



Optimizing ELD: Compliant, Yet Asleep at the Wheel

And other insights from Dean Croke, predictive analytics and long-haul industry expert



The ELD mandate continues to be one of the most discussed topics in the trucking industry. This is particularly the case given that Canada has implemented its ELD regulations. There are folks on both sides of the fence: those who say the technology is making their daily lives easier, and those who find the associated Hours of Service (HOS) regulations producing more headaches than ever. The major disagreement between these two camps lies in the misconception that HOS compliance makes fleets safer.

Transportation industry expert, Dean Croke, says the topics of safety and compliance are mutually exclusive, and that the real value of electronic logging devices lies in their ability to produce immense data sets in real time. The practical applications of these data are innumerable, and when you and your drivers acclimate to the reduced flexibility, you'll come to realize the benefits far outnumber the drawbacks.

Croke currently serves as Principal Analyst at DAT iQ. Before assuming this role, he was Chief Analytics Officer at Freightwaves, and prior to that he led the Data Products division at Spireon. Croke also headed up Lancer's Long-Haul Trucking Insurance after spending many years as Vice President of Omnitracs Analytics, where he developed business intelligence technologies, including predictive models, complex business rules engines, and data analytics for transportation companies.

Croke has thirty-five years of experience in transportation, data analytics, data mining, and insurance risk management.

And after having covered nearly two million miles in Australia as a long-distance truck driver, Croke still holds a CDL. He is uniquely equipped to speak on the topics of transportation management, risk management, and human performance.

Lucky for you, Croke has graciously offered to share his years of expertise with you. What insights will you glean, and which best practices will you incorporate into your fleet management plan?

Data is your most valuable resource

In the 1880s, oil changed the world economy by driving the development of things like the internal combustion engine, central heating, and plastics. Most importantly, oil fueled an economic force that inextricably changed the way people lived and worked. Today, data is fueling a strikingly similar change, impacting not just high-tech, high-profile companies, but also old-school, low-tech industries around the world.

Electronic log data is changing the traditional business paradigm and, in the process, becoming a dominant data source in how the transport task is managed within the supply chain. In the future, ELD data will also be a catalyst to help drive new technology like smart contracts, as shipper and supply chain inefficiencies come under scrutiny with load times becoming a verifiable data point.

Why Compliance And Safety Don't Go Hand-In-Hand

In addition to personally logging over two million accident-free miles, owning and managing fleets, and working in the data science industry, Croke was also tasked with the unfortunate experience of informing families that their spouses and parents had died in trucking accidents on his watch.

Those experiences, he says, changed him forever. And they're what drove him to test and develop technologies that not only add value to truckers' lives, but help managers like you be more effective, as well.

During his time with Spireon, Croke logged over 3,000 miles in his personal Peterbilt testing ELD technology. First and foremost, what he found was that compliance with HOS regulations and overall safety elicited by drivers do not go hand-in-hand. In fact, a driver can actually be sound asleep at the wheel, yet 100% compliant with HOS regulations.

For instance, the average microsleep event on highways in the United States is just over five seconds in duration. At 65 MPH, a truck can cover over 500 feet during that time. That means there are drivers across the country traveling nearly the distance of two football fields completely unconscious. Yet, the majority of these drivers are fully compliant with HOS requirements.

So, rather than expecting safety improvements to follow HOS compliance, Croke argues that you should utilize the data produced by your ELDs to identify the estimated 12% of drivers whose work-and-rest patterns have them operating at high levels of fatigue risk.

But, before we jump into how ELDs can help you identify and manage risk, we need to settle a longstanding debate.

Paper vs. Electronic logs: which is safer?

Having been an over-the-road driver and having used both electronic logs and paper logs, I knew that compliance with logs had nothing to do with my safety.

