

Driver Fatigue

The Road to Danger

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Driver fatigue is a safety issue of special concern to the bus transportation industry. Much of the mileage is compiled during long trips and, as many vehicles run at night, drivers often work irregular schedules. Due to their high annual mileage exposure and other factors, bus drivers' risk of being involved in a fatigue-related crash is far greater than that of non-commercial drivers.

To a bus company, this risk can ultimately result in loss of revenue, costs of criminal and liability suits, administrative costs, loss of customer and public confidence, loss of driver and vehicle, workers' compensation, fines for employees exceeding the hours-of-service limits, as well as insurance rate increases. As a result, bus operators are now forced to recognize fatigue and, more importantly, driver fatigue as a major safety issue.

What is Fatigue?

By definition, fatigue is the condition of a person's mind and body, and how it affects that person's response to every day activities. Fatigue may be caused by a combination of factors including inadequate rest, sleep loss and/or disrupted sleep, displaced biological rhythms, excessive physical activity or mental and cognitive work, as well as stress. The daily pressures of the professional bus driver – meeting schedules, dealing with traffic – can also be contributing factors to fatigue.

In today's fast-paced society, people are working longer hours in order to keep up with the demands and responsibilities of raising a family and running a household. For many, eight hours of sleep is a luxury, and more and more of us simply try to get by with less sleep.

However, without sufficient sleep, most aspects of human performance deteriorate including decision-making, thinking and information processing, memory, reaction time and concentration. As a result, persons who are sleep deprived may become easily distracted, experience slowed responses, find it difficult to visually focus, yawn frequently, become irritable, and are more apt to make frequent mistakes. Particularly dangerous is the inability to judge one's own level of fatigue.

Sleep Personalities



Morning Lark
15% of people who wake earlier, go to bed earlier and enjoy working earlier in the day

70% of Population are Intermediate



Night Owl
15% of people who wake later, go to bed later and prefer working night-time hours

Fatigue can greatly impair a driver's ability to drive and maneuver safely, and may be demonstrated by, among other things: random speed variations, erratic shifting, inappropriate braking, lane drifting, failure to obey traffic signs, reduced awareness of surroundings, and a tendency to tailgate.

When extreme, fatigue can result in brief episodes of "nodding off," or microsleeps. The episodes are marked by a blank stare, head snapping, prolonged closing of the eyes, and/or an attention loss of 5-20 seconds, during which time the hazards of the road are not recognized. Traveling at 60 miles an hour, a bus can travel more than 400 feet during a five to six second period. When cruise control is activated, the vehicle will not even slow down during this time. A driver is unaware of the episode until the head snaps forward or, worse yet, the episode results in a crash. In other words, regardless of motivation, professionalism, training, or pay, a person who is fatigued can lapse into sleep at any time, even when behind the wheel.

How Important is Sleep?

Commercial drivers have new guidelines regarding how long they can stay on the road without taking a break. However,

fatigue is not simply driving beyond the legal hours-of-service. In fact, compliance with the hours-of-service limits in no way means a driver will be well rested. The only way to ensure drivers are well rested is if they get the proper amount of sleep.

Just like an engine without oil, the human body comes to a halt without sleep. Good quality sleep is more than just several hours stretched out on the couch. It is seven to nine hours of quiet, uninterrupted, restful sleep.

Throughout a normal night's sleep, a person will drift in and out of two states of sleep – non-rapid eye movement or NREM, and rapid eye movement or REM sleep. During a six to eight-hour sleep period, the body has four to six cycles between NREM and REM sleep, each lasting about 90 minutes. This combination of NREM and REM sleep during a normal sleep period performs vital functions for an energized body and mind. Any disruption of these functions will cause fatigue.

Sleep disorders such as insomnia, narcolepsy, upper airway obstruction, restless legs syndrome, periodic limb movement or sleep apnea can seriously disrupt sleep. Sleep apnea – the medical name for inter-

ruptions in breathing during sleep – is of particular concern as it affects an estimated 20 percent of professional drivers.

Understanding the Circadian Rhythm

Everyone has a biological "clock" that controls hundreds of daily rhythms, including alertness, digestion, hormone production, blood pressure and sleep. For most people, this clock runs on a daily cycle of roughly 24 hours – a circadian rhythm – and is reflected by shifts in body temperature, mood and motivation. It actually determines specific times when we are most alert and times when performance is lowest.

