June 2025

RCAR

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NEWSLETTER

NEWS FROM
RCAR INSURANCE
RESEARCH CENTRES

SFMI TSRI
Accident reduction effects of Rear-AEB

Thatcham
Battery Integration Developments

AZT
Research on Small Electric Vehicles

News briefing on accident reduction by autonomous rear emergency braking systems (Samsung Traffic Research Institute, Korea)

Dear RCAR members and readers,

I am very pleased to publish the RCAR Newsletter June 2025. It provides a very good overview of current projects and activities of our members and once again shows the variety of technical topics that are relevant for car insurers as well as for the automotive industry in order to ensure safe and affordable mobility solutions for our mutual customers.

I look forward to exchanging ideas at this year's RCAR conference in Milan!

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

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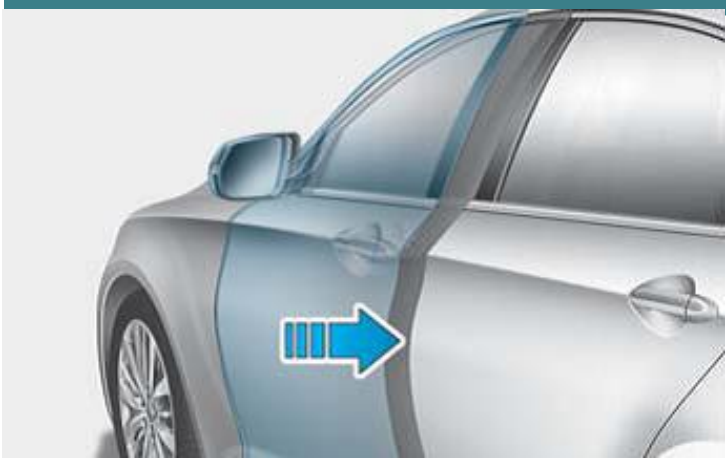

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South Korea

CIRI Auto Technology Institute
China

AXA Switzerland assesses the Dangers of Cargo Bikes

Cargo bikes are becoming increasingly popular. These load-carrying bicycles offer a practical way to transport children and goods, especially in urban areas, where they are seen as an environmentally friendly alternative to cars. Driven by the upcoming legislative change in Switzerland, which will allow the use of cargo bikes with a total weight of up to 450 kilograms and transporting upto 4 children starting July 1, 2025, AXA, the BFU*, and the Schaffhausen police conducted crash simulations to shed light on the potential risks and safety aspects of these vehicles.

Details of the Crash Simulations

The simulations took place during two different events: One was conducted in private, focusing on the transport of children, while the other one was part of a public event and addressed the dangers associated with transporting loads. In both simulations, the cargo bikes travelled at a speed of 25 km/h toward a stationary vehicle. This simulated a stressful situation often encountered in the morning when parents are trying to quickly drop their kids off at daycare or someone making a quick stop at the hardware store for materials. Five cargo bikes were in total crashed.

In the rush of everyday life, important safety precautions can be overlooked, resulting in a high potential for risk. Additionally, due to their robust construction, larger loading area, and extra transport boxes, cargo bikes are significantly heavier, wider, and less manoeuvrable than conventional bicycles – it's like switching from a hatchback to a truck.

The results of the simulations were alarming: In the event of a collision, there is a risk that seatbelt buckles may detach or that faulty belts could completely pull free from their anchorage. As a result, heavy loads can be thrown into other vehicles and road users, or worse, inadequately secured children can be ejected from the cargo bike. The consequences can be devastating.

Furthermore, the simulation demonstrated that riders can be thrown over the handlebars into the loading area upon impact, potentially landing on the children. These findings underscore that accidents involving cargo bikes can lead to severe injuries – for the riders, passengers, and other road users.

Prevention Tips for Safe Riding

To minimize the risk of accidents, several preventive measures have been derived:

- Secure children and loads properly: Children should always be transported in age-appropriate seats, securely fastened and wearing helmets.
- Drive defensively and with foresight: A defensive driving style allows riders to recognize potential hazards early and respond accordingly.
- Consider longer braking distances: Due to their higher weight, cargo bikes tend to have a longer stopping distance than conventional bicycles.
- Increase visibility: Good visibility is crucial, whether during the day or at night. Wearing a well-fitting helmet is highly recommended.
- Practice riding skills: Before the first ride on public roads, the handling of the cargo bike should be practiced in a controlled area.

All video material can be made freely available to all interested parties upon request. If needed, please contact Luca Genovese directly at luca.genovese@axa.ch.

**BFU = Swiss Council for Accident Prevention*

New Chairperson of Working Group Theft and Cybersecurity

Natallia Dziamchuk was appointed chairperson of the RCAR working group Theft and Cybersecurity at the beginning of the year and in this role follows Richard Billyeald from Thatcham, who took over the chair of RCAR's steering committee, following Christoph Lauterwasser in this position.

Natallia holds a degree in electrical engineering and has been working at the Allianz Center for Technology since 2015. Her primary tasks include the field of theft and fraud as well as IT-security in connected vehicles and she is also AZT's responsible specialist for high voltage vehicles. In her daily work, Natallia focuses on analysing and validating claims with a fraudulent background. An ongoing project is the evaluation of vehicle data to effectively identify and investigate cases of fraud. This innovative approach sets new standards in fraud prevention in the industry. Natallia represents AZT and thus the insurers' interests in two working groups on theft and cyber security at the German Association of the Automotive Industry (VDA). She is in regular contact with German car manufacturers and their suppliers to keep up to date with the latest developments in these areas and to represent the interests of insurers.

"I am very pleased that Natallia Dziamchuk, a seasoned expert, is leading the RCAR Theft and Cyber Security Working Group. Since taking on this role, she has shown outstanding commitment by organizing regular and productive meetings. The topic she is addressing is of critical importance for the future security of vehicles and for effective risk management by both OEMs and insurers, especially in light of the growing vehicle connectivity and the increasing complexity of cyber threats.", says RCAR Secretary General Christoph Lauterwasser.

Natallia Dziamchuk, Expert for IT-Security

Research on Small Electric Vehicles

All our projects and initiatives are geared towards one goal – promoting safe, sustainable and affordable mobility. We have now launched a new project at Allianz Center for Technology that exemplifies our pursuit of this goal: over the coming months, we will be conducting a comprehensive research into newly launched electric small vehicles and examining them in individual sub-projects based on various criteria. The following vehicles are currently available for testing: Renault 5 E-Tech, Fiat Grande Panda Electric and Hyundai Inster.

In this project, we aim to generate insights in the following areas and with the corresponding questions:

1. Crash tests:
   - Determination of the extent of damage and repairability
   - Differences in the crash management systems of the vehicles

2. Display and operating concepts:
    - Comparative investigation of display and operating concepts with regard to user-friendliness during initial contact, distraction and acceptance
    - Conducting user tests in stationary vehicles (initial contact) and while driving (distraction effect)
3. Driver assistance systems:
    - Determining the scope and performance of driver assistance systems with a focus on parking assistance and AEB
4. High-voltage system:
    - Assessment and diagnosis of the high voltage battery
    - Differences and possibilities for state of health determination
    - Protection of high voltage components against damage from martens and impacts from below
    - Repair solutions
5. Design and repairability:
    - Determination, documentation and reporting on critical design and structural features
    - Spare part prices, spare part delivery times
6. Connectivity and IT security:
    - Determination of the scope of connectivity, networked functions and integrated peripheral devices
    - Function of the locking system, management logic and data storage
7. In-vehicle data:
    - Determination of which devices and to what extent data must be retrieved in order to diagnose the vehicle or analyze event data
    - Access to and scope of in-vehicle data storage systems

Through targeted and continuous media relations, we want to make our working methods tangible and explain certain technical processes and complex topics to consumers. The main focus is on how modern vehicles are designed, what their special features are and how these features influence vehicle insurance. We will report regularly on the progress of the project and the results.

Fiat Grande Panda Electric and Renault 5 E-Tech

Training in Fire Investigacion

Centro Zaragoza recently delivered the course “Fire Dynamics and Fire Expertise” to the technical and sales teams at Farid Industrie.

The course covered ignition mechanisms, the most common causes of vehicle fires, and inspection techniques for analyzing fire-damaged vehicles. Special attention was given to the analysis of real-life cases and fires in electric vehicles, a topic of growing relevance in the industry.

