

# Accident Severity Model

## Create Substantial Safety Value from Electronic Log Compliance Data

Reduce costs and increase safety through proactive and targeted risk avoidance without the need to touch the truck and install expensive technology.

### *Understanding and Addressing Driver Fatigue*

With all of the awareness recently around the Electronic Logging Device (ELD) Mandate and the additional benefits ELDs offer beyond compliance, fleets are quickly realizing that safety is just as important as compliance to the successful operation of a transportation company. What is not as apparent is that compliance doesn't always equal safety. A driver can be 100% compliant with Hours of Service (HOS) regulations and simultaneously be sound asleep at the wheel. Severe accidents usually occur when drivers are fatigued and become distracted from focusing on driving. Additional precautions must be taken to ensure safety to protect the driver, the fleet, and the public.

It has been challenging to develop severe accident models since just over 1% of drivers are involved in severe accidents. However, while infrequent, severe accidents represent a major financial burden for fleets in today's competitive transportation industry. While severe accidents account for only 22% of the number of accidents, they represent 88% of the cost claims for Omnitracs Analytics customers, and those severe accident have an average cost nine times higher than the all-client, all-accident average cost of accidents.

Fortunately for the transportation industry, electronic logs provide a rich source of predictive data that points directly to severe accidents, not just compliance. This means that by adopting electronic logs in anticipation of the ELD mandate, your fleet not only achieves HOS compliance, but starts accumulating critical information that can help yield significant ROI from your HOS solution.

So how can your fleet utilize this data?

Read on to learn how Omnitracs will get you up to speed on how your fleet can prevent severe accidents to improve safety and increase your bottom line.

## Severe Accident Prevention

Aside from the human toll, severe accidents create substantial and often unbudgeted costs stemming from repairs, insurance, third-party damages, litigation and punitive damages, loss of vehicle productivity, damage to customer freight and service levels, and even administrative burdens to manage the lengthy claims process.

With costs hitting upwards of millions of dollars from a single severe collision, your fleet needs an efficient way to gather massive amounts of information and organize it to address and detect severe accidents before they happen.

The biggest problem with trying to manage severe accidents is they are typically infrequent and appear to be random. However, contrary to popular belief, they are not all random, but a natural culmination of a series of subtle data points that can be detected and addressed well in advance of an accident with the right information.

Unfortunately, gathering all the data required to detect and address severe accidents can be tough to do, especially when your fleet is small and cannot access the massive amounts of data needed to create a predictive model.

Luckily, Omnitrac's Analytics has discovered that the most common cause of severe accidents comes when drivers overestimate sleep and underestimate fatigue. In fact, the majority of severe accidents occur when drivers are typically not in control of the vehicle at the point of impact, as they have mentally disconnected from the driving task, i.e. their brains are asleep.

This inspired us to create a more complete in-cab safety solution to provide a real safety net for fleets that doesn't require access to massive amounts of information. To do so, we developed the tool needed to identify the highest risk drivers most likely to be in a serious collision. Identification of high risk drivers was only the first part of the solution. The next step was to find a way to intervene with those drivers before accidents occurred, in order to reduce fleet costs by developing a new solution that succeeded where previous predictive models failed.

## The Science of Identifying Risk

Commercial vehicle telematics has improved by leaps and bounds since Omnitrac's pioneered its use with a legacy platform in 1988. Increased access to cloud computing and big data technologies are helping fleets process vast amounts of information in real time. However, the opportunity still exists for a more comprehensive, in-cab safety solution to work in conjunction with ELDs to provide a real safety net for drivers.

Current safety technologies utilize audits, perception surveys, and behavior-based scorecard methods that provide fleets with insight into where risk is coming from. However, it's still a reactionary look at what's happened as opposed to what's about to happen. The challenge is that scorecards, while valuable, really only tell you how well you execute on strategy. In contrast, big data technologies will tell you if the strategy is right in the first place. One of the most common myths in data analytics is if you drill down into the data, you'll find the answer, but what if you're drilling in the wrong place to start with? Most reactionary, backwards-looking scorecards and dashboards simply measure symptoms and outcomes, which prevents the fleets that use them from finding the true root cause of accidents. When fleets fixate on symptoms (hard brake and over speed events, for example), they fail to realize the root cause of the problem (which could simply be lack of sleep), and are therefore unable to fix the true physiological problem by only focusing on the symptoms.

