Sept H-570F

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: JUL - 1 1997

In reply refer to: H-97-22

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In severe frontal crashes, air bags clearly increase the chances of survival, particularly for unbelted adult drivers. The protection afforded by air bags, however, does not extend equally to all passenger vehicle occupants. Between 1993 and 1996, 38 children died because they were struck by an air bag in what would have otherwise been a survivable crash, and 23 adults were also killed by their air bags in crashes they should have survived.[1] The increasing public concern about air bags and urgent questions regarding the effectiveness and the potential danger of these life-saving devices prompted the National Transportation Safety Board to convene a 4-day public forum in March 1997 to discuss concerns related to the role of air bags, to identify who is vulnerable to injuries, to examine the experience with air bags in other countries, and to address ways to increase seatbelt and child restraint use.[2] The National Highway Traffic Safety Administration (NHTSA) participated in the forum, along with representatives from Australia, Canada and Europe; the automobile industry; air bag suppliers; insurance, safety, and consumer groups; and family members involved in crashes where air bags deployed.

Several points became evident during the forum. The "one-size-fits-all" approach to air bag design is obsolete: air bags need to be designed to protect all people in a variety of crash situations. With regard to passenger vehicles on the road today, children need to be in the back seat, and everyone needs to be buckled up and seated as far back as possible from the air bag. NHTSA needs to move quickly on a decision regarding air bag deactivation. NHTSA's databases of crash information preclude a proper evaluation of the effectiveness of air bags because the information is not comprehensive in one database and is insufficient in the other. Finally and perhaps most importantly, societal attitudes must change with regard to seatbelt use. The United

[1] National Transportation Safety Board. 1996. The performance and use of child restraint systems, seatbelts, and air bags for children in passenger vehicles. Safety Study NTSB/SS-96/01. Washington, D.C.

[2] National Transportation Safety Board. 1997. Proceedings of the National Transportation Safety Board Public forum on air bags and child passenger safety; March 17-20, 1997; Washington, D.C. Report of Proceedings NTSB/RP-97/01; PB97-917001.

States remains far behind other countries in seatbelt use, and the Nation pays a high price for it in terms of lives lost. Elected officials need to take responsibility for tough enforcement programs and to consider financial incentives (or penalties) if the Nation is to increase seatbelt use.

The Safety Board's concerns about motor vehicle occupant protection have led it to examine and recommend action on a wide range of safety issues throughout its 30-year history. Important changes have already occurred, including improved designs of seatbelts and child restraint systems, the required installation of lap/shoulder belts at all outboard seating positions, the mandated use of child restraint systems in all 50 States and seatbelts in 49 States, an increase in public education about the importance of restraint use, and increased child restraint and seatbelt use rates. Additional improvements, however, are still needed.

Over 60 million passenger vehicles currently on the road are equipped with air bags, and more than 1 million air bags have deployed; however, information is limited on the results of most of these deployments. Testimony at the forum from Dr. Charles Kahane of NHTSA indicated that NHTSA estimates of the number of individuals saved by air bags are based on statistical analyses of the Fatality Analysis Reporting System (FARS) database and not on data that reflect detailed investigations of individual cases.[3]

FARS is a census of fatal traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. Because FARS data are limited to crashes involving fatalities, the data cannot be generalized to nonfatal crashes. The most common crash in the United States leading to death is a single-vehicle crash, as General Motors researcher Dr. Leonard Evans noted at the forum: The preponderance of single-vehicle crashes in FARS is not representative of multivehicle crashes. Similarly, fatal crashes are usually more severe than injury-only crashes, thus crashes in FARS tend to be more severe than other crashes. The National Automotive Sampling System (NASS) contains detailed data on a representative, random sample of about 5,000 police-reported traffic crashes, fatal and nonfatal, involving passenger vehicles towed from the scene because of damage resulting from the crash. A sufficiently large sample size is important when estimating air bag effectiveness, particularly when evaluating the effects on subgroups based on weight, height, and age.

Injury information in FARS is limited to injury severity, whether or not persons were taken to the hospital, and the date and time of death. Injury data are documented in detail in the NASS database, but the limited sample size makes it difficult to draw conclusions about the injuries resulting from air bags.

Injury information is critical in evaluating the effectiveness of air bags. Several agencies, trauma centers, and hospitals have been examining injury data independently. The Centers for Disease Control and Prevention (CDC), an agency of the Department of Health and Human Services, has examined case reports of deaths to children in crashes involving an air bag deployment. Dr. Donald Huelke, an anatomist at the University of Michigan Transportation Research Institute, has reviewed over 500 cases of air bag deployments, but this figure represents

[3] The Fatality Analysis Reporting System is maintained by the U. S. Department of Transportation.

less than one-tenth of 1 percent of the total number of deployments in the United States. Further, Dr. Jeffrey Augenstein, Director of the William Lehman Injury Research Center at the University of Miami, stated at the forum that when they do gather injury information related to air bags, the medical community at large, and emergency department staff in particular, do not generally have well-defined protocols for determining the sources of injuries sustained in passenger vehicle crashes.

Timely and reliable crash data and injury information are needed to evaluate the effectiveness of air bags. The Safety Board believes that NHTSA and the CDC should work together to develop data collection procedures and to establish a comprehensive database for recording all air bag-induced injuries identified by the medical community. This database should be able to link to the other available databases (for example, FARS and NASS) in order to obtain crash-specific information. Other air bag information is also vital for evaluating the effectiveness of air bags; for example, the type of air bag technology in the vehicle, and whether it was deactivated by a tag sensor or a mechanic. Consequently, the Safety Board also recommended to the NHTSA that it revise the FARS and NASS databases to record specific information regarding the air bag equipment installed in the vehicle and its performance in the crash, such as the following: Did the air bag deploy, was it a depowered air bag, was there a cutoff switch, and was it on or off.

Therefore, the National Transportation Safety Board recommends that the Centers for Disease Control and Prevention:

> Develop, in conjunction with the National Highway Traffic Safety Administration, data collection procedures and establish a database for recording all air bag-induced injuries identified by the medical community. (H-97-22)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation H-97-22 in your reply.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By: Jim Hall
Chairman