Participants had the opportunity to consolidate their learning through both theoretical and practical sessions led by our experts. The combination of theory with real case applications allowed for a deeper and more practical understanding of the concepts covered.

At Centro Zaragoza, we remain committed to specialized technical training as a key tool to advance safety and fire investigation in the automotive aftermarket sector.

Student in a practical training session

Feasibility Study on Electric Vehicle Batteries: Repair, Second Life, and Recycling

Centro Zaragoza is approaching the final phase of this project, which aims to help reduce the environmental impact of electric vehicle batteries by proposing solutions to extend their useful life.

In the initial stages, a protocol was implemented to diagnose and repair lithium batteries—when technically feasible—so they can continue to be used as energy storage systems in vehicles for as long as possible. The project also assessed the feasibility of applying certain methods to recondition battery modules that are no longer suitable for automotive use but still have enough capacity to be repurposed as stationary energy storage units in a second life outside the vehicle.

The project is currently concluding with an evaluation of the performance of different battery recycling techniques and their components, with the goal of closing the economic loop by reusing much of the recovered materials in the production of new batteries.

This project is funded by the Spanish Ministry of Industry and Tourism and the European Union, through the NextGenerationEU program, under the Recovery and Resilience Facility. VEC-020100-2022-207.

State of Health (SoH) diagnosis of a hight voltage battery removed from an HEV.

18TH EDITION OF THE CRASH TEST AWARDS

SAFEST CAR 2024

The 18th edition of the Safest Car Crash Test Awards, organized by CESVI ARGENTINA, highlighted the models with the best price-safety ratio and the highest level of protection among all models launched in 2024. Hyundai HB20 (Car), Renault Kardian (Compact SUV and Gold Car), Toyota Corolla Cross (Midsize SUV), Volkswagen Amarok (Pickup), Renault Mégane E-Tech (Electric), Toyota Yaris (Silver Car), and Volvo C40 (Safety Excellence) were the winners.

We are very pleased to see that manufacturers are striving to offer increasingly safer vehicles, which make the awards presented every year by CESVI ARGENTINA increasingly competitive, reflecting technological advances, the incorporation of new technologies, and the development of increasingly solid structures to resist impacts.

The awards ceremony was supported **by Latin NCAP, the Argentine Association of Insurance Companies (AACS) and the Association of Insurance Companies of the Interior of the Argentine Republic (ADIRA)**, together with CESVI's partners: Galicia Seguros, La Segunda, Mapfre, RUS, Sancor Seguros, San Cristóbal Seguros, Seguros Rivadavia, and Zurich. Pillkington, Doble A, and Remate Zárate sponsored this edition.

Which vehicles participated?

Brand new vehicles launched on the local market between January 1 and December 31, 2024, in their base versions, that have exceeded 35 points on the Safety Index. New models and restylings that have improved some important aspect of safety were included in the selection.

All participants had to go through CESVI ARGENTINA's facilities, where they were disassembled, checked, and analyzed to develop the CESVI Safety Index and determine the winners.

It is worth highlighting that **a new category was added this year that includes both electric and hybrid cars**. On the one hand, we awarded the electric cars that offer the best price-safety ratio among all the hybrids and electric cars that went for sale last year. In addition, we added the Silver Car award for the car that offered the best price-safety ratio among the 10 best-selling models in 2024.

The winners in each category

CAR: Hyundai HB20 Hatchback

COMPACT SUV: Renault Kardian

MID-SIZE SUV: Toyota Corolla Cross

PICKUP: Volkswagen Amarok

EXCELLENCE IN SAFETY: Volvo C40

ELECTRIFIED: Renault Mégane E-Tech

SILVER CAR: Toyota Yaris

GOLD CAR: Renault Kardian

Evaluation process

The protocol to determine the Vehicle Safety Index includes 225 items based on their influence on safety. They are divided into two main groups, each with four subgroups:

Passive Safety

- Supplementary restraint systems (seat belts, airbags).
- Structural behavior (materials used, structures).
- Complementary safety systems (post-collision systems and electrical protections).
- Crash Test: results of tests conducted by international organizations.

Active Safety

- Dynamic systems: Stability controls, traction control, slope assistance, among others.
- Preventive safety-ADAS: collision warning, lane keeping, autonomous braking, blind spot sensor, among others.
- Complementary active safety systems: mirrors, restraint systems, safety locks, and window lifts.
- Comfort systems: air conditioning, parking sensors, among others.

Based on the points evaluated, CESVI determined a Safety Index—ranging from 1 to 100—and then linked it to the market value as of December 2024 to establish the price-safety ratio that defined the winner in each category.

The GOLD award went to the model that obtained the best price-safety ratio among all the winners. On the other hand, as every year, only the model with the highest index was considered for the Excellence award, and models that obtained more than 80 points participated.

Winners of the safest Car

Trophies

Representatives of automotive companies, insurance companies, and CESVI Argentina at the event

Second Automotive Repair Expo

A MEETING WITH TECHNOLOGY AND INNOVATION

CESVI ARGENTINA held a new edition of the Expo Car repair at its facilities, with the presence of more than 350 participants. The event brought together the country's body shops and paint shops, suppliers of the repair market, insurance market and the automotive industry, with stands and exclusive spaces for technical demos, product presentations, training, special lectures and networking.

After last year's success, this second edition of the Automotive Repair Expo reinforced the importance of the development of the industry and professional training.

Marcelo Aiello, General Manager of CESVI ARGENTINA, said: “Once again CESVI searched for and succeeded in bringing together the entire repair value chain in an expo whose main objective is to generate a space for meeting, learning and presenting the area 's news, trends and challenges, in order to promote the best safe repair practices to boost the market's development and expertise”.

Special lectures:

Representatives of two car workshops certified by CESVI, LNG Olivieri and Condor; of the insurance companies RIVADAVIA Seguros and RUS; of the automotive company General Motors and OnStar; and the supplier Martech - altogether in a dialogue between specialists- addressed current issues and their vision about the future in the training of professionals, the use of technology and the effective collaboration among the different players in the area.

Under the name **The Happy Employee and Productivity,** discussions were focused on the importance of creating a positive work environment that motivates and connects the work team.

The talk, called **In first person: from training to success**, left a very good impression as it was a clear example of motivation and self-improvement. The CEO of Rebiplast Peru, talked about his beginnings in the 90's and how his car workshop has progressed, starting with the training at CESVI and the professional vision of the business, becoming a recognized reference in his field.

Two **MAPFRE** safety and environmental specialists spoke about the carbon footprint and strategies to reduce it.

A **Volkswagen** mentor, responsible for the development of the bodywork business in the brand's dealer network, explained the challenges of the automaker in after-sales.

LIVE EXPERIENCES

The different suppliers carried out demos in their exclusive spaces.

- Glasurit presented its new line of ProClass coatings, a sustainable range that combines high performance, productivity and a high quality level.

- MAHLE, exhibited its innovative equipment TechPRO® DIGITAL ADAS for the calibration of advanced driving assistance systems. In a live demo, they showed how this equipment significantly reduces vehicle positioning time and simplifies adjustments to the calibration panel.

- Martech/EMYVEC disclosed their latest product entries for working safely with both hybrid and electric vehicles, as well as performing dent removal tests on aluminum parts.

- Henkel gave a demo of its product for repairing plastics and exhibited six applications of its sprayable body sealant.

- WÜRTH presented tools that simplify bodywork stripping, presenting a versatile plastics repair kit for testing.

- Axalta presented its fastest and most productive automotive refinishing system in the global market.

- Double A exhibited a new abrasive for the roughing of parts and another one for the removal of welding spots.

- Norton Abrasives gave a live demo of its Cyclonic color system, its flexible dry sandpaper and its new polishing system.

There was also a demo of using ORION System for automatic damage estimation on a vehicle with the help of Artificial Intelligence. It was also shown how the process is tracked through the system's WEBAPP, which allows optimizing operational and administrative times.

The event included the awards for the best car workshops and safety glass installation centers in Argentina recognized by CESVI.