Smaller fleets can run into problems gathering the required information to utilize these methods, and finding the time for trial and error of correlations is troublesome for any sized fleet. That is why we created the Accident Severity Model so that fleets like yours can have an efficient, yet effective, way to prevent severe accidents.

## *Becoming Proactive Instead of Reactive*

Even with the multitude of improvements engineered into fleet safety over the years, severe accidents still occur. To combat this, Omnitracs Analytics designed the Accident Severity Model to support fleets of all sizes. Custom-made models, requiring expertise and extensive data collection, are not necessary — the only requirement is access to electronic driver logs. Our model identifies driver risk signatures solely from hours of service data. With only this feed, from any service provider, we predict those drivers most at risk of a high-severity, high-cost, loss-of-control accident, allowing for timely intervention and application of avoidance strategies to reduce expenses and enhance overall safety. That means that companies looking to reduce the cost of infrequent accidents as opposed to just frequency, can use this model to put their highest-risk drivers right on their radar to provide timely remediation.

Omnitracs' Accident Severity Model relies on objective hours of service data to measure true performance, rather than relying on drivers' perception of their condition and alertness (as drivers, like all humans, overestimated sleep and underestimate fatigue levels). The model features two-way technology that pulls data from the HOS application and returns tailored safety messages to The Driving Center dashboard. This allows fleets to intervene and provide timely remediation with high-risk drivers before severe preventable accidents occur.

Omnitracs Analytics Accident Severity Model predicts drivers likely to have an incident based on loss of control of the vehicle at the point of impact, in which the brain completely disconnects from the driving task. The majority of severe accidents come from loss of control accidents when drivers make no attempt to minimize damage at the point of impact. This usually occurs when a driver has been exposed to disrupted or truncated sleep patterns, sleep during the day (when he or she is not used to it), overall sleep deprivation, or cumulative fatigue from weeks of driving heavy vehicles. To help provide drivers with a better safety net, Omnitracs created a way to intervene with the most at-risk drivers to prevent loss of control accidents by improving sleep quality and quantity, introducing creative schedule and driving techniques all underpinned by a world-class sleep science education program.

Timely intervention with at-risk drivers can be the difference between saving lives and losing them, which is why Omnitracs trains management on intervention techniques that will allow managers to speak with drivers when the data shows elevated levels of risks. Some of the interventions could include:

- Strategic timing of naps and/or rest breaks
- Strategic timing of sleep and sleep duration
- Shifting load appointment times to accommodate more sleep
- Driving techniques that promote alertness and vigilance

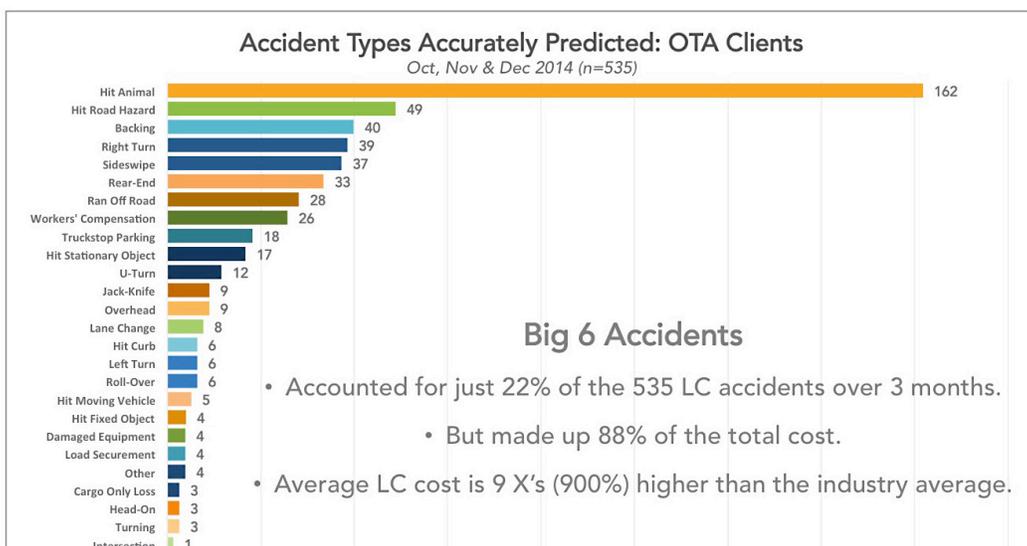
Drivers' understanding of the need for these breaks, based on the sleep science education program, makes a huge difference in their productivity and safety. After all, well rested drivers perform more miles safely.

