

Awake at the Wheel: Making Roads Safer

Mark R. Rosekind, Ph.D. and Jeff Michael, Ed.D. (Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University)

Every day, more than 100 people die on U.S. roadways.

Every time we get in the car, we risk our lives. Globally, nearly 1 and a half million people lose their lives on the road every year. In the U.S., nearly 43 thousand people died on the road in 2021. Crashes, injuries, and fatalities are associated with enormous economic costs, an estimated \$836 billion annually in the U.S., including impact on quality of life.

Driving a motor vehicle (car, truck, or motorcycle) is a complex task. A driver must pay attention, make decisions, and have fast reactions. Basically, head in the game, hands on the wheel, and eyes on the road. Anything that impairs a driver's ability to do these tasks creates a safety risk. Historically, impaired driving has been associated with alcohol (drunk driving). More recently, it has been expanded to include drugs (illicit, over-the-counter, and prescribed) and distractions (especially the use of mobile phones). However, drowsy driving may be the most underestimated and under-recognized impairment, and can unexpectedly challenge any driver.

How impactful is drowsy driving?

- Over 8 and a half million drivers fell asleep at the wheel in the past 30 days.
- Nearly 80,000 crashes per year are related to drowsy driving.
- Between 2.5% and 24% of all fatal car crashes are related to drowsy driving.
 - 10% of fatal crashes that happen in the daytime are related to drowsy driving.
 - 24% of fatal crashes that happen in the nighttime are related to drowsy driving.
- Approximately 6,000 lives and over \$100 billion are lost every year due to drowsy driving.

No fatiguealyzer: It's worse than we know

Blood alcohol levels can be measured with a breathalyzer. This allows drunk driving to be monitored and enforced. Unfortunately, there is no 'breathalyzer' equivalent for drowsy driving. This makes it difficult to know whether someone is driving under the influence of sleepiness. It also makes it



difficult to determine whether drowsiness or sleep loss contributed to a crash. As a result, it is likely that drowsy driving is underestimated and much worse than data currently suggest.

Drowsy driving: How did I get here?

There are 2 ways that drowsy driving can cause a crash:

1. An unexpected sleep attack – when you fall asleep, you become disconnected from the environment. Your head is no longer in the game, your hands may or may not be on the wheel, and your eyes are not seeing anything. If you fall asleep while driving, you are unable to steer or brake, putting you at risk for a crash.
2. Even while awake, drowsiness can impair driving. In fact, drowsiness impairs attention, reaction time, and decision-making to a similar degree as alcohol. Even getting 1 or 2 hours less sleep than you need can impair your ability to function normally. As you may expect, ability to function is significantly impaired after 1 night of sleep loss and sleeping too little each night over time can cause a “sleep debt”. In addition, sleeping at the wrong time each day can cause circadian misalignment (your internal body clock is out of sync with the environmental time). One symptom of sleep debt and circadian misalignment is drowsiness. There are many reasons people may not obtain the right amount of sleep. Some reasons are work and school schedules, jet lag from traveling, and medical conditions like sleep apnea. Regardless of the reason, sacrificing sleep and a regular schedule impairs your ability to function.

The road signs: Head in the game, hands on the wheel, and eyes on the road

Anytime you find yourself disengaging from any of these 3 driving tasks, it is time to act:

1. Head in the game: Do you remember the last exit, current speed limit, and what vehicles are around you? Is your mind wandering?
2. Hands on the wheel: Have your hands shifted from the traditional placements? Are you only using 1 hand to hold the steering wheel?
3. Eyes on the road: Are you struggling to keep your eyes open? Do you remember what you just passed? If you experience the “head nod” – a classic sign of drowsiness – it is time to pull over. An unexpected sleep attack may be next.



Simple solution: Sleep (if only it was this easy!)

To be 'awake at the wheel', every driver needs to be alert on every trip. The best solution is preventing drowsiness: get the sleep you need and maintain a regular schedule. If you think you may have a sleep disorder, get it diagnosed and treated.

If you experience drowsiness when driving, try these actions at the first sign of sleepiness:

- 1) Pull over at a safe place for a short nap (up to 45 minutes).
- 2) Take a break at a rest stop.
- 3) Get coffee/caffeine.

Unfortunately, these classic strategies may only help for 10-15 minutes:

- 1) Rolling down the window.
- 2) Increasing the volume on the radio.
- 3) Turning on the interior lights (at night)

These strategies may keep you awake long enough to get off the road to a safe place, but they are not a long-term solution.

The road ahead

More research is needed before better solutions can be developed for drowsy driving. A 'fatiguealyzer' would create the potential for drowsiness levels to be measured. This would allow for better monitoring, enforcement, and investigations. Other causes of driving impairment (drunk driving and texting while driving) have received increased public awareness and enhanced education, resulting in behavior and policy changes. To reduce crashes and deaths related to drowsy driving, it is critical for drowsy driving to receive the same attention from the public, drivers, educators, and law enforcement.

Impaired driving and distracted driving are known to be major road safety risks. Not everyone driving has been drinking alcohol or is on their phone but every driver needs to be awake and alert when behind the wheel. If they are not, lives are at risk.

