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RCAR

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NEWSLETTER

NEWS FROM
RCAR INSURANCE
RESEARCH CENTRES

The Jiken Center

Assessment of EV Battery Damage

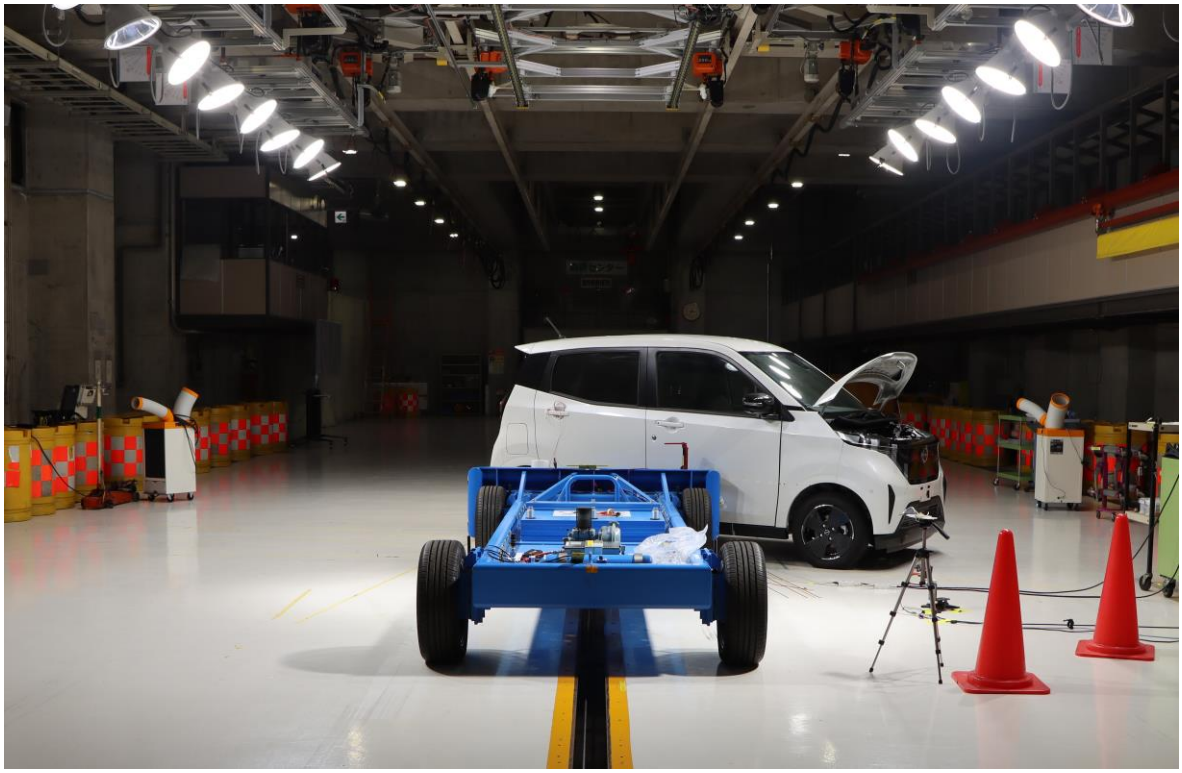
CESVI MÉXICO

New Technologies Laboratory

Generali jeniot

Driver Distraction Initiative

Chilometri di scelte



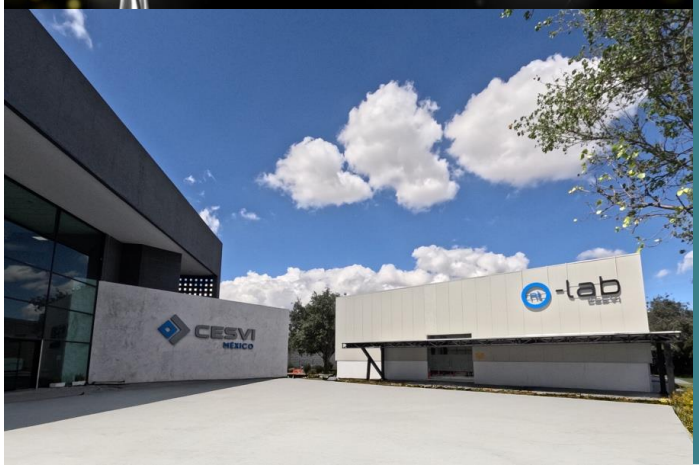
Assessment of EV Battery Damage Due to Collision Impacts

(The Jiken Center, Japan)

Dear RCAR members and readers,

I am very pleased to publish the RCAR Newsletter January 2026. Two of our members, CESVI México and KIDI/KART, report in their contributions to the current RCAR newsletter on new research facilities for batteries, electric vehicles, and new technologies. This illustrates the clear commitment to providing competent support to insurers and the automotive industry in dealing with new risks. The diverse articles on affordable, sustainable, and safe mobility by RCAR members testify to the same shared spirit.

For feedback or questions, please contact me at clauterwasser@rcar.org
Christoph Lauterwasser



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13th Allianz Motor Day: "Hands Off – The safety promise of autonomous driving"

The 13th Allianz Motor Day in October 2025 focused on autonomous driving and how our mobility is changing with the development of new systems in vehicles. Level 3 vehicles are already on European roads, while Level 4 pilot projects – vehicles that move completely autonomously within defined environments – are already in use in cities such as Hamburg, Munich, Oslo, and Shanghai. The world is on the cusp of a new era of mobility that will redefine the way people and societies move around. This progress raises profound questions about vehicle safety, liability in the event of accidents, the use of data stored in vehicles, and expanded access to mobility for people who have previously been excluded.

We discussed precisely these questions with the experts present at the Allianz Motor Day, where we also presented the AZT's research findings. In the run-up to the Motor Day, a meta-study summarizing the current state of research in the field of autonomous driving was conducted, and in addition, our own accident research on the safety effects of autonomous systems and a consumer survey in seven European countries were carried out. The most important findings include the following:

- Our analysis of parking and manoeuvering accidents revealed that for reversing accidents, the effect of autonomous emergency braking (AEB) systems is significant: for one analysed car manufacturer that made rear AEB standard in 2018 reverse-parking collisions decreased by almost two-thirds. For a second one that kept this system optional we saw a far smaller drop of around 30%. Models without the function show virtually no improvement.
- The results of the survey of over 8,000 people in seven European countries show broad confidence in safety improvements associated with autonomous driving, but also uncertainty about the maturity of the technology. On average, more than half of those surveyed (56 per cent) expect autonomous vehicles to offer a higher or at least equal level of safety compared to human-driven vehicles. At the same time, concerns remain: 69 per cent of respondents are worried about the reliability of the system in unexpected situations, and 72 per cent still consider the technology to be 'too new and untested'.

The results of the studies were presented to the press, and the following demands were formulated by Allianz:

1. EU-wide 'driving license' for automated vehicles to ensure uniform testing standards: Allianz calls for a European approval model for autonomous vehicles with uniform technical type approval (homologation) and testing procedures. These should specify the requirements that autonomous vehicles must meet and regulate the simulations and tests they must pass. This would enable cross-border use without repeated certification, simplify market access, increase safety, and accelerate innovation.

2. EU-wide uniform standards for access to accident- and safety-related vehicle data for insurers and regulatory authorities, with critical data remaining within European jurisdiction and treated as a strategic asset. The European Commission's proposal on the exchange of vehicle data under the EU Data Act (Regulation 2023/2854) provides an important basis for this. Allianz believes that use cases for data exchange should be evaluated for both benefits and costs. Sharing all available data across the board is not sensible given the considerable expense. Consumers should also be protected from indiscriminately passing on all their car data to third parties. For accident- and safety-related vehicle data, however, the advantages are clear. A framework developed jointly by insurers, manufacturers, and regulatory authorities would improve road safety, strengthen public confidence, and accelerate the acceptance of autonomous mobility.
3. Joint European database of critical traffic situations for autonomous vehicles. This database must record all accidents in autonomous mode and near misses where accidents were narrowly avoided. The regulatory authorities must define the criteria for this.

Panel discussion (from left to right): Kathrin-Cécile Ziegler (moderator), Verena Bentele (12-time Paralympic champion), Dr. Christian Sahr (Managing Director, AZT), Susan Sahl Poynor (Global Head of Mobility, Allianz Partners), Sascha Meyer (CEO, MOIA GmbH), and Maria Cristina Galassi (via online stream, European Commission DG)

In addition to the speeches and discussions, we had autonomous solutions for live demonstrations on site. For example, we had INYO, which offers an autonomous shuttle for the last mile, and MOIA, which offers ride pooling as a supplement to public transport. There was also iVentim with its offer for teleoperated driving and Momenta, which focuses on ride hailing with autonomous vehicles.

More information about the event can be found on a dedicated Motor Day landing page: *https://www.allianz.com/en/press/topics/motor-day-2025.html*

Harmonized OEM recommendations for towing accidented electric vehicles - New guidelines published following AZT initiative

The AZT informed about the issue of excessive measures and costs in towing battery-electric vehicles (BEVs) at the RCAR annual conferences in 2024 and 2025. An analysis of towing invoices for electric cars that stood out in the claims process from 2023 showed clear indications of inflated costs. Allianz was charged an average of €4,861 by members of a specific towing association, while the average of all other invoices was €2,442, which is half. In the most expensive cases, €20,000 was claimed solely for towing measures.

The review of data for 2025 revealed that towing electric vehicles costs almost twice as much on average compared to conventional vehicles. To verify these findings, AZT conducted an analysis of claims data based on comprehensive collision coverage from 2024 involving battery-electric vehicles (BEVs). A total of 84 claims with towing operations were analyzed, of which 81 were evaluable. Extreme differences in the handling of electric vehicles were noted: In two cases, a "battery expert" was employed, with average costs amounting to €13,984. In one of these cases, €19,217 was claimed due to an alleged critical condition of the high-voltage battery, although no technical reason was actually evident.

Three towing companies were identified as members of the aforementioned association, with average costs of €5,730. Other companies charged an average of €1,093, with a median of €488, indicating a wide range of costs.

Allianz claims experience unveiled cases where decisions were made more out of fear, but it also became evident that there was a lack of information about the applicable legal frameworks, particularly with incorrect interpretations of dangerous goods transport regulations ADR.

To close the gap in information, the VDA launched a "Towing" project group in September 2024, in which AZT played an initiating role. The document developed by this group provides recommendations for the safe handling of accident-damaged electric vehicles, addressing knowledge gaps in a generic, non-brand-specific manner based on regulations from all involved groups, especially considering the German Statutory Accident Insurance DGUV and the ADR. The document is available for download on the VDA website; an English version is currently being prepared.

Overcautious quarantine storage of BEV after collision with guiding rail

Participation in the VoltIA Project

Centro Zaragoza is participating in the VoltIA-EV project, an R&D initiative focused on the development of embedded artificial intelligence solutions in chargers to accurately determine the State of Health (SoH) of batteries during the charging process of electric vehicles and unmanned ground vehicles (UGVs).

The project, led by the Aragon Automotive and Mobility Cluster (CAAR), involves collaboration with Fundación CIRCE, Indubond Technologies, Mecanus Innovación, and the Catalonia Automotive Industry Cluster (CIAC).

