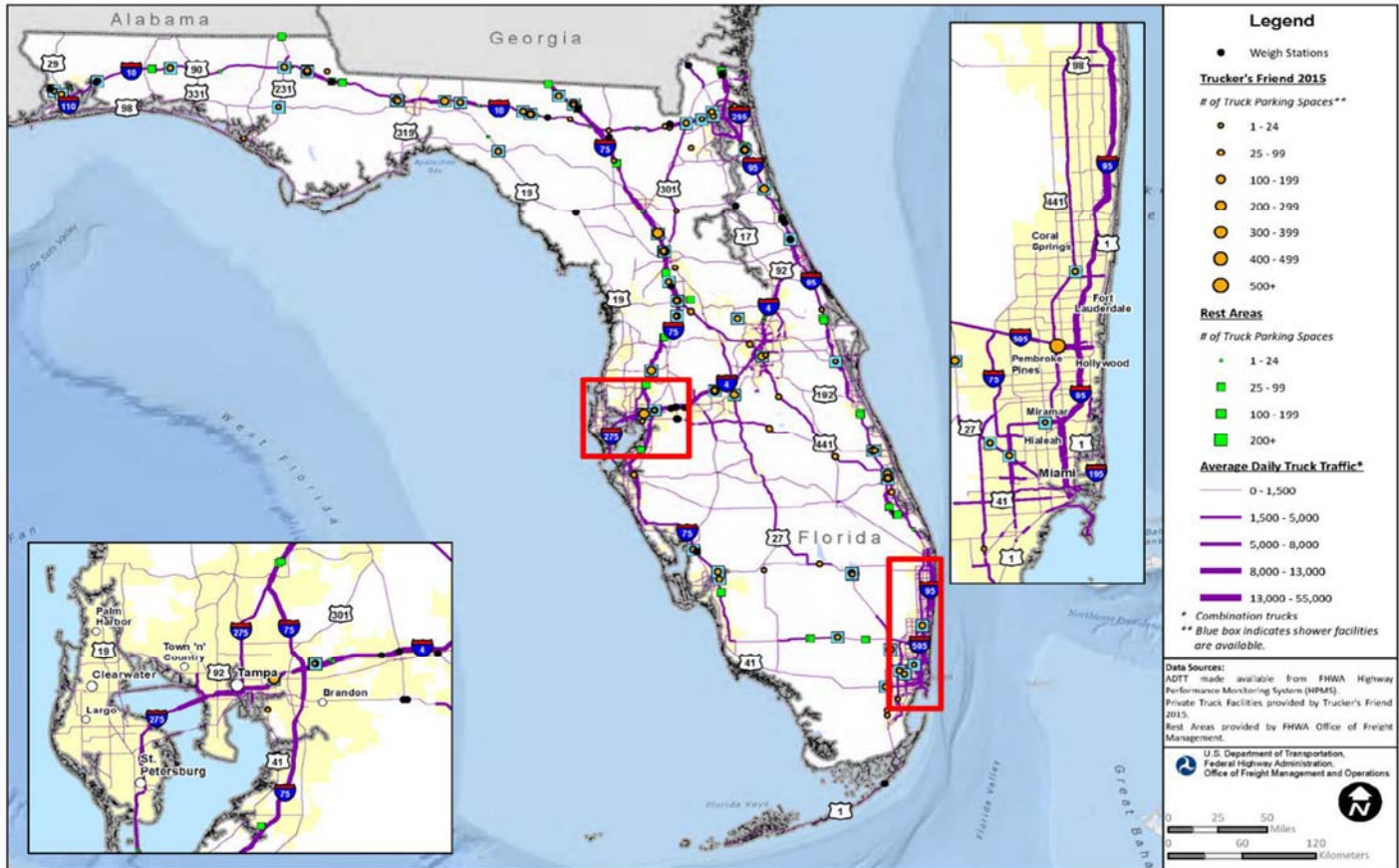
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**Select your search criteria :**

Company	<input type="text"/>
City	<input type="text"/>
State/Province	<input type="text" value="Pennsylvania"/>
Zip minimum	<input type="text" value="18900"/>
Zip maximum	<input type="text" value="19600"/>
Area code	<input type="text"/>
Storage area	<input type="text" value="50000"/> to <input type="text"/> sq.ft
Classification	<input type="text" value="public"/>
	<input type="button" value="or"/>
	<input type="button" value="or"/>
Products handled	<input type="text" value="paper"/>
	<input type="button" value="or"/>
	<input type="button" value="or"/>
Distribution services	<input type="text" value="pick &amp; pack"/>
	<input type="button" value="or"/>
	<input type="button" value="or"/>
Number of rows per page	<input type="text" value="10"/>
Sort results	<input type="text" value="by Company"/>

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**Summary of Jason’s Law Survey Results:**



**Figure: Truck Parking Lots as per Jason’s Law Survey**

Link for the Jason’s Law Survey Information:

[http://ops.fhwa.dot.gov/freight/infrastructure/truck\\_parking/](http://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/)

What is Jason’s Law?

- Jason’s Law is a Section 1401 of MAP-21 which was to address the commercial motor vehicle parking shortage at public and private facilities along NHS.
- Jason’s law directed USDOT to conduct a survey to understand truck parking capabilities in different states, commercial motor vehicle traffic and develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each state.

*Summary of conclusions of survey:*

- States report higher levels of shortages of capacity in public parking facilities than in private facilities
- Higher number of parking spaces are clustered along major corridors with high truck volumes
- Drivers and staff cite I-95, I-40, I-90, I-10 and I-81 as to five corridors with shortage in parking spaces
- Facilities report being at full capacity primarily during night hours and over capacity during mid-week
- Almost 50% of state DOT reported illegal parking on freeway interchange ramps and shoulders of highways.
- More than 75% of truck drivers reported regularly experiencing problems with finding safe parking locations when rest was needed
- 90% of drivers reported struggling to find safe and available parking during night hours
- States expressed a need to understand the key industries and commodities supply chains traveling on their road network in order to better anticipate and plan for parking needs.
- States recognize major difference between short-term and long-term parking needs and seek an understanding of how to accommodate those differing demands
- Parking demand was most acute on major corridors and metropolitan areas
- Delivery needs and schedules appear to drive a nighttime demand for spaces
- FHWA determined that it is valuable to assess truck traffic volumes mapped with parking supply to best provide a means to characterize the spatial distribution of parking patterns.
- Public parking are rest areas, welcome centers, weight stations, truck inspection locations
- 39% of drivers of the drivers responding take 1 hour or longer to find parking
- 53% of drivers regularly use a commercial truck stop for rest and 20% use a rest area. Other options are shipper/receiver location, on/off ramp, abandoned/isolated area and behind a shopping center
- Driver cite two HOS rules to influence changes in truck parking:
  1. For a continuous off-duty window under “34-hour restart provision” to include two consecutive late-night periods of 1:00 am to 5:00 am
  2. For drivers to take a 30 minutes rest break during the first 8 hours of shift

*Truck parking metrics as per the study:*

- Parking demand
- Parking supply
- Economic valuation
- Safety
- Driver demographic and needs
- Location dynamics
- Environment
- Development

*Truck parking data was acquired from:*



1. Public parking data from State DOT
2. Private parking data from 2015 Trucker's Friend database

*Some other results:*

- As per 2015 Trucker's Friend study, Florida has 71.2 parking spaces (public spaces = 19.8) per 100,000 miles of combination truck vehicles miles of travel which is 8th lowest in country. Montana (highest) has 172 parking spaces per 100k miles.
- Public parking facilities in Florida = 77 (spaces = 2529)
- Private parking facilities in Florida = 160 (spaces = 6573)
- 35% of OOIDA survey respondents indicated that they face parking shortages in Florida
- 32% of ATA drivers indicated that they face parking shortages in Florida
- Limited data on utilization, maintenance and plans
- Information beyond the location of unofficial parking is not available
- To come up with parking metrics, they conducted a workshop which included representatives from FHWA, ATA, ATRI, NATSO, AASHTO, state DOT, MPO, OOIDA.





**Attended:**

- **Joel Worrell (FDOT)**
- **Carmen Monroy (FDOT)**
- **Regina Colson (FDOT)**
- **Martin Markovich (FDOT)**
- **Dave Lee (FDOT)**
- **Makarand Gawade (RS&H)**
- **Gabe Matthews (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the Policy Planning Office's data, research, reporting needs.

**Meeting Agenda**

1:00 p.m. – Introductions

1:05 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

1:15 p.m. – Policy Planning Office - current and future business practices discussion

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *What type of freight and modal data support would be needed for reports such as the Trends and Conditions, Fast Facts, Florida Future Corridors?*
4. *What kinds of freight and modal data support are needed for benefit cost analysis tools?*

2:00 p.m. – Meeting adjourn

## Important Points

1. Joel Worrell opened the meeting with a brief discussion of how the TRANSTAT office could help Policy Planning develop basic trends and conditions reporting for Florida's transportation system.
2. Carmen Monroy asked if TRANSTAT uses any data related to performance measures. Joel noted that there are several contracts in progress at the same time and this project is supportive of the mutual efforts.
3. Joel provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that the TRANSTAT office will serve as a "data distribution center" and provide value-added services to the Department.
4. Joel noted that one of the goals of the program is to identify a tool to provide that would consolidate all freight data into a web viewer format if that is determined to be useful through the Freight & Modal Data Inventory project.
5. During the presentation, Thomas Hill provided an overview of the Bluetooth Deployment Data Collection and Microsimulation Project. Carmen asked if Bluetooth data was being collected around the Port of Miami to provide a baseline analysis to measure effectiveness of investments at the port over time. Thomas noted that the Bluetooth and Microsimulation Project is currently centered on Port Everglades and is an effort to develop a methodology to model freight activity at ports statewide. Joel noted, however, that Steven Bentz is working on a data collection project around Port of Miami.
6. Martin Markovich asked if the Bluetooth sensors will capture semi-trucks / freight vehicles. Thomas noted that vehicle type is determined through additional analysis. For the Port Everglades analysis, Bluetooth sensors have been placed at gates where the traffic is exclusively freight.
7. In the presentation of the speed distribution data, Joel noted the probe data is free for now but there may be a cost in the future.
8. Joel noted he is working with Monica Zhong on developing the trends and conditions reporting utilizing FAF data.
9. Thomas described the difference in FAF and Transearch data and the different geographical extents of each.
  - a. Transearch is at the TAZ level, FAF is at a more regional scale. Transearch data can be used to disaggregate FAF data into more local detail.
10. Discussion was held about the age of data FDOT is using and the cost for purchasing and acquiring newer data. The cost has to be evaluated related to the overall use to make the business case for purchasing updated data.
11. David Lee noted that "data people" have different perspectives on data than "planners" and a peer exchange between each community would be useful. He noted that data professionals are focused on the quality of the data itself, which planning professionals are focused on the data's utility for telling a particular story. He noted we can't wait for perfect data to tell a story.
12. David noted that the new federal transportation bill, the *Fixing America's Surface Transportation (FAST) Act*, is more multimodal than the previous bill, and provides the opportunity to redefine Florida's transportation systems. The Office Policy Planning is developing FAST Facts publications that should be easily developed through data resources within the Department. Carmen noted that it's important to be consistent in the reporting.
13. Carmen noted that the Freight & Modal Data Inventory Project should be working with the Department of Health (DOH). She noted that DOH is collecting data that may be useful to the FDOT as well as using some data provided by the FDOT. Carmen referenced the DOH's initiative to identify "food deserts" where

communities don't have access to fresh foods due to socioeconomic status and the connection with transportation. She noted that "health" is factoring into transportation system reporting.

14. Joel noted that the TRANSTAT office is working with the DOH through the Women's, Infants, and Children (WIC) program.
15. David noted that the USDOT has published a tool that provides local data info and provides scores for states based on a variety of variables. David described some of the metrics on which the USDOT tool provides points and ranks states. Examples included the fact that Florida has adopted a Complete Streets policy.
16. Carmen mentioned that TRANSTAT should be looking at data to support the planning, implementation, and analysis of Complete Streets projects.
17. Joel asked the group how FDOT responds to performance measure reporting from other agencies. Carmen noted that Secretary Prasad responded with David's assistance through the publication of a series of performance reports.
18. Joel asked when to make a performance measure out of features that may be contained in new data sources or features that will require new data sources. Truck parking was provided as an example.
19. Carmen commented that truck parking is an issue receiving erroneous reporting (statements that truck stop utilization is low because of trucker concern over being "caught" for some violation). She noted that truck stop utilization is more likely low because these locations are lacking amenities like showers, pet services, healthy food options, etc., or are unsafe.
20. Joel noted truck parking locations and amenities will be contemplated in the upcoming Motor Carrier Plan.
21. Martin noted there are two (2) sides to data: collecting and processing/analysis. Analysis can be very expensive.
22. Carmen recommended the Freight & Modal Data Inventory team talk to Brian Watts as he administers the Strategic Intermodal System (SIS) policy and will be making changes to SIS eligibility criteria with the SIS Strategic Plan update. She also noted that Brian uses freight and modal data for SIS designation change requests. Joel noted that the Freight & Modal Data Inventory team met with Systems Planning Office on 12/15, but will meet with Brian to assess his specific data and service needs.
23. Carmen noted the FDOT needs a methodology on how to collect empty containers to analyze empty backhaul movements on Florida's freight and logistics system and improvements in system development over time.
24. Carmen recommended TRANSTAT work with the Comptroller's Office to develop a legal statement regarding the Department's use and publication of data products to ensure compliance with Sunshine Law. She noted the State of Utah has good examples to follow regarding data downloads. Thomas noted that Florida's data is harder to provide because of the volume of Florida's data being much larger than a smaller state, such as Utah.
25. David noted the difference between Core performance measures and Supporting performance measures. He noted that Core performance measures track program performance.
26. Carmen discussed the opportunity to receive data back from the transportation system during performance through automated/connected vehicles, truck platooning, truck parking. She noted it would be useful to provide corridor-level multimodal characteristics. She noted this data would especially be useful for Future Corridors.
27. David and Carmen noted Systems Planning would like to produce quarterly FAST Facts updates without much expense.



