JANUARY 2018 NEWSLETTER

From Secretary General

www.rcar.org

Happy New Year RCAR members,

This is the first newsletter of 2018 and I am pleased to report that 11 centres have submitted articles.

The topics this month are wide ranging and include electric cars, aluminium repair and repair of wiring harnesses. We also showcase the range of safety activities that RCAR members are involved in. This includes China's new auto safety index, AEB testing, local NCAP involvement and IIHS impressive safety awards.

Speaking of IIHS, there is an article on David Harkey, the new IIHS president who steps in to fill the shoes of Adrian Lund, outgoing President and long time RCAR member who retired in January.

My contact for any feedback or questions is rmcdonald@rcar.org

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ARTICLE FROM ALLIANZ (GERMANY)

BATTERY-POWERED ELECTRIC VEHICLES AND THE ROLE OF MOTOR INSURANCE

Politics, market and technology

The current public discussion concerning air pollution in cities and climate change has had a significant side effect: it has put electric mobility high on the political agenda. Many governments have announced that they will either ban combustion engines in the mid to long term or – like China – plan to introduce mandatory quotas for new car sales. At the same time traditional OEMs as well as newcomers are expanding their line with new models that are increasingly attractive both in terms of range and usability. With the WLTP (Worldwide Harmonized Light-Duty Vehicles Test Procedure) driving cycle ranges now more than 300km, these models have the potential to reach a much broader audience. Today, however, this is still contrasted by moderate sales and a charging infrastructure that needs to be expanded significantly.

Crash tests of electrical vehicles and data analysis

One of the key factors to ensure broader success in this eco-friendly form of mobility is certainly affordability. In this regard motor insurance is one aspect that should not be underestimated. According to a study by the German motoring organization ADAC, of the overall running costs for a BMW i3 electrical vehicle, the typical share made up by insurance costs is 38%. Taking into consideration that this model has a very good insurance rating in the German market, this ought to be taken as a rather conservative estimate.

Over the past few years AZT has crashed and analyzed many electric vehicles with the some significant results. Generally, we found adequate to good protection of the high-voltage components. Therefore we do not expect a different damage pattern for high-voltage vehicles in the vast majority of crashes. What we also found, however, was that some of the early models had not been optimized sufficiently for a good crash performance. AZT had the opportunity to collaborate with several manufacturers to optimize the group rating through joint data analysis, crash testing and consulting. Our partners have not only included established companies like BMW and Tesla, but we are currently establishing a collaborative project with the German start-up, e.GO Mobile AG, which targets the small car segment.

Some more insights could be drawn from the analysis of a 2016 data set on motor own damage from the German private and small fleet car market. For Battery Electric Vehicles we identified two major trends in comparison with other vehicles. On average, BEVs had a lower claims frequency, only 75%, however the average claim costs were 30% higher. With only two car fires out of more than 19,000 insured vehicle years, the electrical vehicles have thus far been inconspicuous. We recognized a similar trend in motor liability with a comparatively low claims frequency of 74%. Here the claims average is very close to the overall market average of 103%. With increased usability we expect that the frequency of claims will go up and reach a similar level as other cars. This can already be seen in hybrid electric cars where we have a claims frequency clearly above the market average.

In discussions with Allianz companies worldwide, it was established that the topic of battery-powered electric vehicles in claims is of increasing importance and warrants attention:

- The key problems at the moment are the comparatively low density of repair networks, lack of qualified staff and increasing costs and handling time.
- In total losses, there are problems with vehicles with leased batteries; in some cases these even have to be transported to the vehicle manufacturer across the border for inspection, which consequently leads to additional costs and delays in claims handling.
- In severe cases, the diagnosis process and availability of data for high-voltage batteries need to be optimized.

The Allianz Autotag 2017

On September 19, 2017 one of the key topics at the Allianz Autotag were electric vehicles. The Allianz Autotag is a multidisciplinary press event made up of various industrial and political representatives organized to discuss technology trends related to motor insurance. We had the opportunity to talk about our findings with various stakeholders, ranging from OEMs to experts on the charging infrastructure and spokespeople from the fire and rescue services.

ARTICLES FROM CESVI ARGENTINA

CESVI ARGENTINA encourages automotive safety

The eleventh edition of Crash Test's Auto Más Seguro Awards took place last November 27th. In this event, the organization rewards the automotive companies that make an effort to protect those who travel by car. This initiative is supported by the Agencia Nacional de Seguridad Vial (Argentina's National Road Safety Agency) and the Programa de Evaluación de Vehículos Nuevos para América Latina y el Caribe (Latin NCAP).
To select the winners, CESVI ARGENTINA evaluates the different systems and features of a car, considering more than 190 items, of the safety they provide to the passengers. In this regard, it examines the active safety, passive safety, the vehicle structure and the driver assistance systems. The score that each one of these aspects gets establish a Security Index that is later linked to its sale price to finally define the Price-Safety relation.
The progress in technology and some safety related new laws, caused CESVI to transform and adapt the way cars were evaluated. This is why the Advanced Driver Assistance Systems, Automatic Emergency Braking, Lane Departure Warning System, Driver Drowsiness Detection, Blind Spot Monitor, Automatic Parking and Adaptive Cruise Control, among other systems were more important to the new protocol.
In this occasion, the evaluated vehicles were all the ones, in its base model, launched in Argentina between October 2016 and October 2017. The categories that were rewarded, with their respective winners, were:

- Small Car: Fiat Argo.
- Medium and Golden Car: Toyota Corolla.
- Big Car: Ford Mondeo.
- SUV: Ford Ecosport.
- Safety Excellence: Mercedes-Benz E Class.

So, for another year, CESVI ARGENTINA awarded the automakers that made the maximum effort to add safety to the most economic models, which are the easiest to achieve for citizens.
This event was carried out with the presence of the press, insurance companies' executives, automotive industry's representatives, certified and homologated workshops, and industry's suppliers.

El auto más seguro

CESVI ARGENTINA is now a Latin NCAP's Board of Directors member

Last June, Latin NCAP members elected the Administrative Council for the next three years. The new board of trustees is composed, among others, by Marcelo Aiello, CEO of CESVI ARGENTINA, as a representative of the insurance companies and related NGO.

With this new panorama, the Board of Directors was formed as follows:

- President: Ricardo Morales (Automóvil Club de Colombia)
- Director: María Fernanda Rodríguez (Fundación Gonzalo Rodríguez)
- Director: Marcelo Aiello (CESVI ARGENTINA)
- Director: Felipe Soares Bente (Proteste)
- Director: Guido Adriaenssens (ICRT).