VoltIA is committed to an innovative approach based on partial charging cycles and Transformer-type neural network models, bringing advanced research closer to real-world vehicle applications. This initiative, funded by the Spanish Ministry of Industry and Tourism, reinforces Centro Zaragoza's commitment to innovation and to safe and efficient electric mobility.

Fig. 1. Project layout with participants

UNESPA Study on Electric Vehicles in collaboration with Centro Zaragoza

The insured fleet of electric and hybrid passenger cars in Spain grew by 21.3% in 2024, reaching a total of 1,240,406 vehicles, according to the report published by UNESPA (Spanish Association of Insurance and Reinsurance Companies) as part of its outreach initiative “Estamos Seguros”.

The analysis was based on data from the FIVA file, a database managed by TIREA with technical support from Centro Zaragoza, which contains information on all vehicles with valid insurance coverage in Spain. This collaboration makes it possible to obtain an up-to-date snapshot of the insured vehicle fleet in terms of powertrain type and geographic distribution.

The study highlights a sustained shift in the powertrain mix of the insured automotive fleet, with the gradual adoption of less polluting technologies. By the end of 2024, electric and hybrid passenger cars accounted for 4.79% of all insured passenger vehicles in the country, compared with 4.01% in 2023.

Fig. 1. Electric vehicle

Fig. 2. UNESPA study layout

First Eco-Sustainable Workshop Certified by CESVI ARGENTINA

As part of the global environmental problem caused by climate change, we believe that raising awareness about sustainability is not an option, but a responsibility. To this end, CESVI ARGENTINA has developed a programme for Eco-Sustainable workshops.

The company is currently working actively with workshops to reduce environmental impact and improve efficiency in the use of resources, using a measurement tool with a corresponding set of recommendations. This involves the implementation of a Sustainability Index and the calculation of the Carbon Footprint. This tool allows us to measure, improve and recognize each workshop's commitment to the community. The data obtained is used to establish a category of eco-sustainable workshops, according to their commitment to the environment.

JR MILIOTTI workshop – Eco sustainable

Sustainability Index

This value includes four fundamental pillars:

a) Repairability: Favour repair over replacement of parts to avoid waste, reduce energy consumption and reduce emissions.

b) Green technology: incorporate environmentally friendly equipment and materials

c) Energy saving: use alternative energies or systems that reduce energy consumption

d) Waste sorting: separate and manage hazardous and non-hazardous waste in a responsible way

Carbon footprint calculation

The carbon footprint is a set of emissions of greenhouse gases produced directly or indirectly by individuals, organisations or products. This indicator serves to identify the behaviours or actions that are contributing to emissions, how we can improve them and make more efficient use of resources.

Classification of sustainable workshops

Workshops that adopt responsible practices not only reduce their environmental impact, but also align themselves with regulatory requirements and customer expectations. To measure this, we have classified workshops according to their level of compliance with environmental commitments.

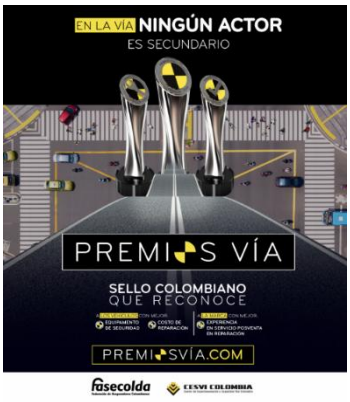
First Eco-Sustainable Workshop

JR Miliotti, located in Las Heras, Mendoza Province, was the first to be certified by CESVI ARGENTINA after completing the required assessment and meeting the necessary requirements to become an Eco-Sustainable Workshop.

This initiative reflects the commitment of CESVI ARGENTINA and workshops that work in a sustainable way, optimizing resources and collaborating with the environment.

VIA Awards: A Decade as a Benchmark for Safety, Repairability, and Sustainable Mobility in Colombia

Road safety continues to be one of the main challenges for sustainable mobility in Latin America. In Colombia, traffic-related accidents not only affect public health, but also the economic sustainability of households, companies, and the insurance system. In this context, having access to technical, objective, and reliable information about the vehicles circulating in the market becomes a key prevention tool. With this purpose, the VIA Awards were created—an initiative developed by CESVI Colombia (Colombian Center for Experimentation and Road Safety) and Fasecolda (Federation of Colombian Insurers), which for more than a decade has guided consumers and raised the standards of the Colombian vehicle fleet.



¿What Are the VIA Awards?

The VIA Awards are an annual recognition program created in 2014 by Fasecolda, the association representing insurers in Colombia, and CESVI Colombia, a center specialized in research, vehicle repair, and road safety. Their objective is to technically and independently evaluate new vehicles marketed in the country, identifying those that offer the best conditions in terms of safety, repairability, and after-sales service.

Unlike other automotive awards, the VIA Awards do not assess design, power, or commercial performance. Their focus is on variables that directly impact occupant protection, repair quality after an accident, and spare parts costs as key factors for consideration.

Purpose and Value for the User

The core purpose of the VIA Awards is to protect road users by providing clear and accessible information based on technical criteria. This initiative promotes informed and responsible purchasing decisions, while encouraging manufacturers and importers to improve safety equipment starting from base versions.

At the same time, the awards help strengthen a culture of prevention aligned with national road safety goals and the needs of the insurance sector, which finds this information to be a key input for risk management.

Evaluation Methodology

The VIA Awards methodology is developed by CESVI Colombia and Fasecolda and is based on the analysis of insured new vehicles over a defined period. Models are grouped by segment and price range, enabling fair comparisons under similar market conditions. The evaluation is structured around three fundamental pillars, reflecting the full vehicle life cycle:

Safety Equipment

Assesses the active and passive safety systems included as standard equipment, such as airbags, ABS brakes, seatbelts, head restraints, and, in more recent editions, advanced driver assistance technologies.

Repair Costs

Evaluates the ease and cost of restoring a vehicle to its original condition after an accident, promoting safe repairs, the use of original spare parts, and technically proper procedures.

After-Sales Service

Measures the user experience within authorized repair networks, considering technical quality, repair or workshop dwell times, and overall customer satisfaction levels throughout the repair process.

VIA Awards Categories

Based on these pillars, the VIA Awards recognize vehicles and brands that stand out in categories such as best safety equipment, best repair costs, and best after-sales service experience. As the market has evolved, new categories have been introduced, including sustainable mobility, as well as recognition for motorcycle safety and cities that have achieved significant reductions in accidents and fatalities—thus expanding the scope of the program.

Figure 1. Awards and trophies

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Technical Standards and Regulatory Approach

Since the first edition of the awards in 2014, the VIA Awards have helped establish a safety baseline in Colombia, supporting the implementation of Ministry of Transport Resolution 3752 of 2015. This regulation mandates the inclusion of front airbags, ABS braking systems, seatbelts, and head restraints in all seating positions for light vehicles and passenger transport vehicles with up to 10 seats. In this way, the VIA Awards act as a practical mechanism for adopting local safety regulations and supporting mandatory compliance for vehicles sold in the country.

Historical Winners: A Consolidated Overview

Over the years, the VIA Awards have recognized numerous brands and models that have set benchmarks in safety and repairability. Among the most notable historical winners are Mazda, one of the most awarded brands; Nissan, a recurring leader in after-sales service and repair cost categories; and Renault, with a consistent presence in best repair cost recognitions.

In more recent editions, Toyota has shown sustained growth, standing out for reliability and sustainable mobility, while BYD has been recognized as an emerging benchmark in vehicle electrification.

Evolution and Trends

The evolution of the VIA Awards reflects changes in the Colombian automotive market. The implementation of increasingly robust evaluation models has encouraged brands and manufacturers to offer better-equipped vehicles and improved repair processes, ensuring quality repairs, optimized spare parts costs, and enhanced customer experience following collision events.

Impact on the Insurance Sector and RCAR

For the insurance sector, the VIA Awards represent a strategic source of technical information that helps identify lower-risk vehicles, analyze repair cost trends, and reinforce prevention as a central pillar of insurance.

Conclusion

The VIA Awards, developed by CESVI Colombia and Fasecolda, have become a key tool for improving road safety in Colombia. By combining technical rigor, a preventive approach, and strong user orientation, these awards help reduce risks, raise industry standards, and, above all, protect lives on the road.

“Safer vehicles, safer passengers, more responsible brands.”

Figure 2. Brand recall and slogan

For more information, visit:

https://www.premiosvia.com/

CESVI MÉXICO UNVEILS NEW TECHNOLOGIES LABORATORY

Toluca Facility Expands to Tackle the EV Repairability Challenge

On 14 October, CESVI MÉXICO officially inaugurated its **New Technologies Laboratory**, an extension of its main facilities in the industrial city of Toluca. The primary objective of this new centre is to conduct rigorous research into the repairability of the industry's most advanced automotive propulsion systems.

Spanning over 600 square metres, the building is fully equipped with specialised lifting ramps, research bays, practical workshop areas, a training classroom, and a dedicated warehouse.

A Growing Market for Electrification

According to the EvolvX report by Latam Mobility, the Mexican market is projected to reach sales of **130,500 hybrid and electric vehicles (EVs)** by 2025. This represents a fivefold increase in sales compared to the period between 2020 and 2024.

Augusto Bagase Rejon, CESVI MÉXICO's CEO, noted that this surge in the electrified fleet is driven by better-informed consumers who now trust the technology. However, this growth presents significant challenges:

- **For Insurers**: Developing accurate risk classification and coverage models.
- **For Repair Centres**: The urgent need to upskill technicians and modernise specialised tooling.
- **Safety Protocols**: Ensuring effective de-energisation to prevent high-voltage electrical discharges during bodywork and paint operations.

The Three-Pillar Strategy

The Laboratory's operations are built upon three strategic pillars designed to provide market certainty:

1. **High-Level Training**: Professionalising diagnostic and dismantling processes under extreme safety standards, including the use of next-generation Personal Protective Equipment (PPE).

2. **Market Research**: Analysing the viability of the Chinese vehicle fleet currently circulating in Mexico to determine which components are suitable for a "second life".

3. **Repairability and Sustainability**: Extending the life cycle of lithium batteries to prevent them from becoming hazardous waste and to promote a genuine circular economy.

   Eduardo Salinas, Chairman of the Board of CESVI MÉXICO, stated that this facility will allow the insurance sector to produce better-prepared adjusters and claims assessors, keeping them at the forefront of technological advancement.

PREDICTIVE MODELLING FOR CRASH TEST INJURIES

Correlating Vehicular Deceleration with AIS Scale Severity

To address a technical void in the Mexican insurance sector, CESVI MÉXICO has developed a predictive model that correlates vehicle deceleration during impacts with the likelihood of occupant injury.

Methodology and Findings

Between December 2024 and August 2025, the research team conducted a series of instrumented crash tests using a fleet of popular models, including the **Mazda 2, VW Jetta, Suzuki Ignis, and Toyota Prius C**. High-precision accelerometers were used to measure **G-forces** in three critical areas:

- **Neck**: To evaluate susceptibility to whiplash.
- **Thorax**: To measure compression and biomechanical stress.
- **Lower Extremities**: To analyse fracture risks due to inertia or cabin intrusion.

