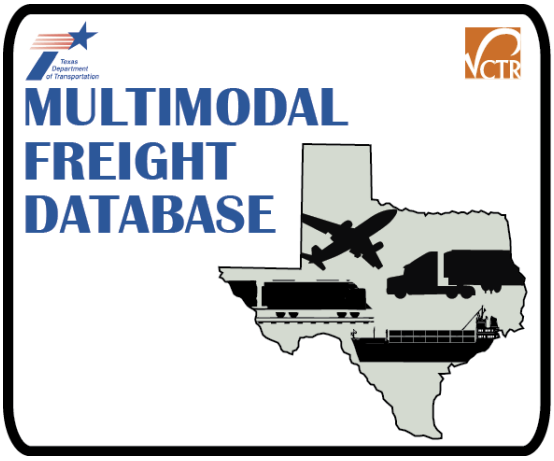
Relational Multimodal Freight Database Workshops



CENTER FOR TRANSPORTATION RESEARCH

The University of Texas at Austin

Research Project 5-6297-01-P2

February 2012

Contents

Introduction

The relational Multimodal Freight Database (MFD) was developed as part of Texas Department of Transportation (TxDOT) Research Project 0-6297 entitled *Freight Planning Factors Impacting Texas Commodity Flows*, conducted by the Center for Transportation Research (CTR). The objective was to capture relevant publicly available freight data required for updating TxDOT freight models and studies. Implementation Project 5-6297-01, entitled *Multimodal Freight Database*, extends the work conducted as part of TxDOT Research Project 0-6297. Specifically, the objectives of Implementation Project 5-6297-01 are to disseminate information about the MFD by hosting six workshops (Task 1), host a webinar to demonstrate the MFD to selected FHWA freight leaders (Task 2), and update the MFD given the feedback received during Tasks 1 and 2.

This document summarizes the outcome of Task 1: Conduct Multimodal Freight Database Workshops. The objective of Task 1 was to demonstrate the MFD to key potential users for review and comment. Thus, the research team hosted six workshops and invited potential users in TxDOT's District and Regional Offices, at Texas MPOs, and at Texas cities to attend one of the following workshops:

- El Paso; September 28th, 2011: 10:00 a.m.–3:00 p.m. (Location: 1430 Joe Battle Blvd, El Paso, TX 79936),
- Tyler; October 5th, 2011: 10:00 a.m.–3:00 p.m. (Location: 2709 W Front Street, Tyler, TX 75702)
- San Angelo; October 12th, 2011: 10:00 a.m.–3:00 p.m. (Location: 4502 Knickerbocker Road, San Angelo, TX 76904),
- Lubbock; October 19th, 2011: 10:00 a.m.–3:00 p.m. (Location: 135 Slaton Road, Lubbock, TX 79404),
- Houston; October 26th, 2011: 10:00 a.m.–3:00 p.m. (Location: 7600 Washington Avenue, Houston, TX 77007), and
- Corpus Christi; November 9th, 2011: 10:00 a.m.–3:00 p.m. (Location: 1701 S Padre Island Dr., Corpus Christi, TX 78416).

During the workshops, the research team (*i*) reviewed the development of the MFD, (*ii*) demonstrated the installation and use of the MFD, (*iii*) provided participants with the opportunity to conduct a number of data searches, (*iv*) gathered feedback from participants as to their experience using the Database, and (*v*) gathered feedback as to any improvements that participants deemed necessary to improve the MFD and workshops. Each workshop participant was given a Workshop Folder that contained

- the workshop agenda (Appendix A),
- the workshop presentations (Appendix B),
- a list of abbreviations and definitions used by the presenters during the workshop (Appendix C),
- challenges/exercises for participants (Appendix D),
- a MFD feedback form (Appendix E), and
- a workshop feedback form (Appendix F).

Given that the workshops had a similar format, only the material for the Corpus Christi workshop is included in the appendices. The next sections of this document provide information about the participants, the answers to the challenges/exercises, the input received from participants regarding the MFD, and finally the feedback and comments received regarding the workshops.

Participants

Titles of TxDOT employee that may be interested in freight transportation were identified and the contact information for these employees was obtained from TxDOT's Human Resources Division[1]. Potential MPO and City participants were identified from MPO or City Websites or by calling MPO and City offices. Table 1 provides the number of participants by agency that attended each workshop.

Table 1: Workshop Participants by Agency

El Paso District Office September 28th, 2011		Tyler District Office October 5th, 2011	
TxDOT	7	TxDOT	6
MPOs	2	MPO	2
City and/or Other Entities	4	City and/or Other Entities	-
Total Participants:	**13**	**Total Participants:**	**8**
San Angelo District Office October 12th, 2011		**Lubbock District Office October 19th, 2011**	
TxDOT	3	TxDOT	4
MPOs	4	MPOs	2
City and/or Other Entities	1	City and/or Other Entities	-
Total Participants:	**8**	**Total Participants:**	**6**
Houston District Office October 26th, 2011		**Corpus Christi District Office November 9th, 2011**	
TxDOT	18	TxDOT	11
MPOs	8	MPOs	6
City and/or Other Entities	1	City and/or Other Entities	-
Total Participants:	**27**	**Total Participants:**	**17**

In total, 79 people participated in the 6 workshops hosted as part of this Implementation project.

[1] TxDOT's Human Resources Division provided the research team with an employee contact list that covered titles such as Engineers, Planners, Environmental Planners, ITS Analysts, and GIS Analysts, among others at the 25 TxDOT District and Regional Offices.

Challenges/Exercises

After the research team demonstrated the MFD to workshop participants, the participants were given the opportunity to run four queries on their own. Appendix D provides the Challenges/Exercises given to the Corpus Christi Workshop participants. Similar challenges/exercises were provided for the other workshops. This section of the document provides the answers for the Corpus Christi workshop.

1. How much farm-related (in weight) products passed through Houston by truck in 2002?

   Answer:

Database	Weight
Freight Analysis Framework (FAF)	25.6 + 128,437.32 = 128,462.92 (100,000 lb) or **12.85 Billion Pounds**

2. How much machinery (in weight and value) was exported from Texas through the Port of Corpus Christi Port in 2002?

   Answer:

Database	Weight	Value
Freight Analysis Framework (FAF)	2.2 + 589.2 + 0.260 + 7.14 = 598.8 (100,000 lb) or **59.88 Million Pounds**	$3,870,000 + $204,600,000 + $1,140,000 + $4,810,000 = 214,420,000 or **$214.42 Billion**

3. Which Databases provide shipment information for Hazardous Material-related commodities?

   Answer:

Databases
North American Transborder Freight Data (TRB)
USA Trade Data (USA)
Carload Waybill Sample Public Use File (WAY)

4. How much freight (in value) was exported from Texas in 2000?

   Answer:

Database	Value
North American Transborder Freight Data (TRB)	$52,216,110,834 or **$52.2 Billion**

Multimodal Freight Database Feedback

After the workshop participants were given the opportunity to conduct the Challenges/Exercises, participants were asked to provide the research team with feedback regarding the user-friendliness of the interfaces and recommendations for improvements to the current MFD. Appendix E contains the form that was used to solicit feedback on the MFD. Table 2 categorizes the feedback that was received pertaining to the data included, the interfaces designed to facilitate the running of queries, and the reporting format used to present the query output.

Table 2: MFD Feedback

Category	Description
Data	Add truck traffic counts (AADT) variable
	Use the commodity code NAICS instead
	Include the FAF BEAs
	Include county level data, city or anything more specific to the regions
	Aggregate unknown, not specified in mode tab
	Aggregate Multimodal, Truck & Rail, Truck & Water, Rail & Water in mode tab
	Fix misspelled words in commodity tab
Interface	Add text box in commodity tab
	Automatically/Interactively update relevant criteria as selections are made
	Change button Check All to Select All
	Clear port search text box after change or unselect port
	Field descriptions appear when on top of words
	Have a button that says "Run Query"
	Have a new screen to allow users to select the sorting form that they desire before running a query
	Identify projected years in the year tab
	Include database abbreviations in Select Databases screen
	Include a Start Over button in all screens
	Organize the ports by state, then alphabetically
	Run Query button should appear when no filtering is selected in filtering screen and invalidate the next button
	Unselect all choices when pressing Start Over button
Report	A glossary tab to explain what each variable category include
	Add Excel grid-like style to enhance readability
	Add total amounts by Database (bottom)
	Add grand totals in new column and include a total amount for the categories with only one record
	Add hyperlink next to the database names for description and limitations
	Add message that indicates database overlap
	Align all common variables in the report

Category	Description
	Button to Export to Excel
	Collapse Option for each hyperlink
	Collapse/Expand All button
	Divide databases in tabs
	Field descriptions appear when on top of words
	Freeze headings
	Have a "top" hyperlinks at the end
	Filtering Option
	Include an index to the side for manageability
	Only show databases that fit criteria
	Save as word, excel, pdf document option
	Show a summary of criteria chosen at the top
	Show Grand Total without having to expand the hyperlinks
	Show subtotals without having to expand the hyperlinks
	Sorting Option

The research team considered each of these recommendations and incorporated most of the suggested improvements. However, in some cases the recommendations were conflicting with one or more of the recommendations that were included in the revised MFD. In those cases, the research team did not address the specific comment or incorporated the specific recommendation.

Workshop Feedback

As mentioned, 79 people participated in the 6 workshops hosted as part of the Implementation Project. Workshop participants were asked to complete a Workshop Feedback survey that was used to improve subsequent workshops. Of the 79 workshop participants, 67 completed and submitted a Workshop Feedback survey (see Appendix F). Table 3 summarizes the feedback obtained by the research team.

