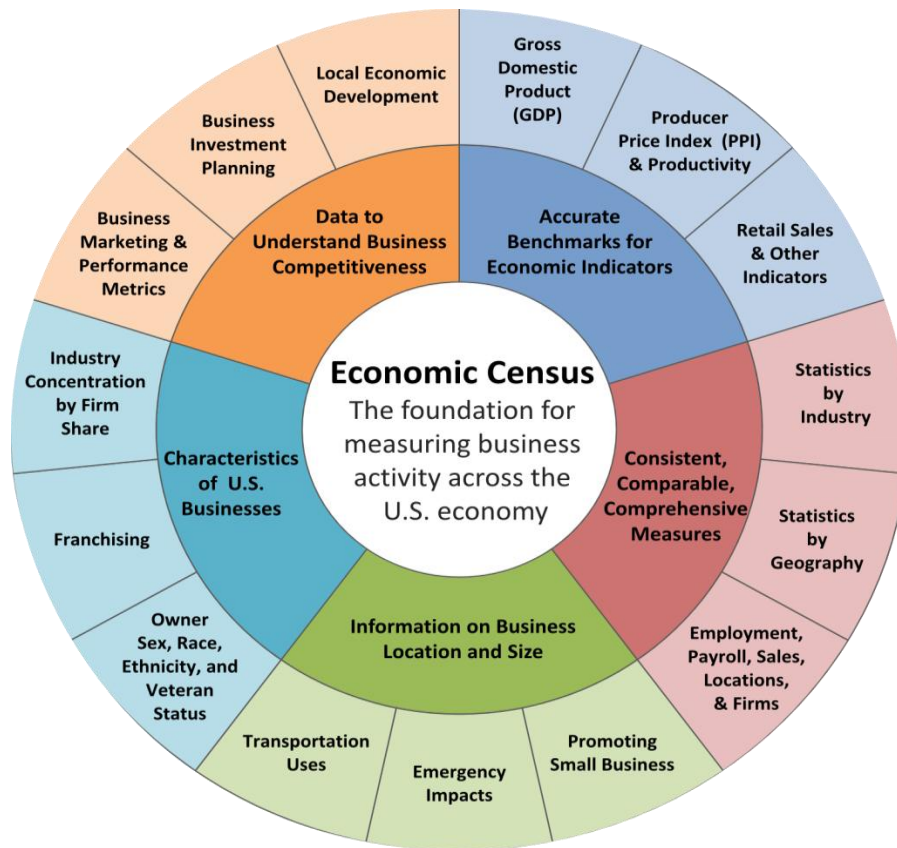


**The Economic Census: Uses for the Transportation
Community Workshop
July 17, 2012
Washington, D.C.**

Workshop Proceedings

January 2013



**The Economic Census: Uses for the Transportation Community Workshop
Workshop Proceedings**

July 17, 2012
The National Academies Building
of the National Academy of Sciences
Washington, D.C.

Organized by

Transportation Research Board
of the National Academies

Sponsored By
U.S. Department of Transportation,
Research and Innovative Technology Administration
Texas A&M Transportation Institute,
Transportation Economics Center

**Completion of the Workshop Proceedings was Supported
by the Transportation Economics Center**

Rapporteur

Katherine F. Turnbull

Texas A&M Transportation Institute
The Texas A&M University System

Typing and Editorial Assistance

Bonnie Duke
Gary Lobaugh

Texas A&M Transportation Institute
The Texas A&M University System

The Economic Census: Uses for the Transportation Community Workshop

Workshop/Planning Committee

Katherine F. Turnbull, Texas A&M Transportation Institute, Chair
Shirin Anne Ahmed, U.S. Census Bureau
Thomas J. Kane, Thomas J. Kane Consulting
Mark Burris, Texas A&M Transportation Institute
Donald Ludlow, Cambridge Systematics, Inc.
Steven E. Polzin, University of South Florida
Rolf Schmitt, Federal Highway Administration
Joy Sharp, Bureau of Transportation Statistics
Thomas Bolle, Research Innovative Technology Administration (RITA)

TRB Staff

Tom Parlmerlee
Matt Miller

Table of Contents

	Page
Opening Session – Introduction to the Economic Census	1
Workshop Welcome.....	1
Overview of the Economic Census.....	2
Transportation Statistics in the Economic Census and Other Data Programs	4
Demonstration of the New American FactFinder	8
Current and Potential Transportation Uses of the Economic Census	11
Transportation Uses of the Economic Census	11
Examples of Transportation Uses of the Economic Census	12
Additional Perspectives on Transportation Uses of the Economic Census	18
Highlights from the Discussion Groups and Building a Community	19
Closing Summary.....	19
Transportation Economic Analysis Discussion Group Summary	19
Transportation and Economic Development Discussion Group Summary	20
Current and Potential Transportation Uses of the Economic Census Discussion Group Summary.....	21
Enhancing the Economic Census for Transportation Uses Discussion Group Summary	22
Integrating the Economic Census with other Data Discussion Group Summary	23
Building a Community for Uses of the Economic Census and Follow-Up Activities	23
APPENDIX A – LIST OF PARTICIPANTS	25

LIST OF TABLES

Table 1. Current and Potential Transportation Applications of the Economic Census.	13
---	----

LIST OF FIGURES

Figure 1. Timeline of 2012 Economic Census Activities.	3
Figure 2. American FactFinder Homepage.....	9
Figure 3. Food Manufacturing Transported by Truck in 2007.	10
Figure 4. Washington D.C. Metropolitan Area Top Tonnage Inbound Flows (2007).	14
Figure 5. Washington D.C. Metropolitan Area Top Value Inbound Flows (2007).	14
Figure 6. Major U.S. Distribution Centers.....	15
Figure 8. Specialized Industry Cluster Analysis – Cheese Processing and U.S. Interstates.....	16
Figure 9. Carpet Supply Chain Depiction – Production Components.	17
Figure 10. Transportation System and Manufacturing Clusters in Maryland.	17

Opening Session – Introduction to the Economic Census

Joy Sharp, Bureau of Transportation Statistics, Moderator

Speakers in the opening session provided an overview of the workshop and the Economic Census. A demonstration of the U.S. Census Bureau on-line tool, American FactFinder (AFF2), was provided.

Workshop Welcome

Katie Turnbull, Texas A&M Transportation Institute

Katie Turnbull welcomed participants to the workshop – The Economic Census: Uses for the Transportation Community. She recognized and thanked the Transportation Research Board (TRB), the co-sponsors, and the workshop planning committee. She also reviewed the objectives of the workshop and the workshop program. Katie covered the following points in her presentation.

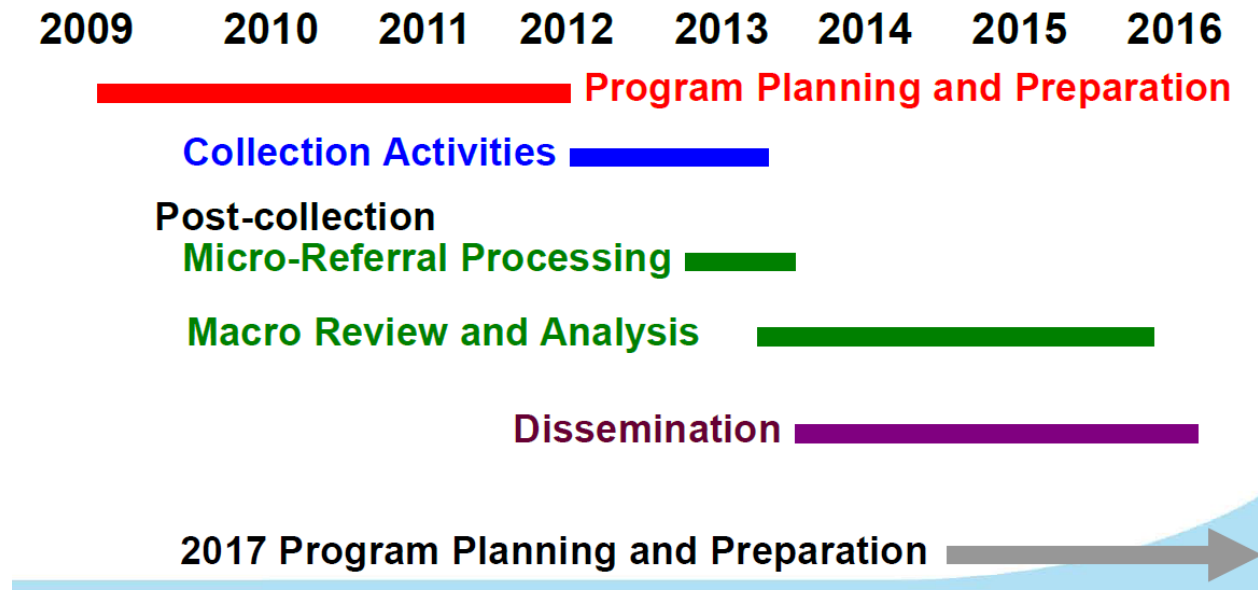
- The workshop sponsors included TRB, the Research and Innovative Technology Administration (RITA) of the U.S Department of Transportation (U.S. DOT), and the Transportation Economics Center (TEC) at the Texas A&M Transportation Institute (TTI). Katie thanked members of the planning committee for their hard work in organizing the workshop. She also recognized and thanked TRB staff members Tom Palmerlee and Matt Miller for their assistance.
- The workshop builds on a session at the 2012 TRB Annual meeting focusing on the Economic Census. It also builds on recent conferences sponsored by TRB addressing the need for good data for good decision making. Recent conferences have examined Census data, the National Household Travel Survey (NHTS), and freight data.
- A major objective of the workshop was to develop awareness and use of the Economic Census among transportation professionals at the federal, state, regional, and local levels. Other objectives include identifying follow-up activities to support the sharing of information on the experience and use of the Economic Census and documenting the value of the Economic Census for the transportation community.
- The workshop includes general sessions and a breakout discussion session. The first session features speakers from the U.S. Census Bureau providing an overview of the Economic Census, discussing the transportation statistics in the Economic Census and other data programs, and demonstrating the use of the American FactFinder on-line tool. The second general session includes speakers describing current and potential transportation uses of the Economic Census. Over lunch, participants are able to self-select breakout sessions to attend. The five breakout sessions are transportation economic analysis, transportation and economic development, freight and international trade, enhancing the Economic Census for transportation uses, and integrating the Economic Census with other data. The closing general session includes summaries from the breakout groups and closing comments from the workshop sponsors.

