

# CV and AV Research Activities at the Transportation Research Board

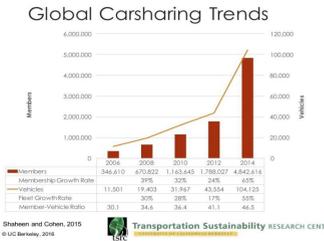
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TRANSPORTATION RESEARCH BOARD

**Advancing Automated and Connected Vehicles: Policy and Planning Actions for State and Local Transportation Agencies** (NCHRP Report 845 & Briefing Document) explores potential impacts to traffic crashes, congestion, pollution, land development, and mobility for the underserved and strategies to reduce negative impacts and boost positive ones.



Source: <http://www.slideshare.net/susanshaheen/trb-2016-shared-mobility-trends>



**Shared Mobility and the Transformation of Public Transit** [TCRP Report 188], **Broadening Understanding of the Interplay Between Public Transit, Shared Mobility, and Personal Automobiles** [TCRP Report 195], and **Private Transit: Existing Services and Emerging Directions** [TCRP Report 196] explore how transit agencies are adapting to shared mobility services, microtransit, and other emerging transportation modes.

Source: TCRP Report 188

**Transportation Network Companies: Challenges and Opportunities for Airport Operators** [ACRP Synthesis 84] compiles experiences and effective practices by airports in facilitating access to transportation network companies.



Source: ACRP Synthesis 84



Source: TRB Staff

**Challenges to CV and AV Application in Truck Freight Operations** (NCHRP Web Only Document 231) describes freight regulatory, planning, policy, and operational environments and challenges for connected and autonomous truck technologies and proposed next steps for addressing the challenges.



Source: [www.truckinsurancencitic.com](http://www.truckinsurancencitic.com)

The Transportation Research Board (TRB), part of the National Academies of Sciences, Engineering, and Medicine, administers four research programs, each of which includes projects dealing with connected vehicle and automated vehicle technologies:

- National Cooperative Highway Research Program (NCHRP),
- Transit Cooperative Research Program (TCRP),
- Airport Cooperative Research Program (ACRP), and
- Behavioral Traffic Safety CRP (BTSCRCP).

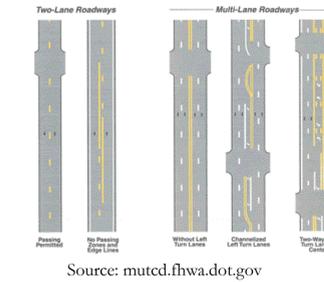
Each of these programs focuses on problems faced by transportation infrastructure owner/operators and are managed in cooperation with the U.S. Department of Transportation. For more information on the work completed, underway, and planned, visit <http://bit.ly/2y8gEm4>

Other projects of general interest include:

- Connected Road Classification System Development [NCHRP 20-24(112)]
- Collaborations and Partnerships Between Public Transportation and Transportation Network Companies [TCRP J-11/Task 26]
- Workplace Implications of AVs on the Transit Workforce [TCRP J-05/Topic 18-03]
- Analysis of Low-Speed Automated Vehicle (LSAV): Pilots and Deployments [TCRP J-11/Task 27]
- Cybersecurity of Traffic Management Systems [NCHRP 03-127]
- Impact of Transformational Technologies on Land Use and Transportation (NCHRP 08-117)
- Framework for Managing Data from Emerging Transportation Technologies to Support Decision Making [NCHRP 08-116]
- Understanding the Impacts of the Physical Highway Infrastructure Caused by the Increased Prevalence of Advanced Vehicle Technologies [NCHRP 20-102(15)]
- Guidance on Roles and Responsibilities in the Operation of AVs (NCHRP 20-24(116))

New Projects needing oversight panel members:

- Algorithms to Convert Basic Safety Messages into Traffic Measures [NCHRP 03-137]
- Determining State DOT Maintenance Program Implications of Connected and Automated Vehicles [NCHRP 14-42]
- Initiating the Systems Engineering Process for Rural CV Corridors [NCHRP 08-120]
- Assessing the Impacts of Connected, Automated, and Autonomous Vehicles on the Future of Transportation Safety [NCHRP 17-91, includes BTSCRCP-07]
- Developing Data Standards and Guidance for Transportation Planning and Traffic Operations—Phase 1 [NCHRP 08-119]



**Road Markings for Machine Vision** [NCHRP 20-102(06)] is developing information on the performance characteristics of longitudinal pavement markings (i.e., center lines, lane lines, edge lines, and dotted lines across freeway ramps) that affect the ability of machine vision systems to recognize them. This information is expected to be useful to the AASHTO/SAE Working Group as they develop guidelines and criteria. The final report is expected in Fall 2018.

**Implications of Automation for Motor Vehicle Codes** (NCHRP 20-102(07)) will provide state departments of transportation and motor vehicle departments with guidance and resources to assist with the legal changes that will result from the roll out of connected and automated vehicles. The project is being coordinated with related efforts by the American Association of Motor Vehicle Administrators. The final report is expected in Fall 2018.



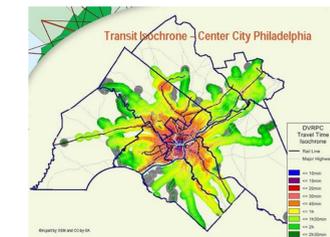
Source: Google Images



Source: en.wikipedia.org

**Dedicating Lanes for Priority or Exclusive Use by CVs and AVs** [NCHRP 20-102(08)] will identify conditions amenable to dedicated CV/AV lanes and identify obstacles to building them. Ways to measure benefits to CV/AV users and operating agencies, as well as possible dis-benefits to non-users will be described. This work will be coordinated with work underway by the Crash Avoidance Metrics Partnership (CAMP) on cooperative adaptive cruise control. The final report is expected in Fall 2018.

**Providing Support to the Introduction of CV/AV Impacts into Regional Transportation Planning and Modeling Tools** [NCHRP 20-102(09)] will provide a conceptual framework and applicable guidelines to support state DOTs and regional MPOs as they begin to incorporate CVs and AVs into their planning, modeling, and forecasting tools. The final report is expected in Winter 2019.



Source: [www.e-education.psu.edu](http://www.e-education.psu.edu)



Source: [www.its.dot.gov](http://www.its.dot.gov)

**Business Models to Facilitate Deployment of CV Infrastructure to Support AV Operations** [NCHRP 20-102(12)] will (1) describe scenarios characterizing how CV infrastructure technology may be developed and deployed and (2) assess the business case for DOTs to make investments in CV infrastructure—alone and in partnership with private enterprise—to realize the greatest public benefits of AV technology. The final report is expected in Spring 2019.