Freight Data Inventory and Training

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About the Mid-America Freight Coalition (MAFC)

The industries and farms of the Mid-America region can compete in the marketplace only if their products can move reliably, safely and at reasonable cost to market.

State Departments of Transportation play an important role in providing the infrastructure that facilitates movement of the growing amount of freight. The Mid-America Freight Coalition was created to support the ten states of the Mid America Association of Transportation Officials (MAASTO) region in their freight planning, freight research needs and in support of multi-state collaboration across the region.

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This research compiles a reference for freight data available where major freight data sources and datasets are investigated. An inventory for freight data for each freight transportation mode (highway, waterway, airway, railway and pipeline) is created providing direct access links and guidance on how to access and navigate data sources.		

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1.1. Background

Freight development practitioners have found much of the existing freight data insufficient for advanced freight planning and analysis work. The copious challenges faced when navigating or searching for these data hinder research and planning efforts in freight transportation. The many challenges faced include: lack of accuracy, outdated data, complexity in understanding the data, and accessibility. Yet, with increased demand for data analysis stemming from federal freight legislation combined with waning state department of transportation (DOT) budgets, efficient, data-driven investment strategies are imperative.

In addition to the challenges posed by the data, those new to freight planning are often unaware of the breadth of freight databases that exist or what they can be used for. To that end, a reference is needed to help new researchers and practitioners delve into the available freight data and to allow the more experienced to smoothly navigate data resources.

1.2. Project Objectives

This research is designed to identify relevant freight datasets and the information they provide. The research scope is to compile a reference document that captures major freight datasets and data sources along all transportation modes. Additionally, the project provides instructions on how to access the data and what to expect while navigating the sources. An evaluation of information provided as well as timeliness are presented. This is designed to be a thorough and novel reference for freight data compiled in one document that will help new researchers locate important datasets and understand the characteristics of freight data while providing those who are experienced with the opportunity to delve deeper into freight transportation data.

1.3. Report Organization

This report compiles a novel freight data inventory and is organized as follows:

- Section 2 presents a background review on the characteristics of freight transportation. An overview of the freight transportation modes is presented. Problems and challenges faced with freight data are studied. Previous work on freight data inventories are reviewed. And, the measures to create freight data are discussed.
- Section 3 presents a practice review of freight data sources, discussing major freight datasets. Compiled tables are shown that allow for direct access of the major datasets.
- Section 4 provides analysis methods and topics researched for each major dataset.
- Section 5 presents the freight inventory framework. Compiled tables for every data source are shown along with notes and recommendations on how to access the data and what to expect.

2. BACKGROUND

2.1. Characteristics of Freight Transportation

Freight transportation is at the center of economic activity and quality of life. In general, freight transportation is defined as the flow of goods from one area to another through various transportation modes. It is estimated that, as of 2015, the transportation system in the US moves around 49.3 million tons of freight daily, valued at $52.5 billion (*1*). This movement is driven by supply and demand chain, which is affected by the geographical distribution of population and the economy. Both population and Gross Domestic Product (GDP) are projected to increase in size in the coming years, stressing the significance of freight transportation networks and the need for their prosperity (*1*). Essentially, the freight transportation network consists of the waterway freight system, highway freight system, railroad freight system, aviation freight system, and pipeline freight system.

2.1.1 Waterway Freight System

The US waterway freight network is a significant contributor to the freight network with 5% of total freight tonnages being transported in waterways (*1*). These waterways act as alternative routes to other surface transportation, as a single barge can match the tonnage carried by 15 railcars or 60 trailers (*2*). Thus, freight transportation through waterways is praised for its efficiency and capacity. Essentially, two major modes of transportation are considered in waterways: inland ("brown water") and coastal, or international, shipping ("blue water"). Inland transportation is usually carried with towboats and barges and moves commodities, such as grains, fuel, coal, gravel, metals, foodstuffs, wood, and others. International shipping is carried by bulk or via containers, which are carried on vessels designed and constructed for containers. The waterway freight system is currently facing many challenges, especially when it comes to aging infrastructure (locks, dams, and ports) causing around 550,000 hours in delay yearly (*2*).

2.1.2 Highway Freight System

The US highway freight system is regarded as the dominant freight transportation mode, with nearly 66% of total domestic tonnages being transported on the highway network by an estimated 11.2 million freight trucks. These statistics illustrate how much the US relies on its highway freight systems and road networks. Currently, freight trucks account for 8% of the overall vehicle miles traveled (VMT), with significant dependence on the Interstate system (*1*). Freight trucks are the backbone of local industries and economies, as they are responsible for transporting raw materials to finished goods, including commodities such as foodstuffs, hazardous material, fuel, steel, construction material, gasoline, waste, and scrap.

2.1.3 Railroad Freight System

The railroad system is defined as "non-highway ground transportation that runs on rails" (*3*). This unique freight system provides the opportunity to transport heavy and bulky material for long distances, with few disruptions. This characteristic is specifically praised by customers, as it offers the orderly movement of goods with minimal cost. Currently, around 138,000 rail miles exist in the US rail freight system, with railroads accounting for 9% of the total freight tonnage transported (*1*)(*2*).

2.1.3 Aviation Freight System

Aviation freight transportation, as a mode, is still small in terms of volume, with currently 0.05% of total freight transportation being transported by this mode (*1*). Aviation freight

transportation is primarily used for light and high-value commodities with time constraints. This freight system transports a variety of commodities such as mail, express carriers' cargo (UPS, DHL, Fedex), passenger cargos, and plane cargo. Examples of high-value commodities transported through aviation system are: pharmaceutical products, precision instruments, electronic devices, chemical products, perishable goods (meat, fish, foodstuffs), and live animals. Essentially, the value of goods transported through aviation is more significant than the actual tonnage of the goods (*2*).

This transportation mode is dependent on the availability of delivery services via truck transport, thus prosperity in aviation freight brings along greater demand for highway freight.

2.1.3 Pipeline Freight System

The pipeline freight network covers two million miles in sub-surface channels in the US, transporting 19% of the total freight tonnage. This freight system plays a crucial role in oil and gas transportation as it connects distribution centers to processing/refining centers. Products transported include crude oil, refined petroleum products such as home heating oil, gasoline, aviation fuel, and diesel, and natural gas. Currently, 67% of petroleum products, gas, and hazardous materials are transported through pipeline networks. Developments in such transportation modes are inherently tied to the surge in domestic fossil fuel production (*2*)(*1*).

2.2. Problems and Challenges Faced in Freight Data

The unprecedented availability of data presents an opportunity of transforming data into better decisions. In freight transportation, this is essential as data is required to inform decision makers at the public and private level. Policy makers rely on freight data to inform decisions on bottleneck locations, economic activity and growth, transportation efficiency, infrastructure reliability, land use, pollution and safety. At the private level, companies and stakeholders require freight data to inform strategic decisions embedded in new investments, relocation, expansion, and to maximize profits (4). In general, freight data can lead policy makers to better decisions and thus:

- Improve the transportation network, safety and efficiency
- Achieve economic growth and expansion
- Reduce pollution
- Understand the demographics and influence of freight networks
- Enable effective planning and allocation of funds
- Reduce costs induced in transportation through informed and strategic planning

While the availability of freight data can lead to better decision making, several problems and challenges remain with the data currently available. These problems are embedded with the nature and the sources of data (*4*)(*5*). Practitioners navigating freight data are mainly faced with the following challenges:

1. Numerous sources reporting the same data leads to variability and complications

   Public and private sectors develop and publish their own data independently while addressing their respective needs and demands. This leads to variations in the data reported caused from a variety of things, such as formatting, reporting, and aggregating the data. While this might not be detected by the publishers, practitioners who want to acquire this data will face challenges in understanding, comparing, and grouping data from

different sources. Examples of this are data on tonnages, Origin/Destination, and transport characteristics.

2. Lack of data associated with some transportation modes

    Ranges of data available differ from one transportation mode to another. While the focus tends to be on highway freight transportation, less significant freight networks often suffer from a lack of coverage. An example is the aviation freight network. This lack of coverage can also be associated with different locations and economic sectors. For instance, some industries in remote areas (farming, fuel processing, or retail) are not covered in the data.

3. Complications in understanding the data and utilizing it

    Datasets are rarely accompanied with guidance or tutorials on how to navigate the data or a description of what the data could be used for.

4. Absence of geographical coverage, or useful coverage for analysis

    Data sources fail to provide a description of the geographical coverage area of the data published or a map of the area covered. Thus, practitioners face challenges in linking different datasets with each other geographically.

5. Lack of accuracy and reliability

    Because billions of dollars in investments are at stake based on decisions being made in transportation, it is essential to be able to identify the level of accuracy and reliability of the data used to inform these decisions. It is important that the publisher provide the limitations, quality, source, currency, methods taken to collect the data, and efficacy of the data.

6. Censorship of the data

    Various laws or company policies restrict the disclosure of data to the public and require either approval from the governmental source or company-specific approval.

2.3. Existing Freight Data Guidance

Efforts have been taken to address the problems and challenges faced with freight data. Essentially, guides have been developed to help practitioners navigate the data or even design an architecture of data sharing.

A list of existing guides is compiled in the table below:

Table 1. Existing Freight Data Guidance

Existing Guidance	
Study Name	**Link**
Freight Data Guide for Improved Transportation Planning (2018) (*6*)	*http://shrp2.transportation.org/Documents/Capacity/C20%20Freight%20Data%20Guide.pdf*
Review of Freight Data Sources for the Development of a Behavior-Based Freight Model (2015) (*7*)	*http://www.azmag.gov/Portals/0/Documents/TRANS_2016-06-01_Review-of-Freight-Data-Sources-for-the-Development-of-a-BehaviorBased-Freight-Model.pdf?ver=2017-04-06-112000-513*
State-of-the-Practice in Freight Data: A Review of Available Freight Data in the US (2004) (*8*)	*https://ctr.utexas.edu/wp-content/uploads/pubs/0_4713_P2.pdf*

Implementing the Freight Transportation Data Architecture: Data Element Dictionary (2016) (*9*)	*https://www.nap.edu/read/21910/chapter/1*

2.3.1 Guide 1: Freight Data Guide for Improved Transportation Planning

This study was prepared for the American Association of State Highway and Transportation Officials (AASHTO). The study built a general framework to aid practitioners in selecting the right data for their project or analysis by providing steps to be followed before moving into the project, and a checklist to be consulted to validate the selection process. The report provides a compiled data sheet that answers general questions on where to find principal freight data, performance measures, future trends, safety data, and others. This helps researchers and practitioners to locate their vendors for the data needed and get a sense of what kind of analysis they can perform with such data. Furthermore, the study suggests general applications of freight data along with examples of studies executed.

The guide provides a "cheat sheet" that helps agencies answer frequently asked questions regarding freight planning efforts and directs them to the appropriate data vendors.

Table 2, below, summarizes some questions considered in the guide (*4*) and suitable data vendors.[*]

The study provides a comparison on data types available in commercial and public data sources, Table 3 presents a duplicate of the summary table found in the guide (*4*).

Table 2. Freight Analysis: Frequently Asked Questions

Headlines	Frequently Asked Questions	Data Vendors
Freight Movement	What is the volume, value, commodity, modes of transportation, and origin/destination?	Freight Analysis Framework (FAF) Commodity Survey Flow (CFS) Transearch Surface Transportation Board (STB) Bureau of Transportation Statistics (BTS)
System Condition and Performance	What is the condition of the freight system? Where and what is the magnitude of the problem?	National Highway Planning Network (NHPN) Highway Performance Monitoring System (HPMS) National Performance Management Research Data Set (NPMRDS)
Freight Generation	Where is the freight movement coming from?	Dunn&Bradstreet InfoGroup COSTAR CBRE
Freight Corridors	What are the truck miles traveled? What are major freight corridors?	FAF HPMS USACE Automatic Identification

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[*] For information on the study discussed please refer to the original freight data guide (*4*).

		Systems (AIS) ATRI INRIX StreetLight
Safety	Where are the locations of safety hotspots? What is the cause?	National Highway Traffic Safety Administration (NHTSA) FRA Trespass Database FRA Highway-Grade Crossing Inventory
Adopted from the *Freight Data Guide for Improved Transportation Planning (6)*		

Table 3. Example of Data Sources for Different Data Types

Data Type	Example of Data Sources	Similar Public Data Sources
Regional Economic Impact Models	IMPLAN Group, REMI, BEA, RIMS II, TREDIS	Econworks (FHWA/AASHTO); WISeR Economic Impact Analysis Tool (EIAT)
Vehicle Probe Data	ATRI, INRIX, HERE, StreetLight	NPMRDS, VTRIS, NHPN
Business, Trade Data	Info USA, Woods and Poole Economics, Datamyne, CBRE Data	BDS, SUBS, SAS, COB, CBP
Maritime, Ports, and Marine Terminal Data	Windward, Statista, Chartco, PIERS	Maritime Statistics Open Data Portal by MARAD USACE Waterways Data
Commodity Flow Data	Statista, Transearch	FAF
Railroad and Aviation Data	Association of American Railroads Airline Data Inc.	FRA Safety Database, Air Carrier Statistics Air Carrier Financial Reports
Adopted from the *Freight Data Guide for Improved Transportation Planning (6)*		

2.3.2 Guide 2: Review of Freight Data Sources for Development of a Behavior-Based Freight Model

This report was prepared by CDM Smith in collaboration with the US Department of Transportation's Federal Highway Administration. The purpose of the report is to compile a database used in developing a behavioral freight model. The report highlights what and how data is used in freight modeling. Table 4 is taken from the report (*8*), presenting a compiled effort of understanding freight modelling.

Table 4. Data and Potential Use in Freight Modeling

Data Types	Use in Freight Modeling
Trade Statistics	Estimation of Production-Consumption (PC) matrices for the base year
	Aggregate gravity-type models for generation and distribution at the PC level
	Value-to-weight ratios (for exported and imported goods)
National Account Data	Estimation of PC matrices for the base year
	Aggregate I/O models for generation and distribution
Transportations Statistics	Estimation of OD matrices for the base year
	Estimation of gravity-type models for generation and distribution at the OD level (less appropriate than at the PC level)
	Estimation of aggregate mode choice models
	Load factors (cargo weight to vehicle capacity)
	Models for road vehicle type choice, tour formation and empty driving/load factor if micro-data is available
Shipper Surveys	Estimation of PC matrices for the base year
	Estimation of disaggregate mode choice models
	Estimation of transportation chain choice models
	Estimation of disaggregate shipment size choice models
	Estimation of disaggregate joint models (mode-shipment; mode-supplier)
	Value-to-weight ratios
Stated Preference Surveys	Estimation of disaggregate mode choice models
	Estimation of transportation chain choice models
	Estimation of route choice models
	Estimation of disaggregate shipment size choice models
	Estimation of disaggregate joint models (mode-shipment; mode-supplier)
	Monetary value of service attributes (e.g. value of time)
Consignment Bills and RFID Data	Estimation of OD matrices for the base year (possibly PC, if tags stay on after transshipment or if combination of tags are registered at transshipment)
	Estimation of disaggregate mode choice models
	Estimation of disaggregate shipment size choice models
	Estimation of disaggregate joint models (mode-shipment; mode-supplier)

Traffic Count Data	Estimation of OD matrices for the base year
	Calibration Data
Weight Data	Load factors
Network Data with Cost Functions	Direct input for the estimation of aggregate and disaggregate mode choice models and joint models
	Indirect input for aggregate distribution models
	Direct input for the estimation of route choice models
Terminal Data	Direct input for the estimation of transportation chain choice models
Adopted from *Review of Freight Data Sources for Development of a Behavior-Based Freight Model (8)*	

The report examines some public data sources while providing a general description and overview of the data they publish. A summary of data sources and information cited in the report in presented in Table 5.

