



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 3, 2007

In reply refer to: H-07-34

Honorable J. Richard Capka
Administrator
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

The National Transportation Safety Board is concerned about motorcycle safety and the growing number of riders that 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 Figure 1 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.

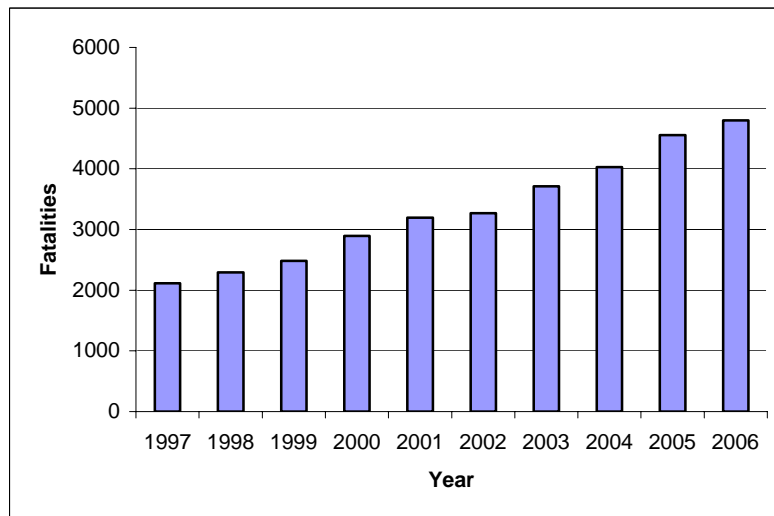


Figure 1. Motorcyclist fatalities between 1997 and 2006 (source: National Highway Traffic Safety Administration [NHTSA]).

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 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, trauma physicians, law enforcement, and insurance companies.

One of the issues raised at the public forum was the need for accurate data reflecting motorcycle activity trends, such as motorcycle registration and vehicle miles traveled (VMT). These data are important because, in addition to being used to calculate safety rates (that is, accidents, fatalities, and injuries per mile traveled or per registered vehicle), they are also used to evaluate funding at the federal, state, and local levels, forecast tax revenue, estimate roadway needs (capacity and condition), assess safety countermeasures, and develop legislation.

The states collect motor vehicle registration data and provide the data to the Federal Highway Administration (FHWA), which then provides the data to the public. After several years of declining motorcycle registrations during the 1980s and early to mid-1990s, motorcycle registrations have increased over the past several years (see figure 2).² In 2005, more than 6 million motorcycles were registered in the United States.

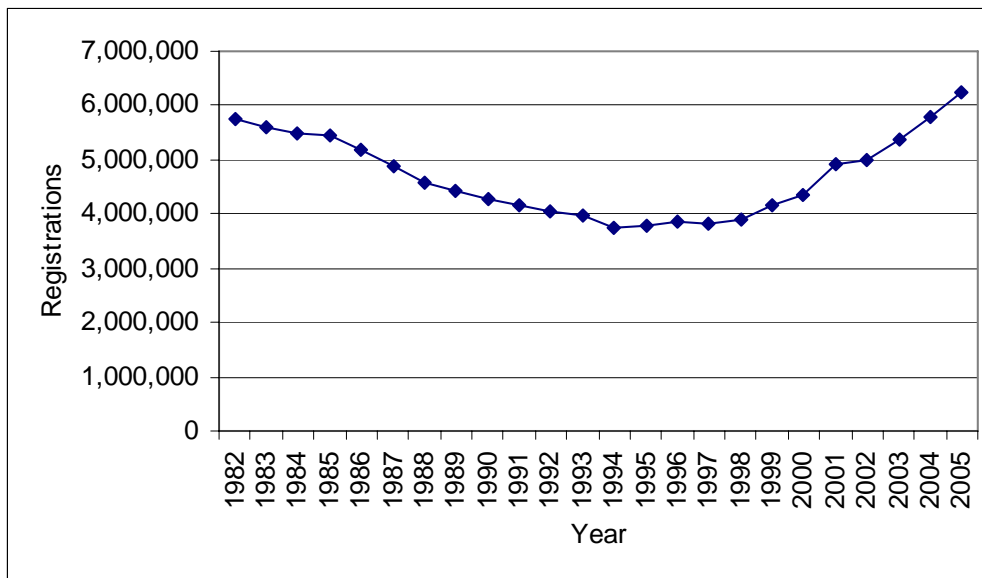


Figure 2. Motorcycle registrations (source: FHWA, Highway Statistics).

