Applying Census Data for Transportation
50 Years of Transportation Planning Data Progress

Crowne Plaza Kansas City Downtown
Kansas City, MO
November 14–16, 2017

Organized by
Transportation Research Board

Supported by
American Association of State Highway and Transportation Officials (AASHTO)
Census Transportation Planning Products (CTPP)
Federal Highway Administration (FHWA)

www.trb.org/conferences/census2017.aspx

The National Academies of
SCIENCES • ENGINEERING • MEDICINE
# Schedule at a Glance

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## SCAVENGER HUNT

**Monday, November 13 (afternoon/evening)**

*Downtown Kansas City along the KC Streetcar line*

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Tom Rossi, Principal, at 617-234-0464 or trossi@camsys.com

www.camsys.com
Census Data and the products derived from it are fundamental inputs for transportation planning, policy and decision making, and for managing transportation programs. They are used to give us data on households, the people in those households, workforce characteristics and the journey-to-work flows of our workers. However, having census data and the various products derived from it should not be taken for granted. Lack of resources, political pressures and new technologies all pose threats to some of our most fundamental data sources.

Recognizing that we are at a data crossroads, the AASHTO Census Transportation Planning Products (CTPP) Program has teamed up with TRB and others to present this forward looking conference. What will our transportation planning data look like in the future? How do we keep Census Data relevant? What improvements do we need to make to the data? These are just a few of the topics up for discussion.

Starting with the 1960 Decennial Census Long Form, the Office of Management and Budget (OMB) called for Journey-to-Work (JTW) data to identify Metropolitan Statistical Areas. However, the OMB need was short-lived as the transportation community assumed ownership of the JTW questions. This ownership has manifested itself in the transportation community’s willingness to pay for a set of special tabulations to meet their specific planning and analysis needs. Now overseen by AASHTO, the CTPP program is a State DOT funded, cooperative program that produces special tabulations of the American Community Survey (ACS), provides universal access to that data, funds and conducts research, and provides training and technical assistance to the transportation planning community.

Come join other transportation data experts as they look back to where we have been and provide focus and direction for moving forward. As the program shows, there are a great many topics that need your input. Come learn, share your experience, discuss strategies for data improvements, and be part of the dialogue.

—Ed Christopher
Chair, 2017 Census Transportation Data Workshop
Independent Transportation Planning Consultant

Planning Committee
Edward Christopher, Independent Transportation Planning Consultant
Alison Fields, U.S. Census Bureau
Michael Frisch, University of Missouri, Kansas City
Joseph Hausman, Federal Highway Administration (FHWA)
Jim Hubbell, Mid-America Regional Council (MARC)
Mara Kaminowitz, Baltimore Metropolitan Council (BMC)
Catherine K. Lawson, State University of New York, Albany
Brian McKenzie, U.S. Census Bureau
Karen Miller, Missouri Department of Transportation
Jennifer Murray, Wisconsin Department of Transportation
Kevin Tierney, Bird’s Hill Research
Penelope Weinberger, AASHTO

TRB Staff
Thomas M. Palmerlee, Associate Division Director
Mai Quynh Le, Associate Program Officer
Bruce Millar, Deputy Director of Meetings Department
Pre–Conference Workshop

Tuesday, November 14, 2017

Open to All Conference Registrants

8:30 a.m.–Noon  
**Advanced Topics in CTPP, Salon C**  
Penelope Weinberger, AASHTO, *presiding*

The workshop will focus on three areas: The Flat Truth about the Flat Files; MOEs and Uncertainty; and Advanced Applications of CTPP Data.

In the first part of the workshop we will focus on the flat files from the Census Bureau and those available by FTP download. What are the differences between these? What do you need to work with these data? Who is this data for? We will then move on to discuss Margins of Error and uncertainty with the data, focusing on the ongoing research around this area. What are tolerable MOEs? How do you generate less uncertain estimates? How do you show an MOE in visual media? Lastly we will look at using the data beyond basic profiles and calibration/validation. How do you assess a data set to see if it’s suitable for a problem or analysis, conversely, how do you assess a problem to see if the data you have can solve it?