Table 5. Major Freight Data Sources and Information Present in Each

Data Sources	Information
Bureau of Economic Analysis	BEA Input/Output Tables
US Census Bureau	County Business Patterns
	Longitudinal Business Database
	Annual Survey of Manufacturers
	Business Dynamics Statistics (BDS)
	Statistics of US Businesses
	Non-Employer Statistics
	Commodity Flow Survey
	Vehicle Inventory and Use Survey (VIUS)
Dun & Bradstreet	National Establishment Time-Series (NETS)
Bureau of Labor Statistics	Business Employment Dynamics (BED)
Federal Highway Administration (FHWA)	Freight Analysis Framework (FAF)
	National Highway Planning Network (NHPN)
	Vehicle Travel Information System (VTRIS)
	National Performance Management Research Dataset (NPMRDS)

HIS Global Insight	TRANSEARCH
	PIERS
Surface Transportation Board	Carload Waybill Sample
US DOT Office of the Secretary	Air Carrier Statistics
	Trans-border Freight Database
Center for Transportation Analysis	CTA Railroad Network
American Transportation Research Institute	ATRI Truck GPS Data
Adopted from *Review of Freight Data Sources for Development of a Behavior-Based Freight Model (8)*	

2.3.3 Guide 3: State-of-Practice in Freight Data: A Review of Available Freight Data in the US

This report was prepared by the Center for Transportation Research at the University of Texas at Austin and published in 2004. It presents a thorough review of available private and public freight data sources. Characteristics of available databases are reviewed emphasizing the limitations, assumptions, survey methods, data collection, update patterns, and coverage. The 31 reviewed datasets are summarized in Table 6. The information reviewed in each dataset is:

- Publishing Organization
- Description
- Data Collection Methods
- Geographic Coverage
- Limitations
- Contact Information
- Availability and Update Frequency

Table 6. Databases Reviewed in State-of-Practice in Freight Data: A Review of Available Freight Data in the US (*8*)

Databases Reviewed	
Airport Activity Statistics of Certified Route Air Carriers	Carload Waybill Sample
Commodity Flow Survey (CFS)	Directory of US Importers/Exporters
Exports from Manufacturing Establishments	Freight Commodity Statistics (FCS)
Freight Transportation and Logistics Service (FTLS)	Fresh Fruit and Vegetable Shipments by Commodities, States and Months
Grain Transportation Report	LTL (Less-Than-Truckload) Commodity and Market Flow Database

National Transportation Statistics (NTS)	Nationwide Truck Trucking Survey (NATS)
Port Import/Export Reporting Service (PIERS)	Quarterly Coal Report
Ship Movements Database	State Estimated of Truck Traffic
Transborder Surface Freight Database	TRANSEARCH
Transportation Annual Survey (Motor Freight Transportation/ Warehousing Survey)	US Air Carrier Traffic and Capacity Data by Non-Stop Segment and On-Flight Market
US Air Freight Origin Traffic Statistics	US Exports and Imports Transshipped Via Canadian Ports
US Exports of Domestic and Foreign Merchandise by State/Region/Port	US Imports/Exports of Merchandise on CD-ROM
US Waterborne General Imports/Exports and Inbound/Outbound Intrasit Shipments	Vehicle Inventory and Use Survey (VIUS)
Waterborne Commerce and Vessel Statistics	Worldwide (North American) Airport Traffic Report
World Sea Trade Service	

2.3.4 Guide 4: Implementing the Freight Transportation Data Architecture: Data Element Dictionary

This report was published by the National Cooperative Freight Research Program (NCFRP). The study is driven by the challenges endured by practitioners exploring the freight data where multiple definitions and naming schemes are adopted for similar data. Thus, it makes a concentrated effort to create a practical, web-based dictionary for freight data elements. Such work provides a harmonized topology of data across different datasets which facilitates locating similar data from different sources. The study materialized into a web-based dictionary that is published on the Bureau of Transportation Statistics website (†).

The report summarizes performance measures and potential data sources that they can be linked to. Table 7 presents these performance measures. Additionally, a compiled list of identified freight data sources is presented in Table 8.

Table 7. Performance Measures and Potential Data Sources for Each Transportation Mode

Performance Measure	Potential Data Source
Safety	
Highway	Accident Crash Reporting Systems (state level)
	Fatality Analysis Reporting System

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† Link for freight dictionary published in Bureau of Transportation Statistics: https://fdd.bts.gov/freight-data-dictionary/

	Motor Carrier Management Information System	
	Safety Measurements System	
	Safety and Fitness Electronic Records	
Rail	Federal Railroad Administration State Freight Rail Safety Statistics	
Air	Accident/Incident Data System	
	Aviation Safety Reporting System	
	Near Midair Collision System	
	Runway Safety Office Runway Incursion Database	
Ports/Marine	Marine Information for Safety and Law Enforcement	
Maintenance/Preservation		
Highway	Pavement Management System (state level)	
	National Bridge Inventory	
Rail	Rail Network Data (state level)	
Air	Airport Pavement Management System (state level)	
Ports/Marine	US Army Corps of Engineers Navigation Data Center	
Mobility, Congestion and Reliability		
Highway	Highway Performance Measurement System	
	American Transportation Research Institute - National Corridors Analysis and Speed tool (N-CAST)	
	INRIX Probe Data	
	Weigh-in-motion Data	
Rail	Association of American Railroads Railroad Performance Measures	
Air	Air Carrier Statistics	
Ports/Marine	US Army Corps of Engineers Lock Performance Measurement System	
	Maritime Safety and Security Information system	
	Port Import and Export Reporting System	
Accessibility and Connectivity		
Highway	State, Regional, or MPO-level GIS Database	
Rail	Carload Waybill Sample	
Ports/Marine	US Army Corps of Engineers Lock Performance Measurement System	

Air	Air Carrier Statistics
Commodity Flow Data	State-level Commodity Flow Models
	Freight Analysis Framework (FAF)
	Transearch Database
	Commodity Flow Survey
Environment	
Highway	Environmental Protection Agency MOVES2010
Adopted from *Implementing the Freight Transportation Data Architecture: Data Element Dictionary (9)*	

Table 8. Main Public and Commercial Freight Data Sources

Public Freight Data Source	Agency
Air Carrier Statistics	US DOT - RITA - BTS
Annual Survey of Manufacturers	US DOC - Census Bureau
Carload Waybill Sample	Surface Transportation Board
Commodity Flow Survey	US DOT - RITA - BTS
County Business Patterns	US DOC - Census Bureau
EIA Data Services	US DOE - EIA
Fatality Analysis Reporting System	US DOT - NHTSA
Federal Railroad Administration Safety Database	US DOT - FRA
Foreign Trade	US DOC - Census Bureau
Freight Analysis Framework	US DOT - FHWA
Highway Performance Monitoring System	US DOT - FHWA
Pipeline and Hazardous Material Safety Administration	US DOT - PHMSA
Maritime Statistics	US DOT - MARAD
Motor Carrier Management Information System	US DOT - FMCSA
Motor Carrier Safety Measurement System	US DOT - FMCSA
National Agricultural Statistics Service	US DA - NASS
National Highway Planning Network	US DOT - FHWA
Survey of Business Owners	US DOC - Census Bureau

Service Annual Survey	US DOC - Census Bureau
Topologically Integrated Geographic Encoding and Referencing	US DOC - Census Bureau
Transborder Freight Database	US DOT - RITA - BTS
U.S. Economic Accounts	US DOC - BEA
U.S. Waterway Data	USACE - Waterborne Commerce
Vehicle Inventory and Use Survey	US DOC - Census Bureau
Vehicle Travel Information System	US DOT - FHWA
Air Carrier Financial Reports	US DOT - RITA – BTS
Business Dynamic Statistics	US DOC - Census Bureau
Statistics of U.S. Businesses	US DOC - Census Bureau
Transportation Services Index	US DOT - RITA – BTS
U.S. Highway Statistics Series	US DOT – FHWA
Workforce Information Database (structure only)	Analyst Resource Center
Commercial Freight Data Source	**Agency**
Dun and Bradstreet Hoovers Database	Dun and Bradstreet
FleetSeek	Fleet Owner Magazine
IMPLAN Data Files	IMPLAN Group LLC
InfoUSA	InfoGroup
Intermodal Association of North America Data and Statistics	Intermodal Association of North
Lloyd's Marine Intelligence Unit	Lloyd's List Intelligence
Motor Carrier Annual Report	American Trucking Association
Port Import Export Reporting Service	United Business Media Global Trade
State of Logistics Report	Council of Supply Chain Management Professionals
Transearch	IHS Global Insight
Woods and Poole Economics	Woods and Poole Economics, Inc.
Adopted from *Implementing the Freight Transportation Data Architecture: Data Element Dictionary (9)*	

2.4. Measures Taken to Create Freight Data

In this section we look into methods taken to create freight data. The principal methodology of creating data is highlighted by the Federal Highway Administration (FHWA). Yet, some states take the initiative to create their own data.

2.4.1 FHWA Methods

The Federal Highway Administration (FHWA) highlights four main methods by which freight data can be generated or forecasted (*10*). The four methods are:

- Vehicle Classification Counts
- Roadside Intercept Surveys
- Establishment Surveys
- Travel Diary Surveys

1. Vehicle Classification Counts

This is rather an aged method which has been widely used. Essentially, traffic corresponding to each pre-defined vehicle classification is counted during a specified duration of time and location. Some of the methods for traffic counting are:

- Manual Observations
- Pneumatic Tubes
- Loop Detectors
- Videography

Classification of vehicles is essential to differentiate between trucks, automobiles, and other vehicles. The most common classification method is distinguishing vehicles by the number of axles. Yet, this might be problematic when distinguishing between trucks and vehicles with the same number of axles. However, the importance of such methods is shown by the ability to perform multiple freight-related analyses with the obtained data, such as models of the calibration of origin/destination trips, trip generation models, and time-of-day analyses.

2. Roadside Intercept Surveys

This method involves stopping trucks traversing a desired location, interviewing the drivers personally, and visually inspecting the trucks. While, this is a rather operationally demanding, it results in gathering information on origin, destination, routing patterns, company information, weight of truck, and weight and type of cargo carried. This information allows for development of origin/destination matrices, commodity flow analyses, and payload factors. Most common survey locations are those at terminal gateways (ports, airports, rail terminals) or stations (tolls, weigh stations, border crossings, inspection units).

3. Establishment Surveys

This method entails surveying key players in freight generation. These might include truck companies, retailers, trans load facilities, distribution centers, industries, owners, and officials. Unlike the road intercept method, here surveys are done through calls or mailings. Typically, information gathered allows for developing origin/destination matrices, analyzing truck trip-chaining, obtaining payload factors, and understanding land-use patterns and commodity flows.

4. Travel Diary Surveys

As the name suggests, this method requires selecting a sample group of drivers and recording a travel diary of each one. This method is especially useful when it comes to analyzing trip movement in urban areas. A modern method of generating this diary utilizes GPS technology, where receivers are attached to trucks to record and trace the truck's activity. Such methodology can aid in mapping truck routes, understanding origin/destination patterns in complex areas (urban areas), and developing trip generation estimates.

2.4.2 State Level Initiatives

In order to better understand the freight transportation system at a local level, states resort to creative techniques that provide them with a new perspective on the local freight system when data is unavailable or inappropriate. In general, these techniques can be incorporated into two main methods:

- Business Surveys & Direct Contact with the Industry
- Mathematical Disaggregation

1. Business Surveys & Direct Contact with the Industry

Typically, such techniques are favored as they present the states with an opportunity to align the industry's input with the state's transportation plan. This is achieved through soliciting feedback from the industry either from direct interviews or questionnaires. Two examples of such techniques are presented:

- State of Minnesota pilot study in 2014 "Manufacturers' Perspectives on Minnesota's Transportation System: A Pilot Study in Southwest and West Central Minnesota" (11).
- State of Wisconsin "Intermodal: Logistics and Supply Chain Survey" ‡

A. Manufacturer's Perspective on Minnesota's Transportation System: A Pilot Study in Southwest and West Central Minnesota

The study by Minnesota focused on district 8 region with the purpose of understanding the transportation priorities and challenges of freight's customers. Through this, the state aimed at addressing the transportation needs of local business and supporting their success. The methodology of the study was based on direct interviews with manufacturers in the region, a summary of the methodology is presented in the table below. This study resulted in a compiled action plan with a highlight on areas of concern and suggestions for improvement.

Table 9. Minnesota Manufacturer Study - Adopted from (11)

Methodology	Gathering an innovative cross-discipline team from Minnesota Department of Transportation (MnDOT), local economic development staff (EDOs) and transportation economic researchers
	Providing training for the team on the art of conducting interviews

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‡ Link to survey: https://www.wmc.org/uncategorized/intermodal-logistics-and-supply-chain-survey/

	Conducting interviews with manufacturers in district 8
	Directing information-sharing and planning sessions
	Hosting a feedback session with the district's city and county engineers

B. Intermodal: Logistics and Supply Chain Survey

This study published by Intermodal Subcommittee of the Wisconsin Freight Advisory Committee (FAC) aims at identifying cargo movement in Wisconsin and its sensitivity to any change in conditions. The study entails an online survey, asking companies to provide information on their imports/exports container movements, origin/destination data and volumes of containers material.

2. Mathematical Disaggregation

This technique entails breaking down components of datasets into smaller data units. Such method can be used for both numerical and non-numerical data, for example: freight tonnage (numerical), material characteristics (non-numeric). Typically, disaggregation of data is used to reveal underlying trends, insights and patterns that might not be necessarily noticeable at an aggregated level. Such technique is useful for statistical analysis across different categories, for example: analyzing trends in freight movement of grain across different transportation modes.

3. FREIGHT DATA SOURCES & MAJOR DATASETS

This chapter provides a review of the data sources investigated. This review highlights the main data sources available and major freight datasets provided. First, general public and private data sources are investigated while addressing the key datasets available in these sources. A description of every dataset is then provided, emphasizing the information presented. Afterwards, the section considers every transportation mode individually and presents the major data sources and datasets associated with each mode.

This section delves into the key freight datasets available, which are of utmost importance to most researchers and practitioners. Yet, further investigation of the data sources is presented in Chapter 4 of this report, where each data source is examined for all the information provided.

3.1 General Public Data Sources

General public data sources are those containing collective information on freight data relative to all modes of transportation. Two key general data sources are presented in Table 10.

Table 10. General Freight Datasets

General Public Data Sources	
Website	**Link**
Bureau of Transportation Statistics	*https://www.bts.gov/*
US Census Bureau	*https://www.census.gov/*

3.1.1 Bureau of Transportation Statistics

The Bureau of Transportation Statistics (BTS) is part of the USDOT and a prime supplier of trusted, thorough, and contextual statistics. BTS publications span multiple topics, modes and geography. These are presented in Table 11.

