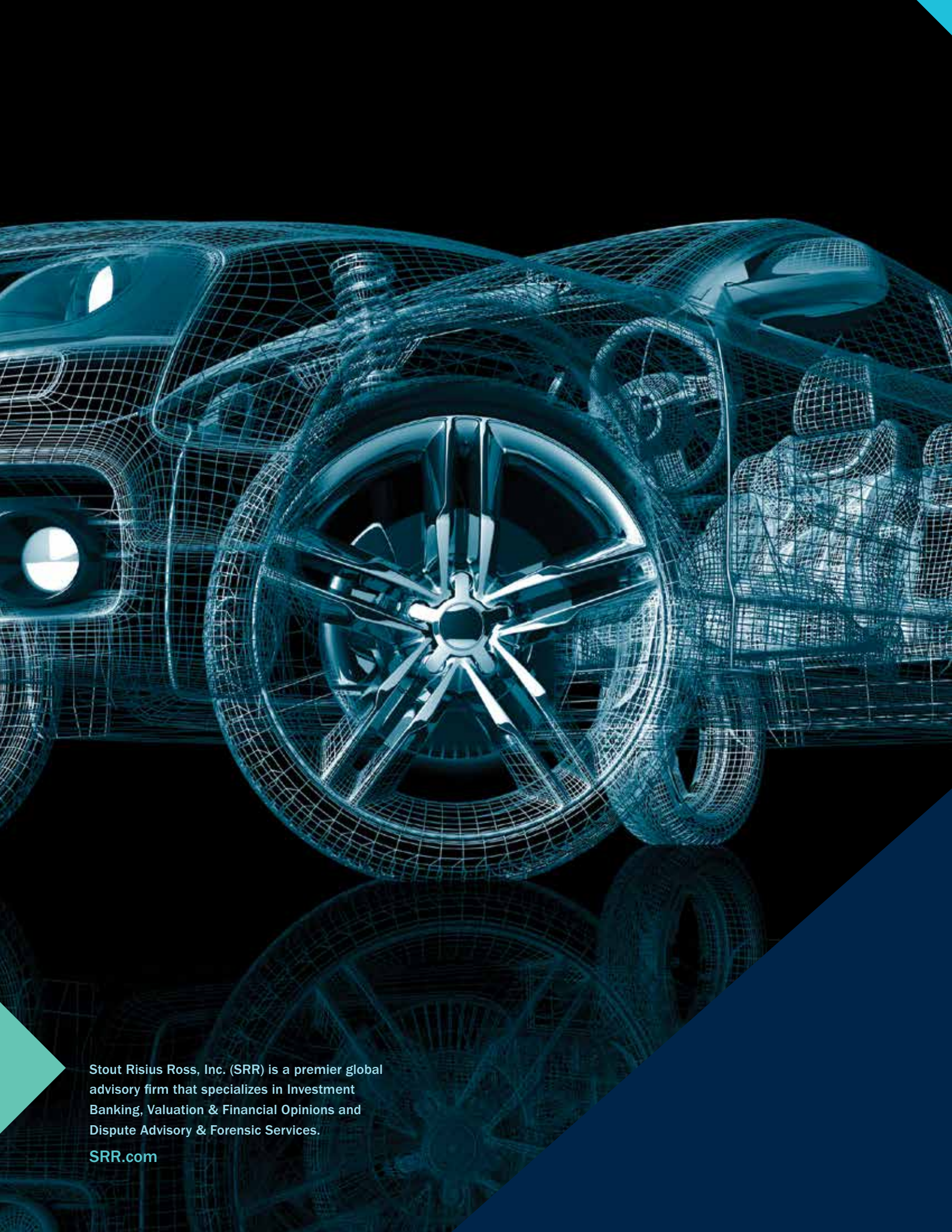


ROAD MAP FOR A NEW ERA

AUTOMOTIVE
WARRANTY &
RECALL REPORT
2015

SRR
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Global Financial Advisory Services



Stout Risius Ross, Inc. (SRR) is a premier global advisory firm that specializes in Investment Banking, Valuation & Financial Opinions and Dispute Advisory & Forensic Services.

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A wireframe model of a car's front end, showing the headlight, grille, and bumper area, rendered in a light blue color against a dark background.

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INTRODUCTION

The automotive industry's rebound from a cataclysmic recession that bankrupted two of the three major U.S. automakers, endangered several large suppliers and forced closure of hundreds of dealerships is one of the more dramatic and impressive business success stories in recent years.

The last few years have been transformative, as the automotive sector reorganized and embraced new technology that allowed manufacturers to respond to consumer demands faster with advanced design techniques and engineering processes, resulting in significant sales increases.

Yet during this same time recalls have continued to rise, punctuated by a record-breaking number of more

than 60 million vehicles affected in 2014 that resulted in tremendous negative attention for the automotive industry and, consequently, pressure from legislators, media, regulators and the public.

A full accounting of last year's automotive recall activity reveals the fact that the major recalls that generated the most public attention were only part of the story. Several other noteworthy developments that surfaced in 2014 will have profound short-term and long-term ramifications for the industry.

Stout Risius Ross (SRR) conducted unprecedented research into a variety of factors that will directly influence recall-related risk and financial planning for OEMs and suppliers of all sizes. Our comprehensive analysis has led us to the conclusion that we are entering a new era in recalls, marked by:

- › **A federal regulatory tone that is much more proactive**
- › **Bipartisan Congressional support for legislation toward increased oversight and penalties**
- › **Fines against OEMs that are larger than in past years**
- › **The threat of criminal penalties against OEMs and their employees**
- › **Renewed pressure to increase recall completion rates**
- › **Global recalls that can endanger the financial viability of even the largest suppliers**
- › **Cost recovery actions throughout the supply chain**

Because of factors like these, OEMs and their suppliers are realizing that the financial and risk management models they employed in recent years are no longer valid. This document is a road map for the new era.

REPORT BACKGROUND

This report is the industry's most comprehensive and integrated assessment of the important metrics behind recall risks, trends and costs.

The data analysis for this report is based on original research by Neil Steinkamp and Jake Reed from Stout Risius Ross (SRR) that began in 2013. Following more than a year of intense research and examination, the first public release of this information was made in 2014 and included a robust assessment

of several recall-related issues that received both automotive industry and general media attention. This document represents the first formal report on this groundbreaking analysis made available to the general public.

The information in this report has greatly influenced the industry conversation about recalls and how they affect OEMs and suppliers. This report combines SRR's qualitative and quantitative approach to understanding risks in the automotive industry, as well as the costs of automotive warranty and recall.

Report sources include National Highway Traffic Safety Administration (NHTSA) data for historical recalls dating to 1966, 573 Letters, 10-Ks, 10-Qs, annual reports, Early Warning Reporting (EWR) data, international recall data, NHTSA investigations data, and Quarterly Progress Reports (QPRs).

REPORT OVERVIEW

This report covers trends that emerged in 2014 and expectations and guidance for planning for recalls in years to come, including:

- 1 | **Factors that will contribute to recall numbers staying at an elevated level**
- 2 | **Factors that will contribute to automakers seeking higher recall completion rates**
- 3 | **Insights into component groups that are at highest risk for recalls**
- 4 | **How OEMs and suppliers can assess the risk of recalls and plan for them financially**



FACTORS THAT WILL CONTRIBUTE TO RECALL NUMBERS STAYING AT AN ELEVATED LEVEL

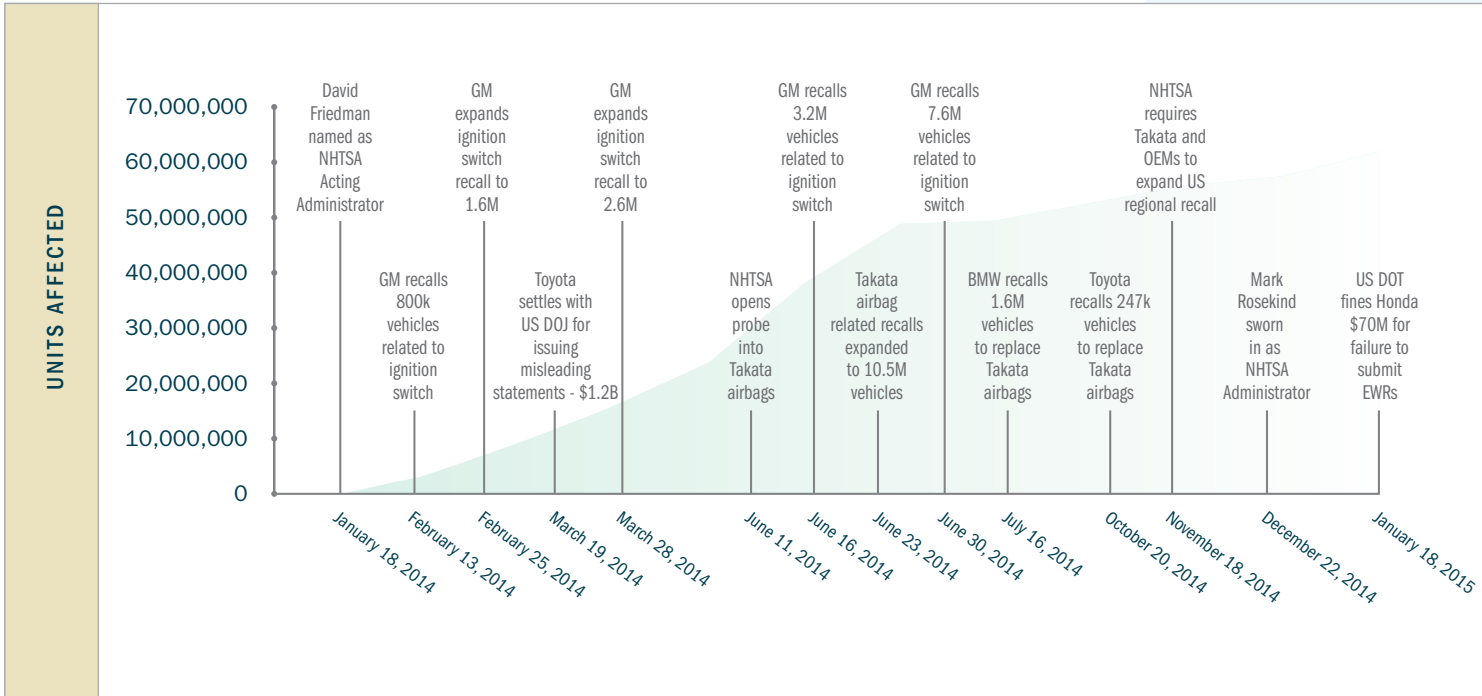
“I think we could actually see an increase in the number of recalls. The reality is that means your system is working.”

