



National Transportation Safety Board

Washington, D.C. 20594

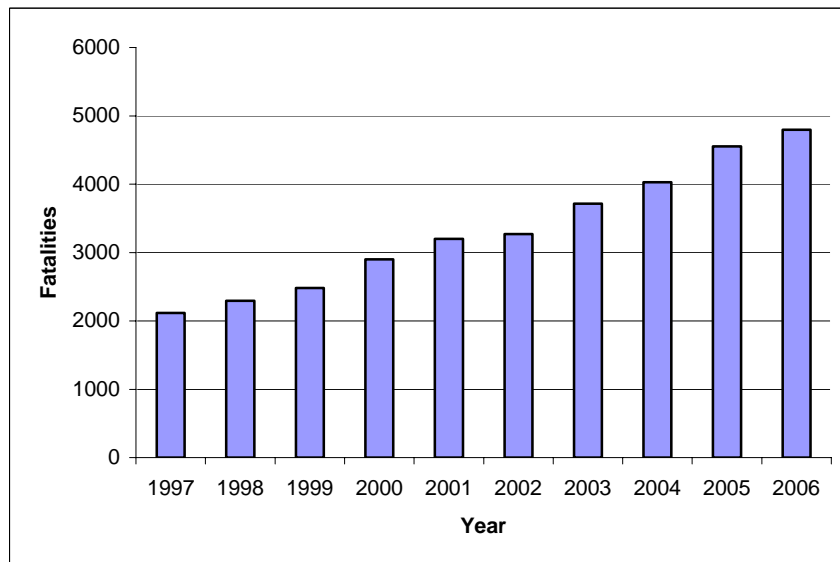
Safety Recommendation

Date: October 3, 2007

In reply refer to: H-07-35 and -36

Honorable Nicole R. Nason
Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, DC 20590

The National Transportation Safety Board is concerned about motorcycle safety and the growing number of riders who have been killed or injured in motorcycle crashes. Since 1997, the number of motorcycle fatalities has increased 127 percent, an increase that far exceeds that of any other form of transportation. In addition, the number of motorcycle fatalities in any recent year has been more than double the number of deaths that same year from accidents in aviation, rail, marine, and pipeline combined. In 2006, for example, 4,810 motorcyclists died in crashes, and motorcycle fatalities accounted for more than 10 percent of all motor vehicle crash fatalities.¹ The following figure clearly shows the rising numbers. Although rising motorcycle use may partly explain this trend, increases in fatalities have outpaced increases in activity measures such as motorcycle registrations and vehicle miles traveled.



Motorcycle fatalities between 1997 and 2006 (source: National Highway Traffic Safety Administration [NHTSA]).

¹*Traffic Safety Facts: 2006 Traffic Safety Annual Assessment – A Preview*, DOT HS 810 791 (National Highway Traffic Safety Administration, 2007).

To better understand the reasons behind these increasing numbers, the Safety Board held a public forum in September 2006 to 1) review current issues in motorcycle safety, 2) gather information about ongoing motorcycle safety research and initiatives, and 3) discuss safety countermeasures that may reduce the likelihood of motorcycle accidents and fatalities. The 2-day forum featured six panels covering motorcycle trends and safety statistics, vehicle design, rider protective equipment, training and licensing, public education and awareness, and rider impairment. Panelists represented government, motorcycle manufacturers, motorcyclist associations, state motorcycle rights organizations, researchers, trauma physicians, law enforcement, and insurance companies.

One of the most comprehensive documents concerning motorcycle safety to appear in the last decade is the National Agenda for Motorcycle Safety (NAMS),² which was referenced several times during the forum. Published by the U.S. Department of Transportation (DOT) in 2000, the NAMS has been called a “blueprint for the future” of motorcycle safety in the United States. NHTSA and the Motorcycle Safety Foundation (MSF), a nonprofit foundation supported by motorcycle manufacturers, cosponsored the NAMS, and a technical working group of experts representing many different motorcycle-related constituencies contributed to its development. Its stated mission is to “point the way to the most promising avenues for future motorcycling safety efforts in the United States.”

The NAMS covers human, social, motorcycle, and environmental factors, and includes subsections dealing with roadway characteristics, motorcycle design, rider education and training, research needs, personal protective equipment, impaired riding, licensing, enforcement, insurance, and motorist awareness. Each section concludes with recommendations aimed at improving motorcycle safety. In total, the document contains 82 recommendations (listed in attachment 1), which are grouped into three broad categories: urgent, essential, and necessary. However, the technical working group did not define the three categories or explain the rationale for the placement of recommendations into categories. Consequently, it is not clear whether the technical working group considered the feasibility, effectiveness, or efficiency of the recommendations when making these classifications. Finally, neither NHTSA nor the MSF has an official means of tracking the status of the 82 recommendations.