Overview of the Economic Census

Shirin Ahmed, U.S. Census Bureau

Shirin Ahmed provided an overview of the Economic Census. She described the background, scope and coverage, and unique role of the Economic Census. She also discussed the objectives, timeline, process, and data products for the 2012 Economic Census. Shirin covered the following topics in her presentation.

- The Economic Census is the foundation for measuring business activity across the U.S. economy. Reliable business statistics from the Economic Census are critical to evaluating the condition of the American economy. The Economic Census is conducted every five years, in years ending in 2 and 7. It covers more than 28 million establishments, including approximately 7.4 million employer businesses and 21.1 million non-employer businesses. The Economic Census forms are sent to less than 20 percent of businesses. Administrative records are used for very small businesses and all non-employer businesses.
- The Economic Census has a broad scope and coverage. Economic Census programs cover minerals, construction, manufacturing, wholesale, retail and accommodations, service industries, transportation, communication, utilities, and finance, insurance and real estate services. It includes the Survey of Business Owners, the Business Expenses Survey, and the Economic Census of Puerto Rico, Guam, Virgin Islands, Commonwealth of the Northern Mariana Islands, and American Samoa. The Bureau of Transportation Statistics (BTS) conducts the Commodity Flow Survey, which is part of the Economic Census. The Economic Census covers data for 1000 industries, 13,000 goods and services products, and 15,000 different geographies.
- The Economic Census has a unique role. It includes some 40 billion data cells and 1,641 data product releases. The Economic Census provides benchmark quality, broad industry coverage. It contains rich industry and geographic detail and rich content. In addition to the Economic Census, monthly, quarterly, and annual surveys provide timely estimates, with an emphasis on short-term trends and period-to-period changes. These surveys track the business cycle and provide source data for quarterly gross domestic product (GDP) estimates and other economic indicators. These surveys have limited sector and industry coverage, limited industry and geographic detail, and limited content, however.
- Figure 1 presents the time line for the 2012 Economic Census activities. Program planning and preparation began in 2009. Collection activities will be underway from 2012 through 2013. Post collection activities – including micro-referral processing, macro review and analysis, and dissemination – occur from 2013 through 2016. Planning and preparation for the 2017 Economic Census will be initiated in 2014.



Source: U.S. Census Bureau.

Figure 1. Timeline of 2012 Economic Census Activities.

- One of the objectives for the 2012 Economic Census is to ensure useful and relevant of programs. Meeting this objective includes use of the newly-developed parts of the North American Product Classification System (NAPCS) for manufacturing, wholesale, and retail sectors. All service sector industries were collected on the NAPCS in 2007. The 2012 revisions to the North American Industry Classification System (NAICS) included fewer industries for manufacturing and clarified classification of factory-less goods producers. Product detail has been added to the manufacturing classifications to account for Current Industrial Report industries and the green economy. In addition, enterprise inquiries for innovation and manufacturing services, a new enterprise classification system, and new enterprise statistics have been added.
- A second objective for the 2012 Economic Census is to reduce the burden on respondent's. This objective is being addressed by offering direct Internet reporting for single units, with a target of 20 percent. The online business help site has been updated, and the Account Manager Program has also been expanded. Account managers assist large companies with reporting. The program was expanded from 1,300 to 2,000 companies, accounting for approximately 400,000 to 775,000 establishments, and 61 percent of multi-unit payroll and 40 percent of multi-unit establishments. Outreach to businesses was also expanded to help reduce respondent's burden. The advance mailing was increased to 80,000 and the electronic tools were aggressively marketed. Specific market segments were also targeted.
- Promotion strategies for helping respondents included a mandatory message on the envelope, a toll-free number, and a business help site. Other strategies were an improved electronic reporting software, multiple reminder re-mails, and letters

from top legal officials. Additional strategies included the advance information and account managers, the use of trade associations and other intermediary outreach, and an awareness campaign focusing on *What's in it for ME (my business)?* This awareness campaign highlights the purpose of Economic Census, why it is important to respond, and uses of the Economic Census for businesses. The website includes industry snapshots, local business snapshots, and video testimonials on the benefits of the Economic Census. It also illustrates how to compare a business to industry totals and averages, how to compare a community to other communities, how to identify new markets, and how to create a business plan.

- The outreach activities also target business associations and chambers of commerce. The Census webpages provide tips on methods for the types of the organizations to help promote the 2012 Economic Census. Methods include talking about the Economic Census, publishing articles on it, e-mailing members, and linking to the Census website.
- Improving key systems represents another objective for the 2012 Economic Census. Elements to accomplish this objective include completing the migration to Blade/Linux information technology platforms and an updated software architecture. Using intelligent computer-assisted data entry (iCADE), which includes optical character recognition for selected numeric data, represents another element. Next-generation on-demand laser printing for report forms is also being used. Better analytic tools are also being introduced.
- There are a number of milestones with the 2012 Economic Census. An advance mailing to the 80,000 largest companies was conducted in March, 2012. The preparation and assembly of 4.6 million mailing packages will occur from September to December and the first wave of Economic Census promotional materials will run from October 2012 to March 2013. The mailing of 775,000 forms to the 2,000 largest companies will occur in October 2012, as well as initiating the business help site, toll-free assistance, and electronic reporting. The Economic Census single-unit (SU) company and remaining multi-unit (MU) company report forms will be mailed in December 2012. The Economic Census due date is February 12, 2013. The first Economic Census data product, the advance report, will be available in December 2013. The industry series will be completed by the fourth quarter of 2014 and the final product released by the second quarter of 2016. The Economic Census products will be available on the “New” American FactFinder (AFF2).

Transportation Statistics in the Economic Census and Other Data Programs

Mark Wallace, U.S. Census Bureau

Mark Wallace described the transportation statistics included in the Economic Census and other data programs. He discussed the types of data and publications available in the different programs. Mark covered the following topics in his presentation.

- The three major economic programs containing transportation statistics from the Census Bureau include the Economic Census, the County Business Patterns

(CBP), and the Commodity Flow Survey (CFS). The current Transportation Programs include the Service Annual Survey and the Quarterly Services Survey. There are also other economic programs that include some transportation statistics.

- The CFS is a partnership between the Census Bureau and the BTS within RITA. The CFS is the primary source of information on freight movement in the U.S. As part of the Economic Census, the CFS is conducted every five years, for years ending in 2 and 7. It is the only source of nationwide data on movement of goods from origin to destination by all modes of transportation. Data from the CFS are used by policy makers and transportation planners for assessing the demand for transportation facilities and services, energy use, safety risk, and environmental concerns.
- The CFS includes data on shipment value, weight in tons, ton-miles, and average miles per shipment. These data are published by commodity, mode, distance shipped, NAICS, hazardous shipment characteristics, and export shipment characteristics. The data are available for the U.S., by state, and by selected CFS defined metropolitan areas. There are 73 defined metropolitan areas for the 2012 CFS.
- The CFS collected data from mining, manufacturing, wholesale, publishing, and selected retail and auxiliary establishments in the spring and summer of 2012. The sample size included 102,000 establishments. Data for over 5 million shipments were collected. Each sampled establishment receives a survey form each quarter to report data for a sampled week in the quarter.
- A number of improvements were made in the 2012 CFS. These improvements included utilizing optical character recognition (OCR) and providing two options for electronic reporting. These options are an interactive system to enter shipment data and downloading and uploading a spreadsheet of shipment data. A new online “How to Sample Shipment Records” video represents another improvement. New questions on temperature control shipments and rush deliveries were also added to the 2012 CFS.
- The 2012 CFS products will be available through American FactFinder (AFF) on Census.gov. Products include the CFS Preliminary Estimates, which will be available in December 2013 and the CFS Final Estimates, which will be available December 2014. The Final Estimates include the Geographic Area Series, the Export Series, and the Hazardous Materials Series.
- The 2002 and 2007 products are currently available through AFF. The Geographic Area Series Tables include shipment characteristics by origin geography, destination geography, origin state, destination state, commodity, destination metropolitan area by mode, and NAICS by mode. The Hazardous Materials Tables contain shipment characteristics by mode, origin state, destination state, NAICS, and other variables.
- The 2007 CFS Export Series Tables represents another product. The Export Series Tables include shipment characteristics by commodity by export mode,

domestic mode, destination country, export mode by destination country, and commodity. All of these tables are available for 2002 and 2007. Shipment characteristics by originating state and NAICS are available only for 2007.

