TMIP Annual Report
October 2013 – September 2014

October 2014

Peer Reviews

Data

Tools

$$f(x) = ln \sum_n$$

Webinars

Analysis
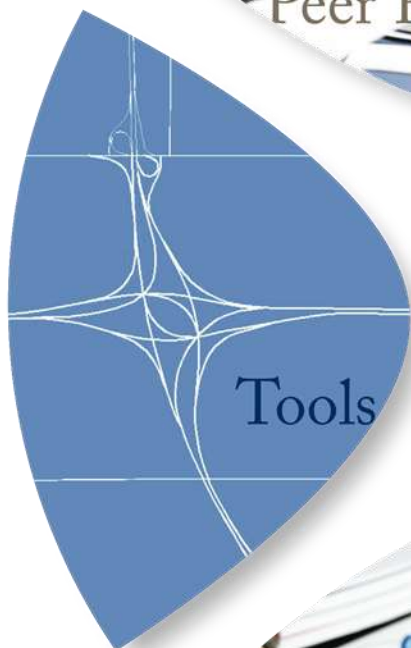
TMIP

Better Methods. Better Outcomes.

TMIP
Better Methods. Better Outcomes.

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Better Methods. Better Outcomes.

Who We Are

The Travel Model Improvement Program (TMIP) has conducted research, provided technical assistance, and delivered training to state, regional, and local transportation planning professionals since 1994. Much has changed since TMIP's inception, with shifts in transport policy, advances in modeling theories, and progressions in practical lessons. Throughout, TMIP has worked to advance modeling capabilities and support transportation professionals as they respond to current and emerging challenges. TMIP continues its mission of improving analysis practices to ensure that transportation professionals are well equipped to inform and support strategic transportation decisions. Currently, TMIP is funded by the Federal Highway Administration's (FHWA) Office of Planning, Environment and Realty.

What We Do

TMIP shares many of its objectives with other stakeholder groups and national organizations. TMIP works cooperatively with the Metropolitan Capacity Building Program (MCB), which is focused on enhancing the capabilities of state and local transportation staffs to meet planning requirements and needs. TMIP also works with the Association of Metropolitan Planning Organizations (AMPO) and the American Association of State Highway and Transportation Officials (AASHTO).

In addition, TMIP has updated its vision, mission, core values, and strategic goals to support the FHWA's mission to meet new planning and programming requirements contained in Moving Ahead for Progress in the 21st Century Act (MAP 21), which was signed into law on July 6, 2012. The bill funded surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014. MAP-21 emphasizes performance-based approaches.

TMIP Vision

TMIP provides technical support and promotes knowledge and information exchange in the transportation planning and modeling community.

TMIP Mission

TMIP helps transportation planners provide better information through effective use of quantitative methods and tools.

TMIP Core Values

- Collaboration
- Innovation
- Education

TMIP Strategic Goals

Outreach: Move transportation planning research from theory to practice and promote good practices in travel data analyses and quantitative methods applications.

Agency Support: Build transportation planning agencies' institutional capacity to effectively apply analytical tools in the transportation planning decision-making process.

Tool Enhancement: Develop the Toolbox as a comprehensive desk reference for applying travel analysis tools to support data-driven, performance-based transportation planning.

Program Highlights

Between October 1 2013 and September 30 2014, TMIP established a set of strategic goals to guide its future activities and initiatives. Additionally, TMIP staff outlined and accelerated the execution of seven major programs, summarized in the table below.

Table 1: TMIP Major Initiatives

Webinars: a virtual forum for transportation planning agencies and stakeholders to share insights and experiences. Webinars include both Workshops Over the Web (WOWs) and Web Knowledge and Information Exchange (WKIEs) on relevant topics to the transportation planning community. Twelve (12) webinars were convened during the performance period with an average of 116 participants per session.

Peer Review Program: a program in which planning agencies collaborate with an expert peer review panel to review their data, methods, and planning models to ensure that their technical processes and tools meet analysis needs. Five (5) peer reviews were conducted during the performance period: Maryland State Highway Administration (SHA), Arizona Department of Transportation (ADOT), Baltimore Metropolitan Council (BMC), Ohio-Kentucky-Indiana (OKI) Regional Council of Governments and Washington State Department of Transportation (WSDOT).

At A Glance Series: a series of concise brochures pertaining to transportation analysis, modeling, and simulation related topics for distribution to the TMIP Community. The fourth At A Glance Series brochure was developed in this performance period entitled "Smart Growth Area Planning Tool (SmartGAP) At A Glance".

TMIP Report Series: an initiative to disseminate information related to transportation modeling, simulation, and analysis through the publication of reports, case studies, and exemplary models and technical documentation. During the performance period, the second TMIP Agency Snapshot Report Series was published on the Oregon Department of Transportation.

TMIP Travel Analysis Toolbox: to provide access to a range of travel analysis related tools and serve as a reference resource for the selection and application of analytical tools and quantitative methods to support transportation planning decision making. The goal of the Toolbox is not to identify or create a single - or even a set of - ideal tools, but rather to provide processes, information, and examples to encourage agencies to select the appropriate tools and methods based on their analytical needs. During performance period, the two white papers on travel modeling were completed.

TMIP Online Community of Practice (TMIP|COP): a complementary community resource to the Transportation Research Board's Travel Forecasting Resource for surface transportation modeling, simulation and analysis discussion, documentation, and capacity building. During the performance period, community site was simplified and moved to an open source platform.

TMIP Website: the website (http://www.fhwa.dot.gov/planning/tmip/) is TMIP's primary web-presence.

Between October 2013 and September 2014, FHWA spent less than four hundred thousand dollars to conduct the major activities described in the following sections.

Program Assessment

There are a number of ways to gauge the success of a program, but few are as forthright as feedback provided directly from the program's users. Vladimir Livshits stated what he thinks of TMIP webinars and resources in his October 18, 2013 email feedback.

"TMIP resources and webinars have high value for staff training and education, for professional reference and for ideas exchange. I think it is probably one single web-based most important users forum worldwide in the transportation modeling and closely related areas. I liked TMIP recent initiatives in terms of the webinars and topics for discussions, even though many of us don't have time to consistently or actively participate in all exchanges."

Vladimir Livshits, PhD
System Analysis Program Manager
Maricopa Association of Governments

When we asked our community members, what they like about TMIP, here is what Nelson Galeano has to say about TMIP:

"Ideas sharing,
Innovation and developing tested possibilities,
and
Partnership."
Nelson Galeano

Here is what an international TMIP Community member said about TMIP:

"Where to start! What I like about TMIP:

- *The range and diversity of information relevant to my interests and work*
- *The immediacy of the information – keeps me up to date about developments worldwide and emerging issues that we may face and what to do about them*
- *The on-line discussions about various topics are extremely valuable – where else would you be able to participate in wide ranging discussions with the "gurus"?*
- *The regular updates mean that all information is as up to date as it can be*
- *Wide range of collateral material in the form of publications and guides*
- *Webinar tho[ugh] it is difficult for us in Australia to participate due to the time differences (having the records of webinar's on line for downloading or viewing would be good)*
- *The lack of advertising and advertorials from software developers and academic institutions is most welcomed."* [1]

Lindsay Oxlad

The TMIP Community members both utilize and steer the program and its various initiatives. It is for these users that TMIP continues to offer services and provide the most relevant and useful information available.

TMIP Major Initiatives

TMIP Webinar

In order to support TMIP's mission and goals, two categories of web-delivered seminars ("*webinars*") were designed: the Web Knowledge and Information Exchange (WKIE), in which an agency or professional communicates a specific project or subject-related experience; and Workshops Over the Web (WOW) webinars, which involve technical subject matter capacity building.

WKIE webinars provide a nationwide virtual platform on which stakeholders may impart knowledge and insight from relevant experiences. WKIE webinars are held on current topics of interest to the transportation modeling, simulation, and analysis communities. WKIE is composed of both one-day webinars and multi-day webinar series.

WOW webinars are typically organized for highly complex topics, such as Land Use and Activity-Based Modeling, which were delivered as eight- and twelve-part sessions, respectively.

TMIP records all sponsored webinars and makes the content available to users in the Recorded Webinar section of the TMIP Online Community of Practice (TMIP|COP) available at: http://tmiponline.org/.

Audio-video recordings, and an Instructor's Manual that includes all of the presentation slides in the series with complete speaker notes and written transcripts of the questions and answers from each session, are available for download on the TMIP|COP website http://tmiponline.org/. The recorded webinars are also available via TMIP News. There are currently more than 70 recorded webinars on many different topics related to transportation planning; these range in length from one to two and a half hours in the TMIP webinar archive.

Performance Period Accomplishments

Metropolitan Planning Organizations (MPOs) are required by Federal law to develop regional transportation plans through the estimation of future travel supply and demand and the analysis of transportation investment impacts.

