eBOOK

An introduction to video-based safety

It's more than just cameras

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Introduction

Companies that have vehicles take managing risk and operating safely very seriously — not only to ensure the safety of their employees and the general public, but also for the secure transportation and delivery of the materials they haul. In addition, a safer fleet reduces costs, fleet claims and litigation – while improving operational efficiency.

That's why fleets use video-based onboard monitoring systems. As a result, fleets have reported:

- 40% or lower driver turnover
- Zero U.S. Department of Transportation–recordable accidents
- More than 60% reduction in collisions
- In excess of $1 million saved in subrogation costs

A study from the AAA Foundation for Traffic Safety found that "video-based onboard safety monitoring systems can prevent as many as 63,000 crashes, 17,733 injuries, and 293 deaths each year" [1].

Companies have many options when choosing vehicle safety technologies. Video-based safety systems offer the context, flexibility and insights that facilitate driver exoneration and improvements in driver performance, compliance with standard operating procedures, improved customer service and lower operating expenses. As such, video can have almost immediate benefits, delivering significant return on investment and an ongoing, positive impact to a fleet's bottom line.

Safety technologies have the potential to prevent thousands of truck-related collisions each year.

Lane departure warning systems

Onboard Video-based monitoring systems

Advanced emergency braking

Air disc brakes

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1   https://newsroom.aaa.com/2017/09/truck-safety-technology-can-prevent-63000-crashes-year/

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Exonerating drivers

When fleet drivers are involved in a collision, they often are assigned blame regardless of the severity or who truly is at fault. It often simply comes down to differing verbal accounts of the incident. So, how can it be determined— and proven— what really happened?

With video, fleet managers can know within minutes what actually caused a collision. When not at fault, the driver can be exonerated quickly, preventing a costly claim against the transportation company or enabling the fleet to file a claim for damages. The certainty confirmed by video footage can prevent the driver from receiving a citation and potentially losing their commercial driver's license. Alternatively, if the driver is at fault, video footage can illuminate the circumstances, speeding the claims resolution process – savings that directly impact a fleet's bottom line.

"
When drivers are involved in an incident that's not their fault, we're not wasting time or money fighting claims, because we can prove exactly what happened with video. We've already found that these exonerations are paying for the system."

Ken Humphries
VP, Safety and Employee Relations, Schilli Corporation

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Not all video systems are created equal

There is more to the decision to install a video-based safety system than just cameras and the actual video of a driving event. Video, alone, does not make a fleet safer. Identifying risk and taking actions to reduce those risks are critical. But how do fleet managers know what risky habits their drivers are engaging in while on the road? And with limited time and resources to coach, how do they know which drivers to prioritize based on severity of risk?

To ensure a fleet gets the right amount of video to ensure performance improvement, while reducing the time and resources needed to spend on the program, a managed service is essential. With a proven coaching workflow, the program will yield the best results – particularly when part of a converged solution that combines computer vision with compliance, telematics, video and analytics.

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Many solutions rely solely on computer vision (CV). Computer vision is important, but without iterative human review, the machine is not smart enough to determine what is truly an obstruction (or not). In addition, a large number of false positives will reduce program accuracy and efficiency if not managed properly. This is why, oftentimes, drivers become desensitized to the program – once they realize the alerts are sometimes false, they lose confidence in the data and ignore the alerts. A managed service can combine CV-captured events with in-cab alerts and human review to save time by only giving actionable information to the fleet and its drivers. And, it ensures the system continually gets smarter, reducing the number of false positives.

Unlike a dashcam or CV-only service, a video safety program with a managed service provides consistent, unbiased and professional reviewing, scoring and prioritizing of thousands of videos. An in-vehicle monitoring system supplemented by a managed service also provides:

- Custom scoring of events based on the fleets' safety and compliance priorities
- Fair, unbiased and consistent reviews for every driver
- across fleets
- Coverage in case an incident occurs at night, on the weekend, or on a holiday
- Expert analysis and a unified view of risk and vehicle performance
- Proven processes that deliver substantial results from a scalable solution

In essence, a fully managed service delivers the right information to the right people at the right time, allowing appropriate actions to prevent collisions and improve driver skills. Utilizing a managed service program empowers fleets to focus on risk areas that have the biggest impact, alleviating the burden of extensive video review and analysis. And, by obtaining insights into the safety of each driver through expert analysis of individual driving events, managers gain overall insight into the safety of the company.

Expert, consistent, and nonbiased review is essential to every video-based program. Trying to manage a dashcam or CV-only program can rack up costs, burden employees and deepen issues with driver acceptance. By tapping a third party to review and score triggered videos, companies get 24/7 coverage in case there is an incident during off hours; scalability as the fleet grows; and fair, consistent reviews for every driver across the fleet.

