Dear Senate Committee

'Personal choice and community impacts'

I have concerns that the Senate is being misled with details regarding 'Answers to questions on notice' from a public hearing held in Melbourne on 16 November 2015, provided by the Australasian College of Road Safety, the Australian Injury Prevention Network and the Royal Australasian College of Surgeons on 30 November 201,5 Additional Documents, No 3.

1. Question on notice concerning Australia's position in the OECD regarding cyclist serious head injuries.

In reply to question No 1 they state;
This question can never be effectively answered because Australia does not routinely collect exposure data.

Please note, in reply to question No 2 they provide Figure1 detailing kilometres travelled by mode from 1900 to 2010. It appears that irregular data may exist.

One report from 1991 included details of cyclist deaths and rate per km, Appendix A4, page 35 of report. http://trove.nla.gov.au/work/34401716?selectedversion=NBD8602319

They state;
For 2014, there were 177 cycling fatalities in The Netherlands and an estimated 32,387.2 million kilometres cycled. That is 5.47 cycling fatalities/billion km. Without any cycling exposure data, it is unclear how Australia compares with any accuracy.

They avoid mentioning that cycling has a much lower percentage of trips in Australia compared with the Netherland, see below and Table 1 in;
'An international review of the frequency of single-bicycle crashes (SBCs) and their relation to bicycle modal share'[1]. The information below is provided.
'Share of cycling in the modal split'
Netherlands 31%
Denmark 19%
England 2%
USA, 1%
Australia 1%
http://injuryprevention.bmj.com/content/early/2014/01/09/injuryprev-2013-040964.full

The answer provided to the Senate omitted the important consideration of data relating to the proportion of trips, thus tending to mislead.

[1] An international review of the frequency of single-bicycle crashes (SBCs) and their relation to bicycle modal share'.
http://injuryprevention.bmj.com/content/early/2014/01/09/injuryprev-2013-040964.full

In reply to Question No2 – information on travel modes dating 1900 to 2010
In Figure 1 information is provided showing distance travelled by mode for metropolitan areas. Because cycling is only a small proportion of travel the effects of helmet legislation can be masked by showing all modes of travel on an extended time frame. They refer to a period 2001-2010 for sport, exercise and recreation that may not relate to utility or travel to school type of travel.

In reply to Question No3 - clarification of costs,
They state;
To clarify the issue, a re-analysis of the dataset was conducted by the authors (unpublished data), to include only bicyclists with severe head injuries (n=15), and it was found that the median hospital costs for non-helmeted cyclists ($47,900, IQR 16,000-127,000) were more than double those for helmeted cyclists ($22,900, IQR 13,000-25,000).

In their original submission No 257, they stated;
In their letter to the Editor of the Medical Journal of Australia, (Dinh et al, 2013b) report that "A multicentre study found the cost of medical treatment was triple for cyclists not wearing a helmet when they crashed, costing an average of $72,000 compared to $24,000 for helmet users". This is significant research evidence from respected researchers, in essence finding that crashes relating to non-helmet cyclists are costing ***three times*** *as much in terms of resultant medical care as for those crashes relating to cyclists who were wearing a helmet.*

Submission No 4 by CF Clarke, Supplement No 2, explains;
In the table provided it shows the costs for helmeted v non-helmet (median cost (IQR), AU$1000 6.5 (2.8–10.7) 5.6 (2.5–15.2)). The medium cost was lower at $5600 for nonhelmeted cyclist compared with $6500 for helmeted.

Characteristics of cyclists and motorcyclists with head injuries, by helmet use

	Cyclist (*n* = 110)			Motorcyclist (*n* = 238)		
Characteristic	Helmet (*n* = 70)	Non-helmet (*n* = 40)	*P*	Helmet (*n* = 206)	Non-helmet (*n* = 32)	*P*
Demographic						
Median age (IQR), years	41 (29–53)	35 (23–44)	0.02	31 (24–43)	25 (21–38)	0.06
Male	64 (91%)	35 (88%)	0.51	194 (94%)	31 (97%)	0.53
Incident details						
After hours*	25 (36%)	14 (35%)	0.94	65 (32%)	14 (44%)	0.17
Location†						
Inner Sydney	21 (30%)	11 (28%)		40 (19%)	13 (41%)	
Suburban Sydney	26 (37%)	20 (50%)		76 (37%)	11 (34%)	
Regional/rural	23 (33%)	9 (23%)	0.37	91 (44%)	8 (25%)	0.02
Injury severity						
Median ISS (IQR)	9 (5–14)	9 (5–21)	1.0	9 (5–17)	15 (5–25)	0.15
Multiregion injury (%)	46 (66%)	29 (73%)	0.46	153 (74%)	21 (66%)	0.32
ICU	11 (16%)	7 (18%)	0.81	47 (23%)	12 (38%)	0.07
Outcomes						
Head injury	27 (39%)	30 (75%)	< 0.001	68 (33%)	14 (44%)	0.23
Severe head injury	6 (9%)	9 (23%)	0.04	26 (13%)	9 (28%)	0.02
Diffuse axonal injury	0	0	na	5 (2%)	3 (9%)	0.08
Rehabilitation‡	3 (4%)	6 (15%)	0.07	35 (17%)	4 (13%)	0.53
Median cost (IQR), AU$1000	6.5 (2.8–10.7)	5.6 (2.5–15.2)	0.91	7.7 (3.0–20.7)	11.4 (4.4–41.0)	0.05

