U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

1200 New Jersey Avenue SE.
Washington, DC 20590

May 26, 2022

The Honorable Patrick Leahy
Chairman
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Chairman Leahy:

Pursuant to Senate Report Number 116-109, incorporated by reference in the Joint Explanatory Statement to the Further Consolidated Appropriations Act, 2020 (Pub. L. 116-94), the National Highway Traffic Safety Administration (NHTSA or the Agency), an operating administration of the U.S. Department of Transportation (DOT), was requested to:

> *research into what data is needed and what analytical tools, such as predictive modeling, may need to be developed to increase recall response rates . . . [and]report to the House and Senate Committees on Appropriations on means to improve recall completion rates within 1 year of enactment of this act, and this research should include consultation with stakeholders including vehicle and equipment manufacturers.*

This report highlights NHTSA's Office of Defects Investigation's (ODI) work with Original Equipment Manufacturers (OEMs) in identifying frameworks for additional data and analytical tools. This effort is, in part, a byproduct of the Takata Amended Coordinated Remedy Order (ACRO) and the innovative consumer outreach strategies that OEMs have undertaken to increase Takata air bag recall completion rates.[1] Additionally, this report illustrates how the Agency aims to improve recall completion rates through additional research, policy adjustments, collaboration with OEMs, and the development of a consumer compliance taxonomy.

Pursuant to the National Traffic and Motor Vehicle Safety Act (Safety Act), a recall is required when vehicles or items of motor vehicle equipment have a defect posing an unreasonable risk to safety, or are noncompliant with a Federal motor vehicle safety standard.[2] NHTSA's oversight and action to investigate safety issues and administer recalls is an important part of the

---

[1] The Takata airbag recalls represented the largest recall the Agency has ever addressed. Approximately 67 million Takata air bags have been recalled to date because these air bags can explode when deployed, causing serious injury or even death. Additional information about NHTSA's efforts relating to the Takata recalls can be found at https://www.nhtsa.gov/equipment/takata-recall-spotlight.

[2] 49 C.F.R. § 573.

Department's work to ensure safer vehicles, as described in the National Roadway Safety Strategy.[3] The Recall Management Division (RMD) within ODI oversees the administration of the recall process. This oversight includes the recall reports filed by manufacturers, the recall notices that manufacturers send to vehicle owners, the effectiveness of the free repair or other remedy provided to resolve the safety risk, and monitoring of the overall completion rate of the recall (*i.e.*, the percentage of affected vehicles or items of equipment that have been repaired). In 2019, for example, RMD processed 966 recalls that covered over 53 million vehicles and items of motor vehicle equipment.[4]

NHTSA RESEARCH NEEDS

Owner Data Integrity

The first step of an effective recall campaign is the ability to reach the current owners of affected vehicles. A consumer who is unaware of the fact that their vehicle is subject to a safety recall would not know to take the steps necessary to have that recall remedied. NHTSA has learned through overseeing the Takata airbag recalls that the contact information of current vehicle owners, which is generally obtained from State Departments of Motor Vehicles (DMVs), is often inaccurate or outdated.

The accuracy of owner data with high-volume, high-affected-population vehicle recalls is of particular concern to NHTSA because such recalls pose an elevated level of aggregate-risk exposure to the consumer. This is especially the case given that the average age of vehicles on the road is at record levels,[5] and older vehicles generally experience a larger number of owner changes. Because the new owner may not immediately visit their DMV or contact the manufacturer to update their records, recall notification letters may be incorrectly sent to a previous owner, to an outdated address, or to an address where the vehicle is not physically located. As observed by the Takata Independent Monitor, "[a]ffected vehicle manufacturers have learned that, at [the] stage in the Takata recalls when repairs have exceeded 60 percent, over half of remaining vehicle owner contact information based on registration data can be incorrect."[6] NHTSA is pursuing opportunities to collaborate with OEMs to employ innovative data integrity initiatives, including using multiple data sources and refreshing the data on a more frequent basis.

