With the increasing ubiquity of Advanced Driver Assistance Systems (ADAS), comes the increasing need for systems to be properly calibrated to ensure proper functionality after a repair has taken place. In many instances, calibrations are required simply because there is damage in the general area of a particular component, even if it wasn't directly impacted by the collision event. Honda, for instance, published the following chart to identify components that should be given particular attention in the event of a collision to one of the areas designated[1] (Figure 1):

Collision Damage Area	Description
Front Bumper and Grille Area	Millimeter Wave Radar Unit Front Camera (w/Multi-View Camera System)
Windshield Area	Multipurpose Camera Unit
Front Passenger's Door/ Mirror Area	LaneWatch™ Camera (Honda Only) Right Side Camera (w/Multi-View Camera System)
Driver's Front Door/Mirror Area	Left Side Camera (w/Multi-View Camera System)
Rear Bumper Area	Blind Sport Information System Radar Units Rear Camera (w/Multi-View Camera System)

Figure 1: From American Honda Post-collision Diagnostic Scan and Calibration Requirements for Honda and Acura Vehicles

For Honda vehicles model 2015 and newer, the points of impact listed above represent 70% of repairable claims in the 2019 calendar year.[2]

Calibrations present complexity for repair facilities because of the varying methods used to complete the

calibration process. While many vehicle networks can be reprogrammed and calibrated using a J-2534[3] compatible tool like the Mitchell Diagnostics MD-350, some vehicles require the use of specialized targets for static calibrations, or dynamic calibrations that involve driving a vehicle at a certain speed for a certain time or distance.

Nevertheless, the need for calibrations is growing. While higher for newer vehicles, the frequency of both diagnostic and calibration charges on estimates has doubled for virtually all vehicles since the beginning of 2018 (Figures 2 & 3).

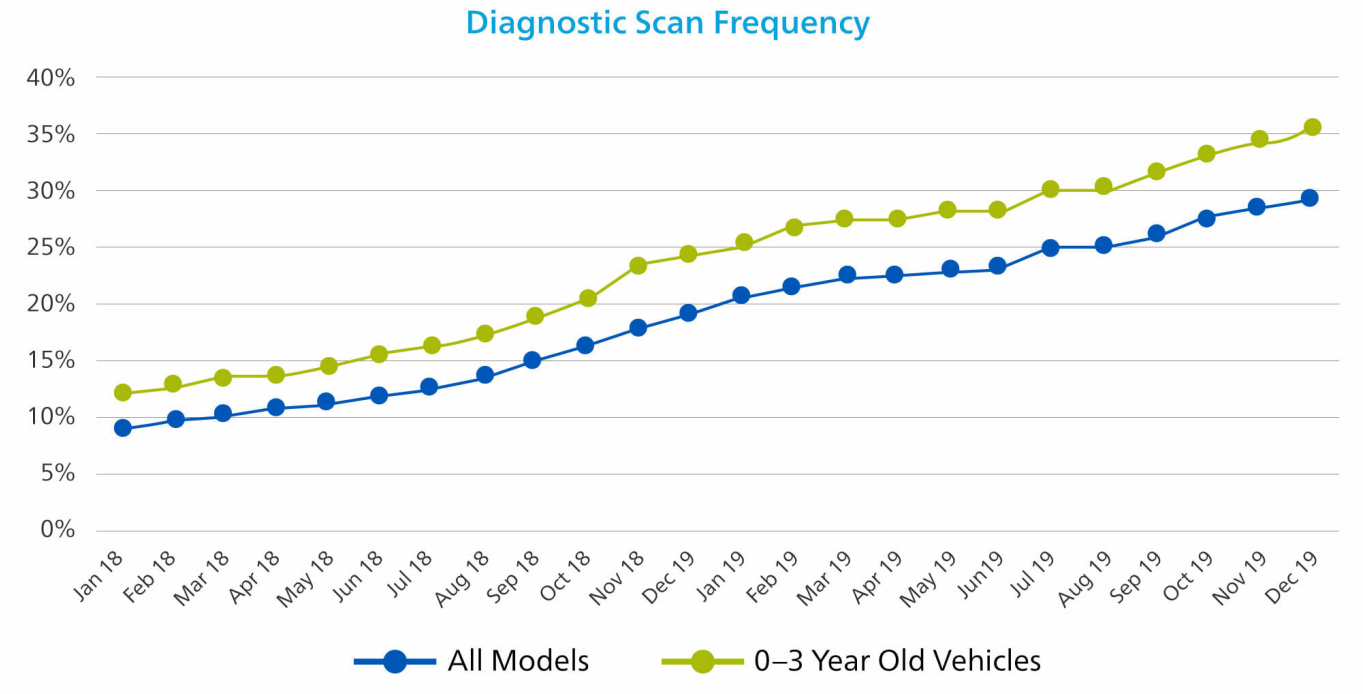

Figure 2: Diagnostic Scan Frequency for All Vehicles and 0-3 Year Old Vehicles Based on Mitchell Data

