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Improving Vehicle Safety Recall Completion Rates

Research on Outreach, Comprehension, and Incentive Strategies

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16. Abstract This publication is NHTSA's response to a Congressional mandate within the Infrastructure Investment and Jobs Act requiring that the Agency conduct research to identify barriers to vehicle safety recall completions due to manufacturer outreach and consumer comprehension of recall notifications.		
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The Infrastructure Investment and Jobs Act (IIJA), was signed into law on November 15, 2021. This legislation requires NHTSA to:

> (1) conduct a study to determine the ways in which vehicle recall notices could--
> (A) more effectively reach vehicle owners;
> (B) be made easier for all consumers to understand;
> (C) incentivize vehicle owners to complete the repairs described in the recall notices; and
> (2) submit to Congress a report describing the results of the study under paragraph (1), including any recommendations for--
> (A) increasing the rate of repair for vehicles subject to open recalls; or
> (B) any regulatory or statutory legislative changes that would facilitate an increased rate of repair.

NHTSA's Office of Defects Investigation's (ODI) Recall Management Division (RMD) manages the oversight of the safety recall process, including the recall of reports filed by manufacturers, the recall notices sent to owners, the free repairs or other remedies provided by the manufacturers for the recall, and the overall completion rate of the recalls (*i.e.*, the percentage of affected vehicles or items of equipment that have been repaired). In 2024, RMD processed 1,073 recalls that included over 35 million vehicles and items of motor vehicle equipment.[1] While RMD routinely processes over 1,000 new recalls each year, staff also manage recalls from prior years, including but not limited to, ensuring that manufacturers file quarterly completion reports in a timely and accurate manner.

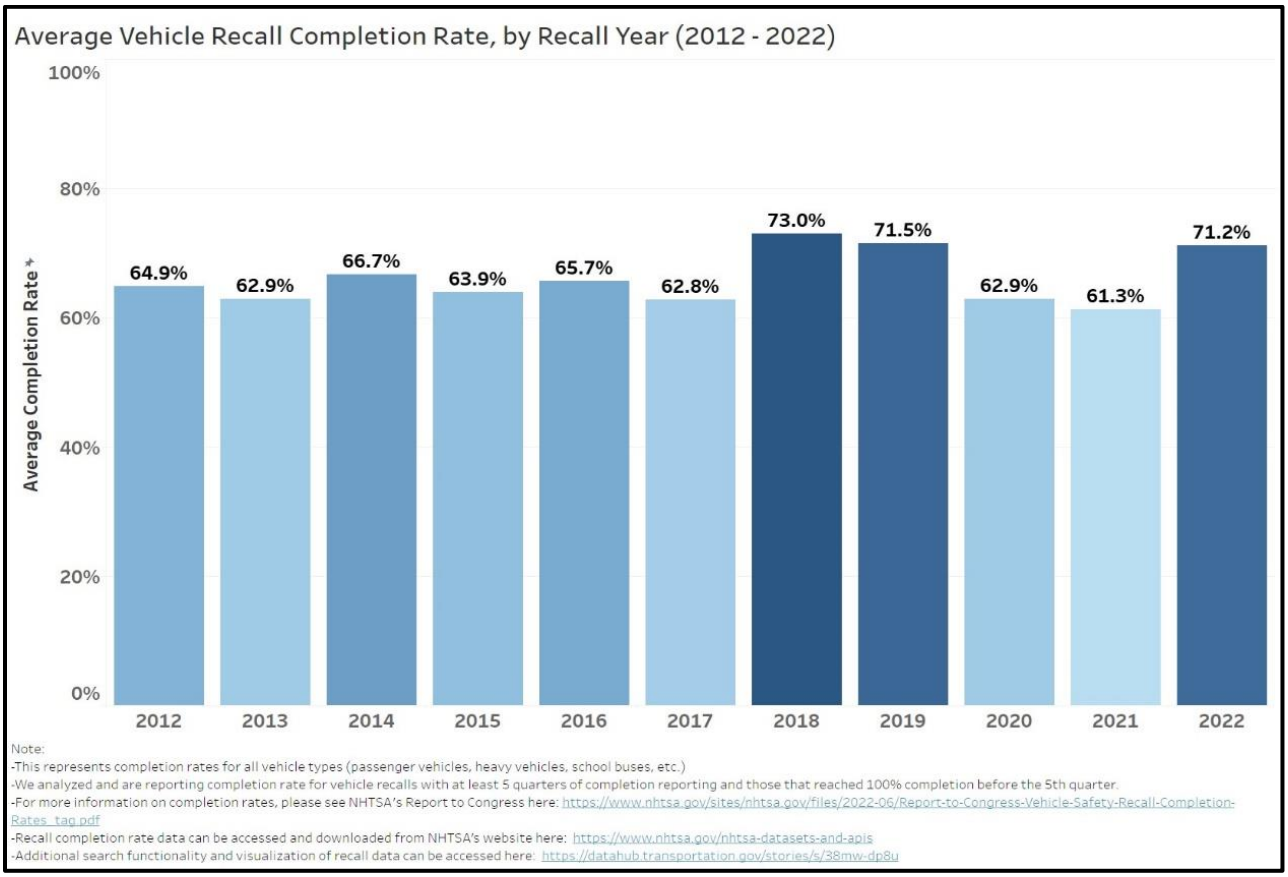
Numerous sources of information were used in NHTSA's study and the preparation of this report, including independent research, consultations with vehicle manufacturers and other automotive stakeholders, compiled analysis of the State of the Takata Recalls reports issued by the Independent Monitor (Takata Monitor) under NHTSA's November 2015 consent order with Takata, and compiled analysis of monthly submissions from Takata-affected vehicle manufacturers regarding consumer outreach strategies and metrics.

[1] https://www.nhtsa.gov/sites/nhtsa.gov/files/2025-04/2024-annual-recalls-report.pdf

Historical Recall Trends and Past Automotive Recall Performance

The analysis of vehicle recalls is a complicated science. Each recall event represents a noncompliance with the Federal Motor Vehicle Safety Standards or a defect in the design, manufacturer, or performance of a component, or grouping of components, that eluded quality control processes. Further, the owners of recalled vehicles are a varied population that includes many types of owners with varying priorities, needs, and responses to vehicle recalls. As such, certain macro analyses can identify overall trends regarding the magnitude and scope of vehicle recalls, generally, while micro analyses looking at specific segments within vehicle recall populations can provide more nuanced insights into administration of recalls.

