



Leveraging the Benefits of Dash Cam Technology

WHITEPAPER

EXECUTIVE SUMMARY

Crashes involving a commercial vehicle are more likely to result in a fatality than crashes involving only automobiles, despite the fact that the majority of CMV crashes are actually the responsibility of the car driver. According to a University of Michigan Transportation Research Institute study, the driver of the car was at fault in up to 75% of CMV crashes. And although only 1% of crashes involving a CMV ultimately result in a fatality, the cost of non-fatal crashes adds up quickly.

The Federal Motor Carrier Safety Administration (FMCSA) has said that the average cost of a large truck crash is approximately \$91,000, rising to \$200,000 when an injury is involved and into the millions when there is a fatality.

Naturally, commercial trucking fleets are doing all they can to rein in these incidents, increase safety and lower insurance rates and other related costs. More than ever, these fleets are turning to dash cams for help. According to a survey, 40% of fleets that have adopted dash cams have done so in the past 20 months. Traditionally favored by larger fleets, the realization that dash cams provide both insight into the circumstances of a crash and the ability to shape driver behavior is convincing fleets of all sizes to add this critical tool to their safety and compliance arsenal.

“It’s a piece of technology I would never leave home without,” Dean Croke, FreightWaves’ Chief Insights Officer, said of dash cams during a recent webinar

titled “The Dash Cam Debate: Why and Why Now?,” sponsored by J. J. Keller & Associates, Inc. “I still own a Class 8 truck, and I still drive on the road. To me it’s one of those pieces of technology that is absolutely compulsory.”

This paper details the results of a new survey on dash cams, why fleets have made the investment to install them, and why some fleets have chosen not to install dash cams. It will answer key questions as to the benefits of such systems, from both a financial standpoint and a human perspective, and provide critical information to help fleets make the case for investment in a dash camera system.

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—Dean Croke, FreightWaves



STUDY DEMOGRAPHICS

FreightWaves conducted a study of 211 fleets on behalf of J. J. Keller, examining fleets' use of and attitudes toward dash cams, both forward-facing and inward-facing. Seventy percent of responding fleets utilize cameras in their vehicles, with 30% deploying both inward and outward facing cameras (see chart 1).

Chart 1

Do you have dash cams installed in some of your trucks?



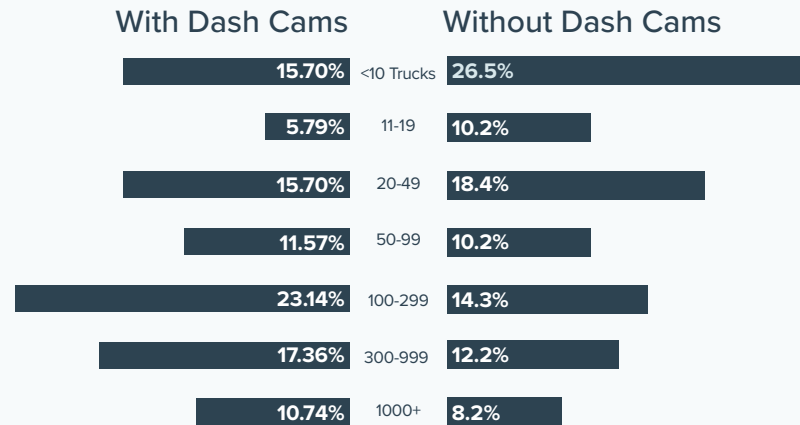
Of the responding companies, 69% identified themselves as a for-hire interstate carrier; 26% said they are a private fleet; and 5% listed their operation as “other.”

Fleet adoption of dash cams seems to be following a similar path as the rate of electronic logging device (ELD) adoption, Eden Weller, Senior Customer and Insights Manager of J. J. Keller, explained on the webinar.

He noted that as costs for dash cams continue to drop, more smaller fleets and owner-operators are adopting them.