The New Car Assessment Programme for Latin America and the Caribbean (Latin NCAP) offers to consumers independent and transparent information about the safety levels that car models have in the market.

Latin NCAP tests are based in international renown methodologies, with vehicles awarded with a safety rating between 0 and 5 stars, indicating the protection the cars offer to adult and child occupants Latin NCAP started in 2010 as a joint initiative and in 2014 was established as an association under legal entity framework. Latin NCAP always test the most basic safety version of a car model available in the market.

Latin NCAP aims to:

- Provide consumers across the Latin American & Caribbean region with independent and impartial safety assessment of new cars.
- Encourage manufacturers to improve the safety performance of the vehicles they offer for sale in the Latin American & Caribbean region.
- Encourage governments across the Latin American & Caribbean region to apply UN vehicle crash test regulations to passenger cars.

ARTICLES FROM CESVIMAP

The new mobility will be autonomous, connected, shared and electric

18th CESVIMAP Chair Lecture Series, at the UCAV

At the 18th CESVIMAP Chair Lecture Series seminar day at the Universidad Católica de Ávila, the subjects dealt with were mobility, connectivity and automation of vehicles.

Rubén Aparicio-Mourelo Alonso, Assistant Manager of CESVIMAP, gave a presentation on ADAS systems and autonomous driving. Mr Aparicio-Mourelo is in charge of the R+D area at CESVIMAP; he talked the audience through the exhaustive process of evaluation that the centre carries out on Advanced Driver Assistance Systems, and the difficulties in establishing a working standard for the same system, both between different vehicles and for models from the same manufacturer. He also referred in his seminar to the location of sensors that these ADAS need in order to work, and the possibility of their being damaged.

Beatriz Huarte Fournier, from Barcelona City Hall Mobility Services Department, spoke in her seminar of the opportunities provided by shared systems in large cities, such as Barcelona. She also pointed to their weaknesses, stressing basically the fact that cars or motorbikes are vital for many people on a daily basis, and that availability is not guaranteed.

In turn, Sergio Gómez Recio, Assistant Manager for Innovation at MAPFRE, estimated in his presentation that global sales for connected automobiles will increase by an annual 41%, reaching 43 million units in 2021, against the almost 8 million currently in existence, among other aspects also related to the connected car.

Ignacio Juárez, CESVIMAP General Manager, ended the day of seminars with an interpretation of what future mobility will be like: integrated, autonomous, connected, shared and electric. "We'll reach a new reality where the vehicle will incorporate as standard both ADAS and connectivity, with alliances between manufacturers and suppliers", stated Ignacio Juárez.

Highly successful CESVIMAP training in replacement of automobile glazing with ADAS systems

CESVIMAP gives training to vehicle after-sales professionals in the replacement and calibration of vehicle glazing with ADAS.

The installation of the ADAS system in vehicle windscreens means repair shops have to have knowledge of these devices and to know how to replace them. The objective is that these pieces of equipment are restored to their optimal state of working repair with guarantees of driving comfort and safety, and that they are not affected by the operations on the windscreen. For this, they must be calibrated, using specific tools.

The windscreen was incorporated into vehicles to offer greater comfort and safety to those travelling in them. It has undergone, and continues to undergo, transformations to come into line with structural, aesthetic, safety and manufacturing needs. It has also adjusted to the new materials which have appeared on the market, as well as to the technologies which, with ever greater frequency, are installed as an aid to driving. All these transformations directly affect repair shops, which have to adapt to the change. It is not just a matter of acquiring the equipment needed to carry out repairs, but also of knowing how to do these repairs and to calibrate the sensors and cameras.

The training given by CESVIMAP has been exceptionally well received. The professionals received both theory on ADAS and practical training, during which they performed windscreen replacements and subsequently conducted calibrations of cameras and radars.

CESVIMAP complements this course with a demonstration of how the AEB system works.

CESVIMAP, an ADAS laboratory

CESVIMAP researches into vehicles carrying ADAS as standard –Autonomous Emergency Braking (AEB), Lane Departure Warning (LDW) or Lane Keeping System (LKS)… –, to find out how these systems work and what there are limits are.

The main objective is to evaluate the vehicle's capacity to avoid accidents and, therefore, personal and material damage with direct influence on road safety. Likewise, the incorporation of ADAS sensors can have influence on the cost of repairing the vehicle, since they are located in zones which aree relatively highly exposed to accidents. Thus, in the event of an accident occurring (for instance, parking against a tow ball) this would have major repercussions on the cost of the repair and, therefore, for the profits and losses for insurance companies or the policy holder's pocket.

It is a question of weighing up the cost and the benefit of these systems, with the starting point being that if an ADAS works properly, the cost of the repair becomes a secondary consideration. However, if the system works badly or even does not work - there have been cases - there is no justification for the increase in the cost of repair and, therefore, the system is hardly worthwhile from the point of view of cost or benefit.

At CESVIMAP, we have designed a characteristic typically urban scenario in which various vehicles, simulated by ABT blocks (AEB *Block Tester*®) are at a halt; the objective of the blocks is to reproduce the rear end of a standard vehicle, for the purpose of the perception of the vehicle's sensors. These blocks are manufactured from a foam containing additive with particles of a material which simulates the echo that a radar produces on it, like the one which a real vehicle would produce. The external material is foam, in order not to cause damage to the vehicle, in the event th AEB system does not work properly. The test for motorbike and vehicle detection with overlap is where the vehicles of various manufacturers are most likely to fail, since they are not considered by any test system from other laboratories.

Since 2016, CESVIMAP holds the international registered patent, corresponding to ABT systems ABT (AEB Block Tester®), capable of simulating vehicles without the test vehicle sustaining damage.

Currently, CESVIMAP is conducting research to perform the tests in various scenarios which reproduce the types of frequent accidents.

Other tests

The analysis finishes with tests on other systems of lower impact on accident rates: Assisted Parking, Blind Spot Warning or Cross Traffic Alert for leaving perpendicular parking spaces.

To do this, we use a qualitative method of technical perception of the tests, putting a value on how they work with three categories: good, average and bad. All the information analysed is compiled into a database, together with the cost of the sensors and the operations to be performed, in the event of their replacement or calibration. As of now, we have fifty or so vehicles of different makes completely analysed; our objective is to increase the number of tests and to carry on participating in the improvement of road safety, one of CESVIMAP's basic principles.

