

Motorcyclist Fatality Numbers and Fatality Rates Related to Helmet Laws: Responding to Claims by Advocates for Helmet-Law Repeal

INTRODUCTION

Two related claims by advocates for helmet-law repeal are addressed in this document. The first claim goes something like this: Surrounding states do not have all-rider helmet laws and have fewer motorcyclist deaths than Michigan (or choose an appropriate state), which has an all-rider helmet law; therefore this proves that helmet laws are not effective. The second claim is similar, but instead of using the raw number of deaths, the statement is made in terms of fatality rate. This claim asserts something like this: There is no significant difference in fatality rates between states with all-rider helmet laws and those that leave helmets optional for adult riders; therefore helmet laws are not effective. Most often, the “therefore” language following the assertion is not actually stated but is only implied. The statements are likely to be more effective if the conclusion is only implied and listeners leap to that mistaken inference on their own.

Both of these statements have two significant problems. First, the statement may be completely false (not supported by actual data or research), depending on how the statement is made. Second, both raw death numbers and fatality rates are influenced by hundreds of variables in addition to helmet laws, and those variables are not mentioned. The uninformed listener is not made aware of other possible variables and is left to believe that the statement “proves” helmet laws are ineffective.

For the purposes of the explanation and examples below, states with an all-rider helmet law are compared to those states with no helmet laws as well as to those that have laws covering only youth riders, as the research has shown partial laws are no more effective than having no law at all.

DEATH NUMBER EXAMPLE AND ANALYSIS

Michigan currently has an all-rider helmet law and is surrounded by states with partial laws or no law. Here is the statement that is made by those who advocate to repeal Michigan’s law: “Our neighboring states do not have an all-rider helmet law, and they have fewer deaths than we do.” Note that the “therefore this proves helmet laws are not effective” is not stated. If it were actually stated, many listeners would question the “proof”; however, when it is only implied and listeners leap to their own “proof” statement, the impact is more effective. Even if listeners wanted to assess the veracity of the statement, the initial problem they encounter is that advocates for helmet repeal seldom identify the source of their information. It is impossible, then, for legislators, policymakers, the motorcycling community, or the nonriding public to be able to “fact check” the claims.

Here is a chart of actual data for Michigan and surrounding states:

| Motorcyclist Deaths by State | | | | | |
|-------------------------------------|-------------|-------------|-------------|-------------|-------------|
| State | 2005 | 2006 | 2007 | 2008 | 2009 |
| Michigan | 124 | 114 | 123 | 128 | 109 |
| Wisconsin | 93 | 93 | 109 | 89 | 84 |
| Illinois | 158 | 132 | 157 | 135 | 130 |
| Indiana | 110 | 110 | 122 | 131 | 111 |
| Ohio | 178 | 158 | 189 | 213 | 166 |

Source: Traffic Safety Performance (Core Outcome) Measures, National Highway Traffic Safety Administration
<http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/stsi/usa%20web%20report.htm>

Highlighted numbers show total motorcyclist deaths greater than the total in Michigan for same year.

The chart shows that the statement “Our neighboring states do not have an all-rider helmet law, and they have fewer deaths than we do” is false. Only Wisconsin has death numbers consistently lower than Michigan’s. Illinois and Ohio consistently have death numbers greater than Michigan’s, and Indiana has mixed results.

If the statement made can be shown to be false, it is really not necessary to move to the issue of failing to address other variables; however, the statement could be modified and remain somewhat effective for advocates of repeal to use. For instance, a statement like “States surrounding Michigan do not have all-rider helmet laws, and some of those states have fewer deaths than Michigan does” would be true. So the problem with this statement is not that it is false, but that it fails to include other variables. Comparing one state to another in a given year is not valid research. To say that “In 2006 Indiana had fewer deaths resulting from motorcycle crashes than Michigan (a statement of fact/truth), and Indiana does not have a helmet law and Michigan does (another statement of fact/truth); therefore helmet laws are not effective in reducing deaths” is to make a highly erroneous conclusion that does not consider the hundreds—maybe thousands—of variables that more likely account for this difference. Other variables that may contribute include the facts that in 2006 Indiana had 100,444 fewer registered motorcycles and approximately 3.5 million fewer residents than Michigan.

FATALITY RATE EXAMPLES AND ANALYSIS

“Fatality rate” (sometimes “death rate” or “mortality rate”) is a term that represents a ratio of deaths to a specific group or population over a specific period of time. In traffic safety it is usually expressed as a decimal number of deaths per 10,000 registered vehicles, per 100,000 registered vehicles, per 100,000 population, or per 100 million vehicle miles traveled (VMT).

The statement by advocates for repeal is usually “States surrounding Michigan do not have a helmet law or they have a law that provides for adult choice, and those states have fatality rates that are less than or about the same as the fatality rate in Michigan.” Just like the initial problem mentioned above that listeners have in assessing the raw data claims, advocates for helmet repeal seldom identify the type of fatality rate referred to or the source of their data, making it once again impossible for legislators, policymakers, the motorcycling community, or the nonriding public to be able to “fact check” the claims.

