Innovations in Freight Data Workshop

April 9-10, 2019
Arnold and Mabel Beckman Conference Center
Irvine, CA

Organized by
Transportation Research Board

www.trb.org/conferences/Freight2019.aspx
WELCOME

Building on the success of its predecessor 2017 workshop, the 2019 Innovations in Freight Data Workshop aims to bring together the community of freight data users to share, discuss, and learn about:

- The latest applications of emerging data sources and data fusion methods;
- Freight data tools that are adaptable, flexible, user-friendly, and preserve proprietary data, or that are developed with open source technology; and
- Transferable methods of data collection, analysis, and visualization to meet local, federal, or international freight planning and performance measurement requirements.

Presenters and attendees are invited to share experience and best practices for addressing persistent gaps in freight data collection and evaluation, and for responding to the new challenges associated with the use of recent and emerging data sources.

—Alison Conway, City College of New York
Innovations in Freight Workshop Planning Team Chair

Planning Committee
Alison Conway, City College of New York, Chair
Avital Barnea, AASHTO
Chandra Bondzie, FHWA
Chester Ford, Bureau of Transportation Statistics
Sam Hiscocks, Iowa Department of Transportation
Sherif Ishak, Old Dominion University
Nikola Ivanov, University of Maryland CATT Laboratory
Yatman Kwan, California Department of Transportation
Catherine Lawson, University at Albany, SUNY
Donald Ludlow, CPCS
Casey Wells, Texas Department of Transportation
Joel Worrell, Florida Department of Transportation

Staff
Tom Palmerlee, TRB
Scott Brotemarkle, TRB
Mai Quynh Le, TRB

The Transportation Research Board is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to increase the benefits that transportation contributes to society by providing leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board’s varied committees, task forces, and panels annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

World.TRB.org
## SCHEDULE AT A GLANCE

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<th>Rooms Assigned to Meetings or Sessions</th>
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<td><strong>Monday</strong></td>
<td>8:00 a.m.- 10:00 a.m.</td>
<td>Auditorium: Freight Transportation Planning and Logistics (AT015) Committee Meeting; Huntington Room: Agriculture and Food Transportation (AT030) Committee Meeting</td>
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<td>April 8, 2019</td>
<td>10:30 a.m.- 12:30 p.m.</td>
<td>Atrium: Urban Freight Transportation (AT025) Committee Meeting; Board Room: AASHTO COP Freight Planning Task Force; Crystal Cove Room: Intermodal Freight Terminal Design and Operations (AT050) Committee Meeting</td>
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<td></td>
<td>1:30 p.m.- 3:15 p.m.</td>
<td>Huntington Room: AASHTO Special Committee on Freight Meeting Part 1 (Public)</td>
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<td>3:30 p.m.- 5:30 p.m.</td>
<td>Balboa Room: AASHTO Special Committee on Freight Meeting Part 2 (Members Only)</td>
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<td>5:30 p.m.- 6:30 p.m.</td>
<td>Atrium: Innovations in Freight Data Workshop Planning Meeting (Members Only)</td>
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<td><strong>Tuesday</strong></td>
<td>8:00 a.m.- 10:00 a.m.</td>
<td>Auditorium: Opening Session</td>
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<td>April 9, 2019</td>
<td>10:30 a.m.- Noon</td>
<td>Board Room: Novel Methods of Data Collection (I)</td>
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<td>1:00 p.m.-2:30 p.m.</td>
<td>Balboa Room: Developing Freight Data into Decision-Making Information</td>
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<td>3:00 p.m.- 4:30 p.m.</td>
<td>Balboa Room: Developing Data Systems to Manage Commercial Vehicle</td>
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<td>4:30 p.m.- 6:00 p.m.</td>
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<td><strong>Wednesday</strong></td>
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<td>Atrium: Emerging Data Streams and Future Freight Application</td>
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<td>April 10, 2019</td>
<td>10:00 a.m.- 11:15 a.m.</td>
<td>Board Room: Poster Session</td>
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<td>1:00 p.m.-2:30 p.m.</td>
<td>Board Room: Machine Learning and Computer Vision to Collect and Improve Freight Data</td>
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<td>3:00 p.m.- 4:00 p.m.</td>
<td>Board Room: Closing Session</td>
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<td>4:00 p.m.- 5:00 p.m.</td>
<td>Board Room: Innovations in Freight Data Workshop Planning Debrief (Members Only)</td>
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TRB COMMITTEE MEETINGS