Annual Volvo Bodywork Meeting at CESVIMAP

Volvo Cars held its renowned Annual Bodywork Meeting at CESVIMAP. More than 70 professionals from dealerships analysed, from the business perspective, different solutions provided by the Swedish make for the challenges of after-sales in the medium and long term. As well as analysing the profitability and the client experience of the dealerships, there were various practical workshops about the latest bodywork developments in their vehicles; they were able to try out, in person, some driving assistance systems from this pioneering safety-driven make. The Volvo Car España Manager for After-Sales, Jesús Martín, explained to those present about the company's projects and stressed the effort made by the make to develop after-sales in its network of authorised repair shops.

ARTICLES FROM CIRI (CHINA)

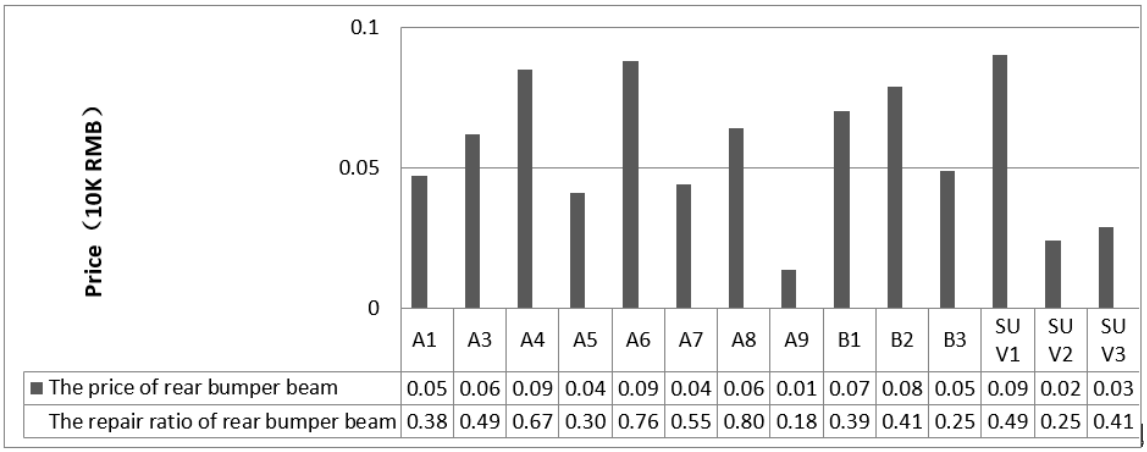
Progress on China Insurance Auto Safety Index

On July 20th, 2017, CIRI and China Automotive Engineering Research Institute (CAERI) released test and evaluation criteria of C-IASI in Chongqing, China.

In 2017, 10 models have been tested and evaluated. Through the analysis of related vehicles collision test data, the below results can be found.

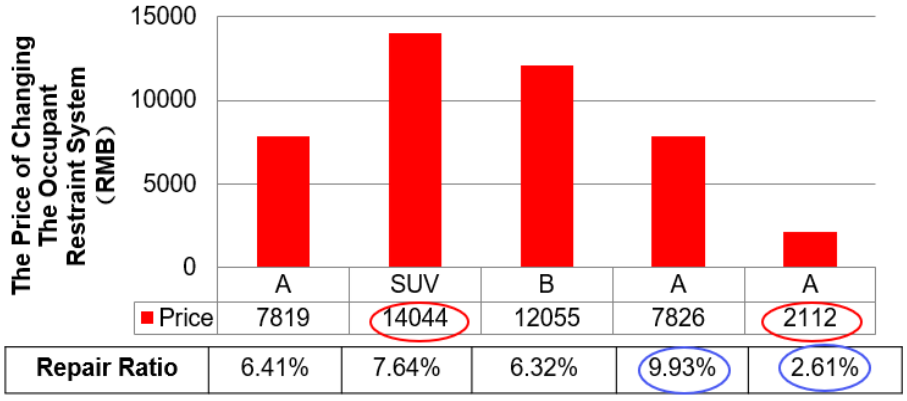
1. There was high probability that the occupant restraint systems were deployed by the low speed collision test. And these vehicles also have bad reparability.

In the repairability, the repair ratio is a fair way to define a vehicle reparability. This repair ratio is a ratio of the cost of vehicle and the cost of repair. In addition, different vehicles have large difference between the cost of replacing components and the repair ratio after the collision tests. And the results can be shown in the figure 1. At the same time, the different vehicles also have large difference between the cost of replacing occupant restraint system and the repair ratio. And the results can be shown in the figure 2.



	A1	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	SU V1	SU V2	SU V3
The price of rear bumper beam	0.05	0.06	0.09	0.04	0.09	0.04	0.06	0.01	0.07	0.08	0.05	0.09	0.02	0.03
The repair ratio of rear bumper beam	0.38	0.49	0.67	0.30	0.76	0.55	0.80	0.18	0.39	0.41	0.25	0.49	0.25	0.41

Figure 1. The Changing Rear Bumper Beam Price and Rear Bumper Beam Repair Ratio.



	A	SUV	B	A	A
Price	7819	14044	12055	7826	2112
Repair Ratio	6.41%	7.64%	6.32%	9.93%	2.61%

Figure 2. The Price of Changing the Occupant Restraint System and Repair Ratio.

2. Fitment rate of airbags on base models tested in C-IASI

According to our vehicles crash tests data, CIRI has counted the air bags of the tested vehicles, and the results can be found in Fig. 3. In China, the frontal airbags are common devices in the passenger cars. However, the side airbags, curtain airbags and knee airbags are seldomly used on the base models.

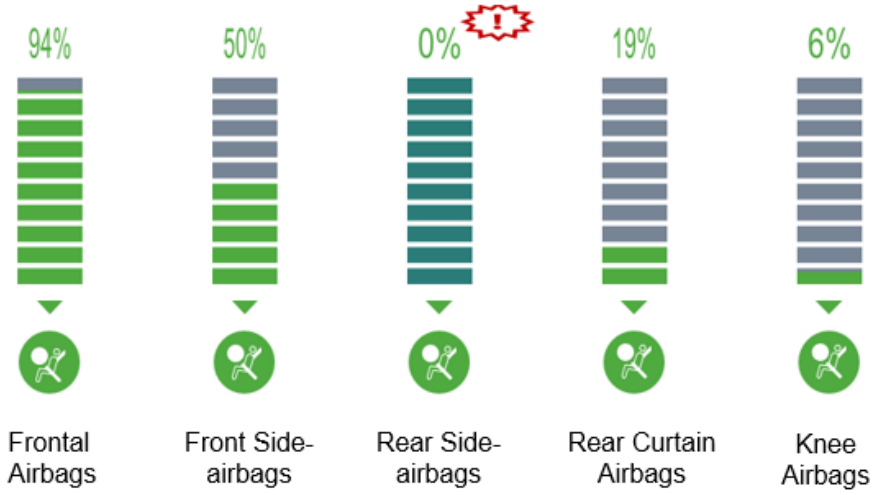


Figure 3. Fitment Rate of Airbags on Base Models Tested in C-IASI

Painting Time Standard Research

From 2015, Insurance Association of China (IAC) has begun to research the painting time standard. After 2016, the project about painting time standard has been transferred to CIRI Auto Technology Institute by IAC. In addition, CIRI has finished the painting time standard about damaged vehicles. Currently, the painting time of 85 different models of vehicles, which account for 47% of the passenger cars in China, has been studied. In 2018, 400 different kinds of vehicles will be calculated, which account for nearly 80% of the passenger cars.