Below is data from the National Highway Traffic Safety Administration:

| Death Rate Per 100,000 Registered Motorcycles | | | | | | |
|---|----------|----------|---------|-------|--------------|-----------|
| Year | Michigan | Illinois | Indiana | Ohio | Pennsylvania | Wisconsin |
| 2005 | 46.88 | 54.28 | 74.55 | 57.64 | 67.03 | 30.65 |
| 2006 | 45.97 | 45.04 | 74.55 | 47.54 | 56.81 | 34.30 |
| 2007 | 45.78 | 50.97 | 82.69 | 54.48 | 63.57 | 33.48 |
| 2008 | 47.20 | 40.65 | 63.91 | 57.51 | 59.94 | 28.61 |

<http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/USA%20WEB%20REPORT.HTM>

Highlighted numbers show death rate per 100,000 registered motorcycles greater than in Michigan for same year.

The chart shows the statement is false. In the four years 2005 to 2008, the death rate (per 100,000 registered motorcycles) in Indiana, Ohio, and Pennsylvania always exceeded that of Michigan. In Illinois, the death rate exceeded that of Michigan in two of the four years. Only Wisconsin had a fatality rate less than that of Michigan in the years 2005–2008. Again, however, comparing one state to another in a given year is not a valid analysis. Variables other than the absence of an all-rider helmet law likely contribute to Wisconsin’s lower fatality rate. To conclude that Wisconsin’s lower fatality rate is solely due to the absence of an all-rider helmet law is no more valid than concluding their lower fatality rate is due to the fact that Wisconsin has more cows than Michigan or that Wisconsin produces more cheese than Michigan.

The April 19, 2011, *Detroit Free Press* article by Matt Helms titled “Rise in cyclists deaths heats up over state helmet law” contained the following: “ABATE board member and Huntington Woods lawyer Larry Katkowsky said there's no significant difference in death rates between states with a mandatory helmet law and those that leave helmets optional for adult riders.” This, too, is a similar “blowing-smoke” statement that is designed to lead readers to the conclusion that helmet laws are not effective in reducing deaths.

Remember this statement by Mr. Katkowsky. We will return to it. In the meantime, consider the scenario that follows:

| Year | State A Death Rate | Type of Helmet Law | State B Death Rate | Type of Helmet Law |
|------|--------------------|--------------------|--------------------|--|
| 2002 | 5.3 | None | 10.4 | None |
| 2003 | 5.7 | None | 10.6 | None |
| 2004 | 5.6 | None | 11.1 | None |
| 2005 | 5.1 | None | 10.9 | None |
| 2006 | 5.2 | None | 5.3 | All-rider <small>(enacted at end of 2005)</small> |
| 2007 | 5.5 | None | 5.4 | All-rider |
| 2008 | 5.4 | None | 5.5 | All-rider |

What would be your conclusion from a review of this data? Possibly you would determine that in the years 2002 through 2005 these two states had significantly different fatality rates. Because neither state had a helmet law, the higher fatality rate in state B must be due to some other factor unrelated to whether there is or is not a helmet law. Additionally, comparing the fatality rates in state B before and after the enactment of an all-rider helmet law shows a significant reduction. If there are no other variables that likely impact fatality rates (such as a significantly colder and wetter riding season or a drastic reduction in impaired riding) that show significant changes, it would be a safe conclusion that the enactment of the all-rider helmet law in state B at the end of 2005 had a significant positive impact, thereby lowering the fatality rate.

Now return to Mr. Katkowsky's statement. Comparing state A to state B in years 2006–2008, it appears that Mr. Katkowsky's statement is true. In fact, using averages and generalities, he is correct. He has made a true statement, designed to lead one to the conclusion that helmet laws are ineffective; however, as we have learned through analysis of our scenario, it is easy to see that Mr. Katkowsky has very cleverly tried to deceive the readers of the *Free Press*, and he has successfully deceived the legislators who listen to him.

To illustrate the point a bit further, here are some examples using fatality-rate data from the Gannett News Service. In the year reported in the Gannett article, Maryland had a fatality rate of 11.1, and Massachusetts a fatality rate of 3.5; both states had helmet laws covering all riders. South Carolina had a fatality rate of 12.4, and South Dakota had a fatality rate of 4.1; both states had a helmet law covering only young riders. Indiana had a fatality rate of 7.5, and Iowa had a fatality rate of 3.5; neither state had a helmet law. It becomes obvious when comparing fatality rates from state to state in a given year that variables other than helmet law must play a significant role.

(<http://gns.gannettonline.com/apps/pbcs.dll/article?AID=/20080326/MOTORCYCLE/803210302>)

In fact, weather is a variable with a big influence on motorcyclist fatality rate. Warm, dry weather equals a longer riding season. Using the Gannett data, the southern states have an average fatality rate in double digits, while northern states have a low single-digit fatality-rate average.

Mississippi has a helmet law covering all riders and has a fatality rate of 20.0, while North Dakota has a law requiring only riders under the age of 18 to wear a helmet and has a fatality rate of 1.6. Now that you have a basic understanding of fatality rates, what do you conclude? Hopefully not what Mr. Katkowsky wants legislators and the public to believe (that helmet laws do not impact fatality rates), but rather that very few people spend much time riding on the straight roads in cold North Dakota compared to the amount of time spent riding in warm Mississippi.

“Helmet Laws and Motorcycle Rider Death Rates,” by Charles C. Branas & M. Margaret Knudson, published in *Accident Analysis and Prevention* in 2001, provides an excellent research look at this issue. The research can be found at:

[http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1005&context=publichealthresources&seidir=1#search=%22motorcycle+ fatality+rates+by+state%22.](http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1005&context=publichealthresources&seidir=1#search=%22motorcycle+fatality+rates+by+state%22)