Table 11. Data Organization Inside BTS Website

Topics	Modes	Geography
Airlines and Airports	Aviation	Geospatial Portals
Energy and Environment	Highway	Maps Gallery
Freight Transportation	Rail	International
Infrastructure	Maritime and Inland Waterways	National
Passenger Travel	Pipelines	State

Safety	Transit
System Performance	Bicycles and Pedestrians
Transportation and the Economy	

BTS is responsible for yearly published statistical reports and updated datasets that serve a wide variety of transportation topics. Table 11 highlights major publications hosted in BTS website.

Table 12. Major Datasets Published by BTS with Access Links

	Information/Datasets	Access Link
1	Border Crossing Data	*https://www.bts.gov/content/border-crossingentry-data*
2	Freight Facts and Figures	*https://www.bts.gov/product/freight-facts-and-figures*
3	GIS Applications/ National Transportation Atlas	*https://www.bts.gov/maps/*
4	Intermodal Transportation Database	*https://www.bts.gov/browse-statistical-products-and-data/statistical-products/intermodal-transportation-database*
5	Local Area Transportation Characteristics for Households (LATCH)	*https://www.bts.gov/statistical-products/surveys/local-area-transportation-characteristics-households-latch-survey*
6	National Census of Ferry Operators	*https://www.bts.gov/NCFO*
7	National Transportation Statistics	*https://www.bts.gov/topics/national-transportation-statistics*
8	Port Performance Freight Statistics Program	*https://www.bts.gov/ports*
9	State Transportation Statistics	*https://www.bts.gov/browse-statistical-products-and-data*
10	TransBorder Freight Data	*https://www.bts.gov/transborder*
11	Transportation Economic Trends	*https://www.bts.gov/product/transportation-economic-trends*
12	Transportation Services Index	*https://www.transtats.bts.gov/OSEA/TSI/*
13	Transportation Statistics Annual Reports	*https://www.bts.gov/tsar/preliminary-2018*
14	Pocket Guide App	*https://www.bts.gov/browse-statistical-products-and-data/pocket-guide-transportation/pocket-guide-transportation*
15	Freight Data Dictionary	*https://fdd.bts.gov/freight-data-dictionary/*

1. Border Crossing Data

Border crossing data are gathered at ports to obtain information on entries to the US from Canadian and Mexican borders. This database provides information on the number of vehicles, trucks, passengers, containers, buses, and trains entering the US.

2. Freight Facts and Figures

These yearly published facts and figures provide a general overview of the volume and value of freight movement in the US across various transportation modes. These serve as snapshots for assessing the performance and condition of freight networks.

3. GIS Applications

These provide high quality mapping of transportation networks and data layers that can be accessed through the web or Geographic Information System (GIS) platforms. The maps allow for visualization of the different freight modes, networks, and data published by BTS.

4. Intermodal Transportation Database

This is a comprehensive database containing information on freight volumes, passenger movements, origin/destination, location of transportation facilities, and economic features that are compiled per mode of transportation. Major data available in this dataset are:

- Freight Analysis Framework (FAF)
- Commodity Flow Survey
- Transborder Freight Data
- Airline Passenger Origins and Destinations
- American Travel Survey

5. Local Area Transportation Characteristics for Households[§]

This platform provides data on average weekday household person trips, vehicle trips, person-miles traveled, and vehicle-miles traveled (per day).

6. National Census of Ferry Operators (NCFO)

The biennial survey gathers information on ferry routes, vessels, passengers, and vehicles.

7. National Transportation Statistics

A quarterly published report that provides information on the condition, performance, and use of the transportation network. Data published in this report are summary data on fatalities, incidents, and safety records per transportation mode. The report also delves into the environmental and economic conditions.

8. Port Performance and Freight Statistics Program

This annually published report provides performance metrics for major ports in the US, including tonnages, commodities, and capacity.

[§] This database does not report freight data

9. State Transportation Statistics

State transportation statistics provide a series of reports highlighting the freight movements, vehicle movements, safety reports, infrastructure, economic, and environment aspects for every state.

10. TransBorder Freight Data

This database contains all freight flow data that is imported or exported, sorted by commodity type and modes of transportation, including rail, highway, pipeline, air, and ports.

11. Transportation Economic Trends

This yearly published report highlights the economic role of transportation in the US through presentation of economic trends and activities relative to all transportation modes.

12. Transportation Services Index

This seasonally published index measures freight and passenger movements. The data provided is collected from government and private sources.

Freight transportation service index provides data on:

- Aviation Tonnage Miles
- Truck Tonnage
- Rail Carloads
- Waterborne Traffic (Tonnage Carried on US Waterways)
- Pipeline Movement (Petroleum Movement, Gas Consumption)

Passenger transportation service index provides data on:

- Transit Ridership
- Aviation Passenger Miles
- Rail Passenger Miles

13. Transportation Statistics Annual Report

Yearly published document summarizing transportation performance, use, condition, freight movement, transportation safety, transportation economics, and environmental impacts.

14. Pocket Guide App

Mobile app developed by BTS to provide a quick guide on transportation statistics.

15. Freight Data Dictionary

Provides precise definitions for freight data elements and recommendations on using freight data.

3.1.2 US Census Bureau

The US Census Bureau is the nation's most reliable statistical agency, providing data through censuses, surveys, and estimates. At the freight level, the Census Bureau is responsible for essential surveys summarized in Table 13.

Table 13. Major Datasets Published by Census Bureau with Access Links

	Information/Datasets	Link
1	Annual Survey of Manufacturers	*https://www.census.gov/programs-surveys/asm.html*
2	Commodity Flow Survey	*https://www.census.gov/programs-surveys/cfs.html*
3	County Business Patterns	*https://www.census.gov/programs-surveys/cbp.html*
4	Foreign Trade	*https://www.census.gov/foreign-trade/index.html*
5	Service Annual Survey	*https://www.census.gov/programs-surveys/sas.html*
6	Survey of Business Owners	*https://www.census.gov/programs-surveys/sbo.html*
7	Topologically Integrated Geographic Encoding and Referencing	*https://www.census.gov/geo/maps-data/data/tiger.html*
8	Vehicle Inventory and Use Survey (VIUS)	*https://www.census.gov/mp/www/cat/business_and_industry/vehicle_inventory_and_use_survey_reports.html*
9	Business Dynamic Statistics	*https://www.census.gov/ces/dataproducts/bds/*
10	Statistics of US Businesses	*https://www.census.gov/programs-surveys/susb.html*

1. Annual Survey of Manufacturers

This survey contains thorough information on the manufacturing system. It provides data on:

- Statistics for Industry Groups and Industries (total manufacturing establishment statistics)
- Value Product Shipments
- Geographic Area Statistics for All States Manufacturing
- Employment, Worker Hours, Inventories, Costs, Expenditures, Energy

2. Commodity Flow Survey

Contains data on the flow of materials along all transportation modes. The survey provides data on:

- Materials/Goods Distance Distribution
- Origin/Destination Data Sorted by Mode, Value and Tonnage
- Origin/Destination Data for Hire and Private Trucks

Typically, this survey is conducted in years ending with 2 or 7.

3. County Business Patterns

Provides economic evaluation data for businesses across the US. Typical data published are:

- Number of Establishments, Employment – Size Class and Payroll for US/States/Metropolitan Areas/Zip Code

4. Foreign Trade

The official database for imports/exports in the US, providing data on:

- Merchandise Trade
- State/Country/Custom District/Port Export and Import Data

5. Service Annual Survey

Provides estimates for revenues, expenses, tax status, and inventories for employer and non-employer firms.

6. Survey of Business Owners

The only comprehensive database on selected demographic and economic characteristics for businesses and business owners.

7. Topologically Integrated Geographic Encoding and Referencing (TIGER)

TIGER provides a platform that merges geographic data (state boundaries, road networks, river systems, and cities) with census data (census tracts and census block groups).

8. Vehicle Inventory and Use Survey (VIUS)[**]

The survey gathers information on the characteristics of truck populations, capturing the physical and operational features.

Operational:

- Commodity categories
- Annual mileage
- Transport destination
- Accidents/Incidents

Physical:

- Gross vehicle weight
- Length
- Number of axles
- Type

9. Business Dynamic Statistics

Gives insights on the dynamics of business change through analyzing data on job creation, job destruction, business development, and age and size of businesses.

[**] Latest version of this survey dates back to 2002. Since then, the survey is no longer done.

10. Statistics of US Businesses

Annual summary data on business establishments (both national and subnational), and employees available sorted by geographic areas.

3.2 General Private Datasets

Along with public governmental sources, some private establishments publish regular datasets deemed valuable for freight analysis. Table 14 presents these private data sources.

Table 14. General Private Datasets with Access Links

	Data Source	Access Link
1	TRANSEARCH	*http://www.ihsglobalinsight.com/ProductsServices/ProductDetail838.htm*
2	Lloyd's Maritime Information Services	*https://www.lloydslistintelligence.com/*
3	FleetSeek	*https://fleetseek.com/*

11. TRANSEARCH

TRANSEARCH is a highly-valued commercial source for its exclusivity in grouping multiple freight traffic data into a single framework that can be adopted to inform policies and decisions. Essentially, data compiled in TRANSEARCH is adopted from public sources (Census Bureau, Surface Transportation Board, US Army Corps of Engineers, Bureau of Transportation Statistics) and private industry data. Consequently, it creates a thorough framework that captures data as:

- Outbound/Inbound and Intra/Through Shipments
- Traffic Volumes Along Lanes and Corridors
- Tonnages, Value, and Units of Shipment
- Air, Rail, Marine, and Highway Transportation Modes
- Commodities
- Cross-Border Trade

12. Lloyd's Maritime Information Services

A private source providing data on national and international maritime trade. Data is compiled from several public and private sources. Accordingly, this source provides information on:

- Vessel Movements
- Global Ship Tracking Intelligence
- Comprehensive Description of Ports, Ships, and Companies
- Incidents, Accidents, and Fatalities

A commercial database serving as a reference for data related to truck fleets. The database provides information on:

- Information on truck fleets operated by private companies
- Carrier routing: geographic and demographic information on trucking companies

3.3 Waterway Freight System Data Sources

Data on the waterway freight system is provided by four major suppliers shown in table 14. These websites host reliable datasets used in analyzing, evaluating, and assessing the performance of the waterway freight system. A list of major datasets for waterway freight is presented in table 15.

Table 15. Waterway Freight System Major Data Sources

Waterway Freight Data Sources	
Website	**Link**
Maritime Administration (MARAD)	*https://www.maritime.dot.gov/*
US Army Corps of Engineers - Waterborne Commerce Statistics Center	*https://www.iwr.usace.army.mil/about/technical-centers/wcsc-waterborne-commerce-statistics-center/*
Waterways Council	*http://waterwayscouncil.org/*
American Association of Port Authorities	*https://www.aapa-ports.org/*

Table 16. Waterway Freight System Major Datasets with Access Links

	Information/Dataset	Reporting Source	Access Link
1	Maritime Statistics	MARAD	*https://www.maritime.dot.gov/data-reports/data-statistics/data-statistics*
2	Waterborne Commerce Statistics	US Army Corps of Engineers - Institute for Water Resources	*https://www.iwr.usace.army.mil/about/technical-centers/wcsc-waterborne-commerce-statistics-center/*
3	Lock Performance and Monitoring Statistics	US Army Corps of Engineers - Institute for Water Resources	*http://corpslocks.usace.army.mil/lpwb/f?p=121:1:12032403789997:::::*
4	State Waterway Traffic Profiles	Waterways Council	*http://waterwayscouncil.org/waterways-system/*
5	Port Industry Statistics	American Association of Port Authorities	*https://www.aapa-ports.org/advocating/landing.aspx?ItemNumber=21148*

1. Maritime Statistics

Annual report that aggregates data of maritime statistics collected by US Department of Transportation Maritime Administration. Typical data found in this report is:

- Fleet statistics for top 25 merchant fleets
- US waterborne foreign trade
- Vessels calls at ports
- Oil vessel trade

2. Waterborne Commerce Statistics

The Waterborne Commerce Statistics Center has the only comprehensive framework providing exhaustive data on:

- Commodities: type, value, and tonnage
- Vessels: trips, direction, type
- Waterway network and infrastructure

3. Lock Performance and monitoring System (LPMS)

LPMS is the only source providing data on vessel movements along waterway infrastructures. The data is updated every 15 minutes and summary sheets are published annually. Information provided is:

- Number of vessels, type, direction, and description
- Lock and dam infrastructure network
- Waterway, marine, rivers, and lakes network
- Delay experienced by vessels
- Annual scheduled/unscheduled unavailability time of locks and dams
- Commodities transferred by vessels
- Lock status and queue reports

4. State Waterway Traffic Profiles

Adopted from waterborne commerce statistics, these annually published reports provide a general overview of the states' waterway network. Typical information present:

- Waterway freight facts and figures per state
- Type and value of commodities transferred
- Waterway and infrastructure network for each state

5. Port Industry Statistics

This dataset is famed for providing maritime statistics reports on ports around the world, collected from public authorities around the world. For US states, the reports are taken from the US Maritime Administration and US Army Corps of Engineers.

3.3.1 Available Training

Training programs related to waterway or maritime systems are scarce, yet a well-known training program is provided by Lloyd's Maritime Academy. The training program constitutes several courses providing general knowledge on maritime systems. A list of course subjects provided is presented in Table 17.

Table 17. Available Training for Waterway Freight System

Course Subject	Link
Big Data Management in Shipping	*http://www.lloydsmaritimeacademy.com/event/big-data-in-shipping-distance-learning-course*
MBA Shipping and Logistics	*http://www.mba4shipping.com/*
Maritime Business Management	*http://www.lloydsmaritimeacademy.com/event/maritime-business-management-distance-learning-course*
Marine Surveying	*http://www.lloydsmaritimeacademy.com/event/marine-surveying-distance-learning-course*
Ports and Logistics	*http://www.lloydsmaritimeacademy.com/event/kpis-for-ports-terminals-distance-learning-course*
Ship Operations	*http://www.lloydsmaritimeacademy.com/event/ship-operations-distance-learning-course*
Maritime Environmental Management	*http://www.lloydsmaritimeacademy.com/event/maritime-environmental-management-distance-learning-course*

3.4 Highway Freight System Data Sources

Exhaustive databases are available for highway freight data. Most of the sources are available through the USDOT. These sources are responsible for major datasets that are at the core of freight-related analysis. The following Table 18 and Table 19 present main data sources for highway freight and major datasets, respectively.

