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**Insights,
Inclusion,
and
Impact**

***Framing the Future for
Women in Transportation***

6th International Conference on
Women's Issues in Transportation

September 10–13, 2019
Arnold and Mabel Beckman Center
of the National Academies
Irvine, California

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Insights, Inclusion, and Impact

Framing the Future for Women in Transportation

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Irvine, California

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Preface

The 2019 Women’s Issues in Transportation Conference (WIT), the sixth in a series that began in 1978, focused on women’s issues related to all aspects of travel and transportation. An evaluative framework of three lenses—*Insights*, *Inclusion*, and *Impact*—guided the focus for this recent WIT conference as well as drawing on themes from previous conferences.

The last WIT International Conference, held in Paris, France, in 2014, called for “bridging the gap” between men and women, between rich and poor countries, and between knowledge and policy. Media trends in recent years have placed attention on these differences, particularly those between women and men, as seen through the hundreds of women’s marches, studies in workforce disadvantages, and the sexual assault #MeToo movement. In comparison to those levels of public interest and attention, there is little research to help understand the major obstacles and constraints encountered by women travelers and women working in transportation industries. This conference aims to spotlight and explore in depth the need and opportunity such research affords to improve policies, actions, and outcomes for women and others facing gender-based disparity in transportation.

The guiding conference themes or *lenses*— *Insights*, *Inclusion*, and *Impacts*—created important questions on which conference participants focused.

INSIGHTS

- Ten years after the 2009 WIT conference held in Irvine, California, what are the lessons learned and their implications for the future of research on women’s travel?
- Which subjects of research remain relevant; which need further consideration with new methods; and which are no longer relevant?
- What emerging social trends and technologies need study of their impact on women and transportation? Trends include technological developments, as well as shifting economic and political circumstances for women around the globe.
- What new research methods will better help in understanding key gender distinctions in transportation policies and implementations?

INCLUSION

- Has emphasis on women’s needs in transportation ignited curiosity for scholars and practitioners to address gender equity broadly?
- How to sustain an emphasis on transportation impacts on women, while expanding more broadly to gender-oriented research—e.g., gay–lesbian–transgender (LGBTQ+)—or the revised roles within family structures?

IMPACT

- If there appears to be unacceptable rate of change based on gender, why is that?
- In what areas has there been measurable progress and how has this been achieved?
- In what areas do disparities and differences among women and men continue to demonstrate intractable positions?
 - Are there new areas of research or ways of presenting research findings that can “move the needle” or exact more dramatic change?
 - If information is influence and power, how has data advanced into the hands of decision-makers, compelling them to respond to it?
 - How are the next generation of researchers and policy-makers positioned to respond?

DISCLAIMER

The views expressed in this summary are those of individual workshop participants and do not necessarily represent the views of all workshop participants, the planning committee, the Transportation Research Board, nor the National Academies of Sciences, Engineering, and Medicine. This document went through an internal TRB peer review process. TRB thanks the following reviewers for their comments: Kat M. Anderson, National Academies of Sciences, Medicine, and Engineering, and Reem Alfahad, London School of Economics.

Contents

Introduction	1
OPENING PLENARY SESSION	
Insights: How Has Women’s Travel Behavior Changed in the Past 30 Years?	2
History of Women’s Issues in Transportation	2
European Research Programs Anticipating Behavioral Changes.....	3
Long-Term Trends in Asia.....	3
Long-Term Trends in the United States.....	4
Panel Discussion	4
Audience Questions and Comments	5
TECHNICAL SESSION A1	
Getting There by Bike	6
Does Safer Cycling Infrastructure Encourage More Women to Bike?.....	6
Better Bicycling Environments for Women	6
Audience Questions and Comments	7
TECHNICAL SESSION A2	
Better Access: Policy Strategies for Gender and Equity in Transportation Systems	8
Women’s Access to the City.....	8
How Women Are Excluded from Active Travel	8
A Common Disjuncture? Ideals of Gender Sensitive Transportation Planning and the Comprehensive Transportation Study of Hyderabad?	9
Community Conversations: Advancing Transportation Equity Through In-Depth Interviews	9
Audience Questions and Comments	10
PANEL DISCUSSION A3	
Advancing Women in Transportation	11
Panel Presentations	11
Panel Discussion	12
TECHNICAL SESSION A4	
Recognize a Pattern? Travel Behavior 101	14
Current Knowledge and Practice on Gender and Travel: A Literature Review	14
Understanding How Women Travel	14
Teleworkers in Southern California; Their Travel, Their Future, and How They Differ by Gender	15
Panel Discussion	15
Audience Questions and Comments	15
VIDEO DOCUMENTARY	
All Else Being Equal	17

AFTERNOON PLENARY PANEL DISCUSSION

Harassment on Public Transit	18
Sexual Harassment in Transit Environments: A Global Look.....	18
Sexual Violence in Public Transportation in Stockholm, Sweden: The Influence of Individual and Environmental Factors.....	18
Planners' Vision of Transit Sexual Assault: The Problem of Depoliticizing Beliefs.....	19
Anti-Sex Offense Campaign on Metro Vancouver Transit	19
Audience Questions and Comments	19
Poster Session	21

TECHNICAL SESSION B1

Human Trafficking	23
Combating Human Trafficking in the Transportation Sector	23
How the Transportation Industry Is Combating Human Trafficking	23
Human Trafficking in Our Transportation System.....	24
Audience Questions and Comments	24

TECHNICAL SESSION B2

Inclusion	26
Does Who You Know Get You Places? The Role of Social Capital in Transport Disadvantage	26
The DIAMOND Method: Revealing Actionable Knowledge from Data to Support Fair Women's Inclusion in the Transport System.....	26
Women's Inclusion in the Transport System by Applying a Novel Structured Methodology: The Inclusion DIAMOND and Polyhedral Individual Model.....	27
A Cross Cultural Study in Pakistan and Malaysia	27

TECHNICAL SESSION B3

Most Likely Harmed: Crashes, Safety, and Gender	28
The Impact of Gender on Injury Outcomes Associated with Motor Vehicle Crashes Through a Linked Analysis of Crash and EMS Data.....	28
A Study on Quantification of the Interaction Between Crash Contributing Factors in Fatal Crashes Among Female Drivers with a Focus on Alcohol Misuse Using Social Network Analysis Methods.....	28
Women's Issues in Road Crashes and Safety in Public Buses in Indian Cities	29
Audience Questions and Comments	29

PANEL DISCUSSION B4

Transportation Tech: Moving Women	31
Transformational Technologies Impact on Women	31
The Effect of Attitudes on Women's Willingness to Share Autonomous Vehicles	31
From Exclusive to Inclusive: Addressing the 'Gender' Component in Smart Mobilities: Discussions	32
Can Autonomous Vehicles Help Liberate Women?	32
Audience Questions and Comments	32

PHOTO ESSAY AND DISCUSSION

Women Lead the Way in Community Mobility	34
---	----

STUDENT SESSION

Letter to My Younger Self: Leadership Insights to Grow a Career in Transportation	39
Panel Discussion	39
Audience Questions and Comments	40

MARQUEE RECEPTION, DINNER, AND PANEL DISCUSSION

Leadership at All Levels: Insight, Inclusion, and Impact Through a Career in Transportation	41
Panel Discussion	41
Audience Questions and Comments	43

MORNING PLENARY PANEL DISCUSSION

Insight, Inclusion, and Impact Through Organizational Support of Women's Advancement in the Transportation Industry	44
Panel Discussion	44
Audience Questions and Comments	45

TECHNICAL SESSION C2

Mom and Her Munchkins on the Move	47
Travel Behavior and Mobility Needs of Elderly Women in Rural America	47
Insights on Single Mothers' Issues in Emergency Evacuation.....	47
Toward an Understanding of Single Mothers' Urban Mobility: A Comparative Analysis of Parents' Travel Patterns in the Paris Region	48
Evaluation of Travel Patterns of Young Mothers in Developing Countries: A Case Study of Lahore, Pakistan	48
The Mobility of Care in Developing Countries: The Case of Tunja, Columbia.....	48
The Move Women Project	49
Audience Questions and Comments	50

TECHNICAL SESSION C3

Perceptions and Realities of Women's Safety on Transit	51
São Paulo Female College Students' Transit Safety: An Overview of Gender Violence and Spatial Dynamics Considering Gender, Race, and Class	51
Sexual Harassment in Public Transit Environments: A Review of Evidence and Interventions.....	51
How Does Perceived Safety Influence the Ridership of Public Transport Routes Involving Transfers? A Gender Perspective	52
Academic Women and Travel	52
Audience Questions and Comments	53

TECHNICAL SESSION C4

By Bike, By Car, By Bus: Women Commuting	54
Work Trip Mode Choice of Men and Women in Germany Including Partner Interactions.....	54

Key Transport Issues for Working Women in Bangladesh:	
Mapping with the Bus Rapid Transit.....	54
Intersectional Inequality: Gender, Race, and the Commute Burden of	
Low-Wage Workers.....	55
Women’s Travel Times and Distances in a Sample of Latin American Cities	55
Gender Differences in Commute Quality: Evidence from UC Davis.....	55
Audience Questions and Comments	56
PANEL DISCUSSION C5	
Moving Women into More Opportunities: Developing Our Workforce	58
Attracting and Retaining Women in the Transportation Industry	58
The Gender Gap in Asia’s Largest Railway Network: Investigating Women Employees,	
Management, and Trade Unions	59
A Regional Assessment of the “She to Sea” Gender Equality Campaign in the Philippines in	
Empowering Filipino Women in the Transport Shipping Industry	59
Women in Transportation: Creating an Inclusive Workplace Together	59
Impact. Advance. Empower. LA Metro’s Women and Girls Governing Council	60
Audience Questions and Comments	60
PANEL DISCUSSION D4	
Women in Motion Initiative: Empathetic Dialogues Workshop	61
Case Studies	61
Breakout Groups	62
Summary Session.....	64
AFTERNOON PLENARY SESSION	
Active Transportation: The Forces Shaping Women’s Travel Decisions	65
From Childhood to Widowhood: A Woman’s Journey	65
Bicycling and Women of Color on Two Wheels.....	65
Factors Influencing Women Cycling in Bogota, Columbia.....	66
Vision Zero: Active Transportation and Women’s Health and Safety	66
Audience Questions and Comments	66
Poster Session	67
TECHNICAL SESSION C1	
Priority One: Global Challenges for Women’s Safety and Security on Transit	69
North American Transit’s Approach to Personnel Security and Awareness	69
Women’s Account	70
A Study of the Satisfaction Level of Women Public Bus Users in Dhaka, Bangladesh	70
Lights on Women: Women’s Perception of Safety When Walking at Night	70
Audience Questions and Comments	71
PANEL DISCUSSION D1	
Framing the Future for Women in Transport Through Collaborative Research	72
Panel Discussion	72
Audience Questions and Comments	74

TECHNICAL DISCUSSION D2

Analyzing the Patterns: Gendered Differences in Travel Behavior	76
Interdependence, Gender, and Mobility: Understanding Mobility Strategies Through an Ethnographic and Time Use Lens	76
Analysis of Ownership and Travel Behavior of Women Who Drive Electric Vehicles: The Case of Maryland	76
Gender Differentials in Predicted Travel Activity in Atlanta Using an Activity Based Model with Path Retention	77
Do More Accessible and Walkable Built Environments Promote Gender Equality in Daily Travel?	77
When Inconvenience Improves Equity: Comparing Gendered Distinctions in Food Access Travel	77
Audience Questions and Comments	78

TECHNICAL SESSION D3

Inequitable Effects, Access, Mobility, and Gender	79
Toward an Equitable Transport System in Kuwait	79
Planning for Women’s Mobility in India: The Case of Panchkula.....	79
Transportation Barriers to Healthcare Among Women in the United States.....	80
Audience Questions and Comments	80

TECHNICAL SESSION D5

Hopes in New Technologies	82
Gender Differences in Using Digital Mobility Services and Being Mobile.....	82
Tour Formation by Ride-Hailing Users: A Gender Perspective.....	82
Think Different: Reframing Jobs in an Autonomous Future	83
Optimizing Shared Automated Vehicles for Women	83
Bringing A Gender-Based Lens to CAV Development and Planning.....	83
Audience Questions and Comments	84

MORNING PLENARY SESSION

Impacting Policy: Crossing the Aisle and Threading the Needle	85
Panel Discussion	85
Audience Questions and Comments	87

CLOSING PANEL DISCUSSION

Onward From WIIT 2019: Emerging Leaders Framing the Future for Women	89
Panel Discussion	89
Audience Questions and Comments	90

Conference-Concluding Plenary Session and Working Lunch	92
--	----

Conference Summary and Research Needs	93
Cross-Cutting Topics Impacting Women’s Travel	93
Cross-Cutting Conference Issues	94
Conclusions.....	105

Appendixes	110
A: Conference Program	110
B: References	135

Introduction

THERESE MCMILLAN
ASHA WEINSTEIN AGRAWAL
Conference Co-Chairs

This E-Circular highlights presentations from the latest of a series of conferences that began in 1978, focusing on many aspects of women's travel behavior around the world. In September 2019, at the time of this sixth conference, 10 years had passed since the fourth conference, also held at the National Academies Beckman Center, near the campus of the University of California, Irvine. It has been 5 years since the previous conference was hosted in Paris, the first time it was held outside of the United States.

These important anniversaries offer the perfect time to gaze into the conference history, allowing opportunities to look forward, to organize known information and new understanding, to evaluate where this knowledge has made a difference and where it has not, but should, and to identify the work still needed to do. This conference was organized around three compelling themes: *Insights*, *Inclusion*, and *Impact*.

Understanding *Insights* gained by reflecting first on the body of information developed over the decades and considering how far women have advanced in the transport sector as consumers, workers, decision-makers, and innovators.

Another essential moment upon which to focus was *Inclusion*, a demand that gender distinctions, both traditional and emerging, be captured in transportation data and research. The simple binary identifiers (male versus female) needed to evolve on a number of levels to reset gender as identity to include our LGBTQ+ community and to understand its potential layering in our research efforts.

Finally, *Impact* became a resounding theme and aspiration for this conference. Although research and data are not enough, their use to effect meaningful and impactful change is the true measure of success. More than that, it is a call to continually update and challenge the status quo and current understanding to meet the mobility and access needs of a diverse community of women across the world, above all providing genuine opportunities for personal and professional advancement.

Conference organizers challenged the participants to fully engage in the range of sessions over the three days of the conference, to encourage themselves and others to continually ask, "what do we do next?" and to believe that individuals can make a difference in women's lives through access to opportunity and mobility, as well as gaining control of their lives as transport enables individuals to grasp and hold onto the meaningful personal and professional elements in their lives.

SESSION SUMMARIES

The following session summaries do not reflect a consensus among the planning committee, the conference participants, nor TRB. The editors prepared the session summaries from the rapporteurs' notes and from the audio recordings of each session.

OPENING PLENARY SESSION

Insights

How Has Women's Travel Behavior Changed in the Past 30 Years?

THERESE MCMILLAN

*Bay Area Metro—Metropolitan Transportation Commission
Moderator*

Therese McMillan, Co-Chair of the WIIIT Conference Steering Committee, officially opened the conference, thanking her Co-Chair, Asha Weinstein Agrawal; the Conference Steering Committee; the TRB Standing Committee on Women and Gender in Transportation (formerly Women's Issues in Transportation); TRB staff, including Bill Anderson, Gary Jenkins, Ted Jamele, and Samantha Stock; and conference sponsors, particularly, the Federal Highway Administration (FHWA) and the New Mexico Department of Transportation (DOT) for their long-term support of multiple conferences in the WIIIT series. McMillan noted that the time is long overdue for capturing gender distinctions in transportation data, research, and policy, while being responsive to women of color, those from different cultures and socioeconomic backgrounds, and the LGBTQ community. McMillan asserted that successfully moving research efforts forward requires defining success by the lessons learned to formulate better and more responsive transportation policies, programs, and services.

HISTORY OF WOMEN'S ISSUES IN TRANSPORTATION

SANDI ROSENBLOOM

University of Texas at Austin

Rosenbloom described the history of the first and subsequent four previous WIIIT conferences; the initial 1978 WIIIT Conference took place in the face of strong opposition to studying women's travel patterns, at the time not considered a legitimate research topic. Although the first conference was a great success, it raised little awareness for the need to study women's travel patterns and behavior. The second conference would not occur for another 17 years, when the FHWA funded the effort. Nevertheless, research on women's travel patterns and needs has gained more legitimacy over the years, in part due to the formation of the TRB Committee on Women's Issues in Transportation (renamed Women and Gender in Transportation in 2020). Still, only recently has the topic produced a maturing body of work, as there remains limited research funding for studying women's travel. Moreover, the transportation modeling community resisted disaggregating data by gender, because it would require important process changes, complicating technical modeling efforts.

Panel Presentations

McMillan asked panelists to present national and regional transport data by gender within the context of socioeconomic trends in order to provide participants with an international perspective on women's travel issues.

EUROPEAN RESEARCH PROGRAMS ANTICIPATING BEHAVIORAL CHANGES

CRISTINA MAROLDA

European Commission, Association for European Transport

Marolda reported known research findings on changes in women's travel behavior in Europe, recognizing that cultures and economic situations vary considerably across the continent and that travel behaviors are reflective of these different contexts. She noted that more women are getting licenses at younger ages, perhaps due to safety and personal security concerns. Marolda stated that there is a need to increase the participation of women in various transport sectors, and questioned if new technologies will contribute to improved gender equity. She further commented that travel behavior and lifestyle changes are not due simply to policies, but also to the long-term impacts of infrastructure investments. Marolda concluded that advancement in this area requires a wide range of transportation data differentiated by sex, and more women involved in decision-making, science, and research, to ensure progress toward gender equity in transportation policies.

LONG-TERM TRENDS IN ASIA

DERLIE MATEO-BABIANO

University of Melbourne

Mateo-Babiano focused on the lived experience of women's travel behavior in Asia, integrating her own personal experiences from childhood to parenthood in her talk. She noted that the lack of data disaggregated by sex makes it difficult to create gender-responsive and -inclusive policies and may systematically exclude women from important dimensions of the economy. She focused on four types of women travelers: the public transit advocate; the frustrated traveler; the comfortable traveler; and the individualistic car driver. She observed that informal transportation options tend to serve the needs of women in many Asian cities, although those modes are often not the focus of official government policies. Women in Asian communities take more trips and typically chain these trips, facing substantial stress in doing so, because they are required to use several modes on each trip (incurring long wait times), while facing almost daily harassment in walking, waiting, and riding. Generally, it is difficult for women in many Asian cities to choose their own mobility options; for example, it is culturally unacceptable for women in countries like the Philippines to ride bicycles without societal judgement.

LONG-TERM TRENDS IN THE UNITED STATES

NANCY MCGUCKIN

Travel Behavior Associates

McGuckin highlighted trends in U.S. women's travel over the decades, revealing that women continue to make more trips, but travel fewer miles than do men—although to a lesser degree than in the past. Women now drive more than men, as well as make fewer shopping and errand trips than in the past. Still, women spend twice as much time in travel-related care, while men are now more likely to engage in secondary childcare (monitoring kids while watching TV for example). She found that Americans have declining trip rates, but employed mothers and especially employed fathers are making more trips than in the past. McGuckin described how technology differentially impacts women; women shop online more and are active participants in the “gig” economy, in which women can flexibly work in supplemental and part-time jobs. She concluded that gender still explains different travel attitudes and behavior, as gender is a deeply entrenched, socially constructed value, which has been slow to change. McGuckin stated that it is critical to understand gender differences, and to undertake more in-depth research that focuses on women's work trip commutes.

PANEL DISCUSSION

McMillan, the moderator, asked the panelists to comment on the most important insights in their work, and the value of data about women's transportation patterns. She also asked them to describe the implications of social and economic factors have on women's travel, and what future trends will likely take place.

Marolda noted that while travel data matter, we must recognize that transport patterns are also responsive to socioeconomic and other societal changes, requiring linkages made to travel data to understand fully what is happening. She suggested that it was not meaningful to talk about large aggregated spatial areas, like Europe, without differentiating individual regions and countries by the level of urbanization, education, gross domestic product (GDP), and the state of transportation infrastructure. Marolda concluded that viewing these changes over time in both transport and societal contexts further our understanding of women's travel needs and patterns.

Mateo-Babiano noted her difficulty in finding data when asked to present on the Asian context. In the Philippines, for example, women report harassment when walking, while using public transit, and during use of informal modes. At the same time, there is no systematic mechanism for capturing data concerning where, when, and how often such incidents occur—thus making appropriate policy responses difficult. However, she cautioned that data are only important when they are used to provide insights and perspectives on public policy and programs.

McGuckin suggested further examination of trip chaining, a phenomenon primarily undertaken by women with children, and which is more difficult to model as a travel behavior. She explained that a trip-chain is usually defined as a sequence of trips bounded by stops of 30 min or less. McGuckin noted that her early-career focus on trip chaining shook the travel demand

modeling world, in part due to making data collection and creating useful projections more difficult. She suggested the notion of considering habits, attitudes, beliefs, and constraints when evaluating travel patterns, using both qualitative and quantitative data. McGuckin warned about travel surveys using smartphone apps to track people's travel behavior, which provides better information about some travelers while missing information from those who cannot access such technologies. Moreover, data are missing for those who cannot or do not want to travel—raising the question of whether people are seen doing what they actually want to do.

AUDIENCE QUESTIONS AND COMMENTS

Should there be a focus on the *household* as the unit of measurement rather than the individual?

McGuckin: The household *IS* the unit of study in the United States, even though data collected pertains to individuals within a given household. Recognition of how household roles, needs, and resources affect individual travel behavior within households requires further study.

Why is the European Commission (EC) focused on low-carbon emissions projects and not gender?

Marolda: Many low-carbon goals have an important gender component and it is essential to think more broadly about how to effectively examine gender in many policy arenas. She noted that there are two new EC projects on gender and transport; she is part of those projects, but admitted that the upcoming goals of the European research agenda do not give much emphasis to gender issues.

Do technology platforms ignore or obscure women's issues in transport, and do women actually do more work even if they can travel less?

McGuckin: Many people do not consider the part-time or flexible work opportunities that platforms, such as Etsy, create as “real work,” even though such tasks are often very time consuming. The American Time Use Survey intends to identify the time spent in such activities.

Mateo-Babiano: The “gig” economy is another name for the informal economy, which is a significant part of the GDP of many developing economies.

A common thread in these talks is the lack of gender data.

A German scholar noted that this might be because transport research is often driven by industry needs, which are often not attuned to gender issues.

Mateo-Fabiano hoped that everyone would take data limits as a challenge to overcome.

McGuckin noted it would be useful to include the role of perceptions and attitudes in the U.S. National Household Travel Survey, but the Office of Management and Budget, which oversees national studies, is not open to adding those questions.

TECHNICAL SESSION A1

Getting There by Bike

JUDY JOHNSON
Jacobs
Moderator

A gender gap exists in cycling. Can data show this gap to improve policies, as well as to better design and plan bike programs and infrastructure?

DOES SAFER CYCLING INFRASTRUCTURE ENCOURAGE MORE WOMEN TO BIKE?

HAYNES BUNN
Strava

Research suggests that U.S. women take only 24% of total bike trips. Bunn used the Metro Data set from *Strava*, an app used to track cycling activity, to evaluate the impact on women's cycling of adding protected bike lanes in three cities (Philadelphia, Santa Barbara, and Seattle). She found an uptick in women's cycling in Santa Barbara and Philadelphia, after bike lanes were protected (usually by plastic bollards), but not in Seattle. She had small samples in each city and did not control for traffic volume or lane connectivity to other cycling facilities. Bunn concluded that there is a need for more research on the impact of different cycling infrastructure treatments on women travelers.

BETTER BICYCLING ENVIRONMENTS FOR WOMEN

DILLON FITCH
University of California, Davis

Fitch evaluated actual cycling environments in the San Francisco Bay Area to determine what kinds of infrastructure would make the majority of women feel safe cycling. She asked female and male participants to watch videos of different traffic situations, mostly of arterials in urban cities, and to rate their level of comfort with cycling in the situations presented. Women always reported feeling less comfort, but gender differences were small. Fitch found that attitudes about bicycling and bicycling confidence rather than comfort explained most gender differences in cycling. She concluded that current engineering metrics are not sufficient to create acceptable infrastructure for many cyclists, and that policy should focus on local biking infrastructure to improve ability to meet women's needs.

AUDIENCE QUESTIONS AND COMMENTS

What is the Strava database, what gender data does it contain, and how can planners access these data?

Bunn: Strava data are from a sample with fewer female than male cyclists. Neither income nor gender information for bike use are included in these data. Strava now offers a GIS data set to some DOTs on a sliding price scale. Strava will launch a web product soon that will make additional, and perhaps gender, data more available. Strava data used in before and after studies was helpful in determining if usage patterns changed after cities modified their cycling infrastructure.

What is the value of conducting research on gender differences in attitudes and preferences in cycling?

Fitch: There is no “average” woman and it is crucial to plan for the most conservative potential female user. Surveys are the best way to understand attitudes in a way that will allow planners and engineers to positively impact cycling behavior.

Some audience members found “it’s not your gender, it’s your attitudes” paradoxical, and questioned why it mattered: what is gained by measuring attitudes to inform and structure policies if certain attitudes are always or largely associated with gender?

Audience members questioned the focus on other conflicts between cyclists and vehicle traffic and not just bike lanes.

Some audience participants wanted research on intersection conflicts between cyclists and other modes. Fitch mentioned that some of the videos shown to her survey participants did include “Dutch style” intersections (at-grade junctions common in the Netherlands that separate pedestrians and cyclists from motorized vehicles) in an attempt to explicitly address perceptions of intersection conflicts.

Some participants thought we should consider a range of policies to support cycling by women that not only include but go beyond infrastructure decisions.

Participants discussed programs in Bogotá and São Paulo that focused on a range of policy variables beyond infrastructure changes (e.g., better lighting, changing land uses). Participants raised other issues for both the United States and in an international context: being able to afford bikes and equipment, the need for special bikes that could accommodate packages or small children, and focusing on differences between recreational cycling (where more women cycle) and transport cycling.

TECHNICAL SESSION A2

Better Access

Policy Strategies for Gender and Equity in Transportation Systems

LAURIE PICKUP

Vectos

Moderator

An assumption is that transportation policies and infrastructure are gender neutral because they benefit everyone equally. Spoiler alert: equal transportation is often not equitable. Strategic management and policies can assist with improving designs and plans for diverse mobility needs and travel patterns.

WOMEN'S ACCESS TO THE CITY

LETÍCIA BORTOLON

Institute for Transportation and Development Policy

Bortolon addressed gender and racial inequality in transportation in Recife, the capital of the Brazilian state of Pernambuco, and the fourth largest urban area in Brazil. Black women in Recife face high poverty rates and poor access to jobs. These women felt empowered by the ability to cycle for their needs, yet challenged by the absence of adequate cycling infrastructure. Bortolon worked with women's groups to show the inadequate service quality that poor women experienced even if they lived near a rapid rail transit system. Her work on black women's unequal access to transportation resources in Recife led to studies of the transportation needs of low-income and black women in eight metropolitan areas in Brazil, bringing these issues to the attention of local government agencies. Bortolon plans to expand her research to look at deficiencies in the regular bus network and to encourage future origin and destination studies to disaggregate transport data by gender, age, race, and other relevant variables linked to black women's needs.

HOW WOMEN ARE EXCLUDED FROM ACTIVE TRAVEL

SHERRY RYAN

San Diego State University

Ryan contended that the city of San Diego presents a stark landscape of gender disparity. Travel data by gender show that local governments and regional planning agencies create both ethical and equity issues when they plan and build transport networks that inadequately serve entire subgroups of the population. She argued for the need to focus on gender mainstreaming in all transportation policies, contending that long-range planning organizations must address the

failure to focus on gender needs in all stages of the planning process, from proposals to implementation of policies. Ryan feels that gender mainstreaming is the lens through which one should consider the impact of policy decisions on both men and women. Ryan further noted that not all transportation infrastructure is equal in quality. Women gain more from investment decisions that take their needs into account, including designing complete streets and cycling facilities that do not mix bikes with auto traffic.

A COMMON DISJUNCTURE? IDEALS OF GENDER SENSITIVE TRANSPORTATION PLANNING AND THE COMPREHENSIVE TRANSPORTATION STUDY OF HYDERABAD?

DEIKE PETERS

Soka University of America

SAMIKCHHYA (SAMI) BHUSAL

University of California, Los Angeles

Peters and Bhusal conducted qualitative interviews with women in Hyderabad, a city in southeastern India. There they found that women often changed aspects of their daily travel to respond to security and safety concerns, e.g., not traveling at night or by bus if they did not have someone to travel with them. The comprehensive transportation planning process in Hyderabad did not consider gendered mobility, nor adequately incorporate women's voices at public meetings. The authors concluded that it is necessary to ensure that women are included at every stage of the transportation planning process in ways that are both accessible and conducive to their participation.

COMMUNITY CONVERSATIONS: ADVANCING TRANSPORTATION EQUITY THROUGH IN-DEPTH INTERVIEWS

HALLY TURNER

Minnesota Department of Transportation

The Minnesota DOT initiated a two-phase planning process: Phase I, an environmental scan of how other communities are addressing transportation equity, and Phase II, a series of community conversations throughout the state. The goal was to reach groups that are not usually part of the planning process; and learn how personal and community factors affect transportation needs and patterns. Describing significant impacts to their travel patterns, people in these sessions talked about childcare needs, specialty healthcare, and their inability to secure affordable housing. Turner feels that these conversations make clear the problems in traditional methods designed to involve users in transportation planning efforts. Minnesota DOT is assessing ways to develop appropriate performance measures that reflect equity issues. Turner did note some pushback from traditional engineers with a tendency toward business-as-usual engagement. She concluded that equity is both a process and an outcome.

AUDIENCE QUESTIONS AND COMMENTS

How can we deal with the fact that professionals in the planning process often do not share the background of many people whose views are left out?

Participants questioned the equity of agency hiring (which may require advanced certification such as a master's degree) and contracting processes, both of which may exclude people and firms whose backgrounds and insights would be useful. One participant noted that she was the only person of color in a large planning agency, and questioned how to balance the need for specific skill sets with the need for specific lens perspectives.

How can we to get planners and policymakers to recognize women's specific needs and concerns in transportation planning and infrastructure decisions? Is the answer better education for women or better infrastructure?

