David R. Thom, MS

Professional Competence

Analysis of protective headgear used in vehicles and sports, including motorcycles, bicycles, skating and snow sports. Head injury analysis relative to the performance of helmets. Helmet performance standard development for ASTM, ISO, DOT, and ANSI.

Education

Master of Safety Science, University of Southern California, May 1993

Bachelor of Safety Science, University of Southern California, May 1985

Training and Experience

Self employed, providing helmet design and performance consultation to individuals, manufacturers, attorneys and agencies for Cities, Counties and States, 2003 – Present

Head Protection Research Laboratory of Southern California
General & Sr. Program Manager, July 1998 – January 2003

University of Southern California
Head Protection Research Laboratory, USC
Laboratory Director, 1992 – June 1998
Research Associate, 1981 – 1992

Motorcycle Accident Research Projects
Research Associate, 1979 - 1981
Research Assistant, 1977 – 1979

Institute of Safety and Systems Management, Dept. of Safety Science, University of Southern California
Invited Lecturer in Accident Investigation, 1990 – 1996

- Invited presenter at California Motorcycle Safety Summit, 2008
- Invited presenter on helmets at Lifesavers Conference, 2003, 2008
- Testimony at NTSB Motorcycle Safety Public Forum, Sept. 2006
- Biomechanics of Impact Seminar, AAAM, September 2002
- The Dirt Bike School, Motorcycle Safety Foundation, May 2002
- Experienced Rider Course, Motorcycle Safety Foundation; 1982, 1991, 1996, 2000, 2004
- Skip Barber High Performance Driving School, Monterey, California, 1996
- Motorcycle Accident Reconstruction, Northwestern University, 1986
- ATV Rider Course, Specialty Vehicle Institute of America, 1985
- Composite Materials, Engineering Extension Programs, UCLA, 1985

Organizations

American Motorcyclist Association, Charter Life Member
American Society for Testing and Materials
American Society of Safety Engineers
Association for the Advancement of Automotive Medicine
Blue Ribbon Coalition
Concerned Off Road Bicyclists Association
Honda Rider's Club of America
Human Factors and Ergonomics Society
Human Factors and Ergonomics Society, Safety Group
Motorcycle Industry Council Helmet Task Force
National Agenda for Motorcycle Safety, Technical Working Group
(Received 2001 Award of Merit from Motorcycle Safety Foundation)
Society of Automotive Engineers
Transportation Research Board, National Research Council
Chairman, Motorcycle and Moped Committee (ANF30), 2000-2006

Forensic Qualifications

Testimony in International Court, Federal and Superior Courts throughout the United States since 1980.

Testing Qualifications

Mr. Thom has been actively involved in testing of protective helmets since 1981. He was trained at the southern California test facility of Bell Helmets and was responsible for acquiring and installing a full helmet test laboratory at the University of Southern California. In the course of the last 25 years, Mr. Thom has either personally tested or overseen the testing of thousands of motorcycle, bicycle and other helmets. As part of this testing, Mr. Thom has disassembled, measured and evaluated the construction details of hundreds of motorcycle and other types of helmets for R&D purposes.

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Biographical Sketch

Mr. Thom was born in Boston, Massachusetts in 1955 and has lived in Southern California since 1965. He is an active motorcyclist and bicyclist, both on- and off-road. Mr. Thom's Master's thesis topic at the University of Southern California was basilar skull fractures in fatal motorcycle accidents. He is the immediate past Chairman of the National Academies Transportation Research Board Motorcycle and Moped Committee (ANF30), and was one of the drafters of the National Agenda for Motorcycle Safety in 2000.

Mr. Thom sits on national and international helmet committees and has been deeply involved in research to update the Federal motorcycle helmet standard (FMVSS 218). Mr. Thom assisted the American National Standards Institute (ANSI) Z90 helmet committee in promulgating the 1984 Bicycle helmet standard and has been a member of the American Society for Testing and Materials (ASTM) F08.53 helmet committee since 1994. This committee created the ASTM F1447 bicycle helmet standard which was used as the basis for CFR 1203, the Consumer Product Safety Commission (CPSC) standard on bicycle helmets. Among the other ASTM standards developed by the F08.53 Committee are helmets for equestrian, skating, football, and snow sports.

Mr. Thom started his motorcycle safety career in 1977 working on the DOT-sponsored Motorcycle Accident Cause Factors and Identification of Countermeasures, commonly known as the "Hurt Report." This study of 900 motorcycle accidents in the Los Angeles area is still the most comprehensive and largest study of motorcycle accidents ever done in the United States. More recently, Mr. Thom worked with the Head Protection Research Laboratory and Chulalongkorn University in Thailand on a similar study involving 1082 crashes. Mr. Thom has appeared on television, radio and national magazines regarding helmets and has testified before the California State Assembly as well as the National Transportation Safety Board about helmet effectiveness and the California Senate on motorcycle safety. His research activities and publications have explored motorcycles, helmets of all types, injuries and injury mechanisms.

