INFORMER

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Trucking's Slow Road Ahead?

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Driver Error: Mistake or Misbehavior?

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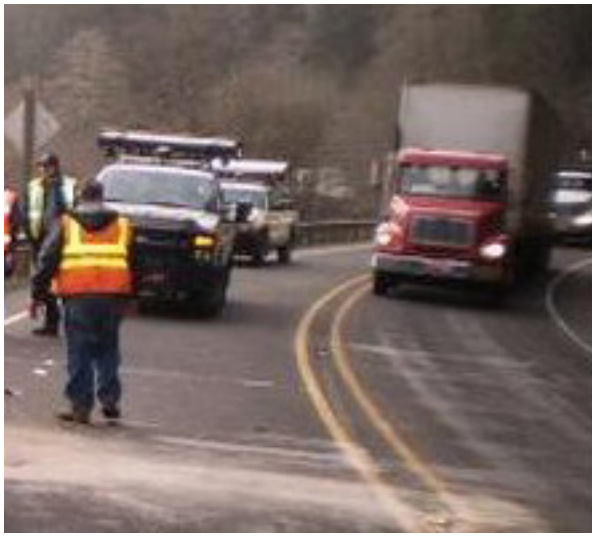
About 90% of traffic crashes are caused principally by driver error. Vehicle or environmental (e.g., roadway, weather) factors may contribute, and occasionally are the principal cause, but most crashes involve a principal or "proximal" driver error triggering the crash or creating conditions leading to it.

In the DOT Large Truck Crash Causation Study (LTCCS), driver errors were classified in four main categories. The categories, along with percentages for truck at-fault crashes, were as follows:

- *Driver physical factor*, e.g., medical crisis, asleep-at-the-wheel (12%)
- *Recognition failure*, e.g., inattention, daydreaming, distracted, looked but did not see (30%)
- *Decision error*; willful unsafe behavior, e.g., speeding, tailgating, illegal maneuver; or misjudgment, such as misjudging the speed of another vehicle (40%)
- *Performance* or *response execution error*, e.g., poorly executed turn, overcompensation after avoidance maneuver (6%).



The four driver error categories accounted for 88% of LTCCS truck at-fault crashes. Others were attributed to vehicle failures (10%) or environmental factors (2%). The proximal cause (called the "critical reason" in the LTCCS) doesn't tell the whole story of a crash, but it's the most important single element.

The LTCCS classification system is both useful and well-grounded in previous research on crash causation. Carriers should consider using this classification system to assess and better understand their own crashes.

The LTCCS system is instructive, but there's another, simpler way to view driver errors which can also benefit carriers. This is the simple distinction between driver *mistakes* and driver *misbehaviors*. There can be a gray area between mistakes and misbehaviors, but most driver errors resulting in crashes fall clearly in one category. Knowing which type of error occurred tells you a lot about your driver and how, as a safety manager, you should respond to the event.

Mistakes are failures of human performance. A person is trying to do the right thing but makes an unintentional error in the performance of some perceptual, mental or physical act of driving. Mistakes include recognition failures like distraction and "looked but didn't see;" misjudgments at intersections; falling asleep at the wheel; or steering overcorrection. Mistakes are apparent from their consequences (e.g., a crash) but otherwise not easily detectible from outside the vehicle. Mistakes can be subtle; for example, a one-second delay in driver awareness can be the critical error. Drivers can obey every law, rule and good practice of driving and still make mental mistakes, even fatal ones. To err is human!

Misbehaviors are voluntary, intentional unsafe driving practices like speeding, tailgating, or other illegal maneuvers. These are usually ongoing prior to the crash and contribute to the development of the crash situation. Misbehaviors are observable– even obvious– from outside the vehicle. Every day you can see motorists speeding, tailgating, weaving, and generally behaving badly. Enforcement and other traffic safety experts often call these misbehaviors *unsafe driving acts*.

Mistakes and misbehaviors cut across the four LTCCS driver error categories, though not evenly. Most recognition failures are mistakes; for instance, a driver looks in his/her side view mirror but doesn't see another vehicle. Similarly, many crashes are triggered by very brief periods of inattention or distraction. In contrast, most decision errors are misbehaviors because most involve a *driver decision* to speed, tailgate, make an illegal U-turn, or otherwise violate safe driving rules.

Yet you can find both mistakes and misbehaviors in all four LTCCS categories. For example, driver physical failures are not intentional, but falling asleep-at-the-wheel should be expected if a driver chooses to push him or herself beyond sensible or legal limits. That's misbehavior. There's also a gray area between mistakes and misbehaviors, as when a driver is unaware that his or her speed on a curve exceeds the rig's dynamic limit. Further, a driver can both misbehave and make a mistake to cause a crash. When drivers tailgate, for example, even a split-second of distraction can trigger a rear-end crash.

So why is the distinction important? If we have the LTCCS 4-category driver error classification, why have another, cross-cutting scheme with just two categories? The answer is that the mistake-misbehavior distinction helps us to understand how and why drivers cause crashes, and how carrier safety policies

and can reduce them. For example, various onboard monitoring technologies can capture misbehaviors like speeding and tailgating. Mistakes are usually fleeting and may not be captured unless there is also an abrupt vehicle maneuver.

Most traffic violations are visible unsafe driving acts. Thus, driver motor vehicle records (MVRs) contain more information on misbehaviors than mistakes. A history of multiple violations reflects a driver personality and attitude inclined toward misbehaviors.

Your assessment of a driver error should determine how you counsel, monitor and re-train the involved driver. Driving performance and behavior are supported by *driver knowledge*, skill, and *attitudes* (KSAs). The figure illustrates this relationship as a three-legged stool. J. B. Hunt's *Safety Culture 101* class for safety managers suggests using the stool concept for KSA analysis after a crash. First, investigate the crash and identify the critical performance or behavioral error. Then ask yourself whether the driver's critical error occurred due to missing knowledge, inadequate *skill* or a misguided attitude. Suppose a driver hits a parked forklift while backing in a yard. Did he or she not know to check the path visually before backing? Did he/she not have the skill to maneuver while backing? Or did he/she not have a caring safety *attitude*? The answer tells you what training and other management interventions might be needed to correct the behavior or performance. Generally, mistakes reflect knowledge or skill deficiencies, whereas misbehaviors reflect attitudes.

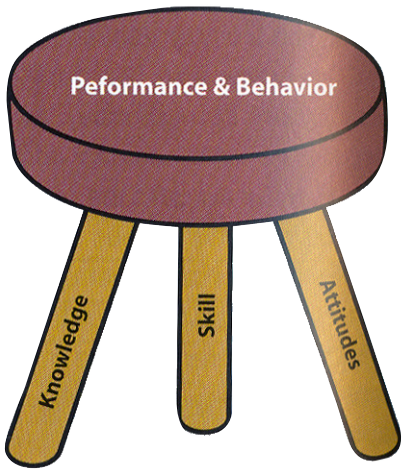


Figure 1: The stool model of KSAs and driving performance and behavior

Both mistakes and misbehaviors can be targeted and reduced. An instructional or coaching approach works best to reduce mistakes. For example, drivers can be taught to use their mirrors better and also to reduce eyes-off-road time, thereby reducing recognition failures. For misbehaviors, a behavioral management approach is needed. Behavioral safety management involves objectively monitoring driver behavior and using consequences –both rewards and punishments – to modify it. Misbehaving drivers can change their habits, but part of their change process must be deciding to make better driving choices.

Dr. Ron Knipling is the author of Safety for the Long Haul; Large Truck Crash Risk, Causation, & Prevention. He is a researcher and consultant with 30 years experience in large truck safety.