During the performance period (*October 1 2013 to September 30 2014*), twelve webinars were convened as part of TMIP Web Knowledge and Information Exchange (WKIE). Participation in each of the twelve sessions varied, but was often close to the maximum of 100 meeting room connections permitted by the regular FHWA license.

Table 2 provides more details on the 12 sessions held in this performance period.

Table 2: TMIP Webinar Sessions, Participants, Dates

SESSION TITLE	PARTICIPANTS (CONNECTIONS)	DATE
Statistical Peril in the Transportation Planning Polygon	118	10/24/2013
Using ITS Data in Performance-Based Planning	112	11/14/2013
Estimating Risks and Model Credibility	90	12/12/2013
Application of the MTC Activity-Based Model for Project-Level Performance Assessment	91	02/20/2014
AMBAG Experience & Usefulness of the TMIP Peer Review Process	51	03/20/2014
Making the Most of Your Next Household Travel Survey	133	04/03/2014
Travel Time Data: The When, Where, and Why for Modelers	125	04/14/2014
Session 1: Using ACS Multi-Year Estimates for Neighborhood Analyses Session 2: Presenting White Papers- *Improving Existing Travel Models and Forecasting Processes* –and- *Risk and Uncertainty in Travel Forecasting*	119	05/15/2014
Leveraging Archive Operations Data for Performance-Based Planning & Programming at the MPO Level	141	06/05/2014
Sketch Planning Tools- Three Presentations	145	07/24/2014
What does (data) integrity mean to you?	135	08/21/2014
Emerging Technologies in Travel Surveys	132	09/25/2014

A large number of agencies responded with positive feedback in the evaluation polls conducted at the end of each individual webinar session. Participant feedback, via the participant poll slides following each webinar, indicated immense public support.

Contributions to Program

TMIP webinars provide a great opportunity to stay current on all aspects of travel analysis related issues. Transportation technical analysts and planners across the nation gain insights on how TMIP webinar presenters work with emerging data, transitional data and travel demand models to meet the new transportation challenges.

TMIP webinars played a unique role in achieving the TMIP mission by efficiently fulfilling both TMIP Outreach and Agency Support goals. These webinar sessions were effective in imparting knowledge of current and emerging practices in data analysis, activity based, freight and analytical modeling techniques to state, regional and local agencies as noted by Mr. Ali Afshar. The recorded webinar sessions are available online and through TMIP News, and may serve as a source of reference, information, and expert advice for agencies planning.

> *"I like the perception of modeling practice from different perspectives which provided by TMIP that can't be obtained from published material."*
>
> *Ali Afshar,*
> *Technical Group*
> *New York Metropolitan Transportation Council*

TMIP Peer Review Program

The Peer Review Program began in April 2003 with the objective of providing:

- Assistance from peer experts to improve forecast models in high-priority areas;
- Advice on how to proceed with model improvement activities;
- Recommendations on known modeling weaknesses; and
- Comments and advice for modeling prospective policy initiatives.

TMIP works collaboratively with the transportation modeling community to improve information sharing and support good available tools, data, and methods. The purpose of the Peer Review Program is to facilitate a process whereby leading practitioners in the fields of transportation, land-use, and air quality planning and modeling can provide guidance to ensure agencies are developing technical tools, procedures, and processes that meet an agency's needs while also satisfying Federal, state, and local planning requirements. TMIP's Peer Review Program provides an agency with the opportunity to elicit recommendations for addressing its current modeling challenges and those expected to arise due to growth and/or transportation policy changes.

TMIP supports peer reviews by assisting agencies in subject-specific panel assembly, logistics, and funding; documentation of the peer review meetings; and preparation of a final report that summarizes the review for the host agency. Web-conference technology is now also used in some cases to convene part of the peer review as a virtual pre-meeting in addition to the day(s)-long meetings held in person at the host agency. Peer reviews are customized to meet the specific needs of the host agency, but reviews often consist of:

- A one- to two-day meeting with four or five travel modeling experts, host agency planning staff, and other stakeholders;

- Documentation of the agency's model for panelists to review before the meeting;
- Questions or issues for peer panelists to address in their recommendations;
- A final report on the peer review meeting that includes all details and recommendations for tools and their application obtained during the peer review meetings;
- An action plan developed by the host agency in response to the peer recommendations;
- Implementation of recommendations from the host agency; and
- Self-evaluation of progress by the host agency, which may be submitted to TMIP for review.

Performance Period Accomplishments

During the performance period, five peer reviews were convened. Table 3 provides the details on dates and locations.

Washington State Department of Transportation (WSDOT)

The objective of the Washington State Department of Transportation (WSDOT) peer review was to seek background information and recommendations on how WSDOT should approach developing a statewide Washington travel demand forecast model. The information sought by WSDOT included:

- The purposes to which statewide travel models have been or could be applied;
- Key challenges in developing and applying statewide models;
- Resources required to develop a statewide model;
- Strategies for model development work planning;
- How economic data is used in the travel model or could be produced by components of the overall model framework.

Ohio-Kentucky-Indiana (OKI) Regional Council of Governments

The objective of the Ohio-Kentucky-Indiana (OKI) Regional Council of Governments' TMIP peer review was to seek guidance and recommendations on the following features of OKI's travel demand model, which is planned to be updated from a trip-based to a tour-based model:

- Reaffirm that the current trip-based model structure, procedures and results meets the needs of the agency;
- Identify any improvements that can be quickly implemented within OKI's existing data resources or suggest data that can be easily collected for application in the model; and
- Obtain guidance regarding their effort to transition to a tour-based model.

Arizona Department of Transportation (ADOT)

Arizona Department of Transportation (ADOT) requested a second TMIP peer review to assist ADOT staff in identifying the best practices in statewide travel modeling for implementation in the AZTDM. The goal of the review was to enhance the methods employed in the AZTDM and to improve its utility for planning analyses at state, regional, and municipal levels.

Baltimore Metropolitan Council's (BMC)

The objective of the Baltimore Metropolitan Council's (BMC) TMIP peer review was to seek guidance and recommendations on the following features of the BMC's activity-based travel demand model, which is currently under development:

- The sufficiency of the model framework, structure, and methodology to address identified regional policies of interest; and
- The model validation criteria, targets, and sensitivity testing.

Maryland State Highway Administration (SHA)

SHA's overall goal for model improvement and motivation for seeking a TMIP peer review was to continuously maintain and apply a model representative of the state of the practice in travel forecasting that equips the agency with the support needed for informed decision making throughout the state. The peer review was conducted in two in-person meetings: one full-day session including presentation of the current model, discussion based on proposed improvements, and panel member discussion and one half-day session consisting of additional panel discussion, a presentation of recommendations by the panelists, and identification of next steps. The results of each of these sessions and recommendations from the panel are presented in the final report.

The complete reports for each of the five Peer Review Panels conducted during the reporting period are available on the TMIP website, and can be accessed via: http://www.fhwa.dot.gov/planning/tmip/resources/peer_review_program/. The host agencies and dates of the peer review meetings convened during the reporting period are listed in Table 3.

Table 3: Peer Review Meetings by Agency

Peer Review Agency	Place	Dates
Washington State Department of Transportation (WSDOT)	Seattle, WA	July 1, 2014
Ohio-Kentucky-Indiana (OKI) Regional Council of Governments	Cincinnati, OH	April 14-15, 2014
Arizona Department of Transportation (ADOT)	Phoenix, AZ	March 6, 2014
Baltimore Metropolitan Council's (BMC)	Baltimore, MD	December 6, 2013
Maryland State Highway Administration (SHA)	Baltimore, MD	November 11 -12, 2013

Contributions to Program

The Peer Review Program has been successful in creating a venue for agencies to receive advice in the development of their planning tools and tool applications. Panel members have proven effectual in helping agencies to identify issues and provide feasible solutions, resulting in targeted and specific short- and long-term recommendations to guide major model improvement efforts. Additionally, the Peer Review Program not only delivers needed technical advice to the host agencies but also provides TMIP with valuable insights into the varying needs of State, regional, and local planning agencies.

Documentation of the peer review meetings, discussions, recommendations, implementation strategies, and post-review evaluations is not only useful to the host agency, but it also serves as a valuable resource to agencies with similar models, methodologies, or transportation concerns. By making these materials available, TMIP provides another resource to State, regional, and local agencies regarding travel model improvement and enhancement. These

agency-based reports are particularly valuable as they present modeling applications in a familiar context for MPOs, state departments, and similar agencies. Furthermore, the TMIP Peer Review Program plays an important role in promoting good practice in transportation planning analysis, modeling, and simulation.

Subrat Mahapatra from MD State Highway Administration noted why he found TMIP Peer Review Program a valuable resource in his email feedback from January 27, 2014.

