HLDI
Highway Loss Data Institute

Bulletin | Vol. 37, No. 11 : December 2020

Predicted availability and prevalence of safety features on registered vehicles — a 2020 update

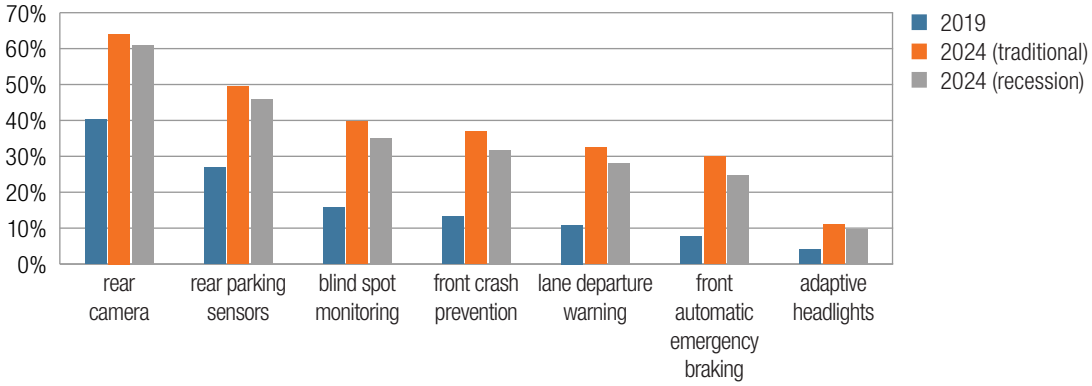
Highway Loss Data Institute (HLDI) studies have indicated that some collision avoidance systems are reducing insurance claims. In particular, claim frequency reductions were found across all of the crash-related coverages for most front crash prevention systems. While some of the reductions are sizable, these systems were first introduced on a small number of luxury vehicles. Consequently, the impact of these systems on the population of all crashes has been limited.

Prior HLDI studies (2012, 2014a, 2014b, 2015, 2016, 2017, 2018, 2019b) showed that it typically takes decades after introduction before most vehicles on the road have a given feature. Most of the prior studies examined the prevalence of the systems based on availability, meaning the feature was available as standard or optional equipment. The percentage of vehicles equipped with an optional feature was unknown. Similar to the 2019 study, the optional-equipped rate is estimated for each feature based on known take rates from some manufacturers. Using this information, the percentage of registered vehicles equipped with a certain feature, along with future predictions, can be better estimated.

The effect of COVID-19 on the economy, including new and used vehicle sales, has introduced a lot of uncertainty. It may take several years before the full ramifications of the pandemic are researched and understood. To demonstrate how this uncertainty may affect our future predictions of vehicles equipped with safety features, an alternative scenario was run based on the 2007–09 recession and subsequent recovery. The annual changes in new vehicle registrations from 2007–12 were used to estimate the future, currently unknown new vehicle registrations for 2020–24. Results from this alternative scenario (recession scenario) are presented alongside the traditional scenario, where future new vehicle registrations are based on a 30-year past trend. The future is uncertain, and future new vehicle registrations may behave completely differently from the prior recession. This study will be updated as new data are made available.

For both scenarios, the figure below shows the percentage of registered vehicles estimated to be equipped with safety features in calendar years 2019 and 2024. Under the traditional scenario, with the exception of adaptive headlights, the presence of all systems is estimated to increase by over 20 percentage points by 2024. However, the feature-equipped rates are expected to decrease by between 1 percent (adaptive headlights) and 5 percent (front automatic emergency braking [AEB]) by 2024 under the recession scenario compared with the traditional scenario. Rear cameras are estimated to be on over 60 percent of the registered vehicle population by 2024 under both scenarios. Rear-parking sensors are estimated to approach a 50 percent fleet penetration by 2024, depending on whether vehicles registrations were affected by COVID-19. Front AEB is estimated to increase from 8 percent of the registered vehicle population in 2019 to between 25 and 30 percent in 2024.

Predicted registered vehicles equipped with collision avoidance systems by calendar year, 2019 and 2024

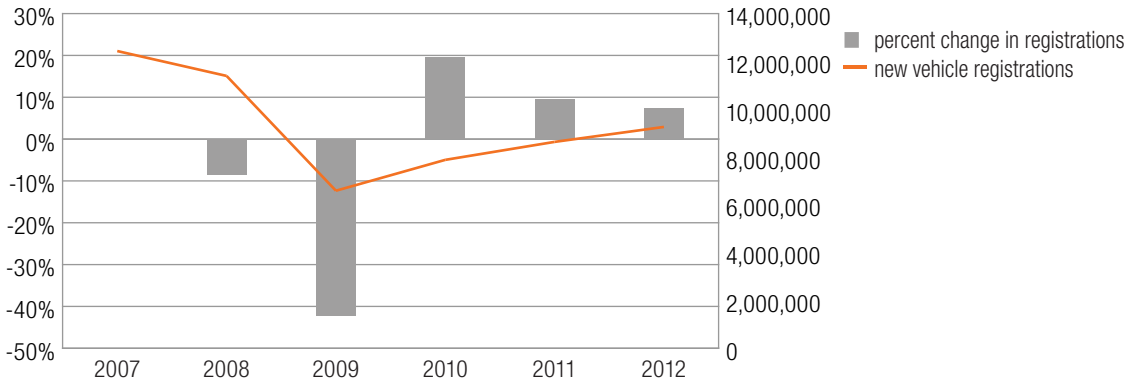


Introduction

Given the potential and proven benefits of collision avoidance systems, it is almost certain that these systems will reduce the number of crashes and insurance claims. While estimating the efficacy of available systems is an important part of understanding the long-term impact of these systems, it is also important to understand the prevalence of these systems in the current fleet and to estimate their growth in the fleet over time. The purpose of this study was to quantify the prevalence of vehicle features in the registered vehicle fleet, trace that prevalence from introduction through the most current registration data, and then predict the prevalence of these features in the future. Similar to the 2019 HLDI study, this current study adjusts the vehicle fleet estimates and predictions by estimating the take rates for optional features.

The global pandemic caused by COVID-19 is also likely to affect new vehicle sales and consequently future predictions of vehicles equipped with collision avoidance features. While the full effect of COVID-19 on the economy and vehicle sales remains to be seen, an alternative scenario (recession scenario) was included to demonstrate how a recession may impact future predictions. This scenario was based on the annual changes to new vehicle registrations from the 2007–09 recession, and the subsequent recovery from 2009–12. **Figure 1** shows the new vehicle registrations and annual percent change in new vehicle registrations during this time. These annual percent changes were used to estimate the number of new vehicle registrations for 2020–24. Results from this alternative scenario (recession scenario) are presented alongside the traditional scenario, where future new vehicle registrations are based on a 30-year past trend. The future is uncertain, and future new vehicle registrations may behave completely differently from the prior recession. This study will be updated as new information and data are made available.

Figure 1: Change in new vehicle registrations from 2007–12



Methods

This study combines vehicle feature information from HLDI with vehicle registration data from IHS Markit (formerly R.L. Polk and Company). For each feature studied, there are three figures:

- The **first figure** illustrates the percentage of new vehicle series with a given feature by model year. In this figure, each new vehicle series (model year, make, series) is a single observation. The observations have not been weighted by insurance exposure or vehicle registration information.

- The **second figure** for each feature illustrates the percentage of registered vehicles with a feature by calendar year. In this figure, each observation (model year, make, series) is weighted by the number of registered vehicles. This second figure also includes an "equipped" line, which estimates the percentage of the vehicle fleet with the feature installed.

- The **third figure** for each feature illustrates the predicted availability for that feature under the traditional and recession scenarios. The actual availability is also displayed for comparison. One set of lines represents predicted availability with the optional take rate considered, while the other set represents the estimate without including that rate. This figure provides insight into the time required for the presence of a feature to build in the registered vehicle fleet.

The following features are included in this study: electronic stability control (ESC), rear parking sensors, front crash prevention systems that warn and those that automatically brake, rear cameras, adaptive headlights, lane departure warning, and blind spot monitoring.

