WHITE PAPER

Up to 60% of Collision Repairs to Have Mandated ADAS Calibrations in 2025

2024 | Q4

CALIBER

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Fulfilling our purpose

Restoring the Rhythm of Your Life©

Fulfilling our purpose means Caliber is committed to restoring vehicles to pre-accident condition.

In recent years, Caliber and our partner, Protech Automotive Solutions, have observed a disturbing trend: The industry is falling behind on performing necessary post-repair ADAS safety calibrations.

As part of our core value of *Doing the Right Thing*, we are sharing these insights with collision repair industry stakeholders with the goal of ensuring every vehicle is repaired correctly and gets safely back on the road, whether or not it is repaired at a Caliber center.

Projected Need for ADAS Calibration in Collision Repair

Current State & Near Future

Projections, methodology, validation, industry current state, future-proofing

Returning every repairable vehicle safely to pre-accident condition. That is the foundational goal of every collision repair shop, everywhere.

Over the years the industry has gotten consistently good at it. For decades, auto body repair didn't change much. Cars and trucks were made of certain steels and certain plastics; steels that could be hammered, sanded, bonded and welded and plastics that could be heated for reshaping. Safety technologies, like airbags, were innovations that happened only occasionally, giving the industry a fair amount of time to adapt to the repair need.

But recent innovation, particularly in the field of Advanced Driver Assistance Systems (ADAS) technology, has been outpacing the industry's ability to adapt and, worst of all, most collision repairers have no idea how far behind they really are.

Is the collision repair industry currently meeting or nearly meeting the true demand for OEM mandated ADAS calibrations?

Unfortunately, no.

The process for determining when a vehicle requires ADAS calibrations is not intuitive; a miscalibrated vehicle rarely sends out a Diagnostic Trouble Code (DTC) or a fault code, using a scan tool in combination with a visual inspection will only expose about 5-10% of needed calibrations, and technology may function improperly for days or weeks before alerting the driver.

Methodology Behind Predicting Annual Need for ADAS Calibration

To understand how we project the current and future need for calibration in collision repair, it is essential to understand that ADAS calibration demand is largely determined by the market adoption of ADAS technology in the average model year of repairable vehicles.

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Using the past 3 years of repair data, 2021-2023, we can make some projections. (Fig. 01) Currently, the data trend indicates that it takes around 5 quarters, rather than the expected 4, for a change to the average model year of repairable vehicles. This is most likely due to an increasing trend in average age of light vehicles in operation (Fig. 02).

Using 5 quarters as the shifting point, the industry can project the average model year of repairable vehicles in 2025 will be 2018 and throughout most of 2031 will be 2023, both of which are key model years regarding ADAS adoption.

There is a possibility the industry will see some variation in the trend, especially in response to inflationary pressures and increasing new vehicle costs, but that is unlikely to slow the growing calibration demand by more than a few months.

Year of repair	Avg. model year of repairable vehicles			
	Q1	Q2	Q3	Q4
2021	2014	2015	2015	2015
2022	2015	2015	2016	2016
2023	2016	2016	2016	2017
2024	2017	2017	NA	NA
Caliber projections:				
2024	-	-	2017	2017
2025	2018	2018	2018	2018
2026	2018	2019	2019	2019
2027	2019	2019	2020	2020
2028	2020	2020	2020	2021
2029	2021	2021	2021	2021
2030	2022	2022	2022	2022
2031	2022	2023	2023	2023

Year of Repair & Average Model Year of Repairable Vehicles | Figure 01
Caliber Internal Estimatics Data

Average Age of Light Vehicles in Operation (in Years) | Figure 02
U.S. Department of Transportation (DOT), Bureau of Transportation Statistics

Once the average model year of repairable vehicles has been established, the next step in predicting the current and future calibration need is to determine the market adoption of ADAS technology in that year.