Ryan commented that it is important to focus on, and take a systemwide approach to, infrastructure because having a continuous safe and secure cycling network, an analogue to the existing roadway network, is crucial to getting more women to cycle. She commented that women are more sensitive to many facets of the transportation system, particularly personal security and safety; however, the traditional planning process does not recognize these differences when planning infrastructure.

One participant noted that infrastructure was not an issue in some European contexts. Immigrant women often face cultural norms against cycling, but educational programs that also provided inexpensive bikes successfully increased these women's cycling without any infrastructure changes.

Bortolon reported gender-based advocacy organizations in Brazil were often not interested in mobility issues because they had to address so many other problems. This created additional barriers to getting transportation planners and policymakers to respond to women's needs. She also commented that an economic argument is often very powerful, viz; providing better transportation options for women will lead to better employment outcomes.

PANEL DISCUSSION A3

Advancing Women in Transportation

BRIANNA PILKINTON

*Burns and McDonald; WTS San Diego County Chapter
Moderator*

The panel's goal was to discuss women's careers in transportation agencies and industries, specifically how to get a "seat at the table." All the panelists were affiliated with WTS, an organization dedicated to creating a more diverse, inclusive, and equitable transportation industry through the global advancement of women. WTS has an education component and connections to 40,000 organizations worldwide in all transportation sectors.

Panelists

- Lima Saft, Caltrans, San Diego; WTS San Diego County Chapter;
 - Noopur Jain, California High-Speed Rail Authority, and Chair, WTS Western Regional Council;
 - Nadine Lee, Los Angeles Metro; 2019 WTS International Woman of the Year;
 - Jeannie Lee, Orange County Transportation Authority; WTS Orange County Chapter;
- and
- Maggie Walsh, HDR, Inc.; Chair, WTS International Board.

PANEL PRESENTATIONS

Moderator Pilkinton asked panelists to describe their journey with WTS.

Saft graduated with a Ph.D. in Civil Engineering from University of California, Irvine where she wrote a letter of recommendation for a student applying for a WTS scholarship, attended the award event when the student won, and joined 7 years ago.

Jain joined WTS 12 years ago after a former supervisor encouraged her to make new connections following her cross-country relocation. She actively involved herself in WTS committee work, later becoming a chapter president and growing as a leader.

Walsh felt WTS diversity awareness was important across the United States where her supervisor encouraged her to attend WTS events. She met right-minded people, developed a support system, and was helped by WTS during multiple job moves.

J. Lee received a WTS scholarship while getting her civil engineering degree, volunteered with WTS, received encouragement from members, and became WTS chapter president.

N. Lee described how 20 years ago her supervisor suggested that she get involved in WTS and takes pride in the growth in the number of WTS chapters.

PANEL DISCUSSION

Moderator **Pilkinton** asked panelists what they had learned about personal leadership development through their WTS involvement.

Jain: The WTS Leadership Program helped her address her fears as the only woman engineer in the room. She learned how others perceived her and improved her speaking abilities through her WTS volunteer work.

N. Lee: WTS mid-management leadership training led to networking opportunities. She learned negotiation skills, how to manage up, how to handle politics that can apply every day, how to deal with stakeholders. WTS provided a variety of valuable skill sets.

Pilkinton asked panelists why there is a disconnect between the number of women graduating in engineering, planning and related disciplines, compared to the number of women holding higher level corporate positions. She asked panelists to offer suggestions on how to help women move into these powerful leadership positions.

Walsh: Women are not nurtured on massive mega-project management, so they are not considered for many interesting projects because they lack this background experience. Opportunities are better in the private than the public sector. It is important to ensure that requests for proposals include language that does not exclude women.

N. Lee: LA Metro changed to blind screening for the first stage of job interviews, which removes gender issues. After the change to blind screening, there was a huge jump in women getting past the first hurdle. Providing child care may also help women at LA Metro, who said that they are having trouble advancing in the organization.

J. Lee: There is a need to promote transportation/engineering careers for everyone, not just boys. It is necessary to focus on promoting women in the workplace, and offer better mentorship to women students and staff.

Jain: We have to plant the seeds with girls to consider transportation jobs early, starting in elementary school. We need to understand that to move the dial, we need more support from men to allow women to grow into leadership roles, e.g., the role of business travel in advancement. Jain stated that she would have left her job if her management and her husband had not helped with her job's travel requirements.

Saft: We need to show middle school students that there is "a space and place for girls" in transportation. Saft commented that optional participation in a middle school class grew from 3% to 45% after she gave a talk in the class. Additionally, she stated the need for management to provide ways for women staff to attend conferences, as both the organization and the women involved

benefit from their conference participation.

Pilkinton asked panelists to talk about their experiences in terms of the three WIiT Conference foci: *insight*, *inclusion*, and *impact*. Statements from individual panelists are as follows:

INSIGHT

- Women need to promote other women. Organizations, such as WTS, can have profound impacts on women's careers in transportation, in part by connecting them to opportunities through networking.
- Volunteer, not just for leadership roles; taking on jobs, big and small, provides valuable experience.
- Leadership training and educational programs can provide expertise not taught in the workplace, arming women with needed skills.

INCLUSION

- Women need to draw attention to the micro-aggression, biases, and gender stereotyping that exist in the workplace, and demand change.
- We need total and inclusive support from leadership, partners, and colleagues, both women and men.

IMPACT

- Girls still need encouragement to enter STEM-related (science, technology, engineering, and medicine-related) fields.
- Few women hold executive positions at the executive level in the transport sector.
- We must start the relevant education of girls early.

TECHNICAL SESSION A4

Recognize A Pattern?

Travel Behavior 101

HILARY NIXON

*Mineta Transportation Institute, San Jose State University
Moderator*

How can transportation planners and decision-makers use the growing body of knowledge and data about women's travel needs and patterns to create better mobility planning standards, procedures, and methods?

CURRENT KNOWLEDGE AND PRACTICE ON GENDER AND TRAVEL: A LITERATURE REVIEW

MADELINE BROZEN

University of California at Los Angeles

Brozen's literature review focused on economic, cultural, environmental, and psychological factors that impact women's travel. The literature shows differences between groups of women, women's hyper-mobility and trip chaining, the fear of sexual harassment, and substantial constraints posed by the transportation network. These issues lead women to prefer private cars when they can. Some transit agencies have responded, e.g., Toronto's Stop Request program. However, transportation systems can respond in other ways by providing: new services to meet women's midday trip patterns; improved lighting, benches, etc., at stops; and better designed transit vehicles for women carrying shopping and traveling with children. Bozen concluded that additional research is necessary on patterns of trip chaining, the travel needs of trans-women and non-binary people, and how transit can respond in low-density areas. Brozen also noted the need for strong program evaluation to determine which ideas and approaches better meet women's needs.

UNDERSTANDING HOW WOMEN TRAVEL

MEGHNA KHANNA

LA Metro

LA Metro created a Women + Girls Governing Council with 60 Metro employees who volunteer to evaluate the agency as an employer, a service provider, and a catalyst for change. More than 50% of system riders are women, but the agency has limited information on women's travel patterns and the needs of women staff. LA Metro conducted surveys, focus groups, and observational studies (e.g., watching where women sat or waited while traveling in the Metro

system) to gain sufficient understanding to switch from a gender-neutral planning focus to a gender-responsive focus. Khanna stated that the next steps are to develop a Gender Action Plan, consider following Bay Area Rapid Transit's example of creating Transit Ambassadors and Santa Monica Transit's example of allowing strollers on buses, and reducing transfer times to limit women's exposure to harassment while waiting.

TELEWORKERS IN SOUTHERN CALIFORNIA: THEIR TRAVEL, THEIR FUTURE, AND HOW THEY DIFFER BY GENDER

MICHELLE BINA

Cambridge Systematics

Bina found many data gaps and challenges in evaluating the gender dimensions of teleworking, or working from home, including the lack of a common definition for this practice, i.e., working from home can include freelancing and the gig economy. Bina first assessed the extant research on the barriers faced by women engaging in various types of telework. She then conducted an online panel survey to distinguish who worked from home, how—whether they telecommuted occasionally, had a home-based business or used co-working spaces—and why. Bina concluded that women do not seem to face barriers to participating in electronically mediated employment. Still, they may be more negatively impacted by automation due to the types of jobs, i.e., part-time office or healthcare support staff, where teleworking is possible.

PANEL DISCUSSION

Nixon, the moderator, asked panelists to explicitly link their research to the three WIIAT Conference themes.

Brozen noted that she explicitly conducted her work to address women's inclusion in transportation industries and decision-making. She noted that concerns about the relationship between transportation and socioeconomic status drives a good deal of research today.

Khanna felt that her less-than-successful search for good data on women's travel patterns and needs supported improving women's inclusion in transportation planning and decision-making.

Bina focused on current travel patterns, as it difficult to keep up with the constant development of new technologies. She wants to ensure that the implications for gender do not get lost.

AUDIENCE QUESTIONS AND COMMENTS

Participants asked the panelists to name the one thing we can take away from their personal presentations.

Brozen: Recognize that transportation policies to better serve and protect women while traveling

cannot be addressed without considering the larger societal issues that create these situations—we cannot address one without the other.

Khanna: Collect more gender-specific data, but then use those data to develop appropriate policies to address women’s travel needs.

Bina: Disaggregate data by gender and other relevant variables.

Participants discussed why men and women feel differently about personal security while traveling and the complexities of addressing the issue.

Some participants noted that people most vulnerable to attack and harassment are often members of already over-policed communities, so they had different perceptions about additional surveillance and oversight. This makes it hard to strike the right balance. Many in Los Angeles are immigrant women who fear even reporting harassment or assault because doing so can be an additional source of anxiety.

Police officers who were conference participants noted that women often incorrectly assess the most dangerous times to travel—they feel less safe at night, but in fact most transit crime occurs during the busiest parts of the day.

VIDEO DOCUMENTARY

All Else Being Equal

ANNE JARRIGEON
Paris-Est University
Moderator and Videographer

Jarrigeon shared her 58-min video, *All Else Being Equal*, which demonstrates the complexity of women's lives and travel patterns. The video shows various women getting themselves and their children ready for work and school, and then using public transit and other transport network companies, or TNCs, to connect all these activities. The video contrasts the complicated household and employment travel patterns of these women with data from a household travel survey showing other women, presumably professional planners, discussing how travel surveys work. The video also contrasts public service messages against sexual harassment with sexualized advertisements for various commercial products.

After the video, Jarrigeon commented that she wanted to illustrate that travel statistics cannot convey any of the ways that women experience travel. She wanted her video to show the atmosphere, both personal and civil, in which women make their trips, particularly the transition from sometimes frantically getting ready to leave the home to operating in the outside world.

She noted that women are underrepresented in all aspects of the film business. As a director, she chose to work only with women actors, avoiding the common "male gaze." She mentioned that a male sound engineer said that her film was problematic because she only had women protagonists whose voices were too high.

Jarrigeon stated that she has shown the video to professionals to demonstrate that there are things simply hard to explain. She next plans to focus on housekeepers, who are largely "invisible," but travel a substantial amount each day without a car.

AFTERNOON PLENARY PANEL DISCUSSION

Harassment on Public Transit

STEPHANIE WIGGINS

Metrolink

Moderator

The panel was designed to underscore the growing problem of harassment and sexual assault occurring on public transit systems in major metropolitan areas around the globe.

SEXUAL HARASSMENT IN TRANSIT ENVIRONMENTS: A GLOBAL LOOK

ANASTASIA LOUKAITOU-SIDERIS

University of California, Los Angeles

Loukaitou-Sideris noted that policy analysts have only anecdotal information on the number, kind, and frequency of harassment and assault on transit systems passengers. Several international researchers cooperated to study the extent of harassment and assault in public transit in their own countries; the researchers found that most women and some men had been victims of these behaviors. The extent and frequency of victimization was not clear, however, because researchers lack uniform definitions of sexual harassment and assault and transit environments vary widely. Loukaitou-Sideris suggested the need to develop better methodology to generate meaningful data on the number, location, and character of these incidents in different transit settings. She recommended that transit systems improve lighting at stops and platforms and provide last-mile services, develop public education and outreach campaigns, implement effective reporting systems, reduce bus overcrowding (which often facilitates harassment), impose strict penalties for perpetrators, and train staff to assist victims and intervene when necessary.

SEXUAL VIOLENCE IN PUBLIC TRANSPORTATION IN STOCKHOLM, SWEDEN: THE INFLUENCE OF INDIVIDUAL AND ENVIRONMENTAL FACTORS

VANIA CECCATO

Kathmandu (KTH) Royal Institute of Technology

Ceccato studied the relationship between the design of the transit environment and sexual harassment and assault against female university students in Stockholm. Only 7% of students reported serious incidents, yet 45% of bus passengers and 25% of train passengers experienced harassment. Many students said they took a variety of preventive measures to avoid daily harassment. She concluded that the degree of victimization is significantly impacted by the physical and social environment created by the transit system. She found that serious sexual assaults rarely occurred in close proximity to bus and metro stations; most rapes and assaults

happened as women traveled to or from transit services. Ceccato concluded that public transit systems create concentrated pathways for crime against women. Moreover, policymakers should focus on making women's trips safe rather than limiting their concern to the confines of the transit system.

PLANNERS' VISION OF TRANSIT SEXUAL ASSAULT: THE PROBLEM OF DEPOLITICIZING BELIEFS

GWEN KASH

Georgia Institute of Technology

Kash contended that sexual harassment is very common, and assault faced by women in Latin American public transit systems is not on most policymakers' agenda. She noted that some transit systems take one or a combination of the following four stances when women claim that they have been harassed or assaulted: blame the victim for what she was wearing or her chosen time of travel; assume that women lied about the assault; demonstrated limited empathy for victims; and/or normalized assault as being cultural behavior for men, "not a transit system problem." Kash argued that improved data collection on the frequency and location of such incidents might not help if transit systems think these issues are part of a larger societal set of values over which they have no control.

ANTI-SEX OFFENSE CAMPAIGN ON METRO VANCOUVER TRANSIT

STEPHEN CROSBY

PATRICK KOCH

Metro Vancouver Transit Police

Crosby and Koch described how Metro Vancouver increased attention to sexual harassment and assault while encouraging women and bystanders to report. This first resulted in a rapid increase in reports, which they do not feel meant such crimes were increasing. Presently, reporting has dropped, which they attribute to the decreased incidence of harassment. Metro Vancouver also implemented a major media campaign stressing that harassment was a crime, offered suggestions on how bystanders can help, described ways to report, and urged victims to do so. They admitted making some missteps with the initial campaign such as failing to consult with local women's advocacy groups. Crosby and Koch noted their concern that women are often mistaken about when and where they are most at risk. Women often feel unsafe at night or in off-peak periods, but most crimes occur at very crowded times during the day.

AUDIENCE QUESTIONS AND COMMENTS

Participants questioned how often men reported being harassed in the international comparative surveys and asked if that meant sexual harassment and assault was a men's problem as well.

Loukaitou-Sideris noted that most of the international surveys did not ask women or men how often they were harassed, what they considered harassment, how threatened they felt, or what changes they made in their lives to avoid harassment. She suggested that is why we need better qualitative data collection methods with uniform and consistent understandings of what harassment and assault mean, the conditions and situations in which they occur, and how victims respond.

There were audience questions about the kinds of attacks that men reported—how did they compare in frequency and severity to those experienced by women?

Loukaitou-Sideris said that we have no idea of the frequency or seriousness of the harassment men faced but we should investigate with better research methods.

Kash suggested that men who reported sexual harassment were often far less impacted than women seemed to be, although they did become more empathetic to women victims.

There was a spirited discussion of how to increase women’s reporting of such incidents.

Participants raised issues ranging from technological solutions that allow on-the-spot reporting of harassment or assault, to ways to educate women and men that such incidents are crimes, to understanding and somehow addressing the fear that some women might feel in interacting with the police.

One participant noted that in the Global South, it often was not seen as appropriate or safe for women to report men for harassment. Within this regional context, is there a way to hold perpetrators responsible without forcing women to go so far beyond their comfort zone? Several participants insisted that it was the obligation of the transit system to make women feel safe by focusing on the perpetrators. It should not be women’s obligation alone—or at all—to make themselves safer by reporting harassment or assault. Others suggested that we need to promote a culture where people can rely on each other in harassment situations, even if the actions are not crimes.

Participants questioned what law enforcement personnel could do about the kinds of sexual harassment which were not actually criminal behavior but disturbing to many women.

Loukanitou-Sideris: If we do not start seeing and treating all forms of harassment as crimes, none of these efforts will have any impact. The vast majority of harassment is “lighter” behavior, but it still strongly impacts women who feel unsafe and often change their behavior in important ways to avoid having to endure that harassment.

Several U.S. transit agency staff mentioned that often threatening or scary behavior that bothered women were not crimes, and they had not been successful in getting police to respond.

Some participants discussed how responsive transit or local police would be to various reporting media (texts, specific apps, phone calls).

The Metro Vancouver police officers pointed out that they took all forms of communication seriously, that they would respond to a text as rapidly as a phone call. Women could call or text

or use a specific app designed to report crime and say they were being harassed or leered at; the police would respond immediately. They pointed out that several types of harassment that might not be crimes in other jurisdictions, such as up-skirting and up-slipping, covertly taking intimate photos or videos underneath women's clothing without consent and posting these images to the web, are considered voyeurism, which is a crime in Vancouver.

The Vancouver transit police officers also said it was important to report even if the kinds of harassment were not a crime. Many offenders had no prior criminal record when confronted by the police. Even if they are not arrested, they were less likely to repeat the offense. Canada is also developing a national database of people who commit such types of behavior.

POSTER SESSION

Increasing Gender Inequality in Municipal Public Transport by Non-Decision-Making

VERED UZIEL

University of the Negev

Developing a Transport Innovation Gender Observatory to Address Gender Inequalities in Transport in Europe

ANDREE WOODCOCK

Coventry University

Why Did You Choose an SUV? Identifying Gender Differences in Latent Vehicle-Type Propensity Segments

XINYI WANG

Georgia Institute of Technology

Measures to Promote Innovative Urban Mobility Solutions for Women

INES KAWGAN-KAGAN

Technical University, Berlin

Understanding the Significance of Gender-Based Equity in Road Safety: A Bengaluru Case Study

ASHISH VERMA

Indian Institute of Science, Bangalore

Gender Differences in Speed Selection

REUT SADIA

Technion-Israel Institute of Technology

The Gender Role on the Effectiveness of an Eco-Speed Control System in The Vicinity of Signalized Intersections: A Driving Simulator Study

SAMIRA AHANGARI

Morgan State University

Real-Time Detection of Pregnant Women Pedestrians Using Cameras**AMIR NOHEKHAN***University of Maryland***A Gender Meta-Analysis of Transport Innovation Acceptance: Women Approve Change****JANA SOHOR***Chalmers University of Technology***Influencing Factors in Autonomous Vehicle (AV) Usage Willingness of Pregnant Women****BINYA ZHANG***University of Maryland, College Park***Gendered Travel at Every Age: Trip Purpose and Frequency Among Georgia Residents Ages 5–100****GWEN KASH***Georgia Institute of Technology***Gender Trends and Differences in Driving, Biking, and Safety****SHARI SCHAFTLEIN***Federal Highway Administration***Toward Livability Ethics, Equity, and Justice, and a Charter for Street Humanity and Human Rights for Gender Equity in Transportation****BRUCE APPELYARD***San Diego State University*

TECHNICAL SESSION B1

Human Trafficking

ELIZABETH CONNELL

*Fehr & Peers
Moderator*

The U.S. DOT described human trafficking as a “modern form of slavery.” Traffickers conducting illegal activities use every mode of transportation. In this moderated panel discussion, researchers discussed this challenging issue and how it is being addressed at the federal and state levels.

COMBATING HUMAN TRAFFICKING IN THE TRANSPORTATION SECTOR

JULIE ABRAHAM

Office of International Transportation and Trade, U.S. Department of Transportation

The U.S. DOT is working with private and public stakeholders to address human trafficking, a global issue closely monitored in the United States by the Presidential Interagency Task Force to Monitor and Combat Trafficking of Persons (state.gov/the-presidents-interagency-task-force). There may be 24.5 million people worldwide held in forced labor, and almost three-quarters are women. There is limited data on how these people are transported, but it is believed that they are moved on nearly all surface transport modes. Educational efforts are the driving force in creating public awareness of the problem. Additionally, we need to train truckers and other transport professionals to recognize and respond, if they suspect human trafficking. Better data and effective ways to measure human trafficking are necessary to study trends over time, and in response to countermeasures. There are multiple research topics for scholars to consider, from how to standardize data collection to evaluating the effectiveness of counter-trafficking efforts.

HOW THE TRANSPORTATION INDUSTRY IS COMBATING HUMAN TRAFFICKING

EMMA LOWE

Pennsylvania Department of Transportation

Human trafficking is often thought to be an international problem, but it occurs in all 50 U.S. states and the District of Columbia. The Commonwealth of Pennsylvania ranks 11th in the number of cases reported. In 2018 the majority of trafficked people were female U.S. citizens, and largely for sex. Trafficking numbers are increasing, but that may be a function of better recognition of the problem. Pennsylvania DOT is responding by using videos at driver centers cautioning drivers to look for suspicious activity, providing a toolkit for local agencies, creating

partnerships with appropriate organizations, and working with law enforcement to alert officers to the signs of human trafficking.

HUMAN TRAFFICKING IN OUR TRANSPORTATION SYSTEM

CHRIS BAGLIN

Project Performance Company

Studying human trafficking has not always been a high priority for transportation researchers. Baglin surveyed state DOTs to see how they would respond, and found most have a low level of engagement with trafficking issues or none at all. DOT respondents expressed their need to understand different types of human trafficking, have a defined policy for reporting suspicions and incidents, and create surveillance at rest and welcome areas—although they were not sure exactly what to look for. All agreed on the need for more information. This is important because state DOTs can take a leadership role in managing trafficking.

AUDIENCE QUESTIONS AND COMMENTS

What are the common misconceptions about human trafficking?

It does not always happen to “somebody else.” It happens everywhere and to all kinds of people, regardless of race, religion, or gender.

It is a mistake to view victims as perpetrators of crime (prostitution), when they generally have no choice. Ultimately, there is no difference between people trafficked for sex and people trafficked for other purposes such as forced labor—they are all victims.

It is essential to be mindful of how to speak about sex workers. It requires altering our language; making small changes in how we talk about victims humanizes the conversation.

What are the barriers to state DOTs getting involved in ending human trafficking? Where can agencies find sufficient funds?

Commitment must come from the top of the organization, but state DOT officials often don’t think this is an issue they should be addressing.

Good and comprehensive data is lacking to make it clear how to intervene effectively. We need more women leaders; we must encourage men to step up to recruit, train, and promote qualified women.

Pennsylvania DOT funded efforts from the secretary’s budget, but had to overcome internal concerns that ending trafficking was not part of the DOT’s mission.

What can we do or say to get involved?

- Go to the U.S. DOT website ([transportation.gov/stophumantrafficking](https://www.transportation.gov/stophumantrafficking)), take the pledge back to your organization, train employees, and create a responsive strategy.
- Raise public awareness—this is crime on a massive scale.

- Address demand! This is a business for traffickers—they would not have customers if people weren't buying sex services. Truckers have an initiative called “Man to Man” conveying the idea that it is not ok to buy sex from trafficked victims.
- Call tip lines when witnessing suspicious activity. “It’s better to be wrong than not to say anything.” Sometimes you just have a feeling that something is not right. However, do not put yourself in danger, nor engage in vigilante justice.

TECHNICAL SESSION B2

Inclusion

BRITTNEY GICK

*Texas A&M Transportation Institute
Moderator*

Transportation takes women and men to work, health care, shopping, schools, and many other venues, but does not provide equal access and services for women. Efforts to provide equitable transportation services are enhanced by including more women in the transportation workforce, education, and outreach activities.

DOES WHO YOU KNOW GET YOU PLACES? THE ROLE OF SOCIAL CAPITAL IN TRANSPORT DISADVANTAGE

LAUREL JOHNSON

University of Queensland

Johnson conducted a longitudinal survey in Brisbane, Australia, where many respondents reported that adequate transport was a high priority, but that cost was a serious constraint. Respondents reported needing more frequent buses and bus signs in different languages. They were often unable to take advantage of new developments in public transit, such as pre-loaded cards and online schedules and maps. The reason is that many could not afford to pay in advance for multiple trips, and had neither smart phones nor Internet connection. Johnson noted that some disadvantaged travelers have access to transport services *if* they live in a certain community or have the “right” disability or specific need, e.g., transport services for people needing dialysis. Others with equally pressing needs had no options. She concluded that people with the connections and knowledge, i.e., those with social capital, are more able to meet their transport needs.

THE DIAMOND METHOD: REVEALING ACTIONABLE KNOWLEDGE FROM DATA TO SUPPORT FAIR WOMEN’S INCLUSION IN THE TRANSPORT SYSTEM

FANNY BREUIL AYMAMI

EURCAT

DIAMOND is a collaborative of 14 institutions, companies, and transport organizations in seven countries that supports women’s inclusion in the transport system by creating actionable knowledge through gender-based data collection (<https://diamond-project.eu/>). DIAMOND is a metaphor for an approach with multiple closely interconnected policy and program facets. The DIAMOND project responds to data showing that more women working in transport industries are part-time and have lower average pay even though two-thirds of most public transport

passengers are women. DIAMOND intends to conduct four case studies (i.e., public transit infrastructure, autonomous vehicles, bikesharing programs, and women's recruitment in railways and freight management), with the goal of systematically collecting and synthesizing major databases and private data from DIAMOND partners. The ultimate objective is to use the data to develop a toolkit that allows users to identify the skills needed in transport industries, how to adapt new technologies to women's needs, and how to design and disseminate job opportunities in ways that attract women.

WOMEN'S INCLUSION IN THE TRANSPORT SYSTEM BY APPLYING A NOVEL STRUCTURED METHODOLOGY: THE INCLUSION DIAMOND AND POLYHEDRAL INDIVIDUAL MODEL

FRANCISCO SANTARREMIGIA
AITEC

DIAMOND's research is a five-step process driven by the known differences in women and men's travel and employment, suggesting the need for innovative models and an appropriate method to conduct deep assessments of the transport system. The DIAMOND exclusion model facilitates the systematic assessments of gender needs in the transport system to minimize inequities. The model focuses on a wide variety of personal characteristics that can influence individual travel behavior as a user and employee of the transport system—each can be a source of discrimination.

A CROSS CULTURAL STUDY IN PAKISTAN AND MALAYSIA

ANDREE WOODCOCK
Coventry University

Woodcock found that transportation is a special challenge for women in Pakistan and Malaysia because they face harassment, road rage, and social and cultural norms that sanction women walking in public or using other modes. In addition, women face the stress of high temperatures and humidity, overcrowding, pollution, and crowded buses with inadequate space for children and packages. There are cultural barriers to women driving motorcycles in Lahore, Pakistan; most women rode sidesaddle as passengers, if at all. Almost all respondents reported weekly sexual harassment and assault ranging from catcalling to rape. It was more acceptable for women to walk and travel in Kuala Lumpur, Malaysia, where there are women-only transit buses; however, women reported being afraid of waiting at stops due to the lack of lighting, poor and badly maintained infrastructure, and frequent train delays. Woodcock concluded that investments in infrastructure alone would not improve women's mobility if they continued to face constant harassment and societal norms against their traveling alone or at all.

TECHNICAL SESSION B3

Most Likely Harmed *Crashes, Safety, and Gender*

DAWN HOOD

*University of Minnesota
Moderator*

Women are roughly 70% more likely than men to be seriously injured or killed in auto crashes of comparable severity. Artificial intelligence data provide a chance to address this disparity and improve safety using good data. Panelists discussed women's risk of harm in car crashes.

THE IMPACT OF GENDER ON INJURY OUTCOMES ASSOCIATED WITH MOTOR VEHICLE CRASHES THROUGH A LINKED ANALYSIS OF CRASH AND EMS DATA

ALYSSA RYAN

University of Massachusetts, Amherst

Ryan focused on what happened to women drivers in crashes by building a model to predict the primary anatomic location and severity of their crash injuries. She found that men are more likely to be involved in severe crashes because of their risk taking; however, women have greater probability of sustaining injuries in comparable crash situations. Men are 42% more likely to be uninjured in a vehicle crash, while women are more likely to have abdominal, chest, and lower extremity injuries of greater severity when compared to men. Ryan also found that vehicles are not designed for the anatomy of women drivers, making it impossible for women to sit in the safest location in the vehicle. Seatbelt placement in vehicles may need re-examining to address the greater chest injuries that women drivers sustain in crashes. Ryan concluded that vehicle designs must change, as well as underscoring the need to create safer driver scenarios for women.

A STUDY ON QUANTIFICATION OF THE INTERACTION BETWEEN CRASH CONTRIBUTING FACTORS IN FATAL CRASHES AMONG FEMALE DRIVERS WITH A FOCUS ON ALCOHOL MISUSE USING SOCIAL NETWORK ANALYSIS METHODS

SEVIN MOHAMMADI

The University of Tennessee, Knoxville

Mohammadi analyzed the California Fatality Analysis Reporting System data set to identify the factors contributing to crashes, finding that roughly 30 factors were significant in explaining fatal

crashes. The first seven were the same for women and men, but there were important gender differences for most of the other factors. Male drivers died more frequently while driving under the influence. Moreover, having a history of driving while intoxicated, or DWI, was a more important contributing factor for male drivers than female drivers. Conversely, high blood alcohol concentration (BAC), the level of alcohol in the blood, was a more significant factor for female drivers suffering fatal crashes. Mohammadi warned that lifestyles are changing and that women are more likely to drink and drive than previously. She concluded that new gender-oriented research methods are necessary to study the causes of crashes. Additionally, constructive training materials that make women aware of the consequences of drinking and driving are necessary.

WOMEN'S ISSUES IN ROAD CRASHES AND SAFETY IN PUBLIC BUSES IN INDIAN CITIES

ASHISH VERMA

Indian Institute of Science, Bangalore

Verma found that female *two-wheelers* (women using motorized bikes and scooters) and pedestrians were the most vulnerable road users in India. More female pedestrian injuries resulted from two-wheelers than by any other vehicle mode. The solution may involve making buses cheaper and more available to women. Many cities plan to build bus rapid transit (BRT) facilities and possibly subsidize women's fares to encourage ridership. Verma also noted that the long clothing, i.e., saris, worn by many Indian women, while carrying several bags and traveling with children often make it difficult for them to board a bus. Furthermore, almost half of women who reported personal security issues while using buses continue to travel by bus, having no travel alternatives. It is not surprising then that Indian women's inclination to buy a car is greater than men's than in the past. Verma concluded that unsustainable transportation choices will increase unless these women's issues are addressed.