Vehicle feature information was obtained by HLDI. The feature information is structured by model year, make, and series. These same three variables were mapped to the registration data from IHS Markit. For each combination of model year, make and series, one of three possible feature values are provided: "standard," "optional," or "not available."

Registration counts belonging to either of the first two groups (standard and optional) are hereafter referred to as "available." For example, in calendar year 2019, 4.3 percent of registered vehicles had rear parking sensors as standard equipment and another 39.9 percent had them as an option, so it is said that rear parking sensors were available in 44.2 percent of the 2019 registered vehicles.

The most recent IHS Markit data available to HLDI contain calendar years 1976–2019. For each calendar year, a number of recent model years are used, ranging from 11 model years for calendar year 1976 to 41 model years for calendar year 2019. The number of model years included in each calendar year has increased over time. For calendar years 2009 and later, more than 50 of the most recent model years were available, but the analysis was limited to 40 model years. This covered at least 95 percent of the overall fleet in calendar years during which safety features started to gain popularity. There are model years that are present in earlier calendar years, age out of the dataset, and then reenter when the dataset was expanded. To increase the amount of usable data, missing values were extrapolated based on existing values. IHS Markit has restated some of its data. In this report, original data were used from 1976 to 2008, while restated data were used for calendar years 2009–19.

Approach used to estimate optional-equipped rates: This study estimates the optional-equipped rates for each of the features using HLDI feature data and Vehicle Identification Number (VIN) information from approximately 12 manufacturers. Using HLDI's vehicle information, vehicles registered in 2019 with optional features were identified. Individual feature-equipped rates for a calendar year were estimated based on VIN data that HLDI previously received from a limited number of manufacturers. The equipped rate for each feature was estimated using several regression models that included some or all of the following variables: model year, size, class, and vehicle base price. In the ideal situation, known equipped rates at the model year, size, class, and price level were assigned to vehicles with unknown feature-equipped rates of the same model year, size, class, and price. In instances where known feature-equipped rates were not available for the variables model year, size, class, and price level, the equipped rates were estimated with regression models that used as many of these variables as possible with known values. In the worst case scenario, the estimated equipped rates were based on models using only model year and vehicle price.

Once the historical unknown feature-equipped rates were assigned, the mix of the historical optional and standard feature data were used to estimate future feature-equipped rates.

Approach used to estimate the number of new vehicles (traditional scenario): To estimate the number of new vehicles in 2020, registrations for new vehicles for 5 calendar years (2015–19) were averaged. New vehicles are defined as vehicles aged 0 and –1 years. For example, a 2012 model year vehicle in calendar year 2012 would have a vehicle age of 0 years , while a 2013 vehicle in the same calendar year would be aged –1 years. To predict new vehicle registrations for calendar years 2020–50, a 30-year past trend in new vehicle registrations was studied. During this period, new vehicle registrations increased on average 1.2 percent per calendar year. New vehicle counts for 2020 and beyond were calculated by adding 1.2 percent to the prior year registration counts.

Approach used to estimate the number of new vehicles (recession scenario): Under the recession scenario, new vehicle registrations for 2020–24 were based on the changes in new vehicle registrations during the 2007–09 recession and 2009–12 recovery as shown in **Figure 1**. For example, under this scenario new vehicle registrations for 2020 were estimated to decline by approximately 8 percent, followed by a 42 percent reduction in new vehicle registrations for 2021 and then a 20 percent increase in 2022, etc. Beginning with 2025, new vehicle registrations were calculated by adding the 30-year past trend estimate of 1.2 percent to the prior year registration counts.

Approach used to estimate attrition rates: For a given model year, registration counts typically peak at age 1 and then decline over time. For example, in 2013 there were fewer 2008 model year registrations than there were in 2012. The rate at which registrations declined as a vehicle aged 1 year (i.e., as the vehicle aged from 1 to 2, 2 to 3, 3 to 4 years, etc.) was calculated for every model year/age change combination over the past 30 years of data. The average attrition rate for a given age change was then calculated and applied to future years (2020–50) and vehicles undergoing the same age change.

Additionally, to account for changes in attrition, a 30-year past trend was studied. During this time period, attrition rates declined on average 0.21 percent per model year. Based on this, the attrition for each subsequent model year was slowed by an additional 0.21 percent. In other words, the attrition rate for the 2025 model year was 0.21 percent less than the attrition rate for the 2024 model year, which was 0.21 percent less than the 2023 model year, etc. The attrition assumptions will be monitored, refined, and modified as needed for future analysis.

The estimation procedure was conducted separately for each feature in the study. The procedure involved running a logistic regression model (assuming a binomial distribution with a probit link) on the past year's data, for which feature prevalence is known, and then applying the model estimates to predict the feature prevalence for future years.

The dependent variable in the model was the ratio of registrations with the feature available to the total registration count. The only two independent variables were calendar year and model year.

Results

Figure 2: Percentage of new vehicle series with ESC by model year

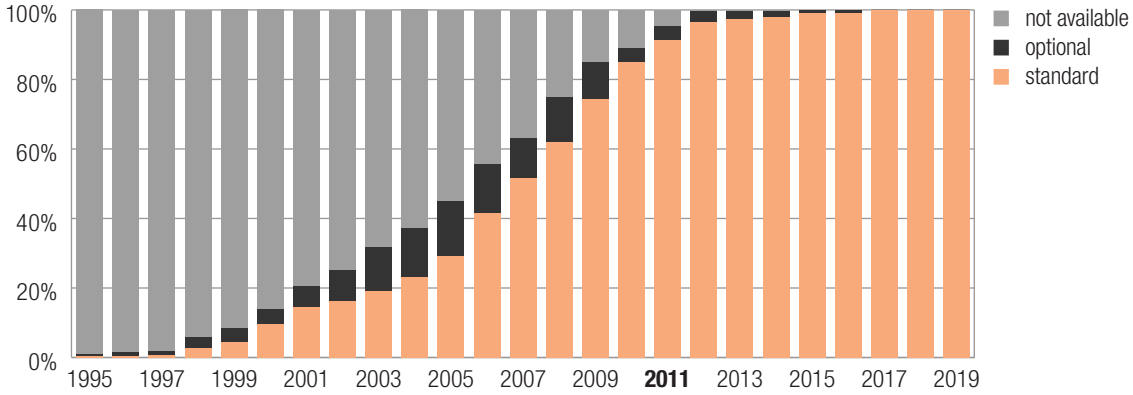


Figure 2 shows the percentage of vehicle series by model year with either standard or optional ESC. ESC was introduced in model year 1995 and by the 2004 model year had become standard on 23 percent and optional on 14 percent of vehicle series. **ESC has been required on all light-duty vehicles beginning September 1, 2011**. Starting in model year 2013, the only vehicles that do not have standard ESC are very large pickup trucks weighing more than 10,000 pounds and not subject to the regulation. By the 2017 model year, all vehicle series had standard ESC.

Figure 3: Percentage of registered vehicles with ESC by calendar year

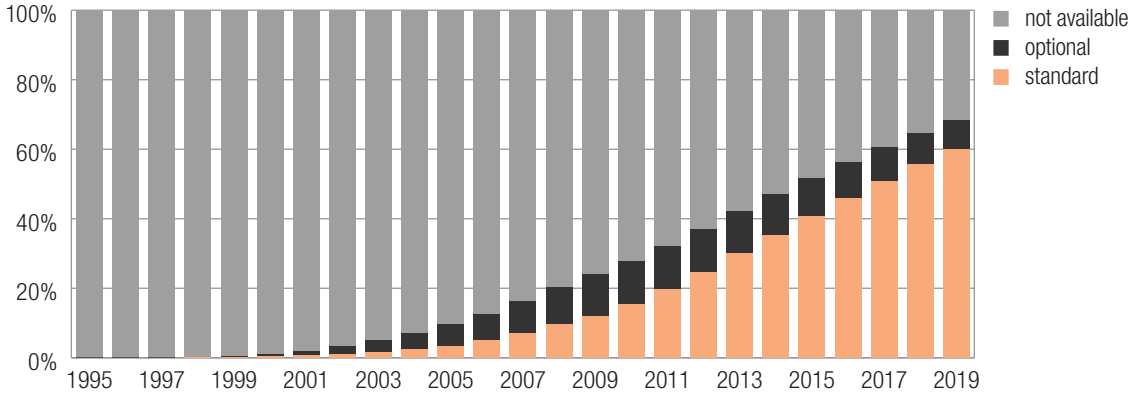


Figure 3 shows the percentage of registered vehicles by calendar year with either standard or optional ESC. By 2004, ESC had become standard on 2 percent and optional on 5 percent of registered vehicles. By 2019, ESC was standard or optional on 69 percent of registered vehicles. Data were not available to estimate the optional-equipped rate for ESC.

