U.S. Department
Of Transportation
**National Highway Traffic Safety Administration**

# Research Note

**DOT HS 809 558**

**March 2003**

## The Relationship Between Driver and Child Passenger Restraint Use Among Fatally Injured Child Passengers Age 0 - 15

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**Summary**

NHTSA's National Center for Statistics and Analysis (NCSA) recently completed an examination of data from the Fatality Analysis Reporting System (FARS) to investigate the association between the restraint use of child passengers fatally injured in a crash and their drivers. Results show that children are more likely to be restrained when their driver is restrained, and children are more likely to be unrestrained as they become older.

**Methodology**

This research note examines restraint use patterns among vehicle occupants involved in crashes where a child was fatally injured. Data from FARS for the period 1991 – 2001 were used. This time period included five years before and after 1996, the year in which NHTSA instituted the Buckle Up America campaign. Each vehicle involved a) one or more fatally injured child passengers age 15 or younger, and b) one driver either killed or survived, age 16 or older.

Drivers were paired repeatedly with each fatally injured passenger of age 15 or younger in their vehicle. For example, a driver with two fatally injured children in the vehicle is included in two separate driver-passenger pairs, once for each child. A child passenger is categorized as being restrained if a child restraint or lap and/or shoulder belt was in use at the time of the crash. All remaining child passengers were categorized as either unrestrained or of unknown restraint use. A driver is categorized as being restrained if a lap and/or shoulder belt was in use at the time of the crash. Drivers of unknown restraint use were not included in this study.

Passenger vehicles selected for this study include passenger cars, light trucks, vans and sport utility vehicles. From 1991 through 2001, the distribution of the age of these vehicles involved in fatal crashes did not vary significantly.

**Results**

Crashes were examined involving fatally injured passengers 0 to 3 years old, 4 to 7 years old, and 8 to 15 years old. When traveling in a passenger vehicle where the driver was unrestrained, 68 percent of fatally injured children age 0 to 3 years old were also unrestrained, while only 29 percent were restrained (the restraint use of 3 percent was unknown). When the driver was restrained, 68 percent of fatally injured children age 0 to 3 years old were also restrained, 28 percent were unrestrained, and restraint use was unknown for 4 percent. These data, displayed in the two charts in Figure 1 below, illustrate a strong positive correlation between the restraint use of young children and the driver of their vehicle.

Figure 2, shown below, refers to crashes involving fatally injured children age 4 to 7 years old. When the driver of the vehicle was traveling unrestrained, 84 percent of fatally injured children 4 to 7 years old were also traveling unrestrained, 14 percent of these

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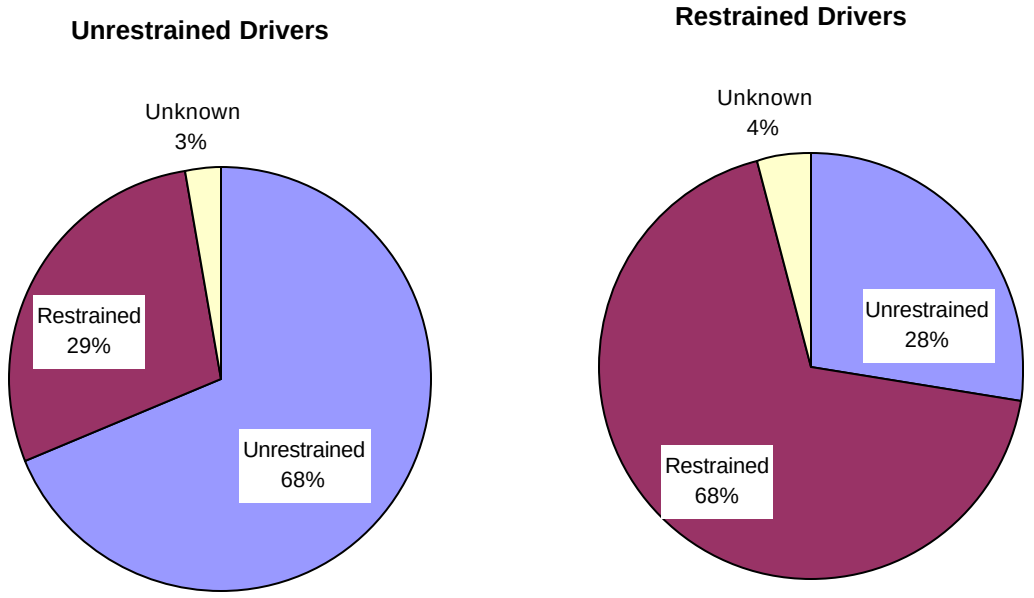
children were restrained, and 2 percent were of unknown restraint use. The chart on the right in Figure 2 categorizes the restraint use of fatally injured children traveling in a vehicle where the driver was restrained. Thirty-six percent of these 4 to 7 year old children were unrestrained, 58 percent were restrained, and restraint use was unknown for 6 percent. When traveling with unrestrained drivers, the 14 percent of children 4 to 7 years old who were restrained is less than half of the corresponding percentage among children 0 to 3 years old (29 percent).