AUDIENCE QUESTIONS AND COMMENTS

Is there Indian government support for addressing women's needs while traveling? What is the role of road design?

Verma: India does not have deep-rooted gender-based planning yet; however, there is a need to continue to make the case for doing so. It might help not to allow all vehicles to share all lanes by segregating two-wheelers or even making it harder for people to use two-wheelers. Subsidies to make a bus cheaper than a two-wheeler might decrease the number of two-wheelers on the road. There is no good data on cyclists; still, the belief is that most have shifted to two-wheeled vehicles, e.g., scooters, motorized bikes.

Why does higher blood alcohol contribute more to women drivers' fatal crash rates?

Mohammadi: Men and women generally have different average body weights and physiological responses to alcohol. Two drinks generally raise women's BAC higher than men drinking a

comparable amount. It is also possible that fewer women drink or drink heavily; however, those who do, do so to excess.

Ryan: As compared to men, women who have had too much to drink may feel safer driving themselves home rather than putting themselves in the care of taxi or TNC (e.g., Lyft, Uber) drivers, where they are more vulnerable.

PANEL DISCUSSION B4

Transportation Tech

Moving Women

CRISTINA MAROLDA

*Association of European Transport
Moderator*

Mixed perspectives exist on the benefits and challenges of shared and smart mobility options for women. Shared mobility provides flexible employment and travel options, but these options can also pose personal security challenges for women in the same ways that public transit does. This raises the following question: what can public- and private-sector entities do to keep women safe, both as drivers and users, during this move toward greater transportation gender equity?

TRANSFORMATIONAL TECHNOLOGIES IMPACT ON WOMEN

CRISTINA MAROLDA

Association of European Transport

Marolda noted that automation of transportation is promising, but may exacerbate social inequalities. Many new platforms both promise increased personal security for women and perhaps risk their security at the same time. She raised a number of questions: can new technologies reduce waiting times or address women's fears of riding with strangers in shared vehicles? Moreover, will new vehicle technologies address the ergonomic problems that women have with current vehicles? Will advances in communication technology create new jobs and work patterns that challenge women, or require new or different educational preparation, or reduce income security? She questioned if and how we can use new technology and educational programs to guarantee a minimum level of mobility for women and men and directly address equity issues.

THE EFFECT OF ATTITUDES ON WOMEN'S WILLINGNESS TO SHARE AUTONOMOUS VEHICLES

DENISE CAPASSO DA SILVA

Arizona State University

Capasso da Silva focused on women and men's attitudes toward automated vehicles (AV) and ridehailing services in U.S. metropolitan areas. She found that men use ride-hailing services more and are more familiar with AVs than women, while women report being far less willing to

share automated transport network companies (TNCs) with strangers. Even women who say they are willing to share rides are still less willing to try AVs. Capasso da Silva concluded that even when women ostensibly share the same attitudes about AVs and TNCs as men, they are less likely to report being willing to use AV-based ridesharing services. This suggests the need to develop personal security protocols that address women's fears and to create marketing campaigns targeted at women.

FROM EXCLUSIVE TO INCLUSIVE: ADDRESSING THE 'GENDER' COMPONENT IN SMART MOBILITIES: DISCUSSIONS

TANU PRIYA UTENG

Institute of Transport Economics, Oslo, Norway

Uteng argued that, in spite of the potential of bikeshare options, the distribution of bikeshare stations often is gender-biased. Stations generally heavily concentrated in city center employment locations are much more convenient for men. Women more likely use bikeshare programs for multipurpose trips, yet many cycling infrastructure decisions seem more responsive to men's recreational and employment needs. Uteng contends that if women's travel patterns converge with those of men, their increasing car use will substantially raise CO₂ emissions. In contrast, carsharing and bikeshare programs designed to meet women's needs might induce more women to reduce their auto use and help us meet global climate targets.

CAN AUTONOMOUS VEHICLES HELP LIBERATE WOMEN?

ANDREA BROADDUS

Ford Motor Company

The Ford Motor Company will launch an AV service in Miami in 2021, a region where travel patterns show substantial differences between women and men. Women's travel often includes substantial off-peak travel and trip chaining in low-density areas, as well as trips difficult to conduct with traditional public transit, which is more responsive to men's needs. Ford is researching women's mobility needs using shared mobility fleet simulation tools, questioning if goods delivery, mobility services, and AVs could supersede certain trips currently taken by women. Broaddus noted that these options might better serve women's travel demands compared to public transit, which is oriented to peak-period travel demands. Ford concluded that mobility services could "liberate" women from typically gendered travel while being operationally efficient and profitable. They would also have the potential to address the needs of zero- and one-vehicle households.

AUDIENCE QUESTIONS AND COMMENTS

Are there differences in trust based on riders or drivers' gender, with regard to AV, or advanced driving systems?

Some participants noted that research found that women trust AV systems more than men, perhaps due to having less confidence in their own driving ability, and having less interest in driving the vehicle in which they are riding. Women may have greater interest in AVs, as they are both more likely to be the passenger in private vehicles, and more willing to live within the established rules of AV systems.

What do we know about the sociodemographic characteristics of users of new transport platforms and advanced driving systems?

Studies suggest that current users are white, male, young, and high wage earners.

What are the takeaways from these research studies?

What women want from AVs and other new technology remains unknown, but there is greater understanding of what women do, their actual behavior. We don't necessarily know why, however, or whether it is their choice, or it is a response to the constraints under which they operate. The kinds of new services and technologies that would attract women remain unknown. It is possible to plan for observed and consistent travel patterns, although there is a need to focus on a whole package of solutions rather than isolated options.

Alignment of gendered patterns of travel with what makes an on-demand mobility service profitable is necessary to take advantage of potential economic benefits.

While women may be the primary beneficiaries of new technologies, this fact remains unknown to them. It is essential to develop and market these new technologies to meet women's travel needs and patterns.

A specific focus on women's concerns about personal security is necessary. Starting with women-only AV or shared mobility services is a start.

PHOTO ESSAY AND DISCUSSION

Women Lead the Way in Community Mobility

ALEX KING

*Community Transportation Association of America
Moderator*

TAYLOR MCGINLEY

*Community Transportation Association of America
Moderator*

The session displayed portraits and other images of women in leadership positions at rural, small-urban, specialized, and tribal transit, or community mobility operations across the United States. Started by women, the community mobility movement focuses on enhancing people's quality of life rather than simply moving people from point A to point B. In contrast to large urban transit systems, women most often head community mobility operations.

CTAA asked 14 women leaders in community transportation systems around the United States, having varying transportation experience and personal characteristics, to answer five questions and to provide photographs that best represented their work. The presentation included two slides on each woman leader, the first an image provided by the leader and the second included a personal quote. These portraits spotlighted women leaders in their own transit facilities, in their communities, at meetings, as drivers and dispatchers, and other important system roles in which they serve.

Most of these leaders were originally from non-transit backgrounds, served in multiple roles in their systems, encouraged diversity and focus on supporting other women, and demonstrated deep empathy for the communities in which they worked. They seemed both open and transparent about their personal and professional lives, were independent and innovative thinkers, and saw their responsibility as connecting communities and building bridges. King and McGinley felt that many of these women had great courage and self-assurance, yet some expressed that they were still working on building their confidence. King and McGinley plan to continue the project, hoping to interview more women, community transit leaders.



**Amy Biggs, Director,
Snoqualmie Valley Transportation**



**Amy Dewitt-Smith, Founder/Director,
Neighbor Network of Northern Nevada**



**Angel Bond, Mobility for All Program
Manager, Boulder County**



**Ann Dawson-August, Former Executive
Director, Birmingham-Jefferson County
Transit Authority**



**Jaime McKay, Transportation Planner,
WSP**



**Jan Ollivier, Transportation Contracts
Manager, People for People**



**Jill Drury, Transit Manager, Charlevoix
County Transit**



**Kendra McGeady, Director of Transit,
Pelivan Transit/Northeast Tribal Transit
Consortium**



Mary Jo Morandini, General Manager/CEO, Beaver County Transit Authority



Sheila Gombita, Executive Director, Washington County Transportation Authority



Staci Haber, Director of Mobility Management, Hopelink



Tiffany Chaffee, Operations Manager, Town and Country Transit



**Jane Hardin, Program Specialist,
Community Transportation Association
of America**



**Zoe Miller, Director of Community
Engagement, Greater Portland (ME)
Council of Governments**

STUDENT SESSION

Letter to My Younger Self

Leadership Insights to Grow a Career in Transportation

FLORA CASTILLO

Pivot Strategies, LLC

Moderator

STACY WEISFELD

Office of the Mayor, City of Los Angeles

Moderator

Moderators designed this session to be insightful and thought provoking to provide graduate students and emerging leaders with the opportunity to learn firsthand from women transportation professionals across disciplines (i.e., transit, highway, port, and aviation) in both public and private sectors. These professionals discussed the real-life advice they would give their younger selves based on how they have achieved professional growth.

PANEL DISCUSSION

The moderators first asked panelists to introduce themselves:

Debra Johnson, Deputy Chief Executive Officer for Long Beach Transit, explained that because she believes in people, she chose to be a public servant. She, as a person of color, did not have a role model that looked like her. She noted that to move forward, she had to step back and step aside before moving forward.

Diana Gomez, Central Valley Regional Director, California High-Speed Rail Commission, noted that she is a civil engineer and has been a public servant for 31 years. She went into transportation because Caltrans was hiring. She was born and raised in Fresno (CA) with few Hispanic role models and had to move away to move forward. She came back home to become Regional Director, a job she considers the hardest of her career, but she is excited for the opportunity to transform California through high-speed rail.

Allison Yoh, Director of Transportation for the Port of Long Beach, explained that she got into transportation because she was in the right place at the right time; she actually wanted to be an archeologist. She focused on educational administration, where she learned the value of people and mentors. Part of her charge was to address suicide prevention and ultimately her concern about access to mental health services led her to transportation planning and administration.

Zenobia Fields, Director of Government & Community Relations, New Jersey Department of

Transportation, is an architect who switched to city planning because she was interested in how to use public policy to influence the built environment. She engaged in asset planning, federal planning, and worked in advocacy for the non-profit sector, ultimately realizing that they were all connected. She switched to doing GIS work for 12 years, then left to become a senior director on a \$2 billion capital program. In this role, she worked on long range and environmental planning until recruited for an executive-level position with New Jersey Department of Transportation.

Samantha Bricker, Chief Environmental and Sustainability Officer, Los Angeles World Airports (LAWA), was a political science major and initially went into politics, but accidentally became involved in planning major transportation projects as the chief operating officer for the LA Exposition Metro Line Construction Authority. Later recruited into LAWA, she focused on their environmental program, enhancing the passenger experience, ensuring sustainability, conserving protected areas, and developing appropriate responses to increasing demand. Her role requires her to address community relations, strategic thinking, and planning.

AUDIENCE QUESTIONS AND COMMENTS

What has been the role of mentors and sponsors in your professional lives?

Mentors can give you opportunities and the lesson that you must first believe in yourself.

Women have a special obligation to bring more women to the table and let them participate and engage.

A mentor's role is to help develop networks, connect you with people, and assist you to establish relationships with people you should know.

What things are important to think about and do as you move up in your professional life?

Remember that you represent something important so be engaged when you sit at the table. Be in touch with your emotions and find balance.

Develop a succession plan; ensure you are doing something to bring up another set of women and men leaders.

Persist in bringing more women with you as you move up the ladder.

Learn to deal with the alpha female. Sometimes the most difficult people are other women in the organization. It is disheartening but true.

Support women by appointing them to important positions, giving them opportunities, and creating support structures that help them into leadership positions.

Find a way to make a difference once you reach the top. Do things that positively impact communities.

MARQUEE RECEPTION, DINNER, AND PANEL DISCUSSION

Leadership at All Levels

Insight, Inclusion, and Impact Through a Career in Transportation

THERESE MCMILLAN

*Bay Area Metro–Metropolitan Transportation Commission
Moderator*

The panel focused on the opportunities and impacts that women leaders have in envisioning and implementing changes that create better access and mobility for women travelers. What can be done to attract, support, and advance women in the transportation field? The panelists are at different stages of their career arc, with all in key visioning and decision-making roles. They shared their personal stories and insight on pivotal career choices, opportunities taken, challenges faced, and how they recruited, inspired, and mentored others in their industry.

Panelists

- **Laura Cornejo**, Department of Transportation, City of Pasadena
- **Genevieve Giuliano**, University of Southern California and METRANS
- **Stephanie Wiggins**, MetroLink

PANEL DISCUSSION

McMillan, the moderator, noted that how we perceive and plan our futures is often shaped by the time we are in and where we come from. She asked the panelists to share a decisive moment for each of them as a woman.

Wiggins described a negative experience when she was working on the most difficult capital planning effort of her career and learned that because the staff would not report to a woman, her boss transferred her responsibilities to a man, who told her to become involved in community engagement instead. Wiggins insisted in staying on the project, which was ultimately a success.

Cornejo noted that she was often the only woman and the only woman of color on a project. She quickly learned that she had to do her homework, so she could make clear that she was not a little sister or daughter to older colleagues. She finally got a promotion because the people with whom she worked saw she could do the best job and was the most qualified. That was validating for her.

Giuliano commented that it never occurred to her to worry about the fact that the field was overwhelmingly male; that is just the way it was. She worked harder to prove herself over and over, again. She feels that the current generation is thinking about these issues and sees that there

is a different way to operate.

McMillan, focusing on one of the conference themes, Impact, asked if the panelists had seen a change in the ways in which women interacted on boards.

Wiggins: Women's voices break through more. They make a distinct impact on the workforce, inducing agencies to look at women's issues. Women at the table make for a more comprehensive and robust discussion of every situation.

Giuliano: The people in charge identify and structure the transportation problems we address. So, for a long time all problems were structured from a male viewpoint. Now, with many women at the top, we have a more nuanced view of transportation issues, a genuine accomplishment.

McMillan asked how, as women of color, the panelists addressed equity in their work.

Cornejo noted she got into transportation to help communities of color because she understood the impact the lack of transportation can have on health issues and the built environment; however, she did not want to come across as someone with "a chip on her shoulder." Therefore, she ensured everything she did was backed up with facts and skill.

Wiggins explained that she first addressed equity when dealing with congestion pricing issues because the topic raised questions of modal and transportation equity. She started to understand that every issue, from toll roads to agency contracting decisions, had an equity component. This helped open her eyes to questions of gender balance.

Giuliano commented that, although not a woman of color, she had worked with SELA, a collaborative of nonprofits, foundations, and transit advocates who study transportation deficiencies in 10 cities in a historically underserved area in South Central Los Angeles. The work led to additional community-centered research whose goal is to get LA Metro to improve transportation in these communities. This kind of engaged research is rare, especially if it becomes the basis of policy changes.

McMillan asked the panelists to explain their mentoring experiences and the role of mentoring in increasing inclusion for women.

Cornejo suggested that mentoring and training help people move up, something which men tend to know better than women. She sought out female mentors early in her career but they were not interested and very vocal why: "No one helped me, why should I help you?" She had important questions about how to balance career and motherhood but until recently could not find anyone to speak about that. Now she has an open door to answer any question—none are off limits. She advised giving constructive feedback to anyone who asks.

Wiggins: Empower each other. Give back and support other women.

Giuliano commented that academics are dedicated to producing the next generation and having each generation be more diverse by explicitly recruiting for diversity. Mentorship is critical in

academia. Students often return after they graduate for ongoing conversations and faculty are there to move them forward.

AUDIENCE QUESTIONS AND COMMENTS

How do you become confident in speaking in meetings and public forums when you're surrounded by men?

Cornejo: It comes down to believing in what you are saying. Someone once said that if women had the confidence of mediocre men, women would rule the world. Trust yourself and speak with confidence.

What do you hope to inspire in the next generation of female leaders?

Cornejo: Get rid of self-doubt because it so defeating.

Giuliano: Everyone in this room is capable of achieving any dream. We are only at the beginning—take the opportunities, be confident, and enjoy the ride.

McMillan: Women are not good at “jumping off the cliff” and assuming that a parachute will open. It was a really scary moment when McMillan went to the Federal Transit Administration—she had to embrace risk. Women should do that early and not be afraid of failure.

MORNING PLENARY PANEL DISCUSSION

Insight, Inclusion, and Impact Through Organizational Support of Women's Advancement in the Transportation Industry

JUDY JOHNSON

Jacobs

Moderator

The panel focused on how public and private sectors, along with educational institutions, support the career advancement of women in the transportation industry. Additionally, the panel discussed policy- and implementation-level strategies that break down barriers and support the professional development and advancement of women.

Panelists

- **Laurie Berman**, Caltrans
- **Elba Higueros**, LA Metro
- **Winsome Bowen**, Facebook
- **Vicky DeGuzman**, METTRANS, University of Southern California

PANEL DISCUSSION

Johnson asked panelists to introduce themselves, and describe their organization and work to promote women.

Berman: It is a special and unique time to be Director of Caltrans, where more than half the executives are women. She has been thinking of how to provide a work environment that offers more equal advancement to women, including allowing mid-managers to work part-time or be involved in special projects at the executive level. Many women stopped to talk with her in the halls or sent e-mails to tell her how important her appointment was to them. Berman concluded that there is a need for greater work flexibility (e.g., telework and Infants-to-Work programs) and STEM programs to get women excited and confident in their science skills. Formal mentoring programs are crucial, but it is also important for women moving up to remember that they are role models, too.

Higueros: LA Metro has 11,000 employees, but only 29% are women. Metro is developing multiple strategies for advancing women; this includes changing hiring practices to ensure that at least one woman sits on an interview panel, creating better job descriptions, and promoting development and leadership training. Metro's leadership developed the Women and Girls Governing Council (WCCG), which has 20 initiatives focused on helping women in the industry. Metro now allows employees to substitute work experience for education, helping many women

and minorities for whom the luxury of university education was not possible. Moreover, this policy change will help the many bus and rail operators wanting to move to other job classifications within the system, but lack the college degrees once required.

Bowen: Facebook has initiated many policies and programs to support women. They created flexible work systems for work-life balance, provided equitable access to economic power and places of influence, added parking for expectant mothers, assigned women a personal life coach, and hosted multiple social opportunities, such as happy hours and monthly teas. Facebook is trying to redefine “tech” in a way that is attractive to women, as it typically has been a space for white men. She also wants Facebook to focus on “consequences” rather than accountability for those who continue to make the workplace stressful for women.

DeGuzman: METTRANS began as a research center; however, it needed to diversify and attract the next generation of researchers. Although few of their programs solely target women, they have seen much greater participation from women when actively engaging students, providing opportunities to interact with industry, establishing ways to meet role models and mentors, and assisting students to develop hard and soft skills. This focused engagement also allows for the creation of leadership workshops, and offers a mixed-gender environment. DeGuzman developed a mentoring program for students, sometimes matching women students with women mentors.

Johnson asked panelists how they thought that women in their organizations view advancement and how millennials perceive opportunities and step into organizational roles.

Berman: After a decade of being unable to hire, Caltrans recently received state gas tax funding, and now encourages prospective employees, especially women, to apply to jobs for which they might not feel ready. Generation Z's expectations for the workplace may drive many organizational changes.

Higueros: LA Metro expects leadership programs and training to help the agency prepare current employees to take the positions of the 40% of agency employees who will retire soon.

Bowen: Women are looking for opportunities for impact. We asked, “What could you do today if you were not afraid?” Female colleagues are looking for resources now to help them advance in the future.

DeGuzman: Millennials are optimistic and confident, but once they get their first internship they come back to the university looking for help. Millennials are passion-driven and thrive in roles where they feel they can make a difference. Generation Z is the first generation which has always had tech in their lives. These girls have as much interest in STEM as do boys, and present more confidence than millennials, a trend they hope continues.

AUDIENCE QUESTIONS AND COMMENTS

How can organizations sustain women's career momentum when so many women have “interruptions” in their careers such as having children, going to graduate school, and/or

dealing with ailing parents?

Higueros: LA Metro’s Women and Girls Leadership Council has looked at establishing “returnship” for women and men with 5 to 7 years of LA Metro job experience who have taken a career break, returning for a 6-month period to be retrained.

Bowen: The tech industry is growing so fast that your job, or a better one, will still be there when you want to come back.

DeGuzman: Most universities have policies to address these issues for staff but have only recently addressed the same issues for graduate students, developing part-time masters programs and offering child care on campus.

Berman: It is tough when people want to take more time off. That is when the agency has to negotiate with individual supervisors.

How can you address those full-time employees who want to work part-time because they are caring for aging parents or have children or both, etc.?

Berman: Managers need to learn to be more flexible. Accommodating the needs of women returning to the workforce builds employee loyalty. It also can make you think about other flexible arrangements that will increase employment options for a range of employees.

Bowen: Facebook has lactation rooms and *Babycash*, a program that pays for unexpected infant expenses not covered by insurance. The human resources (HR) team also created employee-friendly programs and now is considering on-site childcare facilities despite local regulatory issues. In addition, HR is talking about facilitating telework, which requires supervisors willing to be flexible.

DeGuzman: Teleworking is only suitable for some jobs and not others. UC–Irvine has implemented lactation rooms for faculty, staff, and students.

TECHNICAL SESSION C2

Mom and Her Munchkins on the Move

LAUREL JOHNSON

*University of Queensland
Moderator*

Women with kids in tow face health and safety issues when traveling. These factors vary widely based on culture and place, limiting mobility options for many mothers or caretakers. Trips to work, for shopping, to school, for medical appointments, or during emergency evacuations create more and different challenges and risks for women and children. How are communities and transportation agencies responding to these challenges and concerns?

TRAVEL BEHAVIOR AND MOBILITY NEEDS OF ELDERLY WOMEN IN RURAL AMERICA

SUMAN KUMAR MITRA

MINGQI YAO

University of California, Irvine

The senior population of the United States is increasing rapidly and a growing proportion of seniors are women; the older the cohort the more female it is. Mitra and Yao looked at older people in rural areas who face substantial mobility issues as they age, especially if they can no longer drive. Overall, they found very limited differences between women and men in rural areas, although women are generally less mobile. There is more heterogeneity in travel characteristics for older people in rural areas clustered by community–region and other sociodemographic characteristics.

INSIGHTS ON SINGLE MOTHERS' ISSUES IN EMERGENCY EVACUATION

LORRAINE ACEVEDO

Embry-Riddle Aeronautical University

Single mothers are impacted disproportionately by emergencies, as they often have limited access to resources, live in vulnerable communities, and face unexpected expenses if forced to evacuate, e.g., food, transportation, housing. Acevedo focused on the activities of the Florida DOT during Hurricane Irma, which opened shoulder lanes on freeways to expand capacity. However, the agency made no special provisions for vulnerable travelers. Overall, there is little emergency aid for single mothers during a crisis or evacuation.

TOWARD AN UNDERSTANDING OF SINGLE MOTHERS' URBAN MOBILITY: A COMPARATIVE ANALYSIS OF PARENTS' TRAVEL PATTERNS IN THE PARIS REGION

GONÇAL CERDÀ BENEITO

Université Paris-Est

Single-parent households, of which 85% are headed by a woman, are a large and growing percentage of the population in the Paris region. Such households are twice as likely to face poverty, but there is limited research on these travelers in Paris. Beneito's research found that there are narrower gender differences in travel for single-parent households, yet single mothers do make more care-related trips and spend more time doing so while male single parents make more work trips. Single mothers have the highest travel time budgets of all travelers, spending 20 min more each day traveling than coupled women. Coupled women tend to make trips evenly throughout the day while single mothers tend to make afternoon trips.

EVALUATION OF TRAVEL PATTERNS OF YOUNG MOTHERS IN DEVELOPING COUNTRIES: A CASE STUDY OF LAHORE, PAKISTAN

HINA SALEEMI

University of Engineering and Technology, Lahore, Pakistan

The travel patterns of young mothers are not well studied. Busier than other travelers, these women often plan for themselves and their children, and have great variability in their travel. Saleemi studied young mothers in Lahore, the second largest city in Pakistan. She found that these travelers made morning trips to drop children at school and to commute to work. On Fridays, they made miscellaneous trips; while during weekends, they made recreational and social trips. Their mode choice was striking—although only 30% of women had a driving license, most young mothers made over 50% of their trips in autos. They did not find public transit to be convenient, safe, nor reliable for their complicated travel patterns.

THE MOBILITY OF CARE IN DEVELOPING COUNTRIES: THE CASE OF TUNJA, COLUMBIA

LUIZ MARQUEZ

ALEJANDRA SANCHEZ

Universidad Pedagógica y Tecnológica de Colombia

As women frequently travel to care for others, it is important for researchers to make these trips visible and quantify them. Marquez did an ad hoc survey in Tunja, Columbia, a city of 175,000 inhabitants located in the eastern ranges of the Andes. He found that women take more trips than men and those additional trips relate to education, household shopping, and errands. Although women and men are equally likely to offer rides to others, men state they only do so when they want to. In contrast, women state that they feel compelled to offer rides because if they do not, the

rider will not be able to meet some basic need. Marquez concludes that traditional surveys fail to capture the many car trips that women make.

THE MOVE WOMEN PROJECT

KATIE MATCHETT
CityPlace Planning

Matchett created an art installation displayed in the atrium of the Beckman Center during the conference. She sought to make visible all the unique and unspoken norms about women's travel and all the barriers women encounter while traveling with children. Women and their children face safety and security concerns from broken sidewalks, missing curb ramps, inaccessible transit stations, prohibitions against strollers on buses, and worry about exposing children to illnesses. Myriad, often conflicting, expectations challenge women on what is good parenting, while they spend hours chauffeuring their children around in a car. Matchett incorporated a range of these elements that influence mothers' mobility, from a baby stroller to high heels to diaper bags, into her interactive art installation. She attempted to create new knowledge through unconventional ways, inviting WIIIT participants to write on blank tags additional barriers women face and attach those tags to the installation. Additionally, Matchett used unique materials—old magazine ads with interesting comments about women and cars—in parts of the display.



FIGURE 1 The Move Women Project

AUDIENCE QUESTIONS AND COMMENTS

How can we improve travel surveys so they represent the complicated travel patterns of women that do not appear to be captured in some travel surveys?

Audience participants noted that travel behavior researchers have to recognize the unique travel patterns of single-parent households and stop prioritizing two-parent households, given their decline as a percentage of total households.

There was substantial discussion of the art installation.

Participants mentioned that women feel vulnerable when traveling with children, often encountering unsympathetic or unhelpful strangers along the journey. One participant noted that the societal norm is that women should plan carefully so they do not bother people around them when traveling with children. Thus women often worry about their kids' energy level and if the kids will be fussy and tired and act out, burdening other people on a bus or train. Driving the kids removes this anxiety.

Moreover, there is an idea that "good" moms protect their kids by encapsulating them in a car, securely and safely ushering them from place to place; they DO NOT put them "in danger" by letting them walk or bike to school. One participant noted the arrest of parents in Florida for letting their pre-teens walk home from school, a practice viewed as dangerous behavior.

TECHNICAL SESSION C3

Perceptions and Realities of Women's Safety on Transit

HILARY NIXON

*Mineta Transportation Institute, San Jose State University
Moderator*

Transit agencies are trying to intervene to reduce risks of sexual assaults and harassment of women travelers. Statistics and reports of assault through the #MeToo movement affect public perceptions and increase the fears of many women using public transit. What are government and transit agencies doing to increase women's safety?

SÃO PAULO FEMALE COLLEGE STUDENTS' TRANSIT SAFETY: AN OVERVIEW OF GENDER VIOLENCE AND SPATIAL DYNAMICS CONSIDERING GENDER, RACE, AND CLASS

MARINA KOHLER HARKOT

University of São Paulo

São Paulo is a racially divided city, where white Brazilians work closer to economic opportunity sectors and use the rail network, which has little suburban service. Mixed race and black Brazilians living in the peripheral or surrounding suburban areas face long commutes with unpredictable bus services. Harkot surveyed female and male university students in São Paulo. She found that where students lived, and thus the transit services available to them, was a very important variable, revealing that women of color were more likely to be harassed near suburban stations and stops. Harkot concluded that one's gender is a significant factor for those feeling unsafe. Moreover, her findings show that women students, particularly those of color, worry more about being robbed, harassed, or attacked while traveling and change major aspects of their travel to avoid difficult situations in ways that men do not, from using alternative modes to changing the times at which they travel.

SEXUAL HARASSMENT IN PUBLIC TRANSIT ENVIRONMENTS: A REVIEW OF EVIDENCE AND INTERVENTIONS

HAO DING

University of California, Los Angeles

Ding conducted a literature review to determine the extent of sexual harassment on U.S. transit, where and when these situations occur, and how they influence travel behavior. Ding found substantial underreporting of harassment and limited official data or research on the issues. There

was wide variability in reported incidents—63% in New York City versus 24% in the Los Angeles Metro—almost certainly representing variations in reporting, not in harassment. Research shows that women have greater fear of all crimes on public transit, including sexual harassment, but nonwhite women are the most fearful. Studies, focused primarily in North America, Europe and Australia, also show that harassment tends to happen more inside vehicles than outside and more on subways than buses. Many women change their behavior to avoid certain stops or sit closer to the operator, etc., to protect themselves rather than abandoning transit. Ding concluded we need substantially more research on both the extent of the problem and the impact of suggested improvements, such as additional lighting, increased surveillance, and enhanced cleanliness.

HOW DOES PERCEIVED SAFETY INFLUENCE THE RIDERSHIP OF PUBLIC TRANSPORT ROUTES INVOLVING TRANSFERS? A GENDER PERSPECTIVE

SUBEH CHOWDHURY

University of Auckland

Chowdhury surveyed commuters who need to transfer transit routes or modes in their daily travel. Survey participants were from three major cities in New Zealand—Auckland, Christchurch, and Wellington. She noted that the perception of safety as an important factor, stating, “A woman doesn’t need statistics. She knows the truth about her city.” Chowdhury found that few women have achieved a “masculine level of mobility” with flexibility in their travel plans or the freedom to travel independently without worry. Women report feeling less safe, fearing physical and verbal abuse while walking or using public transit. Women perceive many transit stops or stations as scary based on the aesthetics of the surrounding area or the lack of security present. Also, women of color feel less safe during the day than do white women. Chowdhury concluded that it may be impossible to change the culture that creates these situations, and suggested that engineers and planners respond by providing additional support to women including lighting and increased security presence, enabling them to be and feel safe while traveling.

