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**ALL-TERRAIN VEHICLES: DEADLY ON AND OFF THE ROAD**

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**Background** The increasing popularity of all-terrain vehicles (ATVs) has been accompanied by an alarming rise in ATV-related deaths.

**Aims/Objectives/Purpose** To compare fatal ATV crashes on and off the road in order to more fully understand the contributing factors for deaths at each location.

**Methods** A retrospective study was performed using national fatality data from the Consumer Product Safety Commission.

**Results/Outcomes** Overall, 62% of US deaths from 1985 to 2009 resulted from on-road ATV crashes. 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 ( $p<0.0001$ ). Fatal on-road crashes were also more likely than those off-road to involve vehicles with multiple riders, higher alcohol use, more collision-related events, and more head injuries ( $p<0.0001$  in each case). On-road fatality victims were 46% less likely to be helmeted ( $p<0.0001$ ). In addition, passengers and operators with passengers were less likely to be helmeted than operators riding alone ( $p<0.0001$ ), regardless of location. Overall, helmeted victims were half as likely to suffer a head injury ( $p<0.0001$ ).

**Significance/Contribution to the Field** The majority of US ATV-related deaths have resulted from on-road crashes. We hypothesise that risk factors, like passengers and alcohol, exacerbate the challenges of safely operating ATVs on road surfaces, and that higher crash forces from greater speed 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.