In 2006, Croke set out to study the accident rates of fleets using both paper and electronic logs. The two study groups covered more than 12 million miles and collected data from

more than 30 carriers over the course of the two-year study. What Croke found was that fleets using paper logs recorded 30% fewer DOT-recordable accidents. He attributes this result to drivers sleeping when they're tired and driving when they're awake, and perhaps recording information that tells a slightly different story.

In 2011, the study was replicated using two fleet groups that ran on electronic logs. This time around, the two groups produced approximately the same number of DOT-recordable accidents by the end of the study. That figure also nearly matched the number of accidents recorded by the paper log group in the previous study.

What this indicated to Croke was that it wasn't the mechanisms of the log methods themselves, but rather the perceived level of flexibility afforded to the drivers, that made the difference in overall accident rates. In essence, drivers were used to traditional sleep patterns and found ways to make the system work for their needs with paper logs. In the end, drivers using paper logs were likely getting more continuous sleep than those working for fleets that had implemented ELDs.

Now that all fleets must comply with HOS regulations, it's important to understand how you can manage risk as your drivers adopt new habits in conjunction with process adjustments. Below, we'll dive into risk management and how electronic log data can help you identify and correct risk taking behavior. But, first, let's take a moment to appreciate the myriad of information you can use to make your drivers' lives easier.

ELD insights for fleet managers

From a data science perspective, the electronic log data feed is one of the most clean, well-structured, predictive, and insightful data sets I've seen in studying U.S. truck data. Beyond identifying which drivers are compliant with HOS regulations, ELD log data can also tell you:

- Who your riskiest drivers are, and when
- Which of your drivers are most likely to exhibit risk-taking behavior
- Which drivers are the most and least productive

According to Croke, too many in the safety space think of drivers themselves as either safe or unsafe when, in fact, it's not a binary choice at all. Even the most experienced drivers can be either safe or unsafe on an hourly basis.

Just think about your own driving habits. Are you as cautious behind the wheel during your morning commute as when you're stuck in rush hour traffic on the way home? Identifying when your drivers are most likely to exhibit risk-taking behavior is key to keeping your fleet safe for the long haul (pun intended).

Furthermore, ELDs can tell you a lot about who your most and least productive drivers are. Rather than simply indicating average driver speed, the data stream can easily extrapolate, as a measure of productivity, miles logged per hour. So, instead of learning which of your drivers are the quickest between pickup and delivery, you can glean which are spending the most time in detention, at rest stops, and traveling to and from work.

Drivers also stand to benefit greatly from the practical applications of ELD data. For example, electronic log data can:

- Help shield drivers from spurious claims by motorists
- Eliminate shipper coercion
- Allow for uninterrupted sleep
- Be a source of truth in accident litigation

Managing risk and safety with ELDs

Using fatigue-risk simulation software and real-time electronic log data feeds, you can identify populations of drivers that fall outside of the typical over-the-road safety models. On Spireon's FleetLocate UI, for example, fatigue-risk distributions are calculated on a scale of 1-100, with the lowest end of the scale indicating total wakefulness and the latter end of the scale indicating extreme fatigue risk.

On average, if you were to select a driver at random, he or she would likely fall somewhere around 40 on the fatigue-risk distribution scale. At a score of 60, a driver is five times more likely to be involved in a DOT-recordable accident. At 70, a driver's impairment is equal to 0.08% blood alcohol content—equivalent to sixteen hours of continuous wakefulness.

Croke found that upwards of 12% of long-haul drivers, and



25% of slip-seat drivers were operating at high fatigue risk at any given moment. He goes on to note that the fatigue risk exhibited by slip-seat drivers is mitigated by the short average length of haul. In other words, slip-seat drivers are less likely to be involved in DOT-recordable accidents because they're getting in and out of the cab much more frequently, and aren't spending a lot of time at high speed.

Therefore, the population requiring the most scrutiny is the 12% of long-haul drivers operating outside of prescribed safety guidelines. This demographic is the biggest culprit of single-vehicle lane departures and preventable accidents in the industry. Apart from the perception that fleets put the general public at risk through unsafe driving practices and loose enforcement of safety standards, accidents like these can result in astronomical litigation fees and penalties for both you and your drivers.