**Panel**

  - Chris Bonyun, Beyond 20/20
  - Jane Li, Weststat Inc.
  - Jim Hubbell, Mid-America Regional Council (MARC)
Tuesday, November 14, 2017

8:00 a.m.–5:00 p.m., Salon ABC Foyer

Registration

1:00 p.m.–2:30 p.m., Starlight Ballroom

Opening Session

Welcome and Conference Overview
Ed Christopher, Independent Transportation Planning Consultant, Chair

The Need for this Conference: Why is the CTPP Program Interested?
Tracy Larkin, CTPP Oversight Board

The CTPP and National Transportation Statistics: A 40–year Perspective
Rolf Schmitt, Bureau of Transportation Statistics

Remarks from the Census Bureau
Deborah Stempowski, U.S. Census Bureau

Looking Backwards and Forwards: Perspectives from an MPO Planner
Charles Purvis, Metropolitan Transportation Commission (retired)

Charge to the Conferees
Catherine K. Lawson, State University of New York, Albany

2:30 p.m.–3:00 p.m., Salon ABC Foyer

Break

3:00 p.m.–4:30 p.m.

Breakout Sessions

The Greybeards, Salon A
Nanda Srinivasan, Energy Information Administration, presiding

This session will focus on the history of the census as it relates to transportation and the evolution of the CTPP program, the transportation related questions on the long form/ACS, and how the CTPP program can survive in this age of resource cuts, reduced response rates, and lack of trust in institutions.

History of UTPP/CTPP
Ed Christopher, Independent Transportation Planning Consultant

Panel
Alan Pisarski, Alan Pisarski Consulting
Rolf Schmitt, Bureau of Transportation Statistics
Charles Purvis, Metropolitan Transportation Commission (retired)
Phillip Salopek, U.S. Census Bureau (retired)
Ken Hodges, Claritas

CTPP Program 101, Salon B
Penelope Weinberger, AASHTO, presiding (invited)

With the advent of the American Community Survey the special transportation tabulation product was brought under a State DOT funded, cooperative program and broadened to include research, technical assistance, and training for the transportation planning community. This session will highlight the various aspects of the program.
Program Overview
Penelope Weinberger, AASHTO

New Data
Tom Faella, La Crosse Area Planning Committee

New Software
Chris Bonyun, Beyond 20/20

Research
Phil Mescher, Iowa Department of Transportation

Training/Outreach
Benjamin Gruswitz, Delaware Valley Regional Planning Commission

Supporting Transportation Performance Management and Metrics with Census Data, Salon C
Jim Hubbell, Mid-America Regional Council (MARC), presiding
Karen Miller, Missouri Department of Transportation, recording

Transportation Performance Management (TPM) and Metrics are an ever increasing component of our transportation decision and policy processes. As these TPM processes mature, Census data will likely be used to support them. This commissioned paper explores several uses of ACS and CTPP data to support different TPM activities. The session will begin with a 30 minute presentation of the paper followed by a 60 minute facilitated discussion around the topic and the paper.

Commissioned Paper
Ivana Tasic, Department of Civil & Environmental Engineering, University of Utah

5:00 p.m.–6:30 p.m., Starlight Ballroom
Poster Session and Reception

Conspicuous Consumption: Geospatial Trends in Vehicle Type Choice and Travel Behavior
Yue Ke, Konstantina Gkritza, Purdue University

Estimating Paratransit Demand Forecasting Models Using ACS Disability and Income Data
Daniel Rodriguez Roman, University of Puerto Rico, Mayaguez; Sarah Hernandez, University of Arkansas

Travel Model Validation Using CTPP, HH Survey and Big Data
Liyang Feng, Saima Masud, Southeast Michigan Council of Governments (SEMCOG)

A Case Study Measuring the Effect of the Margin of Error in CTPP Data on Transit Business Planning
Mario Scott, Megan Brock, Steer Davies Gleave

Utilizing LEHD Data in Job Accessibility Estimation
Ranjan Prabhakar, Independent Consultant; Stephanie Dock, District Department of Transportation

