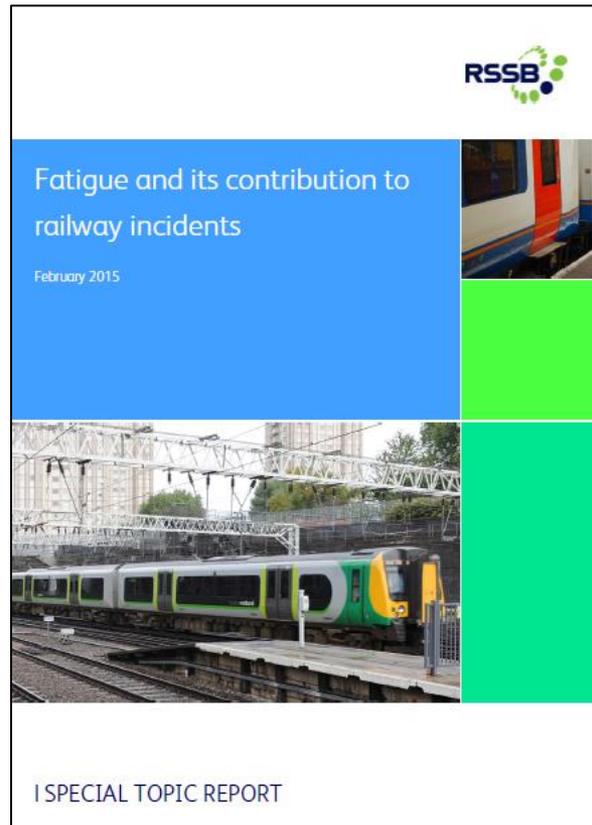




Fatigue

Presented by Dan Basacik
16 November 2018

How big an impact does fatigue have on railway operations?



Available on the RSSB website

Fatigue special topic report

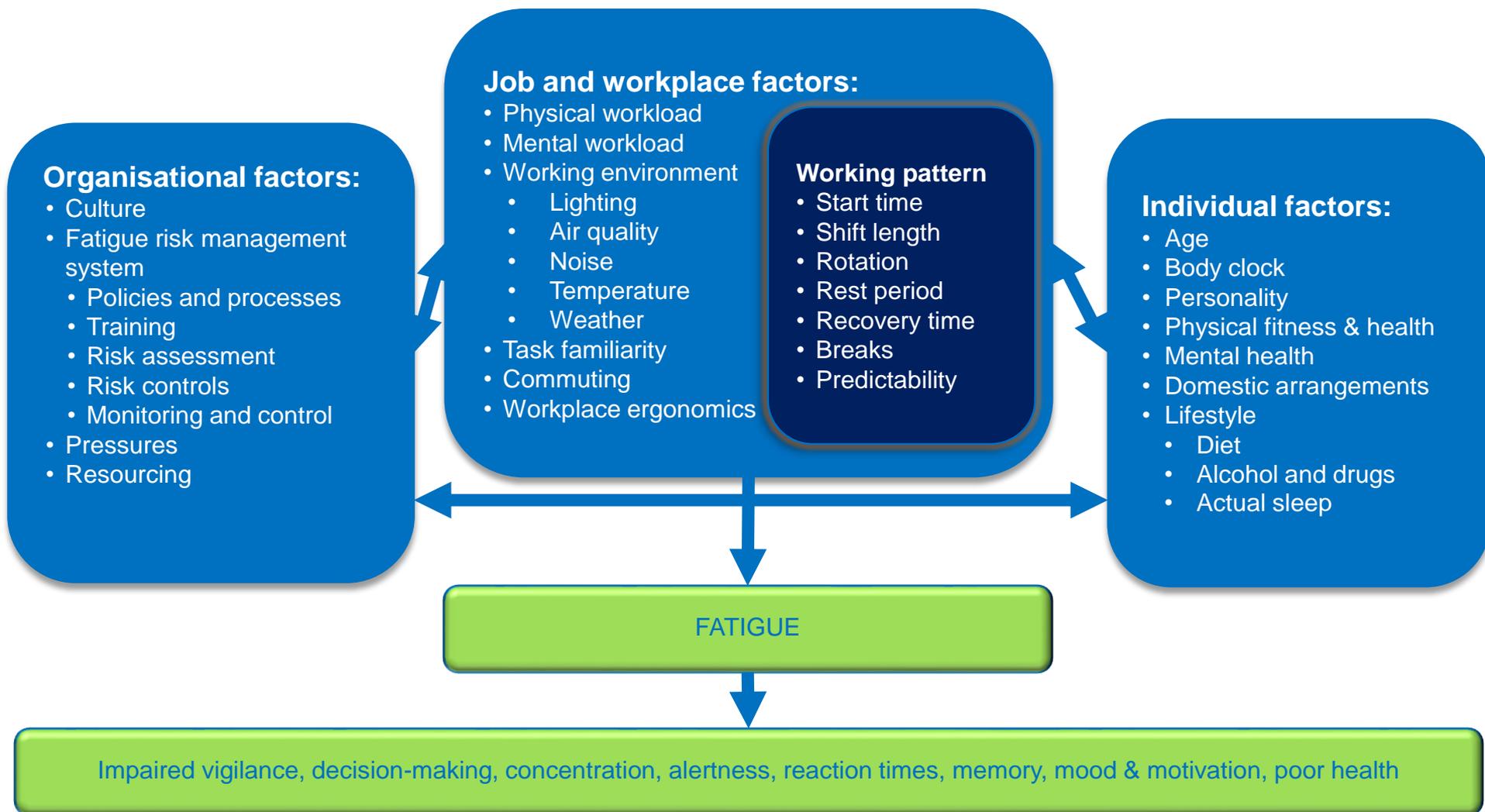
Factor type	% of sample
Causal or contributory factor	6%
Performance shaping factor	15%
Percentage of fatigue-related incidents in full sample	21%