When looking at vehicle-only recalls, which traditionally have the highest completion rates compared to difficult-to-reach owners of recalled child seats, tires, and equipment, NHTSA data shows that the weighted average completion rate for recalls initiated between 2012–2022 is 65.8 percent. In other words, by the time that a recall reaches maturity,[2] on average roughly 65 percent of all affected vehicles within all vehicle-related recall campaigns have been repaired.



While taking a weighted average can be a useful macro-level metric, RMD continues to routinely analyze the age of affected vehicles within each recall campaign. Manufacturers aggregate completion rates for all vehicles within a campaign, including those with different models and

[2] NHTSA defines mature recalls as those that have at least five quarters of completion reporting.

model years when reporting to NHTSA. While recalls involving a specific component are used in multiple makes, models, and model years, manufacturers currently only report an aggregate completion rate for all vehicles affected by the defective or noncompliant component. This limited reporting makes it very difficult to see which vehicle segments within a campaign are performing well or underperforming.

Challenges Related to Vehicle Age

NHTSA and industry research show that vehicle age is the predominant factor in low recall completion rates, and the ability to distinguish between younger and older vehicles in light vehicle recalls is important. Younger vehicles (vehicles 0–3 years in age) generally return to franchised dealers for regular vehicle service and maintenance, warranty repairs, trade-ins, and off-lease events. In addition, franchised dealers have a relationship and contact information from the original purchaser to better facilitate the completion of a vehicle recall remedy. The franchised dealer may also have a greater incentive to notify vehicle owners with younger vehicles about open vehicle recalls as the vehicle owner represents a regular customer of the dealership and potential purchaser of another vehicle. As vehicles age, the inverse is true—that is, vehicles depreciate in value, change owners, and return to franchised dealers for service less frequently. These characteristics are seen in analysis of completion percentages. Younger vehicles have historically had high completion rates, generally around 87 percent, which decline as vehicles age. As such, the issues raised by Congress in IIJA are most relevant for owners of older vehicles as the lower completion rates are more likely caused by age-related barriers. While the observations and analysis in this report are generally applicable to all light vehicle recalls, recalls involving older vehicles have a greater opportunity for completion rates improvements.

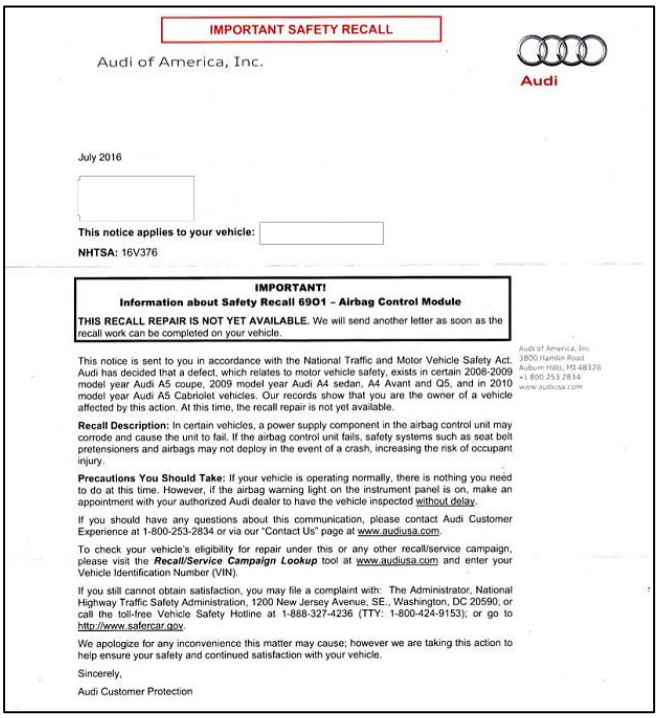
Current Landscape of Consumer Outreach

After a manufacturer submits to NHTSA a Defect or Noncompliance Information Report (DIR), the manufacturer is required to send a first-class letter to each recall-affected vehicle owner to inform them of the safety recall. The National Traffic and Motor Vehicle Safety Act (the "Safety Act")[3] and NHTSA regulations specify certain required elements in both the letter and the associated envelope.[4]

Typical Recall Notification Envelope that meets 49 CFR 577.14 Requirements

[3] Codified under 49 U.S.C. Ch. 301: MOTOR VEHICLE SAFETY.

[4] 49 CFR 577.5(a).



IMPORTANT SAFETY RECALL

Audi of America, Inc.

Audi

July 2016

This notice applies to your vehicle:

NHTSA: 16V376

IMPORTANT!
Information about Safety Recall 69O1 – Airbag Control Module

THIS RECALL REPAIR IS NOT YET AVAILABLE. We will send another letter as soon as the recall work can be completed on your vehicle.

Audi of America, Inc.
3800 Hamlin Road
Auburn Hills, MI 48326
+1 800 253 2834
www.audiusa.com

This notice is sent to you in accordance with the National Traffic and Motor Vehicle Safety Act. Audi has decided that a defect, which relates to motor vehicle safety, exists in certain 2008-2009 model year Audi A5 coupe, 2009 model year Audi A4 sedan, A4 Avant and Q5, and in 2010 model year Audi A5 Cabriolet vehicles. Our records show that you are the owner of a vehicle affected by this action. At this time, the recall repair is not yet available.

Recall Description: In certain vehicles, a power supply component in the airbag control unit may corrode and cause the unit to fail. If the airbag control unit fails, safety systems such as seat belt pretensioners and airbags may not deploy in the event of a crash, increasing the risk of occupant injury.

Precautions You Should Take: If your vehicle is operating normally, there is nothing you need to do at this time. However, if the airbag warning light on the instrument panel is on, make an appointment with your authorized Audi dealer to have the vehicle inspected without delay.

If you should have any questions about this communication, please contact Audi Customer Experience at 1-800-253-2834 or via our "Contact Us" page at www.audiusa.com.

To check your vehicle's eligibility for repair under this or any other recall/service campaign, please visit the ***Recall/Service Campaign Lookup*** tool at www.audiusa.com and enter your Vehicle Identification Number (VIN).

If you still cannot obtain satisfaction, you may file a complaint with: The Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590; or call the toll-free Vehicle Safety Hotline at 1-888-327-4236 (TTY: 1-800-424-9153); or go to http://www.safercar.gov.

We apologize for any inconvenience this matter may cause; however we are taking this action to help ensure your safety and continued satisfaction with your vehicle.