> *"It [TMIP Peer Review] has added great value to our road map and has given guidance for our next steps. We have already started reshaping/ restructuring our programs in line with the peer panel recommendations."*
>
> *Subrat Mahapatra*
> *MD State Highway Administration"*

TMIP At A Glance Series

TMIP designed the At A Glance Series to provide an easy-to-read reference on transportation analysis, modeling, and simulation-related topics. The At A Glance series is scheduled to be released once a year and published as brochures for distribution to the TMIP community.

Performance Period Accomplishments

Smart Growth Area Planning Tool (SmartGAP) At A Glance was distributed to the TMIP Community in March 2014 using the FHWA Office of Planning, Environment and Realty's new GovDelivery service.[1]

Contributions to Program

The At A Glance brochure is another initiative that complements current TMIP activities. It serves as a compact resource that provides a comprehensive, quick reference on important topics to the TMIP Community. By highlighting relevant topics and providing a "*30,000-foot view,*" the brochures are ideal for organizing technical information in an easy-to-read manner.

TMIP Agency Report Series

The objective of the TMIP Agency Snapshot Report Series is to facilitate the sharing of agency practices in selecting and applying analytical tools and methods to support data-driven, performance-based transportation planning. The Agency Snapshot Report Series identifies the data; analysis tools; resources necessary to develop, use, and maintain both the data and analysis tools; and the planning processes from which these data and analysis tools are utilized for each showcased agency. The series promotes tool enhancement by illustrating new, innovative, and good practices. The Agency Snapshot Report Series will highlight agency successes that provide information and examples to help other agencies thoughtfully identify appropriate available data, tools, and methods to meet their agency's analytical needs.

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[1] Smart Growth Area Planning Tool (SmartGAP) At A Glance document is available for download at:

http://www.fhwa.dot.gov/planning/tmip/publications/other_reports/smartgap/index.cfm

Performance Period Accomplishments

Within the 2013–2014 reporting period, the Oregon DOT is completed. The report is available at http://www.fhwa.dot.gov/planning/tmip/publications/other_reports/oregon_snapshot/index.cfm.

Contributions to Program

One of the most essential and critical elements of the overall TMIP Program is technology transfer. The Agency Snapshot Report Series initiative accomplishes this through facilitating applied research related to transportation modeling, simulation, and analysis via tasks such as publishing reports and articles, conducting and publishing applied case studies, and providing working examples of models and technical documents.

The Agency Snapshot Report Series also presents an opportunity to provide more comprehensive and detailed information regarding technical data and data analysis processes in the context of a real-world agency. In particular, through this report series, TMIP will be able to promote good practices in the following areas:

- The data agencies collect and utilize to support planning.
- The analysis tools and methods used by agencies and the resources necessary to develop, use, and maintain them.
- Where in the agency planning processes these data and tools are utilized.
- Agency experience related to performance measurement and prediction.
- Emerging issues and challenges facing agencies.

TMIP Travel Analysis Toolbox

TRB Special Report 288 finds that

> "… there is no single approach to travel forecasting or set of procedures that is "correct" for all applications or all MPOs. Travel forecasting tools developed and used by an MPO should be appropriate for the nature of the questions being posed by its constituent jurisdictions and the types of analysis being conducted."[2]

The objective of the TMIP Travel Analysis Toolbox (the Toolbox) is to provide access to a range of travel analysis related tools and serve as a reference resource for the selection and application of analytical tools and quantitative methods to support transportation planning decision making. The goal of the Toolbox is not to identify or create a single—or even a set of—ideal tools, but rather to provide processes, information, and examples to encourage agencies to select the appropriate tools and methods based on their analytical needs.

Performance Period Accomplishments

Over the course of the 2013–2014 reporting period, TMIP has published two white papers: Improving Existing Travel Models and Forecasting Processes and Managing Uncertainty and Risk in Travel Forecasting.

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[2] METROPOLITAN TRAVEL FORECASTING: Current Practice and Future Direction, Transportation Research Board, 2007, Page 3

Contributions to Program

The Toolbox will be a critical resource for the TMIP Community, providing information on existing tools and quantitative methods used in travel analyses and developing new tools and methods for future application.

TMIP Online Community of Practice

The TMIP Online Community of Practice (TMIP|COP) (http://tmiponline.org/) includes the management of the TMIP email list, but it is also an extension and enhancement of the TMIP email list. The intent of TMIP|COP is to provide additional resources to TMIP Community Members.

A prominent component of the TMIP|COP is the TMIP-L email list. TMIP maintains the email list to promote the open discussion of issues related to transportation modeling, simulation, and analysis. The email list has over 1,600 subscribers representing travel forecasting professionals from around the globe.

Performance Period Accomplishments

Accomplishments during the 2013–2014 performance period involved: hosting and maintaining the TMIP|COP and hosting maintaining the TMIP-L email list.

Contributions to Program

The TMIP|COP provides additional resources to the TMIP community. The TMIP|COP's and TMIP-L email list enables TMIP to reach out to thousands of professionals around the globe and provide a platform for community members to connect with each other in a cost-effective way. Judy Clark[3] expressed her sentiment of why TMIP email list community is an integrated part of TMIP and perceived to be a valuable resource to TMIP community members.

It is a wonderful way to solicit help, see what is trending, share job searches, circulate RFPs, and generally get a sense that even as a "weird duck" where I practice, I am part of a larger group working in this challenging field!

Judy Clark
Modeling & Forecasting Manager
Transportation Department
Bellevue, WA

TMIP Website

The TMIP website, located within the broader Department of Transportation (USDOT) and FHWA website, is the Program's primary web presence. The FHWA TMIP website is located at: http://www.fhwa.dot.gov/planning/tmip/. The TMIP Website is designed as a general public access website to obtain information on TMIP initiatives. The website is a source for members, both inside and outside of the TMIP Community, to obtain information available through TMIP's offerings.

Performance Period Accomplishments

The TMIP Website is designed to inform the user community of news, events, and available resources for all of the TMIP initiatives. A simple navigation menu gives visitors the ability to easily locate information. Using each of the main subject headings, the pages clearly and concisely describe each initiative and provide hyperlinks to additional materials and websites.

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[3] October 17, 2013 Email Feedback

TMIP website saw approximately 136,400 visitors in the performance period. Table 4 shows the FY 2013-2014 TMIP Website statistics by month.

Table 4: TMIP Website Usage Statistics

	Total Visitors	Average Visitors per Day	Total Unique IPs
Oct-13	7,423	239	2,280
Nov-13	6,849	228	2,026
Dec-13	8,205	264	2,329
Jan-14	9,164	295	2,557
Feb-14	8,981	320	2,391
Mar-14	10,702	345	2,921
Apr-14	12,304	410	3,197
May-14	14,585	470	3,802
Jun-14	13,122	437	3,398
Jul-14	16,309	526	4,195
Aug-14	15,311	493	3,760
Sep-14	13,450	448	3,803

Contributions to Program

The TMIP Website is the face of the TMIP Program. The site is useful to agency staff as it illustrates the goals, objectives, and programs of the TMIP Program. It is also helpful in drawing agency awareness to the materials available.

Summary and Observations

Each TMIP activity plays an important part in fulfilling TMIP's vision. Each of the initiatives in the program is designed to meet the needs of state, regional, and local transportation planning agencies.

TMIP Webinars are an important contribution that TMIP makes to the community. With an abundance of readily available information, these series aim to meet immediate local, Metropolitan Planning Organization (MPO), and state agency needs. TMIP webinar sessions are always well attended and well received. However, the technology is still a challenge as it is not very interactive. We constantly strive to make it easier for our participants to ask questions and interact. We will begin to explore the potential of adding video capability to some of our webinars in 2015.

TMIP Peer Reviews offer another venue for building state, regional and local agency capacity to promote good practices. Agency satisfaction in the Peer Review Program has been quite high. During post-Peer Review evaluations, agencies feel—almost universally—that the peer reviews meet or exceed the host agency's expectations. However, it is becoming difficult for TMIP to find volunteer panel members with in-depth experience and expertise, who are willing or able to devote the time necessary to review the agency documents before the peer review and provide comments on the draft post peer review report.

At A Glance Series provide succinct references that fill the gaps between non-technical summaries and lengthy, research reports. We are investigating various means to produce the series at lower cost.

TMIP Agency Report Series supports technology transfer of effective quantitative processes As with the At A Glance Series, we are exploring ways to produce the report series at lower cost.

TMIP Travel Analysis Toolbox is designed to help to identify and develop robust, reliable, and helpful travel analysis data, tools, and methods. Exhaustive testing of each of the tools is not feasible given currently available resources. To overcome this challenge, we will continue to encourage Toolbox users to understand the purpose and limitations of each tool prior to application.