Predicting VMT from PUMA Data
Gregory Newmark, Kansas State University; Peter Haas, Center for Neighborhood Technology

Utilizing Census Data for Active Transportation Planning
Marketa Vavrova, University of Texas at El Paso; Michael Medina, El Paso Metropolitan Planning Organization

From Traffic Counts to Equity: The Power of Integrating Big Data and the Census
Laura Schewel, StreetLight Data

Vision for Applying Machine Learning (ML) to Census and Transportation Planning Data
Melissa Gross, Claudia Paskauskas, InNovo Partners

Yohan Chang, Praveen Edara, University of Missouri, Columbia
Road Segment Sampling: Usage and Evaluation of the Census Bureau’s TIGER
Matthew Airola, Jim Green, Westat Inc

Why Do People Choose to Live Where They Do, Transportation's Role in that Decision, and How Data Can Inform Policy
Phil Lasley, Texas A&M Transportation Institute

High Resolution Demographic Forecasting: The Convergence of Socioeconomic, and Remote Sensing Data for Small Area Forecasting
Mark Folden, North Central Texas Council of Governments

Wednesday, November 15, 2017

8:00 a.m.—4:00 p.m., Salon ABC Foyer
Registration

7:30 a.m.—8:30 a.m., Salon ABC Foyer
Continental Breakfast

8:30 a.m.—10:00 a.m.
Breakout Sessions

Census Bureau Potpourri Part 1, Salon A
Phillip Salopek, U.S. Census Bureau (retired), presiding

This is the first of two sessions focused on the various Census Bureau programs and divisions. In this session attendees will hear from the Social, Economic, and Housing Statistics Division and the Geography Division. These presentations will be followed by an opportunity to participate in a Q&A with Census Bureau representatives.

Commuting Programs and Products from the Census Bureau
Brian McKenzie, U.S. Census Bureau

Geography Division
Vince Osier, U.S. Census Bureau

Demographics, Equity and Access, Salon B
Michael Frisch, University of Missouri, Kansas City, presiding

Census data is used in many ways. This session captures three of the more specialized uses facing states and regional planning agencies throughout the country. These applications have broad applicability and the techniques used can be transferred to other areas.

Identifying the Transportation Needs of Aging Texans
Ben Ettelman, Maarit Moran, Texas A&M Transportation Institute

Leveraging Census Data for MPO Equity Analyses
Kimberly Korejko, Shoshana Akins, Benjamin Gruswitz, Delaware Valley Regional Planning Commission

Transit Accessibility and the Spatial Mismatch between Jobs and Low-Income Residents: Empirical Findings in the Dallas Area
Reza Sardari, Shima Hamidi, The University of Texas at Arlington

10:00 a.m.—10:30 a.m., Salon ABC Foyer
Break
10:30 a.m.–Noon

**Breakout Sessions**

**Census Bureau Potpourri Part 2, Salon A**
Phillip Salopek, U.S. Census Bureau *(retired)*, *presiding*

This is the second of two sessions focused on the various Census Bureau programs and divisions. In this session attendees will hear from the Center for Economic Studies, the Center for Enterprise Dissemination Services and Consumer Innovation (CEDSCI), and the Decennial Communications Coordination Office, followed by an opportunity to participate in a Q&A with Census Bureau representatives.

- **Center for Economic Studies (LEHD Program)**
  Mathew Graham, U.S. Census Bureau

- **The Future of Census Bureau Data Dissemination**
  Ally Burleson-Gibson, U.S. Census Bureau

**Advanced Data Analysis, Salon B**
Joseph Hausman, Federal Highway Administration (FHWA), *presiding*

Working with Margins of Error, evaluating data reasonableness and then applying the data for activities such as market segmentation are key challenges faced by the data analyst. In this session attendees will hear how these issues have been approached.