Table 3: Participant Feedback on Workshops

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The workshop was well organized	-	1	1	27	38
The workshop was the right length	-	2	3	25	37
The presentation(s) was clear and understandable	-	-	5	29	33
The speaker(s) were knowledgeable	-	-	-	20	47
The speaker(s) encouraged questions/comments/opinions	-	-	-	10	57
The handout/manual was useful	-	1	3	22	41
I feel this workshop was worth my time	-	1	5	32	29

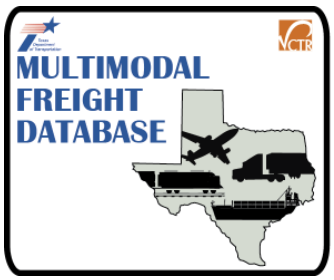
Number of Completed Surveys: 67

Table 3 indicates that these workshops were very well received by the workshop participants. Specifically,

- 97% of the workshop participants agreed or strongly agreed that the workshop was well organized;
- 93% agreed or strongly agreed that the workshop was the right length;
- 94% agreed or strongly agreed that the presentations was clear and understandable;
- 100% agreed or strongly agreed that the speakers were knowledgeable;
- 100% agreed or strongly agreed that the speakers encouraged questions/comments/opinions,
- 94% agreed or strongly agreed that the handout/manual was useful, and
- 91% of the workshop participants agreed or strongly agreed that attending the workshop was worth their time.

Participants were also asked how the workshop could be improved and given the opportunity to provide any other comments. A few participants recommended more time for participants to use and get familiar with the MFD. Others recommended that more examples be reviewed and that the second part of the workshop (i.e., running queries and using the MFD) should be emphasized over the first part (i.e., reviewing the database development and coding). Finally, several participants suggested additional workshop locations, because co-workers were not allowed to attend the workshops due to travel budget constraints.

Appendix A: Workshop Agenda



Agenda

Texas South Coastal Region
Multimodal Freight Database Workshop

Wednesday, November 9th, 2011
Corpus Christi, Texas

10:00	Welcome	Jolanda Prozzi
10:10	Introduction	Jolanda Prozzi
10:30	Database Development and Coding	Migdalia Carrion
11:00	Demonstration: Installation and use	Migdalia Carrion
11:30	Run Queries: Examples	Migdalia Carrion
12:00	Lunch	
1:30	Run Queries: Examples	Migdalia Carrion
2:00	Run Queries: Users	Migdalia Carrion
2:45	Feedback and Input	Jolanda Prozzi
3:00	Workshop Feedback Survey	Jolanda Prozzi

Appendix B:
Workshop Presentations

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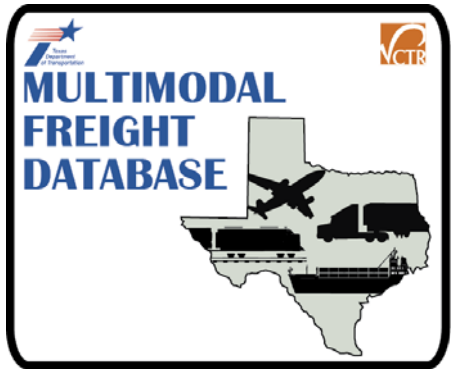
Relational Multimodal Freight Database Workshop

Texas South Coastal Region



Corpus Christi, Texas
November 9th, 2011

Outline

- Study objectives
- Workshop objectives
- Database development and coding
- Software overview
  - Demonstrate installation and use
  - Run a query - example
  - Query exercises
  - Q & A

Study Objectives (TxDOT 0-6297)

- Improve understanding of size, scope, and type of commodities produced, consumed, and moved in Texas
- Gain insight into business and transportation system factors considered by shippers and receivers in making shipping decisions
- Identify and describe factors that impact freight mode competitiveness in Texas

Study Objectives (TxDOT 0-6297)

- Identify and document multimodal freight system trends, needs, and issues in Texas
- Recommend freight policies, strategies, performance measures, and infrastructure improvements for consideration by TxDOT
- Explore interest, feasibility, and requirements for Texas Freight Advisory Committee

Study Objectives (TxDOT 0-6297)

- Gather commodity origin destination data relevant to Texas
  - Develop a Relational Multimodal Freight Database (MFD)
  - Populate the database structure with relevant data from publicly available data sources that could be extracted to facilitate updates to various TxDOT models

Relational Multimodal Freight Database – Advantages

- One “stop-shop” for Texas freight data
- Extracts and consolidates relevant freight data variables from major public databases
- Mapped commodity codes across databases
- User-friendly interface
- Requires minimal computer processing capacity

Study Objectives (TxDOT 5-6297)

- Demonstrate the MFD to key potential TxDOT and MPO users for review and comment
- Demonstrate the MFD to selected FHWA freight leaders
- Finalize the MFD for dissemination to all TxDOT Districts and MPOs

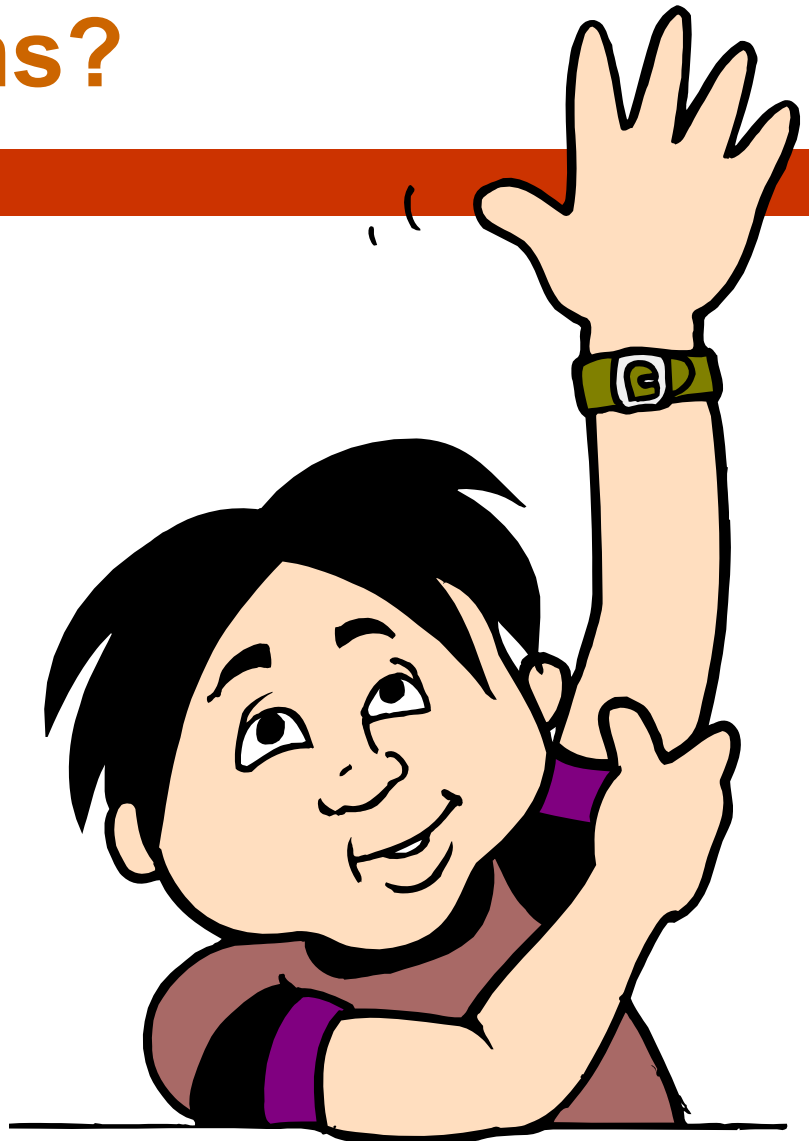
Workshop Objectives

- Provide overview of the Database development
- Demonstrate the installation and use of the MFD
- Provide potential users with the opportunity to conduct a number of data searches

Workshop Objectives

- Gather feedback from the potential users as to their experience using the Database
- Gather feedback as to any improvements that potential users desire

Questions?



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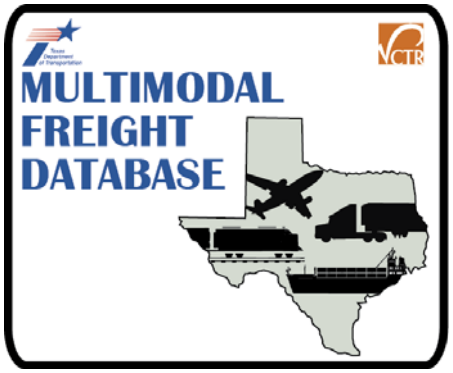
Database Development and Coding



Selection of Variables

- In consultation with TxDOT, the following variables were included in the Multimodal Freight Database:
  - Year
  - Modes of Transportation (Truck, Rail, Air, Water, Intermodal, Pipeline, Unknown)
  - Origin (By Country, State, County)
  - Destination (By Country, State, County)

Selection of Variables

- Port (Port Location by State)
- Commodity Type (STCC at 2-digit level)
- Type of Movement (Export, Import)
- Number of Loads
- Containers (Truck, Rail)
- Value ($U.S.)
- Weight (100,000 lbs)

Selection of Data Sources

- Review Available Databases
  - P2 – State-of-the-Practice in Freight Data: A review of available freight data in the U.S.
    - Reviewed 32 Databases
  - Reviewed past TxDOT research studies
  - CE 392S, Dr. Walton's, Freight Data and Information Sources, Oct 2007

Selection of Data Sources

- Publicly Available Data
  - 22 Public Databases – Data can be downloaded for “free”
  - 2 Databases – Data available on request by federal and state agencies only
  - After review, only 11 of these databases contained all or some of the variable information of interest

Freight Data Sources

- Commodity Flow Survey (CFS)
  - U.S. Census Bureau and the Bureau of Transportation Statistics
  - Shipper-based survey at a national and statewide-level on domestic freight shipments
  - Conducted every 5 years
  - Data collected from 2002 (2007)

Freight Data Sources

- Freight Analysis Framework (FAF)
  - Provided by the FHWA every 5 years
  - An origin-destination database of commodity flows
  - Uses BEA areas to estimate value and weight by commodity and mode
  - Primarily based on CFS and TBR data
  - Data collected from 2002 (2007)

Freight Data Sources

- North American Transborder Freight Data (TBR)
  - Bureau of Transportation Statistics
  - Contains freight flow data by commodity and mode for U.S. exports to and imports from Canada and Mexico
  - Annual Data reported since 1993
  - Data collected from 2008 (June 2011)

