

Managing Long Drives and Fatigue Based on Scientific Evidence

Page 1 provides the most recent scientific findings on driving, fatigue, and managing long drives. Page 2 offers prevention measures to consider when making decisions about travel times.¹

- Roadway crashes are the leading cause of workplace deaths making up 23% of all deaths, followed by falls (14%), being struck by equipment (10%) and homicide (10%).²
- According to a 2003 Center for Disease Control and Prevention study, “driver fatigue has been identified as a leading contributor to roadway crashes among workers as well as the general population”.³ Risk factors identified as contributing to fatigue related crashes include night driving, duration of wakefulness, inadequate sleep, sleep disorders, and prolonged work hours (including time spent performing non-driving tasks).⁴
- Data show a strong and consistent pattern of increases in crash risk as driving time increases. There is a consistent increase in crash likelihood after 5 hours of driving with the highest crash odds in the 11th hour of driving.⁵
- Crash risk decreased in the 6th and 7th hour of driving among drivers who had taken a rest break between hours 2 and 6.⁶
- Drowsiness slows reaction time, makes drivers less attentive and impairs decision making skills, all of which contribute to motor vehicle crashes.⁷
- High predictors of falling asleep at the wheel include driving more than 10 consecutive hours, taking fewer than 8 hours off duty, and driving greater numbers of hours over a 7-day period.⁸
- Periods of work longer than 8 hours have been shown to impair task performance and increase crashes. For example, performance appears worse with a 12-hour, 4-day week schedule than with an 8-hour, 6-day week.⁹
- Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to prescribed levels of alcohol intoxication. After 17-19 hours without sleep, the performance (reaction times, response times, cognitive skills) were equivalent or worse than an individual with a .05 BAC (blood alcohol content).¹⁰

¹ Most research on driver fatigue focus on motor carrier industry employees

² Bureau of Labor Statistics, 2011 <http://www.bls.gov/iif/oshwc/foi/cfch0010.pdf>

³ Pratt, Stephanie, Work related Roadway Crashes: challenges and opportunities for prevention, NIOSH Hazard Review, DHHS, CDC, 2003

⁴ Pratt 2003

⁵ US Department of Transportation, Federal Motor Carrier Safety Administration, Hours of service and driver fatigue: driver characteristics research, May 2011

⁶ Lin et al. 1994, Kaneko and Jovanis 1992

⁷ Wheaton, AG, *et al*, Drowsy Driving—19 states and the District of Columbia, 2009-2010, *Morbidity and Mortality Report*, Centers for Disease Control and Prevention, January 4, 2013

⁸ McCartt *et al*. 2000

⁹ http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html#VI

¹⁰ Williamson and Feyer *Occup Environ Med*. Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to legally prescribed levels of alcohol intoxication, 2000 October, 57 (10) 649-655

Things to Consider Before Starting a Long Drive:

- The following items should be inspected (by the traveler or qualified person) prior to departure:
 - All fluids (fuel, coolant, windshield washer fluid, oil, brake fluid, power steering fluid and transmission fluid)
 - All lights
 - Tires to include spare (tread depth, air pressure and overall condition)
 - Jack and necessary equipment to change tire
 - Windshield wipers
 - Horn
- Texting is prohibited when driving by Presidential Proclamation 8610. It is recommended the traveler use a cell phone only when stopped; however, if this is not possible, only a hands-free device will be used. This does not apply to emergency responders.
- Recommended emergency kit items:
 - Water
 - Food (energy bars, etc.)
 - Blanket(s)
 - Road flares
 - Flashlight
 - First aid kit
 - Candle
 - Lighter or matches
 - Jumper cables
 - Any other item the operator or supervisor deems necessary

Countermeasures For and Warning Signs of Driving Fatigue:

- **How to prevent driving fatigue and crash risk¹¹:**
 1. Maintain a regular schedule
 2. Get sufficient sleep at night
 3. Avoid alcohol when driving
 4. Avoid driving between midnight and 6 a.m.
 5. Take breaks every 2-3 hours of driving
- **Warning signs of drowsy driving¹²**
 1. Frequent yawning or blinking
 2. Difficulty remembering the past few miles driven
 3. Missing exits
 4. Drifting from one's lane
 5. Hitting a rumble strip
- **How to manage fatigue when driving¹³:**
 1. Stop driving (change drivers, take a rest)
 2. Take a short nap (about 15 to 20 minutes)
 3. Consume caffeine equivalent to two cups of coffee
 4. The effectiveness of any other steps to improve alertness when sleepy, such as opening a window or listening to the radio, has not been demonstrated.

¹¹ Pratt 2003

¹² Wheaton, AG, *et al*, 2013

¹³ http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html#VI

Driving and Fatigue References:

<http://www.fmcsa.dot.gov/facts-research/research-technology/report/work-hours-hos.pdf>

http://www.nhtsa.gov/people/injury/drowsy_driving1/drowsy.html

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2656292/>

http://ec.europa.eu/transport/road_safety/specialist/knowledge/fatigue/risk_groups/professional_and_truck_drivers.htm

<http://www.cdc.gov/niosh/docs/2003-119/pdfs/2003-119.pdf>

<http://www.fmcsa.dot.gov/facts-research/art-public-reports.aspx?order=2&site=PubD&pn=2>

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6151a1.htm?s_cid=mm6151a1_w