- a. Joel asked about Benefit Cost Analyses (BCA). Martin noted data is often coming directly from the modal hub that may have a benefit to skewing data if data is used for competitive purposes (such as competing for funds as is the case for ports). Thomas noted it's beneficial to understand downstream and residual effects of transportation investments. Martin noted a BCA was provided by Port Everglades and JaxPort; he will send it to the group. He noted that JaxPort performed own BCA with FDOT quality controlling. .
28. Joel noted it would be useful to understand the data resources utilized within the BCA.
29. Carmen noted data is needed to understand "pop up transit facilities". She provided the example of the University of Iowa's student arrival event; two downtown streets are turned into transit facilities under the events are completed and then reopened afterwards. She noted this will be useful for the automated vehicles implementation because automated vehicles may be able to have smaller, remote parking areas for those that can be shared between individuals and called as needed.

**Action Item:**

- Martin will send the BCA reports for Port Everglades and JaxPort.
- Work with the Comptroller's Office to develop a legal statement regarding the Department's use and publication of data products.
- Set up discussion with Department of Health.



**Attended:**

- **Joel Worrell (FDOT)**
- **Ed Lee (FDOT)**
- **Ed Bryant (FDOT)**
- **Alan Meyers (PB)**
- **Makarand Gawade (RS&H)**
- **Lori Sellers(RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the development and implementation of the Rail System Plan and other data needs and reporting services.

**Meeting Agenda**

1:30 p.m. – Introductions

1:45 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

2:00 p.m. – Rail and Motor Carrier Compliance Office business practices

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *What freight and modal data and information is required for current and future office projects and programs?*
4. *Does the office utilize the National Transportation Atlas Database from USDOT?*
5. *Does the office utilize the Freight Analysis Framework from FHWA?*
6. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*

2:15 p.m. – TWO 10 Freight Data Support System Discussion

2:30 p.m. – Meeting adjourn

## Important Points

1. Joel and Lori provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that the TRANSTAT office will serve as a “data distribution center” and provide value-added services to the Department. He also noted that one of the goals of the program is to identify a tool to provide that would consolidate all freight data into a web viewer format and provided an example of the Philly Freight Finder.
2. Lori added that there will be a follow-up survey after this meeting to get more inputs about data gaps, service gaps, and prospective communication tools.
3. Joel added that if we are considering buying new datasets, will be a Legislative Budget Request (LBR) submitted (FY 2018). Joel continued the presentation and discussed different tasks currently being done through this program.
4. Lori and Alan briefly described the use of different data sources provided by FDOT to the City of Ocala in the *City of Ocala Inland Freight Facility Feasibility Study* as well as the overall benefits of the FDOT being a partner to the study. Ed Lee indicated that current intermodal logistics center (ILC) selection procedure is not comprehensive and it will be helpful to utilize different data resources for a comprehensive analysis for ILCs.
5. Joel asked Ed a series of questions to proceed with the freight and modal data inventory. Those questions and summary responses are reflected below:
  1. *What freight and modal data information are currently used?*
    - a. Safety data – RHCI – inventory of grade crossings, rail, and RCI
    - b. Waybill data
      - i. It was noted that Rail data is subject to Sunshine Law requirements
    - c. Data from Association of American Railroads is not used.
  2. *What are the current freight and modal data office workflows?*
    - a. Michael Dowell has responsibility over RHCI data.
    - b. Waybill data is sent directly to the consultants when needed and not used internally at this time.
    - c. Motor carrier data comes through Transportation Statistics Office.
    - d. One in-house person to do data analytics.
    - e. Rail Data Return of Investment (ROI) tool currently being updated – Martin Markovich and Donald Ludlow are updating.
    - f. Railroads are ready to give data, but have expressed concern that the state is a conveyer of information.
    - g. There is a potential of exemption for proprietary – Sunshine Law concern.
    - h. Rail office indicates that there are potentially other data sources and software but there is no access to the datasets. Railroad infrastructure is owned by rail road companies.
  3. *What freight and modal data and information is required for current and future office projects and programs?*
    - a. Discussion was held regarding that new federal transportation bill and it was noted that the new bill is more multimodal than MAP-21.
    - b. Discussion was held regarding how to capture the impact of rail improvements at rail crossings and through roadway data.



- i. It was noted that analysis of truck to rail mode shifts and vice versa are largely handled through truck/roadway data rather than rail data
  - c. Rail infrastructure quality/status data would be helpful to define where investments are making the most benefit to the system as a whole – rail lines are private, so most data is still coming from highway
  - d. Transearch Rail Data is not being used by Rail office but it includes data at a county level.
- 4. Joel mentioned about two data sources: National Transportation Atlas Database from USDOT and Freight Analysis Framework from FHWA
- 5. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*
  - a. The Freight Model will be used in the next Freight Mobility and Trade Plan; timing of previous plan and Freight Model were out of sync.

Following the conclusion of the questions addressed above, Joel asked a follow-up question related to the update of the Freight Mobility and Trade Plan (FMTP). Freight mobility is something which will be addressed in the Motor Carrier work program. Ed noted that the ATRI data (Trucker Preference Survey) will help guide the upcoming FMTP update and will add safety and asset management aspects.

Alan provided information about how different data sources like Waybill data can be visualized and analyzed using a tool like Tableau.



**Attended:**

- **Joel Worrell (FDOT)**
- **Benjamin Jacobs (FDOT)**
- **Shaun Davis (FDOT)**
- **Rupert Giroux (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the development and implementation of the Florida Highway Safety Plan and other data needs and reporting services.

**Meeting Agenda**

2:00 p.m. – Introductions

2:05 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

2:15 p.m. – Safety Office - current and future business practices discussion

1. *What freight and modal data information is currently used?*
2. *What is the current workflow for working with commercial vehicle incident data and analyses?*
3. *What freight and modal support is needed for Commercial Vehicle Incident data and analyses?*

3:00 p.m. – Meeting adjourn



**Important Points**

1. Joel opened the meeting with greetings and noted that the Safety Office is a data resource and buyer of data (Strava). The Safety Office also uses NAVTEQ data from Survey & Mapping Office.
2. Joel asked about the Office of Safety's planning, finance, and administration needs.
3. The group discussed the ROADS project – "stewards" are designated by modes, TRANSTAT is considered a data "custodian" and is working with Steven Bentz.
4. Joel and Lori provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that the TRANSTAT office will serve as a "data distribution center" and provide value-added services to the Department.
5. Joel noted the program has a planning focus and is seeking to make improvements such as developing better data collection efficiencies from data collection initiation. Ex) TTMS which will track all traffic.
6. Shaun Davis noted to look at expanding counts to close gaps where counts aren't currently collected for all traffic separated by mode, even bicycle /pedestrian. Benjamin Jacobs noted that the local counts used today are estimates. Shaun added that preference is to get the data locally and then model it out.
7. The group agreed better truck counts are needed to get a better understanding of truck exposure by other transportation user communities, such as the bicycle/pedestrian communities, for safety analytics.
8. Joel noted this project is working in tandem with other programs and anything TRANSTAT can learn through other modal programs will help related to modal data requests in the future and will benefit information flow.
9. Joel noted the Motor Carrier Plan is in the process of being updated.
10. Shaun provided an overview of how crash data is collected and processed by the Safety Office. The data provided by the Safety Office is considered the gold standard for safety data and is of better quality than data provided through other resources. The data is processed by a team of people (30 person staff). The Safety Office publishes their crash data a year behind other data resources due to the quality control process.
11. Shaun noted the Safety Office is just closing out analytics on 2014 crash data.
12. Joel asked how the DHSMV collects data. Shaun noted DHSMV produces data statewide and then transfers to the Safety Office for analysis and mapping.
13. Benjamin noted that staff provides customer service and receives information requests for detailed research on crash scenes that may need more detailed investigation. He noted that the office will provide detailed analytics if requested by the Department, not for Freedom of Information Act requests.
  - a. Ex) if a crash involved a guard rail, was it over or under the guardrail, was there an engineering issue, how did death occur?

14. Shaun noted that crash report data has 30+ fields of information and reporting is inconsistent in if and/or how those fields will be filled out from the scene of an accident.
15. Shaun noted the Safety Office hasn't looked into freight data specifically because the office's focus is on the interaction of the user communities and not specifically the movement of goods.
16. Robert Giroux noted that data mining from the form data is required for detailed requests.
17. Benjamin described other crash data resources that publish before the data provided through the Safety Office, such as the Signal4 data. Signal4 data is developed through automated analytics and is typically not as refined (such as is required for safety engineering projects) and quality controlled as the data they provide.
18. Shaun noted they are trying to figure out where to go as a state for data products.
19. Shaun noted there are other safety and crash data products in development, such as the District 7 (Tindale Oliver and Associates as the consultant) is developing the "Crash Data Management System".
20. Benjamin stated the Safety Office owns the long-form data dating back to 2012.
21. Shaun noted that there is no formal process for safety data collection detailed in the Safety Plan.
22. Benjamin noted the Bluetooth deployment project and a previous meeting held with Marlin Engineering, Inc. The team discussed the granularity of the Bluetooth data not being refined enough to use for Safety analytics and projects
23. Joel explained the nature of the Bluetooth data collection project and how the MAC addresses from Bluetooth components on vehicles are the main data source being collected and further refined through post-processing.
24. Benjamin stated they are interested in understanding truck diversions for safety purposes. Could diversions be directing truck traffic to narrower corridors thus increasing interactions and creating a safety issue from the smaller vehicular and pedestrian traffic?
25. Shaun noted that the Strava data flags bicycle trips by purpose – pleasure vs. commute – by Safety office isn't concerned about the purpose of the trip as much as the safety aspects. If a corridor is more commercial in nature, then the design needs to accommodate the safe mobility of all transportation user communities.
26. Benjamin noted they haven't done a lot of analysis on truck movement. He noted that the media has presented "most deaths per mile" without providing a full picture, such as the overall corridor volume. He said the office is often asked for "the number" of crashes without the context.
27. Joel noted the Bluetooth data collection and microsimulation project at Port Everglades is an effort to understand truck movement around ports.
28. Shaun state the Safety office could review correlation between truck factor volume, cause of crash, cost of crash (cost of a "statistical life").



**Action Items:**

- Review Benjamin Jacobs's safety analysis of commercial vehicles.



**Attended:**

- **Joel Worrell (FDOT)**
- **Bob Emerson (FDOT)**
- **Annette Lapkowski (FDOT)**
- **Dan Fitz-Patrick (FDOT)**
- **Jimmy McDonald (CDM-Smith/FDOT)**
- **Julie Christesen (CDM-Smith/FDOT)**
- **Alan Meyers (PB)**
- **James Golden (RS&H)**
- **Frances Ijeoma (RS&H)**
- **Makarand Gawade (RS&H/FDOT)**
- **Lori Sellers (RS&H/FDOT)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices to identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013. The team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support your current office data needs.

**Meeting Agenda**

3:30 p.m. – Introductions

3:45 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

4:00 p.m. – AIS Vessel Traffic Data discussion

4:15 p.m. – Data Needs Survey Discussion

4:45 p.m. – Meeting adjourn

**Important Points**

1. Dan Fitz-Patrick mentioned that one of the important data needs the Seaport Office currently has is for the AIS vessel data (which was discussed later in the meeting).
2. Joel provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that one of the goals of the program is to identify a tool to provide that would consolidate all freight data into a web viewer format and provided an example of the Philly Freight Finder.
3. Joel explained the supply chain model concept as it applies to TRANSTAT's program. Bob Emerson mentioned that some data sources are related to commodity flow and some are the traffic counts, providing two windows in kinds of data. Jimmy McDonald provided information about Seaport Systems Plan in which the commodity flow data and self-reported data is summarized, and explains data gaps. The attendees agreed the plan will be



helpful in understanding the data better and identify data sources. Report is targeted to be published in Spring 2016. Jimmy noted that a draft version, however, can be available in the next few months for review.

4. Julie added that rail modal data don't have data information in their plan and they will have their kickoff soon.
5. Joel added about data sources like truck parking data from Jason's Law survey which is not added in FMTP. Jimmy also added that truck parking issue is identified by South Florida ports which is due to HOS rules.
6. Dan asked if we have identified an interface to manage this data. Joel answered that one of the goals is to produce a web viewer like Philly Freight Finder and spatial component is necessary for that. Joel added that Freight Moves Florida has some capabilities.
7. Jimmy added that CIMS tool has some GIS capabilities to view Transearch data. Thomas added that it can be expanded in future but there are some restrictions on publishing the tool for public use.
8. Jimmy asked about interfaces like Tableau. Annette mentioned that the ROADS project is evaluating a tool similar to Tableau, which will be the subject of an RFP in the near term.
9. Lori talked about data inventory efforts to help with which include data assessment and freight data profiles and provide guidance about how data can be acquired.
10. Annette asked about timeline for second round of meeting and surveys. Lori said that this is first tier of meetings in Central Office, which will include talking to modal offices, district freight coordinators, and external partners, such as Enterprise Florida and the Department of Health. The second round of meetings will be in the Spring. Joel mentioned that other offices like DHSMV want to do data collaboration efforts with DOT.
11. Penelope mentioned it is important to make sure that right information is supported to support LBR requests.
12. Thomas had sent email for data requests for LBR, but had less responses. Everyone agreed that this effort will help to get more responses from different offices.
13. Bob mentioned that one of the data needs is to identify port truck traffic and non-port truck traffic. One data need is to identify the truck traffic from different locations to ports. Thomas mentioned that freight wide statewide model and Bluetooth pilot project can be helpful to satisfy these data needs.
14. Joel continued the presentation by introducing applications through this program like Distribution centers data creation, NPMRDS data assessment, Transearch/FAF assessment. Thomas added that a new study to disaggregate FAF at a finer resolution for base and future years has kicked off now. Other part of the research is linking ATRI and commodity flow data.
15. Lori and Alan discussed about Ocala study and how DOT data was useful in Ocala assessment and have benefited city with significant cost savings
16. Bob added that the data is needed to assess how effective your efforts are and sometimes to assess the next steps.
17. Dan said that AIS data is free and is consistently collected. Starting point for this data will be to create a baseline for seaports and to evaluate the effectiveness of efforts and investments state has made. GIS data can connected to metrics which are being produced on roads/land and will help to give the missing piece to bridge the data gap.
18. Bob asked what attributes are available in AIS data. Alan indicated that the data potentially has vessel type, vessel name, and deadweight tonnage information. Dwell time and routes can be created using AIS vessel location data which can help to optimize rail scheduling and identify bottlenecks. Jimmy mentioned that IHS purchased PIERS and there is possibility of them combining PIERS and AIS data. Jimmy added that they are in process of scheduling a meeting with them to gather more information.
19. Bob asked about data for pipelines. Joel answered that there are agencies who collect this data, but they mask a lot of local movement. Jimmy added that Florida power plants can be a good source to get this data. Bob talked about huge demand of petroleum in Port of Everglades.



