

4 July 2022

Attention: Joint Standing Committee on Road Safety
Parliament of New South Wales
6 Macquarie Street
Sydney NSW 2000

Submission: Speed limits and road safety in regional NSW

Cycling safety needs to be prioritised in regional and rural areas. This inquiry has the potential to make significant long term improvements to road safety in NSW.

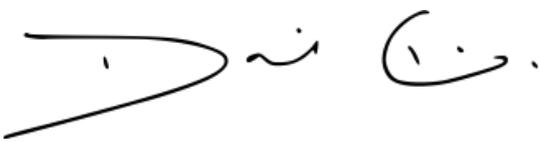
Cycling is very popular in NSW, with 2,910,000 NSW residents riding a bike in the last 12 months. Improving the safety of people riding bikes has economic and productivity benefits, including; improved community connections; increased physical activity; improved mental health, reduced emissions; and reduced road trauma impact and costs.

The majority of road fatalities in NSW occur in regional areas. The Amy Gillett Foundation's submission is a collaboration with Australia's national and state-based cycling organisations:

- Amy Gillett Foundation
- AusCycling
- BicycleNSW
- Bicycle Queensland
- Bike SA
- Pedal Power ACT
- WeRide
- WestCycle
- 30please

Cycling tourism is an important economic impact for regional NSW, attracting cyclists from all over Australia. Cycling also has significant potential in the broader transport mix. As our submission indicates, speed limit policy is crucial. Improving road safety for people on bikes can help deliver important policy objectives. We welcome the opportunity to discuss our submission in more detail: dkneipp@amygillett.org.au

Kind regards,



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Summary of recommendations

1. Define speed limits focused on survivability of all road users (2026 Road Safety Action Plan [2, p.15]), based on crash risk and severity assessments.
2. Develop a road infrastructure interventions (e.g., setting speed limits) protocol that includes the consideration of local characteristics (e.i., mode split, land use, nearby landmarks) with road crash survivability as the guiding principle, especially of vulnerable road users.
3. Cautiously embrace, but not rely on, new vehicle technologies when setting road speed limits, while developing robust studies to assess their safety benefits for non-motorised road users.
4. Consider e-bike adoption rates and international experiences on their impact on road trauma trends in the adoption of new speed limits.
5. Account for the impact of speed limits and related road interventions on cyclists' wellbeing in the road network.
6. Identify and invite government agencies that promote active mobility (i.e., cycling and walking) to this discussion, and jointly assess the alignment between speed limit setting criteria and their strategies.
7. Establish training programs for local decision-makers to guarantee safe road conditions are created for non-motorised road users in regional areas.
8. Expand databases for cyclist crashes, including single-vehicle non-motorised ones.

Introduction

Speed limits are a determinant in road trauma severity and crash survivability. The speed at which a motorised vehicle travels largely determines the distance it will need to brake, and in case of a collision, the speed at which it will hit a person or an object (impact speed, discussed in detail for item a). It is paramount to rely on evidence when setting safe speed limits, especially given the commitment to prevent road trauma at the national, state and local government levels [1].

Around 65% of the yearly road fatalities in New South Wales (NSW) take place in country areas [2]. According to the Australian Road Deaths Databases [3] (data current to April 2022) between 2015 and 2021, 22 cyclists (18 male, 4 female) died on regional roads in NSW (Figure 1). The speed limits recorded for these roads are considerably high (Figure 2) and mostly beyond what is well documented to be considered survivable for the human body (risk curves, discussed in detail for item a). There is only so much energy our bodies can withstand [4], and for people using the road without a protective shell, such speeds represent imminent and serious trauma if involved in a crash.

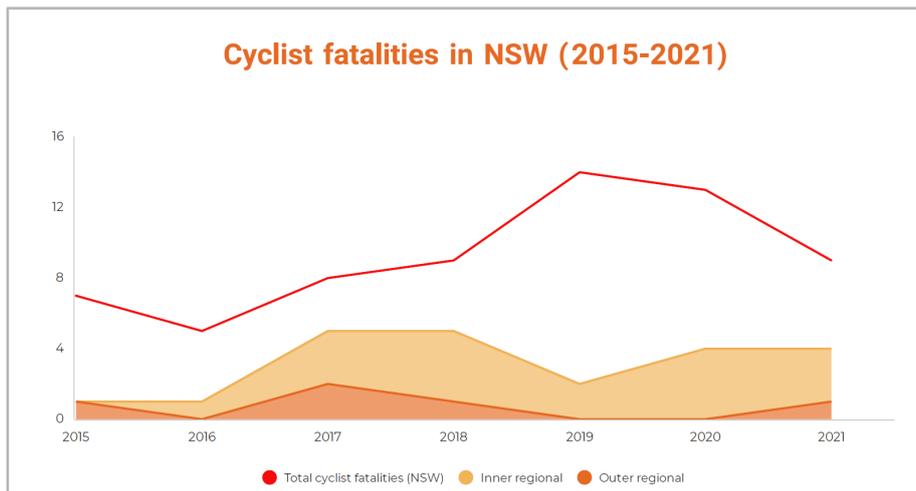


Figure 1. Cyclist fatalities in NSW (2015-2021). Source: AGF based on BITRE, 2022 [3].



