

**Minutes of the Meeting of the Blue Ribbon Panel (BRP) for  
Evaluation of Advanced Airbags**

November 3, 2006

Chairperson, Dr. Susan Ferguson, called the meeting to order at 9:00 A. M. on November 3, 2006 at the City Club in Washington D.C. All panel members and observers were present with the exception of members, Dr. Kennerly Digges, Dr. Jeffrey Augenstein, Dr. Dennis Durbin and Dr. Maria Segui-Gomez. Also in attendance were: Niko Alexandrou, Operations Director for NASS and Brian Marple, Project Leader at the DOT Volpe Center; John Brophy, Chief Crash Investigation Division, NHTSA and Greg Radja, NHTSA-COTR for the data project at Volpe. Dr. Ferguson introduced Bill Windsor of Nationwide Insurance as the newest BRP member. Bill replaces Tim Hoyt of Nationwide, who has retired.

Chairwoman Ferguson asked if there were any comments on the Draft Minutes for the February 11, 2006 meeting of the BRP. Hearing no comments on the Draft Minutes a motion was made and the minutes were approved as written. Dr. Ferguson said that the minutes would be posted to the BRP web site as per past practice.

Dr. Ferguson asked Tom Carr to report on the status of the Alliance funding for the BRP. Tom said that the Alliance is continuing to fund one researcher at each of the three new NASS PSU's through 2007. The Alliance draft budget for 2008 requests funding for these three researchers through 2008, so continued funding will depend on final approval of the 2008 budget. Tom said that it is projected to phase out the BRP following the Public Meeting currently planned for May 7, 2007.

Dr. Ferguson turned the floor over to Niko Alexandrou, for a presentation on the status of ongoing NASS related activities at the Volpe Center in Cambridge, Mass. Of particular interest to the BRP is the status of the XML data sets and viewer. The BRP had asked that the NASS files be made more user friendly by adding a viewer, which would facilitate "smart" searches of the files. Chip Chidester noted that NHTSA has been funding XML data distribution initiatives and that XML files of 2004 and 2005 NASS have been completed and that 2006 NASS is in the works. Niko introduced Brian Marple, who is the new Project Leader at Volpe.

Brian commenced a briefing entitled: "NASS-CDS XML Data Distribution Initiatives". NASS data has been distributed to the general public historically by posting to a web site and through individual case CDs. The current effort is attempting to enhance use of NASS data by providing these data in XML-a current standard for data interchange. A prototype, using data from the Large Truck Study was created in 2004. Based on a review of that prototype it was decided to provide access to NASS CDS 2004/2005 in XML format.

Brian noted that the new web viewer has the following features and functionality:

- Search function for cases based on 31 search criteria

- Dynamic HTML menu allowing flexible navigation through a case
- View individual sections or an entire case
- View thumbnail images or expand to full size
- Printer friendly views
- Download cases to user specified location
- Download case viewer for installation in MS Windows
- Download raw XML data
- 508 compliance for viewing, accessible from multiple browsers

Brian ran through several NASS cases to illustrate the functionality of the new viewer.

To facilitate distribution of the new data, a case catalog setup wizard will be available on DVD or downloadable from the website. PDF help files are available after setup installation. Release of the new XML viewer/printer to the public is tentatively scheduled for January 2007.

Possible future extensions include: increased search capability, cross case extraction, cross year extraction, increased case year coverage, preliminary cases and specialized views (yet to be defined).

Following the presentation, Chip Chidester offered to allow the BRP members to Beta test the new system. DVD data sets will be provided in a briefcase version to members upon request. A full year of NASS requires approximately 10 DVDs.

Dr. Ferguson introduced Dr. Elisa Braver from the University of Maryland Medical School to present an update of the data analysis being conducted for the BRP. Dr. Braver presented some preliminary analyses from her study of the effects of evolving airbag designs on deaths and non-fatal injuries among drivers and right-front passengers. She explained that a considerable effort has been expended on collection of information on airbag and seat belt characteristics by vehicle make, model, and model year. This effort is not yet complete. In addition, her research team at the University of Maryland, Baltimore has needed to develop cross-reference tables of make/model codes used by the National Highway Traffic Safety Administration and the Highway Loss Data Institute.

Definitive conclusions have not yet been reached and the existing statistical analyses need to be refined. Analyses that have been attempted thus far include:

- Matched-pair cohort analyses of fatal head-on collisions,
- Comparing frontal crash deaths among drivers and right-front passengers in sled-certified vehicles per involvements in police-reported crashes,
- Examining driver deaths per registered vehicle by airbag generation,
- Exploring non-fatal injuries among drivers per drivers in towed vehicles by airbag generation,
- Exploring non-fatal injuries among drivers per registered vehicle by airbag generation.

The findings vary by the methods that were used. Thus far, there appears to be little evidence of increased fatality risk among front-seat occupants of vehicles equipped with sled-certified airbags relative to first-generation airbags. Some groups of drivers and right-front passengers may have reduced fatality risk in vehicles equipped with sled-certified airbags. There is some evidence for markedly decreased fatality risk among child right-front passengers in front seating positions in vehicles equipped with sled-certified airbags.

Findings regarding non-fatal injuries were inconsistent and uncertain. Weighted findings differ greatly from unweighted findings for a number of subgroups. The database on non-fatal injuries needs further scrutiny of injury patterns and severity, in addition to considering methods of using unweighted data.