NHTSA actively engages with OEMs, including those that are affected by the Takata air bag recalls, and are developing innovative strategies to aggregate new and disparate data sources to

---

[3] U.S. Dept. of Transp., *National Roadway Safety Strategy*, Jan. 2022, https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf.
[4] In addition to recalls involving safety defects, RMD also administers recalls involving issues of noncompliance with the Federal Motor Vehicle Safety Standards (FMVSS). Investigations of potential noncompliance with the FMVSS are conducted by NHTSA's Office of Vehicle Safety Compliance.
[5] IHS Markit, *Average Age of Cars and Light Trucks in the U.S. Approaches 12 Years*, July 28, 2020, https://news.ihsmarkit.com/prviewer/release_only/slug/bizwire-2020-7-28-average-age-of-cars-and-light-trucks-in-the-us-approaches-12-years-according-to-ihs-markit; Bureau of Transportation Statistics, *Average Age of Automobiles and Trucks in Operation in the United States,* available at https://www.bts.gov/content/average-age-automobiles-and-trucks-operation-united-states, as of June 17, 2021.
[6] The Independent Monitor of Takata and the Coordinated Remedy Program, *Update on the State of the Takata Airbag Recalls*, January 23, 2020, https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/update_on_the_state_of_the_takata_airbag_recalls.pdf.

identify current owners of affected vehicles. One example is an OEM that uses data derived from vendors who use license-plate readers to identify real-time location data of flagged vehicles to determine current addresses. Others are using vendors with access to current billing addresses for leases, credit cards, and utility bills to update vehicle owner addresses. The Agency is monitoring, and is interested in additional research regarding, the aggregate benefits and limitations when OEMs use such databases and services for improving completion rates.

Segmentation of Consumer Outreach Efforts

While the Safety Act and implementing regulations only require manufacturers to contact affected consumers through first class mail,[7] the number of variables associated with a high-volume recall make it difficult for one consumer outreach strategy to be effective for everyone. This is not unique to recall campaigns. The limited effectiveness of a one-size-fits-all approach to consumer outreach seeking to change behavior is well-known, and has been seen in a number of areas, including work by NHTSA to improve seatbelt use and to prevent risky driving behavior, such as driving while impaired by alcohol or drugs.

Evidence from the Takata recalls indicates that multiple ongoing outreach approaches can lead to higher recall completion rates.[8] With the Takata recalls, OEMs have gone beyond the notification requirements of the Safety Act, engaging in a number of unique strategies and consumer outreach initiatives, with varied success. Several OEMs have expressed to NHTSA that additional research is necessary to explain why different segments of affected recall populations do not obtain a free repair. In this report, NHTSA will attempt to illustrate some broad categories that warrant additional examination and research.

Completion Rates by Make and Model

A manufacturer is not required to submit individual recall filings for each separate affected vehicle make and model,[9] but can combine multiple makes and models with identical defective components into a single recall report. Manufacturers build multiple types of vehicles from a single vehicle platform using similar, if not identical, components and systems. For instance, an automaker with multiple brands may produce a luxury crossover, a standard crossover, a luxury sedan, and a standard sedan from a single platform using many common components. This ability to file a single recall notice with the agency covering all affected vehicles provides several benefits to both NHTSA and OEMs, most notably, the ability to track movement and repair of the common defective parts throughout the recall process.

That said, this approach results in difficulty tracking completion rates of each make and model contained within a single recall filing, information that OEMs likely track but are not required to provide to NHTSA under the Safety Act. According to J.D. Power and Associates:

> *Among vehicle segments, Large/Work Vans have the highest overall completion rate, at 86%, followed closely by compact premium SUVs at 85%. This contrasts with the Mid-*

[7] https://www.govinfo.gov/app/details/CFR-2011-title49-vol7/CFR-2011-title49-vol7-part577.
[8] https://www.nhtsa.gov/equipment/takata-recall-spotlight
[9] https://www.govinfo.gov/app/details/CFR-2011-title49-vol7/CFR-2011-title49-vol7-part573.

> *Premium Sports Car segment, which has a completion rate of just 31%, and with Large SUVs, which have a completion rate of 33%.*[10]

What this statistic illustrates is NHTSA's difficulty in understanding potential recall performance problems for certain vehicle type segments within a singular recall campaign involving multiple vehicle makes, models, and types. For a recall filing and the associated quarterly completion rates reports covering components or systems used on multiple vehicle types, it may be beneficial to be able to identify individual makes, models, and vehicle types. Doing so could allow for benchmarking completion rates of specific makes and models. Finally, it may also be beneficial to better understand whether targeted consumer outreach initiatives would benefit one vehicle model or type over another.