Sincerely,

Audi Customer Protection

Typical Recall Notification Letter that meets 49 CFR 577.5

Vehicle manufacturers in the U.S. are required by the Safety Act to inform the registered owner of a defect or noncompliance in a recalled vehicle. 49 U.S.C. § 30119. Regulation requires these notifications to be mailed within 60 days of the manufacturer notifying NHTSA of the recall, whether a remedy is available at that time or delayed until a future date.[5] Such owner notifications are made via first class mail.[6] This requirement extends to owners "registered under State law as the owner of the vehicle and whose name and address are reasonably ascertainable by the manufacturer through State records or other sources available to [them]."[7] However, using first-class mail for notifications makes it difficult to confirm if the vehicle owner received the communication unless it is returned and analyzed. For example, one manufacturer found that around 45 percent of owners with open recalls might not have been receiving notifications, even with certified mail providing delivery metrics.[8] It should be noted that NHTSA is exploring additional notification pathways and has published a supplemental notice of proposed rulemaking (SNPRM) proposing to require that manufacturers notify affected vehicle owners via electronic means, in addition to first class mail.[9]

[5] 49 CFR 577.7.

[6] 49 CFR 577.7.

[7] *Id*.

[8] The Independent Monitor of Takata and the Coordinated Remedy Program (2020). The State of the Takata Recalls. https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/2019-update_on_the_state_of_the_takata_airbag_recalls.pdf, pg. 5 (hereinafter "3rd Report").

[9] https://www.federalregister.gov/documents/2025/01/10/2024-31011/updated-means-of-providing-recall-notification.

The Safety Act lacks precise criteria for what constitutes "reasonable" efforts in acquiring names and addresses from available sources. The landscape has changed drastically since the Safety Act's enactment in 1966, with modern automobile capabilities, increased vehicle longevity, and shifts in consumer habits and norms.

NHTSA and most manufacturers provide online tools for vehicle owners to easily check open recalls and get repair instructions. NHTSA promotes recall awareness annually and during daylight savings time with online campaigns.[10] The National Safety Council's Check to Protect online campaign also encourages owners to check their recall status.[11] However, barriers like lack of awareness and limited internet access hinder these passive notification's effectiveness. In fact, according to research conducted by NHTSA in 2019, only 18 percent of those surveyed had used NHTSA's website to check for recalls.[12]

Issues with Owner Data Used for Recall Communication

To fulfill regulatory requirements under the Safety Act, most manufacturers purchase vehicle registration-based data sourced from State DMVs through data aggregators,[13] which complements any available customer contact data from franchised dealers, for example, email addresses and phone numbers.[14] The type of current owner information available from State DMVs varies by State. Some States collect multiple mailing addresses and alternative types of contact information, such as email addresses and phone numbers, while other states provide only a single address. As a result, data aggregators that secure and process this information must use algorithms to standardize the data, and ensure the data is current, which can result in discrepancies and omissions from what the vehicle manufacturers receive.[15] For example, the DMV may have an outdated mailing address, while a data aggregator has access to toll road authority data storing a more recent mailing address, but the algorithm may not know which address to utilize.

[10] https://www.trafficsafetymarketing.gov/get-materials/vehicle-safety/recalls-safety-campaign.

[11] Check to Protect is funded by BMW, Ford, GM, Nissan, Stellantis, Toyota, and Volvo. https://www.nsc.org/road/safety-topics/check-to-protect.

[12] NHTSA, Effective Recall Communications (August 2019).

[13] The Drivers Privacy Protection Act (DPPA) limits the permissible uses of personal information collected by State DMVs. While vehicle safety recalls are a permissible use of the data, there may only be a limited number of data aggregators to whom States will make this information available.

[14] It is unclear how vehicle titling data is considered in the registration-based data purchased by the manufacturers. While vehicle titling data is often maintained by State DMVs, this data can be more nuanced than vehicle registration data due to the many different vehicle title statuses, such as branded titles for junk/salvage vehicles.

[15] The Independent Monitor of Takata and the Coordinated Remedy Program (2020). The State of the Takata Recalls, available at https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/state_of_takata_air_bag_recalls_fourth_report.pdf at 35 (hereinafter "4th Report").

Moreover, vehicle owners and their mailing addresses are fluid and subject to change.[16] Vehicles often change owners many times throughout their lifecycle, and owners move between residences, both of which increase in frequency as vehicles age.[17] As a result, vehicle manufacturers face difficulties in verifying and updating owner information, with up to 30 percent of unrepaired vehicles in older recall campaigns experiencing owner or address changes annually. As such, the act of sending a notification to the correct owner and address can be challenging for vehicle manufacturers, particularly for recalls of older vehicles.

Vehicles can be considered unreachable for recalls due to various factors like export, theft, scrapping, or missed notifications. In fact, NHTSA tracks and categorizes some campaigns under scrapped, stolen, exported, or other.[18] Different State regulations on scrapping and title branding can also lead to inconsistent data, causing some vehicles in transit—one stakeholder finding as many as 50 percent—to be mistakenly labeled as unreachable.

Similarly, some vehicles may be unreachable for recall inspection or repair without proper documentation. These include exported vehicles, those crossing international borders, inoperable vehicles on private property, and undocumented destroyed vehicles. These untracked vehicles can make up a significant portion of older recalled vehicle populations, as seen in the Takata recalls, where up to 30 percent were classified as unreachable due to various reasons.[19]

[16] The Independent Monitor of Takata and the Coordinated Remedy Program, (2018). The State of the Takata Recalls. https://www.nhtsa.gov/document/update-state-takata-airbag-recalls-independent-monitor-takata-and-coordinated-remedy-0, at 5 (hereinafter "2nd Report").

[17] *Id*.

[18] 49 CFR 573.7.

[19] https://datahub.transportation.gov/Automobiles/Takata-Recall-Net-Air-Bags-Remaining/97d8-fc99/data_preview.

Ways to Improve Consumer Outreach and Comprehension

The most significant finding from NHTSA's study is that there is not a one-size-fits-all strategy in reaching and incentivizing affected vehicle owners and ensuring their understanding. A comprehensive approach, utilizing multiple outreach methods on an iterative cadence, was significantly more effective than a single first-class mailed letter.

Notably, NHTSA's study included an evaluation of the Takata air bag recall campaigns, the largest and most complicated recall in U.S. history. The Takata recall was predicated on a finding of a violation of the Safety Act and initiated pursuant to a consent order. Consent orders are often agreed to by the party found to have violated the Safety Act. Therefore, the terms of the consent order may include requirements that are beyond those found in statute or regulation. Most recalls do not involve such extraordinary circumstances and do not require the level of response seen in the Takata recall. While NHTSA does not have statutory authority to force consumers to fix their recalled vehicles, NHTSA frequently communicates with manufacturers about their recall completion rates and efforts to reach consumers. Through its inquiries, NHTSA often influences manufacturers to take additional steps to communicate with consumers and, where warranted, has the authority to order additional recall notifications. 49 U.S.C. § 30119; 49 CFR 577.7.