Below is a study of Omnitrac's Analytics clients over a 10 year period:

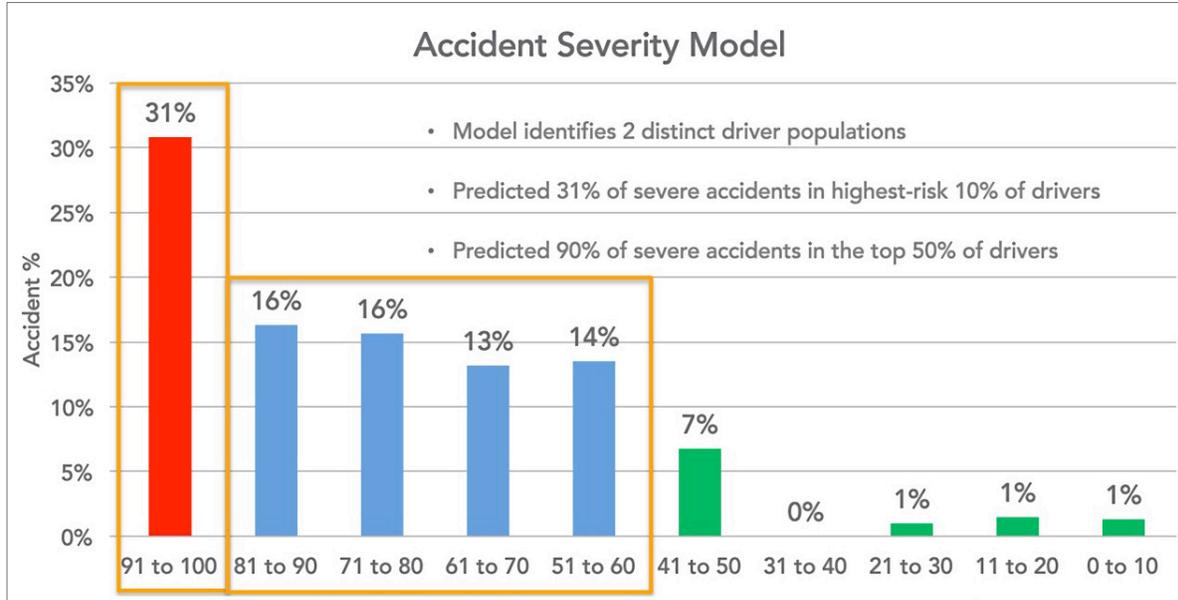


The Omnitrac's Analytics Accident Severity Model was able to accurately predict 31% of these severe accidents in just the highest risk 10% of drivers, and a staggering 90% of severe accidents in the highest risk 50% of drivers. And in a separate three-month study of 181 severe accidents, 71% of accidents accurately predicted included rollovers, jackknives, run-off-roads, high-speed rear-ends, and sideswipes. The ability to predict these severe accidents can give your fleet an impressive return on investment given the cost of severe accidents are often in the hundreds of thousands and even millions of dollars. Preventing just a few accidents makes this program very effective.

Omnitrac's Analytics classifies six accidents as the Big 6: rollovers, run-off-roads, head-on, jackknife, sideswipe, and rear-end. The chart below shows that while these are not the most common result of a loss of control accident, they do have a huge cost effect on fleets.



In a 90-day evaluation of the ASM, we can see how well it performs when it comes to predicting accidents in terms of high and low risk drivers.



These impressive prediction rates mean nothing if they are not acted upon, which is why Omnitracs Analytics has created multiple ways help educate drivers on the prevention of severe accidents. This includes sleep science education for front-line managers, drivers and spouses, schedule optimization to identify opportunities to reduce fatigue risk, and driving techniques based on millions of miles of experience. With the integration of two-hour sleep science education class, drivers learn to be better rested and better prepared to drive more miles safely.