Freight Data Sources

- Annual Coal Report (ACR)
  - U.S. Department of Energy
  - Presents information on U.S. coal production, number of mines, prices, etc
  - Reports are published annually by EIA
  - Data collected from 2008 (2009)

Freight Data Sources

- Border Crossing Data (BCD)
  - Bureau of Transportation Statistics
  - Data only reflects the number of vehicles, containers, and passengers entering the US
  - Annual data has been reported since 1995
  - Data collected from 2009 (May 2011)

Freight Data Sources

- Fresh Fruit and Vegetable Shipments by Commodities, States, and Months (FFV)
  - US Department of Agriculture
  - Reports are published annually, 1999-2007
- Maritime Administration Data (MAR)
  - Maritime Administration (DOT)
  - Reports are published annually, 2003-2007

Freight Data Sources

- National Transportation Statistics (NTS)
  - Bureau of Transportation Statistics
  - Presents statistics about the U.S. Transportation System
  - Data updated quarterly, 2004- 2007 (2010)

Freight Data Sources

- USA Trade Data (USA)
  - STAT-USA and Foreign Trade Division of the U.S. Census Bureau
  - U.S. export and import data on more than 18,000 export commodities and 24,000 import commodities
  - Data is published monthly, 2002-2003 (2011)

Freight Data Sources

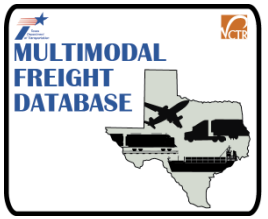
- Waterborne Commerce Statistics of USA (WBN)
  - U.S. Army Corps of Engineers
  - Data on the movement of commodities at U.S. ports and harbors
  - Data is published annually, 2002-2006 (2009)

Freight Data Sources

- Carload Waybill Public Use File (WAY)
  - Surface Transportation Board (DOT)
  - It is a stratified sample of all U.S. rail traffic submitted by rail carriers terminating 4,500 or more revenue carloads annually
  - Data is published annually
  - Data collected from 2003-2007 (2009)

Origin-Destination Data

DATA SOURCE	ORIGIN – DESTINATION OF SHIPMENTS						
	COUNTRY		STATE	PROVINCE	MSA / BEA	COUNTY	PORT LOCATION
	Import	Export					
CFS	-	√	√	-	√*	-	-
TBR	√	√	√	√	-	-	-
MAR*	-	-	√	-	-	-	√
NTS*	-	-	-	-	-	-	√
FAF	√	√	√	√	√*	-	√
USA	-	-	-	-	-	-	√
FFV	-	-	√ (origin)	-	-	-	-
WAY	-	-	√	-	√*	-	-
ACR	-	-	√	-	-	-	-
BCD	-	-	√	-	-	-	√
WBN	√	√	√	√	-	√	-



Mode Data

DATA SOURCE	TRUCK	RAIL	AIR	PIPELINE	WATER	MULTI-MODAL
CFS	√	√	√	√	√	√
TBR	√	√	√	√	√	-
NTS	√	√	-	√	-	-
ACR	-	-	-	-	-	-
FAF	√	√	√	√	√	√
MAR	-	-	-	-	√	-
WBN	-	-	-	-	√	-
USA	-	-	-	-	-	-
WAY	-	√	-	-	-	√
FFV	√	√	√	-	√	√
BCD	√	√	-	-	-	-

Shipment Data

DATA SOURCE	WEIGHT	VALUE	NO. OF SHIPMENTS
CFS	√	√	-
TBR	√	√	-
NTS	-	√	-
ACR	√	-	-
FAF	√	√	-
MAR	-	√	-
WBN	√	-	-
USA	-	√	-
BCD	-	-	√ (Loaded / Empty)
WAY	√	-	√
FFV	√	-	-

Commodity Data

DATA SOURCE	COMMODITY CLASSIFICATION			INDUSTRY CLASSIFICATION	
	HS	SCTG	STCC	SIC	NAICS
CFS	-	√	-	-	√
ACR	-	-	-	-	-
FFV	-	-	-	-	-
FAF		√	-	-	
USA	√	-	-	-	√
WBN	√ *	-	-	-	-
NTS	-	-	-	-	-
MAR	-	-	-	-	-
WAY	-	-	√	-	-
BCD	-	-	-	-	-
TBR	√	-	-	-	-

Database Development – Coding
Commodity

- Excerpt of Mapping of HS, NAICS, SCTG and STCC (Commodity Codes)

	Commodity Type (STCC2)	HS	NAICS	SCTG
1x. Agriculture	01 - Farm Products	01 Live Animals 10 Cereals 11 Milling Products; Malt; Starch; Inulin; Wht Gluten 15 Animal Or Vegetable Fats, Oils Etc. & Waxes	111 Agricultural Products 112 Livestock & Livestock Products	01 Live animals and live fish 1x 02 Cereal grains 03 Other agricultural products 04 Animal feed and products of animal origin, n.e.c.
	08 - Forest Products	06 Live Trees, Plants, Bulbs Etc.; Cut Flowers Etc. 09 Coffee, Tea, Mate & Spices 12 Oil Seeds Etc.; Misc Grain, Seed, Fruit, Plant Etc	113 Forestry Products, Nesoi	
	09 - Fresh Fish and Marine Products	03 Fish, Crustaceans & Aquatic Invertebrates	114 Fish, Fresh/chilled/frozen & Other Marine Products	
2x. Raw Material	10 - Metalic Ores 11 - Coal 13 - Crude Petroleum or Natural Gas 14 - Nonmetallic Minerals	26 Ores, Slag And Ash	327 Nonmetallic Mineral Products	14 Metallic ores and concentrates 15 Coal 16 Crude Petroleum 13 Nonmetallic minerals n.e.c.
3x. Food	20 - Food or Kindred Products	02 - Meat and Edible Meat Offal 04 Dairy Prods; Birds Eggs; Honey; Ed Animal Pr Nesoi 07 Edible Vegetables & Certain Roots & Tubers 08 Edible Fruit & Nuts; Citrus Fruit Or Melon Peel 16 Edible Preparations Of Meat, Fish, Crustaceans Etc 17 Sugars And Sugar Confectionary 18 Cocoa And Cocoa Preparations 19 Prep Cereal, Flour, Starch Or Milk; Bakers Wares 20 Prep Vegetables, Fruit, Nuts Or Other Plant Parts 21 Miscellaneous Edible Preparations 22 Beverages, Spirits And Vinegar	311 Food & Kindred Products	05 Meat, fish, seafood, and their preparations 06 Milled grain products and preparations, and bakery products 07 Other prepared foodstuffs and fats and oils 08 Alcoholic beverages
	21 - Tabacco Products	24 Tobacco And Manufactured Tobacco Substitutes	312 Beverages & Tobacco Products	09 Tobacco products

North American Transborder
Raw Freight Data – Excerpt

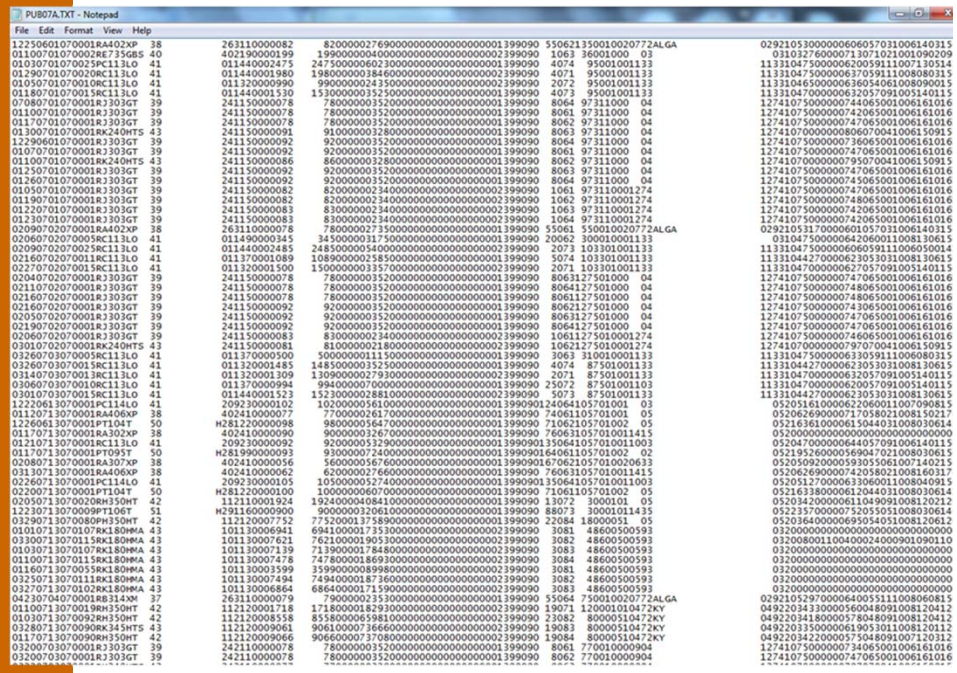
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	TRDTYPE	USASTATE	COMMODITY2	DISAGMOT	MEXSTATE	CANPROV	COUNTRY	DF	CONTCODE	YEAR	VALUE	SHIPWT	FREIGHT_CH
2	1	AK	02	5		XC	1220	1	X	2007	11825.00000	0.00000	398.00000
3	1	AK	02	5	CO		2010	1	0	2007	22000.00000	0.00000	0.00000
4	1	AK	02	5	MX		2010	1	0	2007	8800.00000	0.00000	0.00000
5	1	AK	02	5	TL		2010	1	0	2007	10710.00000	0.00000	0.00000
6	1	AK	02	5	TM		2010	1	0	2007	19600.00000	0.00000	0.00000
7	1	AK	03	1		XB	1220	1	X	2007	9117961.00000	4103071.00000	128198.00000
8	1	AK	03	1		XW	1220	1	X	2007	2338166.00000	668186.00000	43063.00000
9	1	AK	03	1	XX		2010	1	1	2007	871719.00000	240714.00000	0.00000
10	1	AK	03	3		XC	1220	1	X	2007	1007707.00000	81941.00000	44151.00000
11	1	AK	03	3		XC	1220	2	X	2007	19337.00000	1644.00000	376.00000
12	1	AK	03	3		XO	1220	1	X	2007	5655.00000	976.00000	489.00000
13	1	AK	03	3		XQ	1220	1	X	2007	5473.00000	1000.00000	461.00000
14	1	AK	03	5		XC	1220	1	X	2007	1869		
15	1	AK	03	5		XC	1220	2	X	2007			
16	1	AK	03	5		XO	1220	1	X	2007	3		
17	1	AK	03	5		XY	1220	1	X	2007	5065		
18	1	AK	03	8		XC	1220	1	X	2007			
19	1	AK	05	3		XC	1220	1	X	2007			
20	1	AK	05	3		XO	1220	1	X	2007			
21	1	AK	05	5		XC	1220	1	X	2007			
22	1	AK	05	5		XY	1220	1	X	2007			
23	1	AK	10	5		XM	1220	1	X	2007	2		
24	1	AK	10	5		XO	1220	1	X	2007			
25	1	AK	10	6		XA	1220	1	X	2007	10		
26	1	AK	16	3		XC	1220	1	X	2007			
27	1	AK	16	5		XC	1220	1	X	2007	13		
28	1	AK	19	5	MX		2010	1	0	2007	2		
29	1	AK	21	5		XC	1220	1	X	2007			
30	1	AK	21	8		XC	1220	1	X	2007			
31	1	AK	22	5		XC	1220	1	X	2007	17		
32	1	AK	23	5		XC	1220	1	X	2007	5		
33	1	AK	23	5		XO	1220	1	X	2007	3		