- **A Framework for Evaluating Reasonableness of Travel Time Estimates and Margins of Error**
  Cemal Ayvalik, Kimon Proussaloglou, Cambridge Systematics

- **Using CTPP Data for Market Segmentation of Households and Employment in North Central Texas Regional Travel Model**
  Arash Mirzaei, Liang Zhou, North Central Texas Council of Governments (NCTCOG)

- **Use of Published Margins of Error for Aggregating CTPP Tables and Sensitivity Analysis**
  Jianzhu Li, Tom Krenzke, Westat

**TAZs–How Do We Move Forward?, Salon C**
Kevin Tierney, Bird’s Hill Research, *presiding*
Jennifer Murray, Wisconsin Department of Transportation, *recording*

TAZs have been a part of the CTPP/UTPP data product since the inception of the tabulation. However, over time TAZs have become very costly to produce, redundant with other geographies and confusing in their structure. This commissioned paper looks at the CTPP TAZs while providing an assessment of the issues surrounding the continued production of TAZs for Census data. The session will begin with a 30 minute presentation of the paper followed by a facilitated discussion around the topic and the paper.

- **Commissioned Paper**
  Huimin Zhao, Independent Consultant

Noon–1:00 p.m., **Starlight Ballroom**

**Lunch**
1:00 p.m.–2:30 p.m.

**Breakout Sessions**

**We Like Our PUMs Data and We Use It, Salon A**
Jennifer Murray, Wisconsin Department of Transportation, *presiding*

The Public Use Micro Samples can be one of the most powerful resources in the data analyst’s arsenal. If you are not using it this session will highlight what you are missing. If you are using it, this session will provide some new insights into the data.

**Use of PUMS by State DOTs and MPOs–A Synthesis**
Kevin Tierney, Bird’s Hill Research

**Enriched Census Data from IPUMS: Microdata, Time Series, and GIS Data**
Jonathan Schroeder, Minnesota Population Center

**Year-to-Year Changes in County–to–County Commute Patterns: Lessons from the American Community Survey Public Use Microdata Sample**
Charles Purvis, Metropolitan Transportation Commission *(retired)*

**Transportation Modeling, Salon B**
Jim Hubbell, MARC, *presiding*

Census data products have always been integral parts of transportation models. Even as the models evolve and address new issues and problems, census data can still be found at their core. This session traces how three different models are integrating census data.

**Synthesized Travel Model Input and ACS Data Consistency Check: SEMCOG’s Practice and Experiences**
Jilan Chen, Liyang Feng, Southeast Michigan Council of Governments

**Role of Census Data in FTA’s Simplified Trips–on–Project Software**
William Woodford, Resource Systems Group; James Ryan, Federal Transit Administration

**Use of Time of Arrival at Work Data for DTA (and Other Sub–Daily) Travel Models**
Sam Granato, Ohio Department of Transportation

**Keeping the “Census Data” Relevant, Salon C**
Stacey Bricka, MacroSys Research and Technology, *presiding*
Penelope Weinberger, AASHTO, *recording*

The data landscape is changing in terms of both data availability and the demands for new and more types of data. New data sources such as mobile devices, GPS, social media and crowd-sourcing expand the possibilities of data collection and analysis. This paper explores how Census data (CTPP, ACS, LEHD) relate to these emerging and evolving data sets. Will Census data stay relevant? Can Census data be combined or integrated with these private data sets? Can Census data answer the policy questions of tomorrow? The session will begin with a 30 minute presentation of the paper followed by a facilitated discussion around the topic and the paper.

**Commissioned Paper**
Greg Erhardt, Department of Civil Engineering, University of Kentucky

2:30 p.m.–3:00 p.m., **Salon ABC Foyer**

**Break**
3:00 p.m.–4:30 p.m.  
**Breakout Sessions**

**Using Census Data to Understand Alternative Modes, Salon A**  
Jim Hubbell, MARC, presiding

Census data is not only about demographics. In the transportation community it is used for modal analysis, especially when assessing new and emerging modes. Three such examples are highlighted in this session.