Table 18. Highway Freight System Major Data Sources

Highway Freight Data Sources	
Website	**Access Link**
Federal Highway Administration	*https://www.fhwa.dot.gov/*
American Transportation Research Institute	*http://atri-online.org/*
National Highway Traffic Safety Administration	*https://www.nhtsa.gov/*
Federal Motor Carrier Safety Administration	*https://www.fmcsa.dot.gov/*
National Transportation Safety Board	*https://www.ntsb.gov/Pages/default.aspx*
American Trucking Association	*https://www.trucking.org/*

Table 19. Highway Freight System Major Datasets with Access Links

	Information/Dataset	Reporting Source	Access Link
1	Highway Performance Monitoring System	FHWA	*https://www.fhwa.dot.gov/policyinformation/hpms.cfm*
2	Freight Analysis Framework	FHWA	*https://ops.fhwa.dot.gov/freight/freight_analysis/faf/*

3	National Highway Planning Network	FHWA	_https://www.fhwa.dot.gov/planning/processes/tools/nhpn/_
4	National Highway Freight Network	FHWA	_https://ops.fhwa.dot.gov/freight/infrastructure/nfn/_
5	National Performance Management Research Data Set	FHWA	_https://ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/vpds/npmrdsfaqs.htm_
6	Motor Carrier Safety Measurement System	Federal Motor Carrier Safety Administration	_https://ai.fmcsa.dot.gov/SMS/Tools/Downloads.aspx_
7	Motor Carrier Management Information System	Federal Motor Carrier Safety Administration	_https://ask.fmcsa.dot.gov/app/mcmiscatalog/mcmishome_
8	Fatality Analysis Reporting System	National Highway Traffic Safety Administration	_https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars_
9	American Trucking Association Motor Carrier Annual Report	American Trucking Association	_https://www.atabusinesssolutions.com_

1. Highway Performance Monitoring System (HPMS)

HPMS is an annually published report that provides data on the extent, condition, performance, use, and operational characteristics of all national highways. Data provided are submitted by states and the FHWA. The following information is published in this report:

- Full extent of the road network and national highway network
- Summaries on travel, system length, and vehicle classifications. These summaries include statewide summaries, vehicle summaries, urban summaries, and county summaries
- Spatial reference using the Linear Reference System (LRS)

2. Freight Analysis Framework (FAF)

FAF is one of the most used freight databases. It creates a comprehensive understanding of freight movement along states, areas, and transportation modes. FAF integrates data from Commodity Flow Survey (CFS), trade data, exports/imports, waybill sample, and public/private sectors. The framework is presented in a downloadable dataset and as interactive web-based data.

Essentially, FAF provides a thorough representation of freight flows and trends in the US. The latest database version, FAF4, presents estimates for tonnage, value, and ton-miles sorted by region, origin/destination, mode, and commodity type. This database is updated every five years.

3. National Highway Planning Network (NHPN)

NHPN is a geospatial network database representing the US highway network (over 450,000 miles). The road network presented in NHPN is referenced from:

- National Highway System (NHS)
- Eisenhower Interstate System
- Strategic Highway Network (STRAHNET)
- National Highway System intermodal connectors

- Arterial and rural minor arterials

4. National Highway Freight Network (NHFN)

NHFN is a geospatial network database that merges subsystems of roadways into one framework. Following are the subsystems contained inside NHFN:

- Primary Highway Freight System (PHFS): This system contains the most critical highway portions of the US freight transportation system. The network contains both Interstate and non-Interstate roads.
- Other Interstate portions not on the PHFS
- Critical Rural Freight Corridors (CRFCs)
- Critical Urban Freight Corridors (CUFCs)

5. National Performance Management Research Data Set (NPMRDS)

NPMRDS provides high resolution traffic time and speed data collected at 5-minute intervals. The dataset is updated monthly and contains the following data:

- Travel-times in 5-minute intervals
- National Highway System (Interstates and US Highways)
- Traffic Message Channel links (TMC)
- Freight and passenger data
- GIS shape file

6. Motor Carrier Safety Measurement System

The Safety Measurement System is a framework that describes the safety performance of motor carriers. The dataset is updated monthly and contains three major files:

- Summary results of active interstate carriers and active intrastate hazmat motor carriers
- Summary results for active intrastate non-hazmat motor carriers
- Motor carrier census information

7. Motor Carrier Management Information System

This information system is a more thorough dataset for safety fitness, which is updated biweekly. The system presents data on:

- All crash data reported by the FMCSA
- Census data on companies
- All inspection actions
- Comprehensive summary of carriers' national safety performance

8. Fatality Analysis Reporting System

This database acts as a census for reporting all crashes occurring across the US. The crash data are reported yearly with thorough aggregation on vehicles, persons, factors, and description of incidents.

9. American Trucking Association Motor Carrier Annual Report

While this dataset is private, it is only provided to members of American Trucking Association. The report summarizes data on:

- Total freight truckload
- Refrigerated carrier freight data
- Tank carrier freight data
- Small/large carrier freight data

3.4.1 Available Training

Several training options are available for the highway freight system, aiming at familiarizing participants with freight transportation and planning. A compiled list of renowned trainings are provided in Table 20.

Table 20. Available Training for the Highway Freight System

Training Subject	Type	Organization	Access Link
FHWA Workshop	Presentation	FHWA	*https://ops.fhwa.dot.gov/freight/fpd/training/presentations/epsfp/index.htm*
Freight Seminars	Seminars	FHWA	*https://ops.fhwa.dot.gov/freight/fpd/talking_freight/index.htm*
Freight and Transportation Logistics	Course	National Highway Institute	*https://www.nhi.fhwa.dot.gov/training*
Transportation Performance Management	Course	National Highway Institute	
Transportation Planning	Course	National Highway Institute	

3.5 Railroad Freight System Data Sources

Most of datasets associated with railroad freight system are available through federal administrations. Table 21 and Table 22 present the main data sources and important datasets, respectively.

Table 21. Railroad Freight System Major Data Sources

Railroad Freight System	
Website	**Access Link**
Federal Railroad Administration	*https://railroads.dot.gov/*

Surface Transportation Board	_https://www.stb.gov/stb/index.html_
Association of American Railroads	_https://www.aar.org/_
Bureau of Transportation Statistics - Rail	_https://www.bts.gov/topics/rail_

Table 22. Railroad Freight System Major Datasets with Access Links

	Information/Dataset	Reporting Source	Access Link
1	Carload Waybill Sample	Surface Transportation Board	_https://www.stb.gov/stb/industry/econ_waybill.html_
2	Safety Database	Federal Railroad Administration	_https://safetydata.fra.dot.gov/OfficeofSafety/default.aspx_

1. Carload Waybill Sample

This yearly published database serves as the most important data file for the railroad freight system. The database captures information on:

- Rail traffic
- Commodities
- Origin/destination flows
- Revenue
- Routing information

Because of the sensitivity of information provided, access is restricted to appliers[††] and prior approval by the Surface Transportation Board.

2. Safety Database

The railroad safety database presents thorough data on all compiled incident reports. The data is updated monthly and presents information on:

- Rail accidents and incidents
- Grade crossing inventory and accidents
- Railroad-related injuries and fatalities
- Monthly railroad summary statistics on man-hours worked and train-miles traveled

3.6 Aviation Freight System Data Sources

While the aviation freight system is yet to mature, data availability is gaining ground with public and private sources hosting major datasets. Table 23 and Table 24 present the main data sources for the aviation freight system and major databases respectively.

[††] Appliers for Carload Waybill data include: federal agencies, states, transportation practitioners, consulting firms and law firms in specific proceedings.

Table 23. Aviation Freight System Major Data Sources

Aviation Freight System	
Website	**Link**
Bureau of Transportation Statistics - Airlines and Airports	*https://www.bts.gov/topics/airlines-and-airports-0*
Federal Aviation Administration	*https://www.faa.gov/*
Airlines for America	*http://airlines.org/*

Table 24. Aviation Freight System Major Datasets with Access Links

	Information/Datasets	Reporting Source	Access link
1	Air Carrier Statistics	Bureau of Transportation Statistics	*https://www.bts.gov/explore-topics-and-geography/topics/air-traffic-data*
2	Accidents and Incidents Reports	Federal Aviation Administration	*https://www.faa.gov/data_research/accident_incident/*

3. Air Carrier Statistics

Air Carrier Statistics is an exhaustive database compiled by BTS containing both domestic and international data on:

- Seat-miles
- Load factors
- Passengers
- Air freight
- Revenue passenger-miles
- Seasonal data

The data could be downloaded or viewed in an interactive, web-based, customizable table format.

4. Accidents and Incidents Reports

This database is compiled with coordination from the National Transportation Research Board. The following is a view of the data published:

- Air traffic fatalities, incidents, and accidents
- Data, characteristics, condition, and description of incidents
- Runway incursion data
- Investigations

3.7 Pipeline Freight System Data Sources

Data on the pipeline freight system are summarized in a few sources that are dedicated to this transportation mode. Table 25 and Table 26 present the major data sources and datasets, respectively.

Table 25. Pipeline Freight System Major Data Sources

Pipeline Freight System	
Website	**Link**
Pipeline and Hazardous Materials Safety Administration (PHMSA)	*https://www.phmsa.dot.gov/*
National Pipeline Mapping System	*https://www.npms.phmsa.dot.gov/*
Energy Information Administration	*https://www.eia.gov/*

Table 26. Pipeline Freight System Major Datasets with Access Links

	Information/Datasets	Reporting Source	Access link
1	PHMSA Data	Bureau of Transportation Statistics and Pipeline and Hazardous Materials Safety Administration	*https://portal.phmsa.dot.gov*

1. PHMSA Data

This dataset is prepared by BTS in collaboration with PHMSA, presenting compiled information on:

- Pipeline mapping network: mileage and facilities
- Incident and accident reports

While this dataset presents a one-stop shop, registration is required to access the full extent of data on the website.

4. FREIGHT DATA ANALYSIS

The realization of freight transportation data is only of significance once transformed into informed decisions at the planning, research, and investment levels. Practitioners and researchers have historically utilized freight data to perform various analyses. But, with the development of the transportation system, more systematic and exhaustive analysis is needed. Essentially, freight analysis techniques differ in scope where the focus could be on understanding the market or economy, informing planning decisions, developing safety or regulation measures, identifying patterns and trends, and modeling the scientific behavior. Table 27 presents potential analyses of major freight datasets that could help practitioners recognize the techniques and usage of each dataset.

Table 27. Potential Freight Analysis for Major Datasets

Dataset	Potential Analysis
Freight Analysis Framework (FAF) + National Performance Management Research Data Set (NPMRDS) + National Highway Freight Network (NHFN)	Analyze relationships between freight movement and transportation system
	Locate and asses the severity of bottlenecks and congestion areas
	Build time-space diagrams to identify the propagation of queue, speed variations, and temporal traffic conditions
	Asses the economic impact and value of freight road networks
	Determine safety risks, environmental problems, and energy consumptions
	Identify major freight corridors
Highway Performance and Monitoring System (HPMS)	Inform decisions on fund allocations
	Track the condition and performance of highway system
National Highway Freight Network (NHFN)	Maintain information on the road network to conduct analysis on GIS
Fatality Analysis System	Assess safety performance of transportation modes
	Locate safety risks/hazards on the transportation network
	Identify causes of incidents/accidents
	Perform cost/benefit analysis for safety regulation initiatives
	Understand temporal trends in safety
	Develop regulations for safety issues aimed at eliminating or alleviating safety hazards
Vehicle Inventory and Use Survey (VIUS) + Vehicle Travel Information System (VTIS)	Analyze the growth of transportation
	Determine the environmental impact of vehicles
	Understand safety risks
	Help in pavement design and truck travel studies

Waterborne Commerce Statistics + Lock Performance and Monitoring Statistics (LPMS)	Analyze trade, traffic, and commodity patterns along waterway networks
	Identify the infrastructure along waterway networks (locks and dams)
	Locate and assess the severity of queuing at locks and dams
	Evaluate the economic impact of delays at locks and dams
	Identify major freight marine corridors
	Relate the causes of delay with operational conditions of locks and dams
Carload Waybill Sample	Analyze freight movement
	Identify trends in commodity change and economic value
	Identify safety risk
Pipeline and Hazardous Material Safety Administration	Track and locate incidents, accidents, fatalities, and hazardous material spills
	Plan inspections and safety regulations
	Asses the overall performance
Air Carrier Statistics	Understand traffic patterns
	Determine the flow of passengers, freight, and cargo
	Assess performance and safety issues
	Identify market chair and penetrations of air carrier companies
Commodity Flow Survey (CFS)	Analyze spatial and temporal trends in commodity flow
	Establish relationships between commodity flow and vehicle flow across infrastructure
	Prepare forecasts for commodity movement
	Inform management and investments decisions
Service Annual Survey	Prepare national income and product account
	Develop pricing and expenditure indices
	Analyze and forecast industry trends
Foreign Trade	Assess market performance and trends in economic activities
	Calculate measures used to identify GDP
	Inform policy and regulation decisions on imports/exports
County Business Survey	Identify trends in economic activity and changes
	Analyze economic activity of small business and develop budgets
Annual Survey of Manufacturers	Calculate productivity measures used to identify GDP and GNP

5. FREIGHT DATA INVENTORY

This section generates a data primer that provides an overview of all the data sources for each freight system. The data primer is a comprehensive effort to group all data into one source. It is developed to provide an in-depth view of all sources available for transportation modes. Researchers and practitioners who are looking for information and data particular to a certain transportation mode will find this beneficial as a comprehensive, compiled data primer presented in a "one-stop-shop" fashion. Instructions on how to access the data and what to expect is presented as well.

5.1 Data Inventory Framework
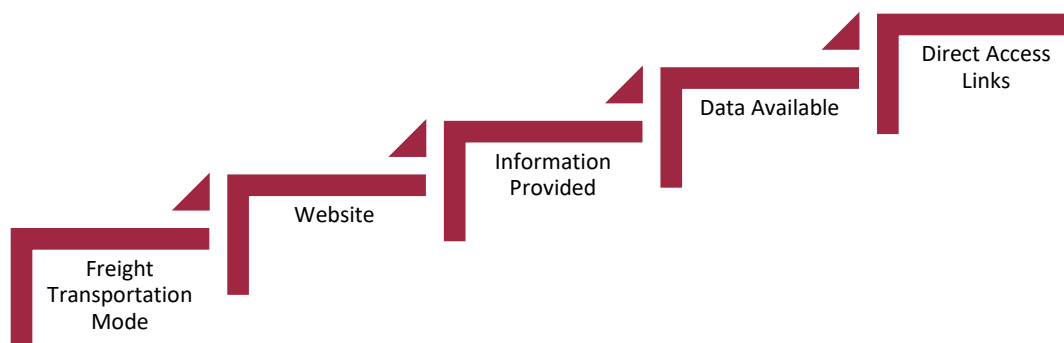
Figure 1. Data Inventory Framework

The data inventory is organized as follows:

- First, data are categorized according to the transportation modes: waterway, aviation, pipeline, railroad, and highway
- Then, data tables are compiled for major data sources relative to the transportation mode
- For every data source, a thorough review of all data and information published within the source is shown
- Information provided present an overview of what material is published in the data source
- Data available presents exactly what data is published under each information category
- Data path locates the information inside the website while sub-link provides direct access to the data
- General characteristics on latest updated data, privacy, data format and category is shown

5.2 Waterway Freight System

5.2.1 US Army Corps of Engineers – Institute for Water Resources

Waterway Freight System							
Website				Link			
US Army Corps of Engineers - Institute for Water Resources				*https://www.iwr.usace.army.mil/*			
Directory for Data Center				*https://www.iwr.usace.army.mil/About/Technical-Centers/*			
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Locks & Dams Performance Monitoring	Location, Status, Performance, Tonnages	Home\About\Technical Center\NDC	*http://corpslocks.usace.army.mil/lpwb/f?p=121 :1:9091652518263:::::*	2016	Public	Excel	Reports
	Live Vessel Data						Statistics
Waterways Monthly Indicators	Overall Tonnages per month	Home\About\Technical Center\NDC	*https://usace.contentdm.oclc.org/utils/getfile/co llection/p16021coll2/id/2668%20*	2018		PDF	
Foreign Waterborne Transportation Statistics	Foreign Cargo, Inbound & Outbound Vessels	Home\About\Technical Center\NDC	*https://usace.contentdm.oclc.org/digital/collecti on/p16021coll2/id/2778%20*	2018		Text	Statistics
Waterborne Commerce Statistics	Commodity Tonnages & Value, Traffic,	Home\About\Technical Center\WSCS	*https://www.iwr.usace.army.mil/About/Technic al-Centers/WCSC-Waterborne-Commerce-Statistics-Center/*	2017		PDF	

Notes and Recommendations
• The lock performance monitoring system is an interactive web-based sorting system, where the user can search and sort for information needed.   • Water commerce statistics system includes several sub data that can be accessed by clicking on the green tabs. The system then directs you towards a search engine where you can locate the needed data. A description of the data is also provided once you click on it.