Monday, April 8, 2019

All Committee Meetings and the AASHTO Freight Meeting Part 1
Open to the Public

7:00 a.m.– 8:00 a.m., Dining Room
Breakfast

8:00 a.m.– 10:00 a.m.
Freight Transportation Planning and Logistics (AT015) Committee, Balboa Room
Matthew Roorda, University of Toronto, presiding

Agriculture and Food Transportation (AT030) Committee, Crystal Cove Room
Mark Berndt, Quetica, presiding

10:00 a.m.– 10:30 a.m., Atrium
Break

10:30 a.m.– 12:30 p.m.
Urban Freight Transportation (AT025) Committee, Balboa Room
Bill Eisele, Texas A&M Transportation Institute, presiding

Intermodal Freight Terminal Design and Operations (AT050) Committee, Crystal Cove Room
Nathan Hutson, University of Southern California, presiding

AASHTO COP Freight Planning Task Force, Board Room
Tom McQueen, Georgia DOT, presiding

12:30 p.m.– 1:30 p.m., Dining Room
Lunch

1:30 p.m.– 3:30 p.m.
AASHTO Special Committee on Freight Part 1, Huntington Room
Roger Millar, Washington State Department of Transportation, presiding

3:30 p.m.– 3:45 p.m., Atrium
Break

3:45 p.m.– 5:30 p.m.
AASHTO Special Committee on Freight Part 2 (Members Only), Huntington Room
Roger Millar, Washington State Department of Transportation, presiding

Freight Transportation Data (ABJ90) Committee, Board Room
Alison Conway, City College of New York, Chair, presiding

Intermodal Freight Transport (AT045) Committee, Balboa Room
Jolene Hayes, Fehr and Peers, presiding

5:30 p.m.– 6:30 p.m.
Innovations in Freight Data Workshop Planning (Members Only), Board Room
Alison Conway, City College of New York, Chair, presiding
WORKSHOP SESSIONS

Tuesday, April 9, 2019

7:30 a.m.– 4:30 p.m., Great Hall
Registration

7:30 a.m.– 8:30 a.m., Dining Room
Breakfast

8:30 a.m.– 10:00 a.m., Auditorium
Opening Session
Alison Conway, City College of New York, Chair, presiding
Catherine Lawson, University at Albany, SUNY, recording

Welcome and Charge to Participants
Roger Millar, Washington State Department of Transportation
Chris Schmidt, CalTrans

10:00 a.m.– 10:30 a.m., Atrium
Break

10:30 a.m.– Noon, Auditorium
Novel Methods of Data Collection (I)
Nikola Ivanov, University of Maryland CATT Laboratory, presiding
Sarah Hernandez, University of Arkansas, recording

Innovative data collection methods are being developed to address persistent freight data challenges, including invisibility of local movements and data time lags. This panel will discuss innovative applications to collect location-specific freight parking, routing, and behavior data.

A Self-Sustaining, Self-Perpetuating Web-Scraping Application for Crude Oil Railroad Route Information
Chieh (Ross) Wang, Shih-Miao Chin, Ho-Ling Hwang, Hyeonsup Lim, Oak Ridge National Laboratory

Next-Generation Smartphone or Tablet-Based Commercial Vehicle Survey
Lynette Cheah, Singapore University of Technology and Design; Kyungsoo Jeong, Massachusetts Institute of Technology

Leveraging the Crowd: The Application of Crowdsourced Data to Generate Truck Parking Insights
Alex Marach, CPCS

Noon– 1:00 p.m., Dining Room
Lunch

1:00 p.m.– 2:30 p.m., Auditorium
Developing Freight Data into Decision-Making Information
Holly Cohen, Florida Department of Transportation, presiding
Julius Codjoe, Louisiana Department of Transportation, recording

State and local agencies are now using common data sources such as vehicle probes, traffic sensors, and weigh-in-motion systems in innovative ways for freight planning and performance measurement. This panel will discuss new freight planning and performance measurement applications for public agencies.

