

Colorado Department of Transportation Freight Data Assessment

July 2005



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Freight Data Assessment

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ABBREVIATIONS AND ACRONYMS

AAR	Association of American Railroads
ATA	Air Transport Association
ATR	Automatic Traffic Recorders
BEA	Bureau of Economic Analysis
BEARFACTS	BEA Regional Fact Sheet
BNSF	Burlington Northern Santa Fe Railroad
Caltrans	California Department of Transportation
CC&RD	Contract Carrier & Routing Directory
CDOT	Colorado Department of Transportation
CFS	Commodity Flow Survey
CMSA	Consolidated Metropolitan Statistical Area
COFC	Container on Flat Car
CTPP	Census Transportation Planning Package
CVEC	Commercial Vehicle Electronic Credentialing
CVISN	Commercial Vehicle Information Systems and Networks
DIA	Denver International Airport
DLG	Digital Line Graphs
DMV	Department of Motor Vehicles
DTD	Division of Transportation Development, Colorado Department of Transportation
DOE	Department of Energy
DOR	Department of Revenue
DOT	Department of Transportation
DPH	Department of Public Health and Environment
DRCOG	Denver Regional Council of Governments
DRI	Developments of Regional Impact
ECMT	European Conference of Ministers of Transport
EDC	Metro Denver Economic Development Corporation
EIS	Environmental Impact Statement
ESRI	Environmental Systems Research Institute
EWITS	Eastern Washington Intermodal Transportation Study
FAA	Federal Aviation Administration
FAC	Freight Advisory Committee
FAF	Freight Analysis Framework
FARS	Fatal Accident Reporting System
FedEx	Federal Express
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carriers Safety Administration
FRA	Federal Railroad Administration
FTE	Full-Time Equivalent Employee



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GPS	Global Positioning System
GSP	Gross State Product
GV	Grand Valley
GVWR	Gross Vehicle Weight Rating
HERS	Highway Economic Requirements System
HPMS	Highway Performance Monitoring System
HS	Harmonized System
HTSUSA	Harmonized Tariff Schedule of the United States Annotated
IMPLAN	Minnesota IMPLAN Group
IFTA	International Fuel Tax Administration
ITMS	Intermodal Transportation Management System
ITS	Intelligent Transportation Systems
LCV	Light Commercial Vehicles
LTL	Less than Truckload
LTPP	Long-Term Pavement Performance
MISER	Massachusetts Institute for Social and Economic Research
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Areas
NAICS	North American Industry Classification System
NFR	North Front Range
NHPN	National Highway Planning Network
NHTSA	National Highway Transportation Safety Administration
NIPA	National Income and Product Account
NORTAD	North American Transportation Atlas Data
NTAD	National Transportation Atlas Databases
NTS	National Transportation Statistics
O-D	Origin-Destination
ODOT	Oregon Department of Transportation
PACOG	Pueblo Area Council of Governments
PCE	Passenger Car Equivalent Factors
PIERS	Port Import Export Reporting Service
PMSA	Primary Metropolitan Statistical Area
POE	Port of Entry
PPACG	Pikes Peak Area Council of Governments
RAIRS	Railroad Accident/Incident Reporting System
RDBMS	Rational Database Management System
REIS	Regional Economic Information System
REMI	Regional Modeling, Inc.
RFQ	Request for Qualifications
RR	Railroad
SASHTO	Southeastern Association of State Highway and Transportation Officials
SCAG	Southern California Association of Governments
SCTG	Standard Classification of Transported Goods
SIC	Standard Industry Classification



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SITC	Standard International Trade Classification
SQL	Structured Query Language
STATS	Standard Trucking and Transportation Statistics
STB	Surface Transportation Board
STCC	Standard Transportation Commodity Classification
STRAHNET	Strategic Highway Corridor Network
SU	Single Unit Trucks
TAZ	Traffic Analysis Zone
TDM	Travel Demand Management
TIUS	Truck Inventory and Use Survey
TL	Truckload
TOFC	Trailer On Flat Car
TPR	Transportation Planning Region
TRAC	Trucking Activity Report
TSA	Transportation Satellite Accounts
TSAR	Transportation Statistics Annual Report
TTS	Transportation Technical Services
TxDOT	Texas Department of Transportation
UCFE	Unemployment Compensation for Federal Employees Program
UGB/A	Urban Growth Boundary/Area
UI	Unemployment Insurance
UPS	United Parcel Service
URCS	Uniform Railroad Cost System
US	United States
USGS	United States Geological Survey
VIN	Vehicle Identification Number
VIUS	Vehicle Inventory and Use Survey
VMT	Vehicle Miles Traveled
WIM	Weigh-in-Motion
WTLUS	Waterborne Transportation Lines of the United States



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1.0 INTRODUCTION

1.1 *Background*

The importance of freight movement to Colorado is evident by the level of truck and train activity experienced on the state's highway and rail systems. With a large portion of the state's economy related to natural resources and agriculture, there are huge demands to move these products throughout the state. The rapidly growing urban areas in the state also need many products and goods to support their growth. Furthermore, Colorado is strategically located as a "bridge" state in the national and international infrastructure system for movement of freight, resulting in large quantities of goods flowing through the state. Yet, to date freight mobility has not been a major focus within either the statewide transportation planning process or the development of regional transportation plans.

Recognizing the need to improve upon this situation, the Colorado Department of Transportation (CDOT) has undertaken a significant effort to determine the effect of freight activity on the state's transportation system and the corresponding needs that address those activities. As part of the CDOT freight planning process, Governor Owens, in conjunction with CDOT, created a Freight Advisory Committee (FAC) comprised of users and providers of freight transportation. Understanding that good freight transportation planning will rely on a solid base of relevant data, the Freight Advisory Committee recommended that CDOT fulfill a leadership role in the collection and dissemination of such data. CDOT, concurring with this recommendation, has undertaken this study as a first step in defining its appropriate roles and responsibilities and in developing a framework for a proper data collection program.

1.2 *Objectives*

The key objectives of this study, therefore, are:

- ▶ To identify current and future freight data requirements
- ▶ To assess the availability and the quality of such freight data
- ▶ To develop a framework plan to collect, maintain and make available needed freight data.

1.3 *Work Plan*

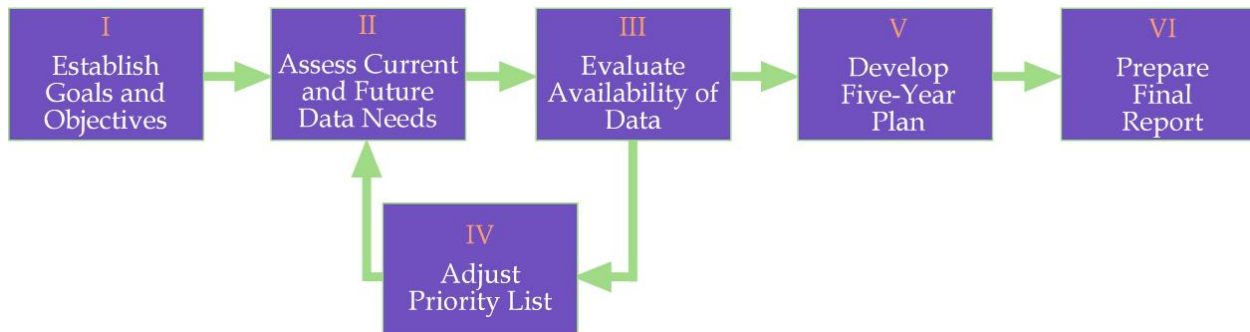
To achieve these objectives, the consultant team established the six-phase work plan illustrated by Figure 1.1. This work plan, the results of which are documented in this report, began with a review and synthesis of the documented goals and objectives of CDOT and local transportation planning entities throughout the state as they relate to freight planning. Then, based on a series of stakeholder interviews, the consultant team prepared a summary of current and future data needs to assist these planning entities in conducting future freight related projects. The next step in the work plan was to evaluate the current availability of the desired data at the local, state or federal level. Key data elements were rated on both their relevance and their quality. Combining the assessment of the availability of data with the needs identified, the consultant



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team then prioritized the key data elements, matched these elements with data collection options, and established some basic priorities for a data collection program. Finally, a series of data collection program options were developed to reflect a range of funding availability, and the consultant team recommended a five-year plan for data collection.

Figure 1-1 Work Plan



1.4 Advisory Group

The entire work plan was conducted under the guidance of an Advisory Group which reviewed interim documents and the final recommendations. This group was comprised of representatives of various departments within CDOT, the Metropolitan Planning Organizations (MPOs) in the state, the Colorado Department of Public Health and Environment, the Colorado Department of Revenue, and the Federal Highway Administration. This group was instrumental in providing critical insight to the data needs, the availability of data, and the opportunities and limitations of data collection programs at the state and local levels.



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2.0 GOALS AND OBJECTIVES

An important first step in recommending a freight data program for Colorado is to establish goals and objectives for CDOT's role in providing data and in warehousing of freight data. The starting point for this task was an examination of the goals and objectives for CDOT as an organization. This included researching the organization's website for stated goals and objectives and a review of key documents such as the CDOT 2030 Statewide Transportation Plan. The next step was to examine the goals and objectives of the transportation planning regions (TPRs) in the state, including both the metropolitan planning organizations (MPOs) and the rural TPRs. Finally, the consultant team utilized its experience in working with freight data both in Colorado and in other states to develop a set of goals and objectives that can guide the freight data program in the state. Appendix A includes a complete listing of the MPO and TPR regional goals and objectives.

2.1 *CDOT Organizational Goals and Objectives*

CDOT organizational goals as provided in the 2005-06 Budget are shown in Table 2-1. They are organized as Mission and Vision Statements and are supported by a set of Values which are expected to guide the organization's achievement. It is important to note that the effective movement of goods is part of the Mission Statement and the integration of goods movement is part of the Vision Statement for CDOT.

Table 2-1 CDOT Organizational Goals

<i>Mission Statement</i> The Mission of the Colorado Department of Transportation is to provide the best multimodal transportation system for Colorado that most effectively moves people, goods and information.
<i>Vision Statement</i> To enhance the quality of life and the environment of the citizens of Colorado by creating an integrated transportation system that focuses on moving people and goods by offering convenient linkages among modal choices.



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2.2 CDOT 2030 Statewide Transportation Plan Goals

CDOT recently adopted the 2030 Statewide Transportation Plan. This plan is unique from previous statewide transportation plans in that it is corridor-focused rather than project-focused. For each of the 350 identified corridors in the state, a corridor vision was developed. Each corridor's vision is based on the role of the corridor in the overall transportation system, identification of deficiencies in the corridor, and the desired future of transportation activity within the corridor. This approach focuses CDOT resources more heavily on doing corridor-level planning. Therefore, the CDOT freight data program must also enable the analysis of freight activity at the corridor level.

The Colorado Transportation Commission sets policy for CDOT. The goals and objectives of the CDOT freight data program need to also be tailored to be consistent with the policy goals of the Transportation Commission. As stated in the CDOT 2030 Statewide Transportation Plan, the Transportation Commission gives high priority to:

- ▶ Preserving, maintaining and enhancing the existing transportation system.
- ▶ Judiciously expanding the system to respond to growth, and recognizing the opportunities provided by the Colorado Tolling Enterprise to incorporate new highways or additional lanes into the system.
- ▶ Recognizing the role of all modes of transportation in addressing mobility needs, and working with planning partners to leverage limited financial resources.

Freight transportation plays a role in each of these three priorities. For the first priority, the heavier vehicles associated with freight trucks and freight rail tend to have a more negative effect on the transportation infrastructure. For the second priority, the higher growth rates of freight relative to passenger cars means that system expansion will increasingly need to account for the needs of goods movement. Consideration of the role of tolling in system expansion is particularly relevant for trucks, because as their value of time is typically much higher than that of passenger cars, the tolling revenues that can be generated from truck-only lanes is generally higher than that from passenger tolling or tolling of mixed-use facilities. The third priority explicitly incorporates the multi-modal nature of the transportation system of which freight is a primary part.

The goals and objectives of the CDOT freight data program must also take into account the funding decision process at the state-level. CDOT funding decisions are based on the following four investment categories:

- ▶ **System Quality** – Maintaining the functionality and aesthetics of the existing transportation infrastructure.
- ▶ **Mobility** – Providing for the efficient movement of people, goods and information.
- ▶ **Safety** – Reducing fatalities, injuries and property damage for all users of the system through services and programs.
- ▶ **Program Delivery** – Providing for the successful delivery of CDOT projects and services.



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Specific performance measures and objectives have been developed for each investment category to allow the Transportation Commission and CDOT to decide how best to allocate financial resources available to the state. The CDOT freight data program needs to be able to support the analysis of these performance measures at the project, corridor and system levels.

2.3 Summary of Goals and Objectives of Other Transportation Agencies in Colorado

While meeting the needs of CDOT is a priority of the freight data program, CDOT also has a number of transportation partners throughout the state who have freight data needs that should be considered. Each of the transportation agencies in the state has a unique set of goals and objectives tailored to local priorities and values.

The amount of effort devoted to freight planning varies for each of the transportation agencies in the state. Many of the regional plans include explicit language to cover freight, some include implicit language to cover freight, and some make little or no mention of freight. Many of the rural TPRs devote the most effort to explicitly developing freight-related goals and objectives in their transportation plans. Many of the more urbanized transportation agencies tend to focus on modes devoted to moving people rather than devoted to moving goods. Some common themes in terms of the goals and objectives that were mentioned in multiple transportation plans are as follows:

- ▶ Support for economic development
- ▶ Improvement of access to interstate highways
- ▶ Enhancement of truck routes
- ▶ Improvement of rail crossings
- ▶ Discouragement of rail abandonment
- ▶ Enhancement of air freight service



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2.4 *Goals and Objectives for CDOT Freight Data Program*

The Regional Transportation Plans' goals and objectives are somewhat different from those in the Statewide Transportation Plan. The differences are focused on three topics. Specifically, the issues of access and freight rail are more evident. These are particularly emphasized in the goals and objectives of the rural TPRs. Additionally, the nature of freight trips is that they are much longer than passenger trips. Therefore, there is a natural role for state transportation agencies to assume a relationship role in freight planning and freight data. Finally, because freight data collection, analysis and storage are expensive activities, there should be an awareness of CDOT's fiscal constraints and the need to be cost-effective in creating a statewide freight data program. The goals and objectives of the CDOT freight data program should incorporate these elements. The complete goals and objectives for the CDOT freight data program should be:

- ▶ Track activity for the two most significant freight modes in the state: truck and rail.
- ▶ Enable statewide, corridor-focused planning.
- ▶ Track the performance of the transportation system in meeting the needs of the freight community.
- ▶ Enable decision-makers to understand the relationship between freight and the economy.
- ▶ Determine the impact of freight activity on the other users of the transportation system.
- ▶ Allow for the incorporation of freight interests in the project-selection process.
- ▶ Incorporate freight data related to rural access to the interstate and national rail infrastructure.
- ▶ Focus on multi-jurisdictional freight data elements that are most effectively managed at the state level.
- ▶ Develop a fiscally-constrained freight data program that considers resources available to CDOT and the long-term costs of collecting, analyzing, storing and disseminating data throughout CDOT and partner agencies in the state.



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3.0 CURRENT AND FUTURE DATA NEEDS

3.1 *Methodology*

The needs assessment was based on extensive stakeholder interviews. Interviewees included staff at the CDOT Division of Transportation Development, CDOT Information Services personnel, rural and urban TPR staff, economic development professionals, and representatives of the private sector.

Interviews consisted of three portions. The first portion of the interview asked about freight planning needs of the stakeholders. The freight planning needs included policy issues, project types, and general questions about freight planning. The second portion of the interview asked the stakeholders what data were needed to achieve freight planning objectives. The interviewees ranked each of the data elements in terms of the relevance for freight planning and current availability of the data. The last portion of the interview asked about approaches to data collection that the stakeholders could recommend as potential options for future freight data collection efforts.

An interview guide was developed to standardize the interview process. The main version of the interview guide is shown in Appendix B. Slight adjustments were made depending on the particular stakeholder group being interviewed. For example, interviews with the private sector focused more on freight-related projects rather than policy issues.

Based on the qualitative and quantitative sections of the interviews, the consultant team then developed a set of freight data needs for Colorado.

3.2 *Description of Stakeholder Interviews*

To develop the interview list, a comprehensive set of freight stakeholders was identified based on interested parties at transportation agencies in the state and members of the Colorado Freight Advisory Council. In total, there were over 40 interviewees. A list of the stakeholder agencies and individuals is shown in Table 3-1.



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Table 3-1 List of Stakeholder Agencies and Departments

Entity	Persons Interviewed
Federal Highway Administration	Craig Larson
Federal Railroad Administration	Steve Fender
Federal Motor Carriers Safety Administration	Bill Copely
Denver Regional Council of Governments (DRCOG)	John Coil, Erik Sabina, Gregory Erhardt, Lawrence Tilog, and Stephen Cook
Pikes Peak Area Council of Governments (PPACG)	Craig Kaspar, Warren Whiteaker, Mary Frye
North Front Range MPO (NFR MPO)	Suzette Theiman
Pueblo Area Council of Governments (PACOG)	Bill Moore
Grand Valley MPO (GV MPO)	Ken Simms
CDOT Region 4	Stan Elmquist, Myron Hora
CDOT Rail Crossing Program	Hayne Hutchinson
Colorado Department of Public Health and Environment	Tammy Ottmer
Union Pacific Railroad *	Steve McLaws
Burlington Northern Santa Fe Railroad	Jay Chapa
Schuck Corporation	Bob Lowe
East Central Council of Governments	MaryJo Downey
Ports-to-Plains Coalition	Joe Kiely
Denver International Airport	Rick Busch
Colorado Motor Carriers Trucking Association	Greg Fulton
Denver Metro EDC (a branch within the Denver Chamber of Commerce)	Laura Brandt
CDOT Division of Transportation Development	David Busby, Leah Ware
CDOT Modal Programs	Tom Mauser
CDOT Oversize/Overweight Permits	Teresa Carillo and Teresa Lawser
CDOT Division of Aeronautics	Chris Pommeroy
CDOT Statewide Data Systems	Tim Baker
CDOT GIS Unit	Marv Koleis
* No formal interview was conducted due to proprietary data concerns.	

3.3 Qualitative Results of Stakeholder Interviews

3.3.1 Corridor-Level Freight Data Needs

One of the unique characteristics of the statewide transportation planning process in Colorado is its corridor-focused approach. This can be contrasted with most states which perform a project—focused transportation planning process. This corridor-focused transportation planning process requires corridor-specific data. The most commonly-used corridor-level freight data that are used are truck counts. Most of the interviewees stated that truck count data currently collected by CDOT were adequate in terms of the locations where the data are collected, the number of locations, and generating accurate truck counts. However, there was a general sense that more information was needed in terms of the types of commodities and the specific origin-destination patterns of trucks on the freight intensive facilities in the state. In addition, to



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provide useful information for long-range transportation planning, corridor-level freight information can also be used for the following activities:

- ▶ **Assist with corridor studies.** To fully assess the impact of corridor improvements on the freight sector, specific freight activity data are required. While, there are methods that exist for estimating this information at the corridor-level using existing sources, actual collected data on commodities and origin-destination combinations could be used to significantly improve the accuracy of these estimates. Commodity information is used to determine which producing and consuming industries are benefiting from corridor improvements. Origin-destination information is used to determine the location of these industries. The combination of commodity information and origin-destination information can be used to identify project proponents in the private sector, and the information can also be used for advocacy of the project to a broad constituency of transportation agencies.
- ▶ **Perform modal diversion analysis.** A major issue in Colorado is determining the potential for diverting truck trips to the rail mode. Truck-rail diversion models determine the probability of shipments using each of the modes based on two primary factors: commodity and trip length. These are two data elements that cannot be determined from the existing truck count data. Real-world corridor-level truck data that include commodity and origin-destination information would significantly improve the accuracy of these modal diversion estimates.
- ▶ **Calibrate models with truck count and origin-destination data.** The regional travel demand models in the state have a truck component. Corridor level truck data would improve the accuracy of the calibration and validation of these models. While truck counts are adequate for these processes, origin-destination data (particularly at the cordon points of these models) could be used to determine if the split of internal-external, external-internal and external-external trip balance is being estimated accurately in the model. Additionally, corridor-specific commodity information at various locations could be used to verify that trip generation and attraction rates are roughly accurate at freight-intensive locations. Hourly truck count data at specific locations are also helpful in calibrating and validating models that have peak-period and non-peak period components. It is important to ensure that actual time-of-day truck count data are available at key calibration and validation points for travel demand models.

3.3.2 Economic Analysis Data Needs

Several references were made throughout the interviews regarding the desire to better incorporate economic impacts of transportation improvement projects in Colorado. This information was of interest for both the movement of passengers and goods. Interviewees stated that for freight, information on economic impacts was particularly lacking. This was seen to be important at both the executive level within the organization and also for other staff at CDOT. The types of information that would be needed to perform economic analysis include:



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- ▶ **Truck Value of Time** – The relationship between travel time and costs is needed to monetize the impacts of changes in roadway conditions on the trucking industry. This value of time varies significantly depending on the perspective that is considered (e.g. truck driver, motor carrier firm, shipper, receiver and the general public).
- ▶ **Rail Value of Time** – Similar to trucks, the relationship between travel time and costs is needed to monetize the impacts of changes in the rail infrastructure. Changes include increases in speed, allowable weight, and travel distances for rail relocation studies.
- ▶ **Input-Output Data** – Input-output data are needed to match commodities that are shipped to consuming industries. This allows for improvements to the freight transportation infrastructure to be assigned to the appropriate industry on both the consuming and producing sides and, therefore, is an important step in monetizing the benefits of transportation infrastructure.
- ▶ **Transportation Spending by Industry** – This information is used to determine how improvements in the transportation or logistics systems will cascade through to cost savings for consumers of transportation services. This information is also used to determine which industries are most sensitive to changes in the transportation system.
- ▶ **Employment by Sub-Sector** – Knowing the employment levels within freight transportation as a whole is useful for determining the direct employment impact of increased freight transportation activity within a region. Also, understanding the relationship between the revenues generated by an industry and the amount of employment will assist in estimating the job impacts of increased freight transportation activity within a region.
- ▶ **Induced and Indirect Benefits of Transportation** – Changes in the level of employment and activity for freight transportation has an impact on jobs in other non-transportation-related fields. These indirect and induced jobs need to be incorporated in a full economic analysis.
- ▶ **Safety and Pavement Data** – Many proposed transportation improvements have impacts on truck operating safety and pavement maintenance requirements. While many transportation improvements are limited to monetizing travel time savings, a full economic analysis would incorporate the savings from reduced accidents and reduced needs for pavement maintenance.

As stated in the interviews, there are three primary uses of freight-related economic data for transportation and economic development agencies: 1) inputs into the project prioritization process, 2) determination of the economic impact of rail relocation projects proposed for Colorado, and 3) to generally understand the economic significance of the goods movement sector and goods movement-dependent sector.



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3.3.3 Rail Data Needs

Freight rail is a key component of the freight transportation system in Colorado. This was mentioned by many of the interviewees as important in the freight transportation process. Freight has also been a part of past and ongoing projects such as the *Public Benefits & Costs Study of the Proposed BNSF/UP Front Range Railroad Infrastructure Rationalization Project*. The Public Benefits Study performed a cost-benefit analysis of relocating the Class 1 railroads that currently run through many of the major metropolitan areas in the state. This rail relocation study is an example of a freight related study that has occurred in the state and is typical of others that are likely to continue into the future. Improved rail activity data are needed to better understand the impacts of these rail relocation projects. Data needs related to rail relocation include the economic value of time data for rail and truck mentioned in the previous section. However, it also includes very specific information about rail activity such as rail volumes for each of the major rail lines. Ideally, volume data would also include commodity information and origin-destination information. Similar to the truck mode, the commodity information would be used to estimate the economic significance of rail activities and the origin-destination information would be used to determine the location of those impacted by changes to the rail system.

In addition to rail line volume data, information on the number of rail cars and the length of trains would be helpful to determine the nature of the interaction between rail and other modes at at-grade crossings. This would be used to estimate the impact of rail activity on automobile and truck activity. Also, information on train speeds would be needed to understand the travel time impacts of changes in operational activity for rail. The ability to monetize these travel time savings is also a key rail data item for these analyses.

3.4 Quantitative Results of Stakeholder Interviews

Select stakeholders were also asked to rank a list of freight data elements in terms of relevance and quality for freight transportation planning. For relevance, the ratings ranged from 0 (not relevant) to 5 (most relevant). For quality, the ratings also ranged from 0 (lowest quality) to 5 (highest quality). This quantification of data elements allows for tracking trends over time regarding stakeholder perception of which data elements are important and how much they are improving. The average rankings of the freight data elements are shown in Tables 3-2 through 3-4.



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Table 3-2 shows the freight data element ratings sorted by relevance. Truck counts are rated as the most relevant for freight transportation planning, with a rating of 4.8 out of 5.0. This is much higher than travel time data and origin-destination data, which rated 4.1. Of the 18 freight data elements, only these three elements were assessed to be higher than 4.0. Vehicle classification data was the fourth highest rated freight data element in terms of relevance, rating 3.9.

The five lowest rated data elements in terms of relevance include: cost of shipping, emissions data, value of products moved, facility-specific information, and commodity-specific information. All of these elements rated lower than 3.0 in terms of relevance. Some of these low ratings are inconsistent with the importance of economic and rail analysis that was captured in the interview process. Commodity-specific information, value of products moved, and cost of shipping data are all important for economic analysis. Cost of shipping data, which are critical for economic analysis, actually had the lowest relevance rating at 1.6. This mismatch between the qualitative and quantitative portions of the interviews may be attributable to a misunderstanding of the specific freight data elements required to perform economic analysis.

Table 3-2 Freight Data Element Rating Sorted by Relevance

Freight Data Element	Relevance
Truck counts	4.8
Travel time data (delay characteristics)	4.1
Origin–destination data	4.1
Classification of vehicles	3.9
Temporal variability	3.7
Accident rate data	3.7
Routing information	3.7
Modal information	3.5
Economic forecasts	3.5
Socioeconomic data	3.5
Transportation network information	3.4
Truck trip generation rates	3.4
Freight value of time	3.2
Commodity specific information	2.8
Facility specific information	2.7
Value of products moved	2.4
Emissions data	2.3
Cost of shipping	1.6



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Table 3-3 shows the freight data elements sorted in terms of quality. The six freight data elements with the lowest quality rating are value of products moved, commodity-specific information, cost of shipping, freight value of time, temporal variability, and routing information. All of these elements were rated at 1.3 or less. The two lowest elements are very important to performing economic analysis, showing that there is a significant amount of work required to provide the information needed to perform these analyses in Colorado. The highest rated freight data elements in terms of quality are transportation network information, truck counts and accident rate data. These are the only data elements rated at 2.9 or higher. This reinforces the notion of truck count data being adequate to support transportation planning.

Table 3-3 Freight Data Element Rating Sorted by Quality

Freight Data Element	Quality
Transportation network information	3.1
Truck counts	3.0
Accident rate data	2.9
Socioeconomic data	2.6
Economic forecasts	2.3
Emissions data	2.3
Classification of vehicles	2.2
Travel time data (delay characteristics)	2.1
Modal information	2.0
Facility specific information	1.9
Origin–destination data	1.8
Truck trip generation rates	1.8
Routing information	1.3
Temporal variability	1.2
Freight value of time	1.2
Cost of shipping	1.0
Commodity specific information	1.0
Value of products moved	0.9



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Table 3-4 shows the freight data elements sorted in terms of the difference between quality and relevance. Origin-destination data is particularly notable in terms of the difference between the relevance and quality of the data. Origin-destination data has the third highest difference of the entire set. It is also the only freight data element that has an average relevance higher than 4.0 and an average quality lower than 2.0. Temporal variability and routing information are the only two other freight data elements with a difference greater than 2.0.

Table 3-4 Freight Data Element Rating Sorted by Difference between Relevance and Quality

Freight Data Element	Relevance	Quality	Difference
Temporal variability	3.7	1.2	2.5
Routing information	3.7	1.3	2.4
Origin–destination data	4.1	1.8	2.3
Freight value of time	3.2	1.2	2.0
Travel time data (delay characteristics)	4.1	2.1	2.0
Commodity specific information	2.8	1.0	1.8
Truck counts	4.8	3.0	1.8
Classification of vehicles	3.9	2.2	1.7
Truck trip generation rates	3.4	1.8	1.6
Modal information	3.5	2.0	1.5
Value of products moved	2.4	0.9	1.5
Economic forecasts	3.5	2.3	1.2
Socioeconomic data	3.5	2.6	0.9
Accident rate data	3.7	2.9	0.9
Facility specific information	2.7	1.9	0.8
Cost of shipping	1.6	1.0	0.6
Transportation network information	3.4	3.1	0.3
Emissions data	2.3	2.3	0.0

3.5 Summary of Interview Results

The qualitative portion of the interviews revealed that there are three key freight data needs that are important for freight transportation planning in Colorado:

- ▶ Corridor-specific information
- ▶ Economic analysis information
- ▶ Rail data.

The quantitative portion of the interviews confirmed that corridor specific information is indeed important. While it could not be used to confirm the importance of the other two elements, the qualitative portion of the interviews should take precedence over the quantitative portion of the interviews. Therefore, the next chapter will focus on freight data elements within these three categories and the methods associated with collecting freight data.



Freight Data Assessment

4.0 FREIGHT DATA AVAILABILITY

There is a considerable amount of freight-related data which are available in Colorado. This chapter begins with a brief description of the freight data available within CDOT, along with data available from other state agencies. Then, a brief description is provided of the major national freight data sources, along with some common uses of the freight databases. This is followed by a tabular list of a wider set of data that are often used for freight analysis. Finally, Appendix C provides a detailed description of over 60 freight-related databases.

4.1 *Colorado-Specific Freight Data and Uses*

4.1.1 CDOT Truck Counts

CDOT has an extensive truck count program which includes a combination of permanent and portable classification counts at hundreds of locations. These data are available on the CDOT website. CDOT also provides truck count information as part of the Transportation Planning Dataset. This dataset is maintained in ArcView and is moving from Sybase SQL Anywhere Software to Oracle Software. It contains several Geographic Information System files and databases that include boundary descriptions of different geographic representations within the State. Base year truck count estimates are available along with forecasts of average annual daily traffic and truck percentages. This information is part of CDOT's annual submittal to the Federal Highway Administration (FHWA) as part of the Highway Performance Monitoring System (HPMS). Truck count estimates are particularly useful in quickly identifying freight-intensive locations. They are also used by the TPRs to calibrate and validate the truck portions of their travel demand models.

CDOT currently has a comprehensive vehicle classification count program, mostly in rural areas. This program meets federal requirements and also is used for statewide transportation planning efforts. The program includes numerous continuous automatic traffic recorders (ATRs), as shown in Figures 4-1 and 4-2.

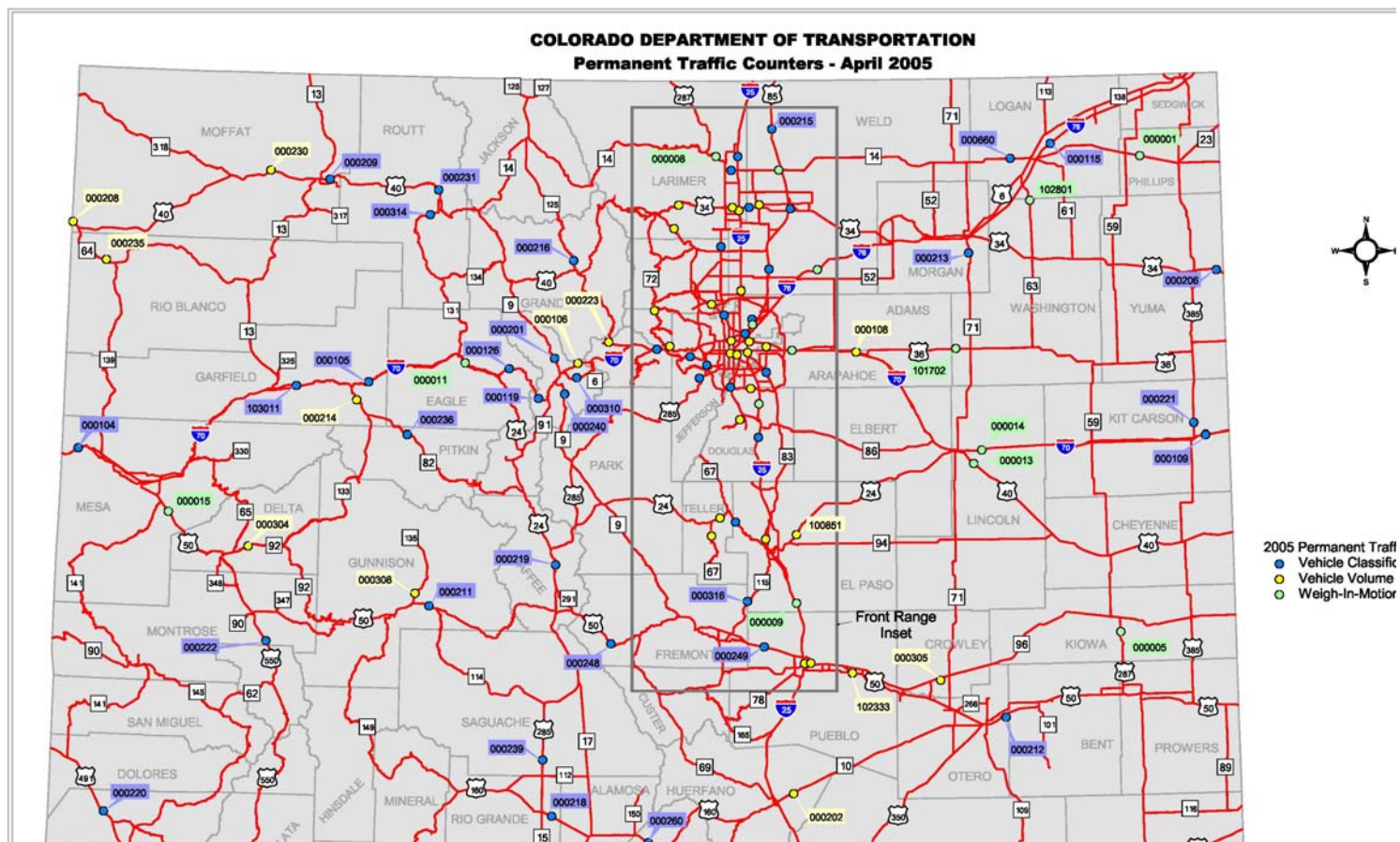
4.1.2 CDOT Weigh-in-Motion (WIM) Program

CDOT has a WIM program that is part of its traffic data collection program. There are 15 WIM locations concentrated primarily around the northern portion of the state. Each WIM location is capable of collecting classification count data, speed data, and weight per axle data for each vehicle at the location.