ICU = intensive care unit admission required. IQR = interquartile range. ISS = Injury Severity Score. na = not applicable. * Recorded incident times between 19:00 and 07:00 hours. † Postcode of location of incident was used to classify incident locations in the inner Sydney (within 10 km of central business district), suburban Sydney (bounded by Hornsby to the north, Royal National Park to the south and Penrith to the west), and regional and rural regions of New South Wales. ‡ Discharge from hospital to a rehabilitation facility. ◆

The Dinh et al letter/study had serious limitations, stating;

Limitations to our study include the small number of patients with severe head injury, and the inability to control for other incident factors such as speed, collision details and intoxication.

No information was provided concerning if the cyclists had been drinking, if a motor vehicle was involved or if the cyclist had fallen without a motor vehicle involvement or details of speed or other injuries was provided. The lack of information means that the conclusions are unreliable. Data published for NSW reported several differences in behaviour between helmet wearers and non-wearers, refer Table 19 Submission No 4 as copied below.

	No helmet	**Helmet**
Age 0-19	55%	18.5%
Disobeying traffic control	9.4%	3.3%
BAC over 0.5	7.2%	1.7%
Riding on footpath	34.4%	12.9%
Serious injury other than head	9.5%	7.3%
Not in daytime	27.9%	23.3%

Table 19

Table 3 from Submission No 4 details TAC claims data for head + concussion by age group, 12-17 age at 10.9%, 18+ age group at 7.6%. The Table provided in the MJA letter shows the medium age for wearers to be 41 and for non-wearers 35. Some of the differences in head injury rates could be age related.
Appendix A refers to 3 articles reporting differences in wearers and non-wearers.

In reply to Question No 2 they state;
'The attribution of bicycle helmet laws as a cycling deterrent is ultimately a red herring'

One early report mentions that cycling decreased:
"Observational surveys of bicycle use in Melbourne indicated a 36% decrease in bicycle use by children in May-June 1991 compared with May-June 1990. The largest decrease (44%) occurred among 12- 17-year-olds, compared with the decrease among 5-11-year-olds (15%)."
http://www.cdc.gov/mmwr/preview/mmwrhtml/00020531.htm

It also reported:
"Victoria (1989 population: approximately 4.3 million) (Figure 1). Implementation of the law was preceded by a decade-long campaign to promote helmet use among the estimated 2.2 million persons who ride bicycles"
From these figures it can be calculated that approximately 51% of the population cycled.

Appendix B shows details of the ‘Frequency of use’, from a 1990 survey report for Victoria.
(Bike helmet study AGB Spectrum SA 3427 #79. May 1990)

Total, 53% daily, 31% weekly, 8% fortnightly, 6% 3-4 times a year, 1% less often

That is 53% rode daily and a further 31% weekly, in total 84% rode on a weekly basis. From 51% who cycled and 84% of those weekly, in total 42.8% of the population cycled weekly.
The percentages for Victoria from the National Cycling Participation Survey 2015 for having cycled in the past week (all ages) are
2015: 16.6%
2013: 16.4%
2011: 19.9%
These results are shown in Fig 2.1 - page 3 of the report for Victoria.
This report was tabled in a QON submission to the Senate Inquiry by the TAC.
From the above information it is obvious that they try to mislead the Senate by stating;
‘The attribution of bicycle helmet laws as a cycling deterrent is ultimately a red herring’