Fleet size of those with dash cams ranged from those having fewer than 10 trucks (15.7%), to those operating more than 1,000 vehicles (10.74%). The largest grouping of trucking operations (just over 23%) had between 100 and 299 vehicles, as illustrated in chart 2.

Charts 2 & 3 Fleet Size of Fleets...



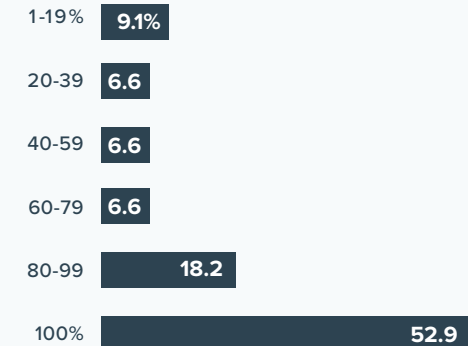
Interestingly, the number of fleets that said they have not adopted dash cams tended to be smaller in size, with just over 8% having more than 1,000 trucks, and nearly 27% having fewer than 10 trucks (see chart 3).

While some surveyed fleets represent early adopters, the majority of fleets (40%), have deployed dash cams since the start of 2018. Prior to 2015, 20% of fleets had installed them with an additional 17% doing so in 2016 and 23% in 2017. In total, 63% of fleets have deployed dash cams in the past three years.

More than half of all fleets (over 52%) choosing to deploy dash cams have done so throughout their entire fleet. An additional 18.2% have outfitted between 80% and 99% of their fleets (see chart 4).

Chart 4

How many trucks currently have dash cams installed?



“ We work with hundreds of fleets each year and believe that distraction and complacency are two of the biggest challenges facing drivers today. We believe the role of effective driver coaching has never been more important. ”

—Steve Murray, J. J. Keller & Associates

THE CASE FOR DASH CAMS

Many fleets turn to dash cams because they have had a costly accident in their past. Some see them as tools to mitigate future risk, or to alter driver behavior. With the FMCSA reporting a minimum average cost of \$91,000 per DOT accident, preventing just one accident would allow a fleet to recoup the costs of installing dash cameras.

Steve Murray, Vice President of Content and Consulting Services for J. J. Keller, said that preventing incidents is not the only savings possible with dash cams.

“We work with hundreds of fleets each year and believe that distraction and complacency are two of the biggest challenges facing drivers today,” he said on the webinar. “We believe the role of

effective driver coaching has never been more important.”

Dash cams provide the opportunity to implement video-based coaching of drivers to improve poor behaviors before they lead to an accident.

Of the fleets responding with dash cams installed, nearly 53% said they are now analyzing hard braking events to discover driver behavior trends, over 47% are using the data obtained to improve driving training programs, and over 22% said their Compliance, Safety, Accountability (CSA) scores have improved since installation (see chart 5).

“We believe having an effective and real-time tool like dash cams that can help you coach and improve your drivers’ performance is really important,” Murray added.

Chart 5

What do you think have been the main benefits of using dash cams?

