

THE PILOT PHASES OF LATIN NCAP: HOW FAR IS THE MARKET FROM IMPROVEMENT?

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ABSTRACT

Since 2010 Latin NCAP has been testing the most popular models in Latin America.

It was demonstrated that Latin America's best selling models are 20 years behind Europe, US, Japan, Australia in terms of vehicles safety. How far is the market in Latin America from an improvement in the best selling models' safety?.

27 different models were tested since 2010 in Latin NCAP phases 1, 2 and 3. The results obtained during the test as well as the inspections supplied the data for the discussion of results.

The most basic equipped versions, which are the ones selected by Latin NCAP, showed that the absence of airbags exposed the passenger dummies to serious injuries. The structural performance of the passengers' compartment was weak to poor in the best selling models of Latin America. Latin NCAP also tested cars that looked exactly like the European models but their structure showed a poorer performance in the crash test. In the case of the Child Occupant the main reasons for the low star rating were incompatibility of CRS-vehicle seat and seatbelts, poor labelling and poor dynamics in several cases.

The results are limited to the tested models. But considering the annual sales volume of 250.000 units of the best selling model in the region, the coverage of the results in terms of drivers and their families reached is considerably important.

Considering the poor structural performance, and also the old platforms being used to produce popular cars in Latin America, the Industry will have to bring to the market new or improved platforms, with better performance in occupants' protection. This should come as the governments make the local regulations tougher, but Latin NCAP is already helping to bring changes faster

INTRODUCTION

Latin NCAP has been helping to improve the crashworthiness of today's passenger vehicles in Latin America.

For phases 1, 2 and 3 Latin NCAP has been assessing the cars in a 40%ODB crash test at 64km/h.

The status of technical performance regulations in Latin America regarding vehicle safety and occupant protection is little to non existent. At the time that Euro NCAP begun to rate cars' capacity to protect occupants performance technical regulations were already mandatory like ECE94. This situation brings Latin NCAP since its beginning a more challenging task in helping improve car's safety in the region

In Europe like in other countries, the consumer then had a certain level of safety established by the regulations. In Latin America this is mostly not the case. As from 2014 Brazil will include a performance criteria technical regulation that gives the manufacturer the option to test the model according to ODB crash test performance criteria based in WP29's regulation and full frontal performance criteria based in the FMVSS regulations.

Before the regulation was published, there was a law that made airbags and ABS mandatory but no performance criteria was required. This action was followed by almost all Latin American government.

Consumers and authorities expects that same models from other markets, produced locally will eventually offer similar Occupants performance protection. Including in cases where models do look the same and have same equipment specifications.

All this might be considered as a first step, but the technology and know-how to improve vehicle safety is available since years and it is about to take it and bring it to Latin America.

The actual situation is that manufacturers complain that safety does not sell cars in Latin America, however some manufacturers are advertising about their cars safety in magazines and newspapers. Probably the real reason why consumer do not buy safer cars of cars with safety equipment is explained by the high price charged to cars with

safety devices, often due to availability only with certain packages, which specially affect the payment capacity originally planned by the consumer that buy the most popular cars.

Latin America does not have CRS technical regulation and lack of mandatory use law with the exception of Brazil.

Most of the CRS available are old and low performing CRS that used to be available in other markets like Europe for example.

Latin NCAP has independent and transparent procedures.

Some of the points mentioned above were reflected in the different situations along Latin NCAPs phases 1, 2 and 3, also called the pilot phases.

This paper will mainly focus on the cars that were selected and sponsored by Latin NCAP, however mention to the manufacturers sponsored car will be pointed along the document.

DATA

The cars that Latin NCAP sponsored and selected are the following:

VW Gol, Chevrolet Corsa, Chevrolet Celta, Fiat Novo Uno, Fiat Palio, Peugeot 207 Compact, Geely CK1, Nissan Tiida, Ford Ka, Ford Fiesta Hatchback, VW Bora, Jac J3, Renault Sandero. The best selling models have the following sale levels: the VW Gol (hatchback) sells more than 280,000 per year in Latin America, Fiat Uno more than 220,000 units per year (old and new UNO together but Old UNO lost market share to the new one in the last years), Chevrolet Classic sells 142,000 units per year, The Chevrolet Celta sells 120,000 units per year, Renault Sandero more than 85,000 units per year, Fiat Palio (Old model) used to sell when tested more than 150,000 units per year in all its versions, VW Bora more than 60,000 units per year, Ford Ka more than 50,000 units per year at the time of being tested.

Latin NCAP selects the most basic safety equipped version available of a model.

Adult

The following models were tested without airbags: VW Gol, Fiat Palio, Peugeot 207 COMPACT, Fiat Novo UNO, Chevrolet Celta, Chevrolet Corsa, Ford KA, Renault Sandero. Geely CK1 They are available in the most basic version without airbags. They all scored 1 star in adult. The VW Gol and Fiat Palio structures were rated as stable, the other models' structure were rated as unstable.

The models that presented unstable structures, sell more than 650,000 units per year in Latin America. According to Latin NCAP assessment a structure considered unstable means that it is not capable of withstanding further loadings.

