

Encouraging cyclist safety and participation

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Public benefits of transport cycling

Health

- **Cardiovascular disease (CVD):** University of Glasgow study of 263,000 people (*British Medical Journal* 2017) [1] found;
 - 52% reduction in CVD mortality, 41% in **all cause** mortality
- Similar results from other international studies e.g. [2]
- **Other health conditions:** prevention of type-2 diabetes, obesity, less air pollution makes non-cyclists healthier too.

Economy

- **Cyclists spend more shopping than motorists:**
 - US\$163 per week, vs US\$143 (Manhattan).
 - \$250 per month vs \$180 (Davis, California).
 - Similar results from Bristol, Graz, Wellington, San Francisco...
- **Improved productivity at work** Fewer sick days, etc.

Public benefits of transport cycling

- Federal government policy paper, 2013 ([link](#)), shows that cycling to work and back benefits the economy in reduced pollution, noise, congestion, infrastructure construction costs, and health improvements
- Net benefit of \$21 per day (about \$5000 per year) **per cyclist**

Economic contribution

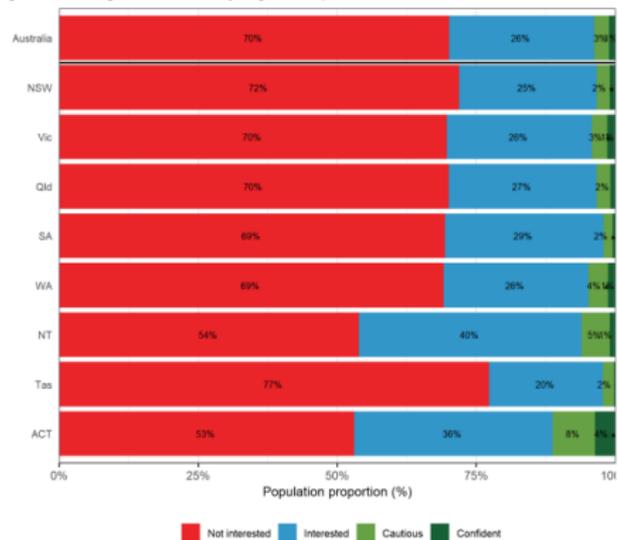
- 33,965 journeys to work by bicycle (2016 census)
- Victorian cyclists save the economy approx. \$170 million/year

Health contribution

Regular cycling probably prevents about 135 premature deaths (i.e. below 75 years of age) from CVD per year in Victoria.

Willingness to cycle for transport, NCS 2019

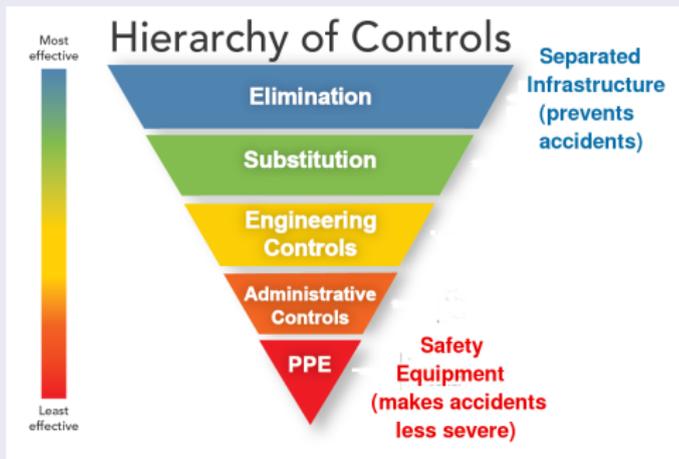
Figure 2.17: Willingness to consider cycling for transport



Sample: persons aged 15+

- Around 1.5% of commuter journeys are by bicycle
- 26% of commuter journeys are less than 5km [3]

Effective safety measures



- Higher levels - most effective (separated infrastructure)
- Mid levels - (e.g. speed limits, passing distance laws)
- Lower levels - least effective (e.g. helmet laws)