NHTSA Administrator Mark Rosekind

Even though vehicle recalls have been climbing steadily for decades, few could have anticipated the record-breaking number of recalled vehicles in 2014.

Overall, vehicles recalled in the U.S. topped 63 million units in 2014, double the previous record of 30.8 million set 10 years earlier. In fact, there were almost as many vehicles recalled last year as in the four-year span from 2010-2013 combined. From 2004 through 2013, the average number of vehicles recalled in the U.S. was 16.1 million annually.

HEADLINES FROM 2014 – TIMELINE



A significant contributor to the record year was the prevalence of large recalls—those involving more than 100,000 units. The largest involved a flaw in Takata air bags that spurred more than 18 million vehicle recalls from Honda and nine other manufacturers because of defects that caused multiple injuries and at least five deaths. Separately, more than 2.6 million units were recalled by General Motors (GM) due to a faulty ignition switch connected with at least 64 deaths.

Another key factor in last year’s recall surge was small recalls (10,000 units or less). There were 125 last year, up 42 percent from 2013 and representing around 45 percent of total unique recalls.

Three primary forces are predicted to keep the volume of recalls and the number of units affected at elevated levels:

1 | REGULATORS WILL BE MORE PROACTIVE

New National Highway Traffic Safety Administration (NHTSA) leader Mark Rosekind, confirmed by the U.S. Senate last December, is expected to take the agency in a much more proactive direction in 2015, possibly with a larger budget, staff and expanded tools and regulatory powers.

The agency drew withering national criticism in 2014 for its practices, in particular how it handled the GM ignition switch concerns over the years. This was evident in tense Congressional hearings, a scathing report from the U.S. House of Representatives’ Committee on Energy and Commerce, and media investigations and critiques.

The pressure is on NHTSA again this year, as certain political leaders have demanded that more federal funds be directed to the agency to help it scrutinize the industry.

President Obama proposed an NHTSA budget increase of 20 percent each year over six years, including tripling the funding for defect investigations. The budget plan would increase full-time staffers at the agency to 85 (there are only 28 currently). With the new funds, Rosekind would like to create a trend analysis division as well as a specialized crash investigation group.

If NHTSA investigations increase, the number of large recalls is likely to as well. Inquiries initiated by NHTSA typically lead to a disproportionate number of large recalls (relative to overall recall population). For example, in 2014 the average size of an NHTSA-influenced recall was about 652,000 vehicles, and manufacturer-influenced recalls averaged about 168,000.

75,000

Number of public complaints
NHTSA received in 2014.

Publicity surrounding the 2014 recalls also inspired drivers to provide information about defects that could lead to investigations. The agency received approximately 75,000 public complaints last year—30,000 more than in 2013.

It will take time for the agency to build its staff and upgrade its technical abilities, but the intent of the Administration and many members of Congress is clear—a stronger, more vigilant NHTSA to prevent the deaths associated with defects that caused large 2014 recalls.

As Rosekind stated during his confirmation hearing, “NHTSA needs to be the enforcer.”

2 | LEGISLATORS ARE READY TO TAKE ACTION

Congress’ ire against automakers and NHTSA was one of the few issues that had bipartisan agreement last year. The result is a growing list of possible legislative actions that could boost NHTSA’s budget and add even more regulations and complications for automakers and suppliers in 2015 and beyond.

For example, members of Congress have proposed to:

- ▶ Encourage whistleblowers to come forward with details about motor vehicle defects and allow them to collect part of the fine imposed by federal agencies
- ▶ Increase penalties on automakers for safety-related issues
- ▶ Require rental car companies to repair defects before they can rent or re-sell vehicles that have been recalled
- ▶ Require NHTSA to provide public notice of all investigations, including preliminary inquiries
- ▶ Eliminate regional recalls to make sure all recalls are national
- ▶ Provide public disclosure of EWR information, including posting online
- ▶ Allow the Secretary of Transportation to declare an “Imminent Hazard” that would force recalls

In addition, NHTSA has requested that Congress allow it to raise its maximum fine to \$300 million from \$35 million.

3 | AUTOMAKERS ARE BECOMING MORE PROACTIVE

During a discussion about recalls at the Automotive News World Congress in January, Fiat Chrysler CEO Sergio Marchionne mentioned the “paradigm shift” in the relationship between OEMs and NHTSA and that it might take time to stabilize.

“We’re far away from that point because I think NHTSA is experimenting with both the exercise of their authority and the scope of their authority and how to use that authority, and the industry is getting used to responding to that usage of authority,” Marchionne said, according to Automotive News.

90%

OEM initiated
recalls in 2014.

In 2014, OEMs were reacting with an abundance of caution to this relationship shift. One example of that is the increasing proportion of recalls initiated by OEMs (almost 90 percent in 2014), with a decreasing proportion being initiated in relation to a NHTSA investigation. The origination of recalls may be another sign of the new reality—that the catastrophic effects of major recalls, as well as pending legislation and increased regulation, have profoundly influenced automakers’ recall committees.


Employees who sit on recall committees have found that because of increased public scrutiny their seats are now much hotter than they anticipated. If they decide against issuing a recall on a component failure that is ultimately traced to deaths, their ruling could be probed, the company could get fined and employees and executives could face criminal penalties.

In past years an OEM may have been more likely to issue a technical service bulletin or an in-warranty fix for a minor defect. Now seemingly minor infractions may be more likely to spark a proactive recall, in some cases to prevent a possible high-profile corporate fine and PR problem a couple of years down the road.

This preemptive approach is why the number of large recalls—increasing recently to 30 percent of the total—may also rise.

OEMs often prefer proactive recalls because they allow the automaker to show consumers that they are addressing the problem on their own, without being forced into action by the federal government. An added bonus is that a smaller, limited recall that does not involve tragic consequences becomes a low-key media story, or no story at all. However, NHTSA may not be in favor of the use of limited recalls, in part because they may need to be expanded at a later time or may not capture all of the vehicles that could manifest the problem.

It was evident just from the first 10 weeks of this year—as regulatory and legislative leaders have backed up their tough talk with new proposals and automakers have initiated several large recalls—that the legacy of 2014 will continue for quite a while.



FACTORS THAT WILL CONTRIBUTE TO AUTOMAKERS SEEKING HIGHER RECALL COMPLETION RATES

Last year General Motors was in a race against time to contact consumers who owned vehicles with a potentially fatal ignition switch problem.

With intense pressure from lawmakers, regulators and media, GM embraced outreach tactics more associated with retailers than automakers, such as Facebook messages, online ads and gift cards. GM also sent vehicle owners a personal letter from CEO Mary Barra and hired a company to call owners' homes, imploring them to visit a dealership right away.

GM executives have said they want to surpass the traditional recall repair completion rate, which is traditionally about 70 percent to 80 percent. While this percentage may sound somewhat positive, it still means—especially in the case of GM's massive

recall—that millions of defective vehicles could still be on the road. In fact, a study by Carfax, Inc. estimated that 46 million vehicles had unfixed defects at the end of 2014.

This elevated level of urgency for recall completion continues in 2015 for all campaigns, for a myriad of reasons:

- › **Media outlets are writing and broadcasting stories about completion rates**
- › **NHTSA's new administrator is studying the viability of a 100 percent completion rate requirement**
- › **Lawmakers are trying to find ways to require car owners to follow through with recall repairs**

“If each state will require that open recalls related to safety issues also be addressed before completing registration, the risk of death and injury to people in unrepaired older model vehicles will be greatly reduced.”

Statement by Rick Schostek, Honda North America’s executive vice president, and Stephanie Erdman, a consumer seriously injured by a Takata air bag inflator in a Honda Civic

This year, we expect OEMs to use a variety of tactics to reach consumers beyond the traditional first-class mail recall notification letter. The dramatic changes in how people receive and process information illustrate why OEMs need to rethink their outreach model:

- › **First-class mail volume has decreased from 98.1 billion in 2005 to 63.6 billion in 2014**
- › **Newspaper circulation has plummeted over the years**
- › **About 58 percent of adults own a smartphone and 42 percent own tablets**
- › **An estimated 74 percent of adults use social networking sites**

One company that works on recall completion outreach with 19 of the top 30 automakers has found success through a combination of postcard mailers, email and phone outreach to track down and convince owners that they need to repair their vehicles. Its goal is to conduct outreach on a sufficient level and frequency to spur customers to act, according to John Holloran, President and CEO of Impartial Services Group, LLC, a Stericycle business.

Holloran estimates that his company can increase completion rates by 150 percent to 200 percent on a quarter-to-quarter basis, thanks in part to software that coordinates and sequences outreach to vehicle owners. The key is to go beyond the one-size-fits-all solution that OEMs have traditionally used in recall notification.

The next step in vehicle-owner outreach might be virtual—manufacturers may soon start to use advanced technologies to push recall information to drivers through vehicle communications systems.

Legislators are not just relying on OEMs to improve completion rates, however. One proposal is to require U.S. car buyers to repair defective cars before registering their vehicles. Honda North America is among the supporters.

The bottom line is that as completion rates go up, so do costs, forcing automakers and suppliers to seriously reconsider the financial implications of recalls.