All the models mentioned above that represent the best selling models scored 1 star rating in the adult safety assessment.

Latin NCAP tested a JAC J3, with double frontal airbags equipment that scored 1 star in adult occupant safety.

Child

CRS use is not mandatory in Latin America with the exception of Brazil that also has technical regulation.

In phase 1 the Child safety rating were 1 and 2 stars results.

In phase 2 manufacturers reached 3 stars in child safety for the first time and later in phase 3 4 stars in child safety (Ford Fiesta and Honda City)

Most of CRS offered in Latin America showed incompatibility with the listed cars restraint systems and a poor dynamic performance resulting in poor child occupant safety ratings.

The instructions in most of the CRS sold in Latin America are insufficient.

METHODOLOGY

Latin NCAP ODB 64km/h test and assessment for Adult and Child occupant according to Latin NCAP Protocols

RESULTS

Adult

The results of the cars tested by Latin NCAP as showed below:

Model	Airbags	Star Rating	Stability
Toyota Corolla XEI	+ 2 Airbags (P1)	★★★★★	★★★★★
Ford Focus Style	+ 2 Airbags (P2)	★★★★★	★★★★★
Chevrolet Cruze	+ 2 Airbags (P2)	★★★★★	★★★★★
Nissan Tiida Hatchback	+ 2 Airbags (P2)	★★★★★	★★★★★
Toyota Etios Hatchback	+ 2 Airbags (P3)	★★★★★	★★★★★
Ford New Fiesta	+ 2 Airbags (P3)	★★★★★	★★★★★
Honda City	+ 2 Airbags (P3)	★★★★★	★★★★★
Renault Fluence	+ 2 Airbags (P3)	★★★★★	★★★★★
VW Polo	+ 2 Airbags (P3)	★★★★★	★★★★★
Fiat Palio ELX 1.4 Emotion	+ 2 Airbags (P1)	★★★★★	★★★★★
VW Clasico (Bora)	+ 2 Airbags (P3)	★★★★★	★★★★★
VW Gol Trend 1.6	+ 2 Airbags (P1)	★★★★★	★★★★★
Nissan Tiida Hatchback	+ 1 Airbags (P2)	★★★★★	★★★★★
Chevrolet Meriva GL Plus	+ 2 Airbags (P1)	★★★★★	★★★★★
Nissan March	+ 2 Airbags (P2)	★★★★★	★★★★★
Peugeot 207 Compact 5p 1.4	+ 2 Airbags (P1)	★★★★★	★★★★★
Peugeot 207 Compact 5p 1.4	ND Airbags (P1)	★★★★★	★★★★★
VW Gol Trend 1.6	ND Airbags (P1)	★★★★★	★★★★★
Fiat Palio ELX 1.4	ND Airbags (P1)	★★★★★	★★★★★
Renault Sandero	ND Airbags (P3)	★★★★★	★★★★★
Chevrolet Celta	ND Airbags (P2)	★★★★★	★★★★★
JAC JS	+ 2 Airbags (P3)	★★★★★	★★★★★
Ford KA Fly Viral	ND Airbags (P2)	★★★★★	★★★★★
Chevrolet Corsa Classic	ND Airbags (P2)	★★★★★	★★★★★
Fiat Novo Uno	ND Airbags (P2)	★★★★★	★★★★★
Geely CK1	ND Airbags (P1)	★★★★★	★★★★★

• = Sponsored model

The Chevrolet Celta, Chevrolet Corsa, Fiat Novo Uno, Ford KA, Renault Sandero, Peugeot 207 COMPACT, and Geely CK1 structures were rated as unstable (modifier -1 point applied).



Geely CK1



Chevrolet Corsa Classic



Chevrolet Celta



Ford Ka

The Chevrolet Celta, Chevrolet Corsa, Fiat Novo Uno, Ford KA, Peugeot 207 COMPACT, and Geely CK1 (modifier -1 point applied)



Child

Latin NCAP requires the manufacturer to recommend of the CRSs to be used in the test. Incompatibility car-CRS was present in most of the Latin NCAP selected cars.

The lack of instructions in the way that the protocols require brought a loss of points for most of the Latin NCAP selected cars.

Acceptable dynamic performance was observed in some models, however in cases where the structure was rates as unstable was observed better dynamics of the CRS than in models which structure was rated stable.

DISCUSSION

Adult

The results of the models tested that belong to the top 10 selling cars showed that most of them presented an unstable rated structure in the test. In some cases like the Geely, it is reasonable to expect that even with airbags the injuries in the front passenger will still be considerable.

One powerful results that can illustrate the risks of an unstable structure even with airbags is the JAC J3 that scored only 1 star in adult occupant safety even with 2 airbags and pretensioners.



JAC J3

Some government in the region are requiring airbags in the law, and the previous example shows clearly that airbags may not solve the problem and that a performance requirement is needed. Some countries in the region are focusing to introduce performance criteria regulations.