Figure 2. Cyclist fatalities in NSW (2015-2021) - Speed limits. Source: AGF based on BITRE, 2022 [3].

Addressing the Terms of Reference

The Committee will inquire into and report on speed limits and road safety in regional New South Wales, with reference to:

a) The impact of speed limits and travel times on driver behaviour and safety

The relation between speed and fatality risk has been studied and is commonly expressed through risk curves. Primarily created based on road incident reports for pedestrian fatalities, risk curves are often used to support road trauma analysis for non-motorised vulnerable road users, including people riding bicycles [5] [6].

Through the detailed examination of risk curves, researchers have demonstrated the importance of mean travel speed, not only the speed limit, when aiming at road trauma prevention due to the expected braking distances different types of vehicles will require to avoid causing serious injury to a pedestrian or cyclist [5]. Speeding has been identified as "the biggest cause of deaths and serious injuries on NSW roads" [7], making this topic critically important for road safety practitioners across the State. Recent studies found pedestrian fatality risk reaches 5% with an impact speed of 30km/h, and an increase of 1km/h can cause it to rise by up to 11% [6]. Besides injury severity, crash risk should also be considered when setting new speed limits [8].

Two particularities identified by Swedish researchers in relation to cyclists injuries are the increased height and speed (compared to pedestrians) which may result in more serious injuries when a crash occurs [9]. In efforts to reduce vulnerable road users injuries, Swedish municipalities started to adopt speed limits of 30 or 40km/h in urban areas in 2008. A 2019 study found the risk for cyclists to get severely injured (MAIS+) decreased by 25% [10].

Following the Safe System approach, setting speed limits is a survivability issue. The Towards Zero target of halving fatalities and reducing serious injuries by 30% by 2030 [2], should guide the selection of speed limits. These in turn could work as an indication of survivability.

Recommendation 1: define speed limits focused on survivability of all road users (2026 Road Safety Action Plan [2, p.15]), based on crash risk and severity assessments.

b) The impact of improved vehicle technology and road infrastructure

Infrastructure design and operation is a determinant of road safety outcomes. Improvements to a road's physical conditions and also recognising that infrastructure determines driver behaviour to a large extent [11], will help to prevent road trauma. As part of a speed management strategy, speed limits have the potential to work as an asset management strategy. Therefore, investing in measures that keep all road users safe not only saves lives but also delivers a more sustainable and cost-efficient operation of the road network [12].

Recognising the different conditions that keep each type of road user safe, means safety will require a comprehensive set of interventions. Regarding cyclist safety, separated and physically protected bike lanes will be required in some areas such as towns and built up urban and peri-urban areas. Dedicated off-road cycling paths and shared paths play an important role in many locations, while in regional and rural locations, especially between towns and connecting communities, wide, sealed shoulders will be the best strategy. Such an approach acknowledges the importance of contextualised solutions that together can create seamless, safe networks for bicycle riding.

Recommendation 2: develop a road infrastructure interventions protocol that includes the consideration of local characteristics (e.i., mode split, land use, nearby landmarks) with road crash survivability as the guiding principle, especially of vulnerable road users.

In regards to improved vehicle technology, it is well known that at the global scale multiple driving assistance systems have been adopted by new models in the last decade and others are in advanced stages [13]. For instance, Brake Assist Systems ([ADR 89](#)) or Lane Departure Warning Systems ([ADR 99 - draft](#)) already are or will soon be required in all new models. However, the national average age of vehicles is 10.6 years [14] and the fleet turnover time should be taken into account when considering the potential of these advancements to reduce road trauma in the near term.

Recommendation 3: cautiously embrace, but not rely on, new vehicle technologies when setting road speed limits, while developing robust studies to assess their safety benefits for non-motorised road users.

d) Any other related matters

- **Rapid adoption of e-bikes**

The number of people cycling in Australia has increased during the past years [15], as well as the number of bicycle imports [16]. A steep increase in e-bike use is expected to result in more people cycling, for longer distances, and for more varied trip purposes [17].