ACADEMIC WOMEN AND TRAVEL

ANDREE WOODCOCK

Coventry University

Woodcock conducted a pilot study to evaluate whether academic women faced more problems undertaking long-distance business travel for research, training, or research presentations when compared to men, a topic on which there is little study. She found that women take a number of precautions that men do not when traveling. Women travelers constantly text their location to their spouses—partners, while avoiding parts of cities perceived as dangerous. Moreover, Woodcock found that women prefer staying in more expensive hotels with better security, as well as carefully mapping out local trips, and not engaging in any activities (e.g., using headphones) that might interfere with being vigilant about their environment and personal

security. As these fears may influence the professional lives and travel behavior of women, additional travel resources and supports, such as a travel provider offering services focused on the safety needs of women travelers, are necessary for women to be able to travel for work.

AUDIENCE QUESTIONS AND COMMENTS

As moderator, Nixon asked presenters to link their research to the three specific themes of the conference: Insights, Inclusion, and Impact.

Harkot noted that Brazilians were looking at the relationship between economic inequity and spatial inequality in the country, recognizing that not all women are the same. She pointed out the importance of accounting for cultural and power differences among groups of women.

Ding stated that academics are trying to shed light on how to influence transit providers so they implement programs and policies that tackle sexual harassment in public transit.

Chowdhury mentioned that a lot of work on sexual harassment focuses on racial and ethnic differences; however, she would like to understand if Asian or indigenous women also face the same or different problems while traveling.

Woodcock commented that presenting numbers is frustrating because she feels it is more important to focus on stories, where lessons are learned, capturing the richness of lived experiences.

Participants discussed the finding that women perceived different transit facilities differently, sometimes because of where the facilities are located but sometimes because of how they look, regardless of location.

A participant suggested that women felt elevated or aboveground stations were safer than underground stations, which lacked public surveillance. Another participant commented that the issue was the degree or level of lighting present, not whether the station was above or below ground. Still, another felt that the issue was the number of vendors or businesses around stations, as they too provided surveillance. While this might explain why women feel less safe at night when shop vendors are closed, most transit crime statistics show people are actually more at risk of being victimized during the day. However, some noted that this may be truer for crimes such as physical assault and theft than for sexual harassment, which is significantly underreported.

TECHNICAL SESSION C4

By Bike, by Car, by Bus

Women Commuting

SUSAN HANDY

*University of California, Davis
Moderator*

Many countries experience gender differences in commuting. What drives these differences? How can the use of this information affect modal choice and support sustainable mobility policies and equity? How do women and men perceive commute times, safety, and reliability when choosing transportation options?

WORK TRIP MODE CHOICE OF MEN AND WOMEN IN GERMANY INCLUDING PARTNER INTERACTIONS

BHUVANACHITHRA CHIDAMBARAM

TU Dortmund University

German national travel data show that the gender gap in commuting is narrower than in the past; still, the gap is widening for the noncommuting trips made more often by women. In fact, women are as likely to drive as are their male counterparts today, yet women face different constraints and are more often involved in the care and transport of children. The more women undertake unpaid activities, i.e., shopping, child care, the more likely they are to drive. In turn, this increases the likelihood that their partner will take public transit to work in Germany. Men in partnered households often take advantage of the child care and domestic tasks undertaken by their partner to work more hours.

KEY TRANSPORT ISSUES FOR WORKING WOMEN IN BANGLADESH— MAPPING WITH BUS RAPID TRANSIT

SHARMIN NASRIN

University of Asia Pacific, Dhaka, Bangladesh

Nasrin found that male commuters in Dhaka, the capital of Bangladesh, have access to multiple commute modes, including company-provided bus services; however, few women drive, cycle, or are employed by businesses providing worker transit. Although perceived as the mode of last resort, walking is the default mode for low-income female workers with limited, affordable transport choices. These workers walk long distances under difficult conditions, while middle-income female workers rarely walk and depend on the bus. As Dhaka proceeds to evaluate BRT,

it is not considering gender issues or needs. Nasrin's research suggests that women are more sensitive to the cost of BRT services, while men are more sensitive to travel time. She suggested that more and better on-street bus service would offer a more equitable response to the needs of women, along with substantial improvements in pedestrian and bus infrastructure.

INTERSECTIONAL INEQUALITY: GENDER, RACE, AND THE COMMUTE BURDEN OF LOW-WAGE WORKERS

VIRGINIA PARKS

University of California, Irvine

Women's commutes are and have generally been shorter than men's commutes, which can be both a convenience, allowing women to better balance multiple household obligations, and a constraint on their employment opportunities; nevertheless, Parks found that women of color in the United States bear a disproportionate commute burden. In some U.S. metropolitan areas, low-wage black women have the longest commute times of any other racial or ethnic group. In fact, black women earning low wages commute 15 min longer daily compared to low-wage white women. These data show the continuing significance of race and place. Specifically, many black women face a spatial mismatch, a widening gap between where they live and the locations of employment opportunities available to them.

WOMEN'S TRAVEL TIMES AND DISTANCES IN A SAMPLE OF LATIN AMERICAN CITIES

MARIA SOL TADEO

University of California, Berkeley

Tadeo found that overall women in sampled Latin American cities take trips that are shorter in distance to work than men, but measured longer in time. However, when measured in time, women with children traveling shorter distances also have shorter commutes compared to men. Women and men's travel times are the direct result of mode choices. Women are more likely to be limited to inherently slower modes, such as walking and buses, relegating them to longer commutes despite the short distances, while men drive or use rail transit. Tadeo concluded that Latin American women are more travel burdened compared to men on work trips, but less so for nonwork trips.

GENDER DIFFERENCES IN COMMUTE QUALITY: EVIDENCE FROM UC DAVIS

SUSAN L. HANDY

University of California, Davis

Handy asked respondents employed at UC Davis how they viewed the qualitative aspects of their

commute mode (e.g., stress involved, time wasted or gained, and positive/negative feelings). She found that commute mode, campus role (students, faculty or staff), and time and distance to work intertwine, making it hard to tease out direct impacts due to gender. Nonetheless, Handy found that women reported experiencing far more stress while commuting than did men, regardless of their role. Furthermore, staff reported having more stressful commutes than faculty, and women staff reported having more stressful commutes than male staff.

AUDIENCE QUESTIONS AND COMMENTS

Handy, moderating, asked presenters and participants to discuss the commonalities in the research presented, despite the large differences in the focus and location of each study.

Participants noted that regardless of where they lived or the predominant commute mode used, women present complicated travel patterns. Some suggested that it is a mistake to focus only on a single element of those complicated trip patterns, e.g., the commute, as women's obligations play out in their travel choices. Having good commute options may not help if their childcare or household responsibilities require more flexibility and responsiveness. Women able to choose preferred shorter commutes, as they need time for all their other trip-related family obligations.

Several participants discussed how strikingly disproportionate commute burden that women of color bear in both industrial and developing nations—these women probably cannot choose shorter commutes, even though they likely have the same domestic burdens as white women, in part, due to this spatial mismatch.

One participant noted that it was important to always focus on the difference between commute distance and commute time, being careful about using a term like “short commute.” A short commute in distance can be a very long commute in time when using some modes (e.g., taking the bus as opposed to driving). Both time and distance will vary depending on where people live and work as well as how many travel options they have, which often correlates with economic or social circumstances.

Participants noted how related these patterns are to the availability and location of affordable housing and employment opportunities, as well as jobs–housing balance. A participant suggested that in places like California, which are attempting to directly address these interlinked issues, some low-wage workers are experiencing shorter commutes in both time and distance.

There was a discussion of changes over time. One participant noted that Chidambaram's German data show men sharing domestic duties since additional parental leave is now available for both genders.

Participants discussed the strengths and weaknesses of the various data sets that the researchers used and suggested additional research that the presenters might consider.

Participants suggested the value of studying the impact of alternative work schedules and scheduling flexibility on women and men's commute stress. Others discussed the need to break out data not only by gender, but also by racial and ethnic differences, particularly when studying commute length in time and distance. Still, others talked about ensuring that all travel surveys and analyses focus on informal workers, those who work at home, as well as those routinely

working variable hours and schedules over time. Women are overrepresented in these groups and we know little about their overall travel patterns.

Participants noted that a common theme in many presentations was the problematic nature of walking in women's commutes.

One participant noted that many women are “captive walkers,” viewing walking as the least palatable option. Participants discussed the fact that women in many contexts, particularly in the global south, often view and experience walking as a dangerous, laborious, unhealthy process, and sometimes a culturally inappropriate activity, not a mode with inherent value or utility. In fact, viewing walking as a positive and healthful activity is a privileged and perhaps tone-deaf perspective by those with multiple choices.

PANEL DISCUSSION C5

Moving Women into More Opportunities

Developing Our Workforce

IDERLINA MATEO-BABIANO

University of Melbourne

Moderator

Recent discussions have focused on including women in the decision-making process, ensuring that women “take a place at the table,” and promoting women in leadership roles. However, this goal of having enough women in decision-making roles and power positions remains unattained. This session focused on what transportation professionals can do to encourage more women to enter and thrive in transportation careers. The panelists shared the outcomes of the tactical strategies they used to get more women into transportation and to the top of their field.

ATTRACTING AND RETAINING WOMEN IN THE TRANSPORTATION INDUSTRY

JODI GODFREY

Center for Urban Transportation Research, University of South Florida

Godfrey created an annotated bibliography that focused on ways to attract, promote, and retain women in the transportation industry. She stressed the need to develop a holistic approach that can change organizational culture to allow people, particularly women, to align job and personal goals. Godfrey outlined eleven recommendations to attract and keep women employees:

- Contact young people;
- Encourage participation in professional organizations;
- Promote educational and career opportunities;
- Create gender-based hiring panels;
- Intentionally promote the organization’s desired perceptions;
- Promote communal goal congruity;
- Develop and adhere to succession planning to remove unintentional bias;
- Invest in best practices;
- Conduct surveys of all employees;
- Ensure earned time off is available without fear of retribution; and
- Promote change through all levels of the organization from the CEO to the front line.

THE GENDER GAP IN ASIA’S LARGEST RAILWAY NETWORK: INVESTIGATING WOMEN EMPLOYEES, MANAGEMENT, AND TRADE UNIONS

LEENA SACHDEVA

Indian Institute of Management, Kashipur, India

Sachdeva’s research highlighted the barriers experienced by women during their career trajectories in nontraditional occupations, describing the measures and initiatives taken by management and trade unions to address them in India’s rail industry. She showed how these efforts make valuable contributions to both the academic world and to policymakers in devising strategies to overcome barriers in the railway industry.

A REGIONAL ASSESSMENT OF THE “SHE TO SEA” GENDER EQUALITY CAMPAIGN IN THE PHILIPPINES IN EMPOWERING FILIPINO WOMEN IN THE TRANSPORT SHIPPING INDUSTRY

SANDY MAE GASPAY

MARIE DANIELE GUILLEN

BRIAN GOZUN

IDERLINA MATEO-BABIANO

University of Melbourne

The researchers evaluated the “She to Sea” campaign, finding that most female seafarers had experienced sexual harassment. The campaign, while gender-sensitive, fell short of being gender-responsive and has had minimal impact to date. They recommend ways to make similar campaigns more effective and more likely to create change.

WOMEN IN TRANSPORTATION: CREATING AN INCLUSIVE WORKPLACE TOGETHER

AUNDREA SEBJANIC

ANNE CATAFORD

City of Calgary

Sebjanic and Cataford conducted focus groups in the Canadian city of Calgary, Alberta, investigating perceived career barriers facing women in the transportation industry, in which seven themes emerged. The first five centered on the specific problems women encountered, which included: the lack of career development and networking opportunities; the presence of subtle sexism; difficulties breaking into leadership roles; the inability to balance their employment and personal obligations; the lack of support and respect in the workplace; and a disproportionate need to prove their competence. The focus groups provided tangible evidence of the need for effective changes and data collection, requirements for measuring the success of organizational efforts. These data should include both quantitative and qualitative measures; that is, numbers on changes in women’s positions over time, and personal stories and journeys as a way to build trust and initiate difficult conversations.

IMPACT. ADVANCE. EMPOWER. LA METRO'S WOMEN AND GIRLS GOVERNING COUNCIL

CLAUDIA GALICIA

Los Angeles County Metropolitan Transportation Authority

LA Metro is one of the few transit agencies that has explored policies, services, and practices that may contribute to gender inequity in the workplace, in transit design, and in the services the agency provides. Galicia explored a key component of this effort, the WGGC, which is designed to analyze how Metro's programs, services, and policies impact the lives of women and girls in Los Angeles. The diverse council allows for an exchange of ideas and experiences by people at all professional levels, different departments, and backgrounds and has resulted in numerous innovative approaches to addressing barriers and challenges faced by women in the workforce and by women and girls in the services Metro provides. LA Metro is moving beyond studying and researching these issues to developing and implementing initiatives that will impact, empower, and advance female employees and users of the system. The council has recommended nine initiatives; many already implemented or in the process of implementation.

AUDIENCE QUESTIONS AND COMMENTS

Participants questioned the role that men could play in promoting the recruitment and retention of women in the industry.

The audience discussed the need to involve men in the process of increasing the roles and opportunities open to women in various transportation sectors. One participant said that it was unfair to require women to carry all the burden of ensuring the recruitment, retention, and promotion of women in the transportation industry since men often make employment decisions.

Participants asked which organizations had successfully targeted diverse talent pools.

Galicia noted that LA Metro has taken many steps to diversify their work force, as discussed in other presentations at the conference. Metro has changed their hiring procedures to make the first round in the application process gender blind. As a result, they found that many more women made it to the second round. LA Metro is also changing the requirements for some positions, allowing applicants to substitute appropriate experience for college and advanced degrees. This practice opens a number of jobs to experienced people without college degrees, often diversifying the employment pool.

PANEL DISCUSSION D4

Women in Motion Initiative

Empathetic Dialogues Workshop

DANIELA CHACÓN ARIAS

TANDEM Foundation

Moderator

The Empathetic Dialogues Workshop used a methodology that seeks to pass on knowledge through practical exercises in which participants learn by observing, discussing, and designing solutions together for a more inclusive transport system. The workshop's objective was to introduce concepts of leadership and apply knowledge to design projects that are effective, have a focus on public policy, and are suited for implementation. The workshop began with presenters first describing specific cases where research has or could inform public or business policy. Then, workshop moderators organized session participants into four breakout groups, each tasked with defining the public policy steps for specific projects with a gender perspective. The topics included: mobility patterns; women's leadership; personal security while traveling; and women and the shared economy. The goal was to allow participants to "play politician for a day."

CASE STUDIES

RONA KORTAM

Uber

MARINA MOSCOSO

Despacio

Moscoso discussed the Women in Motion (WIM) initiative whose main activities are providing leadership training on communications and transportation, through a series of national and international events, webinars, and a WhatsApp group that connects 100+ women across Latin America. WIM was co-founded by former Vice Mayor of Quito, Ecuador, Daniela Chacón Arias as an initiative aimed at preventing sexual harassment on public transit. The group designed this initiative in sequential steps: identifying the problem (which had no political salience at the time); creating public knowledge and the political will to act; conducting comparative research on solutions; estimating policy responses; and advocating for specific evidence-based policies and programs. A key component was the development of a sophisticated monitoring system to evaluate the impact of a range of interventions, creating key performance indicators, and evaluating progress over time. WIM also did case studies to make the numbers "real" and to show the impact of both the problem and the solutions.

This initiative ensured the collection of gender-specific data on harassment to create a

baseline for evaluating the effectiveness of program efforts. The initiative found that women rarely reported harassment or assault by perpetrators whom they often viewed as immune to prosecution. Transit company officials, predominately men, had no idea of the extent of the problem. Police discouraged women from reporting, making matters worse. Women of color and indigenous women were more often victimized and even less likely to report. The data that the WIM collected were extremely valuable in swaying decision-makers who had to recognize that harassment or sexual attacks on women were not rare or unique occurrences but widespread. This led to the creation of an official reporting system for sexual harassment and attacks.

Transit companies now train employees to recognize harassment and respond to reports. Women who are struggling to report are given psychological and legal assistance to do so. The number of reported incidents has soared, as have prison sentences for reported offenders, ranging from 1 month to 8 years (for someone who attacked a child). The bottom line: the data and research highlighted the existence and extent of the problem, allowed WIM to develop solutions and pressure transit officials to implement them, to hold the transit companies, public officials, and police accountable over time, and finally to give everyone a way to measure the impact of their interventions.

Kortam described the Uber “Attracting Women to Transportation” program designed to understand why women face barriers to driving for Uber around the world. The program conducted a survey in seven countries and found that many women were attracted by the flexibility of driving for Uber, but almost two-thirds would not do so because of personal security concerns. Of those that did drive for Uber, 25% did not feel safe driving at night. This was an important issue because women passengers in all these countries would feel safer if they had women drivers—and vice versa. Uber’s special case study of Saudi Arabia found that many women were excited about the end of the ban on women driving and encouraged by a government program designed to increase women’s labor force participation. Still, women considering driving for Uber were worried about their personal security, as were potential women passengers. Uber created a new feature on its app that has a special option allowing women drivers to select only women passengers (<https://www.uber.com/en-EG/newsroom/uber-launches-women-preferred-view-feature-for-women-drivers-in-saudi-arabia/>). The feature also allows drivers or passengers to make a direct call to emergency assistance. Uber continues to address women’s fear of sexual harassment and violence as a barrier to their employment of drivers, working with expert consultants.

BREAKOUT GROUPS

Participants were divided into four groups, each of which provided a brief report of their discussion to the entire session at the end of the process, summarizing their findings in terms of the three conference themes: Inclusion, Insight, and Impact.

Mobility Patterns

The mobility patterns group identified several problems facing women, which included difficulty using public transit for household and child care responsibilities, first–last-mile issues (i.e., inability to safely travel from a transit stop to their destination), and the fear of sexual harassment and attacks that discourage walking and transit use. In addition, they identified a

misalignment of transit services to the employment destinations of many salaried women, i.e., those working in outlying or residential areas as restaurant workers, nannies, housekeepers, cleaners, etc.; and transit services not offered at times most needed by many women, e.g., mid-day and off-peak travel.

Other difficulties the group identified included missing or poorly maintained sidewalks, as well as unsafe, unlit, and unprotected places to wait for transit vehicles. Participants noted the need to collect and use gender-specific data on travel patterns as a foundation for changing the performance of the transportation system. The discussion also centered on the need for specific infrastructure improvements, particularly pedestrian facilities and improved transit stops.

Women in Leadership

The group focusing on women in leadership discussed how important it was to have women at high decision-making levels in government transportation agencies and private transportation companies. Women executives brought women's perspectives into all aspects of service and were more likely to understand the kinds of services that would meet women's needs. Each woman in a position of power was likely to be a role model for younger women considering a transportation career.

Transportation Security

The group focusing on transportation security discussed the lack of data on reporting outcomes. This information must be gathered and disseminated to the public, encouraging women and men to report harassment or assault with the knowledge that doing so is meaningful and will result in action. Also discussed was the value of having a female staff take assault reports, educating women on what constitutes sexual harassment, and informing them of their rights. Additionally, this group discussed the role of online or automated reports of harassment, which eases reporting but may decrease cases prosecuted. This group discussed ways to educate children from an early age on correct and respectful behavior, and the need to form partnerships with policymakers and public officials to create total transparency about both the extent of harassment and prosecution of reported offenders. There was discussion of addressing cultural norms that let some men feel it was appropriate or permitted to harass or attack women in public, to ensure that men understood that women had "rights to the city."

Women, Ride-Hailing, and the Shared Economy

The group discussing women, ride-hailing, and the shared economy noted how a variety of services, from home delivery of goods and services to being able to safely use ride-hailing options, might address women's need to travel to areas with inadequate public transit, or to substitute other services for the need to travel. Such services, as part of the gig economy, might give women flexible jobs that they could do when children were in school or on a part-time basis. Respondents discussed the Uber case study, reflecting how personal security concerns affected women as both users and providers of such services. It is not clear that women are now or will be willing to use shared ride-hail services in the future since they might prefer not to ride with strangers or they may travel with children and multiple packages, leaving no additional capacity in the vehicle.

SUMMARY SESSION

The session concluded with participants examining their group discussions from the perspective of the three conference themes. Participants generally agreed that personal security in all aspects of public transit continues to be an important barrier to women's travel. The Quito experience suggests some ways to raise successfully both official awareness and response to these problems. Participants also agreed that there were many cultural constraints on women's public travel and use of certain modes of transportation, particularly in the global south. There was agreement that all efforts to increase women's mobility must recognize and address societal context and cultural norms about what is appropriate travel by women. Finally, participants insisted that it is crucial to include affected women in all aspects of understanding and responding to transportation needs and challenges.

AFTERNOON PLENARY SESSION

Active Transportation

The Forces Shaping Women's Travel Decisions

MELISSA DUGAN

*City of Irvine; President WTS Inland Empire Chapter
Moderator*

This session focused on how women's active travel is influenced by a wide variety of socioeconomic characteristics and the crucial role of intersectionality.

FROM CHILDHOOD TO WIDOWHOOD: A WOMAN'S JOURNEY

SANDI ROSENBLOOM

The University of Texas at Austin

Rosenbloom discussed her literature review of children's and older women's active transportation patterns, noting that most research on children's active travel focuses only on school commuting and often does not consider gender differences in mode choice. Most but not all research that questions the role of gender finds that girls walk and cycle less overall, as distances increase and as they age, when compared to boys. She also reported on her research that found that older women in Austin and San Antonio, Texas, considering active transportation reported being fearful of most street activity. They associated multiple destinations and busy street life with serious security and safety concerns. Older women across ethnic, racial, and socioeconomic groups felt that very low-density suburban areas with wide sidewalks but few cars, people, businesses, or intersections were the ideal places for active transportation.

BICYCLING AND WOMEN OF COLOR ON TWO WHEELS

JENNIFER DILL

Portland State University

Dill studied the attitudes of different groups of women in several U.S. cities to understand barriers to cycling. She found that women of color were less likely to have cycled or own a bike or to have used bikeshare programs. Utilitarian factors were significant barriers to women's cycling, such as their need to carry things, travel long distances, and have sufficient space at home or work for a bike. Women of color were far more worried than were white women about difficulty in cycling with their children, the distances they needed to travel, initial and excess operational costs, the reliability of the mode, using a credit card to pay for bikeshare, and being harassed or attacked while cycling. Most women of color did not see the utility of cycling for

transport; however, some did express interest in cycling for recreation and social trips. However, when controlling for income, many racial differences disappeared. All women reported that traffic safety was the biggest barrier to their active cycling. Traffic issues were far more serious to all women than oft-cited concerns about clothing, appearance, and hair.

FACTORS INFLUENCING WOMEN CYCLING IN BOGOTÁ, COLUMBIA

MAURICIO OROZCO

Universidad Militar Nueva Granada

Orozco surveyed travelers in Bogotá, which has recently experienced a significant growth in cycling. He found that almost all women cyclists used bikeways compared to only 70% of men. Men reported a preference for riding in the roadway with car traffic, while women reported their preference for segregated or protected bike lanes. Women did not want to cycle on the sidewalk where permissible, as they were likely to be assaulted or harassed, and felt safer in a dedicated bike lane in the street alongside traffic. Women reported that they were currently unwilling to cycle at night, but might consider doing so if additional lighting were added. Orozco feels that public policy should focus on both training women to cycle from the time they are girls and providing dedicated and well-lit bike lanes to encourage more women to cycle.

VISION ZERO: ACTIVE TRANSPORTATION AND WOMEN'S HEALTH AND SAFETY

MEGAN WIER

San Francisco Department of Public Health

Wier reported that San Francisco is undertaking active efforts to treat traffic safety as a major public health crisis, collecting and using crash data from city-operated hospitals and emergency rooms (as opposed to police recorded crash data) to inform city policies and programs, often for the first time. The city found that women pedestrians, and particularly older women, are more likely to be killed in traffic crashes than men, accounting for 40% of all traffic deaths in the city. The city wants people, and particularly older women, to walk more for exercise and social interaction but to do so walking will have to be made safer. The Public Health Department is working with city engineers to lengthen pedestrian crossing times in areas where seniors are concentrated and citywide.

AUDIENCE QUESTIONS AND COMMENTS

Moderator Dugan asked the presenters and audience to discuss universal gender-focused policies in cycling and walking.

Participants commented that there was an important difference for women between safety (crashes and falls) and personal security (attacks, thefts, and harassment). This distinction is far

clearer when speaking of cities in developing nations and is felt more by women of color in the U.S. policymakers must recognize and address both issues, especially if we want more low-income women to cycle.

Orozco reported that both education and training were important for women. There was discussion of programs that donated both bicycles and helmets to low-income women.

One participant noted that cycling and walking, while often lumped together as active modes, are often in conflict—cyclists pose many safety hazards to pedestrians, particularly older pedestrians. There have been a number of deaths caused by cyclists hitting older female pedestrians in nations in the global south.

There was some discussion of how often we propose solutions or improvements designed to facilitate active transportation, and particularly women's use of active modes, and how rarely we rigorously—or at all—study the impacts of these improvements.

Participants discussed the need to do more evaluations of various infrastructure improvements and other policy interventions to test their impact on the mode choices and traffic safety and security of women cycling or walking. Governments should have clear metrics for what they seek and obtain from a variety of policy interventions to improve cycling and walking. What works, and what closes the gender gap? Research, for example, has shown that giving women cars substantially improves their employment outcomes. Therefore, several participants questioned why not give bikes, helmets, and training to women in disadvantaged communities around the world and carefully evaluate what happens, what works (or not) in which contexts and why?

POSTER SESSION

Navigating Women-Only Spaces on Metro Systems in India

Ankita Dhussa, *The Fulbright Program*

Women—Why Knowing Your Vehicle Matters

Reut Sadia, *Technion–Israel Institute of Technology*

Soccer Moms: Children's Travel Behavior and Their Parents' Automobility

Miwa Matsuo, *Kobe University*

#MeToo: Women and Public Transportation

Mauricio Orozco, *Universidad Militar Nueva Granada*

Where Are the Challenges of Getting More Women on Bikes? Reflections on Cycling Policies Design Made in São Paulo, Brazil

Marina Harkot, *Universidade de São Paulo*

Risky and Protective Behavioral Patterns in Cycling: An International Gender-Based Comparative Study on Healthy Transportation

Sergio Useche, *University of Valencia*

Analyzing Grocery Shopping Travel Behavior by Women in Baltimore Using Zero-Inflated Negative Bionomial Models

Samira Ahangari, *Morgan State University*

Gender-Based Differences in Activity Space and Travel Pattern Analysis

Naila Sharmeen, *University of California, Irvine*

Single Parents' Access to Child Care

Ma'ayan Dembo, *University of California, Los Angeles*

Moving to Modesto: Can Car-Oriented Developments Provide High Accessibility for Women?

Erin Cooper, *University of Antwerp*

Using Social Capital Data to Account for Heterogeneity in Activity Behavior Within and Between Genders

Michael Maness, *University of South Florida*

Gender Trends in Transportation Research Board Publications Over the Last Decade

Suzana Duran Bernardes, *New York University*

Women Bicycle Commuting in Bogotá, Colombia

Laura Gutierrez, *Universidad Militar de Nueva Granada*

TECHNICAL SESSION C1

Priority One

Global Challenges for Women's Safety and Security on Transit

VANIA CECCATO

*Kathmandu Royal Institute of Technology
Moderator*

Women traveling by public transit have many safety and security fears about their health, physical safety, and the risks they perceive in many situations. Women are more likely to be victims of assault and harassment from men when using public transit and many women, particularly in the global south, must overcome their fears daily and for every trip. The panelists discussed how women in different communities and countries experience the environments through which they travel and if and how government authorities are responding.

NORTH AMERICAN TRANSIT'S APPROACH TO PERSONNEL SECURITY AND AWARENESS

POLLY HANSON

American Public Transit Association

Hanson pointed out that concern for women's needs is not new to public transit. American women have been advocating for women-only transit vehicles since 1909. American Public Transit Association (APTA) has been highlighting *best practices* at their annual conferences for some time and many transit agencies have developed programs to address these issues. APTA has developed an [online toolkit](#) with examples of resources and strategies being used by several transit agencies. For example, LA Metro has the "It's Off Limits" campaign; King County Metro in Seattle partners with the King County Sexual Assault Resource Center; and the Toronto Transit Commission developed a SafeTTC app and marked platforms for visibility. Other examples: Metro Vancouver has a multiphase marketing program and the Washington Metropolitan Area Transit Authority (WMATA) partners with the Collective Action for Safe Spaces to encourage bystanders to intervene when they see someone being harassed. Nonetheless, transit agencies generally seek to achieve personal security and prevent crime through environmental design and technology.

WOMEN'S ACCOUNT

MARINA MOSCOSO

Despacio

JOSE SEGUNDO LÓPEZ

Ross Center for Sustainable Cities, World Resources Institute

Moscoso and López described Bogotá as following the Dutch practice of creating an “account” for important transportation alternatives, tracking technical and policy advances for walking and cycling—and now a Women’s Account. Bogotá’s transit system is very dangerous for women, yet there is little useful data on the type, location, and severity of incidents. Existing data are unreliable because few women report harassment or attacks. There are poor and incomplete records of even reported incidents and law enforcement agencies rarely respond to the reports they do get.

A STUDY OF THE SATISFACTION LEVEL OF WOMEN PUBLIC BUS USERS IN DHAKA, BANGLADESH

NAWSHIN TABASSUM

Bangladesh University of Engineering and Technology

Female labor force participation is growing rapidly in Bangladesh, strengthening the need for female focused transit options. Tabassum conducted intercept surveys of women at bus stops and in transit vehicles in Dhaka, the capital of Bangladesh, a city of 21 million people. The study was designed to support the central government’s National Development Policy of making women safe in their public and private lives. Fifty percent of women interviewed said they had been sexually harassed while using public buses, which they found embarrassing and uncomfortable. Still, they felt that public transit was safer than taxis and rickshaws because there were other people on board or at stops, etc. Women did not feel safe or secure walking because they have to push through crowds, while walkways often are blocked by vendors and waste dumps.

