

Policy title: High-Visibility Clothing			
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CAN Policy:
CAN encourages people to wear high-visibility clothing where appropriate when cycling, especially in low-visibility or busy road environments and believes that it *may* contribute to improved cycle safety, although the research is inconclusive.
However, CAN is opposed to mandatory requirements for high-visibility clothing.

Background:
Wearing high-visibility (e.g. fluorescent, reflective, bright-coloured) clothing when cycling *may* help other road users to perceive you (and sooner) and take appropriate actions. CAN encourages people to wear such clothing where appropriate when cycling, especially in low-visibility or busy road environments and believes that it *may* contribute to improved cycle safety.
However, CAN is opposed to mandatory requirements for high-visibility ("hi-vis") clothing, for a variety of reasons:

- There is inconclusive research evidence with regards to the effect on crash risk of wearing hi-vis clothing (see details below). There is evidence that suggests that the movement of a cyclist relative to another road user is more relevant to their detection than what they are wearing.
- More specifically, there is no evidence worldwide with regards to the efficacy of a mandatory hi-vis clothing law for people cycling.
- Requiring hi-vis garments when cycling would imply that cycling is a "special" activity requiring special equipment, rather than just an ordinary everyday activity, like walking.
- People would be less likely to choose to cycle for everyday trips, because of the extra inconvenience of wearing a hi-vis garment, and concern about its effect on their personal clothing style or heat management. This reduction in cycling would have significant adverse impacts on the general health of our population.
- Cycling would be perceived as a riskier activity than it actually is, because of the requirement to wear more "safety equipment", regardless of the cycling environment.

The relative risk of someone cycling on (say) a high-speed road at night-time is quite different to the risk of cycling on a low-speed local street during the day; yet the law would apply in all cases. Again, this would have an effect on the take-up of cycling.

- Enforcement of such a law requires a definition of what constitutes hi-vis clothing (e.g. does a yellow or white top count? Does it need fluoro or reflective elements? How big must the hi-vis components be? Does it differ for day or night?) and this is open to mis-interpretation and abuse. It also requires a determination of where the mandatory law would apply (e.g. on road carriageways only? Adjacent paths? Pathways away from roads?), which may cause difficulties practically speaking if someone is riding on a mix of facilities.
- Conspicuity when cycling in low-visibility situations (e.g. night, fog, twilight) is already covered by the legal requirement to have good lights and reflectors on your bike in these situations. Having other additional cycle visibility aids, such as reflectorised tyres and spoke reflectors, may be more effective to improve the conspicuity of people cycling, especially from side-on.
- Such a law would place the onus on those who are usually the victims in crashes, rather than requiring other road users (e.g. people driving) to take more responsibility and care when travelling.
- In a cycle crash, the wearing or otherwise of hi-vis would become an immediate factor identified by other road users, the Police and media, with the potential for it to be seen as "the reason" why the crash occurred, irrespective of other circumstances. This has implications both in terms of Police charges and insurance.
- High-visibility gear would need to be widely available in a variety of sizes and styles/seasons at a reasonable price for all people in New Zealand wishing to cycle.
- Many people in New Zealand only occasionally cycle (e.g. less than once a month); yet they would still be required to have available a hi-vis garment should they have an unexpected opportunity to cycle somewhere, e.g. public bikeshare, on holiday. Similar obligations would be required by tourists to New Zealand. In practice, it is likely there would be widespread disobedience of such a law in New Zealand, especially for short local trips.

It is accepted that wearing hi-vis garments is a requirement of many work places (e.g. road works, construction, postal delivery, shopping car parks). However, that is a (typically conservative) Health & Safety condition of employment, for the protection of both employers and employees which is quite different to private activities often undertaken in the same locations (e.g. pedestrian crossing a road, customer walking across a car park).