“...whilst the driver has worked two more days than he would if following his own roster pattern he is still within the **Hidden guidelines** for maximum number of shifts permitted to be worked without taking a day off duty.”

Excerpt from an incident investigation report, within the rail industry in the UK

Fatigue causes



“The **fatigue index** shows that the driver should not have been suffering from any fatigue issues.”

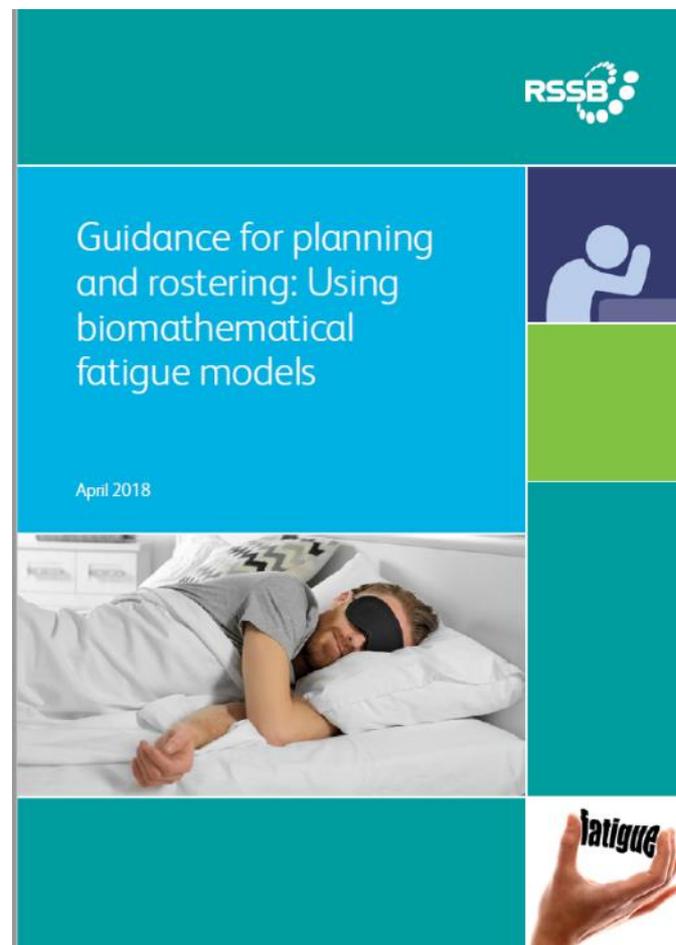
Excerpt from an incident investigation report, within the rail industry in the UK

What do the scores mean?

FRI score = 20

If 100 people worked that shift, 20 would probably experience fatigue to the extent that they struggle to stay awake.

