JOURNAL OF THE AUSTRALASIAN COLLEGE OF ROAD SAFETY

Formerly RoadWise – Australia's First Road Safety Journal

In this edition:

Peer-reviewed papers:
- Managing Risk in a Workplace Bicycle Pool
- An Overview of Bicycle Crashes and Injuries in WA

General papers:
- Bicycle safety – a reflection
- Bicycle education and safety
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Cover photo: Sharing the road in Canberra (courtesy of 'The Canberra Times')

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FROM THE PRESIDENT

A/Prof. Raphael Grzebieta

We hope you will be pleased with the new look of the Journal of the Australasian College of Road Safety and kindly forgive us for the delay in its delivery. After discussion in the ACRS Executive Committee, we decided to overhaul the Journal into its new format and combine the Quarterly report and the Journal into one publication. The Journal's title has changed to reflect this new approach and the editorial management being transferred to our Executive Officer, Geoff Horne. However it will continue to refer to the former name Roadwise on its cover for historical research and reference purposes. The reason that it has taken so long to hit the streets is that sponsorship for its production was being sought. I am pleased to announce that the Australian motoring associations, linked by the Automobile Association of Australia (AAA), have generously agreed to sponsor the next four issues of the Journal.

Roadwise has survived to date because of the former Managing Editor Colin Grigg and his tireless efforts and considerable donation of his time and resources through EMU Press. EMU Press, registered and owned by Colin, published the first edition of *RoadWise* in February 1988, in anticipation of the formation of the College at the 2nd Australasian Traffic Education Conference, which Colin organised at the University of New England. The College will always be indebted to Colin for setting up the Journal and maintaining it despite some lean times in terms of resources. The College is also grateful to the NRMA for contributing to the production costs over many years.

When Colin announced his retirement from the College's Executive he made the following contribution of his perspective of Road Safety for the Executive and members to reflect on: "*I am strongly of the belief that it is at the local community and personal levels that real change must occur to solve road trauma (the bottom-up approach). My convictions are in line with elements of Ray Brindle's commentary with the "Darwin Matrix" (References: various, including the College "Position Paper" on Traffic Calming, 1991; and Brindle R E, 1992, "Road Safety Through Less Traffic – how do we get real change in travel choices?" in **The Proceedings of the Fourth Biennial Australasian Traffic Education Conference**, EMU Press, Armidale). He asks the searching question, "How do we get real change in personal travel choices and behaviour?" He discusses the extensive task of traffic educators to change social values, awareness, attitudes and behaviour.*"

I would agree with Colin that it is a cultural change in behaviour at the grass roots level where we must seek real change and hence drive the top end to change. Of course this notion is not new. Governments have tumbled because of the power of grass roots changing their attitude towards them. I would hasten to point out that the College's partnership in the SaferRoads project is addressing exactly what Colin is proposing – changing the awareness of all road users in regards to hazards and what is a safer road system so as to change cultural attitudes. This in turn we hope will continue to apply pressure to Government regulators to continue their valuable efforts in reducing the road toll.

The contribution of A/Prof. Soames Job, who was Peer Review Editor of the journal, is also gratefully acknowledged. Soames ensured the articles submitted were of a high journal quality. Such peer review processes are very time consuming usually requiring voluntary contribution of one's time, often late at night if not into the wee hours of the morning. As we know, Soames stepped down from his academic research role to take up the position of NSW RTA's General Manager of Road Safety. He is another outstanding College road safety advocate who is leading by example by going to the coal face to institute the changes he believes are needed to reduce the road toll. It is a demanding position requiring all of his attention. For his tireless contribution to road safety the College elected Dr. Soames Job as ACRS' 2004 Fellow. I encourage members to provide their support in helping Soames in whatever way they can to achieve his objective for the sake of the road trauma victims and their families.

Readers will also notice the Editorial Board of the Journal has been broadened to include a wider spectrum of experts related to road safety. Over the next year we will also be approaching international expatriate Road Safety experts who have taken up key leadership/research positions in various prestigious international institutions to become members of the Editorial board. We expect to publish the next edition of the Journal in October 2005.

A number of major events have occurred within the College since my last report. In February another in the seminar series on Roadside Safety Barriers was held under the auspices of the WA Chapter. In May the first of a new College seminar series on 'Recidivist Drink and Unlicensed Driving' was held in Melbourne, and in June a joint conference was held in Sydney on 'Driver Distraction'. All of these events are reported later in this Journal and I thank and congratulate all those who put in the hard work to make them a success.

