



NATIONAL ASSOCIATION of STATE MOTORCYCLE SAFETY ADMINISTRATORS

SMSA Spotlight Magazine

Fall 2015

Measuring the Relative Danger of Motorcycling

Why do we use the word danger instead of risk or safety? The short answer is that when using scientific method we need terms that are not ambiguous. "Danger" is a more useful description of potential bodily harm or injury to humans.

The term "risk" lacks the precision needed when scientifically analyzing data. A workable definition for risk is "chance of loss." Risk has other definitions and uses, such as volatility. (Example: The stock market volatility is a risk measure for investors.) Also, defining risk as "the chance of loss" can be associated with such things as theft. (Example: Parking the motorcycle in a locked garage has less risk than parking it outside.)

So, what about the term safety? A useful definition for the term "safe" in our field is "the absence of danger." When using the scientific method, it becomes difficult to measure safety, and even less meaningful trying to measure changes in safety. (Example: Once you are "safe," how do you measure "more safe?")

National Motorcycle Institute (NMI) purposefully chooses to define danger as "the chance of bodily harm." The ultimate bodily harm is death, so statistics obtained from fatal crashes are useful for modeling danger. "Chance of bodily harm" can be modeled, and measurements can be made. Changes and differences for "the chance of bodily harm" can be calculated in both time and by geographical area.

We at NMI think of ourselves as the "Motorcycle Danger Institute." NMI uses science to understand and manage the danger of motorcycling. We use the scientific method, "Statement because Explanation," where the "Statement" is measurable and disprovable, and the "Explanation" is

difficult to manipulate. Using this method, NMI carefully develops models of danger that are measurable, then we offer specific methods to reduce the dangers.

We use the term "driver" to accurately identify the operator of a motor vehicle, and "passenger" to identify a person riding in a motor vehicle (or upon a motorcycle but not operating it). These terms are used to remove ambiguity, as well as making it easy for meaningful comparisons to be made between motorcycle and passenger vehicle fatality rates.

Let's look at a specific model for driver danger: Driver Fatalities per Billion Miles Traveled. We choose to look at the latest four years of data available. Using the most recent four years provides enough data points to smooth out random fluctuations. However, four years is not so long of a period that it washes out the current trend. Table 1, calculated from statistics from the Fatality Analysis Reporting System and the Federal Highway Administration, measures the relative danger of driving a motorcycle.

**Table 1:
Driver Fatalities per Billion Miles Traveled**

<u>Year</u>	<u>Motorcycle</u>	<u>Passenger Vehicle</u>	<u>Relative Danger</u>
<u>2010</u>	215	7.88	27
<u>2011</u>	220	7.58	29
<u>2012</u>	203	7.68	26
<u>2013</u>	200	7.45	27
Average	210	7.65	27

For years we've used the term "motorcycle safety" to refer to the field of training and licensing motorcyclists. The problem with that term is that "safety" is ambiguous. There



SMSA Listserv

Please take advantage of the SMSA Listserv hosted by Oregon State University. The SMSA Listserv is an easy and efficient way to contact your fellow SMSA members with questions relating to Motorcycle Safety and Rider Education. To sign up, visit the SMSA website Members Only section and choose the tab for Listserv. Summaries from past postings are also listed under the Listserv tab.

is no way to measure “less safe” or “more safe.” Most of us realize that “motorcycle safety” is an oxymoron that downplays the realities of motorcycling. We haven’t been motivated, until now, to come up with a term that better describes the nature of our business, and how we go about it.

In order to better measure the effects of tactics such as driver training and licensing, it is important to use definitions that are not ambiguous. “Danger” correctly defines the nature of motorcycling, referring to the potential for bodily harm to a motorcyclist. And, for scientific purposes, the level of danger can be measured, and models can be developed to manage danger.

National Motorcycle Institute (NMI) will offer its considerable insight, as scientists and motorcyclists, into the measurement and modeling of the danger of motorcycling, and provide a more useful paradigm for the approach to our subject.