LIGHTS ON WOMEN: WOMEN’S PERCEPTION OF SAFETY WHEN WALKING AT NIGHT

ANGELICA ROCHA

Circulate San Diego

CATHERINE THIBAUT

IBI Group

The city of San Diego funded the Women’s Walk Audit Series, an evaluation of four neighborhoods in the city augmented by an online survey. Women reported that lighting was their number one concern when walking at night. Moreover, the type of lighting influenced their perception of safety. They noted that public spaces were often very dark spheres at night, making

being on residential streets uncomfortable, where low-level lighting is intentional to maintain the character of the neighborhood. Low levels of lighting also meant that crosswalks were not visible and that it was difficult to orient oneself, especially those accustomed to driving. The vast majority of respondents said they would not use public transit at night because of these streetscape issues.

AUDIENCE QUESTIONS AND COMMENTS

Ceccato noted that transit systems are often not legally or administratively responsible for the areas around bus stops and transit stations, where women are afraid of assault and falls, etc. She questioned how best to address these issues.

Hanson noted that APTA has useful guidelines online, which are a great resource for planners and designers. APTA's objective is to ensure that all urban designs go through a crime prevention check before construction or installation. She suggested that transit agencies must create partnerships with all affected municipal departments to ensure their involvement in the design process for areas on the way to, in, and around bus stops and stations.

There was a spirited discussion of transit agencies separating women from men, e.g., women only buses. Although men "are the problem," no one appears to be making them change their behaviors. Participants linked these factors to discussions of the resistance from police and transit authorities to accept or take seriously women's reports of harassment or attack or to respond appropriately.

Moscoso said that Bogotá is a male-dominated "macho" society and decision-makers often do not see women's concerns as an issue. Therefore, the first step is to raise public awareness.

Several participants noted that they perceive that the police are not concerned that women underreport such crimes because, if they did report, the public would believe that crime rates had increased. Crime clearance statistics would also look worse since it is rare to catch the perpetrators of most sexual assaults and harassment in, on, or around public transit.

Some participants noted that the police often argue that many kinds of harassment are not crimes and that they can do nothing to perpetrators, even if they catch them. In contrast, U.S. participants commented that it was media reports and women's advocacy groups that pushed a few North American transit operators to act and the police to implement meaningful reporting programs. For example, women's groups in the larger District of Columbia region were able to get two of the three state governments in which the regional transit operator, the WMATA, provided service to make a number of types of harassment a crime, giving police the power to arrest and prosecute the offenders anywhere on the WMATA system. This then made it more likely that women would report harassment and required the police to take action on reports of harassment.

Participants noted that some North American transit operators allowed for optional bus stops, where women would feel safer getting off closer to their destinations or in better-lighted areas on the route rather than at official stops. There was some pushback from transit officials present, stating there were liability issues if operators did so.

PANEL DISCUSSION D1

Framing the Future for Women in Transport Through Collaborative Research

SHARI SCHAFTLEIN

Federal Highway Administration

Moderator

The session, designed to illuminate current activities and future opportunities for the EC's Directorate-General for Mobility and Transport (DG MOVE) and the U.S. Department of Transportation, focused on collaboration to advance the inclusion of women in transport industries and services. DG MOVE has made progressive efforts to address women issues in the transport sector with a series of policy initiatives related to gender equality, and is conducting research on the role of women in transport and mobility. A gender gap however remains and further mainstreaming of gender policy is necessary to close this gap.

Closing the gap requires a robust evidence base on which to formulate the policy needs of women. To start this process, DG MOVE funded two Horizon 2020 research and innovation projects—DIAMOND and TinnGO (Transport Innovation Gender Observatory cordis.europa.eu/project/id/834340)—and has launched specific policy actions such as the “Women in Transport- E.U. Platform for Change.” The U.S. Department of Transportation is influencing gender equity by integrating all users' needs into mobility innovation grants and measuring outcomes.

Panelists

- Maria Carbone, *Directorate-General for Mobility and Transport, European Commission*;
- Wafaa Saleh, *Edinburgh Napier University*;
- Andree Woodcock, *Coventry University*;
- Danyell Diggs, *Federal Transit Administration*;
- Jasmy Methipara, *Federal Highway Administration*; and
- Patricia Hu, *Bureau of Transportation Statistics*.

PANEL DISCUSSION

Schaftlein, session moderator, asked each of the panelists to explain their current collaborative research efforts directly or indirectly addressing gender issues and then to describe future opportunities for the U.S. DOT and the EC to work together to address crucial challenges and barriers to women's full integration into transport services and policymaking.

Carbone briefly outlined the European Union's (EU's) *Strategic Engagement for Gender*

Equality (DG JUST), which sets the framework and targets for gender equality in Europe. She then described the concrete policy actions and research initiatives undertaken by the EC's DG MOVE to address the specific gender needs of the transport sector. In 2018, two major transport research and innovation projects were funded competitively through the EU's Horizon 2020 Research & Innovation Program—DIAMOND and TinnGO. A toolkit is being prepared (which they hope to have available early in 2021) for use in classrooms by teachers to address gender stereotypes and show that many transportation jobs are not for men only. Two platforms have also been launched: the EU-wide network of "Diversity Ambassadors for Transport" to promote the importance of having a diverse workforce and the "Women in Transport E.U. Platform for Change" to enable all transport stakeholders to highlight initiatives they have undertaken to support women's employment as well as to exchange best practices.

Saleh described the DIAMOND project funded by the EU Horizon 2020 Research & Innovation Program. The project will involve EU-wide data collection and analyses of transport needs at various stages of women's lives, considering the many barriers that women face in traveling, for example traveling with children. The project also considers the employment challenges that transport services create for women who often have different commute and other travel patterns than comparable men and which may, for example, require them to take longer and often more dangerous commutes or experience fewer employment options. The project focuses on women's individual trip characteristics, and takes into account women as both users and providers of transport services.

Woodcock described the TinnGO project and showed a short video demonstrating its activities. The project, funded by the EU Horizon 2020 Research & Innovation Program, aims to address the gender imbalance in the EU where only 22% of the transport workforce are women. The project will collect and analyze data on the barriers to women entering STEM careers. It aims to create gender-smart mobility by developing proactive approaches and recommendations for policy actions that respond to specific gender needs and/or prevent new policies from reinforcing existing gender inequities.

TinnGo is creating open innovation platforms at 10 EU national hubs involving 13 individual countries that will develop data and contribute to overall project performance and the development of an EU Observatory in this area. Each hub has a slightly different gender focus in line with national needs and priorities. The German hub, for example, will promote participatory transport planning while the French hub targets women's safety.

Diggs described the efforts of the U.S. Federal Transit Administration (FTA) to confront today's complicated mobility environment where multiple public and private providers operate. The FTA's approach to mobility innovation is three part: explore, enable, and facilitate within a framework of integrated mobility innovations using the catch phrase "A Complete Trip for All." The Complete Trip concept seeks to make every stage of a trip accessible through the chain of individual steps (from deciding to make a trip to arriving safely).

The FTA also launched a program designed to foster research and innovation without fear of failure—the Sandbox Grants. For example, the FTA grant to LA Metro allowed the transit agency to launch a partnership with VIA, a private transportation company. This collaboration provides free last-mile services, which are likely to be especially attractive for women having security and safety concerns traveling as much as a mile or more from a bus stop

or transit station to their home or workplace.

Methipara discussed FHWA's policy studies looking at why, how, where, and when people drive, with the goal of providing insights and data to policymakers. Better data on gender differences can inform safety policies and approaches to, for example, reducing distracted driving and providing alternatives for elderly drivers. Through section 5210 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, Congress authorized and funded the second Strategic Highway Research Program Naturalistic Driving Study, a massive multiyear project, which filmed every detail of many drivers during actual road trips. The program was managed by TRB in cooperation with FHWA, the National Highway Traffic Safety Administration, and the American Association of State Highway and Transportation Officials (AASHTO). These data show what drivers do under a variety of driving conditions, suggesting policy levers for addressing unsafe behaviors. The FHWA's next steps are to improve data collection and analysis by obtaining better driving exposure data (actual miles driven by different people), focusing on telecommuting, and learning how to obtain, use, and validate so-called Big Data.

Hu described two areas of potential cooperation between the U.S. Bureau of Transportation Statistics and the EC: the Pink Transportation Tax, and, the Data and Geospatial Workbench. First, the so-called Pink Transportation Tax refers to the fact that women spend more money to travel safely and also incur substantial opportunity costs due to their limited travel choices. At times, women have to forgo trips, employment and educational opportunities, and spend more money, compared to men, to achieve marginally safer travel. Their travel costs in both time and money limit the modes they can use and their access to a multitude of prospects they could otherwise pursue. We lack good data that could illuminate exactly how large the Pink Transportation Tax is and its magnitude for different groups of women.

Second, Hu noted that another area of potential cooperation involves the spatial and temporal integration of multiple databases, which could offer ways to address transport needs and barriers in small areas, i.e., Census tracts. We lack fuller understanding of gender differences in travel and differences between and among groups of women without more granular spatial data about travel behavior. These important initiatives offer the real potential for collaboration between U.S. researchers and the EU.

AUDIENCE QUESTIONS AND COMMENTS

Participants asked for more definitive information about U.S.–EU collaboration and about potential collaborative opportunities with other countries (Canada for example).

Hu believes that the U.S. DOT will formulate a specific proposal to create opportunities for a range of international cooperative research efforts. Then, they will move these proposals up each agency's chain of command to find support. She thinks there will be two to four such collaborative efforts.

Some participants noted that the United States has a more data-driven (evidence-based) approach to research and to policymaking, while the Europeans do not seem to have nor seek the same quantity and quality of data to make decisions. A few participants questioned the ease of

creating collaborative projects when the key participants come to the table with very different perspectives on methods and approaches and the standards to apply to data and analyses.

A European researcher noted that there were barriers to common data collection efforts across existing EU partners. For example, it is illegal in France to ask questions about race and ethnicity in formal research surveys.

There was substantial discussion of the need to develop good data on women's opportunity costs—what they give up--and the Pink Tax—the additional time and money costs women incur—because of the burdens that the transportation systems impose on them.

Participants noted that women pay more for transportation options that are safe and secure, accommodate their multiple domestic and care obligations, or allow them to travel with their children. They often give up jobs and educational, social, and recreational opportunities because there they lack transportation options.

Participants also talked about the lack of good information about what it really costs women in time and money to balance so many obligations in the face of disproportionate security (crime, harassment) and safety threats (personal falls and vehicle crashes). Several participants discussed various aspects of required data collection efforts, including the need to determine new research and other industry skills necessary to address if and how the changing transportation environments will meet women's needs.

TECHNICAL SESSION D2

Analyzing the Patterns

Gendered Differences in Travel Behavior

SHERRY RYAN

*San Diego State University
Moderator*

What do recognized gender differences in travel mean to a decision maker, a planner, an operator? The session focused on gender as a key socioeconomic attribute influencing transportation choices, evaluating the ways in which a better understanding of the role of gender can improve equity in transportation policy and planning.

INTERDEPENDENCE, GENDER, AND MOBILITY: UNDERSTANDING MOBILITY STRATEGIES THROUGH AN ETHNOGRAPHIC AND TIME USE LENS

JUAN CARRASCO

Universidad de Concepción, Chile

Carrasco used a mixed-methods anthropological approach to understand individual behavior and the interconnectedness of individuals and their travel choices within a household. He shadowed one household to observe their experiences in traveling throughout the day, as well as the extent of their personal and emotional networks. He found that household travel needs are complex and go beyond simple commute trips. Individuals in a household had to communicate and coordinate their travel and other activities throughout the course of the day.

ANALYSIS OF OWNERSHIP AND TRAVEL BEHAVIOR OF WOMEN WHO DRIVE ELECTRIC VEHICLES: THE CASE OF MARYLAND

AMIRREZA NICKKAR

Morgan State University

Nickkar examined how people who owned electric vehicles (EV) in Maryland used them, focusing on gender differences. Roughly, women owned one in four EVs in the state. Owners tended to be older and women owners were more educated. Nearly 70% of EV owners used their vehicle to commute. Women EV owners had shorter commute trips and less concern about efficiency, but expressed more distress about the environment than did male owners.

GENDER DIFFERENTIALS IN PREDICTED TRAVEL ACTIVITY IN ATLANTA USING AN ACTIVITY BASED MODEL WITH PATH RETENTION

YINGPING ZHAO

Georgia Institute of Technology

Zhao focused on gender differences in travel across sociodemographic groups in Atlanta. He found that women trip-chain more often, while making more frequent, yet shorter trips than men; however, this gender difference varied considerably across groups of women. Zhao concluded that it is crucial for policymakers to consider intersectionality—the multiple sociodemographic variables that impact travel needs and patterns. Researchers should understand differences between single and partnered women, and between women of different ages and racial and ethnic backgrounds, as well the differential impact of residential and employment location on the travel patterns of different groups of women.

DO MORE ACCESSIBLE AND WALKABLE BUILT ENVIRONMENTS PROMOTE GENDER EQUALITY IN DAILY TRAVEL?

ASHLEY (WAN-TZU) LO

Tohoku University

DOUGLAS HOUSTON

University of California, Irvine

Lo and Houston used the 2012 California Household Travel Survey to study the impact on women and men's travel of living in higher density, more accessible neighborhoods. They found that both women and men respond to key elements of the built environment: in neighborhoods with greater accessibility to a variety of employment, shopping, and other activities both women and men traveled shorter total distances and made more trips. A 10-unit increase in WalkScore led to a 16% increase in walking trips. They also found, however, that gendered patterns of travel persisted across different types of neighborhoods. Women still walked for greater distances than did men, even in the most walkable of neighborhoods. Lo and Houston concluded that research on the relationship of gender activity-travel patterns and community design deserves more attention.

WHEN INCONVENIENCE IMPROVES EQUITY: COMPARING GENDERED DISTINCTIONS IN FOOD ACCESS TRAVEL

GREGORY NEWMARK

Kansas State University

Travel for shopping is highly gendered. Newmark considered whether gender disparities in shopping travel are smaller in rural areas due to the scarcity of shopping destinations. He found that in both urban and rural environments, women made more shopping trips than did men, but

the gap was smaller, or more egalitarian, in rural areas. The presence of children reduced the frequency of men's shopping, but did not impact the frequency of women's shopping trips.

AUDIENCE QUESTIONS AND COMMENTS

Audience members asked several presenters for more information on their research methods and assumptions.

Carrasco explained that the shadowing technique he used to explore intra-household decisions about trip making actually requires researchers to travel with the people on whose behavior they were focusing, taking contemporaneous notes. He noted that this approach was a different and useful lens on aspects of household travel behavior that cannot be understood in any other way. He did not feel that that this approach was any more biased, perhaps less so, than more traditional survey methods.

Newmark, who studied shopping behavior, was asked how he coded the data if a woman and man living together made shopping trips together. He explained that the trip was attributed equally to both people.

Lo and **Houston**, who studied the impact of community design on travel behavior, were asked to consider if the impact of neighborhood walkability and accessibility were different when household roles were considered. They explained that the 2012 data set does not account for intra-household activities or who performed which roles in the household.

TECHNICAL SESSION D3

Inequitable Effects, Access, Mobility, and Gender

JODI GODFREY

*University of South Florida
Moderator*

What happens when transportation planning and policies do not recognize or take account of gender differences? What happens when we lack good data differentiated by gender and other crucial elements from income to health status? How can we ensure that transportation alternatives are designed and delivered equitably?

TOWARD AN EQUITABLE TRANSPORT SYSTEM IN KUWAIT

REEM ALFAHAD

London School of Economics

Alfahad qualitatively examined the travel patterns of three female foreign national groups and one Kuwaiti group of women living in Kuwait. Low-income foreign domestics often do not leave the homes in which they work because they do not feel safe and lack sufficient income to take taxis. Middle-income foreign nationals often ride public transit. They occasionally use taxis, but feel they are at the mercy of taxi drivers. They would not feel comfortable reporting driver harassment to police given their often precarious legal status in the country. They also express fear and experiences of sexual harassment on public transit. High-income foreign nationals feel very unsafe walking at night, and rely on ridesharing apps or when possible, private vehicles. Kuwaiti nationals report multiple transport problems, including a conservative culture that frowns on or prohibits women from being out alone. Kuwaiti women expressed constantly feeling like they are being watched and harassed by men, and depend on private autos when they can. Alfahad concluded that efforts to discourage Kuwaiti women from relying on private vehicle use must recognize and respond to the factors forcing them to actively seek private vehicles.

PLANNING FOR WOMEN'S MOBILITY IN INDIA: THE CASE OF PANCHKULA

SEEMA SINGH

Cornell University

Singh examined how women negotiate their mobility in Panchkula, the first planned city in India. The Panchkula city government does not provide public transport; however, private informal transport operators provide many options, although some parts of the city have limited transport services. Singh spoke with many women who reported having fear or avoided traveling

alone or on certain routes. Almost three-fourths of these women had experienced sexual harassment, and roughly half of those incidents while walking or waiting for a transport vehicle. In fact, they consider riding a bus to be the most dangerous public place. Women respond by keeping their cell phone in their hand at all times and increasingly rely on male colleagues or friends to accompany them when traveling. Singh suggests that immediate government responses should focus on expanding and improving pedestrian and public transport infrastructure. Longer-term responses must modify existing transportation planning methods to ensure they capture the real differences between women and men's transport concerns and needs.

TRANSPORTATION BARRIERS TO HEALTH CARE AMONG WOMEN IN THE UNITED STATES

NOREEN McDONALD

University of North Carolina, Chapel Hill

McDonald studied the extent to which transportation problems caused women to delay seeking medical care. Her work is based on the National Health Interview Survey from 1997–2017, which asked people if they “have been delayed to an [medical] appointment...” The six million Americans who answered yes were then asked if the reason was “lack of transportation.” More women reported encountering a transportation barrier than did men, but this difference intensified when considering other key variables, such as being under the poverty line or not having medical insurance. McDonald concludes that there is complex interaction between the transportation and the health systems, which requires policymakers to integrate transport and health subsidies. She suggests that new technologies can help in the “transportation access desert.”

AUDIENCE QUESTIONS AND COMMENTS

There was considerable audience response to discussions of the transportation barriers and harassment faced by women in Kuwait and India. Some participants framed the discussion as women having rights to the city, rather than just making women feel safer. They questioned the role that transportation planners could play in ensuring those rights.

Singh noted that India paid little attention to the mobility or security needs of women until there was international media coverage of a 2012 horrendous transit-related rape. This incident forced the government to provide more coaches reserved for women, install surveillance cameras in public spaces, establish helpline numbers, and develop safe mobility apps. She also noted that transportation and public space are tightly interrelated. Ninety percent of the spaces from which women are excluded or where they feel endangered are transportation infrastructure. Focusing on making public spaces safer will create a more secure city, which will give women more of their rights to the city.

Alfahad felt that the goal of women having rights to the city should be incorporated into all urban planning processes. The first step is to bring more women, and greater diversity of women, into the planning field, ensuring that they are at the table for place- and space-making decisions.

She also notes that it is important to define what the right to a city could mean for different women, for example, for the low-income domestic workers in Kuwait who need access to mobility and to build a life beyond their Kuwaiti employer's household. Kuwaiti women need access to mobility without the sense of being under surveillance.

Other participants noted that it was unfair to put all the responsibility on women to solve these problems. The solution must go far beyond having women at the table when important decisions are made. There was some agreement for the need to have a formal gender-sensitive approach to transportation and urban planning that does not force women professionals to carry the burden of creating and implementing gender sensitive approaches.

Participants questioned the role and value of data on women's travel and barriers that researchers are collecting in countries, like Kuwait and India, questioning where these data are being used in meaningful ways. Some asked, what can be done in countries that have not collected these kinds of gender data?

Alfahad pointed out that in developing nations, most large-scale urban and transportation infrastructure planning is done by international consultants who tend to be European and North American men who are unaware of the needs of women in the region, or in general. More seriously, they do not recognize the major cultural constraints on mobility facing women in the global south. It is necessary to find ways to challenge the "expertise" of these consultants and to ensure that the growing body of data on the barriers facing women in these countries is incorporated into those planning processes.

Singh noted that the city of Panchkula is actually considering how they can address the issues that her research raised by trying to make the informal modes more helpful and safe for women. She also commented that India has signed on to other topical issues, like smart city and mobility plans, but the data they use are rarely available by gender.

TECHNICAL SESSION D5

Hopes in New Technology

ANDREA BROADDUS

Ford Motor Company

Moderator

Technologies designed for automation in transportation, greater shared mobility, and improved digital mobility services offer a new hope for women's safety, accessibility, and employment. What can be done today to ensure our hopes in these new technologies become reality? Participate in the discussion and become part of the solution.

GENDER DIFFERENCES IN USING DIGITAL MOBILITY SERVICES AND BEING MOBILE

CLAUDIA NOBIS

BARBARA LENS

German Aerospace Center

Nobis noted that there has long been a gender gap in travel patterns, Internet access, and the use of digital services in Germany; however, many of these differences are more age- than gender-related. She found that the gender gap in the use of "classic" mobility options has been closing, but the increasing digitalization of access is creating new sources of gender differences in mobility. Men and younger people are more likely to use the internet to purchase tickets and do route planning online. As more services transfer to the Internet, the higher the risk of social exclusion becomes, particularly for older women. Nobis suggested there is need for additional research on the technological drivers of emerging gender gaps.

TOUR FORMATION BY RIDE-HAILING USERS: A GENDER PERSPECTIVE

REZWANA RAFIQ

MICHAEL McNALLY

University of California, Irvine

The authors focused on ride-hailing users who create tours (multiple linked or chained trips) as opposed to individual trips. They found that four types of tours make up 70% of all tours, which do not vary by gender. Younger men made up the majority of frequent work trip users, while older women made up the majority of midday household maintenance trip makers. Nighttime, weekend, long-distance, and discretionary trip tours were equally divided by sex.

THINK DIFFERENT: REFRAMING JOBS IN AN AUTONOMOUS FUTURE

SHIVANI SHUKLA

WILLIAM (BILLY) RIGGS

University of San Francisco

Automated vehicles may cost society four million jobs. The impacts will be worse for those with no college degree and will include many delivery people. As many women as men will face negative employment impacts, contrary to common perceptions. However, women, particularly older women, are less likely to ride in automated vehicles. These differences are exacerbated by the fact that most vehicle designers are men who do not recognize gender perspectives and whose solutions (such as in-vehicle security cameras) are not responsive to women's concerns. The uptake of AVs will probably be limited to specific demographic groups; however, the ultimate impact on the economy depends on the actual uptake.

OPTIMIZING SHARED AUTOMATED VEHICLES FOR WOMEN

ANGELA SANGUINETTI

University of California, Davis

There is little research on how women will view or use automated vehicles, which we hope will be electric, shared, and pooled vehicles. Gender differences in response to automated vehicles can be addressed by both generating specific benefits and mitigating specific risks for women. Vehicles can be designed to create territorial security for women by providing storage and leg space, and by defining each rider's personal space using side tables, swiveling seats, personal electric outlets, temperature controls, and free wifi. Women's risks can be mitigated by using lighting, live monitoring, and window surveillance. Vehicles can also be configured to allow for non-nuclear families. It is also possible to provide women-only pools and private pick-ups and drop-offs. Sanguinetti argues the need for experimental research that quantifies the impact of specific design features as well as policy research that evaluates new safety standards and incentives that support women's use of automated vehicles.

BRINGING A GENDER-BASED LENS TO CAV DEVELOPMENT AND PLANNING

HEIDI CORCORAN

ANIA McDONNELL

University of Minnesota

Corcoran and McDonnell argue that the use of AVs requires users to shift mentally from owning a personal vehicle at substantial cost with each individual trip perceived as "free" to making use of a collective fleet and paying for each individual trip. The authors also note that the press has inflated the importance of the few AV fatal crashes since personal vehicles are involved in a substantial number of serious and fatal crashes annually. AVs offer real benefits for a range of travelers with limited or no access to private vehicles.

AUDIENCE QUESTIONS AND COMMENTS

There was a spirited discussion of why women are not currently using ridesharing options since that may presage their unwillingness to use such services in the future when provided by automated vehicles.

Sanguinetti suggested there is substantial anecdotal information that women do not trust the driver, but this fear may be mitigated in pooled options.

Nobis suggested that women have many time constraints, so calling for a ride might be very useful.

Shukla reported that she ride-shares all the time and has always had positive experiences.

Some participants agreed that fear of harassment and assault is always on women's minds; still, some suggested that women are more likely to use current ridesharing services when traveling in groups because they feel safer. Several participants noted that women might be afraid of other passengers in pooled options even if they then have less fear of the driver.

Other participants challenged the notion that rideshare is more convenient for women stressed for time. Many participants noted the logistical constraints that women traveling with children face. They would have to know a shared option had room for their children and equipment. Then, they would have to put car seats into rideshare vehicles when traveling with younger children, as well as strollers or other supplies for their children. The driver may be upset by the time it takes for them to board and disembark. Thus, rideshare options may offer many women limited to no advantages over a private vehicle.

Some participants felt that having a woman driver in a rideshare option might make women feel safer. Others discussed whether pregnant women might feel safer and more comfortable with rideshare options. Ultimately, participants agreed that we have limited and conflicting research on these issues and little way to know what prevents women from using current rideshare options or how they might react to automated vehicles in individual or pooled services in the future.

MORNING PLENARY SESSION

Impacting Policy *Crossing the Aisle and Threading the Needle*

THERESE MCMILLAN

*Bay Area Metro – Metropolitan Transportation Commission
Moderator*

Influencing policy is essential to improving the future of women and girls, and can take many forms—governmental legislation, stakeholder advocacy and philanthropic funding, the latter being the most fundamental. How the policy table gets set—and who sits in the chairs around that table—has and continues to be both a challenge and opportunity for women in the transport and sector and beyond. Maneuvering within those three policy arenas involve different experiences and strategies, key questions to consider are as follows:

- How does one get to the policy table and wield power and influence to effectuate meaningful change?
- What challenges exist for women policy makers/influencers involved in government, advocacy, and philanthropy? What are common themes or important distinctions?
- How can research be used to influence transport policy, especially when addressing issues impacting women and girls?
- Is there room for a “Big Table” where these three arenas of influence can intersect and reinforce each other— and can women leaders define and lead those opportunities?

The panel of industry leaders spoke to these questions, and described how transport and related policy development can drive meaningful change, in a time when #MeToo and other movements are dramatically impacting the context in which such policy takes shape.

Panelists

- Tilly Chang, *San Francisco County Transportation Authority* and
- Tamika Butler, *Toole Design*.

PANEL DISCUSSION

McMillan asked the panelists to consider what research is needed to address the four questions around which the session is focused. She noted that qualitative research is foundational to change, but often is tied to white, privileged, and first-world priorities and perspectives.

Chang felt that the transportation sector is ripe for change, but that there is still far to go. She

noted that only 15% of the transportation workforce is female, although it varies by region. She stated that she has often been the only woman and the only woman of color on important panels and at formal presentations.

Butler stated that she feels that women of color often self-censor and let men of color get important jobs, in part because they recognize that they are intimidating to others and retreat. That might be a long-run strategic response, but it seems so “cringy.” She noted that in her company, there are many women in leadership roles but being a woman of color is still “tricky” to navigate because promoting diversity requires constant vigilance. She also talked about the difficulty of being a working mother since there are differences in organizational culture about the extent to which the organization will accommodate any special needs.

McMillan asked the panelists to describe how they learned to navigate strategically as women and women of color as they rose through the ranks into management, and whether younger generations viewed these processes differently. She asked how women in leadership roles made a difference.

Chang noted that women’s progress is fragile and cannot ever be taken for granted, nor can women become complacent. Women, and particularly women of color, are always on trial and still in the process of “getting there.” She suggested a book, *The Memo: The “Lean in” for Women of Color*. She also mentioned that she is not sure that women in leadership positions today are prepared for the way younger women think and act.

Butler admitted that sometimes as bosses, women can seem intimidating. She reported that she is on the board of the TransitCenter in New York where she is leading a mentorship program for women in transportation. She finds that the new generation of emerging professionals does have a different perspective and different expectations. She found that young white women found out that their male counterparts made more money and thought this needed to be addressed. She felt young women of color were substantially angrier and wanted to “flip over the table.” Butler suggested that women need advocates outside their organization to “flip over the table” while they learn to be direct and forceful within the organization.

McMillan reminded the audience that on the first day of the conference, in the opening plenary session, Derlie Mateo-Babiano commented that “your lived experience is a dataset.” She asked the panelists if they agreed and to discuss the impact that their own story has on their behavior.

Butler said she fully agreed and narrated a story that encapsulated how transportation professionals often forget to ask people what they think or put themselves in their place. She told of a dangerous intersection which the local Vision Zero program had targeted for improvement. The engineers had failed to note that there was an unshaded bus stop on one side of the street, and a big shade tree on the other. Women waiting for the bus stood under the shade tree, and then frantically raced across traffic to get to the bus stop before the bus left. The engineers were clueless and came up with technical traffic engineering solutions that failed to reduce pedestrian crashes because they did not address the real problems. She explained that her company has a new series of *Es* in traffic safety—ethics, equity, and empathy—with empathy being most important. She suggested that we often do not openly listen and learn from people who are the

experts about their own communities. Researchers cannot and should not disregard quantitative data but rather augment it by soliciting and listening to people's stories around the issue as well. Make the community part of the decision-making team in an authentic way.

Chang remarked that we are just learning to bring people's stories into planning methodologies. There is a need to move beyond public hearings to the process of co-creating solutions. She also noted how being supported by her family and mentored by great professionals along the way helped her become a leader, and she believes in giving back. She feels a commitment to educate organizations on the ways in which their work impacts vulnerable groups throughout the city. "We've all made mistakes but we have to recognize and change what we've done." She mentioned the implicit bias facing women applicants for a number of jobs, bias that was addressed by removing gender and first names from job applications.

McMillan then asked the panelists how to get women to the decision-making tables in a meaningful way.

Chang suggested how important it is to build and then broaden your own network, your own kitchen cabinet. She urged women to learn when to step back and when to lean forward. "Be easy on yourself if you make mistakes." She reminded women, in the words of Shirley Chisholm, not to wait to be asked: "If there's no seat [at the table], bring your own folding chair." Chang underscored the importance of creating informal tables where multiple people can hash out important issues.