Freight Data Assessment

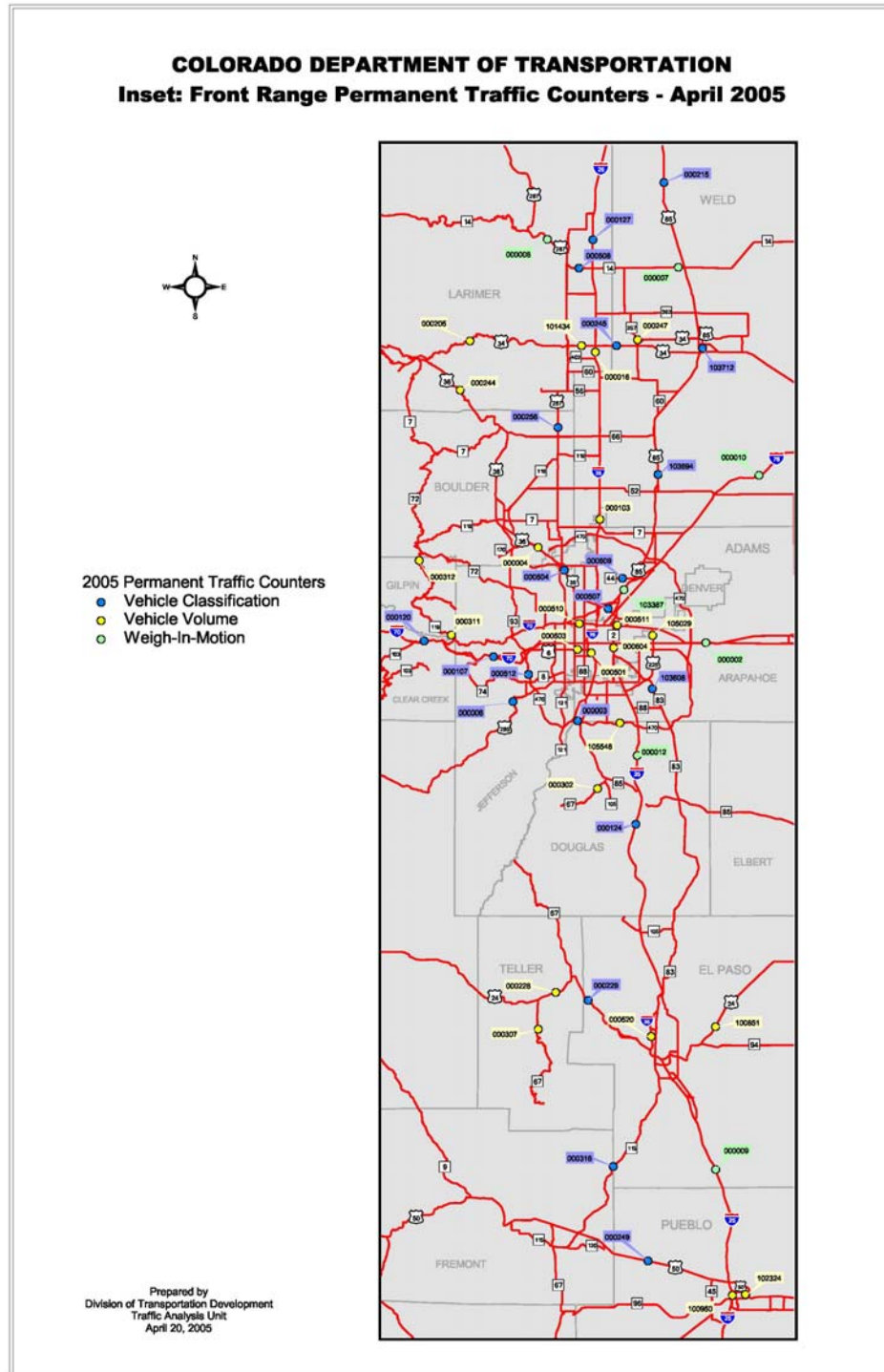
Figure 4-1 Colorado Permanent Traffic Counter Locations





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Figure 4-2 Colorado Front Range Insert – Permanent Traffic Counters





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4.1.3 CDOT Freight Infrastructure Study

In 2000, CDOT conducted the *Freight Infrastructure Study* to provide freight information and analysis to update the TPR plans, to assist CDOT in updating the statewide plan and potentially to assist CDOT in developing an approach to a freight planning program. Freight issues were identified through surveys of local, regional and state freight stakeholders. Basic sources of freight data used in the report included:

- ▶ National and state sources of data describing freight movement, principally the 1993 Bureau of Transportation Statistics Commodity Flow Survey, the 1992 Bureau of the Census Truck Inventory and Usage Survey, and county-level employment information available from the County Business Patterns dataset.
- ▶ Data from the Colorado Department of Agriculture, the Colorado Geological Survey.
- ▶ Studies conducted just prior to the development of the Colorado Freight Infrastructure Study such as the CDOT State Rail Plan.
- ▶ CDOT count program data describing truck volumes on all state roads.

The report for this study provides freight data separately for each of the TPRs in Colorado and includes information such as truck VMT by functional classification, tons of freight moved by truck type and five commodity groups. While these data are useful for understanding freight activity at the TPR level, most of the data sources that were used in this report have since been updated to reflect more current years of activity. Both the Commodity Flow Survey and Vehicle Inventory and Use Survey were updated to reflect 1997 data and they are currently being updated to reflect 2002 freight activity. Therefore, the information in this report provides a summary of freight activity in the past, but other sources need to be used to understand freight activity in Colorado today and to forecast freight activity in the future. The report does qualitatively describe the freight issues in the state from the perspective of shippers, carriers and government agencies. Many of these freight issues are still relevant to the current freight planning environment.

4.1.4 CDOT TRANSEARCH Freight Flow Data

Several years ago, CDOT purchased a TRANSEARCH database from Reebie Associates. This database includes estimates of the amount of data moved for each of over 30 commodities at the sub-state level of analysis for Colorado. The database also includes information by each of several different modes such as private trucks, less-than-truckload trucks, truckload trucks, carload rail and intermodal rail. This database has been used in studies such as the Eastern Colorado Mobility Study to perform freight planning. The data are estimated for year 1996.



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4.1.5 CDOT Division of Aeronautics

The CDOT Division of Aeronautics has recently released a request for qualifications (RFQ) to collect air cargo data at 50 of the 77 smaller airports in the state. The data will be collected through surveys of airport operators and will incorporate the activities of both belly cargo and dedicated carriers such as FedEx and UPS. General information collected will include inbound and outbound tons and limited information on commodity types.

4.1.6 Colorado Department of Revenue

The Colorado Department of Revenue operates the state's ports of entry. Over the years, there have been some commercial vehicle surveys that have been conducted at these locations. These surveys were primarily focused on gathering information for enforcement purposes rather than for freight planning. These surveys were not conducted in a consistent format and they were not accompanied with truck count data collection. Therefore, these data are not easily incorporated into a freight data program for CDOT.

4.2 *Available Freight Data in Other Western States*

4.2.1 California Freight Data

Over the past several years, the California Department of Transportation (Caltrans) has performed many freight data collection and analysis activities. In 2000, Caltrans performed a roadside truck O-D survey at all of the weigh stations in the state. The data were restricted to trucks with 3 or more axles. The data were collected during one weekday during the typical operating hours at each weigh station (between 9 A.M. and 5 P.M.) Information collected included origin, destination, last stop, next stop, and commodity.

Caltrans also developed the Intermodal Transportation Management System (ITMS) database in 1999. This data base was based on TRANSEARCH data that were augmented based on local production and consumption data compiled by the state. The database estimates the flow of goods between each county in the state by mode and commodity. In 2004, Caltrans developed a forecast of the base year commodity flow database. Caltrans also publishes a truck count book which focuses specifically on truck count and truck volume estimates on the state highway and interstate system in the state.

There are also several regional truck models that exist in the state. The Southern California Association of Governments (SCAG) first developed its truck model in 2000, and is currently in the process of updating the model. The Los Angeles Metropolitan Transportation Authority is developing its model for estimating truck activity in Southern California. Caltrans also funded the development of a truck model for the San Joaquin Valley Area, which includes seven counties located in the middle of the state.



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4.2.2 Oregon Freight Data

The Oregon Department of Transportation (ODOT) has worked with the regional transportation agencies in the Portland metropolitan area on several freight data programs. In 2002, a commodity database was developed for the Portland metropolitan area for both a base year and a forecast year. The Port of Portland has also developed a freight facility database which incorporates information on major shippers in the region. The freight facility database includes information on square footage of the facility, sales in dollars, employment and commodities shipped for each facility. ODOT later developed a freight flow database with forecasts for the entire state.

The Port of Portland also collected detailed logistics information for a set of key shippers in the region. The information collected for each shipper included the commodities, locations and modes used for all consumed and produced goods for the facility. This information was also mapped to graphically display the movement of goods for each shipper.

Transportation agencies in the Portland metropolitan region recently started a project to collect truck information. This data collection effort includes 250 24-hour vehicle classification counts, 30 roadside O-D surveys on the highway, 70 roadside O-D surveys at freight-intensive facilities, 30 truck trip diaries, and a license plate survey.

4.2.3 Washington Freight Data

In the early 1990s, the Washington DOT performed the Eastern Washington Intermodal Transportation Study (EWITS). This study collected roadside O-D truck data at weigh stations in eastern Washington. These data were used to develop a truck model for the eastern portion of Washington. Following upon this study, the Washington DOT initiated the Strategic Freight Transportation Analysis. This study incorporated freight data collection and analysis including:

- ▶ Statewide Origin-Destination Truck Survey – Same Sites Over Four Seasons
- ▶ Shortline Railroad Economic Analysis – Capital and Operational Investment Needs for Shortline Railroads by Commodity or Product
- ▶ Strategic Resource Access Road Network Study
- ▶ Survey of Wheat and Barley Elevators throughout Eastern Washington
- ▶ Forest Products Survey
- ▶ Mining and Minerals Survey
- ▶ Fruit and Vegetables, Wine, Hay, Livestock Survey



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4.2.4 Texas Freight Data

The Texas Department of Transportation (TxDOT) has two major aspects to its freight program. First, Texas purchased TRANSEARCH data in 2000. These data have been used as information for the statewide plan and for many other freight planning efforts in the state. Second, TxDOT has also developed a truck component to its statewide travel demand model. The truck portion of the model was developed primarily by disaggregating the freight flows in the TRANSEARCH data to the zone level and routing the data to the statewide road network. There was also a roadside O-D survey conducted at the weigh station outside of Dallas that was performed for a truck emissions estimate by the Texas Commission of Environmental Quality.

4.3 *Major National Freight Data and Uses*

4.3.1 Bureau of Transportation Statistics Commodity Flow Survey

The Commodity Flow Survey (CFS) provides data on the flow of goods by mode for several different geographic regions. The 1993, 1997 and 2002 CFS are a continuation of statistics collected in the Commodity Transportation Survey, which began in 1963. The CFS estimates freight flows based on statistically-expanded data collected from a universe of about 800,000 establishments engaged in mining, manufacturing, wholesale, auxiliary establishments (warehouses) of multi-establishment companies, and some selected activities in retail and service. For the 1997 CFS, roughly 100,000 establishments were selected, and each establishment reported a sample of about 25 outbound shipments for a one-week period in each of four calendar quarters in 1997. This produced a total sample of over 5 million shipments. For each sampled 1997 CFS shipment, zip code of origin and destination, 5-digit Standard Classification of Transported Goods (SCTG) code, weight, value, and modes of transport were provided. Information on whether the shipment was containerized, a hazardous material, or an export was also obtained. The 2002 CFS is in the final stages of development and should be completed by the end of 2005. The 2002 CFS uses data fields similar to the 1997 CFS. However, the samples were reduced to roughly 50,000, which will decrease the accuracy of the final estimates. The CFS data can be accessed through pre-defined tables that are available on the 1997 CFS CD. Customized CFS tables can also be created using software that is on the CD.

CFS data are often used to quickly estimate freight flows for specific regions because they include origin-destination data that are not available from many other sources. As an example, the pre-defined tables include a table that show the freight flows between Colorado and each state in the country. The pre-defined tables also show the freight flows by commodity type and by mode for the state of Colorado. These tables also provide freight flows for the major metropolitan areas in the country, including the Denver metropolitan region. Therefore, the major flows in, out and around Denver can be estimated. Also, the freight flows for the Denver metropolitan region are provided by mode and commodity.



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Another advantage of the CFS is that it includes both tonnage and value data for most freight flows. These data are often used to develop ton-value conversion factors, which are used to convert tonnage flows to value of shipment flows. For example, truck count data can be used to estimate tonnages moved on a particular roadway. Origin-destination surveys can be used to determine the distribution of goods on the roadway. Then the ton-value conversion factors can be used to estimate the value of the shipments on that roadway.

4.3.2 Federal Highway Administration Freight Analysis Framework

The Freight Analysis Framework (FAF) integrates data from a variety of sources to estimate commodity flows and related freight transportation activity among states, regions, and major international gateways. FAF estimates freight flows for 1998, 2010, and 2020, but is currently under revision. The estimation includes commodity flows and related freight transportation activity among states, sub-state regions, and major international gateways. The FAF also forecasts changes in those flows and activity based on shifts in economic conditions, availability of transportation facilities, and other factors. The Office of Freight Management and Operations of the FHWA designed the FAF as a policy analysis tool for the U.S. Department of Transportation (DOT). Since the initial release of FAF results in 2000, the FAF has become a major data product for the larger transportation community.

Maps and national statistics from the FAF have become very popular with the transportation community. FAF maps and the State Freight Transportation Profiles developed by FHWA from FAF data have been used extensively in presentations to state executives and the public. Examples of some of the maps available from the FAF for Colorado are shown in Figures 4-3 and 4-4. Because the FAF contains proprietary data, FAF outputs for distribution outside the U.S. DOT are confined to the following:

- 1) For each state or major international gateway of origin, estimates for 1998 and forecasts for 2010 and 2020 of the tons of freight moved in the United States by state or major international gateway of destination, type of commodity, and mode of transportation.
- 2) For each state, major international gateway, and major metropolitan area of origin, maps of estimated flows for 1998 and forecasted flows for 2010 and 2020 along major routes by range of tonnage and mode of transportation.
- 3) For segments on major highways, maps of estimates for 1998 and forecasts for 2010 and 2020 showing ranges of the number of trucks using the segment and the tons of truck-carried freight.
- 4) For rail and waterway segments, maps of data for 1998 and forecasts for 2010 and 2020 showing ranges of tons of freight.



Freight Data Assessment

Measures of the transportation system performance available from the FAF are limited primarily to truck vehicle miles of travel by highway level of service. Truck travel times can be imputed based on relationships between volume, capacity, and speed. FAF outputs can support estimation of a variety of other performance measures.

Detailed outputs from the FAF that are available within the U.S. DOT include:

- 1) For each county of origin, estimates for 1998 and forecasts for 2010 and 2020 of the tons of freight moved in the United States by county of destination, type of commodity, and mode of transportation.
- 2) For shipments through a region or location, estimates for 1998 and forecasts for 2010 and 2020 of the tons of freight moved by county of origin, county of destination, type of commodity, and mode of transportation.
- 3) For segments on major highways, rail lines, and waterways, estimates for 1998 and forecasts for 2010 and 2020 of the tons of freight moved by county of origin, county of destination, and type of commodity; and for highway segments, the number of trucks.

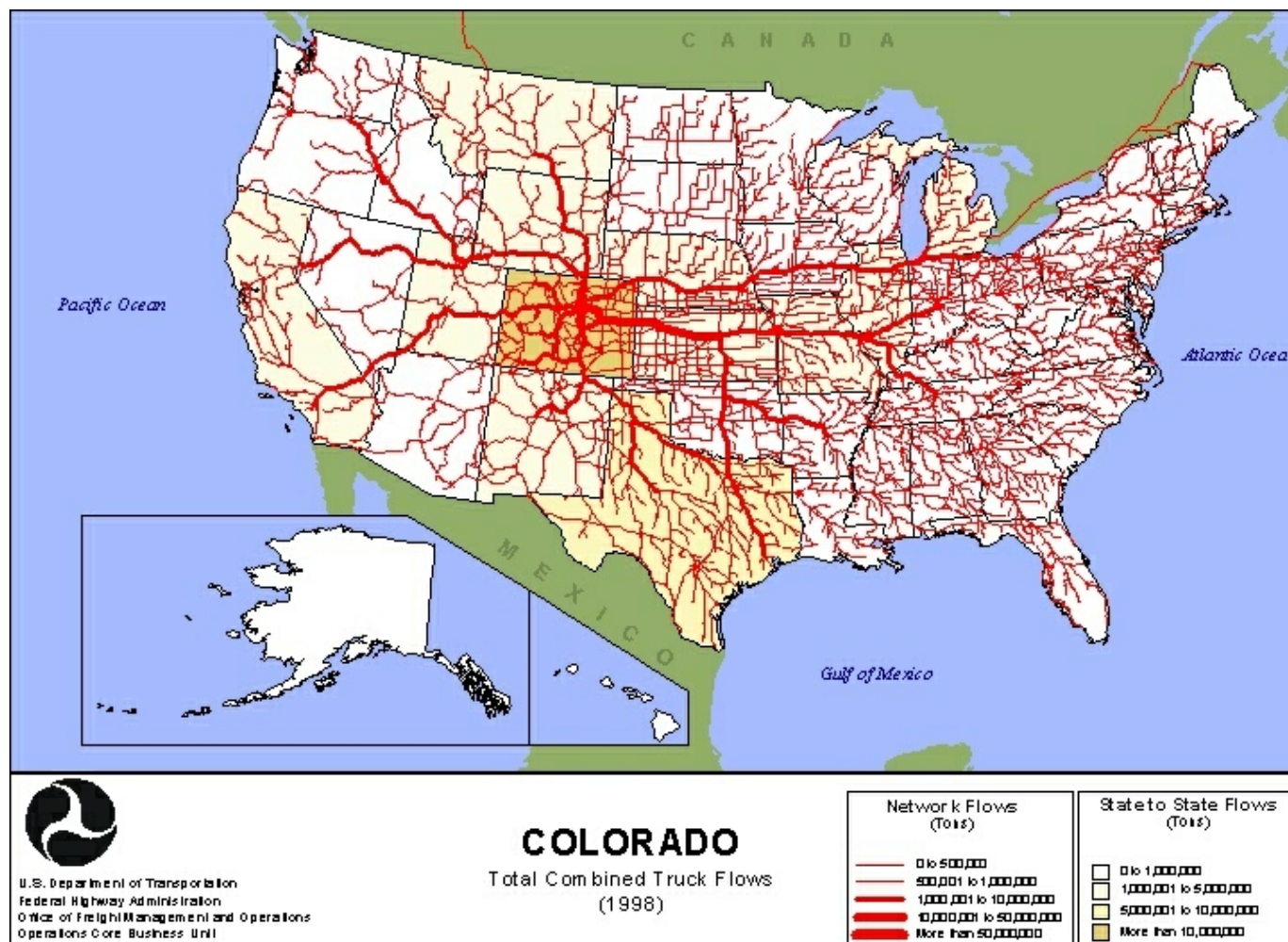
FAF data have features which make them particularly useful for transportation agencies in Colorado. As mentioned above, the maps have been particularly useful in showing the relationship between current freight flows, future freight flows and the transportation network. FAF also has origin-destination data at the state level which can be used to identify major trading partners for each state. The state-level origin-destination data also have both commodity-specificity and modal-specificity, which are useful in infrastructure planning and economic development.

FAF is also the only publicly available source for freight forecast data. The growth rates in the FAF are often used and applied to different types of existing freight flow data that are collected. As an example, for a particular roadway in Colorado growth rates for the State of Colorado can be applied to truck count data to estimate truck flows in future years. A more sophisticated analysis could be performed if the commodity distribution of the flows were known for the roadway, then commodity-specific growth rates could be used to develop a more accurate estimate for truck flows on the roadway.



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Figure 4-3 Colorado Truck Flows Routed to the Highway Network (1998)

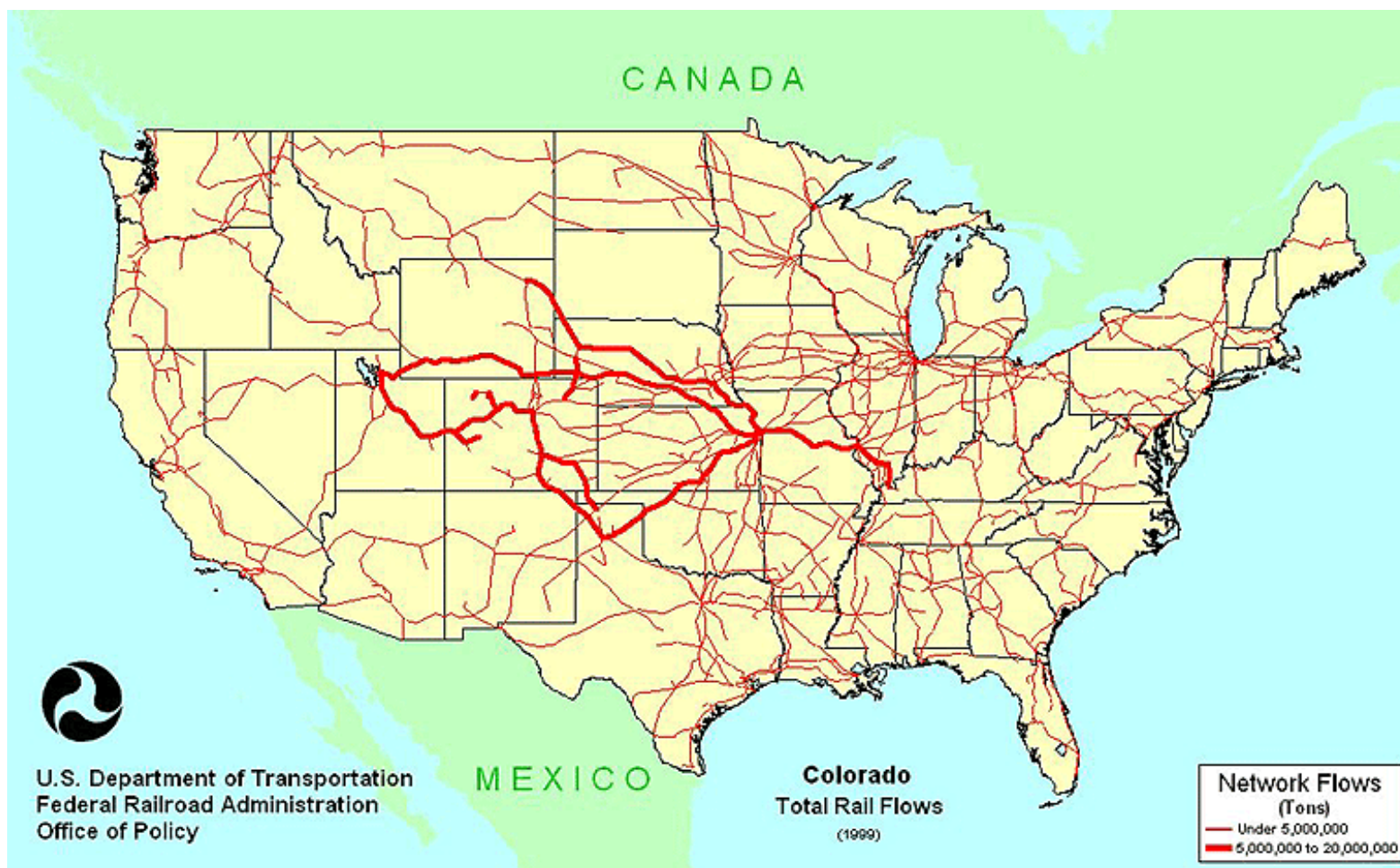


Source: FHWA Freight Analysis Framework



Freight Data Assessment

Figure 4-4 Freight Flows To, From, and Within Colorado by Rail: 1998 (tons)



Source: FHWA Freight Analysis Framework



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4.3.3 U.S. Census Bureau Vehicle Inventory and Use Survey (VIUS)

The VIUS provides data on the physical and operational characteristics of the nation's private and commercial truck population. This survey is conducted every 5 years as part of the economic census. Coverage of the survey includes private and commercial trucks registered (or licensed) in the United States as of July 1 of the survey year. The survey excludes vehicles owned by federal, state, or local governments; ambulances; buses; motor homes; farm tractors; unpowered trailer units; and trucks reported to have been sold, junked, or wrecked prior to January 1 of the survey year. The survey was first conducted in 1963. It has since been conducted for years ending in "2" and "7." The 2002 VIUS is in its final stages of development and should be complete by the end of 2005. Data collection begins in January following the census year and continues for approximately nine months. Reported data are for activity during the census calendar year.

The VIUS data report information on physical characteristics for medium and heavy trucks including weight, number of axles, overall length, and body type. Less detailed physical characteristics data are collected for pickups, minivans, other light vans, and sport utilities because they are relatively homogenous in design and use. Operational characteristics data include lease characteristics, operator classification, gas mileage, annual and lifetime miles driven, months operated, commodities hauled by type, and hazardous materials carried. VIUS data are collected through a questionnaire mailed to the registered owner of each selected truck registration. The registrant was requested to provide data about the truck identified by the vehicle registration information imprinted on the questionnaire. The information provided by each respondent was subjected to extensive computer edits. Questionable responses were reviewed and corrected when necessary.

VIUS data are of considerable value to government, business, academia, and the general public. Data on the number and types of vehicles and how they are used are important in studying the future growth of transportation and are needed in calculating fees and cost allocations among highway users. For freight transportation planning, VIUS data are often used to estimate characteristics such as average truck trip length or the percent of trucks that have two-axles relative to three, four or five axles. One common use of VIUS data is to estimate average payload data for trucks. Payload data assign average shipment weights to trucks based on truck trip distances and commodity type. These payload data can then be used to convert tonnage data into information on the number of trucks needed to haul the tonnage. VIUS data are also often used to develop conversion tables to translate one truck classification system to another, such as translating from number of axles to gross vehicle weight rating.



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4.3.4 Global Insights TRANSEARCH Data

TRANSEARCH data is a proprietary database which is sold by Global Insights. Formerly, this database was offered by Reebie Associates prior to its merger with Global Insights. Similarly to the CFS and the FAF, TRANSEARCH data provide commodity-specific, mode-specific, origin-destination freight flow data. The primary advantage of TRANSEARCH data is that it can be purchased at the county-level. Additionally, Global Insights also offers forecasts that match the data format for base year TRANSEARCH data. Having freight flow data at the county-level is particularly important for transportation planners, because it can be more easily mapped to the road network and translated into truck volumes that are useful for planning. The county-level data are often further disaggregated to the traffic analysis zone level and joined to existing travel demand models to assign truck volumes along with autos. The county-level data also provide more detailed information about intra-state trading partners along with counties that are particularly dependent on interstate and international trade.

4.4 *Comprehensive List of Freight-Related Databases*

There are many additional freight databases that are often used in freight analysis. Tables 4-1 through 4-5 provide a brief description of these databases. Table 4-1 describes economic databases. These databases are often used in conjunction with freight flow data to describe the relationship between freight and the economy. Table 4-2 describes socioeconomic databases. These databases are often used to disaggregate freight flows to smaller geographic units than what is available in commodity flow databases. Table 4-3 describes databases for modal networks to which freight flows are often assigned. Table 4-4 describes available sources for freight data on volumes shipped by mode. These are often commodity flow databases or subsets of these databases. Table 4-5 describes sources of available data for specific freight shipments. Appendix C provides more detailed descriptions of the databases in the tables and some additional databases not mentioned in the table.



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Table 4-1 Economic Databases

Source	Modes	Usability	Description/Attributes	Update Cycle	Currency	Geographic Coverage	Agency	Availability
Regional Economic Information System	All	Useful	Base economic information for U.S. regions	Every 10 years, years ending in 0	1994	U.S. Totals, States, Basic Economic Analysis (BEA) regions, MSAs, and Counties	U.S. Department of Commerce, BEA	CD-ROM version, contact state/local agencies for free copy
Statistical Abstract of the United States	All	Marginal Provides mostly national-level overviews of freight statistics	National level overviews of Freight Status	Annual	2005	U.S. Totals, States, Cities, Metropolitan Areas	U.S. Department of Commerce Bureau of the Census, Data Users Service Division	www.census.gov/epcd/cbp/view/cbpview.html



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Table 4-2 Socioeconomic Databases

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Census Transportation Planning Package (CTPP)	All	Useful	Base-year populations and households for analysis zones	Every 10 years, years ending in 0	Present	U.S. Totals, State, County, Places with more than 2,500 persons	U.S. Department of Commerce, Bureau of the Census	CD-ROM version, contact state/local agencies for free copy
County Business Patterns	All	Useful	SIC Employment Data	Annual	Present	U.S. Totals, State, and County	U.S. Department of Commerce, Bureau of the Census	www.census.gov/epcd/cbp/view/cbpview.html
National Income and Product Account (NIPA)	All	Useful	Consumption Information for U.S.	Annual	Present	U.S. Totals	U.S. Department of Commerce, BEA	Diskette version, free of charge
BEA Regional Projections to 2045	All	Useful	National projections of employment	Annual	Present	U.S. Totals and State	U.S. Department of Commerce, BEA	Diskette version, available for purchase
Annual Survey of Manufacturers	All	Useful	Additional employment data and value of goods shipped	Annual	1995	U.S. Totals	U.S. Department of Commerce, Bureau of the Census, Manufacturing and Construction	http://www.census.gov/mcd/asmhome.html
Covered Employment and Wages (ES-202) Programs.	All	Marginal More detailed information in County Business Patterns.	General employment data	Annual	Present	U.S. Totals, State, and County	Department of Labor, Bureau of Labor Statistics	Print and CD ROM versions, available for free from Florida DOT
Census of Manufacturers	All	Useful	Employment and manufacturing industries statistics as well as quantity and value of material consumed and products shipped	Every five years, years ending in 2 and 7	1992	U.S. Totals, State, and Local Geography	U.S. Department of Commerce, Bureau of the Census	http://www.census.gov/econ/www/mancen.html
Info USA	All	Useful	Employment by industry using refined SIC codes as well as NAICS codes	Weekly	Current	U.S. Totals, State, District, and County	Info USA	Database version, available for purchase



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Table 4-3 Modal Network Databases

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
North American Transportation Atlas Data (NORTAD)	All	Useful	Data for preparation of Commodity Flow Survey	Not specified	1999	U.S. Totals, Canada, and Mexico	U.S. Department of Transportation, Bureau of Transportation Statistics	www.bts.gov/gis/ntatlas
National Transportation Atlas Databases (NTAD)	All	Useful	Most complete database source for highway network and for rail, water, and air networks	Not specified	1999	50 U.S. States, District of Columbia, and Puerto Rico	U.S. Department of Transportation, Bureau of Transportation Statistics	www.bts.gov/gis/ntatlas
National Highway Planning Network Version 2	All	Useful	Highway link information in the U.S.	Real-time	Current	Major U.S. Highways	U.S. Department of Transportation, Federal Highway Administration	www.depository.dot.gov located under subdirectory PUB/FHWA/GIS
Strategic Highway Corridor Network (STRAHNET) and Connectors	All	Useful	Highway link information	Not specified	Current	Major Highway Systems in 50 U.S. States and District of Columbia	U.S. Department of Defense, Department of Army, Military Traffic Management	www.ftp.dot.gov
Federal Railroad Administration (FRA) National Rail Planning Network	Rail	Useful	Digital representation of major continental U.S. railway systems, including Canada and Mexico	Not specified	Current	50 U.S. States, Canada, and Mexico	U.S. Department of Transportation, Federal Railroad Administration	www.bts.gov/gis/ntatlas



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Table 4-4 Modal Operations and Volume Data Sources

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Annual Vehicle Classification Report	All	Useful	Data summary of classification of highway vehicle traffic	Annual	2003	Colorado by classification station	CDOT, DTD	CD ROM, free of charge
Truck Weight Study Data	All	Useful	Database contains information on weigh-in-motion and vehicle classification information collected at truck weigh sites	Not specified	Current	U.S. Totals	U.S. Department of Transportation, Federal Highway Administration	Free of charge if diskette is provided
Terminal Area Forecast	Airport	Useful	Air cargo volumes by airport	Not specified	Current	Select Airports in the U.S., including those with FAA control towers and/or receiving commercial service	U.S. Department of Transportation, Federal Aviation Administration	Printed format
Federal Aviation Administration (FAA) Aviation Forecasts Fiscal Years 2000-2011	Airport	Useful	Air cargo historical and forecast volumes	Not specified	1997	Select Airports in the U.S., including those with FAA control towers and/or receiving commercial service	U.S. Department of Transportation, Federal Aviation Administration	www.api.faa.gov/forca98/fortab2.htm
Status of the Nation's Surface Transportation System: Condition and Performance	All	Marginal National overview	Highway, bridge, transit, and financial performance measures	Biennial	Current	National	Department of Transportation, Federal Highway Administration	Print version, available for purchase
Vehicle Inventory and Use Surveys (VIUS)	All	Useful Vehicle fleet information	Physical and operational characteristics on the Nation's truck population	Varies	1997	U.S. Totals, 50 states, and District of Columbia	U.S. Department of Commerce, Bureau of the Census	www.bts.gov/ntda/tius/prod.html



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Table 4-4 Modal Operations and Volume Data Sources (Continued)