Live technical Demos

Dialog between specialis of different areas of the automotive repair value chain

Awards for the best car workshops

CESVI MÉXICO HOSTS FIRST REGIONAL EDITION OF ITS PRESTIGIOUS TECHNICAL-COMMERCIAL SHOW IN MONTERREY

For the first time, CESVI México took its renowned technical-commercial exhibition beyond Mexico City, choosing Monterrey as the host city due to the northeast region's high concentration of heavy vehicles. The state of Nuevo León, along with neighbouring regions such as Coahuila, San Luis Potosí, and Tamaulipas, is home to over 600,000 heavy transport units, driving significant demand for repair and maintenance services.

Held from 20 to 22 February in Hall "F" of CINTERMEX venue, EXPO CESVI Monterrey was not only the premier showcase for commercial vehicle repair technology but also the leading forum on road safety, thanks to its first-ever Specialised Conference Series.

On 20 and 21 February, attendees benefited from nine expert-led presentations and three panel discussions, delving into the latest technology, knowledge, and road safety strategies for Mexico's transport sector.

Key sessions included:

- "Leveraging Telemetry Data for Accident Prevention"
- "Best Practices for Implementing Road Asset Security"
- "Future Skills in the Mobility Industry"

Notable debates covered:

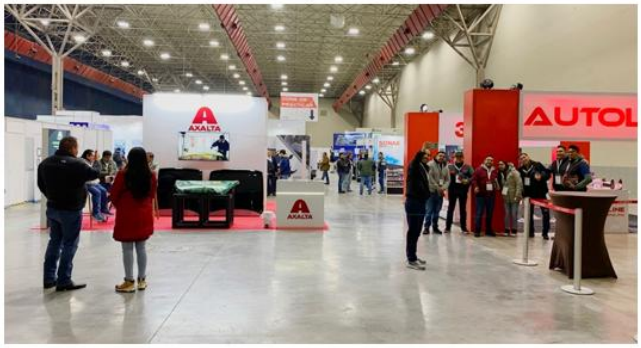
- "The Human Factor in Traffic Accident Prevention"
- "Accident Prevention: The Insurer's Perspective"
- "Safety in Electric Freight Vehicles"

A highlight was the participation of Rodolfo Giacoman, coming from the United States where he assesses the US government, representing The Commercial Vehicle Safety Alliance (CVSA), who delivered an insightful talk on "Fatigue in Heavy Vehicle Operation"—a critical challenge for transport companies.

Augusto Bagase, CESVI MÉXICO's CEO, emphasised that road safety is a core mission of the organisation. He stated: *"This Conference Series in Monterrey provided invaluable expertise for industry professionals and the public alike, helping to enhance safety standards for vehicles, businesses, and—most importantly—people on Mexico's roads."*

Key Figures from EXPO CESVI MONTERREY 2025:

- **Duration:** 3 days
- **Exhibition space:** 1,800 m², featuring 28 stands from specialists in automotive repair, paint, spare parts, and workshop technology
- **Live demonstrations:** Including a functional paint booth oven and displays of next-generation trucks
- **Road safety conferences:** Covering safe mobility, driver fatigue, and future industry skills
- **Workshop productivity sessions:** Focused on improving efficiency and service quality in heavy vehicle repair



Top 10 Driver Distractions When Using a Mobile Phone

Road safety experts at **CESVI MÉXICO** conducted a study measuring the time drivers require to perform the **10 most common distractions** involving mobile phone use while driving. These actions—which **no driver should attempt**—significantly increase the risk of accidents.

The tests were carried out by an **expert defensive driver** in a **manual transmission vehicle** on a closed track to ensure safety. The study aimed to:

1. Measure the time a typical driver spends on each phone-related task while operating a vehicle.
2. Observe behavioral changes during distraction.

Analyzed actions ranged from the simplest (e.g., retrieving a phone from a pocket) to the most time-consuming (e.g., replying to a social media message).

The table below details the **10 primary distractions**, their duration in seconds, and the distance travelled at several speeds during each task:

DISTRACTION ANALYSED	TIME (Seconds)	10 KM/H Distance travelled (Metres)	40 KM/H Distance travelled (Metres)	80 KM/H Distance travelled (Metres)	95 KM/H Distance travelled (Metres)	110 KM/H Distance travelled (Metres)
Retrieving phone from pocket (trousers, jacket, or bag/backpack)	8	22.22	88.89	177.78	211.11	244.44
Unlocking phone via fingerprint/facial recognition	6	16.67	66.67	133.33	158.33	183.33
Unlocking phone via PIN/password	18	50.00	200.00	400.00	475.00	550.00
Searching for and opening an app	56	155.56	622.22	1,244.44	1,477.78	1,711.11
Reading a text/WhatsApp message	12	33.33	133.33	266.67	316.67	366.67
Reading a text/WhatsApp message	14	38.89	155.56	311.11	369.44	427.78
Pairing phone via Bluetooth	74	205.56	822.22	1,644.44	1,952.78	2,261.11
Making a phone call	101	280.56	1,122.22	2,244.44	2,665.28	3,086.11
Answering a phone call	140	388.89	1,555.56	3,111.11	3,694.44	4,277.78
Using Google Maps or Waze	25	69.44	277.78	555.56	659.72	763.89

Key Findings

Regardless of the task or method, **mobile phone use negatively impacts driver behavior and performance**. Those who use phones while driving face a **markedly higher risk of road accidents**.

Move2Green, CESVIMAP's environmental certification, goes international

Move2Green is an online certification developed by CESVIMAP to support auto repair shops committed to environmental sustainability. This certification promotes eco-friendly practices while giving bodyshops a competitive edge by highlighting their environmental commitment to customers, suppliers, and the broader market.

Through a self-assessment digital process, these bodyshops can evaluate their maturity in key areas such as energy efficiency, waste management, responsible consumption, and carbon footprint reduction.

CESVIMAP provides a personalized report with specific improvement recommendations tailored to each shop's reality, helping them move towards more sustainable and environmentally responsible repair processes.

As part of its international expansion, CESVIMAP has begun rolling out Move2Green in other European countries. In **Portugal**, for example, the certification has already been officially launched, and the first Portuguese bodyshops have started the certification process. This expansion aims to adapt the model to the specific needs of each market while maintaining its focus on circular economy principles and sustainability throughout the value chain. The strategy also has included introducing the certification in markets such as the **United Kingdom, Ireland, and the Benelux region**, where environmental awareness and ESG (Environmental, Social, and Governance) criteria are increasingly important to both consumers and businesses.

Currently, **almost 600 bodyshops** across Spain and other European countries are enrolled in the Move2Green certification, demonstrating to customers, suppliers, and partner companies a clear commitment to making their repair processes more sustainable and aligned with today's environmental challenges.

CESVIMAP strengthens its commitment to training and innovation at Motortec 2025

CESVIMAP had a prominent presence at the 17th edition of Motortec 2025, the leading trade fair for the automotive aftermarket sector in Southern Europe, held from April 23 to 26 th at IFEMA in Madrid.

In this edition, CESVIMAP reinforced its role as a benchmark in innovation, sustainability, and technical training, with active participation in several key initiatives throughout the event.

Among its main activities were the organization of two technical competitions that generated significant interest among attendees: the **Damage Assessment Competition**, now in its third edition, and the Headlight Repair Competition. The first, aimed at appraisers and repair professionals, evaluated their ability to perform accurate time and cost assessments using their preferred valuation software—Solera, GT Motive, or DAT Ibérica—while also considering sustainability criteria such as the use of recovered parts. The event was once again supported by the Spanish Association of Appraisers, APCAS.

The **Headlight Repair Competition** tested participants' practical skills in headlight restoration using techniques such as stapling and plastic welding, with judges evaluating the final finish, execution time, and proper use of tools.

Additionally, as part of its support for future automotive professionals, CESVIMAP collaborated in the Young Automotive Technicians Competition organized by Comforp, the association that promotes vocational training by connecting students and teachers with companies in the aftermarket sector.

Motortec 2025 broke participation records, with over 65,000 professional visitors and 640 exhibiting companies spread across 100,000 square meters. The fair served as a key meeting point for manufacturers, distributors, repair shops, and training centers in the automotive industry. With its active presence at Motortec 2025, CESVIMAP reaffirms its commitment to high-quality technical training, innovation in repair processes, and sustainability in the automotive sector.