In January 2006, the FHWA published a notice requesting comments on the quality, timeliness, comprehensiveness, and other characteristics of the motor vehicle registration and

²Motor vehicle registration data are published by the FHWA in Highway Statistics and are available at <<http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>>. Motorcycles include two-wheeled and three-wheeled vehicles. Sidecars are not regarded as separate vehicles; a motorcycle and sidecar are reported as a single unit.

licensed driver information to determine any necessary changes to the collection of these data.³ In its comments, the University of North Carolina Highway Safety Research Center indicated that, beginning in 1998, the motorcycle registration data published by the FHWA for the state of North Carolina deviated from the motorcycle registration data reported by the North Carolina Department of Motor Vehicles and continued to diverge further each year. In 1998, North Carolina reported to the FHWA a larger than expected number of motorcycle registrations. According to the North Carolina letter, rather than publish the reported data, the FHWA elected to estimate the number of motorcycle registrations by projecting a 5 percent yearly increase, a practice it continued for several of the following years. In response to the comments from North Carolina and others who raised concerns about the validity of the vehicle registration and driver licensing data, the FHWA issued a second notice in April 2007 listing several planned changes for these data, but did not address the specific motorcycle registration concern raised by the state of North Carolina.^{4,5}

The FHWA estimates of registered motorcycles may underestimate the number of motorcycles that are used on the roads each year. Data collected by the Motorcycle Industry Council (MIC) corroborate this possibility. At the Safety Board public forum, Pat Murphy, representing MIC, stated, “not all motorcyclists register their bikes,” and presented data from a 2003 MIC motorcycle/all terrain vehicle (ATV) owner telephone survey,⁶ which estimated that nearly 7 million motorcycles were used on the highway in 2003—2 million more than the 5 million registered motorcycles reported by the FHWA for the same year. Motorcycle sales data from the MIC show a sales pattern similar to that of the registration data: declining sales in the 1980s and the early 1990s followed by increased sales since that time (see figure 3). More than 1.149 million motorcycle units⁷ were sold in 2005 compared to the decade before, when only 309,000 motorcycle units were sold. Motorcycle sales in 2005 amounted to an estimated \$9.8 billion.⁸

³72 *Federal Register* 969, January 6, 2006.

⁴For example, the notice stated the FHWA was changing the definition of teenage drivers, was eliminating the collection of information on disqualified commercial drivers’ licenses because the Federal Motor Carrier Safety Administration collects these data, and was improving the software to receive and process motor vehicle registration and driver licensing data.

⁵72 *Federal Register* 17595 (April 9, 2007).

⁶The survey used a national probability sample of households and included 2,018 motorcycle/ATV owners and 2,007 nonowners. It was conducted over a 12-month period to eliminate seasonal bias.

⁷Of these, 70 percent were on-highway, 2 percent were dual, and 28 percent were off-highway units. On-highway units are motorcycles that are certified by the manufacturer as being in compliance with the Federal Motor Vehicle Safety Standard (FMVSS) and that are designed for use on public roads. On-highway units include scooters and exclude mopeds. Dual units are motorcycles certified by the manufacturer as being in compliance with the FMVSS, and designed with the capability for use on public roads, as well as for off-highway recreational use. Off-highway units are not certified by the manufacturer to be in compliance with the FMVSS. Off-highway units include competition motorcycles and exclude ATVs.

⁸*Statistical Annual*, Motorcycle Industry Council (2006). The estimated retail dollar volume is based on the manufacturer’s “suggested retail price” per model in the MIC Retail Sales Report.