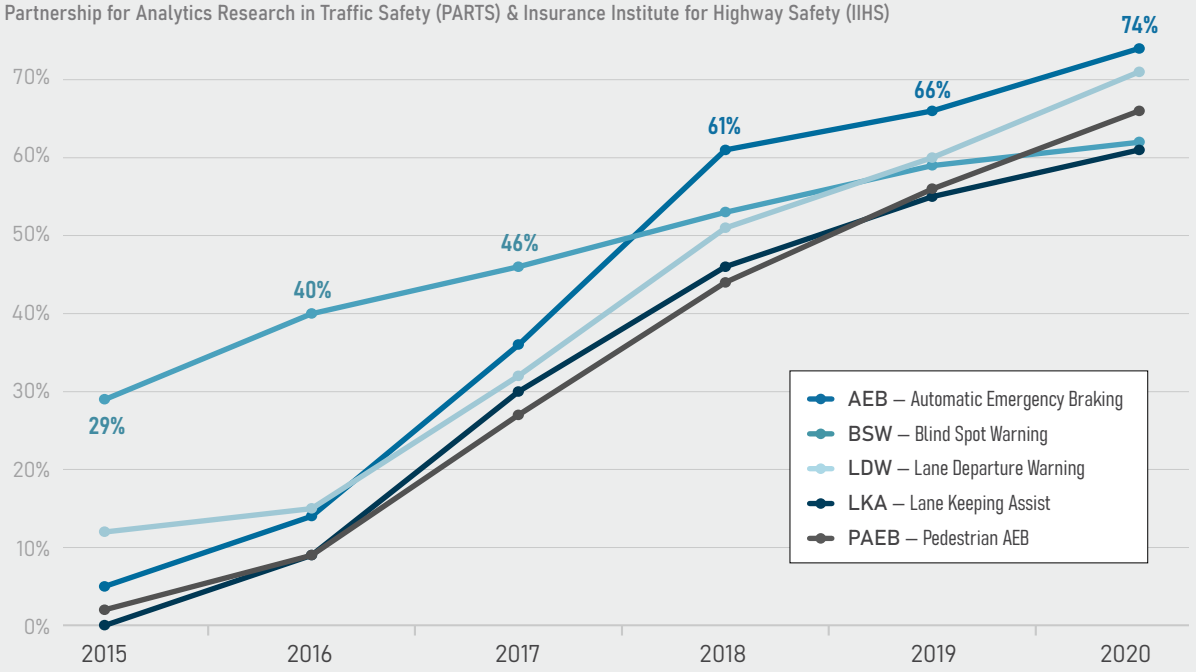
According to market penetration data from the Partnership for Analytics Research in Traffic Safety (PARTS), Blind Spot Warning (BSW) was the most adopted ADAS technology on vehicle model years 2015 – 2017, but starting in 2018, Automatic Emergency Braking (AEB) becomes the technology with the highest market penetration. (Fig. 03A)

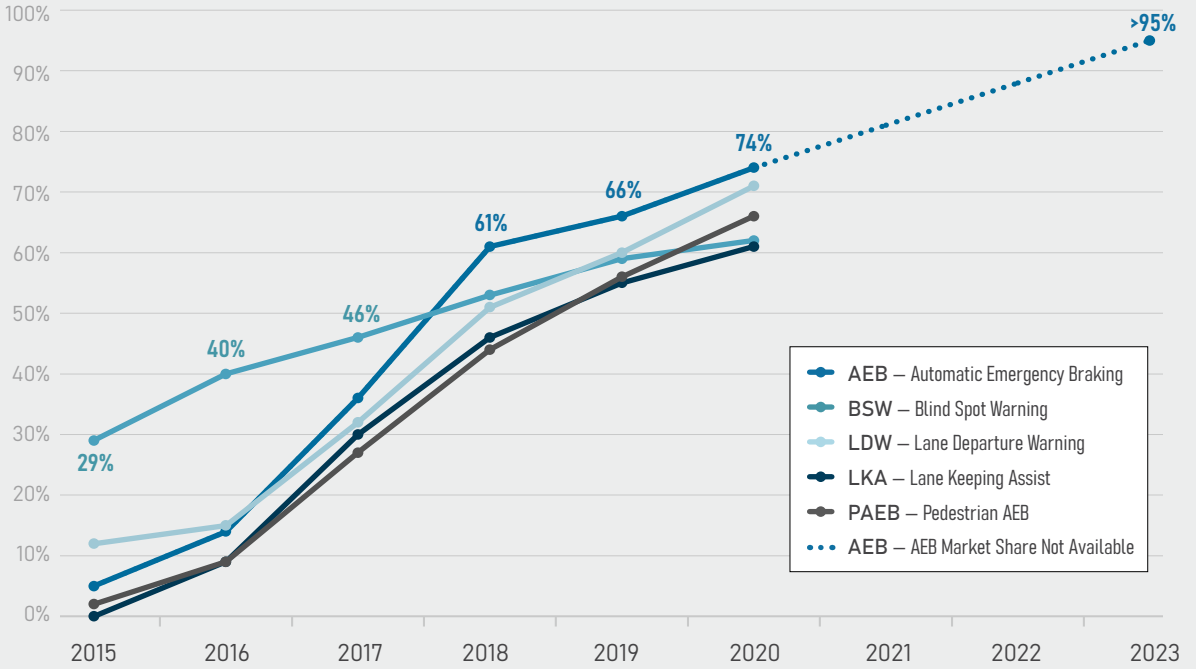
PARTS data is only currently available through model year 2020, but in 2023 the largest 20 automakers fulfilled their 2016 commitment for AEB systems to become standard on 95% or more of their vehicle line-up. (Fig. 03B)