PUBLICATIONS

Comparison Tests of Motorcycle Helmets Qualified to International Standards, Thom, DR, Proceedings of the 2006 International Motorcycle Safety Conference, Motorcycle Safety Foundation, 2006.

Human Factors Issues in Motorcycle Collisions, Hancock, P.A., Oron-Gilad, T., & Thom, D. In: I. Noy et al (Eds.). Handbook of Forensic Human Factors, 2004.

Methodology for Determining Motorcycle Operator Crash Risk and Alcohol Impairment Vol. I: Synthesis Report on Alternative Approaches with Priorities for Research. Robert B. Voas, Ph.D. and A. Scott McKnight (PIRE); David R. Thom and Hugh H. Hurt, Jr. (HPRL); and John W. Zellner (DRI.), April 2007.

Methodology for Determining Motorcycle Operator Crash Risk and Alcohol Impairment Vol. II: Literature Review Report, Robert B. Voas, Ph.D.(PIRE); Terry A. Smith, Ph.D. David R. Thom and Hugh H. Hurt, Jr. (HPRL); A. James McKnight, Ph.D. (Transportation Research Associates); John W. Zellner (DRI), April 2007.

Bulb Usage Analysis of LED-type Automotive Lighting, J.C. Steiner, N.E. Clark, D.R. Thom, 2003 SAE International Congress, SAE No. 03B-225, 2003.

Environmental Contributing Factors in Thailand Motorcycle Crashes, J.V. Ouellet, T.A. Smith, D.R. Thom & V. Kasantikul, Fourth International Motorcycle Conference, Institute for Motorcycle Safety, e.V., September 2002.

Modernization of the DOT Motorcycle Helmet Standard, D.R. Thom, H.H. Hurt, Jr., J.V. Ouellet & T.A. Smith, Proceedings of the 2001 International Motorcycle Safety Conference, Motorcycle Safety Foundation, March 2001.

Methodology for the Development of an On-Scene Motorcycle Accident Investigation Research Program in Thailand Using the Hurt Study as a Model, T.A. Smith, V. Kasantikul, J.V. Ouellet, D.R. Thom, S. Browne & H.H. Hurt, Jr., Proceedings of the 2001 International Motorcycle Safety Conference, Motorcycle Safety Foundation, March 2001.

Safety Testing for Proposed Upgrade to FMVSS No. 218, Motorcycle Helmets, D.R. Thom, T.A. Smith, HPRL report pr218-HPRL-00-001R, March 31, 2000.

Evaluating the Positional Stability of Motorcycle Helmets, D.R. Thom, J.V. Ouellet, T.A. Smith, H.H. Hurt, Jr., Proceedings of the Human Factors and Ergonomics Society, 2000.

Testing the Positional Stability of Motorcycle Helmets, H.H. Hurt, Jr., D.R. Thom, J.V. Ouellet, Proceedings of the 16th Enhanced Safety of Vehicles Conference, No. 98-S10-P-30, June 1998.

Motorcycle Helmet Test Headform and Test Apparatus Comparison, D.R. Thom, H.H. Hurt, Jr. & T.A. Smith, Proceedings of the 16th Enhanced Safety of Vehicles Conference, No. 98-S10-P-29, June 1998.

Feasibility Study of Upgrading FMVSS No. 218, Motorcycle Helmets, D.R. Thom, H.H. Hurt, Jr., T.A. Smith & J.V. Ouellet, Final Report to National Highway Traffic Safety Administration, U.S. Dept. of Transportation, Contract Order No. DTNH22-97-P-02001, NHTSA-97-3160-1, September 1997.

Updating the Twenty-Year Old DOT Helmet Standard (FMVSS No. 218), H.H. Hurt, Jr., D.R. Thom & T.A. Smith, 40th Proceedings of the Association for the Advancement of Automotive Medicine, October 1996.

Atlas and Axis Injuries in Fatal Motorcycle Collisions, D.R. Thom, H.H. Hurt, Jr., T.A. Smith & I.R. Rehman, 39th Proceedings of the Association for the Advancement of Automotive Medicine, 1995.

Evaluation and Replication of Impact Damage to Bicycle Helmets, T.A. Smith, D. Tees, D. Thom & H.H. Hurt, Jr., Accident Analysis and Prevention, Vol. 26, No. 6, pp. 795-802, 1994.

Basilar Skull Fractures in Fatal Motorcycle Collisions, D.R. Thom and H.H. Hurt, Jr., 37th Proceedings of the Association for the Advancement of Automotive Medicine, 1993.

Evaluation and Replication of Impact Damage to Bicycle Helmets, T.A. Smith, D. Tees, D.R. Thom & H.H. Hurt, Jr., 37th Proceedings of the Association for the Advancement of Automotive Medicine, 1993.