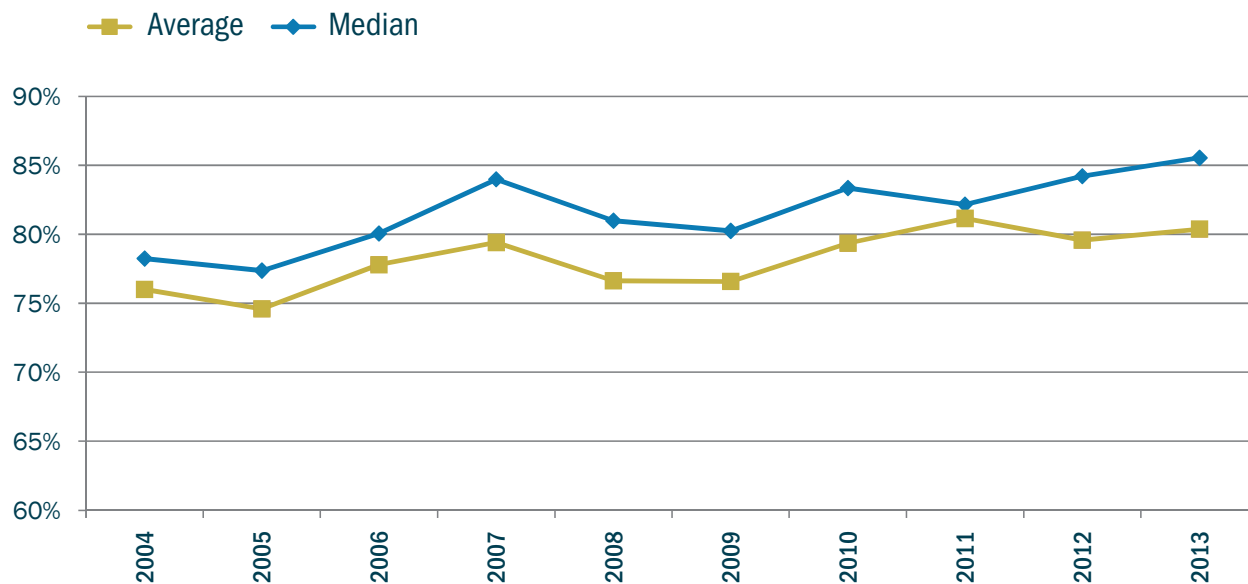
COMPLETION RATES VARY BASED ON SEVERAL FACTORS

SRR’s analysis indicates that OEMs will face several challenges as they seek to elevate recall completion rates.

SRR has reviewed the completion rates of hundreds of recalls through Quarterly Performance Reports (QPRs), which must be submitted to NHTSA for six consecutive calendar quarters after a recall. The reports include the items involved in the recall and the number of successful repairs.

OVERALL MEDIAN AND AVERAGE COMPLETION RATES BY YEAR (2004-2013)

INCLUDES ONLY RECALLS WITH 6 OR MORE REPORTED QUARTERS



Includes data for BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Toyota, Volkswagen, Volvo, Nissan, Mazda and Mitsubishi. Identified from dataset updated through December 2014.

Source: NHTSA Recall Data and Quarterly Progress Reports

In an analysis of automakers' QPRs since 2000, SRR found that, for the last 10 years, recall completion rates have modestly increased. The average completion for recalls completed inched up from 76 percent to 80 percent in the period of 2004 through 2013.

alarming finding that nearly 90 percent of the U.S. vehicles recalled because of faulty Takata air bags were not fixed as of the end of 2014, according to NHTSA. The agency announced the statistic at the same time it issued a \$14,000-per-day fine against the company. Holloran said the Takata-related completion rates are low due to parts shortages and ineffective outreach techniques to owners of older vehicles.

90%

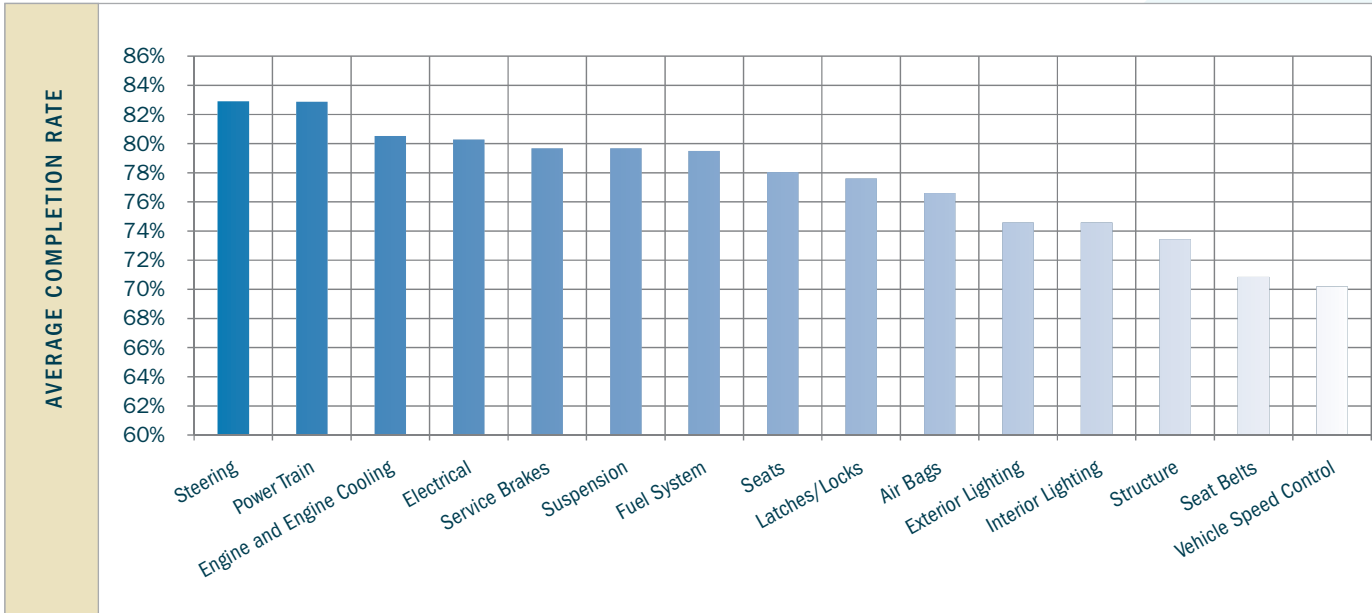
Percentage of U.S. vehicles recalled for faulty Takata air bags not fixed at the end of 2014.

Completion rates vary significantly depending on several factors, one of which is the type of component that is failing. For example, completion rates for air bags and seat belts were, on average, much lower than those for power train and steering-related defects throughout the last 10 years. This ties in with an

Honda, which has been affected by Takata defects more than any other automaker, announced in March it is launching an advertising campaign to reach vehicle owners that includes full-page ads in more than 120 newspapers, radio spots in about 110 markets and customized Facebook ads.

SUMMARY OF RECALL TRENDS

SUMMARY OF **AVERAGE** COMPLETION RATE BY COMPONENT GROUP (LAST 10 YEARS)
INCLUDING ONLY RECALLS WITH 6 QUARTERS OF DATA



Includes data for BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Toyota, Volkswagen, Volvo, Nissan, Mazda and Mitsubishi. Identified from dataset updated through December 2014.

Source: NHTSA Recall Data and Quarterly Progress Reports

Relatively high completion rates for power train components—which average 83 percent—may be tied to longer manufacturer warranties for such components, providing owners a greater incentive to visit their authorized dealership to have these repairs completed. Steering defects also are completed at a high 83 percent rate. Vehicle speed control and seat belt-related recalls are the lowest for completion rates, at about 70 percent and 71 percent, respectively.

83%

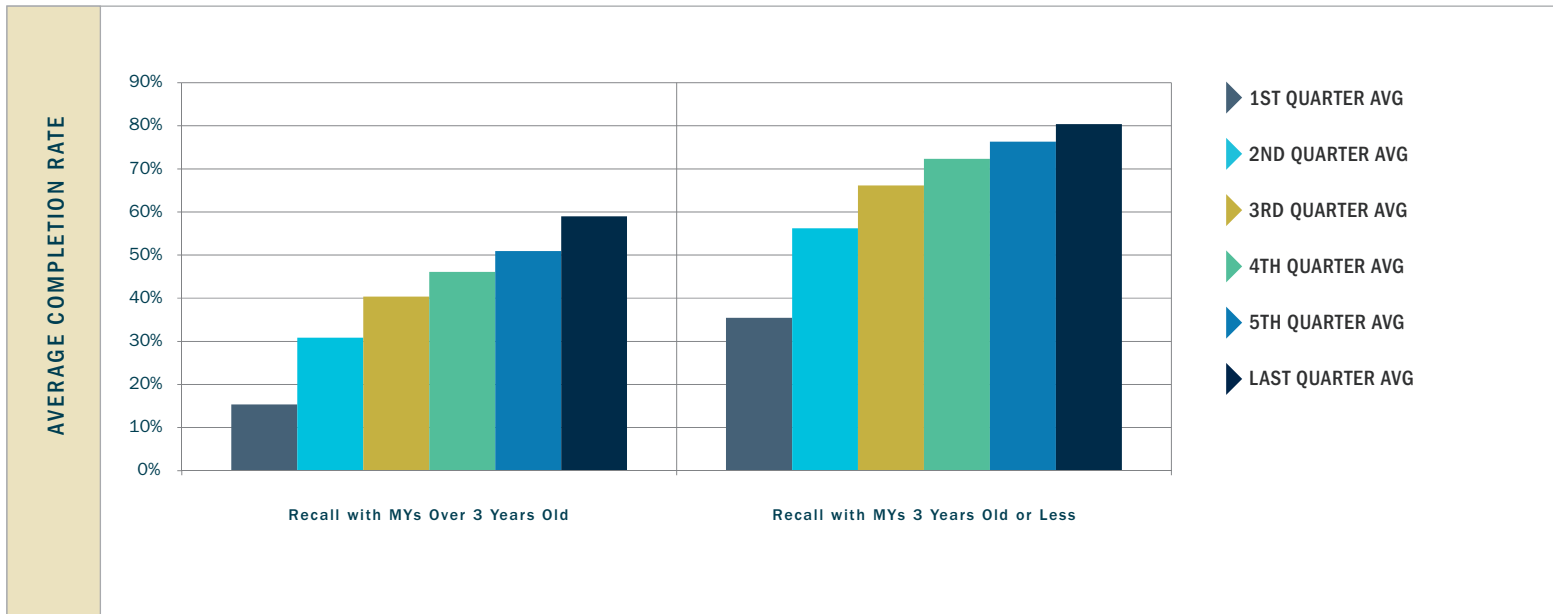
Percentage of power train recalls completed.