E-bikes are enabling people to use a higher percentage of the road network, more frequently and more comfortably. Roads that previously were too difficult for cyclists (because of gradient, distance, etc) could now have higher numbers of cyclists using them thanks to e-bike technologies. This may be particularly relevant for regional and rural communities and where cycling tourism is popular. In countries with higher adoption rates of e-bikes, an increase in crashes involving e-bike riders has already been recorded [18].

Recommendation 4: consider e-bike adoption rates and international experiences regarding their impact on road trauma trends in the adoption of new speed limits.

- **Safety and wellbeing beyond trauma prevention**

Beyond road trauma, staying safe on the road comprises a multiplicity of aspects. For cyclists, extreme weather conditions and events can represent high-risk situations.

Recommendation 5: account for the impact of speed limits and related road interventions on cyclists' wellbeing in the road network.

- **Cohesive narrative and decisions to support safe cycling**

Cycling has been studied for its positive impact on wellbeing. Benefits for physical and mental health at the individual level, as well as on social connection for communities have been broadly recorded [19] [20] [21]. At the local level, multiple organisations and government departments promote cycling as part of their strategies [22] [23] [24].

Safe speed limit setting must be aligned and support strategies that aim at improving the wellbeing of communities in NSW. Sending mixed messages through disjointed and siloed decision-making could potentially undermine the effectiveness of broader Government action to improve health and wellbeing.

Recommendation 6: identify and invite government agencies that promote active mobility (i.e., cycling and walking) to this discussion, and jointly assess the alignment between speed limit setting criteria and their strategies.

- **Capacity and tools to make safe decisions**

As mentioned in relation to road infrastructure improvements (item b), all roads and their local context are different. This reinforces the importance of building capacity for safe and comprehensive speed limits decision-making at the local government level. A thorough understanding of the implications of speed limit policy (partly discussed in the introduction and item a), and the potential for speed limit setting to yield safety outcomes for vulnerable road users, is crucial.

In 2022/23, AGF will lead the roll out of a national, comprehensive skills program, specifically aimed at building knowledge and capability in safe cycling design practices and policy. Our focus will be on helping engineers, local planners and designers, as well as elected officials (Mayors, Councillors and MPs) understand best practice for cycling safety and how it can be implemented within different contexts across Australia.

Recommendation 7: support engineer and other practitioner-focused training programs and professional development to increase knowledge of safe speed limit policy and other road design techniques that can improve cycling safety in regional areas.

- **Comprehensive datasets**

As addressed in the National Road Safety Strategy 2021-30 [1, p.21], data collection and sharing is crucial to make evidence-based decisions that keep all road users safe. Data is essential to understand trends, evaluate interventions, and strategise on improvements for safety. Yet, current records do not support such extensive analysis for cyclists, cycling safety, or vulnerable road users more generally.

Recommendation 8: expand databases for cyclist crashes, including single-vehicle non-motorised ones.

References

1. Commonwealth of Australia, 2021. *National Road Safety Strategy 2021-30*. ISBN 978-1-922521-09-1. Retrieved from <https://www.roadsafety.gov.au/nrss>.
2. Transport for New South Wales, 2022. *2026 Road Safety Action Plan*. ISBN 978-1-922549-62-4. Retrieved from <https://towardszero.nsw.gov.au/roadsafetyplan>.
3. Australian Government - Department of Infrastructure, Transport, Regional Development and Communications, 2022. *Australian Road Deaths Database - ARRD: Fatalities (revised) Data current to April 2022*. Retrieved from https://www.bitre.gov.au/statistics/safety/fatal_road_crash_database.
4. Transport Accident Commission, 2016. *TAC lifts the lid on the science behind global road safety phenomenon*. Retrieved from <https://www.tac.vic.gov.au/about-the-tac/media-room/news-and-events/2016/tac-lifts-the-lid-on-the-science-behind-global-road-safety-phenomenon>.
5. Kröyer, H.R.G., 2015. *Is 30 km/h a 'safe' speed? Injury severity of pedestrians struck by a vehicle and the relation to travel speed and age*. IATSS Research, Volume 39, Issue 1. Pages 42-50. DOI <https://doi.org/10.1016/j.iatssr.2014.08.001>.
6. Hussain, Qinaat; Feng, Hanqin; Grzebieta, Raphael; Brijs, Tom; Olivier, Jake, 2019. *The relationship between impact speed and the probability of pedestrian fatality during a vehicle-pedestrian crash: A systematic review and meta-analysis*. Accident Analysis & Prevention, Volume 129. Pages 241-249. DOI <https://doi.org/10.1016/j.aap.2019.05.033>.
7. Transport for New South Wales, 2022. *Casual Speeding. Every K Counts*. Retrieved from <https://towardszero.nsw.gov.au/campaigns/casual-speeding>.
8. International Transport Forum - Organisation for Economic Co-operation and Development, 2018. *Speed and Crash Risk*. Retrieved from <https://www.itf-oecd.org/speed-crash-risk>.
9. Kröyer, H.R.G., 2015. *The relation between speed environment, age and injury outcome for bicyclists struck by a motorized vehicle - a comparison with pedestrians*. Accident Analysis & Prevention, Volume 76. Pages 57-63. DOI <https://doi.org/10.1016/j.aap.2014.12.023>.
10. Isaksson-Hellman, Irene; Töreki, Josefin, 2019. *The effect of speed limit reductions in urban areas on cyclists' injuries in collisions with cars*. Traffic Injury Prevention, Volume 20, Issue sup3: 2018 International Cycling Safety Conference (ICSC). Pages 39-44. DOI <https://doi.org/10.1080/15389588.2019.1680836>.
11. Van der Host, Richard; De Ridder, Selma, 2007. *Influence of Roadside Infrastructure on Driving Behavior: Driving Simulator Study*. Transportation Research Record: Journal of the Transportation Research Board, Volume 2018, Issue 1. Pages 36-44. DOI <https://doi.org/10.1080/15389588.2019.1680836>.
12. International Road Assessment Programme, 2020. *A world free of high-risk roads: The business case for safer roads*. Retrieved from <https://www.vaccinesforroads.org/business-case-for-safer-roads/>.
13. Watzenig, Daniel; Horn, Martin, 2016. *Automated Driving: Safer and More Efficient Future Driving*. Springer. ISBN 9783319318950.
14. Australian Bureau of Statistics, 2021. *Motor Vehicle Census, Australia*. Retrieved from <https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release>.