Butler agreed that a kitchen cabinet was crucial and that it did not necessarily have to include people that look like you. You need to provide and receive constant support. If your mentors do not look like you, that will help you understand organizational dynamics from a different perspective. She also suggested to not fear telling the truth, something especially important when people "dip their toes into equity work." Finally, she suggested that sometimes you have to realize that you are trying to get to *or* are at the wrong table. Sometimes, it is necessary to find out where women are and bring the table to them.

AUDIENCE QUESTIONS AND COMMENTS

A participant suggested that perhaps we were recreating an old boys club where a special group has restricted access to important decision-making.

Some participants responded that the objective was to create other points of entry into the decision-making arc, not substituting one restricted interest group for another.

Butler suggested the point was not creating a private women's club, but changing the internal culture of the transportation organizations that are part of our professional lives. She noted that creating those entry points that allow access to major decision-making forums is necessary since many disadvantaged people cannot participate in those important processes unless a path is created for them.

Participants discussed how to continue important conversations with disadvantaged communities over time and how to ensure that we do not erase data about whole groups of people, like the trans community, or depend on patriarchal and damaging data.

Butler suggested that we cannot erase people; instead, we need to find the data and the processes to lift them up. We need to push for change and create new terminology.

The panelists were asked what to do if your success creates jealousy and envy.

Butler reminded people that you cannot fight every fight—there will always be haters. Note that people who do not like you can give you useful feedback. You should develop a filter so you can receive meaningful input, even from people not close to you or in your kitchen cabinet.

Several participants asked the panelists what they do for self-care when they wear so many hats.

Butler advised finding partnerships with people who are not jealous, but do not to forget your family. Stating women often give too much, Butler suggested asking yourself if you are ultimately getting as much as you are giving.

Chang noted that having a positive life partner was huge. Having family or community at work is important because you often spend more time at work than with your own personal family. Moreover, she strongly recommended therapy and being open about it to remove any stigma.

There was a robust discussion around the need to shift the nature of community work, of trying to make the system work for people often excluded.

Participants generally agreed that it is not necessary to fix things for people. Remain transparent and listen above all else.

Others noted the importance of changing internal organizational dynamics so that those processes can lead to external community success.

Others insisted that every organization needs to engage in continuous public engagement even if there was no specific project under way, to keep lines of communication open at all times.

CLOSING PANEL DISCUSSION

Onward from WII 2019

Emerging Leaders Framing the Future for Women

ASHA WEINSTEIN AGRAWAL

*Mineta Transportation Institute, San Jose State University
Moderator*

Emerging professionals and doctoral students reflected on key issues that they drew from the conference. These speakers—the future transportation leaders—shared what we as a community have learned about concrete steps our industry should take to improve women’s transportation futures. They identified the key research needs for the coming decades, and more broadly, for the world. They identified promising actions that will bring impactful change in the near, medium, and long term.

Panelists

- Elizabeth Connell, *Fehr & Peers*;
- Huê-Tâm Jamme, *University of Southern California*;
- Bhuvanachitra Chidambaram, *TU Dortmund University*; and
- Amanda Howell, *University of Oregon*.

PANEL DISCUSSION

Agrawal, the moderator, asked each of the panelists to identify something they learned at the conference that will lead them to act differently in the future.

Connell was struck, as an engineer, by the whole discussion of sex trafficking, which she had not previously considered a transportation topic. She is thinking about how to talk to her clients about the policy issues this kind of research raises and the data collection efforts they might engage in.

Jamme had a personal sense of gratitude to all the women who fought for decades to bring academics and practitioners to this point. She said she felt that she was fortunate to be at this stage of her career. Jamme came with her transportation agenda and received all the support she needed. She also noted how women can create safe and vibrant street life, as in Ho Chi Min city. She feels that we need to consider women as the reference point in our research.

Chidambaram is a quantitative analyst, but was struck hearing about the value of qualitative data and its policy applications. She said she wants to take these applications and qualitative policy points and apply them to her own research.

Howell had a few “a-ha” moments at the conference. She stated her gratitude for being present, recognizing her relative privilege, seeing how far we’ve come, yet being saddened by the number of people who had to take vacation time to attend the conference (as she did as well). She was struck by research indicating seatbelts and vehicles designed for men are more likely to cause harm to women in crashes. Moreover, she was surprised to learn that new technology was being designed by and for predominantly white men. Howell felt very aware of who has been and who has not been in the room over the course of the conference. She suggested that women are more likely to wait until they feel 150% sure about their knowledge before saying or doing anything.

Agrawal then asked each of the panelists to identify the research they would like to present or see presented at a similar conference 5 years from now.

Howell stated wanting to see a broader understanding and definition of gender in the research space, moving beyond binary classifications. She is also interested in how automated TNCs are really going to work. As we gain more mobility options, she would like to learn their impacts on congestion and the environment. Howell also has interest in how the gig economy really impacts women—does it create more jobs or is the trend another way to keep women out of the system, on the margins?

Connell is interested in more research on the relationship of the transportation system to human trafficking. At a 2024 WIiT Conference, she also would like to see a hackathon event to identify human trafficking hot spots and learn how to use the trafficking data created to rescue abuse victims.

Jamme would like research to be more inclusive, not limited to women only, but focusing on all vulnerable populations. She expressed the need to create a dialogue with men and researchers focusing on other vulnerable groups. Jamme suggested that transportation professionals in other disciplines could broaden and improve our travel behavior research; for instance, human geographers or anthropogeographers can help researchers see behind the figures. Other disciplines can help us link transportation research to inequalities in health services, for example.

Chidambaram noted that both men and women face inequalities in resources and role. She questioned what egalitarian travel patterns would really look like. She would be interested seeing whether public policy has changed to give 2-year parental leave, and to understand the labor force implications of that policy.

AUDIENCE QUESTIONS AND COMMENTS

Agrawal asked the audience, what might you do differently in the future and what research would you like to see 5 years from now?

Some younger participants expressed enthusiasm about the amazing women they had met. In fact, several participants mentioned that they were excited to meet people they had long been citing in their own work. Others talked about how inspirational the conference was. One participant stated that she planned to leave the transportation profession, but the conference encouraged her to stay. Still, other participants talked about the conference rejuvenating them; as

one attendee stated, “my career can start now.”

Some participants felt that many researchers needed to talk to one another more because they were reinventing the same wheel. One participant urged others to “speak your truth,” and to share personal perspectives and lens on these issues with others. There were several discussions of the many eye-opening topics, including sex trafficking, vehicle design factors, and the implications of the gig economy.

Many participants questioned how to bring men into these discussions and to ensure that everyone understands that so-called women’s transportation problems are really community problems. One participant said that it felt privileged to focus on just some topics or only on women’s issues, although there was polite pushback against this view.

There was also substantial discussion of the challenges of turning research into education and action, rather than just studying something for its own sake. Several participants commented that the most discouraging thing about the conference was the recognition that repeated research findings have had so little impact on policy and planning efforts. One participant noted that nations in the global south, where women start off at such a disadvantage, replicated the problems seen in industrial nations, such as ignoring women’s safety and security needs in all modes, and particularly in emerging travel options and technology.

A number of participants were not from the United States, and they spent time comparing and contrasting their experiences with those of other participants, as well as some of the papers presented. Often the theme was how similar the experiences were; however, other discussions focused on how we may need different research strategies, data, and policies to address a variety of women’s issues in and across the global south.

Agrawal asked Rosenbloom, a member of the Conference Steering Committee, to make some final remarks. Rosenbloom was influential in organizing the first Women’s Travel Conference in 1976 and had been involved in all the subsequent conferences. She noted that she felt very emotional, more than she had expected. She felt lucky to have made a difference and inspired by having met so many wonderful young women at the conference. She ended by saying she felt she had 240 new friends (minus those people she already knew), thanking everyone for their involvement, especially people who had to pay their own way and take vacation time.

Agrawal thanked the participants, her Conference Committee Co-Chair Therese McMillan, the members of the Conference Steering Committee, the TRB staff, and all the many conference financial supporters.

Conference-Concluding Plenary Session and Working Lunch

THERESE MCMILLAN

*Bay Area Metro–Metropolitan Transportation Commission
Moderator*

The conference closed with a structured conversation at the lunch tables. The goal was to provide participants with an opportunity to debrief from the conference together with people sharing their interests.

The lunch tables were labeled with different topics, so participants could choose a table that interested them. The topics were personal safety, new technology, travel behavior, active transportation, demographics, and international relations.

At each table was a flyer with instructions, suggesting that the group discuss the following questions:

- For you, what was an “a-ha” moment from the conference, or major takeaway?
- What was something you heard during the conference about your table topic that sparked your interest?
- What ideas do you have for next steps in practice and research for your table topic?

Conference Summary and Research Needs

The 2019 Conference on Women's Issues in Transportation, held at the Arnold and Mabel Beckman Center of National Academies of Sciences, Engineering, and Medicine in Irvine, California, was the sixth in a series of WiT conferences that began in 1978. In the last 40-plus years we have made substantial progress in understanding both women's travel patterns and the constraints facing women building careers in the transport industry. Yet many sessions at this conference stressed the need to better understand the meaningful differences in women and men's travel, the travel constraints that different groups of women face, the barriers that women in the transport sector must overcome to advance in their careers, and perhaps most emphatically, the ways in which we can move this body of knowledge into meaningful policy, program, and operational changes.

The 2019 WiT Conference was explicitly informed, structured, and motivated by three overarching themes: Insights, Inclusion, and Impact. The Conference Steering Committee asked all participants to use the lens of *Insight* to question the following issues:

- Which emerging societal trends were likely to influence women's travel patterns in a variety of contexts;
- Which transportation factors were topical in today's world;
- How emerging technologies could help or hinder women's labor force participation and balancing work and home life in ways that affected their travel needs; and
- What has been learned about important new research methods designed to understand the interactions of all these trends and women's needs and travel around the world.

The panelists, presenters, speakers, and participants covered a wide array of substantive topics and themes that incorporated these themes across the three days of the conference. Six issues in two general categories captured a majority of conference "air time" and were central to enthusiastic discussions during the conference. The first category consists of cross-cutting issues that play a role in many industries and travel decisions. The second summarizes two individual topics that engaged participants, and surfaced and resurfaced in multiple forums.

CROSS-CUTTING TOPICS IMPACTING WOMEN'S TRAVEL

- Societal changes,
- Personal security threats and perceptions,
- Technology and innovation, and
- Research and data needs and use.

Individual Substantive Issues

- Sex trafficking and
- Recruitment, support, and advancement in the transportation sector.

The editors highlight these issues individually to clarify, but also recognize that almost

all of these issues or topics integrally relate to one or more of the other topics. Also highlighted are the substantial interrelationships between and among the topics below, avoiding extensive duplication.

Some of the issues and concerns addressed at the conference stand alone, such as sex trafficking. Others have multiple important facets, some of which fall under two or all three of the conference lens. Some substantive issues are deeply intertwined and it is difficult to discuss one without addressing its clear connection to other major substantive issues discussed at the conference.

CROSS-CUTTING CONFERENCE ISSUES

Societal Trends

Many presenters at the conference focused on important changes in various societies that impacted women's travel behavior and created or intensified gendered travel patterns—even as there has been convergence between the sexes in some aspects of travel behavior. Four long-term trends discussed at the conference are the increasing involvement of women in the paid labor force, substantial changes in household structure, women's greater use of private vehicles in many nations, and the complexity of mode choices facing women in the global south.

Employment Changes

Employment rates among women have soared worldwide since 1978. Today, roughly 57% of North American women and 74% of women in the EU 28 are in the paid labor force [StatsOECD (nd a); U.S. Bureau of Labor Statistics, 2019]. Nevertheless, there is wide variability among countries, particularly in the same region where less than half of the female population works outside the home for pay. The exceptions are largely Muslim countries, where only 14% of women comprise the labor force in Jordan, and countries in South Asia, e.g., Bangladesh, where only 31% of women have salaried employment.

Official employment numbers may exclude a variety of working women in the global south—those who forage or grow crops for sale, work in family businesses, create crafts or goods for sale or trade, or work as household help or nannies—all aspects of the informal economy (World Bank, 2020). It is important to note that country-specific data often exclude those who the World Bank considers employed, such as those who make nonmarket products for use in their own households. These data may also exclude women in industrial nations who work in the informal or gig economy, or those paid in cash or work without a salary in family businesses. The World Bank (2020) noted that when women do not or cannot seek salaried employment, they “continue to be locked out of” the economic successes of their region. The bank noted that the South Asia region is the fastest growing economy in the world, yet female labor force participation is only 23.6% in this region, denying women the advantages of that growth. A 2018 World Bank study of 71 countries around the world found that 50% of all women living in poverty were unemployed, an additional 19% were self-employed, and 18% worked without pay. Only 11.7% of all poor women had salaried employment.

Women who work outside the home have very different travel patterns than those who do not, adding employment trips to the childcare and household maintenance activities they

continue to assume. Women with children who have either part- or full-time salaried employment generally retain a disproportionate share of household, child- and elder-care responsibilities—in both industrial and developing nations, as demonstrated in several conference presentations. For example, in Germany, salaried women who kept the household vehicle to conduct most child-care and domestic duties freed their husbands to work longer hours, using public transit for their work trip commute. Many gaps in commute travel are closing. Still, presenters in the opening session describing changes in travel behavior showed that employed women continue to make up a disproportionate share of child- and elder-care and household maintenance trips, along with their commute trips. Women continue to trip-chain more and make more serve-passenger (escort) trips, often resulting in highly variable trip patterns when compared to their male counterparts. Those women with children, living with someone with whom they share family responsibilities equally, still change their travel patterns in dramatic ways when they enter and remain in the labor force.

Women who work outside the home less than full-time may have different travel patterns than those who work more hours, a topic on which there is less research. To begin, the definition of full- and part-time are often country-specific. In many European countries, 34 to 36 h a week constitutes full-time employment. Some conference participants suggested that it was possible that a woman working part-time might actually have the most complicated travel patterns, making more trips than either women not in the paid labor force or those who work full-time. It is possible that women working for pay less than 40 h a week remain responsible for almost all domestic and child- and elder-care responsibilities, adding complicated travel patterns to their employment tasks and travel.

Moreover, the changing nature of the economic structure of individual countries significantly impacts both women and men's travel patterns as they balance employment with household responsibilities. Previous WIIAT conferences focused on the impact on women's travel resulting from an economic shift from manufacturing to services-based economies, which disproportionately affects women workers globally. Service-sector jobs often pay less than the manufacturing jobs they replaced. More significantly, the locations of service-sector jobs are more widely dispersed than manufacturing jobs, making commuting by public transit or via carpooling difficult to impossible. The service-sector jobs, in which many women are involved, moreover, are more likely to be part-time, requiring some service workers to have multiple jobs. In addition, service jobs may involve variable schedules over the course of a week or month, and often require off-peak and particularly evening travel, magnifying the difficulty of using modes other than the private car (and cutting off employment opportunities for women unwilling or unable to drive).

Several participants at this conference discussed the impact a new and growing facet of the service or gig economy has on women's travel patterns. The gig economy lacks a precise definition. The term is simply what is called the “informal economy” in the global south (household help, temporary or day workers, contract workers, independent contractors, consultants), people who are not employees of an organization but get paid only for specific jobs.

Many definitions of the gig economy, however, stress the role of technology in creating this sector. Internet on-demand platforms have created a range of jobs and employment options that differ from existing “offline” or office jobs. Craftspeople and artists can use a platform like Etsy to sell their wares worldwide without any brick-and-mortar presence. Others, from lawyers to coders, can work for different clients or companies in a range of cities or countries without having any in-person interaction. The COVID-19 pandemic, which occurred 7 months after the

conference, may well have intensified this shift away from traditional employment patterns to the gig economy.

This trend may have affected women more than men, as women now comprise more than two-thirds of U.S. service workers and roughly a third of gig workers through either their primary or secondary job. The differential impact of the gig economy on women and their travel patterns is not clear, as several conference participants noted. However, these kinds of jobs might allow women more flexibility in balancing their work and home life. These jobs may also create such variability in women's work schedules, employment opportunities, and income that they offer limited travel options by private car, even as women find car ownership to be a financial burden. Finally, some conference participants noted a tendency not to view jobs in the gig economy as "real work" even though they can be very time-consuming.

Changes in Household Structure

Households are changing as well. There has been a substantial increase in the number of single-person households (generally the young and old) and single-parent households, trends which impact women more than men. In the years between 2017 and 2020, the World Bank and other data sources reported that women made up the largest share of single-parent households in the majority of countries throughout the world. Women constituted 89% of all United States, 87% of all German, 83% of all Spanish, and 82% of all Dutch single-parent households (statista.com/statistics/ine.es/en/prensa/ech_2017.en.pdf; and World Bank, 2020, <https://worldbank.org/en/events/2020/02/18/south-asia-women-in-the-work-force/View/1725680>).

Female single parents in the United States were also likely to have more children than male single parents. In 2019, female single-parent households accounted for 90% of all children under age 6 and 86% of all children under 12 living in such households with single-parent households now accounting for more than one out of four of U.S. households with children (U.S. Census, 2019). The OECD (2011) has predicted that the number of single-parent households, most headed by women, will increase 12% in the United States and as much as 27% in some EU countries by 2030, when compared to 2010 numbers. Single-parent households, especially those headed by women, are also substantially more likely to be poor. The World Bank (2018) studied gender differences in poverty rates in 71 nations in five regions across the globe for which there were sufficient data to determine trends. In all those regions, households headed by one adult woman with children were poorer than the relatively few single-male parent households with children, and among the poorest of all households. In the Latin American and Caribbean regions, female single-parent households constituted 14% of all poor households, while comprising only 4% of all family households.

A 2010 study using the EC Labor Force Survey (with 1.5 million respondents in 16 European nations) found that single mothers were less likely to work than partnered women of the same age. Of the European women aged 20 to 29, 84% of partnered mothers, and only 68% of single mothers had paid employment. Single mothers, however, were slightly more likely to work part-time. Twenty-three percent of partnered mothers aged 20 to 29, and 27% of single mothers of the same age worked part-time. Employment later increased substantially among both sets of mothers, attributed to the fact that their children were older, in school longer, and ultimately more able to take care of themselves. Still, being employed doesn't fill all gaps. A 2020 study based on 2010–2016 data from six European nations (Denmark, Finland, Estonia, Luxembourg, United Kingdom, and Ireland) found that all single parents, over 80% of whom were women, *who were*

employed still were more likely to have inadequate incomes (defined as earnings below the poverty-level) and live in poverty than other household types (Nieuwenhuis, 2020).

All female parents of working age in North America are less likely to be in the paid labor force compared to their counterparts in Europe. A recent U.S. Bureau of Labor Statistics Economic News Release (2020) reported that 60.8% of U.S. women with partners and children under 3 years of age were employed in 2019, roughly three-quarters in full-time employment. Only 28.8% of single mothers with children under aged 3 worked; however, more than a quarter had part-time employment (Calculated from Table 6). As in Europe, employment rates were higher among women with older children. Seventy-three percent of partnered women with children 6 to 17 years of age were in the paid labor force in the United States, but just over 70% of single mothers with children of that age worked (full versus part-time status not given). In Canada, almost 72% of “lone mothers” were in the paid labor force compared to almost 76% of married mothers. All Canadian women of working age were substantially more likely to work part-time than men; still, roughly 19% of women and 6% of men worked part-time in 2016 (Statistics Canada, 2017).

In the United States in 2014, roughly one in seven employed women worked part-time (defined as less than 35 h a week) and about one in six Canadian women did so. The number of female part-time workers was substantially higher in Western Europe: 50% of employed Dutch women and roughly 40% of employed Austrian and German women worked part-time. Only the Scandinavian countries and those of the former Soviet Union had a smaller share of female part-time workers than the United States (OECD, nd).

There are variations in the employment rate of single mothers by country and region of the world, but most are in the paid labor force whether at rates slightly higher or lower than partnered mothers with children of the same age. The parent in a one-adult household with children under 16 (and perhaps older) has the burden of almost all household travel combined with employment travel. Several presentations at the conference discussed the barriers facing single parents, whose trip patterns may be even more complicated than those of partnered mothers.

There has also been dramatic growth in the number of single-person households headed by older women in both the global south and the industrialized world. There were only a few papers given at this conference that focused on older women’s travel, in contrast to previous WIIIT conferences. Yet, in both the industrialized world and the global south, the percentage of women becomes greater after age 65.

A Pew Foundation study (2019) found that globally, older women are roughly twice as likely as older men to live alone. This gender gap is greatest in Europe and North America, where roughly one-third of women 60+ and only one-fifth of men live alone. In Canada in 2011, about 65% of women and 74% of men aged 65 lived as part of a couple. By 85 years of age, less than 19% of women, and 57% of men still lived as part of a couple. Conversely, Canadian men who did not live in a couple were much more likely to live with other family or friends than alone or in a care facility. At 85 years of age, 41% of women, yet only 21% of men lived alone. At age 85, over 22% of women lived in a care facility, where only 14% of men did so (Canada Statistics, 2016, computed from Chart 7 data). The 20 countries having the highest rate of older women living alone are in Eastern Europe, i.e., Hungary and Lithuania, where roughly half of older women live alone, or, in Denmark where 47% of older women live alone. Conversely, fewer older people live alone in most countries in the Global South, where only 9% of all those 60+ lived alone in Sub-Saharan Africa or the Middle East and North Africa; they mostly lived with extended family (Pew Foundation, 2019).

Older women have different travel patterns than when younger. Their substantial dependence on the private car in most industrialized countries foreshadows mobility problems when they cannot or do not want to drive. Unpublished data from the 2017 U.S. National Household Travel Survey shows that older women living alone make an overwhelming percentage of their trips by private car, as both driver and passenger. They rarely use public transit even in the densest urban environments. For older women, their third most common travel mode, after driving or riding in a car, is walking. However, as older women age, they may have financial or physical problems with all travel modes, except perhaps riding in a vehicle. Unfortunately, they may have few people willing or able to offer them rides if they live alone. Comparably, older men have physical problems, but they continue to drive well into their 80s. Most still drive 7 days a week. Even when they must stop driving, older men have more options than do women of a comparable age, as they are more likely to live with a spouse, other family members, or friends than are women. These too are women's travel issues.

Increases in Automobility

Women in the industrialized world have substantially closed the driver's licensing gap, and are as likely to drive for their commutes as men in comparable households, life cycle, and employment situations. There are now more women drivers in the United States than men and the gaps in licensing are closing in other countries as well. In Norway in 2009, roughly equal shares of women and men ages 25 to 34 held a driving license (75%). Still, a gap remains in Spain but it is closing. In 2009, 65% of women and 72% of men ages 35 to 39 had a driving license (Sivak and Schoettle, 2011). In 2018, 70% of women and 81% of men of driving age held a license in the United Kingdom, which was roughly the same rate for men as in 2008, but represents a 5-percentage point jump in women's licensing (Statista, nd b).

Furthermore, women in the United States are more likely to use or ride in a private vehicle for their trips, and their commute rates have come to resemble that of men in households where men and women share sociodemographic characteristics (e.g., life cycle, age, employment status, marital status, number and age of children). Several conference presentations showed that in two-car households in a number of countries women still continue to have shorter commutes, link more trips together (i.e., trip chains), and make more trips to serve other people's travel needs. Data presented at the conference showed that in some industrialized nations men are more likely to undertake household and childcare responsibilities than in the past so their travel patterns have come to more resemble women's, becoming more complicated and often requiring a car or daily negotiation over the household vehicle.

Thus, there is real convergence in some aspects of the travel patterns of women and men, and men carry out more household responsibilities than in the past. Conversely, research presented at this conference shows that a gendered division of household and family responsibilities remains in industrialized nations. This plays out in the travel patterns and needs of women, which often increases the need or desire for a car, even in the global south, as several presentations pointed out.

Complexity of Women's Travel in the Global South

The impact of changes in household structure, employment, and trip patterns on women's travel in the global south—where a higher percent of women are single heads of household (Pew, 2019)—are far more burdensome than in the industrial world, as many papers presented at this conference and the preceding five conferences definitively illustrate. Many studies show similar patterns in women's travel in developing nations.

First, women generally are relegated to multiple modes for most trips. These modes often are cheaper in monetary terms, but more expensive measured in time. They include walking, motorized two-wheelers (scooters and motorcycles), three-wheelers, informal buses, and public buses. These modes tend to be dangerous for the users and to pedestrians. A paper at this conference noted that a substantial share of pedestrian deaths among women in the global south were caused by these modes. Such modes of travel are also slower and less reliable, often requiring women to wait without shelter for long periods of time at transfer points.

Women, conversely, often are locked out of more advanced modes, such as rail and BRT systems, because they do not serve the destinations to which women travel or they cannot afford these services. Men conversely are more likely to drive or use rail services or employer-provided bus service because they can afford to do so, have greater access to these services, and because their destinations are often so different from women's.

Second, the limited and problematic modes of travel available to women in the global south are often unsafe, posing substantial risk of serious crashes and falls, as well as personally insecure and exposing women to crime and harassment, a major cross-cutting conference theme. These options often are not modes of "choice," but are rather modes of last resort (and the need to travel this way) and the time consumed in travel profoundly impacts the opportunities many women have in developing nations. This severely limits their educational, employment, and social options, as several presenters showed.

Third, research presented at this conference and at the previous five WLiT conferences, show that in some nations or regions in the global south some women, particularly women of color, have longer commutes than men, often by time and sometimes by distance. Measured in time, their commutes are longer because they must use multiple slower modes with long waiting periods between transfers. Their commutes may be longer in distance because of the spatial distribution of the jobs whose skill level matches their experience and training, as domestic workers, cleaners or servers, for example. Not surprisingly, women in many developing nations are more likely to buy a car (or say they will if they can) than in the past. This trend alarmed several conference participants who warned of the impact on global warming and the inability to implement successfully sustainability policies if women feel they have no other safe option than becoming new drivers.

Several conference participants emphasized how responsive women's travel was to a wide variety of cultural norms and expectations, as well as the economic structure of the region or country where they lived. Many international participants reiterated that even adjacent countries on the same continent might have different norms about women working outside the home, their use of household vehicles, and the division of household responsibilities, which can all have profound transportation implications. The most overt example of the impact of cultural norms on women's travel is Saudi Arabia, which until recently discouraged all Saudi women from working outside the home and prohibited them from driving. Nevertheless, many conference presenters discussed the cultural norms in many countries that prevent women from walking or cycling or expose them to harassment and even violence if they do so, as the next section discusses.

Personal Security Threats and Impacts

One of the most discussed topics at the conference was the crime and harassment that women routinely faced in both industrialized and developing nations as they traveled. These issues are heightened by cultural norms and mores about “acceptable” women’s travel in the global south. A number of conference presentations were part of an international consortium of university researchers who studied the problems facing women university students in their community. Many studies found that women are often harassed or attacked on the streets while walking or cycling, at transit stops and stations, and onboard transit vehicles. Every study on the topic presented at the conference found a large number of women (and occasionally men) who said they had frequently experienced sexual harassment and assault in their daily travel. Most of those women explained that they rarely reported such activities (or even knew if they could or to whom). However, they did often make major changes in their lives to avoid problematic situations. Even in industrialized countries several participants noted that police often didn’t feel these activities *were* crimes (“one person’s flirting is another person’s sexual harassment”).

Several conference presentations focused on how rarely there are good data on the incidents and locations of sexual harassment and assaults even though women routinely tell academic researchers and advocacy groups about such behavior and how frequent it is. The ability to bring these problems to the attention of transportation planners, operators, and law enforcement—and demand action—is hampered by a vicious cycle in the global south and in many industrialized countries. To begin with, several presenters stated that transit operators and police rarely take such actions seriously, even more rarely accept official reports of sexual harassment or even assault, and still more rarely apprehend perpetrators—nor can they impose effective sanctions if they do. (A conference participant noted that one major U.S. transit operator reported “banning” an offender from the system after multiple incidents of harassment against women passengers, a sanction that seems unenforceable.) Consequently, women continue to not report harassment, bystanders are unsure what they can or should do if they see such an attack, and as a result there is little data on the severity, frequency, or locations of such attacks in either industrialized or developing countries. Women around the globe then see that it is ineffective or even dangerous to report harassment or sexual attack. Thus, policymakers find little evidence that sexual harassment or assaults are a serious problem.

The cycle of crimes not reported thereby not addressed has led to a strange conundrum. Law enforcement report that most crimes occur at busy times, but women feel most afraid late at night or in lonely exurban stations, as noted by a presenter from the Vancouver Police Department. As such, it remains unclear what actual rates of crime and harassment are. It may be that the kind of crimes that are reported to police (fights, pick-pocketing, etc.) do occur during congested time periods, while a substantial number of unreported incidents of sexual harassment or assault happen at night, but the police do not know. Therefore, either the police and transit agencies are uncertain as to when a substantial number of crimes occur or women make a number of travel decisions that may not be responsive to the times or situations when they are most at risk (or both).

Several presentations focused on actions undertaken by transit officials to address crime and harassment of women, but participants noted many problems. The most common approach in the global south has been to provide women-only coaches. Unfortunately, these coaches can divide families, and women may still experience harassment from men when disembarking from these coaches. The most common response in North America has been design changes, improved lighting, phone apps, special phone lines to quickly report, and advertising campaigns. We do not

know if the design, lighting changes, and rapid reporting options reduce harassment or assaults nor whether women feel more secure even if they do.

The ad campaigns undertaken by several transit operators stress that sexual harassment is either a crime or a prohibited behavior, urge victims to report, and encourage bystanders to intervene safely or to make an official report. It is unclear how effective these campaigns are. One representative of a major North American transit system admitted at the conference that they started their anti-harassment ad campaign “on the wrong foot” without any discussion with women. After a number of women’s groups voiced concern about their campaign, the transit police worked with these groups to revamp their ads.

There are some encouraging transit system responses. In Quito, Ecuador, women’s groups collected substantial data on the incidence and severity of sexual assaults, and demanded that transit system officials respond and develop a real reporting system. Faced with comprehensive data, transit officials acknowledged the severity of the problem and made multiple changes to address it. The advocacy groups also provide emotional and legal support to women who are afraid of reporting, and then hold the transit operator accountable for addressing and criminalizing these actions.