So, you'd be wise to use the information that's at your fingertips to tighten up security parameters and institute best practices. In doing so, you'll satisfy both HOS requirements and the need for drivers to be well-rested, increasing their safety and productivity. As we'll cover in the next section, ensuring your drivers are well rested is actually a huge boon to your fleet, as well-rested drivers are proven to do on average 10% more miles.

Using ELDs to improve driver safety and increase driver productivity

Truck-led fleets empowered to use electronic log data do 10% more miles a week. A recently published case study used electronic log data to manage fatigue risk and the application of intervention programs; the results are astonishing. A batch of new industry hires totaling 1,765 were separated into two groups. The control group received training on how to properly use ELD technology to comply with HOS regulations.

Moreover, researchers concluded that participants who had enrolled in the sleep class were 30% less likely to voluntarily terminate their employment. They were also 6.75 times less likely to incur a mid-trip service failure, meaning the driver couldn't make it to his or her delivery point on time. On the flipside, the control group had twice as many loss-of-control accidents and five times as many run-off-road accidents, while also spending 7.2 times more money on accident-related fees. Considering the potential savings realized from markedly fewer DOT-reportable accidents and 720% fewer associated costs, you would be remiss not to allocate at least a portion of your revenues toward driver sleep education classes.



Drivers in the study group received the same training, but were also asked to participate in a one-time 90-minute sleep education workshop. Additionally, study participants from the study group were tasked with getting six hours of continuous sleep every day, and two periods of continuous night sleep every seven days.

After the six-month trial period had concluded, researchers were amazed to discover that participants in the study group had only one rollover, compared to fourteen in the control group—which happened to be the normal rollover accident rate for that particular fleet.

Developing workable driver education and corrective action programs

If you teach drivers to sleep within the current HOS framework, you'll get fantastic results.

In order to get beyond HOS compliance to a place where your fleet is actually benefiting from the ELD mandate, both drivers and management need to be on the same page about expectations.

An excellent starting point would be to invest in a short, one-time sleep education class for each of your drivers, whereby company representatives would reinforce work-and-rest best practices, and task drivers to commit to a regimen of frequent, continuous sleep, such as the one listed above.

There's also another half to this equation—the part where your fleet maintains the return on its investment by routinely monitoring log data for behavior that falls outside prescribed operational safety parameters. Identifying such behavior requires you to go beyond a physiological examination to discover what's actually driving those observations.

For example, a driver could be considered at-risk for both environmental and personal reasons. Using the information made available by ELDs will inform the conversations you have with your drivers, and can help you tailor the corrective actions that will best address the issues at hand. Is your driver hard-wired to take more risks, or do they just need to get a good night's sleep? Data points like timestamps can point you in the right direction, but it's important you use that data to fuel deeper conversations with your drivers and uncover contributing factors. Family issues at home are a common reason for excessive rest breaks, for example.

In this instance, the necessary conversation is not how to curb the driver's penchant for "slacking off," but rather how to find a work-life balance that results in greater efficiency on the part of the driver. As Croke notes, it's best to start conversations off with non-confrontational phrasing like, "How's it going?" Since the data isn't actually telling you the full story, it's important to pair your driver's own experience with what the data is telling you, and to craft a corrective action program that suits his or her individual needs, in addition to those of the fleet.

Additional ELD benefits

Shippers and detention

Electronic log data is distinctly valuable in its ability to indicate who your worst and best customers are. With Line-4 events becoming a verifiable data point, fleet managers are able to discern which shippers have the highest and lowest levels of driver detention, and which scheduled appointment times may be unsuitable for high levels of utilization.

According to a recently published study surveying over 200,000 truck drivers, detention times are directly correlated to shipper coercion, voluntary employment terminations, and risky driving practices. The study found that 81% of drivers felt pressured to get to their next destination after being detained, while 32% reported driving on average 3.5 miles per hour faster after a detention.