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Railroad 10-Year Trends	Rail	Marginal Useful in establishing railroad unit costs, particularly historical trends	U.S. freight industry performance, traffic, revenue, financial statistics, employment, plant, and equipment	Annual	Current	U.S. Totals	Association of American Railroads	Print version, available for purchase
Transportation Files (TRANS Files)	Rail	Marginal May be useful in establishing general unit cost for railroads	Railroad annual report	Annual	Current	U.S. Class I Railroads	Surface Transportation Board	Print version, available for purchase
Uniform Railroad Cost System (URCS) Phase III Movement Costing Program	Rail	Marginal General average unit costs for railroads should be sufficient for this study	Movement cost estimates	Annual	Current	U.S. Class I Railroads, two summary regions (east and west)	Surface Transportation Board	Print version, available for purchase
Air Transport	Aviation	Marginal NORTAD intermodal networks contain pertinent information in a more useful link format	Passenger and freight airline statistics	Annual	Current	National	Air Transport Association (ATA)	www.air-transport.org/pubs
Railroads and States	Rail	Marginal Contains information that would be useful in converting tons to railroad operations by carload	Amtrak and freight railroad statistics by state	Annual	Current	48 Continental U.S. states and Alaska	Association of American Railroads	Current publication version, www.aar.org



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Table 4-4 Modal Operations and Volume Data Sources (Continued)

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Airport Activity Statistics	Aviation	Marginal Contains information that would be useful in converting tons to aircraft takeoffs and landing	Volume of revenue passengers, freight express, and mail traffic	Annual	Current	U.S. Totals, state, and city	U.S. Department of Transportation, Bureau of Transportation Statistics	Print version, available for purchase
Railroad Facts	Rail	Marginal Nationwide and railroad summaries. May be useful in establishing railroad unit costs	Summary of historic data on Class I railroads defined by the Surface Transportation Board	Annual	Current	U.S. Totals, summary by east and west	Association of American Railroads	Print version, available for purchase
Transportation Statistics Annual Report	All	Marginal Mostly national overview	Summary of state transportation statistics with focus on economic, safety, and environmental consequences of systems	Annual	Current	U.S. Totals	U.S. Department of Transportation, Bureau of Transportation Statistics	www.bts.gov/program/s/transtu/tsar/tsar.html
Transportation Technical Services (TTS) Blue Book of Trucking Companies	All	Marginal May be useful in establishing trucking unit costs	Motor Carriers data including income, operating expenses, labor, units, output, assets, and liabilities. Private fleet not included	Annual	Current	U.S. Totals, Canada	Transportation Technical Services (TTS)	Disk version, available for purchase
Transtates	All	Marginal Information is mostly summaries of other reports and databases	Data on truck movement, truck shipments that move across the Woodrow Wilson Bridge, federal gas tax, and findings from Transportation Satellite Accounts (TSA)	Varies	2003	U.S. Totals	U.S. Department of Transportation	www.bts.gov/program/s/transtu/analysis.htm



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Table 4-4 Modal Operations and Volume Data Sources (Continued)

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Motor Carrier Financial and Operating Information Program	All	Marginal Mostly national overview. Data could be used to establish tonnage to truck conversions.	Annual and quarterly survey of motor carriers	Quarterly and annually	Current	National	Federal Highway Administration, Office of Motor Carriers	www.bts.gov/mcs/prod.html
Trucking Activity Report (TRAC)	All	Marginal May be useful in establishing trucking unit costs	Benchmarking statistics for both truckload and less-than-truckload carriers	Monthly	Current	U.S. Totals	American Trucking Associations	Yearly subscription
Analysis of Class I Railroads	Rail	Marginal Nationwide and railroad summaries	Financial and operating statistics for each Class I railroad	Not specified	1999	U.S. Totals, summary by east and west	Association of American Railroads	Print version, available for purchase
Highway Statistics	All	Marginal Not link specific	Statistical tabulations relating to highway use, highway finance, and highway infrastructure	Annual	1997	U.S. by 50 states	U.S. Department of Transportation, Federal Highway Administration	www.bts.gov/ntda/fhwa/prod.html



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Table 4-5 Freight Shipment Data Sources

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
TRANSEARCH	All	Useful	Comprehensive market research data service for intercity traffic flows	Every five years, years ending in 3 and 8	2003	Counties	Reebie Associates	CD ROM, available for purchase
Commodity Flow Survey (CFS)	All	Useful	Data on flow of goods and materials by mode of transport	Not specified	1997	U.S. Totals and 89 National Transportation Analysis Region	U.S. Department of Transportation, Bureau of Transportation Statistics	CD ROM, available for purchase
Carload Waybill Sample	Rail	Useful	Rail shipment data such as origin and destination points, type of commodity, number of cars, tons, revenue, participating railroads, and interchange locations	Annual	Current	U.S. Totals, BEA-to-BEA level	Surface Transportation Board	CD ROM, available for purchase
Rail Waybill Database	Rail	Useful	Public-use aggregate non-confidential rail shipment data	Not specified	1992	U.S. Class I Railroads	U.S. Department of Transportation, Bureau of Transportation Statistics	CD ROM, available for purchase
The State Freight Transportation Profiles	All	Useful	Summaries of National Transportation Atlas Databases, Commodity Flow Survey, United States Waterway Data, and Railroad Accident/Incident Reporting System (RAIRS)	Not Specified	1993	50 States	U.S. Department of Transportation, Bureau of Transportation Statistics	CD ROM, available for purchase
U.S. Exports of Merchandise	All	Useful	Year-to-date exports commodity information by district	Annual	Current	U.S. Customs districts of exportations	U.S. Department of Commerce, Bureau of the Census	CD ROM, available for purchase
U.S. Imports of Merchandise	All	Useful	Detailed general imports and imports for consumption data	Annual	Current	U.S. Customs districts of entry and unloading and country of origin	U.S. Department of Commerce, Bureau of the Census	CD ROM, available for purchase



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Table 4-5 Freight Shipment Data Sources (Continued)

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
U.S. Exports of Domestic and Foreign Merchandise	All	Useful	Exports by all modes to outside of the United States	Annual	Current	U.S. Customs districts of exportations, countries of destination	U.S. Department of Commerce, Bureau of the Census	CD ROM, available for purchase
Weekly Railroad Traffic	Rail	Marginal National overview. Duplicate of other material	Information on carloads by commodity and railroads plus intermodal traffic by railroad	Weekly	Current	U.S. rail carloads	Association of American Railroads	Print version, available for purchase
Monthly Truck Tonnage Report	All	Marginal National averages only	Information on tonnage moved by for-hire motor carriers	Yearly	Current	U.S. Totals	American Trucking Associations	Print version, available for purchase
Transportation Annual Survey	All – except Aviation	Marginal Summaries of freight shipments available from other sources	Data on total operating revenue, and total operating expenses that include annual payroll and employee benefits, commodities carried, end-of-year inventory of revenue generating equipment, and type of carrier	Yearly	Current	U.S. Totals	U.S. Department of Commerce, Bureau of the Census	CD ROM, available for purchase
Shifts in Petroleum Transportation	All- except Aviation	Marginal Mostly national overview	Movement, in ton-miles, of crude oil and petroleum products	Annual	Current	50 States, District of Columbia, and Canada	Association of Oil Pipe Lines	Print version, free of charge
Transborder Surface Freight Data	All- except Aviation	Marginal Contains information of freight crossing into U.S. regions from Mexico and between U.S. and Canada regions	Annual tonnage and value data by commodity type and by surface mode of transportation	Monthly	Current	U.S., Canada, and Mexico totals	U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division	www.bts.gov/ntda/tbscd



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Table 4-5 Freight Shipment Data Sources (Continued)

Source	Modes	Usability	Description/Attributes	Cycle Update	Currency	Geographic Coverage	Agency	Availability
Coal Distribution Data	All	Marginal Single commodity data	Information on coal distribution by origin, destination, consumer category, and method of transportation	Quarterly	Current	Worldwide	U.S. Department of Energy, Energy Information Administration	Diskette format
U.S. General Imports and Imports for Consumption	All	Marginal Information available elsewhere	Net quantity and value of imports for consumption and general imports	Annual	Current	U.S. Customs districts of entry and unloading and country of origin	U.S. Department of Commerce, Bureau of the Census	CD ROM, available for purchase
Weekly Railroad Traffic	Rail	Marginal Information available elsewhere	Carloads by commodity and railroad plus intermodal traffic by railroad	Weekly	Current	U.S. rail carloads	Association of American Railroads	Print version, available for purchase



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5.0 PRIORITIZATION OF DATA ELEMENTS

This chapter prioritizes freight data needs based on both the interviews described in Chapter 3 and the availability of freight data described in Chapter 4. As discussed in Chapter 3, the freight data needs are divided into three overlapping categories: 1) corridor-level freight needs, 2) economic analysis needs, and 3) rail data needs. The following sections discuss key freight data elements, the availability of information on these freight data elements, the range of data collection options to be considered in the freight data plan for CDOT, and finally a prioritization of the freight data elements.

5.1 *Key Freight Data Elements*

The first step in identifying relevant freight data elements is to describe the types of freight analyses that are associated with each of the three freight data need categories. The freight analysis categories associated with corridor-level data are: assistance with corridor studies, information for the statewide transportation plan, performing modal diversion analysis, and calibrating truck models. For economic analysis, the freight analysis categories are inputs into the project-prioritization process, economic impacts of rail relocation, and economic significance of freight. The economic significance of freight is specific to regional analysis rather than corridor level economic analysis. Therefore, the corridor-level freight data elements would not be needed for this analysis. For freight rail, the analysis categories of interest are modal diversion analysis and traffic impact of rail relocation. Both of these categories overlap with the corridor-level analysis. The consultant team identified 13 key freight data elements that are associated with each of these analyses as shown in Table 5-1. The remainder of this section describes in detail each of these freight data elements and their importance.



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Table 5-1 Freight Data Need Categories, Analysis Categories and Key Data Elements

Freight Need Categories	DATA NEEDS								
	Corridor Level				Economic Analysis			Freight Rail	
Freight Analysis Categories Freight Data Elements	Assist with Corridor Studies	Assist with Statewide Transportation Plan	Perform Modal Diversion Analysis	Calibrate Truck Models	Input for Project Prioritization	Economic Impact of Rail Relocation	Economic Significance of freight	Perform Modal Diversion Analysis	Traffic Impact of Rail Relocation
Truck Counts	X	X	X	X	X	X		X	X
Origin-Destination Data	X	X	X	X	X	X	X	X	X
Commodity Information	X	X	X		X	X	X	X	X
Classification of Vehicles	X	X	X		X	X		X	X
Routing Information	X	X	X		X	X		X	X
Travel Time Data	X	X	X	X	X	X	X	X	X
Truck Value of Time	X		X		X	X	X	X	X
Rail Value of Time	X		X		X	X	X	X	X
Rail Line Volume Information	X	X	X		X	X		X	X
Input-Output Data					X	X	X		
Transportation Spent by Industry					X	X	X		
Employment by Sub-Sector					X	X	X		
Induced and Indirect Benefits					X	X	X		

5.1.1 Truck Count Data

Having high quality truck counts is important for both general planning purposes and modeling. Truck count data are critical for decisions about improvements to transportation facilities, and the data are important for model validation. The quantitative portion of the interviews revealed that this is the single most important freight data element in the state. Truck count data in the region generally originate from either the formal state-level truck count programs or more ad hoc local vehicle count programs. The state-level data can be found on the CDOT website and include truck counts by truck configuration for state highways and interstates throughout the state. The data are collected either from automated truck count equipment or by weigh-in-motion data.



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5.1.2 Origin-Destination Data

Origin-destination data include both commodity origin-destination information and truck trip origin-destination information. Commodity origin-destination information describes the combinations of origins and destinations for different types of goods in a region. Truck trip origin-destination information describes the truck movements that are required to move the commodities between origin-destination pairs. For example, a commodity origin-destination trip table might indicate that 3 million tons of farm products are moved between Denver County and Pueblo County. This is the type of database that is available in the TRANSEARCH database.

A truck trip table would ideally include the number of trucks, types of trucks and the chain of truck trips required to move the farm products. A full truck trip chain is often composed of multiple segments. Origin-destination data generally refer to each segment as a separate truck trip. For example, the truck trip chain could include the truck trips between a for-hire motor carrier business location to the farms, the truck trips from the farms to the warehouse, and the empty truck trips from the warehouse back to the for-hire carrier parking lot. A database full of truck trips would be needed to be able to predict truck volumes on specific roadways.

5.1.3 Commodity-Specific Information

Commodity information would be necessary to develop the connection between goods movement and the economy. This connection allows planners to estimate goods movement from economic activity and to estimate economic activity based on goods movement. Because most truck trip tables are developed from commodity flow information, commodity information also allows for estimation of changes in truck volumes based on changes in economic activity.

Commodity information is important to understand the time-sensitivity, or impacts of recurring delay, to goods. Time sensitivity is based primarily on the value of the goods, which can be identified by the commodity-type. For example, a recurring hour of delay of a shipment of electronics likely has a more negative impact on the economy relative to an hour of delay of a shipment of coal of the same quantity. Also, because different industries have different supply chains, the commodity information can be traced to industries and used to determine the relationship between the goods and the land use at the origin and destination. Detailed supply chain information (and therefore routing information) can be inferred from knowing the goods inside the truck. The relationship between commodities and industries also enables the economic impact of freight-related decisions to be estimated.

Commodity information is key to being able to estimate the amount of demand for a particular mode, because mode choice is largely a function of the commodity type and the distance that the good is shipped. Therefore, commodity information is critical to performing truck-rail diversion analyses.



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Commodity flow databases are the primary source for commodity information. These data can be supplemented by the Commodity Flow Survey which was last produced by the Bureau of Transportation Statistics for the year 2002. These databases contain the most comprehensive sources of commodity information that is tied to the origin-destination patterns of freight in a metropolitan area. However, most commodity databases tend to be less accurate with non-manufactured goods and limited in terms of relating the commodity information to origin-destination combinations.

5.1.4 Vehicle Classification

Vehicle classification is an important variable from the standpoint of being able to predict payload sizes, commodity types and truck activity. For example, two-axle trucks are much more likely to be performing local distribution than would five-axle trucks. Additionally, trucks with a gross vehicle weight rating of 80,000 pounds will have different payload and commodity characteristics than a vehicle with a gross vehicle weight rating of 10,000 pounds. Different vehicle types also create different effects on pavement deterioration and require different road geometries.

There are multiple classification schemes that are used in different data collection efforts. For example, automated truck count programs classify vehicles by axle counts and spacing because the equipment is limited to tracking these vehicle characteristics. This can be contrasted with the air quality models used by the Environmental Protection Agency which develop truck emissions estimates by classifying trucks by gross vehicle weight rating (the maximum weight that the vehicle can carry).

It would be extremely difficult to develop a single classification method that would satisfy all stakeholder needs. Instead, it is important to understand where the points of divergence occur in the truck classification schemes, and it is important to develop conversion factors that can estimate how trucks in one classification scheme would be distributed across trucks in a different classification scheme. The most common conversion is the axle-to-GVWR conversion factor. Another conversion factor is number of units to number of axles. These conversion factors can vary by time of day, facility type and location in the region (e.g., urban vs. rural). If properly structured, a truck origin-destination survey can collect sufficient data to develop these conversion factors across multiple classification schemes. The survey must include representative locations on all road types throughout the region and collect information on the GVWR and truck configuration for each surveyed vehicle. These data may also be collected from state registration databases or extracted from the Vehicle Inventory and Use Survey.

5.1.5 Routing Information

Routing information documents the specific roads that trucks use to travel from an origin to a destination. This information is important in estimating road utilization and in determining the most efficient network of roads to designate for special truck purposes. Most truck models have the option of using either shortest path (distance) or shortest travel time to route traffic. These are generally found to be accurate methods of predicting routes. However, for some trips, trucks use a set of roads that are unanticipated. For all origin-destination combinations, where there is concern that this may happen, origin-destination surveys can be amended to include questions on the roadways used between origin and destination pairs.



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5.1.6 Travel Time Data

Accurate information on travel times is important for a number of different freight planning functions. Often investments in the transportation network are being made to relieve congestion and/or improve travel times, because travel time savings translate into cost reductions in the context of freight transportation. Thus, evaluating the benefits of freight transportation projects is often done with reference to travel time improvements. Travel times that take into account delays associated with cargo transfers and intermodal connections are also important when comparing modal attributes in modal diversion studies. In cases where improvements are to be financed with toll revenues and other user fees, users of the system will trade off the value of time savings with the cost of using the facility.

The requirement for good travel time data is not unique to freight analysis, and the lack of good travel time data is a problem experienced in the analysis of other modes. In the case of highway travel times, these are often computed from network data. Therefore, good speed data on network links as a function of traffic volumes is important in the calibration of the models used to estimate travel times. Speed studies ideally would be conducted in conjunction with count programs. However, currently high quality speed studies are conducted with even less frequency than count programs in most metropolitan regions.

Travel time information for non-highway modes is even more difficult to obtain. Rail carriers do not publicly report these data, and schedules are highly fluid. Since much air cargo is transported as belly cargo on scheduled commercial carrier service, it is possible to get general information about travel times from airline schedules, but this excludes in terminal transfer and wait time. Surveys of shippers are another source of information about non-highway mode travel times.

In most interviews with shippers and carriers, travel time reliability is cited as the most important measure of system performance. Reliable transportation systems offer some assurance of attaining a given destination within a reasonable range of an expected time. An unreliable transportation system is subject to unexpected delays, increasing costs for system users. While recurrent congestion is something that can be planned around, non-recurring congestion is impossible to predict. Non-recurring congestion is the principal source of transportation unreliability. Accidents, mechanical breakdowns, special events, and hazardous material spills are all sources of non-recurring congestion on highway networks.

Unfortunately, there are no widely agreed upon and generally accessible data which measure travel time reliability. From the industry's perspective, percent of time making a prescribed delivery window (on-time performance) is the key indicator. However, these data are almost never available to public sector planners. A more common indicator used by planners is non-recurrent delay that is measured in reference to average conditions. A related measure is incident-related delay that can be measured when defined incidents occur. These data are still very rare and are only collected in locations where traffic management centers exist with permanent loop detectors.



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Travel time reliability data for other modes is typically expressed in terms of on-time performance. Airlines and rail carriers keep this information, but it is not reported to the public in a way that makes it possible to conduct reliability studies. As noted previously, travel time reliability data are generally difficult to come by because the specific measures of reliability have not been well defined and widely accepted.

5.1.7 Freight Value of Time

In several freight planning applications, it is necessary to have information about the value of time to carriers and shippers. To the extent that this is often related to freight rates/costs, these two categories are often grouped together. Value of time data are important in toll revenue studies involving freight modes. Value of time data are also used in conducting cost/benefit and economic impact studies of freight-related transportation investments. The CDOT statewide transportation plan mentions that maximizing use of its toll options is a priority for the state. Data on value of time is critical to estimating potential utilization of these facilities and associated revenues. Freight rates and costs are also an important input into modal diversion studies. Most modal diversion studies show that shippers trade off modal costs and performance in making decisions about which mode to use.

For Colorado, freight value of time can be estimated based on either local shipper costs, or from one of the stated preference surveys conducted for other regions. To develop more accurate data specific to the state, a stated preference survey could be developed for shippers in the Front Range area. Alternatively, the national Highway Economic Requirements System (HERS) data may be applied with adjustments for truck driver and fuel costs that are specific to Colorado.

5.1.8 Economic Data

Economic data cover a vast quantity of data. There are generally five important economic data elements: 1) economic output data, 2) input-output data, 3) employment data, 4) transportation spending, and 5) indirect/induced benefits. Economic output data are used to determine the size of industries relative to others and relative to the overall economy. Economic output data can also be used to estimate value of time of commodities. County-level economic data are often disaggregated to a sub-county-level using sub-county level employment data such as the zone-level employment data that exist in the travel demand models. Input-output data are used to determine the amount of goods required as inputs to produce a unit of output. While industries tend to produce goods that are directly associated with its industry, goods that are consumed are often not at all related to the industry of consumption. For example, steel is an output of the steel industry. However, steel is an input for a wide range of industries such as construction, automobiles and machinery. To understand how the economy will benefit from reducing travel times for steel shipments, it is important to understand the producing industry (steel) and its consuming industries. Input-output data provide the correlations between goods and their consuming industries. Employment data are critical to economic analyses. Improvements in freight travel times translate into savings for freight-intensive industries. These savings often translate into increased market share for these industries and, therefore, increase in employment. To estimate the magnitude of increases in employment, the relationship between output and employment is usually utilized. Indirect and induced benefits of transportation projects are the second-tier of benefits associated with the increased economic activity that results from increases



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in employment and output. For example, a newly hired worker will purchase housing, food and clothing, and these purchases are additional benefits from transportation projects. Transportation spending by industry is the percent of costs that each industry allocates to transportation. This is important, because it tells you how reliant the industry is on the transportation system and it allows for quantification of transportation savings through to a company's bottom line.

The general tradeoff for economic data is deciding between industry detail, geographic detail and cost. There are free national sources of each of these data sources. However, most thorough economic analyses will require county-level data. Two comprehensive sources of these data are the Minnesota IMPLAN Group (commonly referred to simply as IMPLAN) and Regional Modeling, Inc. (REMI). IMPLAN is a private vendor of economic data and tools. The transportation-related data available from IMPLAN include four of the five key economic data sets: 1) economic output data for a comprehensive set of commodity categories, 2) employment data, 3) input-output data, and 4) transportation spending by industry. All of these data are available at the county-level for a wide range of commodities and industries. REMI is also a private vendor of economic data and tools. REMI is commonly used to estimate the economic impacts of transportation projects in terms of direct jobs and wages associated with projects and the indirect and induced benefits of transportation-related improvements. Recently, additional products have been developed that are competitive with REMI and IMPLAN. These products should also be considered when purchasing these data and tools.

5.1.9 Other Local/MPO Data

DRCOG collects counts performed by CDOT Region 6 (ramp and mainline counts for ramp metering), local government and developers to aid in the travel model calibration and validation. DRCOG has developed a special project to collect another 300 traffic counts in the region, including 100 vehicle classification counts. DRCOG is also focusing on 72-hour counts to reduce the error rates inherent with 24-hour counts. The higher level of traffic counts is needed approximately every 5 years to meet the varied metropolitan area planning needs.

The NFR MPO does not currently collect specific freight data. However, the MPO is partnering with the Center of Business and Economic Forecasting to prepare forecasts and a freight origin-destination study; therefore, it is considering the need to also conduct a vehicle classification study.

The PPACG has vehicle classification counts on the interstates, US50/47, SH 78 and Pueblo Boulevard for use in their modeling process. The City of Pueblo Traffic Department also collects traffic counts, including 7 computerized traffic counts, that are provided to PPACG.

Grand Valley MPO has not conducted detailed freight planning, including specific freight data collection, as part of their traffic modeling efforts. In the past, Colorado Motor Carriers has worked with the MPO to better understand truck issues in the region. The MPO has recently participated in several interchange and roadway studies; however, freight data collection and traffic were not specifically analyzed as part of these studies.



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5.2 Key Freight Data Availability

The description of data elements in the previous section also includes potential sources of data for each element. An overview of the data availability is provided in Table 5-2. The most easily obtainable data are the truck count data. Many of the truck count data have classification schemes based on the 13-class FHWA standard for traffic data collection. Estimation of truck counts by other classification schemes such as by GVWR must be done using the Vehicle Inventory and Use Survey (VIUS) data.

The TRANSEARCH database contains origin, destination and commodity information at the county-level, but not at the corridor-level. TRANSEARCH data represent an estimation of total trips, but it is more accurate for long-haul trips than for local trips. Routing information is available only as a model output. There are no raw data for either of these elements. Truck travel time data are often estimated through vehicle travel time studies conducted by CDOT on key routes. The value of time data along with the other economic-related information are available for free at the national level. Sources of national-level economic data include the Economic Census and the Bureau of Economic Analysis Transportation Satellite Accounts. These data are available on the internet. However, either data purchases must be made or surveys must be conducted to retrieve county-level economic data for detailed analysis.

Table 5-2 Availability of Key Freight Data Elements

Key Freight Data Elements	Availability
Truck Counts	Generally data are easily available in CDOT truck count database, additional data are needed in urban areas.
Origin-Destination Data	Available at county-level in TRANSEARCH freight flow database, but not corridor-level
Commodity Information	Available at county-level in TRANSEARCH freight flow database, but not corridor-level
Classification of Vehicles	Available for single units and combination unit vehicles from CDOT, more detail in VIUS
Routing Information	Not available except as model outputs
Travel Time Data	Not available except as model outputs
Truck Value of Time	National data exist, state-specific data do not
Rail Value of Time	National data exist, state-specific data do not
Rail Line Volume Information	Very old data are available, current data must be acquired from RRs
Input-Output Data	National data exist, state- and county-specific must be purchased
Transportation Spending by Industry	National data exist, state- and county-specific must be purchased
Employment by Sub-Sector	County-level exists, more sector detail must be purchased
Induced and Indirect Benefits	National data exist, state- and county-specific must be purchased



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5.3 Matching Freight Data Elements with Data Collection Options

Methods of collecting freight data range from direct contact with vehicle operators (such as roadside intercept surveys) to passive data collection (such as truck counts and speed surveys) to research and analysis of published or purchased data sets. Table 5-3 reflects the different strengths each method has in terms of the freight data that are collected and the freight planning activities that are enabled.

Table 5-3 Data Collection/Analysis Options

Freight Data Elements	Data Collection/Analysis Options
Truck Counts	Additional data needed in urban areas
Origin-Destination Data	Roadside O-D surveys, TRANSEARCH freight flow database, Statewide truck model
Commodity Information	Roadside O-D surveys, TRANSEARCH freight flow database, Statewide truck model
Classification of Vehicles	Extract state-level data from VIUS
Routing Information	Roadside O-D surveys, Statewide truck model, Truck following surveys
Travel Time Data	Shipper surveys, Roadside O-D survey, Statewide truck model
Truck Value of Time	Survey of shippers, motor carriers, receivers in Colorado
Rail Value of Time	Survey of shippers, railroads, receivers in Colorado
Rail Line Volume Information	Interview with railroads
Input-Output Data	Multiple economic data sources
Transportation Spending by Industry	Multiple economic data sources
Employment by Sub-Sector	Multiple economic data sources
Induced and Indirect Benefits	Multiple economic data sources

For the thirteen key freight data elements, five options for data collection or analysis were selected from Table 5-3.

5.3.1 Roadside Origin-Destination Surveys

Roadside surveys are designed to stop vehicles at designated locations to conduct a brief interview with the driver. Typically, the interviewer makes visual observation of the vehicle to gather information about configuration and number of axles. Interview questions can include commodity carried, trip origin and destination, last stop/next stop, and weight of the cargo on a vehicle. Other information about land use at trip ends and routes used are sometimes collected. The amount of data to be collected is limited so as not to delay the driver for undue amounts of time. Interviews are typically limited to 1-3 minutes.

With regard to trip origin and destination data, it is important to get as much detail about the origins and destinations as possible so that the results of the surveys can be geo-coded and then aggregated to appropriate levels of geography (e.g., traffic analysis zones). This increases the ease of use for corridor-level analysis and modeling. Theoretically, it should be possible to track origins and destinations to street addresses. This proves difficult in practice because of incomplete driver records and the amount of time it takes to collect this information relative to



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other information that is required. Thus, in most intercept surveys, the ability to get sufficiently large samples to geo-code beyond the municipal level of detail is often limited.

One of the advantages of the roadside intercept survey is that all types of carriers can be surveyed. Carrier groups of significance in regional and urban goods movement studies include for-hire fleets, private fleets, independent owner-operators acting as contract drivers, and trucks registered outside of the metropolitan area. Roadside intercept surveys capture all of these fleets. Roadside intercept surveys can also collect detailed information about the characteristics of the vehicles (such as gross vehicle weight ratings, length, body configuration and number of axles) that are useful in further classifying vehicles and their origin-destination patterns. Generally speaking, roadside intercept surveys focus on “last stop-next stop” origins and destinations because questions involving multiple stops can be confusing and may yield less useful data. This can be a particular problem if stops involve activities that are not related to goods movement such as fueling and rest stops. A useful element of roadside surveys is the collection of data regarding land use at the trip ends. This allows for trucks that are related to specific facilities such as rail yards and warehouses to be tracked.

The biggest drawback to roadside intercept surveys is the limitation of where surveys can be conducted. This limitation manifests most clearly where urban goods movement issues are of interest. Another drawback to these surveys is that they are generally labor-intensive to conduct. Surveys are generally staffed with a highway patrol person in a car upstream from the location, a flagman to direct traffic, 3 to 4 surveyors and a site manager to oversee the entire process. Generally, the easiest place to conduct truck roadside origin-destination surveys is at truck weigh stations. While the number of vehicles that are required to stop at weigh stations is decreasing with the use of electronic passes, weigh stations are still a good place to perform origin-destination surveys. All trucks are asked to participate in the survey using a variable message sign upstream of the weigh station. There are some smaller trucks (like U-Haul trucks and panel vans) that are not likely to stop at a weigh station. An origin-destination survey would not be a good way to collect information on these vehicles.

In Colorado, the weigh stations (commonly referred to as ports of entry) are located in the cities of Cortez, Dumont, Fort Collins, Fort Morgan, Lamar, Limon, Loma, Monument, Platteville, and Trinidad. This provides reasonably good coverage of long-haul truck trips throughout the state. However, it will not capture truck trips between key urban markets within the state such as Denver-Colorado Springs, Colorado Springs-Pueblo and Denver-Pueblo. A comprehensive origin-destination survey program in Colorado may require the use of some non-traditional sites such as rest areas and parking lots. Discussions with the Colorado State Patrol indicate that there are no specific guidelines for conducting roadside surveys on Colorado highways. The Colorado State Patrol would like to be heavily involved in the planning and implementation of any future roadside origin-destination surveys. Therefore, to perform the roadside origin-destination surveys, CDOT would need to receive approval and support from other agencies in the state such as the Colorado State Patrol.



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A variation on the roadside intercept survey involves various forms of roadside observation with follow-up. License plate surveys are an example of this approach. These can be conducted with on-site field observers or with video equipment. By recording license plates at particular locations, drivers can be identified who can subsequently be surveyed with mail-back questionnaires or telephone surveys to obtain the origin-destination data associated with particular trips. This approach to roadside data collection gets around many of the problems associated with site selection, but it is expensive to do the follow-up. Response rates on follow-up are much lower than in intercept surveys, and the accuracy of recollection is much lower than in an intercept survey. There are also issues with the ability to translate the images to place numbers, the location of the plates, trailers and tractors having different plate numbers, and the need for other states to be involved for vehicles not registered in Colorado.

5.3.2 TRANSEARCH Commodity Flow Database

Another source of origin-destination data is the Global Insights TRANSEARCH database. This database includes county-level tonnage estimates within the state of Colorado and also estimates of tonnages moved for inbound, outbound and through flows for each county in Colorado. The data are also mode-specific and commodity-specific and can be requested for calendar years as recent as 2003. The accuracy of the TRANSEARCH database has never been quantified. However, it is the only comprehensive source of freight flow data available at the county-level. Various samples of the database can be checked for reasonableness using existing economic output data. As previously mentioned, CDOT purchased this database for 1996, but an update of this database would incorporate the changes in goods movement that have occurred over these several years. Additionally, this database has been significantly improved since 1996 to incorporate the non-manufacturing modes, such as mining and agriculture, in a more accurate fashion.

5.3.3 Development of a Statewide Truck Model

Another alternative to acquiring origin-destination, commodity and routing information on trucking activity is to develop a statewide truck model. The truck model would operate similar to a passenger travel demand model in that a truck trip table would be generated and routed to the state's transportation network. This assignment of truck flows would generate estimates of truck volumes, speeds, routing, origins-destinations and even commodity groupings for each roadway link in the state. The truck model would begin by using the TRANSEARCH freight flow database to develop a county-level truck flow. A statewide transportation network, zone structure, and zone-level socioeconomic data would need to be developed, if they do not exist currently at the state-level. The county-level freight flows would then be allocated to the zone-level based on employment at the zone level. Employment data are correlated directly to outbound flows. Input-output data are used to develop estimates of inbound flows. Trip distribution relationships can then be developed based on standard model functions or locally-collected data. This process generates the trip table which is then assigned to the network. Because CDOT does not currently have a statewide passenger model, the truck trip table would likely be assigned to the network based on shortest path. 24-hour truck count data could be used to develop a multi-period model, if so desired.



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The advantage of developing a statewide model is that it allows for estimates of not only truck volumes in the current context, but it also allows for future alternative scenarios to be estimated based on changes in employment and the road network. The model could also be integrated into the regional travel demand models in the Denver, Colorado Springs, Fort Collins, Pueblo and Grand Junction metropolitan areas providing both an easy source for calibration of external trips and consistency in truck modeling across the state. It is particularly appropriate for a statewide model to focus on truck activity because trucks have a higher percentage of intercity trips than automobiles and, therefore, truck trips are more likely to cross metropolitan-level jurisdiction boundaries. A truck model can also easily be used in conjunction with a modal diversion model to determine the relationship between truck and rail activity.

The disadvantage of developing a truck model is that such models require a significant amount of time and money to develop. The most simplistic truck model would cost a few hundred thousand dollars. The state-of-the-practice truck models cost approximately \$500,000 with a pre-existing passenger model and over \$1 million if there is no pre-existing passenger model. The time to develop these models generally ranges from 1 to 2 years depending on the model sophistication. These requirements would be particularly high for Colorado, because of the lack of a passenger demand model and origin-destination survey data with which to calibrate the model. It is possible to develop a model in phases to spread the cost and time over several years. For example, a simplistic truck model could be developed by converting TRANSEARCH data from tons to truck trips and routing it onto the Colorado interstate system to represent long haul truck traffic in the state. Later, a more sophisticated zone and network system could be developed for the state. Finally, a truck model could then be developed that incorporates sophisticated truck trip generation, truck trip distribution and dynamic routing.

5.3.4 Establishment Surveys

Establishment surveys are based on interviewing shippers at their place of business. While a variety of different types of surveys can be conducted with shippers/carriers, this discussion focuses on collection of trip origin-destination data primarily through travel diary methods. Thus the focus is on shippers/carriers who own trucks. These surveys can be either by mail, telephone, or a combination mail and telephone method. The investment and maintenance costs are also very low for mail surveys. On average, they cost approximately \$500 per establishment surveyed successfully. This type of data collection also requires minimal personnel to implement and generally provides good data and information for those respondents providing completed responses. The types of data collected include origin-destination information, commodity, trip chain information (sequence of trips throughout the day), vehicle characteristics, time of day information, idling information, land use at stop information, travel time data and routing. Specialized establishment surveys can be developed to ask detailed information about value of time, route choice, and mode choice. This information is often critical in estimating impacts of toll roads and modal diversion. They are also helpful in estimating the economic impacts of changes in the transportation network and operations.



