

# **Motorcycle Helmet Crash Cost in North Carolina**

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## 1996 NHTSA Report

The February 1996 NHTSA report to congress is based on data from the Crash Outcome Data Evaluation System (CODES) project funded in several states by the NHTSA. States with CODES projects link motor vehicle crash data with ambulance call reports, hospital discharge data and other traffic records to “follow” a crash victim through the system to determine the outcome for the individual person. Highway safety and medical researchers produce many informative and important reports using the CODES data. However, one must keep in mind that when a person dies at the scene of a crash, the person will not incur medical cost and not be reflected in inpatient care charges.

Exhibit 15 in the NHTSA report shows that the average charge for inpatient care by motorcycle helmet use and brain injury status is lower when helmets are not used. Individuals attempting to repeal mandatory helmet laws often misrepresent this exhibit. **It is a mistake to conclude from this exhibit that helmet use increases medical costs associated with brain injuries.** This exhibit fails to point out that a higher proportion of people not wearing helmets **DIE** and do not require inpatient care. A more accurate representation of the exhibit is to compare costs associated with the purpose of motorcycle helmets, namely to reduce head injuries and the fatalities associated with this type of injury. The NHTSA report concludes that helmets reduce fatalities by 35 percent and are 67 percent effective in preventing brain injuries. Therefore, an accurate interpretation of exhibit 15 is that it compares the costs of treating an unhelmeted motorcyclist receiving care for a brain injury with the costs for treating a motorcyclist who did not have a brain injury. This more accurate comparison shows that charges for unhelmeted motorcyclist receiving care for a brain injury (\$26,805) are **more than 2 times greater** than the average charge for treating an inpatient motorcyclist not brain injured (\$12,736).

## Who Pays?

Exhibit 14 of the 1996 NHTSA report shows that the **government** pays, with tax dollars, nearly 23 percent of inpatient charges of all motorcycle crashes, helmeted or not. In addition, **private insurance** pays 63 percent of the costs. This means the **public pays 86 percent of the charges for inpatient care of injured motorcyclists through taxes and insurance premiums.** If riding without helmets increases the inpatient cost as demonstrated above, then repealing the requirement to wear helmets would cause an increased demand on tax dollars and insurance premiums.

## Fiscal Effect on North Carolina

The assumption is that the use of helmets does not affect the frequency of motorcycle crashes. As mentioned above, helmets are designed to reduce the number of severe head injuries and fatalities. Although some people claim that helmets contribute to motorcycle crashes by restricting peripheral vision and impair hearing, there have not been any credible studies to support such claims. Table 1 shows the reported motorcycle crashes and the number of injured motorcycle riders in North Carolina from 1995 through 1999. The data show that there was a gradual decrease in injuries and

fatalities until 1997. Since 1997, there has been an increase in the number of people killed and injured riding motorcycles and preliminary statistics for 2000 show that the increase continued past 1999.

**TABLE 1: Motorcycle crash statistics from DMV Crash Facts**

Year	Crashes			Motorcyclist Injured	
	Fatal	Injury	Total	Fatal Injuries	Total Injuries
1995	72	1,683	2,004	72	1,937
1996	61	1,719	1,985	63	1,932
1997	60	1,690	1,991	61	1,918
1998	82	1,864	2,182	80	2,127
1999	98	1,952	2,327	97	2,238

With the number of injured motorcycle riders shown in table 1, we now need the helmet usage rate of riders involved in crashes in North Carolina. Reviewing the reported crash statistics from 1991 through 1999, officers reported approximately 83 percent helmet usage rate over the nine-year period. This does not include crashes where the officer indicated unknown or not stated. With the 83 percent usage rate and the cost to treat injured motorcyclists, either helmeted or not, the financial impact can be determined. The costs from the 1996 NHTSA report exhibit 12 are sufficient for demonstration purposes; however, keep in mind that this does not include increases in medical cost or inflation. Therefore, the actual cost would be greater since these inflation factors have increased since 1996. Table 2 shows the estimated annual cost with the 83 percent helmet use rate and the NHTSA cost is more than \$4.4 million. The public share of the motorcyclists' injury cost is over \$3.8 million each year, this consist of \$1.02 million in taxes and \$2.8 million in insurance premiums.