Figure 4: Predicted percentage of registered vehicles with ESC by calendar year

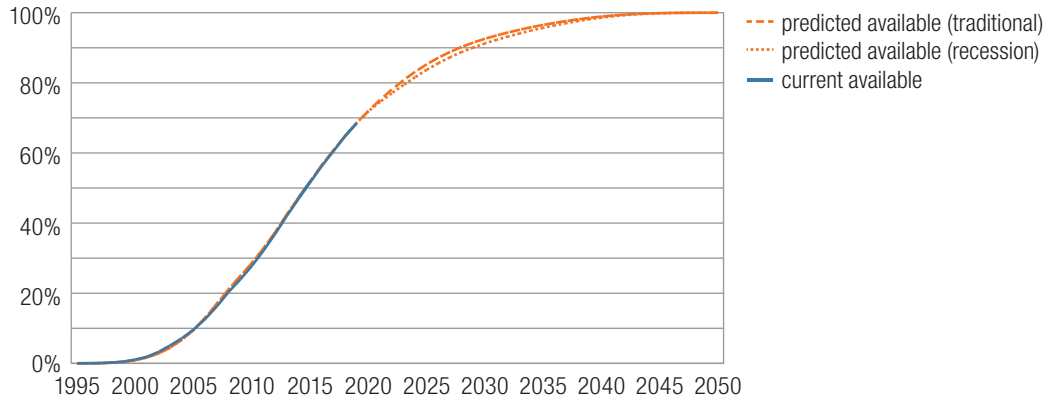


Figure 4 shows the percentage of predicted registered vehicles by calendar year with either standard or optional ESC. It is predicted that ESC will be standard or optional on 95 percent of registered vehicles in 2033 under the traditional scenario and 2035 under the recession scenario.

Figure 5: Percentage of new vehicle series with rear parking sensors by model year

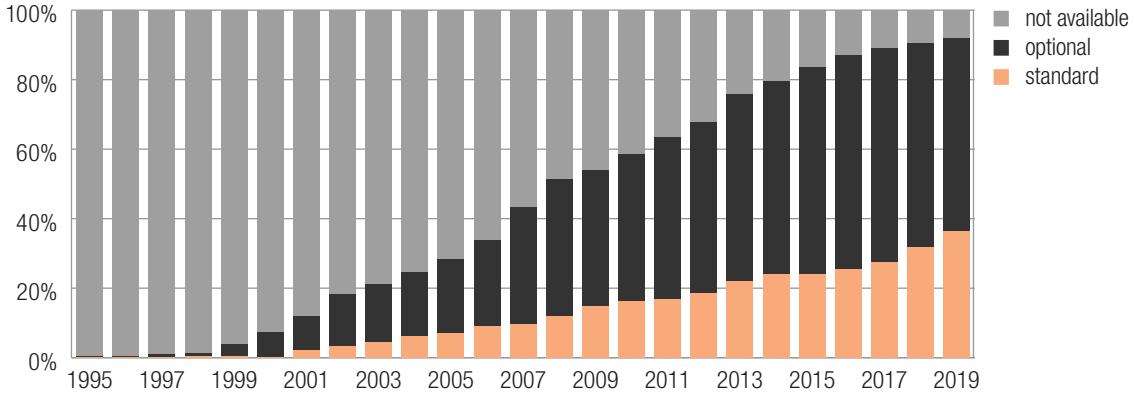


Figure 5 shows the percentage of vehicle series by model year with either standard or optional rear parking sensors. Rear parking sensors were introduced in model year 1995 and by the 2004 model year had become standard on 6 percent and optional on 19 percent of vehicle series. For the 2019 model year, rear parking sensors were standard on 36 percent and optional on 56 percent of vehicle series.

Figure 6: Percentage of registered vehicles with rear parking sensors by calendar year

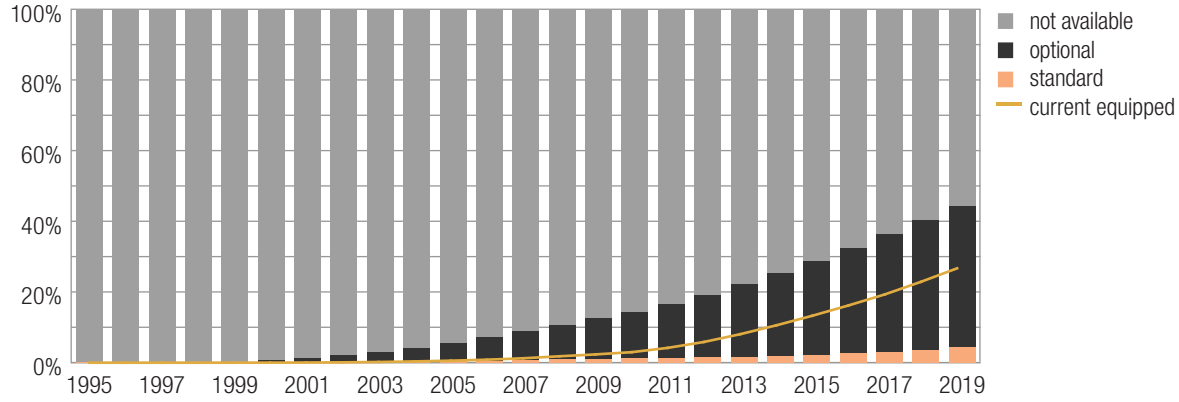


Figure 6 shows the percentage of registered vehicles by calendar year with either standard or optional rear parking sensors. In 2004, rear parking sensors had become standard on less than 1 percent and optional on 4 percent of registered vehicles. By 2019, rear parking sensors were standard or optional on 44 percent of registered vehicles, but only 27 percent of registered vehicles were estimated to be equipped with the feature.

Figure 7: Predicted percentage of registered vehicles with rear parking sensors by calendar year

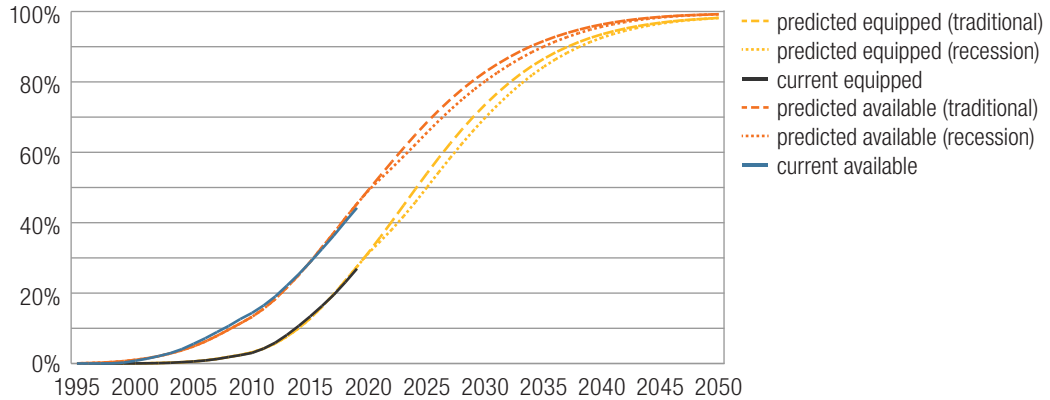


Figure 7 shows the percentage of predicted registered vehicles by calendar year with rear parking sensors. One set of predictions is for vehicles with rear parking sensors available (standard or optional) and the other set of predictions is for vehicles equipped (standard or optionally equipped) with the sensors. It is predicted that 95 percent of registered vehicles will be equipped with rear parking sensors in 2042 under the traditional scenario and in 2043 under the recession scenario.