Completion Rates by Model Year

Recalls are time-sensitive, and NHTSA understands that the older the model year of a vehicle affected by a recall, the less likely the owner is to have the repair performed. In 2016, when J.D. Power and Associates reviewed NHTSA recall completion rate data, it found that "the total recall completion rate for vehicles from model years between 2013 and 2017 [was] 73 percent, [compared] with a completion rate of just 44 percent for vehicles manufactured between 2003 and 2007."[11] Understanding the volume of affected vehicles, by model year, within a singular recall campaign, can provide useful information, especially for recalls that pose higher comparative risks of injury or death (*e.g.*, air bags, fire). Currently, OEMs are only required to provide aggregated completion rate data across all combined affected model years.

Additional Consumer Outreach Methods and Materials

Unless a remedy is not available at the time of notification, 49 C.F.R. Part 577 requires consumers to be notified about safety recalls at least once, using first class mail, with letters containing specific language, and the envelope labeled as containing "Important Safety Recall Information."[12] Additional mailings can be required if NHTSA orders an accelerated remedy relating to a specific recall. Recent evidence suggests that mail may not be the only effective outreach method, particularly among younger age groups of vehicle owners. In a University of Michigan survey regarding recalls, three quarters of younger respondents (18-29 years old) preferred email.[13] NHTSA has an interest in researching how these preferred contact methods and communication language used vary in relation to vehicle cost, type of vehicle, ownership length, geographical location, age, income level, and predominant language spoken at the owner's residence.

The Takata ACRO and the associated quarterly updates from OEMs about additional consumer outreach initiatives undertaken to increase Takata air bag recall completions have provided insights into additional segmentation strategies. Messaging to different sub-populations of

---

[10] J.D. Power and Associates, Press Release, "Unfixed Recalled Vehicles Pose Risk for Automakers, Dealers, and Drivers, Says J.D. Power Safety IQ, July 25, 2016, https://www.jdpower.com/system/files/legacy/assets/2016259_safetyiq_july.pdf.
[11] *Id.*
[12] https://www.govinfo.gov/app/details/CFR-2011-title49-vol7/CFR-2011-title49-vol7-part577.
[13] Michael Sivak and Brandon Schoettle, *Consumer Preferences Regarding Vehicle-Related Safety Recalls* (2017), http://umich.edu/~umtriswt/PDF/SWT-2017-6.pdf.

affected vehicle owners provides additional opportunities to meet the varying needs and preferences of those owners to more effectively increase repair rates. Affected OEMs have conducted numerous outreach efforts to contact unresponsive vehicle owners, sometimes in excess of 30 attempts upon the same owner, employing varied methods and channels. These efforts include, but are not limited to, communication language strategies; door-to-door, in-person canvassing; certified mail; mobile repair; digital advertising; letters from State DMVs; and financially incentivizing dealerships and third-party repair facilities to cold-call hard-to-reach vehicle owners. NHTSA has an acute interest in these high-risk-of-injury type recalls and seeks to learn evidence-based methods to have remedies performed in an expeditious manner. While NHTSA supports and encourages the sharing of innovative consumer outreach methods, it has not formalized these into an evidence-based framework (*e.g.*, case-control study, longitudinal study, etc.).

Validation Research and Reassessing Existing Resources

Since the requirements that dictate the content and language to be used in the consumer notification were developed, entire industries have emerged to study the effects of linguistics as it pertains to safety-related communications. Evidence shows that appeals to fear, for instance, are effective, particularly when the message emphasizes severity and susceptibility.[14] In Sivak's study of consumers affected by a safety recall, 23.1 percent of the respondents that received and reviewed the owner letter indicated that they were "Not Concerned About the Recall Problem."[15]

This evidence is compounded by the fact that not all vehicle safety recalls pose the same amount of risk to the consumer, despite the fact that existing regulations require the manner and format for notification to be the same. For example, although consumers may have difficulty in distinguishing between the risks of certain types of defects, most consumers can easily assess the risk difference between a recall involving an incorrect warning label versus a defective air bag. NHTSA is interested in knowing whether the language used in letters from manufacturers to vehicle owners is effective in encouraging voluntary consumer compliance; whether that language would benefit from variations tailored to intended consumer groups or degrees of safety risk; and whether additional or different language and content could benefit consumer outreach efforts.

