



Insurance Institute for Highway Safety  
Highway Loss Data Institute

# Driver Experiences with Vehicle Technology Following Real-world Use

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## Driver experience program




- ▶ Driver assistance and driving automation systems change the driving task and the driver's role
- ▶ Level 2 driving automation requires the driver to remain engaged in the driving task
- ▶ How do drivers interact with technologies that assist with or automate parts of the driving task?



## Vehicles



2016 Infiniti QX60



2016 Honda Civic



2016 Toyota Prius



2017 Audi Q7



2017 Audi A4




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**Recorded information from over 60,000 miles and 2 years of daily driving**

	phase 1	phase 2
	March - July 2016	August 2016 - January 2017
employee drivers	54	47
vehicle uses	80	80
reported miles driven	33,584	31,331
reported days of driving	354	423



**First phase focused on driver interactions with various technologies**

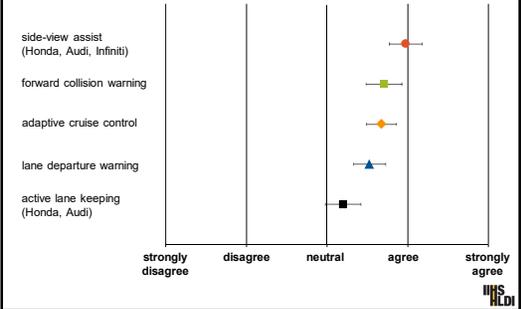
Post-use survey topics

- ▶ Participants indicated their level of agreement with various statements about:
  - Trust  
e.g., system is dependable, suspicious of system, system is reliable
  - Ease of use  
e.g., easy to use, functions well-integrated, learned to use quickly, confident in using
  - Comprehension of system displays and status  
e.g., information located where expected, easy to understand setting or status
- ▶ Reported likes, dislikes and unexpected system behavior



**Side-view assist ranked first in trust**

Average rating and 95% confidence interval by system




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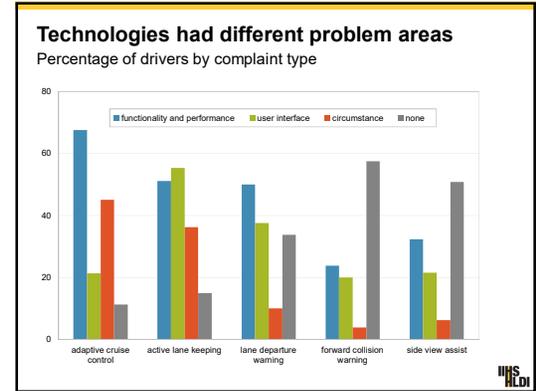
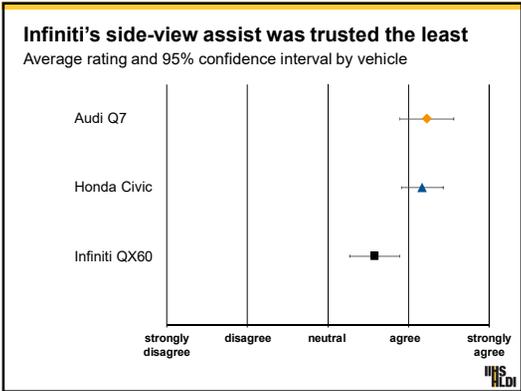
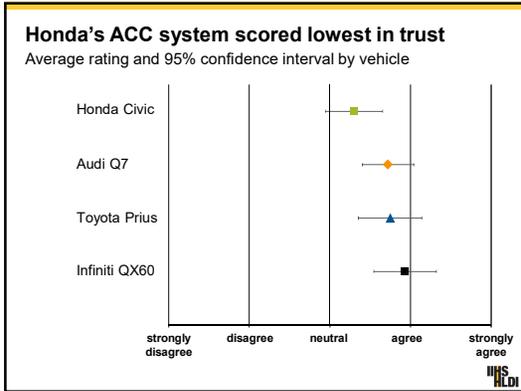
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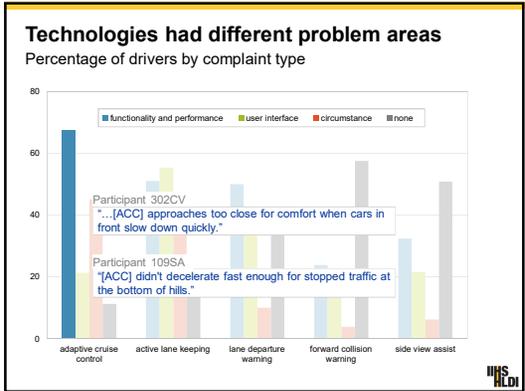
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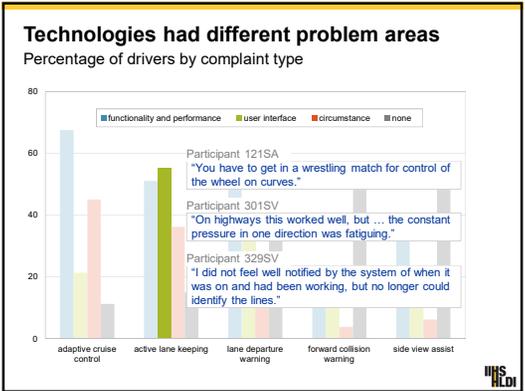
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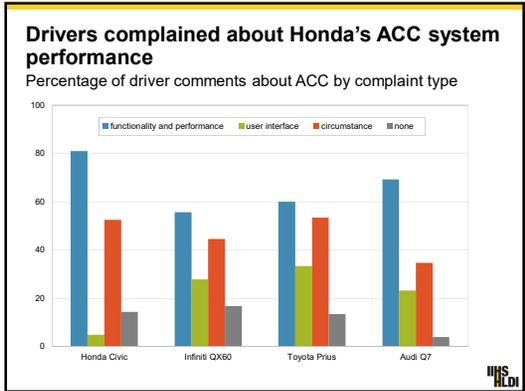
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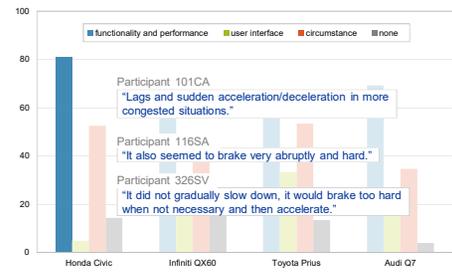
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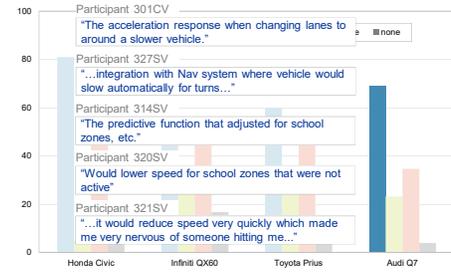
### Drivers complained about Honda's ACC system performance