New Guidelines on New Energy Vehicles Insurance Unveiled in China

To further enhance the protection capacity and service level of New Energy Vehicle (EV) insurance, safeguard the legitimate rights and interests of consumers, and support the development of the new energy vehicle industry, four executive departments in China including the National Financial Regulatory Administration (NFRA), the Ministry of Industry and Information Technology (MIIT), the Ministry of Transport (MOT), and the Ministry of Commerce (MOFCOM) jointly issued new guidelines on deepening reform, strengthening supervision, and promoting the high-quality development of new energy vehicle insurance on January 24, 2025.

The guidelines are divided into 6 parts, comprising a total of 21 articles. Its main content includes promoting the exploration of establishing an insurance vehicle model risk classification system and other policy measures. It focuses on advancing supply-side and demand-side reforms in EV insurance, effectively meeting the public's demand for vehicle insurance, and better serving the high-quality development of the new energy vehicle industry.

Link to the full guidelines:

https://www.nfra.gov.cn/cn/view/pages/governmentDetail.html?docId=1196728&itemId=861&generaltype=1

Following the release of the guidelines, the Insurance Association of China (IAC) and the NFRA Beijing Office visited CIRI for research exchanges. They gained in-depth understanding of automotive risk classification for insurance, the construction and application of the China Insurance Automotive Safety Index (C-IASI) system, and held discussions on promoting the deep integration of the insurance and the automotive industry.

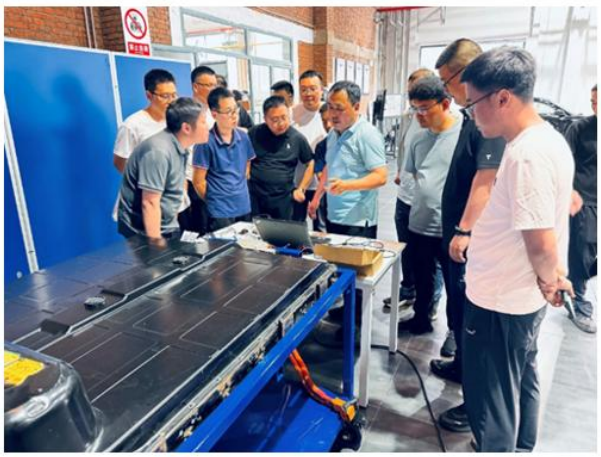
Meeting between CIRI and Insurance Association of China

NFRA Beijing Office Visits CIRI Laboratory

CIRI Develops Specialized Training Programs on EV Insurance Anti-Fraud and Submergence Accident Processing

In 2025, CIRI launched specialized training programs on EV claims-anti-fraud and submergence accident processing. This series of trainings aims to address prevalent challenges in EV accident loss assessment and insurance fraud risks. CIRI adopts a "Theory + Simulation + Practice" integrated teaching model, delving into the damage mechanisms and key repair/inspection techniques for EV's high-voltage parts (battery, drive motor, electronic control systems). The training guides participants to establish a scientific accident assessment framework by analyzing multi-dimensional information—including collision damage detection, vehicle data records, claimant statements, and repair reports, to identify fraudulent claims and unnecessary repairs. This empowers auto insurance adjusters to enhance their technical discernment and anti-fraud capabilities.

EV High-Voltage Parts Collision Damage Detection Training



EV Power Battery Damage Diagnosis Training Program

The training syllabus below was designed by CIRI based on collected real-world cases in China. CIRI aims to collaborate with other RCAR members to improve the quality of EV insurance claims services for insurers worldwide.

Electric Vehicles Claims Anti-Fraud Specialized Training Syllabus	
1	EV Accident Detection Methods
2	EV Insurance Accident Loss Assessment Methods (Including Detection & Diagnosis of All High-Voltage Parts)
3	Post-Accident Detection & Assessment Methods and Applications for EVs (Including Power Battery & Other HV Parts Damage Detection, High-Low Voltage Interlock Fraud, Upper-Computer Fraud, Cell Balancing, Component Identification)
4	EV Low-Voltage Electrical System Repair & Fault Diagnosis
5	EV Bottom Impact Case Analysis & Anti-Fraud Communication Strategies
6	On-Site Loss Assessment Simulation for EV Electrical Parts Damage
7	Common Repair Service Providers Fraud Techniques for EVs & Countermeasures
8	EV Power Battery Repair Service Providers & Price Reference

Electric Vehicles Submergence Accident Processing Specialized Training Syllabus	
1	How the Insurance Industry Influences Vehicle Design
2	Principles of Submergence Accidents, Submergence Level Classification, Impact of Water Type on Vehicle Parts & Rapid Response Measures
3	Rescue, Repair, Testing & Negotiation Techniques for Electrical Parts of Submerged Vehicles
4	EV Submergence Test & On-Site Assessment Drill (Hands-on submergence test, safety briefing, disassemble assessment, HV parts measurement, power battery submergence damage repair testing)
5	EV Submergence Damage Detection & Assessment Standards
6	Measurement Methods, Repair/Replace Criteria & Price Negotiation Techniques for EV Submerged HV Components
7	Fraud Case Analysis: EV Total Vehicle Submergence & Power Battery Water Exposure
8	Common EV Claims Issues & Solutions Following Large-Scale Flood Disasters

Folksam

How safe is your car? 2025

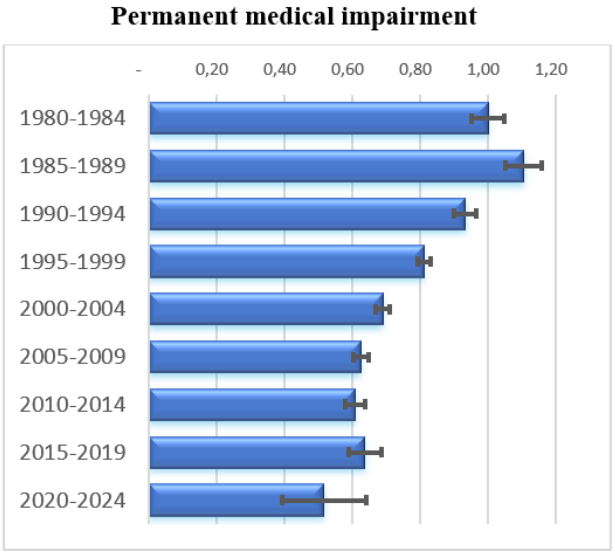
In early June Folksam published an update of the Folksam car model safety ratings "How Safe is Your Car?".

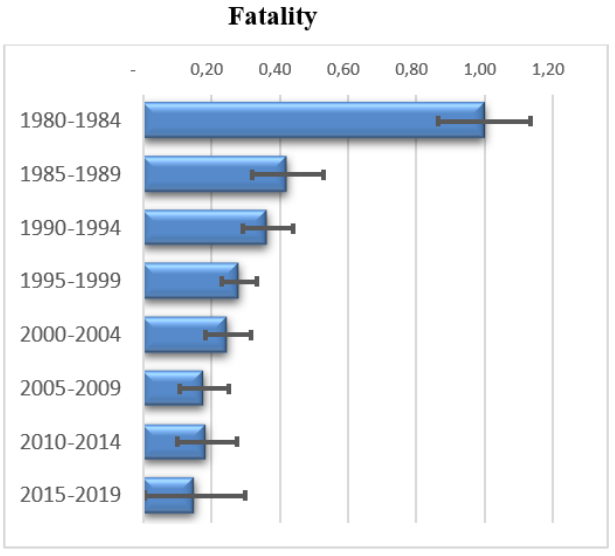
Folksam wish to help consumers using the safest car models. Therefore, for the eighteenth time since 1983, a new rating list is launched presenting information about the safety characteristics of different makes and models of vehicle in order to facilitate and guide your car purchase. The survey covers both the consequences of real-world crashes and the results of crash tests, as well as the performance of safety equipment, in order to reflect the safety characteristics that we know to be of greatest importance. In total, we have assessed the level of safety of 499 vehicle models based on 209,112 real-world crashes. We have analysed how 68,750 drivers and passengers were injured and assessed the risk of suffering an injury leading to long-term health issues. In order to obtain a broader perspective, we have supplemented these results with crash test data and information on whether or not important safety equipment was available. In the case of a further 750 or so vehicle models, we have referred to results obtained in Euro NCAP crash tests, in order to offer consumers advice on the safety of vehicles we have not yet been able to assess based on data from real accidents. We have also added information on important safety equipment. You can find more information about the emthodology used and the complete list at

https://www.folksam.se/tester-och-goda-rad/vara-tester/hur-saker-ar-bilen

When calculating the risk for suffering an injury that leads to death or permanent medical impairment for each vehicle model it is possible to analyse the developments in car safety over the years. These results can be used on an aggregated level, for example to show the development of the vehicle's crashworthiness over time. The results show that the risk of permanent medical impairment (pmi) has been halved when comparing vehicle models launched in the early 1980s with models launched during the past 5 years, while the risk of death has decreased by 85%.