Recently, NHTSA has developed a predictive model using logistic regression analysis methods that can aid in predicting completion rates for particular recalls. More informally known within NHTSA RMD as the "Benchmarking Process," RMD has been tracking completion rates of all recall campaigns since 2014 and comparing rates against historically similar campaigns by the same manufacturer and the same recalled component.

Additional Opportunities

NHTSA is particularly interested in identifying vehicles and equipment that pose a high risk of injury or death. As of September 2020, there were more than 31,000 vehicles that posed such an acute risk of injury as to be categorized by manufacturers as "Do Not Drive" recalls, yet remain

---

[14] Tannenbaum, *et al.*, *Appealing to fear: A Meta-Analysis of Fear Appeal Effectiveness and Theories*, Psychological Bulletin. 2015; 141(6), pgs. 1178-1204, https://www.apa.org/pubs/journals/releases/bul-a0039729.pdf.
[15] Michael Sivak and Brandon Schoettle, *Consumer Preferences Regarding Vehicle-Related Safety Recalls* (2017) http://umich.edu/~umtriswt/PDF/SWT-2017-6.pdf.

un-remedied. These recalls pose such a high risk of injury or death that their manufacturers state that the vehicle should not be driven for any reason until the repair is performed. OEMs have generally been cooperative and pro-active in their efforts to repair these vehicles quickly, yet the average completion rate of all open "Do Not Drive" recalls hovers around 87 percent. The remaining 13 percent of all "Do Not Drive" vehicles represent the 31,000 vehicles still on the road.

The decision whether to obtain a recall remedy, including for those recalls designated as "Do Not Drive," remains voluntary on the part of the consumer. As noted above, the highest recall completion rate generally occurs when the vehicle owner is made aware of a vehicle recall, considers it to be a serious risk, and the remedy is convenient. However, NHTSA is concerned when an owner of a vehicle is unaware that their vehicle has an un-remedied recall. To that end, NHTSA is interested in exploring the feasibility of recall-remedy notification during title transfer and registration of affected vehicles. Australia implemented such a requirement and was able to achieve 90 percent completion rates for the Takata air bag recalls.[16] Other countries, including Germany, also require recall remedy at registration. The Maryland Motor Vehicle Administration recently completed a pilot, funded through a NHTSA grant, to notify recall-affected owners at the time of registration renewal, the outcome of which shows promising results. Throughout the two-year Maryland pilot project, just over 1 million vehicles were identified with open recalls and of those, over 375,000 had been remedied by the close of the project. NHTSA recently awarded additional vehicle registration notification grants to California, Ohio, and Texas. Other complementary initiatives that NHTSA is interested in gaining additional information about include consumer notifications for Ride-Hailing vehicles affected by recalls, and improved in-vehicle Over-The-Air communications to vehicle operators of affected vehicles.

Communications and Consumer Compliance Research

NHTSA remains committed to supporting OEMs and equipment manufacturers in their efforts to remove dangerous vehicles and equipment from our roadways. To that end, there are opportunities for NHTSA to conduct science-based communications research to maximize OEMs' consumer outreach strategies. By compartmentalizing and validating messages and strategies, OEMs may be better equipped to apply tailored efforts to achieve higher consumer compliance. This might be achieved by the use of improved consumer socio-economic data and the development of taxonomies, or categories of consumer compliance needs. Though NHTSA does not intend to obtain sensitive OEM customer information, NHTSA could be positioned to provide cooperative research through third parties, such as University Transportation Research Centers. In addition, the Takata Coordinated Remedy Program has helped lay a foundation for improved cooperation among OEMs to achieve high consumer compliance in getting high-risk recalls repaired. NHTSA is interested in continuing that momentum so that those strategies can be analyzed, improved, and shared with the entire automotive industry.

Using objective, data-driven, risk-based processes, predictive modeling, and leveraging communications with manufacturers will result in safer roads and safer people. NHTSA appreciates the opportunity to report to both the House and Senate on efforts to improve recall completion rates. NHTSA is committed to a culture of continuous improvement in support of our mission to save lives, prevent injuries, and reduce economic costs due to road traffic crashes. We welcome your questions.

---

[16] https://www.productsafety.gov.au/recalls/compulsory-takata-airbag-recall.

A similar letter has been sent to the Vice Chairman of the Senate Committee on Appropriations, and the Chair and Ranking Member of the House Committee on Appropriations.

Sincerely,

Steven S. Cliff, Ph.D.
Deputy Administrator