motive

Ultimate Guide

How to conduct a dash cam trial

Step-by-step instructions and templates inside

🔊 Please keep your eyes on the road

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sales@gomotive.com   855-434-3564

Why trialing your fleet dash cam is important

Driving the length of a football field with your eyes closed—that's what being distracted for just five seconds at 55 mph equates to, according to the National Highway Traffic Safety Administration (NHTSA). AI dash cams are crucial for detecting unsafe behaviors like distracted driving, effectively opening drivers' eyes to the risky habits that endanger their lives and the lives of the motorists around them.

While AI dash cams can enhance safety and reduce road risks, achieving the desired results depends on the accuracy of the technology. Accurate AI detection can mean the difference between preventing an accident and dealing with its aftermath.

Failure to accurately detect these behaviors puts drivers' lives at risk and results in significant financial loss.

44,000

people died in traffic accidents in 2023 (NSC)

$3.6M

average cost of a fatal commercial accident (FMCSA)

47%

increase in insurance costs per mile in the last decade (ATRI)

In light of these statistics, it's imperative that fleets understand what they're getting in a dash cam. Use this benchmarking framework to set up a side-by-side evaluation of your top dash cam providers. This will help you select an AI dash cam provider that can substantiate their claims of accurately detecting unsafe behaviors—helping to prevent accidents and save lives.

Define success metrics

Conduct your evaluation by assessing the following metrics:

1. **Accurate alerts:** Which vendor generates the highest number of in-cab alerts when a driver is engaging in unsafe behaviors?

2. **False positive alerts:** Which vendor generates the fewest false positive in-cab alerts?

A closer look:
How do AI dash cams see?

AI dash cams, like **Motive's**, use AI computer vision to recognize and classify objects such as roads, pedestrians, vehicles, and stop lights. They also distinguish between the foreground and background, identifying drivable lanes. By combining visual data with motion data—such as vehicle speed, GPS, IMU data and other telematics from the **Vehicle Gateway**—they can fully interpret the scene. When unsafe behavior exceeds threshold limits, the dash cam triggers an in-cab alert to the driver. Event video is then uploaded to the dashboard, and managers receive alerts.
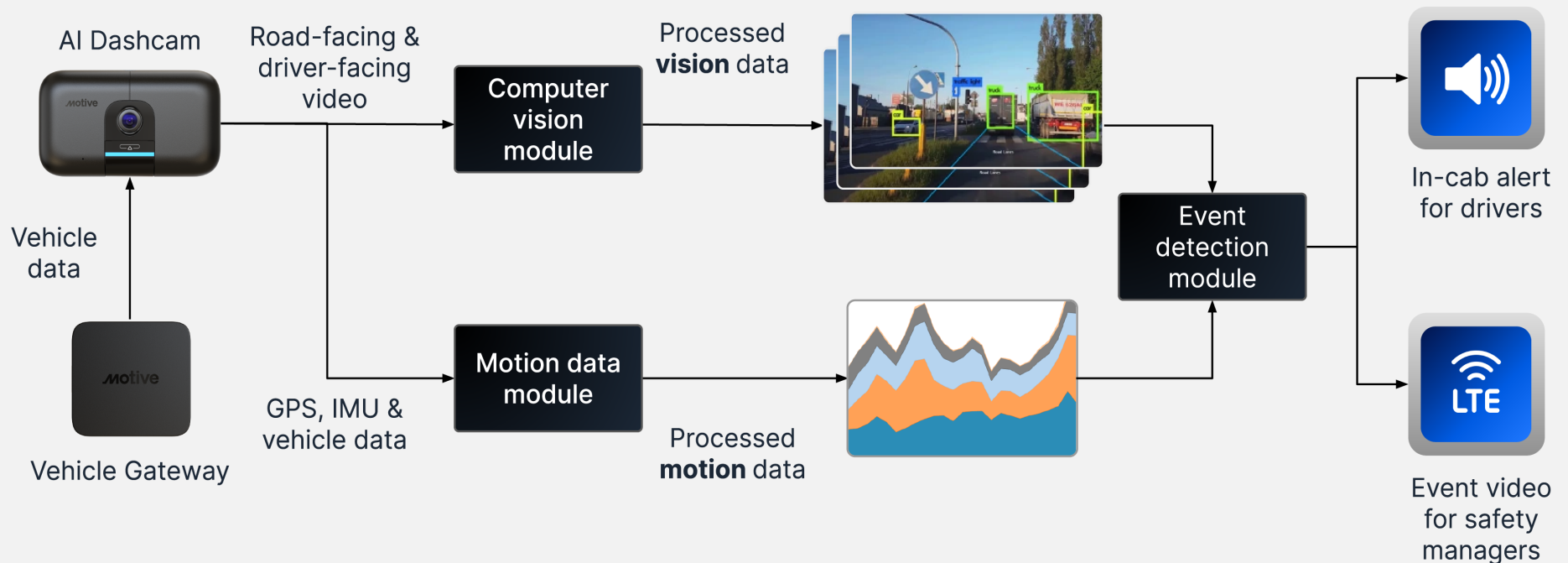
Define unsafe behaviors