70%

Percentage of speed control recalls completed.

SUMMARY OF RECALL TRENDS

COMPLETION RATES FOR RECALLS WITH AT LEAST 6 QUARTERS OF QPR DATA (LAST 10 YEARS)
SUMMARY BY AGE OF VEHICLES RECALLED



Includes data for BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Toyota, Volkswagen, Volvo, Nissan, Mazda and Mitsubishi. Identified from dataset updated through December 2014.

Source: NHTSA Recall Data and Quarterly Progress Reports

3 Years

Vehicle age tipping point where the widest disparity of completion rates was found.

Two other factors that strongly influence recall completion rates are vehicle age and the size of the recall. Completion rates for recalls involving older vehicles are generally lower, often significantly. The widest disparity is between vehicles older than three years at the time of recall (59 percent completion rate) and newer than three years (80 percent). The likely reason for this difference is that many vehicle warranties (for a majority of components) last for three years.

In a comparison of vehicles older than five years/newer than five years, the gap widens. Ultimately, to enhance completion rates, more vehicle owners need to take their vehicles to certified dealerships to have the recall repairs completed. For vehicles outside of standard warranty, many owners are less likely to be regularly visiting dealerships. OEMs and dealers view increased completion rates as an opportunity as well—another touchpoint with customers to demonstrate a dedication to safety and customer service. In fact, some studies have indicated that owners of older cars are more likely to purchase a new car when returning to a dealership for a recall repair on their older vehicle.

Interestingly, completion rates for larger recalls (more than 100,000 units) are often approximately 5 percent to 10 percent lower than for smaller-sized recalls.

There are a variety of reasons for this, including that a limited recall is likely to be much more directed to vehicle owners who are or have been impacted by the issue, making them more likely to take their vehicles in for the repair. Larger recalls are much broader, and there is a greater chance that owners did not experience the defect and might not view a repair as a priority.

One significant challenge for automakers in 2015 will be to locate and follow up with owners of older-model vehicles that were subject to recall in 2014.



INSIGHTS INTO COMPONENT GROUPS THAT ARE AT HIGHEST RISK FOR RECALLS

Component recall risk management, an important strategic and financial planning assessment for OEMs and suppliers, can often be hampered by inconclusive, publicly available information and internal data that lacks an industry-wide view.

During the last two years, SRR has responded to this problem by developing a proprietary methodology that establishes powerful indicators about components most likely to be subject to future recalls, and the reasonable probability of recall for other components. SRR's methodology combines data from publicly available sources with its own industry expertise and experience to provide information that can help OEMs and suppliers make intelligent risk management and financial decisions.

SRR's predictive indicators include—but are not limited to—historical recall and component trends, EWRs and NHTSA investigation records. SRR's conclusions are also informed by current industry recall trends, recent news and information from NHTSA regarding consumer complaints, and other information informing the probability of elevated levels of recall. For any individual component, SRR is also able to incorporate company-specific information to develop a more refined understanding of the risks and likelihood of recall and related costs.

THE IMPORTANCE OF PREDICTIVE INDICATORS

Here is a summary of how SRR investigated each primary indicator, and the insights that can be found through the application of these methods:

1 | HISTORICAL RECALL TRENDS:

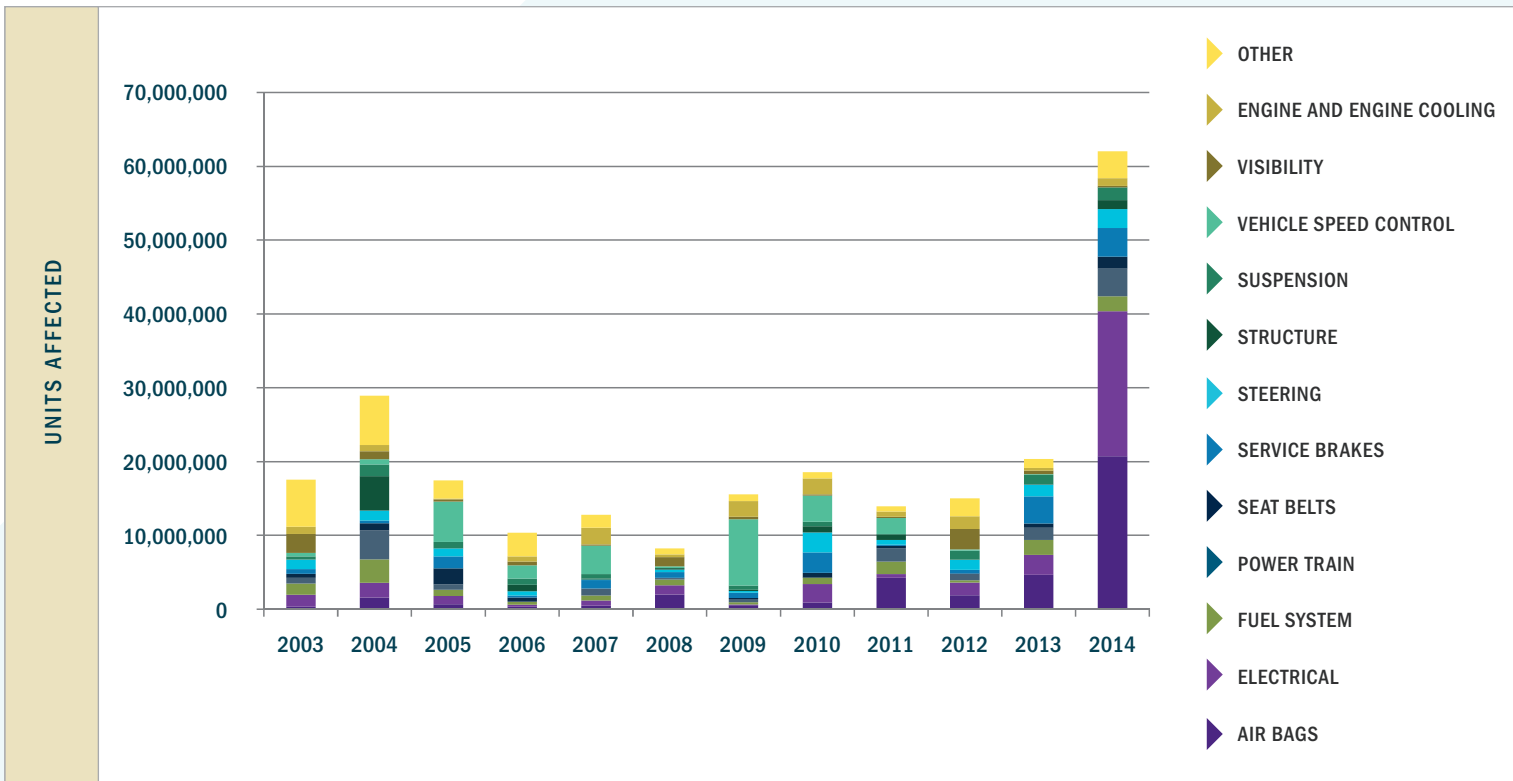
The frequency of recall activity on a particular component is an important sign of whether manufacturers or regulators may recall it in the future.

SRR developed industry-wide recall trend information by analyzing NHTSA recall information dating back to 1966. NHTSA data includes details such as manufacturer, model and model year, component and total units affected. SRR then summarized, scrubbed and analyzed the data to find trends for OEMs across various component groupings and timeframes. This analysis affords the greatest weight to recent trends and recent recalls, while being informed by longer-term trends and observations.

One example is the multitude of air bag-related recalls in the last few years, which seems to imply elevated risk for 2015 and beyond because of persistent supplier problems and increased regulator attention.

The historical trend research is summarized by data charts, such as this one that depicts 2014 recalls by component. As this chart indicates, more units were affected by air bag and electrical recalls in 2014 than in the prior 13 years combined, largely because of the massive GM and Takata incidences. It also shows that recalls across several other component groups and of all sizes played a major role in making 2014 a record year.

UNITS AFFECTED BY COMPONENT GROUPING AND YEAR



Includes Ford, GM, BMW, Chrysler, Honda, Hyundai, Mitsubishi, Mazda, Nissan, Toyota, Volkswagen, Volvo, Nissan, Mitsubishi, and Mazda. Data is through December 2014.