Truck Empty Backhaul - A Florida Freight Story
Joel Worrell, Florida Department of Transportation

Using Freight Data to Inform the 2018 Texas 100 Most Congested Road Sections
David Schrank, Bill Eisele, Texas A&M Transportation Institute
Trucks and the Port of Virginia: Understanding Freight Patterns with Big Data
Robert Case, Hampton Roads Transportation Planning Organization; Catherine Manzo, StreetLight Data

2:30 p.m.– 3:00 p.m., Atrium

Break

3:00 p.m.– 4:30 p.m., Auditorium

Developing Data Systems to Manage Commercial Vehicle Behaviors
Donald Ludlow, CPCS Transcom Inc., presiding
Paul Bingham, EDR Group, recording

Understanding truck activity patterns and supply chain behaviors is critical for planning for and managing goods movements and prioritizing infrastructure investments. This panel will discuss new methods for identifying, measuring, and visualizing freight activities.

Implementation of a National Freight Fluidity Monitoring Program
Marygrace Parker, I-95 Corridor Coalition; Joseph Bryan, WSP USA, Inc.

Truck Activity Pattern Classification Using Anonymous Mobile Sensor Data
Taslima Akter, Sarah Hernandez, University of Arkansas

Advanced Uses Of Truck GPS Data: Truck Tour Typologies, Connecting Long-Haul And Short-Haul Trucks, and Longitudinal Analysis to Understand Change in Business Practices Over Time
Colin Smith, Vincent Bernardin, RSG

4:30 p.m.– 6:00 p.m., Atrium

Interactive Posters and Reception
Casey Wells, Texas DOT; Sam Hiscocks, Iowa DOT, presiding

Presenters will utilize large flat-screens to interactively demonstrate innovative freight data applications, many of which combine multiple data sources / technologies (e.g. GPS, Bluetooth) to improve data collection, analysis, and decision making.

An Evolution in Open Source Interactive Freight Data Visualization
Ben Stabler, Colin Smith, RSG

Derek Cutler, EDR Group

Design and Pilot of a Shipment Tracking Method to Supplement a Commodity Flow Survey
Peiyu Jing, Massachusetts Institute of Technology; Lynette Cheah, Singapore University of Technology and Design

Enhancing Truck Activity Monitoring System by Using Advanced Traffic Sensors
Yiqiao Li, Andre Tok, Institute of Transportation Studies, University of California, Irvine

Firms in the Future: Applying Today’s Data to Forecast the Evolution of Firms for Freight Modeling
Brent Selby, Krishnan Viswanathan, Cambridge Systematics, Inc.

Implementing Freight Fluidity in Texas
Bill Eisele, Nicole Katsikides, Texas A&M University Transportation Institute

International Truck Travel in the SoCal Region: Understanding Freight Patterns with Big Data
Keri Robinson, SANDAG; Jess Stetson, StreetLight Data

NCFRP 49 - Web Guide for Understanding and Using New Data Sources to Address Urban and Metropolitan Freight Challenges
Vivek Sakhrani, Donald Ludlow (CPCS Transcom)

Spatiotemporal Analysis of the Freight Analysis Framework Data
Monique Stinson, Argonne National Laboratory; Birat Pandey, Federal Highway Administration

The Future of Urban Goods Movement: An Evaluation and Implementation of Data Driven Methods
Ethan Yue Sun, Fatemeh Ranaiefar, Fehr & Peers
Wednesday, April 10, 2019

7:30 a.m.– 1:30 p.m., Great Hall
Registration

7:30 a.m.– 8:30 a.m., Dining Room
Breakfast

8:30 a.m.– 10:00 a.m., Auditorium
Emerging Data Streams and Future Freight Application
Patricia Hu, Bureau of Transportation Statistics, presiding
Alan Hooper, ATRI, recording

Transformational technology advances, such as artificial intelligence and the internet of things, and increasingly vast datasets, such as transaction records are expected to enable new advances for freight data collection, behavior analysis, and decision-making. This future-looking panel will discuss the new opportunities that these innovations may offer for freight planning and management.

Emerging Datasets and Their Impact on Transportation
Zach Strickland, Freight Waves

Trucking Industry Perspective: Electronic Logging Devices - Potential Ways to Leverage the Data for Operations Efficiency
Greg Dubuque, Liberty Linehaul West

The Electronic Logging Device (ELD) Mandate and Trucking: How We Got Here and Opportunities for Freight Data, Planning and Management
Jeffrey Short, American Transportation Research Institute (ATRI)

10:00 a.m.– 10:30 a.m., Atrium
Break

10:30 a.m.– Noon, Atrium
Poster Session
Yatman Kwan, California DOT; Chester Ford, Bureau of Transportation Statistics, presiding

Using traditional posters, presenters will discuss a variety of unique approaches for freight data collection, performance measurement, planning, and visualization.