Because nearly any single ADAS technology has the potential to require calibration after a collision, the exact technology with the greatest market adoption doesn't matter when predicting calibration need for the repair year.

ADAS Technology Market Adoption by Vehicle Model Year | Figures 03A & 03B

Partnership for Analytics Research in Traffic Safety (PARTS) & Insurance Institute for Highway Safety (IIHS)





Validating Projections

Correlating the ADAS market penetration data from PARTS with the average model year of repairable vehicles, we projected that in 2022 around 29% of collision repairs would have had required ADAS calibrations, that number should have risen to around 40% in 2023, and to 46% by Q4 2024. (Fig. 01)

Data shared with Caliber from Protech's ADAS ID³ validated these projections. According to the tool, 30% of collision repairs in 2022 and 42% of collision repairs in 2023 had at least one required calibration.

Protech Automotive Solutions

"The industry is missing about 85% of calibrations.

That is, [in 2022] only about 5% of jobs have an entry for calibration, when the number should be much closer to 33%"

Nick Dominato

Repairify's Senior Vice President of Product, adasThink, 2022

New England Automotive Report

The Statistical Significance of the Protech ADAS ID³ Tool

Industry leader Protech Automotive Solutions formally launched its ADAS ID³ diagnostic tool in late 2022, after years of development and testing. The ADAS ID³, named for its ability to leverage three sources of data, is an OEM-agnostic tool that leverages advanced AI and machine learning to assess when calibrations are needed for any given collision repair. The three data sources the ADAS ID³ utilizes are diagnostic pre-scans, line-items on estimates and supplements, and comprehensive calibration documentation from the 10 automotive manufacturers who represent ~90% of the U.S. car park. The ADAS ID³ gathers claims data is gathered from over 1,100 ADAS static-certified collision repair centers in 41 states, ensuring statistical significance.