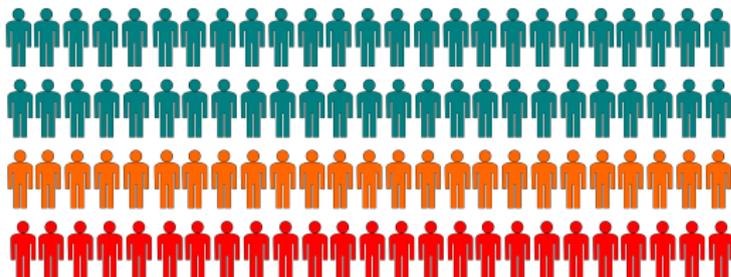
The primary barrier to cycling is the perception of danger

- Infrastructure makes cycling safer and **look** safer

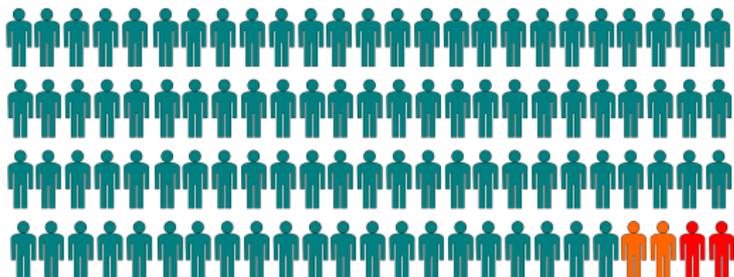
Risk ratio vs risk difference

Consider lives saved by PPE (orange) vs. lost (red) in two scenarios

Accidents common



Accidents rare



Accident frequency and severity

Historically Australia's approach to cycling safety has been;

- Poor investment in infrastructure
- Enforcement of mandatory helmet laws (MHLs)
- **This is a complete inversion of the hierarchy of controls**

- Low-level controls (PPE) cannot eliminate accidents, but high-level controls (infrastructure) can.
- Any benefit of low-level controls reduces as higher-level controls become more effective.
- **Therefore Australia's historical approach ignores the most effective strategies and emphasises the least effective.**

Real world data

AustRoads Cycling Participation Survey, 2011

- 19.4% of Vic population cycle in one week, on average 5.9 times per week.
- Assuming 60% less cycling in winter than summer, that's 255 million cycling journeys per year.

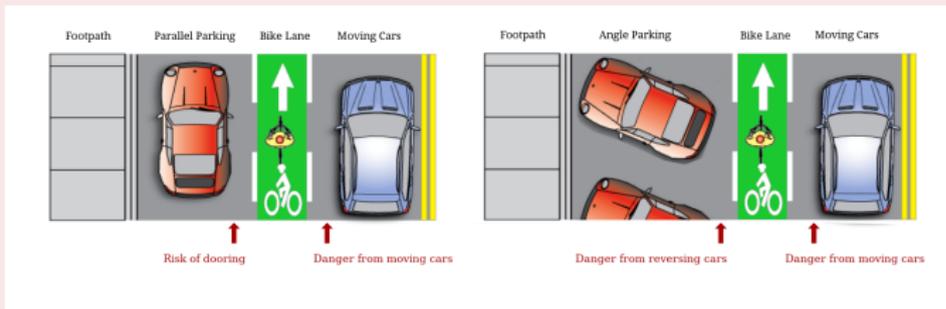
TAC online searchable database

- Average of 7.8 fatalities and 339.3 hospitalised injuries per year
- Hence the chance of a fatality (per journey) is 0.000003%
- And the chance of a hospitalised injury is 0.00013%

Bike lane layout

Standard Australian bike lanes

- on-road bike lanes don't provide physical separation



- Risk of “dooring”
- Risk of collision with moving cars
- Dooring can push cyclists into the path of moving cars
- Even worse with angle parking
 - Reduced visibility
 - Risk from reversing cars

