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Privileged & Confidential
Prepared at the Request of Counsel

February 23, 2016

Jonathan Judge
Schiff Hardin LLP
233 South Wacker Drive
Suite 6600
Chicago, IL 60606

Re: *Nicole and Cameron Hinson v. Dorel Juvenile Group, Inc.*

Dear Mr. Judge,

At your request, in reference to the case "*Nicole and Cameron Hinson v. Dorel Juvenile Group, Inc.*," I have used field data maintained by the National Highway Traffic Safety Administration (NHTSA) to compare the injury risk in frontal crashes and all crashes to belted children (age 12-23 months) in rear facing (RFCS) and forward facing (FFCS) car seats. The field data shows that the FFCS seats are much more effective than RFCS in reducing the odds of serious injury or injury[1] to belted children in car seats. This difference is statistically significant.

I have reviewed the following case-related materials:

CASE MATERIALS

- Plaintiffs' Original Complaint
- Police Report
- Amended Docket Control Order
- Expert Report of Gary Whitman
- Expert Report of Michelle Hoffman
- Expert Report of Ralph Scott
- Expert Report of Daniel Phillips
- Plaintiffs' First Amended Initial Disclosures and Expert Disclosures
- Exhibit A to the Plaintiffs' First Amended Initial Disclosures and Expert Disclosures

[1] Serious Injuries include Abbreviated Injury Severity (AIS) 3 or greater; Injury includes ISS 9+ injuries. (moderate to serious injuries).

BACKGROUND

I am currently the President and owner of JP Research, Inc. My educational background includes a Master of Science degree from George Washington University, specializing in Operations Research/Statistics. I have also obtained a degree in Advanced Mathematics from the University of Madras, India. I am a statistician with over 30 years of experience in performing automotive safety research and reviewing consumer complaint, customer complaint, warranty, and field accident and injury data collected by the U.S. Government and State agencies.

I have published and researched extensively in the area of automotive safety statistics, including a number of peer reviewed papers for the Society of Automotive Engineers (SAE), the Association for the Advancement of Automotive Medicine (AAAM), and the International Research Council on the Biomechanics of Injury (IRCOBI) at their annual conferences, as well as many papers for other international automotive safety conferences. My studies use field data to address vehicle performance, compatibility, and overall vehicle crashworthiness. I have published over 50 peer-reviewed studies using field data (real-world crash and performance data) to address trends associated with different types of automobiles and automobile components. I have also chaired many technical sessions for the SAE, the AAAM and the IRCOBI, and have conducted technical workshops addressing statistical analyses using different types of databases.

I am the recipient of several scientific awards, including: the 2005 SAE Transactions Award for one of the most outstanding SAE technical papers in 2005; the 2001 WEC/BREED Award for Women's Technical Leadership; and the 1995 AAAM Best Scientific Paper Award for a study on rollovers. My attached Curriculum Vitae (CV) details selected publications and presentations.

I have also served on the AAAM Scientific Program Committee, which is responsible for reviewing and selecting technical papers for their annual conferences. I serve on the Editorial Advisory Board for the *Accident Analysis and Prevention Journal*, and have served on numerous SAE committees.

My research and statistical background has been very useful in the International arena as well. I am actively involved in field data research organizations around the world. I am the Chair of the Road Accident Sampling System International (RASSI) Consortium, whose objective is to collect accident data through in-depth crash investigations in India. I am an invited member of the Initiative for the Global Harmonization of Accident Data (iGLAD) committee, whose goal is to harmonize statistical accident data collection and accident investigation activities across developing countries.

I have pioneered accident investigation and crash data collection in India, and have worked with local safety organizations there to promote proper seat belt use, helmet use

and motor vehicle safety. I have conducted research for international agencies by examining accident patterns and injury profiles for victims involved in crashes in developing countries. Through my efforts with iGLAD, I have become an active member in formulating effective safety standards for developing countries by improving how accident data is to be collected and analyzed.

I have also prepared research projects for automobile manufacturers, research organizations and vehicle component manufacturers. I am frequently invited by the National Highway Traffic Safety Administration (NHTSA), an agency of the U.S. Department of Transportation (DOT), to participate in their annual Government/Industry meetings to present and share with the automotive safety community my research using field data. In the past decade I have presented to these agencies my research on seat belt performance, rollover performance of vehicles and vehicle compatibility as it relates to CAFE standards.

In addition to my professional work as a statistician, I have taught courses at Stanford University concerning the risks of injury to older drivers and the risks of injury to women in vehicles where airbags are deployed. I have worked for the California Highway Patrol (CHP) to establish a risk profile of traffic injuries that the CHP uses to identify intersections by crash types. In the past, I have also worked with the NHTSA as a member of the agency's Crashworthiness Subcommittee, which was responsible for deciding which data is to be captured in vehicles' Event Data Recorders (EDR) in the United States.

DATA SOURCES

National Automotive Sampling System (NASS) Data

For my analyses on frontal and all collisions, I used NHTSA's National Automotive Sampling System Crashworthiness Data System (NASS/CDS). Established in the early 1980s, NASS/CDS is a nationally representative probabilistic sample of police-reported, tow-away crashes that occur on public traffic ways and that result in death, injury, or property damage. Selected crashes meeting these criteria are investigated in detail by NASS teams to obtain detailed descriptions of injuries, scene diagrams, photographs, vehicle inspections (with detailed damage measurements), driver interviews and injury documentation from medical records. The NASS investigative teams consist of engineers, biomechanical experts, medical personnel, and statisticians who investigate about 5,000 crashes a year involving light vehicles.