The project of painting time standard includes six different processes: market investigation, time determination, results analysis, building the system of painting time standard, evaluation, and application respectively.

In the beginning of research, the CIRI determine the measuring method of paint time between the painting area and the painting time.

At the measuring time process, the oil paint and water paint has been divided to count. And according to the paint technology, this process also can be divided to solid paint, 2 coats metallic paint, 3 coats pearlescent paint; according to the degree of damage, this process can be divided to new parts painting, small degree damage painting, medium degree damage painting and large degree damage painting. Through 305 specimens research, CIRI has found the relationship between the unit area and the weight of paint.

For acquire the accurate results of painting time, there were many different kinds of garages which cooperated with CIRI. Through the comparison between the garages painting time and CIRI painting time, total 85 cars,

1440 parts, CIRI chooses the vehicles that have more than 3 times painting time at same areas. There are 35 kinds of vehicles and 590 parts. The final results just have 2% deviation. And the results are as shown in the Figure 1.

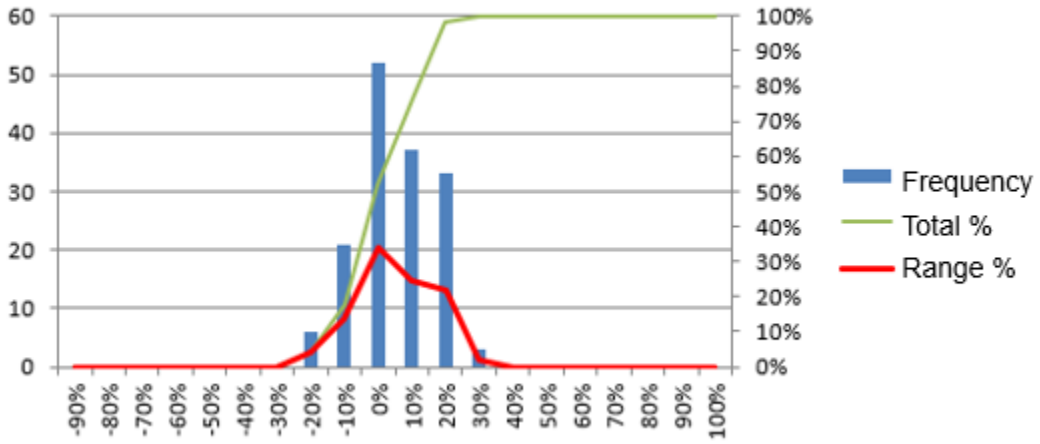


Figure 1. The 35 Different Models of Vehicles Painting Time Deviation Comparison

The CIRI spent nearly 2 years on the painting time standard research, include painting time arrangement, outline of the painting time standard, test and study. This painting time standard can be used to assess the damaged cars and garage painting time management.

On January 9th, 2018, the CIRI organized technical seminar on the painting time standard and invited China Automotive Repair Trades Association and the Insurance Association of China. The research approach, process and results of painting time measurement had been discussed. Afterwards, an expert tank will be set up for the final verification of the CIRI painting time, and application to the insurance estimation will be promoted.

ARTICLES FROM IAG RESEARCH CENTRE (AUSTRALIA)

Research Centre Automotive Repair Library

One of the biggest drivers of motor claims costs in recent years has been the need to follow car companies' recommended body repair methods in order to maintain post-repair safety and quality standards. This adds to claims costs and often leads to total losses when repairs are uneconomic.

Almost every current model vehicle now contains various grades of high-strength structural steels in order to pass collision impact test standards. Specific tools, training and techniques are necessary to deal with particular materials and individual designs.

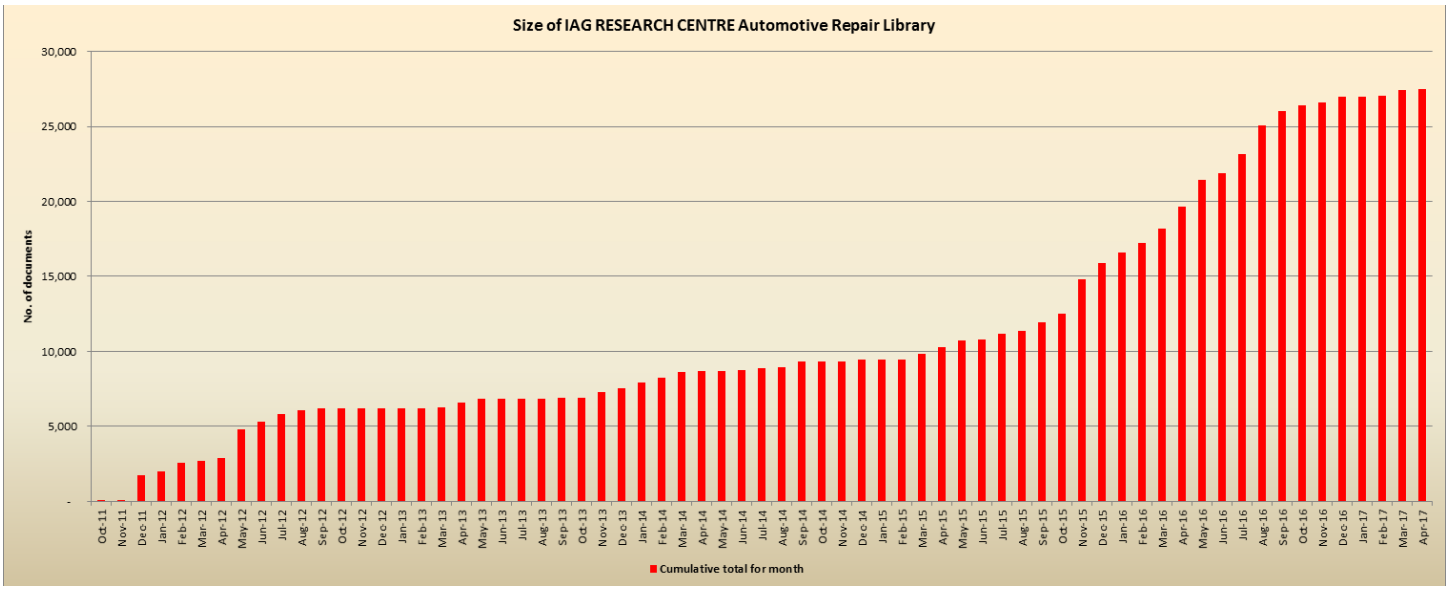
For example:

1. Steel body panels that are laser welded or spot welded at the factory may require various combinations of bonding, riveting, seam welding or plug welding in the course of repairs to maintain integrity

2. Many types of sectional repairs that are permissible on older vehicles with mild steel bodies are prohibited when replacing high strength steel components

The graph below that illustrates the number of repair methods curated by the IAG Research Centre in Australia. You can see how rapidly the numbers have grown over the last few years.

Back in 2012, IAG had fewer than 5,000 repair methods on file. There are now more than 27,000. This growth in materials complexity has raised the cost of repairs for late model vehicles.



Manufacturers working closely with IAG for AEB testing

Now into its fourth year, IAG's AEB testing is an integral part of their new vehicle evaluation program. The reward for effective AEB systems includes premium reductions for IAG customers, which gives manufacturers further incentive to evolve and improve their AEB systems.

Transparency has always been key for this program to work. IAG offer manufacturers the opportunity to attend AEB testing of their products to see how well their AEB systems operate. In the past, these invitations have resulted in favourable outcomes for both IAG and the manufacturer, discovering where calibration improvements can be made to the systems tested.

Recently, Audi, Skoda & Volkswagen representatives were invited to attend IAG's testing of their vehicles. This provided them with a greater understanding of the testing procedure, while also allowing for their input, to ensure the ideal environment was achieved to demonstrate the AEB capabilities of each vehicle.

Attendance by these manufacturers helped identify a number of variables that can impact the effectiveness of AEB systems. It highlighted that while the name of the AEB system remains the same across all models, different models from the same manufacturer can use various system components, and different brands of hardware.

Inviting the manufacturer gives IAG a platform to discuss the importance of AEB testing with them, and explain why it's necessary to perform AEB testing at urban speeds that are not published by EuroNCAP, Thatcham or IIHS. IAG believes that its testing is necessary to ensure manufacturers claims are held to account, AEB components are not de-specified for the Australasian market, and systems can produce real world AEB performance expectations.

ARTICLES FROM IIHS (USA)

IIHS-HLDI welcomes Harkey as president

David Harkey is the new president of the Insurance Institute for Highway Safety (IIHS) and Highway Loss Data Institute (HLDI), succeeding Adrian Lund, who retired in January after serving as president of the Virginia-based safety organizations since 2006.

Harkey comes to the Institutes after 11 years at the helm of the University of North Carolina Highway Safety Research Center, where he focused on improving roadway design and traffic operations for all users. Harkey led major research programs and projects for federal, state and private sponsors during his career at the UNC Highway Safety Research Center and published numerous technical reports and peer-reviewed articles on road safety. He has directed numerous projects to develop strategies for enhanced safety analysis, improve safety data for researchers and decision makers and develop training materials for safety practitioners.

Harkey holds a doctorate in civil engineering from North Carolina State University and Master of Science and Bachelor of Science degrees in civil engineering from the University of North Carolina at Charlotte. He is actively involved in several professional organizations, including the Transportation Research Board and the Institute for Transportation Engineers.

Lund joined the Institutes in 1981 and was the driving force behind new crash test programs at IIHS and evaluations of crash avoidance technologies. Lund recently was named a member of the Autoliv Research Advisory Board.

For more information, go to IIHS and HLDI announce new president

David Harkey

More than 60 models meet tougher criteria to earn IIHS safety awards

Just 15 vehicles qualify for the 2018 TOP SAFETY PICK+ award from IIHS after the requirements were strengthened to include good-rated headlights and good or acceptable passenger-side protection in small overlap front crashes.

Another 47 vehicles earn the TOP SAFETY PICK award, which now requires acceptable or good headlights. In contrast, headlights weren't factored in for 2017 TOP SAFETY PICK, and an acceptable headlight rating was enough to bump a 2017 award winner into "plus" territory.

The inclusion of a passenger-side crash test is a first for any IIHS award. The Institute developed the passenger-side small overlap front crash test after it became clear that some manufacturers weren't paying sufficient attention to the passenger side as they made improvements to achieve better performance in the driver-side small overlap front test.

In 2012, IIHS began rating vehicles for protection in small overlap crashes, which involve just the front corner of the vehicle, bypassing the main structural components. It wasn't surprising that automakers acted more quickly to improve protection on the driver side than on the passenger side, and improving driver-side protection was arguably more urgent, since every vehicle on the road has a driver, while not every one has a passenger. The ultimate goal, however, was symmetric protection.

The first official passenger-side ratings were released in October 2017, following research tests in 2016. The Institute's headlight ratings also are relatively new, with the first ones released in March 2016.

Most of the TOP SAFETY PICK+ awards go to two manufacturers: Hyundai Motor Co. — which owns the Hyundai, Kia and Genesis brands — has six models earning the award, and Subaru has four. Mercedes-Benz has two, while Toyota, BMW and Ford Motor Co. have one each.

Toyota Motor Corp. has the most vehicles — 10 — on the TOP SAFETY PICK list. Hyundai is the runner-up with nine. All but one of the seven vehicles in Subaru's 2018 lineup earn one of the awards.

For more information go to Higher Standards criteria to earn IIHS awards

Rear autobrake and rear cross-traffic alert are reducing police-reported crashes

New research from IIHS indicates that a rear automatic braking system bundled with rear parking sensors and a rearview camera can more than halve backing-crash-involvement rates, while a rear cross-traffic alert system alone can reduce backing crashes by more than 20 percent. The two studies are the latest in a series of reports from IIHS and HLDI that show benefits for backing assistance technologies.

IIHS researchers compared backing crash involvements per insured vehicle year of cars and SUVs with and without the featured technologies. IIHS used police reports to identify crashes in which study vehicles were traveling in reverse and vehicle identification numbers to identify vehicles equipped with driver assistance systems. Researchers used HLDI data on vehicle exposure and garaging location to control for rated driver age, gender, marital status, insurance risk level, state, calendar year and registered vehicle density.