Improved bike lane layout

Parking-protected bike lanes

- Swap the location of parking and bike lanes



- Risk of “dooring” reduced
- Parked cars provide physical barrier from moving cars
- Uses same road space as standard layout - no loss of parking!
- Even better with angle parking
 - “dooring” risk eliminated
 - Collision risk with passengers eliminated

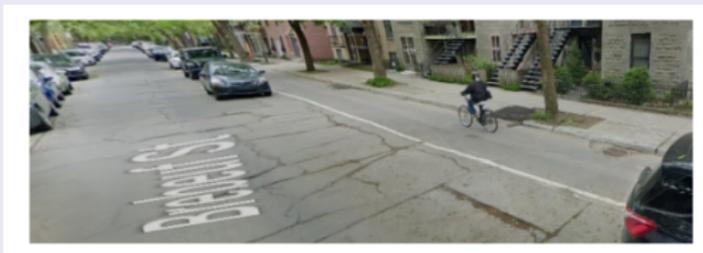
Parking-protected bikeways

Clear benefits

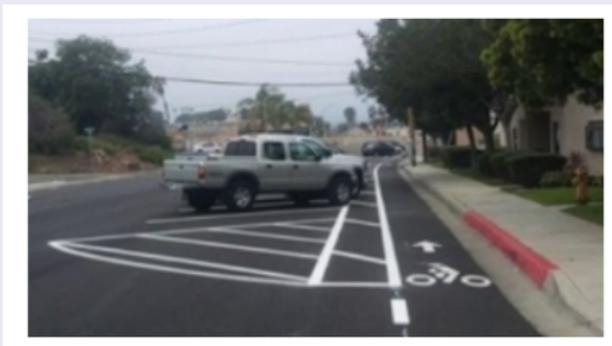
- With parallel parking, the risk of dooring is reduced by as much as 90% (most cars have driver but no passengers)
- Any doorings would not push the cyclist into oncoming traffic
- Cars do not cross the bike lane to park/leave the curb
- No need for wide concrete barriers
- Infrastructure costs are **significantly reduced**, meaning more money for safety treatments at intersections

Examples of parking-protected bike lanes

- bikeways protected by parallel parking (Montreal)

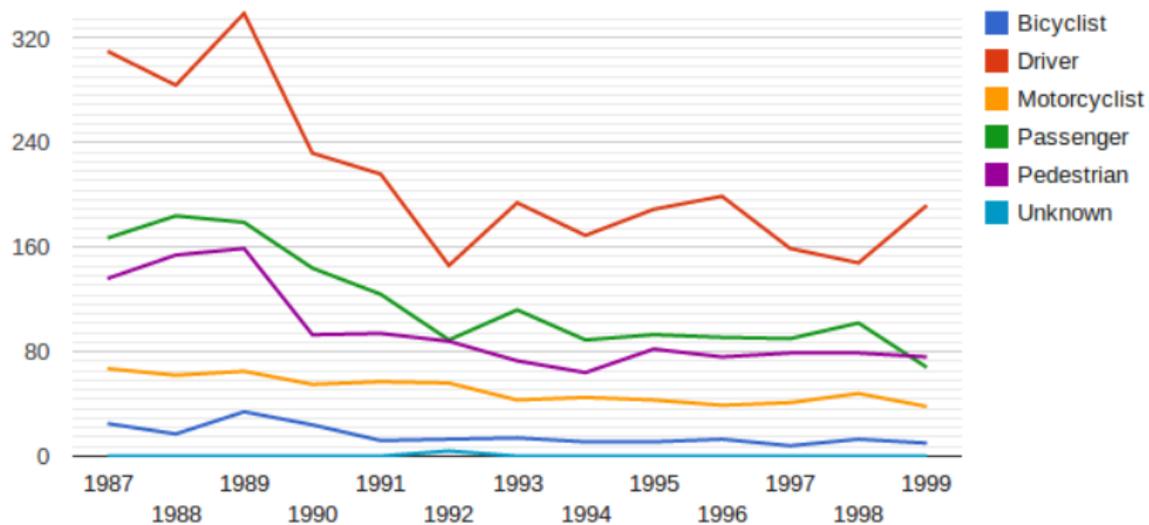


- and angle parking (San Diego)