The study challenged common perceptions of passive safety by revealing that **rear-end collisions** generate significantly higher biomechanical loads on the torso and lower limbs compared to frontal impacts. For instance, the Suzuki Ignis showed a **79.81%** risk of moderate injury (AIS 2) in the lower limbs during frontal tests, while rear impacts saw that risk rise to **82.86%**.

Strategic Applications

This scientific model provides insurers with objective evidence for:

- **Fraud Detection**: Identifying technical inconsistencies in injury claims.
- **Risk Underwriting**: Creating safety ratings by vehicle model for fairer premium pricing.
- **Legal Defence**: Serving as expert technical evidence in litigation.

Looking ahead, CESVI is currently developing its own **proprietary instrumented dummy** and has established an alliance with the Tecnológico de Monterrey's Faculty of Medicine for clinical validation.

ADVANCED DRIVER TRAINING: THE DHL PARTNERSHIP

Preventive Strategies Reducing Direct Liability Accidents by 25%

Throughout 2025, CESVI MÉXICO served as the primary training partner for **DHL**, instructing nearly **2,000 drivers** nationwide in preventive driving techniques.

The programme focused on three core principles: **Vision, Anticipation, and Space**.

The training included:

- **Practical Skills**: Vehicle dimensioning, emergency braking, and on-road habit assessment.
- **Digital Evaluation**: Personalised feedback and results tracked via a digital platform.
- **The DHL Rodeo**: A high-profile competition to reward the most skilled truck and motorcycle operators. A standout highlight of the 2025 Rodeo was the performance of Virgina, a delivery rider from the state of Veracruz, who secured first place both in her specific category and the general classification.

The impact of this investment has been significant. Companies implementing these advanced techniques have seen a reduction in direct liability claims of up to **25%**, alongside increased operational efficiency by avoiding losses related to cargo, vehicles, and third-party property.

IV Iberia Aftersales Conference 2026

On September 14 and 15, the 4th edition of the **Iberia Aftersales Conference 2026** will take place, previously known as *Ibis Iberia*. The three previous editions established it as an essential event for the automotive aftersales sector in Spain and Portugal, bringing together more than 500 attendees. In 2026, it will once again be held in Ávila, gathering insurers, manufacturers, workshops, distributors, and industry experts who will discuss the sector's strategic priorities. The program will include conferences focused on key medium-term challenges and opportunities: profitability, new business models, fleets, used vehicles, spare parts, new technologies, among others.

Iberia Aftersales also stands out for its highly specialized networking, facilitating direct contact with leading figures in the aftersales sector.

In its 2025 edition, the conference addressed six strategic pillars: profitability, operational efficiency, sustainability, artificial intelligence, the used-vehicle market, and spare-parts supply. The program analyzed the evolution of the ecosystem made up of insurers, workshops, and parts suppliers, as well as the main market trends in Spain and Portugal.

Sustainability emerged as a key competitiveness factor, especially regarding green spare parts, energy efficiency, and new sustainable operational processes. Artificial intelligence was another central theme of the discussion, highlighting its impact on repair processes and claims management. Likewise, the growing relevance of the used-vehicle segment received significant attention throughout the presentations.

The event also reinforced the importance of networking as a catalyst for new business opportunities and strategic alliances—an element that will once again play a leading role in the fourth edition.

International Traffic Accident Investigation Congress

The **2025 International Traffic Accident Investigation Congress**, organised by Cesvimap in collaboration with EVU Spain, brought together in Ávila (Spain) more than 250 experts from nine countries, including investigators, forensic analysts, law-enforcement agencies, legal specialists, insurers and industry representatives, consolidating its status as a benchmark event in the investigation and reconstruction of road traffic collisions.

Over the course of three days, the congress combined live outdoor and indoor crash tests carried out at Cesvimap's facilities—whose results were presented to the delegates on the final day of the event—with advanced biomechanical analysis, legal studies and technological demonstrations, incorporating tools such as digital twins, numerical simulations, artificial intelligence, connected-vehicle telematics, LIDAR systems and drones, all of which enhance the objectivity and accuracy of reconstruction work.

The presentations addressed key topics including the importance of data in accident investigation, EDR validation, the analysis of collisions involving motorcycles and bicycles, forensic uncertainty, and the emerging challenges of new mobility. The congress also underscored the need for interdisciplinary collaboration and continuous professional development in order to improve the technical robustness of reports, strengthen road-safety practices, and advance methodologies that enable increasingly precise and effective accident reconstruction.

Cesvimap presents the Sustainable Aftersales White Paper

Before an audience of numerous companies, experts and stakeholders, Cesvimap presented the *Sustainable Aftersales White Paper*, a strategic publication that provides a solid roadmap with innovations, proposals and pathways for transforming the aftersales in line with the demands of public administrations and customers, moving towards a more responsible and efficient model. Aligned with current environmental requirements, it integrates Cesvimap's technical expertise and is enriched by contributions from Mapfre as well as workshop associations and other sector organisations. Its value lies in a comprehensive approach that covers the entire value chain, addressing smart mobility, new propulsion systems, new and more efficient workshop processes, circular-economy principles and the second life of components, thus promoting a holistic vision of sustainability that goes beyond mere regulatory compliance.

The document highlights the importance of digitalisation, artificial intelligence, energy efficiency and process optimisation—key elements for increasing workshop competitiveness in a context of growing technological complexity. It also emphasises the priority of repair over replacement, the use of green parts, and the transformative role of initiatives such as CESVIrecambios. Ultimately, Cesvimap's White Paper provides a rigorous and practical framework that enables the sector to anticipate emerging trends, improve technical and environmental performance, and strengthen its contribution to a modern, sustainable and highly professionalised aftermarket

CIRI Releases New Research Results on Automotive Parts-to-Vehicle Price Ratio

Automotive Parts-to-Vehicle Price Ratio is a key actuarial indicator for motor insurance risk pricing and an important reference for automakers in optimizing aftersales maintenance costs and protecting consumers' long-term vehicle ownership rights. This research safeguard consumer interests and promotes deeper integration and high-quality development between the insurance and automotive industries.

On December 31, 2025, CIRI released the 19th and 20th batch of research on the Automotive Parts-to-Vehicle Price Ratio, based on data collected on December 31, 2024, and June 30, 2025, respectively. The published data cover representative internal combustion engine (ICE) vehicles and new energy vehicles (NEV) in the Chinese market, including the Parts-to-Vehicle Ratio 100 Index, Maintenance Burden 100 Index, Single-Part Ratios, and battery-related indicators for NEVs.

For ICEs, both Parts-to-Vehicle Ratio 100 Index and Maintenance Burden 100 Index increased in the 20th batch. The Parts-to-Vehicle Ratio 100 Index rose to 391.07%, up 0.51% from the previous batch, mainly driven by 10 newly added models with an average Parts-to-Vehicle ratio of 545.11%. Meanwhile, the Maintenance Burden 100 Index reached 20.86, up 0.47%, reflecting higher repair costs for insurance companies and consumers in the traditional ICE market. Among 18 commonly used vulnerable parts of ICEs, 11 recorded increases in average Single-Part Ratios. Rear-view mirror assemblies showed the largest rise. High-claim components also saw modest increases: the average Single-Part Ratio of front headlights reached 3.20%, rear bumpers 1.31%, and engine hoods 2.47%. The exterior lighting Parts-to-Vehicle ratio rose to 10.35%, highlighting increasing costs in appearance-related components.

NEVs showed a more pronounced growing trend. The Parts-to-Vehicle Ratio 100 Index climbed to 312.24%, up 1.07%, largely due to 22 newly included models. The Maintenance Burden 100 Index rose to 27.66, an increase of 2.03%, indicating a notable rise in aftersales repair burdens and insurance compensation pressure for NEV consumers. Of the 18 vulnerable parts for NEVs, 16 showed clear increase in average Single-Part Ratios, with taillights showing the highest growth. For high-claim components, the average Single-Part Ratio of front headlights reached 2.43%, front bumpers 1.09%, and trunk lids 2.32%. The exterior lighting Parts-to-Vehicle ratio rose significantly to 9.02%, reflecting rapidly increasing costs in this category.

Power batteries remain the most critical and costly component of battery electric vehicles (BEV). In the 20th batch, among 70 BEVs, the average battery Single-Part Ratio declined slightly to 49.59%, continuing the downward trend in the proportion of battery cost to vehicle price. Ternary lithium batteries accounted for a higher average ratio (54.25%), while lithium iron phosphate batteries were lower (47.89%). Meanwhile, the average unit energy price of power batteries fell by 2.23% to RMB 1,538.83 per kWh, indicating improved cost-effectiveness.

CIRI will continue publishing research on the Automotive Parts-to-Vehicle Price Ratio to enhance transparency in the automotive aftersales market and regulate parts pricing. These results will support consumers in vehicle selection and usage, while providing data for insurance premium setting, vehicle risk rating, and underwriting policy optimization.

CIRI Publishes 2025 First-Round China Insurance Automotive Safety Index (C-IASI)

The China Insurance Automotive Safety Index (C-IASI), adhering to the principles of professionalism, impartiality, scientific rigor, independence and public welfare, conducted evaluations on three vehicle models in accordance with the C-IASI 2023 Protocol (revised in 2024). A seven-member expert review panel was formed through random selection from the fields of academia, insurance, and the automotive industry to assess the test data and evaluation results. The results were officially released in Beijing on November 28, 2025.

The three evaluated models are the Changan Deepal S09, Toyota bZ5, and Honda P7. All three are New Energy SUV.

The results show that under the Damageability and Repair Economy sub-index, one model received an Acceptable (A) rating, one received a Marginal (M) rating, and one received a Poor (P) rating. In terms of structural damageability, Toyota bZ5, achieved a Good (G) rating. For repair economy performance, Changan Deepal S09 received a Good (G) rating. In terms of crash compatibility, both Changan Deepal S09 and Toyota bZ5, were rated Good (G).

All three models earned bonus points in Low-speed Active Safety, with two models, the Changan Deepal S09 and Toyota bZ5, receiving a Good (G) rating in this category.

For the Occupant Protection Index, all three models achieved a Good+ (G+) rating. In the 25% small overlap frontal crash tests (driver side and passenger side), the 50% frontal offset crash test, and the side impact test, all three models received Good (G) ratings with zero defects. In the roof strength test, 100% of the models achieved a Good (G) rating, as did all models in the seat/head restraint test.

Under the Pedestrian Protection Index, all three models received a Good+ (G+) rating. For the Vehicle Assistance Safety Index, all three models achieved ratings of Good (G) or above, with two models receiving Good+ (G+).

All three vehicles are equipped with Autonomous Emergency Braking (AEB) as standard, with a 100% fitment rate, and all are equipped with Emergency Call (E-call) systems, also with a 100% fitment rate.

Under the New Energy Vehicle Special Index, all three models received a Good (G) rating, among which two models, the Changan Deepal S09 and Toyota bZ5, achieved Good (G) ratings in both repair economy and overall vehicle safety.

Overall, the three evaluated models demonstrated excellent performance in this round of testing. C-IASI will continue to test vehicle in-use performance and encourage manufacturers to develop and provide safer and more competitive new models for consumers.