2 | EARLY WARNING REPORTS (EWRs):

Since 2002, the federal government has required OEMs to report quarterly EWRs that include:

- › Production information
- › Information on accidents involving death or injury
- › Aggregate data on property damage claims, consumer complaints, warranty claims and field reports
- › Copies of field reports involving specified vehicle components, a fire or a rollover

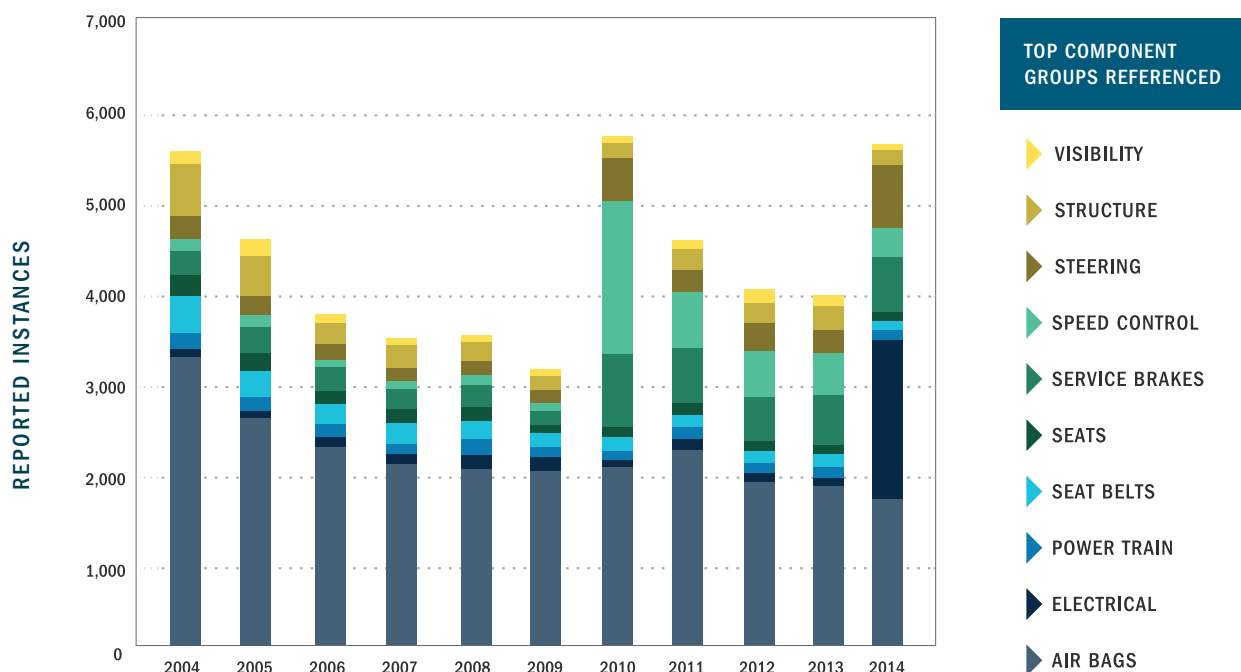
EWRs are important predictive indicators to consider. If there is a significant number of EWRs for a component in 2014, regulators may be more likely to open an investigation in 2015 that could result in a recall. EWR data provides early indicators from across the OEMs regarding accidents happening nationwide.

This data provides the opportunity for various analyses that inform the assessment of recall risk.

NHTSA confirmed the importance of EWRs in 2014 when it fined Honda a record \$70 million for underreporting more than 1,700 accidents that caused injury or death over the last 11 years. The EWRs that were originally reported by Honda added up to about 1,500 accidents, which was less than half of the actual total.

SRR compiled all EWR data from NHTSA dating back to 2003, focusing on EWR reports for accidents involving injury or death over the past 10 years. SRR then entered the information into a database and analyzed trends in EWR volume by component, makes/models, OEM and other criteria.

REPORTED INSTANCES OF INJURY AND/OR DEATH



Includes data for BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Toyota, Volkswagen, Volvo, Nissan, Mazda and Mitsubishi. Includes EWR data through Q3 2014.

“We’d rather have people being preemptive rather than waiting too long and making a mistake. You cannot save those lives after they’re gone.”

NHTSA Administrator Mark Rosekind

3 | NHTSA INVESTIGATIONS:

Investigation-focused data can reveal insights into future recalls. Once an investigation is opened, there is often a significant chance that the related component will be involved in a recall. Further, recalls resulting from NHTSA investigations often involve higher volumes of units than manufacturer-influenced recalls.

NHTSA’s investigations are influenced by multiple data points which are not made public, including certain elements of EWRs, consumer complaints and detailed information received from manufacturers. Once an investigation is open, it’s unclear what the regulators’ threshold will be for a recall. One death associated with a product failure might be enough.

SRR has closely studied the specific actions taken by regulators, such as how many investigations were opened, closed or remained open at the end of each year. SRR also tracked how many were converted to recalls. SRR found that some components have been much more likely to be recalled after an investigation than others. For example, greater than 70 percent of investigations involving structure-related issues led to recalls.

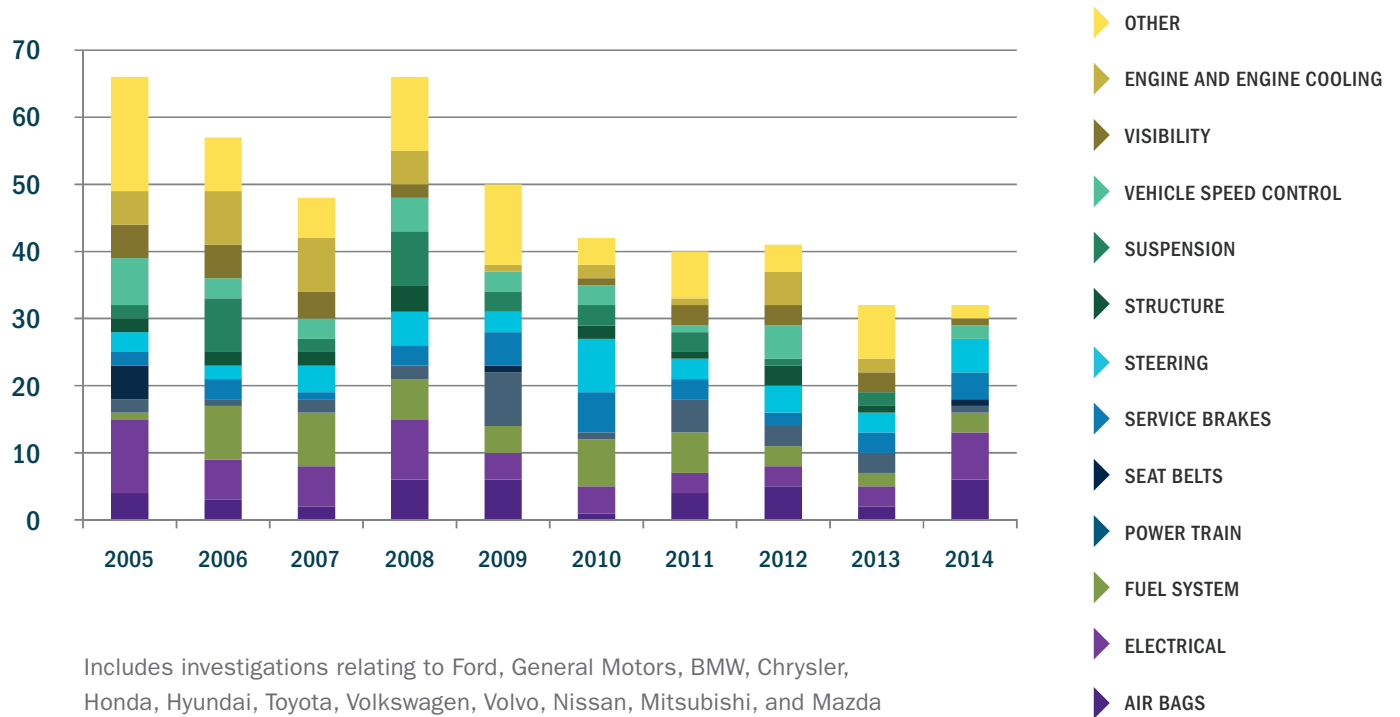
The following charts indicate NHTSA investigation data trends based on component group:

26

Number of current open investigations by the NHTSA as of December 31, 2014.

	5 Year % Leading to Recalls	Current Open Investigations
Structure	71.4%	0
Suspension	66.7%	0
Power Train	61.5%	1
Electrical	50.0%	2
Visibility	45.5%	1
Other	44.0%	1
Engine and Engine Cooling	40.0%	2
Air Bags	38.9%	5
Fuel System	33.3%	3
Steering	30.4%	6
Vehicle Speed Control	27.3%	2
Service Brakes	16.7%	3
Total	37.4%	26

SUMMARY OF INVESTIGATIONS OPENED BY YEAR AND COMPONENT GROUP LAST 10 YEARS (2005-2014)



4 | INDUSTRY EXPERTISE:

SRR's extensive expertise in automotive-related issues provides valuable insight into industry recall trends.

Components at elevated risk for recall. The following initial estimation of risk is based on SRR's insight, combined with publicly available data. It should be taken as a prelude to a deeper investigation that would involve multiple additional data points that are not publicly available, including the effectiveness of the supplier's internal quality controls, its manufacturing process and its use of new materials that had not been used previously in the component. These factors, and many others, could move a component from "low" to "elevated" risk category or vice versa.

Additionally, this report primarily focuses on recall data, not other product defect issues that fall short of a recall, such as technical service bulletins, extended warranty campaigns, or other responsive actions taken by OEMs. SRR also assesses the risk and costs of these additional forms of product-defect response for OEMs and suppliers.