DOT2_07

Table 1: U.S. Trade with State and Port Detail

Field Name	Data Element	Description	Type	Width
CANPROV	Canadian Province of Origin or Destination	Standard Canadian province postal abbreviation	Character	2
CHARGES	Aggregate Charges	Aggregate shipping charges on imports, in U.S. $	Numeric	11
CONTCODE	Container Code	Distinguishes whether the merchandise is containerized "1" = containerized shipment	Character	1
COUNTRY	Country of Origin or Destination	"2010" to denote Mexico or "1220" to denote Canada	Character	4
DEPE	District and Port of Entry or Export	Four-digit classification of U.S. Customs districts and ports	Character	4
DF	Domestic/Foreign Code	Distinguishes whether the Code merchandise was produced in the U.S.; "1" = domestically produced merchandise, "2" = foreign produced merchandise	Character	1
DISAGMOT	Disaggregated MOT	Method of transportation by which the commodities are exported; "1" = air, "3" = vessel, "4" = mail, "5" = truck, "6" = rail, "7" = pipeline, "8" = other (including unknown), "9" = imports into Foreign Trade Zones	Character	1
FREIGHT	Freight Costs	to the consignee in Canada or Mexico, in U.S. $	Numeric	11
MEXSTATE	Mexican State of Destination	Standard Mexican state postal abbreviation	Character	2
SHIPWT	Shipping Weight	Commodity weight in kilograms	Numeric	11

Carload Waybill PUF
Raw Freight Data – Excerpt



2007 PUBLIC USE WAYBILL FILE
247-byte Record
Data Element Descriptions

1. Waybill Date (Month, Day, Year) (6 digit numeric)

   The waybill date is the date on which the originating railroad prepares the waybill.

2. Accounting Period (Month, Year) (4 digit numeric)

   The accounting period is the month and year during which the study waybill is entered into the railroad's revenue accounting system. This information is subsequently reflected in the net income statement of the company for the specified account month.

3. Number of Carloads (4 digit numeric)

   The total number of carloads on the sampled waybill.

4. Car Ownership Code (1 character alpha)

   (P) Privately-owned car
   (R) Railroad-owned car
   (T) Trailer Train owned car

5. AAR Car Type (4 character alpha-numeric)

   Alpha-numeric code giving a general physical description of the type of car. (Refer to Section VI, Exhibit D. of the UMLER Specification Manual.)

Database Development – Coding
Origin/Destination/Ports

LOCN_ID	CTRY_NM	LOCN_NM
1000	USA	Alabama
2000	USA	Alaska
4000	USA	Arizona
5000	USA	Arkansas
6000	USA	California
8000	USA	Colorado
9000	USA	Connecticut
10000	USA	Delaware
11000	USA	District Of Columbia
12000	USA	Florida
13000	USA	Georgia
15000	USA	Hawaii
16000	USA	Idaho
17000	USA	Illinois
18000	USA	Indiana
19000	USA	Iowa
20000	USA	Kansas
21000	USA	Kentucky
22000	USA	Louisiana
23000	USA	Maine
24000	USA	Maryland
25000	USA	Massachusetts
26000	USA	Michigan
27000	USA	Minnesota
28000	USA	Mississippi
29000	USA	Missouri
30000	USA	Montana

LOCN_ID	CTRY_NM	LOCN_NM
48000	USA	Texas - All
48001	USA	Texas - Anderson
48003	USA	Texas - Andrews
48005	USA	Texas - Angelina
48007	USA	Texas - Aransas
48009	USA	Texas - Archer
48011	USA	Texas - Armstrong
48013	USA	Texas - Atascosa
48015	USA	Texas - Austin
48017	USA	Texas - Bailey
48019	USA	Texas - Bandera
48021	USA	Texas - Bastrop
48023	USA	Texas - Baylor
48025	USA	Texas - Bee
48027	USA	Texas - Bell
48029	USA	Texas - Bexar
48031	USA	Texas - Blanco
48033	USA	Texas - Borden
48035	USA	Texas - Bosque
48037	USA	Texas - Bowie
48039	USA	Texas - Brazoria
48041	USA	Texas - Brazos
48043	USA	Texas - Brewster
48045	USA	Texas - Briscoe
48047	USA	Texas - Brooks
48049	USA	Texas - Brown
48051	USA	Texas - Burleson

PortsID	PORTS_NM
2101	PORT ARTHUR, TX
2102	SABINE, TX
2103	ORANGE, TX
2104	BEAUMONT, TX
2301	BROWNSVILLE, TX
2302	DEL RIO, TX
2303	EAGLE PASS, TX
2304	LAREDO, TX
2305	HIDALGO, PHARR, TX
2306	BROWNSVILLE/HIDALGO, TX
2307	RIO GRANDE CITY, TX
2309	PROGRESO, TX
2310	ROMA, TX
2381	EDINBERG USER FEE AIRPORT
2402	EL PASO, TX
2403	PRESIDIO, TX
2404	FABENS, TX
2406	COLUMBUS, NM
2407	ALBUQUERQUE, NM
2408	SANTA TERESA, NM
2481	SANTA TERESA AIRPORT
2501	SAN DIEGO, CA
2502	ANDRADE, CA
2503	CALEXICO, CA
2504	SAN YSIDRO

Database Development – Coding
Mode of Transportation

ModesID	Modes_NM
1	Water
2	Air
3	Truck
4	Pipeline
5	Rail
6	Rail Piggyback
7	Unknown
8	Multimodal
9	No Data Provid
11	Water Tank
12	Water Vessel
21	Air Mail
31	Truck & Water
32	Truck & Air
35	Truck & Rail
51	Rail & Water

Database Development – Coding
Shipment

- Values in $US Dollars
- Weight in 100,000 lbs
- Distinguished between types of movements:

TRDTypeID	Movement_Type
1	Export
2	Imports
3	Imported and Exported
4	Neither Import nor export
5	Unknown

Database Development – Coding
Commodity

CommodityID	COMMODITY_NM
1	Farm Products
8	Forest Products
9	Fresh Fish and Marine Products
10	Metalic Ores
11	Coal
13	Crude Petroleum or Natural Gas
14	Nonmetallic Minerals
19	Ordnance or Accessories
20	Food or Kindred Products
21	Tabacco Products
22	Textile Mill Products
23	Apparel or Related Products
24	Lumber or Wood Products
25	Furniture or Fixtures
26	Pulp, Paper or Allied Products
27	Printed Matter
28	Chemicals or Allied Products
29	Petroleum or Coal Products
30	Rubber or Miscellaneous Plastic Products

CommodityID	COMMODITY_NM
30	Rubber or Miscellaneous Plastic Products
31	Leather or Leather Products
32	Clay, Concrete, Glass or Stone
33	Primary Metal Products
34	Fabricated Metals Products
35	Machinery
36	Electrical Equipment
37	Transportation Equipment
38	Instruments, Photo and Optimal Equip.
39	Misc. Manufactured Products
40	Waste or Scrap Materials
41	Misc. Freight Shipments
42	Shipping Containers
43	Mail or Contract Traffic
44	Freight Forwarder Traffic
45	Shipper Association Traffic
46	Misc. Mixed Shipments
47	Small Packaged Freight Shipments
48	Waste Hazardous Materials
49	Hazardous Materials or Substances
50	Secondary Traffic
70	Unknown

