

Research report N° 2018-R-03-SEN

Are our children safely fastened?

Results of the national Vias behaviour measurement on the use of child restraint systems 2017.



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Schoeters, A. & Lequeux, Q. (2018) Klikken we onze kinderen wel veilig vast? Resultaten van de nationale Vias-gedragsmeting over het gebruik van kinderbeveiligingsystemen 2017. Brussel, België: Vias institute – Kenniscentrum Verkeersveiligheid

Schoeters, A. & Lequeux, Q. (2018) : Nos enfants sont-ils correctement attachés en voiture ? Résultats de la mesure nationale de comportement de l'institut Vias en matière d'utilisation des dispositifs de retenue pour enfants 2017. Bruxelles, Belgique : l'institut Vias – Centre Connaissance

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Summary

Intention and methodology of the research

Restraining children in the car with an appropriate child restraint system is crucial for their safety as car passengers. Depending on the weight and/or height of the child, there are various types of child restraint systems that offer protection in the event of a crash. These systems are approved based on a European standard: UN R44/03 or UN R44/04, or the more recent UN R129.

The effectiveness of child restraint systems in preventing serious injuries in the event of a crash has been scientifically proven. However, their effectiveness is reduced – or even totally negated – when child restraint systems are not used in the correct manner. In fact, there is an increased risk of serious or even fatal injuries when a child restraint system is not installed correctly, if the child is not installed correctly in the system or when the system itself is not appropriate according to the weight or height of the child. For this reason, there have been various European projects underway since 2000 designed to investigate the causes and consequences of the incorrect or inappropriate use of child restraint systems.

With this in mind, Vias institute organised a third national behavioural study in May 2017 into the correct use of child restraint systems. This survey investigated how children are transported under actual conditions on the road. Observations were taken to see whether children were being carried in a child restraint system, whether or not that system was suited to their body type and shape (size/weight) and whether any mistakes had been made when installing the seat in the car or the child in the seat. The survey also examined what factors may have an influence over the way in which children are protected when they are in the car.

The methodology used is comparable with the one used for the surveys in 2011 and 2014. But using the experience gained from those surveys, the methodology used in 2017 was adjusted. This change improved the quality of the data gathered, although comparisons with previous measurements are less obvious. The three studies were conducted in conjunction with Philippe Lesire (LAB), an international specialist in the safety of children in cars.

The fieldwork was carried out in car parks at 114 different observation locations spread across the whole of Belgium. A multi-stage clustered sampling method was used to select the observation locations in order to produce representative results as well as to simplify the practical organisation of the fieldwork itself. Eight observers were trained for the task and they visited the selected locations between 3rd and 31st May 2017. At each location the observers approached the driver of a car in which at least one child under 135 cm in height was being carried. In addition to conducting a thorough examination of the child restraint system, a questionnaire was used to gather additional information from the driver about a number of predictive variables, as well as the socio-demographic details of the driver and the children. Using photographs taken by the observers during their observation, a retrospective quality check was carried out by a specialist. The data gathered was then enhanced and supplemented based on this check.

During the fieldwork, the observers approached the drivers of 1259 cars for an interview. Of these, 27% declined to take part in the survey. Also, when the data was being processed, 241 observations were not retained on account of quality problems or incomplete data. It was also decided to include only those children who were sitting in a restraint system in the dataset to be analysed in detail. The final dataset on which most of the analyses are based consisted of 1077 children who were seated in a restraint system and where it was possible to conduct a thorough observation of the installation, as well as interview the driver properly.

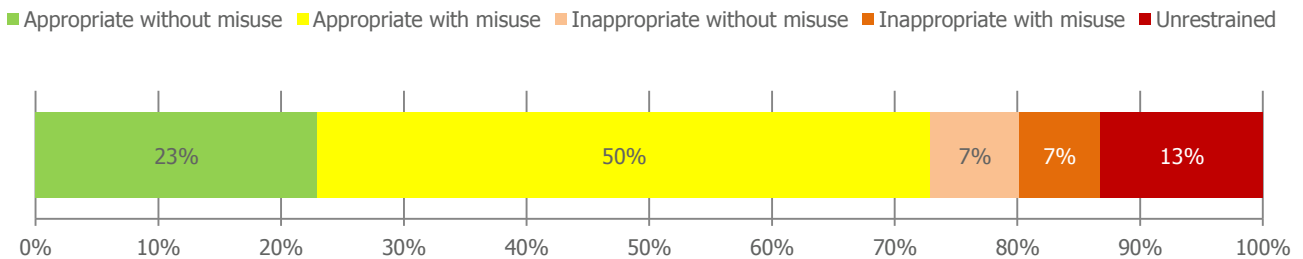
Because the methodology used is based on the voluntary cooperation of the drivers, this makes it less suitable for making statements about the percentage of children not seated in a restraint system. For this reason, taking observations at the side of the road, as was done for the 'seatbelt' survey in 2015, is more appropriate. In that particular survey, observations were made as to whether people in private cars were wearing their seatbelts or whether children were secured in a child restraint system.