With the new paradigm and new tools, we can manage not only the intensity of the danger, but we can, separately, measure the exposure to danger. We look forward to sharing that concept with you next time.



Joseph T. Elliott
Executive Director
National Motorcycle Institute, (NMI)

Motorcycle Safety 2.0

If you could choose only one outcome from a rider education course, which would it be?

- A. Students demonstrate knowledge by passing a written test.
- B. Students demonstrate skill by passing a riding test.
- C. Students demonstrate judgment by making decisions in real-world situations.

If you chose answer C, you’ll be glad to know that our friends in Oregon have developed a new course that addresses knowledge, skill *and* judgment.

In 2014 **TEAM OREGON**, a program of Oregon State University, field-tested an online classroom module for a new option as part of the state-approved, mandatory rider education courses. Called eRider™, the new classroom has proven effective for both basic and intermediate rider training students. Heavy with real-world riding scenarios, interactive video and other learning tools, eRider™ is informed by NHTSA’s *Model National Standards for Entry-Level Rider Training*.

Six chapters, 30-60 minutes each, focus on what new riders need to know *now*. Among 168 national standards, eRider™ prioritizes scanning, risk awareness, riding strategies, judgment, impairments, riding gear, riding skills, and group riding. These topics are heavily emphasized with learning activities throughout the course. Students engage in dozens

of hazard identification and decision-making scenarios across all these categories.

For example: The final activity in Chapter 1 is a shopping trip. Students examine and choose riding gear from an assortment of the good, the bad and the ugly. In Chapter 2, students simulate using motorcycle controls to take a virtual ride. The final activities in Chapters 3-5 are exercises in situation awareness: Students analyze video clips and make decisions about everyday hazards, lane placement, speed and escape routes. The final activity in Chapter 6 is a card game: Just like in the real world, riders play the hand they’re dealt. Wild cards increase the risk from unplanned events, bad weather, distraction, emotion or impairment. Throughout all these activities students must demonstrate that they *think* like a motorcyclist and make good decisions about their safety.

TEAM OREGON pilot-tested a total of 32 basic and 10 intermediate courses using the online classroom. After each course, students completed a pre/post survey to rate their knowledge before and after the course. Online students reported greater increases in knowledge and greater post-course knowledge than students in the traditional face-to-face (F2F) classroom.

In student end-of-course evaluation forms, however, basic (beginner) students still showed a preference for the traditional classroom.

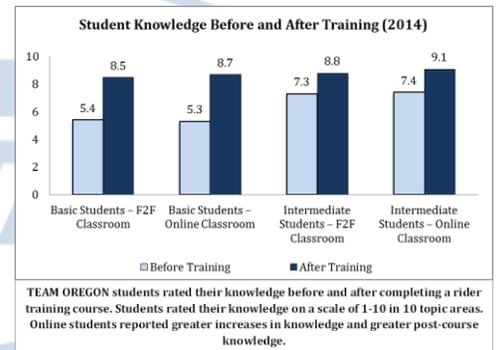
Intermediate students –

generally, those with previous riding experience – showed a preference for the online classroom. Given that most rider training students are beginners, the online classroom will not replace the traditional classroom, but will be offered as a course option.

The eRider™ course has received approval by the Oregon Department of Transportation. The eRider™ option is now available to basic and intermediate students. **TEAM OREGON** estimates 20-35 percent of its 12,000 students per year will choose the online classroom. eRider™ students attend only the range sessions in person; classroom instruction for these courses is done entirely online.

To learn more about the eRider™ philosophy, development and field test, read the final report at team-oregon.org/smsa. To request access to the online classroom, contact: pat.hahn@oregonstate.edu.

Patrick Hahn
Communications and Outreach Manager
TEAM OREGON Motorcycle Safety Program



Revisiting the Link between Helmet Use and Fatality Outcome

In April 2012 the State of Michigan repealed their Universal Helmet Law (UHL) for motorcyclists at least 21 years old who carry \$20,000 in additional medical insurance and who meet minimum riding experience or training requirements. The state of Michigan became the 9th US state to take this step and is one (1) of 28 US states with partial helmet laws as of September 2015. Proponents of the UHL assert that fatalities from crashes involving motorcycles (MC) will increase as a direct result of the legislative change. Conversely, advocates for the repeal of UHL state that helmet wearing impinges on individual rights and freedoms enshrined in the US constitution.

