

# 2018 National Household Travel Survey Workshop

August 8–9, 2018

Keck Center  
Washington, DC

*Organized by*  
Transportation Research Board

*Supported by*  
Federal Highway Administration (FHWA)

<http://www.trb.org/conferences/NHTS2018.aspx>

# NHTS

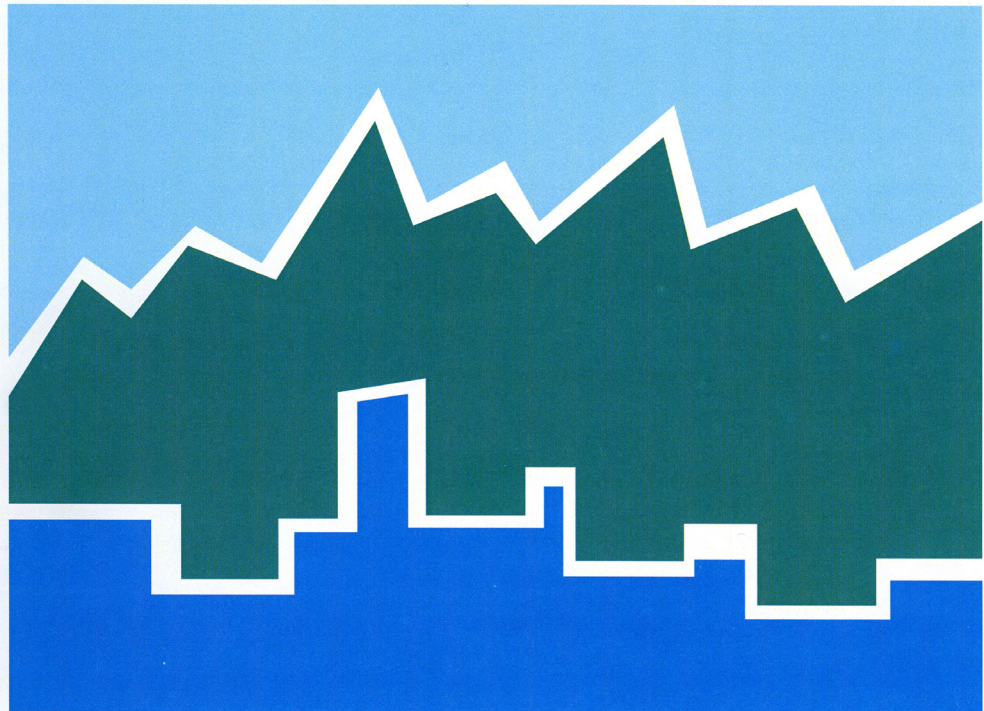


Photo Credit: Vermont Clean  
Cities Coalition



Photo Credit: Andy Duback,  
University of Vermont



# SCHEDULE AT A GLANCE

Wednesday, August 8				
9:00 AM	Opening Session			
	Keynote Speaker – Why Travel Surveys Matter in the Age of Big Data			
10:00 AM	Break			
10:15 AM	Plenary Session			
	The 2017 NHTS Method Changes and Implications Trends 2009 vs 2017			
12:00 PM	Lunch			
1:00 PM	Exploring the NHTS	The New NHTS Online Tool	Roundtable: Using the NHTS for Performance Measures	Roundtable: How the New Methods Affect Me
2:30 PM	Break			
3:00 PM	Alternative Fueled Vehicles	Non-motorized Transportation	The New Sharing Modes	Underserved Populations
4:30 PM	Break			
5:00 PM	Poster Session and Reception			
Thursday, August 9				
8:30 AM	Plenary Session: National Statistical Programs: Directions and Challenges			
	Panel Session: Modelers Panel—Using the NHTS 2017			
10:00 AM	Break			
10:30 AM	Plenary Session			
	Next Generation NHTS			
12:00 PM	Closing Panel: 2009 - Great Things Done, Moving Forward with 2017			

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.

