

Contributed articles

Heavy vehicle driver fatigue: evidence-based policy making

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Information based on a presentation given at the Australasian Road Safety Conference (ARSC2015), 14 – 16 October, Gold Coast, Australia

Abstract

This article introduces a new National Transport Commission project, undertaken in collaboration with the National Heavy Vehicle Regulator, to develop a national framework to collect and analyse fatigue data by the end of 2016. Historic challenges associated with reforms of the national heavy vehicle fatigue regulations are highlighted; and in particular the need for an improved evidence-base before further amendments of fatigue laws are considered. For example, agencies today are collecting enforcement and crash investigation data using different processes and formats. This limits opportunities to collate and compare meaningful fatigue data and an initial step would be to standardise fatigue reporting. From this foundation, a number of improvements can be made. For example, one improvement could involve recording in a standardised format when a driver in a fatigue-related crash is accredited in a government scheme that permits more than “standard” hours of work.

The NTC has developed a list of priority fatigue issues, as well as data collection and research options. The framework aims to improve roadside enforcement data collection, improve and standardise crash investigation reporting and crash codes, and to undertake scientific research in partnership with the Alertness CRC.

Drawing on fatigue expert advice, Alertness CRC research activities and submissions to the NTC discussion paper (published for consultation on 21 August 2015), an explanation is given on how the framework can measure and improve the understanding of fatigue impairment in a number of areas, including:

- frequency and impact of higher-risk driving schedules
- sleep quality and quantity of sleep in rest breaks
- impact of night driving and;
- health and well-being of heavy vehicle drivers.

An appraisal of some risks and challenges associated with data collection and fatigue research is included.

Introduction

Since the introduction of heavy vehicle model laws in Australia in 2008, a number of measures, including a general duty not to drive while impaired by fatigue and Chain of Responsibility obligations on third parties, have contributed to a reduction in crashes involving heavy vehicles. However, crash statistics and driver attitudinal surveys indicate that driver fatigue remains a significant contributor to the road toll.

Drivers of vehicles over 12 tonnes (or buses over 4.5 tonnes with capacity to carry 12 or more people) are regulated by the Heavy Vehicle National Law (HVNL) in all Australian jurisdictions except Western Australia and the Northern Territory. The HVNL is administered by the National Heavy Vehicle Regulator (NHVR). This is a significant national law reform, not only enabling a single rule book across jurisdictions, but providing a framework to standardise data collection, for both enforcement and research purposes.

The HVNL has five key tools to reduce driver fatigue:

1. Duty of driver to avoid driving while fatigued
2. Duty of third parties to ensure business practices will not cause driver to be fatigued
3. Advanced Fatigue Management (AFM) within a safety management system approach
4. Maximum work and minimum rest rules: up to 12 hours work in 24 hours for drivers on standard hours, and 14 hours in 24 under Basic Fatigue Management (BFM) and;
5. Work diary record keeping.

These are supported by work safety principles, operational practices and industry schemes.

Heavy vehicle driver fatigue is a complex policy area and the impact of these regulations on driver fatigue is not definitive; particularly the effectiveness of the work and rest rules. There is also an opportunity to standardise how data is collected through enforcement activities, crash investigations and surveys.

Without improvements to data collection, supported by robust and validated research, the underpinning evidence is not available to support further fatigue reforms. For this reason, in November 2014 the Transport and Infrastructure Council, an organ of COAG, endorsed the NTC and NHVR to develop within two years a national framework to collect real-life operational data to better inform broader fatigue policy directions in the future.

In early 2015, the NTC surveyed road agencies, police and industry to benchmark current data collection processes and to capture preliminary fatigue issues that could be addressed in the framework. In August 2015, the NTC released the *Heavy Vehicle National Fatigue Data Framework discussion paper* for consultation. This paper identifies and prioritises regulatory fatigue issues, sets out framework principles, and proposes data collection and research activities. This includes consideration of new heavy vehicle crash investigation processes.

The NTC will make recommendations to the Transport and Infrastructure Council in 2016.

Road agency and police perspective

Governments support development of a data framework. Three significant issues were raised:

1. **Length of the major rest break.** A driver on standard hours must have a seven hour major rest break in a period of 24 hours. Fatigue research recommends that between 5-8 hours of sleep is required per night, depending on individual biology. Better data is sought to measure sleep quality and quantity in major rest breaks and to assess whether there is sufficient sleep opportunity in a major rest break of seven hours.
2. **Additional hours of work under BFM.** Better data is sought to assess whether the additional two hours a BFM driver can work is sufficiently off-set with current counter measures (including reduced night shifts). An assessment of the counter-measures could also be linked to a validation of the AFM risk classification system.
3. **Nose-to-tail schedules.** Under the current counting rules that determine when a 24 hour period commences, data is sought to measure the fatigue impact from allowing two long periods of work in a 24-hour period (separated by a major rest break).

Industry perspective

In early 2015, the NTC developed multiple-choice and free-text survey questions with input from the Australian Trucking Association (ATA) and NatRoad. The survey was hosted on survey monkey and made available on the NTC website. The survey was also promoted by the ATA and NatRoad. The survey established a baseline of what fatigue, crash and incident data operators collect and what operators do to assess fitness to work. The survey also identified fatigue issues and options from an industry perspective.