In the clamor of voices for and against the repeal of UHLs, medicolegal insights from state troopers/police officers, medical examiners (MEs) and Death Scene Investigators (DSIs) are usually not heard. To explore this shortcoming, a two (2) year study period April 1, 2011 through April 30, 2013 was designed permitting a 'Before' (i.e., April 2011 thru April 2012) and 'After' (i.e., April 2012 thru April 2013) comparison of motorcycle fatalities in Wayne County, Michigan.

Fatality Analysis Reporting System (FARS) data was complemented by qualitative data obtained from interviews with autopsy technicians, DSIs, MEs and state troopers/police officers; in addition to crash scene records, death scene notes, images and autopsy records from the Michigan State Police and Wayne County Medical Examiner.

In the 'Before' period, 18 fatal crashes involving a MC resulted in 18 fatalities in Wayne County; compared to 21 fatal crashes resulting in 22 fatalities in the 'After' period. The 17% increase in MC fatal crashes between the 'Before' and 'After' periods, resulted in a 22% increase in MC fatalities between the same two periods. Proponents of retaining UHLs will state that the increase in fatalities was directly linked to the lack of wearing a helmet. In fact, 13 (or 72%) of the 18 MC fatalities in the 'Before' period wore helmets compared to 7 of the 22 (or 32%) MC fatalities in the 'After' period.

A ME is tasked to record and give a definitive opinion on the cause and manner of death and other contributory factors. However, preliminary findings from the study suggest that 'To assume that the lack of a helmet contributed directly to the death of a MC occupant would be to ignore other fatal injuries and behaviors unrelated to helmet use that may have been equal or greater contributors as revealed during or after the forensic autopsy.' This reasoning supports the need to hear medicolegal perspectives of DSIs, MEs and state troopers/police officers who attend fatal crash scenes, perform forensic autopsies or provide expert testimony in any resulting court cases.

The helmet protects only one part of the body – that is the head.

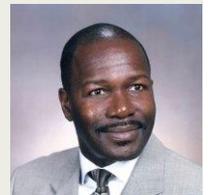
A state trooper interviewed during the study stated, "When you're on a motorcycle and you get hit by a motor vehicle whether it is 40mph or 50mph (64 km/hr or 80 km/hr), all the helmet does is protect your head which is also obviously a very valuable part of your body." "Head injuries with or without a helmet, are catastrophic." However, the susceptibility of the whole body to debilitating injury, for example, broken arms, ribs or a crushed chest, may diminish the efficacy of a helmet in mitigating a fatal crash outcome.

The vulnerability of the motorcyclist to an injury outcome is directly related to the travel speed of the motorcyclist and speed on impact at the time of the crash. Traveling at a high rate of speed potentially reduces the efficacy of a helmet. A DSI interviewed recalls that "From my experience in attending scenes of motorcycle deaths I think for most of them the helmet probably would not have made a difference because they are usually traveling at a high rate of speed."

The type of helmet worn may also be a factor in fatal injury outcome. For example, novelty helmets that do not meet Federal Motor Vehicle Safety Standard No. 218 requirements. The protection of a novelty helmet, emphatically stated during an interview with a state trooper, "Is about as effective as taking this sheet of paper, putting it on my head and strapping it on with a rubber band! They offer zero protection. They are not crash helmets!"

MC riding is an enjoyable recreational activity and feasible commuting option for many people. Motorcyclists as all other road users have the right to be safe and make correct choices to operate their vehicles safely. In order to provide motorcyclists with valid information for making those choices, it is critical to continually evaluate injury prevention strategies targeting riders. A greater understanding of the medicolegal outcomes of fatal crashes permits a reassessment of the accepted link between non-helmet use and fatality outcomes and could point the way to more effective countermeasures.