The combination of a rearview camera and rear parking sensors reduced backing crashes reported to police by 42 percent on General Motors cars and SUVs equipped with the technology. Rear autobrake, which GM packages with a rearview camera and rear parking sensors, reduced backing crashes by 62 percent beyond the effect for cameras and sensors. Taken together, vehicles with all three systems had 78 percent lower police-reported backing crash rates than vehicles with none of the systems.

If all passenger vehicles had a rearview camera, rear parking sensors and rear autobrake systems that perform like the ones on these GM models, 3 in 4 backing crashes reported to police could be eliminated, the study found.

For the rear cross-traffic alert study, IIHS researchers expanded the dataset to include vehicles from GM and Mazda equipped with optional rear-cross traffic alert. Averaging the effects between vehicles from GM and Mazda, IIHS found that backing-crash-involvement rates were 22 percent lower among vehicles with rear cross-traffic alert than vehicles without the feature. In two-vehicle crashes where the backing vehicle hit another vehicle traveling perpendicular across its path — the most relevant crashes to the technology — crash-involvement rates fell by 32 percent.

For more information, go to www.iihs.org

ARTICLE FROM KART (KOREA)

Accident Investigation Using EDR (Event Data Recorder)

On October 30, 2017, a Korean movie star, who drove Mercedes Benz G Wagon, suddenly died in a car accident, shocking the public. Numerous eyewitnesses, black boxed images, and the death of the National Forensic Service have been autopsied, but the cause of the accident has not been exactly revealed to date. If his vehicle had an EDR(Event Data Recorder), it would have been a great help in identifying the cause of the accident.

EDR is a data recording device that records vehicle's airbag and engine operation records which is similar to aviation's black box. The EDR provides information necessary for scientifically reconstructing a traffic accident by recording the vehicle condition and the driver's vehicle control such as the running speed for a certain period of time immediately before the vehicle collides. In North America, standards for EDR information have already been established since 2012 to identify causes of traffic accidents, to detect insurance fraud, and to analyze causes of sudden emergencies.

The Ministry of Land, Infrastructure and Transport will extract the EDR information from the investigation of the suspected vehicle and use it as the data for a new investigation. The information will be collected at the automobile recall center with the consent of the person concerned. In 2019, 'EDR analysis center' will be established to collect, manage and analyze EDR information and use it to predict early probabilities and launch investigations quickly. In addition, it will improve the efficiency of automobile defect investigation by utilizing EDR and analytical data such as free inspection and repair information that have been collected.

The National Police Agency will establish a 'traffic accident analysis center' and integrate the information acquired through the EDR information extraction equipment into the traffic accident data accumulated. Police will use it for the scientific development of the traffic accident investigation.

Korea has introduced a provision for EDR in the Automobile Management Act of 2012 and has been in operation since December 2015. However, the use of EDR information is limited. This is because EDR information is regarded as information about the secrets of the automobile manufacturer or private information of the driver.

Automobile manufacturers do not supply equipment to read EDR data in Korea, and cooperation with accident investigation agencies such as police or insurance companies is not smooth. Therefore, the National Police Agency is analyzing EDR data by importing equipment from overseas, but it is having difficulty in operating such as equipment update. Insurance companies are also not able to obtain data directly from insurance accident vehicles due to the procedural problems that they have to request through the agent who has the equipment. Therefore, the analysis of the cause of the accident is inevitably delayed. Nevertheless, there were several cases of using EDR to detect insurance frauds. Here are two typical examples.

[Accident investigation using EDR]

1. The accident caused by the owner's intention
   - Outline of the accident: An imported vehicle with frequent failures was dropped on a mountain slope without the driver boarding it by the owner.
   - Result of the investigation: Acceleration and braking pedals did not work just before the accident. The suspect confessed his fraud after investigation, so the insurer saved $30,000.

2. Camouflage accident

- Outline of the accident: The suspect purchased a damaged high-priced imported vehicle and made an insurance claim for a total loss about collision with a forklift while driving after imperfect repair.
- Result of the investigation: At the time of the accident, the speed of the vehicle was 1.25km/h and the engine was 800rpm. It was found that it was camouflage accident rather than an accident while driving. The insurer saved $150,000 in insurance money.

ARTICLES FROM MPI (CANADA)

Aftermarket wiring harness connectors and pigtails are a simple way to reduce claims costs

Background - The wiring harness of a vehicle is a major component used to send electrical power and transmit signals for the vehicle to perform adequately. Current practice dictates that if a connector or wire is damaged, the entire harness requires replacement. Many connectors are part of an Engine Control Module (ECM) harness, which is a large harness connecting the majority of components. In the case of an ECM, one damaged connector would require an entire new expensive harness. However, connectors or pigtails could be purchased to replace the damaged end of a harness, which could result in substantial savings in labour and parts.

Repinning refers to pulling out the pin and attached wire from a connector, then installing the pin in a new connector.

A **pig tail** connector is used where pins with wires are installed in the connector, which is meant to be spliced into the existing wiring harness.

Example - The wiring harness of a 2016 Dodge Caravan costs $912 (part number 68236867A) and requires approximately eight hours for removal and installation, which adds roughly $570 (using a rate of $71.36). By contrast, a connector is approximately $300 with three hours of labour for installation. Thus, for a single 2016 Caravan over $950 could be saved.

Data - The table below lists the connector wires, time for the re-pining and costs for the OEM harness that would require replacement, according to current practices.