- The Transportation and Warehousing Sector (NAICS 48-49) covers establishments with activity in the following nine NAICS.
 - 481-Air Transportation
 - 483-Water Transportation
 - 484-Truck Transportation
 - 485-Transit and Ground Passenger Transportation
 - 486-Pipeline Transportation
 - 487-Scenic and Sightseeing Transportation
 - 488-Support Activities for Transportation
 - 492-Couriers and Messengers
 - 493-Warehousing and Storage

It excludes establishments with activity in NAICS Rail Transportation and Postal Service.

- The Transportation and Warehousing Sector had more than 219,000 establishments with over \$639 billion in revenue and more than 4.4 million employees in 2007. A total of 165,336 questionnaires were mailed in 2007, with a return rate of 83.3 percent. The estimated size of the universe for the 2012 Economic Census mail universe is 163,000. The non-mail universe is 45,000, for a total estimated universe of 208,000 establishments.
- The truck transportation questionnaire obtains information on months in operation, operational status, revenue, and employment and payroll. Other questions address the kind of business (NAICS) and revenue detail on product lines. Special inquiries provide additional information on analysis of operating revenue, purchased transportation, franchise, revenue generating equipment, construction activity for pipelines, and the cost of purchased transportation.
- The 2012 Economic Census includes some changes in the product detail line for the NAICS. Minor wording changes were made in each category to reflect the current product line structure. In the air transportation category, air freight was reorganized to include perishable versus non-perishable.
- There are a number of Transportation and Warehousing sector publications. The industry series presents, by type of business for the U.S. and for establishments or firms with payrolls, general statistics on the number of establishments, revenue, payroll, and employment; comparative statistics for 2007 and 2002; and product lines. The data in industry reports are preliminary and subject to change. The geographic area series presents, by type of business for the U.S., states, and metropolitan and micropolitan statistical areas, for establishments or firms with payrolls, general statistics on the number of establishments, revenue, payroll, and employment. The product lines presents data on product lines for establishments or firms with payrolls by type of business. Data are presented for the U.S. only. Establishment and firm size presents revenue, payroll, and employment data for

the U.S. by revenue size, by employment size, and by legal form of organization for establishments or firms with payrolls; and by revenue size (including concentration by largest firms), by employment size, and by number of establishments operated (single-units and multi-units) for firms with payrolls.

- The Transportation and Warehousing miscellaneous subjects present data for a variety of industry-specific topics for establishments of firms with payroll. The data varies by the type of business. Examples of data include purchased transportation by motor freight carriers for the U.S. and by states; revenue-generating equipment for passenger transportation for the U.S. and by states; cost of arranged transportation by mode of shipping for the U.S. and by states; and construction activity by pipelines for the U.S. and by states.
- The CBP is an annual publication that provides economic data by industry for most businesses with paid employees. Data items include the number of establishments, employment, first-quarter payroll, and annual payroll. The data originates from administrative records received from the Internal Revenue Service (IRS), Social Security Administration (SSA), and Bureau of Labor Statistics (BLS), as well as from the Economic Census and company organization survey data collections. Publication formats are provided on the AFF (factfinder2.census.gov) and the CBP website (www.census.gov/econ/cbp/).
- The CBP covers data at the U.S., state, county, and metropolitan statistical area (MSA) levels. Zip code-level data are also available, as are data for Puerto Rico and the Island Areas. More than 1,000 industries are covered at the six-digit NAICS level by employment size and legal form of organization. The 2010 CBP Statistics published approximately 208,000 businesses in the Transportation and Warehousing industry. Between 2009 and 2010, employment dropped to 4.0 million employees, a decline of 3.5 percent from 2009. (2010 CBP Statistics released on June 26, 2012).
- The top five employer counties for Transportation and Warehousing in 2010 were Los Angeles County, California; Cook County, Illinois; Harris County, Texas; Dallas County, Texas; and Queens County, New York. Of the top employer counties, Cook County had the highest increase in establishments in 2010, with 5 percent growth from 2009. The southeast region had the highest concentration of truck transportation establishments. The highest concentration of transit and ground passenger transportation establishments is in the northeast region.
- Other economic programs with transportation statistics include transportation-related manufacturing industries (motor vehicles, aircraft, truck trailers, ship and boat building). Statistics are available from the Annual Survey of Manufactures (ASM), which is conducted annually, except for years ending in 2 and 7, when the ASM statistics are included in the manufacturing sector of the Economic Census. The ASM provides statistics on employment, payroll, supplemental labor costs, costs of materials consumed, operating expenses, value of shipments, value added by manufacturing, detailed capital expenditures, fuels and electric energy used, and inventories. It provides statistics for each state and the District of Columbia. The Manufacturers' Shipments, Inventories, and Orders – the M3 Survey –

provides broad-based, monthly statistical data on economic conditions in the manufacturing sector. It measures current industrial activity and provides an indication of future business trends. Transportation-related data on international trade area available in different sources.

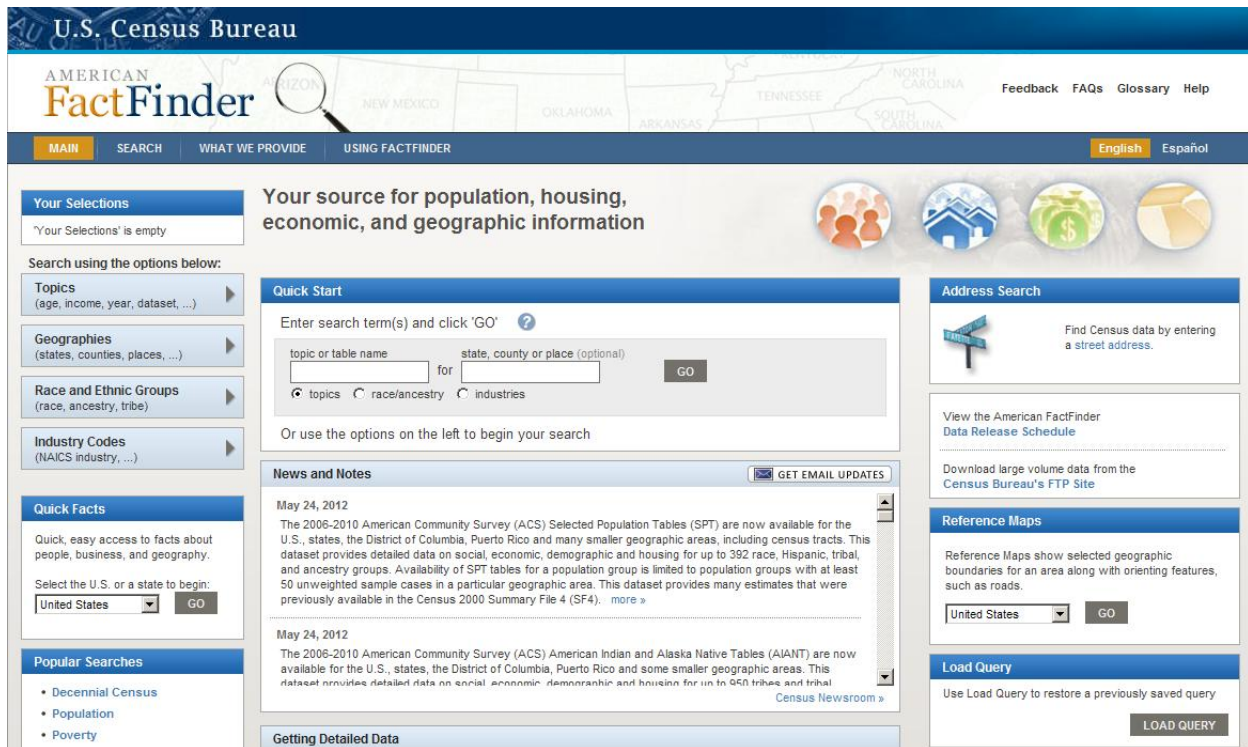
- Modes of transportation (MOT) available in the Census Bureau foreign trade data products include air, vessel, and containerized vessel. Data on value, shipping weight, and import charges are available with detailed commodity, country of origin/destination, port of export/unlading, and state of export/import. Time series data are available monthly from January 2002 to the present, and with port data available from January 2003. Data are available online at <http://www.usatradeonline.gov/>.
- Overland – mail, truck, rail, pipeline, and other data are available from the North American Transborder Freight Database, collected by the Census Bureau for the BTS (http://www.bts.gov/programs/international/transborder/TBDR_QA.html). The MOT is based on how the goods entered or left the U.S. For example, if a product leaves the U.S. on a truck, gets on a plane in Canada bound for China – trade data would show an overland shipment to China (<http://www.census.gov/foreign-trade/guide/>).