NASS/CDS is used extensively by NHTSA, Congress, automobile and insurance industry and the auto-safety community to examine crash performance, injury patterns, nature of injuries by body region, and other occupant-, vehicle-, and crash-related factors, including:

- Advanced occupant protection system studies
- Child seat standards
- Airbag effectiveness/seat belt effectiveness

- Frequency and severity of rear impact crashes
- Injury risk by delta-V
- Injury classifications AIS 0-6[2]
- Injury risk by seat position
- Detailed rollover issues, including roof deformation location/magnitude/direction
- Injury sources and occupant contacts
- Vehicle crashworthiness.

The NHTSA's data systems each have a unique and essential role in supporting the primary mission of saving lives and preventing injuries associated with motor vehicle crashes. NHTSA data are the only source for timely national estimates on real-world traffic crash data for fatalities, injuries, causation factors, occupant protection, and safety program evaluations (NHTSA, 2010). The National Automotive Sampling System Crashworthiness Data System (NASS/CDS), which includes the General Estimates System (GES) and the Crashworthiness System (NASS CDS), along with Special Crash Investigation (SCI), provide NHTSA with real-world information on motor vehicle crashes in the United States (NHTSA, 2015).

METHODOLOGY

My analyses focused on evaluating and updating the 2007 Henary study (Henary et al., 2007). The study used NASS/CDS data from 1988 to 2003 and compared the injury risk between RFCS and FFCS for children less than 2 years of age in the USA. The study concluded that rear facing car seats are more effective than forward facing car seats in protecting belted children aged 0-23 months. More specifically, it concluded that for children age 12-23 months in frontal crashes, the serious injury odds ratio for forward versus rear facing car seats is 6.16 [95% CI: 3.98 to 9.51].

The Henary study used the following selection criteria:

- Includes children (0-23 months) riding in front or rear seats of passenger cars, sport utility vehicles, light trucks, and vans.
- Excludes children exposed to deployed airbags, vehicle fires, or involved in rollover crashes.
- Excludes cases when the car seat orientation was not in accordance with the manufacturer's specified orientation.
- Excludes unbelted children.

I repeated the study for the years used by the Henary study (1988-2003) and updated the study to include NASS/CDS data from 1988-2014. I used the same selection criteria and methodology used by the authors. I performed the analyses for frontal crashes and all crashes.

[2]Abbreviated Injury Severity (AIS) and Maximum Abbreviated Injury Severity (MAIS) scales are copyrighted by the Association for the Advancement of Automotive Medicine (AAAM). The scales rank injury from minor (AIS/MAIS 1) to un-survivable/fatal (AIS/MAIS 6).

I compared the relative injury risk to children (age 12-23 months) in FFCS and RFCS involved in frontal and all crashes. The Henary study defined injury risk as the "injury severity score (ISS) >=9" to represent moderate and severe injuries. I performed the analyses using the injury risk definition used in the Henary study (ISS 9+) and using the conventional definition used by NHTSA to address serious injury risk (MAIS 3+). I examined injury risk for forward versus rear facing car seats for: 1) the years used in the Henary paper (1988-2003); 2) updating to include the most recent NASS/CDS data (1988-2014). I performed logistic regression analysis similar to the methodology used by the Henary study. I ran several sensitivity analyses to assess the stability of our logistic models and the results. The results from our analyses remained consistent.

FINDINGS

1. Logistic models were run for each combination of impact type (frontal vs. all), injury severity (MAIS 3+ vs. ISS 9+), data years (1988-2014 vs. 1988-2003), and methodology (Henary vs. JPR). The odds ratio for all the logistic models developed show that for belted children age 12-23 months in frontal crashes, forward facing car seats are much more effective in preventing injury than rear facing car seats. The difference is statistically significant. This finding holds true for the years used in the Henary study (1988-2003) and for the period 1988-2014. The finding holds true for frontal impacts and all impacts. These conclusions directly contradict the conclusions presented in the Henary paper.
2. The NASS/CDS data is a stratified sampling system and any statistical models developed using the sample data must account for sampling stratification. It appears that the Henary study might not have taken stratification into consideration.[3] If this is the case, the study performed by Henary et.al, used an inappropriate methodology for building logistic models.
3. The sample sizes used by the Henary study were small and any omission of proper controls to the data set render their conclusions invalid. Updating the NASS/CDS data to include ten more years (2004-2014) provide 50% more data and consequently, the logistic models are more stable.

SUMMARY

There is no evidence in the NASS/CDS data which shows that, in frontal crashes or all crashes, rear facing seats are much more effective compared to front facing seats for reducing injury to belted children ages 12-23 months. On the contrary, the analysis including more recent field data shows that, the FFCS are statistically significantly more effective in reducing serious injuries (MAIS 3+) and serious to moderate injuries (ISS9+) compared to RFCS.

[3] The backup data for Henary study logistic models was not available for review.

My analyses are based on materials reviewed to date, and I reserve the right to revise my analyses and opinions if additional information becomes available. If requested, I will also evaluate any further studies or statistical analyses the Plaintiffs' experts may rely on to offer opinions.

At trial, I anticipate presenting exhibits illustrating the data and findings upon which the above opinions are based. My billing rate is $500/hour.

Sincerely,

Jeya Padmanaban

REFERENCES

Henary et al. "Car safety seats for children: rear facing for best protection". *Injury Prevention*, Vol. 13, No. 6, December 2007, pp 398-402. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2598309/pdf/398.pdf.

"NHTSA's Review of the National Automotive Sampling System: Report to Congress", DOT HS 812 128, March 2015.

"Report to Congress, NHTSA's Crash Data Collection Programs," DOT HS 811 337, April 2010.