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Title of Research *	All-Terrain Vehicles: Deadly On and Off the Road
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Introduction & Purpose * Over the last several decades, all-terrain vehicles (ATVs) have steadily increased in popularity, size, and speed. This increase has been accompanied by an increase in ATV-related deaths. Reducing these deaths will require identifying high-risk environments and developing targeted interventions that promote safer riding behaviors. One of these high-risk riding environments is on the road. The objective of our study was to compare fatal ATV crashes on and off the road in order to understand more fully the factors that contribute to deaths at each location.

Experimental Design * Secondary analysis of ATV fatality data from the Consumer Product Safety Commission was performed for crashes occurring from 1985 to 2009. Descriptive analyses of demographics, helmet use, alcohol and drug involvement, crash and injury mechanisms, and injury outcomes were performed using Microsoft Excel® 2008. All other statistical analyses, including multivariate linear regression analysis, were performed using SAS® software, Version 9.2 of the SAS System for Microsoft.

Results * Overall, 62% of deaths from 1985–2009 resulted from on-road crashes (55% of Iowa deaths). After 1998, on-road deaths increased at a greater rate than off-road deaths (48 + 2.8 vs. 20 + 1.8 deaths/year), and crashes on the road were three times more likely to result in multiple deaths. Fatal on-road crashes were also more likely than off-road crashes to involve vehicles with multiple riders, higher alcohol use, more collision-related events, and more head injuries. On the other hand, on-road victims were 46% less likely to be helmeted. Overall, helmeted victims were half as likely to suffer a head injury.

Conclusions * Over 60% of ATV-related deaths resulted from on-road crashes. We hypothesize that risk factors, like passengers and alcohol, exacerbate the inherent difficulty of safely operating ATVs on paved surfaces, and that higher crash forces and lack of protective equipment on the road increase head injuries that result in death. Getting ATVs off the roads may be an effective way to reduce ATV-related deaths. Accomplishing this at a national level will require an investment in rider education and improving road-use law enforcement.

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