Once risk has been identified, the next, and most important step, is coaching. An intuitive coaching workflow—a critical component of a managed service solution—combined with easy-to-use tools is essential to improving driver performance and reducing risk.
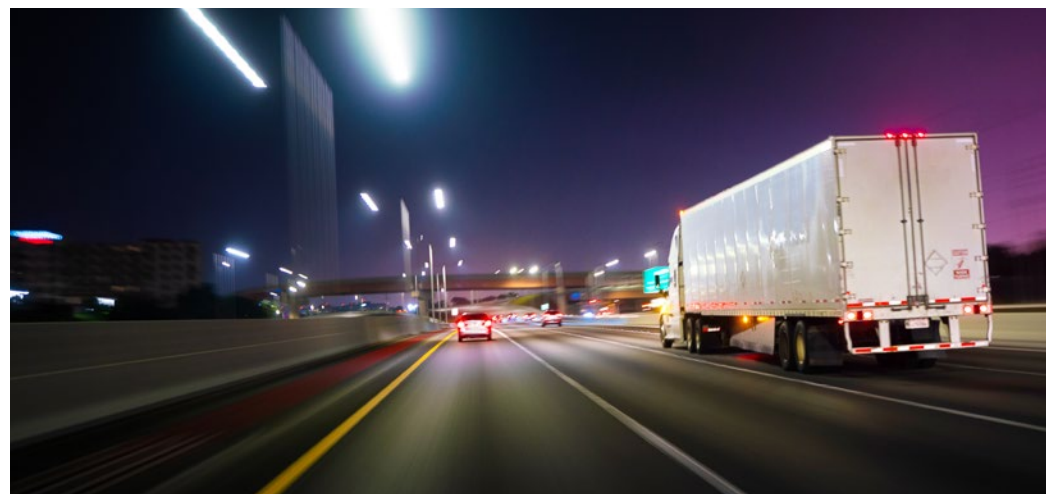
The impact of coaching

As shown in opposite, the impact of coaching as part of a video-based safety program is immediate. However, for fleets that do not engage in continued coaching, the effect of the new program can taper off over time. Without coaching, the safety score shoots back up and continues to fluctuate up and down. For fleets that are highly engaged in a coaching program with their drivers, the safety score drops and remains low.
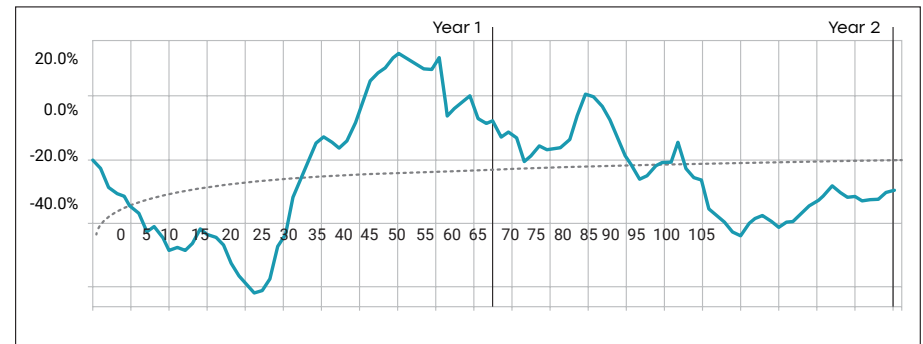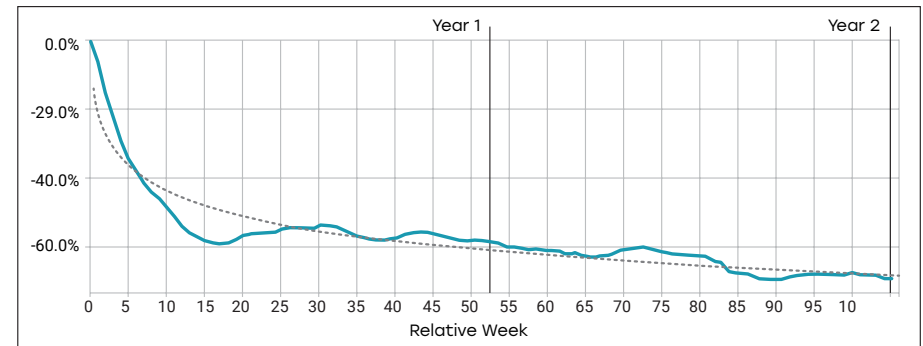
Video-enhancing resources

It takes more than just video to deliver the insights needed for a lasting impact on safety. If a fleet has 1,000 vehicles, each with cameras installed, a massive amount of video is collected in a short amount of time. Very few fleets have the internal resources to review this volume of footage.