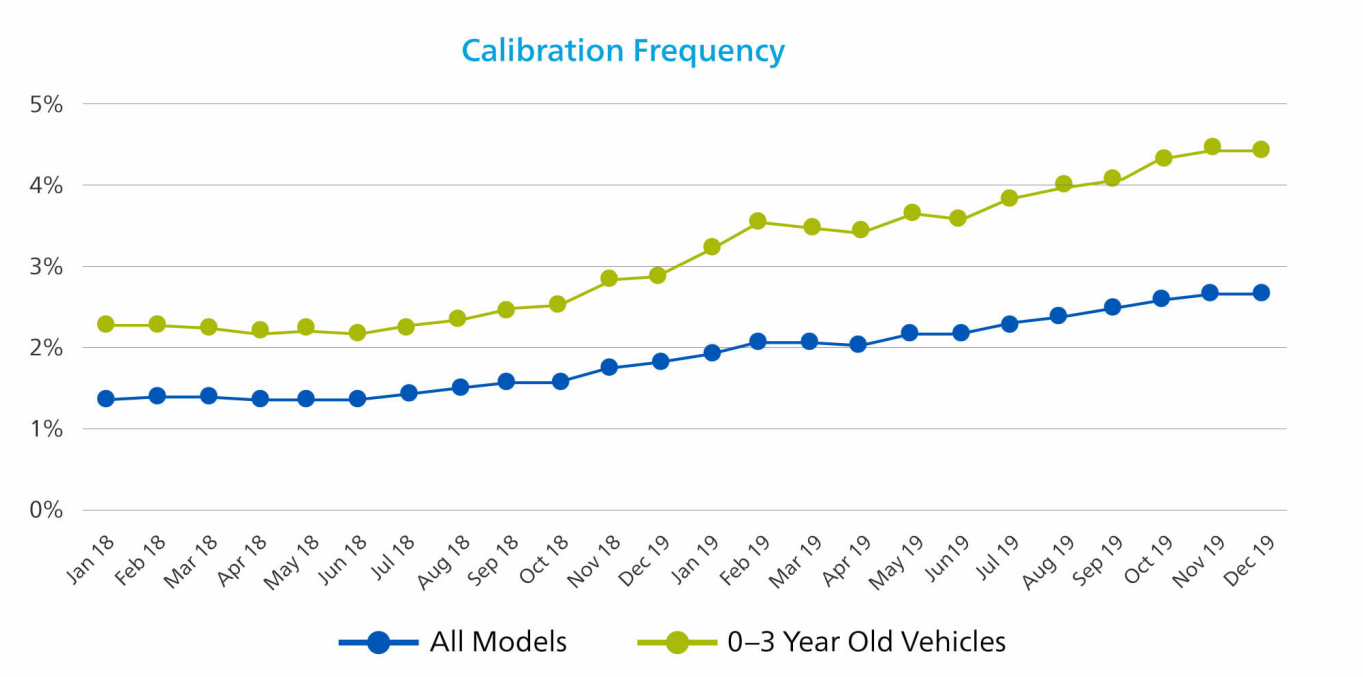

Figure 3: Calibration Frequency for All Vehicles and 0-3 Year Old Vehicles Based on Mitchell Data

The growth seen in the frequency of calibrations over the last two years is likely only the beginning of a steeper increase to come. As more vehicles are equipped with Level 3 autonomy in addition to 5G connectivity, the need for calibrating the complex and sensitive components required to operate these networks will continue to increase. The research firm Gartner estimates that "the share of 5G-connected cars actively connected to a 5G service will grow from 15% in 2020 to 74% in 2023."[4]

The collision repair industry is rapidly transforming from one where calibrations occupy a niche space for a small portion of jobs to one where calibrations will be an almost standard operation on the majority of repairs. This is why Mitchell continues to invest heavily in integrating OEM repair procedures at the estimate line level, as well as comprehensive solutions like the Mitchell Diagnostics system, which currently has the ability to perform more than 700 dynamic ADAS calibrations. Providing shops with the ability to perform these operations in-house helps to reduce costs for insurers while creating an additional profit center for the collision repair business. While the calibration needs of today's vehicles present challenges for the entire industry ecosystem, they are increasingly a necessary part of delivering proper and safe repairs.

[1] https://www.oem1stop.com/sites/default/files/Honda_Pos_Diagnostic-Scans_Revised_FINAL%285-19%29.pdf

[2]Based on Mitchell Data

[3]https://www.kvaser.com/about-can/can-standards/j2534/

[4]https://www.gartner.com/en/newsroom/press-releases/2019-10-17-gartner-predicts-outdoor-surveillance-cameras-will-be