**Investigating the Factors Influencing Electric Vehicle Adoption Rate in California: A County-Level Data Analysis**  
Roxana J.Javid, Savannah State University; Ramina J. Javid, Shahid Beheshti University

**Predictive Models for Bike–Share Utilization Using Open–Source and Census Data**  
Zhuyun Gu, Anurag Komanduri, Cambridge Systematics

**Using CTPP Data for Passenger Ferry Demand Forecasting**  
Megan Brock, Mario Scott, Pierre Vilain, Steer Davies Gleave

**National Household Travel Survey: Building on 50 years of Experience, Salon B**  
Danny Jenkins, Federal Highway Administration, presiding

The National Household Travel Survey (NHTS) is used hand-in-hand with census data. This session will focus on the many years of experience linking NHTS with the census for transportation planning purposes. Also, the session will provide an update on the new NHTS due out in a few months.

**Panel**  
Alan Pisarski, Consultant  
Steve Polzin, University of South Florida  
Cemal Ayvalik, Cambridge Systematics  
Clara Reschovsky, Bureau of Transportation Statistics

**Workplace Data–Achieving Its Potential, Salon C**  
Brian McKenzie, U.S. Census Bureau, presiding  
Michael Frisch, University of Missouri, Kansas City, recording

One of the mainstays of the CTPP special tabulation is the abundance of data on workers at their work locations. However, there is concern moving forward that the workplace tables have been underused and may be reduced in future tabulations. This paper was commissioned to explore the many potential uses of this data both from current applications but also from the “what could the data be used for” perspective. The session will begin with a 30 minute presentation of the paper followed by a facilitated discussion of the topic and the paper.

**Commissioned Paper**  
Jung Seo, Southern California Association of Governments
Thursday, November 16, 2017

8:00 a.m.–Noon, Salon ABC Foyer
Registration

7:30 a.m.–8:30 a.m., Salon ABC Foyer
Continental Breakfast

8:30 a.m.–10:00 a.m.
Breakout Sessions

The Future of Data for Transportation Planning Data, Salon A
Krishnan Viswanathan, Cambridge Systematics, Inc., presiding

This session will focus on the future of transportation planning data, how census data relate to it and the experiences of agencies and universities in working in this future data context. After some brief presentations, time will be left for a group discussion. What is your prognostication?

Panel
Stacey Bricka, MacroSys Research and Technology
Anurag Komanduri, Cambridge Systematics, Inc.
Bhargava Sana, San Francisco County Transportation Authority
Nanda Srinivasan, Energy Information Administration

Comparing Census Data Sets, Salon B
Mara Kaminowitz, Baltimore Metropolitan Council (BMC), presiding

The experienced data user knows there is no perfect data set. Each comes with nuances, methodological concerns, and issues. The savvy analyst knows to check any single source with other relevant sources before drawing any major conclusions. Come see how three different analysts approach this with their data sets.

Comparison of Travel Time Distributions from ACS 2015 and NPMRDS
Francisco Torres, Arash Mirzaei, NCTCOG

Comparing the Use of CTPP and LEHD to Create an Employment Distribution in the North Central Texas Regional Travel Model
Arash Mirzaei, Liang Zhou, NCTCOG

Comparing CTPP and LEHD on Journey–to–Work Trip Length Distributions Statewide
Sam Granato, Ohio Department of Transportation

10:00 a.m.–10:30 a.m., Salon ABC Foyer
Break

10:30 p.m.–Noon, Starlight Ballroom
Closing Session
Clara Reschovsky, Bureau of Transportation Statistics, presiding

Report Back from Commissioned Paper Break Out Discussions
Catherine K. Lawson, State University of New York, Albany

Plans for the Next CTPP
Penelope Weinberger, AASHTO

Closing Remarks
Guy Rousseau, CTPP Oversight Board Vice Chair

Final Thoughts
Ed Christopher, Independent Transportation Planning Consultant
Noon–1:00 p.m., Boardroom 2701
Planning Committee Debriefing (*invitation only*)

1:00 p.m.–5:00 p.m., Salon B
CTPP Oversight Board Meeting (*invitation only*)
TRB 97th Annual Meeting

January 7–11, 2018
Walter E. Washington Convention Center
Washington, DC

Using National Household Travel Survey (NHTS) Workshop

August 8–9, 2018
Keck Center
Washington, DC