

REDUCING SERIOUS INJURIES AMONG CYCLISTS AND PEDESTRIANS

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Reducing serious injuries among cyclists and pedestrians: Why take action and what action?

1. Cyclists and pedestrians are over-represented in serious injuries in Victoria – current road safety strategies focus on fatalities and motor vehicle occupants.
2. Walking and cycling (vulnerable ‘vehicles’) is often disproportionately undertaken by vulnerable population groups (eg children and older adults).
3. Potential for further increases in pedestrian and cyclist serious injuries if no action is taken:
 - ❖ Ageing population
 - ❖ Increased promotion of walking and cycling as important transport modes for sustainable, efficient, liveable cities of the future

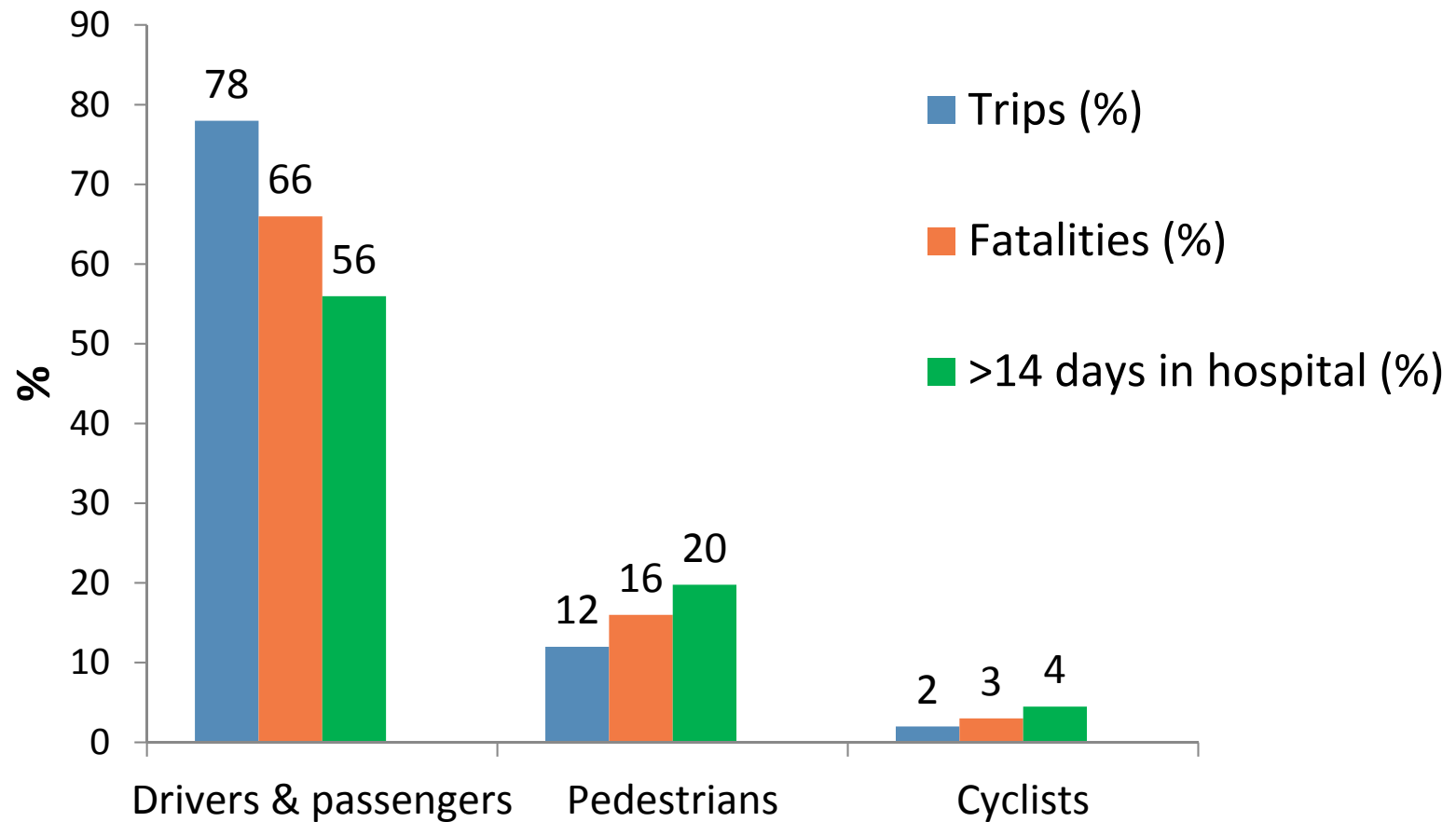
Why take action and what action? (Cont.)