[www.TRB.org](http://www.TRB.org)

August 8–9, 2018



# WELCOME

**H**igh quality representative data describing the travel behavior of all people in diverse communities are essential for planning infrastructure, services, and system operations. The National Household Travel Survey (NHTS) is the largest and most comprehensive passenger travel dataset in the United States. The survey is conducted every 5-6 years. The 2017 dataset was released in Winter 2018. For the first time, the NHTS was conducted using an addressed-based sampling procedure and online retrieval. The database contains information on one full day of travel for 130,000 households. Updated questions probed participants regarding ride sharing, alternative fueled vehicles, transportation network companies, non-motorized transportation, transit, and attitudes.



The August 2018 Workshop officially announces the arrival of the NHTS dataset and its scope to the transportation community as well as users beyond the core transportation planning community. It has been my pleasure to work with a TRB task force on Understanding New Directions for the NHTS to plan a unique program for the 2018 NHTS Workshop. The workshop brings together a community of practitioners and researchers to explore the opportunities within the 2017 NHTS data. We will enjoy hands-on opportunities to work with the data and discuss in roundtables the implications of new methods and data. Our intention is to expand and strengthen connections within the NHTS data community. Both podium presentations and posters will be presented in order to disseminate early analysis by seasoned NHTS users including NHTS state and MPO add-on agencies. A trend analysis comparing 2017 travel to observations in the 2009 NHTS will be included. Keynote addresses will tackle the future role of travel surveys and national data programs. We will wind up our interactive days together by exploring future data collection and the “NextGen” NHTS.

Come join both seasoned and new NHTS data users and researchers as we look at the latest national comprehensive travel data and exchange ideas for analysis as well as visions for moving forward with future data programs. As the program shows there are a great many topics that need your input. Come learn, share your experience, and interact with our panels and roundtables. Be part of ensuring our transportation system is advanced based on data-driven understandings of the travel needs of communities.

—**Lisa Aultman-Hall**

Chair, 2018 National Household Travel Survey Planning Committee  
Professor, Civil and Environmental Engineering, University of Vermont

## Planning Committee

Lisa Aultman-Hall, University of Vermont, *Chair*  
Daniel Chatman, University of California, Berkeley  
Marcus Coenen, Des Moines Area MPO  
Patrick Coleman, AECOM  
Danny Jenkins, Federal Highway Administration  
Habte Kassa, Georgia Department of Transportation  
Catherine T. Lawson, University at Albany, New York  
Jennifer Murray, Wisconsin Department of Transportation  
Wenjing Pu, Federal Highway Administration  
Krishnan Viswanathan, Cambridge Systematics, Inc.  
Lei Zhang, University of Maryland, College Park

## TRB Staff

Thomas M. Palmerlee, TRB  
Mai Quynh Le, TRB

August 8-9, 2018

# WORKSHOP SESSIONS

Wednesday, August 8, 2018

8:00 a.m.– 5:00 p.m., *Outside of Keck 100*

## Registration

8:00 a.m.– 9:00 a.m., *Outside of Keck 100*

## Breakfast

9:00 a.m.–10:00 a.m., *Keck 100*

## Opening Session

Lisa Aultman-Hall, University of Vermont, *presiding*

Daniel Chatman, University of California, Berkeley, *recording*

As we come together in conference, our welcome from FHWA focuses on the accomplishment of the 2017 NHTS, while the opening plenary speaker asks us to think about the dynamic context for the 2017 NHTS and future surveys. As the landscape for travel behavior and for data collection changes at unprecedented rates we all must pause and ask big questions about the relevance of our travel data and what future surveys will look like.

### Introduction and Welcome

Tianjia Tang, Chief of Travel Monitoring and Surveys Division, FHWA

### Keynote Speaker: Why Travel Surveys Matter in the Age of Big Data?

Patricia Mokhtarian, Professor of Civil and Environmental Engineering, Georgia Institute of Technology

10:00 a.m.– 10:15 a.m., *Outside of Keck 100*

## Break

10:15 a.m.– Noon, *Keck 100*

## Plenary Session: 2009 vs. 2017

Lisa Aultman-Hall, University of Vermont, *presiding*

Krishnan Viswanathan, Cambridge Systematics, *recording*

In order to start exploring the new NHTS it is necessary for the designers and data collectors to share details of how the survey was conducted and how this method differs from prior surveys. A Travel Trends report that was commissioned with the survey and its findings, related to both travel and methods, will be presented. After the analysts present their work, expert discussants in this session will respond and bring their experience to these topics.