Development for cars launched since the 1980s: risk of permanent medical impairment (left) and risk of death (right)





A renewed experience hub for innovation, sustainability and safety: the new face of Generali Jeniot Technology Center

Jeniot Technology Center, located in Pero on the outskirts of Milan, has undergone a comprehensive transformation through an extensive renovation project that has redefined every area of the facility. Already a benchmark for experimentation and training in the insurance and technology sectors, the Center offers now an even more immersive and representative experience of the innovation that drives the group's daily operations.

The Technology Center serves as an operational and experimental environment where applied research, advanced testing, and experiential training converge. It is here that real-world solutions are tested, from low-speed crash tests to repair process studies, from satellite device functionality to Advanced Driver Assistance Systems (ADAS), and from connected vehicles to smart home technologies and electric mobility. Each technology is evaluated under realistic conditions to ensure maximum effectiveness before large-scale deployment.

The recent renovation aimed to make the Center more welcoming, functional, and communicative, enhancing both its aesthetic appeal and the clarity of its technological narrative. The spaces have been reorganized to support personalized and engaging training paths, designed for agents, stakeholders, international guests, and academic partners. Among the most notable additions is a timeline installation that visually traces the evolution of the Center's most significant projects, offering a compelling narrative of its ongoing commitment to innovation.

Special attention has been given to strategic thematic areas, such as the newly designed office zone, which features an infographic illustrating the results of a study conducted in collaboration with the Politecnico di Milano. The study highlights how adopting a virtuous driving style can significantly reduce fuel consumption and CO_2 emissions, emphasizing the critical role of behavioural awareness in sustainable mobility.

The newly redesigned training area on the left and the advanced driving simulator on the right

One of the most impactful innovations introduced is the new "Virtual Mobility" area, which houses a state-of-the-art safe driving simulator. This tool offers an immersive and realistic experience designed to raise awareness among users (e.g. agents, operators, and clients) about the real consequences of distracted driving. Through simulated scenarios, the system demonstrates how even brief moments of inattention can compromise road safety, encouraging deep and lasting reflection on driving behaviour.

Another important addition is a dedicated room for the demonstration and testing of the fog security system. This increasingly popular device, particularly in commercial settings, activates in the event of an intrusion by releasing a dense fog that drastically reduces visibility, disorienting the intruder and forcing them to flee. The live demonstration of this system's effectiveness allows visitors to fully grasp its deterrent and protective potential, an experience rarely replicable in other contexts.

"Jeniot Home" experience hub during a test of the fog security system

The Center transformation also concerns environmental sustainability. A new high-efficiency heating and cooling system has been installed, aligning with the broader goals of reducing environmental impact and optimizing energy resource management.

In summary, Jeniot Technology Center reaffirms its role as a center of excellence and training, where new ideas take shape and translate into concrete solutions for the protection of people and property. It is a place where innovation is not only showcased but lived, tested, and shared, fostering continuous dialogue between research, industry, institutions, and society.

More information at the lir https://www.jeniot.it/centro-tecnologico?sc_lang=en

Front End Repair Innovation Study

IAG Research Centre, Australia, June 2025

Overview

- A study was conducted with the intention of reducing repair costs and investigating repair method options for damage resulting from small front end collisions
- Three topics were studied, Headlights, Sensors and Bumpers
- Headlights were found to be the largest cost of front end repairs, followed by Radars

Headlights

- Headlights have been the largest cost, costing between USD $20M - $32M per annum.
- For the quickest and most cost-effective repairs, using refurbished headlights is the best solution
- Refurbished headlights are being used in some repair shops, but not the majority. If we were to encourage 50% more, there could be a cost saving of ~ USD $1M per annum.
- An impediment to this is that repairers are reluctant to use the refurbished headlights, sighting quality concerns and fears that their customers will reject the used / refurbished parts. IAG Research Centre research shows that these concerns can be overcome.
- Next step is a trial with a major repairer to test that the process can work, that repairer margin on parts is retained and that customer satisfaction is upheld.

Lightly scratched, repairable headlight, will be discarded

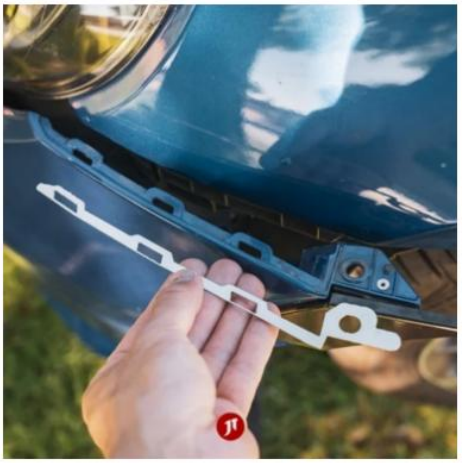
Sensors

- Sensors within the front end of a vehicle costs our business between USD $3M - $4M per annum
- Radars alone cost our business ~ USD $2.5M per annum
- Currently sensors such as Radars are being replaced precautionarily following a vehicle collision
- A subsequent study is currently being undertaken to determine whether sensor reuse is viable, how systems perform with age and to gain insight into whether regular recalibrations may be necessary

Radar Sensor on a thin bracket in a vulnerable position

Bumpers

- Bumper repairs are already common practice within repair shops, however, replacement bumpers still cost our business between USD $1.5M and $2.2M
- Apart from plastic repair, steel laser cut plates can be used to repair bumper tabs more quickly
- Repair information seems to be lacking in repair shops, and consequently, repairing bumpers in the areas of sensors is seemingly not considered as a high enough risk
- Bumpers being repaired in house should be prioritised, as this should allow for better quality control to mitigate concerns around quality with refurbished parts



Bumper Tab Repair Plates

https://jtspec.com.au/collections/bumper-repair-plates

For further information, please contact Shawn Ticehurst (shawn.ticehurst@iag.com.au) or Cris Surace (cristopher.surace@iag.com.au)

Supersizing vehicles offers minimal safety benefits — but substantial dangers

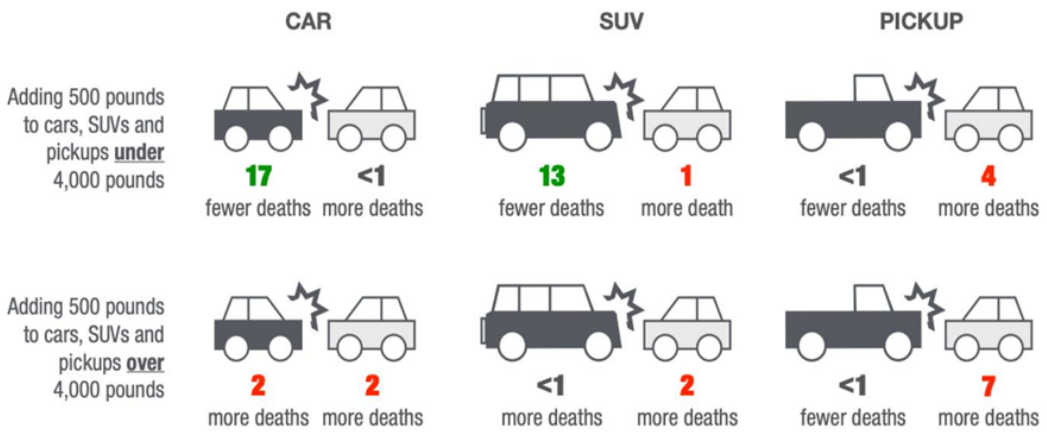
Additional curb weight boosts protection for occupants of the lightest vehicles, but doesn't provide much benefit for occupants of heavier ones, new research from the Insurance Institute for Highway Safety (IIHS) shows.

