

The NCMUG's vision is to provide a forum for sharing knowledge and experiences of using state-of-practice transportation modeling tools, techniques and innovations appropriate to answer transportation planning and policy questions for the State of North Carolina, and promote its implementation across the State.

# 2017 Fall NCMUG Meeting

Wednesday, November 8, 2017

1:00 p.m. – 5:00 p.m.

Room 2600, ITRE/NCSU

909 Capability Drive, Research Building IV, Raleigh, North Carolina 27606

## Presentation Abstract and Presenter Bio/Contact

- **NORTH CAROLINA STATEWIDE MODEL**

### **North Carolina Statewide Model Recent and Upcoming Enhancements**

Roberto Miquel, CDM Smith

#### **Abstract**

The North Carolina Statewide Travel Model (NCSTM) is a cornerstone of the project prioritization process in NC. The model is used to develop travel times savings that are used as part of the scoring criteria. The use of the NCSTM provides a consistent method throughout the state to calculate travel times savings. This, in turn, provides for a more equitable comparison between projects. This presentation will update the attendees on the recent changes made to the NCSTM in support of the P5.0 Project Prioritization process as well as provide the audience with some insight on potential future development of the model.

#### **Bio**

[MiquelRo@CDMSmith.com](mailto:MiquelRo@CDMSmith.com), Raleigh, NC

Roberto Miquel, AICP is a travel demand modeler and transportation planner with 14 years of experience. He holds a B.A. in Anthropology from the Florida State University and a M.S.P. in Urban and Regional Planning from the Florida State University. He is also a member of the American Planning Association and an A.I.C.P. Throughout his career, Mr. Miquel has contributed to a variety of transportation planning and modeling projects. His responsibilities have included base year model validations, model improvement, long-range transportation plan updates, needs analyses, evacuation modeling, scenario planning, and regional and statewide modeling. Mr. Miquel has also worked to develop traffic forecasts for corridor alternatives analyses and emissions modeling for regional air quality conformity determination.

- **APPLICATION - PERFORMANCE MEASUREMENT AND OTHERS**

### **Modeling for Performance-Based Planning Measures**

John (Jay) Evans, P.E., AICP, Principal; Feng Liu, Ph.D., Principal; John Lewis, Principal, Cambridge Systematics, Inc.

#### **Abstract**

The final set of National System Performance Management Measures from FHWA became effective May 20, 2017. These address assessing performance of the National Highway System, freight movement on the Interstate system, and Congestion Mitigation and Air Quality Improvement Program. Existing conditions will inform required baselining and will also influence target settings (along with stakeholder and aspirational consideration). A variety of data sources will need to be tapped to produce the required measures, including NPMRDS, HPMS, CTPP. In addition, it is reasonable to expect that future modeling tasks will want to know how projects can be expected to influence the measures. Given that many measures involve travel time reliability, new modeling considerations may come into play. This presentation will familiarize the audience with the relevant measures

and key datasets. We will also provide some examples of working with the data in a modeling environment and discuss the challenges, opportunities, and experiences of emphasizing travel time and travel time reliability as a model output.

### **Bio**

Jay Evans: [JEvans@CamSys.com](mailto:JEvans@CamSys.com), Bethesda, MD

Feng Liu: [FLiu@CamSys.com](mailto:FLiu@CamSys.com), Bethesda, MD

John Lewis: [JLewis@CamSys.com](mailto:JLewis@CamSys.com), Raleigh, NC

Jay Evans, Feng Liu, and John Lewis each have over 20 years of travel demand forecasting and transportation planning experience and each is designated as a Principal of Cambridge Systematics. Jay and Feng have worked frequently in North Carolina and John Lewis has recently relocated to our Raleigh office.

## **Experiences Incorporating Reliability into Planning Models**

Stephen Tuttle, Consultant, RSG

### **Abstract**

Demand models may need to incorporate travel time reliability to meet the recent FHWA guidelines on performance measures. Although reliability is not presently included in some state-of-the-practice models, the SHRP2 program has published a series of reports on measuring and modeling reliability, including recommendations for incorporating travel time reliability into planning models.

This presentation will review SHRP2 research on travel time reliability, focusing on guidance for static planning models. We will discuss how reliability can be used to improve travel forecasts, outside of satisfying any requirements for performance measures. We will present several recent experiences incorporating reliability into travel models. The case studies will discuss how model characteristics, such as study area size, can affect the advantages and limitations of different methods.