Cars with no airbags showed high risk of life threatening injuries in the passengers. In cases where the same model was tested with and without airbags the benefit of the airbags was clear in the result bringing some models from 1 to 3 stars and another one from 1 to 2 stars. This also shows that there is room for improvement in some cases with not very dramatic changes in the cars to make them perform better in the test.

The dynamic results of the Child occupants was average to good in cars which structures were rated as unstable and poorer performance results in cars which structures were rated as stable, like the Nissan Tiida, Toyota Corolla for example. In some cases we have seen CRS broken due to the accelerations. As the structures become stiffer, then the rear restraint systems as well as CRS must be improved in order to offer good child occupant protection.

Latin NCAP also compared models tested in our program to the same models tested by other NCAPs like Euro NCAP. There is a clear difference in safety equipment of the same models like less

airbags, no ABS or no ESC for example. But we have seen cases where the structures of 2 same looking models behave in a very different way. Examples of that are the Nissan March compared to the Nissan Micra and March, or Renault Sandero and Dacia Sandero. In those cases the Latin NCAP structure was rated as unstable and intrusions were higher as well.

Latin NCAP received comments from consumers claiming that the airbag versions of the models tested are much more expensive then the basic (nom airbag version). In some cases the consumer must pay from 18% to 33% on top of the basic price to get just double fontal airbags. In some cases this is explained by the “package” that offers the manufacturer matching airbags with other non safety related items like Bluetooth or alloy wheels. In one sample case of same European model but different structural behaviour, having the Latin NCAP model no airbags, but the European model 6 airbags, ABS and ESC the price difference at the same time between those cars one sold in Europe and the other sold in Latin America was less than 1000 Euros. However these price differences are strongly linked to the local taxes, cars in Latin America are as or more expensive than in Europe and they offer a lower level of occupants protection. Some consumers are wondering why this is happening and how it can be fixed.

Until phase 3 (2012) the models that could offer a 4 star level of safety to their occupants were large and expensive models, but the Toyota Etios showed that a car from the small most competitive market in the region can offer 4 star in adult occupant safety and be sold for a price close to the 10.000 Euros in Brazil and locally produced.



Before the test of 2 models selected in 2012 were conducted, the manufacturers decided to make a change in production for safer equipment. The VW Bora and Ford Fiesta are sold in Latin NCAP market with double standard airbags.

In phase 3, 2 cars reached the 4 star result n Child occupant: Ford Fiesta and Honda City, both using ISOFIX CRS. The protection offered by the CRS was very good as well as the instructions and

vehicle compatibility. This is a remarkable result considering the beginning of the program. Only one market in Latin America has CRS regulation requirement for type approval: Brazil. The ISOFIX CRS are not contemplated by the regulation therefore they cannot be approved for importation. Hopefully the Latin NCAP results will help to show the benefit of the ISOFIX in misuse reduction and dynamic performance.

CONCLUSIONS

Bodyshell integrity, airbags and seatbelts are critical for the protection of occupants.

Models for Latin America showed poorer protection than the same model even with same equipment for Europe.

The latest models tested showed already an improvement in the structural stability.

The protection of child occupants is low because of the marginal to poor protection offered by the CRS, the incompatibility car-CRS and high probability of misuse.

As structures become more stable and stiff, the rear seat restraint systems and CRS must be improved to offer better protection.

First cars to score 4 stars in Child occupant safety: Ford Fiesta and Honda City. ISOFIX CRS were used and showed good protection performance and considerable reduction of misuse possibilities.

Latin NCAP recommends all governments to make the requirements of UNECE94 (technical standard) mandatory for all cars. Currently no car without airbags will pass UNECE94.

Latin NCAP strongly recommends all governments to reinforce the conformity of production in the regulatory tests for car's protection performance and make tests in independent or governmental test laboratories

Latin NCAP recommends all governments to make CRS use and technical standard approval for CRS mandatory. Latin NCAP would welcome when all governments will allow ISOFIX use according to the UNECE technical standards.

Latin NCAP promotes the use of CRS in cars and strongly recommends closer cooperation between car manufacturers and CRS manufacturers to improve Child safety in the region.

Latin NCAP welcomes Ford's and VW's rapid efforts to bring safer vehicles on sale in Latin

America (Fiesta and Clasico) and strongly encourages other manufacturers to follow suit and increase the availability of airbags on their new cars.

A car locally produced in the smallest most competitive segment could offer 4 stars in adult safety, and same models jumped from 1 to 3 stars in adult safety with just the double airbags.

The previous cases show that it is possible to produce an affordable car in Latin America that offers a 4 star safety level. More stable structures and airbags in vehicles will help to get closer to safer cars in the region. Technology and knowledge is there from the mature economies markets, no need to develop new technologies for Latin America stage

Latin NCAP helps to improve the safety of the cars in the market and consumer awareness not all the cars in the market are being tested.

Considering our actual regulatory situation in comparison to European regulations when Euro NCAP started, Latin America is as close or far from safer cars as the governments, manufacturers and consumers want to be. Governments regulations will help to have better performing cars in occupant protection and will bring safer CRS to the local market but all this must be present together with laws, regulations enforcement and education.