Protech ADAS ID³ At-a-Glance

Data Sourced From

>1,100

Static-Calibration Certified Collision Repair Centers

41 States

Leveraging

Pre-Scans & DTC Analysis

Estimates & Supplements

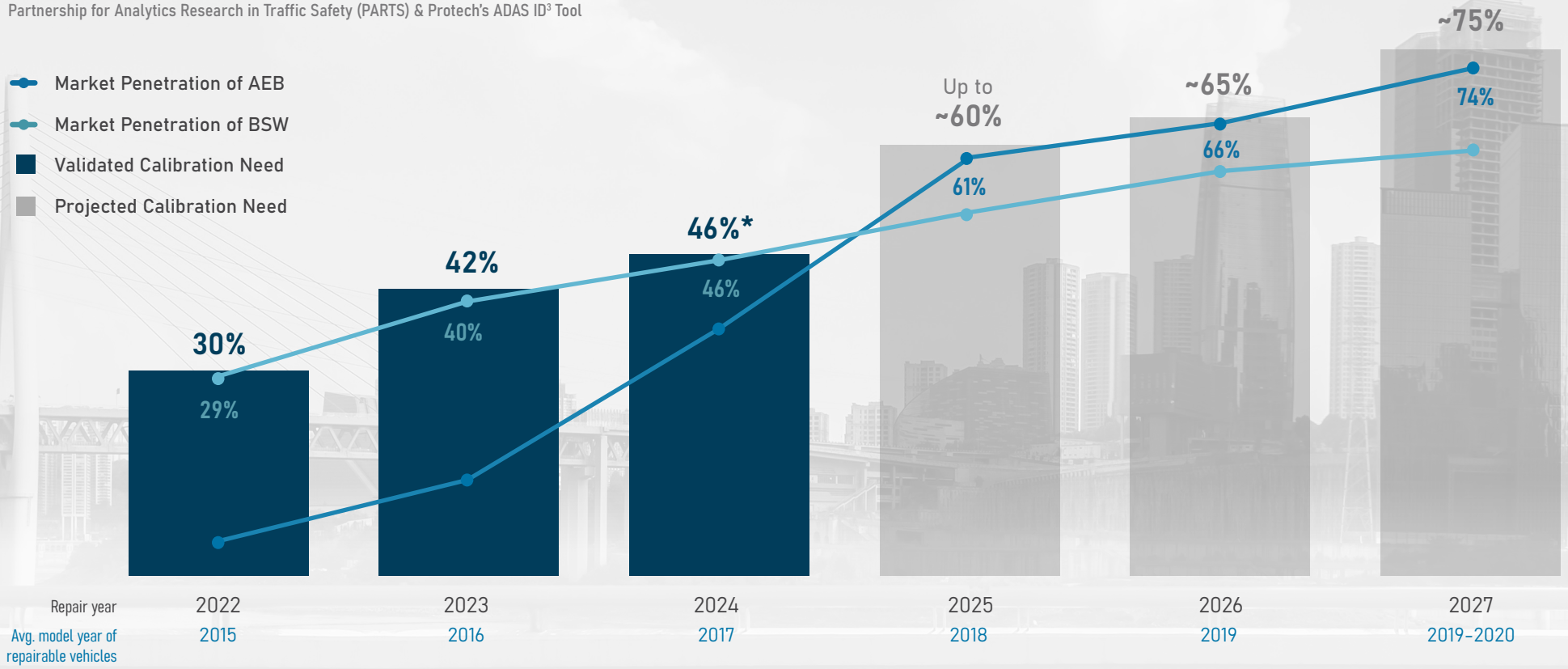
OEM Requirements

Advanced AI Machine Learning

97% Accuracy

Projected Need for Calibrations by Repair Year, With Data Validations 2022 – 2024 | Figure 04

Partnership for Analytics Research in Traffic Safety (PARTS) & Protech's ADAS ID³ Tool



* As of 2024 Q2

Calibration Demand is Fast Approaching Two Transformative Events

Utilizing the same methodology, we can project that 45-50% of collision repairs in 2024 will have one or more mandated calibrations, in response to a 46% market penetration of BSW technology. (Fig. 04)

Preliminary 2024 data from the ADAS ID³ is on-track with these projections, with demand reaching around 46% in Q2.

While growth from 2022 to 2024 has been strong but steady, in 2025 we expect it to reach the first of two transformative events.