4. There are many co-benefits (in addition to injury prevention) associated with improving safety for pedestrians and cyclists.
5. Victoria is unlikely to meet its target of a 30% reduction in deaths and serious injuries if it fails to address serious injuries among cyclists and pedestrians.
6. The causes of serious injuries among pedestrians and cyclists differ from the causes of motor vehicle fatalities, and therefore require (some) different interventions.
7. Countries with high rates of relatively safe walking and cycling can provide guidance, and several recent international 'best practice' reports are available.

1. Over-representation of pedestrian and cyclist injuries

(Sources: TAC Road Safety Statistical Summary, April 2013, 5-year average claims data; VISTA 2007)



Note: Travel data are for trips - NOT distance or time

Serious injury risk based on distance travelled



- Bicycle:car relative risk of serious injury per km in greater Melbourne metropolitan area:
 - RR = 13 (police data)
 - RR = 34 (hospital data)

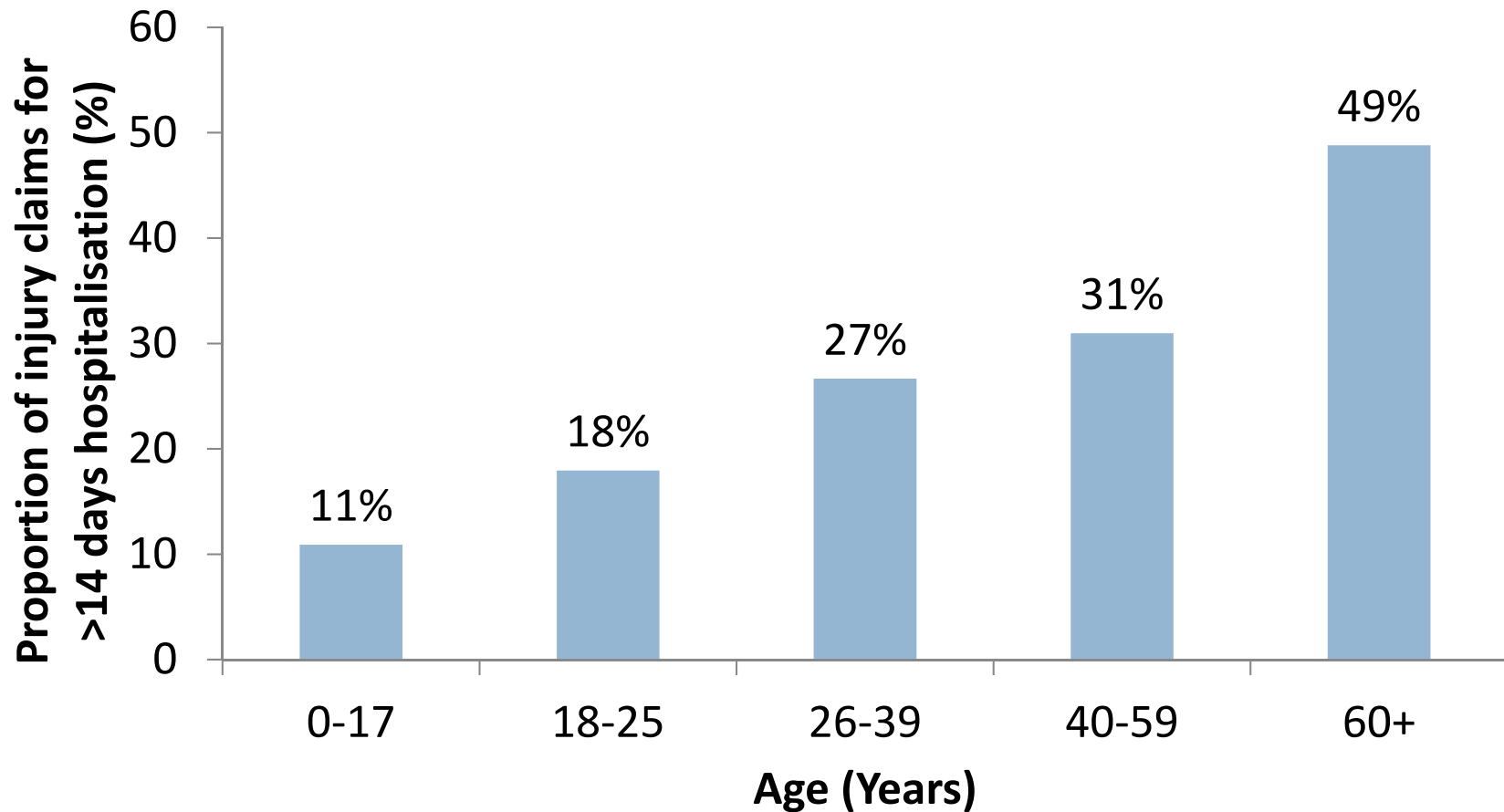
(Garrard et al, 2010)

