

# INTOXICATED DRIVING

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Motor vehicles are the most common form of transportation in the US and the greatest cause of accidental death in this country. Many factors contribute to motor vehicle accidents including highway and vehicle design, traffic density, and driver error due to experience and skill. However, the single most significant predictor of accident risk is the driver's mental and physical state -- their sobriety.

## DOES ALCOHOL INCREASE RISK?

Alcohol intoxication greatly increases the risk of a motor vehicle accident. About half of all fatal traffic accidents involve alcohol and, in the majority of these cases, intoxication was the cause of the accident. Most field studies indicate that risk for an accident increases at blood alcohol concentrations (BAC) above .05%. By .06% BAC, the relative risk for an accident is about 2x greater and at .10% about 6x greater than that of a sober driver (see figure). Other data suggest that this risk may be even greater than illustrated when driver age and gender are considered.

Epidemiological and supporting laboratory research studies reveal that a similar relationship exists for alcohol intoxication and accidents involving pedestrian, boating and swimming activities, for example.

## DIVIDED ATTENTION FAILURE

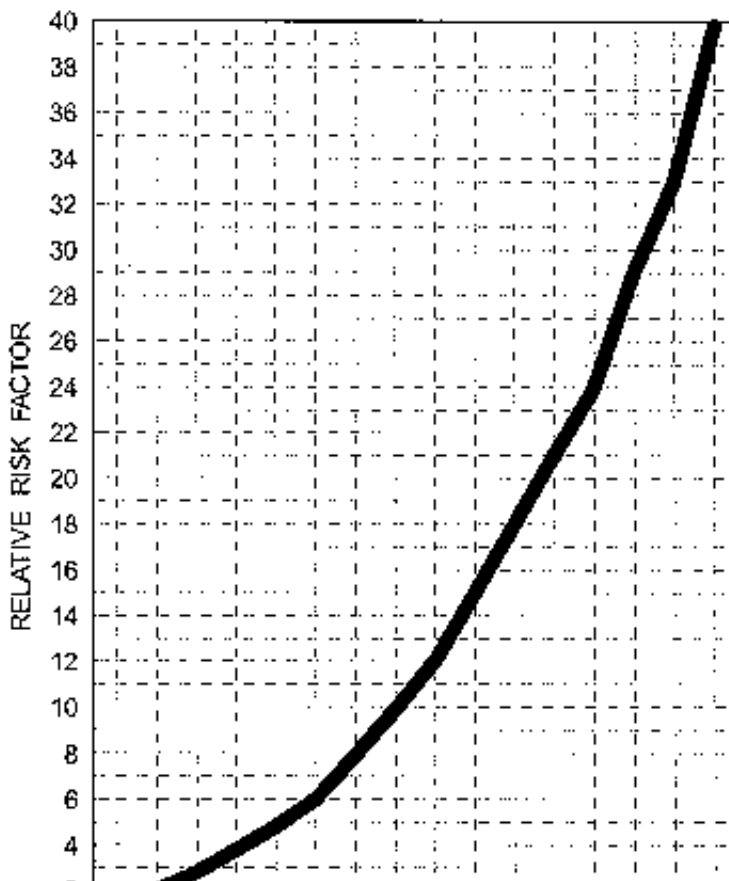
Figure: Relative risk for a crash at different blood alcohol levels. (From Brick, 1994)

Behaviors such as driving, crossing a street, operating a boat, etc., share a common psychomotor requirement.

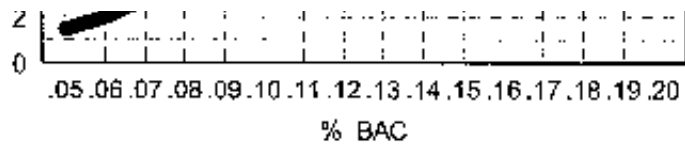
They each require divided attention skills. One of the most pronounced effects of alcohol is on divided attention tasks. For example, operating a motor vehicle requires the driver to attend to, and remember many tasks including the use of seat belts, driving lights, and directional signals while simultaneously looking out for other vehicles, pedestrians, traffic control devices, road markings, hazards, or signs, and to control lane position. Add to that the need to make estimates of time and distance and you can see that driving is a complicated divided attention task. The sober pedestrian must attend to no less, but instead of operating a vehicle, he or she must coordinate psychophysical activities in a similarly challenging environment.

## LOW BACS AND IMPAIRMENT

Even though most of the US has adapted a BAC of .10% as a per se violation, impairment on



certain psychophysical tests occurs at alcohol concentrations well below this level. Research on divided attention reveals that even at very low BACs, e.g., in the .03% range, there is impairment on complex tasks believed to reflect skills necessary for the safe operation of a motor vehicle, for example.



## LEGAL STANDARDS

In younger drivers who, by virtue of their age, have less experience with alcohol and with driving, the risk of an accident is greatly enhanced. In most people, at higher blood alcohol levels, e.g., .10%, the degree of impairment is so great that there is little doubt that the driver is too intoxicated to safely operate a vehicle. For this reason, in the US, most states use of this standard to create a per se violation of drinking driving laws.

Mindful of the scientific research in this area, many countries have revised their drinking-driving laws. For example, in 1990, Sweden lowered their legal limit to .02% and Finland, Iceland, Japan, the Netherlands and Norway have a legal limit of .05%. In the US, the legal limit for commercial vehicle operators is .02% nationally, but varies for non-commercial drivers from state to state.

## THE CHALLENGE

Preventionists have a unique challenge in reducing alcohol related accidents because most people do not appear "drunk" by casual observation, even though their driving ability, for example, is impaired and they are at significant risk for an accident. Increased education, greater visibility of law enforcement and legislative solutions are important areas for future consideration to reduce the alcohol related deaths and injuries that occur each year.

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