

KEEP T R U C K I N

DRIVE Risk Score 101:

How to make your safety team more efficient with advanced AI

Table of Contents

Introduction	02
Section 1: What is DRIVE?	03
Where is DRIVE available?	04
What goes into DRIVE?	04
How does the model work?	05
How does DRIVE help me prevent collisions and coach my drivers?	06
Does DRIVE only detect high-risk behaviors?	07
What makes DRIVE the leader in the market?	07
Under the hood: how does it work?	80
Section 2: Here's an example How should I expect to use DRIVE?	09 13
Section 3: Let's talk about how scoring works	14
It's like a credit score	14
How should I read the DRIVE score?	15
Section 4: Let's talk about applying DRIVE to a real safety program	16 17
Frequently asked questions	18

Introduction

In today's new world of nuclear verdicts, every business' worst fear is that they're just one catastrophe away from a multi-million dollar lawsuit. That concern is justified: in the last 10 years, cases with payouts of over one million dollars have increased by **5X**.

That's why the most successful safety departments focus on taking a proactive approach to driver safety. Identifying high-risk behaviors early, and modifying these bad habits before a crash occurs, can make all the difference in keeping both liability and insurance costs low—and profit margins high.

But we know that identifying these high risk drivers is no simple task. And today's safety departments haven't been set up for success—they've been left high and dry by vendors who don't make them more effective in their jobs and don't help prevent crashes before they occur. KeepTruckin has changed that. With our proprietary DRIVE risk score, we help safety departments automatically pinpoint who they should coach and what behaviors they should focus on. DRIVE determines the accurate risk profile of a driver relative to their peers by evaluating behaviors that are benchmarked across KeepTruckin's network of over 400,000 vehicles.

The most successful safety departments use DRIVE as the framework to power their safety program. Because when you can use technology to help automatically pinpoint where you should be focusing your time and attention, you can be more impactful in your job of making your fleet safer.

In this 101 document, we'll take you through how your team can use the DRIVE risk score to make your existing safety team more effective. We'll cover:

- What the DRIVE risk score model evaluates
- Why DRIVE is more accurate at risk identification than other scores
- How to use DRIVE to power your safety program

Section 1 What is DRIVE?

DRIVE is KeepTruckin's proprietary predictive risk model. It is designed to accurately determine the risk profile of a driver relative to their peers. Where most existing safety platforms have a configurable score, DRIVE fundamentally takes a different approach by remaining objective.

How? DRIVE compares risk across our network of hundreds of thousands of connected vehicles, with the end result being a score that provides a clear distinction between poor, average and high performing drivers.

This objective approach means DRIVE can identify high-risk behavior with an unprecedented level of accuracy: based on our models, drivers with very poor scores are 2.2x more likely to crash than top performers.

DRIVE is designed to better predict risk and help you distinguish between good drivers from bad drivers by remaining objective—something most other safety scores can't do. We'll cover this in depth throughout the document.



Where is DRIVE available?

DRIVE is available in KeepTruckin's Safety Hub, where your safety department can see specific driver scores and behaviors to immediately take action.

Here's how we get there: once data is captured from KeepTruckin's Vehicle Gateway and Smart Dashcam, DRIVE uses a proprietary machine learning approach to automatically generate never before seen insights into driver risk and behavior. These are the insights you can access directly in your Safety Hub.

What goes into DRIVE?

There are five main categories that the model takes into consideration:

Driver

Speed, acceleration, braking, cornering, compliance violations, and driver fatigue

Road

Road grade, road curvature, terrain, obstacles, and road conditions

Imaging

Video data from forward and dual-facing cameras, near misses, unsafe lane changes, and close following

Vehicle

Vehicle make and model, age, maintenance records, and performance telematics

Environment

Weather conditions, road surface conditions, traffic conditions, time-of-day information, and visibility

264 HARD BRAKE DETECTED Apr 5, 1:33 pm Start Speed: Duration: Intensity: N/A N/A N/A **Road Grade:** Curvature: Vehicle Class: N/A N/A N/A Traffic: Weather: Terrain: N/A N/A N/A

Traditional Hard Brake

84 ville 264 HARD BRAKE DETECTED View Dashcam Video Start Speed: Duration: Intensity: -13.6 mph/s 65 mph 2 sec **Road Grade:** Vehicle Class: **Curvature:** 6° 12.6° Class 3 Weather: Traffic: Terrain: Gravel Busy Sunny

DRIVE Hard Brake

These categories provide additional context that make all the difference

How does the model work?

