Policy considerations for driving automation technology

Northeast Autonomous Vehicle Summit
Mystic, CT
March 30, 2017

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Status of automated vehicle legislation
March 13, 2017
IIHS comment on the Federal Automated Vehicles Policy focused on 5 areas

- NHTSA should give more guidance about the contents of the Safety Assessment Letter
- Vehicle performance guidance should be explicitly applied to Level 2 systems
- Guidance should recommend that driving automation systems not rely on users to limit their use within the operational design domain
- NHTSA should collect information about which vehicles are equipped with driving automation systems
- Guidance should encourage addressing possible misuse errors primarily through intuitive design
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Difference between Level 2 and Level 3 systems may not be apparent from a user’s point of view.
Safeguards to keep the driver fully engaged in the driving task and convey system limitations
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Driving automation should restrict use to the intended operational design domain
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Summary of technology effects on insurance claim frequency

Results pooled across automakers
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Experiences with driving automation following real-world use
Vehicles

2016 Infiniti QX60
2016 Honda Civic
2016 Toyota Prius

2017 Audi Q7
2017 Audi A4
Recorded information from over 60,000 miles and 2 years of daily driving

<table>
<thead>
<tr>
<th></th>
<th>phase 1</th>
<th>phase 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>March - July 2016</td>
<td>August 2016 - January 2017</td>
</tr>
<tr>
<td>employee drivers</td>
<td>54</td>
<td>47</td>
</tr>
<tr>
<td>vehicle uses</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>reported miles driven</td>
<td>33,584</td>
<td>31,331</td>
</tr>
<tr>
<td>reported days of driving</td>
<td>354</td>
<td>423</td>
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</table>
Second phase focused on collecting information about using automation in specific situations
Overall, I felt this technology improved my driving experience

Percentage of drivers who agreed or strongly agreed, by technology

<table>
<thead>
<tr>
<th>Model Year</th>
<th>Model Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Honda Civic</td>
<td>40%</td>
</tr>
<tr>
<td>2016</td>
<td>Infiniti QX60</td>
<td>60%</td>
</tr>
<tr>
<td>2016</td>
<td>Toyota Prius</td>
<td>80%</td>
</tr>
<tr>
<td>2017</td>
<td>Audi A4</td>
<td>100%</td>
</tr>
<tr>
<td>2017</td>
<td>Audi Q7</td>
<td>100%</td>
</tr>
</tbody>
</table>

Adaptive cruise control

Active lane keeping
I feel comfortable using adaptive cruise control when traveling on…

Percentage of drivers who agreed or strongly agreed

- Free-flowing interstates: 100%
- Major arterials with signalized intersections: 80%
- Roads with moderate hills: 60%
- Stop-and-go traffic: 40%
- Low-speed, local roads: 20%
I feel comfortable using active lane keeping when traveling on...

Percentage of drivers who agreed or strongly agreed

- Free-flowing interstates: 70%
- Interstates with gentle to moderate curves: 60%
- Roads with moderate hills: 50%
- Winding, curvy roads: 30%
### Manufacturer guidance for using adaptive cruise control in owner’s manual varies

<table>
<thead>
<tr>
<th></th>
<th>free-flowing interstates</th>
<th>arterials with intersections</th>
<th>roads with hills</th>
<th>stop-and-go traffic</th>
<th>Local roads</th>
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<tbody>
<tr>
<td><strong>Honda</strong></td>
<td><img src="#" alt="Recommended" /></td>
<td><img src="#" alt="Recommended" /></td>
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<td><img src="#" alt="Recommended" /></td>
<td><img src="#" alt="Recommended" /></td>
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<td><img src="#" alt="Recommended" /></td>
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<tr>
<td><strong>Audi</strong></td>
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<td><img src="#" alt="Recommended" /></td>
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</table>

- **Green** indicates recommended use
- **Red** indicates use not recommended
- **Gray** indicates stated limitations apply
- **White** indicates no guidance provided

*Note: The table above summarizes the manufacturer guidance for using adaptive cruise control in different road conditions.*
Manufacturer guidance for using active lane keeping in owner’s manual varies

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Technology will fail in unexpected ways
Additional policy considerations for driving automation technology

- The acceptance of driving automation technology, like driver assistance systems, will vary among drivers
  - Benefits of driving automation are likely overestimated in near term

- Drivers may not distinguish among levels of autonomy or follow intended use
  - As level 2 systems proliferate and become more dependable, they will be treated as level 3 or 4

- Disengagements should be clear and inadvertent driver disengagement should be difficult

- System disengagement should begin to slow the vehicle until driver demonstrates control
More information and links to our YouTube channel and Twitter feed at iihs.org

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