Autonomous Vehicles: Understanding the Technology and Identifying Impairment

Jeffrey Michael, Visiting Scholar, Johns Hopkins Bloomberg School of Public Health

Timothy Brown, Director of Drugged Driving Research, National Advanced Driving Simulator, University of Iowa

Kenneth Bragg, Senior Human Performance Investigator, Office of Highway Safety, National Transportation Safety Board

Moderator: Garrett Eucalitto, Program Director; Energy, Environment and Infrastructure; National Governors Association
Autonomous Vehicles: Understanding the Technology and Identifying Impairment

Jeffrey Michael,
Visiting Scholar, Johns Hopkins Bloomberg School of Public Health
Automation Will Eliminate Impaired Driving!

Right?

Timothy Brown, Ph.D.

31 March 2019
AVs enter trough of disillusionment
Implications for Impaired Driving

• As long as Automation may require Human Input, Benefits may be limited

• May Provide a Good Back-up Support
Implications

• System helps when driver cannot perform adequately
  • Drowsy
  • Distracted
  • Impaired

• System minimizes the need for driver engagement when in autonomous mode
  • Increased safety margins
  • Stopping safely if driver is unable to respond
TRB Workshop

Drug and Alcohol Impairment: Challenges for Automated Vehicles
Challenges Needing Research

Detecting Impairment
• Vehicle Detection of Impaired Driver
• Behavioral Test for Impairment Similar to SFST
  • How do you know a driver is impaired if vehicle is in automated mode?

Too Impaired
• Minimum thresholds for drugs where impairment would affect response

AV Crashes
• Minimum thresholds for drugs where impairment would affect response
More Challenges

Reliance
• Do drivers understand capabilities and limitations
• Does learned behavior need to adapt to automation
• Are people willing to rely on AVS to get them home safely if they plan on drinking/using drugs?

Mitigation
• Staged intervention
  • Take control or stop if driver is impaired?
• Does the system report if driver is impaired
  • If so, to who?
Autonomous Vehicles: Understanding the Technology and Identifying Impairment

Jeffrey Michael, Visiting Scholar, Johns Hopkins Bloomberg School of Public Health

Timothy Brown, Director of Drugged Driving Research, National Advanced Driving Simulator, University of Iowa

Kenneth Bragg, Senior Human Performance Investigator, Office of Highway Safety, National Transportation Safety Board

Moderator: Garrett Eucalitto, Program Director; Energy, Environment and Infrastructure; National Governors Association