5.2.2 Waterways Council

Waterway Freight System							
Website				Link			
Waterways Council				*http://waterwayscouncil.org/*			
Directory for Data Center				*http://waterwayscouncil.org/waterways-system/*			
Directory for News Center				*http://waterwayscouncil.org/latest-news/*			
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
State Waterway Traffic Profiles	Waterway map with docks, Commodity value Distribution, Tonnage distribution, State Locks Tonnages, Port Tonnages Value, River & Coastal Commodity Traffic	Waterways System\State Waterway Traffic	*http://waterwayscouncil.org/waterways-system/*	2016	Public	PDF	Reports Statistics
Lock & Dams of Upper Mississippi	Location, Name, Description	Waterways System\Locks Dams	*http://waterwayscouncil.org/waterways-system/*	2015			Information
Tonnages Shipped/Received by State	Domestic & Foreign Total Tonnage	Waterways System\ Which States Move the Most	*http://waterwayscouncil.org/waterways-system/*				Statistics
Economic Impact on States	Revenue Impact, Jobs Supported	Waterways System\US Chamber of Commerce	*https://www.uschamber.com/programs/lets-rebuild-america/waterways-work-america*				Reports Statistics
Outreach Lock Profiles	Lock Information, Tonnage Distribution, Economic Value, Unavailability & Delay, Commodities	Waterways System\Project Profiles	*http://waterwayscouncil.org/waterways-system/*	2016			Reports Information

Notes and Recommendations
• The data provided here are summary data adopted from US Army Corps of Engineers.

5.2.3 American Association of Port Authorities

Waterway Freight System							
Website				**Link**			
American Association of Port Authorities				*https://www.aapa-ports.org*			
Directory for Data Center				*https://www.aapa-ports.org/advocating/landing.aspx?ItemNumber=21148&navItemNumber=20775*			
Directory for News Center				*https://www.aapa-ports.org/empowering/landing.aspx?ItemNumber=21207&navItemNumber=20763*			
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Exports, Jobs & Economic Growth	General Information on Economic Value	Home\Advocates for US Ports\ Ports Value to US Economy	*https://www.aapa-ports.org/advocating/content.aspx?ItemNumber=21150*	2014		Text	Reports Information
Port Industry Statistics	Ports Facility Security Fees	Home\Advocates for US Ports\ Ports Value to US Economy\Statistics	*http://aapa.files.cms-plus.com/Statistics/PORT%20SECURITY%20FEES%20AT%20U.S.%20PORTS.14.pdf*	2016	Public	Excel/ PDF	Reports Statistics
	Sea Trade by Continent and Region						
	Container Traffic						
	Cruise Traffic						
	Waterborne Foreign Trade by Customs District						
	World Tanker Fleet						
	World Bulk Carrier						
	World Port Ranking						
	World Cellular Containership						
Port Maps & Multimedia	Member Ports Information	Home\Advocates for US Ports\Ports Value to US Economy\Port Maps & Multimedia	*https://www.aapa-ports.org/unifying/content.aspx?ItemNumber=20921*	NA		Web Map	Visuals Maps

Notes and Recommendations
• Some reports are only available for members.

5.2.4 USDOT Maritime Administration

Waterway Freight System								
Website				Link				
USDOT Maritime Administration				*https://www.maritime.dot.gov/*				
Directory for Data Center				*https://www.marad.dot.gov/resources/data-statistics/*				
Directory for News Center				*https://www.maritime.dot.gov/calendarview/month*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
US Waterborne Foreign Trade	Total Metric Tons per Country	Home\Latest Maritime Statistics\MARAD Open Data	*https://www.maritime.dot.gov/data-reports/data-statistics/data-statistics*	2016	Public	Excel	Report Statistics
Fleet Statistics	US Flag Privately Owned Fleet; Vessel List, In and Out List, Consolidated List	Home\Latest Maritime Statistics\Fleet Statistics		2018		Excel/PDF	
	US Integrated and Articulated Tug-Barge Units						
	Merchant Fleets of the World Report						
	Top Flags of Registry						
Maritime Security	Security Fleet List	Home\Latest Maritime Statistics\ MARAD US Flag Fleet				Excel	
US Flag Carriers	Contact Information						
US Flag Agriculture Fleet	Vessels Transporting Agriculture					PDF	
Vessel Inventory Reports	Vessel Name, Ship type, Gross Tons, Deadweight tons	Home\Latest Maritime Statistics\Historic Fleet Reports					
Trade Statistics	Foreign Container Trade by US Customs Ports	Home\Latest Maritime Statistics\Trade Statistics		2017			
	Foreign Trade by Trading Partners						
Historic Trade Statistics	Containerized Cargo Statistics	Home\Latest Maritime Statistics\Historical Trade Statistics		1983		Excel	
OPA 90 Statistics	Coastal Tank Vessels	Home\Latest Maritime Statistics\OPA 90 Statistics		2010			
	Oil Pollution						
	Tank Vessels Trade						
Cruise Statistics	Vessels, Capacity, Traffic	Home\Latest Maritime Statistics\Cruise Statistics		2012			

Additional Resources on Economic Indicators for Water Transportation	
Directory for Websites	Home\Latest Maritime Statistics\Related Links and Macro Economic Indicators
Information Provided	Link
Evaluation of Maritime Policy	*http://www.ihsglobalinsight.com/Highlight/HighlightDetail15614.htm*
US Census for Foreign Trade Statistics	*https://www.census.gov/foreign-trade/index.html*
National, State and Country Employment in Water Transportation	*https://data.bls.gov/PDQWeb/en*

Notes and Recommendations
• All the above data are located in the sub-link provided in the Waterway Freight System table; navigate the sub-link to locate the data. • The Additional Resources are present in the Maritime Administration website but published by other entities.

5.3 Highway Freight System

5.3.1 Federal Highway Administration

Highway Freight System							
Website			Link				
US DOT Federal Highway Administration			*https://www.fhwa.dot.gov/*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Office of Highway Policy Information			*https://www.fhwa.dot.gov/policyinformation/*				
			Directory for News	*https://www.fhwa.dot.gov/policyinformation/latestnews.cfm*			
State Statistics General Data	Population, Land Area, Mileage, Fuel ,Drivers, Vehicles	Home\Data Links	*https://www.fhwa.dot.gov/policyinformation/*	2015	Public	PDF	Presentation
Infrastructure Data and Information	Highway Inventory: Network-Links-Nodes		*https://www.fhwa.dot.gov/policyinformation/hpms/shapefiles.cfm*	2017		Shape files	Visuals Maps
	Highway Pavement (IRI, PSR, Rutting, Surface Type, Faulting)		*https://www.fhwa.dot.gov/policyinformation/hpms/shapefiles.cfm*	2017		Shape files	
	National Bridge Inventory and Data		*https://www.fhwa.dot.gov/bridge/nbi/ascii.cfm*	2017		Text	Data
	Highway Performance Monitoring System Field Manual		*https://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/*	2016		PDF	Manual
Vehicles (Cars, Trucks) Travel Data and Information	Annualized Link Level Vehicle Travel Data and Parameters		*https://www.fhwa.dot.gov/policyinformation/hpms/shapefiles.cfm*	2017		Shape files	Visuals Shape files
	Traffic Volume and Location Data		*https://www.fhwa.dot.gov/policyinformation/tables/tmasdata/*	2017		Excel	Data
	Traffic Monitoring Guide		*https://www.fhwa.dot.gov/policyinformation/tmguide/*	2016		PDF	Manual
	Vehicle Miles Traveled (Forecasting 30 Years)		*https://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_forecast_sum.cfm*	2018		PDF	Report
	Vehicle Miles Traveled Forecasting Method		*https://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_model_dev.cfm*	2018		PDF	
	Traffic Volume Trends		*https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm*	2018		PDF/Excel	Data

Category	Subcategory	Path	URL	Year	Access	Format	Type
Passengers (Multimodal) Travel Data and Information	National Household Travel Survey (NHTS)		*https://nhts.ornl.gov/downloads*	2017		All	
	National Household Travel Survey (NHTS) - User Guide		*https://nhts.ornl.gov/documentation*	2017		PDF	Report
	Passenger Travel Origin - Destination Data (2008-2040)		*https://www.fhwa.dot.gov/policyinformation/analysisframework/01.cfm*	2008		Excel	Data
	Bus Data		*https://www.fhwa.dot.gov/policyinformation/analysisframework/03.cfm*	2014		PDF/ Excel	Report
	Traveler Analysis Framework		*https://www.fhwa.dot.gov/policyinformation/analysisframework/02.cfm*	2008		PDF	Report
Freight Movement Data and Information	Truck Weight Data (W-Tables)		*http://our.dot.gov/office/fhwa.policy/HPPI/Working%20Documents/Generating%20he%20Weight%20Data%20(W-Tables)*	2016		Excel	Data
	Freight Analysis Framework (FAF4) Data		*https://www.bts.gov/faf*	2016		Excel	Data
Highway Statistics Series	Annual Report on: Motor Fuel, Registration, Licenses, Taxation, Mileage, Finance	Home\Policy Governmental Affairs\ Highway Policy Information	*https://www.fhwa.dot.gov/policyinformation/statistics.cfm*			PDF	Report
Motor Fuel	Amount of Gallons Taxed by Each State		*https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm*			PDF/Excel	Data
Highway Performance Network	TMC, NPMRDS		*https://www.fhwa.dot.gov/policyinformation/tables/performancenetwork/*	2018		Shape files	Visuals Maps
Traffic Monitoring Location Data	Count Stations Locations		*https://www.fhwa.dot.gov/policyinformation/tables/trafficmonitoring/*				
Toll Facilities	Toll Facilities Locations & Information		*https://www.fhwa.dot.gov/policyinformation/tollpage/*				
Statistical Tables	Urban Highways with Most Lanes		*https://www.fhwa.dot.gov/policyinformation/tables/01.cfm*			Text	Data
	High Occupancy Vehicle Lanes by State		*https://www.fhwa.dot.gov/policyinformation/tables/03.cfm*	2014			
	Most Traveled Urban Highway AADT		*https://www.fhwa.dot.gov/policyinformation/tables/02.cfm*				
Office of Freight Management and Operations			Website	*https://ops.fhwa.dot.gov/freight/index.cfm*			
			Directory for News Center	*https://ops.fhwa.dot.gov/freight/freight_analysis/index.htm*			
General Information By State	Commodity Flow, Truck Fleet Characteristics, Others	Home/Analysis/Data and	*https://ops.fhwa.dot.gov/freight/freight_analysis/state_info/index.htm*	2017	Public	Map	Presentation Data

National Freight Transportation Maps, Networks & Statistics	Tonnages on Highways, Ton-Miles, Tonnages by Commodity, Interstate Movement	System Performance	https://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/index.htm	2007-2015			
	Freight Network for Each State		https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm	2015			
	National Highway Freight Network Mileages by State		https://ops.fhwa.dot.gov/freight/infrastructure/nfn/maps/nhfn_mileage_states.htm	2017	Text	Data	
	National Highway Freight Network Map *(Scroll down the Link to: Where is NHFN to download)		https://ops.fhwa.dot.gov/freight/infrastructure/nfn/index.htm	2016	Shape files	Map	
Freight Analysis Framework (FAF)	Complete Database on Networks, Traffic Data, Statistics		https://ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm		All	Data	
Freight Performance Measures	Developed Performance Measures for: Congestion, Bottlenecks and Economic Indicators		https://ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/index.htm		PDF	Reports	
NPMRDS Analytics	Speed and Time Data		https://npmrds.ritis.org/analytics/help/#npmrds		All	Data	
Freight Policy Studies	Highway Performance, Cost Allocation, Truck Size Economic Impact		https://ops.fhwa.dot.gov/freight/freight_analysis/fhwa_freight_studies.htm	2017	PDF	Report	
Regional & International Freight Studies	Insights on Freight Industry in General		https://ops.fhwa.dot.gov/freight/freight_analysis/reg_ind_studies/index.htm				
Freight Cost/Benefit Analysis	Methods for Investment Decisions		https://ops.fhwa.dot.gov/freight/freight_analysis/cba/index.htm				
Major Corridor Coalitions	List of Coalitions with Links: Corridors Status, Projects, Events	Home\Infra-structure	https://ops.fhwa.dot.gov/freight/corridor_coal.htm				
Truck Size and Limits	Comprehensive Study	Home\Truck Size and Weight	https://ops.fhwa.dot.gov/freight/sw/map21tswstudy/index.htm	2016			
	Load Permits from States Procedure		https://ops.fhwa.dot.gov/freight/sw/permit_report/index.htm	2016			

Office of Planning, Environment & Reality (HEP)	Website	*https://www.fhwa.dot.gov/planning/*
	Directory for News Center	*https://www.fhwa.dot.gov/hep/whats_new/*