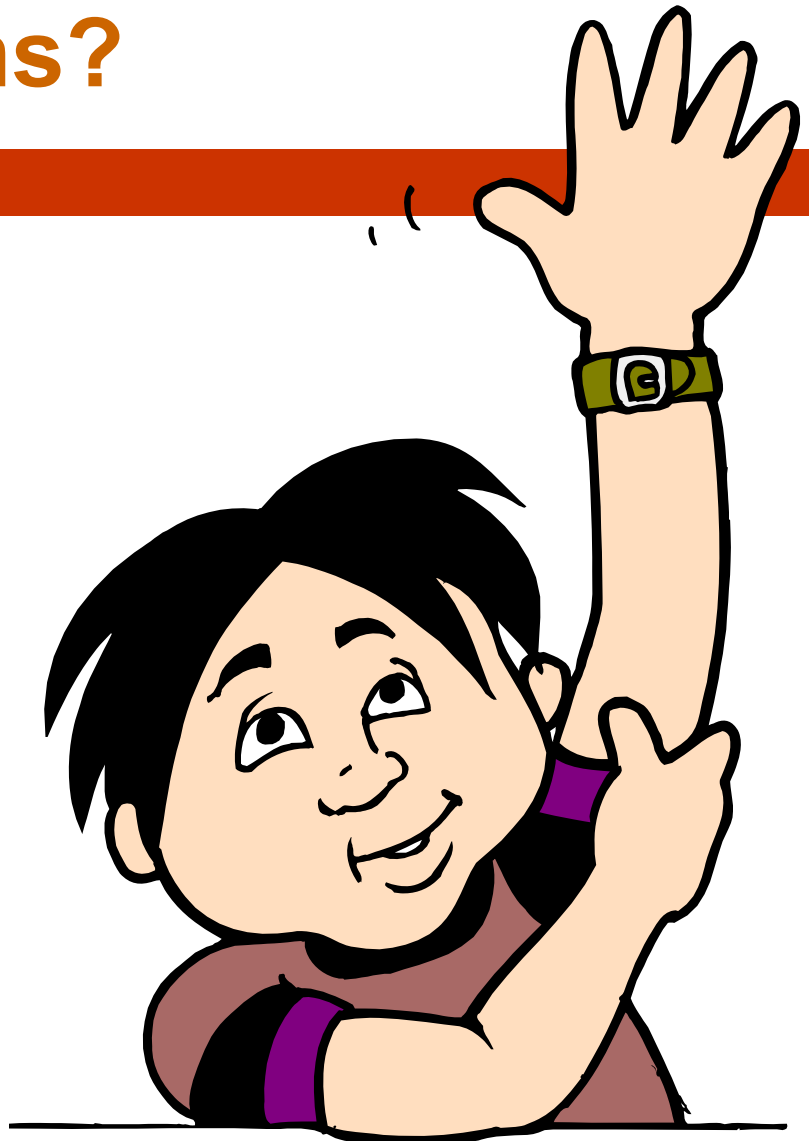
Example of Database - Coded

DATABASE	YR	MODES	COMMODITY	TRDTYPE	ORIGIN	DESTINATION	WEIGHT	NUM_LD
Carload Waybill Public Use File	2003	7	29	3	48000	42000	1.56	1
Carload Waybill Public Use File	2003	7	28	3	48000	42000	1.7	1
Carload Waybill Public Use File	2003	7	29	3	48000	233000	1.5	1
Carload Waybill Public Use File	2003	7	28	3	48000	233000	1.88	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.82	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.68	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.68	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.68	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	2.78	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.62	1
Carload Waybill Public Use File	2003	7	40	3	17000	48000	1.06	1
Carload Waybill Public Use File	2003	7	40	3	17000	48000	1.1	1
Carload Waybill Public Use File	2003	7	40	3	55000	48000	1.42	1
Carload Waybill Public Use File	2003	7	40	3	233000	48000	1.1	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.4	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.4	1
Carload Waybill Public Use File	2003	7	40	3	233000	48000	1.08	1
Carload Waybill Public Use File	2003	7	40	3	55000	48000	1.4	1
Carload Waybill Public Use File	2003	7	11	3	27000	48000	49.5	25
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.64	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.82	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.68	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.68	1
Carload Waybill Public Use File	2003	7	24	3	48000	233000	1.74	1

Database Development – Software

- Microsoft Access
  - Wizards Access
  - Developed in Visual Basic
  - Forms, Queries, and Report format
- Provide a User-Interface
  - Option to search by specific database
  - Option to search by selected freight variables

Questions?



Software Overview

- Demonstrate installation
- Illustrate software features
- Run a query – example
- Query exercises
- Q & A
- Feedback Survey

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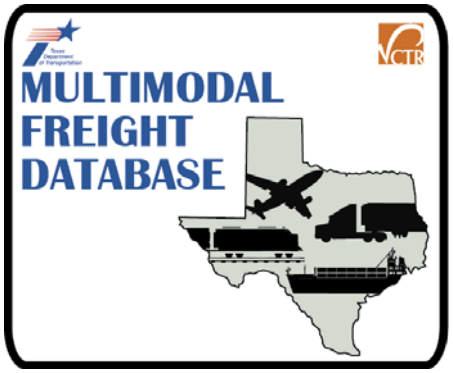
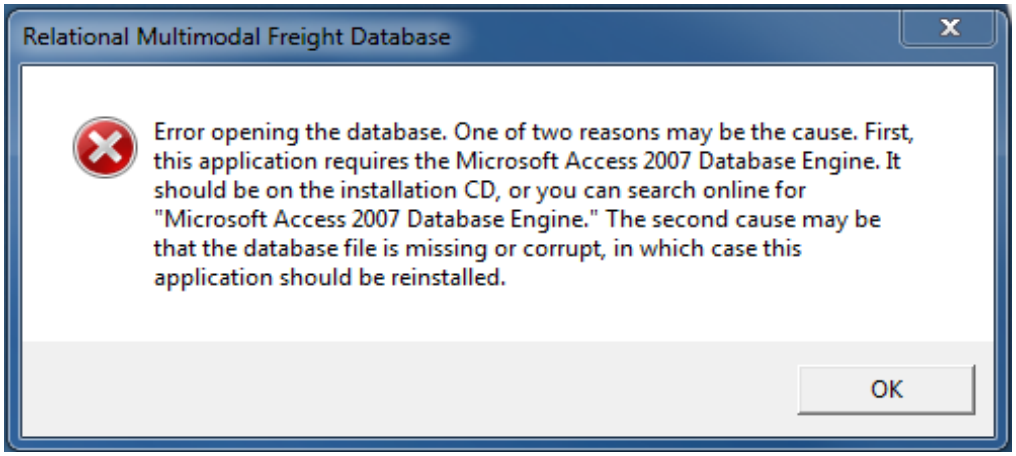
Installation and Use



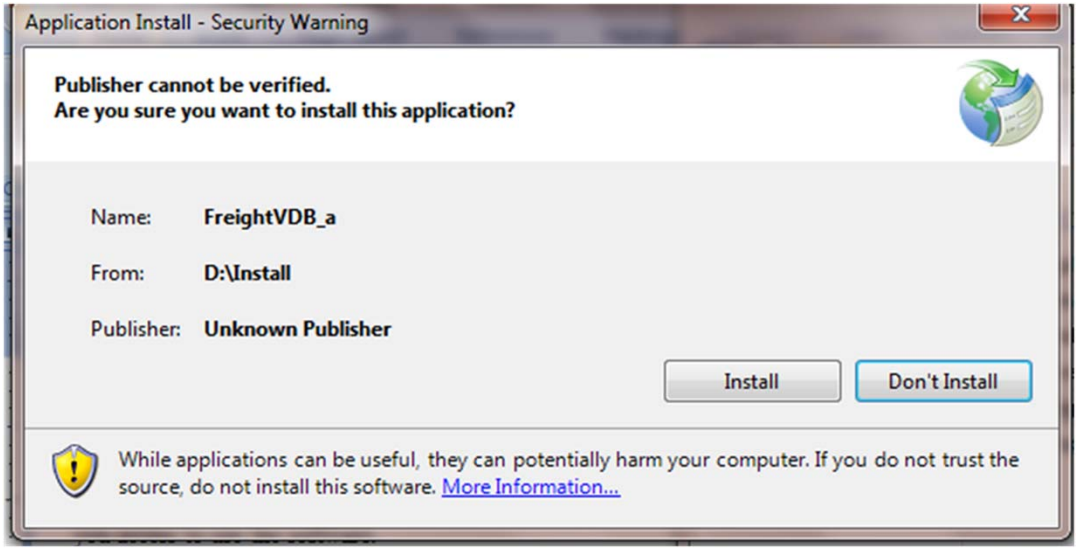
Installing the Software

- Enter the CD into the CD-ROM drive
  - Microsoft Access 2007 is the software platform
  - If the computer does not have Microsoft Access 2007 installed an attempt will be made to install the necessary engine automatically



Installing the Software

- Automatic Installation
  - Insert disc into the CD-ROM drive
  - A message box will appear



Installing the Software

- Manual Installation
  1) Go to Start
  2) Click ***My Computer***
  3) Click ***TxDOT_RMFDB***
  4) Double click on ***Setup.exe***
  5) A message box will appear: Click ***Install***

Installing the Software

- Upon installation, the ***Welcome to the Relational Multimodal Freight Database*** screen will appear