For vehicles that weigh less than the fleet average, the risk that occupants will be killed in a crash decreases substantially for every 500 pounds of additional weight. But those benefits top out quickly, the study found. For occupants of vehicles that weigh more than the fleet average, there's hardly any decrease in risk associated with additional pounds.

On the flip side, adding 500 pounds to a lighter-than-average vehicle poses virtually no increased risk to people in other vehicles. But the same weight increase for a heavier-than-average vehicle increases the danger to people in other vehicles.

"For American drivers, the conventional wisdom is that if bigger is safer, even bigger must be safer still," IIHS President David Harkey said. "These results show that isn't true today. Not for people in other cars. And — this is important — not for the occupants of the large vehicles themselves."

How added weight affects driver and crash-partner death rates per million registered vehicle years



IIHS has been studying crash compatibility — or how the interaction between different vehicles affects the relative safety of their occupants — for many years. For this update, researchers examined two-vehicle crashes that occurred between 1- to 4-year-old cars, SUVs and pickups. They looked at two periods, 2011-16 and 2017-22, and calculated driver death rates for vehicles and their crash partners per million registered vehicle years (i.e., one vehicle registered for one year).

In general, the researchers found that compatibility across vehicle types has continued to improve.

Between 2017 and 2022, SUVs weighing more than 5,000 pounds were only 20% more likely than cars to result in car-partner fatalities.

Compatibility improved almost as much for pickups, though they remained dangerous to drivers in cars.

For more information, visit https://www.iihs.org/news/detail/supersizing-vehicles-offers-minimal-safety-benefits--but-substantial-dangers

High-visibility clothing may thwart pedestrian crash prevention sensors

The clothing that makes pedestrians stand out to human drivers may make them invisible to automated crash prevention systems, an IIHS study suggests.

The study investigated the effects of conspicuous clothing and increased roadway lighting on the performance of the pedestrian AEB systems installed in three 2023 models — a Honda CR-V, Mazda CX-5 and Subaru Forester.

The researchers conducted multiple trials with an adult-sized dummy clothed in a black sweatshirt and pants, a retroreflective jacket with black sweatpants, the black sweatshirt and sweatpants with retroreflective strips added on the dummy's limbs and joints, and a white sweatshirt and pants. The retroreflective strip pattern used was similar to the one seen on roadway worker outfits, although their safety gear is generally bright orange or yellow rather than black.

The tests were run at 25 mph with no roadway lighting, with 10 lux of illumination in the crosswalk, and with the federally recommended 20 lux of illumination in the crosswalk. The dummy crossed the track perpendicular to the path of the vehicle in all scenarios. Results are shown in the table below.

Average speed reduction from 25 mph by clothing type and lighting condition

		Low beams				High beams
						
	Road illumination	Black clothing	Reflective jacket	Reflective strips	White clothing	Black clothing
Honda CR-V	None	0%	0%	0%	0%	40%
	10 lux	9%	0%	0%	95%	Not tested
	20 lux	39%	0%	0%	62%	Not tested
Mazda CX-5	None	30%	53%	0%	38%	68%
	10 lux	31%	58%	0%	33%	Not tested
	20 lux	84%	62%	0%	32%	Not tested
Subaru Forester	None	100%	100%	100%	100%	100%
	10 lux	100%	100%	82%	100%	Not tested
	20 lux	100%	100%	100%	100%	Not tested

Notably, both the CR-V and the CX-5 were stymied by the reflective strips.

"The placement and motion of reflective strips on the joints and limbs of pants and jackets allows drivers to quickly recognize the pattern of movement as a person," said study author David Kidd, a senior research scientist at IIHS. "Unfortunately, the moving strips didn't have the same effect for the pedestrian AEB systems we tested and probably confounded their sensors."

The reflective jacket improved performance in low-light conditions for the CX-5, but didn't help the CR-V. The Forester did well in all scenarios.

For more information, visit https://www.iihs.org/news/detail/high-visibility-clothing-may-thwart-pedestrian-crash-prevention-sensors

Teen vehicle list offers safety for every budget

IIHS and Consumer Reports recently issued their annual list of safe, affordable vehicles for teen drivers.

The 2025 list includes 74 used vehicles priced at $10,000 or less. Another 48 models that come with automatic emergency braking and highly rated headlights can be found for under $20,000. The safety criteria for both categories are more stringent than in earlier years.

A separate list of new vehicles includes 22 model year 2025 vehicles equipped with the latest in crash protection and safety technology. For the first time, the criteria include a good rating in the seat belt reminder evaluation that IIHS launched in 2022.

The annual list of teen vehicles is intended to help families prioritize safety.

Teen drivers are already at heightened risk because of inexperience and immaturity, so vehicle choice is particularly important for this demographic.

As in past years, the list doesn't include anything with excessive horsepower relative to weight or anything marketed for performance. Such vehicles can entice young drivers to take risks or lead them to speed unintentionally.

The list also doesn't have any minicars or anything that weighs less than 2,750 pounds. Although many smaller models are popular with young drivers, they can't protect their occupants as well in crashes with other vehicles.

On the flip side, large SUVs and large pickups may offer greater crash protection in some configurations, but they aren't suitable for teens because they can be hard to handle and take longer to stop. They also pose more risk to others on the road, including pedestrians, bicyclists and people in smaller vehicles.

For the full criteria and the list of recommended vehicles, visit https://www.iihs.org/teenvehicles.

Advancements and Quality Verification of Non-Painted Composite Parts

KIDI / KART

The automotive industry is rapidly evolving with the integration of advanced materials and manufacturing technologies. One of the significant trends in recent years is the adoption of non-painted composite parts, particularly in commercial vehicles. This newsletter highlights the current state, challenges, and ongoing research related to non-painted composite parts, based on a recent project report focused on the Hyundai Staria (ST1) van's non-painted composite roof cover assembly. The following sections summarize the project's background, objectives.

The use of non-painted composite parts in vehicles has been gradually increasing recently, especially for exterior components such as hoods, roofs, and covers. These parts are manufactured using Lifelong Fiber Injection (LFI) technology, which offers advantages in weight reduction, corrosion resistance, and design flexibility. However, the unique characteristics of these materials present new challenges in terms of damage assessment, repairability, and quality assurance.

A key motivation for this research is the lack of standardized guidelines and data regarding the properties, damage modes, and repair methods for non-painted composite parts. The project aims to address these gaps by conducting real-world investigations, laboratory testing, and developing educational materials for industry professionals.

The primary objectives of the project are as follows:

- Field Investigation: Conduct real-world surveys to document the current status and application cases of non-painted composite parts in commercial vehicles.
- Data Collection: Gather and analyze information on the unique properties and typical damage modes of non-painted composite parts.
- Quality Testing: Perform laboratory tests to evaluate the physical properties and quality of these parts, including both internal and external damage scenarios.
- Guideline Development: Develop practical guides for damage assessment, repair, and quality control of non-painted composite parts.
- Educational Outreach: Prepare training materials and technical documentation to support insurers, repair shops, and other stakeholders.

Key Focus Areas:

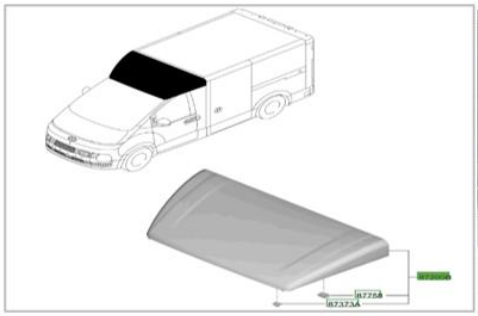
- Real-world case studies of non-painted composite part applications.
- Analysis of typical damage patterns and repairability.
- Laboratory testing for mechanical properties and quality assurance.
- Preparation of damage assessment and repair guidelines.
- Educational outreach, including technical guides for insurance and repair professionals.

Case Study: Hyundai ST1 (Staria) Non-Painted Composite Hood

A focal point of the research is the Hyundai ST1 van's non-painted composite hood cover assembly. This part exemplifies the growing trend of using composite materials for exterior automotive components.