Crashes involving fatally injured children age 8 to 15 years old are described below in Figure 3. A comparison of Figure 3 with Figures 1 and 2 shows that the percentage of restraint use continues to decline as the age of the child increases. When traveling in a passenger vehicle where the driver was unrestrained, 91 percent of fatally injured children age 8 to 15 years old were also unrestrained, while only 7 percent were restrained, with 2 percent having unknown restraint use. When the driver was restrained, 48 percent of fatally injured children age 8 to 15 years old were also restrained, 46 percent were unrestrained, and restraint use was unknown for 6 percent. In crashes where the driver was unrestrained, the percentage of fatally injured children age 8 to 15 years old who were restrained (7 percent) represents less than one quarter of the percentage of children age 0 to 3 years old who were restrained (29 percent).

***Figure 1***

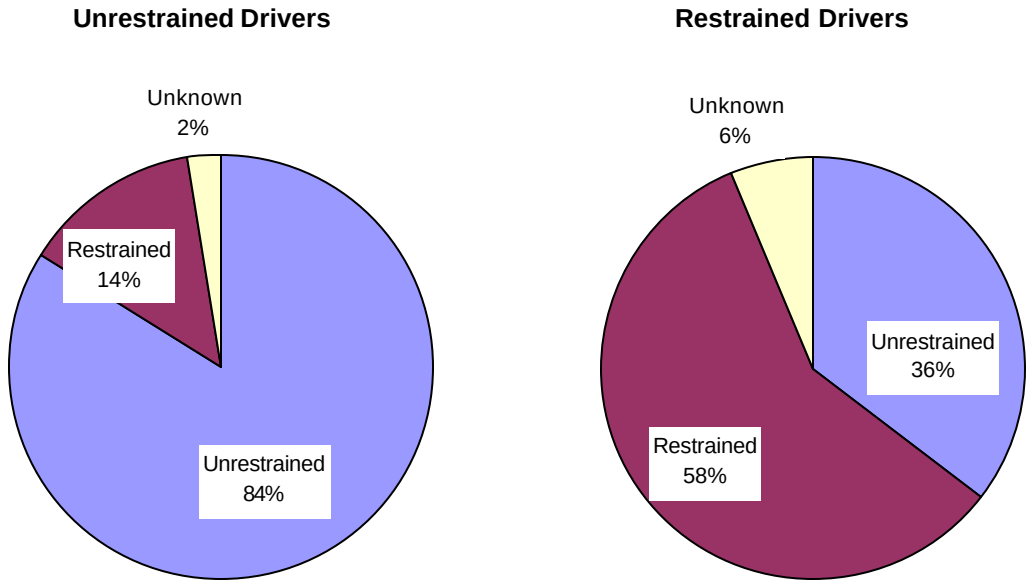
**Restraint Use of Fatally Injured Passengers, Age 0-3**
**By Driver Restraint Use**
**1991-2001**