Border Data & Maps	Land Port Data		https://www.fhwa.dot.gov/planning/border_planning/data/border_port_data/land_ports.cfm	2017		Excel	Data
	Ferry Ports Data		https://www.fhwa.dot.gov/planning/border_planning/data/border_port_data/ferry_ports.cfm	2017			
	Primary Inspection Lane Booths	Home\Border Planning	https://www.fhwa.dot.gov/planning/border_planning/data/border_port_data/pil_booths.cfm	2017			
	U.S Canada TBWG All Modes Data (List with Links for Data)		https://www.fhwa.dot.gov/planning/border_planning/data/tbwg_online_data/current_data.cfm	2017	Public		
	Land Ports of Entry - U.S Canada Northern Border		https://www.fhwa.dot.gov/planning/border_planning/maps/northern_border/	2017			
	Land Ports of Entry - U.S - Mexico Southern Border		https://www.fhwa.dot.gov/planning/border_planning/maps/southern_border/	2017		PDF	Visuals
	Rail Ports of Entry - U.S - Canada - Mexico Borders		https://www.fhwa.dot.gov/planning/border_planning/maps/rail/	2017			
	Other Map Resources		https://www.fhwa.dot.gov/planning/border_planning/maps/other_resources/	2017			
	General Facts Sheets		https://www.fhwa.dot.gov/planning/border_planning/factsheets/	2017			Presentation
	Research Studies & Reports		https://www.fhwa.dot.gov/planning/border_planning/research/	2017			Report
Census Issues	Census Transportation Planning Status Report	Home\ Census Issues	https://www.fhwa.dot.gov/planning/census_issues/ctpp/status_report/sr0818/index.cfm	2018			Report Statistics
	CTPP Status Report		https://www.fhwa.dot.gov/planning/census_issues/ctpp/status_report/	2018 (twice per year)			
National Highway System	National Highway Maps	Home\National Highway System	https://www.fhwa.dot.gov/planning/national_highway_system/nhs_maps/	2018		Shape files	Visuals
	High Priority Corridors Listing & Mapping		https://www.fhwa.dot.gov/planning/national_highway_system/high_priority_corridors/	2018		PDF	Report
	List of Intermodal Connectors		https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/	2018		Excel	Data
Freight Planning	Freight Forecasting Models, Studies and Reports	Home\Freight Planning	https://www.fhwa.dot.gov/planning/freight_planning/forecasting.cfm	2018		PDF	Reports
	Freight Planning Informational Video		https://www.fhwa.dot.gov/planning/freight_planning/videos.cfm	2017		Video	Presentation
	Publications on Freight Planning		https://www.fhwa.dot.gov/planning/freight_planning/publications/index.cfm	2007		PDF	Reports

| | Freight Seminars & Registration | | *https://www.fhwa.dot.gov/planning/freight_planning/talking_freight/* | 2018 | | | Seminar |
| | Freight Training Courses | | *https://www.fhwa.dot.gov/planning/freight_planning/training.cfm* | 2108 | | | Courses |

Notes and Recommendations
- The data in the Federal Highway Administration website is split into three categories shown in green above. The table reviews all data, reports, guides, and publications   - When you access the website link of each category, check the column on the right for a navigation panel on available information inside the website. Some data can be redundant between the three categories   - The sub-links provided will direct you to the information needed. Yet, sometimes you need to go further to download the data, or navigate the page   - For the datasets, navigating the page will help in understanding the data more   - In general, to download the data look for "Excel" and "PDF" signs or blue text. Or, sometimes you need to input some information on data needed and then a download symbol will appear

Highway Freight System							
Website			Link				
National Highway Traffic Safety Administration			*https://www.nhtsa.gov/*				
Directory for Data Center			*https://www-fars.nhtsa.dot.gov/Main/reportslinks.aspx*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Crash Data	Compilation of All Crash Data Sorted by Topic, Cause, Fatality	Home\Research Data	*https://crashstats.nhtsa.dot.gov/#/*	2018	Public	PDF	Reports Statistics
State Traffic Safety Information (STSI)	Total Number of Fatalities, Fatalities by Crash Type, Fatalities by VMT, Fatalities by Age, Crash Location Sited, All Sorted for Each State		*https://cdan.nhtsa.gov/STSI.htm#*			All	
Traffic Safety Facts Annual Report Tables	National Statistics, Trends, Crashes, Vehicles Fatality Rates		*https://cdan.nhtsa.gov/tsftables/tsfar.htm*			PDF	
National Automotive Sampling System (NASS)	Crash Worthiness Data System (CDS) General Estimates System (GES)		*https://www.nhtsa.gov/research-data/national-automotive-sampling-system-nass*			PDF/ Excel	Data
	NASS Raw Data Directory		*ftp://ftp.nhtsa.dot.gov/NASS/*	2015		Excel	
Fatality Analysis Reporting System (FARS)	Yearly Data on Fatal Injuries		*https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars*	2017		PDF\ Excel	
	Directory for Raw Data		*ftp://ftp.nhtsa.dot.gov/fars/*				
	Data Tables		*https://www-fars.nhtsa.dot.gov/Main/index.aspx*				
Query System	Compiled search engine for all data available		*https://www-fars.nhtsa.dot.gov/QueryTool/QuerySection/SelectYear.aspx*				

Notes and Recommendations

- When accessing the State Traffic Safety Information, press on the desired state on the map, and it will direct you to the dataset and a download icon will appear.
- When accessing the Traffic Safety Facts Annual Reports, navigate the page and choose what data you want; then open the dialog and press on the blue text to be directed to data location
- NASS data are provided as raw data, where you can search for the folders of importance to you and download directly. Note, that you can press on "parent directory" on the top right to check all the data available in the National Highway Traffic Safety Administration.
- The query system is an interactive, web-based framework that contains all the data in the nhtsa.gov domain (same as raw data directories but with interactive design). The blue tabs on top allows you to scroll directly between data sets. (These blue tabs present all the information found in the national highway traffic safety administration, so you can directly relay on the query system to navigate the data).
- In the query system, other than "query fafs data" everything can be downloaded directly (look for "export xls" icon located just above the tables).
- For "query fafs data," you will first need to select a query year and press on "submit tab". Then you will be directed to series of questions and tabs so you can identify what data you need. After you submit all your choices, a data table will appear; right above the table there are four icons that allow you to "map" "export" and "chart" your data.

5.3.3 Federal Motor Carrier Safety Administration

<table>
<tr><td colspan="8" align="center">Highway Freight System</td></tr>
<tr><td colspan="3" align="center">Website</td><td colspan="5" align="center">Link</td></tr>
<tr><td colspan="3" align="center">Federal Motor Carrier Safety Administration</td><td colspan="5" align="center"><i>https://www.fmcsa.dot.gov/</i></td></tr>
<tr><td colspan="3" align="center"><i>Directory for Data Center</i></td><td colspan="5" align="center"><i>https://dataqs.fmcsa.dot.gov/Default.aspx</i></td></tr>
<tr><td colspan="3" align="center"><i>Quick Directory for Downloadable Data</i></td><td colspan="5" align="center"><i>https://ai.fmcsa.dot.gov/SMS/Tools/Downloads.aspx</i></td></tr>
<tr><td colspan="3" align="center"><i>Directory for News Center</i></td><td colspan="5" align="center"><i>https://www.fmcsa.dot.gov/newsroom</i></td></tr>
<tr><td>Information Provided</td><td>Data Available</td><td>Data Path</td><td>Sub-link</td><td>Latest</td><td>Policy</td><td>Format</td><td>Category</td></tr>
<tr><td>Motor Carrier Safety Progress Report</td><td>Reported Crash Data</td><td rowspan="3">Home\Analysis\Data &Statistics</td><td><i>https://www.fmcsa.dot.gov/safety/data-and-statistics/motor-carrier-safety-progress-reports</i></td><td>2018 (Quarterly)</td><td rowspan="3">Public</td><td rowspan="3">PDF</td><td rowspan="3">Report Statistics</td></tr>
<tr><td>Large Trucks & Bus Statistics</td><td>Analysis Report on Truck & Bus Statistics</td><td><i>https://www.fmcsa.dot.gov/safety/data-and-statistics/commercial-motor-vehicle-facts</i></td><td rowspan="2">2018</td></tr>
<tr><td>Large Truck and Bus Crash Facts</td><td>Annual Report with Descriptive Statistics</td><td><i>https://www.fmcsa.dot.gov/safety/data-and-statistics/large-truck-and-bus-crash-facts</i></td></tr>
<tr><td colspan="3" align="center">Crash Statistics</td><td colspan="5" align="center"><i>https://ai.fmcsa.dot.gov/CrashStatistics/</i></td></tr>
<tr><td>State Crash Summary Reports</td><td>Summary of Large Trucks & Buses Fatalities Sorted by State</td><td></td><td><i>https://ai.fmcsa.dot.gov/CrashStatistics/Default.aspx?enc=Vrcg+nObgO6myAbh1r0RFB3QZ1YeAaTQLWflrNiv64E=</i></td><td rowspan="4">2018</td><td rowspan="4">Public</td><td>PDF</td><td rowspan="4">Interactive Visuals</td></tr>
<tr><td>Crash Query Tool</td><td>Total Number of Crashes (Fatal, Injury), Cargo Type, Hazardous Material, Driver, Speed (This is an interactive web interface)</td><td></td><td><i>https://ai.fmcsa.dot.gov/CrashStatistics/rptSummary.aspx</i></td><td>PDF</td></tr>
<tr><td>Mapping Tool</td><td>Integrative Map Showing Crash Locations and Data</td><td></td><td><i>https://ai.fmcsa.dot.gov/gis/tools/safetyevent/</i></td><td>Map</td></tr>
<tr><td>Published Crash Reports</td><td>Truck, Driver and Environment Characteristics for Truck and Bus Crashes</td><td></td><td><i>https://ai.fmcsa.dot.gov/CrashStatistics/CrashProfile.aspx</i></td><td>PDF
Report Statistics</td></tr>
</table>

Notes and Recommendations

- The "quick directory for downloadable data" will provide you with a general look at reports and datasets that can be downloaded directly.
- Crash Statistics is query-based system (interactive web framework) where all the published data is available. When you click on the general website for the crash statistics, you will see a map of the US. You can click on states to generate quick summary data. To check detailed data, see the "crash statistics toolbox" where multiple tools are available.
- Crash Query Tool: you can search, sort, and generate data tables and then download them using the "download data tab" on the right. Note that on the left there is a navigation tool that helps you navigate data categories present in crash statistics.
- Mapping Tool: you can select the data you need and view it on the map. Then, you can print the map or export it as a picture.

5.4 Railroad Freight System

5.4.1 Federal Railroad Administration

Railroad Freight System							
Website			**Link**				
US DOT - Federal Railroad Administration			*https://railroads.dot.gov/*				
Directory for Data Center			*https://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Railroad Safety	Fact Sheets	Home\Railroad Safety\Factsheets	*https://www.fra.dot.gov/eLib/Details/L17342*	2015	Public	Report	
FRA Database for Safety - Office of Safety Analysis			*https://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx*				
Summary Overview Sheets	One Year Accident\Incident		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/AccidentByRegionStateCounty.aspx*	Updated Regularly	Public	Excel	Report Statistics
	Ten Year Accident\Incident		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TenYearAccidentIncidentOverview.aspx*				
	Ten Year Freight\Passenger Operations		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TenYearFreightPassengerOperationsOverview.aspx*				
	Graphic Ten Year Accident\Incident		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/GraphicTenYearAccidentIncidentOverview.aspx*				
Query Accident\Incident Trends	Train Accidents by Railroad Groups		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/inctally3.aspx*				
	Employee on Duty Causalities		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/castally1.aspx*				
	Employee on Duty Causalities Rates		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/castally2.aspx*				
	Trespasser Casualties		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/castally4.aspx*				
	Highway-Rail Crossings		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/gxrtally1.aspx*				
	Train Accidents Rates		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TrainAccidentsFYCYWithRates.aspx*				
Train Accidents	Accident Trends - Summary Statistics		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/summary.aspx*				
	Accident Trends - Charts Graphs		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/graphs.aspx*				
	Railroad Safety Statistics Annual Report		*https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/publications.aspx*				

Category	Item	Location	URL	Date	Access	Format	Type
	FRA Accident Report		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/forms.aspx?itemno=3.05				
	Accident Map with Table		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/inctmap.aspx				
	Accident Causes		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/inccaus.aspx				
	Accident Detail Report		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/incrpt.aspx				
	Summary of Train Accidents with Damage, Casualties and Major Causes		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TrainAccidentDamage.aspx				
	Type of Territory vs. Accident Type and Cause		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TypeTerritoryVSCauseAccType.aspx				
	Accident by Stata\Railroad		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/AccidentByStateRailroad.aspx				
Casualties	Casualty Detail Report		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/casrpt.aspx				
	Casualty Map with Table		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/castmap.aspx				
	Casualty Summary Table		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/castab.aspx				
	Worker Safety Report		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/casemp.aspx				
	Suicide Casualties by State\Railroad		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/suiabbr.aspx				
	Casualties by State\Railroad		https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/CasualitiesReport.aspx				
Passenger Rail	Intercity Passenger Rail On-Time Performance	Home\Rail Network Development\Passenger	https://www.fra.dot.gov/eLib/Find#p1_z10_kIntercity%20Passenger%20Rail%20On-Time%20Performance%20(OTP)%3A	Quarterly	Public	Excel	Report Statistics
	Intercity Passenger Rail Cost Analysis		https://www.fra.dot.gov/Page/P0607	2005	Public	Excel	
	Transportation Planning\Corridor Reports		https://www.fra.dot.gov/Page/P0607	2005	Public	Excel	
Freight Rail	Overview Chart	Home\Rail Network Development\Freight Rail	https://www.fra.dot.gov/Page/P0362	2017	Public	Excel	
	Freight Data Value & Volume for States\Country	Home\Rail Network Development\Freight Rail\Data Resources	https://www.bts.gov/transborder	2018	Public	Excel	
Geographic Information System	Network Rail Map	Home\Rail Network Development\GIS	https://fragis.fra.dot.gov/GISFRASafety/	2018	Public	Excel	Visual Map
	Trespassers Map		https://fragis.fra.dot.gov/Trespassers/	2018	Public	Excel	
Research & Development	Conferences, Areas of Research	Home\Research & Development	https://www.fra.dot.gov/Page/P0562	2018	Public	Excel	Report

Notes and Recommendations

- Data highlighted in grey color refers to data from the database system of Federal Railroad Administration. The database system is an interactive design where you can sort, generate and search for information and data tables.
- The directory for data center will direct you to the database system
- Inside the database system you can go to the tab "Downloads" where all downloadable data is available. After inputting the information you need, press on generate data. Either the dataset will download directly, or a message will be displayed to download the set
- Some sub-links provided above may present data that cannot be downloaded directly. it is advisable to search for the data using the "Downloads" tab explained above
- For the Geographic Information System data, you can view the maps on the web or extract them. To extract them, you will need to press on the "table-like shape icon" in the lower middle of the screen. A table will pop out allowing you to export the map and data associated with it

Railroad Freight System							
Website				**Link**			
Surface Transportation Board				*https://www.stb.gov*			
Directory for Data Center				*https://www.stb.gov/econdata.nsf/AllData?OpenView*			
Directory for News Center				*https://www.stb.gov/stb/news/whatsnew.html*			
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Annual Financial Data	Balance Sheets, Freight Revenue, Income, Depreciation, Investments	Home\Quick Links\Economic Data	*https://www.stb.gov/econdata.nsf/FinancialData?OpenView*	2017	Public	Excel	Report Statistics
Cars Loaded and Terminated	Total number of Cars loaded (Revenue, Non-Revenue)		*https://www.stb.gov/econdata.nsf/CarsLoadedandTerminated?OpenView*	2018			
Commodity Revenue Stratification	Tonnage and Revenue per Commodity		*https://www.stb.gov/econdata.nsf/CRSR?OpenView*	2016			
Expanded Commodity Revenue Stratification	Tonnage and Revenue per Commodity		*https://www.stb.gov/econdata.nsf/XCRSR?OpenView*	2016			
Freight Commodity Statistics	Tonnage and Revenue per Commodity		*https://www.stb.gov/econdata.nsf/FCStatistics?OpenView*	2018			
Earning	Earnings per Location		*https://www.stb.gov/econdata.nsf/QuarterlyEarnings?OpenView&Start=1&Count=300&Expand=1#1*				
Condensed Balance Sheets	Assets, Liabilities, Shareholders Equity		*https://www.stb.gov/econdata.nsf/CBS?OpenView*				
Employment Data	Workforce, Number of Employees		*https://www.stb.gov/econdata.nsf/EmploymentData?OpenView*				
Fuel Surcharges	Fuel Consumed, Cost, Increase/Decrease in Cost		*https://www.stb.gov/econdata.nsf/RailFuelSurcharges?OpenView*				
Wages	Payments for Employees		*https://www.stb.gov/econdata.nsf/QuarterlyWageABData?OpenView*				
Wage Statistics	Change, Increase/Decrease		*https://www.stb.gov/econdata.nsf/WageStatistics?OpenView*				
Rail Service Presentation	Performance Measures, Improvement, Plans	Home\Quick Links\Rail Service	*https://www.stb.gov/stb/railserviceissues/rail_service_update.html*				
Complaint Statistics	Per Complaint type and Region	Home\Quick Links\Litigation Alternatives	*https://www.stb.gov/stb/rail/consumer_asst.html*				