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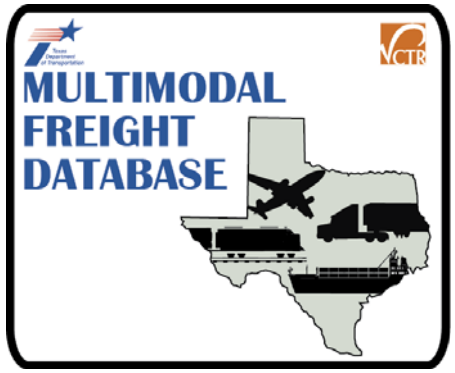
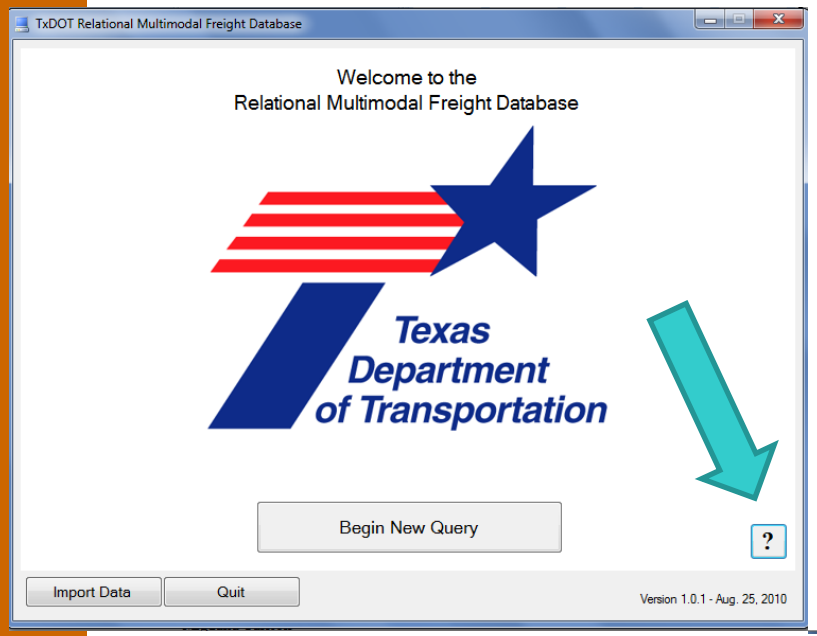
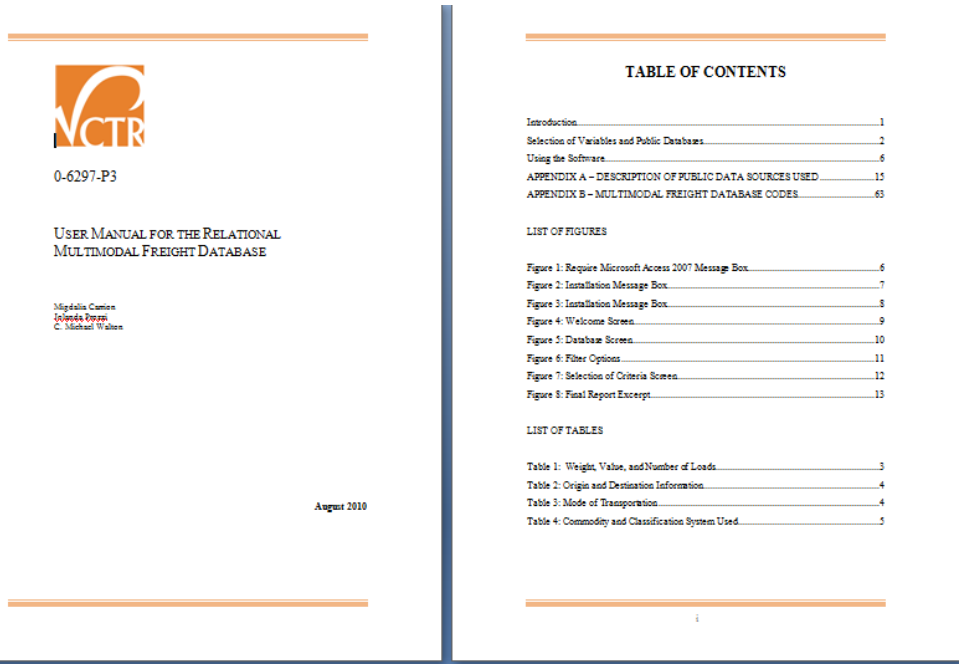
Software Features



Software Features





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USER MANUAL FOR THE RELATIONAL MULTIMODAL FREIGHT DATABASE

August 2010

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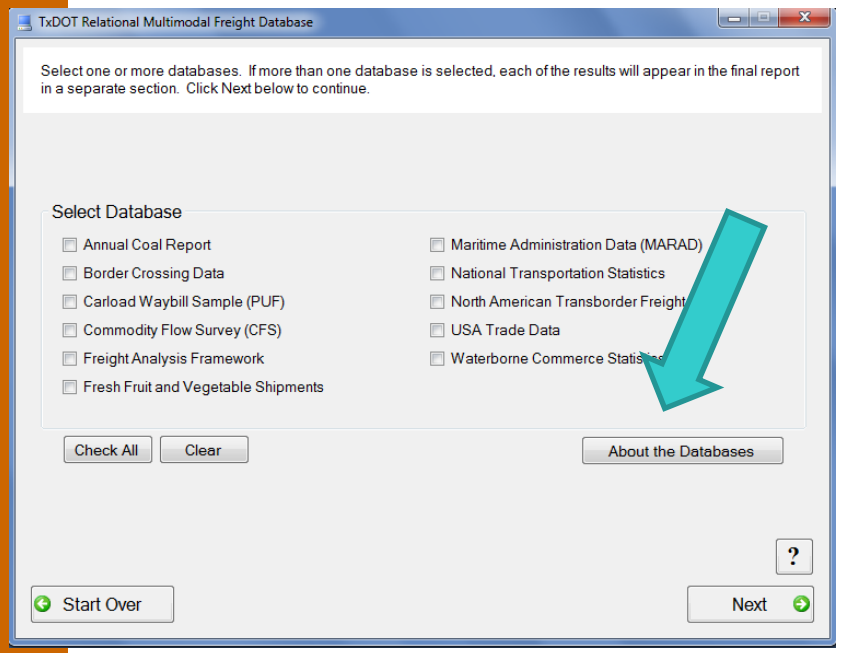
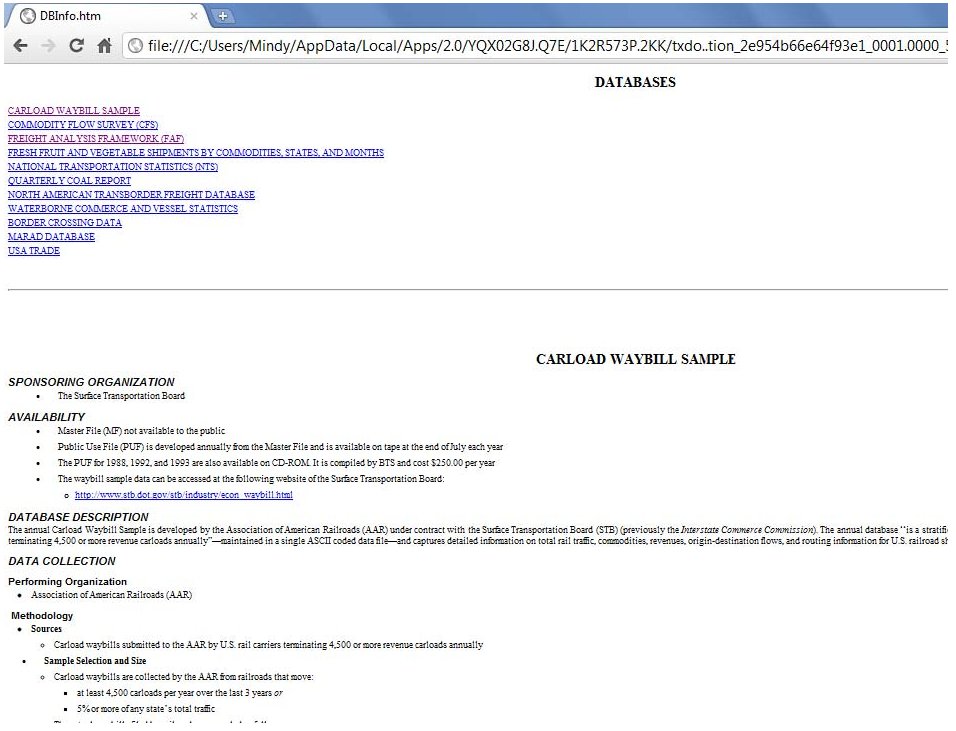
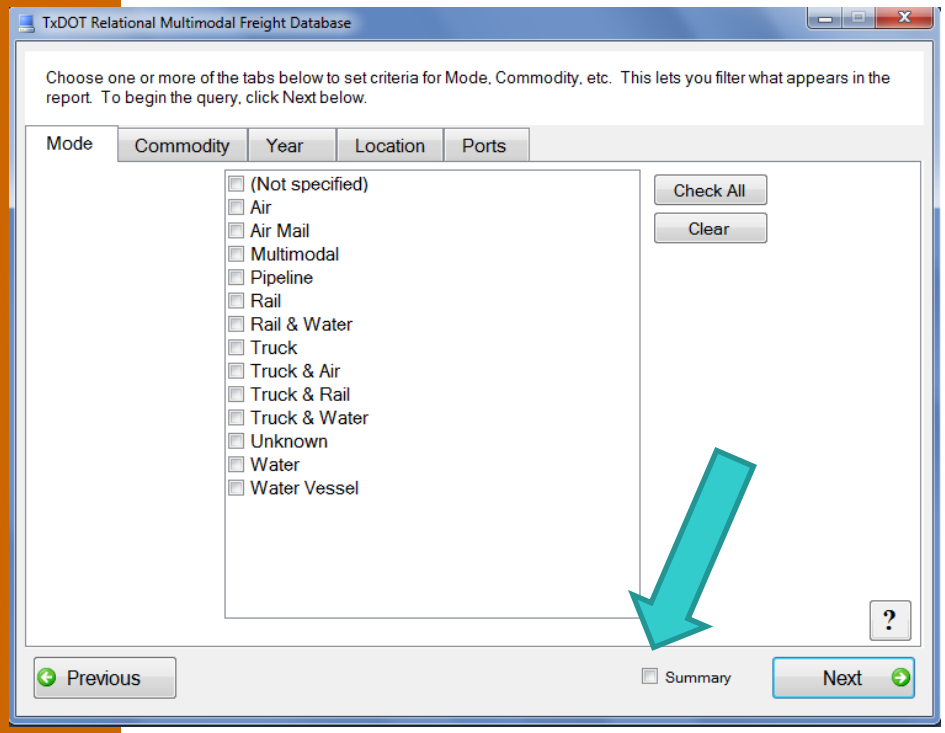
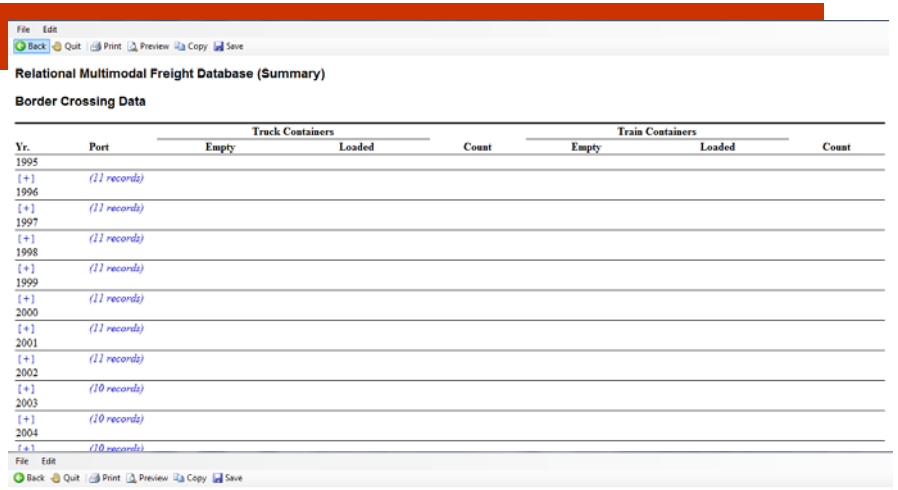