TMIP Online Community of Practice (COP) aims to create a true sense of community by facilitating multiple means of communication between agency staff, private consultants, and researchers. Through the TMIP|COP, the TMIP Program strives to provide a national platform for public agency staff and travel modeling and analysis professionals to collaborate on various technical topics. The online COP (except for the TMIP email list discussion forum) is underutilized as our busy community members still prefer the old-fashioned email list. We are evaluating partnership with other programs to achieve the necessary critical mass of community interaction.

TMIP Website provides a basic delivery channel to effectively and efficiently provide information and services to the TMIP Community and, also to grow the community. The single biggest challenge is meeting 508 requirements for old and new content. We are currently reworking support contracts in order to deliver new 508 compliant products more efficiently.   We are working with various research organizations to ensure that older materials that are non-compliant and too expensive to remediate continue to be available to the public.

Appendix A.   Samples of TMIP Webinar Announcements and Evaluation Reports

Defining a Data Governance Program presented by Zeke Bishop (Oracle)

Webinar Promotion

Note: Attendance is limited to 100 connections so we encourage participants to log into the webinar room together where possible. By watching the webinar with another participant you can help maximize the number of total participants! If you do not make it into the webinar before we have hit maximum capacity, please call in using the teleconference number and follow along with the PDF version of the presentations linked (at the bottom) to this bulletin.

October 2, 2014 from 2-4pm Eastern

Defining a Data Governance Program

Presented by Zeke Bishop (Oracle)

During this session we will take time to better understand why a data governance program is beneficial, what is data governance, how can a data governance program help the organization, and who should ultimately be concerned about data governance within the organization.

Many organizations today are beginning to understand the clear benefits of managing their information assets efficiently. With this said, many organizations are also struggling to understand the clear starting place for maturing their Enterprise Information Management function and often start the journey with the wrong questions and little understanding of what road blocks lay ahead. Key focus areas for any endeavor of this magnitude are People, Process, and Technology. We often find organizations investing significant time on the technology portion of this equation and little time on the process and people components. Data Governance is about the people and how we can structure the organization effectively to ensure one of our most important assets, data, is governed effectively.

Zeke Bishop is currently an Enterprise Architect at Oracle focusing on the Public Sector in North America. Zeke has over 16 years of experience in the Public Sector with 14 years at the City of Phoenix working with all departments and functions to deliver on key business objectives. During his time at the City of Phoenix, Zeke was able to work towards transforming the organizations view of Information Management and develop a strong center of excellence for managing the use and delivery of information. During the development of this COE, the City found it critical to develop a strong governance model that would support the delivery of timely and accurate information to the business processes across various departments, including Aviation, Public Transit, Water and Public Works. Zeke has spent the last two years at Oracle working with States, Counties, and Cities in North America to develop their Enterprise Architecture discipline, which includes the discipline of Information Management and Data Governance.

Meeting Information

Participants do not need to preregister to attend the webinar. Attendance is limited to 100 connections and is first-come, first-served. You can log on to the webinar at:

http://fhwa.adobeconnect.com/tmipvirtualseminars/

The TeleConference Toll Free Number: 1-888-675-2535

Participant Passcode: 8344566

Meeting information has also been included in the linked Outlook calendar file.

We are committed to providing equal access to this online event for all participants. If you need alternative formats or other reasonable accommodations, please send an e-mail to the TMIP Moderator with your request as soon as possible.

Contact Us

 If you have other TMIP webinar topic suggestions or if you are interested in presenting, please let us know. If you have any questions or comments about TMIP, please contact Sarah Sun, FHWA

- TMIP Webinar 10 02 14 Defining a Data Governance Program.ics
- Data Governance Workshop.pdf

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This service is provided to you at no charge by DOT FHWA Office of Planning, Environment, and Realty (HEP).

U.S. Department of Transportation
Federal Highway Administration | Federal Highway Administration | 1200 New Jersey Avenue, SE | Washington, DC 20590 | 202-366-4000

Webinar Participation

Of the 110 unique attendees (meeting connections), over 81.8% attended the webinar for over 65 minutes (of a duration of approximately 105 minutes). **Error! Reference source not found.** below presents a temporal profile of all the webinar participants.

Figure 1: Temporal Profile of Webinar Participation
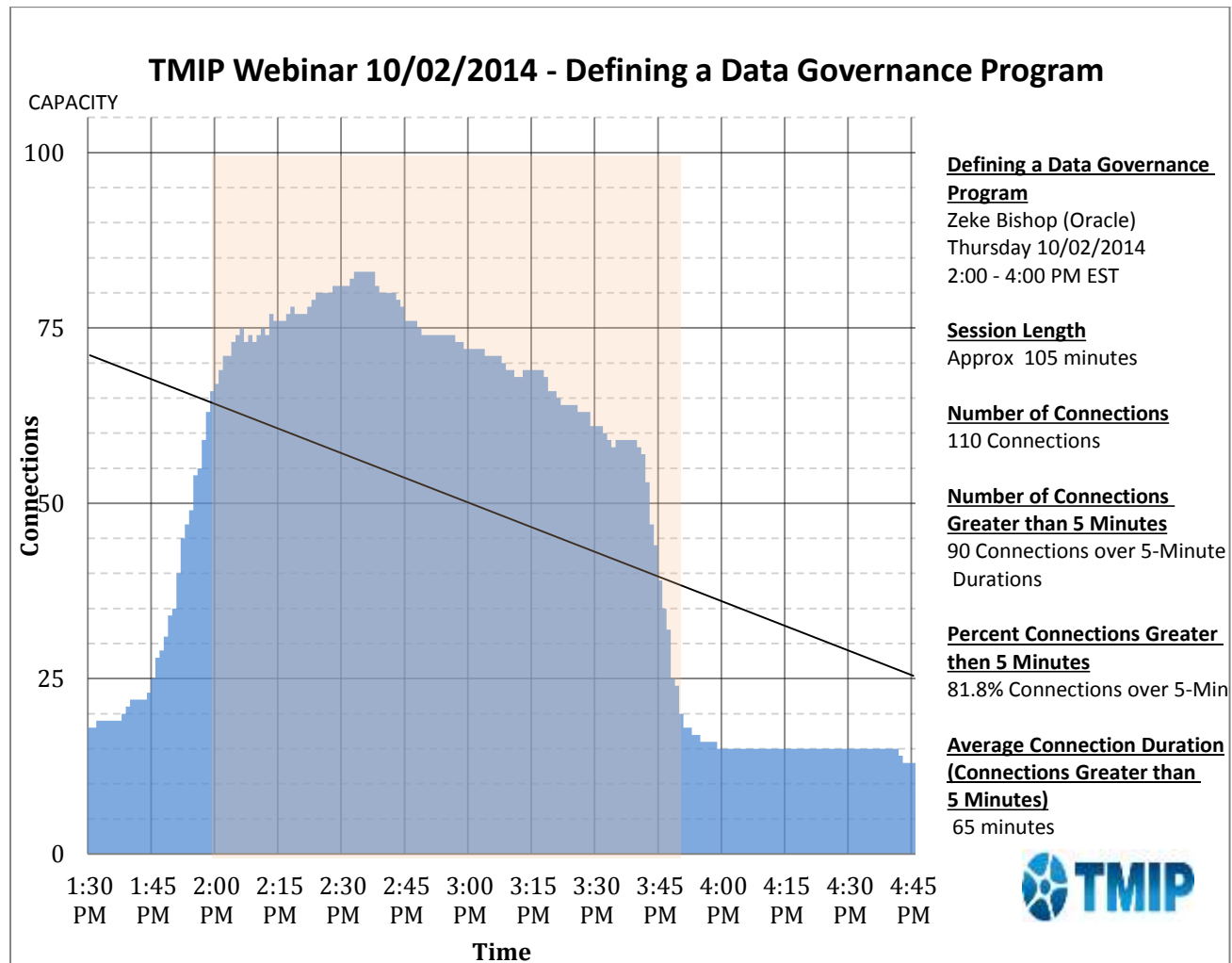
During the webinar, attendees were encouraged to submit questions via the meeting room chat pod. Five (5) questions on the content of the presentations were asked in the chat. These questions are as follows:

- Is there a good model of a state or federal agency that has developed a governance protocol for all of their different data sets?
- We've found that widespread reporting from systems of authority (and management commitment to only accept reports from the systems of authority) is a great way to get widespread investment in the improvement of data quality. People get management support as well as support from people that finally see the usefulness and potential of the data...

- How might principles differ from one agency to another?
- In a statewide IT consolidation, should data governance stay with the agency or does it belong to the centralized IT?
- How do you keep data governance from being inflexible or unresponsive to field and operational units?

The questions were answered during the presentation, which is recorded.