The study also concluded that 75% of drivers admitted to being detained for more than two hours a week, and 35% reported being detained for more than six hours a week. In total, drivers experience an average of seven extended detention periods per month.

Perhaps the most interesting result of this data stream is the fact that voluntary employment terminations rose exponentially during the first eighty-nine minutes of detention, then sharply dropped off at the ninety-minute mark. Why, you ask? The obvious answer is that the fleet in question opted not to compensate drivers for the first hour-and-a-half of detention time. Having this information at hand, thanks to the acquisition of ELD log data, enables you to retain more drivers by instituting a more graduated driver detention pay scale.

Freight pricing

Given current HOS regulations, shipments in the 500–700 mile range, which used to be considered single-day hauls, now may require fleets to quote two-day delivery times.

Using information available from the ELD data stream, you're empowered to make ROI-focused business decisions based on the following criteria:

- Which length of haul yields the most/least profit
- Which lanes have the highest dwell time between loads
- Which drivers, trucks, and trailers are the most productive

Armed with this insight, you can make data-driven decisions to focus on hauls with fewer than 500 miles, or develop a pricing structure that offers the best possible return on investment. A third option would be to institute a policy of team-driving loads over 500 miles away, which would satisfy both the customer's need to receive timely deliveries and HOS requirements.

Insurance

When it comes to purchasing insurance for your drivers, electronic logs provide a rich source of mileage, radius of operation, and location data. Adjusters love this information because it's helpful in identifying which of your drivers exhibit the highest level of risk.

Insurance companies will then assign drivers the appropriate level of coverage for their personal level of risk. This process can save your fleet untold sums of money, as drivers aren't issued more coverage than they need.

In the future, the transportation industry can expect this process to evolve into usage-based insurance (UBI). UBI not only calculates coverage based on risk-profiles, but also rewards drivers who routinely follow safe driving best practices and avoid accidents by routinely lowering their individual rates.

Maintenance

Another thrifty feature of ELDs is their ability to reduce unnecessary and unplanned maintenance across your entire fleet. By sending mileage data directly to maintenance providers, they'll be empowered to alert you when it's time to schedule an inspection.

Furthermore, ELDs provide connectivity to engine telematics components, allowing you and your drivers the ability to actually predict when a part needs replacing before it begins to impact productivity.

Smart contracts: The future of ELD

Given the multitude of use cases for ELD technology already described, you might be asking yourself, "What's next?" As it happens, there are a number of emerging technologies that, when combined with ELD data, can work to further reduce inefficiencies and save your fleet valuable time and resources. Blockchain technology, for example, can be used to facilitate faster payments through smart contracts.

Historically used to validate cryptocurrency transactions, blockchain is perhaps best described as a distributed, decentralized ledger database that records and securely

shares digital transactions. In the future, you'll be able to harness the power of blockchain technology in conjunction with drivers' onboard ELD data streams to initiate automatic payments upon delivery.

Rather than waiting for the submission of proof-of-delivery documentation, payments will be issued as soon as a driver's ELD breaches a customer's geo-fence (unique latitude and longitude), signaling the arrival of a delivery.

Smart contracts will revolutionize the way the trucking industry conducts business, as it all but eliminates the need for paper documentation. This process will likewise make for more transparency and accountability across the entire supply chain.

Conclusion

The correlation between overall driver safety and HOS compliance is tenuous at best. As the ELD mandate becomes a reality for transportation companies just like yours, you'll need to ensure your drivers are well-rested, too.

Where do you start?

Spireon's FleetLocate ELD solution can help you identify at-risk drivers and empower you to institute driver education and corrective action programs that work—among a host of other costcutting benefits.

Are you ready to reduce driver fatigue and foster a culture of safety? Call us at **+1 (800) 557-1449**.

We'd be happy to help you transform your business