	Number of Wires	Total time minutes	Minute Per Wire	Labour Cost	Connector Cost	Harness Cost	Cost Savings
2016 Mazda3 Marker Lamp	2	7*	3.5	$255	$54	$2636	$2,381
2007 Dodge Nitro Fog Lamp	2	6	3	$219	$54	$574	$355
2012 Sonata Manifold Sensor	4	16	4	$292	$55	$2189	$1,897
2015 Buick Lacrosse Tail Lamp	5	5	1	$73	$54	$737	$664
2012 Sonata Headlamp	6	8	1.33	$97	$53	$2189	$2,092
2016 Mazda3 Fog Lamp	6	13*	2.1	$153	$53	$2636	$2,483
2011 Mazda3 Headlamp	6	20	3.3	$241	$53	$2046	$1,805
2017 Kia Soul Tail Lamp	6	8	1.33	$96	$53	$60	($36)
2017 Kia Soul Headlamp	9	4	0.44	$32	$47	$4322	$4,290
2016 Mazda3 ECM	77	67	0.87	$81	$69	$2636	$2,555
2012 Sonata ECM	53	88	1.66	$121	$69	$2189	$2,068
Average	**9.9**	**19.4**	**2.17**	**$151**	**–**	**$2,019**	**$1,869**

**Pin/wire broke ending time study*

Conclusion - Harness replacements could be avoided through re-pinning or splicing when limited damage exists such as a broken connector or damaged wires near the connector. There is currently no standard time for splicing but a simple time study could be done to establish a time or the same time as re-pinning could be applied, as splicing should not be more time-intensive than re-pining. For re-pinning, the average time was 2.17 minutes per wire, which is roughly 0.04 hours per wire. With the splicing and re-pinning times, an Estimating Standard could be created to require that shops seek connector replacements, when applicable, in place of the replacement of an entire wiring harness. This standard would be implemented if the harness and replacement labour exceed $300, which is a padded maximum cost for re-pinning or splicing. General industry guidelines should be followed for the maximum number of wires that can be spliced and should this limit be exceeded, re-pinning would be the recommended course of repair.

Manitoba Public Insurance's new Research and Training Centre is recognized by OEMs

Manitoba Public Insurance (MPI) continues to keep pace with rapid changes in the design, construction, technology and reparability of motor vehicles with the opening of its new, state-of-the-art centre for automotive research and training at its Physical Damage Research Centre in Winnipeg, Manitoba, Canada.

The new centre enables qualified technicians to work in collaboration with Manitoba's repair industry, as it adopts repair methods related to vehicles now being constructed of complex materials, including aluminum, carbon fiber, high strength and ultra, high-strength steels. The research centre works closely with Manitoba's repair industry and training institutes to offer access to training on new and emerging vehicle repair techniques and equipment, resulting in significant savings for local collision repair shops that would otherwise have to spend thousands of dollars to send their technicians to out-of-province training sessions.
As a result of the upgraded facility, equipment, tooling, and training, the research centre has achieved certification or recognition status with a number of OEMs as part of their certified repair programs. Due to the nature of some of the OEM programs, MPI has been "recognized" as meeting the equipment, tooling and training requirements.
Below is a summary of MPI's progress:

Certified Collision Repair Facility	Recognized - Tooling Equipment & Training	In Process Towards Certification/Recognition
Ford, NISSAN, FIAT, CHRYSLER	TOYOTA	BMW, HONDA, TESLA, KIA

Repairability of aluminum vehicles video series is presented to industry

Many new vehicles are being manufactured using complex materials, such as aluminum, boron steel and carbon fiber, to reduce vehicle weight for improved fuel efficiency. The repair of these complex materials requires specialized training, equipment, methods and facilities.

The introduction of the mass produced aluminum body for the Ford F150 was a first. Being a mass-produced truck in a country where pickup trucks are extremely popular, it made, and continues to make, an impact on the auto body repair industry.

Manitoba Public Insurance (MPI)'s research and training department produced a new video series on the reparability of aluminum vehicles, featuring the Ford aluminum F150. Each video features a detailed visual and audio explanation of the repair process for various aluminum components. The videos place an emphasis on proper repair, serving as a tool for repair shops and MPI staff to ensure the accuracy and consistency of aluminum body repairs.

The video sections focus on:
Front end
Truck box
Frame
Cab corner

You can view the video series here:
Training Videos

On-the-Job / Internship for Body & Paint Familiarization Training

In line with the locally researched repair times project, MRC Malaysia research team has attended the on-the-job / internship for body & paint familiarization training in collaboration with Bermaz Motor, the official Mazda distributor in Malaysia.

The on-the-job training was held on July 24, 2017 to August 25, 2017 at Bermaz Motor's Body & Paint Training Centre in Glenmarie Shah Alam.

The main objective of on-the-job training is to give better understanding in body & paint repair processes and exposure to new automotive repair methods, and to ensure that MRC Malaysia's research team is well-prepared for the upcoming times research project.

MRC Malaysia Locally Researched Repair Times Project for the Malaysian Motor Insurance Industry

Towards delivering one of the key deliverables into its renewed commitment to the industry, MRC Malaysia is taking a huge step by introducing locally researched repair times.

In collaboration with Thatcham, UK and Proton Holdings Berhad, PLAZA Repair Times training was held on September 5, 2017 to September 20, 2017 at MRC Training Centre, MRC Malaysia. The two-week training has been conducted by Thatcham, UK and participated by Proton Research & Development (R&D) Team, Proton Engineering Department Services (EDS) Team, Proton Edar Body & Paint (B&P) Team and MRC Malaysia Research Team. The research covered most of Proton's current models such as Exora, Savvy, Gen 2, Inspira, Suprima S, Persona, Preve, Iriz and Saga.

This locally researched repair times is using the same application with PLAZA Parts system, which is also developed by Thatcham. PLAZA Repair Times is produced by analysing the Panel Structure of each vehicle by method review and/or partial physical strip. Vehicle definition consists of a hierarchy of vehicle parts with a single vehicle panel being defined at the highest level, for example a front fender. All associated parts which must be removed and replaced in order to affect a front fender repair for the work type in question are attached. The necessary fastenings and components which retain the associated parts to the vehicle, for example nuts, bolts and screws can be subsequently defined.

A series of calculations are carried out which produce PLAZA repair times. The software system will calculate the time for the complete job using Overlap. Vehicle repair times refer to new undamaged vehicles. To achieve the times repairers must use methods and procedures which are consistent with those in use at Thatcham. Accident damaged vehicles will be of varying ages and condition and the re-instatement process will comprise both the replacement of parts and the repair (i.e. straightening, bending, reforming, etc.) of parts.

For Each Operation/Panel, there are up to 4 time types:

- M.E.T. : The time to remove any Mechanical, Electrical or Trim components
- Panel : The time to carry out all panel related tasks for an operation
- Paint : The time to prepare and paint the panel
- Corrosion Protection : The time to apply corrosion protection to the panel

Repair times are more accurate since research was done by matching the actual measurements, parts and components using Proton`s technical drawings and Proton's repair methods. This actual desktop times varies in comparison with the template times (Thatcham Composite Times). Some operations are longer times while others are shorter. Full research on vehicle using full strip will give more accurate times as it will cover any gaps in desktop times for example, inner panels.