The research includes:

- Component Analysis: Detailed examination of the hood cover's structure and material properties.
- Damage Assessment: Investigation into common damage types and their impact on part performance.
- Repairability: Evaluation of feasible repair methods and their effectiveness.
- Quality Control: Laboratory testing to establish benchmarks for strength, durability, and safety.



The outcomes of this project are expected to:

- Provide comprehensive data on non-painted composite parts, supporting better damage assessment and repair decisions.
- Offer practical guidelines and training materials for repair shops, insurers, and manufacturers.
- Improve overall quality assurance and safety standards for composite parts in commercial vehicles.

The shift towards non-painted composite parts in automotive manufacturing presents both opportunities and challenges. Through rigorous field investigation, laboratory testing, and the development of practical guides, this project aims to bridge the knowledge gap and support the industry's transition to advanced materials. The results will contribute to safer, more efficient, and more sustainable vehicle design and repair practices.

Statistical Analysis on Vehicle Door and Trunk Entrapment Accidents

KIDI / KART

We are pleased to share the results of our recent statistical analysis on vehicle door and trunk entrapment accidents, conducted as part of our ongoing efforts to enhance automotive safety standards.

In 2025, our institution initiated a comprehensive review to support the successful implementation and wider adoption of passenger car safety device improvements. This project was driven by the need to better understand the occurrence and severity of entrapment accidents, and to utilize these insights as a foundation for future safety enhancements.

Analysis Overview

Our analysis was based on insurance claim data between January 2021 and December 2022 from four major insurance companies. We focused on cases where accidents involved personal injury due to hands or fingers being caught in car doors or trunks.

A total of 58 cases of significant injury were identified and categorized as follows:

Categories	Number of cases	Remarks
Self-Negligence	10	typically involving lower compensation amounts and less severe injuries.
Carelessness by Others*	28	Cases which accounted for the highest proportion and severity of injuries, often requiring active medical treatment.
Mechanical Causes	5	often linked to malfunctions in automatic door or trunk closing systems. While these incidents were less frequent, they tended to result in more severe injuries due to the force involved.
Other Causes	15	Cases which included incidents that were difficult to classify under a specific category, often involving complex or multiple contributing factors

* Incidents such as a passenger's finger getting caught in the door while it was being closed from the outside

Key Findings

The majority of accidents were due to carelessness by others, with these cases showing the highest average compensation and severity. Mechanical malfunctions, such as those involving power-operated doors (ghost door closing) and trunks, although less common, resulted in more severe injuries due to the strength of the closing mechanisms. Incidents categorized as "other" typically involved complex circumstances, making them harder to prevent through conventional safety measures.

Future Plans

Based on these findings, we plan to conduct further safety evaluations of power-operated door and trunk systems, including real-world tests to assess the effectiveness of safety features in preventing entrapment injuries. The results will be shared with manufacturers to recommend improvements and ensure that safety devices function reliably in real-life scenarios.

Our institution remains committed to advancing automotive safety through data-driven analysis and collaboration with industry stakeholders. We look forward to sharing further updates as we continue our work to reduce vehicle-related injuries and improve overall safety for all road users.

MRC Annual Insurance Industry Awards 2024 and Genesis PAV Report

MRC Malaysia hosted the Annual Insurance Industry Award 2024 along with the launch of Genesis PAV Report which took place at the Impiana KLCC Hotel, Kuala Lumpur on April 16, 2025. The event brought together key industry players including insurers, loss adjusters, takaful operators, software houses and relevant industry players. The event also recognised organisations for their contributions to the industry and highlighted key findings from the launch of Genesis PAV Report. It was a valuable occasion for networking, learning and celebrating industry achievements.

During the event, MRC CEO, Steve Miller shared a comprehensive overview of accident claims data from 2018 to 2024 in Malaysia. His presentation included key statistics such as the number of claims (OD & OD-KFK), total claims amounts by franchise and non-franchise workshops, repairer trends, average cost per claim, and the total approved amount for 2024 by claims cost category.

In addition, MRC Malaysia introduced its Database Enhancement Projects for 2025, which aim to further support the industry with more accurate and updated data. Key initiatives include New Vehicle Research and Replace Times, Paint Material Costs, Alternative Parts Price Database, Vehicle Market Data Report, Damaged Panel Repair Times and Motorcycle Database. These enhancements are designed to improve the accuracy, fairness, and efficiency of vehicle assessments and claims handling across the industry.

A major highlight of the event was the official launch of the Pre-Accident Valuation (PAV) service, an initiative by MRC Malaysia in collaboration with AutoGrab Sdn. Bhd. Represented by MRC CEO, Steve Miller, and AutoGrab CEO & Founder, Chris Gardner, the partnership aims to provide a reliable valuation of a vehicle's fair market value before it is involved in an accident. This valuation is crucial for insurance claims, legal settlements, and assessing the resale or repair value of a vehicle. The PAV report, which also includes detailed insights into a used car's condition, promotes transparency, helps buyers make informed decisions, and fosters trust between buyers and sellers.

In this event, outstanding industry achievements were also celebrated through the MRC Annual Insurance Industry Awards 2024. The awards were presented by MRC Malaysia CEO, Steve Miller, accompanied by MRC Malaysia COO, Suzana Mohamad.

Recipients of the MRC Annual Insurance Industry Awards 2024.

The recipients were Chubb Insurance Malaysia Berhad for the Fastest Average Approval Time for Insurance Claims 2024, Etiqa General Takaful Berhad for the Fastest Average Approval Time for Takaful Claims 2024 and The Most Accurate Average Estimate to Claims Approval Amount in 2024, Takaful Ikhlas General Berhad for The Most Improved Average Claims 2024, Century Independent Loss Adjusters Sdn Bhd for The Most Supportive Loss Adjuster on MRC Training 2024, and Mr. Benildus Saw Lip Kong for Excellence in Training Support (Loss Adjusting) 2024.

Overall, the event was successful and served as a meaningful platform for collaboration, data-driven insights, and industry recognition. It is a significant occasion centered around the intersection of the automotive and insurance industries. The event also underscores the importance of partnership and a shared vision for fostering innovation and progress in both the automotive and insurance fields.

Press release on the effectiveness of the PMAPs(Pedal Mis-Application Prevention Sys.)

Starting this year, The KNCAP(Korean NCAP) will conduct an evaluation of Pedal Mis-Application Prevention System. Prior to this, Samsung Traffic Safety Research Institute released the results of analysis of pedal mis-application accident characteristics based on data from 11,042 actual accident cases that occurred in Korea. 48.0% of pedal mis-application accidents occurred during parking, reversing, or starting in a parking lot, and drivers aged 61 or older accounted for 39.1% of the total, with a higher accident rate than drivers of other age groups. The analysis results were released through a major Korean media outlets, including KBS(Korea's national broadcasting company) and newspapers. Accordingly, the institute proposed to KNCAP to promptly implement related evaluation to prevent pedal mis-application accidents, and suggested the need to support the installation of a pedal mis-application accident prevention system to prevent accidents involving elderly drivers.

News Briefing on PMAPs

Press release on the accident reduction effects of R-AEB

In March, Samsung Traffic Safety Research Institute announced the results of a study on the effect of R-AEB-equipped vehicles on reducing pedestrian accidents while reversing. The announcement was the result of an analysis of actual accidents in Korea for a total of 174,332 vehicles, and it was found that equipped vehicles had 44.7% fewer collisions with pedestrians while reversing than vehicles not equipped with the system. The analysis results were released through a major Korean media outlets, including KBS(Korea's national broadcasting company) and newspapers. Currently, The KNCAP (Korean NCAP) conducts evaluations of RCTA and RCCA for vehicles, but does not conduct R-AEB evaluations for pedestrians as the Euro-NCAP. Accordingly, the institute will provide research results to Korea Automobile Testing & Research Institute(KNCAP agency), while providing technical support for introducing and installing R-AEB evaluation.