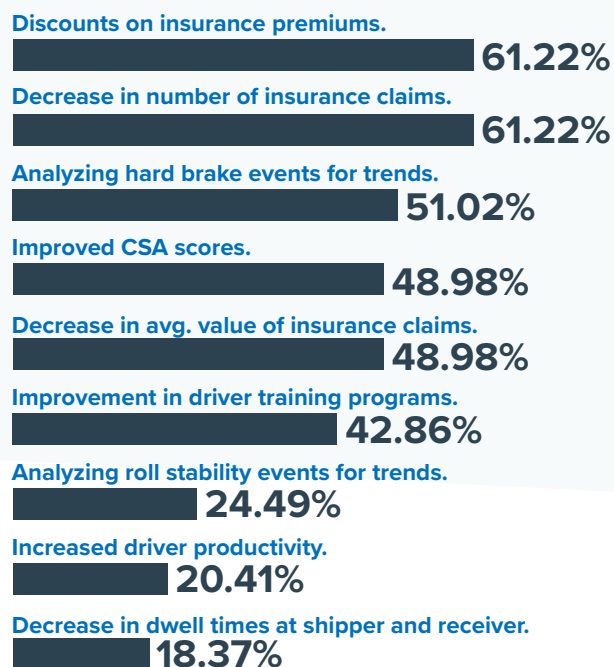
Hard brake events are now analyzed for trends.	52.89%
Improvement in driving training programs.	47.11%
Lower legal fees and litigation risks.	44.63%
Decrease in number of insurance claims.	44.63%
Decrease in avg. value of insurance claims.	41.32%
Quicken the insurance claims process.	40.50%
Discount on insurance premiums.	29.75%
CSA scores have improved.	22.31%
Driver productivity has increased.	20.66%
Roll stability events are now analyzed for trends.	19.01%
Maintenance costs have decreased (less wear and tear).	10.74%
Fuel costs have improved.	4.13%
Decrease in dwell times at shipper and receiver.	1.65%



Speaking on the webinar, Croke noted that the dash cam in his own truck has captured a “brake check” incident during nearly every trip, where a car pulls in front of him and hits its brakes. “In a couple of cases with personal friends that have the dash cam, it has saved them in an accident,” Croke said. “The car driver has actually been charged because of their actions.”

Chart 6

What would you expect the main benefits would be of using in-dash cameras?



Additional dash cam benefits cited by fleets include improvement in driver training programs, lower legal fees and litigation risks, a decrease in the number of insurance claims, a quicker insurance claims process, discounts on insurance premiums, driver productivity increases, trend analysis for roll stability events, decrease in maintenance costs from less wear and tear on equipment, lower fuel costs, and a decrease in dwell time at shippers and receivers as a result of capturing detention time.

Even fleets that have not installed dash cams recognize the benefits. In the survey (see chart 6), over 61% of these respondents believe dash cams would lead to a discount on insurance premiums and a decrease in insurance claims, while nearly 49% believe a decrease in the average value of an insurance claim would occur. Roughly half said dash cams could assist in analyzing hard braking events to identify poor driving behavior trends.

Fleets without dash cams overwhelmingly said they don’t see a direct correlation between having a dash cam and a reduction in crashes. Over 61% said they either didn’t see a direct correlation or didn’t know whether there was a correlation between dash cams and crash reductions.

Conversely, over 56% of fleets that have installed dash cams said they do see a direct correlation, with only about 17% unsure of a correlation (see charts 7 and 8 on page 6).

That said, the Virginia Tech Transportation Institute studied 10,648 crashes involving trucks and buses with dash cams from the time period of 2010 to 2012 and found that vehicles with a dash cam saw a 20% reduction in fatal crashes and a 35% reduction in injury crashes.

Mark Schedler, Senior Editor-Transportation Market for J. J. Keller, said on the webinar that many of the violations drivers accrued during Operation Safe Driver Week in July 2019 would have shown up in driver cam footage.

“It’s interesting to note that eight out of the top 10 violations issued during Operation Safe Driver Week in July can be detected by dash cams,” he said.

Those violations include speeding, failure to wear a seat belt, failure to obey a traffic control device, using a handheld phone/texting, improper lane change, following too closely, improper passing, and inattentive/careless and/or reckless driving.



“ 8 out of the top 10 violations issued during Operation Safe Driver Week...can be detected by dash cams. ”

—Mark Schedler, Senior Editor-Transportation Market for J. J. Keller

Chart 7

Do you think there would be a direct correlation between in-dash camera use and a reduction in accidents?