Improving Owner Contact Data and Increasing Avenues for Engagement

Accurate contact information is crucial for delivering successful recall notifications, but as described above, obtaining current data from DMVs is challenging. Alternative data sources can help supplement addresses obtained through vehicle registrations to better identify vehicle owners with open recalls. These sources include:

- Purchaser, repair, and maintenance records of a manufacturer and those of its dealers, distributors, retailers, and wholesalers;
- Vehicle history reports;
- Loyalty programs and cards;
- Consumer data sources and providers, including records from utility providers;
- Vehicle end-of-life or vehicle transition data providers;
- Used vehicle listings;
- Auction data;
- License plate recognition services;
- Insurance and toll authority data;
- Importation and exportation records; and
- Databases run by law enforcement organizations.[20]

[20] Non-profit and law enforcement organizations like the National Motor Vehicle Title Information System (NMVTIS) and the National Salvage Vehicle Reporting Program maintain databases to identify unreachable vehicles. NMVTIS, managed by the U.S. Department of Justice, contains real-time and historical data on vehicle titles, brands, and junk/salvage/insurance status to prevent fraud and resale of stolen vehicles. NSVRP works with law enforcement to combat auto theft and fraud, gathering real-time vehicle activity data to classify each vehicle's transit status.

A comprehensive strategy could combine some or all of these sources iteratively to improve recall completion rates, especially for older vehicles. However, obtaining such data is expensive and can be unreliable, so many manufacturers have not adopted these voluntary strategies. Despite challenges, leveraging these alternative sources can enhance recall effectiveness and improve vehicle safety.

Multi-Stakeholder Engagement Strategies

Owners of recalled vehicles, particularly older vehicles, frequently change, with turnover rates reaching 30 percent annually.[21] Prompt recall notifications after ownership changes improve completion rates. However, unlike the Takata air bag campaigns, most manufacturers do not regularly track new owners on a routine basis throughout the lifecycle of the recall campaign, as doing so would require use of third-party or multi-stakeholder engagement strategies.

Third-party automotive stakeholders, listed below, who compile vehicle owner contact details can improve notification effectiveness. Though not obligated, their involvement in notifying owners, as seen in Takata Monitor pilots, boosts completion rates.

Dealer Involvement and Communication

Franchised dealers are essential for recall repairs but work independently from the manufacturer issuing the recall. Inconsistent performance among dealers, such as lack of follow-up, inconvenient hours, and misinformation, causes delays and incomplete repairs, impacting owner perception of recall importance. Improved dealer engagement can significantly boost repairs, as shown by Takata-related cases where repairs doubled after enhanced dealer incentives, such as mobile repair and free towing.

Door-To-Door Canvassing

One impactful, albeit costly, method to improve consumer contact and comprehension is through door-to-door canvassing. This involves physically visiting addresses to schedule repairs and gather and provide recall-related information. One pilot study that used door-to-door canvassing found that nearly half of vehicle owner registration information was inaccurate, mostly due to vehicle sales or owner moves.

Used Vehicle Dealers

Selling or leasing a new vehicle with an open safety recall is prohibited by the Safety Act.[22] However, this prohibition does not extend to the sale or lease of a used vehicle (with the lone exception for rental car companies).[23] This has led to fatalities caused by defects in recalled

[21] 2nd Report, at 8.

[22] 49 U.S.C. § 30120(i).

[23] *See id*.

vehicles sold by used vehicle dealers.[24] Ensuring that recall repairs are completed before the sale of vehicles owned and listed by used vehicle dealerships would reduce defective and noncompliant vehicles on the road.

According to the Takata Monitor, vehicle manufacturers have identified online sales listings of used vehicles with open Takata Recalls and have worked with independent dealers to get the repairs done. However, the repair rates for these sales listings remain low and require significant follow-up from field teams.[25] The Takata Monitor also observed that repairs associated with independent dealers were more successful compared to mail outreach, as the contact information of the vehicle owners was often outdated during this transitional period.[26]
These trials have shown that independent used vehicle dealers can successfully collaborate with franchised dealers.

Vehicle Auctions

Major auction houses, which transact more than 13 million[27] vehicles annually, may be another stakeholder that could reduce the number of vehicles with unrepaired recalls. Unlike vehicles sold through private sales, for auction sales, "the location of the vehicle is known, and an individual owner is not inconvenienced with a vehicle recall repair."[28] In 2018, a Takata-affected vehicle manufacturer recognized the potential benefits of involving auction houses in the recall process and collaborated with an auction facility. This collaboration led to the repair of about 90 percent of vehicles with open recalls traded at the auction house.[29]

This initiative, and others like it, highlight the potential success of conducting recall repairs at auctions. The main obstacles include securing consent from buyers or sellers for repairs and ensuring auction facilities provide technicians or allow authorized technicians on-site for repairs.

Independent Repair Facilities

Independent Repair Facilities (IRFs), such as local non-dealer-affiliated automotive repair shops, are key players in enhancing awareness of recalls with vehicle owners. Many owners opt for IRFs for routine maintenance instead of dealerships, with about 90% of vehicles regularly visiting them.[30] As a result, IRFs typically hold more comprehensive owner information compared to what manufacturers typically maintain. While these shops utilize common diagnostic and invoicing software that can identify vehicles with open recalls, they are not required to perform the recall repair

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[24] https://www.consumerreports.org/cars/hidden-risks-of-used-cars-a1069498708/.

[25] 3rd Report, at 29.

[22] 2nd Report, at 44.

[27] Research and Markets, The US Vehicle Auction Market: Analysis By Volume, Type, Distribution Channel, Size, Trends and Forecast up to 2029. (July 2024)

[28] 3rd Report, at 28

[29] *Id*. at 43.

[30] *Id*. at 40.

Consequently, the effectiveness of IRFs in promoting recall repairs varies. A survey of 715 IRFs revealed that a significant portion do not actively check for recalls due to time and resource constraints.[31] The Takata Monitor found that offering manufacturer and dealership financial incentives for IRFs that refer the recall to the nearest dealership almost doubled completion rates, contrasting sharply with situations where no incentives were provided.[32]

State Departments of Motor Vehicles

State DMVs are crucial third-party stakeholders. They have played a vital role in enhancing awareness and outreach for vehicle recalls, boosting repair rates significantly. Utilizing letter mailing campaigns, DMVs achieve recall repair rates two to three times higher than manufacturer notifications alone, thanks to the trust and familiarity owners have with their State DMVs. For instance, in 2019, certain State DMVs collaborated with vehicle manufacturers affected by Takata recalls. They mailed letters bearing the DMV logo to approximately 4.6 million owners, resulting in substantial increases in repair rates across participating States, sometimes exceeding 300 percent.[33] By November 2020, this initiative expanded to 18 States, reaching over 6.5 million affected vehicle owners.[34] Further evidence of the success of this method comes from the results of NHTSA's DMV grant program specifically designed to provide DMVs with the resources to conduct notifications to recall-affected owners during registration renewal. Results from participating States show a significant repair rate, particularly for older vehicles.