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Unfortunately, establishment surveys typically suffer from very low response rates. Response rates between 10 and 20 percent are not uncommon. Most of the time and money expended on these surveys is spent to identify establishments to participate and to follow-up to ensure participation once they have verbally committed. DRCOG has conducted establishment surveys and has received a 70% completion rate for what was collected and included an agreement to participate in the vehicle trip diary survey. The entire process can take between 3-6 months. Low response rates generally make it difficult to develop a statistically representative sample of the population. It is also often difficult to estimate the universe from which this sample is being collected. Ideally, this process would start with a list of all freight-intensive establishments in the state, ranging from office buildings to manufacturing facilities. Then, this universe would be stratified into different populations and a percentage of each population would be sampled. However, such a database does not currently exist. CDOT would need to work with other agencies in the state to identify key establishments to survey. These entities could include the Colorado Motor Carriers, the Colorado Department of Revenue, and the Colorado and Denver Chambers of Commerce. Another consideration is that many truck trips using the highways in Colorado have neither an origin nor destination in the state. These truck trips cannot be captured by surveying establishments within the state.

Given the low and economical cost of implementation, this approach may be useful for capturing freight movements not accessible via other means. Response rates are improved significantly when mail surveys are combined with telephone contact. However, the cost of implementation increases significantly with this approach. The telephone contact prior to the mail survey, and as a follow-up, provides the ability to complete questionnaires, inform the sampling frame and statistical inference, and enhance qualitative information about freight movements.

Utilization of advanced technologies such as global positioning systems does provide additional information regarding individual truck travel activity and truck type frequencies on given corridors and may offer future data collection possibilities. However, high equipment cost and frequent equipment malfunctions currently prevent widespread implementation. Important information such as weight, trip purpose and commodity hauled is also not captured. A combination GPS and driver survey could be implemented to maximize the advantages of each approach. The above concerns can be minimized by increasing the density of vehicle numbers with GPS receivers or by narrowing the focus of each individual study (e.g., to a specific corridor or trip generator of interest). GPS-based data collection can be used to augment mailback and telephone surveys. In addition to providing more accurate O-D information, the GPS approach can provide more accurate travel time data and routing information that are useful for modeling truck flows. With recent advances in information technology, the cost of this approach is still relatively expensive, but may be falling.



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5.3.5 Extraction of VIUS Data

As mentioned previously, the U.S. Census Bureau's Vehicle Inventory and Use Survey (VIUS) can be used to assist in the vehicle classification process. The vehicle population in each state was sampled and a myriad of vehicle and operating characteristics are collected on each sampled vehicle. The three of relevance for vehicle classification are axles, body units and gross vehicle weight rating (GVWR). The data can be used to develop cross-references that can be used to go back and forth between vehicle classification schemes. For example, the data can be used to transform CDOT truck count data from axles to GVWR for emissions analysis.

5.3.6 Economic Data Collection Options

Economic data are different from the other types of data, because they are not particularly useful as stand-alone elements. Instead, they are required to perform various kinds of economic analyses such as determining the economic impacts of transportation projects and determining the economic significance of freight transportation. All of the key economic data listed in Table 5-1 are available at the national level at no cost from sources such as the U.S. Economic Census and National Transportation Satellite Accounts. Because the economy of each state is very different, freight-related economic analyses benefit from the incorporation of state and county-level data. As mentioned previously, several of the common sources of economic data at the county level are IMPLAN and REMI. These sources are proprietary and can only be used if they are purchased from these companies.

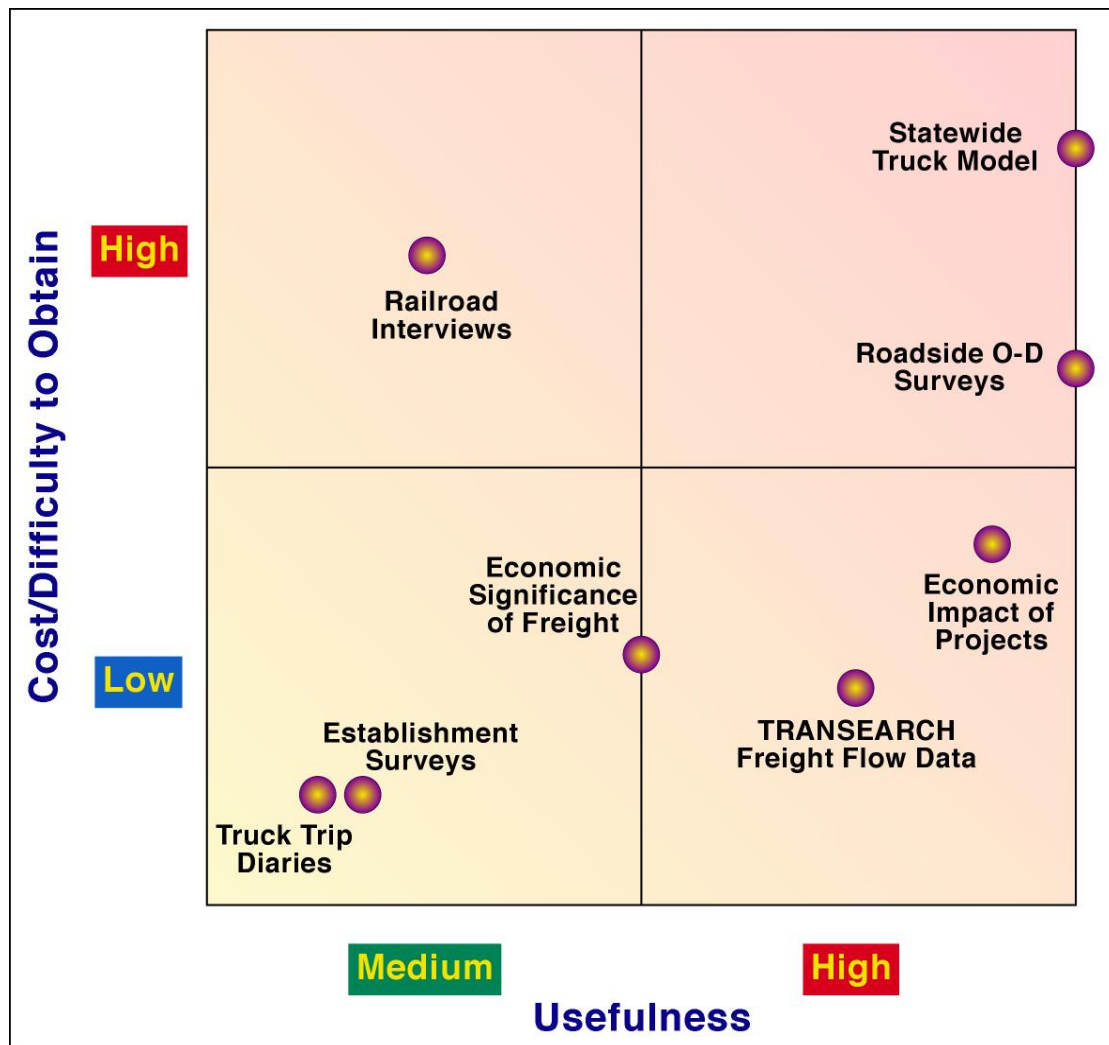
5.4 Data Collection Prioritization

The final data prioritization process compares the methods and analytical tools used to gather information on the key freight data elements. The prioritization is based on comparing relative usefulness of the data collected from each method and the cost/ease of the data collection method. Figure 5-1 displays each method in a 2x2 matrix comparing these two qualities. Note that the roadside origin-destination surveys and the truck model have the highest usefulness. However, the model is much more expensive than the roadside data. It is also in part dependent on the data collected from these surveys. Therefore, the cost/ease of use of the truck model is very high. The cost of the economic studies is slightly lower, but their usefulness is also lower than the origin-destination surveys and the truck model. Establishment surveys are the cheapest, but they are not as useful as the other sources. Truck trip diaries are more beneficial at the MPO-level than at the state-level, because truck trip diaries are more efficient at estimating intra-city trips. Interviews of the railroads would provide some useful information, but not as much as the other data collection methods. While the dollar cost of these interviews would not be high, getting agreement from the railroads to participate may be labor-intensive and require some concessions from CDOT in other issues. Therefore, the cost of this method is considered to be relatively high.



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Figure 5-1 Relative Usefulness and Cost for Each Data Collection Method





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5.5 *Summary of Findings*

The freight data prioritization has indicated several key findings for the CDOT freight data program. First is the need for additional origin-destination data. The two main sources of origin-destination data are roadside O-D surveys and the TRANSEARCH database. Roadside O-D surveys have the advantage of already being associated with specific roadways, which is consistent with the corridor needs of Colorado. TRANSEARCH data has the advantage of being relatively cheap and comprehensive for the entire state. However, TRANSEARCH data includes only region-to-region flows as opposed to the corridor-specific information that is captured by roadside O-D surveys. Truck travel diaries are also a good source of origin-destination data for intra-city trips, but they are not efficient at estimating intercity truck trips. A truck model can also be utilized to estimate origin-destination information, but it requires significantly more costs than either of the other two options.

Another key finding from the data prioritization process is the need for increased economic analysis. The two primary types of economic analysis are determining the economic significance of freight and estimating the economic impacts of projects. These types of analyses are different than traditional data collection activities in that they require the assembling and analysis of data from pre-existing sources. Economic analysis should be a part of the CDOT freight data program because economic development is a key reason to perform freight planning activities. Establishment surveys and trip diaries are relatively inexpensive and simple to implement, but it is difficult to develop comprehensive statewide data using this method. This can be incorporated into the freight data program if resources allow.



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6.0 RECOMMENDED FIVE-YEAR FREIGHT DATA PROGRAM

This chapter outlines options and makes recommendations for the development of a five-year freight data program at CDOT. The structure of the program is highly dependent on the budget allocated to these activities, as funds for freight planning are competing with the myriad of other activities that occur at CDOT. Because an amount has not yet been set, this chapter considers four funding alternatives over a five-year period for the freight data collection program: 1) Low - \$150,000, 2) Medium - \$350,000, 3) High - \$750,000, and 4) Very High - \$1,500,000. The five-year program alternatives also attempt to level-load the work, so that the same level of effort is exerted in Year 1 as in Year 4. It should be noted that there have been data collection programs that have been successful at raising funds in the “Very High” range by pooling funds across transportation agencies and across states. Potential partner agencies for CDOT may include the five MPOs (DRCOG, PPACG, NFRMPO, PACOG, and GVMPO). Other potential partners could include the rural TPRs, economic development agencies and chambers of commerce. The Wyoming and New Mexico DOTs are also potential partners, because they have urban areas which are relatively close to the Colorado border.

6.1 *Summary of Capabilities of Data Collection/Analysis Types*

6.1.1 Vehicle Classification Counts

Vehicle classification count programs collect data on the number of vehicles by vehicle type. These data are generally collected on an hourly basis. These data can be used to find high truck volume locations in the state, which then become the focus of freight planning efforts. They can also be used to determine high truck percentage locations. These high truck percentage locations are important for understanding where truck-auto interaction is at its highest and also where truck movements are most likely to be a major contributor to congestion in the state. It may also be useful to select sites where truck delays are high.

Vehicle class counts are often used in conjunction with other data and modeling techniques. For example, 24-hr truck count data are often collected along with roadside origin-destination truck surveys in order to statistically expand the sample data to the universe of trucks at the location. Truck count data are also used to calibrate and validate travel demand models.

Table 6-1 provides a list of Green Box vehicle counter locations being considered by CDOT for reactivation. These are locations which are equipped with detector loops to allow CDOT to place counters to collect short duration, vehicle classification information. The plan is to upgrade and reactivate these locations as funds become available.

Table 6-2 provides a list of potential additional permanent count (ATR) locations which have been identified by CDOT. The list is ordered by geographic area and does not reflect any prioritization.



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Table 6-1 CDOT Green Box Vehicle Counter Reactivation Program

Route	Location	# Of Lanes	# Of Loops	Comments/Costs
002A	On SH 2, Colorado Blvd, S/O 52nd Ave	6	12	\$6,600.00
025A	On I-25 S/O 23rd Ave, Denver	8	16	\$8,600.00
025A	On I-25 N/O 84th Ave, Thornton	6	12	\$6,600.00
025A	On I-25 S/O SH 119, Longmont	4	8	\$4,600.00
025A	On I-25 N/O 8th Ave, Denver	11	22	\$11,600.00
025A	On I-25 N/O Thornton Pkwy, Thornton	6	12	All Loops OK
025A	On I-25 N/O 104th Ave, Northglenn	6	12	All Loops OK
036B	On US 36 SE/O Pecos St	6	12	\$6,600.00
050B	On SH 50 0.7 Mi W/O Port-Of-Entry, Lamar	4	8	\$4,600.00
076A	On I-76 E/O SH 287, Denver	4	8	\$4,600.00
082A	On SH 82 NW/O County Road 13, Maroon Creek Rd, W/O Aspen	2	4	\$4,600.00
083A	On SH 83, Parker Rd, NW/O Yale Ave, Denver	6	12	\$6,600.00
085B	On SH 85, Santa Fe Dr, N/O SH 470	4	8	\$4,600.00
093A	On SH 93 N/O SH 72, Rocky Flats	2	4	All Loops OK
093A	On SH 93 SE/O Table Mesa Dr, Boulder	4	8	\$4,600.00
119B	On SH 119 NE/O Jay Rd, Boulder	4	8	\$4,600.00
121A	On SH 121, Wadsworth Blvd, N/O SH 470	4	8	\$4,600.00
121A	On SH 121, Wadsworth Blvd, S/O Coal Mine Rd	4	8	\$4,600.00
285D	On SH 285 SW/O SH 8	4	8	\$4,600.00
285D	On SH 285 E/O SH 121, Wadsworth Blvd	4	8	\$4,600.00
470A	On SH 470 N/O SH 285	6	12	\$6,600.00
470A	On SH 470 W/O Kipling Parkway	4	8	\$4,600.00
470A	On SH 470 W/O SH 121	4	8	All Loops OK
470A	On SH 470 E/O SH 121	4	8	\$4,600.00
	On 104th Ave W/O Tower Rd (Permanent Cabinet)			\$1,600.00
Total				\$114,600.00
* Green Box – Short duration volume/vehicle classification sites with permanent in-road loop installations.				



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Table 6-2 Proposed ATR Candidate Sections

Region 1
US 36, Byers-Last Chance (WIM Site to be Installed by project in 2002/2003)
Region 2 General
US 24, Marksheffel – Falcon (ATR Site to be Installed by project in 2002/2003)
I-25, N/O proposed Powers Blvd
US 50, Boone – Fowler
SH 83, Powers Blvd – Shoup Rd
US 287, Springfield – Lamar
Region 2 Colorado Springs
US 24, 31st St – I-25
US 24 (Fountain Blvd), Circle Dr – Powers Blvd
Powers Blvd, Drennan Rd – Platte Ave
Powers Blvd, Platte Ave – Woodmen Rd
Region 2 Pueblo
SH 45, (Pueblo Blvd), I-25 – SH 78 (Northern Ave)
SH 45, (Pueblo Blvd), SH 78 (Northern Ave) – SH 50
US 50, SH 45 – I-25
US 50, Bonforte Blvd – SH 47/96
US 50, I-25 – 21 st Lane
SH 96, SH 45 – SH 50 Bus. Rte.
Region 3 General
SH 13, 30 th St., Rifle – SH 325
SH 13, SH 325 - Piceance Creek Rd
SH 133, Redstone - Carbondale
SH 133, Carbondale – SH 82
SH 65, N side Grand Mesa
I-70, Debeque-Parachute
I-70, SH 13, Rifle – Silt
Region 3 Grand Junction
US 6 (North Ave), SH 70 Bus. Rte. – SH 70 Bus. Rte.
US50, SH 70 Bus. Rte. – B.50 Rd
I-70 (Gr. Jct. Bus. Rte), I-70 – SH 6 (North Ave)
I-70 (Gr. Jct. Bus. Rte.), Main St. – SH 141
SH 340, Ridges Blvd – SH 70 Bus. Rte.



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Table 6-2 Proposed ATR Candidate Sections (Continued)

Region 4 General
US 85, Brighton – Greeley
Region 4 Boulder
SH 7 (Arapahoe Rd), 28 th St – Cherryvale Rd
US 36 (28 th St), SH 119 – Baseline Rd
SH 93 (Broadway), Table Mesa Rd – Baseline Rd
SH 119 (Diagonal Hwy), SH 157 – SH 52
Region 4 Fort Collins
US 287 (College Ave), Harmony Rd – Prospect St
SH 68 (Harmony Rd), College Ave – I-25
Region 4 Greeley
US 34 (Greeley Bus. Rte.), 59 th Ave – 28 th Ave
US 85, SH 34 Bypass – SH 263(8 th Ave)
US 85 (Greeley Bus. Rte), SH 34 Bypass – 18 th St
Region 4 Longmont
SH 119, Hover Rd – SH 287(Main St)
SH 119, SH 287(Main St) – County Line
US 287 (Main St), Pike Rd – SH 119 (Florida Ave)
US 287 (Main St), SH 119 (3 rd Ave) – 17 th Ave
Region 4 Loveland
US 287, 17 th St – 37 th St
US 34, Wilson Blvd – SH 287
US 34, SH 287 – I-25
Region 6 General
I-76, 96 th Ave – SH 85 (WIM Site to be Installed by project in 2002/2003)
US 85, I-76 – 132 nd Ave
US 85, 32 nd Ave – Brighton



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Table 6-2 Proposed ATR Candidate Sections (Continued)

Region 6 Denver
SH 2, SH 285 (Hampden) – I-25
US 6, I-270 – I-76
SH 30, I-25 – Havana
SH 30, Havana – 6 th Ave.
SH 30, Havana – Buckley Rd
US 40 (Colfax), Simms – Federal
US 40 (Colfax), York – I-225
SH 72 (Ward Rd/64 th), I-70 – Indiana
SH 83 (Parker Rd), Lincoln Ave – I-225
SH 83 (Parker Rd), Havana – Alameda
SH 88 (Federal), 6 th Ave – Hampden
SH 88 (Federal/Bellevue), Hampden - Santa Fe
SH 88 (Bellevue), Santa Fe – I-25
SH 88 (Arapahoe), I-25 – Parker Rd
SH 95 (Sheridan), Hampden – 6 th Ave
SH 95 (Sheridan), 6 th Ave – I-70
SH 95 (Sheridan), I-70 – SH 36
SH 121 (Wadsworth), SH 470 – Hampden
SH 121 (Wadsworth), Hampden – 6 th Ave
SH 121 (Wadsworth), 6 th Ave – I-70
SH 121 (Wadsworth), I-70 – SH 36
SH 177 (University), SH 470 - Hampden
US 287/SH 128 (120 th Ave), SH 121 – I-25
US 287 (Federal), I-70 – SH 36
US 287 (Federal), SH 36 – 120 th Ave
US 287, SH 121 – SH 7 (Baseline Rd)
SH 391 (Kipling), Hampden – 6 th Ave
SH 391 (Kipling), 6 th Ave – I-70



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6.1.2 Roadside O-D Survey

Roadside O-D surveys are the most direct method of determining information about a particular corridor. The most commonly used data from these surveys are information about origins, destinations and commodities. The origin and destination information is used to determine information such as trading partners that use a corridor, truck trip generation and attraction rates for particular regions and average truck trip lengths. For example, the origin-destination information is often used to estimate the percentage of trucks using a corridor that are through trips as opposed to inbound, outbound and internal trips for a particular region.

The commodity information is used to determine the economic activity that is being supported by a corridor. Each commodity is produced by a particular industry and consumed by a relatively small range of industries. Therefore, the commodity information on a corridor can be used to identify a set of producing and consuming industries that are likely to be concerned with the current condition and potential improvements to a corridor. Commodity information is also important in economic analyses. Each commodity has a particular sales price which is used to estimate the value of the good. This value information is used to estimate the cost of delays and accidents to the economy and it is used to estimate the benefits that are associated with corridor improvements.

Information from roadside surveys can also be used to validate and calibrate travel demand models. Average truck trip length information can be used in the trip distribution. Commodity information can be used to confirm that commodity-based travel demand models are producing accurate results for specific commodity groups. As mentioned previously, truck counts are usually done in conjunction with roadside O-D surveys to enable the expansion of the sampled data to the universe of truck trips on the corridor.

6.1.3 Establishment Survey

Establishment surveys refer to the collection of goods movement information that is specific to a single facility. These surveys collect a wealth of information on freight flows relative to that specific facility, including:

- ▶ Number of trucks generated by and attracted to the facility
- ▶ Commodity distributions of the inbound and outbound trucks
- ▶ Time of day distribution for truck arrivals and departures
- ▶ Mode split information
- ▶ Value of shipment information
- ▶ General routing information
- ▶ Logistics patterns of the goods shipped in and out of the facility
- ▶ Number of trucks owned or hired during a particular time period
- ▶ Specific origins and destinations related to the goods shipped at the facility
- ▶ Forecasts of future changes in each of the variables described above



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Establishment survey information is most effective when the facility being surveyed is the one of interest. The sampled information can be used by modelers to estimate truck activity for a particular industry. The information can be used by planners to determine the impacts of a new facility being developed at a particular location. The information can also be used for economic analyses to determine the relationships between key industries in a particular region. Sophisticated versions of establishment surveys can be used in the development of mode choice models.

6.1.4 Trip Diaries

Trip diaries focus on the activities of a particular vehicle. Rather than surveying information about an entire establishment, specific vehicles are selected and the trip information associated with these vehicles is recorded. Truck trip diaries are most beneficial in understanding intra-city truck trips. This is because intra-city truck trips may utilize a variety of roadways and have very disparate origin-destination patterns. To understand intercity truck trips, it is more efficient to survey the roadways connecting regions such as through a roadside origin-destination survey. Because the number of roadways will be quite limited, only a few locations will need to be surveyed. Alternatively, a freight flow database such as TRANSEARCH may be used as a starting point for understanding intercity truck flows. Trip diaries collect a wealth of information regarding individual trips, including the following:

- ▶ Commodity carried
- ▶ Origins and destinations
- ▶ Routing information
- ▶ Numbers and location of loading, unloading and other stop activities
- ▶ Time to load and unload at each stop
- ▶ Average payload
- ▶ Time of day for each trip
- ▶ Travel time for each trip

This information is also most commonly used for modeling purposes. Information such as trip chaining, average trip lengths, commodities and O-D information can be used to structure, calibrate and validate models.



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6.1.5 Truck Following Studies

A truck following study could be conducted to determine travel times on key corridors for trucks. For example, the count data discussed earlier could be used to identify corridors or combinations of corridors that are heavy in truck traffic. Truck following studies can be used to estimate the travel times in these corridors. Alternatively, the travel times in key congested corridors can be estimated for all vehicles, and the truck count data can be used to estimate the percentage of the delay at these locations that is felt by trucks relative to autos. CDOT has been doing travel time studies since 2003. In 2003 and 2004 CDOT conducted travel time studies on over 35 corridors. The total cost spent to date has been approximately \$120,000 for the actual data collection.

6.1.6 TRANSEARCH Commodity Flow Database

Another potential data activity for Colorado to consider is updating its freight flow database. The current database is based on 1996 movements, while 2003 data are now available from the vendor of these data. The freight flow database would include county-level, origin-destination and commodity data within the state of Colorado and flows from each county to a set of external regions that can be selected by CDOT. The data can be purchased either for state use only or for both CDOT and TPR use for an additional fee. Forecasts of TRANSEARCH data can also be purchased for additional costs. However, there are less expensive alternatives for developing forecasts that should also be considered by CDOT. These methods include applying simple growth rates from the FHWA FAF database and more sophisticated methods that incorporate growth rates for each industry and region, applying input-output factors, and procedures to balance truck trips. TRANSEARCH data are used for a variety of purposes such as the starting point for freight models, determination of key trading partners for a state or sub-state region, or determination of key industries within a region. The data are also available by mode, making this database a starting point for performing modal diversion analysis.

6.1.7 Economic Significance of Freight

Determining the economic significance of freight is an important component to understanding the relationship between the economy and freight. The first component of this analysis would be developing an understanding of the freight industry. The questions that would be answered regarding the freight industry include:

- ▶ Who are the freight companies in Colorado (e.g. carriers for each mode, brokers, freight forwarders, third party logistics companies, truck drivers, warehouse companies)?
- ▶ Where are they located within the state?
- ▶ How many employees does each type of freight company employ?
- ▶ What is the economic output of these industries?
- ▶ What is the forecast for growth of freight companies in Colorado?



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The second component of this analysis would be to understand the significance of freight for the other sectors of the economy. Each sector spends a different amount on transportation activity, and each sector has a varying degree of reliance on freight. This component would seek to determine the amount spent on transportation by industry in a quantitative fashion. It would also seek to determine the degree of reliance of major industries on transportation from a qualitative perspective. For example, a manufacturing facility may spend 5 percent of its total costs on transportation. Therefore, a decrease of 20 percent of its transportation costs would directly increase its profitability by 1 percent. It may also increase the facility's ability to compete with similar facilities in other states. A service sector business may be more reliant on activities such as parcel delivery, while shipments of bulkier goods such as furniture or office supplies are less frequent and have less of an impact on the company.

This analysis would be done by integrating information from multiple pre-existing data sources. There is generally a tradeoff between geographic specificity and cost. There is also a tradeoff between commodity/industry detail and cost. Free data are generally available at the national and state-level, while much of the county-specific detail must be purchased from proprietary sources. The end product of this analysis would be a report that describes qualitatively and quantitatively how important freight is to the Colorado economy. Information from this report could be used to identify potential private sector stakeholders for infrastructure improvement projects. It could also be used to educate decision-makers on the importance of funding freight activity in the state.

6.1.8 Economic Impacts of Projects (Freight and Passenger)

The economic impacts of projects are often used as a criterion in the project-selection process. The economic impacts tend to start by estimating the number of jobs and revenues required to improve a transportation facility. It would also include an economic quantification of the operational improvements to the vehicular traffic. This would include the impacts of reduced congestion, reduced accidents and increased reliability. Finally, the indirect and induced benefits of these activities would be included. Ideally, these improvements would be calculated separately for freight and passenger movements. These analyses must be done on a project-by-project basis to ensure that the unique features of each project are captured. While this analysis does not require the use of a travel demand model, it can be improved by using a model because the travel impacts of the roadway improvements can be more accurately estimated.

6.1.9 Statewide "Lite" Truck Model

There are many levels of complexity and sophistication that can be incorporated into a truck model. At its simplest level, a model can be used to route truck flows onto a transportation network in an all-or-nothing fashion with no consideration of congestion impacts. This type of model can be used to estimate which corridors are likely to become the most congested in the future. It can also be used to estimate the travel demand impacts of adding major roadway facilities such as new interstates and freeways to the system.



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A slightly more sophisticated version of this model can incorporate automobile traffic by pre-loading autos to the network based on comprehensive statewide classification count data such as Federal Highway Administration Highway Performance Monitoring System (HPMS) data. Then, the truck traffic can be routed to the network using a shortest travel time methodology. This type of “lite” truck model can be used to more accurately estimate the travel impacts of roadway changes and to more accurately estimate the economic impacts of specific project improvements.

6.1.10 Statewide Passenger and Truck Model

A full statewide passenger and truck model would develop the most accurate estimate of transportation activity on Colorado’s roads. This model would provide the greatest degree of flexibility in terms of ability to analyze project alternatives. It also would be the most time-consuming in terms of development. A statewide transportation network would need to be established along with a zone structure. Additionally, socioeconomic data would need to be developed for base years and forecast years. The travel demand models of each of the MPOs in Colorado would also need to be integrated into the statewide model.

A truck component of this model could be developed based on a combination of TRANSEARCH data to estimate the long-haul truck trips and local truck trip generation rates based on a source such as the FHWA Quick Response Freight Manual. Such a model would allow for the direct development of forecasts based on changes in the socioeconomic data of the state. It would also most accurately estimate the changes to both trucks and autos based on a wider range of changes in the roadway network such as new lanes, carpool lanes, truck-only lanes and toll lanes. This model would also require significant maintenance and updating to ensure compatibility and consistency with other models in the state.

6.2 Cost Estimates of Data Collection Methods

Table 6-3 shows preliminary cost estimates for each of the data collection methods described earlier. These estimates are based on actual costs from similar studies in other regions. Actual costs may vary depending on the specific amount of data collected, amount of analysis and data summarizing performed, efficiency of the data collection/analysis team, the desired accuracy of the data collection activity, and the ease of use of the data collection location (for roadside surveys and establishments). In the case of roadside intercept surveys, the survey costs include the cost to conduct a 24-hour truck count at the survey location. This is needed to expand the survey data.



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Table 6-3 Typical Costs for Data Collection and Analysis

Activity	Estimated Cost
Current Vehicle Count/Classification Program*	\$313,500
Additional 24-hr Vehicle Classification Counts (2 directions)	\$300 - \$500 per rural location; \$1,000 - \$2,000 per urban location
Reactivating Green Boxes	\$5,000 - \$7,000 per site
24-hr Roadside O-D Survey (1 direction)	\$5,000 per site
Establishment Surveys	\$500 per establishment
Trip Diaries	\$250 per vehicle
Truck Following Studies (for travel time)	\$100,000
TRANSEARCH Colorado Freight Flow Database (base year)	\$40,000 - \$60,000
Economic Significance of Freight (using available, free data)	\$50,000
Economic Significance of Freight (using local, purchased data)	\$65,000
Freight-Related Economic Impacts of Projects (using available, free data)	\$100,000
Freight-Related Economic Impacts of Projects (using local, purchased data)	\$145,000
Statewide "Lite" Truck Model without Autos	\$400,000 - \$600,000
Statewide "Full" Truck Model with Fixed Auto Volumes	\$750,000 - \$1,000,000
Statewide Passenger and Truck Model	\$1,000,000 - \$3,000,000
* includes staff, equipment and repairs	

6.3 Freight Data Program Options

For each of the four funding options (low, medium, high and very high), there are several combinations of data that could be collected and analyses that could be performed. The following pages include Tables 6-4 through 6-7 which show scenarios for each of the funding options and specific recommendations within each scenario. The principles that were used to develop these recommendations are:

- ▶ Level-loading the work, so approximately the same amount of work is done each of the five years.
- ▶ Data collection informs economic analyses and model development and, therefore, should be done early.
- ▶ A roadside origin-destination survey is key to understanding corridor-level truck flows and is, therefore, a key component of most freight data programs.
- ▶ CDOT should perform at least one analysis to demonstrate the usefulness of freight data.
- ▶ Coordinated timing between the freight data program and other CDOT activities such as the statewide transportation plan update.



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6.3.1 Low Options

Table 6-4 shows three scenarios for the low funding option – Scenario 1 with O-D surveys only, Scenario 2 with origin-destination surveys and 1 analysis and Scenario 3 with O-D surveys and establishment surveys. At this funding level, the consultant team would recommend performing the 20 origin-destination surveys and purchasing TRANSEARCH freight flow data for state use only. The surveys would provide a good start on understanding the commodities that are moving in the state. It would also be sufficient to enable the determination of the percent of external – external truck trips relative to internal – external and external - internal truck trips on the major facilities. The freight flow database is versatile and could be used as the starting point for many different types of travel estimates, economic analyses and crude modeling activities.

Table 6-4 CDOT Freight Data Program – Low Funding Options

Year	Scenario 1 20 O-D Surveys with Freight Flow Database*	Scenario 2 8 O-D Surveys, 1 Analysis, 1 Freight Flow Database	Scenario 3 20 O-D Surveys, 100 Establishment Surveys
1	TRANSEARCH Freight Flow database – state only	TRANSEARCH Freight Flow database – state use only	4 O-D surveys, 20 Establishment Surveys
2	5 O-D surveys	Economic significance of freight (available data)	4 O-D surveys, 20 Establishment Surveys
3	5 O-D surveys	3 O-D surveys	4 O-D surveys, 20 Establishment Surveys
4	5 O-D surveys	3 O-D surveys	4 O-D surveys, 20 Establishment Surveys
5	5 O-D surveys	2 O-D surveys	4 O-D surveys, 20 Establishment Surveys
* Recommended Scenario			

6.3.2 Medium Options

The medium option has the highest number of origin-destination surveys. This would allow for a wider range of roadways to be covered by surveys, which is important since there would not be a model developed. With this alternative, we recommend that CDOT conduct multiple surveys at key locations to determine the impact of seasonality on commodity distributions and origin-destination patterns. The medium option would also include economic analyses. The economic significance of freight analyses would be based on county-level data from IMPLAN, while the project-level economic impacts would rely on free available data.



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Table 6-5 CDOT Freight Data Program – Medium Funding Options

Year	Scenario 1 45 O-D Surveys, 1 Analysis, 1 Freight Flow Database*	Scenario 2 48 O-D Surveys, 100 Establishment Surveys, 1 Freight Flow Database	Scenario 3 25 O-D Surveys, 2 Analyses, 1 Freight Flow Database
1	Freight flow database, 9 O-D surveys	Freight flow database, 20 establishment surveys	8 O-D surveys, Freight Flow database
2	Economic significance of freight (local data)	12 O-D surveys, 20 establishment surveys	Economic significance of freight (local data)
3	12 O-D surveys	12 O-D surveys, 20 establishment surveys	8 O-D surveys
4	12 O-D surveys	12 O-D surveys, 20 establishment surveys	Economic impact of projects (available data)
5	12 O-D surveys	12 O-D surveys, 20 establishment surveys	9 O-D surveys
* Recommended Scenario			

6.3.3 High Options

Table 6-6 shows three alternatives for the high funding level option. Scenario 1 would include a mix of origin-destination surveys, establishment surveys, economic analyses and the purchase of the TRANSEARCH database for the state and the MPOs. Scenario 2 would increase the number of origin-destination surveys by eliminating establishment surveys and by performing the economic analyses using local data. However, because this would not generate a much higher number of origin-destination surveys, this scenario is not recommended. Scenario 3 would include the development of a “lite” truck model. However, because the functionality of this model would be limited and the amount of data collection for the other categories would be reduced so significantly, Scenario 3 is not recommended. This breadth of data collection activities in Scenario 1 makes this scenario recommended over the other two scenarios.