In alphabetical order, the component groups SRR believes are at greatest risk of recalls in coming years, along with a summary of certain factors that contributed to these conclusions:

**AIR BAGS (ASSOCIATED COMPONENTS INCLUDE:
INFLATOR MODULE, SENSOR/CONTROL MODULE,
ON-OFF SWITCH ASSEMBLY)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Significant number of investigations opened recently, and significant number open at year-end
- › Relatively high percentage of investigations leading to recall
- › Significant component within EWR data (high instances of injury and death)

**ELECTRICAL (ASSOCIATED COMPONENTS INCLUDE:
IGNITION MODULE AND SWITCH, STARTER ASSEMBLY,
BATTERY, INSTRUMENT PANEL, VARIOUS WIRING)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Very high number of investigations opened recently, and several open at year-end
- › Relatively high percentage of investigations leading to recall historically
- › Significant recent uptick in reported instances of injury and death per EWR data

**FUEL SYSTEM (ASSOCIATED COMPONENTS INCLUDE:
FUEL INJECTION SYSTEM, FUEL TANK, FUEL PUMP,
HOSES, CARBURETOR SYSTEM)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Historically high recall counts in relation to investigations
- › Significant recent uptick in reported instances of injury and death per EWR data

**POWER TRAIN (ASSOCIATED COMPONENTS INCLUDE:
TRANSMISSION COMPONENTS, CLUTCH ASSEMBLY, AXLE
ASSEMBLY, DRIVELINE DIFFERENTIAL UNIT, DRIVESHAFT)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Steady historical occurrence of NHTSA investigation, and investigations open at year end
- › Very high percentage of investigations leading to recall historically

**SERVICE BRAKES (ASSOCIATED COMPONENTS INCLUDE:
ANTILOCK BRAKE SYSTEM, DISK COMPONENTS
(CALIPER, ROTOR, PADS), COMPRESSOR, HOSES/PIPING
AND FITTINGS, FOOT AND HAND CONTROLS)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Significant number of investigations open at year-end

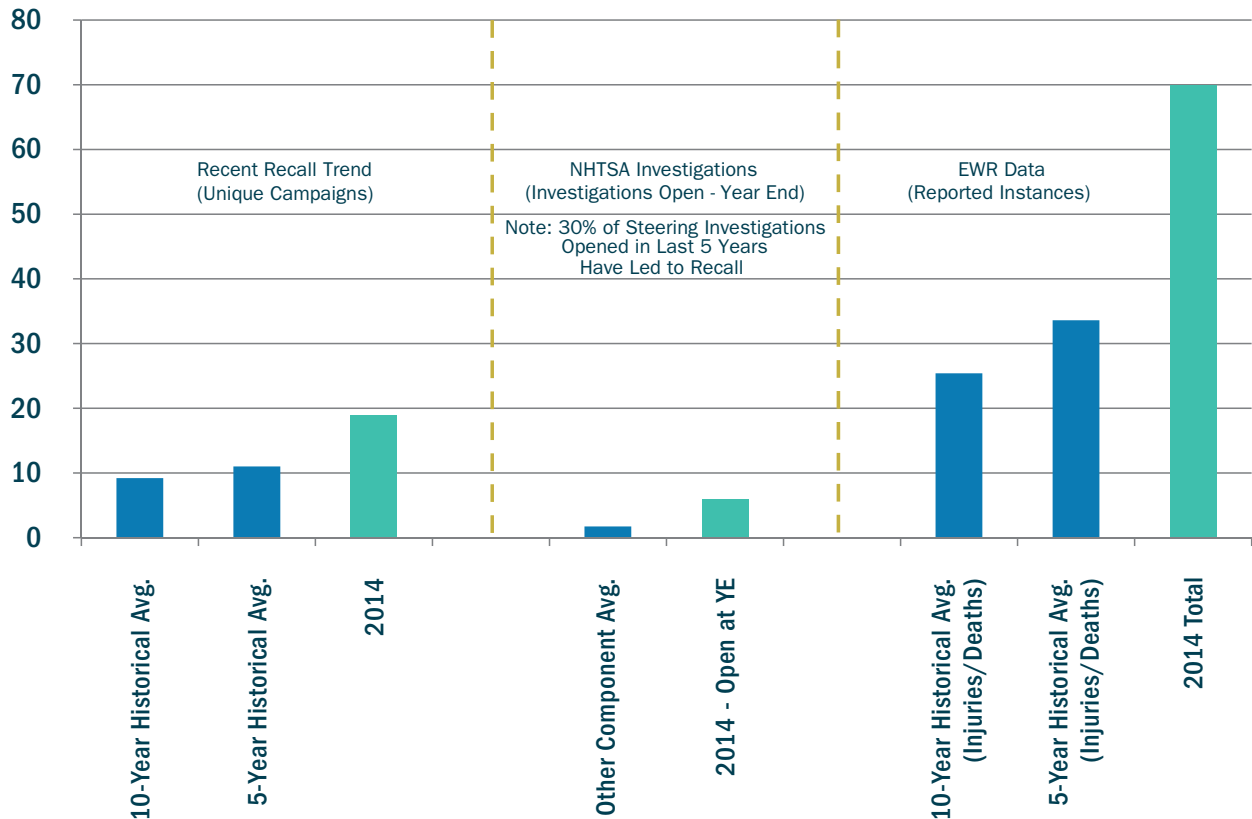
**STEERING (ASSOCIATED COMPONENTS INCLUDE:
COLUMN, POWER ASSIST SYSTEM, GEAR BOX, RACK
AND PINION)**

Reasons for increased risk:

- › High recent recall campaigns in relation to historical averages (recall trend up)
- › Significant number of investigations open at year-end (highest of any component)
- › Significant recent uptick in reported instances of injury and death per EWR data

SUMMARY OF CERTAIN INDIVIDUAL COMPONENT RECALL RISK FACTORS

COMPONENT GROUP: STEERING



The chart above is an example of how historical recall trends, EWR and NHTSA investigation data work together.

Although steering component recalls garner much less attention than others, EWRs through the third quarter of 2014 indicate 70 instances of accidents causing injury or death related to steering components. That's second only to air bags in that category over the same period and is twice as many incidents as the historical average. Further, there were 19 unique recall campaigns involving steering-related components in 2014, higher than the average of the previous five years (11).



HOW OEMS AND SUPPLIERS CAN ASSESS THE RISK OF RECALLS AND PLAN FOR THEM FINANCIALLY

For many years, automakers have employed a variety of formulas to calculate costs for anticipated warranty and recall claims. Yet OEMs and suppliers—except for a couple of recent examples—have resisted similar set-asides for future recall costs largely because of the relative rarity of financially significant incidents. As stated earlier, we expect that to change.

Because of increased pressure from federal officials and legislators, this new era of more consistent recalls and stiffer financial penalties is making OEMs and suppliers more attuned to the elevated risk and monetary impact of recalls. While not all companies will—or should—commit to a publicly disclosed formula to accrue funds for future recalls, many are expected to make recall considerations a greater part of their financial presentations.

This section includes an overview of additional recall risk factors, a look at the OEM/supplier financial relationship, and examples of accrual and business planning relative to recalls.

ELEVATED RISK FOR MORE FREQUENT, LARGER RECALLS

As stated previously, it is likely that both the number of recalls and completion rates will remain elevated in coming years. As OEMs and suppliers develop recall risk assessments and calculations, they must also consider factors such as technological advances, increased acknowledgment of defects in older vehicles and the possibility of larger global recalls.

TECHNOLOGICAL ADVANCES: Enabled by new technologies, the automotive industry is producing an astounding number of new vehicles and vehicle refreshes every year in response to changing consumer tastes.

These demands can put pressure on suppliers during a time when electronic integration and technological innovations—such as cars that parallel park without the driver touching the wheel—are being added. The integration of new technology brings new risks and the possibility of unanticipated failures.

Automakers are also using lighter-weight materials to help vehicles achieve better gas mileage. While these materials are rigorously tested by manufacturers, tests may not always account for extreme real-world situations such as exposure to severe heat, bitter cold and corrosive elements over long periods of time.

In addition, suppliers and OEMs are interacting more and more on the design and engineering of new components and assemblies using these new materials and technologies. This elevated level of collaboration and coordination also brings additional risk for the supplier with respect to their contributions during this process.

OLDER CARS: Parts made for OEMs several years ago can come back to haunt suppliers when automakers issue recalls for older cars.

11.4 Years

Average age of a vehicle on the road in 2013.

The age of the U.S. auto fleet is going up—the average age of a vehicle on the road was 11.4 years at the end of 2013—older-model vehicles may be more likely to be involved in accidents involving injuries or deaths and may have components that fail for reasons unexpected at the time of manufacture. It can

be challenging to test products for safe and reliable use during the first several years of ownership, when the car is covered by a manufacturer warranty; even more so after 5 years and over 100,000 miles. When cars manufactured with new technologies and using new materials are expected to be safe and reliable for consumers after 12 to 15 years, the possibility of recall or unexpected product defect may rise.

GLOBAL RISK: Though there are varied levels of international regulatory oversight for passenger vehicles, OEMs and suppliers should be alert to the possibility of major global recalls that involve multiple automakers and suppliers.

As more automakers adopt global platforms and assemblies, suppliers may become more financially exposed in the event of product failure. The Takata air bag recall is one example of a supplier whose defect had a major impact on several automakers and across the globe.

Automakers are required to notify NHTSA if they are involved in an international recall campaign for a vehicle substantially similar to one being sold in the U.S. But, for the most part, based on SRR's analysis of international campaign disclosures, regulators have not pursued recalls in response to campaigns initiated outside of this country. In many cases, the parts may have been manufactured in different plants or integrated into the assemblies in a different manner. However, as the data sets requested by regulators and provided by OEMs improve and increase, and as suppliers increasingly participate in global platforms, the risks associated with larger recalls increase.

IDENTIFICATION OF SUPPLIERS AND COST RECOVERY

In recent years, large suppliers have taken on more responsibility in the production of vehicles, including

stronger design/engineering collaboration with OEMs and the development of more master assemblies—such as full dashboard panels—that make for easier and faster assembly.

With that increased responsibility comes the likelihood of more shared risk with OEMs.

This increased exposure is evident in Section 573 Letters that OEMs are required to submit to NHTSA when there is a defect related to a motor vehicle safety issue or noncompliance with Federal Motor Vehicle Safety Standards.