Percentage of driver comments about ACC by complaint type



### Drivers also complained about Audi's ACC system performance

Percentage of driver comments about ACC by complaint type



### Second phase focused on collecting information about using automation in specific situations




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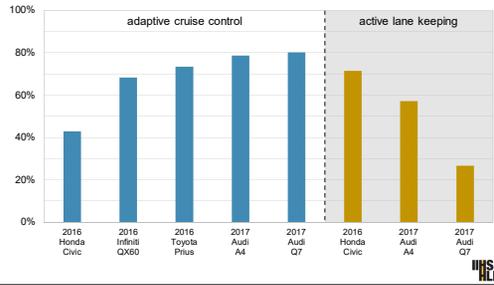
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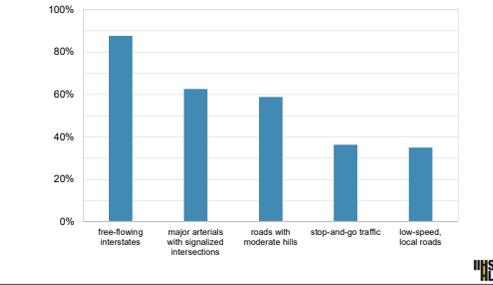
**Overall, I felt this technology improved my driving experience**

Percentage of drivers who agreed or strongly agreed, by technology



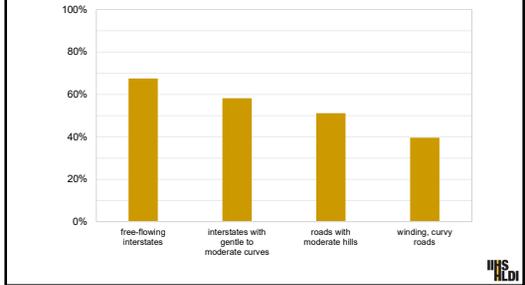
**I feel comfortable using adaptive cruise control when traveling on...**

Percentage of drivers who agreed or strongly agreed



**I feel comfortable using active lane keeping when traveling on...**

Percentage of drivers who agreed or strongly agreed




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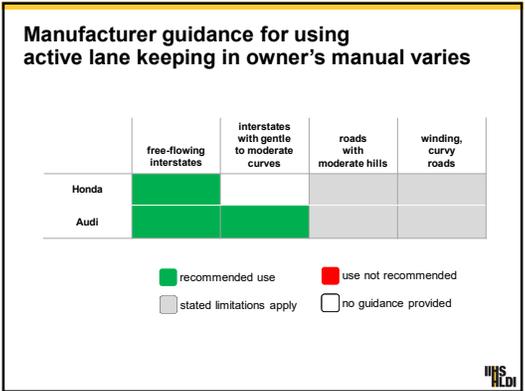
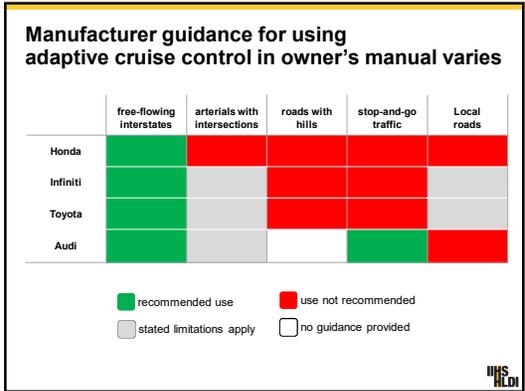
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**Conclusions**

- ▶ Drivers had mixed experiences with driver assistance technologies and automation
  - Expressed favorable opinions about some technologies more than others and for different reasons
- ▶ Drivers may not be comfortable using current driving automation technologies in every situation, even when they are able
  - Most comfortable using automation in low demand situations suggesting limited use and safety benefits
  - Manufacturers often do not recommend use in demanding situations
- ▶ Driving automation systems should limit use to the intended operational design domains and not rely on driver discretion

IIHS HLDI

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**IIHS HLDI** Insurance Institute for Highway Safety  
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More information and links to our YouTube channel and Twitter feed at [iihs.org](http://iihs.org)

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