Toll Road Authorities

Like other players in the automotive industry, toll road authorities were not involved in notifying customers before the Takata recalls and are rarely used by vehicle manufactures. However, toll road authorities typically have extensive consumer billing and contact details, providing a special level of accessibility to vehicle owners. For instance, the Virginia E-Z Pass organization collaborated with affected vehicle manufacturers and the Virginia DMV to send about 37,000 emails to account holders flagged with open Takata recalls. This effort led to completion rates eight to ten times higher than other outreach methods.[35]

Auto Insurance Industry

The auto insurance sector holds a unique advantage in aiding vehicle recall efforts. Insurance companies usually have access to vehicle owner contact details, enabling them to send timely notifications. Focus group data reveals that owners prefer receiving recall information through their insurers. Collaborations between car manufacturers and insurers have also seen significant

[31] 2nd Report, at 40.

[32] 3rd Report, at 27.

[33] 3rd Report, at 19.

[34] 4th Report, at 19.

[35] 4th Report, at 26.

increases in recall completion rates.[36] One manufacturer successfully piloted a co-branded communication with an insurer, leveraging the insurer's owner contact information and achieving a 350 percent higher completion rate than its usual communications.
Despite these successes, many insurers are hesitant to aid vehicle recalls due to potential legal risks and brand concerns.[37]

In-Vehicle Recall Messaging

With the emergence of large digital displays inside new vehicles, vehicle telematics now allow for direct delivery and confirmation of vehicle recall notifications. Currently available on select models, this technology has expanded further to some manufacturers' entire lineups starting with the 2024 model year. Each manufacturer may have unique procedures, but a typical example includes displaying important notifications on the infotainment screen when the vehicle starts and reappearing every seven days if not dismissed. If a recall remains unresolved for 90 days, the notification cycle restarts. Once widely available, this technology can help ensure prompt recall notifications for vehicles throughout their lifespan.

Improving Consumer Comprehension of Vehicle Safety Recall Notifications

Even when notifications successfully reach the intended vehicle owner, the information may not be understood. For example, the Takata Monitor discovered that many vehicle owners did not comprehend the notifications they received.[38] This lack of understanding can be due to various factors, such as reading comprehension level. Focus groups and in-depth interviews conducted by the Takata Monitor revealed that vehicle owners who had received multiple notifications but initially did not complete the recall often could not remember receiving any notices.[39]

Furthermore, many participants did not grasp the nature and severity of the defect. Instead of understanding that the air bag inflator could explode and send shrapnel into the vehicle cabin at high speeds, many thought the air bags might simply fail to inflate or overinflate, or believed they were safe if they wore a seatbelt.[40] Consumer comprehension of vehicle safety recall notifications can be improved through using clear language, strategies that increase the perceived legitimacy of the notifications, providing outreach in multiple languages, and increasing the types of outreach.

Using clear language

Many recall communications include technical terms and concepts that might not be easily understood by the vehicle owner. Improving communication is particularly crucial for recalls of

[36] 2nd Report, at 42

[37] *Id*.

[38] 2nd Report, at 15.

[39] *Id*.

[40] *Id*.

older vehicles, which are more often owned by a lower-income population with lower educational attainment compared to owners of newer vehicles.

The Takata Monitor identified the following strategies to increase vehicle owners' understanding of notifications:[41]

- Share concrete facts, such as field incidents, deaths, and injuries.
- Use real-life stories of vehicle owners to better convey the risks of defect (or noncompliance).
- Communicate urgency and provide a clear and persuasive call to action.
- Clearly communicate risk; for example, using words like "kill" and "explode" are more effective than "defective" or "faulty" to drive action.
- Frequent communications help underscore the risk of defect (or noncompliance).
- Clearly convey that the repair is important, and available free of charge.
- Communicate the time needed to complete repairs and available accommodations, (*e.g.*, mobile repair, loaner vehicles) enhance owners' understanding of process and inconvenience.
- Provide immediate next steps through which recipients can take action to complete a repair.
- Employ language that is simple and non-technical in nature to ensure recipients are not distracted or confused by unfamiliar terminology.
- Use a language the vehicle owners can understand to ensure they understand the content of the message.

Similarly, NHTSA made the following notification recommendations in its 2019 research:[42, 43]

- It is important to engage multiple channels and multiple sources, and those channels should include inbound (notification of successful receipt of the message) and outbound messaging that engages the consumer to communicate back to the manufacturer.
- Use simple language and personalize communications.
- Clearly convey the risks/threats of what can happen if the recall is not repaired.
- Manage expectations on availability of parts, urgency of recall, and time needed for repair.

The Takata Monitor's research found that using clear terms such as "death" and "injury" accelerates recall completion, compared to less urgent terms like "important" or "risk." Participants interviewed by the Takata Monitor recommended terms like "emergency recall," "mandatory recall," or "urgent recall" to underscore the critical nature of the situation.[44]

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[41] *Id*. at 36.

[42] Further, research completed by NHTSA in 2019 found that vehicle recalls that put vehicle occupants at risk of injury or death are a higher priority and, therefore, are more likely to be repaired sooner.

[43] NHTSA also provides recommendations for effective messaging on its website at https://www.nhtsa.gov/vehicle-manufacturers/tips-increasing-recall-completion-rates.

[44] *Id*. at 33

Strategies that increase the perceived legitimacy of notifications

Owners interviewed by the Takata Monitor also expressed skepticism and distrust towards the vehicle recall process.[45] Some interviewees had previously been misled by fraudulent offers for other services, such as credit scams, and cited these experiences as reasons for viewing notifications as inauthentic.[46] They were also suspicious of letters that appeared to be mass mailings, believing someone was trying to take advantage of them by selling or soliciting something unrelated.[47] Third-party messengers, such as DMVs, Toll-Road Authorities, and IRFs positively impact completion rates due to the trust vehicle owners place in them, unlike manufacturers or dealers who may seem motivated by sales. This trust is especially crucial for older vehicle recalls affecting disadvantaged groups.

The Takata Monitor identified the following strategies to increase vehicle owners' understanding of notifications:[48]

- Notifications should be personalized, with the name and image of the recalled vehicle to look like a legitimate communication to better differentiate it from other mass mailers that look like it is selling something.
- Personalization in the repair scheduling process can also increase completion rates. Dedicated case handlers ensure consistent communication, research new owner details, and follow up to ensure repairs are completed. Simplifying call prompts increased call volume sixfold for one manufacturer.