15. Cycling and Walking Australia and New Zealand, 2021. *National Walking and Cycling Participation Survey 2021*. Retrieved from <https://www.cwanz.com.au/national-walking-and-cycling-participation-survey-2021/>.
16. Bicycle Industries Australia, 2021. *Australia will hit a new all-time record of 1.75 million bicycles imported into the country in a single 12 month period*. Retrieved from <https://www.bikeoz.org/news/a-new-record-in-bike-numbers1>.
17. Simsekoglu, Özlem; Klöckner, Christian, 2019. *Factors related to the intention to buy an e-bike: A survey study from Norway*. Transportation Research Part F: Psychology and Behaviour, Volume 60. Pages 573-581. DOI <https://doi.org/10.1016/j.trf.2018.11.008>.
18. Zhang, Xujun; Yang, Yaming; Yang, Jie; Hu, Jie; Li, Yang; Wu, Ming, 2017. *Road traffic injuries among riders of electric bike/electric moped in southern China*. Traffic Injury Prevention, Volume 19, Issue 4. Pages 417-422. DOI <https://doi.org/10.1080/15389588.2018.1423681>.
19. Oja, P.; Titze, S.; Bauman, A.; de Geus, B.; Krenn, P.; Reger-Nash, B.; Kohlberger, T, 2011. *Health benefits of cycling: a systematic review*. Scandinavian Journal of Medicine & science in Sports, Volume 21. Pages 496-509. DOI <https://doi.org/10.1111/j.1600-0838.2011.01299.x>.
20. De Hartog, Jeroen Johan; Boogard, Hanna; Nijland, Hanns; Hoek, Gerard, 2010. *Do the health benefits of cycling outweigh the risks?* Environmental Health Perspectives, Volume 118, Issue 8. DOI <https://doi.org/10.1289/ehp.0901747>.
21. Deenihan, Gerard; Caulfield, Brian, 2014. *Estimating the health economic benefits of cycling*. Journal of Transport & Health, Volume 1, Issue 2. Pages 141-149. DOI <https://doi.org/10.1016/j.jth.2014.02.001>.
22. Transport for New South Wales, 2022. *Get NSW Active*. Retrieved from <https://www.transport.nsw.gov.au/projects/programs/walking-and-cycling-program>.
23. Australian Government - Department of Health, 2021. *Physical activity and exercise guidelines for all Australians - For adults (18 to 64 years)*. Retrieved from <https://www.health.gov.au/health-topics/physical-activity-and-exercise/physical-activity-and-exercise-guidelines-for-all-australians/for-adults-18-to-64-years>.
24. New South Wales Government - Department of Planning, Industry and Environment, 2022. *Draft cycling Strategy and draft Cycling Policy*. Retrieved from <https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/community-engagement/cycling-strategy-and-cycling-policy#:~:text=The%20Cycling%20Strategy%20outlines%20opportunities,see%20what%20opportunities%20are%20available>.