The WMATA in Washington, D.C., worked with all the jurisdictions in which it operated to ensure that various forms of sexual harassment were crimes so that police knew, and could be required to, apprehend and arrest perpetrators on any part of the system. At the same time, a transit official reported that most transit systems prefer to address such issues with better design and lighting, but it is unclear the extent to which such changes reduce incidences of harassment or assault.

Transit systems also differ greatly in the level of protection they provide outside of a station or vehicle. There may be a number of crimes against women walking to or waiting at transit stops that are not officially associated with transit systems. These problems substantially impact women’s travel behavior nevertheless. An APTA representative at the conference noted the importance of transit agencies working with institutions that provide and maintain pedestrian infrastructure to and around transit facilities and stops.

These discussions of personal security and safety while traveling relate to other major conference topics. For instance, security is relevant to the lack of adequate, well-lit, and well-maintained pedestrian and cycling infrastructure in both industrialized and developing nations. Moreover, understanding safety and risks requires having disaggregated data about the impact of policy and program interventions on the personal security challenges and travel choices that different groups of women make.

Technology and Innovation

Many participants raised the issue of how new transportation-related technologies were designed and how responsive they could or would be to the diverse needs of different groups of women.

Some participants questioned the role that women played in the planning process for new technologies and the extent to which designers were aware of and responsive to women’s needs. Others raised the concern that advances in technology, if planned by men, might not only fail to attract women users, but also create additional barriers to employment and travel for those women unable or unwilling to utilize them. The theme of how responsive existing and potential new technology is to women’s needs ran through a number of conference discussions: how little access women in the global south had to cell phones, considered the most basic technology that might improve their mobility; how unresponsive rideshare applications were to women’s personal security needs as drivers or passengers; and ways in which emerging technologies could

lock women out of new transport industries.

Conference participants also discussed the fact that automobiles were still not designed to substantially reduce women's injury or ensure their survivability in a crash—as one presenter noted, “It's not possible for a woman to sit in the safest place in a car.” Research presented at previous WIIIT conferences showed that women, and particularly older women, are far more likely to be seriously injured or killed in crashes of comparable severity than men. There was little research presented at this conference on vehicle design for safety, which may point to how little advancement there has been in addressing automotive safety for women drivers and occupants. For example, no U.S. auto manufacturer uses a crash dummy that simulates a pregnant woman, so we still have limited information on where/how pregnant women should wear seat belts. This leaves unanswered questions about the causes of fetal deaths in vehicle crashes involving pregnant women passengers or drivers.

There was substantial discussion of how to design the interior of automated vehicles used for rideshare applications. Participants discussed ways to create seating options that protected women from harassment and unwanted touching by male passengers in the vehicle (e.g., bucket seats), although others noted that women often travel with packages and children so might prefer bench seating. Some presenters suggested that the apps used to order and dispatch such vehicles must allow for women passengers to request a woman driver or to inform the driver that she has children and a stroller, etc. with her so that the needed capacity would be available. Others questioned if women passengers would be charged extra for their children or packages. A presenter from the Ford Motor Company reported that they were planning a ridesharing AV application in Miami in 2021 and were considering women-only services targeted to the off-peak travel in which more women engage.

Research Methods and Data Needs

A major objective of the WIIIT conferences has been to explore three compelling issues: the additional data needed to better understand women's travel in industrialized countries and the global south; the most effective methods to gather and analyze those data; and how to use data with policymakers to achieve significant improvements in how transport services are planned, designed, and implemented to meet women's needs. A fourth objective arose during many conference discussions—the need to effectively monitor program or policy interventions designed to address women's travel needs, collect data on outcomes and impacts, and use those data to hold agencies accountable and understand if the program or policy was scalable.

The conference highlighted the need to apply a more sophisticated perspective to understanding women's and men's travel behavior by collecting and analyzing new data in multiple ways. Much of the published research on women's travel patterns has not extensively disaggregated travel data. Some work presented at earlier conferences focused on travel by single mothers, older women, people in different geographic areas, and the role of life cycle in travel behavior. There has been little comprehensive work on key issues of intersectionality—the way that gender interacts with a number of relevant factors to create important differences in the travel needs and patterns of women and men and between different groups of women.

Key factors that intersect with gender include differences in women's travel by race and ethnicity, the number of hours worked for pay outside the home, the kinds and location of communities in which they live and work, the number and age of their children, and their social and human capital. Other key intersectional variables include immigrant status and degree of

assimilation (length of time in receiving country), personal as well as household income, language spoken, and distribution of household transportation resources. Others stressed the need to focus on the travel patterns of female home and gig workers and the transportation needs and challenges of the LGBTQ+ community.

Many people at the conference, for example, discussed research showing that women of color had different travel patterns than white women in a variety of situations. Black women often had fewer mode choices, longer commutes, and often traveled by the least convenient or safe method whether in the industrial world or in the global south. However, it was not clear if race was a proxy for a collection of other variables (residential and employment location, income, household structure, etc.) or if race is an independent or explanatory variable. We must also recognize that data on key variables, such as race and ethnicity, is illegal to collect or use in some countries like France, for example.

The second data-related goal of the conference was to evaluate the best methods to ensure that the data researchers and policy analysts collect is actually used to improve public policy. At the opening plenary session the conference co-chairs stressed that the success of research on women's travel must be measured in terms of its impact on policy and programs in ways that actually improve women's safety, security, and convenience as they travel, as well as increasing women's employment, retention, and advancement in the transportation industry.

Most of the presenters at the conference focused on women's travel behavior from one of two methodological perspectives: researchers in the industrialized world often presented quantitative data analyses based on national household travel data sets or large-scale surveys; researchers from the developing nations of the global south often presented the findings from small-scale studies or those based on focus groups or individual interviews. Researchers from the industrialized world often reported sophisticated data analyses but did not directly address the ways in which their findings might respond to women's travel needs; those from the global south depended more on individual stories and retelling personal journeys, often their own. There are exceptions to this broad generalization, but the overall pattern highlights some important differences among conference participants in how they carried out the research enterprise as well as the data and access constraints under which they operated.

Both approaches have strengths and weaknesses in understanding women's travel patterns and needs, although neither has been effective in changing existing public policies or priorities—a recurring if disappointing theme at the conference. More quantitative data-driven analyses have the value of large sample sizes that allow more disaggregated analyses. These analyses are often seen as “scientific” because researchers can use accepted statistical techniques to verify the direction and strength of relationships they observe. Such approaches, however, may not capture information on, for instance, the household roles and obligations that women and men assume or how intra-household transportation decisions are made, as several presenters noted. These approaches also have little to no data on people's attitudes or preferences and lack insights on whether women's observed travel patterns reveal what they want to do or are a result of the constraints under which they operate, or some combination.

Many qualitative assessments focus far more on individual behavior and begin with a concern with travel constraints that women face. Such research often relies on personal accounts and lived experiences, which can provide rich insights into how household members divide responsibilities and how women respond to travel constraints that range from poor bus service to sexual harassment in a variety of travel modes. One presenter traveled with an individual family over the course of a day, noting how the members divided domestic responsibilities and

negotiated decisions about the use of the sole household vehicle to conduct those tasks. Another presenter reported being annoyed at quantitative-driven analyses; she thought the most important learning happened from listening to personal stories about the barriers women faced and how they overcame them. Qualitative studies, however, are often dismissed as being normatively driven or “nonscientific.”

It is not clear that either approach has been very effective in convincing decision-makers of the need to act or how to do so. Neither approach has had much traction with government officials and transport operators in making service or security or safety decisions that better meet women’s needs or address their concerns, let alone design changes to vehicles to improve safety. Women are often the victim of sexual harassment and even assault while traveling in both industrialized nations and the global south; still there are little data on the number, severity, time, and location of such incidents. Hence, many transit operators have made only limited changes in system design or operation and do not monitor the outcomes well or at all. There is substantial evidence that major infrastructure investments give priority to rail systems over the bus services on which women in many nations depend, particularly in the global south. Some new rail systems often fail to consider women’s destinations or ability to pay.

Given the barriers women face in walking in many countries in spite of being dependent on doing so, and their inability to safely cycle in many others, it is striking how little attention is given to improving the pedestrian network and providing the separated bike lanes that women have repeatedly reported needing to feel both safe and secure in cycling. It seems clear that many communities present, as one presenter said about a large American city, “a stark landscape of gender disparity” because of their failure to address these issues.

Several presenters and workshops stressed the need for advocates to have good data for program and policy changes, to set measurable outcomes or goals, and to establish a monitoring system that held agencies or operators to their promises. Participants also stressed the need to ensure that all stakeholders could evaluate which options worked and which did not from their own perspective. This process makes the approach scalable, providing useful empirical information to other advocacy groups and stakeholders to use in discussions with operators and policymakers in their communities. Several audience discussions, for example, of how to encourage cycling among women of color and immigrant women, etc., followed this approach. They suggested, for example, a pilot program giving bikes, helmets, and training to targeted women to increase their employment opportunities or for additional mobility, and monitoring the results to ensure they are transferable.

Individual Substantive Issues

Human Trafficking

Human trafficking is a topic never raised at any of the earlier WIT conferences; some attendees admitted that they had never considered the topic to be a “women’s transportation issue.” Nonetheless, the majority of trafficked victims are women, and in most countries, their captors move them largely on surface transportation modes. Policy analysts and researchers who presented on the topic argued that stakeholders in every surface transportation industry and mode, including state departments of transportation and the U.S. DOT, have a dual role to play. This role involves 1) educating the public that women and men who are trafficked are victims,

not criminals, so the public will report suspicious activity, and, 2) developing programs to interdict human traffickers.

A number of conference presentations concluded that it is necessary to convince state DOTs of the need to include the responsibility for public education and developing interdiction programs in their portfolios as well as working with law enforcement to identify trafficking operations. Participants argued that we must also educate truckers and motorists as well as local and state law enforcement officials to recognize and report trafficking activities and to respond appropriately. Finally, we are just beginning our efforts in this area and no one is certain what strategies or approaches work. Policymakers need to review a range of potential interventions and then evaluate their outcomes and impacts to move interdiction efforts forward.

Recruitment and Advancement in the Transportation Sector

There were many conference sessions, workshops, panels that addressed ways to encourage more women to consider a career in transportation planning, engineering, or operations while identifying the barriers to creating a more diverse workforce. Many panelists felt that it was important to get more women into the pipeline and into higher-level positions, for their own careers, to serve as role models for younger women, and to help ensure that organizations could meet the needs of diverse women. This was topic not addressed at all at several of the previous WIIIT conferences so the focus on attracting and retaining women in the transport sector was of great interest for many conference participants.

Many high-ranking women executives in public and private transportation organizations recounted personal stories of the barriers they had to overcome and the prejudice that they faced because they were women or women of color. Many had no mentors—or mentors who looked like them. Many struggled with successfully combining their personal and employment responsibilities; many stated that no one had helped them juggle these responsibilities or gave them opportunities. All presenters stressed the need for women to serve as role models, to reach out and offer to mentor women employees as they move to increasingly more responsible positions, to have an open door and provide advice to anyone who asks, to share stories of personal struggles, and to make safe places for women and men to find alternative work schedules and arrangements.

CONCLUSIONS

The 6th International Conference on Women's Issues in Transportation was structured with three foci—Insights, Inclusion, and Impact—had the goal of learning from past conferences and building on the rapidly growing body of research on multiple facets of women's travel needs and career development in the transportation industry. In the 41 years since the first WIIIT Conference, researchers and analysts around the world have created new knowledge, developed innovative research methods, and fashioned complex understandings of how, why and when women travel and the challenges and constraints they face in the global south and in industrialized nations. We also have far more information on programs and policies designed to enhance women's safety, security, and mobility while traveling and to address the constraints that different groups of women encounter as employees in transportation organizations, firms, and agencies.

An overarching objective of the conference was to structure and evaluate what we know, to determine the impact of various approaches and policy interventions on women's mobility, and to identify key inflection points in the past, and now, and to determine where they might occur in the future. We sought to determine situations where current knowledge was not used or used well, to recognize the areas we still need to explore, and to tailor our existing knowledge base and our continuing research efforts to better impact transportation agency decisions. Above all the conference was designed to use existing research and build new knowledge in ways that will lead to better mobility and accessibility options and improved employment opportunities for women and girls around the globe.

Our focus on Insights was designed to allow us to synthesize and understand what we already know about women's travel and to evaluate the progress women have made as consumers, employees, policy analysts, and pioneers in the transportation industry globally. The lens of Inclusion recognized that that we must go beyond a single or a few perspectives on women to embrace multiple gender distinctions. Seeking inclusion also requires us to expand our research efforts beyond simple binary identifiers (male vs female), to consider race, ethnicity, immigration status, household structure, age, and a host of other sociodemographic variables that are linked to differences among women. We also sought to expand our understanding of gender to include the LGBTQ+ community and to acknowledge the value of that perspective in our work.

The lens of Impact was designed to inspire us and center our efforts during the conference, to keep the goal of creating meaningful change through knowledge in the forefront of our deliberations and discussions. This lens constantly reminded us that creating positive and lasting change was our gold standard, our measure of success. The focus on Impact was also a call to action, a demand that we do not accept what is but continually seek to improve the mobility and accessibility of different groups of women globally, in ways that help them fulfill their dreams, take advantage of their opportunities, and gain control of their lives. We sought to use knowledge to overcome the lack of options, and poor quality, dangerous, and challenging transportation services that squandered their potential.

The sessions addressed multiple topics related to the Steering Committee's objectives and the three organized themes. However, six stand out, with four cross-cutting topics and two individual substantive topics. All were related, of course; singling them out is not meant to indicate that they stand alone or do not affect the other topics in meaningful ways. The four cross-cutting topics all had elements of the three conference foci, insights, inclusion, and impact. They were:

- Societal changes, encompassing:
 - The increasing involvement of women in the paid labor force in both industrialized nations and the global south;
 - Substantial changes in household structure, particularly the increasing number of households headed by single mothers and single older women;
 - Women's greater use of private vehicles in many nations, narrowing the gender gap in licensing and auto use for commutes, and facilitating women's complicated travel patterns in which are embedded employment, child- and eldercare, and household responsibilities; and
 - The complexity of mode choices facing women in the global south, where women often use multiple modes for each trip, incurring long waits and travel times for relatively

short trips.

- Personal security threats and perceptions, addressing:
 - The substantial incidence of sexual harassment and assault in both the global south and industrialized nations in all modes of travel;
 - Limited and often ineffective processes for reporting harassment and assault leading women to accept such behavior and making substantial changes in their travel behavior; and
 - The lack of good or any data on the frequency, type, location, or time of such assaults, substantially inhibiting or preventing public agency response, and leaving women with perhaps erroneous assumptions about where they are most at risk.
- Technology and innovation, concluding:
 - Technology may not be planned for women or take account of their actual needs;
 - New technology may actually reduce women's employment or travel options if designers do not recognize the constraints under which women operate (from fear of drivers or passengers in shared ride options to their need to carry car seats and other equipment for children); and
 - Vehicles are not designed for women's safety; it is literally not possible for a woman to sit in the safest place in an auto.
- Research and data needs and use, highlighting:
 - Attention to intersectionality, all the many ways women differ from one another that affect their travel patterns and needs, including but not limited to race and ethnicity, language spoken, immigration status and level of assimilation, household structure and life cycle, employment status and hours worked, culture and norms, and LGBTQ+ status;
 - The value of using different methods of examining women's travel from quantitatively evaluating large data sets to qualitatively analyzing women's stories and histories; and
 - The limited impact of current data on women's safety and security needs and other travel differences on governmental responses and the need to conduct research on women's travel, and on programs and policies interventions, in ways that impact policymakers and provide useful guidance on scalable responses.

The two individual substantive issues were:

- Sex trafficking, noting:
 - Most trafficked sex workers are women who are U.S. citizens; these victims are moved on the surface transportation network in all fifty states and the District of Columbia, so sex trafficking is a women's transportation issue;
 - State DOTs need to expand their efforts to educate the public that trafficked women are victims, not criminals, in order to encourage people to report if they see possible criminal activity;
 - We need to find ways to interdict traffickers by involving truckers and other transport workers, law enforcement, as well as transportation officials; and
 - It is important to evaluate the efficacy of various policies and programs being designed to educate the public or interdict traffickers.
- Recruitment, support, and advancement in the transportation sector, suggesting:
 - Many women who are now industry leaders faced multiple challenges, had no

role models, and struggled with balancing their personal and professional lives;

- It is important to get women in the pipeline in a variety of public and private transportation organizations; they can't ever be industry leaders if they do not get in the industry;
- Women who advance through an organization should remember that they are role models for younger women, illustrating that a career in the transportation industry is more than possible for women; and
- Women who reach leadership positions should have an open door, answer questions, and share how they balanced all their responsibilities while creating career paths for younger women and actively considering alternative work options for women and men.

The final formal session of the conference focused on the lessons that younger academics and professionals took away from the conference, and the ideas or themes that interested them, or on which they wanted more information. These included:

- Surprise to learn that sex trafficking was a women's travel issue; considering how to incorporate concern about it into their professional work, e.g., how to collect data on the incidence and the effectiveness of countermeasures.
- Shock at hearing that studying women's travel issues was initially controversial and gratitude that it was now a legitimate research area.
- A new interest in qualitative research and the power of women's personal stories to move policy discussions.
- Annoyance to learn that we still lack good information on how to make vehicles safer for women, and that the best location of seat belts for women and pregnant women is still not fully known or incorporated into vehicle manufacturing.
- Concern that new technology was being designed by men and might not serve women well, or worse might marginalize them economically.
- A desire to move beyond binary (male/female) categories in travel behavior research.
- The value that other disciplines, like geography or cultural anthropogeography, could bring to the study of women's travel needs and patterns.
- Questions about how the gig economy really affects women's employment and travel patterns; will it provide flexibility and convenience for women to manage both employment and family responsibilities or just marginalize women in sporadic jobs with no benefits?
- The need to link research on women's travel to research on the needs and patterns of other marginalized groups.

Finally the audience raised several other themes in the discussions that followed:

- Researchers studying aspects of women's travel need to talk with another; there's too much reinventing the wheel.
- We should bring men into these discussions so they understand that women's needs are community needs.
- There is substantial value in qualitative research in sharing personal perspectives and lens on these issues.
- Nations in the global south are replicating the same patterns seen in industrialized

nations, ignoring women's safety and security concerns.

- The challenges of turning research into education and action, rather than just studying something for its own sake.
- It is disappointing that repeated research findings seem to have had so little impact on policy and planning efforts.
- We may need different research strategies, data, and policies to address a variety of women's issues in and across the global south.

APPENDIX A

Conference Program



**6th International Conference on
Women's Issues in Transportation**

SEPTEMBER 10–13, 2019
Irvine, CA

Convened by
Transportation Research Board

Supported by
Federal Highway Administration

Organized by
Standing Committee on Women's Issues in Transportation (ABE70)

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WELCOME LETTER

**from the WliT 2019 International Conference
Steering Committee Co-Chairs**



We are delighted to welcome all of you to the Arnold and Mabel Beckman Center of the National Academies of Science, Engineering, and Medicine for the 6th International Conference on Women's Issues in Transportation (WliT). Since the first WliT conference in 1978, these gatherings have focused on women's issues related to all aspects of travel and transportation. For this sixth conference, participants will reflect on these issues through the lenses of insights, inclusion, and impact.

This year's attendance draws leaders in transportation from around the world to explore and address the gender differences in access to transportation and mobility, responsiveness of transport systems to needs and preferences of women, transportation safety, personal security, and participation of women in decision-making and wealth creation in the transportation sector. Look around the Beckman Center and you notice many young professionals and students attending this year. One of the features of the 6th WliT Conference is a mentorship of students and young professionals to continue our work into the next generations. We challenge each and everyone of you to become acquainted with at least one of our global leaders and two of our younger attendees.

On Wednesday, September 11, join us for our reception and Marquee Dinner at the UC Irvine Student Center, where we will have an opportunity to network and interact with colleagues and hear from an inspiring panel of women leaders in transportation.

Special appreciation is extended to our conference planning committee and the Transportation Research Board staff for all of their hard work and dedication. We thank all of the panelists and speakers for providing their insight. I would especially like to express our sincere gratitude to our public and private sponsors, for without their support, this conference would not have been possible.

We hope you find the conference inspiring, informative and enjoyable.

Welcome to Irvine, California!

Therese McMillan,
Bay Area Metro-Metropolitan Transportation
Commission

Asha Weinstein Agrawal, Ph.D.,
Mineta Transportation Institute
San Jose State University

WIT 2019 PLANNING COMMITTEE

Asha Weinstein Agrawal, Mineta Transportation Institute, San Jose State University, *Co-Chair*

Therese W. McMillan, Bay Area Metro-Metropolitan Transportation Commission, *Co-Chair*

Flora Castillo, Pivot Strategies, LLC

Elizabeth Connell, Fehr & Peers

Dawn Hood, University of Minnesota, Twin Cities

Amanda Howell, University of Oregon

Judy Johnson, Jacobs

Tina M. Lee, Federal Highway Administration

Nathalie Martinez, University Transportation Research Center

Iderlina (Dertie) Mateo-Babiano, University of Melbourne

Mehri (Mehrza) Mohebbi, Planning Communities, LLC

Hilary Nixon, Mineta Transportation Institute, San Jose State University

Sandra Rosenbloom, University of Texas, Austin

Eileen Ryder, Stantec

Shari Schaffteit, Federal Highway Administration

William Anderson, Transportation Research Board

Ted Jamele, Transportation Research Board

Gary Jenkins, Transportation Research Board

Samantha Stock, Transportation Research Board

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

SCHEDULE AT A GLANCE

	TUESDAY, SEPTEMBER 10	WEDNESDAY, SEPTEMBER 11	THURSDAY, SEPTEMBER 12	FRIDAY, SEPTEMBER 13
7:00 AM		Registration (7:00 a.m.–3:30 p.m.)	Registration (7:00 a.m.–4:00 p.m.)	Registration (7:00 a.m.–11:00 a.m.)
7:30 AM		Breakfast	Breakfast	Breakfast
8:00 AM				
8:30 AM				
9:00 AM		Welcoming Remarks	Plenary Session	Plenary Session
9:30 AM				
10:00 AM		Networking Break	Networking Break	Networking Break
10:30 AM				
10:45 AM		Technical Session and Panel Discussion	Technical Session and Panel Discussion	Onward from WIT 2019
11:00 AM				
11:30 AM				
12:00 PM	Registration (12:00 p.m.–5:00 p.m.)			
12:15 PM		Lunch	Lunch	Conference Conclusion & Working Lunch
12:30 PM				
1:00 PM				
1:15 PM		Plenary Session	Plenary Session	
1:30 PM				
2:00 PM	Committee Meetings			
2:30 PM		Poster Session & Networking	Poster Session & Networking	
3:00 PM				
3:30 PM		Technical Session and Panel Discussion	Technical Session and Panel Discussion	
4:00 PM				
4:30 PM				
5:00 PM		Special Conference Session		
5:30 PM				
6:00 PM		Marquis Reception and Dinner	Informal Social Activity	
6:30 PM				
7:00 PM				
7:30 PM				
8:00 PM				
8:30 PM				

COMMITTEE MEETINGS

TUESDAY SEPTEMBER 10, 2019

12:00 p.m.–5:00 p.m.

Registration Open

1:00 p.m.–3:00 p.m., *Huntington Room*

ABE70 Standing Committee on Women's Issues in Transportation

This is a meeting of TRB's Standing Committee on Women's Issues in Transportation.
Dawn Hood, Center for Transportation Studies, University of Minnesota

3:30 p.m.–4:30 p.m., *Huntington Room*

Steering Committee Meeting

International Conference on Women's Issues in Transportation Planning Committee Meeting

Therese W. McMillan, Bay Area Metro-Metropolitan Transportation Commission
Asha Weinstein Agrawal, Mineta Transportation Institute (MTI)—San Jose State University

4:30 p.m.–5:30 p.m., *Huntington Room*

Rapporteur Meeting

Planning session

Asha Weinstein Agrawal, Mineta Transportation Institute (MTI)—San Jose State University
Iderlina Mateo-Babiano, University of Melbourne

Metro is proud to support
the 2019 Women's Issues in
Transportation Conference.



Metro



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CONFERENCE PROGRAM

WEDNESDAY SEPTEMBER 11, 2019

7:00 a.m.–3:30 p.m.

Registration Open

7:30 a.m.–8:30 a.m., *Dining Room*

Continental Breakfast

8:30 a.m.–10:30 a.m., *Auditorium*

OPENING REMARKS AND WELCOME

Insights: How Has Women's Travel Behavior Changed in the Past 30 Years?

Welcome and opening remarks, followed by a review of the history of Women's Issues in Transportation (WliT), and discussion of global trends in travel behavior research.

Moderator: Therese McMillan, Bay Area Metro-Metropolitan Transportation Commission

History of Women's Issues in Transportation

Sandi Rosenbloom, University of Texas, Austin

Long-term Trends in the United States

Nancy McGuckin, Travel Behavior Associates

Long-term Trends in Asia

Dertie Mateo-Babiano, University of Melbourne

European Research Programmes Anticipating Behavioural Changes

Cristina Marolda, European Commission, Association for European Transport (AET)

10:30 a.m.–10:45 a.m.

Morning Networking Break

10:45 a.m.–12:15 p.m., *Catalina*

TECHNICAL SESSION

Getting There by Bike

Why do fewer women bike? A gender gap exists in biking. Can data demonstrating this gender gap be used to improve policies, as well as design and plan bike programs and infrastructure? Attend this session to learn more about this gap and how safer infrastructure encourages women to bike more often in urban settings.

Moderator: Hilary Nixon, Mineta Transportation Institute, San José State University

Does Safer Cycling Infrastructure Encourage More Women to Bike?

Haynes Bunn, Strava

Better Bicycling Environments for Women

Dillon Fitch, University of California-Davis

Deterrents in Cycling as Mode Choice of Urban Low-Income Women in Navi

Mumbai, Maharashtra

Aruna Reddi, Pillai College of Architecture

WEDNESDAY SEPTEMBER 11, 2019

TECHNICAL SESSIONS

10:45 a.m.–12:15 p.m., Newport

TECHNICAL SESSION**Better Access: Policy Strategies for Gender and Equity in Transportation Systems**

Transportation is frequently thought of as gender neutral since the assumption is that all genders equally benefit from it. Spoiler alert—equitable transportation should not be equal. Strategic transportation management and policy can support designing and planning for mobility needs and travel behaviors.

Moderator: Laurie Pickup, Vectos

Women's Access to The City

Leticia Bortolon, Institute for Transportation and Development Policy

A Common Disjuncture? Ideals Of Gender-Sensitive Transportation Planning and the Comprehensive Transportation Study Of Hyderabad?

Samikchhya Bhusal, Soka University of America

Community Conversations: Advancing Transportation Equity Through In-Depth Interviews

Hally Turner, Minnesota Department of Transportation

Access, Travel Patterns and Safety of Women in Cairo's Public Transportation.

Salma Mousallem, United Nations Habitat

How Women Are Excluded from Active Travel

Sherry Ryan, San Diego State University

10:45 a.m.–12:15 p.m., Huntington Room

TECHNICAL SESSION**Recognize a Pattern? Travel Behavior 101**

Unlike a couple of decades ago, there is a baseline of knowledge and study around gender perspectives and behaviors when using transportation. Women have less access to transportation options while requiring a higher demand and need for using it. How can transportation planners and decision-makers use this knowledge and data to influence better mobility planning standard, procedures, and methodologies?

Moderator: Hilary Nixon, Mineta Transportation Institute—San Jose State University

Current Knowledge and Practice on Gender and Travel: A Literature Review

Madeline Brozen, UCLA Lewis Center for Regional Policy Studies

Teleworkers in the Southern California: Their Travel, Their Future, and How They Differ by Gender

Michelle Bina, Cambridge Systematics

Understanding How Women Travel

Meghna Khanna, LA Metro

Travel Behaviour of Female Slum Dwellers in Mega City of Kolkata, India

Suchismita Nayak, Indian Institute of Technology Kharagpur

PANEL DISCUSSIONS

WEDNESDAY SEPTEMBER 11, 2019

10:45 a.m.–12:15 p.m., Irvine Cove

Video Documentary—All Else Equal*Facilitated by Anne Jarrigeon, Paris School of Urban Planning, Paris Est University*

10:45 a.m.–12:15 p.m., Auditorium

PANEL DISCUSSION**Advancing Women in Transportation***A moderated panel discussion on advancing the needs of women in transportation.**Moderator: Brianna Pilkinton, Environmental Department Manager, Burns and McDonnell; President of the San Diego County Chapter of WTS**Five panel members include:**Maggie Walsh, Vice-President and Strategic Clients and Pursuits Leader at HDR Inc., and WTS International Board Chair; Nadine Lee, Interim Chief of Staff at Los Angeles Metro, 2019 WTS International Woman of the Year; Noopur Jain, Regional Delivery Manager at California High Speed Rail Authority, Chair of the Western Regional Council of WTS; Jeannie Lee, Senior Project Manager of Highway Programs at Orange County Transportation Authority, President of the WTS Orange County Chapter, WTS Orange County (2013) and WTS International (2014) "Member of the Year"; and Lima Saft, Acting Project Manager and Connected and Autonomous Vehicle Program Manager at the California Department of Transportation in San Diego, and Vice-President of the San Diego County Chapter of WTS.*

12:15 p.m.–1:15 p.m., Dining Room

Lunch

1:15 p.m.–2:30 p.m., Auditorium

PANEL DISCUSSION**Harassment on Public Transit***Moderator: Stephanie Wiggins, Metrolink**This moderated panel discussion will underscore the growing problem of harassment and sexual assaults occurring on public transit systems in major metropolitan areas.***Sexual Violence in Public Transportation in Stockholm, Sweden: The Influence of Individual and Environmental Factors***Vania Ceccato, Kathmandu (KTH) Royal Institute of Technology***Planners' Visions of Transit Sexual Assault: the Problem of Deproblematizing Beliefs***Gwen Kash, Georgia Institute of Technology***Anti Sex Offence Campaign on Metro Vancouver Transit***Stephen Crosby, Metro Vancouver Transit Police**Patrick Koch, Metro Vancouver Transit Police, Null***Sexual Harassment in Transit Environments: A Global Look***Anastasia Loukaitou-Sideris, University of California, Los Angeles*

WEDNESDAY SEPTEMBER 11, 2019

POSTER SESSIONS & NETWORKING

2:30 p.m.–3:30 p.m., Atrium

Poster Session and Networking Break

Follow the conference on Twitter [<https://twitter.com/wiit2019>] to vote on your favorite poster and tweet 3 great ideas you learned.