A Freight Forecasting Tool for Northern New Jersey
Daniel Beagan, Christopher Lamm, Cambridge Systematics, Inc.

Statewide Freight Activity
Joel Worrell, Florida Department of Transportation

California Vehicle Inventory and Use Survey - Large-scale Data Collection and Fusion with Trucking Databases
Anurag Komanduri, Mobashwir Khan, Cambridge Systematics

Characterization and Estimation of Traffic Volume: A Truck and Passenger Cordon Study of the Seattle’s Urban Core
Gabriela del Carmen Giron Valderrama, Anne Goodchild, University of Washington

Conceptual Routing for Potential Hyperloop Freight Network Using the Freight Analysis Framework Database
Chieh (Ross) Wang, Shih-Miao Chin, Ho-Ling Huang, Hyeonsup Lim, Oak Ridge National Laboratory

Data Assessment Methods for Truck-Sea Vessel Flow Analysis
Mario M Monsreal Monsreal, Don Kang, Texas A&M Transportation Institute

Emerging Datasets Used in Advanced Freight Models
Kaveh Shabani, Maren Outwater, RSG

Mind the Curb: Findings from Commercial Vehicle Curb Usage in California
Mohammadreza Kamali, Anurag Komanduri, Cambridge Systematics
Practices for the Geographic Disaggregation on CFS Data in Southern California (Canceled)
Stephen Yoon, SCAG
Spatial Disaggregation of Waterborne Commodity Flow by Fusing Truck GPS and Lock Performance Data
Magdalena Asborno, Sarah Hernandez, University of Arkansas
The Questions Big Data Can Answer: Commercial Travel Analysis
Joan Lim, StreetLight Data; Stasa Zivojnovic, Fatemeh Ranaieifar, Fehr and Peers

Noon– 1:00 p.m., Dining Room
Lunch

1:00 p.m.– 2:30 p.m., Auditorium
Machine Learning and Computer Vision to Collect and Improve Freight Data
Sherif Ishak, Old Dominion University, presiding
Chieh (Ross) Wang, Oak Ridge National Laboratory, recording

Computer vision and machine learning offer new opportunities for improving the quality of freight data and for addressing persistent freight data gaps. This panel will discuss recent applications of these approaches.

Machine Learning Applications to Improve the Commodity Flow Survey
Christian Moscardi, Census Bureau
Truck Taxonomy–Classification and Commodity via Machine Learning
Ed Hutchinson, Makarand Gawade, Florida Department of Transportation
Tracking the Maritime Transportation System with the Automated Identification System (AIS)
Patricia DiJoseph, USACE

2:30 p.m.– 3:00 p.m., Atrium
Break

3:00 p.m.– 4:00 p.m., Auditorium
Closing Session
Alison Conway, City College of New York, Chair, presiding

During the closing session, workshop organizers and panel moderators will summarize workshop findings and engage attendees to identify key takeaways from the workshop, including:

• promising new data sources and processing, analysis, or visualization methods;
• transferable advances in practice for freight planning and performance measurement; and
• immediate and long-term research needs to further advance the capabilities of freight data users and to address persistent freight data gaps and challenges.

4:00 p.m.– 5:00 p.m., Huntington Room
Innovations in Freight Data Workshop Planning Debrief (Members Only)
Alison Conway, City College of New York, Chair, presiding
FLOOR PLAN

Authorized in 2005, NCFRP is sponsored by the U.S. Department of Transportation and managed by the Transportation Research Board (TRB). Program guidance is also provided by an oversight committee comprising a representative cross section of freight stakeholders.

Annual funding has averaged around $3.4 million per year. The 2012 law titled Moving Ahead for Progress in the 21st Century Act (MAP-21) repealed the NCFRP. Although there will be no new funding, all existing research contracts will be completed as planned.

Browse the still-growing body of research produced by the NCFRP program.

https://ncfrp48.icfwebservices.com/ncfrp48/reports/
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