



REPORT 2016 FUNDACIÓN MAPFRE ROAD SAFETY CHILD  
IN SPAIN AND LATIN AMERICA: CAR SEATS 2016. EXECUTIVE  
SUMMARY

Fundación  
**MAPFRE**



# Executive Summary

## Summary of Spanish figures

- In 2014 (the last year of available data), traffic accidents were the main external cause of child fatalities, accounting for 23 percent of all deaths of children under the age of 14 for external causes. This is the lowest percentage of the last 25 years, which indicates that improvements in children's road safety are achieving greater success than in other areas such as drownings, accidental falls, etc.
- In 2015, a total of 25 children under the age of 14 died in Spain as a result of a traffic accident. In 2014, the number of child fatalities from traffic accidents was 37: thus between 2014 and 2015 there was a significant drop of 32 percent in the number of child fatalities in Spain from traffic accidents.
- The joint total of fatalities and serious injuries to children in 2015 was 380. In 2014, the total fatalities and serious injuries to children in Spain as a result of traffic accidents was 388: consequently, between 2014 and 2015 there was a small drop of 2 percent in the number of child fatalities and serious injuries from traffic accidents.
- In 2015, most child fatalities occurred outside towns and cities: while 19 children lost their lives on highways (76 percent, or two out of every three children), six died in cities (24 percent).
- In contrast, 63 percent of serious injuries and 65 percent of minor injuries in Spain in 2015 happened on city streets.
- Most children under 15 who died in traffic accidents in Spain in 2015 were traveling in cars or light vans: 16 of the total of 25 children who died in 2015 were traveling in cars. In 2015, car occupants accounted for 64 percent of all the fatalities in traffic accidents. It is therefore evident that children traveling in cars are still a priority when it comes to improving children's road safety.
- The second group with the highest number of fatalities was pedestrians. To be exact, eight children died in 2015 as pedestrians. In other words, just under one-third of all the child fatalities in Spain as a result of traffic accidents in 2015 under the age of 14 involved pedestrians (32 percent of all child deaths).
- In 2015, one child riding a quad bike died (4 percent). In 2015, no children riding bicycles, buses, other heavy vehicles, motorcycles or mopeds died in a traffic accident in Spain.
- However, in 2015, all child fatalities in urban areas were pedestrians (six children), and two pedestrians aged under 14 died on highways (11 percent of the total of 19 fatalities on highways). While no child passenger of a car or van died in towns or cities, a total of 16 children traveling in these vehicles lost their lives on the highway (84 percent of highway fatalities).
- In the last two decades, between 1990 and 2015, the number of children under 14 who died as a result of traffic accidents dropped from 307 to 25, a very significant fall of 92 percent. In other words, for every ten children who lost their lives in traffic accidents in Spain in 1990, only one child loses

their life today. Taking fatalities and serious injuries together, while at the beginning of the 1990s around 2,200 children died or were seriously injured in Spain, by 2015 this figure had fallen to 355 (a drop of 81 percent).

- In the last two decades, between 1993 and 2015, the number of children under 14 who were seriously injured in traffic accidents fell from 1,893 to 355, a very significant drop of 81 percent.
- In the last two decades, between 1993 and 2015, the number of children under 14 who incurred minor injuries as a result of traffic accidents rose from 5,708 to 6,165, an important increase of 8 percent over this period. It is also worth noting that the number of minor injuries increased very significantly between 2014 and 2015, going from 5,610 minor injuries in 2014 to 6,165 in 2015 (a rise of 19 percent).
- While the number of children with serious injuries in 2015 reached an almost historical minimum (the lowest figure in the last 20 years was 351 serious injuries in 2014), the number of children who sustained minor injuries has increased in recent years and in 2015 was the highest figure of the last two decades.

## Summary of data for Latin America

In many countries, especially in the more developed ones, children traveling in private cars represent the largest group of accident victims (and, furthermore, a group that is growing with increased motorization); child seats, also known as Child Restraint Systems (CRS), prevent between 50 and 90 percent of all serious injuries and fatalities in children.

The correct use of child restraint systems reduces injuries by between 90 and 95 percent in the case of rear-facing systems, and 60 percent in the case of front-facing ones.

CRS are probably the MOST IMPORTANT means of individual accident protection for children traveling as passengers in private vehicles.

The data from the 2015 report and for the most recent years for which there are available figures from each country show that almost 5,000 children aged under 14 (4,918 to be exact) died over the course of the year in the 18 LAC countries covered in the study.

If we compare this with the 5,113 child fatalities in the previous study (in 2013), we can see that there has been a drop of 3.87 percent in the number of deaths.

The average child mortality rate from traffic accidents in the LAC countries surveyed is thirty-two (32) deaths per million inhabitants; in European Union countries, this rate is six (6) child fatalities per million inhabitants.

The countries of Latin America and the Caribbean need to tackle a road safety challenge that can no longer be put off: if the LAC countries covered in this study had the same road accident rates as the European countries analyzed, the lives of over 4,000 children would be saved every year.

The 2015 review of the situation of children's road safety in Latin America throws up some heartening figures: countries such as Peru have achieved an increase in their general rating of 18 points compared to the 2013 review, and have done so based on legislation, inspection protocols, mandatory technical requirements and the emergence of certain road safety campaigns, including the promotion of CRS.

