Asleep on the job: transforming fatigue risk management in UK rail

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SUMMARY

The UK rail industry faces persistent challenges in managing fatigue risk, despite regulatory mandates and lessons from major incidents such as Clapham (1988) and Sandilands (2016). Structural changes, including the creation of Great British Rail, add new pressures and constraints, while progress is hindered by economic, operational, and cultural barriers. This paper argues that a deeper, systems-based understanding and the application of human factors tools are essential to develop pragmatic, multidimensional solutions alongside industry.

KEYWORDS

Fatigue Risk, Rail, Complex Systems

Introduction

Understanding 'demand and pressure' and 'resources and constraints' are two of Eurocontrol's ten systems thinking principles (Eurocontrol, 2014). These principles resonate strongly within the UK rail industry – a sector in perpetual transition. The forthcoming establishment of Great British Rail represents a significant structural shift, introducing new demands and constraints for rail operators. Amid this change, fatigue risk management remains a persistent challenge. This paper explores how system-focused human factors work can support the industry in addressing fatigue risk management during this critical transition.

Influences on the current state of fatigue risk management

Safety critical industries often evolve in response to catastrophic events that expose systemic weaknesses. In British rail two such incidents - the Clapham Junction disaster (1988) and the Sandilands tram derailment (2016)– highlighted deficiencies in fatigue risk management and spurred regulatory calls for improvement (Basacik, Mills, Young, Macgregor-Curtin & Balfe, 2023).

Following Clapham, KC Anthony Hidden's post-incident report proposed operationally feasible scheduling rules, later known as the 'Hidden limits'. While intended as a foundation for robust fatigue management, these rules have largely persisted as a minimal compliance standard rather than a dynamic framework for continuous improvement.

The Sandilands derailment prompted Croydon Trams to modernise fatigue risk management, notably including driver- monitoring technology that detects microsleeps and triggers alerts. Inspired by this success, the Rail Safety and Standards Board (RSSB) and three rail companies have attempted to trial similar technology on heavy rail for three years – with limited progress.

This raises a critical question: Why, despite major disasters, regulatory mandates, and research support, has the rail industry struggled to advance fatigue risk management?

Barriers to progress

The answer is as complex as the system itself. Conversations with operators – whether passenger, freight, infrastructure, or maintenance – reveal a web of interdependent pressures and constraints. Commonly cited barriers to fatigue risk improvement include:

- Economic pressures: Workers seek overtime to offset rising living costs, supported by trade unions defending these rights.
- Resource limitations: Operators cannot afford to significantly expand worker pools, nor is there a sufficient supply of qualified candidates. Overtime and rest-day work remain essential to meeting service demands.
- Operational realities: Continuous rail operations necessitate night shifts and unsociable hours.
- Labour market competition: Track worker recruitment suffers when civil construction offers better pay and more sociable hours.
- Trust deficits: Drivers often distrust fatigue-monitoring initiatives, fearing surveillance or job automation.

These factors illustrate that fatigue risk management is a socio-technical challenge. Systems thinking then, may help us to better understand these challenges more deeply and to identify mitigation strategies that are both effective and pragmatic.

Looking Ahead: Predicting Future Needs

As Great British Rail consolidates passenger operators under government oversight, a shift toward lean workforce management is already evident. Efficiency-driven rationalisation may exacerbate fatigue risks unless counterbalanced by proactive strategies.

Engagement with trade unions remains pivotal. While unions have often championed safety research, their priorities do not always align with those of regulators or safety practitioners. Navigating this dynamic will require diplomacy, transparency, and shared ownership of solutions.

While we have glimpses of the pressures and constraints shaping the system, the absence of real progress makes it clear that we need a deeper more comprehensive understanding of system features if we are serious about driving impactful change.

The Path Forward

So, how do we encourage meaningful progress? There is no single ‘right’ answer, fatigue risk management is multifaceted, and the means to encourage progress must be similarly multidimensional.

A pragmatic approach demands curiosity and humility: asking what we have overlooked, embracing diverse perspectives, and deploying human factors tools to design enquiries and interventions that are both operationally viable and culturally acceptable.

Throughout this paper we take a deeper look at how systems thinking can help us explore these issues alongside industry to find a common path towards improving fatigue risk.

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