The core of DRIVE is the dense collection of billions of data points produced everyday from our network of hundreds of thousands of connected vehicles, which helps us gain context into normal driving behavior (safe) versus abnormal driving behavior (unsafe).

This volume of vehicles gives us great coverage of North America's road networks to understand typical driving behavior across numerous dimensions (intensity, duration, etc.) for a given road segment and vehicle class. The end result is a comprehensive, granular model to help you predict risk.

DRIVE then compares your drivers' behavior against the observed driving behavior from our network for a given road segment and class of vehicle.

This is why DRIVE is the first of its kind and differentiated from other safety scores: drivers are not unfairly penalized for expected triggered events such as hard braking on a steep decline, where most other solutions weigh hard braking events all the same—no matter the specific circumstances.

How does DRIVE help me prevent collisions and coach my drivers?

Traditionally, other safety solutions simply calculate the total number of safety events like hard braking, accelerations and cornering—and then attach a subjective weight to the behavior to get to a safety score.

KeepTruckin is different: we don't just look at a few subjective factors to determine risk—we measure driver risk against actual driving behavior from over 400,000 vehicles in real time. That means we have an industry-leading snapshot of what does and does not constitute high-risk driving.

For example, DRIVE can distinguish braking behaviors between a city and a highway.

Frequent braking in a city is typical and expected during rush hour, so the driver shouldn't be unfairly penalized; whereas highway braking is less typical, and is something to pay closer attention to.

You can help prevent collisions by using the DRIVE risk score to determine **who** you should be coaching, and **what behaviors** you should focus on. When you have this type of visibility into where risk lies for your business, you can take the necessary steps to proactively modify unsafe patterns before a crash occurs. This is crucial to helping reduce liability for your business on the road.



Does DRIVE only detect high-risk behaviors?

DRIVE is "always-on" — so it rewards positives, just as much as it penalizes negatives. For example, if a driver takes a hairpin turn at a safe speed, DRIVE rewards the driver for that safe behavior. Most other solutions, on the other hand, wouldn't even notice.

What makes DRIVE the leader in the market?

It all comes down to context vs. count. Most existing safety scores only look at the count, or volume of safety events from a driver to determine risk. They simply detect harsh driving and compute a score based on the frequency of those events. But road safety is far more complex than that.

The KeepTruckin DRIVE risk score fundamentally changes this approach by considering the **full context** of an event on the road. **This is where DRIVE provides the most value.** Because DRIVE can intelligently offer context into factors surrounding the event—like road conditions, vehicle class, and the behaviors of other drivers on the road—DRIVE can profile that driver's risk with an unprecedented level of accuracy.

But DRIVE doesn't just stop after evaluating the context of the driver safety event. DRIVE takes it a step further, and compares that event against the driving behaviors of one of the largest networks of vehicles in North America. This creates an objective evaluation of driver behavior, leading to a more accurate measure of a driver's risk profile.

\bigcirc

This Al-augmented analysis works:

Based on our model, DRIVE is up to **5x more accurate** in risk identification than the FICO Safe Driving Score, which is the industry leading benchmark.

Under the hood: how does it work?



1. Safety events

Driver safety events feed into a single analysis bucket for KeepTruckin

2. Contextual data

Our insights layer analyzes the full context that could impact driving behavior



	Very Poor		Fair	Excellent	
0		39	50 55	70	100

3. Comparison

Then we compare events across the entire KeepTruckin network for an objective view of driver risk

4. DRIVE risk score

A resulting safety score helps you understand the accurate risk profile of your driver relative to their peers

Section 2 Here's an example...