Appendix A
1
Ann Emerg Med. 1997 May;29(5):625-9.
Observational evaluation of compliance with traffic regulations among helmeted and nonhelmeted bicyclists.
Farris C1, Spaite DW, Criss EA, Valenzuela TD, Meislin HW.
Abstract
STUDY OBJECTIVE:
To evaluate whether helmeted bicyclists are more compliant with traffic regulations than nonhelmeted bicyclists.
METHODS:
This prospective observational study, using a convenience sample, was conducted during daylight hours at three separate intersections, marked with legal stop signs, near the campus of a major university. Data collected included helmet use, legal hand signal use to indicate a turn or stop, and whether the bicyclist came to a complete stop before proceeding through the intersection.
RESULTS:
A total of 1,793 bicyclists were evaluated. Only 8.8% of the bicycle riders were wearing helmets. Helmeted bicyclists were 2.6 times more likely than nonhelmeted bicyclists to make legal stops (P < .000001; odds ratio [OR], 3.1; 95% confidence interval [CI], 2.1 to 4.6). They were also 7.1 times more likely to use hand signals (P < .000001; OR, 7.2; 95% CI, 2.8 to 18.2).
CONCLUSION:
Helmeted bicycle riders showed a significantly greater compliance with two traffic laws than nonhelmeted bicyclists. They were 2.6 times more likely to stop at stop signs and 7.1 times more likely to use legal hand signals. This very strong association of helmet use with safer riding habits has implications for injury-control efforts aimed at preventing bicycle-related injuries.

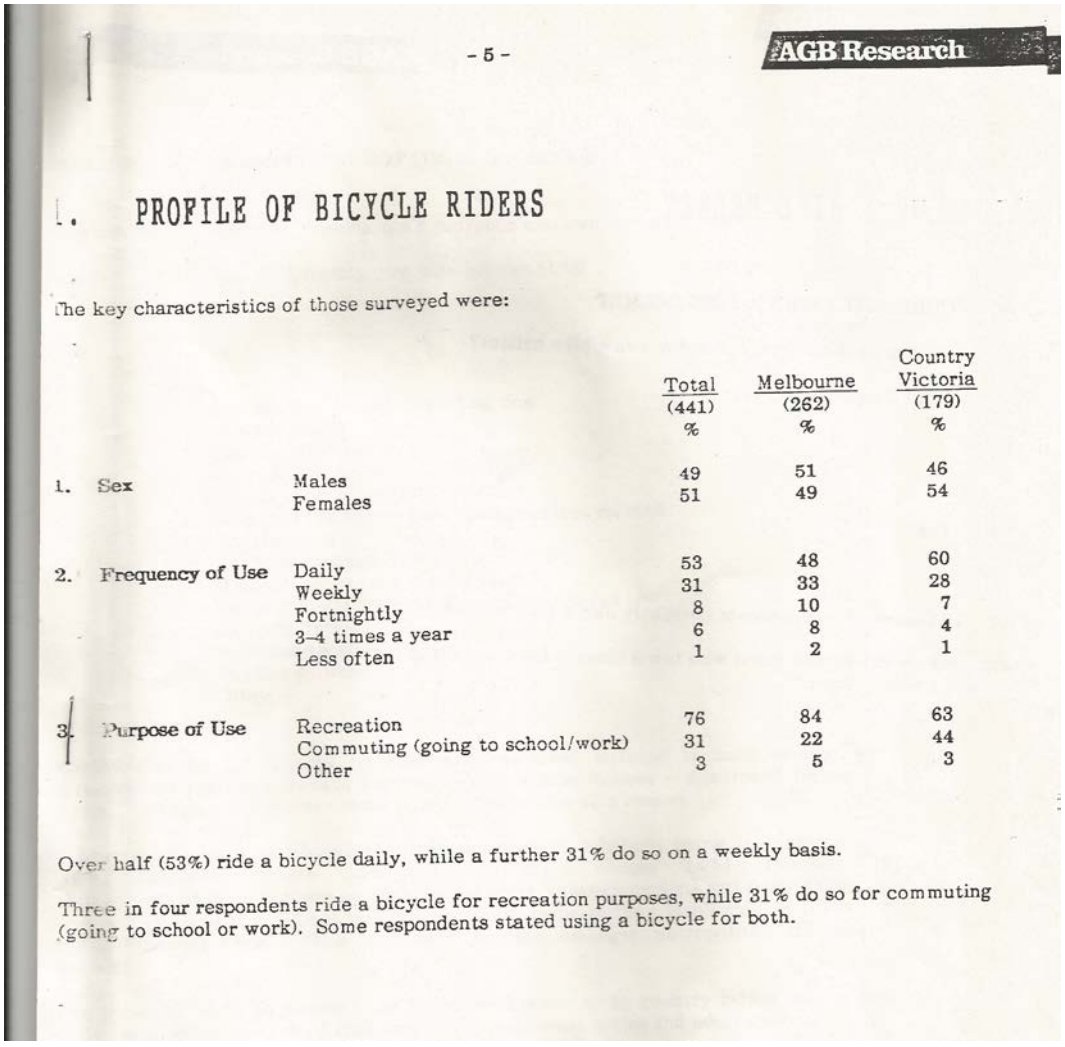
Spaite et al. showed that helmet users were in less severe crashes. Other reports have also found significant differences between helmet wearers and non-wearers, for example;