In 2006, NHTSA published the NAMS Implementation Guide,³ which lists several state and community motorcycle safety efforts that are aligned with NAMS recommendations. The implementation guide identifies approximately half of the NAMS recommendations as being directed to states and communities and cites specific “action steps” for implementing those recommendations. The guide also describes over 100 “promising practices” that states and motorcycling organizations submitted as examples and provides resources such as websites and documents that may assist those who wish to initiate similar efforts. According to the guide, “Each State and Community must evaluate its own motorcycle safety issues and decide which NAMS recommendations may help address these issues.” Although the guide does provide useful information, it does not evaluate the potential efficacy of the recommendations or its own promising practices.

²*National Agenda for Motorcycle Safety*, DOT-HS-809-156 (U.S. Department of Transportation, November 2000).

³*Implementation Guide: National Agenda for Motorcycle Safety*, DOT-HS-810-680 (U.S. Department of Transportation, December 2006).

The effectiveness of the NAMS recommendations may be evaluated by establishing a set of objective rating criteria and applying them to the recommendations. Examples of evaluation criteria include the existence of research that links the recommendation to safety outcomes (for example, reductions in accidents or fatalities) or the availability of resources needed to implement the recommendation. Another NHTSA report, *Countermeasures That Work (CTW): A Highway Safety Countermeasure Guide For State Highway Safety Offices*,⁴ uses such an approach to evaluate highway safety countermeasures. The CTW guide identifies strategies for traffic safety that are relevant to states and rates their use, effectiveness, cost, and implementation time. In doing so, the guide enables state highway safety offices to identify science-based countermeasures that are most likely to have a positive impact on traffic safety.

The CTW guide dedicates one chapter to motorcycle safety and states that the most important objectives for improving motorcycle safety are to “increase helmet use, reduce alcohol impairment, and increase proper licensing and training.” The guide goes on to state that of all the proposed countermeasures, only state motorcycle helmet laws have “proven effectiveness,” as demonstrated by “several high-quality evaluations with consistent results.” Although the CTW guide focuses exclusively on countermeasures that could be accomplished by state highway safety organizations, its methodology for prioritizing countermeasures could readily be applied to evaluate and reprioritize the NAMS recommendations.

The Safety Board is concerned, because motorcycle fatalities have been increasing, that those who seek guidance in the NAMS and its implementation guide may be less likely to commit time and money to implement the NAMS recommendations without knowing which ones have been shown to provide a benefit in terms of preventing accidents, injuries, and fatalities. By using objective criteria to prioritize the NAMS recommendations, concerned parties can step up efforts in those areas that are most likely to produce results. Therefore, the Safety Board recommends that NHTSA reprioritize the NAMS recommendations based on objective criteria, including known safety outcomes. In addition, the Board recommends that NHTSA, following completion of the reprioritization of the NAMS requested in Safety Recommendation H-07-35, implement an action plan for states and others, such as federal agencies, manufacturers, insurance organizations, and advocacy groups, to carry out those recommendations that are determined to be of high priority.

Once the evaluation criteria have been established, it will be important to gather the appropriate information for prioritizing the recommendations. For example, one criterion could be whether implementing the recommendation has led to reductions in accidents, injuries, and fatalities, or if it has reduced the incidence of risk factors, such as speeding or impaired riding. NHTSA may gather such information through program evaluations or reviews of scientific research. NHTSA could also seek this information from states and organizations that have implemented programs meeting the NAMS recommendations, or from states that have received federal funding to implement motorcycle safety programs.⁵

⁴J. H. Hedlund, *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices*, DOT HS 809 980 (January 2006).

⁵For example, NHTSA administers a motorcycle safety incentive grant program that is designed to “encourage States to adopt and implement effective programs to reduce the number of single and multi-vehicle crashes involving motorcyclists.” In 2006, 44 states and Puerto Rico received grants totaling \$5.94 million.

In conclusion, the Safety Board recognizes that the NAMS is an important document in motorcycle safety that covers numerous topics, including rider training, personal protective equipment, motorist awareness, rider impairment, motorcycle design, and roadway characteristics, many of which were also discussed at the Safety Board public forum. The Board is encouraged by the attention that the NAMS has generated and by federal, state, and community-level efforts to respond to its recommendations. However, the Board believes that safety will be improved by prioritizing the NAMS recommendations using objective criteria, continuously tracking the effectiveness of new and ongoing efforts, and promoting efforts that are judged to be most successful at improving safety.