Each organization is different. It's critical to define the unsafe behaviors that pose the most risk to your business. For example, long-haul trucking is more prone to drowsiness (e.g., frequent yawning) after long shifts, while field service fleets operating in residential areas are more likely to encounter stop sign violations.

Unsafe behavior	Impact
Cell phone usage (e.g., texting, making phone calls, using phone in lap)	**Nine people** die every day from accidents caused by distracted driving, such as texting and making phone calls.
Close following (e.g., tailgating)	**2.2M** or 33% of all crashes are from rear-end collisions.
Drowsiness (e.g., frequent yawning)	**100K** vehicle-related accidents, 800 fatalities, and 50K injuries are due to driver fatigue.
Seat belt violation (e.g., no seat belt)	**$11B** in U.S. injury-related crash costs resulted from not wearing a seat belt.
Stop sign violation (e.g., rolling stops)	**2.6M** or over 50% of crashes occur at or near intersections.

Set up a fair, controlled test

Ensuring a fair and controlled test is crucial for accurate comparison. Side-by-side comparisons are especially beneficial so you can observe capabilities and results in real time. To maintain fairness and avoid bias, it's important to control variables that could impact AI dash cam performance.

For example, not rotating the camera placement on the windshield could bias the results in favor of the centrally positioned camera. Failing to initialize the camera according to vendor guidelines could compromise the AI's ability to accurately detect certain behaviors. Be sure to inform the vendors that you are trialing their dash cams before getting started.

Example of the three camera positions used during testing.

Factors to control for include:

| Factors	How to control
Hardware condition	☐ Use only new cameras, checking that packaging is intact and there is no visible damage.
Installation	☐ Have cameras installed by a certified, professional third-party installer.
	☐ Initialize the cameras as per vendor guidelines.
	☐ Install one camera in the upper middle of the windshield, ensuring nothing blocks its view. Place additional cameras slightly to the left and right to still meet vendor guidelines.
	☐ Make sure dashboard settings are comparable for all cameras and enable audio recording to capture the in-cab alerts.
Placement	☐ Test cameras together in the same vehicle to minimize variability due to sun position, cloud cover, and driver performance.
	☐ Rotate their positions on the windshield to ensure each camera spends equal time in each location.
Time of day	☐ Assess performance across different lighting conditions—day, twilight, and night.
	☐ Avoid testing during periods when direct sunlight obscures the driver's face.
Anonymize dash cams	☐ Cover any identifying labels on the dash cams to prevent bias based on brand recognition or preconceived expectations.

Run the tests

1. Ask your driver(s) to drive normally without altering behavior to collect real-time feedback during normal business operations.

2. How long you run the test will depend on how many vehicles are being tested. Be sure to run the test long enough to gather enough data and make an accurate determination, about two weeks or more.

3. If testing multiple cameras, rotate the cameras so they have equal time in each position on the windshield.

4. Collect data passively from all vendor dashboards as you drive.

Analyze results with these templates

1. For consistency, use the provided templates below or the **editable version** to record your results.

2. Review the safety events recorded by all the vendor dashboards. Verify that each event is accurate, and record how often each system prompts drivers to correct unsafe driving behaviors.