Meanwhile, Uruguay managed to improve its rating by 10 points, mainly attributable to improvements in child traffic accident indicators, legislation, technical requirements and mandatory inspections, according to the "Global Report on Road Safety" published by the World Health Organization (WHO) in 2015; Ecuador also improved its general classification by eight points based on improvements to child traffic accident indicators and legal inspections, according to the same WHO report.

However, countries such as Mexico and Brazil account for around 50 percent of all child fatalities in the LAC countries in the study, a trend that has remained unchanged in the three studies undertaken in 2012, 2013 and 2015.

These results seek to provide technical and scientific analytical tools to spread information on this problem and educate people in how they can deal with it; regional governments are responsible for incorporating and strengthening children's road safety policies in their agendas, taking on board the fact that road accident rates are, in the first instance, a public health issue which - in view of the results of this study - has failed to achieve specific and sustainable results in Latin America and the Caribbean.

## Conclusions of the tests

Comparison tests of different child restraint systems were conducted in different conditions.

A separate study was made of three age groups using P3/4, P3 and P6 crash test dummies and three different child restraint systems. These CRS were: Group 0+, in which the child travels facing the opposite direction to travel; Group I, in which the child faces the front and is secured by a harness; and Group II/III, in which the child travels facing the front, secured by the vehicle's seat belt. The tests were conducted in the correct conditions, the wrong conditions, using uncertified child restraint systems, and not using any CRS at all.

For each test, different parameters were studied: the resultant and vertical acceleration of the chest, the maximum horizontal and vertical movements of the dummy's head, and the resultant acceleration of the head. In addition, the videos of the dummy's movements in different situations were studied.

The following systems/situations were tested:

### The use of uncertified Group 0+ and Group I CRS

The results of the tests on dummies P3/4 and P3 were poor in both cases, exceeding the limits established by standard R44.04 for both head movement and chest acceleration. In addition, there was damage to the harnesses and structure of the seats, making these CRS completely unsafe. In contrast, when certified CRS

were used the correct results were achieved, well within the regulatory limits, and the videos showed much safer and more controlled dynamic movements.

#### The use of CRS without the seat belt securing it or the safety harness being sufficiently tightened.

These tests were done using P3 dummies with Group I child restraint systems. The results exceeded the regulatory limit for horizontal head displacement as well as the vertical acceleration from the chest sensor. In contrast, the tests conducted in the correct conditions produced valid results for both chest acceleration and minor head movements.

#### No use of a CRS

In the simulation of a situation in which a baby was traveling on an adult's lap, the child would be thrown forwards and severely crushed by the adult. This would not happen if a CRS was used, as the restraint system would halt the child's movement.

Meanwhile, when simulating the case of an older child sitting in the seat without a CRS, acceptable head movement and chest acceleration figures were recorded, yet it was observed that the seat belt put pressure on the child's neck which could lead to serious injuries in this area. It was also observed that the test dummy slid forward, making the seat belt exert pressure on its abdomen which could cause a "submarining" effect.

#### Correct use of an old CRS

Old or damaged child restraint systems do not protect children in the same way and can break when subjected to the deceleration experienced in a collision. In the test with an old Group I child restraint system, although the head and chest acceleration limits were exceeded, there was no breakage or abnormal movement of the seat. The non-regulatory figures recorded may be the result of changes to the properties of the CRS, such as the rigidity of the material, due to the aging process.

Overall, this study corroborated the importance of the correct use of child restraint systems. In particular, it noted the serious inadequacy of non-certified systems

## Goal Zero child fatalities or serious injuries

One of the main objectives of Spanish road safety policy for 2011-2020, a strategy that was presented at the end of 2011, is to "reduce to zero the number of fatalities in children without child restraint systems."

Taking a much broader view, Fundación MAPFRE believes the end objective should be none other than reducing to zero the number of child fatalities or very serious injuries as a result of traffic accidents in Spain, including those who do not use retention systems (primarily because they have gone past the age of using them) and those who do. Until we achieve this goal, there is a long way to go.

Indeed, in 2015 Fundación MAPFRE made a formal proposal for a new framework for improving road safety based on two key cornerstones:

- "Goal Zero" fatalities and serious injuries as the only mid-term goal that is ethically sustainable (Fundación MAPFRE's adaptation of the "Vision Zero" passed by the Swedish Parliament in 1997).

- The “Safe System” approach as a means of achieving this goal.

“Goal Zero” is based on the fact that practically every serious injury or fatality is avoidable. It also believes that it is necessary to consider serious injuries in the same way as fatalities: so it is essential to start establishing joint objectives and action plans to reduce both types of outcomes.

On the one hand, given the threat of an increase in traffic-related accidents, it is also essential to recognize that doing the same thing, or at the same level of intensity, IS NOT ENOUGH. We need to do more, or do things in a different way, or channel more resources, or improve the efficiency of our actions (an improvement which, it has to be said, also has its own limits).

Fundación MAPFRE believes that it is realistic to aspire to achieving Goal Zero in urban environments (in towns and cities) by 2030 and in interurban environments (outside cities, on the highways) by 2050





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