Autonomous Vehicles Meet Human Drivers:
Traffic Safety Policy Issues for States

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Today

• **Background**
  - What’s an autonomous vehicle (AV)?
  - What’s on the road now?
  - What’s coming and when?
  - What does the public think about AVs?
  - What are current state laws on AVs?

• **Policy issues for states: discussion**
  - AV testing
  - AV operations

• **What can states do now (and what shouldn’t they do)?**
What’s an AV?

- **Level 0**: no automation, driver in complete control
- **Level 1**: driver assistance
  - Cruise control or lane position, driver monitors at all times
- **Level 2**: occasional self-driving
  - Control both speed and lane position in limited situations, like Interstates; driver monitors at all times
- **Level 3**: limited self-driving in some situations, like Interstates
  - Vehicle in full control, informs when driver must take control
- **Level 4**: full self-driving under certain conditions
  - Vehicle in full control for entire trip, such as urban ride-sharing
- **Level 5**: full self-driving at all times
  - Cruise control or lane position
What’s on the road now?

- **Level 1 available for many years**
  - Cruise control, electronic stability control, lane-keeping assistance

- **Level 2 available now**
  - Tesla Autopilot

- **Level 3-5 being tested extensively**
  - Google test fleet: 2 million miles
  - Uber in Pittsburgh
  - 33 companies worldwide working on some aspect of AVs
What’s coming and when?

- Level 3-5 vehicles available commercially in 3-5 years
  - Tesla – current Autopilot has Level 5 software
  - Volkswagen – predicts 2019
  - GM, Toyota – predict 2020
  - Ford – predicts 2021
What’s coming and when?

Autonomous Vehicle Fleet Projections
(as a percentage of all vehicles on the road)

- 2020’s: Large Price Premiums (01%-02%)
- 2030’s: Moderate Price Premiums (10%-20%)
- 2040’s: Minimal Price Premiums (20%-40%)
- 2050’s: Standard on Most New Vehicles (40%-60%)

Source: GHSA
What does the public think about AVs?

• **Skeptical**
  - Prospect of wide use? 34% excited, 57% worried
  - Will AVs reduce crashes? 35% yes, 46% no
  - Would you ride in an AV today? 17% yes, 75% no
  - Would you buy an AV when available? ≈ 20% yes, ≈ 50% no

• **Prefer AVs that allow drivers to take control**
  - Over 80% in two surveys

5 surveys (4 in 2016 and 1 in 2015), 4 in US and 1 in Canada
What are current state laws?

- AVs probably can operate in most states without law changes
- AV laws in place in 9 states and DC
  - CA, DC, FL, NV: testing and operations
  - MI, UT: testing
  - LA: defines AV, ND authorizes a study, TN establishes certification, VA allows viewing a visual display in autonomous mode
- AV executive orders in 2 states
  - AZ executive order: testing and operations
  - MA executive order: testing
State AV policy issues - testing

Encourage AV testing while protecting public safety

• Final testing is on public roads
• Some considerations
  ▪ Must testing organizations apply to the state
  ▪ How and where will testing be conducted
  ▪ Test driver selection and training
  ▪ Test vehicle identification
  ▪ Testing organization’s safety culture and safety plan
  ▪ Testing organization’s insurance
  ▪ Reporting: test trips, incidents, crashes, injuries

Most topics are suggested in NHTSA’s AV Policy
Encourage AV operations while protecting public safety

- **AV certification**
  - Proper operation when all systems working properly
  - Plan to deal with hardware or software failures

- **AV registration and titling**
  - Identify Level 3-5 AVs in title and registration
  - Identify AV level
  - For Level 3-4 AVs, identify where AV can operate autonomously (Operational Design Domain)

- **AV drivers**
  - Licensing and training for Level 3-4 AVs
State AV policy issues - operations

Encourage AV operations while protecting public safety

• Laws on AV operations
  – Who’s the driver
  – Distracted driving laws
  – DUI and DUID laws
  – AVs and traffic laws – speed limits, following too closely

• Law enforcement
  – How to identify AVs
  – Traffic stops; vehicle pursuit
  – Officer safety
  – Road rage of human drivers interacting with AVs
  – AVs suspected of carrying contraband
Encourage AV operations while protecting public safety

- **Crash investigation**
  - How to identify AVs
  - Officer and emergency responder safety

- **Data systems**
  - How to identify AVs in vehicle title and registration, driver licensing, crash reports

- **Liability and insurance**
  - Who is liable – manufacturer, software provider, owner, operator

- **Vehicle inspection, for states with periodic safety inspections**

- **Coordination across states**
What should states do – big picture

• Be informed; stay informed

• Be a player
  ▪ Join or start a state AV task force
  ▪ Work with other states to develop consistent laws, policies, procedures

• Understand state roles
  ▪ Federal role: regulate vehicles
  ▪ State roles: license vehicles and drivers, establish and enforce traffic laws, vehicle insurance and liability

• Don’t rush to establish AV laws or regulations
  ▪ Aim for consistency across states

• Be flexible
  ▪ AVs are disruptive technology, developing very quickly
What should national organizations do?

- Develop model AV laws and regulations
- Document the traffic safety issues of AVs
- Develop model public education materials
- Establish an AV information clearinghouse
- Issue vehicle regulations and guidance promptly
- Establish regulations or guidelines to identify AVs easily
- Involve law enforcement, SHSOs, and DMVs in AV discussions
For more information

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Download the report:  www.GHSA.org