Demonstration of the New American FactFinder

Andrew Hait, Census Bureau

Andrew Hait demonstrated the use of the AFF2. He described and presented features of AFF2, including searching for CFS data, modifying table tools, creating a map, and downloading and printing results. He also documented modifying a search to view more results and use of the FTP site. Andrew covered the following topics in his presentation.

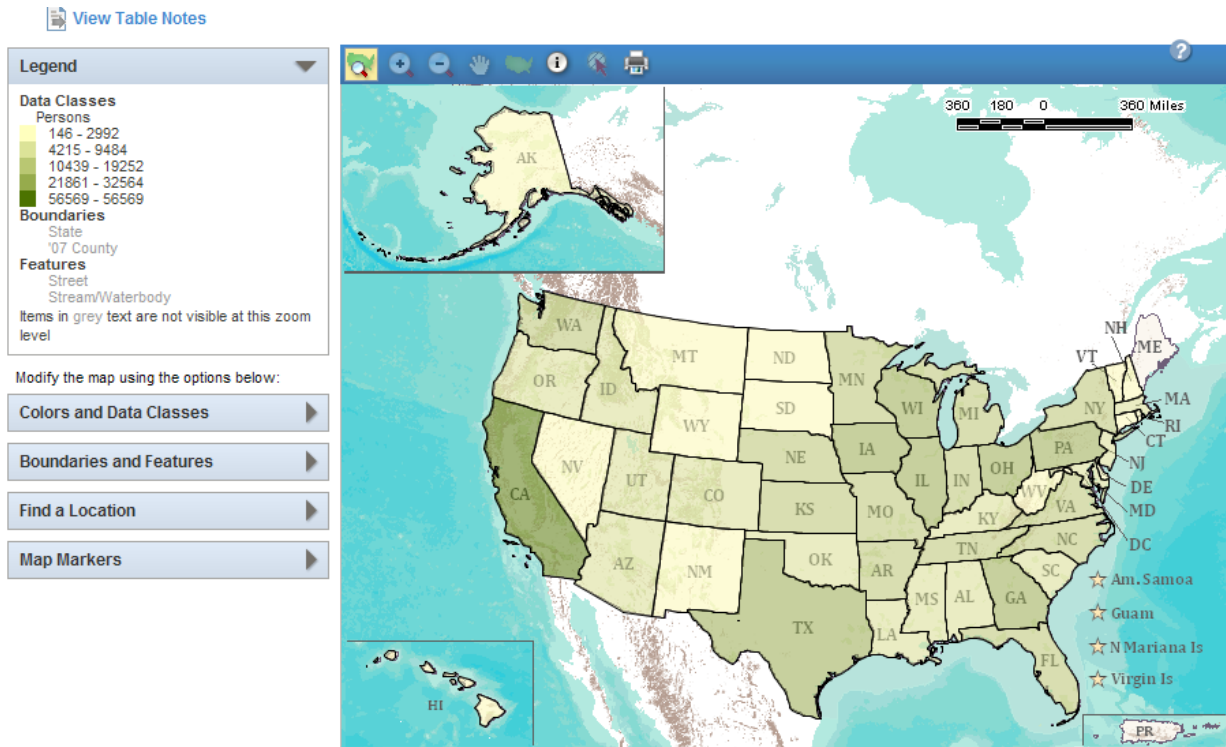
- Figure 2 illustrates the AFF2 Homepage. The AFF is the source for population, housing, economic, and geographic information. The main menu provides search options using standard topics, geographies, race and ethnic groups, and industry codes. Search terms can also be entered. Quick facts and popular searches are available. The news and notes section provides current information on the release schedule of products, publications, and activities.



Source: U.S. Census Bureau.

Figure 2. American FactFinder Homepage.

- Filter options for searching CFS data include the survey year, geographies, and industry codes. The geographies include individual states and all states in the U.S.
- Andrew demonstrated opening a table by clicking on the table title, or by placing a check in the box and clicking view. Table tools can be used to modify a table. Examples of modifications include rearranging columns, filtering rows, sorting, and showing or hiding columns.
- Andrew demonstrated the steps in creating a map, including selecting the data, processing the data, and showing the map. Figure 3 presents a thematic map of the value in million dollars of food manufacturing transported by truck in 2007 by state.



Source: U.S. Census Bureau.

Figure 3. Food Manufacturing Transported by Truck in 2007.

- Options for printing results include portrait or landscape and paper size. Downloading options include CSV, as a single file or separate files and presentation-ready as a PDF, Microsoft® Excel, or rich text format (RTF).
- Data can be examined by returning to *Your Selections* and de-selecting the CFS. The *Search Results* refreshes with all programs in the AFF2. Large volumes of data can be downloaded using the Census Bureau FTP site. The FTP site can be used when the filtered results exceed 65,000 rows of data or when the entire file (.zip) is needed.
- The following website provides help with AFF or Economic Census questions: <http://www.census.gov/econ/census07/>.

Current and Potential Transportation Uses of the Economic Census

Alan Pisarski, Consultant, Moderator

Speakers in this session described current transportation uses of the Economic Census. Examples of maps presenting Economic Census transportation data were highlighted. Possible enhancements in the Economic Census to benefit additional transportation applications were also discussed.

Transportation Uses of the Economic Census

Alan Pisarski, Consultant, Moderator

Alan Pisarski discussed the development of the Economic Census, current uses, and potential applications. He described some of the transportation elements included in the Economic Census and possible approaches to enhance its value. Alan covered the following topics in his presentation.

- Congressional authority to conduct a Census of Transportation was first authorized in 1948, but no funding was allocated. Congress approved the Economic Census in 1954, but no request to include transportation in the Census was made. The Department of Commerce made a request in 1958 to conduct a Census of Transportation, but Congress did not approve the request. Authorization was received in 1962 and the Census of Transportation was conducted in 1963. It included the Truck Inventory and Use Survey (TIUS), the Passenger Travel Survey (NTS), and the Commodity and Shipper Survey. These surveys were not maintained, however. The Passenger Survey was discontinued in 1977. The Transportation Annual Survey was renamed to the Motor Freight and Warehousing Survey and was last conducted in 1998. Some elements are now included in the Services Annual Survey. The Vehicle Inventory and Use Survey (VIUS) and TIUS were last conducted in 2002. Support for the concept of a Census of Transportation appears to be waning.
- The Economic Census currently provides some important transportation data. As noted by previous speakers, the transportation sectors included in the Economic Census are NAICS 48-49. Excluded from these sectors are establishments primarily engaged in providing travel agent services that support transportation and other establishments, such as hotels, businesses, and government agencies. These establishments are classified in Sector 56, Administrative and Support and Waste Management and Remediation Services. Additionally, establishments primarily engaged in providing rental and leasing transportation equipment without an operator are classified in Subsector 532, Rental and Leasing Services. Railroad transportation and the U.S. Postal Service were not included in the 2007 Economic Census. Large certificated air passenger carriers are included in the 2007 data, but were not included in the 2002 data, affecting comparability for this industry.
- Information included on the sectors are the establishment location; single or multi location; sales, shipments, receipts, or revenues; the number of employees; and annual and first quarter payrolls. Trucking and Warehousing NAICS includes

over 26 main categories of sales. Special inquiries include the value of inventories, an analysis of operating revenue, and expenses for purchased transportation and purchased fuels. Transit NAICS includes the type of business, nine revenue sources, and special inquiries for revenue generating equipment and franchises. Transportation Services NAICS contains 15 categories of sales and special inquiries for the cost of purchased transportation and franchising. Pipelines NAICS includes seven types of business classes, seven classes of sales, and a special inquiry on construction activity. The Air Transportation NAICS includes over 29 types of main revenue classes. Other NAICS of interest include Non-Transportation Business Banking and Energy and Consulting.

- Initiating a review of transportation opportunities associated with the Economic Census would be beneficial. There are a number of annual surveys keyed to the Economic Census. The Survey of Manufacturers includes 1,226 industries groups and 4,342 products. The Annual Retail Trade Survey, the Annual Capital Expenditures Survey, the Annual Services Survey, the Annual Wholesale Trade/Annual Retail Trade Survey, and the Business Research and Development Survey are also conducted. A review of transportation opportunities could focus on identifying high pay-off special inquiries. For example, the expanded quinquennial Business Expenses Survey includes a question on the cost of fuel, purchased repair and maintenance, lease and rental payments, and depreciation and amortization payments. Transportation could be added to these elements to include vehicle fleet inventories and costs, and purchased passenger and freight transportation.
- Considering ways to make intensive use of existing products, to review and consider annual surveys, and to resurrect the TIUS and make it a true VIUS would be beneficial. The potential exists to make progress on all of the elements by working together and obtaining support from other groups.