20. Joel inquired about applications of GIS data from AIS vessel data and asked if we should start acquiring this data. Dan mentioned that data back from 2015 to 2011 (the year Transearch was purchased) can be requested. Jimmy said that they have meshed Transearch and PIERS data in the Seaport Systems Plan. Dan brought up the point of what should be the geography of AIS data request.
21. Bob said it will be good to know to what ports ships are going to.
22. It will be important to decide what filters should be when requesting AIS data. Annette noted to cast a wide net for one (1) year to determine how large data really is. And then decide where to filer the data. Joel noted that the annual utilization report could also be used to determine server space.
23. Bob noted that a challenge will be to match it to landside data. Bob added that Ports Council has conducted studies on the volume of commodities coming through a Florida port and from ports outside Florida. The business intelligence developed through this data will be to understand who is shipping, and why other ports have competitive advantages/desirability.
24. Bob mentioned that they are planning to put sensors at Port Everglades; Steve Bentz is working on the cost estimates and the funding plan based on the different “flavors” of money that have to be compiled for this process.
25. Bob added that Rich is concerned about distribution center network and if it is robust enough to handle all commodities from port.
26. Currently, data for short trips like port to rail are not captured and they can be captured by studies like Bluetooth study by Thomas/Steve.
27. Discussion was held about the utility of mapping the supply chain, a task currently being undertaken by the Ports Council, and planning for freight facilities in a more organized fashion. Identifying the supply chain can also facilitate the modal planning aspects to most effectively access desired markets.

### **Action Items**

28. Deliver Transearch/FAF SWOT analysis to the Seaport office.
29. Transtat and Seaports will start working together to obtain AIS vessel finder data through DHS.
30. A vendor data list will be provided to Annette and the ISD finance group.



**Attended:**

- **Joel Worrell (FDOT)**
- **Paul Fang (FDOT)**
- **Khaleda Hatim (FDOT)**
- **Jennifer King (FDOT)**
- **Martha Hodgson (FDOT)**
- **Gabe Matthews (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the development and implementation of the Strategic Intermodal System Program's research and reporting needs.

**Meeting Agenda**

10:00 a.m. – Introductions

10:05 a.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

10:15 a.m. – Systems Planning Office - current and future business practices discussion

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *What freight and modal data and information is required for current and future office projects and programs like SIS Updates for connectors?*
4. *Does the office utilize the National Transportation Atlas Database from USDOT?*
5. *Does the office utilize the Freight Analysis Framework from FHWA?*
6. *Is your office interested in using the Statewide Traffic Demand and Freight Model?*

10:45 a.m. – Meeting adjourn

## Important Points

1. Joel Worrell opened the meeting with a brief discussion of how the TRANSTAT office could help Policy Planning develop basic trends and conditions reporting for Florida's transportation system.
2. Paul Fang offered that freight data is important to project development. Effort to develop statewide freight model and network to develop future projects into SIS planning process.
3. Joel noted that the Florida Statewide Model will be expanded to include model inputs, the RCI, truck parking data, and how to apply across efforts.
4. Joel noted there are many data collection efforts and there needs to be knowledge on how to streamline efforts.
5. Khaleda Hatim noted that requests for rail data, she uses and maintains Rail RCI and is currently working with Lena Patel (HNTB) to add SunRail data.
6. Joel noted that data storage is expensive.
7. Khaleda offered that rail crossing data is good data and already has GPS coordinates.
  - a. RHCI data is maintained by consultant (HDR)
  - b. Rail crossing data is a separate private, data resource and maintained by Rail Office.
8. Joel noted that a main motivation for this project is to coordinate resources; some resources are available to serve the Systems Planning Office through this project.
9. Paul noted the office's coordination with the ROADS project and noted that Steven Bentz is very interested in the statewide structure. He also noted that the SIS program will be included in the ROADS project.
10. Joel noted the project may conclude with a data viewer or some tool to disseminate data resources. He asked attendees about the SIS data viewer and how that project is progressing.
11. Paul noted that the Silverlight platform is being updated. Joel noted that the TRANSTAT office is considering different options for a tool to view freight and modal data.
12. Khaleda discussed the Work Program GIS tool which, she noted, includes RCI and Work Program data. She noted that the licenses for the tool have been obtained and it's inward facing.
13. Joel asked TRANSTAT should develop separate tool to provide info outside of agency.
14. Khaleda noted ESRI staff visiting FDOT in January.
15. Paul offered to share data framework from ROADS project.
16. Joel noted that TRANSTAT is currently listed as a data "custodian" under the ROADS project.
17. Joel noted there is an emphasis on better data collection systems, example criteria on TTMS; looking at strategic needs.
18. Jennifer King noted the Policy Planning Office is in the middle of the SIS/FTP plan update with a comment period coming up. This will lead to a goals and performance measure change.
19. Joel described the modal applications and noted that the Port Everglades Bluetooth and microsimulation project will provide a more detailed resolution and statewide guidance on modeling at ports. Gabe Matthews offered to send presentation on project to meeting invitees.
20. Joel returned to the presentation to note the probe data is a combination of HERE and ATRI data provided through FHWA. Discussion was held about uses in District 4 and by the Florida Turnpike Enterprise to develop a scorecard.
21. Joel noted the value added series that will be provided through TRANSTAT including a description of the distribution center database being created. He noted a next step will be to refine the data more to separate out distribution center data and warehousing data. Khaleda noted distribution centers aren't always



connected by SIS. Discussion was held on thresholds for freight facilities to become eligible for inclusion the SIS.

a. Ex) Rail has components that are SIS and non-SIS.

22. Paul noted there are good opportunities by mapping distribution centers to help with SIS implementation and mapping.

23. Joel asked about how System Planning wants data and what data is needed.

24. Jennifer noted that if a tool supports the Work Program development, one can use Work Program dollars to fund it.

a. Ex) SIT tool: approved for use of Work Program dollars for development. It was noted that Kendra Davis and Annette Lapkowski are the main points of contact as they review and approve requests.

### **Action Item**

- Schedule meeting with Brian Watts.
- Paul Fang to share data framework from ROADS project.
- Gabe Matthews offered to send presentation on microsimulation project to meeting invitees.



**Invited:**

- **Joel Worrell (FDOT)**
- **Mark Wilson (FDOT)**
- **Marie Tucker (FDOT)**
- **Derek Vollmer (FDOT)**
- **Russell Alan (FDOT)**
- **Raj Ponnaluri (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT's freight data business intelligence through internal/external offices and identify the available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine where TRANSTAT's Freight and Modal Data Support Unit can support the Traffic Engineering and Operations Office's data, research, reporting needs.

**Meeting Agenda**

1:00 p.m. – Introductions

1:05 p.m. – Freight & Modal Data Unit Overview – Where we are, where we're going

1:15 p.m. – Traffic Operations - current and future business practices discussion

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *What are the future needs for freight data programs like the Container Number Database?*

2:00 p.m. – Meeting adjourn

Important Points:

- Joel opened the meeting with the intent of the project.
- Mark Wilson talked about projects impacting truckers on I-75 impacting a trucker's ability to move through the I-75 corridor and the number of stops they may encounter
- TRB
- Discussion was held about how to organize construction information to facilitate freight mobility.
- Container database tracks the truck out of the ports which is then corroborated through checking other resources, such as subsequent check-ins.
- Russell Allen asked if we know the average travel time over the network.
- Marie Tucker said they don't track by truck ID
- Joel talked about Drivewyze – limited.
- Marie that Drivewyze is more open to giving information while PrePass is not.
- Joel noted that the coordination includes many factors – collecting, analytics, and performance measures. This inventory process is part of the foundation to improve efficiency. Will help guide Agency resources.
- Joel asked if sharing information from the database would be desirable.
- Marie the database would have to be modified.
- The question of performance metrics came up. Joel noted that he hasn't
- Weigh stations, agricultural stations, and virtual capture. How do we get that data to mesh with traffic counts.
- It was noted that non-containerized freight isn't captured to the detail that containerized de
- Would a statewide Bluetooth deployment help with travel times statewide.
- Russell said he didn't think this would help with travel times. They capture speed data, but not count data.
- Developing performance measures – Traffic Ops captures delay
- Joel provided overview of the Bluetooth data collection project to analyze methodologies for collection port related travel time and reliability.
- Joel noted the coordination with the ROADS project and the other initiatives in the agency with which TRANSTAT is working. He noted the freight & modal data collection project is a planning-level project and to provide business intelligence to and on behalf of the Department. The data collected through interviews and research will be used to facilitate better models.
- Russell Allen noted pre
- Discussion was held about data collection from personal vehicles and what type of data will be shared.
- Russell said they will store their own data.

- Russell Allen described their data sources between FL511
- Discussion was held about Waze data and ability to strip out specifics from the data FDOT can get from Waze.
- Marie noted that the vehicle classification by size may not capture the right type of vehicle.
- Marie just noted they're getting a new consultant to manage \_\_\_database to make changes to it. She noted this is the time to send "wish list" and any desired reports can be pulled easily.
- She said they did the same for their weigh stations, weigh in motion stations.
  - 3 port of entries being relocated
    - Ulee on I-95
    - White Springs on I-95
    - Pensacola on I-10
- Discussion was held about predictability modeling.

#### **Action Item**

- Joel to follow up with Marie Tucker on freight and modal data profiles.
- TRANSTAT Office will lead data analysis on
  - Container number database
  - Prepass
  - Drivewyze
  - Port of Entry Study
  - ITS FL511
  - Scale houses (follow-up with Paul Clark and Jeffrey Frost)



**Attended:**

- **Joel Worrell (FDOT)**
- **Lisa Saliba (FDOT)**
- **Roger Kriesel (FDOT)**
- **Susan Wilson (FDOT)**
- **Lori Sellers (RS&H)**

**Meeting Purpose**

As part of the Freight and Modal Data Inventory project, the Freight Data support team is tasked to gather and coordinate FDOT’s freight data business intelligence through internal/external offices to identify available freight and modal data and information. This inventory includes identifying current office routines, potential projects, plans and plan updates, documents, studies, resources, and practices. Following up on the first round of outreach of the program in 2013, the team would like to determine how the TRANSTAT’s Freight and Modal Data Support Unit can work most efficiently with the Office of Work Program and Budget to ensure Work Program requests are consistent with what is required to effectively program and fund freight and modal projects as well as data purchases.

**Meeting Agenda**

8:30 a.m. – Introductions

8:35 a.m. – Freight & Modal Data Unit Overview – Where we are, where we’re going

8:45 a.m. – Work Program and Budgeting Office – coordination discussion

1. *What freight and modal data information are currently used?*
2. *What are the current freight and modal data office workflows?*
3. *What is the current process for freight funding object codes?*

9:00 a.m. – Meeting adjourn

**Important Points**

1. Joel introduced the purpose of the meeting as an information-sharing session to understand how the Freight & Modal Data Program can work with and support the Office of Work Program and Budget in the overall effort to streamline freight and modal data acquisitions, applications, and Work Program development.
2. Joel asked if the Office of Work Program and Budget (WPB) utilizes any specific freight and/or modal data resources. Susan Wilson recommended that Annette Lapkowski and the districts be consulted for this conversation.
3. Lisa Saliba noted that many districts are buying data independent of each other and Central Office activities.
4. Lisa asked if the Freight and Modal Data Program will be working with the ROADS project. Joel responded that this program is intended to be consistent with the ROADS project and not to impede or duplicate efforts.



5. Lisa asked if return on investment (ROI) data was being collected to capture metrics on efficiencies created through the Freight and Modal Data Program to provide to the Legislature. Lisa noted that ROI is required for any legislative budget request (LBR). She also noted that ROI of project overall and improvements resulting from the project should be captured.
6. Susan noted that there is no dedicated funding source for freight projects. Lisa commented that modal projects are a subset in the Work Program.
7. Lisa noted that the Roadway Characteristics Inventory (RCI) was supposed to be a data repository and that WPB uses RCI heavily in Work Program development. Lisa asked if we could leverage existing databases rather than creating new ones. Joel noted that TRANSTAT is supporting the RCI rewrite.
8. Joel provided the TRANSTAT overview presentation and explained that this program aims to create business intelligence with collaboration with all FDOT offices and stakeholders. Joel explained that the TRANSTAT office will serve as a “data distribution center” and provide value-added services to the Department. He also noted that one of the goals of the program is to identify a tool that would consolidate all freight data into a web viewer format.
9. Lori added that there will be a follow-up survey after this meeting to get more inputs about data gaps, service gaps, and communication tools.
10. Joel added that if we are buying new datasets, it will be in 2018 due to LBR requests. Joel continued the presentation and discussed different tasks currently being done through this program.
11. Susan noted that it’s unclear what the contract for this project provides: data acquisition or data inventorying.
12. Lisa stated that a Truck Parking Pilot project is currently under procurement. Joel noted that TRANSTAT is coordinating with the pilot project.
13. Susan stated that WPB relies on RCI data heavily. She stated location data provided through the RCI is used by the WPB to determine Work Program applicability. She also noted that the Safety Office relies on RCI and crash data and has created resources using NAVTEQ data such as the CRASH and CARS systems.
14. Susan noted that some projects are funded by SIS funding but not on the SIS according to the RCI.
15. Lisa noted each district has individual modelers, program, and GIS people, processes, and needs.
16. Susan noted that the funding data each district reports to their respective MPO/TPOs during the Work Program Public Hearing is the same though the formats are individualized. Rodger noted that we have a statewide map, but districts still doing own processes to map Work Program projects.
17. Joel noted he has worked with Chuck Rohling obtaining capacity projects from the Work Program for an external data request that wanted Capacity Project information related to Freight to build an inventory on multi-state freight projects created by the Institution for Trade and Transportation Studies. An efficiency for future data requests at any scale would require a way to understand what projects would be freight related projects.
18. Joel noted that the freight story is being told by commodity flow. Discussion was held about funding projects based on commodity served. The Work Program is not currently designed to address the multimodal aspects of freight projects.
19. Lisa noted that funding follows mode according to statute, not activity on the facility. This fact makes it difficult to fund based on freight activity versus modal improvement. Susan commented that funding projects is contingent upon the “flavor” of the funding source. Example: Federal funds must be used on the state system. Roger noted the difference between a project affecting freight versus a “freight project”.



