Understanding Distraction

**Eyes off the Road**
- Roadside Billboards
- Checking Self in Mirror
- Gawking at Crash Scenes

**Hands off the Wheel**
- Personal Grooming
- Reading Maps or Newspapers
- Reaching for Fallen Objects
- Attending to Passengers/Pets
- Texting while Driving
- Eating
- Drinking
- Using a Handheld Cell Phone
- Manipulating Vehicle Instruments
- Changing CDs
- Talking with Passengers
- Using a Hands-Free Cell Phone
- Using Voice-Activated Features
- Daydreaming

**Mind off of Driving**
which occurs during any distracting activity
AAA Foundation 2015 Traffic Safety Culture Index

National sample of American drivers age 19 and older

www.aaafoundation.org/2015-traffic-safety-culture-index-0
“Do As I Say Not As I Do”

National sample of American drivers age 19 and older

AAA Foundation 2015 Traffic Safety Culture Index

www.aaafoundation.org/2015-traffic-safety-culture-index-0
Crash impact is probably under-estimated

<table>
<thead>
<tr>
<th></th>
<th>Fatal crashes</th>
<th>Estimated Injury crashes</th>
<th>Police-reported crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distraction-affected</td>
<td><strong>10% of all fatal</strong> (N=3,179)</td>
<td><strong>18% of all estimated injury</strong> (N= 431,000)</td>
<td><strong>16% of all police-reported</strong> (N=967,000)</td>
</tr>
<tr>
<td>Cell phone in use</td>
<td><strong>1.2% of all fatal</strong> (N=404)</td>
<td><a href="https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812260">Distracted Driving 2014, NHTSA</a></td>
<td></td>
</tr>
</tbody>
</table>
Data collection: probably under-reported

- Police can’t tell
- Drivers won’t say
- Dead men tell no tales
- Records subpoenaed only (maybe) w/fatality
- Police crash reports vary
Road Map...

• Distracted Driving: What’s the Problem?
  • What Does Research Tell Us?
    • Public Education
      • Laws and Legislation
        • Enforcement
      • What’s on the Horizon?
What does the research say about risk?

Crash risks doubles when a driver when looks away from the road for two or more seconds

<table>
<thead>
<tr>
<th>Type of Secondary Task</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaching for a moving object</td>
<td>8.82</td>
</tr>
<tr>
<td>Insect in Vehicle</td>
<td>6.37</td>
</tr>
<tr>
<td>Looking at External Object</td>
<td>3.70</td>
</tr>
<tr>
<td>Reading</td>
<td>3.38</td>
</tr>
<tr>
<td>Applying Makeup</td>
<td>3.13</td>
</tr>
<tr>
<td>Dialing a Hand Held Device</td>
<td>2.79</td>
</tr>
<tr>
<td>Inserting/retrieving CD</td>
<td>2.25</td>
</tr>
<tr>
<td>Eating</td>
<td>1.57</td>
</tr>
<tr>
<td>Reaching for a Non-Moving Object</td>
<td>1.38</td>
</tr>
<tr>
<td>Talking/Listening to a Hand-Held Device</td>
<td>1.29</td>
</tr>
<tr>
<td>Drinking from an Open Container</td>
<td>1.03</td>
</tr>
<tr>
<td>Other Personal Hygiene</td>
<td>0.70</td>
</tr>
<tr>
<td>Adjusting the Radio</td>
<td>0.50</td>
</tr>
<tr>
<td>Passenger in the Adjacent Seat</td>
<td>0.39</td>
</tr>
<tr>
<td>Child in Rear Seat</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Table 2. Odds Ratio for Secondary Tasks in the 100-Car Study (see Klauer, et al., 2006; p. 30) Bold=statistically significant

Manual texting while driving

• Text messaging drivers 6 times more likely to crash – University of Utah, 2009
  www.unews.utah.edu/old/p/121809-3.html

• Truckers who are texting – 23 times more likely to have a crash or near-crash event – Virginia Tech Transportation Institute, 2009
Cell phone use while driving

• Cell phone use, both handheld and hands-free: roughly quadruples crash risk
  www.aaafoundation.org/cell-phones-and-driving-research-update

• Simulators vs. naturalistic driving – complementary not exclusive
Even with your eyes on the road and your hands on the wheel, mental distractions dangerously affect drivers behind the wheel.