At the College's recent AGM a number of policies were presented to the members for ratification. They included policies on: Daytime running lights; Bullbars; Rollover protection; and an upgraded Bus policy. Not only do these policies reflect the College's position concerning a road safety issue but they also reflect the credible research supporting their introduction and formulation. I would encourage readers to review the existing and new policies and consider any new ones for addition. Feedback regarding the policies at any time is always welcome.

The College proposal to set up an Australasian register of Road Safety Professionals was also ratified at the May 2005 AGM. Professionals who satisfy registration criteria will be eligible to be listed on the College's website and entitled to use the letters RRSP after their name. The College is currently in the process of establishing

discipline sub-committees so that they can decide on selection criteria for road safety professionals applying to register in their particular discipline or field of activity. Where possible people who are at or near the top of their profession, and who have a strong interest in road safety and preferably are members of the College are being approached to serve on these sub-committees.

Once the RRSP criteria have been established through unanimous agreement within a particular sub-committee, an applicant will be able to submit their CV and application written in accordance with the selection criteria together with an application fee.

Road safety professionals will then be able to be admitted to the ACRS Register for one or more of the following disciplines/fields of activity related to road safety: Administration/Policy, Audit, Crash Investigation and Reconstruction, Driver Education, Enforcement, Engineering, Medicine, Occupational Health and Safety, Psychology, Road Safety Education and Research/Evaluation. Associated with the register will be a Code of Professional Conduct that registered Professionals will be required to adhere to.

The Register will be maintained by the College so that an individual's field of professional expertise can be readily identified. RRSPs will then need to renew their status on the register each year so that, besides continuing their professional activity in their field, they demonstrate that they have also maintained their expertise through means such as for example: attending continuing education course and/or relevant conference/seminar/workshop attendance; committee activity; community activity related to road safety; writing journal or conference papers; organising a road safety related conference/seminar/workshop; etc. A minimum number of 30 hrs per annum has been suggested as being an appropriate level that RRSPs would need to maintain and declare for renewal. Again we encourage those members who are professionally employed in areas related to road safety to consider applying for the Register once we have announced the selection criteria.

Each year the College invites nominations from members to elect an outstanding member to be a Fellow of the College. Persons nominated should have a strong record of involvement in College activities and in working in some aspect of road safety. If you would like to make a nomination, please contact Head Office for a nomination form for submission not later than 31 August 2005.

Finally, I would like to thank members of the Executive Committee for re-electing me as President of the College. It is an honour and privilege to be handed the stewardship of ACRS for yet another year. I hope I will do justice to the Committee's confidence, with a strong commitment to help reduce the blight of road trauma and associated pain and suffering both in Australia as well as internationally.

Raphael Grzebieta
President Australasian College of Road Safety.

COLLEGE CHAPTER NEWS

ACT and Region Chapter
A seminar entitled "Cross Border Road Safety Initiatives' was held on 12 May, the venue near Lake George was chosen to draw delegates not only from Canberra, but also from the broad surrounding region of NSW. The seminar was free and funded by the NRMA-ACT Road Safety Trust. The goals of the seminar were to:

- Inform the community about the recent NRMA-ACT Road Safety Trust commissioned report by the ARRB Group Ltd on crash involvement of ACT drivers in the region;
- Provide a picture of road crashes in the southern NSW region;
- Showcase local government road safety initiatives;
- Examine what is known about fatigue in rural crashes and discuss possible counter-measures; and
- Outline the experience of Snowy Hydro SouthCare in relation to the recovery of trauma victims.

Speakers included Dr Peter Cairney from the ARRB Group, Mr Rob Reynolds from the NSW Roads and Traffic Authority, Mr Mark Foran, Road Safety Officer Yass Valley and Upper Lachlan Councils, Mr Ken Smith, Road Safety Consultant and Dr Damian McMahon, Director, Shock Trauma Service, the Canberra Hospital. Over 80 delegates attended this very successful seminar.