### The 2017 NHTS Method Changes and Implications

*Speakers:* Shawn McCloskey, Jeremy Wilhelm, Westat

*Discussants:* Stacey Bricka, MacroSys, LLC; Daniel Chatman, University of California, Berkeley

### Travel Trends 2009 vs. 2017

*Speakers:* Nancy McGuckin, Travel Behavior Associates

*Discussants:* Jeff LaMondia, Auburn University; Steve Polzin, University of South Florida

Noon– 1:00 p.m., *Outside of Keck 100*

## Lunch

Noon– 1:00 p.m., *Keck 101*

## Committee on National Transportation Data and Programs and Task Force on Understanding New Directions for the National Household Travel Survey (*Members Only*)

Lisa Aultman-Hall, University of Vermont; Krishnan Viswanathan, Cambridge Systematics, *presiding*

August 8–9, 2018



1:00 p.m.– 2:30 p.m.

## Breakout Sessions

### Exploring the NHTS, Keck 100

Krishnan Viswanathan, Cambridge Systematics, *presiding*

Krishnan Viswanathan, Cambridge Systematics, *recording*

This session will explore NHTS data using R software developed specifically for the purpose of analyzing the most recent NHTS programs. In it we will demonstrate loading the most recent NHTS dataset into a Windows or Mac environment using RStudio, R's most common development interface, and will examine the data structure and variable metadata using R syntax. We will also demonstrate ways to analyze and visualize the data. The session will end with participants rendering their own HTML report containing their own visualized national travel estimates of interest.

Participants can view the presentation or follow along with it if they have the needed R tools installed:

<https://github.com/Westat-Transportation/summarizeNHTS/tree/master/inst/install>.

#### Panel

Anthony Fucci, Westat

Alexander Cates, Westat

### The New NHTS Online Tool, Keck 101

Daniel Jenkins, FHWA, *presiding*

Jennifer Murray, Wisconsin DOT, *recording*

This session will provide an overview of data analysis tools Oak Ridge National Laboratory is developing for all NHTS data users. The session will also provide a hands-on demonstration of the analytical tools that have been developed thus far that allow the NHTS add-on partner agencies to analyze their data at different levels of geography (state, Metropolitan Planning Organization (MPO), county levels).

#### Panel

Ho-Ling Hwang, Oak Ridge National Laboratory

Apara Banerjee, MacroSys, LLC

### Roundtable: Using the NHTS for Performance Measures, Keck 105

Lei Zhang, University of Maryland, *presiding*

Habte Kassa, Georgia DOT, *recording*

NHTS provides a variety of data variables that can directly or indirectly support transportation performance management. The NHTS transition to an annual survey format and the integration with big data promise more applications in this domain. This panel session focuses on lessons learned, best practices, and future opportunities on NHTS-based performance measures.

#### Panel

Wenjing Pu, FHWA

Subrat Mahapatra, Maryland DOT

Keith L. Killough, Arizona DOT

Geena Maskey, Texas DOT

### Roundtable: How the New Methods Affect Me, Keck 106

Daniel Chatman, University of California, Berkeley, *presiding*

Patrick Coleman, AECOM, *recording*

This session covers professional reactions to the new data collection methods implemented in the 2017 NHTS. Come listen to experts who use NHTS data for different purposes with or on behalf of transportation agencies. We will discuss how the new methods and data structure may affect agencies and other users, and will include ample time for discussion with the audience.

#### Panel

Stacey Bricka, MacroSys, LLC

Soheila Khoii, California DOT

Paul Schroeder, EurekaFacts Inc.