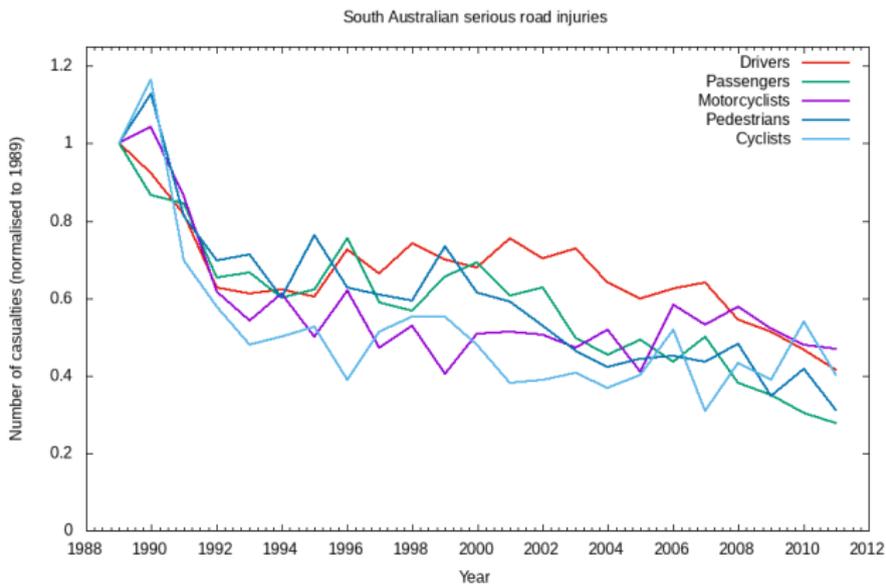
Effect of speed cameras, RBTs, etc.

Serious injuries (Victoria)

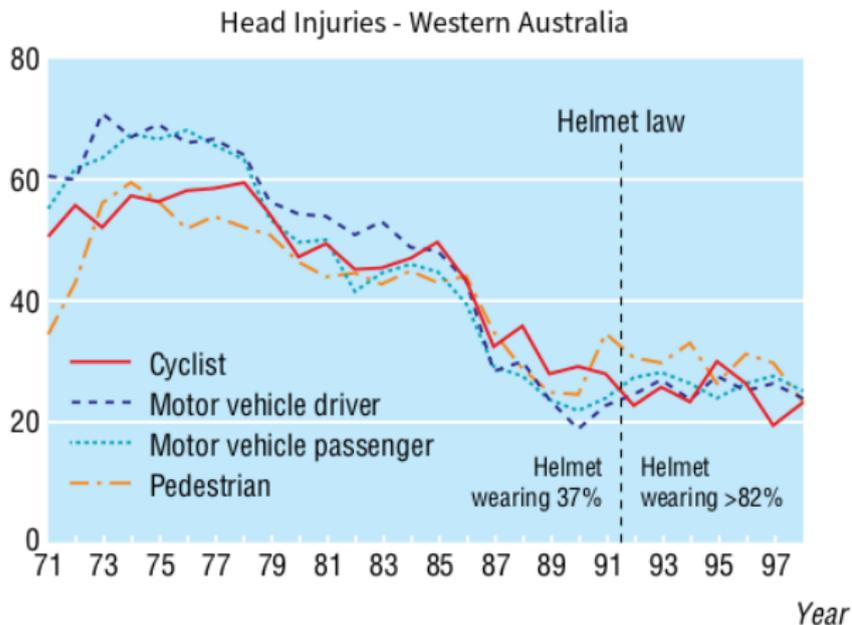


Effect of speed cameras, RBTs, etc.