Figure 8: Percentage of new vehicle series with front crash prevention by model year

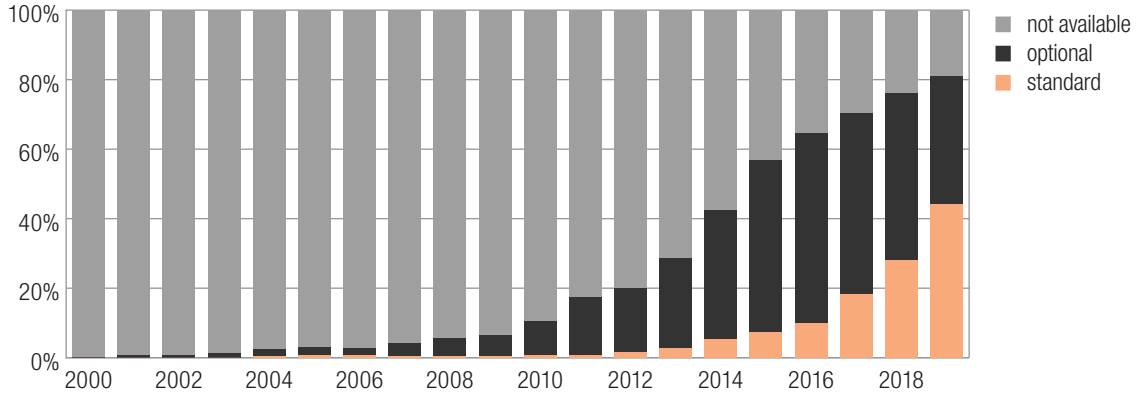


Figure 8 shows the percentage of vehicle series by model year with either standard or optional front crash prevention. It includes vehicles that warn and/or automatically brake. Front crash prevention was introduced in model year 2000 and by the 2009 model year had become standard on 1 percent and optional on 6 percent of vehicle series. For the 2019 model year, front crash prevention was standard on 44 percent and optional on 37 percent of vehicle series.

Figure 9: Percentage of registered vehicles with front crash prevention by calendar year

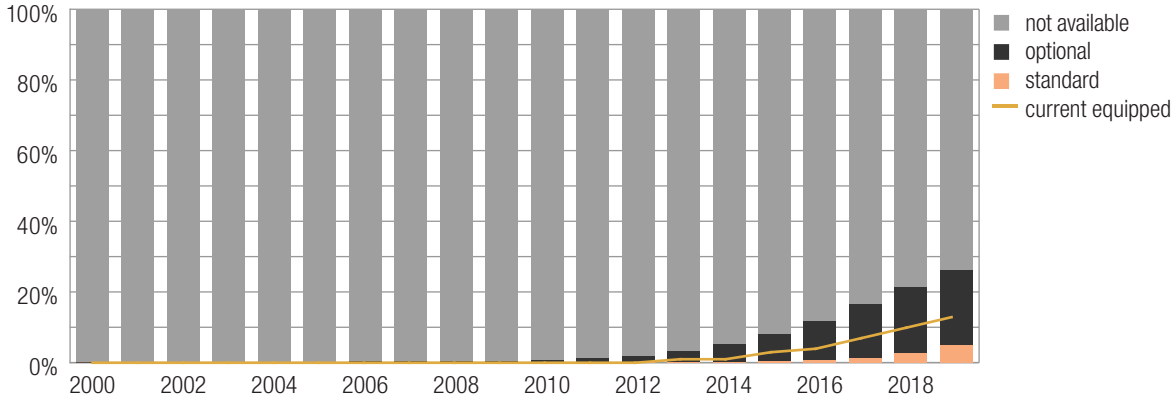


Figure 9 shows the percentage of registered vehicles by calendar year with either standard or optional front crash prevention. In 2009, front crash prevention was available on less than 1 percent of registered vehicles. By 2019, front crash prevention was standard or optional on 26 percent of registered vehicles, with about 13 percent of registered vehicles estimated to be equipped with the feature.

Figure 10: Predicted percentage of registered vehicles with front crash prevention by calendar year

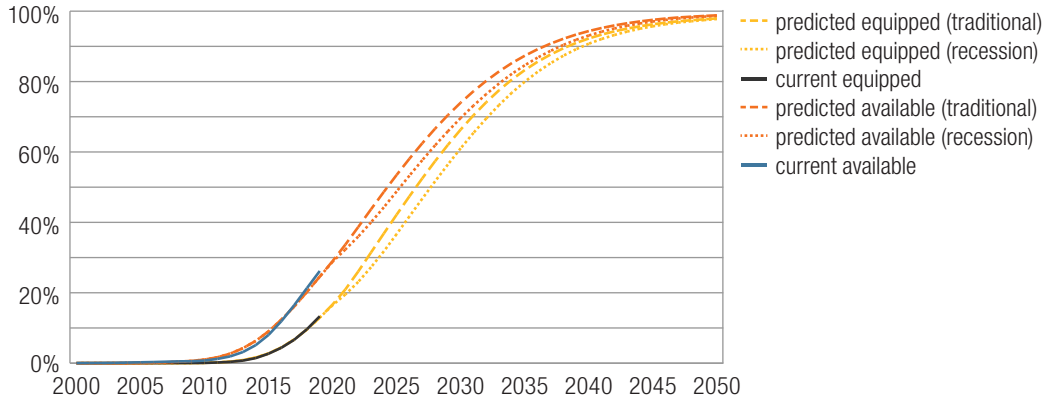


Figure 10 takes into account a 2022 voluntary commitment by many manufacturers to make automatic emergency braking (AEB) standard on most of their vehicles by 2022. It is predicted that 95 percent of registered vehicles will be equipped with the feature by 2043 or 2044.

Figure 11: Percentage of new vehicle series with front automatic emergency braking by model year

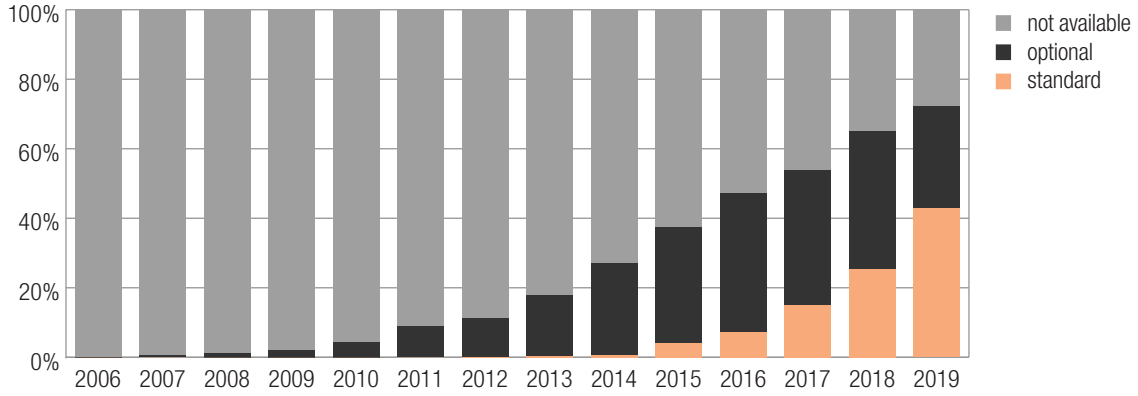


Figure 11 shows the percentage of vehicle series by model year with either standard or optional AEB. These systems may also warn. AEB was introduced in model year 2006 and by the 2015 model year had become standard on 4 percent and optional on 33 percent of vehicle series. For the 2019 model year, AEB was standard on 43 percent and optional on 30 percent of vehicle series.