Preliminary findings indicate that the following analyses are necessary in order to determine the effects of sled-certification: multivariate regression models that consider the multiple factors that affect fatality risk, including belt use, vehicle type, age, and collision partner. In particular, vehicle age must be addressed in analyses. In addition, seat belt technology, including load limiters and pretensioners, needs to be incorporated in analyses wherever possible. Plans for further research also include differentiating sled-certified airbags with and without advanced features and investigating airbags certified as advanced and compliant.

*Pacific Institute for Research and Evaluation (PIRE):* George Bahouth also presented preliminary findings. The presentation included an economic analysis of frontal crash injuries occurring in vehicles with first-generation versus sled-certified airbag systems. The following issues were discussed: 1) methods used to partition NASS/CDS data for analysis, 2) the treatment of missing data including crash severity, 3) preliminary data comparing injury risk for first-generation versus sled-certified airbag systems, and 4) estimates of injury cost differences by airbag type.

The PIRE team presented injury odds ratios by airbag type and mean injury cost estimates based on multivariate regression models. Covariates considered for each model included deltaV (crash severity), occupant age, occupant gender, belt status, vehicle type, object or vehicle type struck, presence or absence of intrusion and other factors. Two analyses were presented which considered: 1) overall risk of injury and 2) injury cost differences by airbag generation. The analyses were conducted for a series of crash severities and occupant characteristics. During the briefing selected estimates were provided per occupant and per body region.

Overall, the cost of injury was found to be significantly lower for drivers and right-front passengers of vehicles equipped with sled certified airbags when compared with occupants of vehicles equipped with first generation systems. This cost difference is largely associated with a reduction in low-severity injuries (AIS1 and AIS 2 injuries). In particular, a reduction in low-severity upper extremity injury risk was found and may be closely associated with this trend. To date, no significant difference in high-severity injury costs or high-severity injury risks have been found when occupants protected by

first generation airbags are compared with occupants protected by sled-certified systems. Continued analysis is planned to further identify and better characterize changes in injury risk and injury cost by body region.

Considerable discussion took place during the meeting regarding the appropriateness of available data systems to study the effects of sled certification on non-fatal injuries. One important aspect of this study is the reliability of estimates based on the stratified sample of crashes in the NASS/CDS system. For some subpopulations of interest, the NASS/CDS sample size is too small to yield reliable estimates and great care will be taken during reporting and interpretation of results to clearly explain this issue.

Both Drs. Braver and Bahouth stressed that all findings may be subject to change after statistical models have been finalized. Accordingly, no numbers are given in these meeting minutes.

Following the presentation Dr. Ferguson asked Dr. Braver about the timeline for completion of the project. Dr. Braver said that they are shooting to finish in time for the February 2007 BRP meeting. Note: the next meeting of the BRP is scheduled for February 26, 2007 in Miami, Florida. The primary purpose of the February meeting will be to plan for the third and final public meeting of the BRP.

Dr. Ferguson asked for suggestions as to invitees who could make analytical presentations on the efficacy of air bags at the Public Meeting. She noted that a presentation by the University of Maryland of their findings should of course be the feature presentation. Dr. Carra noted that Dr. Charles Kahane of his office has recently completed an extensive analysis of the effectiveness of air bags. The analysis is in the clearance process at NHTSA and should be available in time for the Public Meeting. Dr. Carra will report further at the February meeting. Dr. Ferguson noted that Peter Cummings of Harbor View Hospital has completed an analysis and she will check with him as to his interest in presenting at the Public Meeting.

Dr. Ferguson said she would check with Dr. Durbin to see if CHOP would be able to present updated results of their ongoing analysis on the impact of air bag and other restraint system design changes on injuries to children. Dr. Ferguson also queried Dr. Schneider about updated analyses from ongoing University of Michigan research. Dr. Schneider said that he had just updated his analyses with approximately 100 additional cases and that he would check on the desirability of making a presentation at the Public Meeting. Dr. Schneider also noted that the new analyses are continuing to show lower injury risk in later model year vehicles, but there continues to be some evidence of a problem with lower extremity injuries in the newer vehicles.

Don Bischoff asked about an update on progress in making EDR readouts available to accident researchers, noting that this may be difficult due to the ongoing NHTSA rulemaking on EDR's. Tom Carr said he would check with Alliance members to see if any members would be willing to put something together. Tom was also asked to check with Alliance members about putting together a presentation on implementation of

advanced restraint system features. Dr. Ferguson said she would contact Dr. Augenstein at the University of Miami to see if they had any interest in making an updated presentation at the Public Meeting. Dr. Ferguson said she would also try to contact the air bag and safety campaigns to see if they had any interest in making further presentations.

Dr. Ferguson announced that she would be retiring from IIHS at the end of the year, but that she will continue to serve as the Chairwoman of the BRP. She said that unless analysis results presented at the upcoming Public Meeting are different from what has been seen to date that it was her opinion that the BRP should be disbanded following the Public Meeting. She said that she anticipated authoring a paper at that time which summarized the overall findings of the BRP.

Both Chip Chidester and Dr. Carra noted that feedback from the BRP, which contains many “power users” of NASS data, has been very useful and has resulted in a number of significant changes to the way NASS data is collected and disseminated by NHTSA. The BRP has helped NHTSA to better define data needs and analyses of interest. Dr. Ferguson thanked Dr. Carra and NHTSA for the excellent support provided throughout the tenure of the BRP and acknowledged the mutually beneficial roles.

A motion was made and approved and the meeting was adjourned at 3:00 P.M.