



Auto Focus

When someone driving for work purposes is involved in a road traffic incident questions will be asked as to how well their employer was prepared in terms of driver risk assessment. Such assessments can have a significant impact on managing fleets but, asks **Dr Lisa Dorn**, are they effective in identifying high-risk drivers?

THE TRAGIC HUMAN CONSEQUENCES OF road traffic crashes cannot be quantified but the cost of failure to manage fleets and driver risk properly can be easily measured in terms of the adverse effect on business continuity, efficiency and the bottom line. Company directors and managers are accountable for the risk and safety of their employees, and this includes those who drive as part of their work. If employers are unable to prove they have effective procedures in place to safeguard such workers, they could be open to prosecution. The size of the company's fleet will not matter; what will matter is how well it is prepared for an investigation in the aftermath of a serious crash.

What causes crashes?

It is unlikely that the world-wide escalating road safety problem will be solved any time soon purely by focusing on making vehicles

safer and engineering forgiveness into the roads. We need to get to the source of the problem: the human factor. As opposed to a crash caused by mechanical failure, or poorly engineered road environments, human factor-related crashes involve issues pertaining to the human being that led to the crash taking place, e.g. excessive speed. The decision to speed can be defined as a driver behaviour brought about by specific beliefs about driving-related events and the traffic environment. These beliefs are based on past experiences and driver characteristics. We each have our own particular (and, in some cases, peculiar) behavioural strategies when we are behind the wheel, each bringing its own associated level of risk.

Around 95 per cent of crashes are contributed to by human factors and academic research has advanced our understanding of the precursors to crashes so that we are now in a far better position to know which ones are most significant. Road safety researchers agree that many drivers are aware of how they should be driving and know what to do to be safe but they don't always do what they know. This is because other, more important personal motives take priority.

To illustrate, if a driver is waiting for a gap before overtaking but at the same time is conscious that if he doesn't hurry up he will be late for a meeting, two motives are competing: the motive to overtake safely and the motive to be on time. It is often the fear of how being late might impact on him at work that will take precedence over executing a safe overtake.

What goes through the driver's mind in the crucial seconds before making these life-and-death decisions? First of all, they rationalise their risk-taking. A driver creates risk by making decisions based on a level of risk they are willing to accept. After all, there were many other occasions on which they took this risk and there were no adverse consequences. Drivers who operate at a lower threshold of risk than others often believe they have better than average skills and can avoid being in a crash.

To understand anything about driver risk it is critical to 'measure' these underlying beliefs. We need to look at driver decision-making and what motivates driver behaviour in order to manage the risk posed by the human factor.

How can human factors be risk-assessed?

Myriad human factors can lead to risk of being in a crash and no driver risk assessment can ever measure all of them.

However, it is possible to identify some of the main beliefs, feelings and behaviours that can create an increased risk of being involved in a crash.

One of the ways psychologists measure such human qualities is via psychometrics. This is the science of measuring human characteristics reliably and validly using statistical techniques based on proven psychological principles. Recently, the psychometric approach has been adopted to assess driver behaviour. Remember, though, that it takes several years of research to produce a robust, reliable and valid psychometric measure. It needs to go through rigorous scientific procedures to make sure that responses to the assessment are predictive of real-world driving behaviour.

Research on hundreds of drivers has identified specific factors to describe the personality-based emotional reactions to driving that lead to unsafe decisions. Taking

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these in turn, published academic research shows that:

- Aggression is associated with tailgating, frequent overtaking, higher frequencies of driving errors, and deliberate violations, such as speeding;
- Drivers who report low levels of enjoyment of driving tend to hold poor beliefs about their own ability as a driver, and these beliefs generate negative mood states and worries, which interfere with driving performance;
- Hazard monitoring is associated with active attempts to anticipate danger, with increased scores being associated with safer driving performance. The thrill-seeking scale measures the desire to experience the excitement of driving fast and taking risks;
- The fatigue proneness dimension measures an individual's vulnerability to experience fatigue after several hours of prolonged driving. It relates to

drowsiness, day-dreaming, and boredom and is associated with slower reaction to traffic and reduced attention; and

- Work-related risk measures the extent to which fleet drivers are concerned about time pressure and other work demands when driving.
- There is also reason to suppose that the way drivers cope with the demands of driving for work impact on driving performance and accident risk. Research has identified five factors measuring different ways of coping with driver stress:
- Task-focused coping, which involves active attempts to increase vigilance when driving is difficult or demanding. High scores are associated with fewer crashes;
 - Emotion-focused coping is a strategy whereby the driver ruminates over their own performance, which may distract them from the primary task of driving safely;
 - Confrontive coping is the mastery of traffic through self-assertion or conflict with other drivers. Drivers who use this strategy are more likely to tailgate and be involved in collisions;
 - Avoidance is the driver's attempt to ignore the stressor – usually through self-distraction; and
 - Reappraisal measures the extent to which the driver evaluates what mistakes were made and how they can improve as a driver.