Figure 12: Percentage of registered vehicles with front automatic emergency braking by calendar year

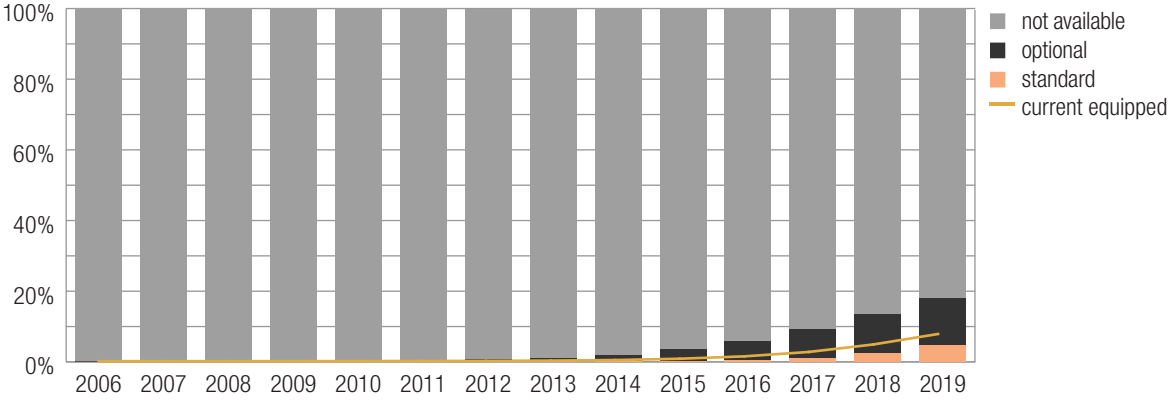


Figure 12 shows the percentage of registered vehicles by calendar year with either standard or optional AEB. In 2015, AEB was available on 4 percent of registered vehicles. By 2019, AEB was standard or optional on 18 percent of registered vehicles but estimated to be equipped only on 8 percent.

Figure 13: Predicted percentage of registered vehicles with front automatic emergency braking by calendar year

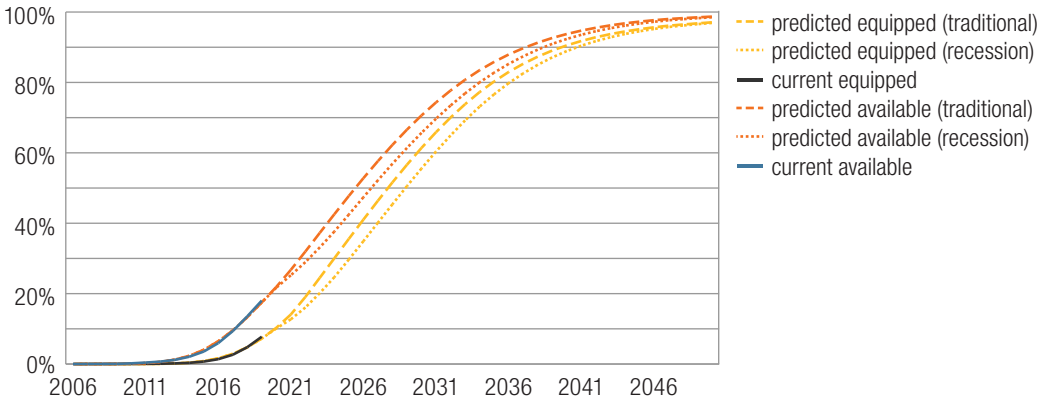


Figure 13 takes into account the 2022 voluntary commitment and shows the predicted registered vehicles by calendar year with AEB. It is predicted that 95 percent of registered vehicles will be equipped with AEB in 2045 or 2046.

Figure 14: Percentage of new vehicle series with rear cameras by model year

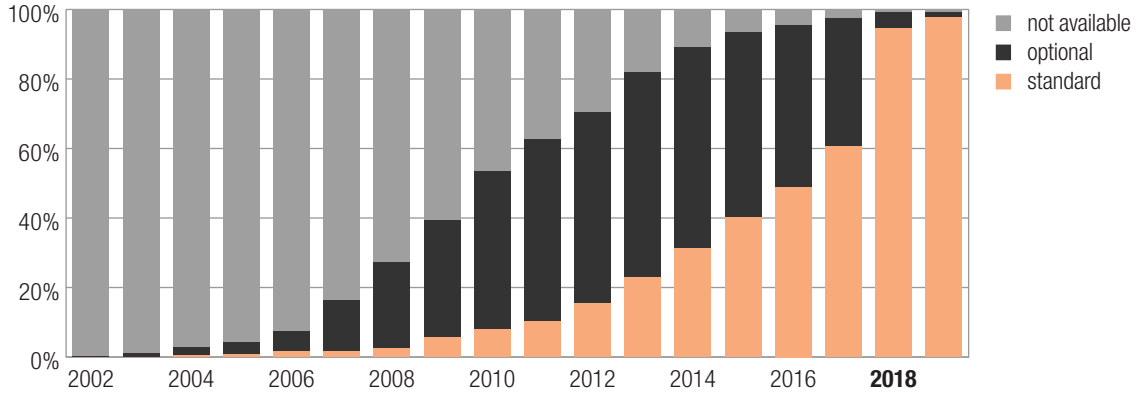


Figure 14 shows the percentage of vehicle series by model year with either standard or optional rear cameras. Rear cameras were introduced in model year 2002 and by the 2011 model year had become standard on 10 percent and optional on 53 percent of vehicle series. **Rear cameras are required on all new vehicles with a gross vehicle weight rating under 10,000 lbs. produced after May 1, 2018.** For the 2019 model year, rear cameras were standard on 98 percent and optional on 2 percent of vehicle series.

Figure 15: Percentage of registered vehicles with rear cameras by calendar year

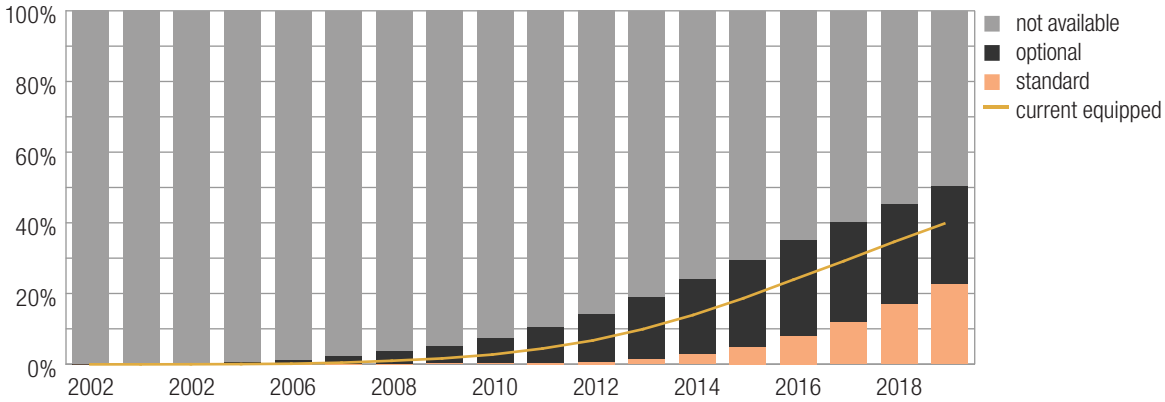


Figure 15 shows the percentage of registered vehicles by calendar year with either standard or optional rear cameras. In 2011, rear cameras were available on 11 percent of registered vehicles. By 2019, rear cameras were standard or optional on 50 percent of registered vehicles. It was estimated that 40 percent of registered vehicles were equipped with the feature.

Figure 16: Predicted percentage of registered vehicles with rear cameras by calendar year

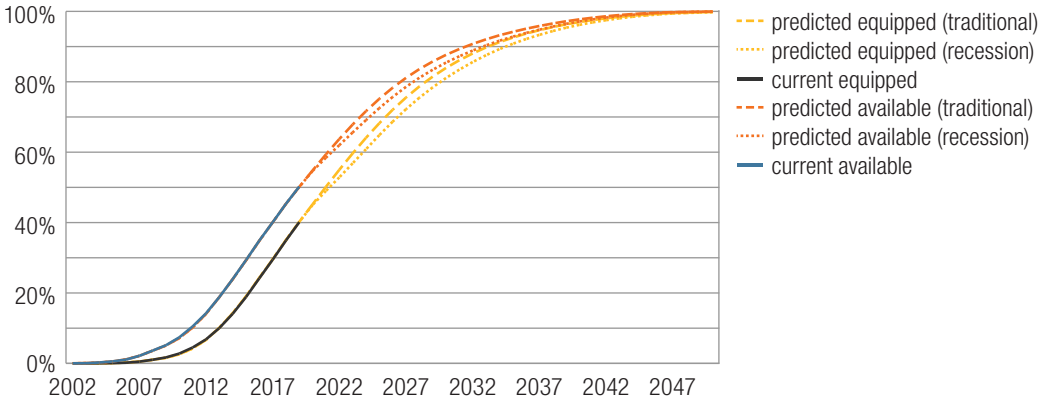


Figure 16 takes into account the 2018 mandate and shows the predicted registered vehicles by calendar year with rear cameras. It is predicted that 95 percent of registered vehicles will be equipped with rear cameras in 2038 or 2039.