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Table 6-6 CDOT Freight Data Program – High Funding Options

Year	Scenario 1	Scenario 2	Scenario 3
	76 O-D surveys, 200 Establishment Surveys, 2 Economic Analyses, Freight Flow Database*	108 O-D surveys, 2 Economic Analyses, Freight Flow Database	28 O-D surveys, 2 Economic Analyses and Lite Model
1	Freight flow database, 25 O-D surveys	Freight flow database, 36 O-D surveys	14 O-D surveys
2	Economic significance of freight (local data), 100 establishment surveys	Economic significance of freight (available data)	Economic significance of freight (available), Economic impact of projects (available)
3	25 O-D surveys	36 O-D surveys	14 O-D surveys
4	Economic impact of projects (local data), 100 establishment surveys	Economic impact of projects (available data)	Develop "lite" statewide truck model
5	26 O-D surveys	36 O-D surveys	
* Recommended Scenario			

6.3.4 Very High Options

For the very high funding option, only two scenarios were considered. Scenario 1 would have an extremely high number of origin-destination and establishment surveys along with economic analyses and the purchase of the TRANSEARCH freight flow database. While Scenario 1 would allow for many different origin-destination locations during many different seasons, Scenario 2 would be preferred because it would include a statewide truck model which would provide greater flexibility and analytical capability for CDOT and MPOs in the state. Scenario 2 would also retain 86 origin-destination surveys and 100 establishment surveys, which are adequate for full statewide coverage of the interstate system during each season in the year.

Table 6-7 CDOT Freight Data Program – Very High Funding Options

Year	Scenario 1 206 O-D Surveys, 400 Establishment Surveys, 2 Economic Analyses, Freight Flow Database	Scenario 2 86 O-D Surveys, 100 Establishment Surveys, 2 Economic Analyses, Freight Flow Database and “Full” Truck Model*
1	Freight Flow Database, 51 O-D surveys, 100 Establishment surveys	43 O-D surveys, 50 establishment surveys
2	Economic significance of freight (local data), Economic impact of projects (local data)	Economic significance of freight (local data), Economic impact of projects (local data)
3	51 O-D surveys, 100 Establishment surveys	43 O-D surveys, 50 establishment surveys, Freight Flow Database
4	52 O-D surveys, 100 Establishment surveys	Statewide Truck Model
5	52 O-D surveys, 100 Establishment surveys	
* Recommended Scenario		



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6.4 Recommended Option

Although a recommended scenario has been identified for each funding level in the previous section, the consultant team recommends that CDOT pursue Option 3, the high funding level option (\$750,000 over 5 years). More specifically, Scenario 1 within this option, which includes 76 roadside origin-destination surveys, 200 establishment surveys, 2 economic analyses and the purchase of the TRANSEARCH commodity flow database, should be pursued. The data collected with this recommended alternative would significantly increase the freight transportation planning capabilities for agencies in Colorado.

The roadside origin-destination surveys would provide information on long-haul truck movements throughout the state, which would be important for performing major corridor studies on freight-intensive corridors. These surveys are typically accompanied by truck counts, which would provide information on the number and types of trucks using the roadway. These surveys would also capture commodity and origin-destination information which could be used to understand which industries are being impacted by bottlenecks and where these industries are located. This could help transportation planners identify supporters of transportation improvement projects. Roadside origin-destination surveys would also provide MPOs with information on the amount and type of through truck trips in their region. This information would be particularly helpful for identifying potential truck-only lanes, truck-prohibited lanes and truck bypass lanes.

The establishment surveys could be used to develop both a qualitative and a quantitative understanding of the major freight needs of key shippers, receivers and carriers in the state. For example, the establishment surveys could provide information on road geometries and deterioration conditions that inhibit the movement of goods. This would enable transportation planners to develop a set of small, “quick win” transportation improvement projects that would generate momentum for conducting freight transportation planning. The establishment surveys could also be used to obtain information on logistics patterns of industries and key bottlenecks in the state for freight stakeholders. This would enable transportation agencies to prioritize bottlenecks by their impact on both passenger and freight transportation. The establishment surveys could also be used to generate a set of local truck trip generation rates and trip distribution factors by facility type. For example, one would be able to correlate information such as size of facility and commodities shipped with the types of trucks used and the number and timing of truck trips in and out of the facility. These trip generation rates could be used to improve the accuracy of metropolitan level models. The origin-destination information collected at establishments could be used to improve the trip distribution portion of truck models. Performing 200 establishment surveys would provide breadth in terms of both industry and geographic coverage throughout the state.

The TRANSEARCH commodity flow database would enable a comprehensive perspective of all goods moving in the state. Because the freight flow database would provide data at the county-level, it would also provide information on intra-state trading partners along with information on Colorado’s major trading partners around the country. This would be beneficial in terms of determining who Colorado should partner with for multi-state planning efforts.



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Information from the freight flow database would also supplement the information needed to describe the relationship between freight and the economy. Together these two sources of information would describe the percent of employment, income and output that is related to goods movement in the state. It would also describe how much each industry relies on the transportation infrastructure. This would be valuable information in terms of describing the importance of freight improvement projects while securing and allocating transportation funds within the state of Colorado and for TPRs as well. Additionally, this information would be key to identifying a comprehensive set of relevant freight stakeholders for the entire state.

The other economics-related project would be a project to estimate the economic impact of transportation projects on both freight and passenger movement. This process could take an existing set of transportation projects and determine the economic impact of performing them individually or as a bundle of projects. This process would also develop a systematic method for estimating the economic benefits of projects that could be used as a model for performing analysis not just at the state level, but also for TPRs as well. This would ensure consistency across the state in performing economic analysis for transportation projects.

Consistent with the yearly breakdown of data collection efforts as shown in Table 6-6, it is recommended that the \$100,000 programmed by CDOT for freight data collection in the upcoming fiscal year be utilized to purchase county-level TRANSEARCH commodity flow data for CDOT and the MPOs in the state. Any surplus funds should be used to conduct as many roadside truck O-D surveys as the funds would allow. The highest priority sites for these surveys should be interstate locations at the external cordons of the metropolitan areas in the state.

It should also be noted that this Freight Data Assessment was being conducted at the same time that CDOT was conducting its Mobility Performance Measures Study, a study which has preliminarily also recommended the collection of some freight data. The performance measures study recommends “congested truck miles traveled” and “truck travel time delay” as two of the performance measures which CDOT should be tracking on the state highway system. To track these two performance measures, the report recommends that annual short-term classification counts be conducted on approximately 200 high volume urban roadway segments. Some of these data could be compiled through the expanded ATR program or the Green Box reactivation program being considered by CDOT. These efforts, along with other performance measure data collection, would require an estimated 2.5 full time equivalent employees (FTEs). Because of the high priority placed on the performance measures program by the Colorado Transportation Commission, it is recommended that this classification count process occur in conjunction with the activities of freight data Option 3, Scenario 1.

In summary, it is recommended that CDOT pursue a freight data program which would include the following over the next five years:

- ▶ Purchase of the statewide TRANSEARCH commodity flow database (at the county level) for use by CDOT and the MPOs in Colorado.
- ▶ Conduct of 76 O-D surveys.
- ▶ Conduct of 200 establishment surveys.



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- ▶ Conduct of 2 economic analyses, one demonstrating the economic significance of freight in the state, and the other demonstrating the economic impacts of specific freight transportation improvement projects.
- ▶ Support for 200 additional vehicle classification counts proposed to monitor mobility performance measures on the state highway system.

It is further recommended that funding for one (1) additional FTE be pursued to specifically assist with these freight data collection efforts.

With these efforts, the Colorado Department of Transportation would have a significantly improved database upon which freight transportation planning activities could be based and transportation improvement projects could be evaluated.



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APPENDIX A GOALS AND OBJECTIVES OF LOCAL TRANSPORTATION PLANNING ENTITIES



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This section describes the goals and objectives of other transportation organizations as stated in their long-range planning documents. This section concludes with a summary of goals and objectives to be incorporated in the CDOT freight data program, based on the long range goals of these other transportation agencies in the state.

A.1 Denver Regional Council of Governments

DRCOG's long range plan, termed Metro Vision 2030, is a long-range plan to manage growth within the Denver area which was adopted in January 2005. It addresses three main areas in terms of their growth and development, transportation and environmental quality, and vision and goals. While freight is not a specific category in the plan, it does fit into the vision of the first two categories. These visions and goals are presented in Table 1-2. Italics are used in the table to show points of overlap with freight.

DRCOG also has a set of policies that cover the following 13 topics:

- ▶ System Preservation
- ▶ Transit
- ▶ Highways
- ▶ Rights-of-Way Preservation
- ▶ Denver Central Business District
- ▶ Safety
- ▶ Management and Operations
- ▶ Bicycle and Pedestrian
- ▶ Interconnections
- ▶ Efficient Housing and Business Developments
- ▶ Land Use Integration
- ▶ Transportation for the Disadvantaged
- ▶ Air and Water Quality

Interestingly, none of these topics nor their associated policy statements explicitly discuss freight. Therefore, it appears that the inclusion of freight in the goals and objectives does not translate into specific freight policy areas.



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Table A-2 DRCOG Metro Vision 2030 - Vision and Goals

Category 1 - Growth and Development
<p><u>Vision</u></p> <p>A defined urban growth boundary/area (UGB/A) will promote a more orderly, compact, and efficient pattern of future development within the region. Containing development within the growth boundary/area will prevent the unnecessary and inefficient extension of roads, transit services, water and sewer. It will reduce regional vehicle travel, help achieve greater density, conserve open land outside the boundary/area for growth beyond 2030, and provide separation between communities.</p>
<p><u>Goal</u></p> <p>Ensure that urban development occurs within a defined urban growth boundary/area to promote a more orderly, compact and <i>efficient pattern of future development</i>.</p>
Category 2 - Transportation System
<p><u>Vision:</u></p> <p>A balanced multimodal transportation system will include rapid transit, a regional bus system, a regional highway system, local streets, bicycle and pedestrian facilities, and associated system and travel demand management services. This system will provide reliable mobility choices to all of its users: residents and visitors of all ages, incomes and physical abilities, as well as businesses that provide services and produce or sell goods. Users will find it easy to access, and it will permit <i>efficient state and nationwide connections for people and freight</i>.</p>
<p><u>Goals:</u></p> <p>Provide safe, environmentally sensitive and efficient mobility choices for people and goods; and integrate with and support the social, economic, and physical land use development of the region and state.</p>
Category 3 - Environmental Quality
<p><u>Vision</u></p> <p>By 2030, the region will have protected its major natural resource areas such as riparian corridors and wildlife habitat. Several key working farms and ranches adjacent to the urban area will be preserved. Recreational areas in both developed parks and passive open space will be readily available and accessible to the region's residents. The region's open space will help define the urban area and separate communities.</p>
<p><u>Goal</u></p> <p>Establish an integrated, linked, permanent parks and open space system. This system will include a variety of open space and make appropriate open space accessible to all of the region's population.</p>



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A.2 Grand Valley MPO

While the Grand Valley MPO uses CDOT's mission and vision as a guide, the MPO's four specific goals are to:

- ▶ Enhance mobility
- ▶ Promote economic vitality
- ▶ Increase Safety
- ▶ Provide transportation system enhancements

The MPO also has 23 strategies divided into three categories: Transportation including land use and development, Private Sector Initiatives, and Intermodal Potential. Only one of these strategies refers to freight, and this reference is indirect. The specific language states "Provide the transportation system needed for business and industry expansion". This reference undoubtedly refers to both the passenger and freight transportation system needed to support the expanding portion of the economy.

A.3 North Front Range MPO

The North Front Range MPO's 2030 Plan specifies a set of values, vision and goals to guide its planning efforts. However, none of these are freight-focused. The MPO also specifies a set of strategies that it will use to fulfill these goals. These strategies are described under four headings:

- ▶ Land use/transportation connection,
- ▶ Multimodal options,
- ▶ Regionally significant corridors,
- ▶ Corridor visioning.

While none of these pinpoint freight-related objectives, the consistency of the corridor-focus with this MPO and CDOT leads to consistency in terms of the application of CDOT's freight data program to this MPO's strategies. The North Front Range MPO also has four performance measures that are used for project selection. Two of these measures are directly related to freight as shown below.

- ▶ Increase the accessibility and mobility options available to people and freight
- ▶ Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight



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A.4 Pueblo Area Council of Governments

The Pueblo Area Council of Governments (COGs) Long Range Transportation Plan for the year 2030 contains four goals related to mobility, livability, intermodalism (passenger) and implementation. However, only one of the 14 objectives which are developed from the goals explicitly mentions freight. Under the “Intermodal” goal, one of the objectives is to “*Identify locations of existing or future freight transfer points.*” The Pueblo Area COG has also established six subcommittees one of which is the Rail, Freight and Intermodal committee for the long range plan.

A.5 Pikes Peak Area Council of Governments

The four goals of the 2030 Long Range Plan as set forth by the Pikes Area Peak Council of Governments are related to mobility, environment, accessibility, and maintenance. None of these goals explicitly mentions freight. Additionally, none of the objectives or detailed criteria in this document state a freight focused objective.

A.6 Central Front Range TPR

In its long-range plan, the Central Front Range explicitly mentions freight in its vision and in many of its strategies to support its economic development, transportation system and safety goals. The vision states:

“The Central Front Range Transportation Planning Region will accommodate the region’s rapidly growing multimodal transportation needs through a combination of capacity improvements in congested corridors, safety and traffic management improvements...The transportation system supports economic development by providing mobility for people and goods ...”

The freight-related strategies include:

- ▶ The TPR will support local, regional, statewide and national initiatives to modify and improve vehicle safety and driver behavior for all type of vehicles, including ... trucks.
- ▶ Access to goods and services is as critical to the region as general mobility and will be enhanced by implementation of the transportation plan.
- ▶ Since the economic health of the region depends in part on mobility of commercial goods, the plan evaluates and recommends implementation of improved facilities to enhance commercial goods movement, including truck routes, Intelligent Transportation Systems (ITS), truck/rail intermodal facilities and aviation cargo facilities.
- ▶ Rail grade crossings will be improved at high volume locations to include appropriate safety equipment or grade separations.



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A.7 San Luis Valley TPR

In its long-range plan, the San Luis Valley explicitly mentions freight in its vision and in two of its strategies to support its economic development, transportation system and safety goals. The vision states:

“The San Luis Valley envisions a transportation system that supports the region’s agricultural and tourism-based economy....The transportation system supports economic development by providing mobility for people and goods as well as multimodal access to services.”

The freight-related strategies include:

- ▶ Support the diversification of the region’s agricultural economic base, including agri-processing by developing truck and rail modal opportunities.
- ▶ Improve access to interstate highways in Colorado and New Mexico, thereby increasing access for tourists, residents and commerce.

A.8 Southeast TPR

In its long-range plan, the Southeast TPR explicitly mentions freight in its vision and in three of its sub-goals to support its economic development, transportation system and safety goals. The vision states:

“To position Southeast Colorado to compete for economic development opportunities by strengthening the transportation infrastructure to support the effective, efficient and safe movement of people and goods.”

The freight-related sub-goals include:

- ▶ To maintain the region’s agricultural base economy through development of transportation infrastructure.
- ▶ To improve east-west linkages to connect the region to its markets in Colorado and Kansas and other areas of the country.
- ▶ To create better north-south linkages to access markets in Canada and Mexico.

A.9 Eastern TPR

In its long-range plan, the Eastern TPR implicitly mentions freight in its vision and in many of its objectives to support its economic development, transportation system and safety goals. The vision states:



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“Enhance the unique character and quality of life found in northeast and east central Colorado by maintaining and improving the Region’s transportation network essential to dynamic local and regional economies based on agriculture, oil and gas production, recreation, and tourism.”

The freight-related objectives include:

- ▶ Investigate rail subsidies and incentives for short line railroads
- ▶ Support the relocation of Class 1 rail operation to eastern Colorado
- ▶ Improve rail crossing safety throughout eastern Colorado
- ▶ Invest in eastern Colorado to accommodate future freight issues
- ▶ Maintain and enhance current north/south, east/west truck routes
- ▶ Advocate for enhanced education and awareness of freight needs and its value to the economy
- ▶ Widen highway shoulders along major truck routes
- ▶ Maintain or improve the safety of any hazardous materials routes
- ▶ Enhance airfreight and passenger service for the Region

A.10 Northwest TPR

In its long-range plan, the Northwest TPR implicitly mentions freight in its vision, in three of its goals and in many of its strategies to support those goals. The vision of the TPR is:

“To work together to establish and maintain a realistic, balanced multi-modal transportation system that effectively addresses current and future needs at the same time protecting the quality of life and the safety of residents and visitors in the Northwest Region.”

The three freight-related goals are:

- ▶ Support a transportation system that meets present and future mobility and freight needs.
- ▶ Enhance passenger and freight rail service along with freight and commuter air service.
- ▶ Broaden the economic base for communities in the region.

The freight-related strategies are:

- ▶ Recognize the importance of north/south transportation and freight corridors as connections to adjacent states and other planning regions when developing plans.
- ▶ Consider the enhancement of freight facilities when developing plan alternatives.



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- ▶ Develop commercial air passenger and air freight connections to Grand Junction, Colorado Springs, Denver and Salt Lake City airports from smaller regional/county airports and improve service to and from resort area airports.
- ▶ Enhance service of passenger and commercial rail.
- ▶ Identify and enhance routes of economic importance for freight
- ▶ Adopt a policy that discourages abandonment of rail rights-of-way and rail service.
- ▶ Widen appropriate roadways, shoulders, provide passing lanes (where appropriate), improve railroad crossings.

A.11 Gunnison Valley TPR

In its long-range plan, the Gunnison Valley TPR does not mention freight explicitly or implicitly in its vision. Its values/issues include five categories: economic opportunity, safety, maintenance, air service, and rail service. The air and rail service implicitly include freight, but it is unclear from the language provided what strategies might be envisioned.

A.12 Southwest TPR

In its long-range plan, the Southwest TPR explicitly mentions freight in its vision, but not in any of its goals and strategies. The vision of the TPR is to:

“Ensure that the quality of life desired by its residents and visitors is maintained by providing for a balanced transportation system that accommodates the movements of residents, tourists, and goods throughout the region through the use of telecommunications, expanded air travel, and an enhanced highway system.”

A.13 Intermountain TPR

In its long-range plan, the Intermountain TPR does not explicitly mention freight in its vision, but it does mention goods movement in one of its goals. The vision of the TPR is:

“...for a region that is composed of physically distinct, unique, diverse communities interconnected by a multimodal transportation network that promotes preservation of the unique character of each community through open space buffering, while providing economic, cultural, environmental, and outdoor recreational benefits.”

Its one freight related goal is to “Develop a regional perspective or vision for the geographic distribution of people, goods and services, and recreation.”



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A.14 South Central TPR

In its long-range plan, the South Central TPR implicitly mentions freight in its vision and explicitly mentions freight in many of its strategies. The vision of the TPR is to:

“...envision a multimodal transportation network that supports a stronger and more diversified economy, supports the preservation of the region’s environmental and scenic quality of life, provides access to recreational opportunities, and preserves the unique historical, cultural, and small town character of the region.”

Its freight-related strategies include:

- ▶ Access to goods and services is as critical to the region as general mobility and will be enhanced by implementation of the transportation plan.
- ▶ Since the economic health of the region depends in part on mobility of commercial goods, the plan evaluates and recommends implementation of improved facilities to enhance commercial goods movement, including truck routes, intelligent transportation systems (ITS), truck/rail intermodal facilities and aviation cargo facilities.
- ▶ We will work with the railroad companies to develop strategies that allow access to crucial areas that are sometimes blocked by stopped trains.
- ▶ The plan seeks to improve commercial air connections and terminal facilities.
- ▶ Provide a system of airports that supports economic growth and diversification.
- ▶ Rail grade crossings will be improved at high volume locations to include appropriate safety equipment or grade separations.

A.15 Upper Front Range

In its long-range plan, the Upper Front Range implicitly mentions freight in its vision and explicitly mentions freight in two of its goals. The vision of the TPR is:

“To provide a multi-modal transportation system that maximizes public input, fosters cooperation, and meets the transportation needs of all travelers in the Upper Front Range.”

Its freight-related goals include:

- ▶ To provide a multi-modal transportation system for the safe and efficient movement of persons, goods, and information.
- ▶ To ensure that the transportation needs of tourism, agriculture, industry and economic development are met, while protecting and improving the high quality of life in the region.



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APPENDIX B STAKEHOLDER INTERVIEW SUMMARIES



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INTERVIEW GUIDE – COLORADO DOT FREIGHT DATA ASSESSMENT

Introduction (3 Minutes)

- **Discuss goals of project**– To assess the availability and quality of freight data, prioritize freight data elements to be collected in the state, and determine options for storing and distributing freight data.
- **Purpose of interviews** – To ensure that the project team understands the specific needs of stakeholders and to help understand what freight data elements would help them meet their needs. The purpose of the interviews is also to get a complete understanding of the data that the stakeholders have at their disposal.

Part I – Previous Freight Data Experience (12 minutes)

- What types of freight planning activities (e.g. plans, studies, diversion analysis, outreach/education, etc.) has your organization undertaken?
- What types of general planning activities does your organization undertake?
- What data have you used for these projects? What were the sources?
- What data did you lack? Explain why. (Data not available, too expensive, etc.)
- What, if any, freight data have you collected? Describe the data collection efforts, tools and databases that you developed.

Part II – Expected Freight Data Needs (15 minutes)

- What types of freight planning activities does your organization anticipate performing over the short and long term?
- What do you see as the specific freight data needs for those projects?
- In addition to the projects above, please describe the questions you seek to answer about freight. Provide some specific examples.
- Are you aware of any specific data collection programs or techniques that would be particularly useful for freight data collection effort?

Part III – Freight Databases (5 minutes)

- What freight data do you currently store?
- How do you store freight data? What method do you use? What software do you use?
- What freight data would you prefer to be stored centrally as opposed to stored on local computers?
- What method would you prefer in terms of receiving freight data from a central source within CDOT?



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FREIGHT DATA ELEMENTS - INDIVIDUAL RANKING SHEET

Freight Data Element	Relevance (0) no relevance – (5) extremely relevant	Quality of existing data (0) not available – (5) exactly what is needed
Transportation network information		
Truck counts		
Counts/categorizing classes of vehicles (e.g. medium trucks vs. heavy trucks, private vs. for-hire, single- vs. multi-unit trucks)		
Commodity specific information		
Facility specific information (e.g. warehouse, IM yard)		
Origin–destination data		
Routing information		
Temporal variability (e.g. time of day, seasonal)		
Value of products moved		
Truck trip generation rates		
Travel time data (delay characteristics)		
Cost of shipping		
Freight value of time		
Modal information (e.g. rail, truck , air or diversion data)		
Economic forecasts		
Socioeconomic data		
Accident rate data		
Emissions data		
Other		
Other		
Other		



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INTERVIEW SUMMARY

Interviewee(s): Craig Larson, Federal Highway Administration

Date: February 23, 2005

Interview Type: Phone

Part I - Previous Freight Data Experience

- Education is a big part of FHWA freight planning activities, including freight planning classes. Two classes are currently available with new emphasis on preparing planning forums for how to involve the private sector in planning process. An executive session on freight planning has been given to Colorado's Freight Advisory Committee.
- Projects that FHWA has been more involved in includes: Ports-to-Plains Study, Eastern Colorado Mobility Study, and reviewing EIS corridor studies.
- FHWA is developing/researching national freight performance measure data – particularly baseline time and/or speed data by major interstate corridor. GPS data from several national freight data companies is being used to collect location data that can be used to generate speed data. However, Colorado data was taken during Colorado's the March blizzard so there are some current discussions to come back to Colorado.
- CDOT only has existing truck data. The Eastern Colorado Mobility Study generated a lot of data but it does seem like the data was used outside the study. Some data would now need to be updated and would need to be purchased. Was there an understanding of how it fit in the larger planning process?

Part II - Expected Freight Data Needs

- New federal legislation is underway to create an Intermodal Connector Program. Funding of this program would require state data collection on terminals, warehousing, and origin and destination data along with a ranking of the connector routes.
- Legislation is underway to design US 50 in Colorado to I-35 in Kansas. This study may be similar to the Ports-to-Plains study.
- There is a need to prepare a Western Colorado Mobility Study since freight transportation is somewhat different.
- MPOs lack data. General information provided in some planning process is too general for MPOs to use. More specific, localized data would need to be collected.
- Questions that have been asked by the public include limiting freight travel on I-70 in certain times of day and the development of truck only lanes.
- There is a need for more general trend data on freight transportation, all modes.
- Data that has not been tapped in Colorado includes ITS information for the traffic operation centers and Port-of-Entry data. Speed data, O & D data, and traffic volume are a few data sources that could be captured and used to create trends.



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Part III – Freight Databases

- Does not maintain large amounts of data in Colorado office.
- FHWA reviews HPMS and Department of Revenue data and uses these sources for Trend analysis to explain anomalies
- FHWA would not need data on site but would prefer to link to a central database of information.
- Data is currently reviewed used MicroSoft Access or Excel.
- CDOT should create a standard freight transportation trend analysis/report that is generated each year and then included in the Statewide Transportation Plan.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Steve Fender, Federal Railroad Administration

Date: February 19, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- The FRA collects several data items in its role as the regulatory authority of the railroad mode. Most of the data are accessible online including safety data. These data are submitted from the railroads on an annual basis.
- There are also certain restrictions which are enacted that restrict railroad activity in certain regions and neighborhoods. One of these rules is a new rule which restricts the use of horns in certain neighborhoods.

Part II - Expected Freight Data Needs

- Steve noted some specific data needs for rail in the state. Grade crossing data was the data element which is the highest priority. 2-3 years ago, CDOT developed an inventory of railroad grade crossings. However, the person that developed this database has since retired.
- Steve also recommended the development of a statewide rail system map that shows the rail network, the owners of each of the rail lines, which lines are active and which are abandoned. This information used to be known and current at CDOT, but is no longer known at the same level of accuracy.

Part III – Freight Databases

- No comments

Part III - Additional comments

- Steve also recommended an additional interview with Bennie Howe at 816-407-9651 for more information. Bennie held Steve's current job for several years before Steve was hired.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Bill Copely Federal Motor Carriers Safety Administration

Date: February 10, 2005

Interview Type: Phone

Part I - Previous Freight Data Experience

- Bill often requests and receives highway safety data from CDOT. He used to get these data easily from Bruce Oglethorpe, but after a CDOT re-organization the data are much harder to retrieve.
- FMCSA performs law enforcement activity to investigate highway crashes. Currently, when an accident occurs, the state highway patrol files a report within 5 days. This report is immediately passed on to CDOT. Then, this report is passed on to the FMCSA within 10 days and the data are ultimately housed at the Department of Revenue DMV Division. Both CDOT and FMCSA have accident databases, but there is not much communication between the organizations right now.
- The interesting data elements kept in the FMCSA database include probable causal factors of the accident. These data are cross-referenced with demographic and VMT data obtained from CDOT's website to develop safety recommendations.
- There is a lot of freight data included in the international fuel tax administration (IFTA). This is maintained by the DOR.
- The FMCSA also pays for inspections of drivers and trucks that are done in each of the states. This information populates their safety database. The data are kept for 15 years. The inspection results are available primarily to attempt to identify companies that are habitually out of compliance.
- FMCSA also does compliance reviews by visiting specific companies and examining paperwork such as driver logs.
- The NHTSA has the Fatal Accident Reporting System (FARS). CDOT populated this database.
- CDOT does engineering while FMCSA does education and enforcement. Does it make sense to coordinate these activities?

Part II - Expected Freight Data Needs

- There are several hundred thousand records in the FMCSA database, but there is not information on the type of truck or the VIN. The information is based on principal place of business and can be provided to the state with some effort.

Part III – Freight Databases

- Bill would prefer a central safety database shared by CDOT and the FMCSA.



Freight Data Assessment

Part IV - Additional Comments

- Bill notes that pre-pass has eliminated the need for many trucks to stop and therefore reduced the opportunity to collect data.
- Bill provided me with the name of Allen Rutledge at POE, DOR in Colorado for additional information. His phone number is 303-205-5727.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): John Coil, Erik Sabina, Gregory Erhardt, Lawrence Tilong, and Stephen Cook – Denver Regional Council of Governments

Date: February 9, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- DRCOG has had extensive experience with freight data. As part of their travel behavior inventory conducted several years ago, there were interviews of private sector freight companies and a facility-based commercial vehicle survey. The information and data collected from these efforts were primarily used to develop the truck component of the travel demand model for the Denver metropolitan area.
- DRCOG has also performed external origin-destination surveys. These were done at weigh stations located outside of the metro region. The weigh stations were not ideal locations, because they did not exactly correspond to the corridor location in the regional model, but they were the easiest places to perform O-D surveys for the region. The primary purpose of these surveys was to calibrate external truck trips in the region.
- Some recalled a statewide freight study done in 1998 to support TPRs/MPOs. It used TIUS, CFS and other sources. However, DRCOG needed the information at a more disaggregated level to do more finite planning. They have also used the State Freight Infrastructure Study for several purposes including:
 - Trip generation
 - Employment by sector using county business patterns
 - Commodity production by county
 - Disaggregation of data to 15 TPRS for general planning purposes
 - Colorado Geological Survey (for coal tonnage and other mining data)
- DRCOG has noticed that there is freight-intensive activity north of downtown along I-70, but that much of the expansion will occur to the east if the rail relocation occurs. The northeast which was traditionally a freight-intensive area is getting gentrified and the freight is moving further to the east.

Part II - Expected Freight Data Needs

- DRCOG has tried to encourage private sector participation in several different forums, but often times meetings are cancelled at the last minute by the private sector, because long-term freight planning is not a priority for these companies
- DRCOG needs more freight data to perform general metropolitan-level planning
- DRCOG has tried to use DMV data to help with freight planning, but the data provided to them did not have sufficient information. It did not separate vehicles by type and owners into usable categories. This would be necessary to do the statistical stratification necessary to perform a defensible facility-based commercial vehicle survey. They ended up using Arizona data rather than local data for this stratification.



Freight Data Assessment

- For the MPO plan, DRCOG needs more rail and air cargo data. Rail data were particularly noted as difficult to use. Air cargo was seen as not particular to the Denver region, but only available at the state and regional level.
- There was also a need for supply chain information to help understand trip chaining activities. They have some familiarity with the tour-based modeling that is being done in Calgary. They have also considered porting the model to other formats.
- Rail relocation is a big issue in the Denver region and throughout Colorado. DRCOG would like information or a tool to help them understand what the impacts of rail relocation would be on truck travel patterns in the Denver metropolitan area. Would the trucks come back into town along I-70? Would they use non-interstates? A survey is not enough to answer these questions.
- There is an EIS underway for I-70 East. However, DRCOG feels that freight considerations have not been sufficiently incorporated into the EIS both for truck and rail.
- DRCOG would like to know where the freight generators are including trucking companies, commercial vehicle attractions by business type.
- DRCOG would like to know how congestion impacts LTL companies. At what point do LTL companies locate another terminal as opposed to fighting congestion with existing. For example, companies wanted to locate south of the tech center, at what point would increased congestion warrant this.
- For toll roads, DRCOG wants to know the willingness of trucks and commercial vehicles to pay to bypass congested facilities. Many trucking companies have said that the E-470 toll rates are too high to encourage truck use. Many trucking companies opt to use the slower, but free facility.
- For modeling purposes, DRCOG has considered purchasing additional classification counts in order to better calibrate and validate their model. They also noted that they need 72-hour counts rather than 24-hour counts and that they would prefer it to be in the fall and spring season. They also need better local data on routes on which trucks are prohibited to improve vehicle assignment.
- DRCOG would also like to have better expansion data for counts and surveys. This would include truck count and survey data across different times of day and seasons in the year.
- In regards to local truck information, they need to know preferred and designated truck routes. In addition, they need to truck-route prohibitions by time of day.
- Time of day fluctuations in freight data is also seen as important in terms of counts, the CMS and for modeling to distribute truck trips by time of day. Developing a set of factors for this is also a possibility.

Part III – Freight Databases

- No comments.

Part IV - Additional Comments

- DRCOG disagreed with a rule that stated that companies could only have 1 site where doubles and triples would be registered.
- DRCOG is interested in exploring automated data collection, but they understand that confidentiality is an issue for freight companies.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Craig Kaspar, Juan Whiteaker and Ken Prather, Pikes Peak Area Council of Governments

Date: February 10, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- PPACOG currently has a truck portion of their regional model. The truck portion is pre-loaded and assigned in an all-or-nothing fashion. Freight movement analysis is also part of their Unified Plan Work Program.
- The City of Colorado Springs has a truck route committee and a truck route map that PPACOG has used previously.
- The County has a list of truck prohibited and truck preferred routes.
- In the plan and the TIP, there is no mechanism to specifically include freight projects.
- Freight interests are also incorporated through the public involvement process of the plan.
- PPACOG has also worked with the EDC to understand land use patterns in the region including those related to freight. They have also worked together to identify appropriate locations for expansion facilities.

Part II - Expected Freight Data Needs

- PPACOG would like more information about the military bases in the area and what their freight demands are.
- PPACOG is also very interested in understanding the freight impacts of the so-called Superslab (also known as the Front Range Tollway). This proposal has taken many forms over the years including options where trains are moving 100 mph and triple-trailers are traveling on the roadway.
- PPACOG needs freight information on economic development, so that they can understand the economic significance of freight and understand how to monetize freight access improvements.
- PPACOG also wants freight information so they can educate locals on the impacts of certain land use decisions in the region. There is also the desire by city officials to design roads for very specific uses. Therefore, understanding the needs of shippers/recievers on local roads is important. PPACOG is interested in understanding the difference between freeway design for autos and freeway design for trucks.
- PPACOG would ideally like a mailing list of shippers and receivers in the region to enable notification of different activities by PPACOG and other key decision-makers.
- PPACOG also wants information on the location of where gasoline trucks are filling up and how they are moving throughout the city.
- PPACOG also wants safety and time-of-day information on trucks. They are also interested in understanding the impacts of certain operational improvements on trucks



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such as restricting truck use of lanes #1 and #2 along interstates both locally and statewide.