Multilingual Outreach

Sending notifications in multiple languages has been shown to improve vehicle recall completion rates. The Takata Monitor reported an increase in repair volume for one affected vehicle manufacturer that included translations in Spanish, Chinese, and Vietnamese in its postcard

[45] 1st Report, at 27.

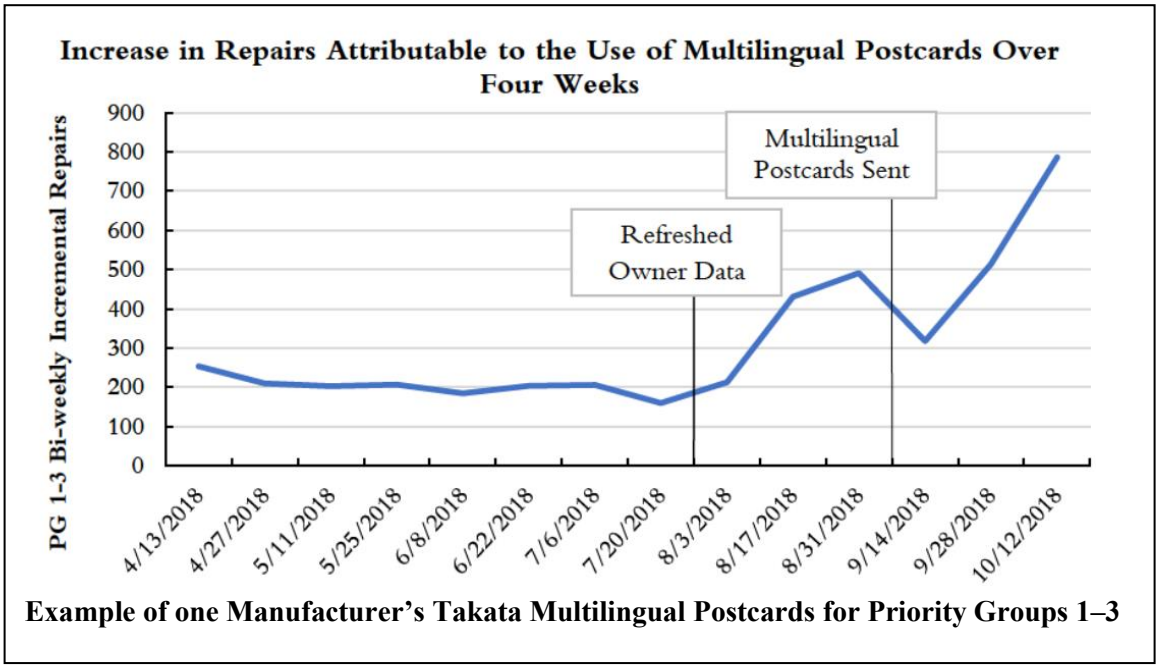
[46] *Id*.

[47] *Id*.

[48] *Id*. at 36.

communications. The graph below shows the increase in repair activity following the use of these multilingual postcards, sent repeatedly over the course of multiple days.

Increased Types of Outreach



Example of one Manufacturer's Takata Multilingual Postcards for Priority Groups 1–3

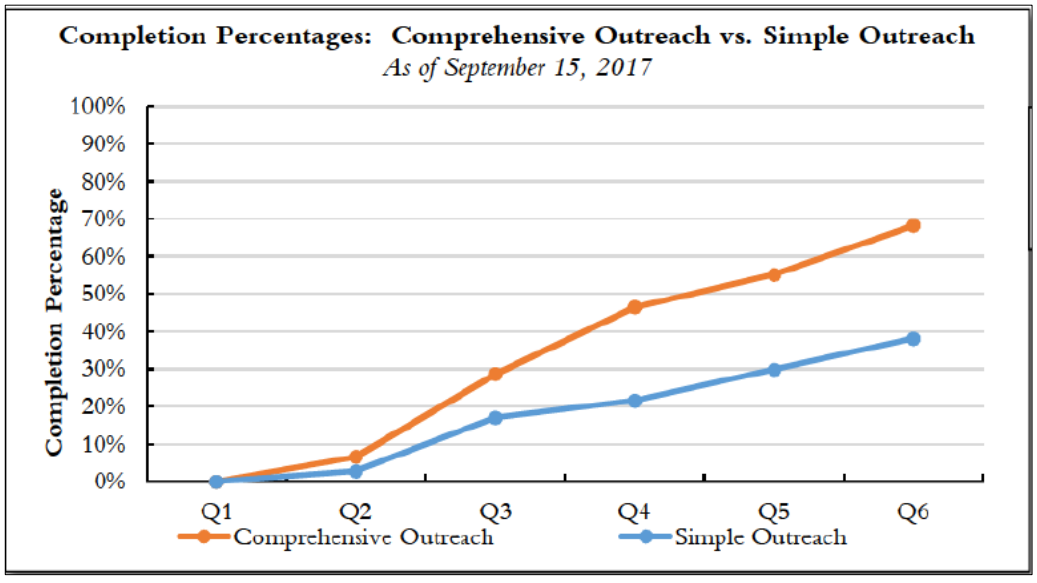
A varied communication strategy that uses targeted approaches and involves State DMVs, IRFs, used car dealers, insurers, and toll authorities boosts notification reach and completion rates. Using multiple communication methods—in combination with improving owner contact accuracy and prioritizing vehicles in transit—enhances notification effectiveness and encourages prompt action. Additional communication channels used for informing vehicle owners, beyond the required first-class mailed letters, have included:

Mailings using different sizing and mechanisms for delivery – letters, postcards, third-party services (*e.g.*, FedEx, UPS), certified mail, oversized mailers, etc.	Vehicle app notifications
E-mails	Trade and enthusiast magazines
Text messaging	Non-English language publications and media
Phone calls	Sporting and local community events
Door-to-door canvassing outreach	Social media
Notifications on vehicle reseller websites	Press conferences

Independent Repair Facility (IRF) notifications	Recall-specific websites
In-vehicle alerts	Radio advertisements and PSAs

In addition, NHTSA issued a Supplemental Notice of Proposed Rulemaking (SNPRM) for electronic notification (*i.e.*, telematics, email, etc.) that would require manufacturers to augment their first-class letters to recall-affected vehicle owners by electronic means.[49]

Using a varied, multi-channel communication strategy accelerates vehicle recall repairs. In December 2016, the Takata Monitor issued Coordinated Communication Recommendations to manufacturers, advising effective ways to inform owners about recalls.[50] These recommendations include using owner data, various message formats, risk levels, addressing concerns, tailoring messages, and ensuring accessibility. For instance, a 2017 Takata Monitor study found that frequent reminders were crucial for urgent safety risks. Focus groups recommended weekly contact, while two-thirds of survey respondents preferred several notifications monthly. Multiple pre-campaign communications convinced canvassing recipients of the seriousness of Takata recalls and motivated them to act. As shown in the graph below, sending multiple communications, through multiple channels, and using enhanced data techniques, increases the reachability of notifications.



