Relative Risk Calculated For Driver Fatalities In Alcohol-Related Crashes

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RELATIVE RISK CALCULATED FOR DRIVER FATALITIES IN ALCOHOL-RELATED CRASHES

As of September 1999, 31 states defined driving with a blood alcohol concentration (BAC) above .10 percent as a crime *per se*, and another 17 states plus the District of Columbia set their *per se* limit at .08 percent. Alcohol-related fatalities have been declin-ing for nearly two decades, both in absolute num-bers and as a proportion of all fatalities. Despite this, there were still 15,935 alcohol-related traffic fatalities in the United States that accounted for nearly 38 percent of total traffic fatalities in 1998.

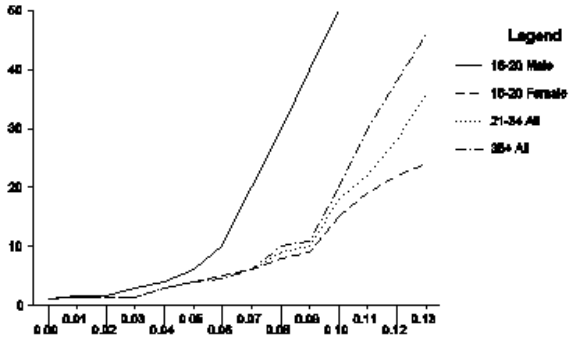
Based on extensive research over several decades, we now have overwhelming evidence showing that even BACs as low as .02 percent impair driving-related skills. One line of evidence grows out of laboratory research with dosed subjects. Confirming evidence comes from field research that compares the BACs of crash-involved with non-crash-involved drivers to determine the relative risk of crash involvement.

Two types of relative risk studies have been conducted. *Classical* studies used a procedure in which data from non-crash-involved drivers were collected at the same times and locations as the reference crash had occurred. This procedure ensures that the only potential difference between the crash and non-crash driver would be the presence or absence of alcohol. An alternative survey procedure compared crash-involved drivers identified in NHTSA's Fatality Analysis Reporting System (FARS) with data from the National Roadside Survey. The National Roadside Survey collected interviews and breath samples of 6,000 representative drivers. While this procedure loses some of the precision of specific crash sites, it gains reliability because it uses larger numbers and a broader representation of the country as a whole.

Clearly, many drivers are involved in crashes through no fault of their own but because of the mistakes of others. It is important to consider responsibility in selecting the crash-involved drivers. Usually this is accomplished by including only drivers in single vehicle crashes.

Westat and the Pacific Institute used recent data to refine estimates for alcohol-related relative risk of driver involvement in fatal crashes by age and sex as a function of BAC. To obtain these estimates, they combined data from FARS with exposure data from the joint NHTSA and the Insurance Institute for Highway Safety's 1996 National Roadside Survey (see Traffic Tech No. 152). Using logistic regression techniques they derived age and sex specific relative risk functions.

Relative Fatality Risk for Drinking Drivers by Age and Sex in Single-Vehicle Crashes



The relative risk of being killed as a driver in a single vehicle crash at .08 BAC was found to be 13 times that at .00 BAC for drivers aged 21 to 34. Each .02 percentage point increase in the BAC of a driver more than doubled the risk of receiving a fatal injury in a single vehicle crash among male drivers 16-20, and nearly doubled the comparable risk for other driver groups. In part, contrary to the findings from the 1991 study that this one updates, for the 16-20 age group, females had a lower relative risk of receiving a fatal injury than males at every BAC. This is an important finding because of the increasing nighttime presence of young female drinking drivers observed in the 1996 Roadside Survey.

At the midpoint of the .08 -.10 percent BAC range, the relative risk of a fatal single vehicle crash injury varied between 11.4 (drivers 35 and older) and 51.9 (male drivers, 16-20). This similar pattern was also found overall (for any involvement in a fatal motor vehicle crash), although with smaller magnitudes.

- For any involvement in a fatal motor vehicle crash, drivers 35 and over had the lowest relative risk of involvement at about 6.1 followed by those in the 21-34 age group at 6.3.
- The youngest male age group had a relative risk of about 24 -- four times that of the other age groups.
- Relative risk was considerably higher for drivers with a BAC between .10 and .15 percent, and ranged between 29 for drivers 35 and over and 241 for male drivers under 21 for driver fatalities in single vehicle crashes.
- Relative risk of fatality in a single vehicle crash for drivers with a BAC at or above .15 percent ranged from 382 for drivers 35 and over, to 15,560 for male drivers under 21.

Conclusions

The findings from this study confirm that driving at (non-zero) BAC levels below .10 percent is very dangerous. Reducing BAC limits from .10 percent to .08 percent is an effective method of saving lives. These results show that with such elevated relative risks, reducing alcohol use while driving at any BAC level is likely to further reduce alcohol-related motor vehicle fatalities in the United States.

HOW TO ORDER

For a copy of ***Relative Risk of Fatal Crash Involvement by BAC, Age and Gender*** (20 pgs), write to the Office of Research and Traffic Records, NHTSA, NTS-31, 400 Seventh Street, S.W., Washington, DC 20590 or send a fax to (202) 366-7096. Paul Tremont, Ph.D., was the contract manager. This report has been published in the *Journal of Alcohol Studies*.

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