- Some specific freight related projects that they are working on include the Powers corridor improvement, SH16 improvements and airport access.
- PPACOG also wants better origin-destination data. They are particularly interested in HAZMAT vehicles. They would like to request that CDOT passes its HAZMAT information on to them including the time-of-day of travel of these trucks.
- PPACOG also wants information on railroad crossing safety.
- PPACOG wants better information on growth rates

Part III – Freight Databases

- No comments



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Suzette Theiman, North Front Range MPO

Date: March 14, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- The MPO does not have much experience in freight planning and does not currently collect freight data.
- The MPO has used data from the Eastern Mobility Study.
- Staff has attended the NHI Freight modeling class. The MPO is not sure what they will really get for the investment and time it would take to create and model freight data.
- The MPO is not sure what freight data CDOT has available.
- The City of Fort Collins has previously conducted corridor freight studies but data has not been received by the MPO.
- The MPO did participate in the DRCOG external station survey.

Part II – Expected Freight Data Needs

- The MPO would be happy to receive even county level freight data for their uses.
- The MPO is taking small steps to generate freight data. The MPO is partnering with the Center of Business and Economic Forecasting to prepare forecasts and to prepare freight origin and destination information. The study will begin in June, 2005 and run through March, 2006.
- There will be a new bottling plant in Windsor and there is a need to better understand the viability of truck to rail conversions.
- The MPO is considering the need to conduct a vehicle classification study to supplement the origin and destination information they will receive.
- If there is a desire to collect shipper/receiver data, it would be helpful if CDOT would initiate the contact so there might be better response.
- There is a desire to identify the types of freight that are moving in the region including agriculture data for type on commodity and tonnage.
- There is a need to better understand the volume of traffic that is generated from oil and gas production.
- There is a feeling that some type of freight modeling should be done at the state level so that MPO efforts can be compared to the state as a whole. There need to consider the larger context that encompasses what the MPO's are identifying.

Part III – Freight Databases

- There is a desire to have CDOT store the data with the ability to download data or acquire data through a webserver.
 - The MPO uses TransCad and ArcGIS as well as MicroSoft software.
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INTERVIEW SUMMARY

Interviewee(s): Bill Moore, Pueblo Area Council of Governments

Date: February 10, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Bill has used several types of freight data. It is used in both the short and long range plans for the COG. The plans have information on the location of intermodal facilities such as trucking firms in the west of the region and the Target Distribution Center.
- Bill has used data on freight share of overall traffic. Bill also has vehicle class counts on the interstates, US50/47, Hwy 78 and Pueblo Boulevard. However, Bill tried to provide class information (truck %s) to county roads, but it did not work.
- The City of Pueblo also does counts. These are done by its Traffic Department. They do counts by using 7 computerized traffic counters. The counters are able to capture class data.
- CH2M Hill is in the process of updating their TDM including developing PCE factors for SU and combination counts.
- Bill has also used the FHWA FAF database. However, there is no reference to Reebe freight flow data in the current planning process.
- One member of a major citizen group is an ex-railroad employee, so educating the public on the importance of freight is not particularly difficult.
- There are 12 coal trains through Pueblo every day. Very little of this coal traffic is to support local needs.

Part II - Expected Freight Data Needs

- Bill says there are only a few firms in the Pueblo region that do trucking and they are not always cooperative in terms of providing information to the COG.
- Some of Bill's freight needs have to do with the development of a new Wal-Mart Distribution Center in the western side of Pueblo. Wal-Mart has developed their own projections for truck trips generated from the new center, but they would like to be able to confirm this estimate. Bill would also need accurate counts on US50 to understand how the new truck trips would affect the overall traffic and how the current traffic will impact Wal-Mart's trucks. There is also a major intersection that is being improved on US50 and Wal-Mart's street. Truck activity data are needed to determine how much new pavement will be required at this new intersection.
- There are a lot of surplus rail lines in Pueblo due to the downsizing of a major steel mill. The current switch yards and abandoned rail lines are a barrier to transportation. Bill would like to be able to tell the City of Pueblo whether or not to remove these items. This analysis would incorporate the value of the land and the current taxes being paid on the land.



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- Bill also needs more freight data to examine the relocation of the freight rail lines to the east of the city. In particular, Bill needs long-term rail forecasts, because the RRs only provided 10-year forecasts to the project.
- Bill is also interested in considering options for the use of the current under-utilized airport runway capacity in the city. He would like to know if it is possible to divert some traffic from Colorado Springs or Denver to the Pueblo airport. There is currently no commercial jet service at their airport. Airfreight out of Colorado Springs may start to become constrained due to congestion at the airport.
- Truck traffic (VMT) figures into the construction funding allocation in the state, so accurate truck count data are critical. The allocation is based on 45% for centerlines, 40% for VMT and 15% for truck VMT.

Part III – Freight Databases

- No comments



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Ken Simms, Grand Valley – Mesa County MPO

Date: March 7, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- Grand Junction has not conducted more detailed freight planning as part of their traffic modeling. The traffic model has been borrowed from Fort Collins and adapted to fit the Grand Junction requirements.
- Recently the MPO participated in several interchange and roadway studies; however, freight traffic was not specifically analyzed.
- The MPO does work with Mesa County on studies such as master plans.
- A truck route plan has been completed for a small area within the MPO area but would like more data to do a larger study.
- The MPO modeling process uses census data and standard economic type data but no specific freight economic data is analyzed.
- In the past, the Colorado Motor Carriers has worked with the MPO to better understand truck issues in the region.
- The MPO would like to start some freight analysis but has not identified what freight questions they should evaluate and report.

Part II – Expected Freight Data Needs

- The western part of Grand Junction is the area of focus for future commercial and industrial development. The area is expecting transportation issues so there is a need to evaluate freight transportation and its potential impacts.
- There is also a need to integrate land use and transportation planning.
- There is never enough funds to enhanced data collection so CDOT efforts would be appreciated.
- There is a need to better understand “through” movements in the region so planning can occur on how to route trucks in the future.
- There is a desire to evaluate the need for intermodal yards such as the old Pig Yard for future freight movement.
- There is a need to understand the linkages between Grand Junction and other cities inside and outside of Colorado.
- There is a desire to create coordination opportunities between the railroads, Colorado Motor Carriers and unions for freight movement. May need to consider the impacts of not using Tennessee Pass for added capacity.
- Walker field has plans to expand their freight capabilities along with a new interchange onto I-70. There is a need to better understand what this will mean to the transportation system.



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Part III – Freight Databases

- There MPO does not currently collect or store freight data.
- The MPO would prefer to access a central database with the capability to download pertinent information such as internet sharing.
- CDOT's website is difficult to navigate and not user friendly. Therefore, there would be a request to not access data through this interface.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Stan Elmquist/ Myron Hora, CDOT Region 4

Date: March 1, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- CDOT Region 4 has participated in the Eastern Colorado Mobility Study, the North Front Range MPO planning process as well as manages environmental studies.
- Freight is a component of the environmental studies but there doesn't seem to be emphasis on freight in the studies.
- The Region does consider freight transportation when evaluating noise.
- The DRCOG Travel Behavior Study is being reviewed for use in the North I-25 EIS.
- The Region does use CDOT's traffic count data to classify noise and identify corridors with higher truck volumes.

Part II – Expected Freight Data Needs

- Origin and destination information would help the Region identify and prioritize improvements for transportation facilities.
- There is a desire to understand how on-time delivery is changing or will change current traffic patterns.
- There is a desire to understand what the risks are for moving hazardous materials through communities. Therefore, there is a need to understand what is moving through communities.
- The Region is looking at highway swaps so there is a need to better understand the potential truck impacts to other roadways and how freight traffic patterns will change.
- There is a need to better understand what the thresholds are which promote truck to rail conversions. When is it best to continue to invest in truck versus rail?
- The Region is interested to see what data may be available from other agencies such as Port of Entry, DIA and other airports, Department of Agriculture. There may be data currently available that CDOT is not aware of.
- The Region could benefit from better truck percentages that could be used for long range transportation planning.
- Weld County has many oil and gas sites in the county. There is a need to better understand the transportation trips generated from these facilities. Is there information from the oil and gas industry?



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Part III – Freight Databases

- The Region does not store information or use database software beyond MicroSoft Excel. Environmental analysis is conducted for Noise impacts.
- Region 4 would like to see the information stored centrally with the ability to download information for consultant use.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Hayne Hutchinson, CDOT Rail Crossing Program

Date: February 23, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- Manages Section 130 – At-Grade Rail Crossing Program. The program provides federal funding for rail crossing closures, gates, lights, pad improvements, etc. Develops an Integrated Rail Safety Plan that is compiled every three years.
- Responsibilities include working with the CDOT Regions to prepare railroad contracts, attending scoping meetings for larger transportation corridors, and sometimes reviewing corridor studies for final rail recommendations and identified funding.
- Section 130 uses the Federal Rail Administration (FRA) Gradec database. The software database already includes most rail, truck and safety data; however, CDOT does have opportunities to override information with more recent information.
- Data verification sometimes includes accident data, traffic volumes, and traffic volumes by vehicle classification. Data sources include DTD and local municipalities.
- No specific tools or databases are used for data collection since the data is stored by others. Most information is site specific and does not require major analysis.

Part II – Expected Freight Data Needs

- No new federal legislation is expected that would change the program or require new reporting needs.
- It would be helpful to know when special use permits are issued by local governments that may change land use planning and impact state highways or the interstate.
- Two projects that there has been some oversight include Whistle-Free Zones and one study that prioritized deficient at-grade crossings for the entire county prior to application for Section 130 funds.

Part III – Freight Databases

- Since staff link to the FRA database there is no major data storage.
- Staff would prefer to link to a centralized database for needed data.



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INTERVIEW SUMMARY

Interviewee(s): Tammy Ottmer, Colorado Department of Public Health and Environment

Date: February 10, 2005

Interview Type: Phone

Part I - Previous Freight Data Experience

- Tammy's office maintains a database of all hazardous materials spills since 1989. This database includes the location, time and reason for each spill. They also create a spill reporting brochure. Each of these is required by state and/or federal law.
- The chain of events for reporting a spill is for the responsible party to make a call to enforcement officers. Then the officers contact the Department of Public Health. However, not all enforcement officers are aware that they are supposed to make this call, so not all are reported. There is also not always incentive for companies to report spills if they do not think that they will be caught otherwise. This leads to questions about the completeness of the spill database information.
- Tammy has sent letters to the railroads letting them know they need to be more prompt and accurate in their spill reporting procedures.
- The DPH is a member of the Colorado Motor Carrier Safety Administration. They often scour the state highway patrol database to look for accidents that may have resulted in spills.
- Tammy mentioned that the Colorado Highway Patrol does roadside O-D truck surveys on a limited basis both at POEs and at other locations as well.
- The Department of Public Health uses all of this information to:
 - Work with communities to develop disaster plans and exercises
 - Education of community in terms of what's in the trucks
 - Working with emergency personnel
- Tammy has tremendous interest in the railroads. She says that they have had 7 derailments in the recent past: 4 by UP and 3 by BNSF. The reporting process for derailments is for the railroad to contact the AAR or FRA and then the AAR or FRA contacts DPH.
- Information on derailments was once taken to the D.O.E. to attempt to influence who carries certain government contracts and rail routes that are used by the railroads for certain loads.

Part II - Expected Freight Data Needs

- Tammy says her #1 need is rail information by commodity. In particular, she is concerned about commodities that are potentially hazardous so that in the case of accidents and derailments her agency can understand the potential hazards to the local community and take appropriate steps.
- Tammy would also like to have railroad route information, so that she can understand locations that are likely to carry hazardous materials.



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- Railroads have not always been helpful in providing this information. She says their general attitude is that they do not have to report what is going on.
- She would also like to have information on truck commodities moved by time of day. She would like to discourage truckers from shipping hazmat during daytime hours when there are high volumes of people moving on the highway system.
- Tammy would also like information on short lines including where the Class I railroads interface with the short lines.
- Tammy also mentioned that there was a guy who put together truck accident reports in the state, but that these are no longer available. She would like to see this information made available again. She said that accident data need to be correlated to commodities and location for safety purposes. She would like accident rates by commodity.

Part III - Additional Comments

- Tammy provided me with the names of Allen Rutledge and Jerry Pierce at POE, DOR in Colorado for additional information. Jerry's phone number is 303-205-5684.



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INTERVIEW SUMMARY

Interviewee(s): Jay Chapa, Burlington Northern Santa Fe Railroad

Date: March 11, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- The data the BNSF looks at includes growth projected by commodity, the flow of goods movement and then implications from freight growth.
- The railroad does their own internal studies mostly on freight economics. Some data is purchased from DRI.
- The BNSF has participated in CDOT's Public Benefits Study.
- Information is available at the federal level for gross ton miles, number of trains per day, etc.

Part II – Expected Freight Data Needs

- The BNSF is always looking for more timely information on transportation and data on emerging new economic sectors.
- The railroad is interested in warehousing areas with cities, truck routes by industry including those routes that are longer distance and/or bridge states.

Part III – Freight Databases

- BNSF uses standard economic analysis software for economic trend analysis.
- There is a desire for CDOT to maintain the data centrally with the ability to download data locally as needed.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Bob Lowe, Schuck Corporation

Date: March 17, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- The Schuck Corporation uses consultant services to prepare transportation analyses and studies. The company does not collect or prepare transportation studies. The company is doing some land planning for intermodal sites that would include rail transportation as well as working with the Colorado Motor Carriers on trucking issues and needs.
- Bob Lowe is involved with various studies and committees that focus on transportation issues including the Ports-to-Plains project, the Eastern Mobility Study, and Public Benefits Study.
- Bob Lowe was involved with the Rystrom Study with Adams and Denver County. The study evaluated and identified the best location for air cargo.
- Colorado rail transportation is limited by choke points in the system. There needs to be coordination with the railroad to understand the impact this has on the transportation system.
- A study was completed by the University of Denver Business School regarding freight trends by industry. CDOT may want to take a look at the study and what it says about freight trends for the future.

Part II – Expected Freight Data Needs

- Bob Lowe identified some key issues that CDOT and the state of Colorado might want to evaluate:
 - Why are truck registrations decreasing? Why are companies locating to Oklahoma?
 - Why does Colorado not have one of the top 100 national trucking companies?
- Colorado is a state that has seen a decrease in “deadheading”. It would be interesting to know what the percentage of decrease has been and the reasons why. The Denver Chamber of Commerce may have studied the issue of “deadheading” in the past.
- American Trucking Association is considering the need to identify intermodal sites for air, rail, and trucking across the nation. This effort may be funded outside the federal funding process.

Part III – Freight Databases

- Bob would like the ability to download data from a central data. The data would then be available for the use by their subconsultants.
- If the information is to be stored centrally, there is a request to identify and advertise the principle contact for answering questions.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Mary Jo Downey, East Central Council of Governments

Date: March 14, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- The East Central Council of Governments does not conduct individual transportation studies but does participate in CDOT's regional planning process.
- Since the COG represents numerous jurisdictions, MaryJo does not participate in specific corridor studies.
- The COG does not have a transportation planner and is more of project oriented agency versus planning oriented agency.
- The COG uses demographic and economic data from the state demographer and information from CDOT's Statewide Transportation Plan and the regional plans.

Part II – Expected Freight Data Needs

- I-70 is an important corridor for the COG where there is potential for retail distribution sites. There is desire to consider the potential for locating trucking terminals along the corridor.
- Since there are very large feedlots in the area, there is a need to understand the transportation impacts. Information could include trucks per year, proximity of feed, and percent brought into the region.
- The local governments would want know the type of hazardous materials that are traveling through the region so local communities can prepare for safety and emergency issues.

Part III – Freight Databases

- The East Central COG does not store any data but would like to access the data from CDOT's site with the ability to download pertinent information.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Joe Kiely, Ports-of-Plains Coalition

Date: February 10, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Joe Kiely worked on the Ports-to-Plains Feasibility Study, which was followed by the Ports-to-Plains Corridor Development Management Plan. Mehdi Baziar of CDOT also worked on the plan and the study. Both of these projects used a fair amount of freight data.
- Joe is also familiar with the Eastern Colorado Mobility Study which he feels did a good job of identifying the truck growth that would occur over the next 20-25 years.

Part II - Expected Freight Data Needs

- Joe often provides freight data to elected officials on an as-needed basis. These data have included and are likely to include:
 - Truck count data along with trends and projections of truck counts
 - Job creation potential for transportation and warehousing
 - Relationship between freight and the economy
- Joe noted that there is not much data to understand the impacts of the relocation of the freight rail line from the downtown of the cities along I-70 to Eastern Colorado. He felt that the data needs include:
 - Economic impact on counties where there is currently pass-through freight rail traffic
 - Emergency management issues/benefits of rail relocation
 - Changes in truck traffic patterns
 - Differential impacts for each of the regions
- Joe feels that the biggest need is accurate truck count data in Eastern Colorado. The data should be updated every 3 years to account for high growth rates in certain areas. There is also the need to smooth out the inconsistencies in the current truck count database, so that the data are all reasonable. Joe thinks that the locations are correct and that there are enough locations. The accuracy of the counts is OK, but the quantity needs to be increased. Joe also felt that the classes of trucks needed were only total vehicles, single-unit trucks and combination trucks.

Part III – Freight Databases

- No comments



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Rick Busch, Denver International Airport

Date: March 1, 2005

Interview Type: Phone

Part I - Previous Freight Data Experience

- Rick covers both air cargo and marketing at DIA. Air cargo includes belly cargo and dedicated carriers such as UPS and FedEx. General planning at DIA includes tours of air cargo facilities and strategy sessions to attract more business. Currently the marketing is targeted towards international passenger airlines and not very much on air cargo.
- Rick uses MISER data for air cargo. However, this data only has exports in NAICS code with no destination information.
- DIA also subscribes to the local world trade center for 4-digit trade data.
- Most air cargo moves between 7-9 pm or 5:30-7:30 am to avoid rush hour traffic. There is not a lot of congestion near the airport, but trucks must fight traffic to get to and from the regional distribution centers.

Part II - Expected Freight Data Needs

- As UPS and FedEx grow in specific cities, there is an inflection point at which point they shift from truck to air service even for very short trips. Rick would like more information on what that inflection point is. In general, Denver is very much slanted towards truck activity, because the large amount of distribution activity that occurs in the region.
- Because, air cargo data are proprietary, they are virtually impossible to collect from the carriers or brokers.
- Cargo studies are expensive and do not always generate the data that is needed for airport planning purposes. These studies can include an understanding which commodities are potential to be by carried as air cargo, where they are located and how to market that product. Rick noted that the 2-digit commodity information is not enough.
- There has never been a gate survey of trucks for air cargo. Most of the traffic is bound for regional distribution centers along I-70, so that would be the most logical location for such a survey.
- Through word of mouth, Rick has heard that truckers avoid the toll road on E-470 and use the alternate route even though it is often slower.
- DIA does sometimes do tube counts, but the technology being used does not differentiate between commodities very well. Rick would like more truck data on roads leading to and from the airport.
- Rick said he would be willing to authorize a roadside survey at the airport to gather more information on commodities, and Origins and destinations for trucks.



Freight Data Assessment

Part III – Freight Databases

- No comments.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Greg Fulton, President, Colorado Motor Carriers Trucking Association

Date: February 18, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

Note: A major portion of this interview was focused on how to get freight data from private sector firms. This was a different format than interviews of the public sector freight data stakeholders.

- Greg noted that private sector firms are very protective of their proprietary data because they are worried about it being used by competitors. Greg noted that public sector freight studies are well-intentioned, but that often raw data or summaries of data were released to the public in ways that were troubling to the private sector.
- Greg suggested that private sector freight data could be maintained by another private sector data firm that would monitor how the data were distributed. This is similar to the electronic prepass information programs that are used in Colorado and several other states.

Part II - Expected Freight Data Needs

- Greg noted that data needs for the private sector were as follows:
 - Truck counts – this is needed on interstates and state highways to determine where the major truck travel lanes are. Greg said that the truck count data currently used by CDOT are not accurate enough for private sector uses. They are also not current enough to be useful. The private sector would also need information on seasonal and hourly variation of the data.
 - Bridge data – the private sector would also like information on deficient and obsolete bridges. This would help in performing truck routing and truck loading by private sector trucking firms.
 - Weight data – important to determine the direction of truckloads.
 - Ports-of-entry (weigh station) data – helpful for lobbying for increased resources for facilities.

Part III – Freight Databases

- No comments

Part IV - Additional Comments

- Greg mentioned that he felt that the restriction of LCVs on holidays was a bad policy, particularly because freight demand is often higher on holidays.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): DRCOG – Laura Brandt, Denver Metro EDC (a branch within the Denver Chamber of Commerce)

Date: February 9, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- The EDC website provides lots of information about freight services provided in the Denver metro area such as trucking companies, railroads, and freight forwarders. This information is designed for business attraction purposes.

Part II - Expected Freight Data Needs

- The EDC would like information of freight flows in and out of the region. However, the EDC needs very current data. Two years old is the absolute oldest that would be useful for them.
- Laura is also interested in getting freight rail data in as much as it is related to the FasTracks program to extend light rail services in the Denver metro area.

Part III – Freight Databases

- The EDC would like to be able to access CDOT information on the web rather than trying to hunt around the agency and find the appropriate person with the data. This would include data on truck counts, freight flows and project status.

Part IV - Additional comments

- The Secretary of State has a searchable database of companies registered in the state. The database can be sorted by SIC code and it is based on InfoUSA data. The Colorado Office of Economic Development also has this database. This could be used as a source of freight and freight-dependent companies in the state.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Leah Ware, CDOT Division of Transportation Development

Date: February 8, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Leah Ware has primary responsibility for developing the CDOT Statewide Transportation Plan. This plan combines information from the MPOs and TPRs in the state. One particular difference of the CDOT Plan is that it is corridor-focused rather than project-focused. The plan describes each of the major corridors in terms of activity along the corridor, deficiencies, and ongoing and planned projects along the corridor.
- Currently, the freight data incorporated in the plan is minimal. There is some information on truck travel patterns and commodities moved in the state. There is also mention of the location and activities at the airports and intermodal yard. The plan also incorporates the freight maps that are located in the FHWA FAF database.

Part II - Expected Freight Data Needs

- Leah noted several freight data needs for her work including the following:
 - Leah noted that it is particularly difficult to get information from the railroads. Key data from this mode include tons moved and commodities moved by direction (internal – external, external - external, internal – internal, external – external trips)
 - While Leah uses the FHWA FAF maps, she was also interested in getting the data behind the maps as well. In particular, she would like the commodity distribution on each of the major corridors in the state.
 - Leah believes that the plan is missing commodity information in general.
 - Leah would also like information on rest areas and intermodal yards in the state.
 - Leah also wanted origin-destination information for each corridor and more information on modes.
 - Leah did not particularly think that value data were important.
 - County-level data would be good for TPRs (including MPOs)
 - Safety data for railroad grade crossings was also noted as lacking.

Part III – Freight Databases

- No comments



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Tom Mauser, CDOT Modal Programs Section Manager

Date: February 8, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Tom Mauser generally works in the areas of transit, TDM, passenger rail, and bike/pedestrian activity. Tom Mauser was project manager of the Public Benefits Study which estimated the costs and benefits of adding rail lines to the east of Denver to service through freight rail. This would significantly reduce the number of trains through the current freight rail line which runs through an urbanized portion of Denver. There was a multitude of data required for this study including:
 - Train counts on each rail line – present, 2020, and 2030
 - Cost of construction of new rail line
 - Jobs created from construction of rail line
 - Cost savings to RR for using new rail line
 - Grade of terrain
 - Savings for grade-separation construction that would not be needed
 - Time savings for cars and trucks that would not wait at intersection
 - Air quality reductions from faster trains and less waiting for cars and trucks
 - Value added from moving freight facilities to cheaper land and using current land for higher uses
 - Cost savings from reduction in accidents

Part II - Expected Freight Data Needs

- Mauser's freight data needs are primarily focused on potential future work related to the Public Benefits Study. Additional freight data needs include data needed to gaining an understanding of the changes in truck travel patterns of relocating freight facilities from the inner core of Denver to east of Denver. The potential relocating freight facilities include intermodal rail yards, warehouses and distribution centers.

Part III – Freight Databases

- No comments

Part IV - Additional Comments

- Leah mentioned that Tim Baker had developed a freight technical report that could be used to extract information about freight in the state.
- She also mentioned that there was a freight focus group that occurred a few weeks ago. Tammy had 12 private industry freight participants in a room and asked specific questions about improvements to the freight infrastructure.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Teresa Carillo and Teresa Lawser, CDOT Oversize/Overweight Permits

Date: February 9, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- These two interviewees were most familiar with the truck oversize/overweight permitting process. The majority of the applicants to this process apply for a single permit that is good for 5 days. Some applicants receive an annual pass to haul a certain amount of shipments that are oversize or overweight. The permits are attached to a specific, single vehicle. They are also very vague on commodity (e.g. oil field equipment, construction equipment, material).
- For these overweight trucks, CDOT provides a permissible route based on bridge and height conditions of the system. In some cases, the vendor provides a route and CDOT approves or adjusts it.
- This office has several maps depending on the type of oversize or overweight vehicle. These maps include: a height map, weight map, and a pilot/escort map. These maps are scaled down from structure logs of the highway inventory.

Part II - Expected Freight Data Needs

- Teresa and Teresa are interested in ensuring that they have accurate road attribute data such as road widths, shoulder widths, lane widths, bridge heights and bridge location. The quality of these data elements is inconsistent in CDOT's database. In some locations the road attributes are good and in other locations, the road attributes are bad. Ideally, these elements could be integrated into the permitting system and the route could be automatically generated.
- Changes to the road attributes also presents a problem. Teresa and Teresa also need real-time data in terms of when project engineers create temporary restrictions to some of the roadways. Additionally, roadway improvements are not always added to the highway inventory quickly enough to be sufficient for routing purposes. Ideally, both of these changes would also be updated automatically. This specifically occurred along I-225 in Aurora near Alameda Avenue where roadway improvements decreased the road height and trucks were no longer able to be routed in a similar fashion as before. However, the CDOT Permitting office was never notified of these changes.
- One particular problem is road attribute inconsistencies between CDOT DTD system and the CDOT Bridge Unit.
- Also, they would like to have more information and more accurate information on county roads and information by political jurisdiction as well.



Freight Data Assessment

Part III – Freight Databases

- No comments

Part IV - Additional Comments

- Teresa provided me with a reference at the Colorado Department of Commerce. His name is Jerry Pierce, Chief Port Officer. His contact number is 303-205-5691. He is familiar with CVISN, CVEC along with a guy with the last name of Brooks that they could not recall.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Chris Pommeroy, CDOT Division of Aeronautics

Date: February 9, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- There are two main airports in the state: Denver International Airport and Colorado Springs Airport. There are also 77 smaller airports in the state. Because the two large airports have their own staffing, the main concern of CDOT is the smaller airports.
- Chris has limited freight data in his department. The majority of his air cargo information comes from contacting the airports directly and asking about the freight tons per year in and out of the airport. He generally does not have or request information on commodity, origin-destination data or sales data.

Part II - Expected Freight Data Needs

- Chris would like data on the economic value of the smaller airports. In particular, what role does air cargo at these airports have on the larger economy. This should be analyzed both on a macroeconomic level, but also on a microeconomic level in terms of the effect on specific, individual firms.
- Chris has recently released an RFQ to collect air cargo data at 50 of the 77 smaller airports in the state and Grand Junction Airport. This will include belly cargo and dedicated carriers such as FedEx. The purpose of this data collection effort is to be able to answer questions from high-ranking CDOT officials, board members and the general public about air cargo activity at these smaller airports.
- Also, CDOT will be updating their Airport System Plan in 2005. Air cargo will be a component of this plan.

Part III – Freight Databases

- No comments

Part IV - Additional Comments

- The aeronautics group receives an annual grant from sales tax on aviation fuel which is used for pavement maintenance, safety improvements and system enhancements at the smaller airports. CDOT also matches the FAA fuel tax contribution.
- CDOT works with the legislature to establish automated weather systems. They also work with local airports on their capital improvement programs.
- Chris was aware of a 1996 study that DRCOG had done to look at air cargo in the Denver region.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Dave Busby, CDOT Division of Transportation Development

Date: February 8, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Dave Busby works extensively with performance measures for CDOT. In this role, he tracks data operations and reports it to several different entities both within and outside of CDOT. These data are used to report the impacts of projects and policies. They are also used for resource allocation.

Part II - Expected Freight Data Needs

- Dave was interested in several data elements to help him in his role of monitoring performance measures for the agency. Some of these include:
 - Growth trends in freight activity – this is helpful so that decision-makers can decide which commodities to invest in. For example, coal might be a high percentage of the freight flows today, but if that percentage is shrinking than it may not make sense to invest in infrastructure that supports this commodity
 - Commodity information – this information is helpful to do economic analysis. Economic analysis has been specifically noted by high-level officials at CDOT as important for decision-making
 - Cost of delay to carriers – this is also important for economic analysis
 - Travel time information
 - Freight safety data – truck crash data is needed to analyze safety projects

Part III – Freight Databases

- Dave thinks that the format of freight data is not particularly important, but that access to the data is the important. However, he would suggest using an Oracle platform that would allow for integration with asset management data, pavement management and HR.

Part IV - Additional Comments

- Dave Busby thought there should be a freight unit within DTD. The responsibilities of this unit would include:
 - Storing freight data
 - Communications with industry
 - Economic analysis to match decision-making needs
 - Dave also thinks that most of the analysis should be done on an as-needed basis rather than preparing a set of analyses upfront.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Tim Baker, CDOT Statewide Data Systems

Date: February 9, 2005

Interview Type: In-Person

Part I - Previous Freight Data Experience

- Tim Baker has worked on a number of projects that used a significant amount of freight data including the Ports-to-Plains Corridor Project, the Heartland Express Corridor and the Eastern Colorado Mobility Study.
- The freight data that Tim is aware of includes truck counts, WIM data, and the Reebe database. Tim noted that there is no one in particular that is responsible for maintaining the Reebe database.
- The FHWA also performed an alpha and beta study on truck travel time that Tim is familiar with.

Part II - Expected Freight Data Needs

- Tim believes that there is a role for CDOT to provide information to industry and that this is an important aspect of the freight data collection process. The types of information that Tim thinks the private sector would be interested in includes:
 - Just-in-time movements
 - Optimal routing
 - Growth projections
 - Freight ton-miles
 - Temporal variability (day of week, season in year changes)
 - Determination of optimal times for moving freight
- Other data elements that Tim thinks are important include:
 - The locations of the different elements of the freight industry
 - Location of intermodal facilities
 - What is the economic impact of freight (travel time delay is more important than value of goods shipped)
 - Tim Baker thought that generally origin-destination data should be collected as needed on a project basis. However, information on 1 or 2 corridors will be maintained on a regular basis.
 - Tim noted that the private sector concerns include: congestion, reliability, accidents, routing and hub location.



Freight Data Assessment

Part III – Freight Databases

- Tim thinks that the freight data needs should be subdivided into freight data needs for CDOT and needs for its customers. These needs also need to be balanced with staff resources to collect, manage and disseminate data.
- Tim thinks that CDOT should focus on collecting a smaller set of data that are good rather than trying to collect everything.
- Tim noted that currently there is no passenger or freight model on a statewide basis.



Freight Data Assessment

INTERVIEW SUMMARY

Interviewee(s): Interview with Marv Koleis, CDOT, GIS Unit

Date: March 1, 2005

Interview Type: Phone

Part I – Previous Freight Data Experience

- The CDOT GIS database does have some standard locational type data along with traffic count data and census data.
- Marv walked through the list of data on the ranking sheet by identifying what data CDOT has:

Public Roads -	Yes
Railroad Networks -	Yes
Commercial Airports -	Yes
Truck counts	Annual trucks, % of Trucks, Peak and non-Peak hour volumes
Vehicle Classification	Yes
Commodity	No
Facility Specific Info	No
Origin and Destination	No
Routing	Hazardous material routes, permitted weight information, emergency routing as included in the NHS
Temporal Variability	Peak and non-peak hour volumes, some seasonal information
Value of Products Moved	No
Truck Trip Generation	Not Sure
Travel Time Data	Not Sure
Cost of Shipping	No
Freight Value of Time	No
Modal Information	Location but not diversion data
Economic Forecasts	No unless talking about 2030 Plan data
Socioeconomic Data	Yes
Accident Rate Data	Yes
Emissions	Yes
- A more detailed list of data can be provided.
- Marv has not worked with federal or private freight databases as part of his work.

Part II – Expected Freight Data Needs

- No comments



Freight Data Assessment

Part III – Freight Databases

- CDOT has ESRI software and some spatial database capabilities, RDBMS.
- The Department is transitioning from Sybase to Oracle.
- Traffic data is not dynamic but is updated for external use once a year.
- The only dynamic data that the Department has considered is ITS data that could provide hourly or daily information.
- The Permitting Division uses Bentley software for electronic permitting. There may be freight type data available from this program.
- The GIS section would prefer to become a central data warehouse for sharing information.
- The media used to distribute GIS information is dependent on the size of the data.
- There will need to be good metadata for users of the data.
- If data is to be provided from other surrounding states, there would need to be good metadata and the ability to link with Colorado data.
- There is a desire to standardize the data for Colorado.



Freight Data Assessment

APPENDIX C SUMMARY OF DATA SOURCES



Freight Data Assessment

The databases discussed below are classified according to:

- The type of data contained in the database;
- The geographic area covered by the data;
- The time period covered by the database, including historic data as well as projections;
- A description of the contents of the database;
- The organization which sponsored the database and is responsible for its maintenance; and,
- The availability of the data, in the form of printed reports, computer files, and on-line access, as well as a contact to obtain more information about the database.

C.1 Economic Databases

Suitable databases were identified that should provide sufficient detail for base and historic data both for Colorado and the U.S. The U.S. Department of Commerce's Bureau of Economic Analysis has a comprehensive database of historic and forecast conditions for the national economy at the county level.

Title: Regional Economic Information System (REIS)

Geographic Coverage: U.S. Totals, states, Basic Economic Analysis (BEA) regions, metropolitan areas, counties

Content: The REIS CD-ROM contains the following annual estimates for all counties, metropolitan areas, BEA economic areas, and States: personal income by major source, per capita personal income, earnings by two-digit SIC industry, full- and part-time employment by one-digit Standard Industry Classification (SIC) industry, regional economic profiles, transfer payments by major program, farm income and expenses, and the BEA Regional Fact Sheet (BEARFACTS). In addition, other information includes: Gross State Product; income and employment projections States, metropolitan area, and BEA Economic Areas; Gross State Product projections; state quarterly personal income; county-level gross commuters' income flows; Census Bureau estimates on inter-county commuting flows for 1960, 1970, 1980, 1990, and 2000; and Census Bureau county-level commuting flows and average wage estimates at the SIC one-digit level.