There are currently several driver risk assessment tools on the market, with each provider offering their own particular brand of self-reported measures. The assessments usually include questions relating to driver attitude, behavioural intentions, knowledge of the Highway Code, and hazard identification. Most provide an overall low, medium or high-risk score, with varying levels of insight into what can be done to actually manage risk.

A psychometric measure of driver beliefs, feelings and behaviour that has been developed according to the factors explained above is the Fleet Driver Risk Index (FDRI), which was introduced by Cranfield University to exploit the decades of research undertaken by the author. The FDRI measures an individual's vulnerability to behavioural and situational risk when driving for work using the core facets of the Driver Stress Inventory (DSI). This is a relevant foundation for the FDRI because it is well documented that driving for work can be highly stressful, and that there is a link between driver stress and fatigue and increased crash risk.

Driver stress impacts on driver behaviour in two ways. Firstly, stress interferes with attention to driving by generating anxiety, worry and task-irrelevant thoughts that reduce attention to the primary task of driving. Secondly, stress impairs the driver's judgement in the selection of coping strategies, which, in themselves, may lead to unsafe decisions in response to traffic-related events.

FDRI calculates the situational risk measure based on factors such as age, experience, and crash and violation record. For each driver, an individualised five-page psychometric report is automatically generated, identifying not only which drivers are most at risk of being involved in a collision but also – and most importantly – why those drivers are at a high risk by identifying the specific behaviours that contribute to that risk.

Plus and minus points

One of the major advantages of conducting a driver risk assessment is that it helps identify high-risk drivers who can then be targeted for more focused one-to-one driver training. This is especially useful for companies with large fleets and allows resources to be concentrated on the drivers that are more likely to be involved in a crash.

Another important advantage is that driver risk assessments often provide a management information system (MIS) on the back of the assessment, which gathers all driver data into an overall management reporting structure. The MIS enables the manager to easily monitor the entire driving risk management process, incorporating assessment, monitoring, review, compliance and audit trail, ensuring that the company has fulfilled its health and safety duty of care to its employees.

Finally, research has shown that tailored risk feedback interventions work better than a blanket low, medium or high-risk categorisation. With individualised profiles, drivers can focus on the behaviour that is increasing their risk of being involved in a work-related crash.

But there are disadvantages, too. Assessments can, for example, contain relatively few questions, which can be easily memorised, and employees might be tempted to pass this information on to colleagues who have yet to complete the assessment. A good assessment is one with a high number of questions, for which there is no right or wrong answer. This ensures that the questions cannot be memorised and respondents have no idea where the benchmark is for each question, making it difficult to anticipate what score represents a low risk.



Secondly, it is often obvious what the right answers should be, so they are easy to fake. Drivers might be concerned that they will 'fail' the assessment and so, to avoid being regarded as a bad driver, they might misrepresent the way they really drive. A driver risk assessment should not be set up as a test that a driver either passes or fails, or used as a driver recruitment tool. Tests that use a standard psychometric approach are more difficult to fake because they use 'lie scales', which exploit well-established research showing that drivers hold distorted beliefs about their driving skill and crash risk.

All of this being said, the behavioural precursors to crashes are multifaceted and to say that any driver risk assessment can predict with absolute certainty whether a driver will or will not be involved in a crash would be a misuse of that assessment, no matter which method is used. What it can provide is a more objective approach to identifying high-risk drivers and a smarter way of targeting resources to reduce that risk.

Making a model driver

Any driver risk assessment is only as good as the intervention that is put in place to reduce the risk identified. Many companies introduce driver training that teaches drivers things they already know: how to drive safely taking a skills-based approach to

driving. It should, however, address the way a driver thinks and behaves, given that it is driver behaviour rather than lack of skills that is responsible for the vast majority of crashes. To improve the safety of high-risk drivers, trainers need to encourage self-reflection and raise awareness of unsafe beliefs that are fundamental to unsafe behaviours. For example, if a particular driver scores significantly higher than the norm for 'confrontive coping', his or her training should aim to reduce hostile reactions towards other drivers and develop more effective strategies for dealing with frustration while driving for work.

The real value of tools like FDRI is that they provide a summary of the facets of driver behaviour, organising these otherwise rather fragmented components of reactions and actions into more understandable wholes and thus identifying areas of weakness for further training. Such tools are best used for identifying drivers with accident potential and enabling corrective action at the outset, before real opportunities arise on the road. The trainer can target certain behaviours for training, identifying areas where the driver is below the benchmark.

The future of driver risk assessments is likely to lie in the use of more objective measures of driver behaviour. 'Black-box' technology to manage fleet driver risk is just around the corner. ■