NSW (New England) Chapter: The Chapter continues to meet monthly and held their AGM on 10 May. The major annual project of the Chapter, the 'Arrive Alive' Expo was held from 6-8 June, and was once again a great success. The 3-day road safety program was aimed at senior secondary school students with at least 20 hours of L-plate driving experience. 137 students from schools in the New England region attended the Expo at the Traffic Education Centre, Armidale, and were taken through six different workstations. The Expo was run with the assistance of a $5,000 grant from the NSW Government.

NSW (Sydney) Chapter: A seminar on 'Older Driver Licensing' was held on Thursday 5 May 2005 at the Parliament House Theatrette. The seminar was a partnership between the STAYSAFE Committee, the NSW Office of Ageing, and the Australasian College of Road Safety. The speakers included David Weinstein, on the NZ project; Associate Professor Joanne Wood, on issues of vision, ageing and driving; Professor Craig Anderson, on issues in neurological diseases, ageing and driving; and Shona Blanchette, on local community interventions regarding ageing and driving. The Chapter was also heavily involved in planning the international 'Driver Distraction' Conference, a partnership of the College with the NRMA and STAYSAFE Committee, which took place on 2,3 June 2005 at the Parliament House conference facilities with over 100 delegates, including five speakers from overseas.(See separate report)

New Zealand Chapter: Chapter members are looking forwarding to their involvement with the Australasian Research, Policing and Education Road Safety

conference in Wellington 14-16 November 2005. In the intervening months they are planning two seminar meetings in Wellington and also a pre-conference seminar on 'Recidivist Drink Driving and Unlicensed Driving'. The latter is in the current seminar series being organised by the College Head Office with Ms Kerry Fitzgerald and Dr Barry Watson as the keynote speakers.

Queensland Chapter: The Chapter held their AGM on 1st March and appointed some new committee members. With the AGM they had a seminar on Road Safety Advertising, with 35-40 people attending. A CARRS-Q PhD student gave a talk on her research into road safety advertising. The other speaker was from Qld Transport, who overviewed their new speed enforcement public education campaign. On 2 June, the Medical Director from the Qld Ambulance Service gave a talk on the management of road trauma. Other issues being considered for forthcoming seminars are rehabilitation of crash victims, young drivers and graduated licensing.

South Australia Chapter: A recent lunchtime dialogue was held on the drugs and road safety issue. A speaker came from the Centre of Automotive Safety Research. In May Dr Jeremy Woolley gave an address on Crash Investigation. A seminar is being planned on tailgating and rear end crashes.

Victorian Chapter: On 26 April a forum was conducted on Safer Vehicles, with a speaker from Bosch talking about electronic stability control and summarising some of the developments around the world. The 'Recidivist Drink Driving and Unlicensed Driving' seminar was held on 6 May and attended by some 60 delegates. Speakers included Dr Barry Watson of CARRS-Q, Ms Kerry Fitzgerald of the Department of Employment and Workplace Relations, Inspector Ian Cairns of the Victorian Police, Ms Jan Lyttle of VicRoads and Dr Pamela Snow of La Trobe University. The Chapter AGM was held on 10 May.

Western Australia Chapter: On 22 February in Perth the Chapter hosted the College's "2003-2005 seminar series" seminar on Roadside Safety Barriers. This was very well supported with 45 delegates attending. The Chapter appreciated the efforts of Mr. Jan Karpinski of WA Main Roads, who played a key role in organising the seminar. Comments from some of the attendees were surprising when they pointed out to other attendees that they had never seen a roadside barrier crash test before or understood the importance of roadside protection using properly certified barrier systems. It was pleasing that the College was able to help disseminate this vital information to people involved with barriers. With movements of key Chapter members due to job changes, the committee has been re-forming and assessing plans for the rest of 2005. It is hoped to put on two more seminars during the rest of the year, with one of these probably following up on the 'Driver Distraction' theme of the Sydney June conference.

CORRESPONDENCE

I was pleased to see the article on Mobile Phones and Driving in the November Quarterly Report. Might I suggest a further strategy be included with the recommendations of the Pedestrian Council of Australia. This is simply that legislation should allow mobile phone call records for drivers involved in crashes to

be obtainable by investigating transport authorities. Time, date and cell base station can provide good circumstantial evidence that a driver was involved in a call and distracted from driving at that critical time.

Gary McDonald
Road Safety Officer, Queanbeyan City Council

NEW TO THE COLLEGE LIBRARY
The College Library has received the following publications:

'Inquiry Into Crashes Involving Roadside Objects' – Road Safety Committee, Parliament of Victoria, March 2005.