### Benefits of Severe Accident Prevention

Diver feedback on the Omnitracs Analytics' Sleep Workshop shows how the class has improved drivers' awareness to impactful issues and improved their quality of life.

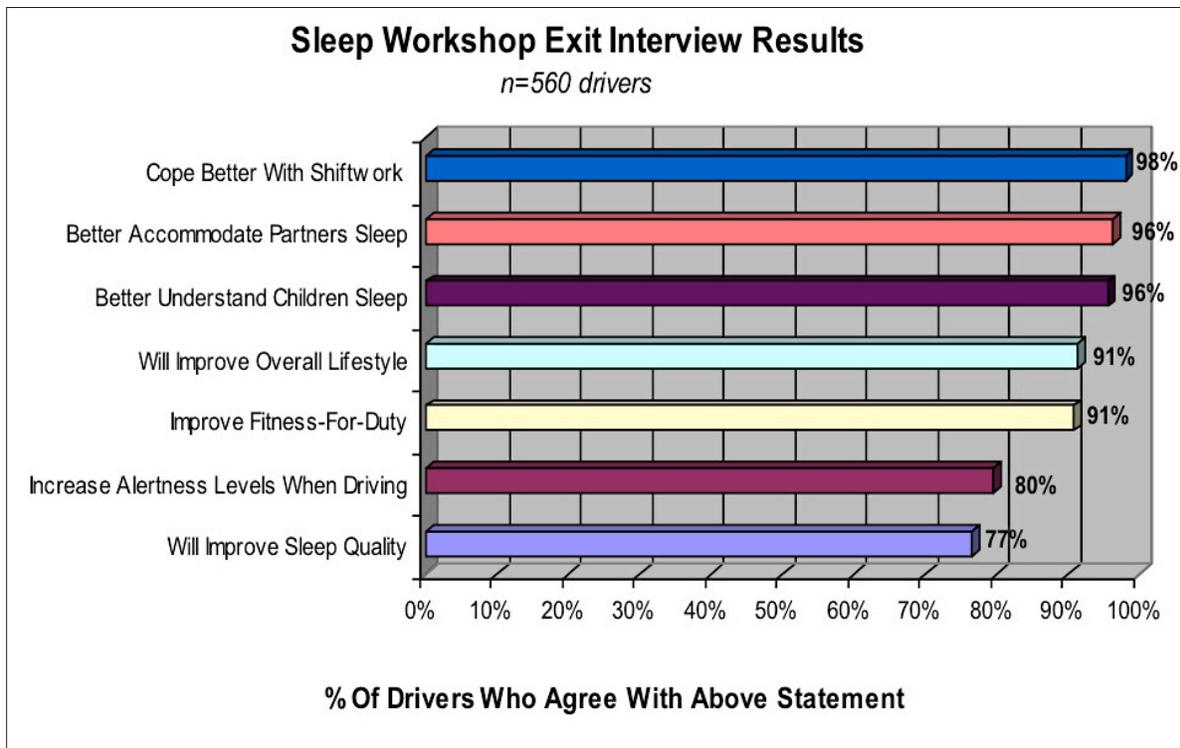
*"[The Sleep Workshop] helped myself [sic] as a new driver to understand and/or find a new way to help myself sleep — which after three weeks was already becoming a concern for me."*

*"This workshop was amazing! I now believe the reason I hated my last driving job was because of poor sleep. Life now has a better outlook because of this information".*

*"I am a new hire with 40 years' experience and twelve years retired [and this was] very good information."*

The previous statements do not come from just a select few drivers, either. Take a look below to see that the vast majority of Sleep Workshop participants, both old and new drivers, felt it was a very beneficial class.

Driver feedback on the Omnitracs Analytics Sleep Workshop shows how the class has increased driver awareness to impactful issues and improved quality of life. The Sleep Workshop:



The value of the Sleep Workshop is truly amazing when you take a look at the results and their effect on fleets:

Truck drivers who *don't attend* a sleep class:

- Incur an average accident cost **7.2 times higher**
- Have **twice as many** loss of control accidents
- Experience **five times** as many "run-off-road" accidents

While drivers who *attend* sleep class are:

- **30% less likely** to voluntarily terminate employment
- **6.75 times less likely** to have a service failure

These statistics prove that with proper intervention, fleets can increase safety while lowering operating costs through the reduction of severe accidents — and the significant expenses attached to them. This in turn leads to drivers who experience a more safe and consistent environment, creating less turnover as a result of a better work environment.