August 8–9, 2018

2:30 p.m.– 3:00 p.m., *Outside of Keck 100*

### **Break**

3:00 p.m.– 4:30 p.m.

### **Breakout Sessions**

#### **Alternative Fueled Vehicles, Keck 100**

Lei Zhang, University of Maryland, *presiding*  
Habte Kassa, Georgia DOT, *recording*

The last decade has seen significant growth of the alternative fuel, hybrid, and electric vehicle market. What does NHTS 2017 tell us about the ownership and usage pattern of these greener vehicles; who own them; are they used in different ways compared to traditional vehicles; and what is the future market demand? Three research groups will share their findings on these questions in this breakout session.

##### **Revisiting Vehicle Ownership in Activity-Based Models Considering Alternative Fuel Vehicles**

Arash Asadabadi, Lei Zhang, University of Maryland

##### **A Causal Approach to Disentangling Vehicle Technology & Self-Selection Effects on Household Vehicle Use – A Tri-variate Copula Based Endogenous Regime Switching Framework**

Behram Wali, Asad Khattak, University of Tennessee, Knoxville

##### **Tracking National Household Vehicle Usage by Type, Age, and Area in Support of Market Assessments for Plug-in Electric Vehicles with Emerging Usage of Shared Services**

Yan Zhou, Vyas Anant, Argonne National Laboratory

#### **Non-motorized Transportation, Keck 101**

Janice Machado, Westat, *presiding*  
Lisa Aultman-Hall, University of Vermont, *recording*

Every NHTS cycle brings improvements in how we measure all types of non-motorized transportation including bicycling and walking. The abstracts received for the workshop included many users of the 2017 bicycle and pedestrian survey data and these authors will share early analysis related to health, built environment and affinity groupings.

##### **Health Impacts of Non-motorized Travel Behavior and Built Environment**

Jina Mahmoudi, Lei Zhang, University of Maryland

##### **Trends in Walking and Cycling in the United States, 2001–2017**

Ralph Buehler, Virginia Tech; John Pucher, Rutgers University; Dafna Merom, Adrian Bauman, University of Sydney

##### **Interactions between the Built Environment and Domain-Specific Transportation Physical Activity: Evidence from the 2017 NHTS**

Theodore Mansfield, ORISE-USDOT

##### **Defining Type of Cyclist based on Travel and Activity Patterns**

Jim Sullivan, Sarah Howerter, University of Vermont

#### **The New Sharing Modes, Keck 105**

Guy Rousseau, Atlanta Regional Commission, *presiding*  
Wenjing Pu, FHWA, *recording*

The convergence of information and communication technologies with transportation has been growing for decades. In the time between the 2009 and 2017 NHTS, the use of sharing has impacted mode choices in numerous ways in many parts of the country. This session includes presentations from university researchers who are tackling usage levels and modeling of ridesharing with the new data.

##### **Trends in Taxi Usage and the Advent of Ridehailing, 1995-2017**

Matthew Wigginton Conway, Arizona State University

##### **Examining the U.S. Ridesourcing Market Using the 2017 NHTS Data**

Zhenpeng Zou, Sevgi Erdogan, University of Maryland

##### **The Effects of Different Generational Sociodemographic Characteristics on Dynamic Ridesharing**

David Donaldson, Arash Ghaffar, University of Maryland

## Underserved Populations, Keck 106

Krishnan Viswanathan, Cambridge Systematics, *presiding*

Jennifer Murray, Wisconsin DOT, *recording*

The importance of having safe, reliable, efficient transportation options are critical for access to jobs, food, and healthcare and for the general uplift of all sections of society. In this session, we identify methods to understand the travel patterns of immigrants, persons with disabilities, and low income households.

