

Off-road motorcycles put four times more kids in hospital than quad-bikes: Study

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Motorcycles cause a far higher rate of injuries among children than quad bikes do, a study from UNSW Sydney and NeuRA has found, but quad bikes account for more serious individual injuries.

In a retrospective population study carried out by UNSW and its [medical research](#) affiliates NeuRA and The George Institute, the study authors examined all records of children aged 0-16 years admitted to NSW hospitals in the years 2001-2018 for injuries sustained in off-road [motorcycle](#) or quad-bike crashes.

Published in the journal *Injury Prevention*, the research noted 6624 crashes resulted in hospitalizations during this time, with 5156 (78 percent) involving motorcycles (including motocross bikes, trail bikes and other off-road motorcycles) and 1468 (22 percent) involving [quad-bikes](#).

When looking at the type of injuries sustained by the kids, there were clear differences between the two-wheeled and four-wheeled varieties. Motorcycle riders were more likely to have lower limb injuries, but less likely to have head, neck, abdominal or thoracic injuries than quad-bike riders. Quad-bike riders had higher severity in injuries on average, with longer hospital stays.

Tragically, there were 10 fatalities over the study period—six from motorcycles and four from quad-bikes.

Lead author of the study, Dr. Chris Mulligan, is an orthopedic doctor at Sydney Children's Hospital and affiliated researcher with UNSW Medicine & Health and NeuRA. He said he and his fellow researchers wanted to measure and distinguish the differences between off-road quad-bike and motorcycle injuries among children—something that had never been done before at the [population level](#).

"Our findings support the policy changes over the last 10 years with regards to quad-bikes after various coronial inquests and media attention, but the high number of hospitalizations we saw indicates a need for more attention to motorcycles too," Dr. Mulligan said.

Focus on two-wheelers

As a practicing clinician, Dr. Mulligan has seen his fair share of children presenting with serious injuries from both motorcycles and quad-bikes. With almost four times as many hospitalizations from motorcycle injuries than quad-bikes, he and his fellow researchers call for a greater focus of [injury](#) prevention for two-wheeled riders.

"We know that over the last 10 years there's been a lot of research particularly into the vehicle risk factors in quad-bikes," Dr. Mulligan said.

"A lot of good work has been done at UNSW in relation to the stability testing and other vehicle-based design modifications of quad-bikes, but we have not had the same level of research done for two-wheeled bikes."

"While best practice advice for quad-bikes is to not recommend their use by children under 16, this may not be practical for motorbikes. More efforts are needed to find ways to minimize risks to children using motorbikes recreationally or on family farms."

More data needed

But could it be that there are more motorcycle injuries because there are more motorbikes?

UNSW Health & Medicine's Associate Professor Julie Brown, who is Joint Director of the Transurban Road Safety Centre at NeuRA, said while we don't know with certainty, it is a reasonable assumption.

"It is likely that more children use motorcycles and this is why we see more hospitalizations among children using them. The popularity of

these vehicles over quad bikes also indicates a need to find ways to minimize the harms associated with this activity," she said.

"To understand this better, we'd need to know how many vehicles there are in circulation. And because both off-road motorcycles and quad bikes are unregistered, and ridden off [public roads](#), it's not possible to know how many [children](#) are riding and for how long, and over what time period."

This will be the subject of further study that the group is involved in.

"We want to engage with industry and other groups and get access to sales data, which would enable us to define what the baseline level of exposure to these vehicles is and what the risk factors are."

"Working co-operatively with young riders and their families, riding organizations, farming groups and industry bodies will be critical in developing effective and acceptable injury prevention measures," Brown said.

More information: Chris Mulligan et al, Comparative analysis of off-road vehicle crashes in children: motorcycles versus quad bikes, *Injury Prevention* (2022). [DOI: 10.1136/ip-2022-044573](https://doi.org/10.1136/ip-2022-044573)

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