Figure 17: Percentage of new vehicle series with adaptive headlights by model year

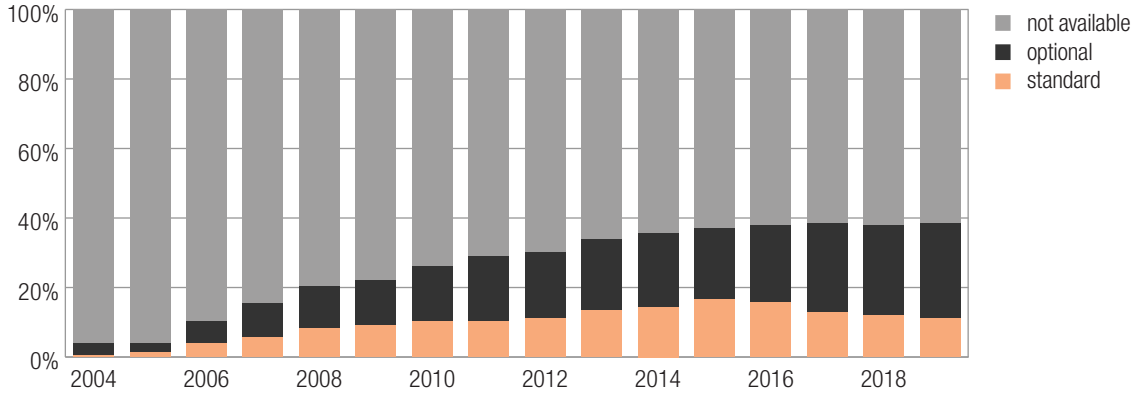


Figure 17 shows the percentage of vehicle series by model year with either standard or optional adaptive headlights. Adaptive headlights were introduced in model year 2004 and by the 2013 model year had become standard on 13 percent and optional on 21 percent of vehicle series. The percentage of vehicle series with adaptive headlights as standard has declined since the 2015 model year, where it peaked at 17 percent. For the 2019 model year, only 11 percent of vehicle series had adaptive headlights as standard while 27 percent of vehicle series had them as optional.

Figure 18: Percentage of registered vehicles with adaptive headlights by calendar year

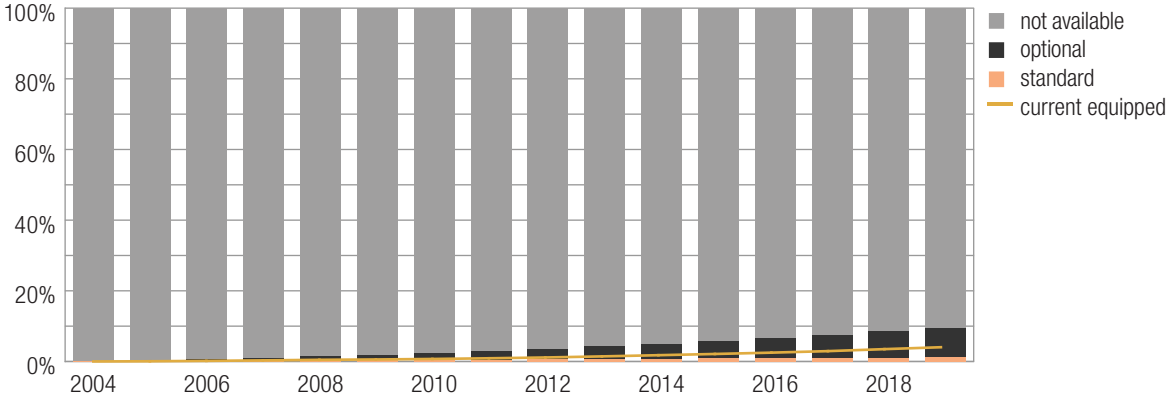


Figure 18 shows the percentage of registered vehicles by calendar year with either standard or optional adaptive headlights. In 2013, adaptive headlights were available on 4 percent of registered vehicles. By 2019, adaptive headlights were standard or optional on 10 percent of registered vehicles, but only 4 percent of registered vehicles were estimated to be equipped with the feature.

Figure 19: Predicted percentage of registered vehicles with adaptive headlights by calendar year

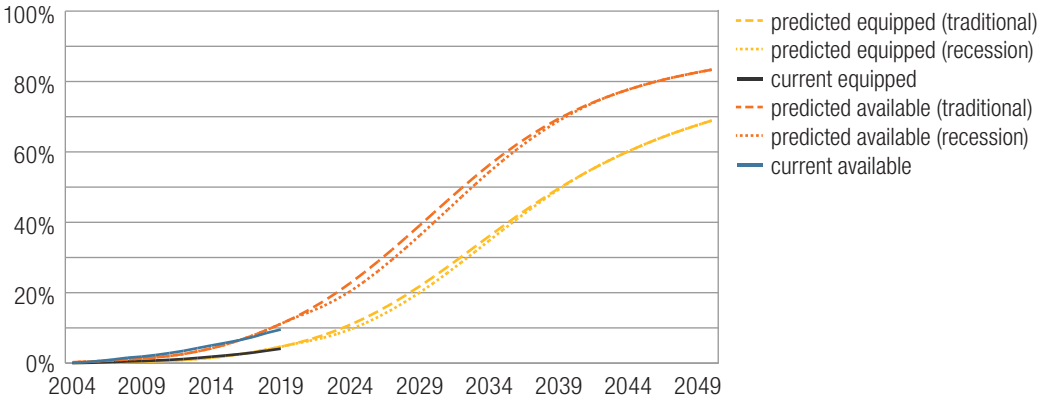


Figure 19 shows the predicted registered vehicles by calendar year with adaptive headlights. It is predicted that 95 percent of registered vehicles will be equipped with adaptive headlights sometime after 2050.

Figure 20: Percentage of new vehicle series with lane departure warning by model year

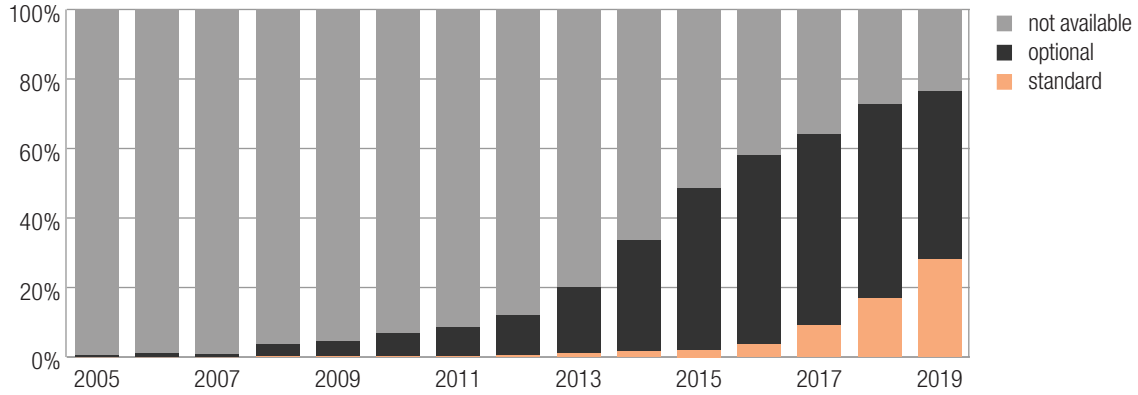


Figure 20 shows the percentage of vehicle series by model year with either standard or optional lane departure warning. Vehicles with systems that only warn drivers when they depart a lane and those with systems that both warn and provide active lane keeping are included. Lane departure warning was introduced in model year 2005 and by the 2014 model year had become standard on less than 2 percent and optional on 32 percent of vehicle series. For the 2019 model year, lane departure warning was standard on 28 percent and optional on 48 percent of vehicle series.