Looking ahead, C-IASI will continue to uphold the principal of “serving society and promoting safety,” with the goal of reducing consumers’ vehicle usage costs. It will further expand the scope of tested models and provide consumers with a fair, impartial, and objective vehicle selection guide.

2025 Rating										
No.	Brand	Tested Vehicle	Tested Vehicle Model	Type	OEM	Damageability Repair Economy	Occupant Safety	Pedestrian Safety	Assistant Safety	NEV Special Test
1	Changan	Deepal S09	SC6522AAA6HEV	SUV	Changan Automobile	A	G+	G+	G	G *
2	Toyota	bZ5	TV6480BEV	SUV	FAW Toyota Motor	M	G+	G+	G+	G *
3	Honda	P7	GHA6480WAN0ABEV	SUV	GAC Honda Automobile	P	G+	G+	G+	G

"Chilometri di scelte": Turning Research into Action for Safer Mobility

Every day, when we get behind the wheel, we make choices that may seem trivial. However, just a moment of distraction can turn an ordinary decision into a significant risk. This awareness is the foundation of "*Chilometri di scelte*" which literally means Kilometers of Choices, a project that places road safety at the center as the result of continuous and responsible decisions.

The project represents the evolution of a scientific study carried out by Generali jeniot, in collaboration with ASC GuidaSicura Quattroruote, aimed at understanding the real impact of smartphone use while driving.

The test involved 43 participants under controlled track conditions, simulating different scenarios: driving without distractions, phone conversations, using navigation apps, and typing messages.

The results revealed unequivocal data:

- While typing messages, drivers kept their eyes on the screen for 59% of the time (about 17 seconds out of 29), equivalent to 221 meters traveled without watching the road. Under these conditions, 67% of drivers veered out of their lane.
- Using navigation apps resulted in 173 meters of "blind" driving and 16% of pedestrians not detected.
- A simple phone call led to 49% of lane departures.

The Distraction Score, an index measuring distraction levels, rose from 6 (normal driving) to 45 while typing messages. These numbers speak for themselves: smartphone distraction is one of the main threats to road safety.

Snapshots from the "Chilometri di scelte" event at the jeniot Technology Center

To turn research into tangible awareness, Generali Jeniot has developed a 360° immersive driving simulator, connected to a smartphone.

This tool recreates realistic scenarios where drivers are asked to interact with a mobile device integrated into the simulator while driving, experiencing firsthand how challenging it is to maintain control under distraction.

The simulator was designed for use both at the Technology Center and during awareness events across the country, with the goal of making scientific data tangible: even a seemingly harmless gesture can compromise personal and public safety.

Generali jeniot's journey did not stop at experimentation. The digital campaign "*Chilometri di scelte* – On the Road with jeniot" brought the theme of responsible mobility to a wider audience through a multi-episode narrative format, featuring experts from the medical, technological, insurance, and media sectors.

The numbers confirm the initiative's effectiveness: nearly 50 million impressions, over 6 million people reached, millions of video views, and more than 50,000 interactions with editorial content. A success that transformed safety from an abstract concept into a shared story.

Every kilometer traveled is a choice. And every choice on the road can change everything. With "*Chilometri di scelte*" Generali jeniot reaffirms its commitment to promoting safer mobility through an integrated approach that combines science, technology, and awareness.

In a context where driver distraction is among the leading causes of accidents, initiatives like these are crucial for the insurance sector and society as a whole. This is not just prevention: it is an investment in a culture of responsibility—starting from research, evolving into experience, and culminating in communication.

Vehicle Risk Insights: Key findings on Chinese-built vehicles.

The Australian new car market continues to evolve at pace, with Chinese-built vehicles now playing a leading role in reshaping the national fleet. Once considered niche, Chinese brands have become a mainstream choice, particularly for EV customers.

Chinese-built vehicles recorded substantial growth in 2025, increasing sales by 31% to reach 252,702 units. This represents 20.4% of all new vehicles sold in Australia, positioning China as the second largest vehicle source market, behind Japan and ahead of Thailand. We expect further growth of Chinese-built vehicles and predict market share to be around 30% in 2026.

To date, 22 Chinese automotive brands have launched locally, with more scheduled for 2026. Brands now present in the Australian market include Aion, BYD, Chery, Deepal, Denza, Farizon, Foton, GAC, Geely, GWM, Haval, JAC, Jaecoo, JMC, LDV, Leapmotor, Omoda, Polestar, Skyworth, smart, Xpeng and Zeekr.

Three Chinese brands—GWM, BYD and MG—finished the year within Australia's Top 10, while Chery secured 13th place, reinforcing the sector's accelerating momentum.

At the IAG Research Centre, a significant focus has been placed on engaging with these new brands, to ensure access to vehicles for evaluation and technical information for repairs.

Through the Vehicle Risk Insights (VRI) program, each vehicle is assessed for Damageability and Repairability (D&R). So far, 14 Chinese-built vehicles have been evaluated, with the Medium SUV segment being the most popular, representing seven of these assessments.

When comparing Chinese-built Medium SUVs with vehicles of the same class from all other build origins, there is an 8.3-point deficit. Chinese-built Medium SUVs average 50.1 / 100, while all other origins average 58.4.

Overall, the Chinese-built vehicles assessed demonstrate reasonable performance in D&R, however, two recurrent issues will impact repair complexity and costs:

1. **Front-end vulnerability:**
   Headlamps and bonnet assemblies are positioned forward of the front bumper reinforcement on many models. This increases the vulnerability and likelihood of damage during low-speed collisions.

Leapmotor C10

BYD Atto 3

Geely EX5

2. **Limited OEM repair information:**
   The majority of models are lacking comprehensive OEM repair documentation, including critical information such as steel grade identification, material strength data, structural component mapping, and detailed joining specifications. Where OEM procedures are provided, they are often high-level and do not offer panel-specific or joint-specific repair guidance.

   A major technical limitation is the absence of approved sectioning-repair procedures. Several OEMs mandate full body-side replacement, which requires removal of the roof panel, skirt reinforcement. In contrast, validated

sectioning methods would allow localized replacement of individual structural components—such as the sill/rocker panel, B-pillar, or quarter panel—minimising unnecessary disassembly, reducing heat-affected zone risk during joining processes, and significantly decreasing refinish requirements and overall repair cycle time.

As the popularity of Chinese-built vehicles continues to grow in Australia, we will continue to work closely with existing and new brands, with the focus on repair topics and on improving vehicle damageability and repairability.

For more information, please contact Shawn Ticehurst (shawn.ticehurst@iag.com.au) and Chris Emerson (chris.emerson@iag.com.au) from IAG's Research Centre.

◢ ***Big vehicle blind zones increase pedestrian crash risk during left turns***

Vehicles with large driver-side blind zones are much more likely to strike crossing pedestrians while turning left than those with small blind zones, a new study from the Insurance Institute for Highway Safety (IIHS) shows.

Thick and slanted A-pillars, bulky side mirrors, and tall, long hoods all obstruct driver views. The field of view offered by the windshield, which alters the location of the blind zones, also affects the driver's ability to see.

Using a camera-based technique developed by IIHS engineers, the researchers measured the blind zones of 168 vehicles. Because designs don't change every year, the measurements applied to many make, model and model year combinations, allowing the researchers to analyze nearly 4,500 police-reported pedestrian crashes involving these vehicles.

The analysis showed large driver-side blind zones were associated with a 70% increase in the risk of left-turn crashes with pedestrians, compared with small ones. Medium driver-side blind zones were associated with a 59% increase in left-turn crash risk.

A similar analysis of 3,500 crashes showed that passenger-side blind zones had no significant impact on the risk of right-turn crashes.

Key metrics for left-turn pedestrian crash risk

(shading depicts areas obscured for driver by vehicle components)

Size of driver-side blind zone	Front field of view	Nearest visible point
A driver-side blind zone that blocks more than 30% of the critical scanning area increases the risk of a left-turn pedestrian crash by 70%.	A narrow view angle between the A-pillars puts the driver-side blind zone more directly in the path of the vehicle. An angle of 85°or less increases left-turn pedestrian crash risk by 51%.	A nearest visible point more than 30 feet in front of the vehicle at ground level is associated with a 37% increase in left-turn pedestrian crash risk.

For more information, visit https://www.iihs.org/news/detail/vehicles-with-big-blind-zones-spell-danger-to-pedestrians-during-left-turns.

Camaro ZL1 tops chart of most-stolen vehicles

A security glitch helped push the Chevrolet Camaro ZL1 to the top of the list of America's most-stolen model year 2022-24 vehicles, while a software upgrade helped reduce theft rates for Hyundai and Kia models.

Relative to its numbers on the roads, the Camaro ZL1 has a whole-vehicle theft rate 39 times the average for all vehicles, a recent analysis by the Highway Loss Data Institute (HLDI) shows. The frequency of whole-vehicle theft claims for the standard Camaro is 13 times as high as the average.

Along with the two Camaro variants, pickup trucks and other expensive or high-horsepower models dominate the list of the top 20 vehicles with the highest claim frequencies for whole-vehicle theft.

The 20 least-stolen models include eight electric vehicles and two plug-in hybrids, all of which have whole-vehicle theft claim frequencies that are more than 85% lower than the all-vehicle average. Electric vehicles are likely to be garaged or parked near buildings to facilitate charging, making them less attractive to thieves.

A technical glitch contributed to Camaro owners' woes, according to media reports. Thieves ordinarily need access to the owner's key fob to copy it. But a security fault allowed them to clone the key code for newer Camaros by accessing the on-board ports technicians use to monitor vehicle performance.

A supplemental HLDI analysis of Camaro theft claims for model years 2010-24 showed that theft claim frequencies — both whole-vehicle and smaller claims — for Camaro variants were relatively stable from 2020 through 2022 but rose sharply in 2023 and continued to climb through much of 2024. It also indicated a clear break in the pattern beginning with model year 2016, which was when a keyless, push-button start system was introduced.

In March 2025, General Motors launched a service campaign aimed at reducing theft risk for 2020-24 Camaro models. Under the initiative, owners can bring their vehicles to dealerships for a free software update that makes the keyless start system more secure.

A similar solution implemented by Hyundai and Kia, which had faced soaring theft claims for models that lacked electronic immobilizers, has already pared back losses, a separate HLDI report shows.

For more information, visit https://www.iihs.org/news/detail/camaro-zl1-tops-chart-of-most-stolen-vehicles

Higher IIHS front crash prevention ratings mean bigger benefits

The original IIHS vehicle-to-vehicle front crash prevention test

Front crash prevention systems that performed well in the original IIHS front crash prevention test are associated with larger crash reductions, HLDI recently found.

All systems are associated with reductions in the frequency of property damage liability (PDL) insurance claims. But better ratings mean bigger benefits, the analysis of claims data for 2018-19 models shows.