Data shows that the average severe accident costs from \$250,000 to \$1 million, not including injury, damage to a fleet's reputation or long-term impacts associated with higher insurance premiums, making the financial benefits of preventing such incidents obvious. Omnitrac's Accident Severity Model allows fleets to predict accurately a significant proportion of crashes, thereby reducing expenses and mitigating resulting outcomes up to and including loss of life. If a carrier prevents only one severe accident in five years, a fleet of 25 trucks would experience a return of more than 10 times its investment in the solution.

The benefits of the Accident Severity Model stretch far and wide from reduction of costs, improved safety, increased driver awareness, and better fleet efficiency. However, one area that can sometimes be overlooked is the usability and rapid implementation of the solution. When your fleet decides to adopt the ASM solution, you will gain a dedicated systems engineer that will assist your fleet through the short process of integrating your information into the Omnitrac system. Omnitrac will also work with your fleet to set up the sleep program at your fleet's convenience and provide support every step of the way to ensure that your fleet has a full understanding of all the ASM's features and uses. We will ensure your fleet has a complete working knowledge of the ASM solution along with the necessary tools to help your fleet flourish with your new safety model in place.

## *In Conclusion*

The Omnitrac Analytics Accident Severity Model (ASM) was designed for any fleet using electronic hours of service (HOS) management applications, so that fleets of all sizes could utilize the benefits of predictive modeling — in this case, to prevent severe accidents. The ASM identifies subtle changes in driver behavior to find highest risk drivers who are most likely to be involved in a serious accident, enabling proactive intervention to prevent accidents, reduce related expenses, and enhance overall safety.

Until now, predictive modeling's sophisticated algorithms and technology had been reserved for only the largest of fleets, whose resources and access to volumes of data from multiple sources served as the foundation for advanced analytic-based insights. Omnitrac's Accident Severity Model allows fleets of all sizes to benefit from sophisticated algorithms and technology to improve safety outcomes and reduce operating costs.

If your fleet wants to reduce the cost of infrequent accidents as opposed to just frequency, then this model puts your highest risk and most inexperienced drivers right on your radar. This in turn will allow your fleet to gain a demonstrable return on investment and, most importantly, save lives. Carriers who prevent only one severe accident in five years, for a fleet of 25 trucks, will experience a return of more than ten times its investment in the solution. So if your fleet is looking for a cost-effective, accident prevention solution look no further than Omnitrac Accident Severity Model.

**To learn more, request a free consultation today.**

**1-800-348-7227**

## Why choose Omnitracs?

- Award-winning, 24/7/365 support teams that understand your business.
- ELD Mandate thought leadership — we've helped shape the legislation and we share important resources at [www.eldfacts.com](http://www.eldfacts.com)
- Proven solutions for every stage of your growth — fleets of all sizes, including eight of the ten largest for-hire fleets and the five largest private fleets in North America use Omnitracs.
- Robust integrations — and the technical expertise to maximize your tech stack.
- Intuitive solutions and a focus on the end-user experience — making drivers' lives easier, building a positive image for your company, and retaining your workforce.

## About Omnitracs, LLC

Omnitracs, LLC is a global pioneer of fleet management, routing and predictive analytics solutions for private and for-hire fleets. Omnitracs' nearly 1,000 employees deliver software-as-a-service-based solutions to help more than 50,000 private and for-hire fleet customers manage nearly 1,500,000 mobile assets in more than 70 countries. The company pioneered the use of commercial vehicle telematics over 25 years ago and serves today as a powerhouse of innovative, intuitive technologies. Omnitracs transforms the transportation industry through technology and insight, featuring best-in-class solutions for compliance, safety and security, productivity, telematics and tracking, transportation management (TMS), planning and delivery, data and analytics, and professional services.

Learn how you can use our applications, platforms, and services to reduce costs, increase profitability, and stay competitive. Visit [www.omnitracs.com](http://www.omnitracs.com) and let us show you how you can save time and money.



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