(FLEETS WITHOUT DASH CAM)

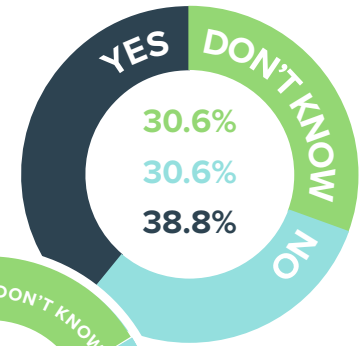
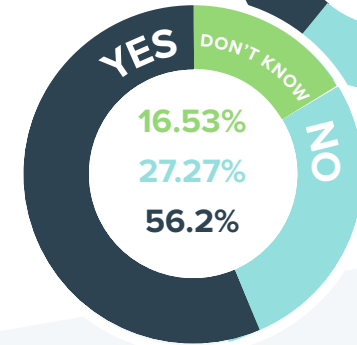


Chart 8

Do you think there is a direct correlation between in-dash camera use and a reduction in accidents?

(FLEETS WITH DASH CAM)



LEGAL CONSIDERATIONS

1 Exonerating the Driver/Fleet

Drivers have long pushed back against the installation of cameras – forward or inward facing – into their cabs. That resistance has softened in the last few years as drivers have become aware of the camera’s capability to quickly exonerate them from wrongdoing.

Speaking about the use of cameras in general, Stein Law explained that “when a driver uses a dash cam to constantly record footage while driving, he or she has far more protection from

liability in the event of an accident that was not his or her fault.”

At an ACT Research seminar in March 2019, one fleet executive told the story of how a dash cam saved the job of a 40-year driver with a near-perfect record. The driver in question had resisted installation of a dash cam, and the fleet hadn’t forced the issue. Eventually the driver relented and just three weeks after installing the device, he was involved in an accident.

In this particular instance, the driver was not at fault, nor was he involved in the original incident, but rather was swept up in the after-effects of the initial crash. The executive explained that without the dash cam footage, the driver would have been terminated because of the company’s zero-tolerance approach to preventable accidents. Instead, the driver kept his job. Additionally, the fleet, along with the at-fault parties, was sued by victims of the incident for \$40 million. Having the dash



LEGAL CONSIDERATIONS

cam footage available provided the fleet with a strong case for having the lawsuit dismissed altogether.

In 2018, the National Transportation Safety Board released a report on a Greyhound bus crash along California Route 101. The bus had both driver- and road-facing cameras and using that information, investigators were able to determine that the bus hit a concrete barrier near an exit lane because the reflective markings on the barrier were not clearly visible.

It was also determined, because of the driver-facing camera, that the driver was alert and attentive at the time of the crash, ruling out fatigue or other driver-related causes. In fact, the driver had made initial statements that he may have fallen asleep, but the dash cam disproved that, leading investigators to conclude that the driver's memory was likely affected by the crash.

2 Avoiding Costly Litigation

When there is an incident, the dash cam is providing real value. Even when the truck driver is in the wrong, the dash cam footage provides indisputable evidence, giving the fleet and its lawyers the opportunity to work toward a quick settlement rather than a costly, drawn-out trial. Of fleets that use dash cams, nearly 45% identified lower legal fees and risks of litigation as a benefit.

3 Fewer Insurance Claims

Insurance claims are also lower for fleets with dash cams. More than 41% of respondents that have installed dash cams said they have seen a decrease in the average value of insurance claims, and more than 44% said they have seen a decrease in the number of insurance claims.

“The overall risk-related costs are coming down in many ways, as the study shows, and while it may not be insurance premiums

that are lower with dash cams, there certainly are other insurance-related savings,” Weller pointed out. “Those would be in exonerating or protecting the business, reducing claims and expediting claims thus wasting fewer resources.”

Handling Dash Cam Data

4 How fleets choose to use captured data generated by dash cams is important and gets to the heart of fleets' top concern regarding a dash cam.

When asked what legal issues, on a scale of 1-5, with 1 being least important, were most important to know before installing dash cams (see chart 9 on page 8), 51% of fleets identified a company's liability if it doesn't act on footage obtained by a dash cam as most important. Driver



privacy rules and regulations ranked as the second most important (29%).