**TABLE 2: Annual cost for current law and compliancy level of 83 percent**

Year	Cost for Helmeted	Cost for Un-helmeted	Total
1995	\$3,316,398	\$927,253	\$4,243,650
1996	\$3,307,837	\$924,859	\$4,232,696
1997	\$3,283,867	\$918,157	\$4,202,024
1998	\$3,641,703	\$1,018,207	\$4,659,909
1999	\$3,831,749	\$1,071,343	\$4,903,092
1995-1999	\$17,381,554	\$4,859,819	\$22,241,371
Average Annual Cost	\$3,476,311	\$971,964	\$4,448,274

While 17 percent of the people not wearing helmets make up 21.9 percent of the cost, the remaining 83 percent make up the remaining 78.1 percent of the cost. These cost figures are not adjusted for inflation.

The question now is how much more will it cost the citizens of North Carolina if the helmet law for those over 21 is repealed. To get a feel for the increased cost, we can look at estimates of how much it would have cost if the law had been repealed in 1995. Helmet use in "choice" states ranges between 34 and 54 percent. If North Carolina becomes a "choice" state, then it is reasonable to expect that the helmet use would be in this range. If North Carolina had repealed the helmet law in 1995, the additional cost that would have been incurred between 1995 and 1999 is \$2.2 to \$3.7 million dollars, or \$440,000 to \$740,000 annually. Table 3 shows the cost ranges based upon the high and low helmet use rates in "choice" states. The table also shows that there would have been a need for \$100,000 to \$170,000 additional tax dollars each year to cover the typical States share in *additional* motorcycle

crash injury cost. The public also receives an additional insurance bill of \$274,000 to \$464,000 in each of the five years. The result of repealing the mandatory helmet law in North Carolina in 1995 would have added an additional \$375,000 to \$634,000 burden on the public in increases in taxes and insurance premiums to cover the additional medical treatment.

**TABLE 3: Estimates of increased costs if NC Helmet law was repealed in 1995 based on 34 –54 usage in “choice” states**

Year	54%	34%	54%	34%	54%	34%	54%	34%
	Total Cost Range		Additional Tax Requirements		Additional Insurance Premium Requirements		Additional Public Cost Share	
1995	\$417,237	\$705,462	\$95,964	\$162,256	\$261,607	\$442,325	\$357,572	\$604,581
1996	\$416,160	\$703,641	\$95,717	\$161,837	\$260,932	\$441,183	\$356,649	\$603,020
1997	\$413,144	\$698,542	\$95,023	\$160,665	\$259,041	\$437,986	\$354,064	\$598,651
1998	\$458,163	\$774,661	\$105,378	\$178,172	\$287,268	\$485,712	\$392,646	\$663,884
1999	\$482,073	\$815,087	\$110,877	\$187,470	\$302,260	\$511,060	\$413,137	\$698,530
1995-1999	\$2,186,776	\$3,697,394	\$502,959	\$850,401	\$1,371,109	\$2,318,266	\$1,874,067	\$3,168,666
Average Annual Increase	\$437,355	\$739,479	\$100,592	\$170,080	\$274,222	\$463,653	\$374,813	\$633,733

Table 4 shows the midrange estimate for cost increases broken out by payer. The midrange helmet use rate is 44 percent; however, this still yields an annual additional tax dollar requirement of \$135,000 and annual additional insurance premium of \$369,000 to cover the roughly 2,100 motorcycles crashes each year.

**TABLE 4: Increases based upon the average 44 percent helmet usage rate in “choice” states**

Year	Expected Cost Increase	Expected Increase in Necessary Tax Dollars	Expected Increase in Insurance Premiums	Expected Increase in Public Share of Cost
1995	\$561,349	\$129,110	\$351,966	\$481,076
1996	\$559,900	\$128,777	\$351,058	\$479,835
1997	\$555,843	\$127,844	\$348,514	\$476,358
1998	\$616,412	\$141,775	\$386,490	\$528,265
1999	\$648,580	\$149,173	\$406,660	\$555,833
1995-1999	\$2,942,085	\$676,680	\$1,844,687	\$2,521,367
Average Annual Increase	\$588,417	\$135,336	\$368,937	\$504,273

Clearly, the persons injured riding motorcycles incur most of the physical harm, but the rest of the public will pay more than 86 percent of the cost of these injuries. Repealing the helmet law would cost the public more than a million dollars in **additional costs** in the first two years. And limiting the helmet requirement to person under the age of 21 only covers less than 18 percent of all the motorcycle drivers involved in crashes from 1991 through 1999. The majority of the crash injuries and fatalities involve motorcyclist who are 21- through 54-years old.