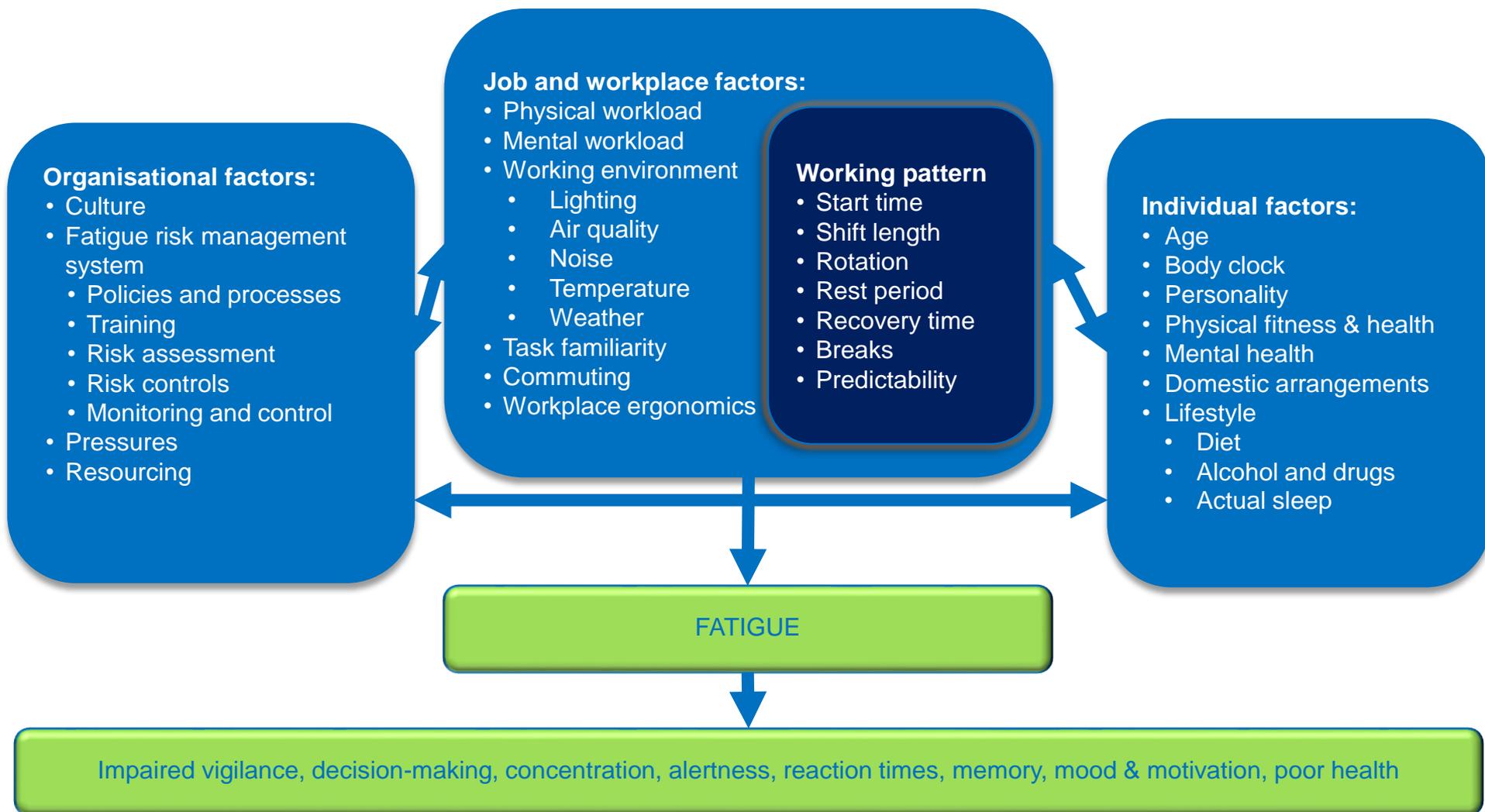
So is a score of 20 safe?