Time Period: 1969-2002

Sponsoring Organization: Department of Commerce, Bureau of Economic Analysis

Availability: DOC/Bureau of Economic Analysis, Regional Economic Measurement Division, BE-55, Washington, DC 20230; Telephone (202) 606-5360. Price, available as download.



Freight Data Assessment

Title: Statistical Abstract of the United States

Geographic Coverage: U.S. Totals, states, cities, metro areas

Content: This publication is divided into subject sections, each of which contains by a brief summary giving an explanation of terms used, major sources, and origin of data used. Most of the tables are presented on an annual basis with data for preceding years included for historical comparisons. There are two chapters devoted specifically to transportation: *Transportation: Land* and *Transportation: Air and Water*. *Transportation: Land* provides the most extensive coverage of highway-based transportation, providing information on mileage, financing, general aid, gasoline taxes, motor vehicle production and registration, imports, operating costs, fuel consumption, insurance, accidents, and employment and revenues. Other sections of the publication provide information on the aspects of transportation equipment, travel, public expenditures for highways, and energy consumption, as well as basic socioeconomic population data. Appendix 2 provides a guide to statistical sources, including transportation.

Time Period: 1970-present

Sponsoring Organization: Bureau of the Census, Data Users Service Division

Availability: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Telephone (202) 512-1800 or National Information Service, Springfield, VA 22161; Telephone (703) 487-4650.

C.2 Socioeconomic Databases

Suitable databases were identified to provide historic and forecast data of the basic socioeconomic data such as population, households, income, and employment. National data on population households and income is available from the U.S. Census Bureau. National data on employment is available from the U.S. Department of Commerce's Bureau of Economic Analysis.

Title: Census of Population and Housing, 1990: Census Transportation Planning Package (CTPP)

Data Classification: Population

Geographic Coverage: U.S. Totals, state, county, places of more than 2,500 persons

Content: The CTPP is a set of cost reimbursable special tabulations, produced for the Department of Transportation in each state. The detailed cross-tabulations have been designed to meet the needs of state and local transportation planners, and are provided for counties, places of 2,500 or more inhabitants and custom-defined Traffic Analysis Zones (TAZ). The CTPP is a continuation of the 1970 and 1980 Urban Transportation Planning Package programs. The statewide tabulation consists of six parts: Part A, tabulations by place of residence; Part B, tabulations by place of work; Part C, tabulations by place of residence by place of work; Part D, tabulations by place of residence for areas of 75,000 or more persons; Part E, tabulations by place of work for areas of 75,000 or more persons; Part F, tabulations of place of residence by place of work for areas of 75,000 or more persons. Urban tabulations are produced for the



Freight Data Assessment

Metropolitan Planning Organizations (MPOs) in each area where the Census Topologically Integrated Geographic Encoding and Referencing system (TIGER)/Line files contain address ranges. Data are tabulated for either standard census geography such as census tracts of block groups, or for locally defined geographic areas such as TAZs. Subtotals for study area, CTPP Region, MSA, CMSA, PMSA, and urbanized area (place of residence data only) are also provided. The urban tabulation consists of seven parts: Part 1, tabulations by small area of residence; Part 2 tabulations by small area of work; Part 3, tabulations of small area of residence by small area of work; Part 4, tabulations of large areas of residence; Part 6 tabulations of super district of residence by super district of work for regions with one million or more persons; Part 7, tabulations by census tract of work; and Part 8, tabulations of small area of residence by small area of work for regions with one million or more persons.

Time Period: 1990, 2000, similar information exists for previous census

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: CD-ROM: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-DATA; Fax (202) 366-3640. CD-ROM currently available for Parts A, B, and C, and 1, 2, and 3 only. Tapes: Contact state transportation agency or local metropolitan planning organization.

Title: County Business Patterns

Geographic Coverage: U.S. Totals, by state, by county

Content: County Business Patterns is an annual series that provides coverage on the national economic activity by industry. Data are provided by industry in the following economic divisions: agricultural services, forestry, and fishing; mining; construction; manufacturing; transportation and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services. Data are tabulated by industry as defined in the *Standard Industrial Classification Manual: 1987* in the following economic divisions: agricultural services, forestry, and fishing; mining; construction; manufacturing; transportation and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services. Data are tabulated by industry as defined in the *Standard Industrial Classification Manual: 1987*. The series is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for statistical series, surveys, and databases between economic censuses. Various businesses use this data to analyze market potential, measure the effectiveness of sales and advertising programs, set sales quotas, and develop budgets. The data are also used by government agencies for administration and for planning.

Time Period: This series has been published annually since 1964 and at irregular intervals dating back to 1946. The latest data release was for the year 2002. The comparability of data over time may be affected by definitional changes in establishments, activity status, and industrial classifications.

Sponsoring Organization: U.S. Census Bureau

Availability: On-line at <http://www.census.gov/epcd/cbp/view/cbpview.html>



Freight Data Assessment

Title: National Income and Product Account (NIPA)

Data Classification: Employment

Geographic Coverage: U.S. Totals

Content: The NIPA shows the value and composition of the Nation's output and the distribution of incomes generated in its production. Transportation information includes: personal consumption expenditures; personal tax and non-tax receipts; indirect business tax and non-tax accruals; federal and state government expenditures by category; private purchases of trucks, bus, auto, aircraft, ship, railroad equipment; income, employment, and hours by industry; price indices; and expenditures for auto and truck output.

Time Period: 1929-present

Sponsoring Organization: Department of Commerce, Bureau of Economic Analysis.

Availability: Diskette: DOC/Bureau of Economic Analysis, National Income and Wealth Division, BE-54, Washington, DC 20230; Telephone (202) 606-5304; Fax (202) 606-5320. Printed Source: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Title: BEA Regional Projections to 2045

Data Classification: Employment

Geographic Coverage: U.S. Totals, by state

Content: This three volume series contains economic projections for the U.S., States, Metropolitan Statistical Areas (MSAs), and Bureaus of Economic Analysis (BEA) economic areas. Projections cover gross state product (GSP) by industry (available for States only), employment and earnings by industry, population, and total personal income. Projections are available for the years 1998, 2000, 2005, 2010, 2015, 2025, and 2045. Historical data consistent with the projections are also available for the years 1977-1992 for GSP, and 1969-1993 for all other data.

Time Period: 1977-2045 for GSP, 1969-2045 for all other data

Sponsoring Organization: Department of Commerce, Bureau of Economic Analysis

Availability: Volume 1, States is available from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402. Contact the Regional Economic Analysis Division at (202) 606-5341 to order diskettes. State projections are also available electronically on the Economic Bulletin Board (EBB) and on the Internet from the Commerce Department's STAT-USA. Telephone (202) 482-1986.



Freight Data Assessment

Title: Annual Survey of Manufactures

Data Classification: Employment

Geographic Coverage: U.S. Totals

Content: This survey of manufactures was initiated in 1949 and has been conducted since that time for years not covered by the Census of Manufactures. The survey provides up-to-date statistics on the key measures of manufacturing activity for industry groups and individual industries, and for states by three-digit industry groups. This program is designed to provide estimates of general statistics (employment, payroll, hours worked, value added by manufacture, cost of materials, expenditure for new plant and equipment, value of manufacturers' inventory, etc.) for industry groups and industries. It also provides general statistics for values of shipments for classes of products, fuels and electric energy data by industry groups, and labor cost. Approximately 55,000 plants from a total of 350,000 were surveyed. Included in the sample are all large manufacturing plants, that account for more than two-thirds of total employment of all manufacturing establishments in the U.S., and a sample of the more numerous medium and small-sized establishments.

Time Period: 1949 to 2001

Sponsoring Organization: Department of Commerce, Bureau of the Census, Manufacturing and Construction

Availability: CD-ROM, Internet, Printed source Publications: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Telephone (202) 512-1800. CD-ROM: DOC/Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100. Also available via the Internet.

Title: Survey of Employment, Payrolls and Hours

Data Classification: Employment

Geographic Coverage: Canada, the Provinces and Territories

Content: This survey is designed to measure, on a monthly basis, the levels and month-to-month trends of payroll employment, paid hours and earnings. These measures are compiled at detailed industrial levels (using the 1980 Standard Industrial Classifications system) for Canada, the Provinces and Territories. The estimates are derived from a census of large size employers (+300 employees) and a sample survey of medium size employers (100-299 employees). A sample of governmental administrative records is used for firms with less than 99 employees.

Time Period: 1980 to Present

Sponsoring Organization: Statistics Canada, Labour Division

Availability: Statistics Canada, Labour Division, Information Unit; 7th Floor, Jean-Talon Bldg.; Ottawa, Ontario K1A 0T6; Telephone (613) 951-4090; Fax (613) 951-4087; E-mail: labour@statcan.ca.



Freight Data Assessment

Title: Covered Employment and Wages (ES-202) Program

Data Classification: Employment

Geographic Coverage: U.S. Totals by state, by county

Content: This program provides monthly employment and quarterly wage data for workers covered by state Unemployment Insurance (UI) laws and Federal civilian workers covered by the Unemployment Compensation for Federal Employees (UCFE) program. Data are available by four-digit Standard Industrial Classification code (and at aggregated levels) at the county, state, and national levels. Data are provided by the state employment security agencies every quarter. These data are obtained from quarterly tax reports submitted to the state employment security agencies by employers subject to UI laws and to the UCFE programs.

Time Period: 1984-present

Sponsoring Organization: Department of Labor, Bureau of Labor Statistics

Availability: DOL/Bureau of Labor Statistics, ES-202 Data Request Staff, Washington, DC 2012; Telephone (202) 606-6567; Fax (202) 606-6645; E-mail: info@bls.gov.

Title: Current Employment Statistics

Data Classification: Employment

Geographic Coverage: U.S. Totals, less detail for states

Content: This publication provides monthly employment data collected from monthly payroll records of a sample of business establishments. Statistics on employment, hours, and earnings are published for industry groups in the transportation sector classified using the Standard Industrial Classification (SIC). Publication detail includes all two-digit SIC detail (railroad transportation, local and interurban passenger transit, trucking and warehousing, water transportation, transportation by air, pipelines, transportation services), most three-digit, and selected four-digit detail. The Surface Transportation Board (STB) provides employment data for Class I railroads.

Time Period: Current year; some series begin in 1947, all are available since 1988

Sponsoring Organization: Department of Labor, Bureau of Labor Statistics

Availability: DOL/Inquiries and Correspondence Branch, Office of Publications, Bureau of Labor Statistics, Washington, DC 20212; Telephone (202) 606-5902. Data are published monthly in Employment and Earnings (ISSN 0013-6840) and also are available on World Wide Web using URL <http://stats.bls.gov:80/datahome.html>



Freight Data Assessment

Title: Census of Manufactures

Data Classification: Employment

Geographic Coverage: U.S. Totals, State, local geography

Content: The Census of Manufactures is conducted every five years, for years ending in two and seven, as part of the Economic Census. The results of the Census of Manufactures are presented in a series of reports on industries, geographic areas, and subjects (Concentration Ratios in Manufacturing, etc.). Two types of statistics are provided: 1) general statistics (number of establishments, employment, payroll, hours worked, cost of materials, value of shipments, capital expenditures and inventories); and 2) quantity and value of materials consumed and products shipped.

Time Period: 1972-1997

Sponsoring Organization: Department of Commerce, Bureau of the Census,

Availability: CD-ROM: DOC, Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100. Printed Source: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Telephone (202) 512-1800. Also available via the Internet.

Title: Consumer Expenditure Survey

Data Classification: Population

Geographic Coverage: U.S. Totals, four Census regions and 26 selected metropolitan areas

Content: The Consumer Expenditure Survey collects information from a sample of American households on their expenditures, income, and family characteristics. The data include household expenditures on all expenditure categories, including transportation items such as vehicle purchase, vehicle maintenance, gasoline and motor oil, public transportation, and airline travel. The data are shown by classes of households, such as by income, age, family size, and region. There are two Consumer Expenditure Survey components: a quarterly interview survey in which approximately 5,000 consumer households are interviewed per quarter; and a weekly diary survey in which approximately 5,000 consumer households per year keep two consecutive, one-week diaries.

Time Period: Current Survey, 1980-2002

Sponsoring Organization: Department of Labor, Bureau of Labor Statistics

Availability: Online at <http://www.bls.gov/cex/home.htm>.



Freight Data Assessment

c.3 *Modal Networks*

The highway network outside Colorado is available from the U.S. Department of Transportation's Bureau of Transportation Statistics's National Transportation Atlas Database (NTAD). NTAD is GIS data available as ASCII fixed length link and node records that is convertible to other transportation modeling packages. NTAD contains the modal networks maintained separately by other federal agencies such as the Federal Highway Administration, the Federal Railroad Administration and the U.S. Army Corps of Engineers.

Title: North American Transportation Atlas Data (NORTAD)

Data Classification: Modal Networks

Geographic Coverage: United States, Canada, Mexico

Content: This CD-ROM includes geospatial information for transportation modal networks, intermodal terminals and related attribute information. Common data sets for each country include: highway networks, rail networks, airports, water ports, and political boundaries (states and provinces). Additionally, highway and rail border crossing data sets are included for facilities found at the border between the U.S. and Canada and the U.S. and Mexico. There are no pipeline or waterway network data.

Time Period: 1998

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via the Internet: <http://www.bts.gov/gis/ntatlas> or by E-mail

Title: National Transportation Atlas Databases 2003 (NTAD)

Data Classification: Modal Networks

Geographic Coverage: 50 U.S. states, District of Columbia and Puerto Rico

Content: This compilation of geographic databases provides the infrastructure for national planning and policy initiatives for the U.S. Department of Transportation. These databases include geospatial information for transportation modal networks and intermodal terminals and related attribute information as included in the National Highway Planning Network. File format descriptions and database metadata as prescribed by the Federal Geographic Data Committee are included. The databases are most useful at the national level, but have major applications at the regional, state, and local scale throughout the transportation community. Datasets on this CD-ROM include: Public Use Airports, Trailer On Flat Car (TOFC) and Container on Flat Car (COFC), Amtrak Stations/railway terminals, Water Ports and Facilities, Place Name Point File, National Highway Planning Network, Railway Networks, Fixed Guideway Transit Network plus High-Occupancy Vehicle Roadways, Commercial Air Segment Network, United States with



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integrated shoreline, National Parks, Federally Adjusted Urbanized Areas, Bureau of Economic Analysis Economic Areas and more.

Time Period: 2003

Sponsoring Organization: U.S. Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via the Internet: www.bts.gov/programs/gis/ntatlas/; or by E-mail.

Title: National Highway Planning Network Version 2.XX

Data Classification: Modal Networks

Geographic Coverage: Major U.S. highways (~430,000 miles)

Content: The NHPN-V2.XX is a database of the major highways in the U.S. It is a foundation for analytic studies of highway performance, vehicle routing and scheduling problems, and mapping purposes. The NHPN-V2.XX is based on the U.S. Geological Survey 1:1,000,000 Digital Line Graphs (DLG). Some urban links were digitized from state-supplied maps to assure up-to-date alignments. The NHPN-V2.XX contains verified transportation attributes, such as signed route, FHWA National Highway System, and FHWA functional classification. It also contains unverified attributes such as number of lanes, degree of access control, and median type. All federal and eligible highways are included; other roads have been added to serve local network continuity.

Time Period: Real-Time.

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: DOT/FHWA, Office of Environment and Planning, HEP-10, Room 3301, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-2167; Fax (202) 493-2198. The data is available through Internet (depository.dot.gov). The data is located in subdirectory/ PUB/FHWA/GIS.

Title: Strategic Highway Corridor Network (STRAHNET) and Connectors

Data Classification: Modal Networks

Geographic Coverage: Major Highway Systems in 50 states, District of Columbia

Content: STRAHNET and STRAHNET Connector routes are identified by link attributes in the National Highway Planning Network (NHPN) developed by the U.S. DOT/Federal Highway Administration (see NHPN profile). The NHPN database is a digital representation of the major highway systems, covering some 400,000 miles of federal, state and some local highways. STRAHNET identifies those highways important to national defense. STRAHNET connectors are those links that that permit access to the national network by individual defense installations.



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STRAHNET is maintained by the Military Traffic Management Command Transportation Engineering Agency (MTMCTEA). Initial identification of STRAHNET links was through analysis of historical and planned war and peacetime traffic. Connectors were identified from commercial maps and then coordinated with individual installations and their respective state.

Time Period: Current year

Sponsoring Organization: Department of Defense, Department of Army, Military Traffic Management

Availability: Identification of STRAHNET links/connectors and printed reports: MTMCTEA, 720 Thimble Shoals Boulevard, S130, Newport News, VA 23606-2574. NHPN data: DOT/BTS, K-40, 400 7th Street, Washington, DC 20590; Telephone (202) 366-3282. Price: no charge for data. Available on Internet: <ftp.dot.gov>

Title: Federal Railroad Administration (FRA) National Rail Planning Network

Data Classification: Modal Network

Geographic Coverage: 50 U.S. states, Canada, Mexico

Content: This database presents a digital representation of the major continental U.S. railway systems, including Canada and Mexico, covering some 190,000 miles of route. Link attributes include owning railroads, trackage rights railroads, state previous owning railroads, subsidiary railroads, FRA region, passenger service, U.S. Geological Survey (USGS) region, and significance in civil rail lines important to national defense. All links in original USGS data are retained. Links subsequently abandoned are so identified. Node attributes include name (where there is a name), state, standard point location code, and junction code, if any.

Time Period: Current

Sponsoring Organization: Department of Transportation, Federal Railroad Administration

Availability: DOT/FRA, Office of Policy Systems, RRP-20, 400 7th Street SW, Washington, DC 20590; Telephone (202) 632-3153; Fax (202) 632-3157. The database is available in GIS form from the Bureau of Transportation Statistics (see NORTAD listing)

C.4 Modal Operations and Volumes

The most comprehensive source of roadway truck volumes nationally is the Federal Highway Administration's (FHWA) Highway Performance Monitoring System (HPMS) database. Other useful national information on truck volumes is contained in the FHWA's Truck Weight Study Database and Long-Term Pavement Performance (LTPP) Central Traffic Database. Modal operation information for trucks including unit costs can be developed from the FHWA's Vehicle Inventory and Usage Survey (VIUS).



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Operating information on other freight modes is not readily available and will need to be obtained from a variety of sources including the American Association of Railroad's Railroad 10-Year Trends, the Federal Aviation Administration's Terminal Area Forecasts, the Surface Transportation Boards' Uniform Rail Cost System, and the U.S. Army Corps of Engineer's Waterborne Transportation Lines of the United States. The primary purpose of obtaining the operating characteristics of the other modes will be to establish the inter-zonal modal utilities for use in the calculation of freight Mode Split. Sufficient information may be available on the NTAD modal networks for this purpose.

Title: Highway Performance Monitoring System (HPMS)

Data Classification: Modal Volumes

Geographic Coverage: U.S., by state, urbanized areas

Content: The HPMS is an information system that addresses all the Nation's public road mileage on both a statewide and national basis. It is also an analytical simulation system that can serve a variety of users and uses. The HPMS includes limited data on all public roads, summary data, and detailed sample data for rural, small urban and urbanized areas within a state at known precision levels. The HPMS database is unique because it directly ties together roadway physical, operational, usage (travel), pavement, condition, and performance data so that they can be analyzed and summarized at substate, statewide, regional, and national levels by highway system. HPMS data can be displayed via GIS using the National Highway Planning Network, which is available as part of NTAD.

Time Period: 1978-Current

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: DOT/FHWA, Office of Highway Information Management, HPM-20, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-0175; Fax (202) 366-7742. Price varies depending upon amount and coverage desired.

Title: Highway User and Usage Database

Data Classification: Modal Operation

Geographic Coverage: U.S. stratified by state, District of Columbia

Content: This database has the following components: MOTOR FUEL – This section contains information on usage of gasoline and other fuels, including gasohol, diesel, liquefied petroleum gases. It focuses on usage of fuels to operate highway vehicles; REGISTRATION – This section includes state registrations by major classes, including autos, trucks, buses, and motorcycles. This data is supplemented by outside sources; DRIVER LICENSE – This section includes information on number of licenses by class, gender, and age; HIGHWAY FINANCE – This section includes information on revenues, disbursements, debt status, and other financial information for federal, state, and local agencies, tax sources, debt expenditures for capital and maintenance purposes; ROAD CHARACTERISTICS – This section includes data on the physical, operational,



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usage characteristics, extent, and performance of public roads. INTERNATIONAL – This section includes limited information on transportation and related data.

Time Period: 1945-present

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: R&T Reports Center, 9701 Philadelphia Court, Unit Q, Lanham, MD 20706; Telephone (301) 577-0906; Fax (301) 577-1421. URL <http://cti1.volpe.dot.gov/ohim>.

Title: Truck Weight Study Data

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: This database contains weigh-in-motion and vehicle classification information collected at truck weigh sites and submitted periodically by states in accordance with the Traffic Monitoring Guide (TMG). Summary files are produced for generating weight reports. The weights are obtained from weigh-in-motion devices that monitor trucks through sensors embedded in or attached to the roadway surface. The amount of data varies tremendously by state because some states submit data from continuously operating weigh-in-motion sites whereas others submit the minimum 48 hours of data from each weigh-in-motion site. Some states have not submitted weigh-in-motion data because of various problems with the equipment, etc.

Time Period: 1989-Current

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: DOT/FHWA, Office of Highway Information Management, HPM-30, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-0175; Fax (202) 366-7742. No cost to customer if magnetic or optical disks are supplied.

Title: Terminal Area Forecast

Data Classification: Modal Operations

Geographic Coverage: Selected U.S. airports (those with towers and/or receiving FAA service)

Content: This database provides a 12-year forecast of aviation activity at selected airports in the U.S., encompassing at least those airports with FAA control towers and/or receiving commercial service. For each airport, detailed forecasts are made for the four major user groups of the air traffic control system: air carrier, air taxi/commuter, general aviation, and military. Summary tables contain national, FAA regional, and state aviation data and other airport-specific highlights. Forecasts are prepared to meet the budget and planning needs of the FAA and to provide airport-specific information that can be used by state and local aviation authorities, by the aviation industry, and by the general public.



Freight Data Assessment

Time Period: Latest 12 years

Sponsoring Organization: Department of Transportation, Federal Aviation Administration

Availability: Printed Source: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Telephone (202) 512-1800 or National Technical Information Service, Springfield, VA 22161; Telephone (703) 487-4650.

Title: Federal Aviation Administration (FAA) Aviation Forecasts Fiscal Years 2000-2011 (March 2000)

Data Classification: Modal Operations

Geographic Coverage: U.S., 400 Airports receiving FAA tower service

Content: This report contains the Fiscal Year 2000-2011 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. This includes airports with both FAA and contract traffic control towers, air route traffic control centers, and flight service stations. This report contains detailed forecasts for the major users of the national Aviation System: large air carriers, air taxi/commuters, general aviation, and military. These forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide aviation system information for use by state and local authorities, the aviation industry, and the general public. The report contains nine chapters which discuss three major areas: 1) the U.S. and world economic environment, assumptions, and predictions which were used in developing the forecasts; 2) historical data and forecasts of future aviation demand and aircraft activity for three major non-military user groups – large commercial air carriers, regional/commuter airlines, and general aviation/helicopters; and 3) workload measures for FAA and contract towers, en route centers, and flight service stations. The report concludes with a discussion of forecast accuracy of the 1992 to 1997 historical data and the 1998 to 2009 forecasts for selected aviation demand and activity series. Internet access is provided to the Executive Summary (and five summary tables), four summary tables from the 1998 General Aviation and Air Taxi Activity and Avionics Survey (1993-1998), and 48 tables which contain historical (1994-1999) and forecast (2000-2011) data for selected aviation demand and activity series.

Time Period: Historical (1994-2003) and forecast (2004-2015)

Sponsoring Organization: Department of Transportation, Federal Aviation Administration

Availability: Available on-line at <http://www.api.faa.gov/forca98/fortab2.htm>. Hardcopy publication available via contact below.



Freight Data Assessment

Title: 1997 Benchmark Input-Output Accounts of the United States

Data Classification: Modal Volumes

Geographic Coverage: U.S. Totals

Content: This publication shows the distribution of transportation service output (including rail, truck, water, air, pipeline, and other transportation services) to using industries and final purchasers, defined by mode. The commodities used as inputs by these transportation industries are also identified. These accounts also provide detailed information on the consumption of specified commodities. The input-output workfile that is available for benchmark years includes information for over 8,000 commodities.

Time Period: 1997

Sponsoring Organization: Bureau of Economic Analysis, Industry Economics Division

Availability: Diskette: DOC/Bureau of Economic Analysis, Industry Economics Division, BE-51, Washington, DC 20230; Telephone (202) 606-5585. Price varies by table requested. Printed Source: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; Telephone (202) 512-1800.

Title: 2002 Status of the Nation's Surface Transportation System: Condition and Performance

Data Classification: Modal Operation

Geographic Coverage: U.S.

Content: This is the latest in a Congressionally required series, dating from 1968, that tracks changes in highway and bridge system performance measures, finance, and usage patterns. The report was expanded in 1993 to include transit and in this latest version, maritime. The series also estimates capital investment required from all sources to meet benchmarks of system performance for highways, bridges, and transit. No maritime investment requirements are provided.

Time Period: Biennial

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: DOT/FHWA, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-9215; Fax (202) 366-3297. Publication Line: (800) 240-5674 or (202) 366-9899.



Freight Data Assessment

Title: FAA Statistical Handbook of Aviation

Data Classification: Modal Operations

Geographic Coverage: U.S., 400 Airports receiving FAA radar service

Content: The prime purpose of the Handbook is to serve as a convenient source for historical data and to assist in evaluating aviation progress. The report includes such data as Total Ton-Miles Available in All Services of the Large Certificated Air Carriers: 1987-1996, Revenue Ton-Miles Flown in All Services by the Large Certificated Air Carriers: 1987-1996, and Summary of Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Cargo and Mail, by Type of Service, by State and U.S. Area: 1996. The handbook is published annual by the FAA in MS Excel format and as text tables.

Time Period: 1987-1996

Sponsoring Organization: Department of Transportation, Federal Aviation Administration

Availability: <http://www.api.faa.gov/handbook96/toc96.htm>, Hardcopy available from contact below:

Title: Profiles of U.S. Railroads

Data Classification: Modal Operations

Geographic Coverage: 500 freight railroads in U.S.

Content: This database contains an annual survey of approximately 500 freight railroads. Information for each freight railroad includes: name, address, phone number, type of carrier, owner, year established, predecessor(s), states served, number of employees, miles of road operated, number of interchange railroads, top three commodities, and revenue range.

Time Period: 2001

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.

Contacts: Mr. A. Clyde Crimmel, Jr.
Economist

AAR, Policy, Legislation and Communications Department

Telephone (202) 639-2309; Fax (202) 639-2499; E-mail: ccrimmel@lms.aar.org



Freight Data Assessment

Title: Motor Carrier Financial and Operating Information Program

Data Classification: Modal Operations

Geographic Coverage: U.S. active motor carriers

Content: The Motor Carrier Financial and Operating Information Program collects annual and quarterly data from motor carriers of property and motor carriers of passengers. The program collects balance sheet and income statement data along with information on tonnage, mileage, employees, transportation equipment, and other items. The program was transferred to the Department of Transportation from the Interstate Commerce Commission by the "ICC Termination Act of 1995." The data collections cover for-hire trucking and buses, but exclude private motor carriers that operate as auxiliary establishments to non-transportation companies. Approximately 2,600 firms meet the annual filing criteria. For reporting purposes, motor carriers are classified on the basis of annual gross carrier operating revenues (including interstate and intrastate).

Time Period: 1994 to 2001

Sponsoring Organization: Federal Highway Administration, Office of Motor Carriers

Availability: FHWA, Division of Licensing and Insurance, Room 1349, 12th and Constitution Avenue NW, Washington, DC 20423; Telephone (202) 927-6784; Fax (202) 927-5609. Available on-line at <http://www.bts.gov/mcs/prod.html>

Title: Intermodal Equipment Inventory

Data Classification: Modal Operations

Geographic Coverage: U.S.

Content: This system records intermodal equipment of all U.S.-flag intermodal marine carriers and major container leasing companies operating in the U.S. It includes for each company the type and number, dimensions of containers and trailers. Chassis are shown by types, number of units and containers carried. The size and number of slots available on container vessels and barges is recorded. Capacity in 40-foot equivalent units of trailers along with automobile capacity are also included for Ro/Ro ships and barges. The database is the only government source of aggregated data on American-owned containers, chassis, trailers and vessels, that are essential for planning most efficient use of U.S. intermodal equipment by U.S. Department of Defense.

Time Period: 1971-present

Sponsoring Organization: Department of Transportation, Maritime Administration

Availability: DOT/MARAD, Office of Intermodal Development, MAR-810, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-8888; Fax (202) 366-6988. Data available on-line (MARlinspike bulletin board), updated quarterly.



Freight Data Assessment

Title: Annual Bulletin of Transport Statistics for Europe

Data Classification: Modal Operations

Geographic Coverage: Europe, U.S., Canada and Israel

Content: This publication provides extensive data on rail, road, inland waterways, and oil-pipeline transport and some related trends in European countries, Canada Israel, and the United States. It also has a short section on intermodal (container) transport and international goods transport by various modes and commodity groups. Some aggregate data are also given on energy consumption, population, and other related issues. Data collected by questionnaire from Economic Commission for Europe member countries. From 1996, the same questionnaire is jointly used by the United Nations Economic Commission for Europe and by the Statistical Office of the European Communities (Eurostat) and by the European Conference of Ministers of Transport (ECMT).

Sponsoring Organization: United Nations, Economic Commission for Europe

Availability: United Nations, Sales Section, 2 United Nations Plaza, New York, NY 10017; Telephone (212) 963-8302. Address for UN/ECE is United Nations, Economic Commission for Europe, Statistical Division, Palais des Nations, 1211

Title: Waterborne Transportation Lines of the United States (WTLUS)

Data Classification: Modal Operations

Geographic Coverage: U.S.

Content: The annual revision of the Waterborne Transportation Lines of the United States (WTLUS) contains summary information of the shipping companies and their American flag vessels operating or available for operation on 31 December 1995 in the transportation of freight and passengers. The information includes the size of the vessels and their usage. General ferries and floating equipment used in construction work, such as dredges, pile drivers, and flats; fishing vessels; and recreational craft are not included. The WTLUS is prepared under authority contained in the Rivers and Harbors Appropriations Act approved 22 September 1922, (42 Stat. 1043), as amended, and codified 33 U.S.C. 555.

Time Period: 2002

Sponsoring Organization: Department of Defense, U.S. Army Corps of Engineers

Availability: Available on-line at

http://www.iwr.usace.army.mil/ndc/veslchar/pdf/wtlusv11_02.pdf.



Freight Data Assessment

Title: Railroad 10-Year Trends

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: This document contains a comprehensive cross section of freight railroad industry data in a tabular/graphic format. The report includes an overview of the U.S. freight railroad industry; Class I industry performance, traffic, revenue, financial statistics, employment, plant and equipment, and operations; a list of U.S. freight railroads; and profiles of railroad-related organizations.

Time Period: Most recent 10 years

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.



Freight Data Assessment

Title: Transportation Files (TRANS Files)

Data Classification: Modal Operations

Geographic Coverage: U.S. Class I Railroads

Content: This database contains railroad annual report, as required by Surface Transportation Board STB Form R-1, data for all current Class 1 railroads. In addition to Form R-1 data, the TRANS files also contain data for the STB wage reports and Association of American Railroads reports CS-54, FCDP-95. The data are non-proprietary. The TRANS files contain data for all current Class 1 railroads and Class 1 predecessor railroads from 1978 to present. Data for 1978 are on a Betterment Accounting basis only. Data for the years 1979 to 1987 are on both a Betterment Accounting and Depreciation Accounting basis. Data from 1988 to current are on a Depreciation Accounting basis only.

Time Period: 1978-Present

Sponsoring Organization: Surface Transportation Board

Availability: Ward L. Ginn, Jr., Chief, Section of Costing and Financial Analysis, STB, Office of Economic and Environmental Analysis and Administration, Washington, DC 20423; Telephone (202) 565-1533.

Title: Uniform Railroad Cost System (URCS) Phase III Movement Costing Program

Data Classification: Modal Operations

Geographic Coverage: U.S. Class I Railroads, two summary regions (east and west)

Content: The URCS Phase III program allows the user to develop movement cost estimates for U.S. Class 1 railroads. The URCS Phase III unit cost database contains railroad annual unit cost data for the current Class 1 railroads and two summary regions (East and West). The data are non-proprietary.

Time Period: 1987-present

Sponsoring Organization: Surface Transportation Board

Availability: Ward L. Ginn, Jr., Chief, Section of Costing and Financial Analysis, STB, Office of Economic and Environmental Analysis and Administration, Washington, DC 20423; Telephone (202) 565-1533.



Freight Data Assessment

Title: Air Transport

Data Classification: Modal Operations

Geographic Coverage: U.S.

Content: This publication is the annual report of the U.S. scheduled airline industry. It includes statistics for both passenger and freight airlines concerning total passengers, flights, and performance. It is organized by airline not by route.

Time Period: Annual

Sponsoring Organization: Air Transport Association (ATA)

Availability: Air Transport Association, Distribution Center, P.O. Box 511, Annapolis Junction, MD 20701; Telephone (800) 497-3326 or (301) 490-7951. ATA Publications catalog is also on the Internet at <http://www.air-transport.org/pubs>.

Title: Railroads and States

Data Classification: Modal Operations

Geographic Coverage: 48 continental U.S. states, Alaska

Content: This report contains Amtrak and freight railroad statistics by state. It includes state-by-state statistics, rankings, and maps. Includes carloads, tons, top commodities, railroad employment, and a list of all railroads operating within a state.

Time Period: Current year

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156. Current version at AAR web site

Title: Airport Activity Statistics of Certificated Route Air Carriers

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals, state, city

Content: This report presents detailed data on the volume of revenue passengers, freight express, and mail traffic carried by U.S. certificated route air carriers for each airport and individual airline, and total departures by airport, airline, and aircraft model operated. Scheduled/nonscheduled service shown by airport and carrier are included.