20. Lisa stated that data should be coordinated to budget category by mode and that a special “freight” category may require a budgetary rewrite because the Work Program doesn’t have a multimodal funding component at this time. She noted there are single attribute crosswalks to budget.

- a. Example: Project that could be SIS highway, SIS arterial, and other category would be broken into three (3) different codes and split evenly over those three (3) funding categories.

**Action Items:**

- Locate and review Work Program Integration Project.
- Continue discussing the impact of multiple other initiatives underway, including ROADS, RCI/Geospatial and Work Program Integration Initiative.
  - Freight & Modal Data Inventory team to talk to Stephanie Tanner in the Office of Information Technology to understand methodology of Work Program Integration Initiative.
- Review Program Plan Crosswalk

# FLORIDA'S FREIGHT & MODAL DATA PROGRAM

ISD Presentation Project  
April 20<sup>th</sup>, 2016

ENHANCING FLORIDA'S FREIGHT ECONOMY  
THROUGH MULTIMODAL DATA AND INFORMATION RESOURCES




## FDOT'S MISSION 2

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The Department will provide a safe transportation system that:

- » Ensures the mobility of people and goods
- » Enhances economic prosperity
- » Preserves the quality of our environment and communities



FREIGHT AND MODAL DATA PROGRAM  
APRIL 2016





# FDOT'S FAST FACTS 3

## FAST FACTS

Annual facts about Florida's transportation system, its performance, & emerging trends.

SYSTEM	PERFORMANCE	TRENDS
<b>122,392</b> Highway miles	<b>SAFETY</b> Fatalities and injuries decreasing	<b>3rd</b> Most populous state
<b>20</b> Commercial airports	<b>PRESERVATION</b> Preservation and repair investments accelerating statewide	<b>99M</b> Visitors to Florida
<b>2</b> Spaceports	<b>MOBILITY</b> Travel time reliability, improving	<b>19th</b> Largest economy in the world
<b>31</b> Urban transit systems	<b>ECONOMY</b> Transportation is the economy's largest driver	<b>1.027M</b> Tons of freight
<b>15</b> Seaports	<b>ENVIRONMENT</b> Air quality standards met	
<b>2,743</b> Railway miles		

## FLORIDA'S TRANSPORTATION SYSTEM

**SIS** Florida Strategic Intermodal System (SIS) is a transportation system that is made up of facilities and services of interstate and interregional significance (strategic). Consists of types of transportation that bring both people and goods from one place to another.

State Government    Municipal Government    Local Government    **GIS** Strategic Intermodal System

Highways	Seaports
122,392 Miles	15 Seaports
12,516 Miles	12 Seaports
2,325 Miles	
107,943 Miles	
4,499 Miles, highway corridors	

Bridges	Aviation
12,225 Bridges	700 Airports
4,874 State owned	120 Public
5,174 Local owned	481 Private
297 Other	19 Public

Public Transit	Spaceports
21 Urban transit systems	2 Spaceports
23 Rural transit systems	2 Spaceports
2 Commuter rail systems	10 Launch facilities

Bicycle & Pedestrian	System Usage
7,282 Miles bicycle facilities	201 Billion auto vehicle miles traveled (2014)
2,276 Miles pedestrian facilities	147 Million airline passengers (2014)
Facilities on the State Highways System	1.1 Million transit passengers (2014)

Rail	Technology is changing how we live
2,743 Railway miles	15% Increase in drivers 65 & older 2007: 2.4Milion - 2013: 2Milion
2,490 Public at-grade crossings	22% Decrease in drivers 24 & younger 2007: 1.9Milion - 2013: 1.5Milion
8 Freight terminals	
234 Mail connectors	

## FLORIDA'S TRANSPORTATION TRENDS

- 3rd most populous state. **20 Million** people.
- 5.8 Million additional residents by 2040.
- Freight Moves Florida: Growth in freight value, Growing Opportunity.
- Almost 100 Million tourists... 50.4% by Air, 49.4% Other Modes. ...and attracting more: 99M in 2014, 157M by 2025.
- 9 out of 10 Floridians live in urban areas.

Office of Policy Planning <http://www.dot.state.fl.us/planning/fastfacts.pdf>

FREIGHT AND MODAL DATA PROGRAM  
APRIL 2016



# FREIGHT & MODAL DATA PROGRAM 4

Fla Stat § 334.044 (20)

**VISION:** Promoting Florida's freight business intelligence and economic competitiveness through collaborative development of multimodal freight data resources, used to sustain Florida's strategic freight investments.

**MISSION:** Identify, coordinate and establish data efficiencies of Department freight and modal data and technology for programs, studies, plans, models and databases.



FREIGHT AND MODAL DATA PROGRAM  
APRIL 2016



## PROGRAM GOALS 5

### GOAL 1:

Provide consistent & effective data access, collection, & reporting of freight and modal data.

### GOAL 2:

Integrate Freight & Modal Data Resources in FDOT Operations & Planning Offices.

### GOAL 3:

Coordinate Data Investments & Improvements.

### GOAL 4:

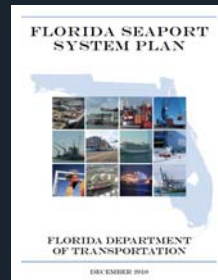
Provide Training & Awareness of Data, Datasets, Tools, & Models.



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## STATE & FEDERAL PLANS & INITIATIVES 6



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## TRANSPORTATION STATISTICS ORGANIZATION 7

Transportation Statistics

Ed Hutchinson, *Manager*

Transportation Modeling

Thomas Hill, *Manager*

Transportation Data Support

Paul O'Rourke, *Administrator*

Transportation  
Quality Assurance

Andrea Hodge, *Coordinator*

Transportation  
Performance Analysis

Doug McLeod, *Administrator*

Transportation Data  
Collection and Acquisition

Steven Bentz *Administrator*



FREIGHT AND MODAL DATA PROGRAM  
APRIL 2016



## PROGRAM GOALS 8

### □ GOAL 1:

#### Provide Consistent & Effective Access, Collection, & Reporting of Multimodal Data

- **Strategy 1:**  
Create a Statewide Freight & Modal Data Program to freight planning, operations and reporting needs.
- **Strategy 2:**  
Create a Statewide Freight & Modal Data Manager position to manage the Statewide Freight & Modal Data Program.
- **Strategy 3:**  
Establish a Data Plan that encourages collaboration between all levels of government, stakeholders, and freight/logistics industry.
- **Strategy 4:**  
Coordinate developments with ROADs Stewards and Custodians.

FREIGHT AND MODAL DATA PROGRAM  
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# FREIGHT DATA SYSTEMS COORDINATOR 9

## RESPONSIBILITIES

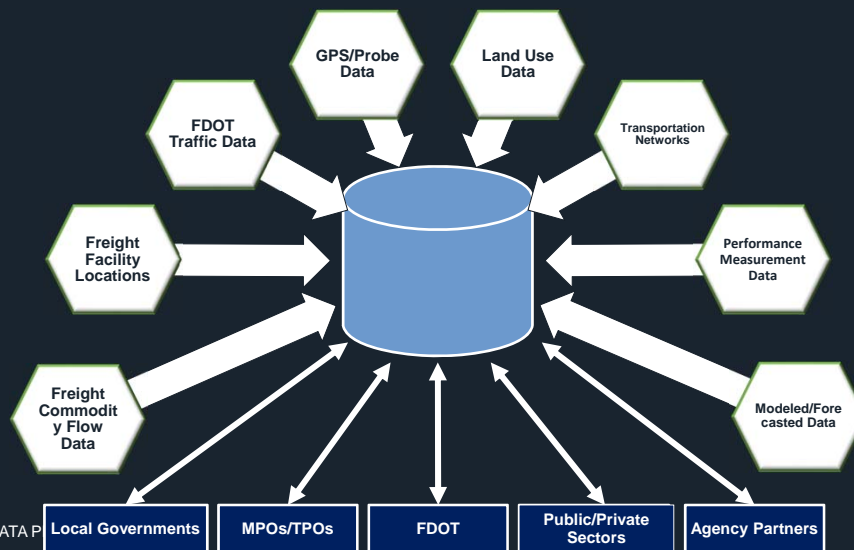
- Coordinates with the State Transportation Development Office, the FLP Office, Districts, MPOs, local governments, and private entities as necessary.
- Identifies needed freight, motor carrier and modal information resources to define freight and modal movements within Florida.
- Oversees freight and passenger data acquisition.
- Develops a system of information dissemination available to internal and external customers of the Department.
- Establishes and oversees a quality assurance program for freight, motor carrier, and modal data.
- Responds to requests for freight, motor carrier and modal data information from the Department, other state and local agencies, and the public.



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# OPTIMIZED FREIGHT DATA SUPPLY CHAIN 10



FREIGHT AND MODAL DATA P  
APRIL 2016



## PROGRAM GOALS 11

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### □ GOAL 2

#### Integrate Freight & Modal Data Resources in FDOT Business and Offices

- Strategy 1:  
Continuously coordinate with Freight Supporting Programs and Research in Operations and Planning Offices
- Strategy 2:  
Identify efficiencies for seamless transaction available freight data.



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## PROGRAM GOALS 12

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### □ GOAL 3

#### Coordinate Statewide Data Investments & Improvements

- Strategy 1:  
Support data programs with new data sources and enhancements.
- Strategy 2:  
Improve existing data collection systems and databases by implementing new data sources.
- Strategy 3:  
Identify FDOT strengths to develop effective procedure and policies.



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## PROGRAM GOALS 13

### □ GOAL 4 Provide Training & Awareness of Data, Datasets, Tools, & Models

- Strategy 1: Provide standardized data analytics, products, & services for quick and consistent freight planning and reporting.
- Strategy 2: Provide & promote education and communication tools to ensure FDOT freight & modal personnel, decision-makers, and external stakeholders are aware of resources.
- Strategy 3: Work directly with District Freight Coordinators as “boots on the ground” on regional freight data and research needs, and opportunities for partnership & innovation.



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## STATEWIDE & MULTI-FACETED BENEFITS 14



**ECONOMIC VITALITY**

- Data that translates to the economy
- Consistent modal metrics & reporting
- Connecting Transportation to Economic Goals



**INNOVATION**

- Real-time data & transponder based
- Cloud or other Web-based tools
- Data that provides origin-destinations



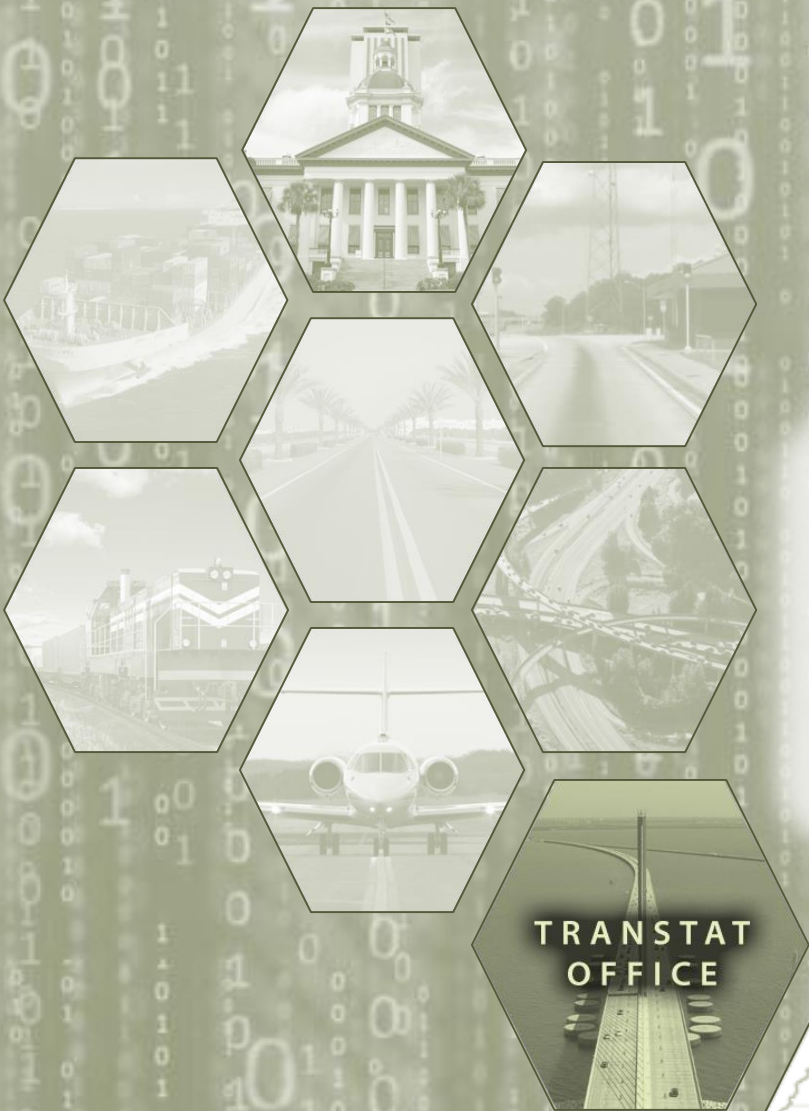
**PARTNERSHIPS**

- Statewide data can encourage partners
- Public Private Partnerships (P3)
- Build trust with ports, 3PLs, MPOs, & stakeholders



FREIGHT AND MODAL DATA PROGRAM  
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# APPENDIX D: DATA ROADMAP 36x48IN ARCH E PLOT PDF

JUNE 2016

**TRANSTAT  
OFFICE**



*APPENDIX D: MULTIMODAL FREIGHT DATA ROADMAP ARCH E PDF*

ARCH E Sized PDF is attached on the following page.