Example of one Manufacturer's quarterly comparison of multi-channel outreach vs 1st class mail

Multi-channel outreach has a distinct advantage over use of a single mandatory first-class letter.

[49] https://www.federalregister.gov/documents/2025/01/10/2024-31011/updated-means-of-providing-recall-notification.

[50] https://www.nhtsa.gov/document/coordinated-communications-recommendations.

Consumers have different communication preferences, and the use of different formats resulted in vehicle owners being impacted by a format that appealed to them. Further, the frequency and variety of the communications also underscored the seriousness of the defect or noncompliance and the need for repair.[51] In addition, there were distinct advantages in some forms of communication. This included: the ability to include links for more information; scheduling in electronic communications; and the ability to engage in dialogue with phone calls to understand and alleviate specific concerns of vehicle owners. Some vehicle manufacturers observed that at certain points of their outreach campaigns the vehicles that had phone numbers available had completion percentages twice that of vehicles without phone numbers.

The Takata Monitor identified the following strategies to increase vehicle owners' understanding of notifications:[52]

- Use nonverbal iconography, such as vector graphics showing the dangers of recalled air bags (without the use of words), to demonstrate the nature of the defect (or a noncompliance) to help the message resonate with key audiences, regardless of the language they speak.
- Affected vehicle manufacturers must not only use multiple mediums to reach owners, but also must ensure that they communicate a consistent message to maximize impact and understanding.

Similarly, NHTSA made the following notification recommendations in its 2019 research:

- Visuals of defective (or noncompliant) components, and what happens when a recall is not repaired, can help drive home the message of how important it is to have the recall repaired.
- It is important to engage multiple communication channels (*i.e.*, text, door-to-door, experiential, radio, etc.) and multiple sources, and those channels should include inbound and outbound messaging.
- Consumers want to hear directly from manufacturers about their specific vehicles, and from the government, to raise overall awareness and credibility to the recall.
- Having multiple messengers helps get the message out more effectively.

Other Ways to Incentivize Recall Repairs

Manufacturers are not allowed to charge consumers for completing vehicle recall repairs, but that does not mean that bringing a vehicle in for a free remedy lacks any cost or burden for the owner. Owners of a recall-affected vehicle may only have one vehicle for their entire family, so finding other means to travel while waiting for the repair is a significant barrier. Similarly, light-

[51] *Id*. at 36.

[52] *Id*. at 36.

duty trucks and vans that are used for trade work can impact earnings for affected owners. The Takata recall campaigns introduced several unique strategies to achieve high levels of recall completion, many of which involve removing practical barriers for affected vehicle owners. These strategies are described below.

Reducing Burden

Beyond direct expenses like fuel and potential lost wages, there are indirect costs like the time spent dealing with the recall. A 2018 survey by the Takata Monitor found that 40 percent of vehicle owners pointed to inconvenience as the main reason for not addressing a recall.[53] This finding aligns with recent findings from a Stout survey[54] that found that about 40 percent of respondents cited inconvenience as the primary factor for not repairing their recalled vehicles.

Importantly, the time and opportunity costs associated with completing a vehicle recall repair vary for each owner, and each owner weighs the perceived costs and benefits differently. Some of the common barriers to completing recall repairs include the inability to take time off work during normal dealer hours, using the vehicle for trade or business, lack of childcare, commitments to children's extracurricular activities, participation in structured hobbies and events, large distances to franchised dealerships, inoperable vehicles, mistrust of franchised dealers, fear of upselling, bad past experiences at dealerships, and dealer miscommunication on part availability. To address these challenges, various accommodations have been tried with varying degrees of success. These include financial incentives, offering extended service hours at dealerships or mobile repair services, and offering free towing or loaner vehicles.

Financial Incentives

Takata-affected manufacturers have implemented numerous financial incentives to prompt recall completions by consumers. Some of these, including service rebates and gift cards, have been met with varying levels of success. Some manufacturers have experimented with the timing of when to offer financial incentives, with some offering them earlier in a recall.

Offering Extended Hours or Mobile Repairs

Mobile repair services, where technicians travel to the owner's location to complete the recall, have been highly successful, increased completion rates significantly when the option is available,[55] though it should be noted that these strategies have typically only been utilized for Takata recalls (and some limited examples outside the Takata recalls). Extended service hours, especially during evenings and weekends with additional amenities like food and entertainment,

[53] 2nd Report, at 28.

[54] Quantitative Analysis of Survey Responses of U.S. Vehicle Owners with Open Recalls of Older Vehicles [Unpublished raw data] (2024). Stout Risius Ross (now referred to simply as **Stout**, a global financial advisory firm).

[55] 2nd Report, at 29.

have also proven effective, particularly for households with limited transportation options.

Offering Loaner Vehicles or Shuttles

Offering loaner vehicles or shuttle services has been shown to increase completion rates. Focus groups and in-depth interviews conducted by the Takata Monitor revealed that many interviewees believed that the repair process would be lengthy and inconvenient, unaware of programs such as free rental and towing services designed to mitigate the inconvenience of completing the repair.[56] Critically, only half of the Takata Monitor survey respondents were willing to travel up to 10 miles to complete a recall repair, and 38 percent were okay waiting for a maximum of two hours. Moreover, 41 percent of respondents mentioned they would be more motivated to complete the repair if the dealer provided a free loaner vehicle (though this is not a requirement for manufacturers), while 33 percent indicated they would want a guarantee of a short repair duration.[57]

Vehicle Registration Requirement for Recalls

Below are examples of governmental authorities requiring owners to have vehicle recall repairs completed:

- **Germany:** The national vehicle recall regulator in Germany frequently reminds vehicle owners to address any outstanding recalls. Failure to comply results in the withdrawal of vehicle registration. Manufacturers are required to confirm part availability before starting recall campaigns.[58]
- **Australia and Japan:** Following the Takata air bag recall, Australia and Japan imposed a temporary registration ban on unrepaired vehicles.[59] Failure to address this recall led to vehicle inspection failures. As a result, Australia achieved a 99.9 percent completion rate for the affected vehicles.[60]
- **U.K.:** The U.K. introduced a policy fining vehicle owners £2,500 for driving an unsafe vehicle. Insurance claims also take open recalls into consideration after an accident.[61]
- **California:** Failure to address EPA recalls related to emissions standards prevents vehicle registration renewal in California.[62]
- **Maryland:** Maryland's Department of Public Safety and Corrections requires that upon original licensure, and annually thereafter, for-hire vehicle owners (*e.g.*, taxis, Uber, Lyft,

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[56] *Id*.