Webinar Polling Questions

Seven polling questions were administered as part of the webinar. The results of some questions are listed below.

Question 1

How many participants are there at your location?

Table 1 Evaluation Poll Question – Participant Numbers

Response Options	Response	Percentage
One Person	29	85%
Two People	2	6%
Three People	2	6%
Four People	1	3%
Five People	0	0%
Six to Nine People	0	0%
Ten to Twenty People	0	0%
Total	**34**	**100%**

Most respondents attended the webinar alone.

Question 2

How relevant was this webinar to your day-to-day job?

Table 2: Evaluation Poll Question - Job Relevance

Response Options	Response	Percentage
Very	12	57%
Somewhat	9	43%
Not very	0	0%
Total	**21**	**100%**

All of the respondents found the webinar to be very or somewhat useful at their current job.

Question 3

What changes would you like to see in the format?

Table 3: Evaluation Poll Question – Desired Changes in Webinar Format

Response Options	Response	Percentage
More Time for Question & Answer	2	10%
More Presentation Time	4	19%
Just About Right As Is	15	71%
Total	**21**	**100%**

A significant majority of 71% viewed the webinar as "Just About Right As Is."
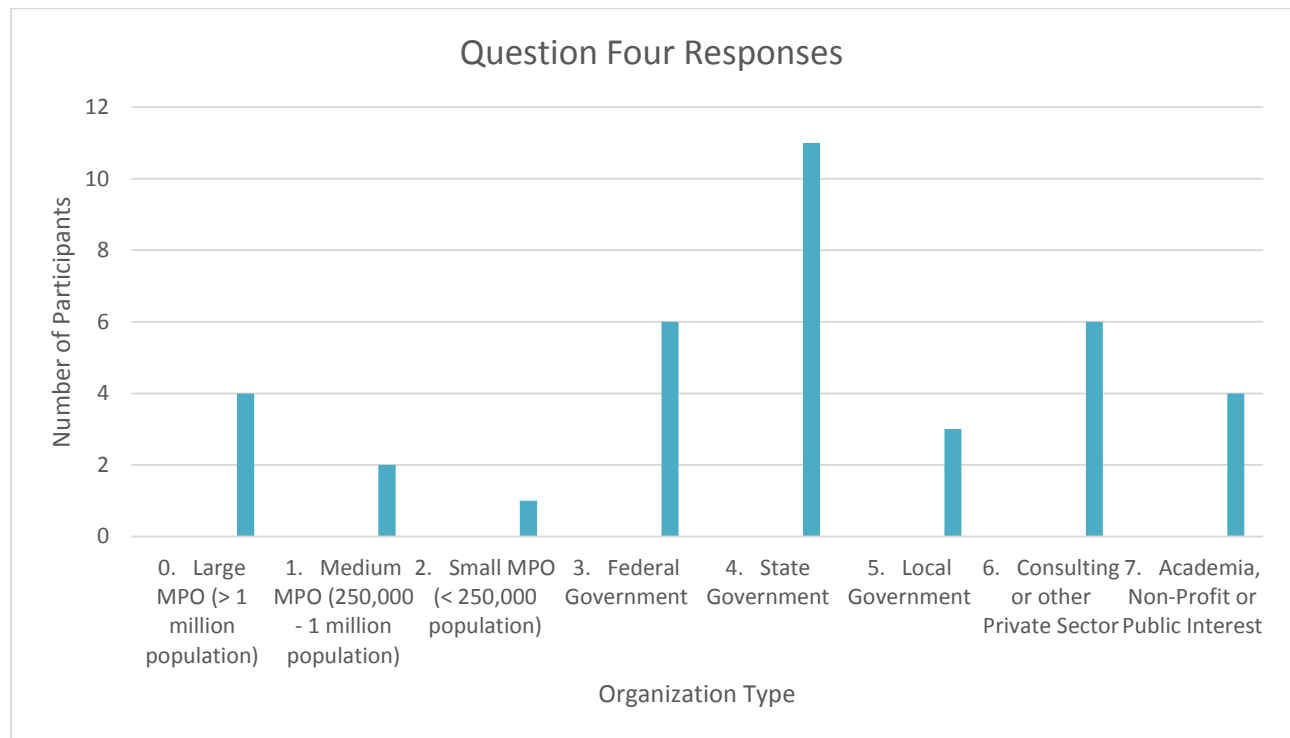
Question 4

What type of organization do you work for?

Figure 2: Evaluation Poll Question – Type of Organization

The largest group of webinar the attendees of this webinar were from State Government.

Question 5

Which of the following best describes you?

Table 4: Evaluation Poll Question – Participant Professional Description

Response Options	Response	Percentage
I apply and maintain travel demand models (hands on)	4	21%
I manage a group primarily responsible for model applications and maintenance	1	5%
I manage/direct a group in which travel modeling is one of multiple technical services	5	27%
I'm an executive director of an agency	0	0%
I'm a developer of application software to support travel models	0	0%
I manage a model development group or practice	2	10%
I conduct or oversee research related to travel modeling	7	37%
Total	**19**	**100%**

The majority of the participants in the webinar conduct or oversee research related to travel modeling as part of their agency or firm role.

<u>Question 6</u>

If you work for a public agency that is responsible for model-based travel forecasts, how soon do you think it will start implementing an activity-based model system?

Table 5: Evaluation Poll Question – Participant Professional Description

Response Options	Response	Percentage
We already have one in development	2	10%
Within two years	2	10%
Two to five years	4	20%
At least five years	1	5%
Maybe never	0	0%
I'm not in a public agency responsible for model-based travel analysis	11	55%
Total	**20**	**100%**

The majority of the participants in the webinar are not responsible for model-based travel analysis.

<u>**Question 7**</u>

Do you have a Data Governance Program?

Response Options	*Response*	*Percentage*
Yes	5	20%
No	20	80%
Total	**25**	**100%**

The majority of respondents (80%) do not have a Data Governance Program at this time.

Webinar Participant Feedback and Recommendations

Participant response to the webinar was generally very positive. As indicated by the unedited comments below, the participants hoped that these seminars would continue with additional details and topics. A few common themes in the comments included requests for more detail on data governance programs and suggestions for future webinar topics.

Comments

- very good
- Thanks
- Thanks
- Examples of data management systems, including backups, data storage, access, etc.
- This was very helpful and informative for current research we are doing for other DOTs needing information on Data Governance programs.
- Our agency, a state DOT, is just starting to migrate to a statewide IT consolidation. The law is clear, the state IT organization owns all technology and technology resources. This includes data. There are a lot of questions about the data life cycle:
  - 1. Collection
  - 2. QA/QC
  - 3. Management
  - 4. Access Management
  - 5. Distribution
  - Governance has a role in all of this. However, the division of labor between what an agency [business unit] does and what IT does is not always clear. How do you define and manage these [and other] roles? Who controls what and what is handled in a more collegial manner? The primary issue here needs to accommodate the continuum that is starts with the business unit who knows all of the standard practices with respect to their data and ends with the IT guys who now how to best store and distribute it.
- Still in research on this method since our models are trip based. None at this time.
- nice presentation, thanks...
- On this topic, it would have been good to have more examples and more relevant research from the Transportation Field. IE NCHRP 666. More speakers on the same topic would be useful
- For this presentation, even though it was running long, it might have been better to stay with the presentation rather than jump to Q&A. The questions coming up in the chat pod were being

addressed as they were raised, and there was a lot of material in the slides that was skipped over. Nevertheless, a big thank you for setting this up and to Zeke Bishop for his time and materials.

- Very good! Thank you.
- Development of fine-grained modeling networks - Transportation Data Integration - Data visualization - Ways of delivering Transportation Data and forecast - Integrated DTA/ABM regional models

Emerging Technologies in Travel Surveys

Webinar Description and Promotion

September 25, 2014 from 2-4pm Eastern

Emerging Technologies in Travel Surveys

Collection of External Survey Data Using Bluetooth and a Community Web Survey

Presented by Ed Hard (TTI)

This presentation will provide an overview of the methods and results of an external survey conducted in the Omaha-Council Bluffs area in 2013 where Bluetooth and a Community Web Survey were used as part of a multi-faceted approach to collect external survey data. It will cover the deployment and coordination of all data collection efforts, which also included a passive video survey as well as intercept surveys, and explain the data elements collected as part of each component. The presentation will provide the technical detail related to Bluetooth, review the design of the web survey, and discuss the numerous efforts used to inform the community about the survey and direct them to the survey website. It will also discuss lessons learned and provide a brief snapshot of a current external survey underway which is comparing cell versus Bluetooth collected O&D data

Using Mobile Phone Data to Develop an External Trip Model

Presented by Leta Huntsinger, PhD, PE, and Kyle Ward, EI, (Parsons Brinckerhoff)

The presentation will cover the development of external-internal/internal-external (IX) trip model for the French Broad River MPO (FBRMPO) in western North Carolina. The data was collected 24 hours a day for one month during May 2013 for the North Carolina Department of Transportation. The data was used to develop a through trip table and to estimate an IX trip model. In the interest of time, the presentation will focus the data processing and trip table creation aspects of this effort.