Therefore, the National Transportation Safety Board recommends that the National Highway Traffic Safety Administration:

Reprioritize the National Agenda for Motorcycle Safety recommendations based on objective criteria, including known safety outcomes. (H-07-35)

Following completion of the reprioritization of the National Agenda for Motorcycle Safety requested in Safety Recommendation H-07-35, implement an action plan for states and others, such as federal agencies, manufacturers, insurance organizations, and advocacy groups, to carry out those recommendations that are determined to be of high priority. (H-07-36)

The Safety Board also issued safety recommendations to the Federal Highway Administration and to the states.

Please refer to Safety Recommendations H-07-35 and H-07-36 in your reply. If you need additional information, you may call (202) 314-6177.

Chairman ROSENKER, Vice Chairman SUMWALT, and Members HERSMAN, HIGGINS, and CHEALENDER concurred in these recommendations.

[Original Signed]

By: Mark V. Rosenker
Chairman

Attachment 1 – National Agenda for Motorcycle Safety Recommendations

Urgent Recommendations

- Immediate action should be taken by government and industry to address the critical questions in motorcycle safety through comprehensive, in-depth studies as well as studies focused on specific topics.
- Continue to discourage mixing alcohol and other drugs with motorcycling.
- Use effective strategies to increase the use of FMVSS 218 compliant helmets.
- Educate operators of other vehicles to be more conscious of the presence of motorcyclists.

Essential Recommendations

- To better utilize data collected by law enforcement personnel, a uniform traffic crash report for police officers should be developed and deployed. A similar format should also be developed for emergency medical services reports. This will permit meaningful comparisons among jurisdictions. All concerned parties should share the resulting information.
- Mechanisms for building academic and funding capacity for ongoing and future motorcycle safety research should be explored.
- Study factors that affect and shape motorcyclists' attitudes and behavior and how they affect crash involvement.
- Using information about how motorcyclists form attitudes about safety issues, create programs that reduce dangerous behavior and reinforce safe behavior.
- Expand motorcycle safety programs to accommodate all who need or seek training.
- Conduct uniform follow-up research into the effectiveness and impact of rider education and training.
- Merge rider education and training and licensing functions to form one-stop operations.
- Commission studies to ensure that licensing tests measure skills and behaviors required for crash avoidance.
- Identify and remove barriers to obtaining a motorcycle endorsement.
- Develop and implement programs to allow all state motorcycle safety programs to issue motorcycle endorsements immediately upon successful completion of rider training courses.
- Enforce penalties for operating a motorcycle without a proper endorsement.
- Encourage states and jurisdictions to provide motorcycle specific training to license examiners administering testing for motorcyclists.
- Conduct research to determine which rider crash avoidance skills are most important.
- Develop countermeasures in training, license testing, and motorcycle technology to address any current crash avoidance deficiencies.
- Evaluate effectiveness of rider education and training in developing crash avoidance skills.
- Study how alcohol, drugs and other substances, including over-the-counter medications, can affect a motorcyclist's operating skills.
- Study the alcohol, drug and other substance use patterns of motorcyclists.
- Educate law enforcement about unique alcohol-related behavior of motorcyclists.
- Encourage partnerships with groups already involved in alcohol/substance abuse issues related to motor vehicle crashes, e.g., Mothers Against Drunk Driving (MADD), Students Against Destructive Decisions (SADD).
- Educate motorcyclists about the value of protective apparel by providing an information source on related research and a forum for the exchange of information.
- Find ways to more effectively communicate the benefits of helmet use and work toward making voluntary use of FMVSS 218 compliant helmets more widely accepted.