Researchers have long noted that fatigue-related accidents tend to occur in two distinct periods of the day - 2-6 a.m. and 1-5 p.m. These periods coincide with typical low-points in our daily pattern of alertness. For drivers, the more dangerous of the two "down" times is between 2-6 a.m. since most people are programmed to sleep when it is dark. Fighting fatigue becomes increasingly difficult during the evening and early morning hours.

Most professional drivers do not work a regular 9-5 shift. When work/sleep cycles are out of phase with a person's normal circadian rhythm, it is vital to pay special attention to how well they respond to such disruptions. By understanding the human engine and the circadian rhythm, you can identify factors that tend to encourage a healthy lifestyle and reinforce the importance of adequate sleep for your drivers.

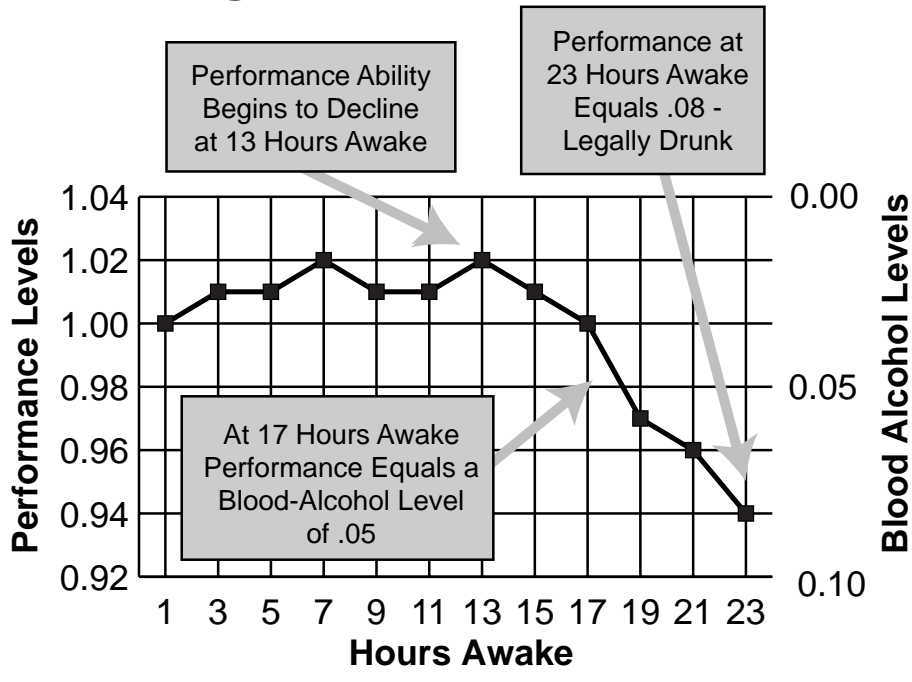
Sleep Personalities

While sleep requirements vary from one individual to the next, most adults feel rested and perform best with seven to nine hours of uninterrupted sleep. If you do not get enough sleep, what you have missed accumulates as "sleep debt." The requirement for sleep does not disappear and it can only be satisfied by sleeping. The more sleep we have lost, the more likely we are to suffer the effects of fatigue.

Nearly as important as the proper number of hours of sleep is the number of hours a person has been awake. The ability to function properly begins to drop at the 13th hour of being awake, and declines as the hours progress. Research shows that at the 17th hour, people perform driving tasks as if they had a blood alcohol concentration of .05; the legal limit for commercial drivers is .04.

While the number of sleeping hours required varies from person to person, so do the differences in sleep personalities. Morning larks prefer to go to sleep early in the evening and wake up early in the morning. They typically see themselves as highly productive and tend to resist change to new work schedules. Others are night owls who stay up past the average bedtime hour only to find it difficult to get up the next morn-

Fatigue Imitates Intoxication



ing. However, night owls tend to have more flexible sleeping habits that indicate they can more easily adjust to shift changes.

Sleep requirements also vary with age, so age is yet another factor in the sleep personality picture. In general, people over 50 are less tolerant of changes in schedule and take longer to adapt to shift changes. As a result, you should take your drivers' ages, sleep personalities and shift preferences into account when scheduling any work assignments.