For this reason, the best configuration for most fleets is to have a robust exception-based video recording system that deploys artificial intelligence, computer vision and machine learning—along with human review. For example, unlike a DVR that continuously records and saves video for review, an exception-based system only records when something occurs outside of a specified range of expectations— in this case, when there's a hard brake, sudden acceleration, swerve, U-turn or other unusual driving event. These systems feature a finely tuned triggering mechanism that can detect whether the vehicle is driving on the street or on a job site.

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For instance, this is particularly important with construction vehicles because of the conditions of construction sites compared with most roadways. Construction and ready-mix fleets that use a video-based safety system (in this case, SmartDrive)—combining artificial intelligence, CV, and machine learning with a managed service—have seen reductions in distracted driving and mobile phone use, unsafe turning, speeding and more (see opposite).

> **The SmartDrive program made an immediate impact on our fleet safety – identifying risky driving while also highlighting the many positive examples of our professional drivers avoiding dangerous, distracted or aggressive motorists."**
>
> **T.J. Oneglia**
> Vice President, O&G Industries

70%
reduction in distracted driving

65%
reduction in mobile phone usage

14%
reduction in unsafe backing

97%
reduction in unsafe turning

52%
reduction in following too close

87%
reduction in speeding

*Data from SmartDrive's database of thousands of construction and ready-mix vehicles.

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Counteracting data overload

Vehicles are loaded with sensors that generate huge quantities of data, which can be a major headache for fleets to analyze on their own. Solutions with an open platform can incorporate a variety of inputs, allowing an in-vehicle monitoring system to trigger a video event based on hard braking, following distance, lane departure and more. It's important your video-based safety programs delivers insight—not just data.

By leveraging data across fleet safety investments, you get a single, consolidated view of the driving environment, the driving maneuvers and the vehicle. Because advanced in-vehicle monitoring systems can offload data and alert managers in real time, fleets have immediate access to the most important information to make fast and effective decisions.

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An array of actionable business intelligence – such as operational metrics, key performance indicators, reports and dashboards for managers, and interactive visualizations for advanced analysis (as shown below) – is the key to changing behavior and driving success.
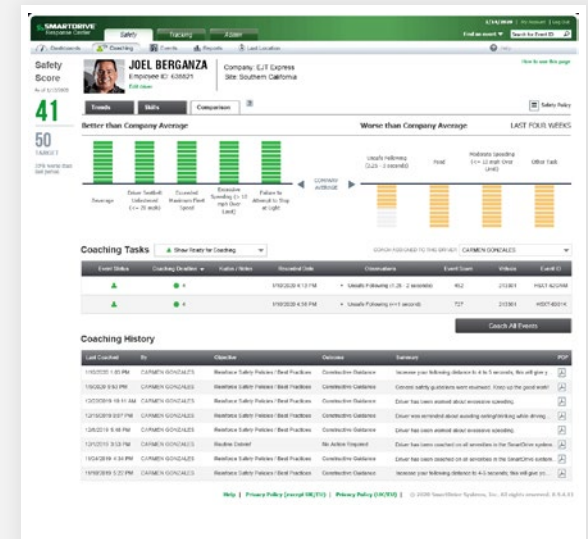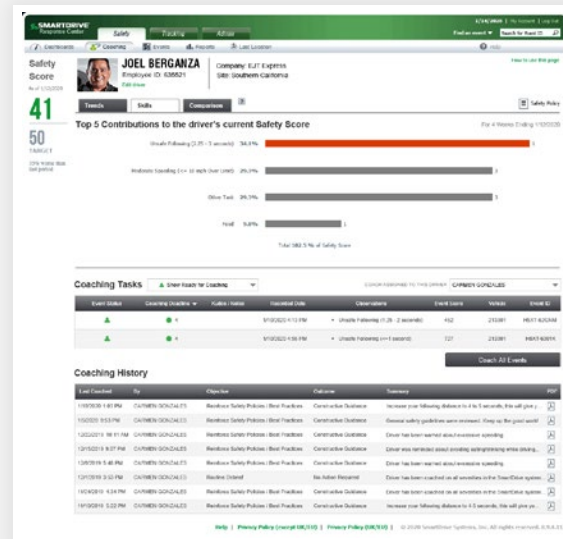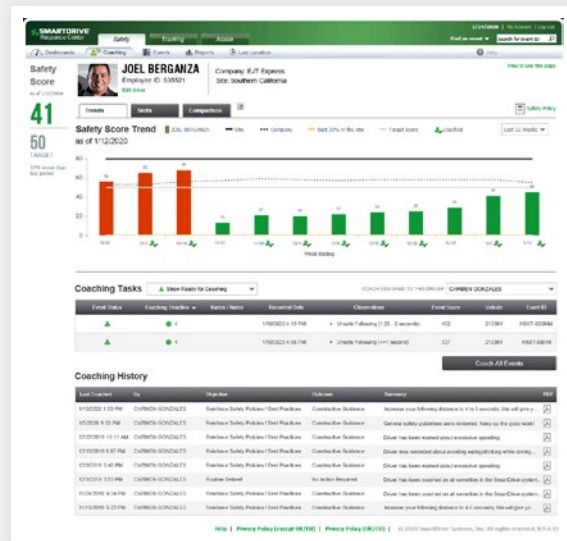
Data and analytics for prediction