# Multimodal Freight Data Roadmap



DATE PRODUCED :  
May 20, 2016

PRODUCED BY:  
TRANSTAT Office



BUREAU OF ECONOMIC ANALYSIS (BEA) INDUSTRY ECONOMIC ACCOUNTS

BUREAU OF ECONOMIC AND BUSINESS RESEARCH (BEBR)

BUREAU OF LABOR STATISTICS (BLS)

BTS NATIONAL TRANSPORTATION ATLAS DATABASE

BTS NORTH AMERICAN TRANSBORDER FREIGHT DATA

CMTS DATA INVENTORY

FREIGHT ANALYSIS FRAMEWORK (FAF)

NATIONAL PERFORMANCE MANAGEMENT RESEARCH DATASET

NATIONAL PIPELINE MAPPING SYSTEM

PORT OF ENTRY LIST

US CENSUS COMMODITY FLOW SURVEY (CFS)

US CENSUS COMMUTING DATA

US CENSUS COUNTY BUSINESS PATTERNS

US CENSUS DATA

US DEPARTMENT OF AGRICULTURE DATABASE

DEPARTMENT OF HEALTH (DOH) GIS DATA  
DEPARTMENT OF REVENUE (DOR) TAX PARCEL DATA  
FDEP GIS DATA AND TOOLS  
FLORIDA GEOGRAPHIC DATA LIBRARY (FGDL)

FREIGHTSIM  
MULTIMODAL PERFORMANCE MEASURES SOURCEBOOK  
ROADWAY CHARACTERISTICS INVENTORY (RCI)  
TRAFFIC DATA  
WEIGH IN MOTION (WIM) STATIONS

CHAIN STORE GUIDE (CSG)  
INFOGROUP  
TRANSEARCH (TS)

AUTOMATED IDENTIFICATION SYSTEM (AIS)  
NAVIGATION DATA CENTER (NDC)

CRASH ANALYSIS REPORTING SYSTEM (CARS)

FLORIDA SEAPORT SYSTEM PLAN  
FLORIDA WATERWAY SYSTEM PLAN

FLORIDA PORTS COUNCIL (FPC)  
PORT IMPORT/EXPORT REPORTING SERVICE (PIERS)

REST AREAS AND SERVICE AREA LOCATIONS  
MOTOR CARRIER SIZE AND WEIGHT (MCSAW)  
PERMIT APPLICATION SYSTEM FOR OVERWEIGHT AND OVER-DIMENSIONAL VEHICLES



RAIL SYSTEM PLAN  
RAILROAD HIGHWAY CROSSING INVENTORY (RHCI)

FEDERAL RAILROAD ADMINISTRATION (FRA)  
PUBLIC/CONFIDENTIAL USE WAYBILL DATA

AMERICAN ASSOCIATION OF RAILROADS (AAR)  
RAILROAD PERFORMANCE MEASURES

CONTAINER NUMBER DATABASE (CND)  
ELECTRONIC FREIGHT THEFT MANAGEMENT SYSTEM (EFTMS)  
TRUCK LANE RESTRICTIONS MAP



AIR CARGO SYSTEM PLAN UPDATES  
AIRPORT AIR SERVICE PROFILES  
FLORIDA AVIATION SYSTEM PLAN

BUREAU OF TRANSPORTATION STATISTICS (BTS) – AIR CARRIER STATISTICS (FORM 41 TRAFFIC)  
FEDERAL AVIATION ADMINISTRATION DATABASE

AIRPORT COUNCIL INTERNATIONAL (ACI)  
OFFICIAL AIRLINE GUIDE'S DATABASE (OAG)

FLORIDA'S STRATEGIC INTERMODAL SYSTEM (SIS) PORTAL  
SYSTEMS PLANNING OFFICE BROCHURES AND MAPS

**PURPOSE:** The purpose of the Freight and Modal Data Roadmap is to provide a visual of how data sources and active data collection systems relate to users across the FDOT offices.

The roadmap also provides an overview of data sources utilizing a tiered approach to highlight data source workflows. The tiers are identified within the legend and help differentiate proprietary data versus data from other Federal offices or data internal to FDOT.

**LEGEND**

- TIER I – FDOT & STATE OFFICES DATA
- TIER II – FEDERAL OFFICES DATA
- TIER III – PRIVATE SECTOR DATA

# APPENDIX E: GUIDELINES FOR EVALUATING CLEARINGHOUSES

JUNE 2016



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## APPENDIX E: GUIDELINES FOR EVALUATING DATA CLEARINGHOUSES

### Appendix E.1: Standard Guidelines “Data Seal of Approval” (1-16)

#### 0. Repository/Clearinghouse context

Guidance: To assess a repository/clearinghouse, reviewers need some information about the repository to set it in context.

- » Type
- » Designated Community
- » Level of Curation
- » Outsource Partners

#### 1. The clearinghouse has an explicit mission to provide access to and preserve data in its domain.

Owner/Developer of the clearinghouse take responsibility for stewardship of digital objects, and to ensure that materials are held in the appropriate environment for appropriate periods of time.

#### 2. The clearinghouse maintains all applicable licenses covering data access and use and monitors compliance.

Owner/Developer of the clearinghouse must maintain all applicable licenses covering data access and use, communicate about them with users, and monitor compliance. This requirement relates to the access regulations and applicable licenses set by the data repository itself, as well as any codes of conduct that are generally accepted in the relevant sector for the exchange and proper use of knowledge and information.

#### 3. The clearinghouse has a continuity plan to ensure ongoing access to and preservation of its holdings.

The level of responsibility undertaken for data holdings, including any guaranteed preservation periods.

#### 4. The clearinghouse ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.

Adherence to ethical norms is critical to responsible science. Disclosure risk—for example, the risk that an individual who participated in a survey can be identified or that the precise location of an endangered species can be pinpointed—is a concern that many repositories must address.

#### 5. The clearinghouse has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.

Repositories need funding to carry out their responsibilities, along with a competent staff who have expertise in data archiving.

#### 6. The clearinghouse adopts mechanism(s) to secure ongoing expert guidance and feedback (either in-house, or external, including scientific guidance, if relevant).

An effective clearinghouse strives to accommodate evolutions in data types, data volumes, and data rates, as well as to adopt the most effective new technologies in order to remain valuable to its Designated Community. Given the rapid pace of change in the research data environment, it is therefore advisable for a repository to secure the advice and feedback of expert users on a regular basis to ensure its continued relevance and improvement. For this Requirement, responses should include evidence related to the following questions: Does the repository have in-house advisers, or an external advisory committee that might be populated with technical members, data science experts, and disciplinary experts?

*7. The clearinghouse guarantees the integrity and authenticity of the data.*

The clearinghouse should provide evidence to show that it operates a data and metadata management system suitable for ensuring integrity and authenticity during the processes of ingest, archival storage, and data access. Integrity ensures that changes to data and metadata are documented and can be traced to the rationale and originator of the change. Authenticity covers the degree of reliability of the original deposited data and its provenance, including the relationship between the original data and that disseminated, and whether or not existing relationships between datasets and/or metadata are maintained.

*8. The clearinghouse accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.*

The appraisal function is critical in determining whether data meet all criteria for inclusion in the collection and in establishing appropriate management for their preservation. Care must be taken to ensure that the data are relevant and understandable to the Designated Community served by the clearinghouse.

*9. The clearinghouse applies documented processes and procedures in managing archival storage of the data.*

Clearinghouses need to store data and metadata from the point of deposit, through the ingest process, to the point of access. Clearinghouses with a preservation remit must also offer 'archival storage' in OAIS terms.

*10. The clearinghouse assumes responsibility for long-term preservation and manages this function in a planned and documented way.*

The clearinghouse, data depositors, and Designated Community need to understand the level of responsibility undertaken for each deposited item in the repository. The repository must have the legal rights to undertake these responsibilities.

*11. The clearinghouse has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.*

Clearinghouses must work in concert with depositors to ensure that there is enough available information about the data such that the Designated Community can assess the substantive quality of the data. Clearinghouses must also be able to evaluate the technical quality of data deposits in terms of the completeness and quality of the materials provided, and the quality of the metadata.

*12. Archiving takes place according to defined workflows from ingest to dissemination.*

To ensure the consistency of practices across datasets and services and to avoid ad hoc and reactive activities, archival workflows should be documented, and provisions for managed change should be in place. The procedure should be adapted to the clearinghouse mission and activities, and procedural documentation for archiving data should be clear.

*13. The repository enables users to discover the data and refer to them in a persistent way through proper citation.*

Effective data discovery is key to data sharing, and most repositories provide searchable catalogues describing their holdings such that potential users can evaluate data to see if they meet their needs. Once discovered, datasets should be reference able through full citations to the data, including persistent identifiers to ensure that data can be accessed into the future. Citations also provide credit and attribution to individuals who contributed to the creation of the dataset.

14. *The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.*

Clearinghouses must ensure that data can be understood and used effectively into the future despite changes in technology. This requirement evaluates the measures taken to ensure that data are reusable.

15. *The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.*

Clearinghouses need to operate on reliable and stable core infrastructures that maximizes service availability. Furthermore, hardware and software used must be relevant and appropriate to the Designated Community and to the functions that a clearinghouse fulfils. Standards such as the OAIS reference model specify the functions of a clearinghouse in meeting user needs.

16. *The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.*

## **Appendix E.2: Guidelines for Other Evaluation Criteria**

### NESTOR Seal for Trustworthy Digital Archives

- » C1: Selection of information objects and their representations
  - » Criteria have been defined for the selection of information objects and their representations in the digital archive. The framework is provided by legal obligations, the institution's or companies basic function, and its own targets.
- » C2: Responsibility for preservation
  - » The digital archive assumes responsibility for the long-term preservation of the information objects on the basis of legal requirements or its own objectives. Long-term preservation means ensuring the long term usability of the information contained in the representations.
- » C3: Designated communities
  - » The digital archive has defined its designated community/communities. This includes knowledge of the specific requirements of the designated communities which influence the selection of the services to be provided. If the designated communities or their requirements change over time, the digital archive should adapt accordingly.
- » C4: Access
  - » The digital archive ensures that authorized users in the designated communities can access the representations. This includes appropriate search possibilities. The digital archive openly declares its conditions of use and any costs which may arise, listing these in a transparent manner.
- » C5: Interpretability
  - » The digital archive has defined measures to ensure the long-term interpretability of at least one of the representations, thereby meeting a basic precondition for appropriate use now and in the future. This includes the interpretability of both content data and metadata. In ensuring this, the digital archive should take the needs of its designated community/communities into account. Changes to the technical environment or the designated community or communities can influence the interpretability of the objects. Using appropriate procedures, the digital archive should therefore check at regular

intervals whether the objects can still be interpreted by the designated community or communities.

- » C6: Legal and contractual basis
  - » The digital archives ingest, archiving and access procedures are based on legal or contractual regulations concluded with the producers. The nature and scope of the delivery is regulated, as are the digital archive's archival obligations, the conditions of use and, where applicable, the costs.
- » C7: Legal conformity
  - » The digital archive monitors and documents conformity with relevant regulations concerning the ingest, archiving and use of digital objects. These include: data protection, protection of the rights of affected parties, confidentiality regulations, copyright and usage rights, internal and external compliance.
- » C8: Funding
  - » Valid budget planning exists, as does a long-term funding plan for the digital archive.
- » C9: Personnel
  - » Sufficient numbers of appropriately qualified staff are available. Updated job descriptions exist which set out the required qualifications of the digital archive personnel and contain an organizational chart and/or a staff development plan based on the tasks and objectives of the digital archive.
- » C10: Organization and processes
  - » The organizational structure should be appropriate for the objectives, tasks and processes of the digital archive. The structural and procedural organization should be defined. The responsibilities should be established. The digital archive is incorporated at the appropriate point in the schedule of responsibilities.
- » C11: Preservation measures
  - » The digital archive should conduct strategic planning as a means of preserving the digital objects entrusted to it. This should include imminent or expected tasks and specify the deadlines by which they are to be completed. Long-term planning should be based on the monitoring of legal and social changes, the demands and expectations of the designated communities and all technical changes relevant for the sustained preservation and appropriate use of the information objects in the form of their representations. Possible effects on task fulfilment are evaluated. Suitable structures and procedures exist for this.
- » C12: Crisis / successorship management
  - » The digital archive is in possession of a plan which ensures continuation of the preservation tasks even beyond the archive's own existence. The digital archive should have made contingency plans. In such a case the preservation work must be continued in a different organizational framework, thereby ensuring that the set tasks can be carried out in full. Where this is not possible, any deficiencies should be documented. The digital archive should take precautions to ensure that the transition process can be defined, planned and implemented in good time.
- » C13: Significant properties
  - » The digital archive identifies and documents which of the transferred representations' properties are significant for preservation of the information objects. In determining the scope of the properties to be preserved, a balance should be struck, bearing the archive's own targets in mind, between the technical possibilities and the costs of long-term

preservation on the one hand and the needs of the designated community/communities on the other hand.

- » C14: Integrity: Ingest interface
  - » The digital archive has its own interface for ingesting the representations in a way which retains their integrity. The interface contains all of the functions and processes aimed at transferring the submission information packages from the producers, transforming them into archival information packages and incorporating them into the digital archive. The interface allows the producer and the digital archive administration to check and maintain the integrity of the representations.
- » C15: Integrity: Functions of the archival storage
  - » The archival storage provides functions necessary for checking and maintaining the integrity of the representations by the administration of the digital archive. The functions include recording of the archival information packages onto storage media, long-term storage, and restoration of the archival information packages and all changes to the packages.
- » C16: Integrity: user interface
  - » The digital archive has an interface which allows users and the digital archive administration to check and maintain the integrity of the representations. This includes the transformation from archival information packages into dissemination information packages.
- » C17: Authenticity: Ingest
  - » The digital archive has procedures which permit the authenticity of the representations to be assessed upon being ingested and the authenticity of the submission information packages to be assessed and protected.
- » C18: Authenticity: Preservation measures
  - » The digital archive deploys methods which ensure the authenticity of the objects during implementation of the long-term preservation measures and document the degree of authenticity.
- » C19: Authenticity: Use
  - » The digital archive allows the users and the administration of the digital archive to check and maintain the authenticity of the representations. This includes the transformation from archival information packages into dissemination information packages.
- » C20: Technical authority
  - » The digital archive obtains technical authority over the representations being ingested, allowing it to transform them into archival information packages and, if necessary, to carry out long-term preservation measures. Following the transfer, all necessary measures can be carried out without any technical restrictions.
- » C21: Submission information packages
  - » The digital archive has issued specifications regarding its submission information packages. The digital archive agrees with the producers which submission information packages will be ingested (content data and metadata). The submission information packages are checked on the basis of the specifications.
- » C22: Transformation of the submission information packages into archival information packages
  - » The digital archive converts submission information packages into archival information packages.