A driver slams the brakes on I-80 in California. What's next?

KeepTruckin's DRIVE Risk Score

DRIVE analyzes the full contextual data that could impact the driving behavior including factors like road segment, vehicle class, intensity, and duration of the event. Then, we compare that observed behavior across our network of vehicles for that same road segment and vehicle class to more accurately determine the risk profile of the event.

vs. Most Other Safety Scores

Traditionally, others simply count the total number of harsh events like this. Then, they multiply that count by the subjective weight— meaning, how important a particular Fleet Manager or vendor has determined it to be—to produce a score.



Let's compare the differences of how the event would impact the driver's score.

KeepTruckin's DRIVE Risk Score

The DRIVE risk score takes other factors into consideration that may have caused the event. For example, was the driver going down a known, steep road segment?

KeepTruckin compares that event against the data we have to see if the behavior is expected or abnormal.

In this case, the road segment the driver was going down on I-80 is a steep one, so the braking was expected behavior. This crucial contextual data shows that the driver's score should not be negatively impacted—and DRIVE is smart enough to know that.

vs. Most Other Safety Scores

Because there is no context into the event—and only a count—this driver's score would unfortunately be negatively impacted.

He would essentially be penalized for engaging in safe driving behavior.





Let's compare how the scoring weights are established.

KeepTruckin's DRIVE Risk Score

DRIVE is objective. DRIVE compares the event across what has been observed from the KeepTruckin network for the given location and vehicle class versus a subjective bias of what someone thinks is important.

The DRIVE risk score also takes into account hours of service (HOS) violations, event location, vehicle class, intensity and duration of an event when scoring the event for full context.



vs. Most Other Safety Scores

Most other risk scores let fleets subjectively assign weights to event types to determine how these events impact the risk score. This approach includes a few problems, like:

- An inability to compare risk across fleets
- Changing priorities and managers: a risk score can completely change based on what is important to a specific manager at a given point in time

Other vendors score every event for a given event type the exact same, regardless of where it happened, the vehicle class, the duration or intensity of that event. **This creates an inability to assess risk of a driver relative to their peers.**

How should I expect to use DRIVE?

Think of DRIVE as the engine that sits under the hood of your safety program. The DRIVE risk score does the heavy lifting for your safety team to identify who your fleet's riskiest and safest drivers are. Our most successful customers use DRIVE for three different reasons:

Out of the box risk framework: Most fleets resort to building their own internal models to establish risk profiling. Instead, you can use DRIVE as the turnkey infrastructure to power driver risk identification for your business.

We've done the heavy lifting for you, so that your company can focus on running a more effective safety program with your existing team. DRIVE can act as your assistant to help remove a lot of the busy or ineffective work that takes away from allowing your team to focus on the most impactful work, like rewarding and coaching.

- Automated risk identification: With DRIVE automatically pinpointing your fleet's high-risk drivers, you can quickly take action to get in front of coaching specific behaviors as soon as possible.
- Powerful driver retention programs: It's important to show appreciation for your drivers so they understand how critical they are to the business. Highlighting drivers that are doing well, whether in weekly team meetings or to your management team is an easy way to create a culture of safety. Establish driver incentive programs, and reward drivers who either have a high DRIVE score or are improving their DRIVE score in the form of a bonus or recognition.

Fleet Analysis	SCORE IN	MPACT	Driver Impact Analysis		NEGATIVE	POSITIVE
			These drivers had the biggest negative influence on your fleet's DRIVE Score			
247			DRIVER	DRIVE SCORE	1 WK IMPACT	12 WK IMPACT
DRIVER	s		John Bright	53	-2.1	-3.7
			Matthew Smith	58	-1.8	-1.2
Excellent (70-100)	10%	27	Isaballa Paskin	07	-1.2	+1.1
Good (55-69)	23%	52		07	-1.2	+1.1
Fair (50-54)	47%	109	Mac Campbell	68	-0.9	-0.9
Poor (40-49)	11%	27		_		
Very Poor (0-39)	9%	30	Andre Li	35	-0.9	+0.1

Section 3 Let's talk about how scoring works.