Data are transforming the way fleets of all sizes make decisions that improve efficiency, productivity and ultimately, profitability. Today's connected vehicles are loaded with sensors that deliver massive volumes of rich data that fleets can leverage to help answer the following types of questions about every aspect of fleet performance:

- What happened?
- How or why did it happen?

- What's happening now?
- What is likely to happen next?

- How can I avoid what might happen next?

Analytics help fleets engage with drivers, while improving safety and operational efficiencies, in some of the following areas:

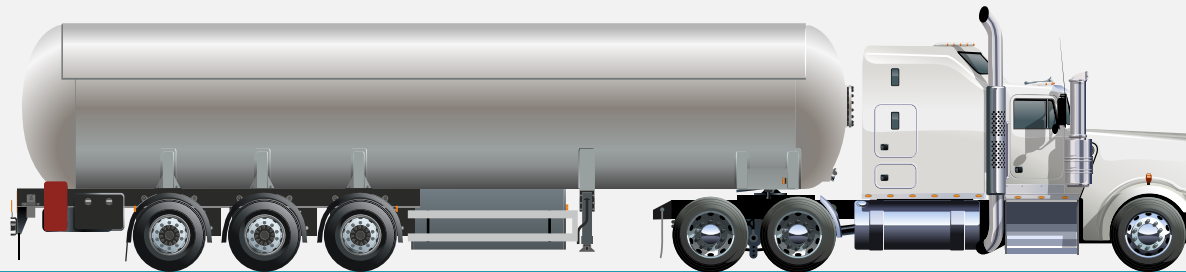Hard Braking   Fuel Efficiency   Engine Revving   U-turn   Lane Departure   Rollover Stability   Following Distance   Collision Avoidance

Video Analytics   Telematics

Multiple sensors + intelligent triggering

| Collision Near-collisions | Speeding Rolling Stops Texting / Distractions | Drowsy Driving Close Following U-turns | Backing Collisions Side-swipes Low / No Impact |

More visibility to risk

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Fuel economy

By analyzing fuel usage, fleets can improve fuel efficiency and savings. Fleets can pinpoint the biggest opportunities for improvement and take full control of idling expense by tracking, monitoring and optimizing the cost of idling on a daily basis. Fleets can then improve fuel efficiency and savings by understanding speeding, identifying efficient and inefficient vehicles, and identifying (and coaching) inefficient drivers.

Speeding

Increasing highway cruising speed from 55 mph to 75 mph can raise fuel consumption by as much as 20% [2]. Video-based systems allow fleets to monitor when a driver exceeds the posted speed limit or a company's preset limit. By focusing on speeding, fleets can optimize fuel consumption by identifying drivers who are habitual speeders.

Driver scores

Fifty-two percent of drivers leave their current employer to make more money elsewhere, according to a recent survey [3]. By analyzing driver safety scores, fleets can measure driver performance across key safety, efficiency and operational metrics; determine drivers' eligibility for incentive programs; and identify and reward top drivers using performance-based metrics

that matter. Best-run fleets use data and analytics from their fleet management software to predict problems, trends, and behavior patterns.

Speeding for conditions

In recent studies, 23% of large-truck crashes occurred when the vehicle was traveling too fast for conditions. These types of crashes are leading to rising insurance rates, increased citations, fatalities and nuclear lawsuits – now averaging $17 million. With a real-time analytic and alerting solution designed to detect and report unsafe speeds in inclement weather, intelligent data alerts can be integrated with your existing telematics messaging systems so drivers can selfcoach at that high-risk moment and managers can receive notifications if self-coaching doesn't happen.

