

A review of Fatigue Risk Management Systems and their potential for managing fatigue within the road transport industry

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The Project:

In 2008, the UK Department of Transport (DfT) commissioned a world-wide study to investigate the use of Fatigue Risk Management Systems (FRMS) within the transport industries. The primary aim of the project was to assess the potential of FRMS as an additional control for managing commercial driver fatigue in the United Kingdom.

A Fatigue Risk Management System (FRMS) is:

A scientifically-based data-driven system which manages employee fatigue in a flexible manner appropriate to the level of risk exposure and the nature of the operation. FRMS can be used as an additional or alternative to prescriptive hours of work limitations.

Objectives:

In order to assess the potential of FRMS, the project aimed to achieve the following objectives:

1. To review the academic and regulatory literature relating to FRMS to better understand the steps undertaken in the evolution of this approach;
2. To learn from other countries' experience of FRMS through surveys and interviews with regulators, operators and researchers;
3. To consult with the UK Road Transport Industry to determine how FRMS could be adapted to work in the UK.

Methods:

Table 1 (below) summarises the methods used to collect data, the response rates (where applicable) and the number of participants. Figure 1 shows the proportion of respondents interviewed from the different sectors of the transport industry.

Methods		Response rates	n
1. Literature review		NA	NA
2a. Online Survey		70%	29
2b. In-depth Interviews		88%	59
3. Consultation with UK industry	Fatigue working group ¹	NA	11
	Drivers	More than 50%	34
	Operators and industry representatives	68%	13

Table 1: Methods of data collection

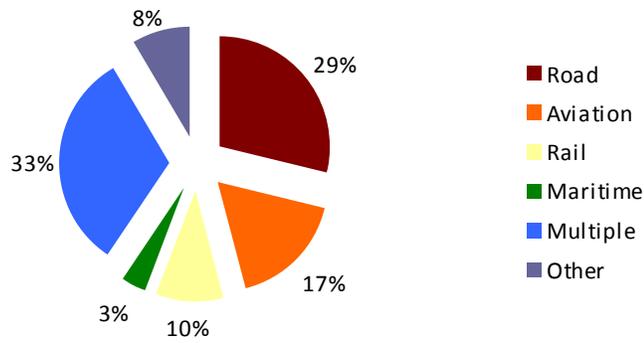


Figure 1: Proportion of interviews by industry

Results:

Key findings:

- ◆ The review of FRMS trials highlighted the considerable potential offered by FRMS as a viable addition to hours of work limitations for managing driver fatigue in the UK.
- ◆ There is at present a lack of objective data for demonstrating the advantages of FRMS.
- ◆ A broad package of regulatory reforms including, but not limited to, provisions for FRMS is likely to be needed for fatigue risk to be managed most effectively.

The study also identified the need for industry guidance and informed the development of guidelines for:

- ◆ Regulators looking to trial FRMS and assess the results of a trial;

¹ The fatigue working group consists of representatives from regulators, trade associations, operators and unions

- ◆ Regulators and operators wishing to develop, implement and maintain an FRMS effectively.

The following sections provide more detail from each of the three areas of research.

1. The literature review

Assessments of early examples of FRMS analysed in the literature review indicated that FRMS has potential to provide enhanced protection against fatigue risk. Table 2 (below) summarises the assessment of four early examples of FRMS.

Assessments of early FRMS				
Regulator	Queensland Transport	Civil Aviation Authority (NZ)	Civil Aviation Safety Authority	NZ Transport Agency
Types of companies involved	Road haulage	General aviation and airlines	General aviation	Road haulage
Assessment report	Burgess-Limerick & Bowen-Rotsaert (2002)	Signal, Ratieta and Gander (2006)	McCulloch, Fletcher & Dawson (2004)	Gander, Signal and Gardner (2008)
Method(s)	(1) Driver survey (2) Business survey	Survey	(1) Onsite Visit (2) Interview (3) Questionnaire (4) Document Review	(1) Driver survey (2) Sleep diary (3) Business survey
n (Organisations)	8-9	88	16	9
Results of study	Overall positive for FRMS	Lack of regulatory guidance resulted in some operators not implementing FRMS	Overall positive for FRMS	Not applicable: trial discontinued

Table 2: Assessments of early FRMS

2. Surveys and interviews

The surveys and interviews indicated that a number of operators are using FRMS to effectively manage fatigue risk, especially in Australia. Although results tended to be positive, the interviews helped to identify challenges in developing and implementing FRMS that regulators and operators should be prepared to manage. Additionally, the interviews indicated that FRMS is only one of a number of improvements to fatigue management regulations and guidelines necessary for enhancing protection against fatigue risk.

3. Consultation exercise with the UK road transport industry

A draft set of recommendations was presented to representatives from the UK road transport industry, together with a questionnaire inviting their comments on FRMS and fatigue management in general. Results indicated that UK industry recognises the need to improve the way in which fatigue risk is managed and that many operators and drivers are in favour of trialling FRMS.

4. Recommendations

The literature review, surveys, interviews and consultation exercise resulted in the development of recommendations for the DfT. Table 3 (below) presents the primary recommendations.

Recommendations	
1. Trial FRMS in the UK	<ul style="list-style-type: none"> ◆ Trial FRMS with mature, safety-committed companies in the UK to determine the benefits of FRMS and its applicability in the UK; ◆ Use advice from the literature review and interviews on how to develop and assess a trial of FRMS; ◆ Use advice from the literature review and interviews on how to develop, implement and maintain an FRMS.
2. Investigate chain of responsibility legislation	<ul style="list-style-type: none"> ◆ Each party within the road transport supply chain has a legal responsibility for managing heavy vehicle driver fatigue. ◆ Special consideration needs to be given to how this system would work within the context of the European Union.
3. Conduct ongoing research into fatigue risk	<p>For example, the DfT could research issues such as:</p> <ul style="list-style-type: none"> ◆ Driver payment methods and whether these impact on fatigue. ◆ Whether there are sufficient safe and comfortable rest areas available for drivers.
4. Investigate broad reforms of fatigue regulations	<p>(Dependent upon the results of 1, 2 and 3)</p> <ul style="list-style-type: none"> ◆ Adopt a mixed model approach including FRMS for greater flexibility; ◆ Provide guidelines on fatigue controls and FRMS; ◆ Provide a toolkit for developing fatigue controls; ◆ Match regulations with health and safety legislation; ◆ Include chain of responsibility legislation; ◆ Improve hours of work limitations; ◆ Abandon the distinction between driving and work hours.

Table 3: Primary recommendations for UK Department for Transport