Software Features





File Edit

Back Quit Print Preview Copy Save

Relational Multimodal Freight Database (Summary)

Border Crossing Data

Yr.	Port	Truck Containers Empty	Truck Containers Loaded	Truck Containers Count	Train Containers Empty	Train Containers Loaded	Train Containers Count
1995							
[+]	*(11 records)*						
1996							
[+]	*(11 records)*						
1997							
[+]	*(11 records)*						
1998							
[+]	*(11 records)*						
1999							
[+]	*(11 records)*						
2000							
[+]	*(11 records)*						
2001							
[+]	*(11 records)*						
2002							
[+]	*(10 records)*						
2003							
[+]	*(10 records)*						
2004							
[+]	*(10 records)*						

File Edit

Back Quit Print Preview Copy Save

Relational Multimodal Freight Database

Border Crossing Data

Yr.	Port	Truck Containers Empty	Truck Containers Loaded	Truck Containers Count	Train Containers Empty	Train Containers Loaded	Train Containers Count
1995							
	BROWNSVILLE, TX			223,689			631
	DEL RIO, TX			37,431			
	EAGLE PASS, TX			53,026			1,180
	EL PASO, TX			606,742			1,431
	FABENS, TX			249			
	HIDALGO, PHARR, TX			177,459			
	LAREDO, TX			747,241			4,925
	PRESIDIO, TX			4,328			101
	PROGRESO, TX			20,838			
	RIO GRANDE CITY, TX			12,668			
	ROMA, TX			11,300			
	TOTAL:	**0**	**0**	**1,894,971**	**0**	**0**	**8,268**
1996							
	BROWNSVILLE, TX	111,788	113,868	226,367	39,248	11,640	726
	DEL RIO, TX	9,437	28,053	39,720			
	EAGLE PASS, TX	21,234	34,582	57,622	23,740	37,820	1,334
	EL PASO, TX	287,479	280,867	556,134	13,657	8,208	780
	FABENS, TX			136			
	HIDALGO, PHARR, TX	42,448	93,660	205,028			267
	LAREDO, TX	404,771	563,145	1,015,905	46,700	69,204	3,206
	PRESIDIO, TX	1,010	2,018	3,102	854	698	152
	PROGRESO, TX	15,362	8,142	23,521			
	RIO GRANDE CITY, TX	3,155	9,284	14,084			
	ROMA, TX	7,395	5,207	12,751			
	TOTAL:	**904,079**	**1,138,826**	**2,154,370**	**124,199**	**127,570**	**6,465**

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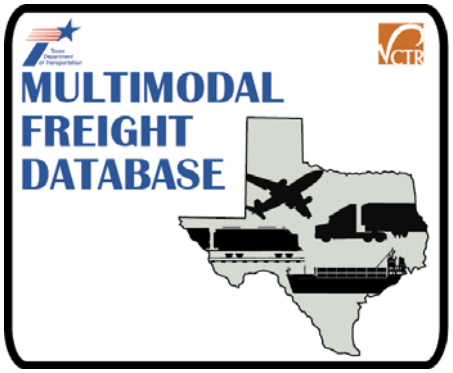
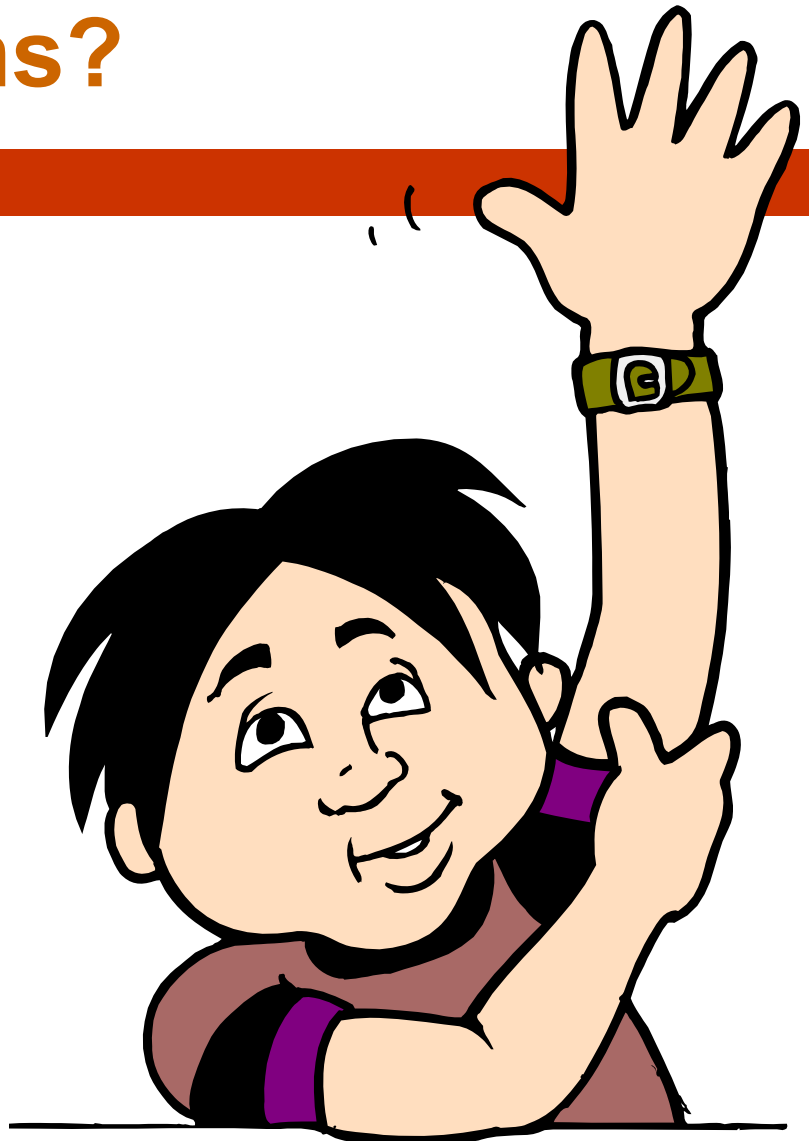
Run a Query – Example



Questions?



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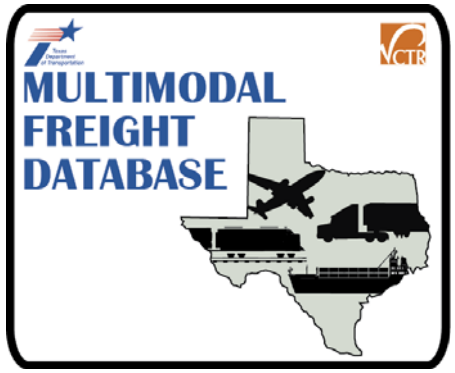
Lunch Break
See you back at 1:30PM!



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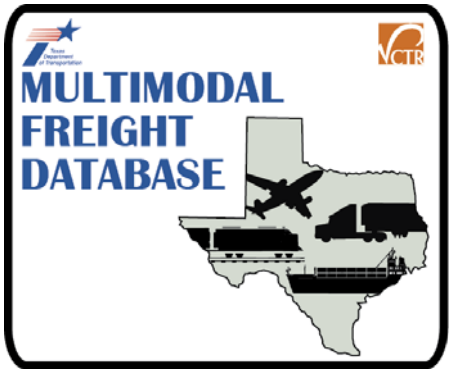
Run a Query – Example



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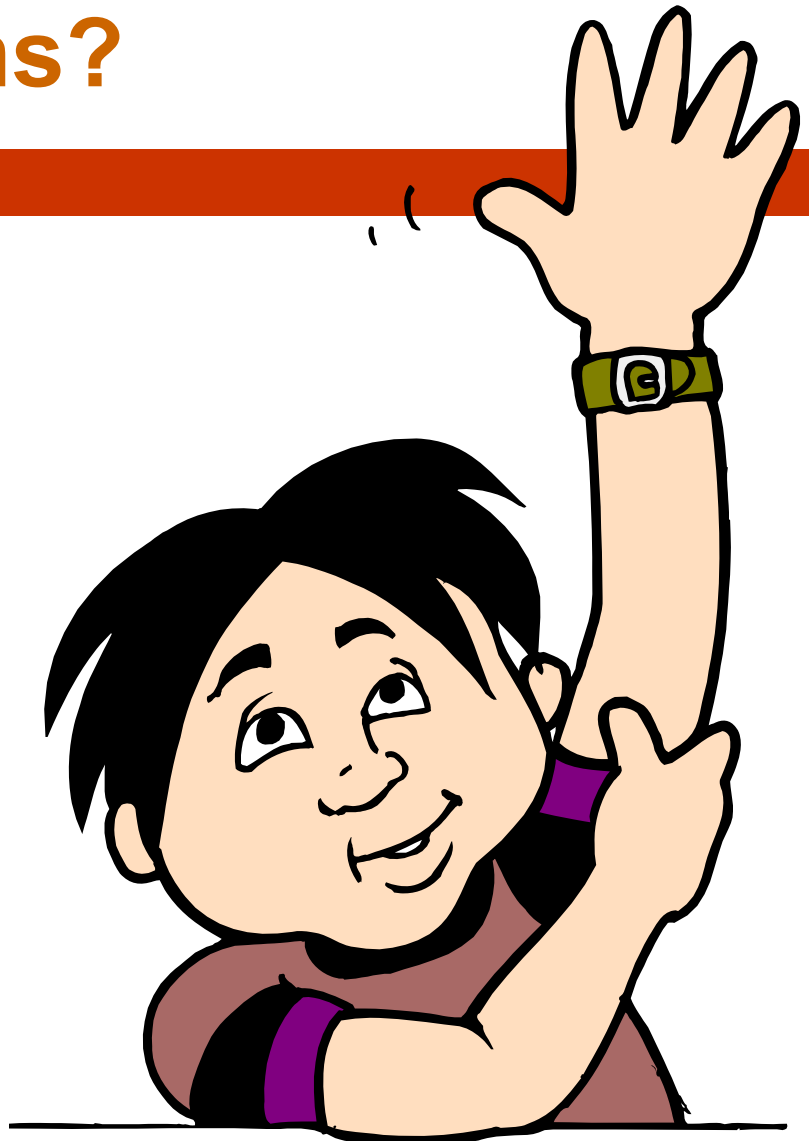