Sitting duck

Lack of available truck parking is one of the top issues facing the industry, which can result in "sitting duck" situations – trucks parked in locations that put drivers and the motoring public at risk. With a realtime analytic and alerting solution designed to detect vehicles that have stopped, parked or stalled in an at-risk area for an extended period, drivers can be alerted to contact dispatch when stopped in a potential at-risk area longer than necessary.

2   http://eartheasy.com/move_fuel_efficient_driving.html
3   HireRght's 2018 Transportation Spotlight report

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Analytics for key business goals

Armed with actionable insights from analytics on the way their fleet, drivers and vehicles operate, fleet managers can begin setting goals to transform their fleet. How fleets apply analytics will depend on critical business needs. These vary from fleet to fleet, but some common concepts for leveraging analytics include:

- Reducing collisions through coaching
- Improving driver retention and reducing turnover
- Optimizing fuel economy and lowering idling expenses

Building the required in-house analytical capabilities can be time consuming and very expensive.
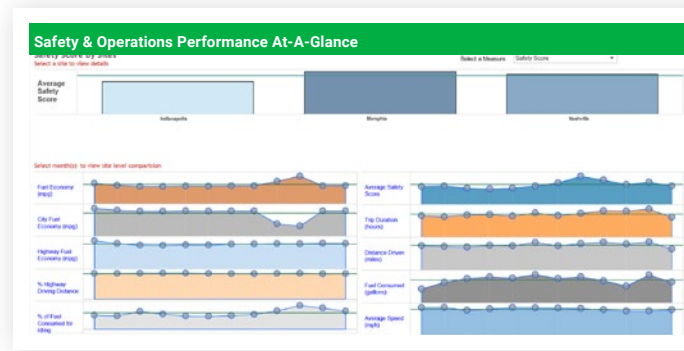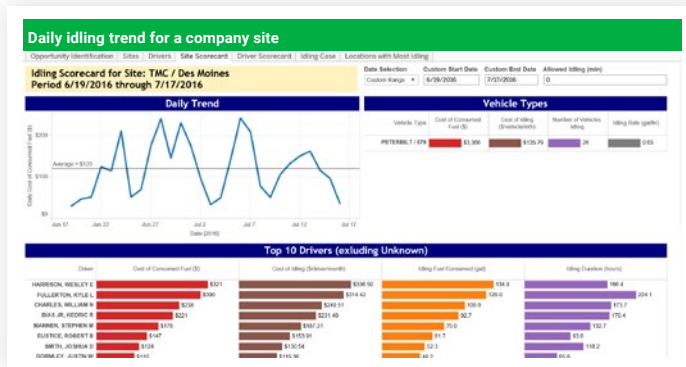
To help fleets save time and resources, a video-based safety program can provide full analytical software services at a fraction of the cost of developing similar capabilities in-house, including decision-ready, state-of-the-practice metrics designed to answer safety and operational questions, including:

- Are we reducing our collision frequency and costs?
- What are my site's riskiest driving skills?

- Who are my top-performing drivers? How should we recognize and reward their good performance?

- What are the root causes of excessive idling across my fleet and where is it occurring?

Fleet managers can use this information to positively impact their operations, eliminate risky driving behaviors, and ultimately, increase profitability.

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The key to success

A video safety system is more than just a dashcam. Whereas a dashcam should be able to help you in the event of a collision, a video safety program helps you proactively avoid collisions through accurate and immediate information provided at high-risk moments so your drivers and coaches can make the best informed decisions for your fleet.

A video safety program with a managed service – combined with a strong safety culture – is the key to success.

When building a culture of safety, fleets must set clear expectations for each driver and take the time to explain the factors impacting each driver's safety score and how they can improve. Technology empowers managers to understand their own program analytics and define the organization's key performance indicators, but that information is only effective if it is regularly communicated to each driver. When drivers understand their organization's goals and where they fit in, they become key players in furthering the organization's safety mission by developing a positive safety culture.

> "
> **As a result of implementing the SmartDrive program, we're seeing an awesome shift in our safety culture. This investment has helped us significantly reduce risk and strengthen our culture of safety."**
>
> **Thomas Oakley**
> CEO, Oakley Transportation

A video-based safety program is more than just video—it also is the data produced from that video, which facilitates fleets to take a closer look at their operations and determine where emphasis should be placed to make the biggest difference in their fleet. Regardless of where that emphasis may be directed—driver exoneration, coaching, or reducing idling—the effects can significantly impact the bottom line.

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Delivering driving performance solutions and transportation intelligence that transform fleet safety and operational efficiency through video analysis, predictive analytics and a personalized performance program improves driving skills, lowers costs and provides immediate ROI.

To get started, please visit us at **omnitracs.com**, or contact us at 1 (888) 401-0423.

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