Metropia: Mobility Management and Data Analytics

Presented by Mia Zmud, Principal (Metropia, Inc.)

This presentation introduces and provides real-world applications of Metropia mobility management platform and mobile app technology that dynamically manages, controls, and influences travel demand, traffic demand and traffic flow of a regions' transportation facilities. The recently available mobile app, Metropia Mobile, uses prediction and coordinating technology combined with user rewards to incentivize drivers to cooperate, balance traffic load on the network, and reduce traffic This dynamic smartphone-based data mechanism opens up the possibilities of allowing long-term continual data collection to support travel behavior research, traffic management, and transportation planning and modeling.. Several

data analytics use cases will be presented.

Applications of Mobile Technology to Study Transit Rider Behavior and Sustainable Travel

Presented by Joan L. Walker, PhD, and Andre Carrel (University of California at Berkeley)

This presentation covers two large studies that made use of mobile technology to study and change behavior. The first one, Quantified Traveler, was a 130-person study in which participants were fed back information on the footprint of their travel patterns with the goal of inducing more sustainable travel behavior. The second was the San Francisco Travel Quality Study, in which nearly 800 transit riders in San Francisco were recruited to give feedback about their experiences using public transportation in San Francisco. By fusing cell phone tracking data with survey responses and other data sources, it was possible to collect a rich data set that provides insights on behavior and satisfaction at an individual-level scale.

Meeting Information

Participants do not need to preregister to attend the webinar. Attendance is limited to 100 connections and is first-come, first-served. You can log on to the webinar at:

http://fhwa.adobeconnect.com/tmipvirtualseminars/

The TeleConference Toll Free Number: 1-888-675-2535

Participant Passcode: 8344566

Meeting information has also been provided in the attached calendar invite.

We are committed to providing equal access to this online event for all participants. If you need alternative formats or other reasonable accommodations, please send an e-mail to the TMIP Moderator with your request as soon as possible.

Contact Us

 If you have other TMIP webinar topic suggestions or if you are interested in presenting, please let us know. If you have any questions or comments about TMIP, please contact Sarah Sun, FHWA.

Webinar Participation

Of the 132 unique attendees (meeting connections), over 90% attended the webinar for over 106 minutes (of a duration of approximately 120 minutes). **Error! Reference source not found.** below presents a temporal profile of all the webinar participants.

Figure 3: Temporal Profile of Webinar Participation
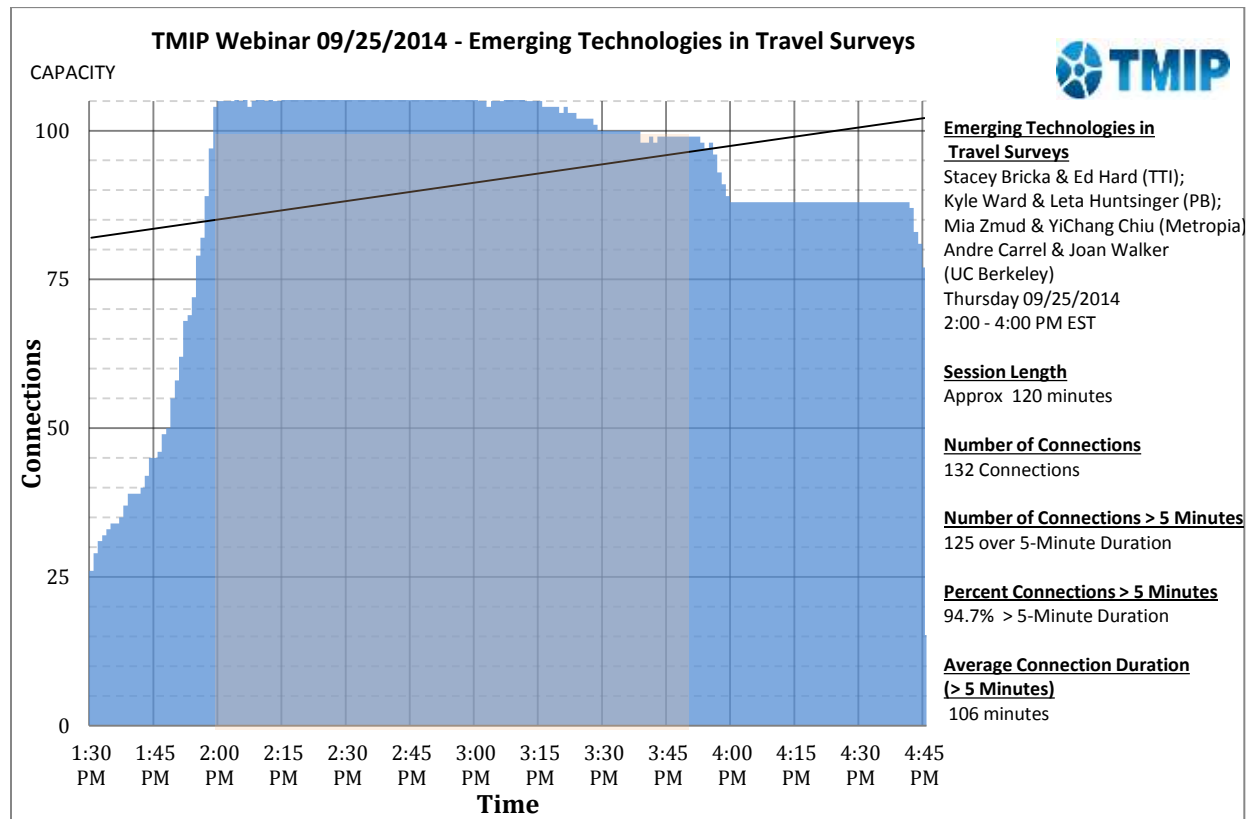
During the webinar, attendees were encouraged to submit questions via the meeting room chat pod. Twenty-two (22) questions on the content of the presentations were asked in the chat. These questions are as follows:

- Question for Ed Hard: Since you were working with major employers to increase the E-I/I-E survey sample size, how did you correct for oversampling of workers at those sites?
- Is there a distinction between the cell and bluetooth methods of data collection?
- With Bluetooth, how do you distinguish between passenger cars and commercial vehicles?
- Could you give us an idea about how many trips you captured in the survey in terms of total number of trips of the study area during the study period
- How did you expand web survey results?
- Any different to count EE trips with BT device?
- Did you consider disaggregating Home Based trips by Population only for Origins and Employment only for destinations, and the presented equation for NHB?
- Do you have an estimate of the rate of cell phone ownership in the area?
- Do you validate the AirSage data at TAZ level? If so, have you found any noise?
- I just wonder any difference on EE trip count compare to traditional EE count measures.
- Any adjustment measure to control BT's higher counts?
- Who is sponsoring Metropia in Austin?

- Have you attempted to gain access to the Apple WatchKit to develop an app for the new Apple Watch?
- Does the app incorporate Multi-Modal trips such as with suggesting transit/bikeshare/ walking etc or are there plans to start incorporating this for encouragine people to simply not drive at all?
- Are there plans with using this type of interaction with the google car or other driverless transit technologies?
- How do you plan on expanding to other cities? Need any help? :)
- The trajectories with home and office ends would not pass our IRB. Have "Metropians" opted-out on privacy?
- You mentioned you are not trying to become a navigation app. Why not?
- Data for travel model validation from Metropia would seem to have to be adjusted to reflect self selection of participants. Are you aware that there is a movie Metropia?
- Re: Objective vs. subjective bars; could you tabulate Vs. Wait Delay? i.e. variance from scheduled/advertised arrival time? The IVTT may be a reaction to unexpected cost versus expected cost.
- How frequent did your android app collect location-related data?
- Thanks, 30 second data report is quite frequent in my opinion. was battery ever an issue reported by respondents?

The questions were answered after each presentation concluded and also while other presentations were going on within the chat pod.

Webinar Polling Questions

Six polling questions were administered as part of the webinar. The results of some questions are listed below.

Question 1

How many participants are there at your location?

Table 1: Evaluation Poll Question – Participant Numbers

Response Options	*Response*	*Percentage*
One Person	40	82%
Two People	3	6%
Three People	3	6%
Four People	1	2%
Five People	0	0%
Six to Nine People	0	0%
Ten to Twenty People	2	4%
Total	**49**	**100%**

Most respondents attended the webinar alone.

Question 2

How relevant was this webinar to your day-to-day job?