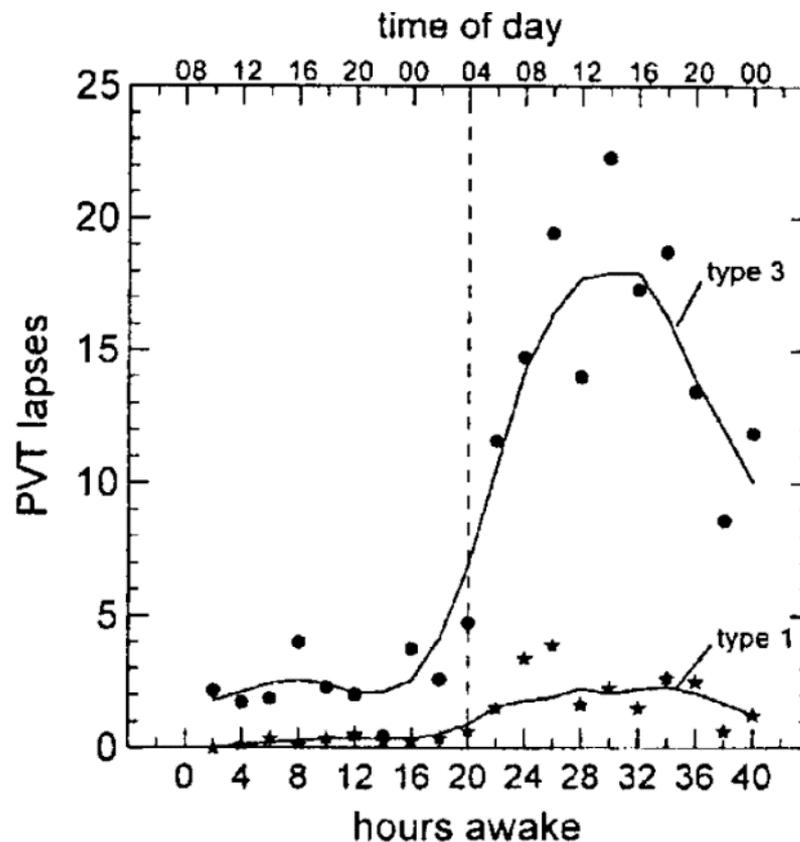
Using biomathematical models

- Understand fatigue and fatigue management
- **Use to compare** work patterns against one another (relative comparison) rather than for a 'pass/ fail' evaluation of a schedule (absolute evaluation)
- A shift below a threshold is not a green light in terms of safety.
- If using thresholds:
 - Validation
 - Single vs multiple

Modelling the full picture?