It is important to also recognise the differences between **fluorescent** clothing (which shows up well under UV light like sunlight) and **reflective** clothing (which shows up well under reflected lights such as headlights and street-lights). Thus, hi-vis garments appropriate for daytime riding may not be appropriate for night-time riding (and vice versa). The picture is further complicated by other brightly-coloured clothing that may not meet either requirement yet still be quite conspicuous.

A recent review of cycling fatalities in NZ between 2006-2013 (Koorey 2014) found that (of those where clothing colour was recorded) more than half were already wearing bright-coloured or reflective clothing; clearly this did not guarantee a safer outcome. The majority of drivers had **not** noticed the cyclist prior to the crash, even when they were wearing reflective or bright colours. In fact the proportion of drivers not noticing a cyclist prior to a crash was *not statistically different* regardless of whether they were wearing high-visibility clothing or not.

There is a growing pool of research about the safety effects of wearing hi-vis gear, but the results are generally inconclusive:

- Kwan & Mapstone (2009) reviewed studies investigating the effect of pedestrian and cyclist visibility aids on detection and recognition responses by observers. The 42 studies reviewed generally found improvements to detection distance or recognition time with the use of stronger visibility aids, including fluorescent and retro-reflective clothing. Interestingly, no studies were found that related visibility aids to actual pedestrian/cyclist crash risk.
- An Australian study (Wood et al 2009) found that fluorescent vests were not a significant improvement on black clothing at night and that retro-reflective strips were more effective when attached to knees and ankles than on a more-or-less static jacket.
- Wood et al (2010) highlighted the problem of "looked but did not see" crashes, where the driver of the vehicle failed to detect the cyclist in time to prevent the crash, even though they reported that they correctly looked in the direction of the cyclist (a similar effect has also been found for motorcyclist crashes). This could suggest shortcomings in driver attention processes, or an expectancy effect (i.e. only scanning for cars). It was not clear whether cyclists wearing hi-vis clothing would reduce these crashes, but drivers and cyclists surveyed generally believed it would help (e.g. 95% of drivers and 72% of cyclists agreed that cyclists should wear reflective clothing in low lighting environments).
- In a study of the habits of 2500 adult Queenslanders who cycle (Washington et al 2011), it was found that "never wearing bright coloured clothing" correlated with increased crash risk; however, the use of fluorescent and reflective clothing had no effect.
- A comparison between UK cyclists who had experienced crashes and those who hadn't (Miller 2012) found a higher (although non-significant) rate of crash risk by those wearing conspicuity aids compared to those who hadn't. Hence, no protective effect of wearing conspicuity aids was demonstrated.
- In a follow-up study of more than 2500 cyclists who took part in the 2006 Lake Taupo Cycle Race, TinTin et al (2014) found no significant difference in crash rates over six years between those riders who did or didn't regularly wear conspicuity aids.
- A Canadian study comparing cycling injuries with and without a motor vehicle involved (Hagel et al 2014) found a reduced risk of motor-veh collisions when wearing visibility aids during the daytime, but an increased risk of collision when wearing them at night.

Other factors are considered more important influences on cycling safety, such as:

- good road design and provision for cycling
- lower traffic speeds
- cycle positioning on the road and training of good cycle riding behaviours
- lighting of the street environment at night
- good lighting and reflectors on bicycles when cycling in dark/low-visibility conditions
- vigilance and awareness of other road users at all times when on the road

CAN believes that:

- Wearing high-visibility (e.g. fluorescent, reflective) clothing when cycling may contribute to improved cycle safety, but the evidence is not conclusive.
- Wearing high-visibility clothing when cycling should be encouraged where appropriate but not made mandatory.
- Other cycling safety factors should have a higher priority than requiring high-visibility clothing, because they are more likely to be effective

References:

All internet references have been last accessed on 11 November 2016.

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CAN's Vision:

Cycling is a safe everyday activity in Aotearoa/New Zealand.

CAN's Mission:

CAN is a national voice for cyclists, promoting cycling as an enjoyable, healthy, low-cost and environmentally friendly activity, and a key part of an integrated, sustainable transport system.