- » C23: Archival information packages
  - » The digital archive has issued specifications for its archival information packages. The digital archive defines which archival information packages (content data and metadata) are to be stored and in which form. The archival information packages are checked on the basis of the specifications.
- » C24: Interpretability of the archival information packages
  - » Technical preservation measures are undertaken to ensure the interpretability of the archival information packages.
- » C25: Transformation of archival information packages into dissemination information packages
  - » The digital archive transforms archival information packages into dissemination information packages.
- » C26: Dissemination information packages
  - » The digital archive specifies the dissemination information packages on the basis of the requirements of the designated communities.
- » C27: Identification
  - » A digital archive should use internal identifiers to manage the information objects and their representations and, where applicable, their parts and relationships (part/totality, different variants, versions etc.), especially to ensure unique assignment of the content data to the metadata. The use of externally visible, standardized persistent identifiers ensures reliable tracing of the information objects and their representations, and consequently also access.
- » C28: Descriptive metadata
  - » The scope, structure and content of the descriptive metadata are defined. They depend on the goals of the digital archive, its designated communities and the object types.
- » C29: Structural metadata
  - » The structure of the representations must be adequately described so that the information objects can be reconstructed and used.
- » C30: Technical metadata
  - » The technical metadata are defined to ensure interpretability, integrity and authenticity and to manage the preservation measures.
- » C31: Logging the preservation measures
  - » The digital archive logs the preservation measures and any changes to the representations.
- » C32: Administrative metadata
  - » The digital archive has defined its administrative metadata in order to render the administration and use of the information objects and their representations transparent. Use of the representations may be restricted for legal or contractual reasons.
- » C33: IT infrastructure
  - » The IT infrastructure should realize the specifications for handling the information objects and representations at the technology and security levels.
- » C34: Security
  - » The organization and the infrastructure protect the digital archive and its archived information objects and representations.



## ISO16363: Audit and Certification of Trustworthy Digital Repositories

3. ORGANIZATIONAL INFRASTRUCTURE		
3.1 GOVERNANCE & ORGANIZATIONAL VIABILITY		
		Metric
	3.1.1	THE REPOSITORY SHALL HAVE A MISSION STATEMENT THAT REFLECTS A COMMITMENT TO THE PRESERVATION OF, LONG TERM RETENTION OF, MANAGEMENT OF, AND ACCESS TO DIGITAL INFORMATION.
	3.1.2	THE REPOSITORY SHALL HAVE A PRESERVATION STRATEGIC PLAN THAT DEFINES THE APPROACH THE REPOSITORY WILL TAKE IN THE LONG-TERM SUPPORT OF ITS MISSION
	3.1.3	THE REPOSITORY SHALL HAVE A COLLECTION POLICY OR OTHER DOCUMENT THAT SPECIFIES THE TYPE OF INFORMATION IT WILL PRESERVE, RETAIN, MANAGE AND PROVIDE ACCESS TO.
3.2 ORGANIZATIONAL STRUCTURE & STAFFING		
		Metric
	3.2.1	THE REPOSITORY SHALL HAVE IDENTIFIED AND ESTABLISHED THE DUTIES THAT IT NEEDS TO PERFORM AND SHALL HAVE APPOINTED STAFF WITH ADEQUATE SKILLS AND EXPERIENCE TO FULFIL THESE DUTIES.
3.3 PROCEDURAL ACCOUNTABILITY & PRESERVATION POLICY FRAMEWORK		
		Metric
	3.3.1	THE REPOSITORY SHALL HAVE DEFINED ITS DESIGNATED COMMUNITY AND ASSOCIATED KNOWLEDGE BASE(S) AND SHALL HAVE THESE DEFINITIONS APPROPRIATELY ACCESSIBLE.
	3.3.2	THE REPOSITORY SHALL HAVE PRESERVATION POLICIES IN PLACE TO ENSURE ITS PRESERVATION STRATEGIC PLAN WILL BE MET.
	3.3.3	THE REPOSITORY SHALL HAVE A DOCUMENTED HISTORY OF THE CHANGES TO ITS OPERATIONS, PROCEDURES, SOFTWARE, AND HARDWARE.
	3.3.4	THE REPOSITORY SHALL COMMIT TO TRANSPARENCY AND ACCOUNTABILITY IN ALL ACTIONS SUPPORTING THE OPERATION AND MANAGEMENT OF THE REPOSITORY THAT AFFECT THE PRESERVATION OF DIGITAL CONTENT OVER TIME.
	3.3.5	THE REPOSITORY SHALL DEFINE, COLLECT, TRACK, AND APPROPRIATELY PROVIDE ITS INFORMATION INTEGRITY MEASUREMENTS.
	3.3.6	THE REPOSITORY SHALL COMMIT TO A REGULAR SCHEDULE OF SELF-ASSESSMENT AND EXTERNAL CERTIFICATION.
3.4 FINANCIAL SUSTAINABILITY		
		Metric
	3.4.1	THE REPOSITORY SHALL HAVE SHORT- AND LONG-TERM BUSINESS PLANNING PROCESSES IN PLACE TO SUSTAIN THE REPOSITORY OVER TIME.
	3.4.2	THE REPOSITORY SHALL HAVE FINANCIAL PRACTICES AND PROCEDURES WHICH ARE TRANSPARENT, COMPLIANT WITH RELEVANT ACCOUNTING STANDARDS AND PRACTICES, AND AUDITED BY THIRD PARTIES IN ACCORDANCE WITH TERRITORIAL LEGAL REQUIREMENTS.

3. ORGANIZATIONAL INFRASTRUCTURE		
	3.4.3	THE REPOSITORY SHALL HAVE AN ONGOING COMMITMENT TO ANALYZE AND REPORT ON RISK, BENEFIT, INVESTMENT, AND EXPENDITURE (INCLUDING ASSETS, LICENSES, AND LIABILITIES).
3.5 CONTRACTS, LICENSES, & LIABILITIES		
		Metric
	3.5.1	THE REPOSITORY SHALL HAVE AND MAINTAIN APPROPRIATE CONTRACTS OR DEPOSIT AGREEMENTS FOR DIGITAL MATERIALS THAT IT MANAGES, PRESERVES, AND/OR TO WHICH IT PROVIDES ACCESS.
	3.5.2	THE REPOSITORY SHALL TRACK AND MANAGE INTELLECTUAL PROPERTY RIGHTS AND RESTRICTIONS ON USE OF REPOSITORY CONTENT AS REQUIRED BY DEPOSIT AGREEMENT, CONTRACT, OR LICENSE.

4 DIGITAL OBJECT MANAGEMENT		
4.1 INGEST: ACQUISITION OF CONTENT		
		Metric
	4.1.1	THE REPOSITORY SHALL IDENTIFY THE CONTENT INFORMATION AND THE INFORMATION PROPERTIES THAT THE REPOSITORY WILL PRESERVE.
	4.1.2	THE REPOSITORY SHALL CLEARLY SPECIFY THE INFORMATION THAT NEEDS TO BE ASSOCIATED WITH SPECIFIC CONTENT INFORMATION AT THE TIME OF ITS DEPOSIT.
	4.1.3	THE REPOSITORY SHALL HAVE ADEQUATE SPECIFICATIONS ENABLING RECOGNITION AND PARSING OF THE SIPS.
	4.1.4	THE REPOSITORY SHALL HAVE MECHANISMS TO APPROPRIATELY VERIFY THE DEPOSITOR OF ALL MATERIALS.
	4.1.5	THE REPOSITORY SHALL HAVE AN INGEST PROCESS WHICH VERIFIES EACH SIP FOR COMPLETENESS AND CORRECTNESS.
	4.1.6	THE REPOSITORY SHALL OBTAIN SUFFICIENT CONTROL OVER THE DIGITAL OBJECTS TO PRESERVE THEM.
	4.1.7	THE REPOSITORY SHALL PROVIDE THE PRODUCER/DEPOSITOR WITH APPROPRIATE RESPONSES AT AGREED POINTS DURING THE INGEST PROCESSES.
	4.1.8	THE REPOSITORY SHALL HAVE CONTEMPORANEOUS RECORDS OF ACTIONS AND ADMINISTRATION PROCESSES THAT ARE RELEVANT TO CONTENT ACQUISITION.
4.2 INGEST: CREATION OF THE AIP		
		Metric
	4.2.1	THE REPOSITORY SHALL HAVE FOR EACH AIP OR CLASS OF AIPS PRESERVED BY THE REPOSITORY AN ASSOCIATED DEFINITION THAT IS ADEQUATE FOR PARSING THE AIP AND FIT FOR LONG-TERM PRESERVATION NEEDS.
	4.2.2	THE REPOSITORY SHALL HAVE A DESCRIPTION OF HOW AIPS ARE CONSTRUCTED FROM SIPS.

4 DIGITAL OBJECT MANAGEMENT		
	4.2.3	THE REPOSITORY SHALL DOCUMENT THE FINAL DISPOSITION OF ALL SIPS
	4.2.4	THE REPOSITORY SHALL HAVE AND USE A CONVENTION THAT GENERATES PERSISTENT, UNIQUE IDENTIFIERS FOR ALL AIPS
	4.2.5	THE REPOSITORY SHALL HAVE ACCESS TO NECESSARY TOOLS AND RESOURCES TO PROVIDE AUTHORITATIVE REPRESENTATION INFORMATION FOR ALL OF THE DIGITAL OBJECTS IT CONTAINS.
	4.2.6	THE REPOSITORY SHALL HAVE DOCUMENTED PROCESSES FOR ACQUIRING PRESERVATION DESCRIPTION INFORMATION (PDI) FOR ITS ASSOCIATED CONTENT INFORMATION AND ACQUIRE PDI IN ACCORDANCE WITH THE DOCUMENTED PROCESSES.
	4.2.7	THE REPOSITORY SHALL ENSURE THAT THE CONTENT INFORMATION OF THE AIPS IS UNDERSTANDABLE FOR THEIR DESIGNATED COMMUNITY AT THE TIME OF CREATION OF THE AIP.
	4.2.8	THE REPOSITORY SHALL VERIFY EACH AIP FOR COMPLETENESS AND CORRECTNESS AT THE POINT IT IS CREATED.
	4.2.9	THE REPOSITORY SHALL PROVIDE AN INDEPENDENT MECHANISM FOR VERIFYING THE INTEGRITY OF THE REPOSITORY COLLECTION/CONTENT.
	4.2.10	THE REPOSITORY SHALL HAVE CONTEMPORANEOUS RECORDS OF ACTIONS AND ADMINISTRATION PROCESSES THAT ARE RELEVANT TO AIP CREATION.
4.3 PRESERVATION PLANNING		
		Metric
	4.3.1	THE REPOSITORY SHALL HAVE DOCUMENTED PRESERVATION STRATEGIES RELEVANT TO ITS HOLDINGS.
	4.3.2	THE REPOSITORY SHALL HAVE MECHANISMS IN PLACE FOR MONITORING ITS PRESERVATION ENVIRONMENT.
	4.3.3	THE REPOSITORY SHALL HAVE MECHANISMS TO CHANGE ITS PRESERVATION PLANS AS A RESULT OF ITS MONITORING ACTIVITIES.
	4.3.4	THE REPOSITORY SHALL PROVIDE EVIDENCE OF THE EFFECTIVENESS OF ITS PRESERVATION ACTIVITIES.
4.4 AIP PRESERVATION		
		Metric
	4.4.1	THE REPOSITORY SHALL HAVE SPECIFICATIONS FOR HOW THE AIPS ARE STORED DOWN TO THE BIT LEVEL.
	4.4.2	THE REPOSITORY SHALL HAVE CONTEMPORANEOUS RECORDS OF ACTIONS AND ADMINISTRATION PROCESSES THAT ARE RELEVANT TO STORAGE AND PRESERVATION OF THE AIPS.
4.5 INFORMATION MANAGEMENT		

4 DIGITAL OBJECT MANAGEMENT		
		Metric
	4.5.1	THE REPOSITORY SHALL SPECIFY MINIMUM INFORMATION REQUIREMENTS TO ENABLE THE DESIGNATED COMMUNITY TO DISCOVER AND IDENTIFY MATERIAL OF INTEREST.
	4.5.2	THE REPOSITORY SHALL CAPTURE OR CREATE MINIMUM DESCRIPTIVE INFORMATION AND ENSURE THAT IT IS ASSOCIATED WITH THE AIP.
	4.5.3	THE REPOSITORY SHALL MAINTAIN BI-DIRECTIONAL LINKAGE BETWEEN EACH AIP AND ITS DESCRIPTIVE INFORMATION.
4.6 ACCESS MANAGEMENT		
		Metric
	4.6.1	THE REPOSITORY SHALL COMPLY WITH ACCESS POLICIES.
	4.6.2	THE REPOSITORY SHALL FOLLOW POLICIES AND PROCEDURES THAT ENABLE THE DISSEMINATION OF DIGITAL OBJECTS THAT ARE TRACEABLE TO THE ORIGINALS, WITH EVIDENCE SUPPORTING THEIR AUTHENTICITY.

5 INFRASTRUCTURE AND SECURITY RISK MANAGEMENT		
5.1 TECHNICAL INFRASTRUCTURE RISK MANAGEMENT		
		Metric
	5.1.1	THE REPOSITORY SHALL IDENTIFY AND MANAGE THE RISKS TO ITS PRESERVATION OPERATIONS AND GOALS ASSOCIATED WITH SYSTEM INFRASTRUCTURE.
	5.1.2	THE REPOSITORY SHALL MANAGE THE NUMBER AND LOCATION OF COPIES OF ALL DIGITAL OBJECTS.
5.2 SECURITY RISK MANAGEMENT		
		Metric
	5.2.1	THE REPOSITORY SHALL MAINTAIN A SYSTEMATIC ANALYSIS OF SECURITY RISK FACTORS ASSOCIATED WITH DATA, SYSTEMS, PERSONNEL, AND PHYSICAL PLANT.
	5.2.2	THE REPOSITORY SHALL HAVE IMPLEMENTED CONTROLS TO ADEQUATELY ADDRESS EACH OF THE DEFINED SECURITY RISKS.
	5.2.3	THE REPOSITORY STAFF SHALL HAVE DELINEATED ROLES, RESPONSIBILITIES, AND AUTHORIZATIONS RELATED TO IMPLEMENTING CHANGES WITHIN THE SYSTEM.
	5.2.4	THE REPOSITORY SHALL HAVE SUITABLE WRITTEN DISASTER PREPAREDNESS AND RECOVERY PLAN(S), INCLUDING AT LEAST ONE OFF-SITE BACKUP OF ALL PRESERVED INFORMATION TOGETHER WITH AN OFFSITE COPY OF THE RECOVERY PLAN(S).