News Briefing on R-AEB

Legal safety training for public officials in Korea

Since April, Samsung Traffic Safety Research Institute has been providing traffic safety training to public officials. This training is being implemented in accordance with the revision of Korea's Traffic Safety Act, which made it mandatory for public officials in charge of traffic safety and facilities to complete safety training. Accordingly, the research institute has been designated as an educational institution in charge of this this year and will provide safety training to approximately 1,000 people. The main content is to provide practical training suitable for the duties of individual public officials, such as analyzing and using driving records, investigating the cause of traffic accidents, and diagnosing traffic facilities, along with education related to laws uch as the Korean Traffic Safety Act, Road Traffic Act, and major traffic safety policies. Through this, the institute will improve the capabilities of public officials and enhance the national level of traffic safety.

Photo of the lecture

Child pedestrian safety campaign using mobile technology

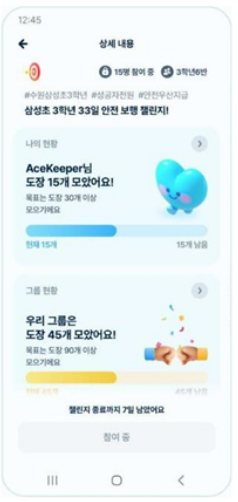
In May, Samsung Traffic Safety Research Institute, together with the Ministry of the Interior and Safety, the Ministry of Education, and Samsung Electronics, jointly developed a smartphone application(*Walky Buddy*) and conducted a child pedestrian safety campaign. This campaign aims to prevent traffic accidents caused by children using smartphones while walking. A total of 1,000 elementary school students were provided with a safety campaign by installing an application on their own smartphones. The main function of the smartphone application is to guide safe walking rules along with a warning screen when smartphone use is detected while walking. In addition, quizzes and challenges related to children's safety were given, and rewards were provided for achieving them so that children could change their own behavior. Meanwhile, the institute is analyzing changes in children's behavior before and after the campaign, and the results of the study will be provided to government agencies and used to establish children's traffic safety policies in the future.

Walky Buddy

Caution Pop-up

Warning Screen

Daily Challenge



Mission Board

Battery Integration Developments

Thatcham Research
Automotive Risk Intelligence

Vehicle Manufacturers are constantly looking at opportunities to reduce cost and increase range in BEVs. One aspect is new methods of integrating the High Voltage (HV) battery.

The first new method is Cell to Pack (CTP), this design directly integrates the battery cells into the battery pack removing the battery modules. LFP batteries are preferrable for this design due to its higher stability in a cell-to-cell configuration. The BYD Blade Technology is a good example of this method in production vehicles. This method reduces the parts which reduces weight and cost as well as simplifies the manufacturing processes and increases the energy density. The challenges with this method are reducing the serviceability of the battery pack, thermal management and how force load paths may affect the battery pack.

Cell to Body (CTB) and Cell to Chassis (CTC) are similar and tend to be used interchangeably. There is a slight grey area, and it is difficult to address the differences in this technology without there being any production examples. CTC design integrates the battery cells directly into the vehicle chassis, thus making the battery cells part of the vehicle platform. This may be in multiple locations in the vehicle without the need of a battery pack collating the cells into one area; however, there may be a form of access for serviceability. The advantages and challenges with CTC are similar to CTP, one difference is CTC may increase the manufacturing complexity due to variations in chassis design across VMs and the battery fitment location. This design may require complex manufacturing methods which has the potential to increase costs too. The CTC design may offer increased rigidity in the platform but VMs must still consider the load paths during a high severity road traffic collision; repair scenarios must be considered also in this design as the vehicle rigidity may be lower when the battery has been removed.

We also see Structural Batteries, an example of a structural battery is the Tesla Model Y, where the battery pack has vehicle body parts fixed to the battery pack like the seat rails and in some cases, a sheet metal for the floor. The difference is that it is a traditional battery pack which can be removed from the vehicle, it may provide some torsional rigidity to the vehicle but has no further integration. CTC however would be individual cells which may be accessed but removed individually. There are few differences between the advantages and challenges of CTP and CTC designs. It will be the VMs choice for which design they opt for; however, it may be the battery chemistry that dictates which method is used. LFP is preferrable for usage in the CTP design, but it may be that VMs are holding out for Solid State Batteries to use the CTC design due to the increased stability and safety of that chemistry. There are only examples of CTP currently on the road; for CTC, there are numerous manufacturers investigating the capabilities but yet to declare an introduction date.

Battery safety improvements, or the implementation of sodium or solid-state batteries, could enable or accelerate the CTC design to market. CTC is optimal for VMs as it eliminates modules and packs, reducing both cost and weight. This could lead to simpler chassis designs like we currently have in ICE vehicles today.

If safety and energy density improve significantly, battery cells could be stowed inside the vehicle, possibly under the rear seat or in the floor pan. However, if the safety concerns persist, cells might be serviceable from underneath the vehicle in watertight access panels. The spare wheel area of the boot floor is another opportune location but poses a risk due to its high damage frequency. Therefore, cells could be mounted forward of this boot floor area, similar to the current hybrid batteries. Given that the cells will always form a significant portion of the vehicle weight and cost, VM's will most likely continue to position them low between the four wheels for dynamic stability and safety. This aligns with the current body style trend of SUVs and Crossovers.

Many vehicle manufacturers have already adopted direct CTP integration, reducing weight, cost, and improving manufacturing efficiency. For example, BYD's Blade Battery 2.0 targets a 15% cost reduction and 210 Wh/kg energy density. While replacing individual cells is more complex than swapping modules, it offers significant cost and sustainability benefits by minimising waste and reducing the carbon footprint by avoiding the disposal of entire modules when only one cell fails.

Vehicle manufacturers (VMs) have reported challenges with cell failure rates between 0.5% and 7%, far above the industry target of <0.1%. This has led to expanded UK operations and outsourced warranty repairs. Despite improvements in quality, these figures suggest a growing need for serviceable CTP batteries at the cell level.

CTC design presents significant advantages beyond cost, weight, and CO_2 footprint, including improved serviceability, damageability and repairability. The current location of battery packs exposes them to significant risks of impact in multiple scenarios. These risks will be mitigated with a move to a more integrated CTC structure, which better protects the cells from direct impacts and eliminates sensitive components such as support rails that sit behind the sill and hold in place the circa 500kg pack.

CTC also simplifies workshop requirements; by reducing vehicle weight, it may eliminate the need for heavy-duty hoists and 500kg+ battery lifts. Although it demands investment in high-voltage repair training, it opens new skill development opportunities. Additionally, CTC removes the need for structural battery packs and vehicle braces, streamlining labour and diagnostics. Tasks like disconnecting cooling systems or removing entire packs just to replace a single cell become obsolete.

In essence, CTC represents a transformative step offering a path to reset EV serviceability and cost-efficiency to levels comparable with internal combustion engine (ICE) vehicles. This is why CTC is considered the "Holy Grail" as it could reset the playing field to that of its ICE predecessor.

Relaunch of the RCAR Website –
A Model of Successful Collaboration

The previous RCAR website had become outdated, prompting the decision at the RCAR Annual Conference in Washington to initiate a full relaunch. Under the leadership of Richard Billyeald (Thatcham Research), the new website was developed over the past year and has been live since April 2025 (www.rcar.org).
This project is a great example of RCAR members joining forces and leveraging each other's strengths and resources to achieve a common goal. Several centres actively contributed to the development, resulting in a modern, user-friendly, and informative website.

Key contributions at a glance:

- **CESVIMAP:** Analysis of the existing website and development of a proposal to improve its content, structure, and visual identity. Definition of a unified template for presenting member centre and working group information.
- **CESVI Mexico:** Production of the RCAR image video and graphic design of the new website.
- **Thatcham Research:** steering the project and compilation and preparation of the content provided by various centres for final approval.

Redesigning and migrating a website is often more work than it seems. I'm very grateful to everyone involved for their dedication and teamwork! The new site has received very positive feedback from members and now serves as an excellent platform to showcase RCAR's work to external partners and the public.

What's next?
Thatcham, CESVI Mexico, and I are currently implementing minor corrections and incorporating member feedback. Thatcham has agreed to take on the hosting of the site and will continue to support its maintenance, together with CESVI Mexico.
Our goal is to keep the website up to date and to make RCAR working group results, procedures, standards, and newsletters easily accessible to the public.

Internal information – now better organized
Internal content is now shared exclusively via the Teams platform under the "Member Information" section. The former member area from the old website has been discontinued. This ensures that internal information is always current and avoids duplication of effort.
Christoph Lauterwasser