Figure 21: Percentage of registered vehicles with lane departure warning by calendar year

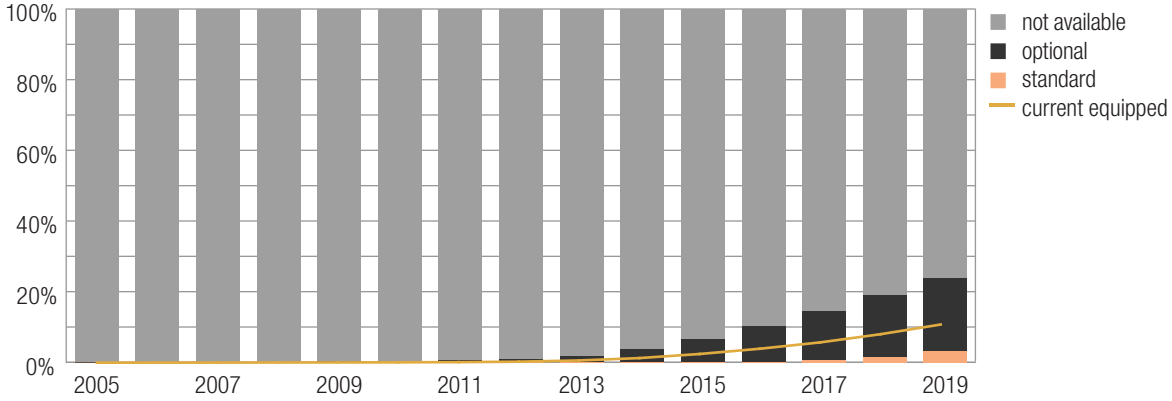


Figure 21 shows the percentage of registered vehicles by calendar year with either standard or optional lane departure warning. In 2014, lane departure warning was available on less than 4 percent of registered vehicles. By 2019, lane departure warning was standard or optional on 24 percent of registered vehicles, but only 11 percent of registered vehicles were estimated to be equipped with the feature.

Figure 22: Predicted percentage of vehicles with lane departure warning by calendar year

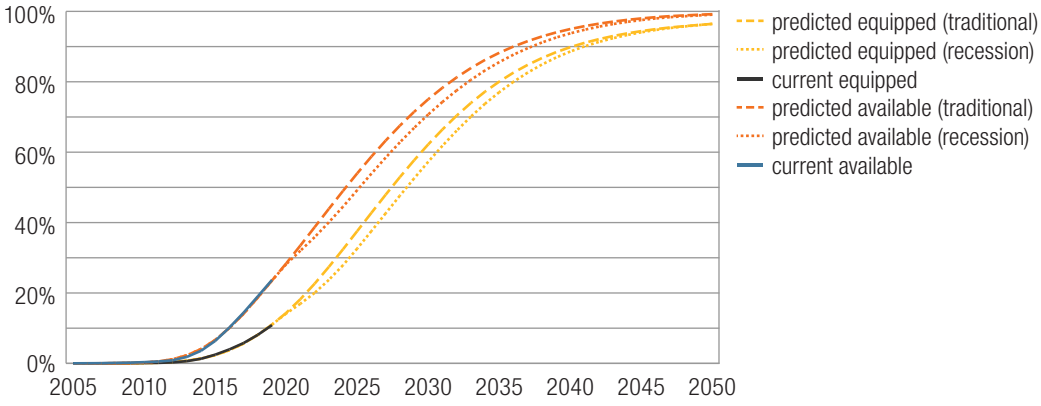


Figure 22 shows the predicted registered vehicles by calendar year with lane departure warning. It is predicted that 95 percent of registered vehicles will be equipped with lane departure warning in 2047.

Figure 23: Percentage of new vehicle series with blind spot monitoring by model year

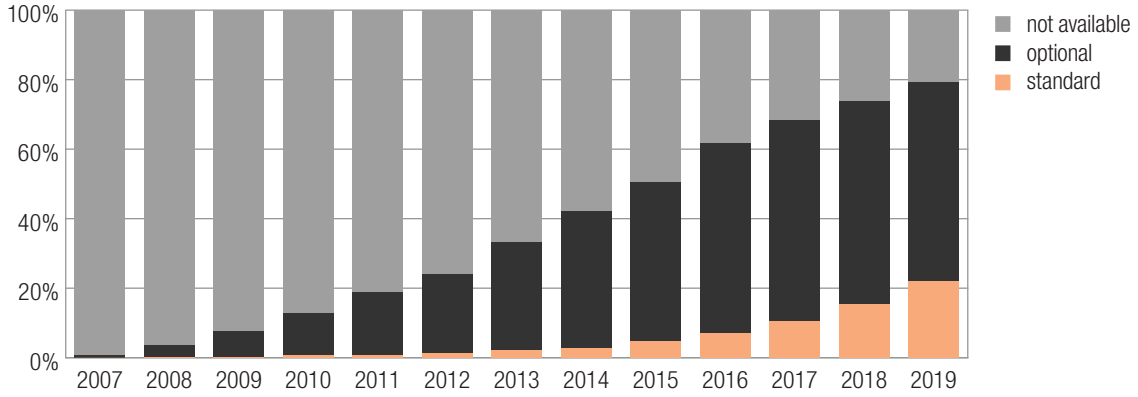


Figure 23 shows the percentage of vehicle series by model year with either standard or optional blind spot monitoring. Blind spot monitoring was introduced in model year 2007 and by the 2016 model year had become standard on 7 percent and optional on 54 percent of vehicle series. For the 2019 model year, blind spot monitoring was standard on 22 percent and optional on 57 percent of vehicle series.

Figure 24: Percentage of registered vehicles with blind spot monitoring by calendar year

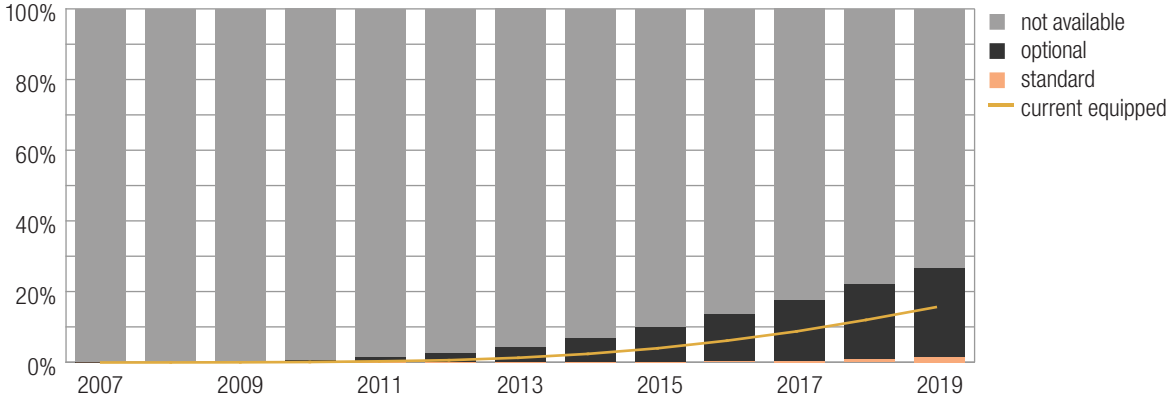


Figure 24 shows the percentage of registered vehicles by calendar year with either standard or optional blind spot monitoring. In 2016, blind spot monitoring was available on 14 percent of registered vehicles. By 2019, blind spot monitoring was standard or optional on 27 percent of registered vehicles, but only 16 percent of registered vehicles were estimated to be equipped with the feature.