- **Mild Danger**: Listening to the radio or an audio book
- **Moderate Danger**: Talking on a hand-held phone or a hands-free phone
- **High Danger**: Using voice-activated texting or email feature
Phase 1 Key Findings

- Cognitive distraction exists and can be measured
- Cell phone use impairs driving ability
- Cognitive distraction can be a risk even if a driver is using a hands-free system
- Speech-based in-vehicle interactions rated the most cognitively distracting

https://vimeo.com/67329578
AAA Cognitive Distraction Research
Phase II

Mental Distraction Levels by System

- **High Distraction**
  - Driving Only
  - Toyota: Entune®
  - Hyundai: Blue Link®
  - Chrysler: Uconnect®
  - Ford: MyFord Touch®
  - Mercedes: COMAND®
  - Chevy: My Link®

AAA Foundation for Traffic Safety  
www.AAA.com/distraction
Mental Distraction Levels by Task

- **High Distraction**
- **Medium Distraction**
- **Low Distraction**

- Driving Only
- Adjusting Radio or Temp*
- Listening to Messages*
- Listening & Composing Messages*
- Navigating Simple Menus*
- Navigating Complex Menus*
- Apple’s Siri® **

*Using hands-free voice commands while driving.

**Version iOS7 at time of research.
Evaluated sending/receiving texts, updating Facebook/Twitter and checking calendar by using voice commands while driving.

AAA Foundation for Traffic Safety  www.AAA.com/distraction
AAA Cognitive Distraction Research

Phase III:

• Does practice matter?
• Does age matter? Do all drivers experience cognitive distraction equally?
• Do differing in-vehicle systems and mobile voice assistants vary in terms of levels of distraction?
# AAA Cognitive Distraction Research

## Phase III: Findings

### Mental Distraction Rankings of Voice-Activated Systems

<table>
<thead>
<tr>
<th>Distraction Level</th>
<th>Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High Distraction</td>
<td>4.6</td>
</tr>
<tr>
<td>High Distraction</td>
<td>3.8, 3.8, 3.8</td>
</tr>
<tr>
<td>Moderate Distraction</td>
<td>2.9, 2.9, 3.0, 3.1</td>
</tr>
<tr>
<td>Mild Distraction</td>
<td>1.0, 1.0, 1.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevy Equinox</td>
<td>2.4</td>
</tr>
<tr>
<td>Buick Lacrosse</td>
<td>2.4</td>
</tr>
<tr>
<td>Toyota 4Runner</td>
<td>2.9</td>
</tr>
<tr>
<td>Google Now</td>
<td>3.0</td>
</tr>
<tr>
<td>Ford Taurus</td>
<td>3.1</td>
</tr>
<tr>
<td>Chevy Malibu</td>
<td>3.4</td>
</tr>
<tr>
<td>Apple Siri</td>
<td>3.4</td>
</tr>
<tr>
<td>VW Passat</td>
<td>3.5</td>
</tr>
<tr>
<td>Nissan Altima</td>
<td>3.7</td>
</tr>
<tr>
<td>Chrysler 200c</td>
<td>3.8</td>
</tr>
<tr>
<td>Hyundai Sonata</td>
<td>3.8</td>
</tr>
<tr>
<td>Microsoft Cortana</td>
<td>3.8</td>
</tr>
<tr>
<td>Mazda 6</td>
<td>4.6</td>
</tr>
</tbody>
</table>

*Source: AAA Foundation for Traffic Safety*

*Mental distraction rankings when using voice-commands to make calls or change music while driving. Includes 2015 model-year vehicles.*
MENTAL DISTRACTIONS CAN LAST AS LONG AS 27 SECONDS after using voice commands on cars and phones to make a call, send a text or change the music.
AAA Recommendations

Developers:

• Design simpler systems

• Interactions should be no more demanding than listening to the radio or an audiobook

• Interactions that are high-risk or unrelated to driving should be disabled during driving
AAA Recommendations

Motorists:

• Hands-free is not risk free

• Drivers should limit use of voice-driven technologies to tasks related to driving
Teen drivers using cell phones: An average of 4.1 seconds out of final 6 seconds before a crash looking away from the road.

Over half of all cell phone read-end crashes: driver exhibited no reaction at all before impact.
Teen Drivers Risk Death with Young Passengers

A 16- or 17-year-old driver’s RISK OF BEING KILLED IN A CRASH increases when there are young passengers in the vehicle.

Compared to driving without any passengers, THE RISK:

- **QUADRUPLES** when carrying 3 or more passengers younger than 21
- **DOUBLES** when carrying 2 passengers younger than 21
- **INCREASES** by 44% when carrying 1 passenger younger than 21
- **DECREASES** by 62% when an adult age 35+ is in the vehicle

*Teen Driver Risk in Relation to Age and Number of Passengers* AAA Foundation for Traffic Safety, MAY 2012
## Teens and Cell Phone Use...

<table>
<thead>
<tr>
<th>Age</th>
<th>Reported Using Phone While Driving</th>
<th>Reported Using Phone Fairly Often / Regularly While Driving</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-18</td>
<td>58 percent</td>
<td>20 percent</td>
</tr>
<tr>
<td>19-24</td>
<td>72 percent</td>
<td>27 percent</td>
</tr>
<tr>
<td>25-39</td>
<td>82 percent</td>
<td>43 percent</td>
</tr>
<tr>
<td>40-59</td>
<td>72 percent</td>
<td>30 percent</td>
</tr>
<tr>
<td>60-74</td>
<td>51 percent</td>
<td>15 percent</td>
</tr>
<tr>
<td>75+</td>
<td>31 percent</td>
<td>7 percent</td>
</tr>
</tbody>
</table>
## Teens and Texting...