“The prime example is probably GPS data,” explained Brandon Wiseman, a partner in the transportation law firm Scopelitis, Garvin, Light, Hanson & Feary, PC. “Depending on how you have it set up, it may be pinging every hour, every minute or even more often. Just for one driver, you may have thousands of data points in just one day.

“If you are collecting all the data and are not doing anything with it, or worse, you are looking at it but ignoring it, that creates additional liability concerns,” Wiseman added.

As mentioned, dash cams generate a lot of data, but fleets don’t need to watch thousands of hours of footage to take advantage of that data. Dash cam recordings are triggered by an incident, usually recording between 5 and 15 seconds before an incident to up to 15

seconds or more following the incident. When triggered, fleet managers can be notified, either in real time or through a daily, weekly or monthly report, depending on the severity of the incident.

Third-party services are adept at managing this process and analyzing the data, easing the burden on fleet safety managers, effectively turning this trove of data into useful, actionable data.

Chart 9

Importance of the following legal issues for fleets to know before implementing dash cams.



IMPACT ON DRIVER TURNOVER AND RETENTION

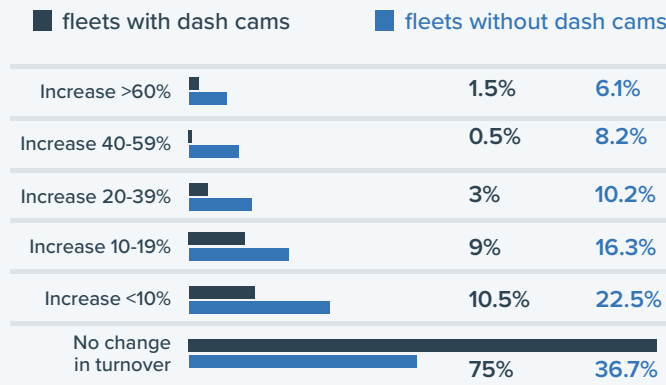
Perhaps no single concern is more prevalent among fleets than how deploying dash cams will affect driver turnover, retention and recruiting.

Just a few years ago, there was a report repeated by many publications that cited 90% of drivers would not sign on to a carrier with cameras.

Despite the report's findings being proven untrue, the pessimism persists. Although 36.7% of the FreightWaves survey respondents without dash cameras felt driver turnover would stay the same or decrease, over 6% thought turnover would increase more than 60%. In total, more than a quarter of respondents believed turnover would increase more than 20%.

Chart 10

How do you think driver turnover and application rates would change if you implemented in-dash cameras?



In an industry that routinely faces driver turnover rates above 90%, and is facing a shortage of new driver entrants into the industry, it's understandable that fleets may shy away from anything that could deter potential candidates. However, the experience of survey respondents that

have installed dash cameras contradicts the survey results.

Among fleets with cameras, 74% reported turnover has stayed the same or improved. Another 11% said turnover and application rates have increased less than 10%. Only 2% said turnover increased more than 60%.

“When you put technology in like this, driver turnover levels don't increase, they actually decrease,” Croke said. “I have some theories as to why this might be—I think it could be related to driver standards, training, compliance issues, and smaller fleets are somewhat more reluctant to add new technologies. It also could just be cost.”

Schedler echoed Croke's comment, noting that J. J. Keller has not seen an increase in turnover once fleets install cameras, but how the fleet installs them plays a large role.

"The carriers that are successful at getting the drivers to accept the cameras, they put a lot of effort into communicating the 'why' of the dash cam implementation," Schedler said.

"Really, the message is we want to improve skills and protect drivers and the company from a wrongful lawsuit."

Schedler went on to say that accepting driver feedback is as important as conducting detailed training on "what is going to trigger events, how does that dash cam operate and the coaching process, so drivers aren't left to wonder what's going to happen and what they are

doing that is going to get them in trouble.