Double jeopardy: 'unprotected' travel modes and more vulnerable travellers

For example, older pedestrians:

- Nearly a third (29%) of TAC claims for pedestrian injuries requiring hospitalisation are for pedestrians aged ≥ 60 years.
- Annual average TAC claims for >14 days in hospital:
 - ▣ Age 0-25: 189
 - ▣ Age 70+: 207
- Pedestrians aged ≥ 60 years have the highest proportion of severe injury claims (49%).

Injury severity by age - proportion of TAC injury claims involving >14 days hospitalisation



High pedestrian injury rates are not an inevitable consequence of living in large, modern cities

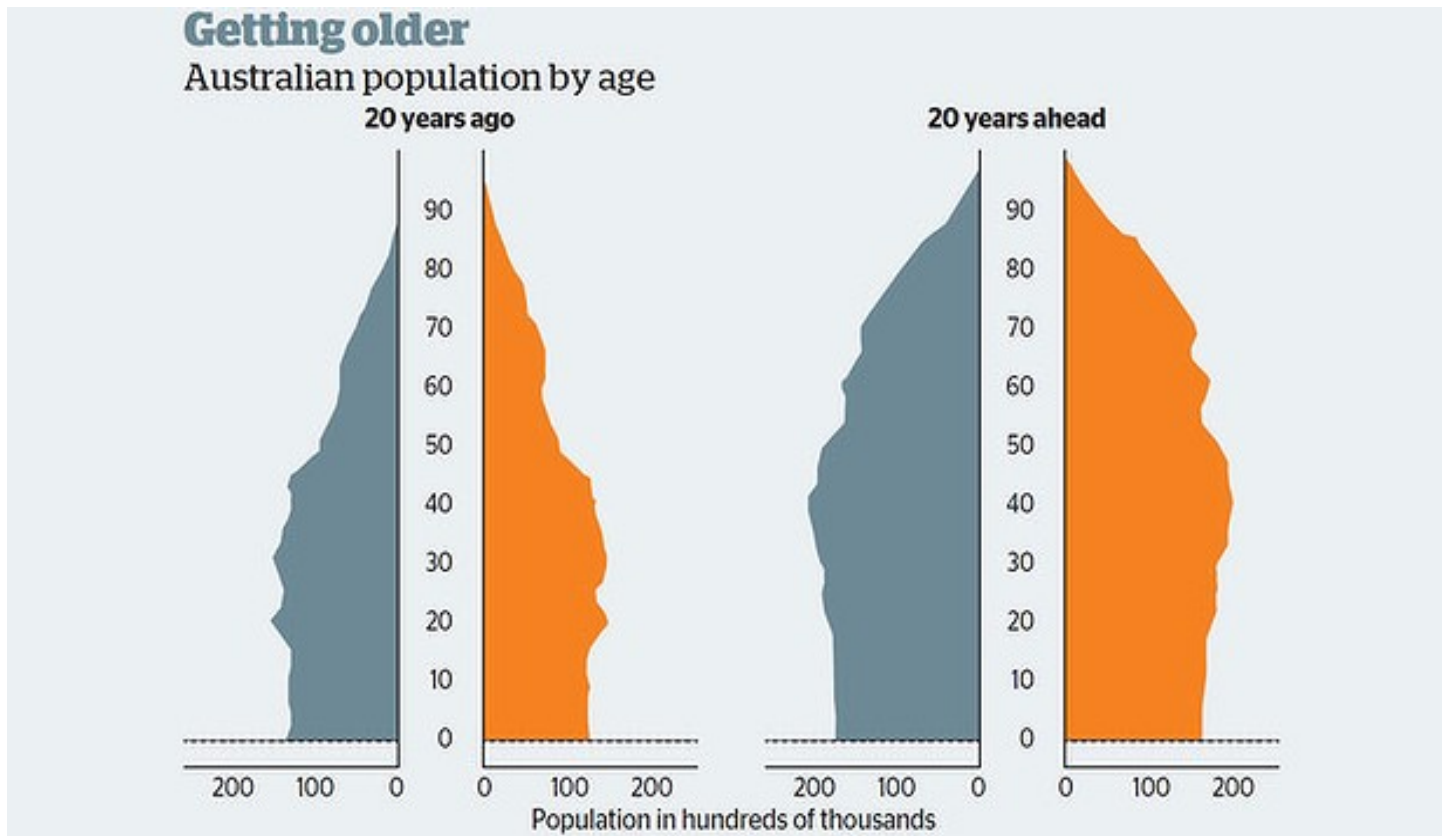
	Pedestrian fatalities (per 100,000 population)	Road traffic fatalities (per 100,000)	Walking share of transport trips (%)
Norway	0.50	5	22
The Netherlands	0.58	4.8	22
Sweden	0.62	5.2	23
Germany	0.84	6	23
Victoria	0.79	6.4	12
Australia	0.97	7.6	NA