[57] *Id*.

[58] "Recalls," KBA pdf, at 3-4.

[59] "Takata Airbag Recall," New South Wales Government, Press Release: "At Vehicle Inspection, Rejection of Vehicles with Faulty Airbags Recalled but Not Yet Repaired": Ministry of Land, Infrastructure, Transport and Tourism.

[60] "Car manufacturers complete 99.9 per cent of Takata airbag recall," Australian Competition & Consumer Commission, Mar. 5, 2021.

[61] "Manufacturers' Guide to Recalls in the UK Automotive Sector," Driver & Vehicle Standards Agency.

[62] Fiat Chrysler Automobiles, Important Emissions Recall example, at 1.

limousines) may not operate or permit the operation of their vehicle if it has open safety recalls.[63]

In addition, several proposals at State and Federal levels aim to enforce recall repairs but have not become law. For example, a 2003 New Jersey Senate Bill proposed a registration ban for unrepaired recalls. The Federal RECALL Act, proposed in 2015, would have required States to inform vehicle owners about ongoing recalls, with repairs necessary for registration renewal. It is important to consider competing policy considerations with respect to any registration mandate. In particular, requiring owners to repair vehicles prior to registration would disproportionately impact households with limited transportation options, non-English speakers, and owners of older vehicles, which are more often owned by a lower-income population.

[63] https://www.psc.state.md.us/vehicle-inspections-notice-of-in-person-rulemaking-session-rm-74.

Conclusion

On average, there are typically over 300 unique light vehicle recalls in the U.S. each year, affecting more than 20 million vehicles. Improved detection technology has enhanced the ability of manufacturers and suppliers to identify incidents of noncompliance and safety defects earlier, leading to lower volume recalls and achieving completion rates of at least 80%.However, recall completion rates for older vehicles tell a different story, where lower completion rates indicate barriers.

NHTSA's study and this resulting report are largely based on lessons from the Takata air bag inflator recall, the largest automotive recall of all time. NHTSA's Coordinated Remedy Order required independent oversight and extensive consumer outreach beyond standard notifications, providing valuable insights into effective strategies.[64] Vehicle recall campaign notifications often fail to prompt action due to owners not receiving, understanding, or trusting the notifications. Research shows that recall rates for older vehicles can improve with coordinated, data-driven strategies. These strategies, often stretching beyond regulatory obligations, would enhance outreach efforts requirements. Some high-level recommendations that could lead to higher recall completion percentages and accelerated recall repairs include the following:

Improvements to Owner Outreach

NHTSA recommends several measures to improve the outreach owners receive notifying them of a vehicle recall. Accurate contact information is crucial for sending notifications; alternative data sources such as purchaser and vehicle history reports can help supplement registration addresses to better identify vehicle owners with open recalls. Furthermore, use of the National Motor Vehicle Title Information System and the National Salvage Vehicle Reporting Program (NSVRP) to better identify salvaged vehicles that were labeled as unreachable for repair could significantly improve recall completion rates and allow manufacturers to direct resources to unrepaired vehicles that are still on the road. Manufacturers' use of these sources and leveraging the involvement of multiple stakeholders such as independent repair facilities, toll authorities, and insurers would vary and legitimize communication, enhancing the reach of recall notifications and bolster recall administration effectiveness.

NHTSA is considering the creation of a VIN Lookup Tool to service multiple VINs (or a "batch" of VINs) per request. A NHTSA-created batch VIN Lookup Tool for safety recalls may allow further proliferation of recall data into the market and improve recall outreach to consumers. Further, NHTSA is exploring ways to increase voluntary participation in NHTSA's VIN Lookup Tool to include manufacturers beyond the passenger vehicle and motorcycle manufacturers that currently participate. Given the importance of owner notification during the recall process, NHTSA will continue to consider updates to 49 CFR Part 577, the regulation outlining owner notification.

[64] *See* https://www.nhtsa.gov/document/third-amendment-coordinated-remedy-order-and-annex.

Improvements to Consumer Comprehension of Vehicle Safety Recall Notifications

Consumer comprehension of vehicle safety recall notifications can be improved through manufacturers' use of clear language, strategies that increase the perceived legitimacy of the notifications, and increasing the varied forms of outreach. In addition, the use of in-vehicle messaging, certified mail, and door-to-door canvassing in addition to the existing first-class mailed letter could dramatically improve the accuracy and timeliness of consumer awareness.

NHTSA will also initiate discussions with the automotive insurance industry to explore ways to partner to improve safety. Possible insurance company outreach regarding open safety recalls may benefit recall completion rates.

Reducing Burden to Consumers

NHTSA recommends several measures to encourage owners prompt action on recalls by reducing burden. These include manufacturers providing financial incentives, offering extended service hours at dealerships or mobile repair services, and offering free towing, shuttle services, or loaner vehicles. By offering a range of accommodations tailored to different barriers, manufacturers can boost recall completion rates, emphasizing clear communication to ensure owners are aware of available options.

Increased Research

NHTSA maintains lists of communications strategies that have the potential to increase recall notification comprehension, including those developed by the Takata Monitor. However, more evidence-based approaches exist within numerous other fields involving voluntary behavior change, including, but not limited to, public health (*e.g.*, tobacco prevention and cessation, DUI prevention, seatbelt-use, health screenings) and financial responsibility (*e.g.*, creditworthiness, gambling addiction). Unlike these fields, the vehicle recall safety space lacks a body of scholarly research publications (peer reviewed research utilizing scientific methods) that examine communication methods and strategies that can provide direct correlation or causation to voluntary behavioral compliance (consumer repair of the vehicle safety recall).

Vehicle Registration Recall Information

Proactive notifications at current registration can prompt owners to address recalls before the next cycle, improving overall vehicle safety.

By using data-driven processes and effective manufacturer communication, NHTSA aims for safer roads. NHTSA is committed to continuous improvement in saving lives, preventing injuries, and reducing traffic crash costs.

NHTSA also expects to issue a Notice of Funding Opportunity in FY26 for state DMVs to receive grants to enable notification of vehicle owners with open safety recalls during the vehicle registration process. This program's past grant recipients (Maryland, California, Texas, and Ohio) notified consumers of 9.5M open safety recalls in total, resulting in nearly 2M recalls repaired during their programs.