It's like a credit score.

Like a credit score, DRIVE is a consolidated round up of past behavior that predicts future behavior. Once a driver has demonstrated **consistent improved performance against the DRIVE risk baseline**, the score will start to shift at a faster rate.

Where payment history is the largest component of a credit score, driving history is the largest component of a DRIVE risk score. A driving history with intense driving events would indicate a driver with a riskier attitude when driving, signaling this might be a driver you want to pay closer attention to and coach more frequently.



DRIVE Risk Score Grades

How does the score work?

The score is historical versus a single point in time—meaning the score is reflective of the driver's driving history on KeepTruckin's platform, dating as far back as October 2019.

Each driver starts with a score of 50, and their score is updated weekly based on their driving behavior against the expected baseline behavior observed across the KeepTruckin network.

DRIVE scores range from 0-100 and the score is relative (not absolute) to the KeepTruckin network average. You should look at the DRIVE score on a relative scale — not a school grading scale.

The next section will break up how to read the different score ranges.

How should I read the DRIVE score?

A score above the KeepTruckin average means your fleet poses less risk compared to the KeepTruckin network. A score below the KeepTruckin average means your fleet is at higher risk compared to the KeepTruckin network.

If the KeepTruckin average sits at 54, anything above that number means less risk compared to the KeepTruckin network, and anything below means more risk compared to the KeepTruckin network.

Grade	Score range	% of KeepTruckin driver network	
Very Poor	0 - 39	19%	
Poor	40 - 49	21%	
Fair	50 - 54	18%	
Good	55 - 69	24%	
Excellent	70 - 100	18%	

Section 4 Let's talk about applying DRIVE to a real safety program.

See how Usher Transport, a fleet of almost 500, completely centered their safety program around the DRIVE risk score, Smart Dashcam, and Safety Hub. As a result of taking a proactive approach to safety, Usher Transport has decreased the total frequency of accidents in their fleet **by 32% annually and made their existing safety department team more effective.** Read more here.



Applying DRIVE: your 3-step coaching framework

Our most successful customers have leveraged DRIVE to improve their fleet's safety through this simple, 3-step framework:

- DRIVE saves mission-critical time by automatically surfacing the drivers and specific behaviors to pay attention to. When your team is already wearing 15 different hats, every time savings activity counts.
- 2. DRIVE grades help automatically determine how often you should have coaching sessions with drivers. Very poor drivers may require weekly conversations, while excellent drivers only require a casual check-in every other month. You can use these grades to guide the frequency of coaching conversations needed with drivers.

Grade	Score range	Suggested coaching frequency	Likelihood to crash vs. excellent drivers
Very Poor	0 - 39	At least 1x/week	2.2x
Poor	40 - 49	1x/week	1.8x
Fair	50 - 54	1x/month	1.5x
Good	55 - 69	1x every 6 weeks	1.2x
Excellent	70 - 100	1x every other month	

Based on our models, drivers with very poor scores are 2.2x more likely to crash than top performers. We recommend coaching at least 1x/week.

3. DRIVE Insights then help managers understand how their coaching efforts have improved driver behavior over time.

Other pro tips

- Our customers like to use dashcam video footage to help coach high-risk behaviors identified by DRIVE. It's like a football coach watching film with a player — when you have visual context to reference, it is much easier for drivers to understand how to improve.
- The correlation between a low DRIVE score and high-risk behaviors is proven. Unfortunately, customers have seen drivers involved in tragic accidents have some of the lowest DRIVE risk scores in their fleet.

Frequently asked questions

How do I turn DRIVE on? Do I need to pay for it?