### Food Access for Low Income Individuals

Chandra Bhat, Abhilash Singh, University of Texas, Austin

### Predicting Daily Trip Frequencies of Vulnerable Households in New York State Using Emerging Machine-Learning Approaches

Bumjoon Bae, Ho-Ling Hwang, Shih-Miao Chin, Chieh R. Wang, Oak Ridge National Laboratory

### Travel Patterns of Low Income Households

Apara Banerjee, MacroSys LLC

### Persons with Disabilities and Persons Born Outside the U.S.: Demographic and Travel Trends for Transport Planners

Daniel Chatman, Abigail Cochran, University of California, Berkeley; Nicholas Klein, Cornell University

5:00 p.m.– 6:30 p.m., Keck Atrium (3rd Floor)

## Poster Session and Reception

### Who Is Out on the Road? Analyzing the Effect of Changes in Drivers' Demographic Characteristics and Where They Travel on Traffic Safety (CANCELED)

Don Pickrell, Larry Blincoe, Volpe Center, USDOT

### Using the NHTS as a Daily Activity Pattern Archive in a Passive Data Model

Greg Macfarlane, Josie Kressner, Transport Foundry

### Application of NHTS Transferability Statistics to Measure Impacts of Transportation Revenue Tools on Household Segments

Kyle Schroeckenthaler, Stephen Fitzroy, EDR Group

### Modeling Transportation Characteristics: Small Area Estimation Using the NHTS

Theresa Firestine, Clara Reschovsky, BTS, USDOT

### A Comparison of the NCTCOG Weighting Method to the NHTS Weighting Method

Kathleen Yu, Arash Mirzaei, North Central Texas Council of Governments (NCTCOG)

### Calibration and Validation of a Micro-Simulation Long-Distance National Travel Demand Model Using 2017 NHTS

Sepehr Ghader, Aref Darzi, University of Maryland

### Insights on Data Quality from a Large-Scale Application of Future Mobility Sensing Technology in Greater Phoenix, AZ

Shari Gershenfeld, Mobile Market Monitor; Shuyao Hong, Maricopa Association of Governments

### Why Do We Drive the Way We Do? Demographic Analysis of Historical Growth in Travel and Vehicle Use (CANCELED)

Christina Foreman, Don Pickrell, Volpe Center, USDOT

### Comparing Temporal and Spatial Trip Durations for Elderly Travelers using the 2009 and 2017 NHTS

Gary Jordan, Panagiotis Anastasopoulos, University at Buffalo, SUNY

### A Breakthrough Solution for Statistical Surveys of U.S. Population

Laurie Wargelin, Chet Bowie, University of Chicago

### Rethinking the Survey Part of the NHTS

Jeremy Wilhelm, Westat; Nancy McGuckin, Travel Behavior Analyst

### Using the 2017 NHTS to Estimate the Fuel Economy Rebound Effect (CANCELED)

Don Pickrell, Volpe Center, USDOT

### Increasing Efficiency in Generating and Comparing National Travel Behavior Estimates over Time

Anthony Fucci, Alexander Cates, Westat

August 8–9, 2018

**How Built Environment Changes Shape Travel Behavior Over Time: Comparison Between 2009 and 2017 NHTS**

Aref Darzi, Lei Zhang, University of Maryland

**Update from 2017: Did the Millennials Really Change their Travel Behavior in 2009?**

Matthew Coogan, Independent Consultant; Margaret Campbell, RSG, Inc.

**The Changing Nature of the Activity–Travel Behavior of the Elderly**

Chandra Bhat, Joseph Hutchinson, University of Texas, Austin

**Trends in Typical vs. Actual Travel: An Analysis of NHTS Data Over Time**

Stacey Bricka, MacroSys LLC; Timothy Reuscher, ORNL

**Travel Trends in Texas: A Comparison of the 2017 NHTS Data to Previous National and Local Travel Survey Analysis Results**

Lisa Green, Michael Martin, Texas A&M Transportation Institute

**Online Shopping Behavior of Us Travelers: The Roles of Internet Usage and Lifestyle**

Huyen Le, Virginia Institute of Technology

**Assessing Equity and Access to Long-Distance Travel Using the 2017 NHTS Data**

Lisa Aultman-Hall, Jonathan Dowds, Greg Thivierge, Anuarbek Onayev, University of Vermont