The 573 Letters include:

- › **Manufacturer and chain of distribution information**
- › **Identification of recall population and size**
- › **Description of the defect or noncompliance and chronology of events**

- › **Remedy program and its schedule**
- › **Manufacturer of defective component**

SRR has examined all of the 573 Letters for every recall dating back to January 2000. SRR identified situations in which the supplier was named, matched it to the NHTSA recall database and created a supplier recall database. Through that new database, SRR analyzed:

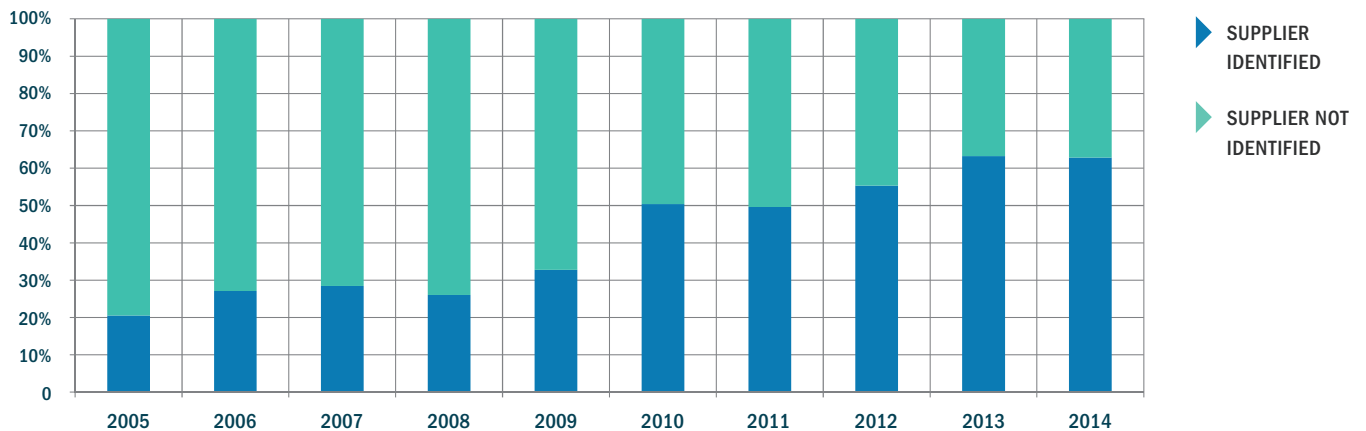
- › **Component groups for which suppliers are most often named**
- › **Recall trends by supplier involved**

SRR found that, in the last 10 years, there has been a significant increase in OEMs naming suppliers in the 573s. This chart shows that in 2005 suppliers were named for only 20 percent of recalls, which has increased dramatically to about 60 percent in the last two years.

SUMMARY OF RECALL TRENDS

RECALLS WITH IDENTIFIED SUPPLIERS - UNIQUE CAMPAIGNS

PERCENTAGE OF UNIQUE CAMPAIGNS



Includes data for BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Toyota, Volkswagen, Volvo, Nissan, Mazda and Mitsubishi. Identified from dataset updated through December 2014.

“If effectively this frequency of recalls becomes a norm, if everybody starts doing this, then I think you will see this cost being shifted to the consumer. It will transfer itself over onto the selling price of the vehicle.”

Fiat Chrysler Automobiles CEO Sergio Marchionne

It is important to note that when a supplier is named in a 573 Letter it does not necessarily mean the supplier is at fault. It simply indicates that the OEM has conducted an investigation and has initiated a recall—the actual fault-finding process has just started. This letter marks the end of one process and the beginning of another—cost recovery.

Cost recovery actions—when an OEM seeks to be financially compensated by the supplier for the costs related to recall of a faulty component—typically follow the 573 disclosure. In recent years, there has been an elevated effort by OEMs to seek cost recovery from suppliers, primarily because of the increased integration between the two parties and the enhanced responsibility of suppliers when there is a defect in a master assembly component.

In addition to the possible cost recovery negotiations with OEMs, major suppliers have to be diligent about their “downstream” relationships with smaller suppliers.

For example, when a Tier 1 supplier pays an OEM for its share of responsibility of a recall, it in turn often expects compensation from other suppliers (often Tier 2, Tier 3, etc.) that worked with it on the component. It is not always possible, however, for a smaller supplier to pay the Tier 1, as the smaller entity might not have the financial wherewithal to pay. This is one more reason financial planning around potential recalls is critical for Tier 1 suppliers.

RECALL FINANCES: ACCRUAL AND BUSINESS PLANNING

When GM disclosed that it was accruing funds in the third quarter of 2014 to pay for future recalls and Ford soon followed suit, it was a sign that OEMs realize they need to be more transparent with investors and others about the possibility of recall costs.

\$874M

Allocated catch-up accrual by GM in 3rd quarter of 2014 for future recalls.

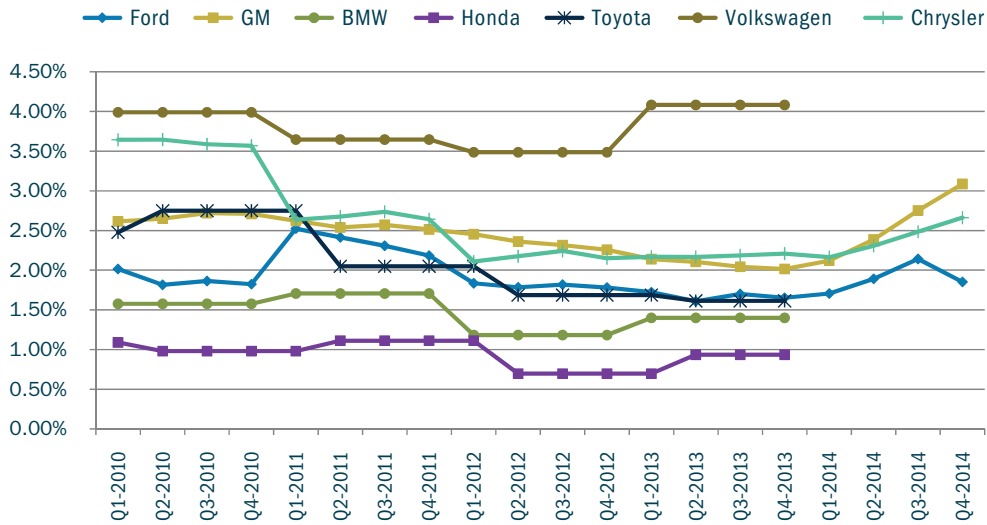
GM’s accrual disclosure is the most detailed observed in the industry, allocating \$874 million as a “catch-up accrual” for vehicles already sold. In the following quarters, GM will adjust the number based on the mix of vehicles on the road that might be subject to recall.

This is the first time an OEM has publicly disclosed a recall-specific accrual with this much clarity and detail.

This robust accrual disclosure is a proactive way to demonstrate that GM—which had approximately \$2.9 billion in recall-associated costs last year—is aware of the issue and is doing everything it can, not only to repair the vehicles but to be transparent about the financial ramifications.

Now that GM has shown that accruals for future recalls can be developed, this is just the beginning. There will be more such disclosures as investors demand similar information from other OEMs and possibly suppliers.

OEM QUARTERLY CLAIMS/REVENUE SUMMARY



Source: Warranty Week

RECALLS AND REVENUE

For OEMs, the financial impact of recalls comes primarily from dealerships working on the affected vehicles. The dealerships repair the vehicle, the automaker reimburses the dealership, and those expenses are reflected as the automaker's claims expense.

Historically, global warranty and recall claims for OEMs have amounted to approximately 1 to 3 percent of revenue. These claims have increased in recent years, causing a notable financial impact for manufacturers. For example, as the chart above indicates, GM's increased costs in these areas absorbed an extra one percent of revenue last year.

The question is whether OEMs are willing to accept lower profit margins for vehicles as the costs of recalls rise. Ultimately it is likely that automakers' accrual model will be similar to the method followed for warranties: OEMs will accrue an expense for the recall when they sell the vehicle, and also likely incorporate it into the retail price. This method would limit the financial damage of recalls for OEMs and make them acknowledge publicly that recalls are an ongoing cost of doing business.

Many OEMs and suppliers accrue for current, ongoing recalls because they can reasonably estimate the costs for an ongoing campaign. The next step is to conduct a risk and cost analysis to estimate the cost for recalls that have yet to begin.

RECALL RISK AND MONETIZATION ASSESSMENT

SRR utilizes a robust financial and predictive model to conduct risk and monetization assessments that assist OEMs and suppliers to determine whether their recall expenses are probable and reasonably estimable.

If a supplier manufactures low-risk parts—such as interior trim—that have experienced few, if any, recalls, accrual for future recalls may not be necessary.

However, suppliers of safety-related components such as air bags, seat belts, windshield wipers, steering systems and service brakes need to determine how they can financially plan for a long-term elevated level of risk. If, by the end of the assessment, the company cannot determine that the cost is reasonably estimable or probable, they may not need to accrue for financial statement planning purposes. However, they can apply those findings to their company's financial plan and strategic thinking.

A recall risk and monetization assessment will help the manufacturer quantify the potential risk scenarios of a component recall. Recalls affect more than just revenue. They can impact pricing, insurance, potential acquisition and divestiture and the product portfolio.

To start the assessment, SRR will meet with a cross-functional team. The makeup of the team is critical as there will be many different perspectives on risk from groups such as risk management, finance, insurance, legal, engineering and design.

The team would be responsible for helping assess risks on a component-by-component basis, because the risks are different for each.

Once the components are identified and the team members are selected, they will assess all prior warranty claims, recalls, expected warranty issues and a historical assessment of what went well or what went wrong with the component and the costs of those.

SRR will then apply an essential qualitative element to the assessment of risk through its institutional knowledge and expertise based on years of consultation in the automotive manufacturing sector. In addition, SRR will review its exclusive and comprehensive research to help the supplier gain an appreciation for the costs it is likely to incur on a risk-adjusted basis.

The ultimate goal is to create a more balanced financial position for the OEM or supplier in order to prepare for years of more frequent recall activity.



CONCLUSION

In 2009, following a global economic collapse the year before, the financial industry was the subject of intense scrutiny from regulators, legislators and media, and became the target for regulatory penalties, new reforms and investigative stories.

Currently, the automotive industry is in a similar situation in relation to recalls. It is evident that 2014 was a watershed year that will produce new legislation and intense regulatory examination for years to come.