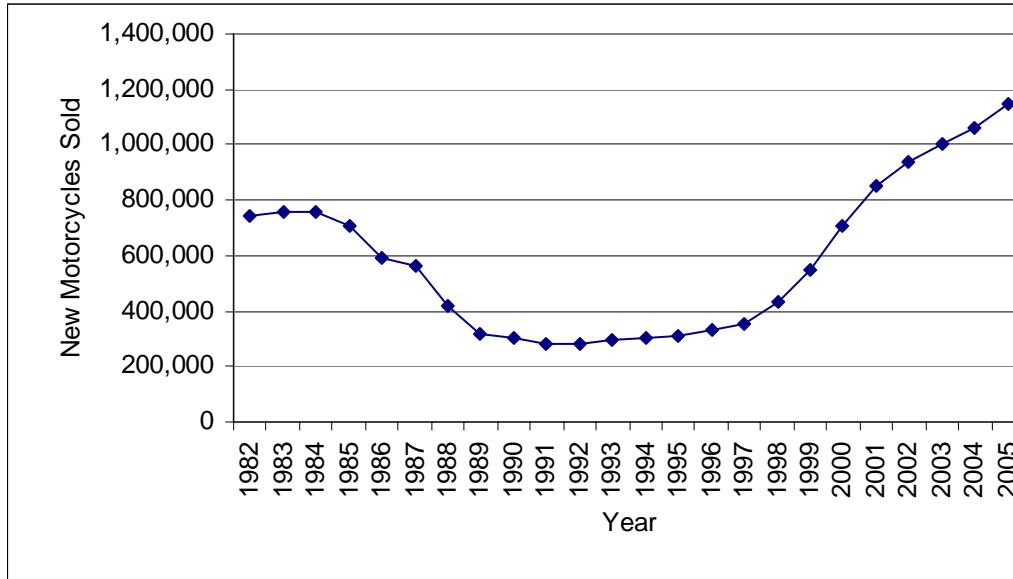


Figure 3. Motorcycle sales (source: Motorcycle Industry Council).

The FHWA motorcycle VMT data show more fluctuations during the 1990s and 2000s than the registration and sales data, as shown in figure 4.⁹ Currently, states are not required to collect and submit motorcycle VMT data to the FHWA; however, beginning in June 2008, the collection and submission of these data will be mandatory.¹⁰

Some states have indicated that they do not currently collect motorcycle VMT data or, if they do, have indicated that, for several reasons, they are concerned about the quality of the data.¹¹ For example, states have identified problems with using automatic traffic recorders to account for motorcycle traffic—such as difficulties in counting motorcycles that travel side by side or close behind each other, difficulties in distinguishing larger motorcycles from passenger vehicles, or magnetic counters not sensing motorcycles that do not pass over or travel close enough to the sensor. Alternatively, some states conduct manual classification counts, but these efforts are labor intensive. A further complication is that classification counts are frequently conducted during the week and therefore do not capture weekend motorcycle traffic numbers.

⁹VMT data, available at <<http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm>>, are published by the FHWA in Highway Statistics. Motorcycles include all two- or three-wheeled motorized vehicles. Typical vehicles in this category have saddle-type seats and are steered by handlebars rather than a wheel. This category includes motorcycles, motor scooters, mopeds, motor-powered bicycles, and three-wheeled motorcycles.

¹⁰Letter dated January 30, 2007, from FHWA to the states.

¹¹71 *Federal Register* 18134 (April 10, 2006), Docket No. FHWA-2006-23638.

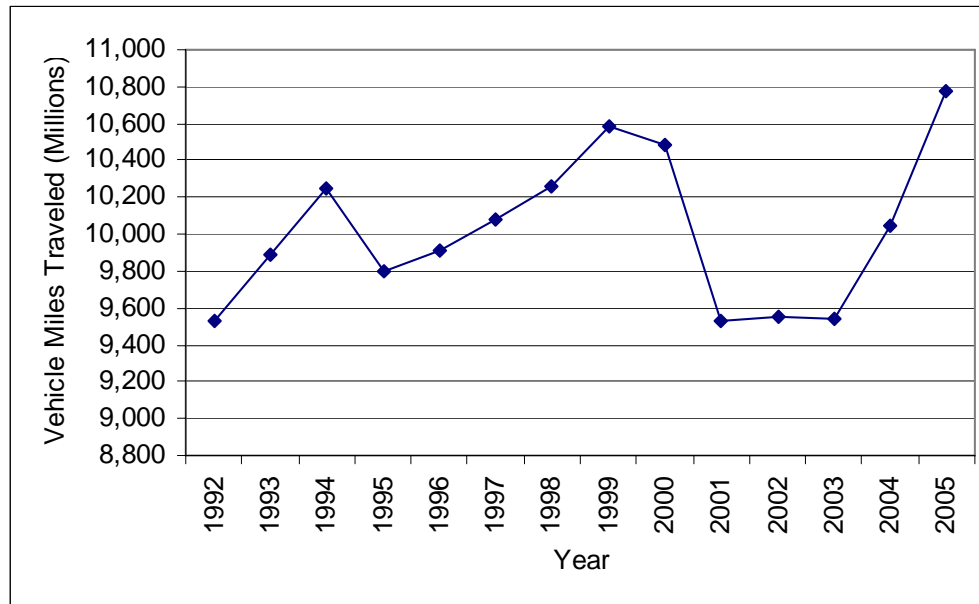


Figure 4. Motorcycle vehicle miles traveled (source: FHWA Highway Statistics).