### **Bio**

[Stephen.Tuttle@RSGInc.com](mailto:Stephen.Tuttle@RSGInc.com), Chicago, IL

Stephen is a Consultant with RSG, located in their Chicago office. He has seven years of experience developing and applying travel demand models. He has worked on regional and statewide trip-based models and has developed toll choice models for traffic and revenue studies.

## **Using Performance Measures to Evaluate MTP Scenarios**

Mike Bruff, PE, DCHC MPO

### **Abstract**

DCHC is in the process of developing their 2045 MTP. As in the past, the MPO developed a series of performance measures to help evaluate the effectiveness of each scenario and to guide decisions by policy makers.

### **Bio**

[Michael.Bruff@DCHCMPO.org](mailto:Michael.Bruff@DCHCMPO.org), Durham, NC

Mike Bruff has over 30 years' experience in transportation planning, the last year with the DCHC MPO working on the Triangle Regional Model.

## **Comprehensive Benefit-Cost Analysis**

Vince Bernardin, PhD, RSG

### **Abstract**

Benefit cost analysis (BCA) has long been used as a powerful tool for evaluating transportation investments and understanding their impact on matters of value to the traveling public. Traditionally BCA has focused somewhat narrowly on travel time savings, vehicle operating cost savings, and crash cost savings. Increasingly, however, public discourse and concern includes a broader array of impacts including improving travel time reliability and various important quality of life factors such as noise and the public health benefits of active transportation.

This presentation will report on and share recent efforts by FHWA and various metro areas around the country including Portland, San Diego, and Tampa to broaden transportation benefit cost analysis to account for these and other factors of increasing public interest. New methods for quantifying and monetizing these new categories of benefits will be presented and discussed in terms of their ability to produce more robust project evaluations that inspire greater public confidence and buy-in.

### **Bio**

[Vince.Bernardin@RSGInc.com](mailto:Vince.Bernardin@RSGInc.com), Evansville, IN

Vince Bernardin, PhD., is Director of RSG's Travel Forecasting Group and manages their Indiana office in the great metropolis of Evansville. Vince has project experience in over twenty states and abroad developing and applying statewide, urban, and corridor-level travel forecasting models and related analysis tools for both plan development and major project studies. He is best known for his pioneering work with big data and for his development of a "hybrid" modeling approach, which combines elements of activity-based and trip-based models. He has published on a wide variety of topics including destination and mode choice models, the complexity of travel patterns made using public transit, and the representativeness and expansion of passively collected data. Vince holds a BA in Philosophy from the University of Notre Dame, and an MS and Ph.D. in Transportation Engineering from Northwestern University.

## **Atlanta Express Lane Network Study (ELNS) Traffic and Revenue Validation and Forecasting**

Jennifer Zhan, HNTB

### **Abstract**

Traffic and Revenue studies often utilize regional travel demand models to help understand project feasibility/financeability or to help prioritize managed lane alternatives and projects system wide. However, regional travel demand models are typically more designed to understand regional needs and to test regional policies, managed lane evaluation at the detailed corridor level would require further considerations and enhancements of the regional model to better estimate transportation impacts and revenue potential. This presentation will provide a general overview of various levels of T&R, key risk drives and Georgia Department of Transportation's system evaluation on the managed lanes. It will also discuss the empirical data used, process/approaches and recommendations on improving the traffic and revenue forecasting process for the Express Lane Network Study.

### **Bio**

[JZhan@HNTB.com](mailto:JZhan@HNTB.com), Atlanta, GA

Jennifer Zhan, AICP, PTP serves as Senior Project Manager and Technical Services Squad Lead in HNTB's Atlanta office. She has more than 16 years of professional experience in the fields of travel demand modeling, toll feasibility and managed lane studies, congestion pricing, risk analysis, tool development and transportation planning. Jennifer has a diverse background in transportation planning, engineering, and urban and regional development. She has participated and managed projects ranging from the T&R forecasts at system level to forecasting revenue probability using Monte Carlo simulation. Jennifer holds a BA in Urban and Regional Planning and MS in Human Geography from the Nanjing University, and a MS in Civil Engineering from Clemson University.