- Use effective strategies to ensure that all helmets in use meet FMVSS 218.
- Revise FMVSS 218.
- Remind motorcyclists that they may be overlooked and provide defensive strategies for overcoming this situation.
- Include questions regarding motorcyclists on driver's license tests and include information in driving manuals.
- Include the completion of a motorcyclist awareness class in sanctions against motorists found guilty of violating a motorcyclist's right-of-way.
- Adequate funding needs to be devoted to the development and implementation of motorist awareness issues.
- Insurers should write policies that stipulate that coverage or certain portions of coverage are not valid if the owner permits an unlicensed or improperly licensed operator to use the motorcycle.
- Educate law enforcement and judicial officials about unique motorcycle safety issues and resources.
- Encourage inclusion of law enforcement officials in Motorcycle Safety Program Assessments.
- Develop and implement standardized data gathering and reporting for motorcycle crashes.
- Include motorcycle crash investigation procedures in the basic course given to crash investigators.
- Appropriate sanctions should be applied to those found guilty of contributing to motorcycle crashes. The sanctions, such as mandatory attendance at a motorcycle awareness course, would be designed to expand knowledge of motorcycle issues.
- Traffic safety organizations outside of the motorcycling community can better influence motorcycle safety issues by becoming more educated about motorcycle safety issues and adopt them where applicable.
- Increase funding for motorcycle safety programs by elevating their importance to state highway safety offices.
- Representatives of the motorcycle safety community should be integrated into the larger highway safety community to improve cooperative efforts.
- Conduct research to determine how current motorcycle designs affect crash and injury causation.
- Implement the use of available tire and wheel technology and explore technology, such as run-flat tires, to reduce frequency of loss-of-control crashes caused by puncture flats.
- Study the effectiveness of linked and antilock braking in the field. If these technologies prove valuable, deploy them more widely.
- Conduct research to determine why other motorists fail to see and identify motorcyclists and implement countermeasures.
- Encourage motorcyclists to enhance their conspicuity.
- Encourage manufacturers to make motorcycle apparel and parts conspicuous.
- Reconsider state requirements that prohibit safe conspicuity-enhancing modifications, including safe modification to lighting systems.
- Study the safety implications of lane splitting.
- Identify and prioritize roadway hazards to motorcycle operation.
- Develop and revise highway standards on all levels—federal, state, county, and local—to reflect the needs of motorcyclists and encourage motorcycle-friendly design, construction, and maintenance procedures.
- Create a working group to recommend changes to highway standards to increase motorcycle safety.
- Post specific warnings for motorcyclists where unavoidable hazards exist.
- Revise the *Manual on Uniform Traffic Control Devices (MUTCD)* so that signage better communicates roadway or construction conditions that present hazards to motorcyclists.
- Educate motorcyclists about the hazards created by common roadway defects and maintenance methods. Emphasize riding skills required to negotiate these hazards through education and training.
- Take steps to remove slippery sealants and repair substances applied to road surfaces.
- Educate road design and maintenance personnel about conditions that pose hazards to motorcyclists.

- Educate motorcyclists about strategies to overcome the challenges that the designs of other vehicles create in the traffic environment.
- Integrate a motorcyclist treatment component in emergency medical personnel training.
- Integrate a motorcyclist treatment component in first-aid/bystander care training and encourage motorcyclists to obtain this training.
- Include motorcycles in the design and deployment of Intelligent Transportation Systems.

Necessary Recommendations

- Create a clearinghouse to distribute current, practical information about motorcycle safety based on recent research.
- Develop research-based safety information that can be used easily by the consumer media and in rider education and training systems.
- Explore public service announcements, advertising in enthusiast and near-enthusiast media, and any other viable avenues for distributing safety information.
- Increase the number of states conducting Motorcycle Safety Program Assessments.
- Establish benchmarks for rider education and training effectiveness and program operation excellence.
- Explore the effectiveness of on-street training.
- Develop an enhanced motorcycle licensing model using appropriate GDL concepts and evaluate its effectiveness.
- Evaluate the need for motorcycle simulator skills training.
- Examine technological approaches such as pre-crash warning and avoidance systems to enhance crash prevention.
- Conduct research regarding protective apparel effectiveness, and consider development or adoption of existing standards, if research justifies.
- Collect, organize, analyze, and distribute motorcycle-specific loss data from insurers to better understand safety issues, and to educate riders and other motorists on motorcycling safety issues.
- Develop guidelines for insurers to tie approved training, licensing, and safe-riding practices to premium reductions.
- Use information from research to implement other braking-related countermeasures.
- Provide additional training and education on proper braking and panic-braking techniques.
- Study the role of modifications in current motorcycle crashes.
- Educate users about how modifications and loads can change the operating characteristics of their motorcycles.
- Conduct research on the effect of automobile DRL on motorcycle safety.
- Educate motorcyclists about lane-use strategies, including HOV lane usage.
- Reduce roadway debris such as that resulting from uncovered loads and shorn retreads.
- Emphasize motorcycle safety issues as a consideration in the design of other vehicles.
- Investigate how the designs of other vehicles affect motorcycle safety.
- Identify opportunities to utilize the *EMS Agenda for the Future* to promote motorcycle safety.