Figure 25: Predicted percentage of registered vehicles with blind spot monitoring by calendar year

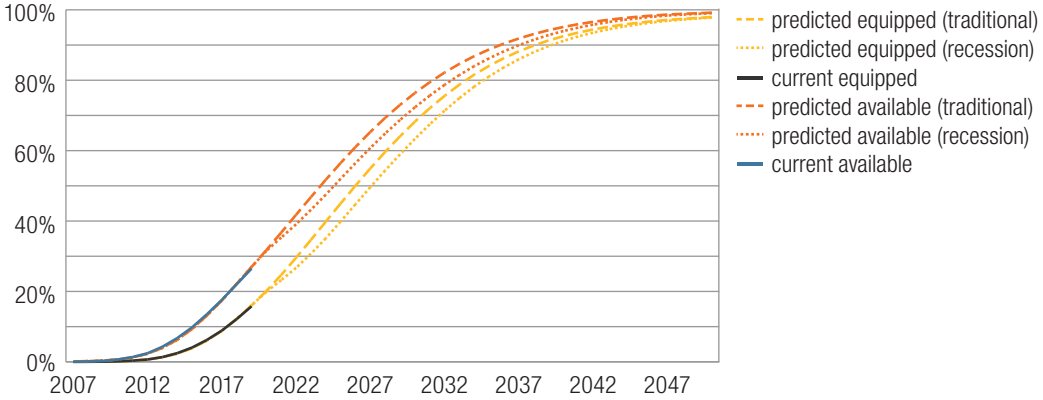


Figure 25 shows the predicted registered vehicles by calendar year with blind spot monitoring. It is predicted that 95 percent of registered vehicles will be equipped with blind spot monitoring in 2043 or 2044.

Figure 26: Predicted registered vehicles equipped with collision avoidance systems by calendar year, 2019 and 2024

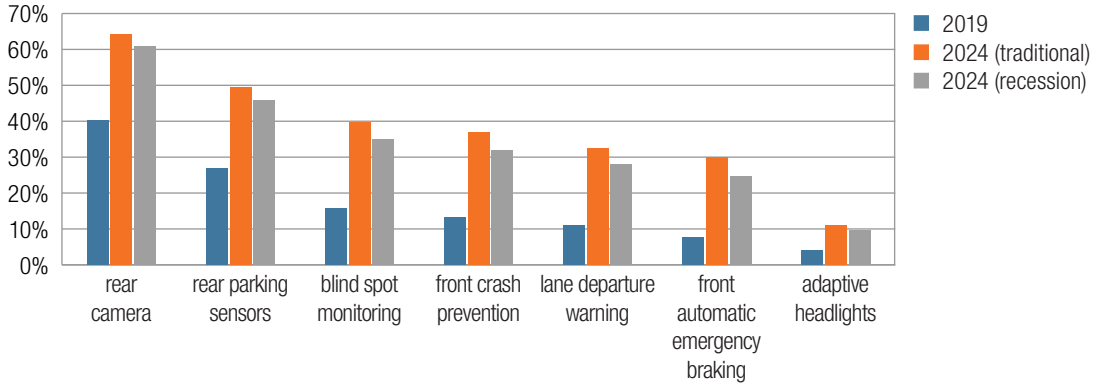


Figure 26 shows the percentage of registered vehicles estimated to be equipped with a feature in 2019 and 2024 under the traditional and recession scenarios. Under the traditional scenario, the presence of most systems is estimated to increase by over 20 percentage points by 2024. Adaptive headlights are an exception, with an estimated increase of only 7 percent by 2024. Feature-equipped rates are expected to decrease by between 1 percent (adaptive headlights) and 5 percent (front AEB) by 2024 under the recession scenario compared with the traditional scenario. Rear cameras are estimated to be equipped on over 60 percent of the registered vehicle population by 2024 under both scenarios. Rear parking sensors are estimated to approach a 50 percent fleet penetration by 2024 under the traditional scenario. Front AEB is estimated to increase from 8 percent of the registered vehicle population in 2019 to between 25 and 30 percent in 2024. This increase may be attributed to the voluntary commitment to equip vehicles with AEB by 2022.

Discussion

It takes a long time for new vehicle features to spread through the registered vehicle fleet. Even when features are required by the government, it takes many years for features to be available on all vehicles. Many collision avoidance features have been recently introduced to the fleet, though of the ones in this report, only rear cameras have been mandated. Manufacturers have agreed to voluntarily equip vehicles with front automatic emergency braking by 2022.

With the exception of ESC, estimated take rates have been included for optional features. Although it isn't known with absolute certainty how many of the optional features were purchased, estimates were made from VIN data supplied from several manufacturers. This provides a better estimate of the actual penetration of collision avoidance features in the vehicle fleet. Equipped rates varied considerably by feature. About 8 percent of the fleet was estimated to be equipped with front automatic emergency braking, even though it was available on 18 percent of vehicles in the 2019 fleet (5 percent standard and 13 percent optional). Rear cameras, however, were estimated to be present on 40 percent of the 2019 registered vehicle fleet, with 22 percent having it standard and 28 percent having it available as an option.

Accounting for the optionally equipped vehicles in the analysis, features will reach half of the registered vehicle fleet 1 to 5 years later than projections that assume all vehicles with an optional system were actually equipped with that system.

A recent HLDI study (2019a) found that Honda and Subaru vehicles equipped with effective collision avoidance systems persisted longer in the vehicle fleet. A prior HLDI report on ESC also found that ESC-equipped vehicles last longer in the vehicle fleet than non-ESC equipped vehicles (HLDI, 2014a). This could lead to a slowdown in the turnover of the fleet, as vehicles are lasting longer. However, a sensitivity analysis on changes in the rate of attrition found that small changes in the rate of attrition over time had minimal impact on results. Consequently, the potential longer life span for collision avoidance-equipped vehicles was not accounted for in the predictions.

The global pandemic caused by COVID-19 has introduced a lot of uncertainty for the future. The 2007–09 recession saw a sharp decrease in new vehicle sales, and this was used as a reference to demonstrate the potential effect a recession may have on our predictions. However, this situation is unique, and any recession resulting from the pandemic may not follow the same pattern as prior recessions. The pandemic has changed the way we work and live, and it is currently unclear what the short- and long-term effects will be. As many workers have shifted from office work to telecommuting, it is possible this will have a much longer lasting effect on vehicle sales or fleet turnover. It may be years before the full implications of the pandemic are fully researched and understood. This study will be updated as new information and data are made available.

Limitations

One limitation of the logistic model with a probit link is that it assumes a distribution with an asymptote of 100 percent, which it approaches slowly toward the end of the distribution. When a given feature's prevalence reaches 95 percent, its growth substantially slows and it takes a number of years to capture the remaining 5 percent. It is not known how this remaining small percentage will be captured because no feature has reached a 100 percent prevalence yet. The model was carefully chosen to fit the existing (past year) data well, and there is no reason to believe that it does not adequately describe the future data. It may be the case that 100 percent prevalence is never reached, as some people tend to keep old cars as collectable vehicles. Even if so, the goal of the study was to estimate when each feature will be available for the vast majority of the fleet, not 100 percent of the fleet.

Additionally, the work presented here was based on data from a limited number of vehicle manufacturers. The estimates for the optional-equipped rates were the best estimates possible with the available data. Sensitivity analysis was conducted by excluding an individual manufacturer from the dataset and using the remaining data for the analysis. For most safety features, the elimination resulted in only minimal changes in our feature-equipped estimates. However, for a few manufacturers, larger changes were observed. Additional data from manufacturers would likely result in better estimates.

Another limitation is that the prediction was based on the coarse calendar year/model year registration counts rather than stratified by make and series. However, the stratified approach would be difficult if not impossible to accomplish. The future is uncertain, and so is the future new model fleet. Even with the present approach, a bold assumption of stalled vehicle sales had to be made. Making assumptions of which makes and series will be popular in the future or which manufacturers will introduce safety features more aggressively is beyond the scope of this analysis. However, as mentioned previously and reflected in the graphs, the model fits the existing data well, and therefore it is reasonable to believe that our predictions for the future fleet are the best possible given the limitations.

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The Highway Loss Data Institute is a nonprofit public service organization that gathers, processes, and publishes insurance data on the human and economic losses associated with owning and operating motor vehicles. NB