Examples of Transportation Uses of the Economic Census *Donald Ludlow, Cambridge Systematics, Inc.*

Don Ludlow presented examples of the use of data from the CFS and the CBP in transportation planning and assessing economic development and transportation. He also discussed potential applications of Economic Census data in transportation planning, modeling, and policy development. Don covered the following topics in his presentation.

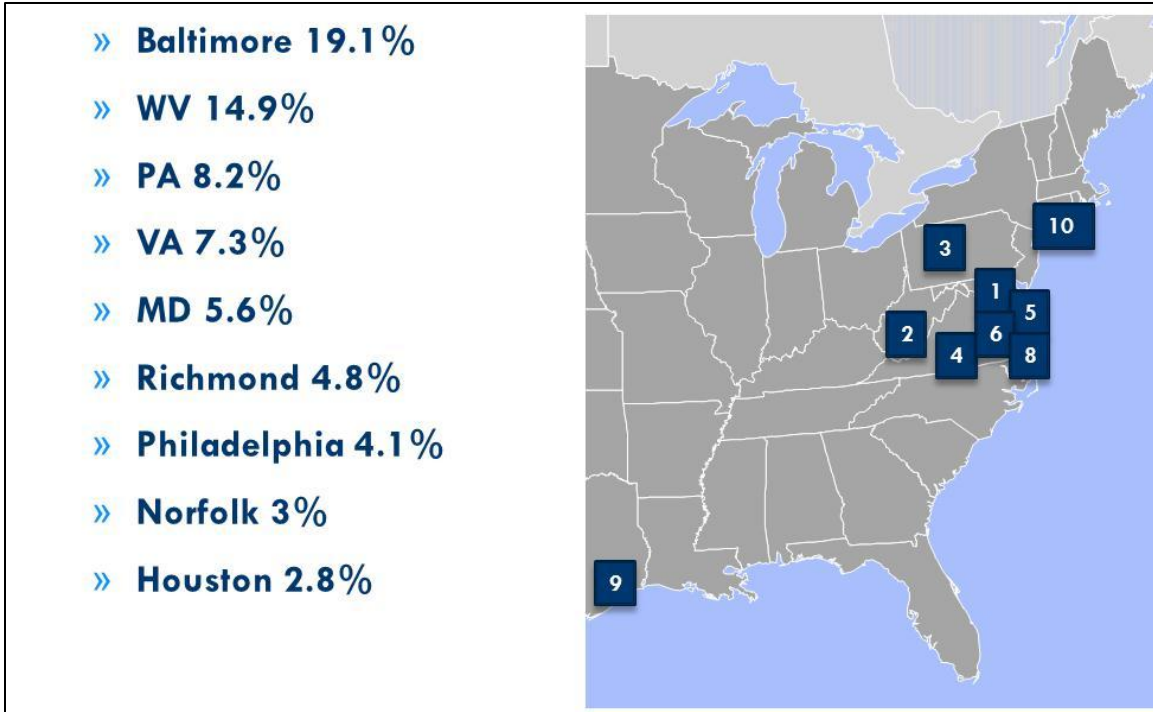
- The Economic Census data sets include the Business Expenses Survey, the CFS, the CBP, the Economic Census of the U. S., the Non-Employer Statistics, and the Survey of Business Owners. These sources provide the foundation data for economic indicators, forecasts, and other tools that support transportation planning. The CFS sustains public and private sector freight transportation planning and operations analysis. The CBP provides consistent employment data for travel demand modeling, and transportation and industry analyses.
- Table 1 highlights examples of current and potential transportation applications of data from the Economic Census. Examples of applications range from policy development, to designing sales territories, to disaster response planning.

Table 1. Current and Potential Transportation Applications of the Economic Census.

Uses of the Data	Transportation Applications (examples)
Develop Public Policy	Guide infrastructure investments to support freight
Locate Business Markets	Clusters of freight-dependent businesses
Evaluate Industry Growth	Time-series analysis of freight-dependent industries
Assist Local Businesses	Identify potential customer concentrations
Design Sales Territories	Transportation market research (“freight sheds”)
Gauge Competitiveness	Location quotients and linkages to transport
Research	Sector analysis, trade studies
Business-to-Business	Visualize supply chains, network design
Entrepreneurship	Identify opportunities (perfect information = perfect competition)
Disaster Response	Assess vulnerabilities (e.g. between suppliers and manufacturers)

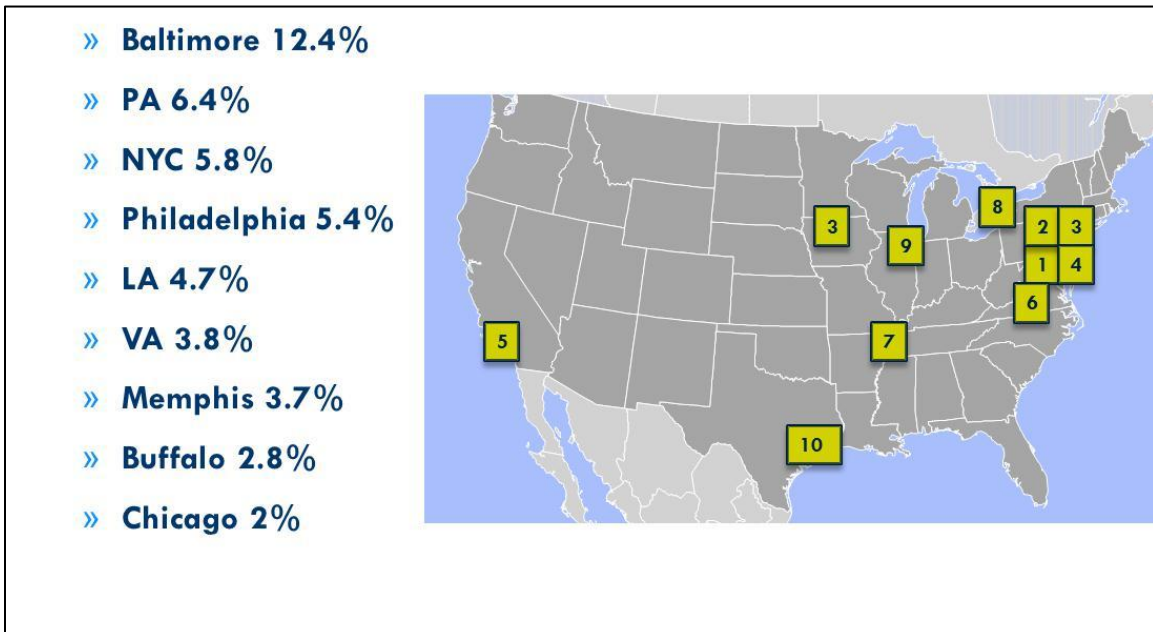
Source: Cambridge Systematics, Inc.

- The CFS and the Freight Analysis Framework (FAF) developed from it, is the foundational national freight data set. It is used for identifying trade patterns, developing modal data, conducting freight system analyses, and optimizing network design. The CBP is used in economic development and transportation analyses, including strategic analyses of industry potential and site selection. The CBP is also used in transportation planning to assist in examining the relationship of activity centers to transportation systems and in travel demand model disaggregation.
- Figures 4 and 5 provide examples of using the CFS and the FAF to identify the 2007 Washington, D.C. metropolitan area top tonnage inbound flows and the top value inbound flows. The heaviest commodities in the Washington, D.C. area can also be identified for 2007 and projected to 2040.



Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

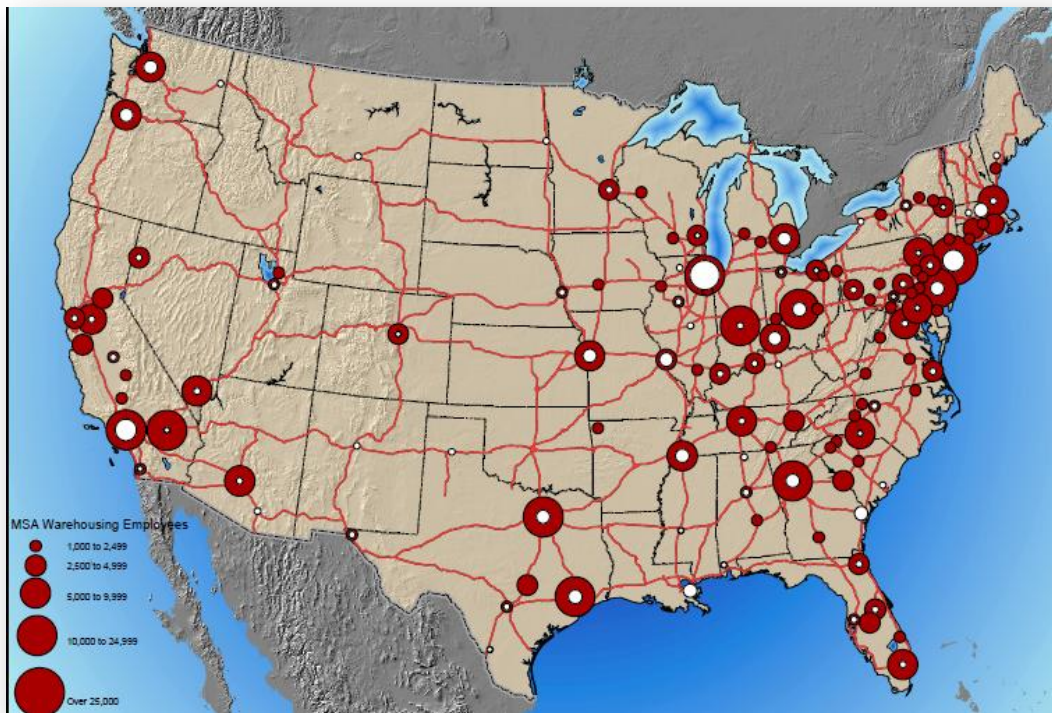
Figure 4. Washington D.C. Metropolitan Area Top Tonnage Inbound Flows (2007).



Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

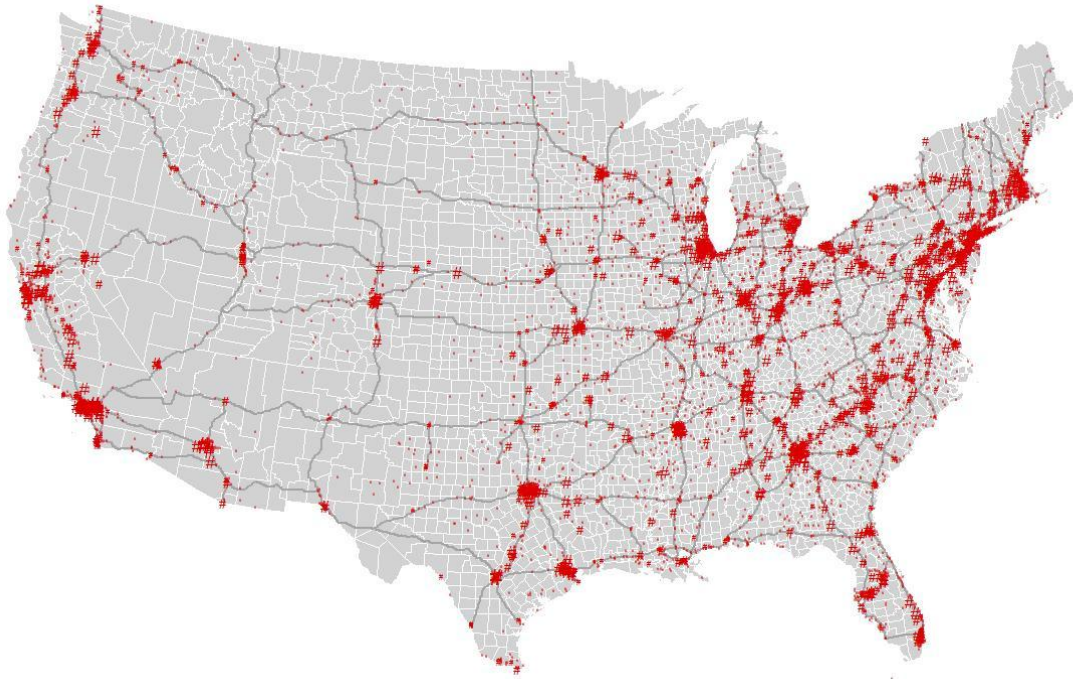
Figure 5. Washington D.C. Metropolitan Area Top Value Inbound Flows (2007).

- The mapping features of the AFF2 can be used to display a wide range of information. Figure 6 highlights major freight distribution centers in the U.S. Figure 7 presents warehouse employment by zip code zones in the U.S. Figure 8 illustrates a specialized industry cluster analysis of cheese processing facilities and the Interstate system. Figure 9 presents the location of carpet supply chain production components. Figure 10 shows the transportation system and manufacturing clusters in Maryland. This information can also be combined or compared with data from other sources.



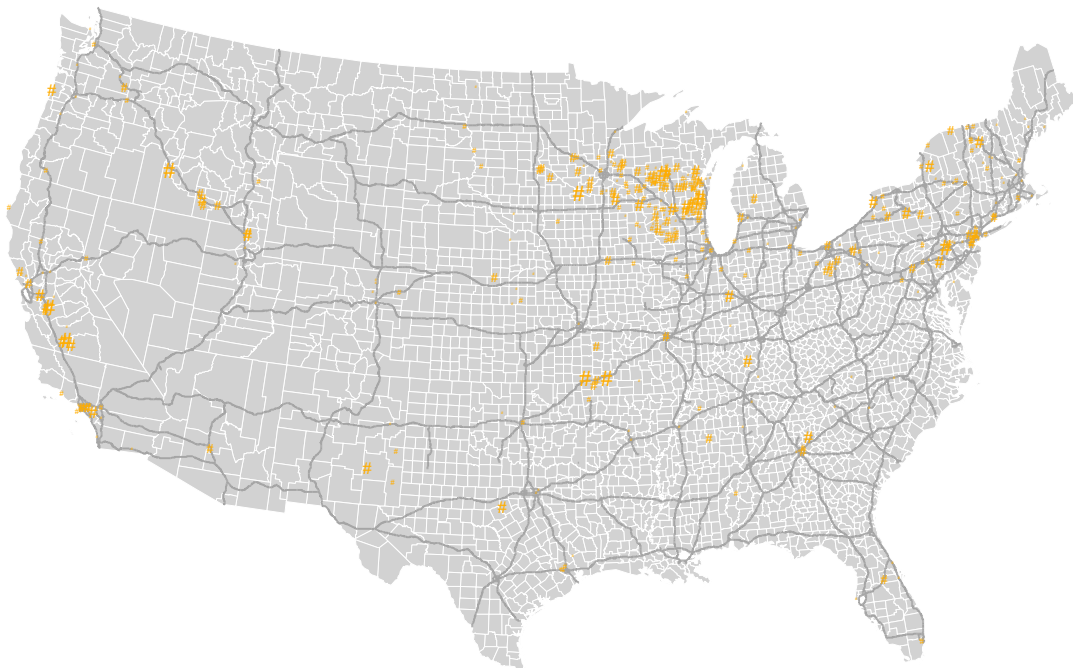
Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

Figure 6. Major U.S. Distribution Centers.



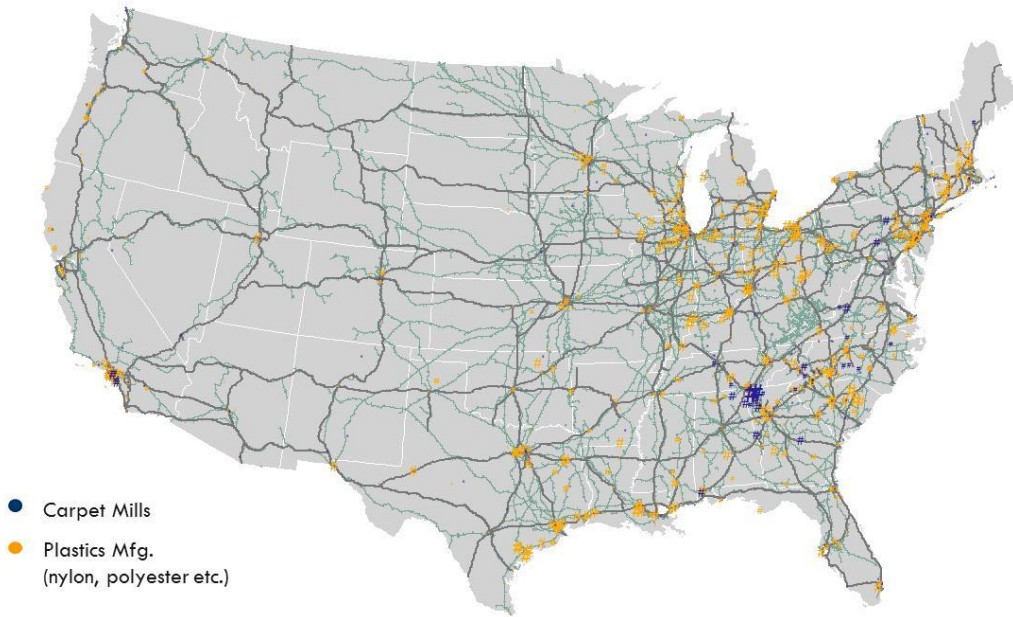
Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

Figure 7. Warehouse Employment by Zip Code.