Waybill Data	Sample Waybills Available	Home\Industry Data\Waybill	*https://www.stb.gov/stb/industry/econ_waybill.html*		Confidential		
Uniform Rail Costing System (URCS)	Cost Programs	Home\Industry Data\Economic Data	*https://www.stb.gov/stb/industry/urcs.html*	2016			
Railroad Map Depot	National Rail Network Map	Home\Quick Links\ Railroad Map Depot	*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=96ec03e4fc8546bd8a864e39a2c 3fc41*	2017	Public	Web Map	Visuals Map
	Abandoned and Rail banked Rail Lines		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=59c5662600854756a7e6f18bca1 a0f44*				
	Rail Heritage Map		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=0a75e92dcd4942439ae3606e79d 6585e*				
	Lone Star Railroad Map		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=2379e2a7ffc54ff98f97d6974e3d3 128*				
	Tongue River Railroad Map		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=a38da8551185433aab27aae389b dda18*				
	Cates Landing Railroad Map		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=1464ea60246f42a1ae7f9e78264e efa5*				
	Six Country Rail Project Map		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=5e7441f74c1245b9853cdce439a e73e3*				
	Harsimus Branch Abandonment		*https://stb.maps.arcgis.com/home/webmap/viewer .html?webmap=b298c06d0dfd4e68adf2db5b626a bfad*				
	Harsimus Historic Structures		*https://stb.maps.arcgis.com/home/item.html?id=0 5b27da2e08444a7b31bb61d51c65bb2*				
	Harsimus Historic Districts		*https://stb.maps.arcgis.com/home/item.html?id=3f a15ede2d9e458ea385fbb83a5aaebf*				
	Harsimus Historic Buildings		*https://stb.maps.arcgis.com/home/item.html?id=a b2072d7b02b41d48d5b530dcc9bda36*				

Notes and Recommendations
• Follow the sub-links provided to download the data. Click on the blue text and it will direct you to the Excel document • You will need to create a GIS account to download the maps

5.4.3 Association of American Railroads

Railroad Freight System	
Website	**Link**
The Association of American Railroads	*https://www.aar.org/*
Directory for Data Center	*https://www.aar.org/data-center/*
Directory for News Center	*https://www.aar.org/news/*
Directory for Quick Fact Sheets	*https://www.aar.org/fact-sheets/*
Directory for Quick Infographics	*https://www.aar.org/infographics/*

Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Railroads and States	State Representative Directory	Home\Data Center\ Railroads & States	*https://www.aar.org/wp-content/uploads/2018/03/2018-SRPC-Directory-for-AAR-3.0.pdf*	2018	Public	PDF	Report
	State Railroad Associations Directory		*https://www.aar.org/wp-content/uploads/2018/03/AAR-State-Railroad-Associations-Directory-1.pdf*				
	Fact Sheets per State; Number of Fright Railroads, Miles, Employees, Wages, Commodities, Tonnages and Maps		*https://www.aar.org/data-center/railroads-states/*				
Rail Traffic Data	Weekly/Monthly/Annually Traffic Data Per Commodity, Tonnages, Prices, Carloads	Home\Data Center\Railroad Traffic Data	*https://www.aar.org/wp-content/uploads/2017/12/AAR-Rail-Time-Indicators-Sample.pdf*				
Rail Cost Indexes	Fuel Prices, Cost Recovery, Adjustment Factors Quarterly Fillings and Decision	Home\Data Center\ Rail Cost Indexes	*https://www.aar.org/rail-cost-indexes/*				
Background Papers	Public-Private Partnership	Home\Data Center\Background Papers	*https://www.aar.org/background-papers/*	These are reports generated regularly. Refer to data path for updated versions	Public	PDF	Report
	Freight Railroad Capacity & Investment						
	Cost-Effectiveness of Freight Railroads						
	Overview of America's Freight Railroads						

Economic Impact of U.S Freight Railroads							
Differential Pricing							
International Trade							
Railroads & Greenhouse Emissions							
Environmental Benefits of Moving Freight by Rail							
Truck Size and Weight							
Railroads & Grain							
Railroads & Coal							
Railroads & Chemicals							
Rail Intermodal							
U.S Rail Crude Oil Traffic							
Railroad Security							
Railroad Cybersecurity							
High Tech Advances							
Performance Standards							

Notes and Recommendations
• The data is available in an interactive web-based framework. You can sort, search, and generate data you need. You can download the data by pressing on a download icon on the right side beneath the table/graph directly   • Some sub links will direct you to PDF documents directly. It is advisable you check the data path for updated data.

5.4.4 Bureau of Transportation Statistics – Railroads

Railroad Freight System							
Website			**Link**				
Bureau of Transportation Statistics | Rail			*https://www.bts.gov/topics/rail*				
Directory for Data Center			*https://www.bts.gov/topics/rail*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Rail Freight System	Seasonally Adjusted and Unadjusted Rail Freight Carloads	Home\BTS Data, Surveys and Methods	*https://www.transtats.bts.gov/osea/seasonaladjustment/?PageVar=RAIL_FRT_CARLOADS*	2018	Public	Excel	Statistics
	Seasonally Adjusted and Unadjusted Rail Freight Intermodal Traffic		*https://www.transtats.bts.gov/osea/seasonaladjustment/?PageVar=RAIL_FRT_INTERMODAL*				
	Seasonally Adjusted and Unadjusted Rail Passenger Miles		*https://www.transtats.bts.gov/osea/seasonaladjustment/?PageVar=RAIL_PM*				
National Transportation Atlas Database	North American Rail Nodes	*http://osav-usdot.opendata.arcgis.com/datasets?keyword=Rail*	*http://osav-usdot.opendata.arcgis.com/datasets/a3de9d3cac5345fca767cd8e74ec92ff_0*			Web Map	Visuals Map
	North American Rail Lines		*http://osav-usdot.opendata.arcgis.com/datasets/f15d9e40cd1d4170a36bf31d4e6a3c28_0*				
	Railroad Crossings		*http://osav-usdot.opendata.arcgis.com/datasets/bbf77e8e0938472da1280adcb780e724_0*				
	Amtrak Routes		*http://osav-usdot.opendata.arcgis.com/datasets/4e32613ba4c9450880118b2fd639e8cb_0*				
	Amtrak Stations		*http://osav-usdot.opendata.arcgis.com/datasets/3e9daf681b154fb19372044f4d52941a_0*				
	Railroad Nodes		*http://osav-usdot.opendata.arcgis.com/datasets/366792a73ec7451f8a7afa1ec46cc3b3_0*				
	Railroad Lines		*http://osav-usdot.opendata.arcgis.com/datasets/2553aa5e457349efb600502050bf9c3c_0*				

Notes and Recommendations
• The data is available in an interactive web-based framework. Press on download tabs to download the data.

5.5 Aviation Freight System

5.5.1 BTS – Airlines and Airports

Aviation Freight System							
Website			**Link**				
USDOT Bureau of Transportation Statistics - Airlines and Airports			*https://www.bts.gov/topics/airlines-and-airports-0*				
Directory for Data Center			*https://www.bts.gov/statistical-releases*				
Quick Link to All Data Available			*https://www.bts.gov/topics/airlines-and-airports/quick-links-popular-air-carrier-statistics*				
Directory for News Center			*https://www.bts.gov/newsroom*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Airline Financials	Average Age of Aircraft	Home\Airlines and Airports\On-Time	*https://www.bts.gov/content/average-age-aircraft*	2018	Public	Excel	Report Statistics
	Baggage's Fees		*https://www.bts.gov/baggage-fees*	2018			
	Employment Data by Month		*https://www.transtats.bts.gov/Employment/*	2018			
	Fuel Cost and Consumption		*https://www.transtats.bts.gov/fuel.asp*	2018			
	Net Income		*https://www.transtats.bts.gov/Data_Elements_Financial.aspx?Data=6*	2018			
	Operating Revenue		*https://www.transtats.bts.gov/Data_Elements_Financial.aspx?Data=7*	2018			
	Reservation Cancellation/Change Fees		*https://www.bts.gov/cancellation-change-fees*	2018			
	Fares		*https://www.transtats.bts.gov/AverageFare/*	2018			
Airline On-Time	Airport Ranking and Summaries	Home\Airlines and Airports\On-Time	*https://www.bts.gov/topics/airline-time-tables*	2018			
	Causes of Delays (Sorted by Carrier, Airport, and Data)		*https://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp*	2018			
	Delayed Flights		*https://www.bts.gov/topics/chronically-delayed-flights*	2018			
	Holiday Flight Delay		*https://www.transtats.bts.gov/holidaydelay.asp*	2018			
	Tarmac times		*https://www.bts.gov/topics/tarmac-times*	2018			

	Performance Data		https://www.transtats.bts.gov/Tables.asp?DB_ID=120&DB_Name=Airline%20On-Time%20Performance%20Data&DB_Short_Name=On-Time	2018		
	Travel Consumer		https://www.transportation.gov/individuals/aviation-consumer-protection/air-travel-consumer-reports	2018		
	Airport General Statistics & Information		https://www.transtats.bts.gov/airports.asp	2018	Public	Report
	Carrier General Statistics & Information		https://www.transtats.bts.gov/carriers.asp	2018		
Arline Performance	Fares	Home\Airlines and Airports\Performance	https://www.bts.gov/air-fares	2018		
	Mishandled Baggage		https://www.transportation.gov/individuals/aviation-consumer-protection/air-travel-consumer-reports	2018		
	Passengers Denied Space		https://www.bts.gov/denied-confirmed-space	2018		
	Airline Origin and Destination		https://www.transtats.bts.gov/Tables.asp?DB_ID=125&DB_Name=Airline%20Origin%20and%20Destination%20Survey%20%28DB1B%29&DB_Short_Name=Origin%20and%20Destination%20Survey	2018		
	Overbooking		https://www.transportation.gov/individuals/aviation-consumer-protection/air-travel-consumer-reports	2018		
Airline Traffic	Seat-Miles	Home\Airlines and Airports\Traffic	https://www.transtats.bts.gov/Data_Elements.aspx?Data=4	2018		
	Cargo Tonnages		https://www.bts.gov/topics/freight-transportation/air-cargo	2018		
	Total Flights (Domestic & International)		https://www.transtats.bts.gov/Data_Elements.aspx?Data=2	2018		
	Load Factor		https://www.transtats.bts.gov/Data_Elements.aspx?Data=5	2018	Public	Excel
	Passengers		https://www.transtats.bts.gov/Data_Elements.aspx?Data=1	2018		
	Revenue Passenger-Miles		https://www.transtats.bts.gov/Data_Elements.aspx?Data=3	2018		
	Origin and Destination Survey		https://www.transtats.bts.gov/Tables.asp?DB_ID=125&DB_Name=Airline%20Origin%20and%20Destination%20Survey%20%28DB1B%29&DB_Short_Name=Origin%20and%20Destination%20Survey	2018		
	Summary Traffic Tables		https://www.transtats.bts.gov/TRAFFIC/	2018		
General Airport Snapshots	Summary Statistics on Passenger, Delay, Performance, Carrier	Home\Airlines and Airports\Products	https://www.transtats.bts.gov/airports.asp	2018		Report
General Carrier Snapshots	Summary Statistics on Passenger, Delay, Performance, Carrier		https://www.transtats.bts.gov/carriers.asp	2018		Report

Supplementary Databases and Resources		
Directory for Websites	Home\Airlines and Airports\Databases | Products | Related Resources	
Information Provided	Description	Link
Aviation Databases	General Database from Transportation Statistics Library	*https://www.transtats.bts.gov/databases.asp?Mode_ID=1&Mode_Desc=Aviation&Subject_ID2=0*
	General Database from National Transportation Atlas	*http://osav-usdot.opendata.arcgis.com/*
Restricted Aviation Data	Details on How to Obtain Restricted Data	*https://www.bts.dot.gov/topics/airlines-and-airports/restricted-data*
Secretary for Aviation and International Affairs	Governmental Office	*https://www.transportation.gov/policy/assistant-secretary-aviation-international-affairs*
Regulations Related to Office of Airline Information	Regulations and Directories	*https://www.bts.gov/topics/airlines-and-airports/selected-regulations-related-office-airline-information*

Notes and Recommendations

- The quick link available (near the top of the first table in section 5.5.1) gives you a "one-stop-shop" for popular data available. It is recommended the user checks it for simplicity.
- In some sub-links, the data available are presented as web-based interactive tables that can be downloaded by hitting the download icon directly beneath the tables or clicking on "Database Tables" marked in blue, then hitting "download" also marked in blue. Note: links present just summary tables and charts that cannot be downloaded.
- This website (BTS Airlines and Airports) allows for generation of figures and data tables directly on the web.
- In this website (BTS Airlines and Airports) everything marked in blue can either direct you to a new link or directly download an excel sheet with the data specified.
- The supplementary table presents some resources, libraries, and suggested websites for further reference.

5.5.2 Federal Aviation Administration

Aviation Freight System								
Website				**Link**				
Federal Aviation Administration				*https://www.faa.gov/*				
Directory for Data Center				*https://www.faa.gov/data_research/*				
Directory for News Center				*https://www.faa.gov/news/*				
Information Provided	Data Available	Data Path	Sub-link		Latest	Policy	Format	Category
Aviation Safety Information and Analysis System (ASIAS)	Type of Accident, Fatalities, Location, Aircraft, Date	Home\Data Research\Accident Incident Reports	*https://www.asias.faa.gov/apex/f?p=100:1:::NO::* *https://www.ntsb.gov/investigations/AccidentReports/Pages/aviation.aspx* *https://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx*		Every 10 Days	Public	Excel	Report Statistics
Aviation Data & Statistics	On-Time Statistics & Delay Causes	Home\Data Research\Aviation Data & Statistics	*https://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp*		2018			
Passengers & Cargo	Unruly Passengers Statistics	Home\Data Research\Passengers & Cargo	*https://www.faa.gov/data_research/passengers_cargo/unruly_passengers/*					
	Passenger Boarding and All-Cargo Data		*https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/*					
Forecasts	A Full Report for Yearly Forecast of Economic Factors	Home\Data Research\Forecasts	*https://www.faa.gov/data_research/aviation/aerospace_forecasts/*				Report	
Funding and Grants Data	Federal Funds History, Grants, Projects	Home\Data Research\Funding & Grant Data\AIP\Data, Tools & Resources	*https://www.faa.gov/airports/aip/*					

Notes and Recommendations
• It is recommended to access the Data Center link which provides a simple directory of information present in the website.
• For ASIAS, three links are shown in the above table. The first directs you to ASIAS database system that is being updated as of February 2019; in this database you can still access preliminary reports under the "What's New" tab. The second link directs you to the same data published by the National Transportation Safety Board, where you can download PDF versions of accident reports. The third link allows you to directly download the entire accident database.