Neither are high cyclist injury rates

Country (city)	Cyclist injuries (per 10 million km)
The Netherlands	1.4
Denmark	1.7
Germany	4.7
UK	6.0
USA	37.5
Melbourne	12.4 (police data), 31.5 (hospital data)
Sydney	55.7 (police data, includes minor injuries)

Future trends: (i) demographic

Historical and projected age profile of the Australian population
(Source: Williams 2013, *The Age*, based on ABS data)



Future trends: (ii) Transport mode shifts

"No city in the world is trying to encourage more cars to come into the centre."

(Robert Doyle, May 10, 2013)



Improving the safety of pedestrians and cyclists is *“the gift that keeps on giving”*

- When we create safe road systems for all road users, we:
 - ▣ Reduce traffic crash deaths and serious injuries
 - ▣ Remove a major barrier to people walking and cycling
 - ▣ Increase physical activity levels
 - ▣ Increase health and wellbeing (through both increased physical activity and reduced car use)
 - ▣ Reduce traffic congestion
 - ▣ Reduce air and noise pollution, and greenhouse gas emissions
 - ▣ Improve community liveability



Active transport bears many gifts!

Planning objectives	Expand roadways	Efficient and alternate fuel vehicles	Mode shifts and smart growth
Reduce traffic congestion	✓		✓
Roadway costs savings			✓
Parking costs savings			✓
Consumer cost savings			✓
Improve mobility options			✓
Improve traffic safety			✓
Energy conservation		✓	✓
Pollution reduction		✓	✓
Efficient land use			✓
Public health and fitness			✓

(Source: Litman & Doherty 2009)

Achieving Victoria's Road Safety Strategy goal of a 30% reduction in deaths and serious injuries

- Victoria is unlikely to meet its target of a 30% reduction in deaths and serious injuries if it fails to address the rising incidence of serious injuries among cyclists and pedestrians.
- **Cyclists:**
 - ▣ Police-recorded cyclist fatal and serious injury casualties in Victoria increased from 338 in 2004 to 498 in 2008, an **increase of 9.5% annually**
 - ▣ For the same period, the number of cyclist hospitalisations related to traffic crashes increased from 626 in 2004 to 959 in 2008, a **yearly increase of 10.6%**.

(Boufous et al 2010).

How to achieve a 30% reduction in serious injuries for pedestrians and cyclists

1. Understand the characteristics and causes of serious injuries among pedestrians and cyclists
 - ▣ Most pedestrian and cyclist serious injuries are NOT for young males, speeding, drinking, not wearing seatbelts or 'hooning' (the focus of road safety in Victoria)
 - ▣ Serious cyclist casualties are more common among middle-aged males; cycling in urban areas on main roads or highways with speed limits less than 70 km/h; at intersections; on week-days; during daylight hours (Watson and Cameron 2006; Boufous et al 2010b).