3. Note any false positives, where video was captured without any unsafe behavior.
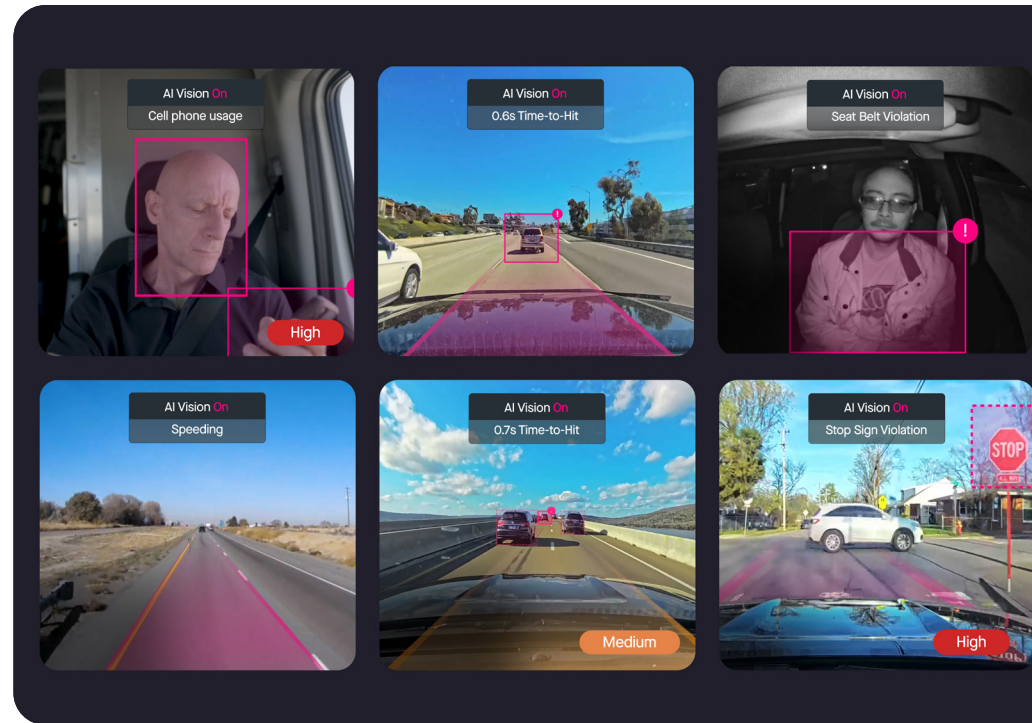
Alerts Template – Accurate Alerts

Behaviors captured	Number of accurate alerts		
	Vendor 1	Vendor 2	Vendor 3
Overall			
Close following			
Stop sign violation			
Unsafe lane change			
Cell phone usage			
Distraction			
Frequent yawning			
Seat belt violation			

Alerts Template - False Positives

Behaviors captured	Number of false positives		
	Vendor 1	Vendor 2	Vendor 3
Overall			
Close following			
Stop sign violation			
Unsafe lane change			
Cell phone usage			
Distraction			
Frequent yawning			
Seat belt violation			

The Federal Trade Commission (FTC) advocates for honest product comparisons to help buyers make informed decisions. Trialing your AI dash cam is essential to verify its effectiveness, especially when these systems promise to enhance driver safety and save lives.

Conclusion

The stakes are high when it comes to successfully alerting to unsafe driving events, and visibility is everything. Accident prevention is made possible through risk detection that is both instant and precise. Despite numerous claims from vendors about how their advanced AI capabilities ensure driver safety, the reality often reveals inaccurate or slow AI-based detection systems. While having any accident prevention technology is better than having none, not all AI-based detection tools are equally as effective.

Reliable Carriers conducted an exhaustive head-to-head trial with Motive and Samsara. After months of comprehensive testing with 40 different test drivers, the Reliable team unanimously decided that Motive was the right fit for the business. "By the end of our testing, the decision to move forward with Motive was an easy one," recalls Lauren Abrams, Director of Digital.

"The AI Dashcam instantly alerts our team to review any high-risk situations on the road," says Abrams. "The accuracy of the AI Dashcam's detection — and the contextual tags automatically associated with the videos — eliminates the need to play detective and gives us the ability to immediately direct our attention to where it's required most."

In addition, Motive commissioned its own side-by-side AI dash cam trial on a controlled test track conducted by one of the most renowned transportation voices in the country, the Virginia Tech Transportation Institute (VTTI). The study found Motive's AI Dashcam successfully generated alerts related to six unsafe driving behaviors 3-4 times more than the latest models from Samsara and Lytx. The Motive AI Dashcam successfully alerted drivers to unsafe driving behavior 86% of the time, compared to 21% for Samsara and 32% for Lytx. To learn more about the study and the evaluation process, download the VTTI study here.

Before signing a contract, it's essential to rigorously test the AI dash cams and get hands-on proof of product capabilities through your own trial. If you have any questions or need guidance on how to conduct your test, don't hesitate to contact the Motive team.

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