If you are on KeepTruckin's Pro or Enterprise plan, DRIVE is included in your subscription and available to start using at no additional cost. There is no work required to turn it on — simply log into your Safety Hub and get started.

When is a new driver's DRIVE risk score made available?

The DRIVE score is available after 4 weeks of data are accrued on a new driver. Similar to a credit score, 4 weeks is a sufficient amount of time to understand his/her driving habits and provide an accurate score.

How is the DRIVE baseline determined?

The baseline is generated based on the previous driving data we have collected for that road segment from our network of over 400,000 vehicles. This baseline is updated quarterly.

How does DRIVE score events?

DRIVE goes beyond looking at just the count or weight of a given event type. When an event occurs, the DRIVE model looks at the specific road segment and evaluates the attributes (intensity, duration, etc.) of that event and compares against the baseline of driving behavior for that road segment and vehicle class. The further above the baseline the intensity and duration of the event, the more negative impact that event has on the score.

What factors are considered when calculating the DRIVE score at this time?

DRIVE currently looks at hard brakes, hard accelerations, speeding (defined using the flow of traffic), hard cornering events, and HoS violations. In addition to the event type, DRIVE also evaluates the location in which the event occured in addition to the vehicle class.

How is the total fleet DRIVE score calculated?

Fleets are scored weekly based on drivers who drove within that week. We take a modified weighted average (based on miles driven) of driver scores to get the fleet average.

Ex: A driver who drove 1,000 miles would count only 1.5x more than someone who drove 100 miles, as opposed to being 10x more if you did a simple average weighted by distance.

How are scores impacted?

Just like credit scores, we wouldn't expect to see major shifts month over month or week over week. Because the score is behavior based, it will likely take a longer amount of time (~6 months) to see bigger shifts in the score for a driver. The score changes when drivers perform better or worse than the expected baseline. Consistency is critical—the drivers have to prove that they are consistently committed to improved behavior or less risky driving behavior.

The more driving data a driver creates, the easier it is for the model to make an opinion and compare the driver's behavior against his/her peers. Within a safety event, DRIVE looks at intensity and duration in addition to the road segment and vehicle type against the baseline to

determine how the score is impacted. This means the score increases or decreases depending on how consistent the driver performs above or below the expected baseline.

This also means that DRIVE is forgiving. If your driver has proven to be a good driver with a score well above the KeepTruckin baseline (average) and he/she has a bad week— their score is not going to drop dramatically. This is because the model knows this driver has historically proven to perform above the expected baseline. The driver score might shift a few points that week but in the following weeks you would see the score go back to where it was if that one week was truly an anomaly.

Why does a driver with more events have a higher DRIVE score than a driver with less events?

Let's explore reasons why you may be seeing this:

- DRIVE is not strictly scoring based on the count of events it's comparing events against the expected behavior.
- The score is historical so one driver might have had their score decrease significantly more initially than the other due to their different histories. It's important to always consider the historical trend when comparing driver scores.
- The score is very dependent on locations and vehicle class. When comparing drivers, make sure they are traversing similar areas and in a similar vehicle class.
- Let's say a driver has a high count of braking events, but all of those braking events are down a steep decline. This would be expected behavior and thus have little impact to the score even though the event volume is high. This is because we would have observed similar braking behavior for this location from the KeepTruckin network, meaning the braking behavior is expected.

Do I need a dashcam to use DRIVE?

No, all Pro and Enterprise subscriptions include the DRIVE risk score in the Safety Hub. However, it is important to note that without dashcams, certain driver behavior that can only be detected by dashcams is not available. Examples of these behaviors are close following, distraction, drowsiness, unsafe lane changes, cell phone usage, and more.

Is DRIVE calculated at the driver or vehicle level?

The driver level. We believe that fleets want to coach the driver, rather than the vehicle. We also need to know which driver is in the vehicle at any given time to correctly attribute the driving behavior to the correct driver.