<table>
<thead>
<tr>
<th>Age</th>
<th>Reporting Sending Text or Email While Driving</th>
<th>Reported Sending Text or Email Fairly Often / Regularly While Driving</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-18</td>
<td>31 percent</td>
<td>7 percent</td>
</tr>
<tr>
<td>19-24</td>
<td>42 percent</td>
<td>11 percent</td>
</tr>
<tr>
<td>25-39</td>
<td>45 percent</td>
<td>10 percent</td>
</tr>
<tr>
<td>40-59</td>
<td>24 percent</td>
<td>4 percent</td>
</tr>
<tr>
<td>60-74</td>
<td>7 percent</td>
<td>2 percent</td>
</tr>
<tr>
<td>75+</td>
<td>1 percent</td>
<td>1 percent</td>
</tr>
</tbody>
</table>
Road Map...

- Distracted Driving: What’s the Problem?
- What Does Research Tell Us?
- Public Education
  - Laws and Legislation
  - Enforcement
- What’s on the Horizon?
AAA Foundation 2010 Study

- Focused on texting while driving by drivers age 17-26:
- Such drivers:
  - Are aware of distracted driving and anti-distraction laws
  - Engage in distracting activities and recognize them as so
  - Harbor heroic assumptions about their own driving abilities
Values Ladder

- Sad (4%)
- Scared (9%)
- Guilt (41%)
- Shame (14%)
- Angry (5%)
- Stupid (27%)

Message Architecture

- Peace of Mind
  - Causes accidents than can injury or take a life
  - Creates guilt and shame because I/You knew better

- Accident
  - Get a ticket or be fined (6%)
  - Injure someone (9%)
  - Less focused (22%)
  - Kill someone (22%)

- Texting
  - Eating or drinking (10%)
  - Writing a text (20%)
  - Looking at a GPS/Map (9%)
  - Answering a phone call (7%)
  - Looking for music to play (16%)
  - Reading a text (11%)
Key Findings

• Young people KNOW, and KNOW better

• Most susceptible and responsive to messaging that directly confronts them with the tragic consequences of not acting on what they know

• Evoking emotions of “guilt” and “stupidity” (their own words) they would feel if their actions were to cause a crash

www.aaafoundation.org/distracted-driving-message-development-and-testing-heart-mind-strategies-project
Road Map...

- Distracted Driving: What’s the Problem?
- What Does Research Tell Us?
- Public Education
  - Laws and Legislation
- Enforcement
- What’s on the Horizon?
Prohibits all drivers from text messaging while driving: 46 states + D.C.
(secondary enforcement in Florida, Iowa, Nebraska, Ohio, and South Dakota)

Prohibits text messaging for teen drivers only: 1 states

No law prohibiting all drivers from text messaging while driving: 3 states

Louisiana bans drivers from using a wireless device to access, read, or post to a social networking site
Prohibits teen driver cell phone use and text messaging: 38 states + D.C. (hands-free use permitted in Alabama, Louisiana, Michigan, and Oklahoma)

Prohibits teen driver text messaging only: 1 states

Prohibits text messaging for all drivers (teens included): 9 states (+ handheld ban for all drivers New York and Nevada)

No law prohibiting teen driver cell phone use: 2 states
Prohibits hand-held cell phone use for all drivers: 14 states + D.C.

Prohibits hand-held cell phone use for all drivers in school and/or work zones only: 3 states

No law prohibiting hand-held cell phone use for all drivers: 33 states
Public opinion on distracted driving laws

<table>
<thead>
<tr>
<th>State Law</th>
<th>Public Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texting ban for all drivers</td>
<td>87.7%</td>
</tr>
<tr>
<td>Handheld cell phone ban for all drivers</td>
<td>70.3%</td>
</tr>
<tr>
<td>Complete cell phone ban for all drivers</td>
<td>42.4%</td>
</tr>
</tbody>
</table>

2015 Traffic Safety Culture Index, AAA Foundation
www.aaafoundation.org/2015-traffic-safety-culture-index-0

Ban all cell phone use?

- Enforcement?
- Public acceptance?
- Industry/commercial acceptance?
Other distracted driving laws

- ‘Comprehensive distracted driving laws’
- Reckless/negligent driving laws
- School and work zone bans
- Telematics/infotainment restrictions
Key Areas to Explore in Texas

• Adopt a texting while driving ban for all drivers

• Federal FAST Act distracted driving incentive grants

• Improve distracted driving data collection

• Evaluate your educational programs if possible – help everyone zero in on what works and why