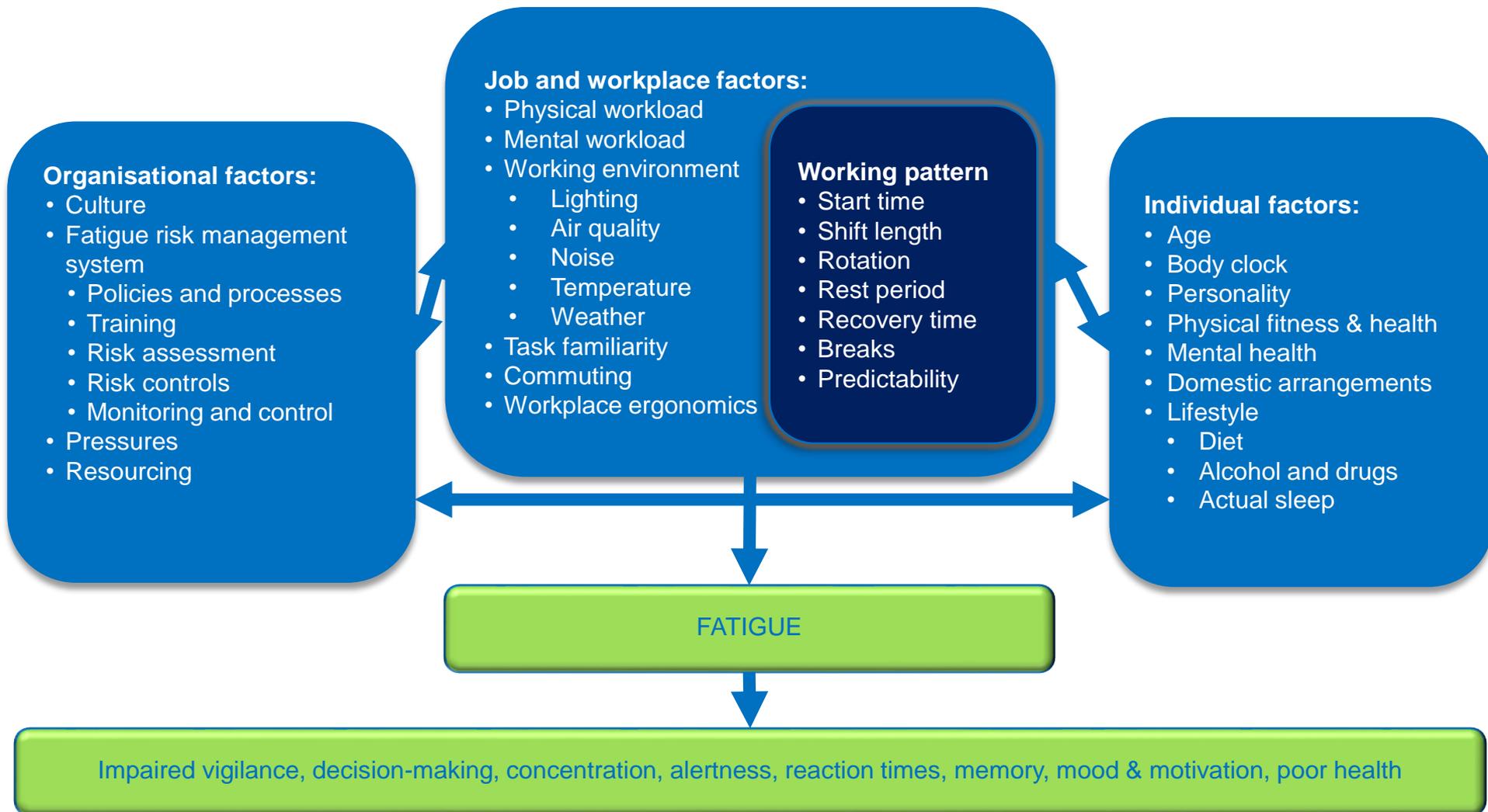


Individual differences

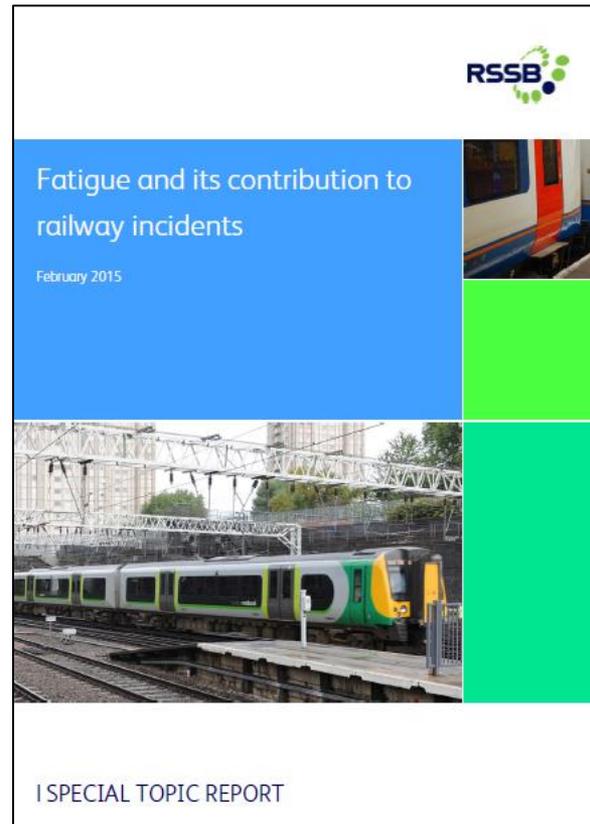


Van Dongen HP, Maislin G, Dinges DF. Dealing with inter-individual differences in the temporal dynamics of fatigue and performance: importance and techniques. *Aviation, Space, and Environmental Medicine.* 2004;75(3 Suppl):A147–54.

Modelling some of it, more accurately



What else did we learn from this report?



Available on the RSSB website

What did we learn from reading the investigation reports?



Fatigue and Alertness topics

FEATURED

Fatigue and you

Everybody needs a basic understanding of fatigue and what they can do to manage it. Find out more here.

[View topic >](#)

Planning and rostering

Planning and rostering is a key aspect of managing fatigue risk. 'View topic' to see our guidance.

[View topic >](#)

Supervision and line management

People who have supervision and management duties play an important role in managing fatigue risk. 'View topic' to see our guidance and resources.

