

Around about time to improve our roundabouts?



The German word for “roundabout” is “Kreisverkehr”. The German word for “cycle-friendly roundabout” is “Kreisverkehr”. In case you missed it, that’s the same word. Since all urban roundabouts designed according to the German guidelines are automatically cycle-friendly, there’s simply no need for another term.

Now, that’s efficient! And, what’s more, the entire guidance for designing roundabouts in Germany is contained within 40 pages. Compare that with Austroads GRD 4B, which is twice as long and was identified in the NZ Transport Agency’s Cycling network guidance project as having significant gaps in terms of consideration for cycling (i.e. not so efficient).

In New Zealand, roundabouts in general have been shown to be safer for motorists than intersections with other forms of control, but (at least on average) significantly less safe for people riding bikes or walking. Comparing injury crashes experienced by cyclists by intersection control gives some insight as to why. We know that the prevalence of cycling in Germany is very different to that in New Zealand, but let’s take the number of injury crashes signalled intersections to be the base case for each country.

In Germany, the number of injury crashes at roundabouts involving cyclists is 2.1 times that at traffic signals. The New Zealand equivalent is 4.9 times as many cycle crashes at roundabouts compared with

traffic signals. There must be something going on for such a difference to occur. Either we build our signalised intersections much safer than the Germans do, or German roundabout design is fundamentally safer than what we seem to be able to achieve; unfortunately, it’s probably the latter.

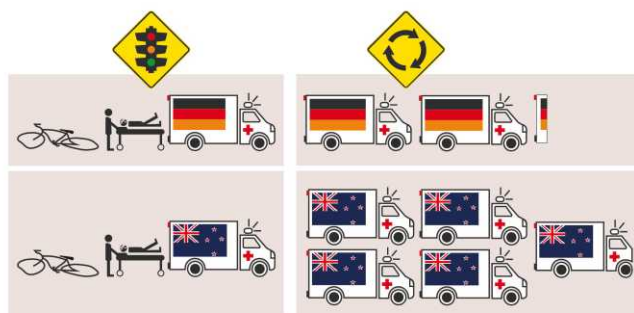


Figure 1: Cycling-related crashes at roundabouts normalised by rates at traffic signal crash rates – Germany vs New Zealand

There is some bad news about the German roundabout guidelines, however – it’s all written in German! The good news is that a lot of the principles have been translated into the Queen’s English (admittedly this was done by a German guy, who reckons he has better English grammar than most kiwis) and incorporated into

the section on cycle-friendly roundabouts of the Cycling network guidance (CNG) online framework.

The even better news is that a CAD file for a roundabout designed according to these principles has been made freely available by ViaStrada, for anyone wishing to use this as a starting point for a specific roundabout design.

So, what are they doing differently in Germany to make their roundabouts so much safer for people cycling? Firstly, given that speed kills (and death is not efficient) they design to reduce the speed differentials between users, especially in terms of approach / entry speed.

A key aspect of this is using radial approaches which make the approach seem more like that of a T intersection; drivers approach slowly, expecting to encounter a sharp turn and maybe having to give way. In theory, many NZ designers recognise the importance of reducing entry speeds (and, admittedly, Austroads does emphasise this for larger roundabouts in higher speed zones); in practice, the achievable operating speeds are still high and therefore have safety risks for all road users, especially those travelling by active modes.

Secondly, the German guidance recognises that it is desirable to have single general traffic lanes for the entry, circulation and exit. This reduces the confusion for people cycling as to where best to cycle, reduces the likelihood of a motorist overlooking someone on a bike, and minimises the number of potential points of conflict between cyclists and motor vehicles.

It is not permitted to design new roundabouts with dual exit lanes, as the rate of crashes involving people on bikes or walking is considered to be too high (this applies even where an off-road circulatory path is

provided because dual lanes increase the risk of crossing the road). The guidelines specify where it is acceptable to have two circulating lanes, but when this is the case, cycling cannot be accommodated within the roundabout and a circular pathway should be provided instead.

By now anyone with any actual experience in designing roundabouts in Australasia is probably thinking something along the lines of: "what a delightful notion it is to welcome two-wheeled pedalling folk into the realm of roundabouts, but how in the dickens shall we continue to include trucks with such fanciful designs?" Well, trucks do exist in Germany too. Big ones, even. And somehow, they seem to manage to get through.

This is partly due to the central mountable apron being easily accessible to trucks but rarely crossed by those driving smaller vehicles (there's a rule about it, and Germans follow the rules).

A lot of thinking has been done about how to make urban roundabouts safer, particularly for cycling. (We haven't presented it all here, more background can be found on the 'Cycle-friendly roundabouts' page of the CNG and ViaStrada's website). What's left to do now? Let's make this experience a turning point and build some kiwi-style-kreisverkehrs... we could consider investing the savings we'll make from reducing crashes into our hockey teams to teach Germany something at the 2020 Tokyo Olympics.

P.S. if you're still hankering to set your teeth into some multi-lane roundabout design, don't worry, we've got thoughts on those too – stay tuned for another round, including an assessment of crash rates for recently constructed roundabouts.

Megan Fowler & Axel Wilke

Figure 2: The high operating speeds here make this Christchurch's number 1 cycling hotspot



- 1 Bondzio, L., et al. (2012). *Verkehrssicherheit innerörtlicher Kreisverkehre [safety of urban roundabouts]*. Berlin.
- 2 Wilke, A., et al. (2014). *Assessment of the Effectiveness of On-road Bicycle Lanes at Roundabouts in Australia and New Zealand*. Sydney, Australia.
- 3 Cycle-friendly roundabouts (CNG): <http://bit.ly/2c3iSjN>
- 4 German roundabout design (ViaStrada): <http://viastrada.nz/safe-rdbt>