Serious injuries (South Australia)

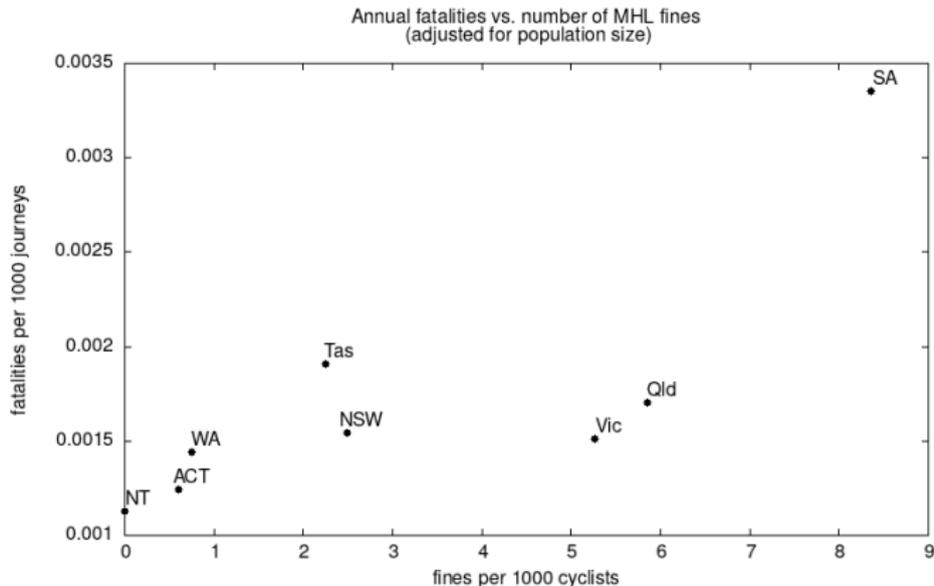


Effect of speed cameras, RBTs, etc.



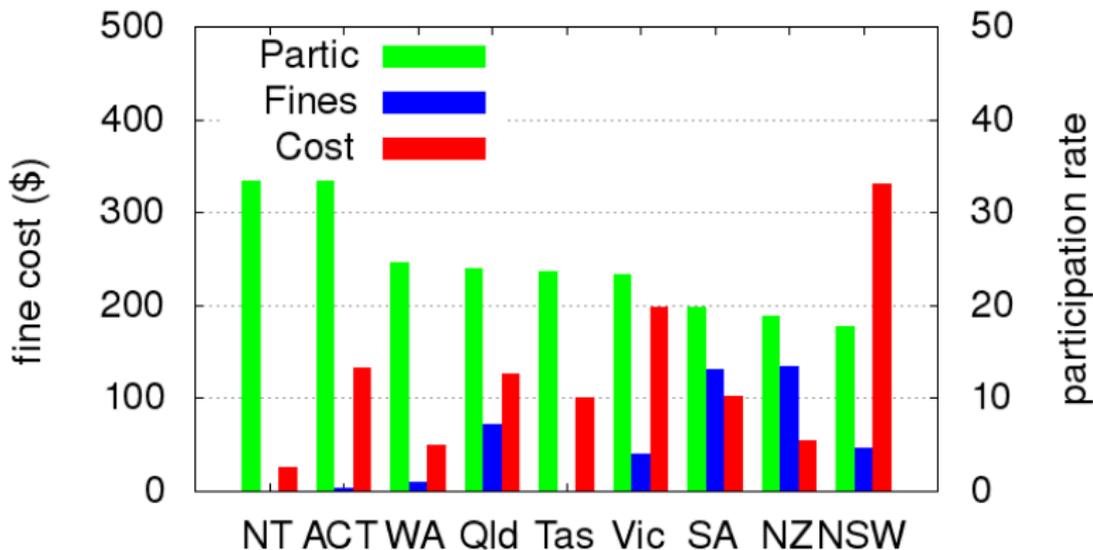
Does MHL enforcement improve cyclist safety?