[View topic >](#)

Fatigue risk management systems

This topic area is about setting up and running a fatigue risk management system. It is mainly aimed at senior managers.

[View topic >](#)

Incident investigation

Incident investigations provide companies with information about whether its fatigue risk management arrangements are working. 'View topic' to see our guidance on investigating fatigue here.

[View topic >](#)

Incident Investigation

An investigator's role in managing fatigue

Learn about fatigue

Investigate – consider fatigue

Causes of fatigue

Consider all fatigue controls

Address underlying causes

Promote a fair culture

Positive behaviours

» Fatigue and Alertness » Managing fatigue: an investigator's role



Managing fatigue: an investigator's role

SHARE THIS    

 Dan Basack
Lead Human Factors Specialist

It's important to manage fatigue risk because people need to be awake and alert to do their jobs safely and efficiently. The effects of serious fatigue are comparable to being over the drink driving limit for alcohol. Fatigue can seriously affect our safety. Long-term fatigue is also bad for our physical and mental health.



00:02 / 02:21    

An investigator's role in managing fatigue risk



Incident Investigation

An investigator's role in managing fatigue

Positive behaviours

Prepare (language and behaviour)

Make yourself available

Encourage discussion

» Fatigue and Alertness » Managing fatigue: an investigator's role



Managing fatigue: an investigator's role

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Lead Human Factors Specialist

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An investigator's role in managing fatigue risk



Incident Investigation



» Fatigue and Alertness » Managing fatigue: an investigator's role

Managing fatigue: an investigator's role

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00:02 / 02:21

An investigator's role in managing fatigue risk



Guidance on investigating fatigue

1. Was the individual likely to have been experiencing fatigue at the time of the incident?

Sleep opportunity
Sleep quantity and quality
Other reasons for fatigue / sleep loss
Signs of fatigue

2. Were their actions or decisions a factor in the incident?

See RSSB's Accident Investigation Guidance.

3. Were their actions consistent with known fatigue-related performance impairments?

Did they show signs of reduced alertness, concentration, increased reaction times, poor memory or decision making, or risk-taking?

Guidance on investigating fatigue

1. Was the individual likely to have been experiencing fatigue at the time of the incident?

Example of format

Did the person's working arrangements give them enough of an opportunity to get sufficient sleep?

- Where to start
- Interpretation and rules of thumb
- Factors to investigate (underlying causes)

Fatigue and Alertness topics

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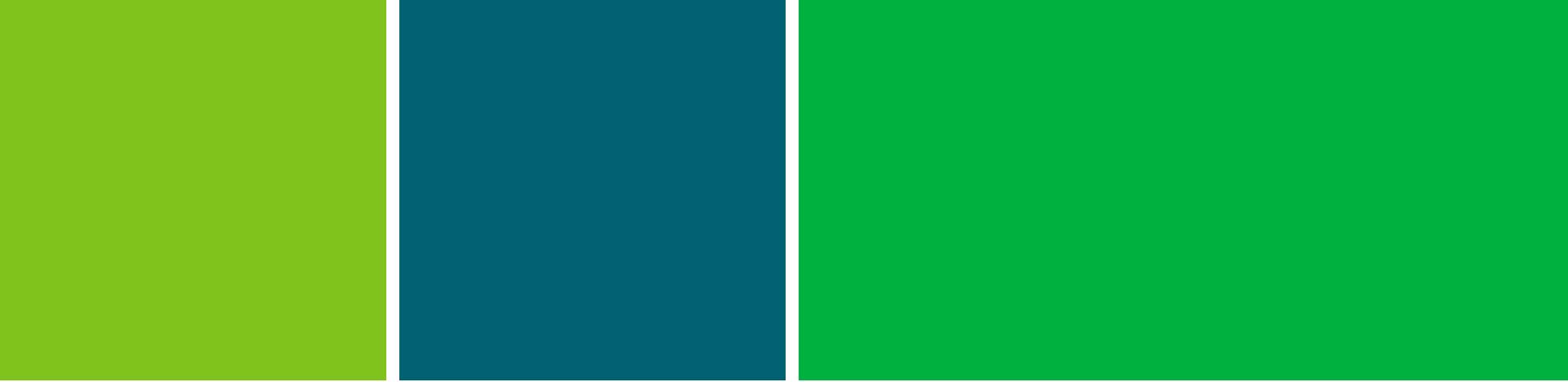
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Any questions?





Thank you