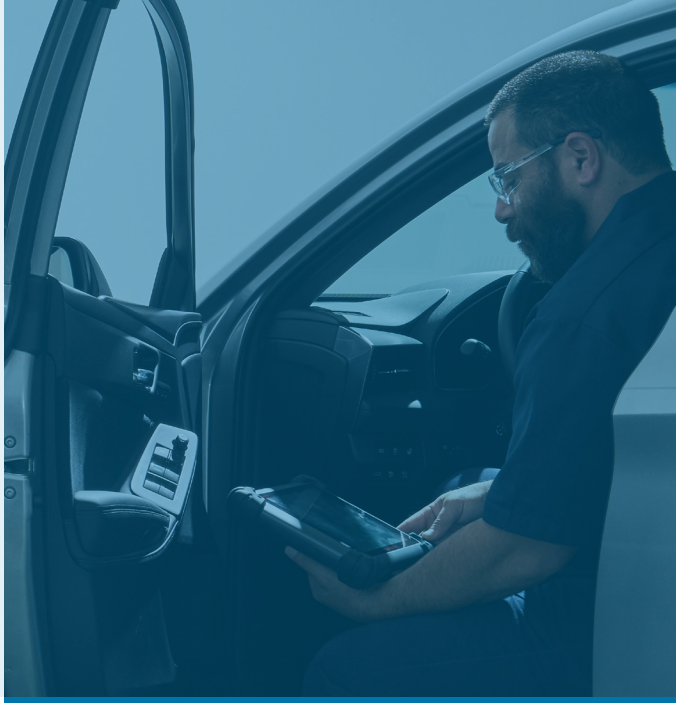
Year-over-year demand is expected to surge between 10 - 15%, as we see automatic emergency braking (AEB) take over from blind spot warning (BSW) as the dominant ADAS system.

This is a direct result of 10 key automakers achieving AEB standard on their 50% or more of their model year 2018 light vehicle line-up.

“When we get to the point where 2018 is the average [repairable] model year, that will truly be a watershed moment.”

Ryan Mandell
Director, Claims Performance, Mitchell

Ryan Mandell, Director of Claims Performance for Mitchell also agrees that demand will grow up to 60% by the end of 2025. In Enlyte’s *Enlytened Trends Report 2024*, he projects the year will become a “watershed moment.”



Second Transformative Event Predicted for 2030-2031

The second transformative event should occur when 2023 becomes the average model year of repairable vehicles.

There are many factors which could impact when exactly this will occur, including vehicles in operation, average vehicle age, new vehicle purchases vehicle miles traveled and collision frequency.

Assuming all of these remain consistent, Caliber estimatics predict that 2023 will become the average age of repairable vehicles in 2031. However, there is some indication that, due to increases in new vehicle sales in 2023, the timeline will advance and we will see 2023 become the average model year of repair in 2030.

Model year 2023 was when the automotive manufacturing industry fulfilled their 2016 voluntary commitment to have AEB standard on 95% or more of the U.S. car park.

Thus, based on market penetration of AEB systems alone, around 95% of U.S. collision repairs will require one or more ADAS calibrations by Q4 of 2031—at the latest.

2031

~95%
OF COLLISION REPAIRS TO REQUIRE CALIBRATION

Between 2022-2031, Domestic Repair Mix Will Create Percentage Variations at the Shop Level

Until recently, adoption of any ADAS technology was completely voluntary on the part of the auto manufacturer. There were no mandated milestones, and the only discretionary one—for model year 2023.

As a result, while we can track overall market penetration of ADAS through the PARTS initiative, ADAS adoption by vehicle make varied widely up until the fulfillment of the 2023 voluntary commitment.

Generally speaking, luxury models had the greatest adoption of all ADAS technologies, followed by foreign-made vehicles, with domestics trailing behind.

This means that an individual shop's mix of vehicle makes will create variations in the calibration demand they can expect to see in any repair year before 2030-2031. Collision repairers who specialize in select luxury makes may see 90% or more of their claims requiring calibration as early as 2025. Conversely, shops that primarily repair vehicles from industry-giant Ford may encounter relatively few mandated calibrations until 2026-2027.

Percentage of Model Year 2019 Vehicle Line-Up with AEB Standard by Manufacturer | Figure 05
U.S. Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA)

* Now Stellantis

Future-Proofing for Continually Evolving Automotive Technological Innovation

To ensure driver and passenger safety on our roadways, the collision repair industry must develop a deep understanding of three critical facts:

1. The overwhelming majority of current needed calibrations are being missed by collision repair professionals. This is largely due to correct identification of calibration need being a time-consuming, manual process that is prone to human error.
2. Calibration need will only rarely be identified during vehicle pre- or post-scan, test drive or any other standard diagnostic procedure.
3. Partnering with a respected industry-leader or industry-leading service that specializes in ADAS calibrations is the most accurate and cost-effective way for most collision repairers to ensure that needed calibrations are identified and correctly performed.

