

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

FORUM MEETING #2: JULY 8-9, 2018; SAN FRANCISCO, CA

Forum on Preparing for Automated Vehicles & Shared Mobility



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SCIENCES • ENGINEERING • MEDICINE



TRANSPORTATION RESEARCH BOARD



Forum on Preparing for Automated Vehicles & Shared Mobility



- Overview of TRB Forum
- Top Ten Research Needs
 - Next steps to address these needs
- Strategic Research Questions
- Cross-cutting Issues

Forum on Preparing for Automated Vehicles & Shared Mobility



- Bring together public, private, and research organizations to share perspectives on critical issues surrounding the deployment of automated vehicles and shared mobility. Focus on the discussion, identification, and facilitation of evidence-based research needed to deploy these technologies in a manner and timeframe that informs policy to meet long-term goals.
 - The long-term goals include increasing safety, reducing congestion, enhancing accessibility, increasing environmental and energy sustainability, and encouraging economic development and equity.

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- Federal/State/Local Agencies (11)
- Private Sector (8)
- Academic/Research Institutions (7)
- National Academies' Boards (7)
- TRB Committees (7)
- Partner Associations (6)



TOP 10

Research Needs National Academies/TRB Forum on Preparing for Automated Vehicles & Shared Mobility



Forum Research Needs

#1: Models for Sharing of Data

- Public sector use of private sector data
- Sharing of safety & crash data
- Making data available for research and planning models
- Development of V2X communication protocols and procedures
- Protocols for data sharing and management for real-time operations & freight supply chains
- Use of transportation data to support Smart Cities
- Access to data by law enforcement agencies



Forum Research Needs

#2: Potential safety scenarios during the transition to highly automated vehicles

- Educating drivers on AV capabilities
- Re-engaging drivers' attention when human intervention needed
- Examining the role of human behavior in maintaining safe operation
- Implications of long term mixed vehicle fleet
- Interacting/communicating intent with manually operated vehicles and vulnerable road users



Forum Research Needs

#3: State and local policies to ensure safety prior to deployment

- Clarifying federal and state responsibilities
- Roles of simulation, modeling, and off-road testing vs. on-road testing
- Risk management strategies during on-road testing
- Standards for vehicle responses in emergency situations



Forum Research Needs

#4: Infrastructure Enablers for AVs & Shared Mobility

- Future designs of highways, streets, intersections, etc.
- At what point should we dedicate lanes to AVs?
- Infrastructure needs for V2I
- Establishing a stable technology environment to enable public agencies to support connectivity
- Impacts on public agencies' procurement policies
- Impacts on existing standards and standards-development processes



Forum Research Needs

#5: Net positive (and opportunities to mitigate negative) social impacts of AV deployment and shared mobility

- Managing unintended consequences (e.g., security, privacy, labor impacts, insurance)
- What are the right metrics and measurements that should be used to improve social outcomes?
- Diverse planning tools to address key social and environmental transportation issues



Forum Research Needs

#6: Addressing social inclusion and equity

- Helping to ensure equity of access to AVs and shared mobility
- How to best serve those with special needs



Forum Research Needs

#7: Potential impacts of higher level automated vehicles and shared mobility on traveler behavior and freight movement

- Impacts of shared mobility on VMT & system capacity
- Behavior of other road users around highly automated vehicles
- Should zero occupancy vehicles be regulated?



Forum Research Needs

#8: Impacts of shared mobility on transit, and vice-versa

- Helping transit agencies solve first mile/last mile issues
- Models for integration of AVs & shared mobility with transit/micro-transit



Forum Research Needs

#9: Implications for transportation planning and planning models

- Modeling the impacts of increased penetration of AVs & shared mobility
- New planning tools - revisiting the traditional 4-step planning process
- Moving to objective-based planning
- Evolution to near-term or real-time planning
- Planning for rural areas



Forum Research Needs

#10: Impacts on land use, and how land use impacts AVs and shared mobility

- Facilitating active/livable communities
- Impacts on the built environment
- What's in it for rural areas?



Top Ten Research Needs - Next Steps

- Refine the list
 - Prepare Research Problem Statements
 - Prepare white papers (collating research already completed, underway, planned, and needed)
 - Assign Forum Working Group(s)
- Pursue/conduct needed research
 - TRB/Cooperative Research Programs
 - Other research organizations
 - Encourage/facilitate research partnerships
- Share information within our community, and with other audiences/groups

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Strategic Research Questions

- What can we do to build awareness across a broader spectrum of the potential transformational impacts on society?
- What options exist to generate and fund a significant strategic research effort or program to inform policy decisions?
- How can we best leverage existing research programs to help address these issues?
- What new approaches to our conventional research processes should be considered?

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Cross-Cutting Issues

- Vision(s) for a “fully evolved future”
- Financing and funding implications of AVs & shared mobility
- Importance and role of connectivity
- Potential impacts on roles of different levels of government & private sector

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Forum Website: <https://trb.org/AVSMForum>

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