Police-reported crashes involving motor vehicles and cyclists, 2000-2008, Queensland

(Schramm et al 2010)

- 6328 crashes, motorists deemed at fault in 56% of crashes.
- For at-fault motorists, the most frequent traffic violations were failure to take care and failure to yield violations:
 - ▣ “Undue care and attention” (22.4%)
 - ▣ “Disobey give way sign” (19.1%)
 - ▣ “Fail to give way” (15.3%)
 - ▣ “Turn in the face of oncoming traffic” (11.9%); and
 - ▣ “Open car door causing danger” (5.9%)

Multiple, diverse causes require multi-component interventions



- Compulsory seatbelts, drink-drive laws, random breath-testing and speed control have contributed to substantial reductions in fatalities in Victoria in the last four decades.
- Need to maintain these initiatives, but few remaining 'silver bullets' - especially for prevention of serious injuries.
- Need to adopt a 'chipping away' strategy, guided by Vision Zero and the Safe System framework.

Vision Zero and Safe Systems

- Vision Zero is an ever-present reminder not to fall into the “only 1%” trap (ie, “not worth taking action on”).
- $30 \times 1\% = 30\%$
- Many ‘one-percenters’ are cost-effective – especially when the wider health and social benefits of more and safer walking and cycling are included.
- Eg, review of 16 economic valuations of walking and cycling transportation infrastructure or policy:
 - ▣ Benefit-cost ratios (BCR) for walking and cycling projects - median value of 5 (range from -0.4 to 32.5) (Cavill et al 2008)
- Safe System framework is an ever-present reminder of where the ‘one-percenters’ are hiding

A Safe System for pedestrians and cyclists: (i) Safe roads

- Integrate “safe mobility” goals for pedestrians and cyclists in urban planning.
- Eg, planning neighbourhoods so trips up to about 5km (about 50% of household trips) can be made safely and pleasantly by foot or by bicycle (including for children, women and seniors).
- *Prioritise* pedestrian and cyclist mobility in ‘access’ areas (eg residential areas, shopping and service precincts).
- Extensive network of high quality footpaths and bicycle routes that provide:
 - ▣ Separation from motor vehicle traffic where appropriate; and
 - ▣ Good management of interactions between pedestrians, cyclists and motor vehicles:
 - Intersections
 - Mid-block
 - Signalised and unsignalised crossings

(ii) Safe vehicles (for pedestrians and cyclists)

“Occupants of a car are protected by seat belts, airbags and dashboards devoid of sharp objects. A pedestrian's only defence generally is to get out of the way.” (The Windsor Star, 9 July, 2013)

Improve vehicle design:

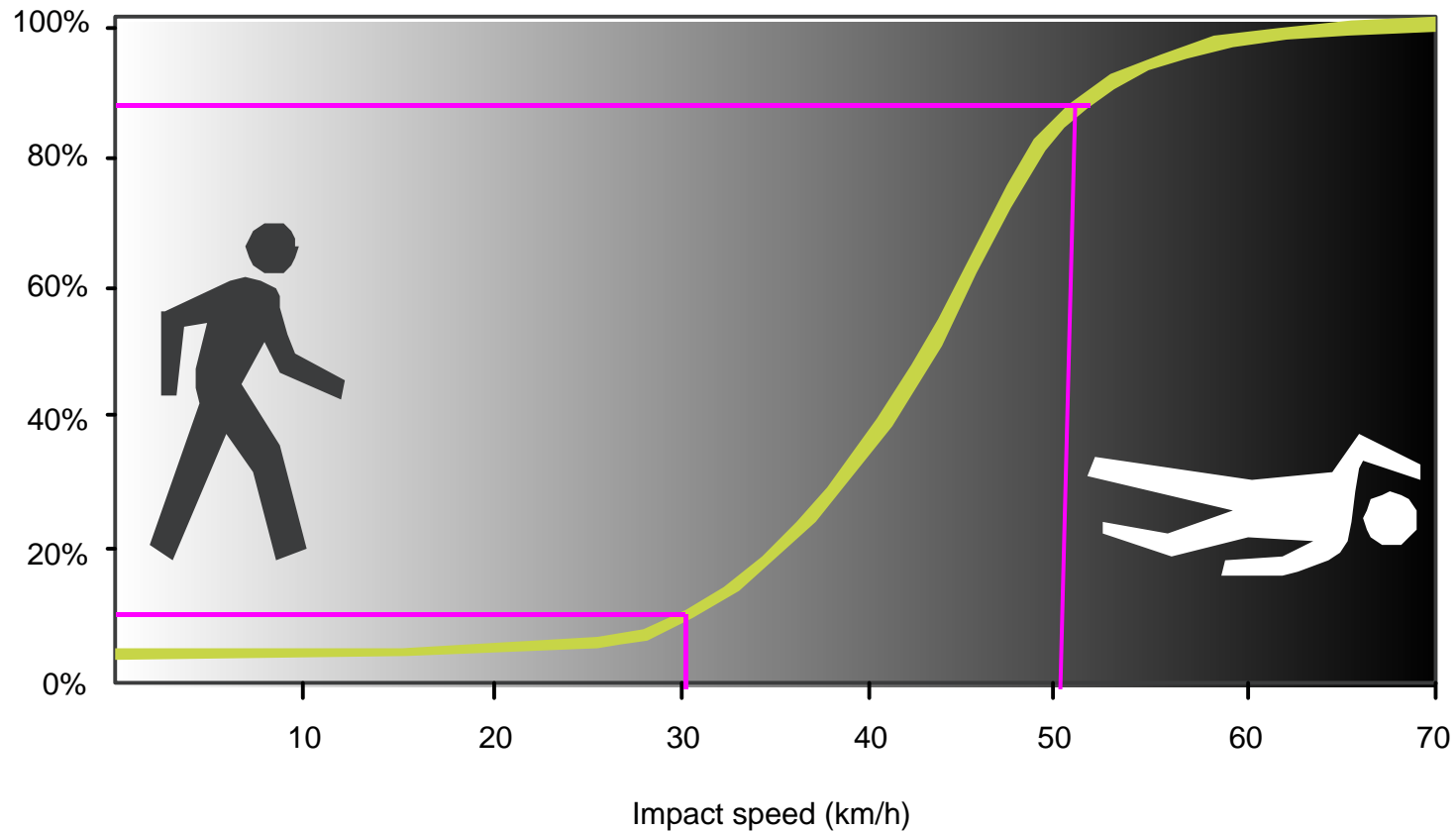
- ▣ Bull bars, window tinting, heavy vehicle design (side underrun protection)
- ▣ Energy-absorbing bonnets, windscreens and pillars
- ▣ Blind-spot mitigation
- ▣ Windscreen airbags
- UK Transport Research Laboratory estimated that 8% of all pedestrian fatalities and 21% of all pedestrian serious injuries could be prevented through improved vehicle design, with BCRs of 7 to 1.
- The European Transport Safety Council estimates that around 20% of urban pedestrian casualties could be saved through ISA (Intelligent Speed Assistance) technology.

(iii) Safe speed

- 'Speeding' includes both travelling above the speed limit, as well as travelling too fast for the road and traffic conditions, and mix of road users.
- Lower speed limits mean that exceeding the speed limit (both deliberately and inadvertently) occurs at lower and therefore safer speeds.
- Traffic calming measures, including street design, also assist in reducing speeding.
- Victoria's speed limits are high by international standards (OECD/ITF, 2012)

