Final Call for Content

Innovations in Travel Modeling Conference – Summer 2020 in Seattle

Submissions due March 3rd at https://forms.gle/vfrhDfGKLCHCkoY66

The Transportation Research Board Innovations in Travel Modeling Conference will be held June 14-17 2020 in Seattle, WA. The Organizing Committee has selected the following four technical issues to focus the conference around: data solutions, modeling approaches, useful forecasts, and getting there in the real world and is seeking content submissions that further our knowledge and understanding of them. Specifically, the Committee is currently seeking two types of submissions:

1. **Late-Breaking Innovations**, or ones that were not able to meet the original conference submission timeline. These innovations will be put into either poster sessions or a lightning talk session and should be consistent with the Conference Focus Areas below.
2. **Specific Content Call,** to help us fill gaps in specific sessions.. Please see below for Specific Content Requests.

Submission and Review Process

Submissions should be in the form of a brief narrative which describes the motivation and outcomes of the proposed content in addition to a maximum of 2000 character (with spaces, approx 300 words) which describes the content itself. If accepted to the program, presenters will be required to submit an extended abstract or short paper to supplement the short submission.

Specific Content Requests

- Machine learning applications in travel analysis
- Approaches utilized for considering uncertainty in forecasts and case studies for the considering uncertainty in decision-making.
- Modeling methodologies to address dynamics in travel behavior and demand
- Approaches to understanding and representing shared mobilities
- Generalizable travel model construction methodologies and strategies
- New approaches for representing network supply
- Travel analysis and research workflow examples (aka we can be efficient and effective at our jobs)
- Travel analysis "software stack" examples (aka what tools do you use)
- A data standards that the industry should know about and use

Conference Focus Areas

Data Solutions

What are techniques and strategies to assess, acquire, process, analyze, visualize and validate data of increasing volumes from heterogeneous sources, some with restrictions, alone or in combination with more traditional data sources? How to correctly, safely, and expediently select, expand and

analyze from the many data fire-hoses? How does one identify standards for reporting on data sources, guidelines for assessing and applying data and reporting on results, best practices with respect to identifying and addressing privacy concerns, sharing best practices and lessons learned? More specifically:

Data Acquisition

- What type of data sources are out there that we could be using, and for what purposes? What type of data is appropriate for which applications?
- How do we evaluate those sources against our needs?
- How do we increase confidence in the data for users as well as decision-makers? How do we assess the representativeness of a particular data source?
- What questions should we be asking when evaluating data products? What are and how can we address barriers and challenges to acquiring data from various sources?
- How are "traditional" data sources and data collection methods changing in response to recent challenges (public perception of data privacy, response rates, etc.)?
- What are practices and frameworks that support best practices? What common terms should we be using?

Data Processing and Application

- How do we process the data for specific analyses, visualization or applications? What processes or procedures should we employ in order to ensure privacy?
- How and when should new data be combined with traditional data sources? Which type of data can we confidently fuse (or not fuse)?
- How do we validate the results?
- What open source programming, software, or tools work well (or should be used with caution)?
- What are practices and frameworks that support best practices?
- How do we monitor and analyze transportation network and policy actions (e.g., built a connected bike network) and their resulting impacts?

Modeling Approaches

What are the strengths, weaknesses, and appropriate roles of data-driven vs behavior-driven models and how they might potentially work together? More specifically:

- How are behavioural models and data driven models complementary, interdependent, or mutually exclusive?
- How reliable and useful are complex model systems given their cost and potential uncertainty propagation?
- How well do we understand the limitations and assumptions of the data vis-a-vis the limitations and assumptions in model systems themselves?

- What are existing and novel experimental setups that support important learning objectives?
- What are systematic ways to know if a model is adequate for a given problem?
- Are there ways to interpret the meaning of machine learning models and how and why is this important, or not?
- When building a model, is it most effective to start with the questions, the data, or a framework? How would your answers to specific policy questions change based on each path?

The Committee seeks submissions which can lead to the following outcomes:

- Standardised terms and notation (for example, what is model validation in a data-driven versus behaviour-driven context?);
- Guidelines (for example, guidelines for effective validation of models); and
- Associated calls for action to researchers and practitioners.

Useful Forecasts

How do we develop forecasts with useful representations of risk and uncertainty? How do we assess/evaluate how well we did with presenting a decision-space (as opposed to validation of existing behavior?). More specifically:

- How do we ensure that the forecasting approach is the most useful and relevant to a particular decision-making context? Are different tools tuned to different planning questions? Are we getting to end goals like health and accessibility or only intermediate goals like mobility and delays?
- What does accuracy look like from a historical perspective? What drives it? And how important is it to decisions at different points in the planning process?
- What is the relationship between complexity and realistic representations of decision-making within models and their usefulness to answering questions?
- Ensemble forecast techniques which incorporate a variety of modeling approaches (and the assumptions embedded in them). Examples of reconciling tools with different methods to tackle a question.
- Tools and techniques to evaluate forecasts beyond single point accuracy or enable multiple scenarios/multiple futures.
- Techniques to produce useful points of information when uncertainty is so great and multi-dimensional. Which uncertainties should we be accounting for and how?
- Effective communication and visualization of model results with many dimensions of uncertainty and ranges.
- Using visualizations to help understand trade-offs or see value in policies that are politically challenging.