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Trucker sleep patterns influence safety-critical events

Commercial truck drivers are essential to transporting goods long distances to meet consumer demands. These demands can put pressure on shippers to move goods quickly while keeping costs low, which often puts truckers at risk for insufficient sleep and/or irregular sleep patterns. Each year there are approximately 4,000 fatalities caused by crashes involving large trucks and buses, and it is estimated that 10 to 20 percent of these crashes involved fatigued truck drivers.

Approximately 2.6 million workers are employed as drivers of large trucks (weighing over 10,000 pounds) in the United States, with more than 1.7 million of these drivers employed as heavy and tractor-trailer drivers. In 2012 alone, crashes involving large trucks cost the United States economy about $40 billion. Yet, the total cost – $99 billion – is much higher when including crashes with injuries or property damage.

Lack of sleep is the number one cause of fatigue and drowsiness. However, limited data are available on the truck driver sleep patterns during non-work periods and their impact on driving performance. To address this issue, researchers at the Center for Disease Control and Prevention's (CDC) National Institute for Occupational Safety and Health (NIOSH) examined the sleep patterns of 96 commercial truck drivers during their non-work periods and evaluated the influence of these sleep patterns on subsequent truck driving performance using data from the Naturalistic Truck Driving Study.

Each driver participated in the study for approximately four weeks, which allowed researchers to examine sleep patterns for 1,397 shifts. A shift was defined as a non-work period followed by a work period. Four quantitative measures were used to describe sleep patterns in a non-work period: sleep duration, sleep starting points in a non-work period, sleep ending points in a non-work period, and the amount of sleep as a percentage of the

non-work period. Driving performance was measured by safety-critical events (SCEs), which included crashes, near-crashes, crash-relevant conflicts, and unintentional lane deviations.

Findings from the study reveal:

- Four distinct sleep patterns in non-work periods:
    ◦ Pattern 1: moderate sleep (average 6.7 hours) which started in the middle of the non-work period and occupied approximately half of the non-work period duration (average 53%).
    ◦ Pattern 2: short sleep (average 5.8 hours) which started at the beginning of the non-work period and occupied less than a half of the non-work period duration (average 44%).
    ◦ Pattern 3: a long sleep (average 8.1 hours) which occupied a majority of the non-work period duration (average 68%).
    ◦ Pattern 4: long sleep (average 9.3 hours) which occupied more than 90% of the non-work period duration (average 93%).
- Pattern 2 had the highest SCE rate, followed by Patterns 1, 4, and 3. Regression analysis suggested that the SCE rate of Pattern 2 was significantly higher than the SCE rates of Pattern 3 and Pattern 4. The SCE rate for Pattern 2 was not significantly higher than the rate for Pattern 1. Pattern 2 also had less sleep during the time period between 1:00−5:00 a.m. compared to Patterns 1, 4, and 3.
- Male truck drivers, fewer years of commercial vehicle driving experience, and higher body mass indexes were associated with increased driving risk compared to their counterparts.

Findings from this study have implications for driver training and fatigue prevention efforts to keep truckers and others on the road safe. Training and prevention efforts should consider educating new drivers on the safety benefits of adequate sleep, truckers sleep time should include the time period between 1:00 a.m. and 5:00 a.m., and arranging sleep in the late stage of the non-work period. Sleep tips for truck drivers are available on the NIOSH website, *Quick Sleep Tips for Truck Drivers* (https://www.cdc.gov/niosh/docs/2014-150/).

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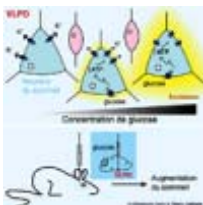### Long-haul truck drivers share views of safety on the road

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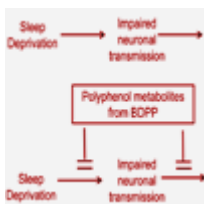
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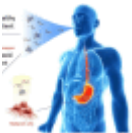
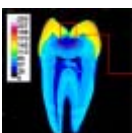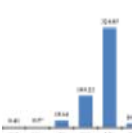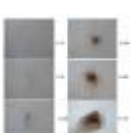### Does traffic noise increase the risk of obesity?

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fatigued driving, naturalistic driving study, sleep patterns, truck drivers

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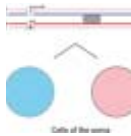| Popular	Comments

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