OEMs and suppliers realize they cannot take recall risk management and financial planning for granted. With more frequent and potentially larger recalls lurking—either initiated by NHTSA or the OEMs themselves—it is essential for companies affiliated with the automotive sector to plan ahead.

For suppliers, the cost of a recall can be significantly more than the profits they earn in supplying the OEM, which could impair the financial viability of a company. This is a concern most often with larger recalls, when the financial costs could be in the hundreds of millions of dollars.

SRR is poised to share its unparalleled forecasting and planning expertise with OEMs and suppliers to help them prepare for this new era in recall risk and financial forecasting.

ABOUT SRR

SRR AUTOMOTIVE PRACTICE

SRR was founded in Detroit over 24 years ago, so our automotive roots run deep. The depth and breadth of our experience in the automotive industry, combined with unparalleled expertise and experience in Valuation & Financial Opinions, Investment Banking, and Dispute Advisory & Forensic Services results in a uniquely valuable collection of knowledge regarding industry practices,

internal reporting systems, common and uncommon documentation, industry trends and milestones and other information that is simply not known unless you live and breathe the automotive industry. SRR professionals have more automotive experience in these service areas than any other advisory firm, period.

CLIENTS

\$60MM supplier of noise reduction & vibration dampening products

\$160MM automotive camshaft manufacturer

\$10MM manufacturer of transmission components

\$500MM manufacturer of die cast engine & transmission components

\$10MM supplier of precision underhood stampings

\$25MM piston pin manufacturer

\$100MM supplier of exterior lighting systems

\$150MM supplier of stamped engine, transmission & chassis components

**UNPARALLELED INDUSTRY FOCUS,
EXPERIENCE, AND CAPABILITIES**

- › Extensive experience in the automotive industry includes providing Valuation & Financial Opinions, Investment Banking, and Dispute Advisory & Forensic Services to OEMs, suppliers, material providers, vendors, lenders and dealers worldwide.
- › Recognized nationally and internationally with respect to depth of automotive industry knowledge and expertise. As a result, SRR professionals maintain personal relationships with key industry participants and are involved in leadership roles in industry associations and organizations.
- › Hundreds of automotive engagements completed annually.
- › Broad based industry experience as well as niche segment experience such as stamping, plastics, metal forming, dealerships, and distressed companies.
- › Experience across nearly every vehicle segment, encompassing original equipment manufacturers all the way through the supply chain.
- › Experience in numerous significant transactions involving the valuation of automotive related assets throughout the U.S. and worldwide for various transaction advisory, financial reporting, tax, and other corporate related matters.
- › Assessed damages in patent infringement cases involving the varied technologies in the automotive industry such as airbags, steering components, visibility components and aftermarket components.
- › Recognized experts in the automotive industry providing expert testimony regarding valuation and damages in a wide variety of matters such as contract disputes and economic damages, shareholder disputes, forensic accounting and internal investigations, and antitrust investigations, as well as providing e-discovery and data hosting services in the context of litigation.
- › Involved in hundreds of engagements related to valuation of patents and other intellectual property for various financial reporting, tax, and other litigation-related matters.
- › Strategic senior level experience in private market financings including transactions, growth capital, and shareholder recapitalizations.
- › Extensive relationships with senior and mezzanine lenders and equity investors.
- › Approximately 350 professionals in twelve offices including Atlanta, Baltimore, Chicago, Cleveland, Dallas, Denver, Detroit, Houston, Los Angeles, New York, Tysons Corner, and Washington, D.C.

\$40MM supplier of stamped metal components

\$175MM exhaust system component supplier

\$15MM producer of screw machine parts & subassemblies

\$12MM manufacturer of plastic HVAC & fuel system components

\$11MM manufacturer of electronics & electromechanical controls

\$70MM manufacturer of aluminum wheels

\$50MM producer of internal electronic controls

\$160MM manufacturer of precision machined powertrain components

WARRANTY AND RECALL RISK ASSESSMENT SERVICES FOR AUTOMOTIVE OEMS AND SUPPLIERS:

WHAT WE DO:

- › Analyze warranty and recall data collection systems, warranty repair history, administrative processes and costs, recall risks and costs, alternate recall procedures, and other information
- › Analyze warranty and recall circumstances of many sizes – from large recalls affecting millions of vehicles to small recalls or extended warranty actions affecting several thousand vehicles
- › Analyses are used to assist clients in understanding the risk and economic costs of warranty service repair, recall campaigns and other actions for purposes of business negotiation, claim assessment, or settlement and trial testimony

HOW WE DO IT:

- › Expertise in understanding potential warranty and recall activities and the costs associated with each
- › Traditional and creative approaches employed in assessing risk from multiple perspectives, as appropriate
- › Wherever possible, our analyses make use of supplier and program-specific information to further refine and support our analysis
- › Warranty and recall risk is often nuanced, and not easily represented by a simple mathematical or actuarial calculations
- › We apply both quantitative and qualitative risk factors impacting warranty and recall risk
- › We identify likely warranty and recall scenarios and establish cost and risk parameters for each

CLIENTS

\$19MM supplier of bearing products

\$20MM manufacturer of seat hardware systems

\$11,800MM supplier of electrical systems & components

\$40MM supplier of rubber window seals

\$235MM body & suspension components supplier

\$1,000MM supplier of precision machined components

\$120MM supplier of cold headed fasteners

\$30MM supplier of vehicle body hardware & other components

About the Authors

NEIL STEINKAMP is a Managing Director at SRR. He has extensive experience providing a broad range of business and financial advice to corporate executives, risk managers, in-house counsel and trial lawyers. Steinkamp has provided consulting services and has been engaged as an expert in numerous matters involving automotive warranty and recall costs. His practice also includes consulting services for automotive OEMs, suppliers and their advisors regarding valuation, transactions and disputes. Mr. Steinkamp can be reached at +1.646.807.4229 or nsteinkamp@srr.com.

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\$40,000MM supplier
of complete automotive
subsystems

\$100MM supplier of interior &
exterior plastic trim products

\$40MM supplier of insert
molded plastic & metal
components

\$16MM supplier of connecting
rod machined components

\$1,000MM integrated
steel producer

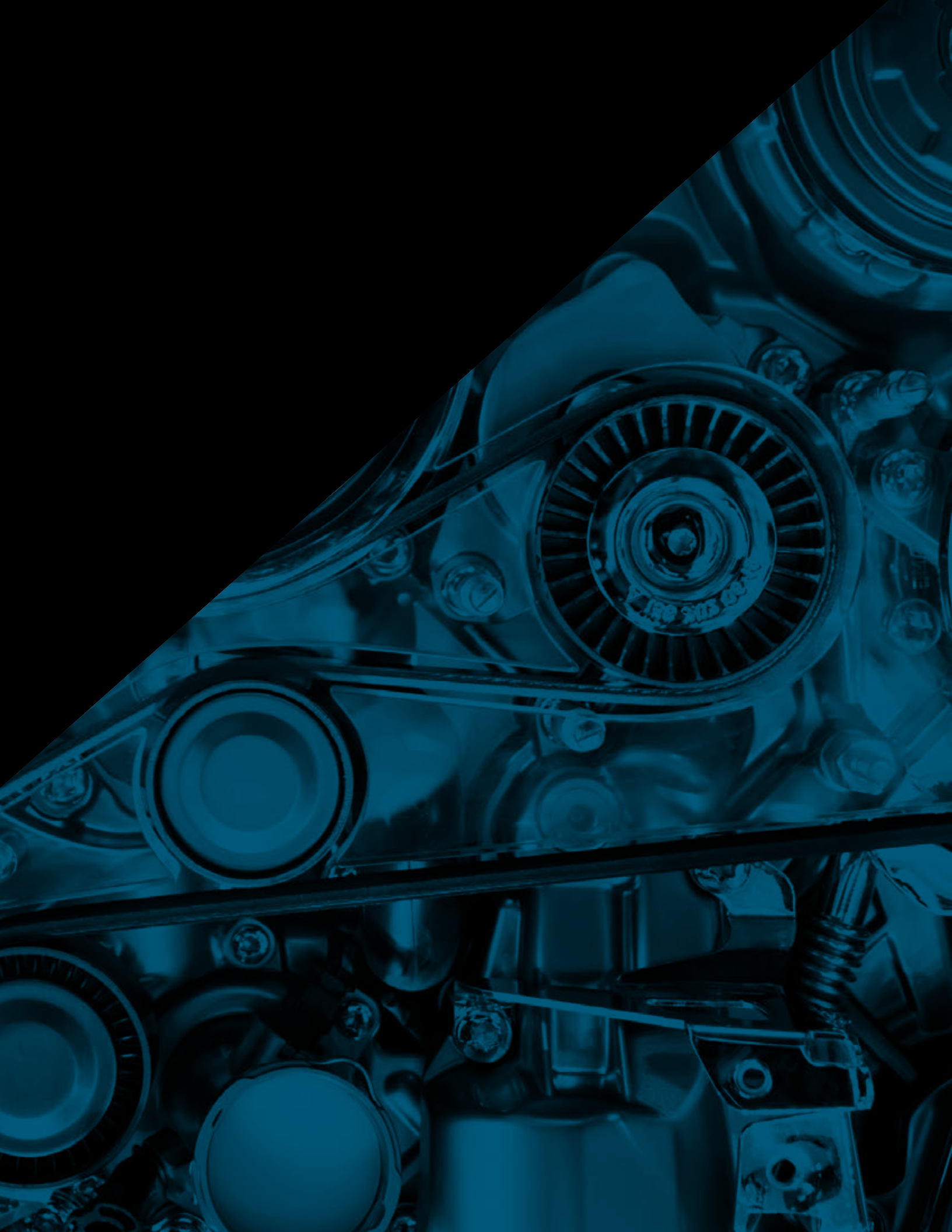
\$18MM manufacturer of
precision stamped air bag
components

\$11MM thermomolded
interior trim parts supplier

\$10MM manufacturer
of flywheels & related
machined components



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