

BODY BUILT TO SURVIVE TRANSFORMATION

How vulnerable are we, really?

Drivers and vehicle passengers have the protection of the vehicle to absorb some of the forces of a crash. When we are walking, cycling or riding a motorcycle, we are much less protected and more vulnerable to injury - even in crashes with lower impact speeds.

Cycling

Impact speed	Likely injuries ¹
30km/h	Fractures to arms, shoulders and collarbone Open wounds due to sliding along the road surface
45-60km/h	Injuries listed above as well as those stated below Head or spinal injury Broken bones Internal injuries in the chest and abdominal area
60-75km/h	Injuries listed above as well as those stated below Severe brain, skull and spinal injuries

What works?

- Wearing a helmet reduces the risk of head injury by up to 74%²
- Using reflective clothing and bicycle lighting enhances visibility
- Travelling in designated bike lanes and on lower speed roads.

Motorcycle riding

Impact speed	Likely injuries
30km/h	Open wounds from sliding along the road surface Leg, knee and pelvis injury Head injury from hitting vehicle bonnet or windscreen
45-60km/h	Injuries listed above as well as those stated below Head or spinal injury Injury to internal organs
60-75km/h	Injuries listed above as well as those stated below Severe brain, skull and spinal injuries Internal injuries in the chest and abdominal area

What works?

- Wearing a helmet reduces the risk of head injury³
- Wearing protective clothing reduces the likelihood of open wounds⁴
- Buying a safer motorcycle with crash-preventing technology such as Anti-lock Braking System (ABS)
- Lower travelling speeds
- Safer cars with technology such as blind spot detection and Autonomous Emergency Braking (AEB) help drivers to detect other road users

¹ Likely injuries for road users at different impact speeds were sourced from TAC claims data and crash investigation data.

² Bambach, M.R., Mitchell, R.J., Grzebieta, R., J., Olivier, J. (2013). The effectiveness of bicycle helmets in collisions with motor vehicles: A case control study. *Accident Analysis & Prevention*, 53, 78-88. Research used 2001-2009 police-reported data matched to hospital data.

³ Liu B.C., Ivers R., Norton R., Boufous S., Blows S., & Lo S.K. (2008). *Helmets for preventing injury in motorcycle riders*. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD004333. DOI: 10.1002/14651858.CD004333.pub3

⁴ de Rome, L., Ivers, R., Fitzharris, M., Du, W., Haworth, N., Heritier, S. & Richardson, D. (2011). Motorcycle protective clothing: Protection from injury or just the weather? *Accident Analysis & Prevention*, 43, 1893-1900.
McIntyre, A., Nieuwesteeg M., & Cockfield S. (2011). *Motorcyclist Injuries and Protective Clothing: Research with TAC Clients*. Paper presented at the Australian Road Safety Research, Policing & Education Conference, Perth: Australia, 6-9 November 2011.