Table 2: Evaluation Poll Question - Job Relevance

Response Options	Response	Percentage
Very	19	49%
Somewhat	20	51%
Not very	0	0%
Total	**39**	**100%**

All of the respondents found the webinar to be very or somewhat useful at their current job.

Question 3

What changes would you like to see in the format?

Table 3: Evaluation Poll Question – Desired Changes in Webinar Format

Response Options	Response	Percentage
More Time for Question & Answer	5	13%
More Presentation Time	3	8%
Just About Right As Is	31	79%
Total	**39**	**100%**

A significant majority of 79% viewed the webinar as "Just About Right As Is."

Question 4
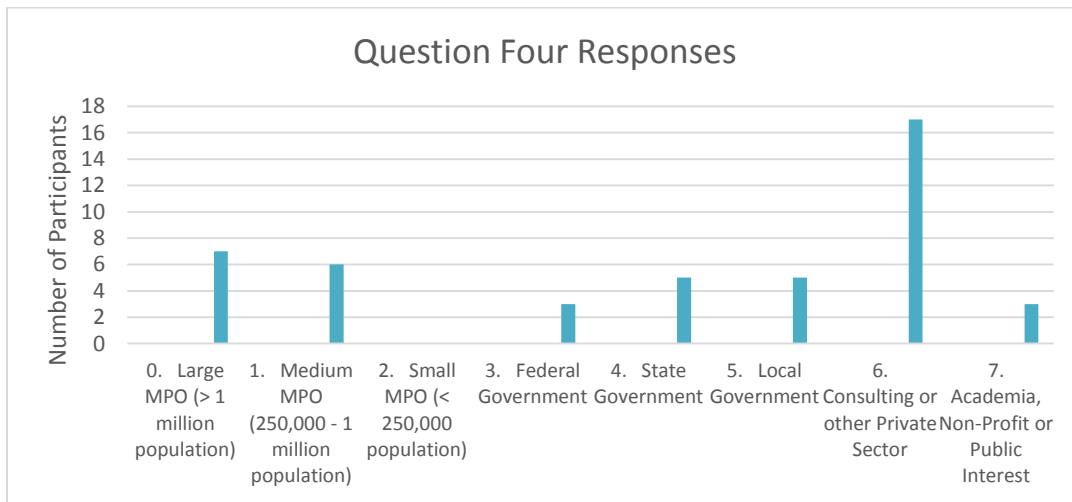
What type of organization do you work for?

Figure 4: Evaluation Poll Question – Type of Organization

The largest group of webinar the attendees of this webinar were from private sector consulting firms.

Question 5

Which of the following best describes you?

Table 4: Evaluation Poll Question – Participant Professional Description

Response Options	*Response*	*Percentage*
I apply and maintain travel demand models (hands on)	14	44%
I manage a group primarily responsible for model applications and maintenance	3	9%
I manage/direct a group in which travel modeling is one of multiple technical services	4	12%
I'm an executive director of an agency	0	0%
I'm a developer of application software to support travel models	2	6%
I manage a model development group or practice	0	0%
I conduct or oversee research related to travel modeling	9	29%
Total	**32**	**100%**

The majority of the participants in the webinar applies and maintains travel demand models as part of their agency or firm role.

Question 6

If you work for a public agency that is responsible for model-based travel forecasts, how soon do you think it will start implementing an activity-based model system?

Table 5: Evaluation Poll Question – Participant Professional Description

Response Options	*Response*	*Percentage*
We already have one in development	7	22%
Within two years	0	0%
Two to five years	3	10%
At least five years	3	10%
Maybe never	4	13%
I'm not in a public agency responsible for model-based travel analysis	14	45%
Total	**31**	**100%**

The majority of the participants in the webinar are not responsible for model-based travel analysis.

Participant Feedback and Recommendations

Participant response to the webinar was generally very positive. As indicated by the unedited comments below:

Comments

- Need to increase the number of people who are allowed into the room. I was in the room early on but got booted and couldn\'t get back in for an hour or so. Luckly I was able to hear about METROPIA.
- video downloadable of the presentation
- It can focus more on travel demand model issues
- This webinar was very interesting/useful
- A great session. Informative, and fluent. Thank you very much for organizing this.
- more geared towards day-to-day practice of traditional model users among small-medium MPOs
- Please avoid consultantant sales pitch presentations.
- Excellent as is.

What does (data) integrity and utility mean to you? Painstaking attention to detail comes to mind.

Webinar Description and Promotion

If you do not make it into the webinar before we have hit maximum capacity, please call in using the teleconference number and follow along with the PDF version of the presentations linked (at the bottom) to this bulletin.

August 21, 2014 from 2-4pm Eastern

What does (data) integrity and utility mean to you? Painstaking attention to detail comes to mind.

Household travel survey data collection is a complex process, with most contracts structured to provide interim datasets and then a final dataset at the conclusion of data collection. What can you do to assure to improve the quality of the data during the survey collection period, what will you do with the data to improve its utility after the final receipt of the data? Staff from three MPOs will discuss how they evaluated interim data deliverables and modified survey field work, and how they have checked the final deliverables and edited records to adjust for anomalies, and how new sample weights were developed. A discussant will identify the key points from the 3 presentations and identify recommendation for future activities and research based on the presentations and her own survey experience.

Presented By:

Stacey Bricka, TTI

Sangeeta Bhowmick and KyeongSu Kim, NYMTC (and Louis Berger)

Chris Pulchasky, Ben Gruswitz, and Sarah Moran, DVRPC

Shimon Israel, MTC

Christi McDaniel-Wilson and Becky Knudson, Oregon DOT

Meeting Information

Participants do not need to preregister to attend the webinar. Attendance is limited to 100 connections and is first-come, first-served. You can log on to the webinar at:

http://fhwa.adobeconnect.com/tmipvirtualseminars/

The TeleConference Toll Free Number: 1-888-675-2535

Participant Passcode: 8344566

Meeting information has also been included in the linked Outlook calendar file.

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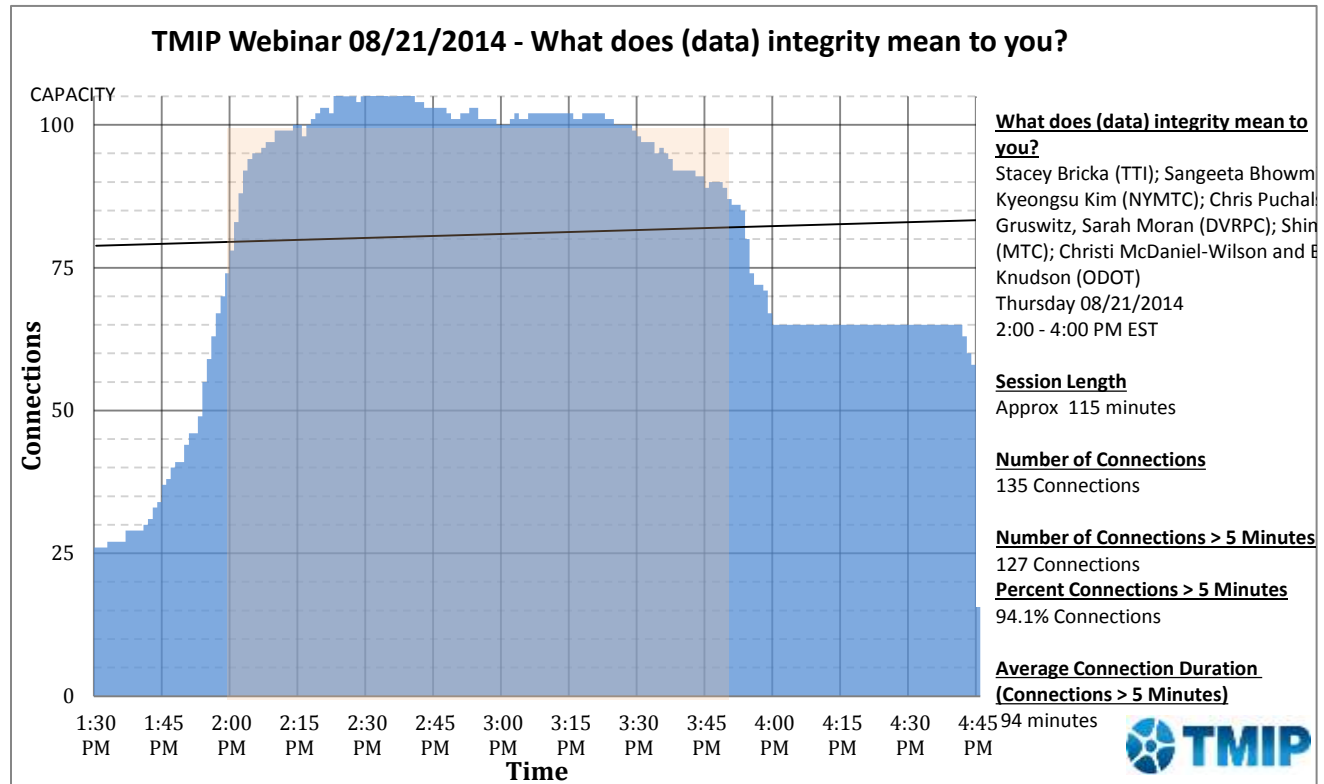
Contact Us

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Webinar Participation

Of the 135 unique attendees (meeting connections), over 94.1% attended the webinar for over 94 minutes (of a duration of approximately 115 minutes). **Error! Reference source not found.** below presents a temporal profile of all the webinar participants.