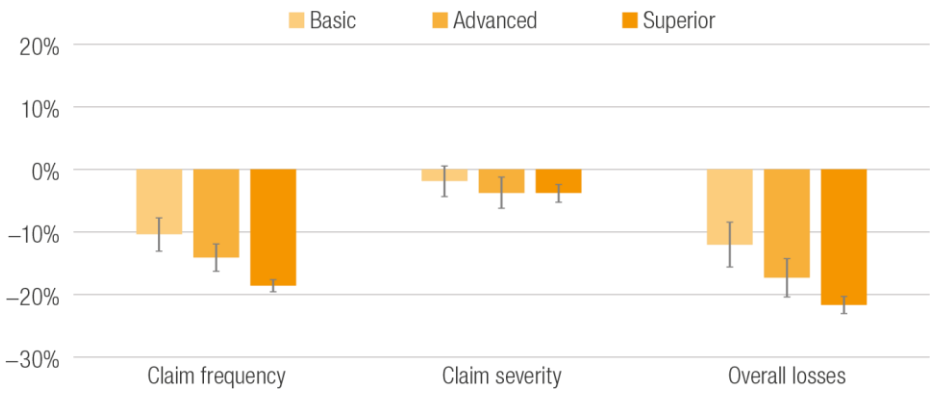
Compared with unequipped vehicles, systems with the lowest rating of basic are associated with a 10% reduction in PDL claims. PDL claim rates are 14% lower for advanced-rated systems and 19% lower for superior-rated vehicles, the study found.

Though the pattern was less consistent for PDL claim severity (the dollar amount of claims), better-rated systems also deliver greater benefits in terms of overall losses, which combine frequency and severity.

Many early front crash prevention systems could earn no better than a basic rating because they only included forward collision warning, while later versions incorporated automatic emergency braking (AEB).

HLDI looked at 2018-19 model year vehicles to ensure that the sample included unequipped vehicles and models with all three ratings in the original IIHS evaluation.

Estimated effect of front crash prevention on property damage liability losses, by rating



Since then, automakers have moved to equip virtually all passenger vehicles with AEB, the majority of which earned superior ratings as of model year 2021. IIHS discontinued its original front crash prevention test in 2022 and replaced it with a higher-speed test evaluation that evaluates performance in preventing crashes with motorcycles and large trucks as well as other passenger vehicles.

To request a copy of the full HLDI report, send an email to researchpapers@iihs.org.

A Case Study: Workable Angles in Aluminium Sheet Metal

In recent years, aluminum panels have been increasingly adopted for cosmetic components such as hoods to reduce vehicle weight. In general, aluminum is more prone to cracking from localized deformation compared with steel, so extra care is required when performing panel repair work. If a crack occurs during the repair of an aluminum panel, the part must be replaced with a new one, and all the repair work done up to that point is wasted.

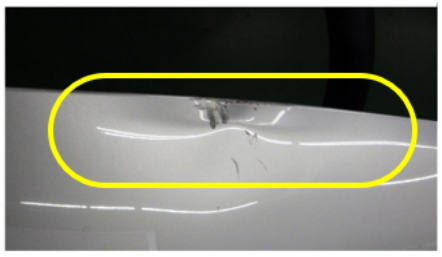
If we could know in advance whether a panel is likely to crack during repair—based on how much it is bent—we could work more efficiently. For this reason, we tested aluminum panels in conditions similar to real repair work to find out at what bending angles cracks start to appear.

Test Conditions

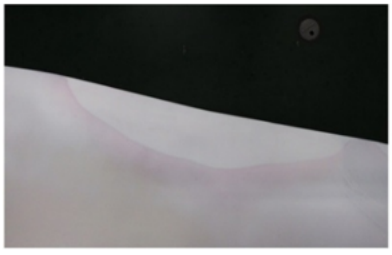
- Bend damage intentionally reproduced at the hood, leading edge at 30°, 45°, 60°, and 75°.
- Coatings removed on both sides; panel heated to 200 °C (manufacturer-specified), then hammered with a wooden mallet.
- Dye penetrant testing conducted using a red penetrant.

Results

Bend damage at 60°

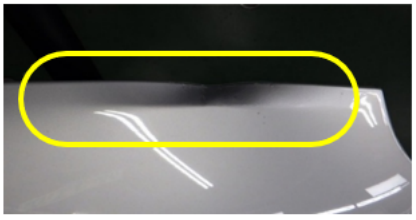


After straightening

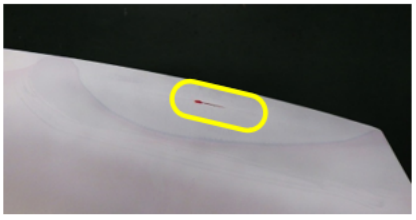


• **30° to 60°:** No cracks detected by visual inspection or penetrant testing.

Bend damage at 75°



After straightening



• **75°:** Cracking observed on the surface at the sharply bent area.

The tests suggested that the maximum fold angle at which an aluminum exterior panel can be repaired without cracking may be approximately 60°. However, this experiment represents only a single case, and the results may vary depending on the aluminum material and the extent of the damage. Therefore, this finding should be used only as a reference.

Assessment of EV Battery Damage Due to Collision Impacts

When an EV is involved in an accident and its battery experiences an impact, determining whether the battery remains in normal condition is difficult when there is no visible external damage. Currently, most Japanese automobile manufacturers do not provide a method for diagnosing an impacted battery as "normal." As a result, batteries are sometimes replaced solely due to concerns about potential damage.

The Jiken Center conducted a crash test to investigate battery damage and examined the effects of the collision on the battery using diagnostic tools. The findings were then discussed with automobile manufacturers to request that they provide battery diagnostic criteria to the market.

Test Conditions

- A Japanese kei car (smallest category of road-legal cars) BEV was used. Its battery is mounted on the floor member, approximately 300 mm away from the side sill.
- The vehicle was tilted 30 degrees to the side, and a moving barrier crashed into the front door at 20 km/h.

Damage Status

- The right-side sill and the right side of the floor were damaged, with no secondary damage spreading to the left side.
- The battery itself appeared to have no visible external damage. Both the vehicle and the battery were equipped with acceleration sensors, confirming that the battery experienced significant impact; however, there was no displacement or deformation of the battery.

Diagnostic Results

Using three types of diagnostic tools - a manufacturer's genuine diagnostic tool, a tool based on dynamic internal resistance measurement, and a tool that compares voltage/current data against degradation patterns—we measured battery capacity, State of Health, and other parameters to check for changes before and after the crash test. None of the measurements showed any significant changes.

After discussing these results with the automobile manufacturer, we found that although they also recognize the issue, diagnosing battery damage in crashed vehicles still involves many challenges, and practical implementation has not yet been achieved. To encourage manufacturers to develop a feasible method for battery damage assessment, the Jiken Center will continue conducting experiments with other vehicles and further engage in discussions with automobile manufacturers.

Establishing a Repair-Focused Research Infrastructure: KART Opens the Mobility Research Facility

As vehicle technologies continue to advance rapidly, the automotive insurance repair environment is undergoing significant change. The expansion of electric vehicles and the development of autonomous and software-based vehicle technologies are transforming vehicle structures and damage patterns, making post-accident repair decisions increasingly complex. In this evolving context, the insurance industry is facing growing demands for more precise and objective bases for repairability assessments and decisions on repair scope.

In response to these changes, **KART of KIDI** completed the construction of the **Mobility Research Facility** in October 2025. The facility was established as a dedicated research infrastructure for empirical studies on vehicle structural damage and repairability, with the objective of conducting forward-looking research in response to the rapid advancement of automotive technologies and insurance repair practices.

The Mobility Research Facility is a **two-story facility**. The **first floor accommodates approximately 1,630 m² of research space**, while the **second floor provides around 330 m² of office space** for researchers. By integrating research areas and office functions within a single facility, the facility enables close coordination between research activities and daily operations.

Fig1. Exterior view of the Mobility Research Facility at KART

With the increasing penetration of electric vehicles and autonomous, software-driven vehicle technologies, insurers are required to make more detailed judgments regarding battery damage, the replacement of structural components, and repair scope associated with damage to advanced sensors. The Mobility Research Facility provides a research environment in which repairability and replacement criteria can be verified through **vehicle-based structural analysis and observation of actual repair operations**. The focus lies on empirically examining how post-accident structural damage translates into specific repair tasks, labor time, and repair costs.

Research Infrastructure and Key Areas

The Mobility Research Facility comprises several specialized research areas designed to support systematic studies of vehicle structural damage and repair processes.

The **Vehicle Structural Research Area** analyzes damage patterns in major structural components after accidents and empirically evaluates repairability and replacement decision criteria based on differences in structural design. Actual repair operations are conducted based on structural analysis, and measured data on repair items and labor time are used to quantitatively identify key cost-driving factors in insurance repairs.

The **Electric Vehicle and Battery Research Area** is dedicated to visual inspection and structural assessment of EV battery systems. Research focuses on underbody protection structures, battery case designs, and criteria for repair versus replacement depending on observed damage levels.

The **ADAS and Future Mobility Research Area** examines vehicles equipped with advanced driver assistance systems, analyzing sensor damage sensitivity, interactions between structural damage and electronic components, and calibration-related issues following repairs.

The **Body Repair Research Area** empirically analyzes the boundary between panel repair and component replacement, as well as material-specific repair processes, supporting the development of repair criteria applicable to real insurance claims environments.

These research areas were designed as **dedicated facilities for proactively studying increasingly complex structural damage and repair characteristics resulting from advances in vehicle technology**, and will be used as a foundation for future insurance repair research.

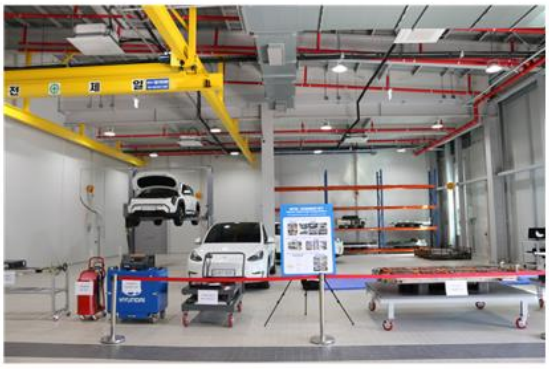


Fig2. Electric Vehicle and Battery Research Area

Through empirical research conducted in the Mobility Research Facility, KART expects to **provide more concrete and realistic grounds** for discussions on damageability and repairability among RCAR members and international partner institutions. Measured data and research outcomes accumulated through this facility may serve as a starting point for comparative discussions that take into account differences in national regulations and repair environments.

Looking ahead, KART plans to share research findings derived from real repair practices with the RCAR network and to gradually expand insurance repair research in line with ongoing technological developments. In a rapidly changing automotive landscape, the Mobility Research Facility will be **utilized as a long-term research infrastructure** supporting the reliability and transparency of insurance repair standards.

Performance Evaluation of AEB for Trucks

KIDI/KART

According to national traffic accident statistics, the proportion of accidents involving commercial trucks is relatively low compared to passenger vehicles. Based on recently published data, accidents involving commercial trucks account for approximately 12~13% of all road traffic accidents, whereas passenger cars account for more than 60%.

However, when accident outcomes are considered, a clear difference emerges. The number of fatalities per 100 accidents involving commercial trucks ranges from approximately 2.8 to 5.3, which is about two to three times higher than that of passenger car accidents (approximately 1.0~2.5). In other words, while commercial truck accidents occur less frequently, they are associated with significantly more severe consequences when they do occur.

