Human Factors

"Human Factors" is the scientific study of human physical and mental capabilities and limitations and the application of that knowledge to:

- the investigation of human interaction with technology and their environment
- the design of human-centered systems and technology
Distracted Driving Statistics

• In 2013, there were 3,154 people killed and 424,000 injured in motor vehicle crashes involving distracted drivers. (NHTSA, 2015).

• Ten percent of fatal crashes, 18 percent of injury crashes, and 16 percent of all police-reported motor vehicle traffic crashes in 2013 were reported as distraction-affected crashes (NHTSA, 2015).

• At any given daylight moment across America, approximately 660,000 drivers are using cell phones or manipulating electronic devices while driving (Distraction.gov)

• New voice-activated technologies intended to reduce crashes due to distraction are even more distracting than previous in-vehicle technology

Texting while driving raises a driver’s crash risk by 23 times (VTTI)
What is Distracted Driving?

• "A diversion of attention away from activities critical for safe driving toward a competing activity"

• Types of distractions
  • Visual (eyes off the road)
  • Manual (hands off the wheel)
  • Cognitive (mind off the road)
  • Visual / Manual / Cognitive
Are all distractions equal?

- All distractions increase crash risk
- Distractions that require a combination of visual, manual, and cognitive resources are the most risky

(aaa.org)
How does distraction cause crashes?

- Visual Distractions
- Manual Distractions
- Cognitive Distractions
  - Perception
  - Inattention

(Strayer, Watson & Drews, 2011)
Effects of Distracted Driving on Driver Performance

- Increased time that eyes are off road
- Increased reaction time to hazards
- Increased braking reaction time
- Greater speed variability and slower mean speed
- Increased lane deviations and lane departures
- Closer car following

LASTING EFFECTS OF MENTAL DISTRACTION

Mental Distractions Can Last Up to 27 Seconds
after using voice commands on cars and phones to make a call, send a text or change the music.
Distracted Driving Laws and Campaigns

- **Laws for the Driving Public**
  - 46 states and the District of Columbia ban text messaging for all drivers.
  - Some states have additional handheld cell phone bans

- **Laws or Regulations for Employees**
  - Federal Employee ban on texting
  - Commercial Driver ban on texting and hand-held cell phone use while driving
  - Rail Employees ban on cell phone and electronic device use while on the job

- **Public Awareness Campaigns**
Human Factors Investigations of Distracted Driving

Driver training, experience, and actions

External and in-vehicle technology

Driving environment and roadway conditions

Human Factors Investigations of Distracted Driving
Questions?

Dr. Nancy Grugle
Human Factors Expert
Robson Forensic
100 Fillmore St.
Denver, CO 80106
ngrugle@robsonforensic.com
303-385-8571