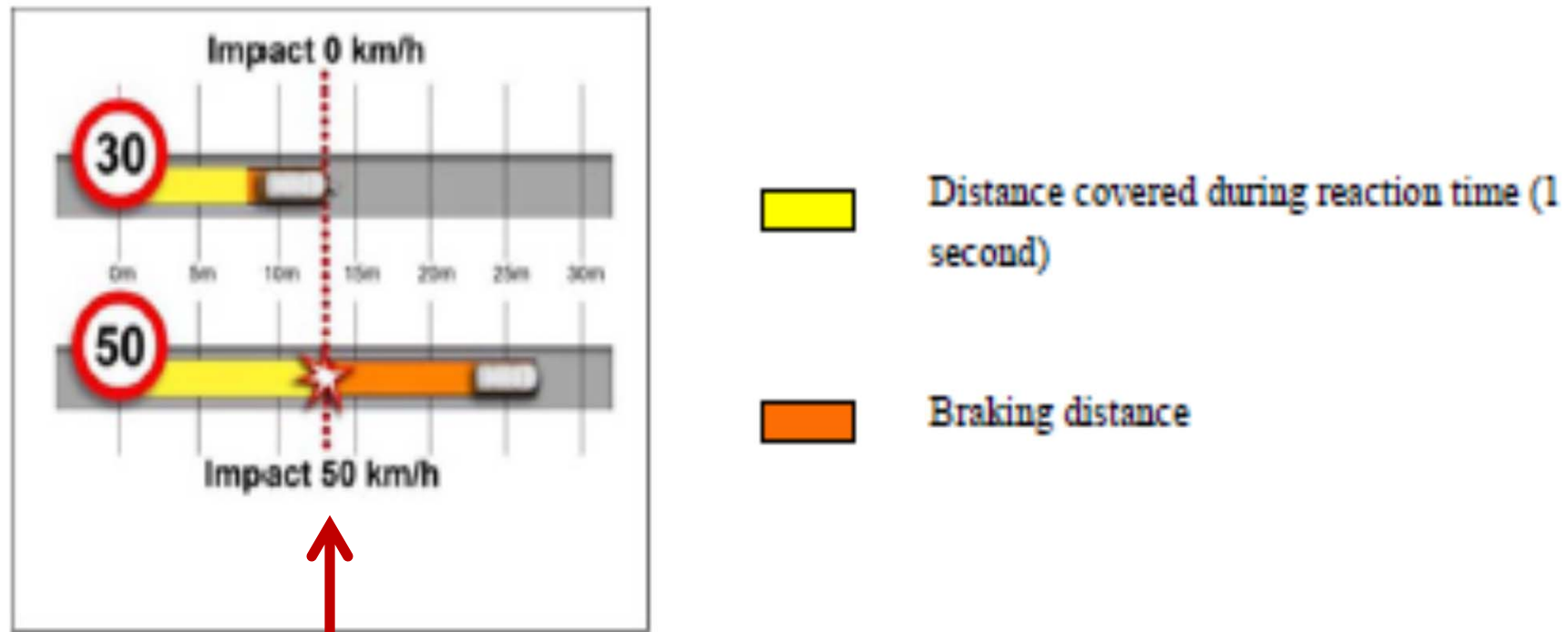
Probability of fatal injury: 50 km/hr compared with 30 km/hr

(Source: WHO 2008)



Impact speed depends on vehicle speed, reaction time and braking distance

Figure 3. Stopping distances at 30 km/h and 50 km/h



Source: CERTU.

13 metres (43 feet)

(iv) Safer road users

- Establish greater responsibility for avoiding harm on the drivers of vehicles that cause the most harm:
 - ▣ High duty-of-care to avoid collisions with pedestrians and cyclists - 'stricter liability' for injury to cyclists and pedestrians
 - ▣ Extensive driver education on importance of cyclist and pedestrian safety
 - ▣ Greater attention to traffic offenses that are hazardous to cyclists and pedestrians (eg 'dooring', safe passing distance, yielding to pedestrians when turning at intersections)
 - ▣ Acknowledge and address law enforcement and legal system bias in favour of drivers.

Germany: strict traffic laws and license testing



German traffic laws generally favor cyclists and pedestrians over motorists



German traffic laws – drivers must yield to, and watch out for pedestrians and cyclists

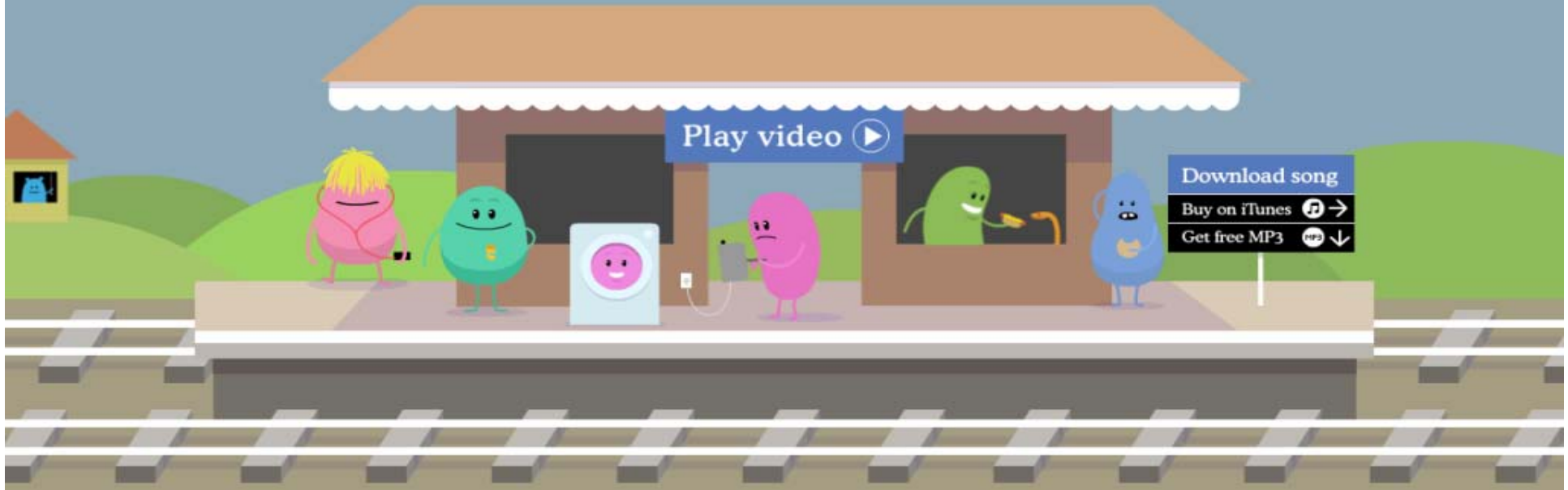
(Source: Pucher 2006)