Main results

The results of this new study, combined with those from the 'seatbelt' survey, show that the number of children travelling unsafely in cars in Belgium is unacceptably high (Figure 1). Based on the study, it can be estimated that only 23% of children under 135 cm in height are being secured correctly in an appropriate child restraint system. A major problem is the percentage of children not restrained at all, which is estimated

at 13%. This percentage includes both children not using any restraint system (neither a child restraint system nor a seatbelt), as well as children sitting in a child restraint system, but with the harness not clicked in place or the system itself not attached to the car. The use of inappropriate systems is another problem: it is estimated that 14% of children use a restraint system for which they are still too small or have already outgrown it. Finally, we find that child restraint systems (or just the seatbelt as the only restraint system) are very frequently used incorrectly. In all, it is estimated that 57% of children travel in cars with a restraint system that is not being used correctly.

Figure 1. Estimated breakdown of children based on the quality of the use of safety systems, Belgium (based on the 'child safety systems' survey (n=1077, weighted figures, 2017) and the 'wearing a seatbelt' survey (n=6667, weighted figures, 2015))



Source: Vias institute

The effect of incorrect or inappropriate use on the effectiveness of a restraint system differs strongly according to the type of incorrect or inappropriate use. Of those children travelling in a restraint system, we found that in more than one-third of cases, the effectiveness of the restraint system being used is seriously reduced or even of no use at all. These children run the risk of suffering serious to fatal injuries in the event of a crash.

It was possible to identify various factors associated with a better or worse use of child restraint systems:

- the type of child restraint system;
- the system used to attach the child restraint system to the car (ISOFIX or the seatbelt);
- the place where the child restraint system was purchased;
- research for information prior to purchasing the child restraint system;
- the person placing the child in the child restraint system;
- verifying the installation of the system and the child before departure;
- the relationship between the child and the driver;
- the socio-demographic profile of the driver (level of education, occupation and geographical origin);
- whether the driver is wearing a seatbelt;
- the length of the journey;
- the location in the car.

The most frequently occurring types of incorrect use differ between integral and non-integral systems. With integral systems – i.e. systems that have their own belt system (infant carriers and harness seats) – incorrect use stems mainly from using the harness incorrectly (too much slack, the child's arms outside the straps or twisted straps). There is also incorrect application of the belt used to attach the restraint system to the vehicle. A low level of incorrect use is observed that is related to the use of ISOFIX.

Non-integral systems – i.e. systems in which the child is held in place with the seatbelt (booster cushions) – have other forms of incorrect use. In many cases, the belt is incorrectly positioned on the child (off the shoulder, under the arm or behind the back), or the belt does not run under the armrests of the booster cushions. The belt is often twisted or is too loose and in booster cushions with a back support, the back support is not always correctly adjusted or the belt guide is not always used.

One important observation is that drivers are often not aware of this incorrect and/or inappropriate use and they underestimate the effects that this has on the safety of the child. The reasons given by drivers to explain the incorrect use of the restraint systems are usually related to poor motivation than to problems with complex installation.

Conclusion and recommendations

The number of children being carried unsafely in cars in Belgium is unacceptably high. Not only does the high percentage of children not using a restraint system have to be addressed, but also the multiple ways child restraint systems are being used incorrectly and inappropriately.

The recommendations from the study are situated in terms of awareness and education, as well as legislation, enforcement and technology. There are four points of particular interest for which practical measures can be put in place: the complex installation of child restraint systems; the lack of knowledge among users about the correct and appropriate use of the systems; a lack of motivation among users; and the observation that children often restrain themselves into their seats.

This study is unique in European on account of its quality, the size of the sample and the fact that it was possible to conduct a retrospective check based on photos taken at the time of the observation. As a consequence, the study constitutes a useful tool both for policymakers and manufacturers when it comes to improving prospects for the safety of children.