August 8–9, 2018





Thursday, August 9, 2018

7:30 a.m.– 10:00 a.m., *Outside of Keck 100*

**Registration**

7:30 a.m.– 8:30 a.m., *Outside of Keck 100*

**Breakfast**

8:30 a.m.– 9:00 a.m., *Keck 100*

**Plenary Session: National Statistical Programs: Directions and Challenges**

Krishnan Viswanathan, Cambridge Systematics, *presiding*

Lisa Aultman-Hall, University of Vermont, *recording*

Statistics for the common good are embedded in the very foundation of the United States and are central for our democracy and economic and social wellbeing. Large-scale probability sample surveys have been a primary method for collecting data for federal statistics for decades. However, continued reliance on sample surveys as a principal means of collecting national statistical data are threatened by the increasing difficulty and cost in conducting these surveys with consequent threats to data quality, and by the increasing demand for more geographically detailed and faster information. This presentation will discuss the importance of federal statistics for the country, the foundational principles for federal statistics, and the current environment for conducting federal surveys. It will provide an overview of recent studies by the Committee on National Statistics that explore a possible shift in federal statistical programs—from the current approach of providing users with the output from a single census, survey, or administrative records source, to a new paradigm of combining data sources with state-of-the art methods to give users richer and more reliable datasets that lead to new insights about policy and socioeconomic behavior.

**Keynote Speaker**

Brian Harris-Kojetin, Board Director, Committee on National Statistics National Academies of Sciences, Engineering and Medicine

9:00 a.m.– 10:00 a.m., *Keck 100*

**Panel Session: Modelers Panel—Using the NHTS 2017**

Jennifer Murray, Wisconsin DOT, *presiding*

Nancy McGuckin, Travel Behavior Analyst, *recording*

Modelers will discuss NHTS data for travel demand modeling. The discussion will highlight the use of NHTS for trip rates, travel mode choices, and thoughts on improving NHTS data for travel demand modeling purposes. An innovative pedestrian trip calibration method will be shared.

**Panel**

Habte Kassa, Georgia DOT

Patrick Coleman, AECOM

Arash Mirzaei, NCTCOG

**Quick Ways to Use NHTS Data to Support Regional Travel Demand Model Calibration**

John Miller, Peter Ohlms, and Zulqarnain Khattak, Virginia DOT

10:00 a.m.– 10:30 a.m., *Outside of Keck 100*

**Break**

August 8–9, 2018

10:30 a.m.– Noon, *Keck 100*

### **Plenary Session: Next Gen NHTS**

Wenjing Pu, FHWA, *presiding*

Stacey Bricka, MacroSys, LLC, *recording*

The FHWA is establishing the NextGen NHTS program through a pooled fund effort (<http://pooledfund.org/Details/Solicitation/1466>). This new program will include both travel surveys and passive data to provide annual multimodal data products. It also offers opportunities for State DOTs, MPOs, and other entities to join the program as Add-On partners to gain insights and purchase additional data products.

#### **Introduction of the NextGen NHTS**

Daniel Jenkins, Wenjing Pu, FHWA

#### **Integration and Validation of Passively Collected Data with National Household Travel Survey**

Sepehr Ghader, Lei Zhang, University of Maryland

#### **Cross-Validation and Simultaneous Model Estimation from NHTS and Aggregate Passive OD Data in Charleston, SC**

Vince Bernardin, Hadi Sadrsadat, RSG Inc.