"Carriers that have done all the things I've just said, and have integrated their dash cam metrics into their reward programs, they've really seen little to no turnover," Schedler added. "I ask people at every event and when they say their turnover hasn't been affected, I ask them if it has been included in their driver reward programs, and they say absolutely."

IMPROVED DRIVER COACHING

Most fleets, as the survey indicates, find that installation of in-cab cameras generates no negative impact on driver recruiting or retention. They do, though, provide plenty of opportunity for improving poor driving habits.

The data and video footage dash cams generate allow fleets to develop coaching programs to eliminate common, yet poor, driving habits such as following too closely. Doing so can result in fewer incidents, which have a cascading effect on overall fleet

costs and lead to a sustained safety culture change based on proactive management of driver behavior.

Developing these positive changes in driver behavior allows drivers to improve their skills and possibly their paychecks with carriers that pay bonuses based in part on dash cam statistics.

Take, for instance, reckless driving. According to the American Transportation Research Institute's Crash Predictor Model study, released in 2018, drivers with a reckless driving violation on their record

were 114% more likely to be involved in a future crash. Convictions such as improper lane/location, reckless/careless/inattentive/negligent driving and improper or erratic lane change all resulted in an increased likelihood of a future crash.

All of these behaviors can be reduced through the proactive use of cameras and follow-on driver coaching to reduce subsequent incidents.



Crash Likelihood

Summary for All Data Analyzed

IF A DRIVER HAD A(N):

	THE CRASH LIKELIHOOD INCREASED:	SIG:
Reckless Driving violation	114%	**
Failure to Yield Right of Way violation	101%	***
Failure to Keep in Proper Lane conviction	83%	**
Failure to Use / Improper Signal conviction	82%	**
Past Crash	74%	***
Improper Lane / Location conviction	72%	***
Improper Pass conviction	70%	**
Reckless / Careless / Inattentive / Negligent Driving conviction	69%	***
Improper or Erratic Lane Changes conviction	66%	***
Improper Lane Change conviction	63%	***
Hours-of-Service violation	50%	***
Improper Turn conviction	49%	*
Following Too Close conviction	46%	**
Speeding violation	45%	***
False or No Log Book violation	45%	***
Disqualified Driver violation	44%	***
Any conviction	43%	***
Speeding More Than 15 Miles Over Speed Limit conviction	40%	***
Speeding 1 to 15 Miles over Speed Limit conviction	38%	**
Any Moving violation	35%	***
Seat Belt violation	33%	***
Failure to Obey Traffic Control Device violation	30%	***
Any OOS violation	29%	***
Failure to Obey Traffic Sign conviction	25%	**
Driving Too Fast for Conditions conviction	25%	*
Size and Weight violation	20%	***
Failure to Obey traffic signal / light conviction	20%	*
Reckless Driving conviction		ns
Improper Turn violation		ns
Failure to Yield Right of Way conviction		ns
Improper Passing violation		ns
Following Too Close violation		ns
Medical Certificate violation		ns
Failure to Obey Yield Sign conviction		ns
Failure to Obey Warning Light/ Flasher conviction		ns

SIG: Significance

* at p < .05 ** at p < .01 *** at p < .001 ns — non-significant

Using video allows drivers to see the behaviors they have—many of them unknown to the drivers themselves—and offers opportunity for coaches to showcase improved techniques. Everything from speeding and distraction, to following too closely and hard braking, can be worked on with drivers to reduce the risk of a future incident. In some fleets, monetary rewards help reinforce proper driving behaviors.

Many fleets have used video footage to generate healthy competition among drivers. Turning learning into a game provides a quantitative and

measurable sense of achievement for drivers; encourages training and focus on the tasks at hand; and delivers an engaging learning experience.