Correctly identifying when a vehicle needs to be calibrated and then performing that calibration correctly to OEM standards will help protect the collision repairer from potential legal liability for the repair. Additionally, correctly identifying and performing calibration during the initial repair can decrease call-backs and increase customer satisfaction and trust.

With 2022 calibration demand expected to increase as much as double by 2025, the industry is poised to experience a significant decline in repair satisfaction if it doesn't take immediate action to bring calibrations performed in line with demand.

The calls to action for insurance carriers center around supporting ADAS calibrations largely from a procedural and industry awareness standpoint. Taking these organizational actions proactively will help protect both carriers and repairers in the face of quickly rising calibration demand.

Display cohesive commitment across all tiers of the organization to ensure understanding of and compensation for collision repairers performing necessary ADAS calibrations.

Optimize processes by reducing the complexity and number of claims reviews and re-inspections performed in response to calibration line-items and supplements, saving time and manpower for both the collision repairer and the insurer.

Increase awareness among claims management teams of the importance of exclusively referencing original OEM information when performing an ADAS-related audit as third-party documentation can be incomplete.

Inform your organization's underwriting teams of the fast-approaching "watershed" moments, when the industry will see dramatic increases in percentages of repairs requiring calibration(s).

Appendix: Sources

- **PG. 2 FIG. 01** | Caliber Internal Estimatics, not previously published
- **PG. 2 FIG. 01** | Enlyte *Enlytened Trends Report 2024 "Collision Claims: What Every Insurer, Repairer and OEM Needs to Know"* https://www.enlyte.com/insights/enlytened-trends-report
- **PG 2. FIG. 02** | US Department of Transportation (DOT), Bureau of Transportation Statistics https://www.bts.gov/content/average-age-automobiles-and-trucks-operation-united-states
- **PG. 3 FIG. 03A** | Partnership for Analytics Research in Traffic Safety (PARTS) *Market Penetration of Advanced Driver Assistance Systems (ADAS)* | Note: PARTS is a partnership between automakers and the U.S. Department of Transportation's National Highway Traffic Safety Administration https://www.mitre.org/sites/default/files/2022-01/PARTS-Annual-Report-2021.pdf
- **PG. 3 FIG. 03B** | Insurance Institute for Highway Safety (IIHS) *Automakers Fulfill Autobrake Pledge for Light-Duty Vehicles* https://www.iihs.org/news/detail/automakers-fulfill-autobrake-pledge-for-light-duty-vehicles
- **PG. 4** | Protech Automotive Solutions Proprietary Caliber Report | Internal for Caliber, not published
- **PG. 4** | New England Automotive Report October 2022 *To Calibrate or Not: What a Dangerous Question!* https://issuu.com/nja0614/docs/near1022_issuu
- **PG. 5 FIG. 04** | Partnership for Analytics Research in Traffic Safety (PARTS) *Market Penetration of Advanced Driver Assistance Systems (ADAS)* & Protech Automotive Solutions Proprietary Caliber Report https://www.mitre.org/sites/default/files/2022-01/PARTS-Annual-Report-2021.pdf
- **PG. 6** | Enlyte *Enlytened Trends Report 2024 "Collision Claims: What Every Insurer, Repairer and OEM Needs to Know"* https://www.enlyte.com/insights/enlytened-trends-report
- **PG. 7** | US Department of Transportation (DOT), National Highway Traffic Safety Administration *10 Automakers Equipped Most of Their 2018 Vehicles with Automatic Emergency Braking* https://www.nhtsa.gov/press-releases/10-automakers-equipped-most-their-2018-vehicles-automatic-emergency-braking

Appendix: Glossary

- **ADAS:** Advanced driver assistance systems
- **AEB:** Automatic emergency braking (ADAS technology)
- **BSW:** Blind spot warning (ADAS technology)
- **LDW:** Lane departure warning (ADAS technology)
- **LKA:** Lane keeping assist (ADAS technology)
- **OEM:** Original equipment manufacture
- **PAEB:** Pedestrian automatic emergency braking (ADAS technology)

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