2
J Trauma. 1991 Nov;31(11):1510-6.
A prospective analysis of injury severity among helmeted and nonhelmeted bicyclists involved in collisions with motor vehicles.
Spaite DW1, Murphy M, Criss EA, Valenzuela TD, Meislin HW.
Abstract
To evaluate the impact of helmet use on injury severity, patient information was prospectively obtained for all bicyclists involved in collisions with motor vehicles seen at a level-I trauma center from January 1986 to January 1989. Two hundred ninety-eight patients were evaluated; in 284 (95.3%, study group) cases there was documentation of helmet use or nonuse. One hundred sixteen patients (40.9%) wore helmets and 168 (59.1%) did not. One hundred ninety-nine patients (70.1%) had an ISS less than 15, while 85 (29.9%) were severely injured (ISS greater than 15). Only 5.2% of helmet users (6/116) had an ISS greater than 15 compared with 47.0% (79/168) of nonusers (p less than 0.0001). The mean ISS for helmet users was 3.8 compared with 18.0 for nonusers (p less than 0.0001). Mortality was higher for nonusers (10/168, 6.0%) than for helmet users (1/116, 0.9%; p less than 0.025). A striking finding was noted when the group of patients without major head injuries (246) was analyzed separately. Helmet users in this group still had a much lower mean ISS (3.6 vs. 12.9, p less than 0.001) and were much less likely to have an ISS greater than 15 (4.4% vs. 32.1%, p less than 0.0001) than were nonusers. In this group, 42 of 47 patients with an ISS greater than 15 (89.4%) were not wearing helmets. We conclude that helmet nonuse is strongly associated with severe injuries in this study population. This is true even when the patients without major head injuries are analyzed as a group; a finding to our knowledge not previously described. This implies that nonusers of helmets tend to be in higher impact crashes than helmet users, since the injuries suffered in body areas other than the head also tend to be more severe. It is possible that at least some of the "protection" afforded helmet wearers in previous studies may be explained by safer riding habits rather than solely a direct effect of the helmets themselves.

3
J Trauma. 1995 Feb;38(2):287-90.
A prospective investigation of the impact of alcohol consumption on helmet use, injury severity, medical resource utilization, and health care costs in bicycle-related trauma.
Spaite DW1, Criss EA, Weist DJ, Valenzuela TD, Judkins D, Meislin HW.
Abstract
STUDY OBJECTIVE:
To examine if a relationship exists between bicycle-related injuries, consumption of alcohol, helmet use, and medical resource utilization.
DESIGN:
A prospective cohort study with data from emergency department, operating room, and inpatient records.
SETTING:
University-based trauma center in a medium-sized metropolitan area.

TYPE OF PARTICIPANTS:
Adult victims (age > or = 18 years) of bicycle-related injury presenting to the emergency department. A total of 350 patients made up the study population.
RESULTS:
Group 1 consisted of 29 patients (8.3%) with detectable blood alcohol levels at the time of the incident. Group 2 (321 patients) had a measured blood alcohol level of 0 or no clinical indication of alcohol consumption. Group 1 mean Injury Severity Score was 10.3, with six (20.7%) sustaining at least one severe anatomic injury. Group 2 had an Injury Severity Score of 3.3 ($p < 0.0001$), with only 4.4% ($p = 0.0013$) sustaining severe anatomic injury. Mean length of hospitalization for group 1 was 3.5 days, including a mean of 1.4 intensive care unit days. Mean hospitalization (0.5 days, $p < 0.0001$) and intensive care unit (0.1 days, $p < 0.0001$) were significantly lower in group 2. Mean combined hospital and physician charges were more than six times greater for group 1 ($7,206) than group 2 patients ($1170, $p < 0.0001$).
CONCLUSION:
In patients presenting with bicycle-related injuries, prior consumption of alcohol is highly associated with greater injury severity, longer hospitalization, and higher health care costs. This information is useful in the development of injury prevention strategies to decrease incidence and severity of adult bicycle injuries.

Appendix B



AGB Research

1. PROFILE OF BICYCLE RIDERS

The key characteristics of those surveyed were:

			Total (441) %	Melbourne (262) %	Country Victoria (179) %
1.	Sex	Males	49	51	46
		Females	51	49	54
2.	Frequency of Use	Daily	53	48	60
		Weekly	31	33	28
		Fortnightly	8	10	7
		3-4 times a year	6	8	4
		Less often	1	2	1
3.	Purpose of Use	Recreation	76	84	63
		Commuting (going to school/work)	31	22	44
		Other	3	5	3

Over half (53%) ride a bicycle daily, while a further 31% do so on a weekly basis.

Three in four respondents ride a bicycle for recreation purposes, while 31% do so for commuting (going to school or work). Some respondents stated using a bicycle for both.