Assigning points for certain behaviors—staying within legal speed limits or limiting hard braking events, for instance—encourages drivers to engage in safe driving habits. The dash cameras provide the mechanism for recording and documenting these behaviors and reinforcing what drivers are doing well, and what they need to improve upon.

Improving driver behavior not only reduces risk, but it also drives cost savings in terms of less fuel use and less wear and tear on vehicles.



IMPACT ON SAFETY AND INSURANCE

Insurance is a significant financial consideration for many fleets when investigating dash cameras, but not all fleets see immediate payback.

When asked how much of an insurance savings would be needed for their fleet to install dash cams, 37% of non-dash-cam fleet respondents said between 10% and 19%. Twenty-nine percent said at least 20% and not more than 39%, while 16% cited above a 40% savings.

That savings doesn't always materialize in premiums, but it may come in other forms, such as if a dash cam exonerates a driver of wrongdoing.

Speaking on the webinar, Croke, who spent several years leading an insurance provider, relayed his perspective on the value a dash cam provides.

"One of the things we always credited companies with was having technology that could help exonerate them in the event of an accident," he said. "When a claim is underway, lack of evidence is one of the biggest issues underwriters face."

Video evidence offers that context and leads to fewer claims, which is a factor when the underwriter considers insurance premiums at renewal time.

Nearly 40% of fleets said they have seen lower insurance premiums since installing dash cameras. Of those, 22% said they have seen less than a 10% reduction; 14% have seen a reduction of between 10% and 19%, and 6% have seen a reduction between 20% and 39%.

Dash cams provide many benefits beyond just a reduction in insurance premiums, as fleets that have deployed them have learned.

Of those fleets, 45% said they have lowered legal fees and litigation risks while the same percentage has seen a decrease in their insurance claims. The value of those claims has also decreased, according to 41% of respondents. The insurance claims process has also quickened for many, 41% in fact, as the video evidence dash cams provide is able to help investigators quickly determine fault, reducing costs associated with lengthy investigations.

It's important to make sure insurers and fleet customers are aware of these positive results, Schedler said. "What does that translate to?" he asked. "A lower unsafe driving CSA BASIC. The other thing...is in addition to showing what you are doing to insurance brokers, show what you are doing to your customers because when you show them you've taken your safety program to the next level, you've just relieved them of potential vicarious liability by improving your program."



CONCLUSION

Payback for dash cams is often within a year, Murray said.

“It’s really no secret that fleets run on small operating budgets and small margins, so for most fleets out there, there has to be some kind of return on investment,” he said. “But the great thing about cameras, not only have the purchase costs come down substantially over the last three to four years, but the capabilities of these cameras and technology have improved so that a lot of the fleets we talk to see a return on investment in less than a year.”

“Payback for dash cams is often within a year,” Murray said.

Though dash cams generated significant opposition following their initial introduction, it’s clear that they are here to stay. Dash cams play an important legal role for fleets, and it’s where the majority of the return on investment is coming. While it can be difficult to quantify something like the cost savings of a prevented accident, there is growing support among fleets that recognize the value of both exoneration and safer, well-coached drivers.

The proactive performance management made possible with dash cams is leading to fewer incidents, fewer liability claims, and more drivers keeping their jobs. It is also generating ancillary cost savings by reducing wear and tear on vehicles, reducing fuel usage, reducing driver turnover, and increasing overall safety on the road.

Doing this requires a dedication to managing the process.

That is why so many companies are turning to third-party services like those offered by J. J. Keller to manage this entire process. A strong partner is able to collect and help analyze the data and take it a step further to assist carriers in understanding how the data can be used to improve the coaching process and build a team of safer, more efficient drivers.

Murray said that fleets should consider a pilot program with a few cameras and a few drivers, and then listen to their feedback.

“Fleets that started communicating early and frequently with their drivers saw the greatest return on their investment,” he said.

Used correctly, proactively, and as a tool to reinforce positive driver behavior, dash cams become a critical piece of a fleet’s safety and driver training programs.