#### **NextGen Add-on Perspectives**

Zachary Hanson, Virginia DOT

Noon–12:30 p.m., *Keck 100*

### **Closing Session**

Lisa Aultman-Hall, University of Vermont, *presiding*

Lei Zhang, University of Maryland, *recording*

#### **Great Things Done in 2009 and Moving Forward with 2017**

Rolf Schmitt, BTS, USDOT

David Winter, FHWA

12:30 p.m.–1:30 p.m., *Keck 101*

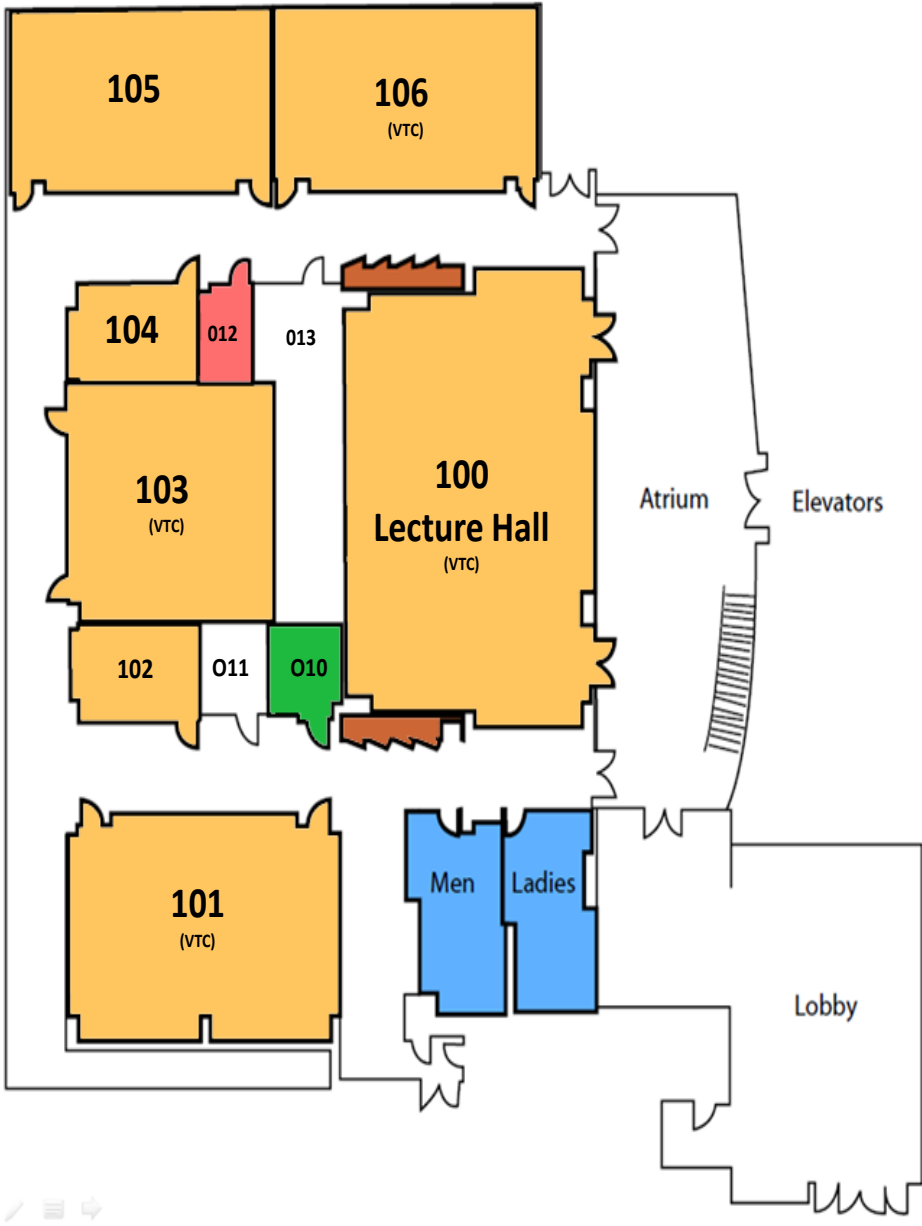
### **Planning Committee Debriefing (*Invitation Only*)**

August 8–9, 2018



# FLOOR PLAN

## Floor 1



- Conference Room
- Phone Booths
- PC Room
- Copy Room
- Restrooms



August 8-9, 2018



## Hotel Information

Hampton Inn  
901 6<sup>th</sup> Street, NW  
Washington, DC 2001

## Contact

Tom Palmerlee at [TPalmerlee@nas.edu](mailto:TPalmerlee@nas.edu)  
Mai Quynh Le at [MQLe@nas.edu](mailto:MQLe@nas.edu)

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