

Pulsar Informatics conducts congressionally mandated study on fatigue impacts of work hour limitations for CMV drivers.

Apr 2016 Case Studies

Challenges

Capturing fatigue information in a national geographically dispersed operational setting

Logistics of managing 250 driver subjects over a 5 month period

Data capture and aggregation to facilitate data analytics

Products and services



Fleet Insight

Fatigue Snapshot

Sleep Fit

PVT

The final report about this study has been submitted to the Government. It is anticipated that the report will be made publically available sometime in 2016.



Pulsar Informatics was selected to conduct the study in partnership with Washington State University. Our team provided software to collect vehicle driving and safety data and a custom Android App to assess driver's alertness and work rest patterns.

Solution

During the 112th Congress of the United States, an appropriations bill was approved by the Senate and the House of Representatives to authorize funds for Federal-aid highways, highway safety programs, and transit programs. Included in the bill was a requirement for Federal Motor Carrier Safety Administration (FMCSA) to initiate a study of the restart provision under the Hours of Service of Drivers Final Rule, published on December 27, 2011.

Pulsar Informatics was selected to conduct the study in partnership with Washington State University. Our team provided software to collect vehicle driving and safety data and a custom Android App to assess driver's alertness and work rest patterns.

The research team measured CMV drivers' sleep and fatigue through two consecutive duty cycles and the intervening restart breaks. A duty cycle ended when the driver had a period of at least 34 consecutive off-duty hours. Participating drivers had a valid CMV driver's license, were fit for duty by regulatory standards, were actively employed with a carrier or as an independent contractor, and were representative of drivers affected by the maximum on-duty time regulation. During the study, drivers managed their duty and driving schedules and performed their tasks as they normally would have done; no experimental intervention changed their schedules or behaviors.

A total of 106 CMV drivers completed the study. Their commercial driving experience ranged from less than a year to more than 39 years. In each of the two duty cycles measured during the study, a driver could fall into one of the two following study conditions relevant to the new restart rule:

- Restart break with one nighttime period—the driver's restart break preceding the duty cycle contained one nighttime period.
- Restart break with two or more nighttime periods—the driver's restart break preceding the duty cycle contained two or more nighttime periods.

The study compared 24-hour patterns of duty and driving, sleep, and fatigue between these two conditions.

Outcome Measure	Significant difference between Conditions	Drivers with One Nighttime Period in Restart*
Lapses of attention	Yes	Exhibited more lapses of attention, especially at night, during duty cycles.
Subjective sleepiness	Yes	Reported greater sleepiness, especially toward the end of their duty periods, during duty cycles.
Lane deviation	Yes	Showed increased lane deviation (i.e., more variability in lateral lane position) at night and in the morning and afternoon (but not in the evening) during duty cycles.
Sleep	Yes	Sleep occurred predominantly during the day during duty cycles.
On duty	Yes	Sleep occurred predominantly during the day during duty cycles.
Driving	Yes	Time spent driving was greater and occurred more typically at night.

*Compared to Drivers with Two or More Nighttime Periods in Restart.

Results from this naturalistic field study indicate that having at least two nighttime periods from 1 a.m. until 5 a.m. in the restart break helps to mitigate fatigue as measured both objectively and subjectively.

Pulsar Informatics played a critical role by supporting the study and providing state of the art fatigue assessment technology. Contact us to learn more about how to put our state-of-the-art tools to work in your organization to reduce fatigue risks that may be impacting safety, performance, and cost.

Related links:

To read the official Congressional act H.R. 4348, please visit:
<https://www.congress.gov/bill/112th-congress/house-bill/4348>

To read the complete report, please visit:
<http://www.fmcsa.dot.gov/facts-research/art-public-reports.aspx>

Our products and services are designed to make fatigue risk management decisions easy.

Fatigue Meter shows you exactly how operational factors such as long duty hours, night driving, and restricted sleep opportunities contribute to elevated fatigue risk on an individual driver level.

Our data-driven and scientifically validated tool gives you the confidence to implement mitigation strategies such as driver reassignment, nap breaks, and schedule changes as required.



Ready to start managing fatigue risk?

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