**Source: National Center for Statistics and Analysis, NHTSA, FARS 1991-2001**

*Figure 2*

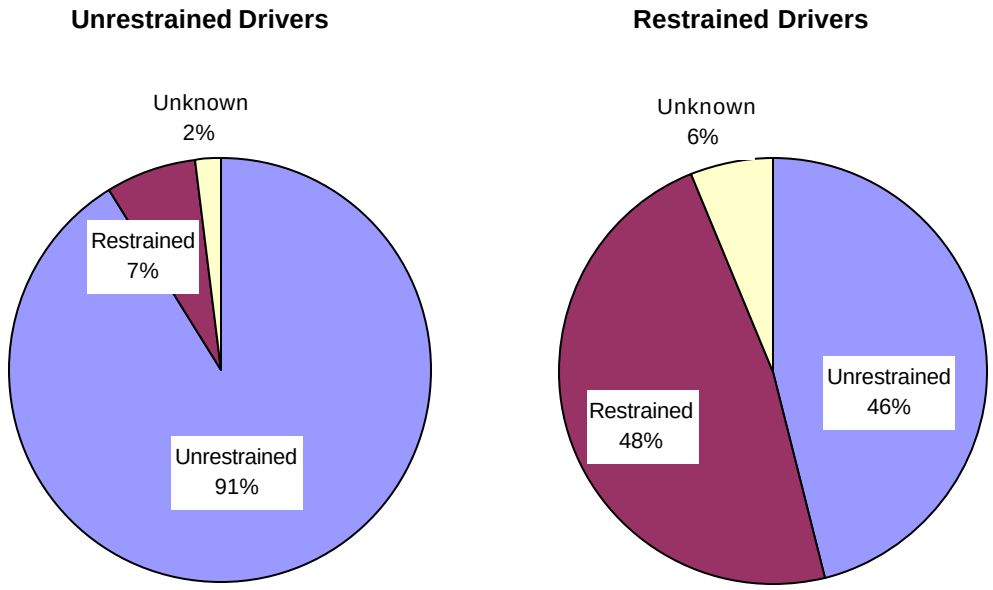
**Restraint Use of Fatally Injured Passengers, Age 4-7**
**By Driver Restraint Use**
**1991-2001**




**Source: National Center for Statistics and Analysis, NHTSA, FARS 1991-2001**

*Figure 3*

**Restraint Use of Fatally Injured Passengers, Age 8-15**
**By Driver Restraint Use**
**1991-2001**




**Source: National Center for Statistics and Analysis, NHTSA, FARS 1991-2001**

## Conclusions

Based on crash data recorded in the FARS database, the following conclusions can be made regarding the relationship between the restraint use of child passengers fatally injured in a crash and the restraint use of their drivers.

- The restraint use of fatally injured child passengers and their drivers are strongly correlated. Child passengers are far more likely to be unrestrained if their driver is unrestrained, and similarly, child passengers are far more likely to be restrained if their driver is restrained.
- For the age groups 0-3 years old, 4-7 years old, and 8-15 years old, the probability of a fatally injured child being unrestrained is between 2.0 and 2.5 times greater when the child is with an unrestrained driver versus being with a restrained driver.
- As children get older, the percentage of fatally injured children who are unrestrained increases. This trend exists among children traveling with unrestrained drivers as well as children traveling with restrained drivers. With unrestrained drivers, 68 percent of 0-3 year olds, 84 percent of 4-7 year olds, and 91 percent of 8-15 year olds were unrestrained. With restrained drivers, only 28 percent of 0-3 year olds, 36 percent of 4-7 year olds, and 44 percent of 8-15 year olds were unrestrained
- The proportion of fatally injured child passengers who are restrained is 39 to 44 percentage points greater among restrained drivers than unrestrained drivers, for all three age groups. For example, among child passengers 8 to 15 years old, 48 percent were restrained when their driver was restrained, while only 7 percent were restrained when their driver was unrestrained.

NCSA will continue to monitor these issues and report new findings as they become available.

For additional copies of this research note, please call 1-800-934-8517 or fax your request to (202) 366-3189. For questions regarding the data reported in this research, contact Marc Starnes [202-366-0183]. This research note and other general information on highway traffic safety may be accessed by internet users at: http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html

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