ARTICLES FROM CENTRO ZARAGOZA (SPAIN)

CENTRO ZARAGOZA's 3rd Conference on Impact Biomechanics

On 7 November, the ***3rd Conference on Impact Biomechnics*** was held at CENTRO ZARAGOZA, with representatives from most of Spain's Automobile Insurance Entities attending, along with other important figures from the fields of law and medicine who specialize in automobile accident claims and the assessment of bodily harm.

The Conference opened with words of welcome and a presentation of the program and the objectives of the conference, by **David Casademont** and **José Manuel Carcaño**, President and General Manager of CENTRO ZARAGOZA, respectively.

The technical talks began with the brilliant presentation titled "***Offer and motivated response in low-intensity accidents***", by the Dr. of Law **Javier López y García de la Serrana**, a member of the commission to monitor the scale established by the additional provision of Act 35/2015. Expanding on this talk, which discussed the documentation on which insurance entities must base their motivated responses and their offers, **Mario de la Fuente**, head of the Legal Department of TIREA and a certified specialist in Information Protection, discussed the ***"Viability of the exchange of expert opinions between companies"***, precisely as part of the documentation that is so important for the analysis of the intensity of collisions and therefore to establish the bases for the responses by the insurance companies. To complement these presentations, the ***"New technological tools applied to the functional assessment of parties injured in traffic accidents"*** was covered, in order to increase the possible objectivity in regard to minor cervical vertebrae trauma. This third talk was presented by **Dr. Alejandro Sanz**, an orthopaedic physician with a degree in law, medical director of Clínicas FisiON, together with **Ignacio Diaz**, director of operations of Clínicas FisiON.

To close out the cycle of conferences, **Juan Luis de Miguel**, Assistant Director of CENTRO ZARAGOZA presented the **new Crash Tests carried out by CENTRO ZARAGOZA to validate the CZ BALS calculation algorithm.** This highly technical presentation explained the experimental methodology, based on the execution of crash tests in controlled conditions to provide support for the biomechanical reports prepared by CENTRO ZARAGOZA to quantify the intensity of low-speed collisions, which guarantees the precision of the reports and also facilitates their understanding, reliability, and credibility, based on the ease with which people who are not experts in carrying out physical calculations can compare the results. To finish the day, all those in attendance participated in a round-table discussion, moderated by **Carlos Arregui**, one of the leading national and international experts in the field of impact biomechanics, who recently joined Centro Zaragoza as Assistant to the General Management, debating the questions covered in each presentation.

CENTRO ZARAGOZA participates in the "Mechanical Expo 2017"

CENTRO ZARAGOZA recently participated in the 2nd **"Mechanical Expo 2017"**, organized for the British insurance sector by Euro Car Parts (ECP), a British company specialized in the distribution of auto parts in the UK, the Netherlands, and France, and part of the LKQ group, a world leader in the distribution of this type of spare parts.

The expo was held in Tamworth (UK), in central England, where the company has its distribution logistics centre, including its main warehouse, which was recently completed and was also presented to those in attendance during the expo.

The event also include participation by a select group of original part manufacturers, such as Hella, Magneti Marelli, Schaeffler, ZF, TRW, Bosch and Valeo Service, as well as the world's other two entities that certify alternative bodywork parts, Thatcham in the United Kingdom and Capa in the United States.

The event was very interesting and was attended by a large group of representatives from insurance companies in the UK, who showed keen interest in the quality proposal presented by ECP. An essential part of this proposal was based on the quality guarantee that certification by independent entities represents for the body parts market. The certification by CENTRO ZARAGOZA was highlighted, as it is the only certification that conforms to the criteria defined by the RCAR (Research Council for Automobile Repairs) and that is accredited according to the standard UNE-EN ISO/IEC 17025.

1st Conference on bodily harm in highway safety

On 8 November, the CENTRO ZARAGOZA Professorship of the University of Zaragoza organized a multidisciplinary conference to analyse bodily harm in highway safety, covering the different risks and dangers, in addition to designing strategies to prevent traffic accidents.

The event was opened by Ignacio Garcés and Mariano Bistuer, director of the Professorship and Assistant Director of CENTRO ZARAGOZA, respectively.

Juan Luis de Miguel, Assistant Director of CENTRO ZARAGOZA talked about the application of biomechanics in expert opinions, and Mario Maza, professor at the University of Zaragoza, explained the evolution over time of the different approval standards for motorcycle helmets.

Ricardo Insausti, university professor and director of the Human Neuroanatomy Laboratory of the University of Castilla-La Mancha, gave a talk on craneo-cephalic trauma; and Rebeca Abajas, from the University of Cantabria, finished the day by covering in detail one of the scales used to measure accident injury severity, the AIS (Abbreviated Injury Scale).

ARTICLE FROM CESVI BRASIL

CESVI BRASIL presents artificial intelligence tool that automates automotive budgets

With an investment in artificial intelligence and big data technology, CESVI BRASIL (MAPFRE's Research Center) introduces SMART, a functionality linked to ÓRION Budget system for the insurance and repair markets that speeds up budgeting of vehicles.

This new functionality aims to increase productivity in the process of preparing budgets for vehicle repairs. Compared to the previous process, SMART reduces the number of clicks in the system by 42%, resulting in time savings of 47%. That is, this allows you to do the same budgeting process in half the time. An achievement that is so much for a market that depends on productivity.

The tool, never seen before in Brazil, can be used by both bodyshop estimators and industry claim regulators.

The functionality was developed based on the study of the software database that brought together 1000 types of collisions, more than 13,000 vehicle models, about 10,000 parts and an historical base of 8 years.

The analysis also took into account the most frequent types of collision, including the front of the vehicle, the front left side and the front right side – with a frequency of 11%.

In the study of the database, two statistical methods of analysis were identified: "CLUSTER" and "FREQUENCY". In order to choose the most assertive method for use in SMART, CESVI's Research and Development area evaluated the low-speed impacts carried out on the test track along with claims budgets that had affected areas that are usually damaged in reparability tests. The most assertive method identified in the study was the frequency one.

With this, it was possible to develop a tool that, in selecting the model, the year of the vehicle and the impact region (front, rear or side), presents, through an algorithm that analyzes historical information of the database of ORION, a pre-budget, suggesting the parts to be exchanged and their costs, repair time and the value of the workforce.

From this, the user has the possibility to change the data according to his expertise and the particularities of the accident.

The tool is available to all ÓRION users and can be selected by the regulator at the time of the claim preparation. (Using the new feature is optional.)

About ÓRION

ÓRION system is an online, integrated and complete claim management solution. For the bodyshops, it offers the best electronic repair budget tool on the market. For insurers and regulators, it provides a solution that speeds up the entire process since the contact with the company's call center.