Figure 5: Temporal Profile of Webinar Participation

Polling Questions

Six polling questions were administered as part of the webinar. The results of some questions are listed below.

<u>**Question 1**</u>

How many participants are there at your location?

Table 1: Evaluation Poll Question – Participant Numbers

Response Options	*Response*	*Percentage*
One Person	29	85%
Two People	2	6%
Three People	2	6%
Four People	1	3%
Five People	0	0%
Six to Nine People	0	0%
Ten to Twenty People	0	0%
Total	**34**	**100%**

Most respondents attended the webinar alone.

<u>**Question 2**</u>

How relevant was this webinar to your day-to-day job?

Table 2: Evaluation Poll Question - Job Relevance

Response Options	*Response*	*Percentage*
Very	26	65%
Somewhat	13	32%
Not very	1	3%
Total	**40**	**100%**

All but one of the respondents found the webinar to be very or somewhat useful at their current job.

<u>**Question 3**</u>

What changes would you like to see in the format?

Table 3: Evaluation Poll Question – Desired Changes in Webinar Format

Response Options	*Response*	*Percentage*
More Time for Question & Answer	1	2%
More Presentation Time	2	5%
Just About Right As Is	37	93%
Total	**40**	**100%**

A significant majority of 93% viewed the webinar as "Just About Right As Is."

Question 4
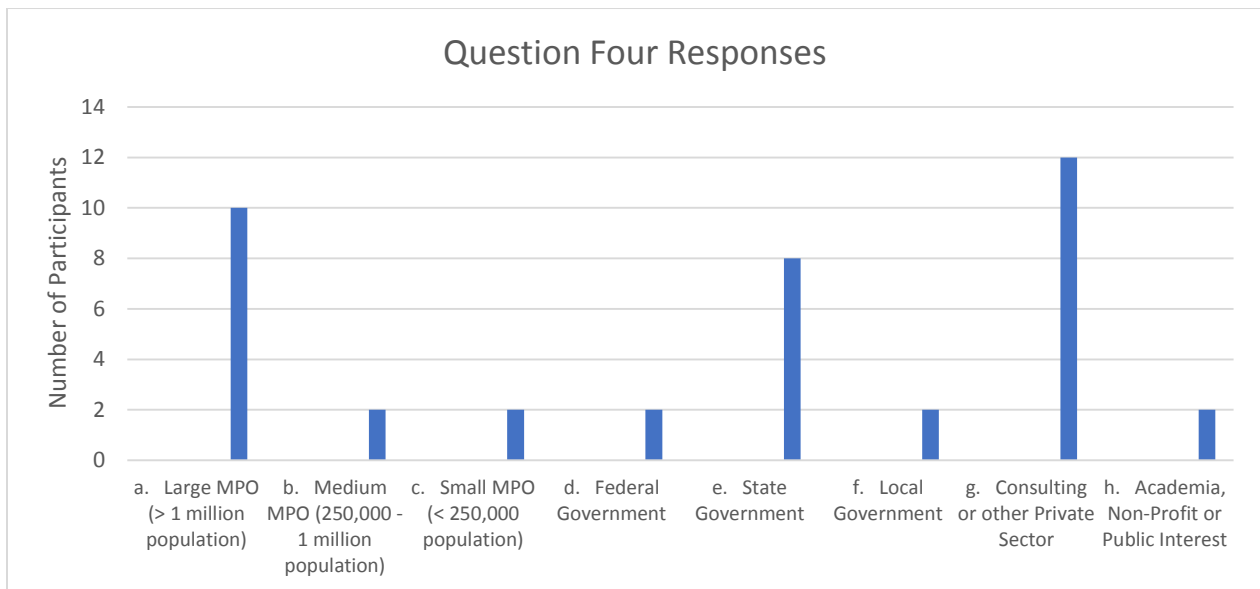
What type of organization do you work for?

Figure 6: Evaluation Poll Question – Type of Organization

The largest group of webinar the attendees of this webinar were from consulting or other private sector firms.

Question 5

Which of the following best describes you?

Table 4: Evaluation Poll Question – Participant Professional Description

Response Options	Response	Percentage
I apply and maintain travel demand models (hands on)	16	42%
I manage a group primarily responsible for model applications and maintenance	1	3%
I manage/direct a group in which travel modeling is one of multiple technical services	3	8%
I'm an executive director of an agency	0	0%
I'm a developer of application software to support travel models	0	0%
I manage a model development group or practice	1	3%
I conduct or oversee research related to travel modeling	17	44%
Total	**38**	**100%**

The majority of the participants in the webinar conduct or oversee research related to travel modeling as part of their agency or firm role.

Question 6

If you work for a public agency that is responsible for model-based travel forecasts, how soon do you think it will start implementing an activity-based model system?

Table 5: Evaluation Poll Question – Participant Professional Description

Response Options	Response	Percentage
We already have one in development	11	29%
Within two years	1	3%
Two to five years	2	5%
At least five years	2	5%
Maybe never	4	11%
I'm not in a public agency responsible for model-based travel analysis	18	47%
Total	**38**	**100%**

The majority of the participants in the webinar are not responsible for model-based travel analysis.

Participant Feedback and Recommendations

Participant response to the webinar was generally very positive. As indicated by the unedited comments below, the participants hoped that these seminars would continue with additional details and topics. A few common themes in the comments included requests for better audio/technical setup to improve webinar function and suggestions for future webinar topics.

Table 6: Participant Comments and Feedback

Comments

- TMIP may consider to offer basic training courses on travel demand modeling
- Offer high level overview for MPO work related to transportation planning capacity.
- no other ideas today
- Can be improved
- More bandwidth for online video and audio.
- Presentations were very good\ \ Have \other\ or \NA\ options on all your wrap-up questions. For example, Q2 asked for more Q&A time, more presenter time or as is. I think 2 hours is tooooo long for a webinar to pay attention. 90 minutes max. I\'d like to been able to say shorter.
- Thanks for the conducting the webinar.
- I have completed many travel and on-site surveys for State DOT and MPO\'s. The later presentations were easier to follow. The initial presentations were too detailed. Thank you for the webinar.
- It helped understand the various datasets that are available and how to access them.
- use of establishment (workplace) surveys in travel demand models
- Post all recordings and transcripts on web and notify everyone of where they are located
- More basic information and reasons for the need for TMIP.
- no suggestions
- Thanks for organizing this and for the open access. I work for a Canadian research firm that has conducted data collection / geocoding / trip validation for a few household travel surveys, and it is great to get perspective and ideas from U.S. practice. (For example, I\'ve developed my own IPF routines for weighting that make household level weight adjustments from raking between household and person level Census controls -- it\'s great validation to see that what I have been coming up with on my own is the state of the practice in the U.S. -- and it helps me to be able to justify to my clients the rationale for using a better method if I can refer to this being common practice in the U.S.). \\ One suggestion I might have for future such seminars would be an exploration of statistical issues associated with surveys to help educate agencies better understand how to design research and/or evaluate different data collection proposals. As a survey researcher in other contexts as well, I am usually happiest with a general population survey with an overall response rate (final completions / households initially randomly sampled to invite to participate) of at least 30%, and I have managed household travel surveys with as high as 40% response. This goes a long way to containing non-response bias (even if it makes the data collection contractors job more difficult). However, I can see that in many jurisdictions in the U.S. and some in Canada as well,

there is a tolerance for quite low response rates (e.g. below 5%), sometimes because of the logistical complexity of the survey method, but also perhaps in part because either the data collection contractors or the agencies contracting the surveys are not always terribly well informed about the dangers of low response rates. Another example: a lot of people do not seem to be aware that non-response bias or over/under-sampling and weighting to compensate for this reduces the sampling efficiency, and that the margin of sampling error needs to be calculated to take into a

- Better advertisement. I just learned of the webinar 10 minutes ago and wish I could have logged on sooner. Great information for my organization!

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The opinions expressed in this report belong to the authors and do not constitute an endorsement or recommendation by FHWA.

This report is being distributed through the Travel Model Improvement Program (TMIP).

Federal Highway Administration