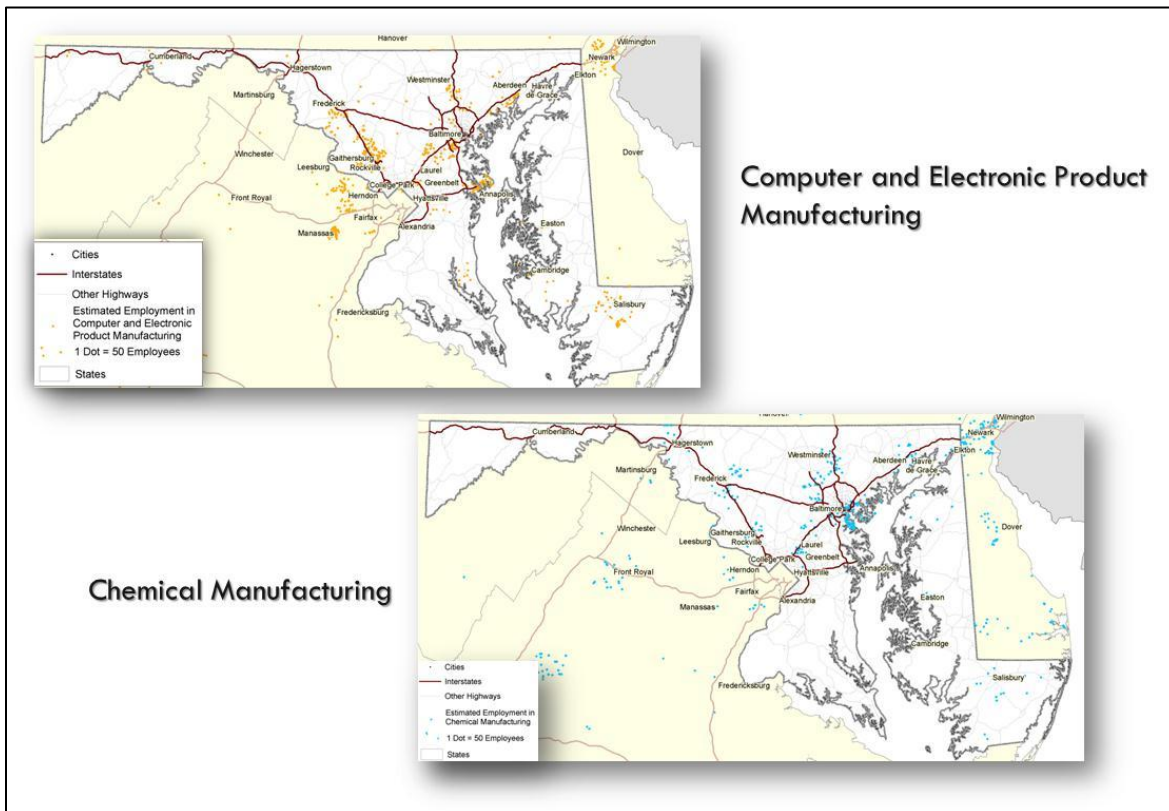
Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

Figure 8. Specialized Industry Cluster Analysis – Cheese Processing and U.S. Interstates.



Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

Figure 9. Carpet Supply Chain Depiction – Production Components.



Source: Cambridge Systematics, Inc. – CFS/FAF3 Data.

Figure 10. Transportation System and Manufacturing Clusters in Maryland.

- A number of additional uses of Economic Census data can be identified. Transportation planning applications include using national freight data from the CFS and the FAF, linkages between economic development and transportation, time-series analysis, and travel demand modeling. Potential new applications include visualization of transportation-economic linkages, enterprise data, site selection applications, industry and transportation analyses, and sustainability, livability, and land-use applications.

Additional Perspectives on Transportation Uses of the Economic Census

Rolf Schmitt, Federal Highway Administration

Rolf Schmitt provided comments on further transportation uses of the Economic Census. He also described potential links with other data sources, potential applications, and areas for further research. Rolf covered the following topics in his presentation.

- Moving Ahead for Progress in the 21st Century (MAP-21) provides new requirements related to freight planning, performance measurement, and other topics. Data from the Economic Census and other Census products should be of benefit in addressing these new requirements. There are numerous sources for passenger information, but more limited sources for freight data. The FAF, CBP, and other parts of the Economic Census provided needed freight data.
- Collecting and analyzing freight data is different than collecting and analyzing passenger data. For example, some areas experience a lot of pass through freight. Transportation is also an economic activity itself. There are differences between data on what is shipped and what is carried, trade data, economic activity data, and intermodal and multimodal data. There are also seasonal variations in freight movements and freight data.
- More research would be beneficial on seasonal variations in freight data, avoiding the use of average data if there are significant variations in seasonal data, and examining trade data versus economic activity data. Considering restarting the VIUS would be beneficial. Data from VIUS are still being used.

Highlights from the Discussion Groups and Building a Community *Thomas Bolle, Research and Innovative Technology Administration, presiding*

Speakers in the closing session highlighted the major topics covered in the discussion groups, including areas for further research. Speakers also summarized the major themes from the workshop, potential follow-up activities, and efforts to enhance building a community for uses of the Economic Census.

Closing Summary

Thomas Bolle, Research and Innovative Technology Administration

Tom Bolle highlighted major topics and themes from the workshop. He summarized the background to the workshop, the importance of the Economic Census, and possible future activities. Tom covered the following topics in his presentation.

- This workshop built on the session held at the 2012 TRB Annual Meeting, which focused on an overview of the Economic Census. Speakers at this workshop provided more detail on transportation data in the Economic Census, use of the AFF2, and examples of transportation applications of the Economic Census data. The discussion groups allowed the opportunity for participants to share experiences and ideas for enhancements and further research. The workshop built momentum to develop a community to further expand the understanding and use of the Economic Census among transportation professionals.
- The Economic Census provides critical information for decision makers at all levels. It helps address many key questions. Economic Census data are used in transportation planning, policy making, and analysis. The Economic Census represents significant element in providing accurate data to enhance decision making.
- Continuing to build on the momentum from the TRB Annual Meeting session and the workshop is important. Following up on the suggestions from the discussion groups highlighted next will be key to maintaining this momentum. Numerous activities can be undertaken to help address research needs, enhance awareness of the Economic Census, and develop new applications for available data.

Transportation Economic Analysis Discussion Group Summary

Mark Burris, Texas A&M Transportation Institute

Mark Burris presented the summary of the transportation economic analysis discussion group. He highlighted the four research needs identified by participants in the discussion group and other possible follow-up activities. Mark covered the following topics in his presentation.

- Research on the important role transportation plays in supporting the economy and economic development was discussed by participants. The Economic Census provides key data for analyzing the relationships between transportation and the economy. Research to better define this relationship, including developing new algorithms or analysis techniques, would be beneficial. This research could

enhance the methodologies frequently used with TIGER grants and other programs.

- A second research topic discussed by participants was examining the impact that changes in industries in an activity center might have on travel behavior in that activity center. Possible changes might include people moving into or out of the activity centers, as well as relocating within the area.
- A third research topic focused on exploring the impacts of e-commerce. Participants suggested that data from the Economic Census and other sources could be used to assess the impact that e-commerce has had on individual shopping trips and on delivery vehicles.
- A fourth research topic focused on better understanding the relationship between road construction – including new roadways and major improvements – to changes in the economy, economic development, job creation, and other factors. Participants noted that examining the use of data from the Economic Census, in combination with other sources, would be beneficial.
- Participants also discussed other follow-up activities. It was suggested that the TRB Transportation Economics Committee could help facilitate some of these activities, including assisting with disseminating the workshop proceedings, developing a better understanding of the Economic Census, and promoting its use. The Committee could also work on research needs statements and develop problem statements.

Transportation and Economic Development Discussion Group Summary

Karen White, Federal Highway Administration

Karen White summarized the discussion in the transportation and economic development group. She noted the participants represented a diverse mix of backgrounds and experience using the Economic Census data programs. Mark Wallace from the Census Bureau participated in the group and provided more detail on the development and use of the Economic Census data programs. Karen highlighted the following topics in her presentation.

- Participants identified a major desire of increased frequency with finer granularity for the Economic Census. The importance of balancing available funding and public acceptance of surveys was recognized, however.
- Participants discussed the ability to identify locations of publicly held companies where the location data current exists in the public domain. The example of mechanic shops was given.
- Conducting more detailed, but less geographically dispersed surveys were discussed. One example was conducting a 100 percent sample within a smaller zone (chosen because it represents a population of similar type zones). This approach would reduce some of the issues experienced with the American Community Survey (ACS) of under-represented groups.
- Data on seasonality was identified as important in using the Economic Census products. Knowing when the CFS shipment sample weeks are would be

beneficial. Are they truly random throughout the year? There is some potential that a retail company does not want to sample December because they are very busy.

- Identifying shipments when the company “owns” the shipment process was identified as another need. For example a shipper may know 100 percent that a shipment went by truck because it was the business’s truck. On the other hand, a shipper may identify “truck” just because a J.B. Hunt truck drove away from the warehouse.
- Participants also discussed the potential of updated Census Transportation Planning Products (CTPP). Participants discussed the potential of using Public Use Micro Areas (PUMA) rather than county boundaries. County and zip code boundaries were not designed for data analysis. A research project examining the use of PUMA rather than county boundaries to analyze data from the Economic Census would be beneficial.

Current and Potential Transportation Uses of the Economic Census Discussion Group Summary

Donald Ludlow, Cambridge Systematics, Inc.