## Digital Repository Audit Method Based on Risk Assessment (DRAMBORA)

Repository Stages	Tasks	Functions
<b>Stage 1: Identify organizational context</b>	Task 1: What is mandate of your repository or the organization in which it is embedded?	» Operational Functions: Acquisition and Ingest
	Task 2: List goals and objectives of your repository	» Operational Functions: Preservation and Storage
<b>Stage 2: Document policy and regulatory framework</b>	Task 3: List your repository's strategic planning documents	» Operational Functions: Metadata management
	Task 4: List the legal, regulatory and contractual frameworks or agreements to which your repository is subject	» Operational Functions: Access and Dissemination
	Task 5: List the voluntary codes to which your repository has agreed to adhere	» Support Functions: Organization and Management
	Task 6: List any other documents and principles with which your repository compiles	» Support Functions: Staffing
<b>Stage 3: Identify activities, assets and their owners</b>	Task 7: Identify your repository's activities, assets and their owners	» Support Functions: Financial management
		» Support Functions: Technical Infrastructure and Security
<b>Stage 4: Identify risks</b>	Task 8: Identify risk associated with activities and assets of your repository	
<b>Stage 5: Assess the identified risks</b>	Task 9: Assess risks	
<b>Stage 6: Manage risks</b>	Task 10: Manage risks	

PREPARDE, *Guidelines on Recommending Data Repositories as Partners in Publishing Research Data*

For data publication, a repository must be actively managed in order to:

- 1) Enable access to the dataset
  - a) Ensure that data will be accessible (either as open data, or provide information on conditions of access and a clear point of contact);
  - b) Have a policy in place allowing appropriate access for peer reviewers, as required as part of support for the data peer-review process;
    - i. In the context of data, peer reviewers are individuals with appropriate scientific and/or technical expertise who produce or use data.
- 2) Ensure dataset persistence
  - a) Have a clear and public assertion of responsibility to preserve the data and provide access to the data over the long term;

- 
- b) Have an appropriate, formal succession plan, contingency plans, and/or escrow arrangements in place in case the repository ceases to operate or the governing or funding institution substantially changes its scope;
  - c) Develop and implement suitable quality control and security measures to ensure the metadata is correct and the data themselves are maintained and curated to avoid degradation;
    - i. User feedback can and should be used to strengthen and correct the metadata as needed;
    - d) Assign globally unique persistent IDs to the published datasets and maintain a repository-managed URI associated with each of those IDs. These URIs should also be associated with versions of the datasets;
    - e) Ensure permanent IDs for the dataset resolve to a publicly accessible landing page which must:
      - i. Be open and human readable (and it would be preferred that they should also be provided in a format which is machine readable);
      - ii. Describe the data object and include appropriate metadata and the permanent identifier (used to identify the page in the first place);
      - iii. Be maintained, even if the data has been retracted.
- 3) Ensure dataset stability
- a) Stability means that the exact same version of the dataset that was cited can be returned to when the citation is resolved;
  - b) If dataset versioning is supported, new versions should be permanently identified and linked from the original, published dataset landing page, without overwriting the original version linked from the article. The database should provide time stamped versions of archival data.
- 4) Enable searching and retrieval of datasets
- a) Allow users to easily determine whether a dataset has been peer reviewed or been subject to a robust quality assurance process;
  - b) Provide appropriate metadata about the dataset in human readable form on the landing page (see point 2.e), and when possible standardized machine readable formats e.g. DataCite metadata schema<sup>13</sup>;
  - c) Provide appropriate information about licensing and permissions, and manage access to restricted or embargoed material, as appropriate;
  - d) Provide access to allow metadata for the datasets to be searched and retrieved through interfaces designed for both humans and computers.
- 5) Collect information about repository statistics
- a) Publish statistics on the level of access to any deposited item that is publicly accessible to contribute to metrics of the item's publication impact;
  - b) Publish information to enable journals and depositors to assess its take-up in the community it aims to serve, e.g. about any operational agreement with a well-established journal, learned society or equivalent body.

### ICSU World Data System

1. Data, metadata, products and information should be fully and openly shared, subject to national or international jurisdictional laws and policies, including respecting appropriate extant restrictions and in accordance with international standards of ethical research conduct.
2. Data, metadata, products and information produced for research, education and public-domain use will be made available with minimum time delay and free of charge or for no more than the cost of dissemination, which may be waived for lower-income user communities to support equity in access.
3. All who produce, share and use data and metadata are stewards of those data, and have responsibility for ensuring that the authenticity, quality and integrity of the data are preserved and respect for the data source is maintained by ensuring privacy where appropriate and encouraging appropriate citation of the dataset and original work and acknowledgement of the data repository.’
4. Data should be labelled sensitive or restricted only with appropriate justification and following clearly defined protocols and should in any event be made available for use on the least restrictive basis possible.

### **Appendix E.3: Data Fusion Classification Schemas**

#### Durant – Whyte Classification

This classification is based on the relations between the data sources. The three categories are:

- » *Complementary*: The information provided by the input sources represents different parts of the scene and could thus be used to obtain more complete scene.
  1. Existing examples:
    - a. Freight Analysis Framework (FAF) is the fusion of different commodity flow datasets which are collected for different modes. BTS T-100 (aviation), Commodity Flow Survey (trucks) are some of the datasets which are fused together to come up with a multimodal commodity flow dataset – FAF.
    - b. FDOT-Safety office receives crash data from Florida Highway Safety and Motor Vehicles. This crash dataset lacks proper location information of the crashes. FDOT Safety office fuses the crash information with RCI road network to provide a spatial picture of the crashes.
  2. Potential example: Freight facility dataset created by RS&H for FDOT currently includes dataset using Department of Revenue’s (DOR) parcel data with spatial analysis using Google, Bing and other imageries. This data currently has valuable information about the acreage of the parcel, ownership, land use type, etc. A spatial data fusion with other data sets like Chain Store Guide, Business Register and Infogroup will bolster the utility of this dataset as it will add more information to it. Potential added information to the freight facility dataset will be number of employees, sales volume, commodities generated, received or distributed from a freight facility.

- » *Redundant*: The information provided by the input sources has the same target and could thus be fused to increase the confidence in the accuracy of the datasets.
  1. Existing example: FHWA's National performance management research dataset (NPMRDS) currently fuses travel time data from different GPS and probe datasets. The primary information from all these datasets is identical - travel time (speed). The fusion of these individual datasets helps to reduce errors and build confidence in the fused dataset.
  2. Potential example: NPMRDS currently provides travel time data for major roads - National Highway System (NHS) only. To gain travel time information for minor roads (local streets and road network not included in NHS.), point GPS datasets from providers like ATRI, HERE, Rand McNally, INRIX, etc. can be used. But, a single provider will give information for a small sample of vehicles. To get a better sample size and have more confidence in the travel time information, data fusion of these individual datasets will be helpful.
- » *Cooperative*: The information provided by the input sources is combined into new information that is typically more complex than the original information.
  1. Existing example:
    - a. One of the current FDOT'S research projects involves fusing ATRI's GPS data with Transearch commodity flow data to create an estimated dataset which will include truck traffic information classified for different commodities. This research is currently being conducted by universities. Hence, the methodology is currently unknown.
    - b. FreightSIM model uses socio-economic data, survey information and commodity flow data as input sources and applies econometric/statistical methods to deduce the Origin-Destination (O-D) trip matrix.
  2. Potential example: Similar to the example above, the PIERS and AIS data can be fused together to create an estimated dataset which will include ship trip information classified for different commodities with the tonnage information.

### Dasarathy's Classification

This classification is based on input/output data types and their nature. The five categories are:

- » Data in-data out (DAI-DAO): This type of data fusion process inputs and outputs raw data; the results are typically more reliable or accurate.
  1. Existing example: Traffic count information in Transportation Statistics Office is done using Telemetered Traffic Monitoring Sites (TTMS) and Portable Traffic Monitoring Sites (PTMS). TTMS sites generally count traffic for majority of the year and PTMS sites generally count traffic for few days. PTMS traffic counts are adjusted for seasonality and time of day to come up with Average Annual Daily Traffic (AADT). Similarly, AADT for TTMS are computed too. These two datasets are then fused together to get traffic count information.
  2. Potential example: Point GPS datasets from providers like ATRI, HERE, Rand McNally, INRIX, etc. can be used. But, a single provider will give information for a small sample of vehicles. To get a better sample size and have more confidence in the travel time information, data fusion of these individual datasets will be helpful.
- » Data in-feature out (DAI-FEO): This type of data fusion process employs raw data from the sources to extract features or characteristics that describe an entity in the environment.
  1. Existing example: FHWA's National performance management research dataset (NPMRDS) currently fuses travel time data from different GPS and probe datasets. The primary



- information from all these datasets is identical – spot speeds. The fusion of these individual datasets is converted into a travel time on the NAVTEQ network links (TMC – Traffic Message Channel).
2. Potential example: PIERS and AIS datasets are two raw datasets which can be fused together to create an estimated dataset which will include ship trip information classified for different commodities with the tonnage information.
- » Feature in-feature out (FEI-FEO): This type of data fusion process employs feature data from the sources to addresses a set of features with to improve, refine or obtain new features.
    1. Existing example: Transportation Service Index – Freight is a feature which is created by fusion of features of multiple data sources which include: Aviation Revenue Freight Ton – Miles, Truck Tonnage, Rail Freight Carloads and Intermodal Traffic, Inland Waterborne Traffic and Pipeline Movements.
    2. Potential example: Average Annual Daily Truck Traffic (AADTT) on the roadway links and NPMRDS travel time data can be fused together to compute performance measures for the roadway links.
  - » Feature in-decision out (FEI-DEO): This type of data fusion process employs features as input and produces decision as outputs.
  - » Decision In-Decision Out (DEI-DEO): This type of data fusion process employs decisions as input and produces decisions as outputs.

#### Joint directors of laboratories (JDL) Data Fusion Classification

This classification is based on the levels of the data fusion process [13] [14]. The five levels of data processing are defined as follows:

- » *Level 0 - Source preprocessing*: This is the lowest level of the data fusion process, and it includes fusion at the most disaggregate level. This level reduces the amount of data by eliminating the obvious outliers and retains high quality data.
- » *Level 1 - Object refinement*: As the title of this level suggest, it involves using the disaggregate data from Level 1 to refine it further. The procedures used in this level are spatio-temporal alignment, data association, and data correlation, clustering or grouping techniques, state estimation, and the removal of false positives, identity fusion, and the combining of features.
- » *Level 2 - Situation assessment*: This level focuses on a higher level of inference than level 1. Situation assessment aims to identify the likely situations given the observed events and obtained data (patterns in general). It establishes relationships between the objects. Relations (i.e., proximity, communication) are valued to determine the significance of the entities or objects in a specific environment.

NCFRP 35 [3] provides a comprehensive methodology of how to create relationships or build bridges between different datasets. Five topics which are commonly considered are place names, units of measurement, commodity and industry classification systems, and modes of transport. The reconciliation process involves identification of the nature of the differences, identification of commonalities within the differences, and determining whether the differences are statistically significant, or whether they are inconsequential for freight data analysis.

The discussion follows same general format:

- » Topic
- » Keyword
- » Type of Bridge, which may include:

1. **Taxonomic Bridges:** these bridges apply to data differences that result from how the data elements are classified.
  2. **Temporal Bridges:** these bridges apply to data differences that result from how the definitions of data elements vary over time.
  3. **Methodological/Analytical Bridges:** these bridges apply to data differences that result from how the data is collected, processed, and disseminated by the various reporting agencies.
- » *Level 3 - Impact assessment:* This level includes (1) an evaluation of the risk or threat and (2) a prediction of the logical outcome;
  - » *Level 4 - Process refinement:* This level aim is to achieve efficient resource management while accounting for task priorities, scheduling, and the control of available resources.

### Classification Based on the Type of Architecture

One of the main questions that arise when designing a data fusion system is where will the data fusion process be performed. Based on this criterion, the following types of architectures could be identified:

- » *Centralized architecture:* The fusion node resides in the central processor that receives the information from all of the input sources. All of the fusion processes are executed in a central processor that uses the provided raw data. In this classification schema, the sources obtain only the observation as measurements and transmit them to a central processor, where the data fusion process is performed.
- » *Decentralized architecture:* comprised of a network of nodes in which each node has its own processing capabilities and there is no single point of data fusion. Each node fuses its local information with the information that is received from its peers.
- » *Distributed architecture:* In a distributed architecture, measurements from each source node are processed independently before the information is sent to the fusion node; the fusion node accounts for the information that is received from the other nodes.
- » *Hierarchical architecture:* Combinations of decentralized and distributed nodes, generate hierarchical schemes in which the data fusion process is performed at different levels in the hierarchy.

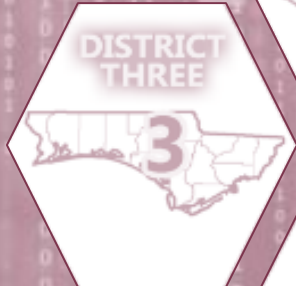
### Methodology Classification

The data fusion techniques can be categorized into three nonexclusive categories [12]:

- » *Data association:* The objective of data association is to establish the set of observations or measurements that are generated by the same target over time. Some popular data association techniques are nearest neighbors and K-means, probabilistic data association, joint probabilistic data association, multiple hypothesis test, distribution multiple hypothesis test and graphical models.
- » *State estimation:* The objective of state estimation is to determine the state of target under movement given the observations or measurement. Some popular state estimation techniques are Maximum Likelihood and Maximum Posterior, Kalman Filter, Particle Filter, Distributed Kalman Filter, Distributed Particle Filter and Covariance Consistency Methods.
- » *Decision fusion:* The objective of these methods is to make a high-level inference about the events and activities that are produced from the detected target. Some popular techniques are The Bayesian methods, Dempster-Shafer Inference, Abductive Reasoning and Semantic Methods.