Fatalities vs Fines



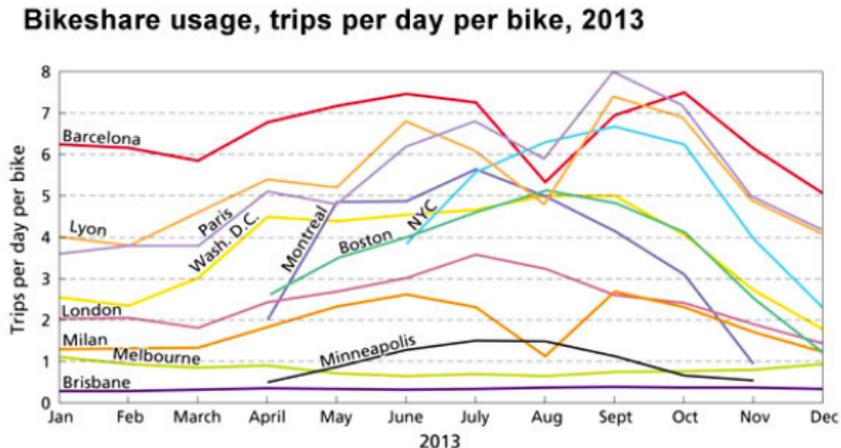
Have helmet laws affected cycling participation?

Cycling participation vs cost of fines,
and number of fines (adjusted for population size)



Helmet laws and bike share

Globally, bikeshare schemes have been effective at increasing uptake of transport cycling. Safer than private bike use.



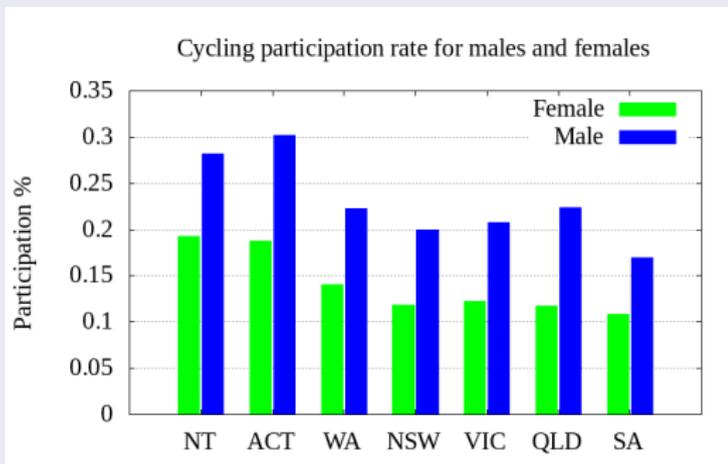
"Bikeshare: A Review of Recent Literature," 2015

Public attitudes to helmet laws

- 2018 policy review by Bicycle Network, 41% of respondents said helmet laws should be relaxed. 30% said they would ride more often if helmets weren't mandatory.
- 2011 survey of Brisbane CityCycle members found 11% cited MHLs as the reason for not renewing their membership. A further 9% wanted the laws removed.
- 25% of Melbourne's bikeshare users said they didn't want to wear a helmet.
- 2011 phone survey in Sydney found 22.6% of respondents would ride more if helmets were optional.
- The Northern Territory allows anyone over the age of 17 to ride on off-road paths without a helmet.
 - Consistently highest cycling participation in Australia.
 - Close to 50-50 female mode share.
 - Highest per-journey safety in the country.

Male vs female cycling participation

Percentage of population who had cycled in the past week



	F:M ratio
NT	0.68
ACT	0.62
WA	0.63
Aus	0.59
Vic	0.59
NSW	0.59
Qld	0.52
SA	0.64
Tas	0.48

For comparison, 24% of Dutch citizens cycle every day

References I

- [1] Celis-Morales et al. “Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study”. In: *BMJ* (2017), p. 357. URL: <https://www.bmj.com/content/357/bmj.j1456>.
- [2] L. B. Andersen et al. “All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work”. In: *Arch. Internal Med.* (2000).
- [3] “Australia’s commuting distance”. In: *BITRE: cities and regions information sheet 73* (2015). URL: https://www.bitre.gov.au/publications/2015/is_073.