This characteristic is closely related to the physical properties of commercial trucks with a gross vehicle weight exceeding 3.5 tons, including their large mass, longer braking distances, and the increased kinetic energy involved in collisions. In addition, the operating environment of commercial trucks—characterized by long-distance driving and a higher proportion of night-time and early-morning operation—contributes to driver-related factors such as fatigue and reduced forward attention, which are repeatedly identified in traffic accident statistics.

Given these accident characteristics, the role of safety systems that can prevent collisions or mitigate their consequences is particularly important for commercial trucks. Autonomous Emergency Braking (AEB) is a representative advanced safety system designed to reduce crash severity by detecting forward collision risks, warning the driver, and automatically applying braking when necessary.

At the same time, commercial truck accidents are not limited to full-width, straight-on collisions. It is therefore necessary to examine under which conditions AEB operates effectively in real-world accidents and where its limitations may arise. To better understand actual accident environments, KIDI/KART analyzed real-world crash videos recorded by onboard black box systems installed in commercial trucks. The analysis covered 3,696 cases in which accident circumstances could be clearly identified.

The results show that front-to-rear collisions with a leading vehicle accounted for 51.0% (1,885 cases) of all analyzed accidents, making rear-end collisions the dominant accident type for commercial trucks. An analysis of vehicle overlaps in these rear-end collisions indicates that cases with overlap greater than 70% accounted for 80.6%, overlaps between 30% and 70% for 12.9%, and overlaps below 30% for 6.5%. This distribution indicates that real-world commercial truck accidents include not only near full-width impacts but also a meaningful proportion of partial-overlap and non-uniform collision configurations.

To examine the real-world response capability of AEB systems installed in trucks over 3.5 tons, KIDI/KART conducted full-scale vehicle tests under controlled proving-ground conditions. The tests were carried out on a multi-lane proving ground (900 m × 64 m, eight lanes), which allows stable and repeatable test execution. A Global Vehicle Target (GVT), commonly applied in international AEB test procedures, was used as the forward collision target.

The test vehicle was a 2023 Hyundai Mighty 4-ton cargo truck, equipped with a forward-facing camera mounted near the windshield for vehicle recognition and a forward radar sensor installed in the upper front bumper for object detection.

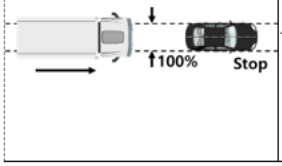
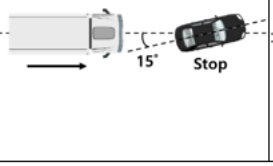
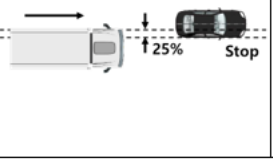
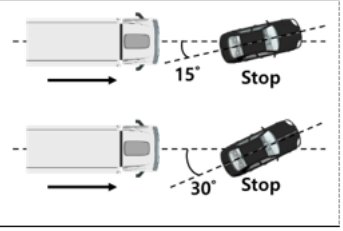
<Table 1. Test Vehicle and Experimental Setup>

Test Vehicle		Test Target	Test Location
			
Hyundai Mighty 4-ton Cargo Truck (2023)	*① Forward Camera Sensor* *② Forward Radar Sensor*	*Global Vehicle Target (GVT)*	*Proving Ground (Universal Road)*

The test program included both standardized and real-world-oriented scenarios. Standardized scenarios followed NCAP-type AEB truck-to-vehicle test configurations, representing controlled and relatively mild collision conditions. In addition, real-world scenarios were developed based on accident configurations identified through black box crash video analysis.

These real-world scenarios reflected collision conditions frequently observed in actual accidents, including partial-overlap and non-aligned impact configurations. By combining standardized and real-world scenarios, the test program aimed to evaluate AEB performance across a broader range of collision conditions relevant to practical driving environments.

<Table2. AEB Test Scenarios and Configurations>

Euro NCAP Scenarios *AEB Truck-to-Vehicle Test Protocol (May 2024)*		Real-World Accident Scenarios *Black Box–Based Scenario*	
100% Overlap	*50% Overlap*	*25% Overlap*	*Oblique impact*
			

Under NCAP-type conditions, AEB activation or limited speed reduction was observed in some scenarios. In contrast, under more severe conditions reflecting actual accident configurations, AEB did not activate or failed to provide sufficient speed reduction in several cases. These results indicate that real-world accident environments involving commercial trucks over 3.5 tons are significantly more complex and demanding than standardized test conditions, and that current AEB implementations may not be sufficient to ensure effective crash prevention in all relevant scenarios.

This study demonstrates that, despite the recognized importance of AEB for reducing the severity of accidents involving commercial trucks over 3.5 tons, performance limitations become evident under real-world accident conditions. In particular, collisions involving partial overlap and non-aligned impact configurations highlight the need for further enhancement of AEB functions, including object recognition coverage, activation conditions, and control strategies.

The findings of this study have been shared with vehicle manufacturers, and follow-up discussions will be conducted to further discuss the application of advanced AEB systems and potential functional improvements under real-world collision conditions.

Bumper covers in front of radar sensors

Bumpers are the car components most frequently damaged in accidents. According to DAT, far more than 2 million bumpers are damaged in Germany every year.

If radar sensors are installed behind bumper covers, the function of driver assistance systems and automated driving functions can be impaired by impact damage or unsuitable repairs. If radar sensors are installed behind a bumper cover, this cover is considered a radome and must not only meet mechanical requirements but also have certain electromagnetic properties. These properties can be negatively affected by impact damage (e.g., scratches and displaced position) or unsuitable repairs (sanding marks, inhomogeneities, and unsuitable coating). Current repair concepts are therefore very restrictive in some cases. Even in the case of minor damage, bumper covers often have to be replaced with new parts in accordance with OEM repair specifications.

A lower repair rate and a significant increase in spare part prices in recent years are driving up insurance premiums for end customers. In Germany, the average price of front bumpers rose by more than 75% between 2015 and 2025. The increased spare parts prices mean that fewer OEM parts are used for repairs and that replica aftermarket parts, for example, are increasingly being used. With replica aftermarket parts, there is no guarantee that they will meet the specifications of the sensor or vehicle manufacturers with regard to radar properties.

For ecological and economic reasons, the goal must be to increase the repair rate. This requires optimized repair specifications from vehicle manufacturers. The specifications must take into account that repair painting differs from factory painting in practically every parameter. Unlike in production, the application of coatings during repairs is highly dependent on the painter, the materials used, the equipment used, etc.

For many years, the KTI has conducted intensive studies on the influence of repaired, repainted, and wrapped bumpers on the function of radar sensors. The primary goal, now and in the future, is to ensure the repairability of bumpers with radar sensors installed behind them. With the results of its research, the KTI supports equipment manufacturers, committees (e.g. DIN) and advises insurers, workshops and experts on how to deal with this topic in the future.

In the future, OEMs can be supported by a DIN standard, which currently formulates minimum standards and minimum information requirements for repair guidelines. In addition, the DIN working group is addressing issues relating to material development (plastics and coating materials) and series production. Apart from the inaccuracy of non-destructive measurement methods (e.g. with ultrasonic) for determining paint layer thicknesses, a lower material thickness is not always more favorable in terms of damping.

One solution for the future could be for vehicle manufacturers to specify suitable limit values that workshops can check and document using measurement technology in the sensor area. Devices for determining attenuation in the radar transmission range after repair painting, for example, could, in principle, be used by workshops. A suitable device for this purpose was as prototype presented to the professional public at Automechanisa 2024 and discussed with workshops. It is currently in the development phase and is expected to be available soon.

With regard to use by workshops, from KTI's point of view the following are particularly important:

- cost-effective
- resistant to the harsh conditions in a workshop,
- easy to operate and interpret the measured values,
- option to archive the data.

Device for measuring one-way damping (dB), Source: Perisens

In addition to determining the suitability of a repaired bumper, another advantage would be that the “repairability” of the bumper could be assessed before and during a repair, thus optimizing the repair process. For example, used or replica aftermarket parts could be tested for suitability. Previously repaired damage could also be identified and taken into account. Particularly in the case of safety-critical or highly automated driving functions, the documentation and archiving of measurement results after a repair - e.g., to clarify liability issues -is another benefit.

Driving the Future: MRC Malaysia's Active Role in EV Industry Discussions

As Malaysia moves toward a future powered by electric vehicles (EVs), MRC Malaysia is proud to be actively involved in shaping the conversations that will define this transformation. Over the past two months, MRC has participated in two significant industry events that brought together leading experts and stakeholders to explore the opportunities and challenges presented by the growing EV ecosystem. These engagements underscore MRC's commitment to innovation and collaboration in building a sustainable automotive landscape.

Mr. Steve Miller among the panelist of the discussion on electric vehicle hosted by ISM.

On October 31, 2025, MRC Malaysia participated in the Panel Discussion on Electric Vehicles hosted by Insurance Services Malaysia (ISM) at Azman Hashim Auditorium, Kuala Lumpur. This insightful event focused on how the rise of EVs is reshaping the insurance and takaful industry. The highlight of the session was a discussion titled "The EV Revolution: Risk, Repair, and Readiness for the Insurance and Takaful Industry." The conversation delved into critical topics such as developing new risk models, pricing strategies, and claims handling approaches tailored to the unique characteristics of EVs. Moderated by Mr. Chua Kim Soon, CEO of General Insurance Association of Malaysia (PIAM), the panel featured distinguished speakers including Mr. Steve Miller, CEO of MRC Malaysia, Ms. Hana Ghazali, Chief Data Officer and Head of Automobile Profit Centre at Etiqa International Holdings Sdn Bhd, and Mr. Steven Li Gang, Trainer and EV Expert from the Asian Institute of Insurance (AII). Together, they shared valuable insights on how the insurance sector can adapt to the rapid evolution of mobility.

Continuing this momentum, MRC Malaysia was honoured to participate in the ASM–CAS–IAAu Actuarial Conference on November 18, 2025, where the focus shifted to the actuarial and underwriting implications of EV adoption. This prestigious conference provided a platform for industry leaders to examine the risks, market trends, and readiness of the insurance industry in the face of technological disruption. The panel discussion, moderated by Mr. Daniel Lee, Partner at Ernst & Young Malaysia, featured an impressive line-up of experts including Mr. Steve Miller, CEO of MRC Malaysia, Mr. Chua Kim Soon, CEO of PIAM, Mr. Wayne Chin, Appointed Actuary and Chief Actuary at Zurich General Insurance Malaysia, Mr. Ong Shze Yeong, Head of Portfolio Management at Liberty General Insurance Berhad and Mr. Mahendran Samiappan, CEO of ISM. The dialogue offered deep insights into how actuarial practices must evolve to accommodate the complexities of EV risk assessment and pricing.