Safe road users: the role of mass media campaigns



- A recent, apparently effective campaign with a difference:
 - Use of humour rather than 'scare tactics'
 - Multiple media channels (including social media)

DUMB WAYS to DIE



DUMB: Ignoring the signal at a pedestrian level crossing.

SMART: It's just common sense to obey signals at level crossings. Trains move faster than you think and those swinging gates are designed to keep you alive, not just brighten the place up. So be smart, obey the signals, look both ways and double check before crossing.

"I solemnly swear to not do dumb stuff around trains"



Use of humour (albeit 'black humour') and multi-media in road safety campaigns

- *"Dumb ways to die"* appeared in newspapers, local radio, outdoor advertising, throughout the Metro Trains network and on Tumblr.
- **"The aim of this campaign is to engage an audience that really doesn't want to hear any kind of safety message"** (John Mescall, executive creative director of McCann).
- McCann estimated that within two weeks it had generated at least \$50 million worth of global media value in addition to more than 700 media stories, for "a fraction of the cost of one TV ad".
- According to Metro Trains, the campaign contributed to a more than 30% reduction in the number of collisions and near-misses involving vehicles and pedestrians at levels crossings.

Recent reports contain comprehensive lists of measures for reducing pedestrian and cyclist injuries

- OECD/ITF (2012). *Pedestrian safety, urban space and health: Research report*. Paris, OECD/ITF.
<http://www.internationaltransportforum.org/Pub/pdf/11PedestrianSum.pdf>
- OECD/ITF (International Transport Forum) (2012). *Cycling safety: key messages*. Preliminary findings. Paris, OECD-ITF.
<http://www.internationaltransportforum.org/Pub/pdf/12Cycle-Safety.pdf>
- Wegman, F (2012). *Driving down the road toll by building a safe system*. Government of South Australia.
<http://thinkers.sa.gov.au/wegmanflipbook/index.html>
- World Health Organization (WHO) (2008). *Speed management: a road safety manual for decision-makers and practitioners*. Geneva, Global Road Safety Partnership.
http://whqlibdoc.who.int/publications/2008/9782940395040_eng.pdf
- World Health organisation (WHO) (2013). *Pedestrian safety: a road safety manual for decision-makers and practitioners*. Geneva.
http://apps.who.int/iris/bitstream/10665/79753/1/9789241505352_eng.pdf

“Pedestrian safety: a road safety manual for decision-makers and practitioners” (WHO 2013)

- **Module 1** stresses the need to promote pedestrian safety in transport planning and presents data on the magnitude of pedestrian fatalities and risk factors.
- **Module 2** examines the extent of pedestrian consideration and inclusion in land-use, transport and public space planning.
- **Module 3** outlines steps for prioritizing interventions and preparing a pedestrian safety plan of action.
- **Module 4** presents key principles and examples of interventions related to roads, vehicles and users from around the world.
- **Module 5** presents key principles for evaluating pedestrian safety interventions and advocating for pedestrian safety.
- **Case studies** from a range of countries and settings are included throughout the modules.

Thank you!

- With thanks to Victoria Walks for support with collecting and analysing some of the information and data used in this submission (though the opinions expressed here are mine)

<http://www.victoriawalks.org.au/Assets/Files/Victoria%20Walks%20Road%20Safety%20Strategy%20-%20FINAL.pdf>