Taking Action

Now that you have an understanding of the natural cycle of the human body, as well as the importance of quality sleep periods, you have an important tool for predicting and countering the effects of fatigue. Importantly, you can establish procedures that minimize your drivers' exposures to fatigue, including:

- Do not schedule shifts without considering drivers' schedules, not just hours of service.
- Consider the interaction of sleep, shift hours and time of day, and avoid frequent shift changes or shift inversions that are disruptive to the circadian cycle.
- Avoid scheduling a driver for repeated nights of driving.
- Be especially aware of high risk scheduling, such as: any continuous driving between 11 p.m. and 7 a.m. on a regular basis; any 10-hour shift that starts between 8 p.m. and 2 a.m.; irregular daily shift start times day to day and week to week; any combination of schedules in which driving occurs after 16 hours of sustained wakefulness.

- Give your drivers ample notice regarding schedules so they can get sufficient sleep before a trip.

- Evaluate your drivers' endurance level - know how accustomed each is to the level of workload or task demands.

- Survey your drivers to determine lifestyle factors such as sleep personality, general physical fitness, diet and exercise plan. Find out whether a driver is able to sleep without being disturbed. Importantly, determine whether the driver suffers from any sleeping disorders, such as sleep apnea.

Fatigue Awareness Campaign – Off the Road

One way to encourage fatigue awareness is to make it a part of your company's health and safety culture. Educate your drivers about circadian rhythms and the techniques that they can incorporate into life off the road. These preventive strategies can help them be better equipped to fight the effects of fatigue while on the road, and include:

- Be aware of your biological clock so that you can take extra care when you are likely to be sleepy.
- Look after your health and fitness with a healthy diet and regular exercise.
- Understand that stress and personal worries have a tremendous impact on your level of fatigue. Do your best to deal with personal problems before you drive.
- Go to bed and get up at the same time each day, regardless of when you went to sleep. Importantly, be sure to get about eight hours of restful sleep before driving on a

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hours of restful sleep before driving on a long trip. This will require cooperation from family members, advance planning for family activities and careful projection of shift or work changes.

- Use medications with care as some can cause fatigue. Avoid sleeping pills and alcohol as "aids" to sleep.

- Consult a physician if you think you have a sleep disorder.

Fatigue Awareness Campaign – On the Road

Your company fatigue awareness campaign should also provide drivers with a list of practical suggestions or operational strategies to help them combat fatigue while on the road, such as:

- Understand the signs of fatigue (e.g., blurred vision, slowed reactions, sore eyes, poor concentration) and have an action plan to manage fatigue (e.g., plan regular breaks and avoid driving during a body's "down time," if possible).

- Adjust the vehicle's environment, making sure it is well ventilated and is not too hot or too cold.

- Avoid using cruise control as often as possible.

- Wear a good pair of sunglasses to cut down on the problems of sun glare, and keep your eyes moving.

- Make healthy lifestyle choices – eat lightly, exercise regularly and do not drink alcohol or smoke on the job.

- Recognize your body's limitations and realize the signs of sleepiness. When you feel them, pull over immediately and take a nap.

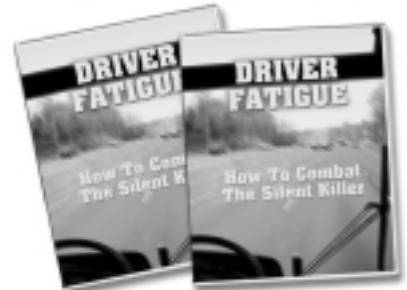
A Wake Up Call for Owners and Managers

Fatigue remains a serious threat to driving safety. While there is no magic solution to combat the fatigue issue, ultimately, the responsibility for alert driving rests upon your shoulders as well as that of your drivers. As an owner and manager, you have an important role in helping your drivers manage fatigue. By understanding sleep, its effects on human performance and the warning signals of fatigue, you will take a major step toward making the roads a safer place for your drivers, your passengers, as well as the commuting public.

Ann L. Barron is the director of communications and marketing services for Lancer Insurance Company, nationally recognized as the nation's largest specialty passenger transportation insurer. The company is licensed in all 50 states, the District of Columbia and Puerto Rico, and has consistently received an A- (Excellent) rating for financial strength and stability from the A.M. Best Company. □

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