Supplementary Database			
Federal Administration & Performance Data	https://aspm.faa.gov/		
Information Provided	Description of information	Sample Manual on how to Access the Data	Security Policy
Aviation System Performance Metrics (ASPM)	https://aspmhelp.faa.gov/index.php/Main_Page	https://aspmhelp.faa.gov/index.php/TFMSC_Manual#Overview	Registered Account
Operational Network (OPSNET)			
Traffic Flow Management System Counts (TFMSC)			
Airline Service Quality Performance (ASQP)			
Terminal Area Forecast (TAF)			

Notes and Recommendations
• This database requires an account to access

Aviation Freight System							
Website			Link				
Airlines for America			*http://airlines.org/*				
Directory for Data Center			*http://airlines.org/data/*				
Directory for News Center			*http://airlines.org/news/*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Financials	Imposed Taxes on Air Transportation	Home\Data Statistics\ Financials	*http://airlines.org/dataset/government-imposed-taxes-on-air-transportation/*	2018	Public	Report	Report Statistics
	U.S Passenger Delay Costs		*http://airlines.org/dataset/per-minute-cost-of-delays-to-u-s-airlines/*	2018		Report	
	A4A Passenger Cost Index (PACI)		*http://airlines.org/dataset/a4a-quarterly-passenger-airline-cost-index-u-s-passenger-airlines/*	2018		Report	
	Annual Financial Results		*http://airlines.org/dataset/annual-results-u-s-passenger-airlines/*	2018		Excel	
Traffic Capacity & Operations	Daily Jet Fuel Prices	Home\Data Statistics\ Traffic Capacity & OPS	*http://airlines.org/argus-us-jet-fuel-index/*	Daily		Report	
	U.S Airline Traffic and Capacity		*http://airlines.org/dataset/annual-results-u-s-airlines-2/*	2017		Excel	
	World Airlines Traffic Capacity		*http://airlines.org/dataset/world-airlines-traffic-and-capacity/*	2017		Excel	
	Current Operation Status		*http://airlines.org/dataset/current-operation-status-for-us-airports/*	Updating Live		Report	
	Safety & Incident Records		*http://airlines.org/dataset/safety-record-of-u-s-air-carriers/*	2017		Report	
	U.S Noise Exposure		*http://airlines.org/dataset/u-s-airlines-tremendous-noise-record/*	2017		Report	

Notes and Recommendations
• Tables or charts that can be downloaded from airlines.org will have an interactive design and a small download icon directly beneath the table.

5.6 Pipeline Freight System

5.6.1 Pipeline and Hazardous Materials Safety Administration

Pipeline Freight System							
Website			**Link**				
USDOT - Pipeline and Hazardous Materials Safety Administration (Oracle System)			*https://www.phmsa.dot.gov/*				
Directory for Data Center Inside Website			*https://www.phmsa.dot.gov/resources*				
Directory for News Center			*https://www.phmsa.dot.gov/news*				
Directory for Oracle system			*https://primis.phmsa.dot.gov/comm/Index.htm?nocache=2322*				
Quick Navigation Sites inside Oracle			*https://primis.phmsa.dot.gov/comm/PipelineLibrary.htm?nocache=3931*				
Compiled Data for Each State			*https://primis.phmsa.dot.gov/comm/states.htm?nocache=1597*				
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Pipeline Information, Data and Statistics	Pipeline Basic Information	Home\Site Pages\About\Pipelines	*https://primis.phmsa.dot.gov/comm/PipelineBasics.htm?nocache=6556*	2017	Public	Text	Reports Information
	Pipeline Glossary	Home\Site Pages\About\Pipelines	*https://primis.phmsa.dot.gov/comm/glossary/index.htm?nocache=6960#ASTMInternational*				
	Safety Regulations	Home\Site Pages\About\Pipelines	*https://primis.phmsa.dot.gov/comm/SafetyStandards.htm?nocache=4320*				
	Pipeline Mileage and Facilities Per State and Cargo Type	*https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-mileage-and-facilities*	*https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages*				
Regulatory Oversights	Nationwide Enforcement Activity	Home\Site Pages\Regulatory Oversights\Enforcement	*https://primis.phmsa.dot.gov/comm/reports/enforce/EnfHome.html?nocache=5001*	2018		Excel	Reports Statistics
	Enforcement Actions	Home\Site Pages\Regulatory Oversights\Enforcement	*https://primis.phmsa.dot.gov/comm/reports/enforce/Actions_opid_0.html?nocache=8097*				
	Enforcement Case Status	Home\Site Pages\Regulatory Oversights\Enforcement	*https://primis.phmsa.dot.gov/comm/reports/enforce/CaseStatus_opid_0.html?nocache=1264*				

	Operator Information : Status, Mileage, Incidents, Inspections	Home\Site Pages\Regulatory Oversights\Enforcement	*https://primis.phmsa.dot.gov/comm/reports/operator/Operator list.html?nocache=8822#*					
Incidents	Serious Incidents 20 Years Trend	*https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends*	*https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpage s&NQUser=PDM_WEB_USER&NQPassword=Public_Web_ User1&PortalPath=%2Fshared%2FPDM%20Public%20Web site%2F_portal%2FSC%20Incident%20Trend&Page=Serious &Action=Navigate&col1=%22PHP%20-%20Geo%20Location %22.%22State%20Name%22&val1=%22%22*					
	Significant Incident 20 Year Trend	*https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends*	*https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpage s&NQUser=PDM_WEB_USER&NQPassword=Public_Web_ User1&PortalPath=%2Fshared%2FPDM%20Public%20Web site%2F_portal%2FSC%20Incident%20Trend&Page=Signific ant&Action=Navigate&col1=%22PHP%20-%20Geo%20Locat ion%22.%22State%20Name%22&val1=%22%22*					
	All Reported Incidents 20 Year Trend	*https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends*	*https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpage s&NQUser=PDM_WEB_USER&NQPassword=Public_Web_ User1&PortalPath=%2Fshared%2FPDM%20Public%20Web site%2F_portal%2FSC%20Incident%20Trend&Page=All%20 Reported&Action=Navigate&col1=%22PHP%20-%20Geo%2 0Location%22.%22State%20Name%22&val1=%22%22*					
	Significant Incidents Consequences	*https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends*	*https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpage s&NQUser=PDM_WEB_USER&NQPassword=Public_Web_ User1&PortalPath=%2Fshared%2FPDM%20Public%20Web site%2F_portal%2FSC%20Incident%20Trend&Page=Signific ant%20Incidents%20Consequences*					

Notes and Recommendations
• All the data here are presented in a database system that stores all the data.
• The system is in an interactive web-designed format where you generate, sort, and search for data needed.
• All data is downloadable. Either an "Export table" is available directly beneath the table. Or, if you are inside the database system, then on the upper right side there is a tab next to the Help sign, where you can download, print, and refresh the data.
• Charts and tables presented are interactive. If you click on them, additional data will be presented.

Supplementary Databases and Resources	
Information Provided	Link
Research & Development	*https://primis.phmsa.dot.gov/rd/*
Public Stakeholder, Damage Prevention, Land Use Planning Links	*https://primis.phmsa.dot.gov/comm/Links.htm?nocache=9864*
Federal Government Links	
State Regulator Links	
Pipeline Industry Links	
Other Industry Related Stakeholders Links	

Notes and Recommendations
• These are supplementary data sources that are present in the website.

5.6.2 Pipeline and Hazardous Materials Safety Administration

Pipeline Freight System							
Website				**Link**			
National Pipeline Mapping System				*https://www.npms.phmsa.dot.gov/*			
Directory for Data Center Inside Website				*https://pvnpms.phmsa.dot.gov/PublicViewer/*			
YouTube Instructional Video				*https://youtu.be/OnZFGVwae4I*			
Information Provided	Data Available	Data Path	Sub-link	Latest	Policy	Format	Category
Pipeline System per State and Country	Accidents (Liquid)	Home\Public Map Viewer	*https://pvnpms.phmsa.dot.gov/PublicViewer/*	NA	Public	Web Map	Visuals Map
	Incidents (Gas)						
	Gas Transmission Pipelines						
	Hazardous Liquid Pipelines						
	LNG Plants						
	Breakout Tanks						
	Other Populated Areas						
	Highly Populated Areas						
	State Boundaries						
	Country Boundaries						
	Satellite						

Notes and Recommendations
• All information presented here are web-based, interactive maps • To download the maps, you need to create an account • To view the maps, you need to input a state and county, then the map appears

5.6.3 US Energy Information Administration

<table>
<tr><th colspan="8">Pipeline Freight System</th></tr>
<tr><td colspan="4">Website</td><td colspan="4">Link</td></tr>
<tr><td colspan="4">US Energy Information Administration</td><td colspan="4">https://www.eia.gov/</td></tr>
<tr><td colspan="4">Directory for Data Center of Petroleum & Other Liquids</td><td colspan="4">https://www.eia.gov/petroleum/</td></tr>
<tr><td colspan="4">Directory for Data Center of Natural Gas</td><td colspan="4">https://www.eia.gov/naturalgas/</td></tr>
<tr><td colspan="4">Directory for Data Center of Coal</td><td colspan="4">https://www.eia.gov/coal/</td></tr>
<tr><th>Information Provided</th><th>Data Available</th><th>Data Path</th><th>Sub-link</th><th>Latest</th><th>Policy</th><th>Format</th><th>Category</th></tr>
<tr><td rowspan="13">Petroleum & Other Liquids</td><td>Prices, Sales Volumes & Stocks by State</td><td rowspan="13">Home\Sources Users\Petroleum Other Liquids\Data</td><td>https://www.eia.gov/dnav/pet/pet_sum_mkt_dcu_nus_m.htm</td><td rowspan="13">Weekly</td><td rowspan="13">Public</td><td rowspan="13">Excel</td><td rowspan="13">Report Statistics</td></tr>
<tr><td>Crude Oil Production</td><td>https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm</td></tr>
<tr><td>Refining and Processing</td><td>https://www.eia.gov/dnav/pet/pet_pnp_wiup_dcu_nus_w.htm</td></tr>
<tr><td>Weekly Imports & Exports</td><td>https://www.eia.gov/dnav/pet/pet_move_wkly_dc_NUS-Z00_mbblpd_w.htm</td></tr>
<tr><td>Imports by Area of Entry</td><td>https://www.eia.gov/dnav/pet/pet_move_imp_dc_NUS-Z00_mbbl_m.htm</td></tr>
<tr><td>Imports by Processing Area</td><td>https://www.eia.gov/dnav/pet/pet_move_imp2_dc_R10-Z00_mbbl_m.htm</td></tr>
<tr><td>Exports</td><td>https://www.eia.gov/dnav/pet/pet_move_exp_dc_NUS-Z00_mbbl_m.htm</td></tr>
<tr><td>Exports by Destination</td><td>https://www.eia.gov/dnav/pet/pet_move_expc_a_EP00_EEX_mbbl_m.htm</td></tr>
<tr><td>Net imports by Country</td><td>https://www.eia.gov/dnav/pet/pet_move_neti_a_EP00_IMN_mbblpd_m.htm</td></tr>
<tr><td>Movements by Pipeline</td><td>https://www.eia.gov/dnav/pet/pet_move_pipe_dc_R20-R10_mbbl_m.htm</td></tr>
<tr><td>Movements by Pipeline Tanker and Barge</td><td>https://www.eia.gov/dnav/pet/pet_move_tb_dc_R20-R10_mbbl_m.htm</td></tr>
<tr><td>Movement by Rail</td><td>https://www.eia.gov/dnav/pet/PET_MOVE_RAIL_A_EPC0_RAIL_MBBL_M.htm</td></tr>
<tr><td>F.O.B costs of Imported Crude Oil</td><td>https://www.eia.gov/dnav/pet/pet_move_imc1_k_m.htm</td></tr>
</table>

	Landed Costs of Imported Crude Oil		*https://www.eia.gov/dnav/pet/pet_move_land1_k_m.htm*				
	Products Supplied Volume		*https://www.eia.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_m.htm*				
Natural Gas	Prices	Home\Sources Users\ Natural Gas Data	*https://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_m.htm*				
	Reserves Summary		*https://www.eia.gov/dnav/ng/ng_enr_sum_a_EPG0_r21_BCF_a.htm*				
	Gross Withdrawals and Production		*https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_FGW_mmcf_m.htm*				
	US Imports & Exports		*https://www.eia.gov/dnav/ng/ng_move_state_a_EPG0_IM0_Mmcf_a.htm*				
	Pipelines Network and Information		*https://www.eia.gov/naturalgas/archive/analysis_publications/ngpipeline/index.html*				
	State-to-State Capacity (Major Pipeline Tonnages, Inflow, Outflow)	Home\Sources Users\Natural Gas Data\Pipelines\ U.S state-to-state capacity	no link, check the data path				
	Total Consumption	Home\Sources Users\Natural Gas\Data	*https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_m.htm*				
Coal	Prices	Home\Sources Users\Coal\Data	*https://www.eia.gov/coal/markets/*				
	Production	Home\Sources Users\Coal\Data\Production	no link, check the data path				
	Imports, Exports & Distribution	Home\Sources Users\Coal\Data\ Imports, Exports &Distribution	no link, check the data path				
	Transportation Costs	Home\Sources Users\Coal\Data\ Transportation costs	no link, check the data path				
Energy Maps	State Energy Profile Maps	Home\Geography\Maps	*https://www.eia.gov/state/*	2016			Visuals Map
	Map Details and Data		*https://www.eia.gov/maps/layer_info-m.php*	2016			

Notes and Recommendations

- If a table pops-ups directly when you access the sub-link, then data are presented in an interactive design. Data from the tables can be downloaded by clicking on "Download Series History" just above the table. You can generate, sort and search for data inside the interactive tables. Also, a small icon called "Graph" located on the top of second column inside each table will enable you to graph any data you choose inside the tables.

- Other sub-links will direct you to a regular page. Click on text highlighted in "blue" to see data.

5.7 Powerful General Directories

General Information	
Information Provided	**Link**
US DOT (HEPGIS) - All Data and Maps for Highway Freight System	*https://hepgis.fhwa.dot.gov/fhwagis/*
Directory for All Freight Data Sources Available	*https://ops.fhwa.dot.gov/freight/freight_analysis/congestion/index.htm*
Directory for all National Transportation Safety Board Report (All Transportation Modes)	*https://www.ntsb.gov/investigations/Pages/default.aspx*

Notes and Recommendations
• HEPGIS is a very powerful framework where you can see all available datasets on highway freight transportation (safety, commodity, FAF, demographics, daily traffic data, etc.) • Directory for All Freight Data Sources is a page were you can see access directly freight-related sources (all of these sources are available in the above tables). • The directory in the third row directly provides all safety reports for all transportation modes.

6. REFERENCES

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www.midamericafreight.org

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