Oliver Page, Ph.D.
Transportation Safety Researcher



Announcing the 2016 International Driver and Rider Training Symposium

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 - New training programs and trends
- Exposure to and explanations of current and future Motorcycle Safety Control technology
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 - Opportunity for peer networking with other instructors



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SMSA Committee Updates

The **Motorcycle Safety Programs Committee** has been working on a data collection project and finalized the first in a series of guideline documents on collecting and analyzing motorcycle safety related data.



The project focuses on how to collect accurate data, the analysis of that data and how that data can drive funding decisions within a state program. The first guideline document is titled the *SMSA Motorcycle Safety Related Data – A Guideline Document for States to Collect Motorcycle Safety Data*. The document will soon be posted to the SMSA website following the SMSA 2015 Symposium. In the coming year, the committee will continue working on additional guideline documents for motorcycle safety data collection and analysis.

The **Communications and Membership Committee** has been planning the 2015 SMSA Symposium and preparing for the 2016 Summit in Portland, Oregon. The committee has also been working on ways to further enhance SMSA services, the SMSA Spotlight Magazine and identifying approaches for updating the SMSA website to make it more user friendly. Please share your ideas with the committee members.

The **Policy and Planning Committee** is currently working on several policy positions including Instructor Rules of Professional Conduct and a Lane Splitting policy. Please share your ideas on policy positions with the committee members. The committee has also been assisting with preparing for the 2015 SMSA Symposium Awards selections.

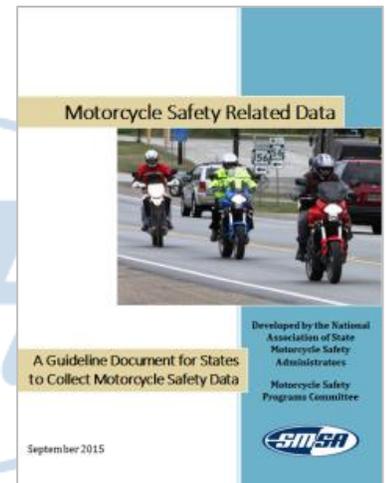
SMSA Motorcycle Safety Data Guideline Document

The National Association of State Motorcycle Safety Administrators (SMSA) released the *SMSA Motorcycle Safety Related Data – A Guideline Document for States to Collect Motorcycle Safety Data* at the SMSA 2015 Symposium – Making a Difference through Research, Data, Planning and Collaboration in Baltimore, Maryland.

Charged to the SMSA Motorcycle Safety Program Committee, this guideline document is the first in a series of guideline documents designed to assist states in collecting and analyzing motorcycle safety related data.

This guideline document outlines; the need for Motorcycle Safety-Related Data; Rider Training Data Collection; Course Completion Data Collection; Motorcycle Licensing Data; Vehicle Registration Data; Crash Reports; Data Analyses; and SMSA’s Data Survey.

The SMSA Motorcycle Safety Programs Committee was assisted by Cindy Burch and Tim Kerns from the Charles “McC” Mathias National Study Center for Trauma and EMS, Shock, Trauma and Anesthesiology Research-Organized Research Center and Dr. Chanyoung Lee from the Center for Urban Transportation Research at the University of Southern Florida.



Save the Date

Join us for the
SMSA 2016 Summit: Motorcycle Safety – The Next Steps
 September 21-24, 2016
 Portland, Oregon
 Red Lion on the River
 Jantzen Beach

Hosts:
 Oregon Department of Transportation
 TEAM OREGON Motorcycle Safety Program

The SMSA 2016 Summit will be held at the Red Lion Hotel on the River in Portland, Oregon September 21-24, 2016.

The Summit will be hosted by the Oregon Department of Transportation and the **TEAM OREGON** Motorcycle Safety Program.

The theme of next year’s SMSA 2016 Symposium is Motorcycle Safety – The Next Steps.

We look forward to seeing you next year in Portland, Oregon – September 21-24, 2016.

October 17, 2015

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