Don Ludlow summarized comments from participants in the freight and international trade discussion group. He described outreach opportunities for increasing the use of the Economic Census, developing new applications, and research needs. Don covered the following topics in his presentation.

- Participants noted that the Economic Census is an underutilized resource for transportation professionals. Part of the reason it is not being used more fully is that transportation professionals are not aware of the data it contains, how to access the data, and various applications. Participants suggested developing and conducting outreach, education, and training activities to highlight the availability and use of data from the Economic Census. Developing a guide and conducting training sessions or workshops were suggested.
- Participants discussed using data from the Economic Census to better communicate the benefits of transportation to the economy and the impacts of different projects to policy makers. It was suggested that research linking Economic Census data with GIS and other visualization techniques would be beneficial to fully utilize available data.
- Linking Economic Census data to private sector data was also identified as an important research area. For example, many trucking companies have instrumented vehicles that track location, speeds, travel distance, and other measures. Additional information on commodity value was also noted as needed.
- Participants noted that Developing a state-of-the-practice guide and case study examples would be beneficial. Outreach activities to state departments of transportation, metropolitan planning organizations, and other agencies was also suggested.

Enhancing the Economic Census for Transportation Uses Discussion Group Summary

Alan Pisarski, Consultant

Alan Pisarski summarized the discussion in the group addressing enhancing the Economic Census for transportation uses. He highlighted research needs, potential enhancements, and opportunities to build awareness of the Economic Census among transportation professionals. Alan covered the following topics in his presentation.

- Participants discussed the need for a survey or a review of current uses and potential uses of the Economic Census in transportation. This research project could be conducted through the National Highway Cooperative Research Program (NCHRP), the Transit Cooperative Research Program (TCRP), the BTS, or the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Planning (SCOP).
- Participants also discussed a possible process for making enhancements to the Economic Census. It was noted that staff at the Census Bureau solicit input from government agencies and interested private sector parties prior to each cycle of conducting the Economic Census. The BTS, TRB, and the National Academy of Sciences (NAS) could develop a list of beneficial additions or changes that would enhance the transportation uses of the Economic Census. This approach could have a positive impact. Timing is important, however, as missing the window could lead to a five-year delay. The franchising industry could be used as a case study. Questions were suggested for all sectors, but were finally winnowed down to about 200. The same approach could be used for transportation. Most establishments do not have internal transportation elements, but identifying vehicle fleets owned by establishments and the nature of their use is important. Identifying other spending for transportation is also important.
- The question of what problems need to be solved was discussed. One answer is establishing the transportation activities of key missing sectors of the nation's vehicle fleet, sectors of the economy, and of business practices.
- The concept of auxiliaries has always been a key transportation concern. Auxiliaries are separate entities within a major establishment that serves the establishment's main function. Examples of auxiliaries include a truck fleet maintained by a food company to distribute their goods, a unit with multiple aircraft that serves a corporation moving executives and important materials and parts by air, and the large bus fleets owned by car rental agencies. The current term for this concept is enterprise support. The new approach to gaining more information on enterprise support units needs to be actively considered by transportation analysts.
- Participants discussed that the 2012 Economic Census will provide much greater geographic detail than the 2002 and 2007 Economic Censuses. A total of 15,000 places, counties, and cities will be represented. Ensuring that transportation professionals are aware of this improved geographic detail and take advantage of the opportunities presented by this expansion is important.

- Participants discussed the need for transportation analysts to make better use of the annual series that derive from the Economic Census. It was suggested that in most cases it is more appropriate to ask questions of a small sample of establishments in a sector than to generate a huge burden on the universe of establishments. This approach could be used to provide annual data.
- The need to establish the original VIUS survey as an ongoing activity of the Census Bureau was supported, along with developing it as a valid survey of all vehicles in all vehicle classes and ownership classes and activities.

Integrating the Economic Census with other Data Discussion Group Summary

Steven Polzin, Center for Urban Transportation Research

Steve Polzin highlighted the discussion in the integrating the Economic Census with other data sources group. He noted that Economic Census can help address the recent increased interest in freight planning, policy making, and operations. He also described opportunities to combine Economic Census data with data from other sources to increase the uses and the benefits. Steve covered the following points in his presentation.

- Participants discussed the growing realization among policy makers and public agencies of the importance of freight transportation. Since the movement of freight by rail, truck, air, water, and pipeline is primarily the responsibility of the private sector, public agencies, transportation planners and modelers, and policymakers have historically placed less emphasis on it. With increasing congestion on all modes, there is increased interest in taking a holistic approach to the transportation system and maximizing the use of all freight modes.
- The Economic Census includes key data and surveys for freight planning and analysis. Combining data from the Economic Census with data from other sources can improve freight planning, forecasting, analysis, and evaluation activities. Participants noted that freight is a large scale national issue, so there is a need for national freight data, which should be funded at the national level.
- Participants discussed comparisons of data from different sources, the advantages and limitations of different data sets, and needed research to better understand the strengths and weaknesses of different data sources and methods to combine data sets. Research examining techniques to compare, contrast, and combine data sets over time was also suggested as needed.
- Research identifying best practice applications of Economic Census data was suggested. Developing a synthesis or guide through NCHRP or other sources would be beneficial. Examining alternative data collection methods, including the use of technology, was suggested as another needed research area.

Building a Community for Uses of the Economic Census and Follow-Up Activities

Katie Turnbull, Texas A&M Transportation Institute

Katie Turnbull summarized key elements of the workshop and identified possible follow-up activities and research to continue building a community for transportation uses of the Economic Census. She thanked workshop speakers, discussion group facilitators, and

participants. She also recognized TRB staff for their help in organizing the workshop and RITA for co-sponsoring the workshop. Katie covered the following topics in her presentation.

- A number of follow-up activities are anticipated. A summary of the workshop will be prepared and distributed to participants. It will also be posted on the TTI Transportation Economic Center website. The summary and the PowerPoint presentations can be shared with other transportation professionals to enhance the understanding of the Economic Census and its use.
- Katie noted that workshop participants included the chairs of three TRB committees. These committees can assist with follow-up activities related to webinars, sessions at future Annual Meetings, sessions at other TRB conferences, TRNews articles, and a future workshop.
- Some members of the planning committee took the initiative to draft a NCHRP 8-36 problem statement focusing on developing a guide for transportation professionals for use of the Economic Census. If the problem statement is selected by the review group, it would come out as an RFP.
- Numerous other activities can be considered working the BTS, the Census Bureau, AASHTO, and other groups. These activities focus on the general theme of “good data is needed for good decisions.” Building use of the Economic Census and building support for restarting VIUS and other surveys would be beneficial.
- The CTPP could be used as a model for supporting efforts related to the Economic Census, including research, training, and outreach. Developing a longer term research agenda could be considered. Ongoing communication and coordination among all agencies and organizations would be beneficial, as would continuing to keep workshop participants actively engaged.

APPENDIX A – LIST OF PARTICIPANTS

Ahmed, Shirin
Bureau of the Census

Bates, Michael
Federal Transit Administration

Bolle, Thomas
U.S. DOT, Research and Innovative
Technology Administration

Burris, Mark
Texas A&M Transportation Institute

Chang, Christopher
Federal Highway Administration

Fang, Vincent
MacroSys, LLC

Farrar, Ronald
U.S. Census Bureau

Fields, Alison
U.S. Census Bureau

Hait, Andrew
U.S. Census Bureau

Hambric, Donna
U.S. Census Bureau

Han, Charlie
MacroSys Research, LLC

Hinckley, James
U.S. Census Bureau

Hollingsworth, Cynthia
U.S. Census Bureau

Houtz, Amy
U.S. Census Bureau

Hu, Patricia
U.S. DOT, Research and Innovative
Technology Administration

Hyatt, Felicia
Washington Metropolitan Area Transit
Authority

Locke, Michael
U.S. DOT, Pipeline and Hazardous
Materials Safety Administration

Long, Liang
Cambridge Systematics, Inc.

Ludlow, Donald
Cambridge Systematics, Inc.

M.Saeed, Basheer
University of Maryland, College Park

MacFarlane, Gregory
Georgia Institute of Technology

Maillett, Edward
U.S. Fish and Wildlife Service

McHugh, Jeff
U.S. Census Bureau

McKenzie, Brian
U.S. Census Bureau

Moody, Jack
U.S. Census Bureau

Nelson, Kathryn
U.S. Census Bureau

Palmerlee, Thomas
Transportation Research Board

Pisarski, Alan
Consultant

Polzin, Steve
Center for Urban Transportation Research

Roman, Steve
U.S. Census Bureau

Rothenberg, Heather
Federal Highway Administration

Schmitt, Rolf
Bureau of Transportation Statistics

Sharp, Joy
Bureau of Transportation Statistics

Smith, Aidan
U.S. Census Bureau

Stephens, Thomas
Argonne National Laboratory

Sylvester, Kate
Maryland Department of Transportation

Tran, Duke
Bureau of Economic Analysis

Turnbull, Katherine
Texas A&M Transportation Institute

Wagley, Rajendra
Federal Transit Administration

Wallace, Mark
U.S. Census Bureau