Using self-reports of VMT from the 2003 motorcycle/ATV telephone survey, the MIC estimated that motorcycles traveled 20,669 million miles during the data collection period (October 2002 through September 2003). This estimate is more than double the FHWA's 2003 estimate for motorcycles of 9,539 million VMT.

Another estimate of motorcycle VMT is the U.S. Department of Transportation's National Household Travel Survey (NHTS), which provides national data on travel by all modes of transportation, for all travel purposes, and for all travel distances. The NHTS asks for information on motorcycles and mopeds that are owned, leased, and/or available for regular use by people who currently live in the household.¹² Numbers for motorcycles, motorcycle trips, and motorcycle travel are covered in the survey. The most recently completed NHTS survey (2001) calculated the VMT data for motorcycles to be about 8,372 million miles. (FHWA estimated 9,509 million VMT for 2001.)

At the Safety Board's public forum, Ralph Gillman of the FHWA indicated that a more complete picture of motorcycle trips could be achieved by oversampling motorcycles through an "add-on" survey.¹³ Although several states have purchased "add-on" surveys, funding for a motorcycle "add-on" survey has not been identified, nor has funding been secured for the 2008 NHTS national sample.

Figure 5 shows four estimates of VMT: from the FHWA based on state-reported data in 2001 and 2003, the 2001 NHTS data, and the 2003 MIC survey data.

¹²The NHTS definition of motorcycle includes large, medium, and small motorcycles and mopeds.

¹³The add-on program allows states and metropolitan planning organizations to purchase NHTS samples to create a household travel survey dataset for their area.

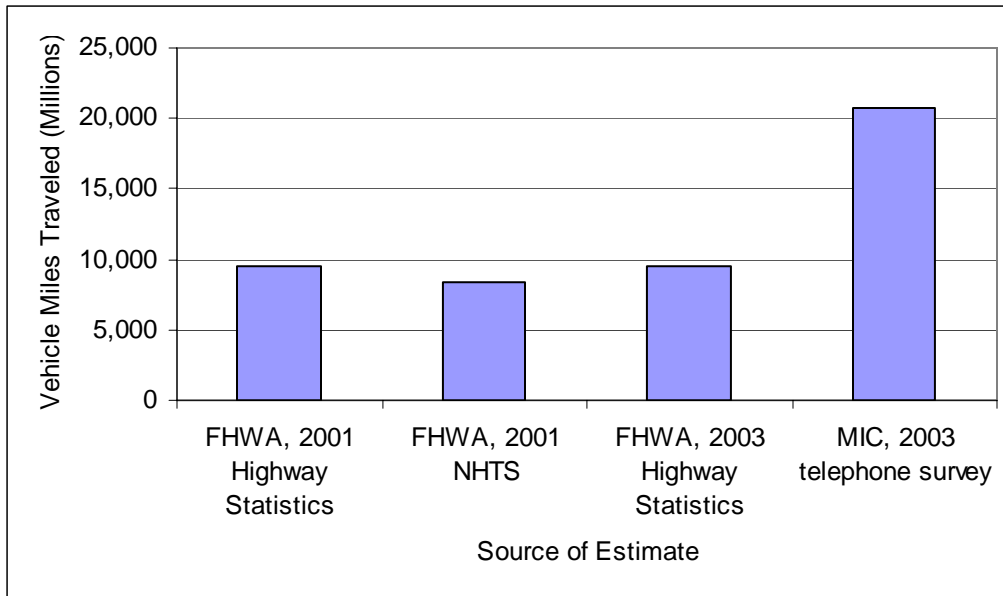


Figure 5. Comparison of motorcycle VMT estimates.

Motorcycle registration and VMT data are frequently used in calculating accident and fatality rates. Figure 6 shows motorcycle fatality rates based on various estimates of motorcycles in use and motorcycle VMT data.¹⁴ The figure shows that the motorcyclist fatality rate per 100,000 registered vehicles is higher when based on FHWA motorcycle registration data rather than the MIC estimates of motorcycles in use. The motorcyclist fatality rate per 100 million VMT is higher based on either of the FHWA estimates than it is when based on the estimate of VMT from the MIC telephone survey. These rates are often used to study trends in motorcycle safety over time. For example, at the public forum, using VMT data from the FHWA, the MIC showed that the motorcycle fatality rate per 100 million VMT increased 73.82 percent from 1998 to 2003; in contrast, using VMT data from the MIC telephone surveys, MIC showed the rate increase at 17.79 percent.¹⁵

¹⁴Similar graphs were originally presented by MIC at the Safety Board forum. These graphs are supplemented with data from NHTSA and the FHWA.