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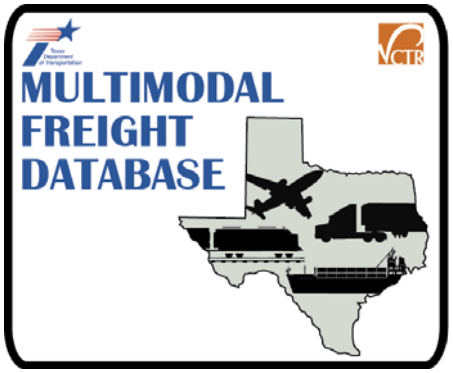
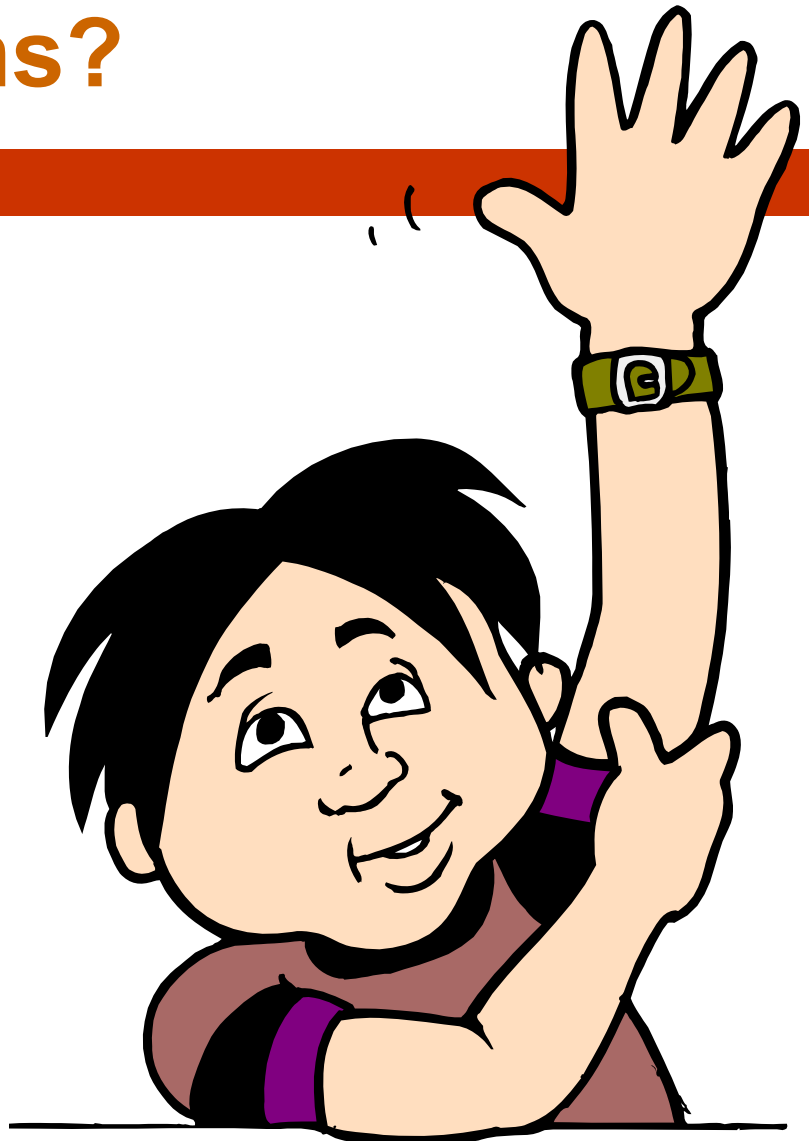
"Challenges"/Exercises



Questions?



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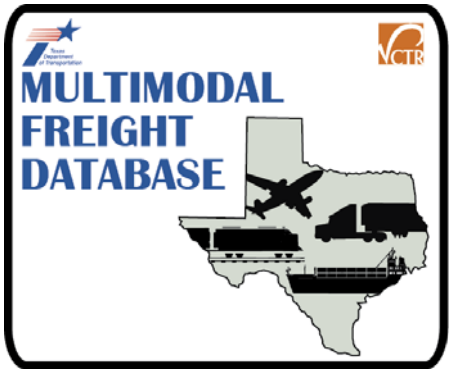
Q & A



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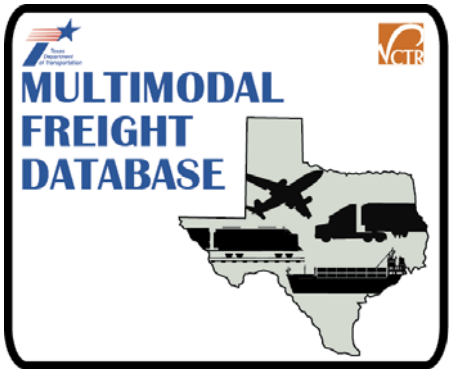
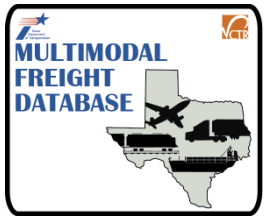
Feedback Survey





THANK YOU SO MUCH FOR YOUR PARTICIPATION!

Appendix C: Abbreviations and Definitions

Abbreviations / Definitions

Multimodal Freight Database Workshop

Databases

MFD	Multimodal Freight Database
CFS	Commodity Flow Survey
FAF	Freight Analysis Framework
TBR	North American Transborder Freight Data
ACR	Annual Coal Report
BCD	Border Crossing Data
FFV	Fresh, Fruit, and Vegetable Shipments by Commodities, State, and Months
MAR	Maritime Administration Data
NTS	National Transportation Statistics
USA	USA Trade Data
WBN	Waterborne Commerce Statistics of USA
WAY	Carload Waybill Public Use File

Agencies

DOT	U.S. Department of Transportation
TxDOT	Texas Department of Transportation
MPO	Metropolitan Planning Organization
FHWA	Federal Highway Administration
DoC	U.S. Department of Commerce
AAR	Association of American Railroads
EIA	U.S. Energy Information Administration
BTS	Bureau of Transportation Statistics

Others

STCC	Standard Transportation Commodity Code
SCTG	Standard Classification of Transported Goods
NAICS	North American Industry Classification System
BEA Areas	Bureau of Economic Analysis (BEA) economic areas define the relevant regional markets surrounding metropolitan or micropolitan statistical areas.
MSA	Metropolitan Statistical Areas – The U.S. Office of Management and Budget delineate MSA on the basis of a central urban area or urban cluster—a contiguous area of relatively high population density.

Appendix D: Challenges/Exercises

Challenges / Exercises

South Coastal Region Workshop

Corpus Christi, Texas

Wednesday, November 9th, 2011

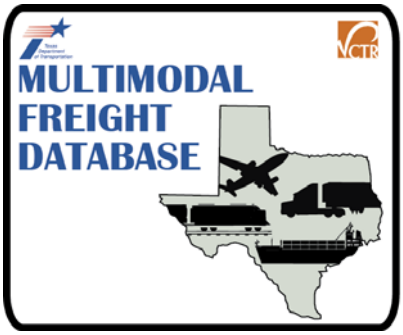
1. **How much farm-related (in weight) products passed through Houston by truck in 2002?**

2. **How much machinery (in weight and value) was exported from Texas through the Port of Corpus Christi in 2002?**

3. **Which Databases provide shipment information for Hazardous Material-related commodities?**

4. **How much freight (in value) was exported from Texas in 2000?**

Appendix E:
MFD Feedback



Q & A
South Coastal Region Workshop

Corpus Christi, Texas
Wednesday, November 9th, 2011

1. Are there any other data that should be included in the Database?

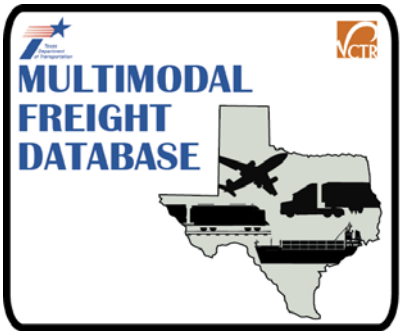
2. Thinking of the Database's interface, how user-friendly do you feel it is? How can the interface be improved?

3. Are the level of detail that is included in the database sufficient with regards to
   - Origins and Destinations?
   - Commodities?
   - Other variable(s)?

4. Would a national Database like this one, be more useful for your work?

5. Other comments?

Appendix F: Workshop Feedback and Comments



Feedback/Comment
South Coastal Region Workshop

Corpus Christi, Texas
Wednesday, November 9th, 2011

1. Please give us your opinion regarding this Workshop. Your comments will help us improve future workshops. Please mark the box that corresponds with your level of agreement with each statement with an "X".

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
The workshop was well organized						
The workshop was the right length						
The presentation(s) was clear and understandable						
The speaker(s) were knowledgeable						
The speaker(s) encouraged questions/comments/opinions						
The handout/manual was useful						
I feel this workshop was worth my time						

3. How can the workshop be improved?

4. Any other comments?