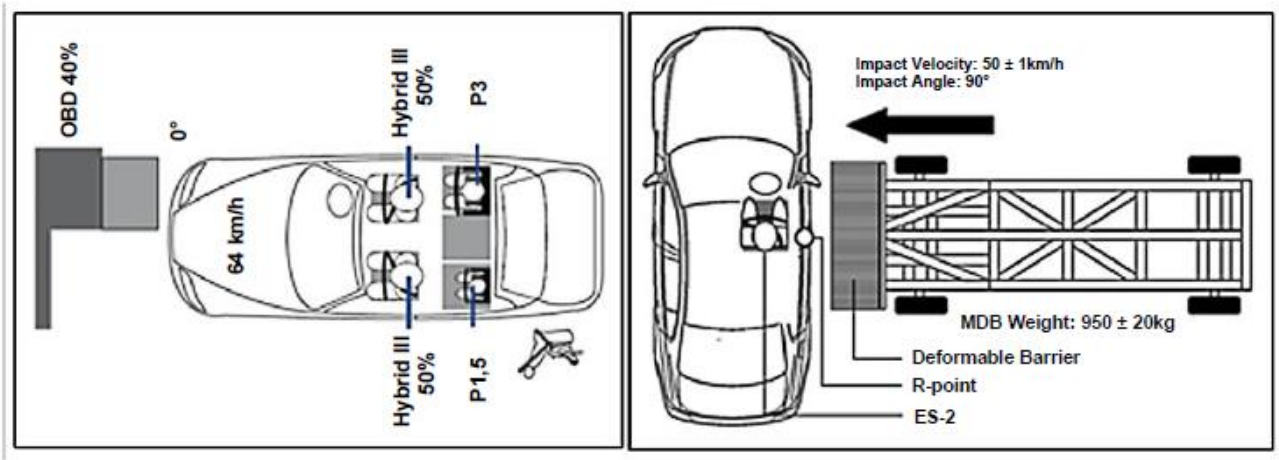
Mr. Steve Miller among the panelist of the discussion on actuarial and underwriting implications of EV adoption.

Through these engagements, MRC Malaysia reaffirms its role as a thought leader and collaborator in advancing Malaysia's automotive and insurance sectors. As EV adoption accelerates, MRC remains committed to driving innovation, sharing knowledge, and fostering partnerships that will shape a resilient and sustainable mobility ecosystem.

Collaborative Research for Safer Roads: MRC's Role in ANCHOR 5

The MRC Research Team is actively engaged in the fifth edition of ASEAN NCAP Collaborative Holistic Research (ANCHOR) project for 2024–2025, which aims to strengthen scientific evidence in support of the ASEAN NCAP roadmap. In collaboration with Universiti Teknikal Malaysia Melaka (UTeM) and Universitas Nasional, Indonesia, the research focuses on evaluating critical impact locations for Side Impact and Frontal Impact tests, in accordance with global standards such as UN Regulations 94 and 95, as well as Euro NCAP protocols. By utilising post-accident statistical data from MRC iCAP claims database, insurance records, police reports and accident images, the study address real-world crash scenarios to enhance the accuracy and consistency of vehicle safety assessments. Anchored on four key pillars which are Adult Occupant Protection,

Child Occupant Protection, Safety Assist Technology and Motorcyclist Safety, this initiative reinforces ASEAN's commitment to advancing road safety.



As part of the ANCHOR 5 research initiative, the MRC Research Team conducted a study to evaluate the critical locations used in ASEAN NCAP frontal and side impact tests through post-accident secondary data analysis. This study aims to assess the relevance of the current ASEAN NCAP test parameters, specifically the 40% target overlap used in frontal impact tests, and the R-point location applied in side impact tests, based on real-world crash scenarios. Currently, ASEAN NCAP frontal and side impact tests are conducted in accordance with UN Regulation No. 95, as illustrated in the figure above. The frontal impact test adopts a 40% offset target overlap, while the side impact test references the R-point located at the centre of the driver's seating position. In comparison, since January 2020, Euro NCAP has increased the frontal offset overlap from 40% to 50% under its Mobile Progressive Deformable Barrier (MPDB) test, in order to better represent real-world crash conditions and enhance occupant protection.

Collaborative ANCHOR 5 team between MRC Malaysia and Universiti Teknikal Malaysia Melaka.

The evaluation of the project is currently ongoing, with certain items requiring further refinement and additional time to complete the analysis. The latest development updates from this research were being presented at two major events, the ASEAN NCAP Vehicle Safety Course held at Ho Chi Minh City University of Technology, Vietnam, and the SHIFT 2025 International Conference on Safety and Holistic Intervention for Future Vehicles.

Collaborative ANCHOR 5 team presented at two major events in Malaysia and Vietnam.

As the research activities are still ongoing, data evaluation is expected to be completed in Q1 2026 and finalisation anticipated in Q2 2026. This research aims to establish new findings, including the actual percentage of frontal impact offset derived from detailed analysis, as well as the appropriate R-point location for side impact testing. In response to Euro NCAP's recent increase in the frontal offset overlap requirement to 50%, this study proposes that ASEAN NCAP consider adopting a similar adjustment in future ASEAN NCAP Roadmaps 2030-2035. Upon completion, the final results of this study will be shared at the upcoming RCAR Annual Conference 2026 in Mexico.

mrc malaysia

SFMI TSRI Launches 'ANY SAFE' Campaign for Elderly Pedestrian Safety

Older pedestrian crashes frequently occur on local roads near traditional markets, where narrow roadways, mixed traffic and high foot traffic create complex and hazardous environments. Traditional markets are places older adults visit regularly, making them persistent high-risk hotspots for pedestrian injuries.

While infrastructure improvements such as wider sidewalks and signalized crossings can reduce crash risk, many traditional markets face structural limitations that make comprehensive physical upgrades difficult. In response, the Samsung Fire & Marine Insurance Traffic Safety Research Institute(SFMI TSRI), in cooperation with the National Police Agency and the Ministry of the Interior and Safety, launched a visibility-based safety campaign designed specifically for these environments.

The campaign, known as "ANY SAFE" centers on improving the conspicuity of older pedestrians rather than relying on behavioral change or new infrastructure. The initiative distributes specially designed shopping carts — a daily necessity for many older market visitors — equipped with fluorescent yellow-green panels, reflective materials on the front and sides, and pedestrian pictograms.

By enhancing the visibility of shopping carts, the campaign allows drivers to recognize the presence of older pedestrians well before entering market areas. Because the carts are already integrated into daily routines, the approach increases safety without requiring additional equipment or changes in behavior from older users.

Organizers emphasize that ANY SAFE is not intended to replace traditional safety measures such as Senior Safety Zones, roadway maintenance or intersection improvements. Instead, it functions as a complementary strategy that enhances the effectiveness of existing countermeasures in environments where space and infrastructure are limited.

Beyond equipment distribution, the campaign incorporates on-site traffic safety education, joint outreach with police and local governments, and participation from market vendors. These elements aim to foster a sustainable safety culture within traditional markets, rather than delivering a one-time intervention.

The ANY SAFE campaign demonstrates how low-cost, high-visibility tools can address pedestrian safety challenges in real-world settings with practical constraints. By focusing on visibility and routine-based behavior, the initiative offers a scalable model for protecting older pedestrians in community environments where conventional engineering solutions are difficult to implement.

SFMI TSRI plans to expand the campaign in collaboration with partner organizations, continuing to develop field-oriented safety programs tailored to the needs of vulnerable road users.

SFMI TSRI "ANY SAFE" Campaign at a Senior Welfare Center

Real Accidents Analysis for Improvement of KNCAP Seat Safety Assessment

Korea's New Car Assessment Program (KNCAP) is preparing to update its seat safety assessment based on findings from real-world rear-end crash data, reflecting growing concern over long-term neck injuries among vehicle occupants.

Since 2008, KNCAP has evaluated seat safety using the IIWPG test protocol (ΔV 16 km/h, 10.0 g at 27 ms). While the procedure has remained largely unchanged for nearly two decades, real-world crash data suggest that these conditions may not fully capture the severity of rear-end collisions associated with prolonged medical treatment.

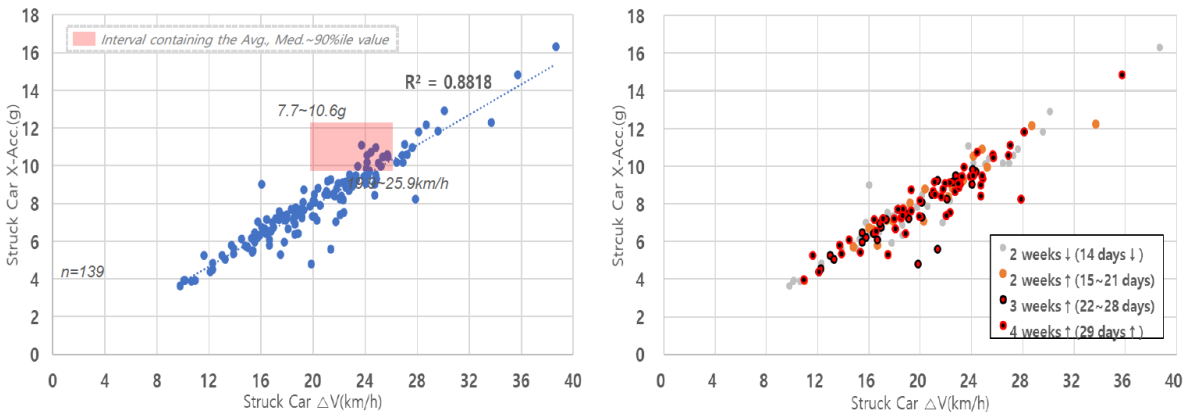
To address this gap, the Korea Automobile Testing & Research Institute (KATRI) commissioned a real accident analysis conducted by the Samsung Fire & Marine Insurance Traffic Safety Research Institute(SFMI TSRI). The study examined 818 belted occupants involved in rear-end crashes, focusing on the relationship between vehicle damage severity and injury outcomes.

The analysis revealed that crashes involving trunk and/or rear panel damage — roughly equivalent to CDC level 2 or higher — were associated with substantially worse injury outcomes. Compared with cases limited to rear bumper damage, the proportion of occupants hospitalized for more than two weeks was 2.6 times higher, while the share requiring more than four weeks of medical treatment (including outpatient care) doubled.

SFMI TSRI also reconstructed 139 severe rear-end crashes using actual accident video footage to estimate impact severity. These simulations showed an average delta-V of 20.3 km/h, with an 80th percentile value of 24.1 km/h, and an average acceleration of 8.0 g, reaching 10.6 g at the 90th percentile. These values are comparable to high-severity seat tests used in Euro NCAP and Japan NCAP.

The findings indicate that real-world rear-end crashes leading to long-term neck injuries tend to occur at higher severities than those represented in the current KNCAP seat safety test. As a result, KATRI plans to revise the seat safety assessment protocol to better reflect actual crash conditions and align with international NCAP practices.

The updated KNCAP seat safety protocol is expected to be announced this year, with the goal of providing more realistic safety information to consumers and encouraging improved seat and head restraint design.



△V-Acc. Distribution(Left) and Distribution by Treatment Period(Right)

Media Briefing Highlights Pedestrian Crash Risks From Large Truck Blind Spots

Large trucks pose a substantially higher risk to pedestrians than passenger vehicles, particularly during right turns, according to findings presented by the Samsung Fire & Marine Insurance Traffic Safety Research Institute(SFMI TSRI) during a recent media briefing.

The institute identified blind spots and vehicle design as key contributors to the severity of pedestrian crashes involving large trucks. Trucks weighing five tons or more were found to have a right-side blind spot averaging 8 meters—more than 60 percent wider than that of passenger vehicles—making it more difficult for drivers to detect pedestrians traveling alongside the vehicle.

