

Roundabout Design and Cycling Safety

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ABSTRACT

Roundabouts reduce the frequency and severity of motor vehicle crashes and therefore the number installed has increased dramatically in the last 20 years in many countries. However, the safety impacts of roundabouts for bicycle riders are a source of concern, with many studies reporting lower injury reductions for cyclists than car occupants. This paper summarises the results of a project undertaken to provide guidance on how cyclist safety could be improved at existing roundabouts in Queensland, Australia, where cyclist crashes have been increasing and legislation gives motor vehicles priority over cyclists and pedestrians at roundabouts. The review of international roundabout design guidelines identified two schools of design: tangential roundabouts (common in English-speaking countries, including Australia), which focus on minimising delay to motor vehicles, and radial roundabouts (common in continental Europe), which focus on speed reduction and safety. While it might be expected that radial roundabouts would be safer for cyclists, there have been no studies to confirm this view. Most guidelines expect cyclists to act as vehicle traffic in single-lane, typically low-speed, roundabouts. Some jurisdictions do not permit cyclists to travel on multi-lane roundabouts, and recommend segregated bicycle facilities because of their lowest crash risk for cyclists. Given that most bicycle-vehicle crashes at roundabouts involve an entering vehicle and a circulating cyclist, the greatest challenges appear to be reducing the speed of motor vehicles on the approach/entry to roundabouts and other ways of maximizing the likelihood that cyclists will be seen. Lower entry speeds are likely to underpin the greater safety of compact roundabouts for cyclists and, conversely, the higher than expected crash rates at two-lane roundabouts. European research discourages the use of bike lanes in roundabouts which position cyclists at the edge of the road and contributes to cyclists being less likely to be noticed by drivers.

Keywords: bicycle safety, roundabouts, design guidelines, bike lanes, cycling.