Moderator: Hilary Nixon, Mineta Transportation Institute, San José State University

Bringing a Gender-based Lens to CAV Planning and Development

Heidi Corcoran, University of Minnesota—Humphrey School of Public Affairs

Increasing Gender Inequality in Municipal Public Transport by Non-Decision Making

Vered Uziel and Fany Yuval, Ben-Gurion University of the Negev

Developing a Transport Innovation Gender Observatory to Address Gender Inequalities in Transport in Europe

Andree Woodcock, Coventry University

Why Did You Choose an SUV? Identifying Gender Differences in Latent Vehicle-Type Propensity Segments

Xinyi Wang, Georgia Institute of Technology

Measures to Promote Innovative Urban Mobility Solutions for Women

Ines Kawgan-Kagan, Technical University Berlin

Understating the Significance of Gender-Based Equity in Road Safety—A Bengaluru Case Study

Ashish Verma, Indian Institute of Science, Bangalore

Influencing Factors in Autonomous Vehicle (AV) Usage Willingness of Pregnant Women

Binya Zhang, University of Maryland, College Park

Gender Difference in Speed Selection

Reut Sadia, Technion—Israel Institute of Technology

The Gender Role on the Effectiveness of an Eco-Speed Control System in The Vicinity of Signalized Intersections: A Driving Simulator Study

Samira Ahangari, Morgan State University

Real-time Detection of Pregnant Women Pedestrians Using Camera

Amir Nohekhan, University of Maryland

A Gender Meta-Analysis of Transport Innovation Acceptance: Women Approve Change

Jana Sochor, Chalmers University of Technology & RISE Viktoria

Gendered Travel at Every Age: Trip Purpose and Frequency among Georgia Residents Ages 5-100

Gwen Kash, Georgia Institute of Technology

Gender Trends and Differences in Driving, Biking, and Safety

Shari Schaftelein, Federal Highway Administration

Maternal Exposure to Traffic-related Air Pollution in South Texas.

Suriya Vallamsundar, Texas A&M Transportation Institute

PANEL DISCUSSION & TECHNICAL SESSIONS

WEDNESDAY SEPTEMBER 11, 2019

3:30 p.m.–5:00 p.m., Huntington Room

TECHNICAL SESSION**Human Trafficking***Moderated panel discussion on human trafficking.**Moderator: Elizabeth Connell, Fehr and Peers***How the Transportation Industry is Combatting Human Trafficking**

Emma Lowe, Pennsylvania Department of Transportation

Combating Human Trafficking in the Transportation Sector

Julie Abrahams, Office of International Transportation and Trade, Office of the Secretary of Transportation, U.S. Department of Transportation

Human Trafficking in Our Transportation System

Chris Baglin, Project Performance Company

3:30 p.m.–5:00 p.m., Catalina

TECHNICAL SESSION**More Likely Harmed: Crashes, Safety, and Gender***There are studies showing women are roughly 70% more likely to be severely injured or killed in a car-crash than men. With the introduction of A.I. data, there is a chance to reduce this disparity and improve safety through data collection. Panelist will discuss their studies of women's risk to harm in car accidents and the data supporting it.**Moderator: Dawn Hood, Center for Transportation Studies, University of Minnesota***The Impact of Gender on Injury Outcomes Associated with Motor Vehicle Crashes Through a Linked Analysis of Crash and EMS Data**

Alyssa Ryan, University of Massachusetts Amherst

Women or Men at Risk? A Multi-Level Analysis of the Decision to Travel with a Drunk Driver

Jose Ignacio Nazif-Munoz, Harvard University

A Study on Quantification of the Interaction Between Crash Contributing Factors In Fatal Crashes Among Female Drivers with a Focus on Alcohol Misuse Using Social Network Analysis Method

Sevin Mohammadi, The University of Tennessee Knoxville

3:30 p.m.–5:00 p.m., Auditorium

PANEL DISCUSSION**Transportation Tech: Moving Women***Shared and smart mobility options seem to have a mixed perspectives in regard to benefits and barriers for women. Shared mobility provides flexible employment and travel options, although, much like transit, safety is a concern. As we move toward greater transportation equity for gender, what can the public and private sector entities do to keep women safe as a driver and as a user?**Moderator: Cristina Marolda, Association of European Transport—AET***The Effect of Attitudes on Women's Willingness to Share Autonomous Vehicles**

Denise Capasso da Silva, Arizona State University

WEDNESDAY SEPTEMBER 11, 2019

TECHNICAL SESSIONS

From Exclusive to Inclusive: Addressing the 'Gender' Component in Smart Mobilities Discussions

Tanu Priya Uteng, Institute of Transport Economics

Transformational technologies impact on women

Cristina Marolda, Association of European Transport—AET

Tour formation of ride-hailing users: A gender perspective

Rezwana Rafiq, Institute of Transportation Studies, University of California, Irvine (UCI)

Can Autonomous Vehicles Help Liberate Women?

Andrea Broaddus, Ford Motor Company

3:30 p.m.–5:00 p.m., Newport

TECHNICAL SESSION

Inclusion

Transportation takes men and women to work, healthcare centers, grocery stores, schools, and many other social venues. Although, it does not provide equitable access for women as to men. Studies are beginning to show how including women in the transportation workforce, education, and public involvement aspects of planning enhances equitable transportation among gender. In this session, panelists will present data sets and programs supporting inclusion of women in the transportation system.

Moderator: Brittney Gick, Texas A&M Transportation Institute

Women Inclusion in the Transport System by Applying a Novel Structured Methodology: The Inclusion Diamond and Polyhedral Individual Model.

Francisco Santarremigia, AITEC

The DIAMOND Method: Revealing Actionable Knowledge from Data to Support Fair Women's Inclusion in the Transport System.

Fanny Breuil Aymami, EURECAT

Does Who You Know Get You Places? The Role of Social Capital in Transport Disadvantage

Laurel Johnson, University of Queensland

Women's Perceptions of Service Quality in Transit: A Case Study of Tehran Metro

Meeghat Habibian, Amirkabir University of Technology

Relationship Between Tunisian Women's Empowerment and Mobility Behaviors Using Activity Based Model

Nadia Labidi, SEKET University

CONFERENCE SESSIONS

WEDNESDAY SEPTEMBER 11, 2019

3:30 p.m.–4:15 p.m., Executive Dining Room

Photo Essay and Discussion—Women Lead the Way in Community Mobility

This session will be given as visual presentation; a photo-led display showcasing women in leadership positions at rural, small-urban, specialized and tribal transit operations across the United States. Women in leadership roles at these agencies stand in contrast with the heavily-male balance often found at large-urban systems. These photos highlight women in their transit facility, in the community and at meetings; as drivers and dispatchers, or any other important role they may play. Alongside the candid photos of the women, we'll be discussing our conversations with them—revealing information we learned and brief descriptions of their role. Following the presentation, there will be an opportunity to discuss the trends we found and any questions participants might have. Follow the conference on Twitter (<https://twitter.com/wiit2019>) and post your reaction and comments.

Alex King, Community Transportation Association of America

Taylor McGinley, Community Transportation Association of America (CTAA),
Communications Specialist

4:30 p.m.–5:30 p.m., UCI Woods Cove AB

STUDENT SESSION**Letter to my Younger Self: Leadership Insights to Grow a Career in Transportation**

Attend this insightful and thought-provoking session to learn first-hand from women transportation professionals across various disciplines (i.e. transit, highway, port and aviation) in the public and private sectors on the advice that they would give their younger-self based on how they have achieved professional growth and what support systems they rely upon. Attend this session if you are an emerging leader or a graduate student looking to gain real-life advice and strategies from seasoned professionals in our industry.

Moderators: Flora Castillo, Pivot Strategies, LLC

Stacy Weisfeld, Transportation Policy Analyst, Los Angeles Mayor Eric Garcetti

5:30 p.m.–8:30 p.m., UCI Pacific Ballroom D

MARQUEE RECEPTION AND DINNER**Leadership at All Levels: Insight, Inclusion, and Impact through a Career in Transportation**

The panel will focus on the opportunities and impact women can have in envisioning and implementing changes that create better access and mobility for women. So, how do we do we attract, support, and advance women in the transportation field? Panelists represent different stages of their career arc, and all are in key visioning and decision-making roles. They will share personal stories and insight on pivotal career choices; opportunities taken and challenges faced; and recruiting, inspiring, and mentoring others in the industry

Moderator: Eileen Ryder, Stantec

Setting the Table Panelists:

Laura Corejo, City of Pasadena

Genevieve Giuliano, University of Southern California, and METTRANS

Stephanie Wiggins, MetroLink

THURSDAY SEPTEMBER 12, 2019**7:00 a.m.–4:00 p.m.****Registration Open****7:30 a.m.–8:30 a.m., Dining Room****Continental Breakfast****8:30 a.m.–10:00 a.m., Auditorium****PANEL DISCUSSION****Insight, Inclusion, and Impact through Organizational Support of Women's Advancement in the Transportation Industry**

This panel will focus on how public sector, private sector and educational institutions can support the career advancement of women in the transportation industry. We will discuss policy- and implementation-level strategies that break down barriers and support the professional development and advancement of women. Panelists represent the public sector at the state and local level, private sector and academia. They will share insights, strategies and successes; and they will share accomplishments and ongoing challenges.

Moderator: Judy Johnson, Jacobs

Laurie Berman, California Department of Transportation (retired)

Winsome Bowen, Facebook

Victoria Deguzman, University of Southern California

Elba Higueros, LA Metro

Congratulations

APTA Congratulates the Transportation Research Board
on its 6th International Conference on Women's Issues in
Transportation and commitment around transportation
equity and travel issues.



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PANEL DISCUSSION & TECHNICAL SESSIONS

THURSDAY SEPTEMBER 12, 2019

10:30 a.m.–12:00 p.m., Auditorium

PANEL DISCUSSION**Women in Motion Initiative—Empathic Dialogues Workshop**

The Empathic Dialogues Workshop has a methodology that seeks to pass knowledge and investigation through practical exercises, where participants learn by observing, experiencing, discussing and designing solutions together for a more inclusive transport. The Empathic Dialogues Workshop's objective is to introduce concepts of leadership and apply knowledge and investigation to design projects that are effective, have a focus on public policy, and can be implemented. This workshop will give the participants the tools to better design projects, public policies, and research proposals that can be applied with impact in cities.

WIM is responsible for organizing the workshop methodology and contents, as well as facilitating the session. The workshop's structure is as follows:

- 5 min—Introduction of Uber, WIM, and participants
 - 10 min—Uber's initiatives on gender
 - 20 min—Technical presentation on leadership tools and how to impact public policy
 - 40 min—Work in groups
 - 15 min—Final discussion in plenary on main results of the group work
- Moderator:* Daniela Chacón Arias, TANDEM Foundation

Empathic Dialogue

Sofia Salek, PTV Group

Empathic Dialogue

Elizabeth Ortiz, PTV Group

10:30 a.m.–12:00 p.m., Catalina

TECHNICAL SESSION**Perceptions and Realities of Women's Safety on Transit**

Transit agencies have been intervening to reduce risks of sexual assault and sexual harassment of women using their service. However, statistics of assault on transit and reports of assault through the #MeToo movement effect public perceptions and increase fears for many women using transit. What are government and transit agencies to do to increase women's safety when using their service? How are they attempting to improve their image as a safe transportation option?

Moderator: Heather Allen, Transport Research Laboratory

How does perceived safety influence the ridership of public transport routes involving transfers? A gender perspective.

Subeh Chowdhury, University of Auckland

Sexual Harassment in Public Transit Environments—A Review of Evidence and Interventions

Hao Ding, University of California, Los Angeles

São Paulo female college students' transit safety: an overview of gender violence and spatial dynamics considering gender, race and class

Marina Kohler Harkot, University of São Paulo

THURSDAY SEPTEMBER 12, 2019

TECHNICAL SESSIONS

Public transport trips for work or study in Bangladesh and Cambodia: women's perceptions of risk

Mark King, Centre for Accident Research and Road Safety (CARRS-Q), Queensland
University of Technology (QUT), Australia

10:30 a.m.–12:00 p.m., Newport

TECHNICAL SESSION**Mom and Her Munchkins on the Move**

Health and safety issues arise for mothers with children in tow using transportation. These issues vary widely based on culture and place. Traveling with children limit accessibility and mobility options for many mothers. Trips to work, to the store, to school, to medical appointments, or during emergency evacuations all have challenges and risks for mothers than other users of transportations. How are communities and transportation agencies using travel behavior of mothers to provide them a better and safer service?

Moderator: Laurel Johnson, University of Queensland

Towards an Understanding of Single Mothers' Urban Mobility. A Comparative Analysis of Parents' Travel Patterns in the Paris region.

Gonçal Cerdà Beneito, Laboratoire Ville Mobilité Transport, Université Paris-Est

aUPA Project

Verónica Mansilla, 1319.TreceDiecinueve

The "Mobility of Care" in Developing Countries: The Case of Tunja, Colombia

Luis Marquez, Universidad Pedagógica y Tecnológica de Colombia

Alejandra Sánchez, Universidad Pedagógica y Tecnológica de Colombia

Evaluation of Travel Pattern of Young Mothers in Developing Countries (A Case Study of Lahore)

Hina Saleemi, University of Engineering and Technology

Travel Behavior and Mobility Needs of Elderly Women in Rural America

Suman Mitra, University of California, Irvine

The Move Woman Project: Getting from Here to There with Kids in Tow

Sirinya Matute, City of Santa Monica

Insights on Single Mothers' Issues in Emergency Evacuation

Lorraine Acevedo, Embry-Riddle Aeronautical University

PANEL DISCUSSION & TECHNICAL SESSIONS

THURSDAY SEPTEMBER 12, 2019

10:30 a.m.–12:00 p.m., Executive Dining Room

TECHNICAL SESSION**By Bike. By Car. By Bus—Women Commuting**

Gender differences in commuting behaviors are recognized in many nations. What are the drivers of these differences? How can this information affect modal choice and favor sustainable mobility policies and equity? How do genders perceive commute times, safety, and reliability when choosing transportation options?

Moderator: Susan Handy, University of California, Davis

Work trip mode choice of men and women in Germany including partner interactions

Bhuvanachithra Chidambaram, TU Dortmund University

Key Transport Issues for Working Women in Bangladesh—Mapping with the Bus Rapid Transit (BRT)

Sharmin Nasrin, University Of Asia Pacific, Dhaka, Banglaesh

Travel behaviour of working women in Indian cities

Monika Singh, School of Planning and Architecture Delhi

Sanjay Gupta, School of Planning & Architecture Delhi

Gender Differences in Commute Quality: Evidence from UC Davis

Susan Handy, University of California, Davis

Intersectional Inequality: Gender, Race, and the Commute Burdens of Low-wage Workers

Virginia Parks, University of California, Irvine

Women's travel times and distances in a sample of Latin American cities

Maria Tadeo, University of California, Berkeley

10:30 a.m.–12:00 p.m., Huntington Room

PANEL DISCUSSION**Moving Women to More Opportunities: Developing Our Workforce**

The issue of including women in the decision-making process, taking a “seat at the table,” and promoting women in leadership roles has been a topic of discussion, but we are still not even close to having women in decision making roles and power positions. This leads to the question we will address through a panel discussion 5 local WTS leaders. Namely, what can we, as transportation industry professionals, do to encourage more women to enter and thrive in transportation careers?

In this panel discussion, we will share the successes and failures of the tactical strategies that we've used to get more women into transportation and to the top of their field, such as our Pecha Kucha-style “thunder talks” and awarding scholarships to promising young women entering STEM fields. We will then open the panel to audience input and questions.

Moderator: Iderlina Mateo-Babiano, University of Melbourne

Attracting and Retaining Women in the Transportation Industry

Jodi Godfrey, Center for Urban Transportation Research at the Univeristy of South Florida

The Gender Gap in Asia's Largest Railway Network: Investigating Women Employees, Management and Trade Unions' Response

Leena Sachdeva, Indian Institute Of Management Kashipur India

THURSDAY SEPTEMBER 12, 2019

TECHNICAL SESSIONS & PLENARY SESSION

A Rapid Assessment of “She to Sea” Gender Equality Campaign in the Philippines in Empowering Filipino Women in the Transport Shipping Industry

Ilderina Mateo-Babiano, University of Melbourne

Impact. Advance. Empower. LA Metro’s Women and Girls Governing Council

Claudia Galicia, LA Metro

Women in Transportation: Creating an Inclusive Workplace Together

Audrea Sebjanic, City of Calgary

12:00 p.m.–1:00 p.m., *Dining Room*

Lunch

1:00 p.m.–2:30 p.m., *Auditorium*

PLENARY SESSION

Active Transportation: The Forces Shaping Women’s Travel Decisions

Moderated panel discussion on how women’s travel decisions are influenced by a variety of social factors and conditions.

Moderator: Melissa Dugan, City of Irvine and President WTS Inland Empire Chapter

From Childhood to Widowhood: A Woman’s Journey

Sandra Rosenbloom, The University of Texas at Austin

Factors influencing women cycling in Bogotá, Colombia

Mauricio Orozco, Universidad Militar Nueva Granada

Bicycling and Women of Color

Jennifer Dill, Portland State University

Forces Shaping Women’s Travel Decisions

Megan Wier, San Francisco Department of Public Health

ARE YOU CONNECTED? BECOME A FRIEND.

ABE70 TRB’s Standing Committee on Women’s Issues in Transportation

Advance the practice and research of women and gender transportation issues by becoming a Friend of the committee.

Go to MyTRB at www.TRB.org

POSTER SESSION & NETWORKING

THURSDAY SEPTEMBER 12, 2019

2:30 p.m.–3:30 p.m., Atrium

Poster Session & Networking Break

Follow the conference on Twitter (<https://twitter.com/wiit2019>) to vote on your favorite poster and tweet 3 great ideas you learned.

Moderator: Hilary Nixon, Mineta Transportation Institute—San Jose State University

Gender-Based Differences in Activity Space and Travel Pattern Analysis

Naila Sharmeen, University of California, Irvine (UCI)

Soccer moms: Children's Travel Behavior and Their Parents' Automobility

Miwa Matsuo, Kobe University

Moving to Modesto: Can Car-Oriented Developments Provide High Accessibility for Women?

Erin Cooper, University of Antwerp

Analyzing Grocery-Shopping Travel Behavior by Women in Baltimore Using Zero-Inflated Negative Binomial Models

Samira Ahangari, Morgan State University

The highlight of her life: "My Son Was Born in the Same Month Highway 531 Was Inaugurated"

Tal Shalom Rosen, Netivei Israel, National Transport Infrastructure Company

Women—Why Knowing Your Vehicle Matters

Reut Sadia, Technion—Israel Institute of Technology

Can a New Emergency Response System Reduce or Increase the Gender Gap of Traffic Fatalities? The Case of Dominican Republic.

Jose Nazif-Munoz, Harvard University

Toward Livability Ethics, Equity, & Justice, and a Charter for Street Humanity and Human Rights for Gender Equity in Transportation

Bruce Appleyard, San Diego State University

Women's Motivations and Barriers to Cycle within a University Campus in the Philippines

Keisha Alena Mayuga, University of the Philippines

Risky and Protective Behavioral Patterns in Cycling: An International Gender-Based Comparative Study on Healthy Transportation

Sergio Useche, University of Valencia

Gender Trends in Transportation Research Publications Over the Last Decade

Suzana Duran Bernardes, New York University

#Metoo: Women and public transportation

Mauricio Orozco, Universidad Militar Nueva Granada

What Are the Challenges of Getting More Women on Bikes? Reflections on Cycling Policies Design Made in São Paulo, Brazil.

Marina Harkot, University of São Paulo

Single-Parent's Access to Child Care

Ma'ayan Dembo, University of California, Los Angeles

Insight into Problems and Challenges of Working Women Who Commute to Work in Mumbai, India: Does Commuting Affect Women?

Prashika Kurlikar, International Institute For Population Science

THURSDAY SEPTEMBER 12, 2019

PANEL DISCUSSION & TECHNICAL SESSIONS

Using Social Capital Data to Account for Heterogeneity in Activity Behavior Within and Between Genders

Michael Maness, University of South Florida

Trang Luong, University of South Florida

Women Only: Navigating Women-Only Spaces on Metro Systems in India

Ankita Dhussa, The Fulbright Program

3:30 p.m.–5:00 p.m., Auditorium

PANEL DISCUSSION**Framing the Future for Women in Transport through Collaborative Research**

Women in Transport: European research and innovation projects and actions to enable fair and equal access. What are future areas for EU-US R&I collaboration to advance women inclusion throughout transport will be discussed.

Maria Carbone, Directorate General for Mobility and Transport, European Commission

Shari Schafflein, Office of Human Environment, Federal Highway Administration,

U.S. Department of Transportation

Robert Missen, Directorate General Mobility and Transport, European Commission

Patricia Hu, Bureau of Transportation Statistics, U. S. Department of Transportation

Wafaa Saleh, Edinburgh Napier University

Andree Woodcock, Coventry University

Danyell Diggs, Office of Research, Demonstration, and Innovation, Federal Transit

Administration, U.S. Department of Transportation

Jasmy A. Methipara, Office of Transportation Policy, Federal Highway Administration,

U.S. Department of Transportation

3:30 p.m.–5:00 p.m., Newport

TECHNICAL SESSION**Analysing the Patterns: Gendered Differences in Travel Behavior**

We recognize the difference in travel behaviors between genders, but what does that mean to a decision maker, planner, and operator? Gender is a key socio-economic and socio-demographic attribute to influence travel behavior. Through analysis, a better understanding of how gender is such an influence could improve equity in transportation policy and planning.

Moderator: Sherry Ryan, San Diego State University

Interdependence, Gender and Mobility: Understanding Mobility Strategies Through an Ethnographic and Time Use Lens

Juan Carrasco, Universidad de Concepción

Analysis of Ownership and Travel Behavior of Women Who Drive Electric Vehicles: The case of Maryland

Amirreza Nickkar, Morgan State University

Gender Differences in Predicted Travel Activity in Atlanta using an Activity Based Model with Path Retention

Yingping Zhao, Georgia Institute of Technology

TECHNICAL SESSIONS

THURSDAY SEPTEMBER 12, 2019

Do More Accessible and Walkable Built Environments Promote Gender Equality in Daily Travel Behaviors? A Case Study in Los Angeles

Ashley (Wan-Tzu) Lo, Tohoku University
Douglas Houston, University of California, Irvine

When Inconvenience Improves Equity: Comparing Gendered Distinctions in Food Access Travel between Rural and Urban Residents

Gregory Newmark, Kansas State University

3:30 p.m. – 5:00 p.m., Catalina

TECHNICAL SESSION

Inequitable Effects: Access, Mobility, and Gender

We recognize the differences in travel behaviors by gender, but what does that mean to a decision maker, planner, and operator? Gender is a key socio-economic and socio-demographic attribute influencing travel behavior. Through analysis, a better understanding of how gender as an influencer could improve equity in transportation policy and planning.

Moderator: Jodi Godfrey, University of South Florida

Towards an Equitable Transport System in Kuwait

Reem Alfahad, London School of Economics

Transportation barriers to healthcare among women in the U.S.

Noreen McDonald, University of North Carolina, Chapel Hill

Planning for Women's Mobility in India: Case of Panchkula

Seema Singh, Cornell University

3:30 p.m. – 5:00 p.m., Executive Dining Room

TECHNICAL SESSION

Priority One—Global Challenges for Women's Safety and Security on Transit

Women traveling by transit face many safety fears related to health, physical safety, and risky situations. Women are more likely to be victims of assaults and harassment than men when using transit. The fears must be overcome for each trip—overcome once contented with all potential risks on the bus or train. But in general, fear is a warning signal for survival. What must women do to learn about cultural difference before traveling abroad to recognize safety and security risks? Listen to case studies of safety and security challenges for women in transit.

Moderator: Vania Ceccato, Kathmandu (KTH) Royal Institute of Technology

North American Transit's Approach to Personal Security and Awareness

Polly Hanson, American Public Transportation Association

Academic women and travel

Andree Woodcock, Coventry University

Women's Account

Marina Moscoso, Despacio.org

Jose Segundo López, World Resources Institute Ross Center for Sustainable Cities

A Study on the Satisfaction Level of Women Public Bus Users in Dhaka, Bangladesh.

Nawshin Tabassum, Bangladesh University of Engineering & Technology

THURSDAY SEPTEMBER 12, 2019

TECHNICAL SESSIONS

How does disability influence perceptions of risk on public transport among women in Bangladesh and Cambodia?

Julie King, School of Public Health and Social Work (SPHSW), Queensland University of Technology (QUT), Australia

Lights on Women—Women's Perception of Safety When Walking at Night

Angelica Rocha, Circulate San Diego

Catherine Thibault, IBI Group, Manager—Transportation Planner

3:30 p.m.–5:00 p.m., *Huntington Room*

TECHNICAL SESSION**Hopes in New Technologies**

Technologies designed for automation in transportation, greater shared mobility, and improved digital mobility services offer a new hope for women's safety, accessibility, and employment. What can be done today to ensure our hopes in these new technologies become reality? Participate in the discussion and become part of the solution.

Moderator: Andrea Broaddus, Ford Motor Company

Think Different: Reframing Jobs in an Autonomous Future

Shivani Shukla, University of San Francisco

William Riggs, University of San Francisco, School of Management

Bringing a Gender-Based Lens to CAV Development and Planning

Heidi Corcoran, University of Minnesota—Humphrey School of Public Affairs

Ania McDonnell, University of Minnesota—Humphrey School of Public Affairs

Shannon Engstrom, University of Minnesota—Humphrey School of Public Affairs

Optimizing Shared Automated Vehicles for Women

Angela Sanguinetti, UC Davis Institute of Transportation Studies

Gender differences in using digital mobility services and being mobile

Claudia Nobis, Institute of Transport Research, German Aerospace Center

5:30 p.m.–7:00 p.m.

Thursday Evening Social Activity (Informal)

Informal social activity. Check @wiit2019 on Twitter for program updates.

Flora Castillo, Pivot Strategies, LLC

FRIDAY SEPTEMBER 13, 2019

7:00 a.m.–11:00 a.m.

Registration Open

7:30 a.m.–8:30 a.m., Dining Room

Continental Breakfast

8:30 a.m.–10:00 a.m., Auditorium

PLENARY SESSION
Impacting Policy: Crossing the Aisle and Threading the Needle

Influencing policy is essential to improving the future of women and girls, and can take many forms—governmental legislation, stakeholder advocacy and philanthropic funding being three of the most fundamental. How the policy table gets set—and who sits in the chairs around that table—has and continues to be both a challenge and opportunity for women in the transport and sector and beyond. Maneuvering within those three policy arenas involve different experiences and strategies; key questions consider:

- How does one get to the Policy Table- and wield power and influence to effectuate meaningful change?
- What challenges exist for women policy makers/influencers involved in government, advocacy and philanthropy? Common themes or important distinctions?
- How can research- facts, data, analyses- be used to influence transport policy, especially addressing issues impacting women and girls?
- Is there room for a “Big Table” where these three arenas of influence can intersect and reinforce each other— and can women leaders define and lead that opportunity?

Our panel of leaders will speak to these questions, and how transport and related policy development can drive meaningful change, in a time when “#MeToo” and other movements are dramatically impacting the context wherein such policy takes shape.

Moderator: Therese McMillan, Bay Area Metro

Impacting Policy Panelists

Connie Galambos, Urban Habitat

Tamika L. Butler, Toole Design

Tilly Chang, San Francisco County Transportation Authority

FRIDAY SEPTEMBER 13, 2019

PANEL DISCUSSION

10:00 a.m.–10:30 a.m.

Morning Networking Break

10:30 a.m.–12:00 p.m., Auditorium

PANEL DISCUSSION**Onward from WliT 2019—Emerging Leaders Framing the Future for Women**

In this closing panel discussion, emerging professionals and doctoral students will reflect on key lessons to be drawn from the conference. These speakers—the future leaders of transportation—will share what we as a community have learned about concrete steps our industry should take to improve women's transportation futures. What are the key research needs for the coming decade and, more broadly, for the world? What are promising actions that will bring about impactful change in the near, medium, and long terms?

Moderator: Asha Weinstein Agrawal, Mineta Transportation Institute (MTI)—San Jose State University

Onward from WliT 2019 Panelists

Amanda Howell, University of Oregon

Elizabeth Connell, Fehr & Peers

Bhuvanachitra Chidambaram, TU Dortmund University

Huê-Tâm Jamme, University of Southern California

12:00 p.m.–1:30 p.m., Dining Room

CONFERENCE CONCLUSION AND WORKING LUNCH

During the final working lunch attendees will have the opportunity to debrief the conference with other participants, share their key takeaways, brainstorm next steps, and deepen connections through a series of guided table activities

Therese W. McMillan, Bay Area Metro—Metropolitan Transportation Commission

Thank you

The Steering Committee and TRB Staff extends their appreciation to the rapporteurs summarizing conference session conversations.

Ashley Hooper, University of California, Irvine

Lupita Huerta, University of California, Los Angeles

Annaleigh Yahata Ekman, University of California, Los Angeles

Sue Dexter, University of Southern California

Jonathan Stanton, San Diego State University

Kavina Patel, University of Southern California

Shannon McCarthy, University of California, Berkeley

Lily MacIver, University of California, Berkeley

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JULY 11-14, 2020
BOSTON, MA



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The 13th National Conference on Transportation Asset Management (TAM) provides an opportunity for all practitioners involved in their agency's asset management initiative to build core competencies and generate new ideas.

- Looking for both practical and innovative presentations.
- Selected abstracts will be featured in either poster or technical podium sessions.
- Presenters will be required to register and attend the conference to be included in the final program.

Presentation tracks and crosscutting issues:

- ♦ Track 1: Implementation
- ♦ Track 2: Data Governance/Tools
- ♦ Track 3: Managing Risk
- ♦ Track 4: Partners and Peers
- ♦ Track 5: Sustaining Asset Management in your Organization
- ♦ Crosscutting Issue 1: Transit
- ♦ Crosscutting Issue 2: Resilience

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APPENDIX B

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Federal Highway Administration. (undated, b). *Women's Travel Issues: Proceedings from the Second National Conference.* Vol. II. <http://www/fhwa.dot.gov/ohim/womens.wtipage.htm>.

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