There were 107 respondents. Over half the respondents were operators, a quarter were drivers and less than ten were trade associations. One respondent was a freight customer. The results can only be considered indicative of industry views.

Respondents largely welcomed higher-quality data on crash incidents and near misses. A challenge identified was operator reliance on manual systems, driver interviews and observational information to assess driver fatigue. Only around a fifth of respondents reported using outward and inward-facing camera and other technologies.

Highly-rated factors contributing to fatigue from an industry perspective was poor fitness for work, especially pre-trip fatigue caused by insufficient sleep and rest during a long rest break. Other contributing factors rated highly by respondents included the availability and quality of rest stop areas and the quality of sleep obtained on a driver's rest break. Around a third of respondents also regarded a driver's work schedule as a fatigue risk factor. Less than a fifth of respondents identified the length of the driver's rest break as an issue.

The importance of delays at distribution centres was raised as a factor that should be assessed for correlation with crashes and near misses. Another issue cited was the complexity of the fatigue laws which makes it more challenging to manage fatigue.

Fatigue expert advice

In March 2015, the NTC commissioned expert advice on the development of the data framework from the Centre for Accident Research and Road Safety, Queensland University of Technology, the Transport and Road Safety Research unit at the University of New South Wales, the Institute for Breathing and Sleep at Austin Hospital and the Appleton Institute, Central Queensland University.

Expert advice recognised fatigue risks with insufficient rest opportunities in the regulations, night driving (especially work periods that end between midnight and 6am), length of work opportunities and threshold issues relating to the exclusion of local work. Identifying whether there were adequate counter-measures in place to offset additional work permitted under BFM and AFM was also a significant issue.

In relation to the development of a data framework, experts advised that the framework needs to have clearly articulated high-level goals and specific objectives, with a clear implementation path to realisation. The data framework should be organised around collection of scientific evidence based on an agreed scale of fatigue impairment.

Proposed framework activities

Standardised crash investigation and reporting processes

Understanding the fatigue impact of HVNL regulations can be improved by standardising how fatigue impairment is identified and reported across Australian jurisdictions. There are three potential focus areas:

1. Standardised improvements to how crash investigators identify and categorise fatigue and alertness impairment as contributing factors, including the application of ‘fatigue likelihood’ and ‘fatigue impact’ scales. This would replace current yes/no fatigue reporting.
2. Standardised improvements to what data crash investigators collect from heavy vehicle drivers where fatigue had a likely impact. Current thinking in road agencies is that the following three questions standardised and collected are most critical:

1	Was the driver on standard hours, BFM or AFM?	_____standard/BFM/AFM
2	When did the driver wake up from the last sleep?	_____time since wake up
3	How much sleep did the driver have in the last 24/48 hours?	_____hours

3. Review the Australian Transport Safety Bureau operational definition of relative fatigue.

Collection and analysis of work diary records based on activities identified during compliance and enforcement activities

Police and road agencies interact with heavy vehicle drivers through compliance and enforcement activities. These interactions provide an opportunity to collect improved fatigue data. Under this proposal, national processes are developed to collect and transmit 28 days of de-identified work diary records when a practice of concern is identified during enforcement activities - for example, the identification of nose-to-tail schedules. The collection of 28 days of work records allows fatigue experts to assess the risk in the context of a working week, and the frequency of practices within a 28 day period.

New research to measure the impact of specific regulations

There are four research areas where the Alertness CRC has expertise to provide comparative data on the impact of specific regulations:

- field studies using alertness monitoring devices to scientifically compare fatigue and alertness impact of different schedules (e.g. a comparative analysis of nose-to-tail and conventional shifts; and standard hours compared to BFM)
- objective monitoring of sleep during rest periods, to assess the level of sleep drivers are achieving during short and major rest breaks
- data fusion and data modelling undertaken by the Alertness CRC – utilising multiple sources of scheduling and crash data to improve understanding of linkages between different regulatory provisions and alertness levels and;
- developing and testing practical and validated methods to screen and manage sleep disorders amongst heavy vehicle drivers.

Periodic industry surveys

These are to collect large-scale attitudinal and behavioural data regarding driver and operations’ management of fatigue and alertness. Industry surveys are used to quantify the range of operating schedules and practices across the industry so that baseline risk levels can be established.

Alertness CRC

The data framework will be supported by the Alertness Safety and Productivity Cooperative Research Centre (Alertness CRC); a consortium of industry, academics and technology developers. The Alertness CRC aims to develop predictive tools to reduce occupational fatigue, and improve alertness, safety and productivity. The data framework will integrate Alertness CRC research to measure the impact of fatigue regulations.

The longer-term challenge is to develop a simple, repeatable indicator of when a person is too tired to drive safely that can be applied in the workplace or at the roadside. If this can be achieved, the NTC can work with industry and the community to develop a straightforward performance-based law that is simple enough to be easily understood by those who need to comply with the law and those who enforce the law.