Accident Performance of Contemporary Safety Helmets, H.H. Hurt Jr. & D.R. Thom, Head and Neck Injuries in Sports, ASTM STP 1229, E.F. Hoerner, Ed., American Society for Testing and Materials, 1993.

Conflicts of Contemporary Motorcycle Helmet Standards, D.R. Thom and H.H. Hurt, Jr., 36th Proceedings of the Association for the Advancement of Automotive Medicine, 1992.

Motorcyclist Head Injury Mechanisms -- With and Without Helmets, H.H. Hurt, Jr., D.R. Thom, 36th Proceedings of the Association for the Advancement of Automotive Medicine, October 1992.

A Field Evaluation of Driver Eye and Head Movement Strategies Toward Environmental Targets and Distracters, M. Rahimi, R.P. Briggs & D.R. Thom, Applied Ergonomics, December 1990.

Conflicts of Contemporary Motorcycle Safety Helmet Standards, D.R. Thom, H.H. Hurt, Jr., Proceedings of the 1990 International Motorcycle Safety Conference, Motorcycle Safety Foundation, October 1990.

Accident Performance of Motorcycle Safety Helmets, H.H. Hurt, Jr. & D.R. Thom, Proceedings of the 1990 International Motorcycle Safety Conference, Motorcycle Safety Foundation, October 1990.

Status Report on Conspicuity Research at USC, H.H. Hurt, Jr., D.R. Thom, Proceedings of the 1990 International Motorcycle Safety Conference, Motorcycle Safety Foundation, October, 1990.

Motorcycle Helmet Retention Devices: Convenience and Comfort, D.R. Thom & M. Cann, 34th Proceedings of the Human Factors Society, 1990.

Driver Workload During Differing Driving Maneuvers, P.A. Hancock, G. Wulf, D.R. Thom & P. Fassnacht, Accident Analysis & Prevention, Vol. 22, No. 3, pp. 281-290, 1990.

A Preliminary Comparison of Estimated Arrival Times for Two and Four-Wheeled Vehicles, D.L. Damos & D.R. Thom, Conspicuity Research Group, USC, June 1990.

Human Factors in Automobile-Motorcycle Collisions, G. Wulf, P.A. Hancock & D.R. Thom, Proceedings of Experimental Safety Vehicle Conference, Gotenberg, Sweden, May 1989.

Contrasting Driver Behavior During Turns and Straight Driving, P.A. Hancock, G. Wulf, D.R. Thom & P. Fassnacht, 33d Proceedings, Human Factors Society, 1989.

Car Driver Behavior During Differing Driving Maneuvers, P.A. Hancock, G. Wulf, D.R. Thom & P. Fassnacht, Proceedings, 12th Intl. Technical Conference on Experimental Safety Vehicles, Gothenburg, Sweden, Paper No. 89BO006, pp. 1320-1327, June 1989.

Collision Performance of Contemporary Crashbars and Motorcycle Rider Leg Injuries, J.V. Ouellet, H.H. Hurt, Jr., & D.R. Thom, SAE paper 870603, Proceedings of 1987 SAE International Congress and Exposition, February 1987.

Alcohol Involvement in Motorcycle Accidents, J.V. Ouellet, H.H. Hurt, Jr. & D.R. Thom, SAE Paper 870602, Proceedings of 1987 SAE International Congress and Exposition, Detroit, February 1987.

Failures of Driver Sustained Attention in the Etiology of Motorcycle-Automobile Collisions, P.A. Hancock, H.H. Hurt, Jr., J.V. Ouellet & D.R. Thom, Proceedings of the Annual Conference of the Human Factors Association of Canada, 1985.

Laboratory Tests and Accident Performance of Bicycle Safety Helmets, H.H. Hurt, Jr. & D.R. Thom, 29th Proceedings of American Association for Automotive Medicine, 1985.

Hand Position and Motorcycle Front Brake Response Time, D.R. Thom, H.G. Arao & P.A. Hancock, 29th Proceedings of the Human Factors Society, pp. 278-281, 1985.

Motorcycle-Automobile Collision Prevention Through Increased Motorcyclist Frontal Conspicuity, H.H. Hurt, Jr., P.A. Hancock & D.R. Thom, 28th Proceedings of the Human Factors Society, pp. 795-798, 1984.

The Effect of Hand Position on Motorcycle Brake Response Time, H.H. Hurt, Jr., D.R. Thom & P.A Hancock, 28th Proceedings of the Human Factors Society, 1984.

Motorcycle Accident Cause Factors and Identification of Countermeasures (a.k.a. the "Hurt Report"), Final Report to National Highway Traffic Safety Administration, U.S. Dept. of Transportation, H.H. Hurt, Jr., J.V. Ouellet & D.R. Thom, PB 81-206443, 81-206450, 1981.