# APPENDIX F: EVALUATION MATRIX OF CLEARINGHOUSES

JUNE 2016



APPENDIX F: EVALUATION MATRIX OF DATA CLEARINGHOUSES

Serial Number	Name of data clearinghouse	State	Multiple years of data	Exportable files/formats	Query options personalize	Roadway Data (AADT and # of lanes minimum)	Basemap of roads	Georeference information	Tonnage, Value, TEUs	Intuitive Interface	Interactive	Navigation	Relevance of Content	Email Support / Phone Support	Text Instructions	Online help	Frequently Asked Questions	Workshops	Data Analysis	Semantic search function	Visualization
1	<a href="#">Alabama Flagship GIS - Parcel Data</a>	AL	1	1	1	0	1	1	0	1	2	2	2	1	1	0	0	0	1	1	2
2	<a href="#">AlabamaView - Remote Sensing and GIS Shapefiles</a>	AL	1	1	0	0	0	1	0	1	2	2	2	1	0	0	0	0	0	0	2
3	<a href="#">Alaska State Geo-Spatial Data Clearinghouse</a>	AK	0	1	0	0	1	1	0	1	2	2	3	1	0	1	1	0	0	0	2
4	<a href="#">Arizona State Land Department</a>	AZ	2	1	1	1	1	1	0	1	1	1	3	1	1	1	1	0	0	1	2
5	<a href="#">University of Arizona Libraries GIS &amp; Geospatial Data</a>	AZ	0	1	1	0	0	1	0	1	2	2	3	1	1	0	1	0	0	1	1
6	<a href="#">Arkansas GIS Office</a>	AR	0	1	1	1	1	1	0	1	2	2	3	1	0	0	0	0	0	1	1
7	<a href="#">Cal-FRED: The Online California Freight Data Repository</a>	CA	2	1	0	1	1	1	1	1	3	3	4	1	1	1	1	0	1	1	2
8	<a href="#">State of California GeoPortal</a>	CA	2	1	0	1	1	1	0	1	2	2	4	1	1	1	1	1	1	1	3
9	<a href="#">University of Connecticut GIS Data</a>	CT	2	1	0	0	1	1	0	1	2	2	3	1	1	1	1	1	0	1	3
10	<a href="#">State of Delaware</a>	DE	2	1	0	0	1	1	0	1	2	2	3	1	1	1	1	0	0	1	3
11	<a href="#">Florida Housing Data Clearinghouse</a>	FL	2	1	1	0	0	1	0	1	3	2	2	1	1	0	0	0	1	1	0
12	<a href="#">Florida Geographic Data Library</a>	FL	2	1		1	1	1	0	1	2	2	3	1	1	1	0	0	0	1	0
13	<a href="#">Florida Department of Transportation Statistics Office</a>	FL	0	1	0	1	1	1	0	0	2	2	3	1	0	0	0	0	0	1	0

Serial Number	Name of data clearinghouse	State	Multiple years of data	Exportable files/formats	Query options personalize	Roadway Data (AADT and # of lanes minimum)	Basemap of roads	Georeference information	Tonnage, Value, TEUs	Intuitive Interface	Interactive	Navigation	Relevance of Content	Email Support / Phone Support	Text Instructions	Online help	Frequently Asked Questions	Workshops	Data Analysis	Semantic search function	Visualization
14	<a href="#">Idaho</a>	ID	2	1	1	1	0	1	1	1	3	2	3	1	1	1	1	0	0	1	2
15	<a href="#">Indiana University Spatial Data Portal</a>	IN	2	1	1	0	0	1	0	1	3	2	2	1	1	1	1	1	0	1	2
16	<a href="#">Kentucky</a>	KY	1	1	1	0	0	1	0	1	2	2	2	1	0	0	0	0	0	1	2
17	<a href="#">Maine</a>	ME	1	1	1	0	1	1	0	1	3	3	3	1	1	1	0	0	1	1	0
18	<a href="#">Maryland</a>	MD	2	1	1	0	1	1	0	1	3	3	3	1	1	1	1	1	0	1	2
19	<a href="#">Massachusetts</a>	MA	0	1	1	0	0	1	0	1	3	3	2	1	1	1	1	1	0	1	2
20	<a href="#">Massachusetts Department of Transportation GIS</a>	MA	0	1	0	1	1	1	0	1	3	3	3	1	1	0	0	0	0	0	0
21	<a href="#">Michigan</a>	MI	0	1	0	0	1	1	0	1	2	3	3	1	0	0	0	0	1	0	1
22	<a href="#">Minnesota</a>	MN	1	1	0	0	1	1	0	1	2	3	3	1	0	0	1	1	0	1	0
23	<a href="#">Mississippi</a>	MS	0	1	1	0	1	1	0	1	2	3	3	1	0	0	1	1	0	0	1
24	<a href="#">Missouri Spatial Data Information Service</a>	MO	2	1	1	0	1	1	0	1	2	3	3	1	1	1	0	0	0	1	0
25	<a href="#">Montana</a>	MT	0	1	1	0	1	1	0	1	2	3	3	1	1	1	0	0	0	1	0
26	<a href="#">Montana Cadastral</a>	MT	0	1	1	0	0	1	0	1	3	3	3	1	0	1	0	0	0	1	4

Serial Number	Name of data clearinghouse	State	Multiple years of data	Exportable files/formats	Query options personalize	Roadway Data (AADT and # of lanes minimum)	Basemap of roads	Georeference information	Tonnage, Value, TEUs	Intuitive Interface	Interactive	Navigation	Relevance of Content	Email Support / Phone Support	Text Instructions	Online help	Frequently Asked Questions	Workshops	Data Analysis	Semantic search function	Visualization
27	<a href="#">National Ballast Information Clearinghouse</a>	Federal	2	1	1	0	0	1	0	1	2	2	3	1	0	1	1	0	0	1	0
28	<a href="#">FAFDTT</a>	Federal	2	1	1	0	1	1	1	1	4	4	4	1	1	1	1	1	1	1	2
29	<a href="#">United States Department of Agriculture</a>	Federal	0	1	1	0	0	1	0	1	3	3	2	1	0	1	0	0	0	1	4
30	<a href="#">USGS National Geospatial Program</a>	Federal	0	1	1	0	0	1	0	1	3	3	3	1	0	1	1	0	0	1	3
31	<a href="#">Bureau of Land Management</a>	Federal	0	1	1	0	0	1	0	1	2	2	2	1	0	1	1	0	0	1	2
32	<a href="#">RITA</a>	Federal	2	1	1	0	1	1	1	1	3	3	4	1	1	1	1	1	1	1	2
33	<a href="#">Nebraska</a>	NE	0	1	0	0	1	1	0	0	2	2	2	1	0	1	1	0	0	0	0
34	<a href="#">Nevada</a>	NV	2	1	0	0	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0
35	<a href="#">New Hampshire's Statewide GIS Clearinghouse</a>	NH	0	1	0	0	0	1	0	1	3	3	2	1	0	0	0	1	0	1	1
36	<a href="#">New Jersey Office of GIS</a>	NJ	0	1	1	0	1	1	0	1	2	2	3	1	0	0	0	0	0	0	3
37	<a href="#">Resource Geographic Information System</a>	NM	2	1	1	0	1	1	0	1	3	3	3	1	1	1	1	1	0	0	3
38	<a href="#">New York State Clearinghouse</a>	NY	2	1	1	0	1	1	0	1	3	2	3	1	0	1	1	0	0	1	2
39	<a href="#">Center for Geographic Information Analysis</a>	NC	0	1	1	0	1	1	0	1	2	3	2	1	0	0	0	0	0	0	3

Serial Number	Name of data clearinghouse	State	Multiple years of data	Exportable files/formats	Query options personalize	Roadway Data (AADT and # of lanes minimum)	Basemap of roads	Georeference information	Tonnage, Value, TEUs	Intuitive Interface	Interactive	Navigation	Relevance of Content	Email Support / Phone Support	Text Instructions	Online help	Frequently Asked Questions	Workshops	Data Analysis	Semantic search function	Visualization
40	<a href="#">North Dakota GIS Hub</a>	ND	0	1	1	0	1	1	0	1	3	3	3	1	1	1	0	0	0	1	2
41	<a href="#">Ohio Geographically Referenced Information Program</a>	OH	0	1	1	0	1	1	0	1	3	3	3	1	1	1	0	0	0	0	3
42	<a href="#">Oklahoma Geographic Information Council</a>	OK	0	1	1	0	1	1	0	1	3	4	3	1	1	1	1	0	0	1	4
43	<a href="#">Oregon Geospatial Enterprise Office</a>	OR	2	1	1	1	0	1	0	1	3	4	3	1	1	1	1	0	1	1	4
44	<a href="#">Pennsylvania Geospatial Data Clearinghouse</a>	PA	2	1	1	1	1	1	0	1	3	3	3	1	1	1	1	1	0	1	3
45	<a href="#">Rhode Island Geographic Information System</a>	RI	0	1	1	0	1	1	0	1	3	3	3	1	1	1	1	0	0	0	0
46	<a href="#">South Carolina Geographic Information Systems</a>	SC	2	1	0	1	1	1	0	0	2	2	4	1	0	0	0	0	0	0	0
47	<a href="#">South Dakota GIS</a>	SD	0	1	1	1	1	1	0	1	3	3	3	1	0	1	0	0	0	0	4
48	<a href="#">North Central Texas Council of Governments</a>	TX	2	1	0	1	1	1	0	1	2	2	4	1	1	1	1	1	0	0	0
49	<a href="#">Utah Automated Geographic Reference Center</a>	UT	0	1	1	1	1	1	0	1	2	3	3	1	1	1	0	0	0	0	4
50	<a href="#">Virginia Economic Development Partnership GIS Site</a>	VA	1	1	0	1	1	1	0	1	3	3	3	1	0	0	0	0	0	0	0
51	<a href="#">West Virginia State GIS Technical Center</a>	WV	2	1	1	1	1	1	0	1	3	3	4	1	0	0	0	0	0	0	0
52	<a href="#">Wyoming GeoSpatial Hub</a>	WY	2	1	1	1	1	1	1	1	2	3	4	1	1	0	0	0	0	0	3



# APPENDIX G: LIST OF ABBREVIATIONS

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*APPENDIX G: LIST OF ABBREVIATIONS*

AAR	Association of American Railroads
ACAIS	Air Carrier Activity Information System
ACI	Airport Council International
ADS-B	Automatic Dependent Surveillance – Broadcast
AIS	Automated Identification System
AST	Florida Agency for State Technology
ATRI	American Transportation Research Institute
BEA	Bureau of Economic Analysis
BEBR	Bureau of Economic and Business Research
BLS	Bureau of Labor Statistics
BTS	Bureau of Transportation Statistics
CARS	Crash Analysis Report System
CBP	US Census County Business Patterns
CFID	Comprehensive Freight Improvement Database
CFS	US Census Commodity Flow Survey
CMTS	Committee on the Marine Transportation System
CND	Container Number Database
CSG	Chain Store Guide
CVO	Commercial Vehicle Operations
DACS	Florida Department of Agriculture and Consumer Services
DHSMV	Florida Department of Highway Safety and Motor Vehicles
DOH	Florida Department of Health
DOR	Florida Department of Revenue
DQAF	Data Quality Assessment Framework
EDR	Florida Legislature’s Office of Economic and Demographic Research
EFTMS	Electronic Freight Theft Management System
FAA	Federal Aviation Administration
FAF	Freight Analysis Framework
FARS	Fatality Analysis Reporting System
FBO	Fixed Base Operator
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGDL	Florida Geographic Data Library
FHP-CVE	Florida Highway Patrol – Commercial Vehicle Enforcement
FHWA	Federal Highway Administration
FLSWM	Florida Statewide Model
FLP	Freight Logistics and Passenger Operations Office
FPC	Florida Ports Council
FRA	Federal Rail Administration
FREIGHTSIM	Florida Freight Supply-Chain Intermodal Model

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GIS	Geographic Information Systems
GPS	Global Positioning System
HEP	US DOT FHWA Office of Planning, Environment, & Realty
HPMS	Highway Performance Monitoring System
IANA	Intermodal Association of North American Services
ICSU	International Council for Science
IMF	International Monetary Fund
IO	Input-Output
ITSP	Information Technology Strategic Plan
ISO	International Organization for Standardization
JLS	Jason's Law Survey
LEHD	Longitudinal Employer-Household Dynamics
LNG	Liquefied Natural Gas
MCSAW	Motor Carrier Size and Weight
MMR	Master of Marketing Research
NAICS	North American Industry Classification System
NASS	National Agricultural Statistics Service
NCFRP	National Cooperative Freight Research Program
NDC	Navigation Data Center
NHPN	National Highway Planning Network
NHS	National Highway System
NPMRDS	National Performance Management Research Data Set
NPMS	National Pipeline Mapping System
NTAD	National Transportation Atlas Database
OAIS	Open Archival Information Systems
OAG	Official Airline Guide
PAS	Permit Application System
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIERS	Port Import/Export Reporting Services
PIMMA	Pipeline Information Management Mapping Application
PTMS	Portable Traffic Monitoring Sites
PUWS	Public Use Waybills Sample
RBCS	Role-Based Classification Schema
RCI	Roadway Characteristics Inventory
RHCI	Railroad Highway Crossing Inventory
RITA	Research and Innovative Technology Administration
RM	Rand McNally
ROADS	Reliable Organized Accurate Data Sharing
SAS	US Census Service Annual Survey
SHS	State Highway System
SQS	US Census Service Quarterly Survey
SIS	Strategic Intermodal System
SSRC	Southwood Shared Resource Center

STB	Surface Transportation Board
SWOT	Strength, Weakness, Opportunities and Threats
TAZ	Traffic Analysis Zone
TDR	Trusted Digital Repository
TMC	Traffic Message Channel
TRANSTAT	Transportation Statistics Office
TRB	Transportation Research Board
TS	Transearch
TSI	Transportation Service Index
TTMS	Telemetered Traffic Monitoring Sites
USACE	US Army Corp of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
VIUS	US Census Vehicle Inventory and Use Survey
WIM	Weigh in Motion Stations



# MULTIMODAL FREIGHT DATA INVENTORY AND MANAGEMENT

605 SUWANNEE STREET  
TALLAHASSEE, FL 32399  
850.414.4848