Time Period: 1962-present



Freight Data Assessment

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640.

Title: Railroad Facts

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals, summary by east and west

Content: This publication is a summary of historic railroad data on Class I railroads, defined by the Surface Transportation Board, for each respective year. The report includes data on financial results, traffic, operating averages, plant and equipment, employment and wages, and fuel consumption and cost. The report also includes a one-page profile of each Class I railroad.

Time Period: Most recent 10 years + selected prior years between 1929 and 1980

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.

Title: National Highway and Airway Carriers and Routes

Data Classification: Modal Operations

Geographic Coverage: 50 states, District of Columbia, Canada

Content: This publication contains general and detailed shipping information, indexes of shipping firms, maps, charts, Less than Truckload (LTL), Truckload (TL), intermodal, transportation brokers, freight forwarders, and warehousing information. Canadian motor freight carriers, airline cargo companies, and detailed routing information with over 150,000 points and terminals were recently added. The publication is the most complete, up-to-date, routing information on LTL, TL, intermodal, brokers and freight forwarders.

Time Period: 2000

Sponsoring Organization: National Highway Carriers Directory, Inc.

Availability: National Highway Carriers Directory, Inc.



Freight Data Assessment

Title: National Motor Carrier Directory (NMCD)

Data Classification: Modal Operations

Geographic Coverage: 50 states, Canada

Content: This Directory features information on the name and Title of the CEO; headquarters address; phone number; revenue and period covered; type and quantity of equipment-owned and leased; trailer types; motor carrier number; commodities transported; TL or LTL; common, contract and/or broker authority; plus year firm was established. Information is presented in alphabetical order, followed by an index listing in zip code sequence. The information is available in a single volume for 21,000 trucking companies or by individual states in the National Motor Carrier Directory – State Editions. Data are also available on disk

Time Period: 2001

Sponsoring Organization: Transportation Technical Services, Inc.

Availability: Transportation Technical Services, Inc. 225 West 34th Street, New York, NY 10122; Telephone (888) ONLY-TTS; Fax (540) 899-1948. Prices vary for state editions.

Title: Port Facilities Inventory

Data Classification: Modal Operations

Geographic Coverage: Major U.S. ocean and river port facilities

Content: This system contains detailed information on more than 4,000 major ocean and river port facilities, including location, physical dimensions, cargo handling equipment and capacities. The source of the data is the U.S. Army Corps of Engineers (Port Series) which systematically surveys all U.S. ports, and additional data supplied periodically by U.S. port authorities. The report includes extensive detail on major U.S. port facilities, both ocean and river; does not include all U.S. port facilities

Time Period: 1988-1996

Sponsoring Organization: Department of Transportation, Maritime Administration

Availability: DOT/MARAD, Office of Ports and Domestic Shipping, MAR-832, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-4357; Fax (202) 366-6988.



Freight Data Assessment

Title: Port Series, 1921-Present

Data Classification: Modal Operations

Geographic Coverage: U.S. coastal, inland, and Great Lakes port facilities

Content: The 56 reports in the Port Series include information on commercial facilities at the principal U.S. Coastal, Great Lakes and Inland Ports. Each report consists of complete listings of a port area's waterfront facilities, including information on berthing, cranes, transit sheds, grain elevators, marine repair plants, fleeting areas, and docking and storage facilities. Aerial maps show the locations of the described facilities. Contains complete physical data on each docking facility limited by knowledge of on-site informants and professional observations, mile points latitude and longitude as applicable for each facility.

Time Period: Varies. Each port is updated on an eight to 10-year cycle.

Sponsoring Organization: Department of Defense, U.S. Army Corps of Engineers

Availability: U.S. Army Corps of Engineers, CEWRC, Navigation Data Center, Ports and Waterways Division, 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3868; Telephone (703) 428-7315; Fax (703) 428-6047.

Title: Transportation Statistics Annual Report (TSAR)

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: This report is a summary of the state of the transportation system, the quality of statistics used to identify the state of the transportation system, and planned efforts to improve the quality of data collection. Topics covered in the report include the physical condition, performance, and use of the transportation system; its economic importance; expenditures and revenues; safety, energy and environmental consequences of the transportation system; the state of transportation statistics; and special analyses on current issues (TSAR 1995: The Economic Performance of Transportation; TSAR 1996: Transportation and the Environment; TSAR 1997: Mobility and Access; TSAR 1998: Long-Distance Travel and Freight). The report is compiled from various current reports, including TSAR's companion volume, National Transportation Statistics, and other data sources from the DOT modal administrations and other federal agencies.

Time Period: 1960-Current

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via Internet: <http://www.bts.gov/programs/transtu/tsar/tsar.html>.



Freight Data Assessment

Title: Waterborne Transportation Lines of the United States

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals, U.S. territories

Content: This system contains information on all domestic vessel operations. Major data content includes: alphabetical listing of operators, description of vessels (net registered tons, length, breadth, draft loaded, horsepower, capacity, highest point above waterline, cargo handling equipment, year built, home base), description of operations (principal commodities carried and areas served). General ferries, floating equipment used in construction work such as dredges, piledrivers, fishing vessels, and recreational craft are not included.

Time Period: 1940-Current

Sponsoring Organization: Department of Defense, U.S. Army Corps of Engineers

Availability: U.S. Army Corps of Engineers, Quality Control, Products and Services Office, Waterborne Commerce Statistics Center, P.O. Box 61280, New Orleans, LA 70161-1280; Telephone (504) 862-1424; Fax (504) 862-1423.

Title: Transportation Technical Services (TTS) Blue Book of Trucking Companies, 1995-1996

Data Classification: Modal Operations

Geographic Coverage: U.S., Canada

Content: This publication contains data on over 2,000 of the largest motor carriers in the United States and Canada. The data includes income, operating expenses, labor, units, output, assets, liabilities, etc. Private fleet operations are not included.

Time Period: 1995-Current

Sponsoring Organization: Transportation Technical Services (TTS), Inc.

Availability: Transportation Technical Services, Inc., 225 West 34th Street, New York, NY 10122; Telephone (888) ONLY-TTS; Fax (540) 899-1948.

Title: American Trucking Trends

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: This document contains comprehensive trucking statistics such as industry profile, equipment, employment, industry financial condition, taxes, and operating statistics. Topics explored in the report include tonnage, freight revenues, modal share, cost per mile, safety statistics, etc. The information is for the trucking industry as a whole not for individual carriers.



Freight Data Assessment

Time Period: Varies. Update frequency 1-2 Years. Last Update: 1999

Sponsoring Organization: American Trucking Association (ATA)

Availability: American Trucking Association, Customer Service, 2200 Mill Road, Alexandria, VA 22314; Telephone (800) ATA-LINE.

Title: Contract Carrier & Routing Directory (CC&RD)

Data Classification: Modal Operations

Geographic Coverage: 48 states, Canada, Mexico

Content: This Directory features information on over 1,500 top contract carriers plus 1,000 major contract and common carriers with 10 or more power units. Information includes the name and headquarters address; phone and fax numbers; contract or contract and common carrier authority; commodities transported and shipment type (TL, LTL, or both); number of trucks, tractors, and trailers; trailers by type; vehicle/shipment tracking capability; 48 state or actual states served; service to Canada/Mexico; speed indexes by states served (includes equipment type), plus separate list of van, flatbed, tank, reefer services, etc.

Time Period: Current

Sponsoring Organization: Transportation Technical Services, Inc.

Availability: Transportation Technical Services, Inc., 225 West 34th Street, New York, NY 10122; Telephone (888) ONLY-TTS; Fax (540) 899-1948.

Title: Standard Trucking and Transportation Statistics (STATS)

Data Classification: Modal Operations

Geographic Coverage: U.S.

Content: STATS is a quick reference for the most frequently asked questions about trucking. STATS provides a comprehensive overview of the industry, including: trucking employment and wages, the number of commercial vehicles on the road, taxes levied on and paid by trucking, trucking accident rates and safety, and total revenues, mileage and tonnage accumulated by the trucking industry.

Time Period: Annual

Sponsoring Organization: American Trucking Associations

Availability: Please include a name and E-mail Address: American Trucking Associations; Telephone (703) 838-1792; Fax (703) 683-9751.



Freight Data Assessment

Title: The Private Fleet Directory

Data Classification: Modal Operations

Geographic Coverage: 50 states, Canada

Content: This Directory provides comprehensive profiles on firms, such as Wal-Mart, Kraft, Toys R Us, with 10 or more trucks or tractors. Information includes name and title of key fleet decision-maker; company address; phone number; number of trucks, tractors, and trailers; trailer types; maintenance performed at location; equipment size/class; and type of fleet. The information is available for 24,000 fleets or by individual state in The Private Fleet Directory – State Editions. Data are also available on disk.

Time Period: Current

Sponsoring Organization: Transportation Technical Services, Inc.

Availability: Transportation Technical Services, Inc., 225 West 34th Street, New York, NY 10122; Telephone (888) ONLY-TTS; Fax (540) 899-1948. Prices vary for the state editions.

Title: TranStats

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: TranStats is a new report series that highlights topics of current interest and new transportation data developments in a short, easy-to-read format. TranStats has four major reports. The first report covered truck movements in the United States. The second report covers the federal gas tax. The third in the series discusses truck shipments that move across the Woodrow Wilson Bridge. The fourth report summarizes the findings of the Transportation Satellite Accounts (TSA), a new accounting tool developed jointly by the Bureau of Transportation Statistics and the Bureau of Economic Analysis.

Time Period: Varies

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via the Internet: <http://www.bts.gov/programs/transtu/analysis.htm>, or by E-mail: orders@bts.gov.



Freight Data Assessment

Title: Truck Inventory and Use Survey (TIUS)

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals, 50 states, District of Columbia

Content: This database provides detailed information on the physical and operational characteristics of the Nation's truck population, based on a mail survey of approximately 154,000 private and commercial truck companies. Individual state and United States estimates are produced. Physical characteristics include model year, body type, empty weight, truck type, axle arrangement, length, and engine size. Operational characteristics include major use, products carried, annual and lifetime miles, area of operation, miles per gallon, operator classification, and hazardous materials transported. This database is the only source of comprehensive truck data classified by their physical and operational characteristics and that also provides microdata records. The microdata records are modified to avoid disclosure of a sampled vehicle or operating company. As of 1997 the database also includes automobiles and buses and is now known as VIUS, the Vehicle Inventory and Use Survey.

Time Period: Data available for 1963, 1967, 1972, 1977, 1982, 1987, and 1992 surveys. 1997 as VIUS, 2002 as VIUS.

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: Data File: DOC/Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100. \$26.00/U.S. Summary Report. Available on-line at <http://www.bts.gov/ntda/tius/prod.html>

Title: Trucking Activity Report (TRAC)

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals

Content: This is a monthly report providing benchmarking statistics for both truckload and less-than-truckload carriers. TRAC reports on changes in such information as operating expenses, employee turnover and driver wages, rack and retail diesel fuel prices revenues, revenues per mile and revenue per load, equipment utilization for all 50 states. Also included is a report by the American Trucking Association that assesses the state of the U.S. economy and its implications for the trucking industry.

Time Period: 1993-Current (Monthly)

Sponsoring Organization: American Trucking Associations

Availability: Please include a name and E-mail address: American Trucking Associations; Telephone (703) 838-1792; Fax (703) 683-9751;



Freight Data Assessment

Title: Analysis of Class I Railroads

Data Classification: Modal Operations

Geographic Coverage: U.S. Totals, summary by east and west

Content: This publication contains 2000-2002 data for each Class I railroad. The report contains approximately 750 financial and operating statistics (including traffic by commodity) for each Class I railroad. Summaries are also provided for the U.S., East and West totals.

Time Period: 2000-2002

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.

Title: Highway Statistics

Data Classification: Modal Volumes

Geographic Coverage: U.S. by 50 States

Content: This publication summarizes selected statistical tabulations relating to highway transportation in three major areas: 1) highway use – the ownership and operation of motor vehicles; 2) highway finance – the receipts and expenditures for highways by public agencies; and 3) the highway infrastructure – the length, characteristics, and performance of the public highways, roads, and streets in the Nation. The compilation of this report is the result of a cooperative effort between the FHWA and the States. Nearly all of the data provided to FHWA, including the Highway Performance Monitoring System (HPMS) data, come through state departments of transportation from existing databases or business records of many individual state and local governmental agencies, including metropolitan planning agencies (MPO).

Time Period: Summaries of various data beginning in 1936 through 1995. Complete printed reports 1969-1997, on-line reports 1994-1997

Sponsoring Organization: Department of Transportation, Federal Highway Administration

Availability: Available on-line at <http://www.bts.gov/ntda/fhwa/prod.html>, available on microfiche and/or paper from the Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161; Telephone orders (800) 553-6847; Fax orders (703) 321-8547.



Freight Data Assessment

Title: Freight Transport Trends and Forecasts to 2005

Data Classification: Modal Volumes

Geographic Coverage: Canada, transborder, international, Coast Guard region, St. Lawrence Seaway

Content: This report analyzes historical trends and presents detailed forecasts for marine, rail and truck freight traffic, by commodity and sector, and marine vessel movements, up to the year 2005.

Time Period: 1985-2005

Sponsoring Organization: Transport Canada/ACAC/Economic Analysis/Policy and Coordination

Availability: Transport Canada/ ACAC/ Economic Analysis/ Policy and Coordination, Floor 25C, Place de Ville, Tower C, Ottawa, Ontario, Canada K1A 0N5.

Title: Annual Vehicle-Miles of Travel and Related Data (VM-1)

Data Classification: Modal Volumes

Geographic Coverage: U.S. Totals

Content: Table VM-1 shows the estimated Vehicle Miles of Travel (VMT) for the current year and revised figures for the previous year by passenger cars, buses, and trucks on the rural Interstate System, other rural arterial roads, other rural roads, urban Interstate System, and other urban streets. VM-1 also shows the number of vehicles registered by type and by total fuel consumption on a statewide basis. Also included are the calculated average annual miles of travel, average miles traveled per gallon, and average fuel consumption for each vehicle type. In addition, Table VM-1 provides the FHWA estimates of person-miles of travel.

Time Period: 1936-present

Sponsoring Organization: Department of Transportation, Federal Highway Administration, Office of Highway Information

Availability: DOT/FHWA, Office of Highway Information Management, HPM-30, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-5052; Fax (202) 366-7742; FEBBS (202) 366-3764.



Freight Data Assessment

Title: National Transportation Statistics 1998 (NTS)

Data Classification: Modal Volumes

Geographic Coverage: U.S. Totals

Content: This database is a compendium of selected national transportation data and transportation-related energy statistics for the major transportation modes – air, automobile, bus, truck, transit, rail, water, and pipeline. The NTS is divided into four chapters and several appendices. Chapter 1 of this document presents statistics about the length of the physical network; travel and goods movement; vehicle, aircraft, and vessel inventories, as well as the condition and physical performance of the system. Chapter 2 focuses on the relationship between transportation and the economy. Data are provided on consumer and government expenditures on transportation, and employment in and productivity of transportation industries. Chapter 3 details transportation's safety record, presenting data on fatalities, injuries, and accidents for each mode and for hazardous materials. Chapter 4 presents transportation energy use and related emissions and environmental data. Appendix A provides modal profiles; Appendix B includes metric conversion tables, where applicable; and Appendix C contains the NTS glossary.

Time Period: 1960-2004

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via Internet: <http://www.bts.gov/programs/btsprod/nts> or by E-mail.

C.5 Freight Shipments

The principal source of freight information is the Reebie Associates TRANSEARCH commodity database. Specific movements at ports and intermodal yards are also available from a variety of sources including the Dade County Freight Movement Study, the Surface Transportation Board's Carload Waybill Sample. The Latin American Trade and Transportation Survey provides information on international origins and destinations that is not available from TRANSEARCH.

Title: TRANSEARCH

Data Classification: Freight Shipments

Geographic Coverage: National. Basic price includes 183 National Transportation Analysis Regions/Bureau of Economic Analysis Regions, different units are available for an additional fee.

Content: TRANSEARCH is a comprehensive market research data service for intercity freight traffic flows. The database includes commodities, tonnage, origin and destination markets, and mode of transport. Data is obtained from, federal, state, trade and industry associations, and a sample of motor carriers. Forecasts for up to 10 years are available for a fee. The truck data is developed using actual motor carrier information; includes over 75,000,000 shipments. Printed



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sources are provided in a variety of formats, depending upon user requirements. County-level information is available through special processing for an additional fee.

Time Period: 2002

Sponsoring Organization: Reebie Associates

Availability: Reebie Associates, 411 W. Putnam Avenue, Suite 111, Greenwich, CT 06830; Telephone (203) 661-8661; Fax (203) 661-8886.

Title: Commodity Flow Survey (CFS)

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals, state, 89 National Transportation Analysis Regions

Content: The Commodity Flow Survey (CFS) provides data on the flow of goods and materials by mode of transport. The CFS is a continuation of the Commodity Transportation Survey conducted from 1963 through 1977, and includes major improvements in methodology, sample size and scope. The Census Bureau collected commodity flow data from a sample of 200,000 domestic establishments randomly selected from a universe of about 800,000 establishments in manufacturing, mining, wholesale trade, and selected retail and service industries. Each selected establishment reported a sample of shipments for a two-week period in each of the four calendar quarters of 1997. This produced a total sample of about 12 million shipments. For each sampled shipment, respondents reported origin and destination, Standard Transportation Commodity Classification (STCC) code, weight, value, and modes of transport. Respondents also provided information on whether the shipment was containerized, a hazardous material, or an export. The public database only includes information at the National Transportation Analysis Regions. Data at smaller geographic levels is available commercially in TRANSEARCH.

Time Period: 1993, 1997

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via Internet: www.bts.gov

Title: Carload Waybill Sample

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals, BEA-to-BEA level

Content: This database contains rail shipment data such as origin and destination points, type of commodity, number of cars, tons, revenue, length of haul, participating railroads, interchange locations, and Uniform Railroad Cost System (URCS) shipment variable cost estimates. The waybill sample contains confidential information which is used primarily by Federal and state



Freight Data Assessment

agencies and this information is not included in the public database. Movements are aggregated to the BEA-to-BEA level at the five-digit STCC level. For a particular commodity, the origin or destination BEA is not included unless there are at least three freight stations in the BEA and there are at least two more freight stations than railroads in the BEA.

Time Period: Annually beginning in 1991

Sponsoring Organization: Surface Transportation Board

Availability: CD-ROM: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640.

Title: Rail Waybill Data: 1988-1992 CD-ROM

Data Classification: Freight Shipments

Geographic Coverage: U.S. Class I Railroads

Content: This database contains public-use aggregate non-confidential rail shipment data such as origin and destination points, type of commodity, number of cars, tons, revenue, length of haul, participating railroads, and interchange locations. The data are based on the Carload Waybill Sample, which is a proprietary sample of freight waybills that were submitted to the Interstate Commerce Commission by Class I Railroads. Since the elimination of the ICC, the Rail Waybill Data report has been replaced by the Carload Waybill Sample maintained by the Surface Transportation Board.

Time Period: 1988-1992

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640. Products are also available via Internet: www.bts.gov or by E-mail: orders@bts.gov.

Title: Latin America Trade and Transportation Study

Data Classification: Freight Shipments

Geographic Coverage: Latin America, Southeastern U.S. by state

Content: This study is an analysis of trade between Latin American and the United States with an emphasis on the transportation impacts on the Southeastern states. Existing freight flows are provided for 1992, 1995, and 1996 and forecasts for 2000, 2005, 2010, 2015 and 2020 at the two-digit STCC commodity level. Major modes of shipment are air, water and transborder rail and truck. For all modes the entry U.S. gateway is identified as well as the U.S. origin or destination state. For ports, the inland mode within the U.S. is identified for each shipment. Air cargo is identified at the state level only. Conversion factors for converting tonnage to truck and rail car shipments are given for each commodity group.



Freight Data Assessment

Time Period: 1992, 1995, 1996, 2000, 2005, 2010, 2015, 2020

Sponsoring Organization: Southeastern Association of State Highway and Transportation Officials (SASHTO)

Availability: Online at <http://www.wilbursmith.com/latts/>

Title: Domestic Waterborne Commerce of the United States

Data Classification: Freight Shipments

Geographic Coverage: U.S. by port

Content: This system contains information on domestic waterborne commerce in short tons by commodity, vessel, operator, shipping and receiving dock, type of service and trade segment. Also included are detailed data on vessels and operators engaged in this commerce. This data is obtained from the U.S. Army Corps of Engineers who collect information from responsible parties. Data is made available in summary form to protect confidentiality.

Time Period: Most recent five years

Sponsoring Organization: Department of Transportation, Maritime Administration

Availability: DOT/MARAD, Office of Statistical and Economic Analysis, MAR-451, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-2277; Fax (202) 366-8886. Data available approximately nine months after close of period.

Title: U.S. Waterborne Exports and Outbound Intransit Shipments (TM-780-monthly/TA-780-annual)

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs districts and ports of lading, foreign ports of unloading, countries of origin and destination.

Content: This database provides information on the shipping weight and value by type of vessel service by Customs district and port of lading by foreign port of unloading by Standard International Trade Classification (SITC Revision 3) and by country of destination. The database includes percentages of containerized/non-containerized cargo by value and weight, and information on country of origin and destination. An annual version (TA-780) is also available.

Time Period: 1993-monthly, 1990-annual to present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Foreign trade Division, Room 2179-3, Washington, DC 20233; Telephone (301) 457-2227; Fax (301) 457-2647.



Freight Data Assessment

Title: The State Freight Transportation Profiles

Data Classification: Freight Shipments

Geographic Coverage: 50 States

Content: The State Freight Transportation Profiles present information on freight transportation for each of the 50 states. The purpose of these reports is to present summaries of the major federal databases related to state freight movements. Among the databases summarized are National Transportation Atlas Databases, Commodity Flow Survey, United States Waterway Data, VIUS, and the Railroad Accident/Incident Reporting System (RAIRS). Along with tables generated for each state, the reports give a description of the databases, information on how to obtain the databases, format and contact points.

Time Period: Primarily based on 1993 CFS

Sponsoring Organization: Department of Transportation, Bureau of Transportation Statistics

Availability: CD-ROM: DOT/Bureau of Transportation Statistics, 400 7th Street SW, Room 3430, Washington, DC 20590; Telephone (202) 366-3282; Fax (202) 366-3640.

Title: U.S. Exports of Merchandise on CD-ROM

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs Districts of Exportation

Content: A monthly and year-to-date exports commodity information by country by district is available on CD-ROM. Access software is included on each disk.

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100.

Title: U.S. Imports of Merchandise on CD-ROM

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs districts of entry and unloading, and country of origin

Content: This database provides general imports and imports for consumption data in the most extensive detail available. The data includes net quantity, value data, value and shipping weight data for vessel or air shipments in terms of commodity by country of origin, by Customs district of entry, by Customs district of unloading, and by rate provision.



Freight Data Assessment

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100.

Title: U.S. Exports of Domestic and Foreign Merchandise

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs districts of exportations, countries of destination

Content: This database presents current month and cumulative data on the net quantity, value, and shipping weight by 10-digit Harmonized Tariff Schedule of the United States Annotated (HTSUSA) number, by country of destination, by Custom district of export, and by method of transportation. An annual tape (EA-645) is also available.

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census,

Availability: DOC/Bureau of the Census, Foreign Trade Division, Room 2179-3, Washington, DC 20233; Telephone (301) 457-2311; Fax (301) 457-4615.

Title: U.S. General Imports and Imports for Consumption

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs districts of entry and unloading and country origin

Content: This database contains data on the net quantity and value of imports for consumption and general imports by 10-digit Harmonized Tariff Schedule of the United States Annotated (HTSUSA) commodity code by country of origin by Customs districts of entry and unloading. Method of transportation is included. An annual tape (IA-245) is also available.

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Foreign Trade Division, Room 2179-3, Washington, DC 20233; Telephone (301) 457-2311; Fax (301) 457-4615.



Freight Data Assessment

Title: Trucking in Canada (Catalogue No. 53-222)

Data Classification: Freight Shipments

Geographic Coverage: Canada, provinces, territories

Content: This publication presents a comprehensive overview of the Canadian trucking industry, both for-hire and owner-operators. Principal information includes statistics on revenues and expenses, equipment operated, investment, employment, and commodities transported from point of origin to point of destination. Also included are data analyses, special studies, a glossary, and a section on survey methodology and data quality. This data is based on a census of for-hire carriers earning operating revenues of \$1 million or more; a sample is taken of carriers earning \$25,000 to \$1 million.

Time Period: Current

Sponsoring Organization: Department of Transportation, Maritime Administration

Availability: Statistics Canada, Publication Sales, Ottawa, Ontario, Canada K1A 0T6; Telephone (800) 267-6677 (in the U.S. and Canada) or (613) 951-7277; Fax (613) 951-1584.

Title: Weekly Railroad Traffic

Data Classification: Freight Shipments

Geographic Coverage: U.S. rail carloads

Content: This report contains information on carloads by commodity and railroad plus intermodal traffic by railroad. The report includes carload data for 19 commodity groupings for each railroad, intermodal count by trailer and container and shows traffic originated and received. Railroads in this report originated approximately 93 percent of all U.S. freight carloads, and 99 percent of intermodal units, during 1992.

Time Period: Current week, previous week, same week last year, and cumulative weeks this year and last year.

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.



Freight Data Assessment

Title: Monthly Truck Tonnage Report

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals

Content: This monthly report contains information on tonnage moved by for-hire motor carriers. It includes an index, which represents the movement of millions of tons per month, and is a monthly indicator of for-hire trucking activity. The report includes month-to-month and year-over-year results, relevant economic comparisons, and other financial indicators.

Time Period: Current

Sponsoring Organization: American Trucking Associations

Availability: Please include a name and E-mail address: American Trucking Associations; Telephone (703) 838-1792; Fax (703) 683-9751.

Title: Transportation Annual Survey

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals

Content: This database reflects information obtained from firms furnishing local and long-distance trucking, and courier services (except by air), public warehousing and storage, including farm product warehousing, refrigerated, general, and special warehousing and storage. The database does not include private motor carriers and independent owner-operators. The data items consist of total operating revenue, and total operating expenses that include annual payroll and employee benefits, commodities carried, end-of-year inventory of revenue generating equipment, and type of carrier. Origin and destination of shipments are also included.

Time Period: 1984-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Services Division, Washington, DC 20233; telephone (301) 457-2787; Fax (301) 457-2374.

Title: Shifts in Petroleum Transportation

Data Classification: Freight Shipments

Geographic Coverage: 50 states, District of Columbia, Canada

Content: This pamphlet contains movement, in ton-miles, of crude oil and petroleum products by pipelines, water carriers, motor carriers, and railroads.



Freight Data Assessment

Time Period: Last 10 years

Sponsoring Organization: Association of Oil Pipe Lines

Availability: Association of Oil Pipe Lines, 1101 Vermont Avenue NW, Suite 1604, Washington, DC 20005; Telephone (202) 408-7970; Fax (202) 408-7983. No fee for publication.

Title: Transshipments Via Canada

Data Classification: Freight Shipments

Geographic Coverage: U.S., Canada

Content: This database presents the dollar value and estimated waterborne tonnage for United States exports and imports transshipped through Canada. Shipments are arranged numerically by four-digit Harmonized System (HS) commodity codes under each selected U.S. Customs District of border crossing by foreign country of destination for exports, and by U.S. Customs District of clearance by foreign country of origin for imports. The database identifies U.S. foreign trade broken down by country of origin or destination, U.S. Customs District, volume carried, and the commodity code. The information contained in the database consists of all methods of transportation combined, net quantity and dollar value, vessel shipping weight and dollar value, and air shipping weight and dollar value.

Time Period: 1976-present/printed source only

Sponsoring Organization: Association of American Railroads

Availability: DOT/MARAD, Data Coordination and Evaluation Group, MAR-450, 400 7th Street SW, Washington, DC 20590; Telephone (202) 366-5507; Fax (202) 366-8886.

Title: Transborder Surface Freight Data

Data Classification: Freight Shipments

Geographic Coverage: U.S., Canadian, Mexican totals

Content: The Transborder Surface Freight Data contains annual tonnage and value data by commodity type and by surface mode of transportation (rail, truck, pipeline, or mail) for U.S. exports to and imports from Canada and Mexico. The dataset includes two sets of tables; one is commodity-based while the other provides geographic detail. Files are organized by commodity detail or by geographic detail to satisfy Census confidentiality regulations.

Time Period: 04/93 to current month

Sponsoring Organization: Department of Commerce, Bureau of the Census, Foreign Trade Division

Availability: Available via the Internet: <http://www.bts.gov/ntda/tbscd/>



Freight Data Assessment

Title: Origin and Destination of Waterborne Commerce of the United States, Public Domain

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals, U.S. territories

Content: This database contains aggregated information on waterborne commodity movements between 26 geographical regions or between individual states of the U.S. This database provides the origin/destination of commodity flows but protects the confidentiality of the data provided by the individual companies and suppresses any information that would allow a specific company to be identified.

Time Period: 1985-1993

Sponsoring Organization: Department of Defense, U.S. Army Corps of Engineers

Availability: U.S. Army Corps of Engineers, Quality Control, Products and Services Office, Waterborne Commerce Statistics Center, P.O. Box 61280, New Orleans, LA 70161-1280; Telephone (504) 862-1424; Fax (504) 862-1423.

Title: Rail in Canada (Catalogue No. 52-216)

Data Classification: Freight Shipments

Geographic Coverage: Canada

Content: This publication provides a general overview of information relating to the size and structure of the Canadian Railway industry for a six-year period, followed by a more in-depth analysis on the economic performance, financial structure and equipment usage for the reference period. Also provided in the report are commodity origin and destination data series supplied by Transport Canada and the number of railway cars, fuel statistics, employment, operating and traffic statistics, tonnage loaded and unloaded, and tonnage to/from United States.

Time Period: Latest six years

Sponsoring Organization: Statistics Canada, Transportation Division, Multimodal Transport Section.

Availability: Statistics Canada, Publication Sales, Ottawa, Ontario, Canada K1A 0T6; Telephone (800) 267-6677 (in the U.S. and Canada) or (613) 951-7277; Fax (613) 951-1584.



Freight Data Assessment

Title: Port Import Export Reporting Service (PIERS)

Data Classification: Freight Shipments

Geographic Coverage: Global, including U.S. Seaports

Content: The PIERS database has comprehensive statistics on global cargo movements transiting seaports in the United States, Mexico and South America to companies around the globe. PIERS collects more than 10,000 bills of lading from U.S. Customs' Automated Manifest Systems (AMS) data tapes. In addition, over 100 PIERS reporters collect import and export information daily from actual bills of lading and vessel manifests, from every leading U.S. port, including Alaska, Hawaii and Puerto Rico. PIERS then verifies this information against the U.S. Customs' list of vessels exiting and arriving at U.S. ports.

Time Period: Most recent 24 months

Sponsoring Organization: Journal of Commerce Group, Inc.

Availability: Commercial database available on-line, E-mail: pierssales@mail.joc.com

Title: U.S. General Imports and Imports for Consumption

Data Classification: Freight Shipments

Geographic Coverage: U.S. Customs districts of entry and unloading and country of origin

Content: This database contains data on the net quantity and value of imports for consumption and general imports by the over 17,000 10-digit Harmonized Tariff System of the United States Annotated (HTSUSA) commodity codes by country of origin by Customs districts of entry and unloading. The mode of transportation is included in the database. An annual tape (IA-245) is also available.

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Foreign Trade Division, Room 2179-3, Washington, DC 20233; Telephone (301) 457-2311; Fax (301) 457-4615.



Freight Data Assessment

Title: Weekly Railroad Traffic

Data Classification: Freight Shipments

Geographic Coverage: U.S. rail carloads

Content: This report contains carloads by commodity and railroad plus intermodal traffic by railroad. Carload data is provided for 19 commodity aggregations of the STCC codes for each railroad. A count of the intermodal trailers and containers is provided. The report shows traffic originated and received in total. Railroads in this report originated approximately 93 percent of all U.S. freight carloads, and 99 percent of intermodal units, during 1992.

Time Period: Current week, previous week, same week last year, and cumulative weeks this year and last year.

Sponsoring Organization: Association of American Railroads

Availability: Association of American Railroads, Publication Order Processing, 50 F Street NW, 5th Floor COG, Washington, DC 20001; Telephone (202) 639-2211; Fax (202) 639-2156.

Title: Current Industrial Reports

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals

Content: These reports provide current statistics on commodity production and shipments for approximately 4,500 products. A questionnaire is completed by manufacturing establishments with one or more paid employees. The information is collected monthly on a voluntary basis and annually on a mandatory basis. The series include monthly, quarterly, and annual reports. Publication schedules vary for individual industries. All monthly and quarterly series include annual summaries. Data collected in this current and continuing program are not duplicated in the Census of Manufactures or the intercensal publication Annual Survey of Manufactures. The system of numbering commodities in the current industrial reports series is designed to relate them closely to the standard industrial classification.

Time Period: 1992-Present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Customer Services, Washington, DC 20233; Telephone (301) 457-4100.



Freight Data Assessment

Title: U.S. Merchandise Trade: Selected Highlights. (FT-920)

Data Classification: Freight Shipments

Geographic Coverage: Customs districts, world area by countries of origin/destination

Content: This publication contains tables on merchandise exports, general imports, and imports for consumption. These tables include data on U.S. Customs Districts and method of transportation, and world area by country of origin/destination and method of transportation.

Time Period: 1989-present

Sponsoring Organization: Department of Commerce, Bureau of the Census

Availability: DOC/Bureau of the Census, Foreign Trade Division, Room 2179-3, Washington, DC 20233; Telephone (301) 457-2227; Fax (301) 457-2647.

Title: Waterborne Tonnage by State

Data Classification: Freight Shipments

Geographic Coverage: U.S. Totals, U.S. territories, 50 states, District of Columbia

Content: This report provides one page listings of the waterborne tonnage by states for a given calendar year. Reports are sorted alphabetically by state and by total waterborne tonnage. All companies moving commerce by water are required by law to report.

Time Period: 1988-1993

Sponsoring Organization: Department of Defense, U.S. Army Corps of Engineers

Availability: U.S. Army Corps of Engineers, Quality Control, Products and Services Office, Waterborne Commerce Statistics Center, P.O. Box 61280, New Orleans, LA 70161-1280; Telephone (504) 862-1424; Fax (504) 862-1423