The institute noted that these visibility limitations are associated with more severe crash outcomes. Pedestrian fatality rates in crashes involving large trucks were estimated to be two to six times higher than those involving passenger vehicles. In right-turn crashes, the risk was substantially greater, with fatality rates reaching up to 27 times higher for certain vehicle types, including dump trucks and other heavy-duty vehicles.

According to SFMI TSRI, structural characteristics such as elevated driver seating positions, tall door panels and limited direct vision near the front and sides of the vehicle play a critical role in increasing risk. To reduce these hazards, the institute emphasized the necessity of expanding direct vision and mandating advanced safety technologies, such as blind-spot detection systems.

The institute also noted that several European countries, including the United Kingdom, are moving to mandate such safety equipment, and said similar regulatory measures should be considered in Korea to strengthen pedestrian safety around large trucks.

News Briefing On Large Truck Blind Spots

Driving Forward: The Real-world Impact of Ford BlueCruise and Connected ADAS

The automotive safety landscape is evolving rapidly, with Ford's BlueCruise at the forefront as an advanced Level 2+ Driver Controlled Assistance System (DCAS) now approved for UK roads. BlueCruise integrates intelligent adaptive cruise control, lane keeping, and direct driver monitoring on pre-mapped UK motorways, all enhanced by real-time connectivity and cloud-based data.

Recent research conducted by Thatcham Research presents data collected from 24 users across a short reference route drive, 5 users for business travel and a continued longitudinal single-user study over an eight-month period. The analysis reveals that hands off BlueCruise operation did not increase user disengagement or safety-critical events. In fact, drivers remained responsive to alerts, and longer eyes-off-road durations were typically observed in manual driving compared to BlueCruise. Alert response times improved with experience, and most warnings were triggered by deliberate system probing rather than inattentiveness. Participants highlighted strong confidence in BlueCruise's core driving functions but identified the need for more intuitive human-machine interface (HMI) and additional features, such as automated lane-changes, to maintain appropriate driver engagement and mitigate emerging risks.

Regulatory frameworks including EU General Safety Regulation 2 (GSR2), UNECE Regulations 171 (DCAS) and 157 (ALKS), and the UK Automated Vehicles Act 2024, are driving adoption and standardisation. Despite technical progress, UK market penetration of connected ADAS remains limited, with low fitment rates and lack of feature transparency. For RCAR members, these trends present challenges in risk assessment, repairability, and post-collision system validation. Future research should address interoperability, diagnostic protocols, and the impact of over-the-air updates on repair processes and safety assurance.

Ford Mach-E

Wiring Harness Damage, Supply and Repair

Thatcham Research are investigating the challenges associated with vehicle wiring harness damage, supply, and repair, reflecting the increasing complexity of modern automotive electrical systems. As vehicles evolve to incorporate advanced technologies such as electrification, connected systems and driver assistance features, the vulnerability and repairability of wiring harnesses become critical concerns for repair professionals, manufacturers, and the wider industry.

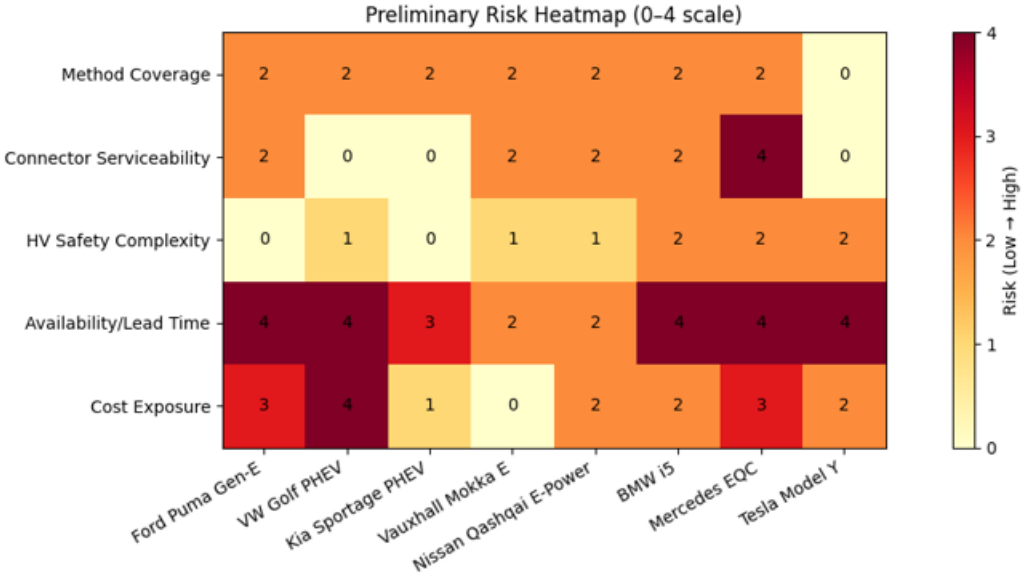
The project is motivated by real-world cases, where vehicles were declared total losses due to unavailable or prohibitively expensive wiring harness repairs. Although initially highlighted through instances of rodent damage, the broader picture also includes impact damage and component theft.

Key issues identified, include limited availability and long lead times for replacement harnesses, inconsistencies in repair information and methods across manufacturers, high part costs, along with safety and operational risks associated with incorrect repairs.

The initial phase of the research assessed a selection of representative vehicle models to evaluate harness vulnerability, serviceability, and the availability of repair information. The findings highlight significant variability in both harness vulnerability and serviceability across manufacturers. Long lead times for replacement parts, limited repair information, and the emergence of one-piece harness designs further complicate the repair process.

The research highlights the urgent need for improved repair methodologies and improved parts availability. These measures are essential to controlling costs, reducing vehicle write-offs, and maintaining sustainable repair practices as vehicle technology continues to advance.

The next phase of the project will focus on identifying wiring harness design best practices, assessing whether plant-based sheathing increases susceptibility to rodent-related damage and exploring potential aftermarket mitigations. It will also evaluate future harness technologies for their potential impact to vehicle insurability and look to establish clearer thresholds for repair versus replacement.



Thatcham sponsor 2026 WhatCar? Safety Award

Thatcham have once again collaborated with the UK motoring magazine WhatCar? in sponsoring and judging the 2026 Safety Award.

The main criteria for the awards judging were as follows:

- New models with a 5 star Euro NCAP rating in 2025;
- Affordability and likely UK sales volume;
- A wide range of ADAS features available;
- ADAS system performance which is collaborative and easy to use without driver annoyance.

Shortlisted cars were driven by Thatcham experts to check how ADAS systems performed in real-world conditions, in particular speed limiters, lane keep assist, L2 assisted driving capability and driver monitoring systems.

The judging panel was made up of Richard Billyeald, Yousif Al-Ani and Alex Thompson from Thatcham Research, alongside motoring journalist Claire Evans from WhatCar?.

The results were announced at the WhatCar? Awards evening in London on 22nd January 2026, with the BMW X3 coming out as the overall Safety Award winner and the Smart #5 and Skoda Elroq taking the runner-up spots.

The awards process provided a valuable opportunity to understand how different vehicle manufacturers are implementing ever more complex driver assistance features. Some of the key insights from this process were as follows:

- **Lane keeping assistance** is becoming more collaborative and less intrusive. Most of the systems we saw provided gentle and accurate steering support, as opposed to some previous systems which could feel like the car was fighting for control of the steering.
- **Direct driver monitoring systems** have great potential to reduce driver distraction, but poorly implemented systems can be annoying and inaccurate. Some of the systems that we tested gave incorrect warnings or were overly intrusive in warnings for glances to check the vehicle's speed or mirrors.

- **Head up displays** provide a good opportunity to reduce the time that a driver's eyes are off the road, but implementation is often reserved for premium trim levels.
- **Reversing AEB** systems available on all shortlisted models performed extremely effectively, preventing collisions with pillar and car targets.

The awards video can be found on YouTube here:

2026 What Car? Safety Award - what's the safest new car? | What Car?

What Car? Safety Award finalists

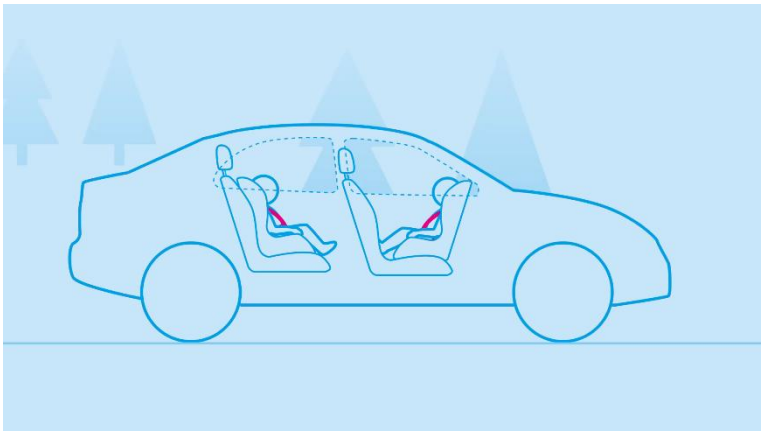
Upcoming RCAR Events

2026 International Seminar on Insurance and Automotive Risk Technology,
Beijing, China
April 22nd to April 25th, 2026

Annual International RCAR Conference 2026
México City
September 28th to October 2nd, 2026

Folksam

Child Restraint System (CRS) usage in fatal car crashes in Sweden and the potential of rear-facing CRS to influence injury outcomes



Children are the one of the most vulnerable in our traffic system. Sweden has successfully adopted the Vision Zero which is a strategic approach towards a safe system whereby no one is at risk of being fatally or severely injured while using the road transport system. Although Sweden has a strong safety culture, with low number of fatalities, it is important to examine the facilities that do occur to gain knowledge of safety measures such as rearward facing seating for small children. For this, Folksam ha has performed a case-by-case study of child fatalities in cars 1992-2024 using the Swedish national in-depth crash database, which includes all fatally injured road users.

In car crashes, children are generally at higher risk than adults of sustaining more severe injuries in certain body regions due to anatomical differences. The anatomical and physiological characteristics of young children—such as a relatively large head size, underdeveloped neck musculature, and flexible spinal structures—make them especially vulnerable to neck and spinal injuries when restrained in a forward-facing position. Rear-facing seats provide optimal support to the head, neck, and spine by distributing crash forces more evenly across the child's back and minimizing head movement relative to the torso.

In total, the dataset included 99 fatally injured children in 83 cars, of which 58 were 0–3 years old (i.e. had not turned 4 years old). The car model years ranged from 1972 to 2013.Among these aged 0-3 years, 69% were not restrained according to the Swedish recommendations of using rear-facing CRS up to the age of 4. 20% of the 4-6 years old were unrestrained. In total, 44 % of the 4-6 years old did not sit according to the Swedish recommendations which is to use a child restraint (forward or rearward). No rearward restraint was noted for those 4 or above. Considering each individual accident, it was estimated that potentially up to 48% of the children aged 0-3 years could have survived if using a rear-facing CRS, and additionally 27% of the 41 children 4-6 years old.

This study highlights the critical role of proper CRS use in preventing fatalities among young children in car crashes. The results show that the adherence among fatally injured children was relatively low, despite high compliance reported in parental surveys. This further highlights the need for further information on the value of rearward seating to prevent accidents.