¹⁵Data presented at the Safety Board Motorcycle Public Forum, September 2006.

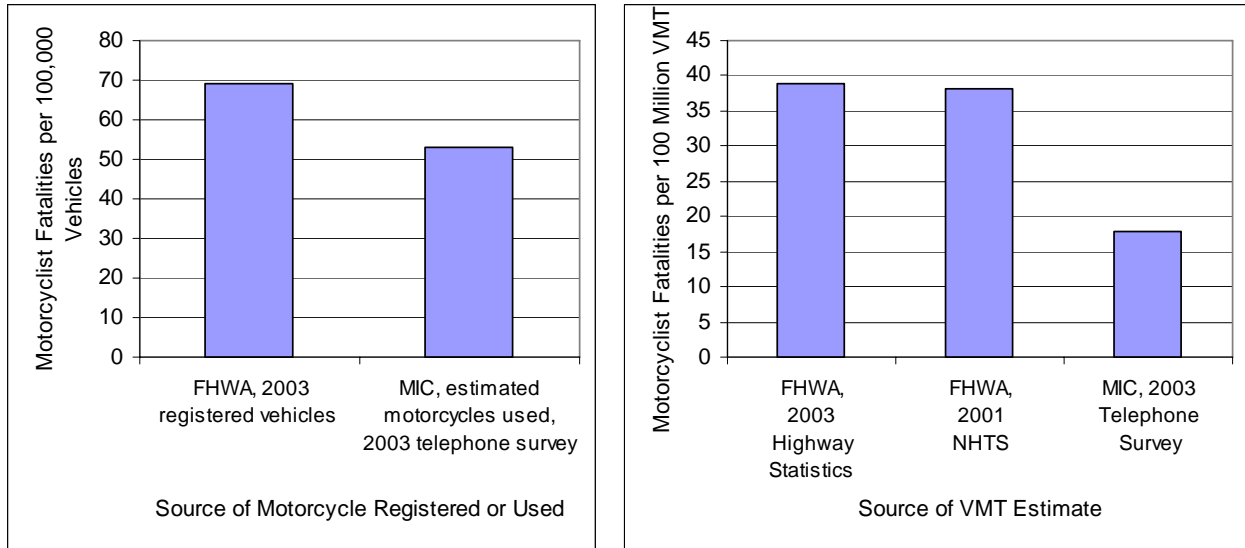


Figure 6. Comparison of fatality rates. Note: NHTSA reported 3,714 motorcycle fatalities in 2003 and 3,197 motorcycle fatalities in 2001. (Source: Motorcycle Industry Council as presented at Safety Board motorcycle forum. Supplemented with data from FHWA and NHTSA.)

In an effort to address concerns with the motorcycle registration and VMT data and to identify the best methods to obtain these data, the FHWA and NHTSA are cohosting a Motorcycle Travel Symposium on October 10-12, 2007. The Safety Board commends the FHWA for taking action to address the data quality concerns with the motorcycle registration and VMT data.

However, the Safety Board is concerned that the momentum generated by the symposium may not continue. Given that motorcycle registration and VMT data are used by federal, state, and local governments in highway budgeting and planning, in evaluating highway safety countermeasures, in developing legislation, and in calculating accident and fatality rates, the Safety Board believes that it is critical that these data be accurate and reliable. Therefore, the Safety Board recommends that the Federal Highway Administration:

Following the 2007 Motorcycle Travel Symposium, develop guidelines for the states to use to gather accurate motorcycle registrations and motorcycle vehicle miles traveled data. The guidelines should include information on the various methods to collect registrations and vehicle miles traveled data and how these methods can be put into practice. (H-07-34)

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

Please refer to Safety Recommendation H-07-34 in your reply. If you need additional information, you may call (202) 314-6177.

Chairman ROSENKER, Vice Chairman SUMWALT, and Members HERSMAN, HIGGINS, and CHEALANDER concurred in this recommendation.

[Original Signed]

By: Mark V. Rosenker
Chairman