Inquiry into the Country Road Toll – published by the Road Safety Committee of the Parliament of Victoria, May 2005.

AUSTRALIAN NEWS

Successful Joint International Conference on 'Driver Distraction'

Over 100 delegates attended the two-day 'Driver Distraction' conference held at the NSW Parliament House conference facilities on 2,3 June 2005. The conference was organized as a partnership between the College, the NRMA Motoring and Services and the Staysafe Committee of the NSW Parliament. In the early planning stages the view was expressed that there might not be sufficient research reports and other presentations submitted to justify running a two-day conference in this comparatively new aspect of road safety. However, in the event, the two days were fully utilised, as the conference received a total of 25 excellent presentations, including five from international speakers. The keynote speakers were Dr Peter Burns, Chief of the Ergonomics and Crash Avoidance Division at Transport Canada, Professor John D Lee John, an Industrial Engineering expert from the University of Iowa, USA, and Dr Mike Regan who is a Senior Research Fellow at the Monash University Accident Research Centre specialising in research on human factors, ergonomic and safety issues relevant to the design, deployment and evaluation of vehicle Intelligent Transport Systems. According to some observers, this conference was a 'world first' on the subject of 'Driver Distraction'. The conference was well covered by the media. One TV free to air channel featured a short video that had been shown at the conference, in which the dangerous effect of using a mobile phone while driving was clearly demonstrated. One of the popular radio stations featured a lengthy interview with Prof. Mark Stevenson, Chair of the NSW (Sydney) Chapter. There is no doubt that the conference raised many issues regarding the driver distractions that affect road safety, especially some of the newer ones such as mobile phone use and navigation, video and audio systems. A CD-ROM of the conference proceedings is

being produced and will be sent free to conference delegates, probably about the end of August. Members of the College who did not attend the conference will be able to obtain the CD for the discount price of $20 including GST and postage (for non-members, $30).

New Seminar Series Launched for 2005 – 2006

Following the successful seminar series on 'Roadside Safety Barriers', run by the College in Brisbane, Sydney, Melbourne, Wellington, Adelaide and Perth during 2003-2005, a new series has now been launched. The title of the new seminar is 'Recidivist Drink and Unlicensed Driving' and the first seminar in this series was held on 6 May 2005 in Melbourne, hosted by the Victorian Chapter of the College and sponsored by the Traffic Accident Commission, Draeger Safety, RACV and VicRoads. The keynote presenters for the seminar series are Dr Barry Watson and Ms Kerry Fitzgerald, both long-time and active members of the College.

 Kerry   Barry

Each seminar event will then include two or three local speakers who will provide a local angle on the issues considered. In Melbourne the local speakers were Inspector Ian Cairns of the Victoria Police, Dr Pamela Snow of La Trobe University and Jan Lyttle of VicRoads. Over 60 delegates attended the day-long seminar. Plans are in hand for a Brisbane seminar on 19 August 2005 and another immediately preceding the Road Safety Research, Policing and Education Conference in Wellington NZ in November.

Road Users Summit seeks community views

In March 2005 the New South Wales Minister for Roads convened a two-day 'Road Users Summit' to gather the views of community, business and government representatives on a wide range of traffic and road safety issues. Presentations addressing the key topics were given by Roads and Traffic Authority staff, followed by discussion and debate to suggest practical solutions to existing problems. With 1,000 extra people moving to Sydney every week, there is increasing pressure on the road system. The total kilometres travelled by all vehicles on major arterial routes in Sydney has increased by 43% to 11.9 million vehicle kms in 2003/4 from 8.3 million in 1990. The following solutions are expected to be implemented as a result of the Summit:

Good driver incentives: Responsible drivers with unrestricted licences will earn up to 6 additional merit points from 1 February 2006 as part of a plan to encourage better, safer driving. Motorists will get 2 extra points after 2 years of clean driving and 1 extra point for each additional year of clean driving. The plan will not apply to P plate or learner drivers.

Changes to the demerit scheme: Double demerits: speeding and seatbelt offences will continue to attract double demerit points but the 1 additional point for all other offences during designated periods will be scrapped from 1 July 2005 in conjunction with the Demerit Points Fine Review. The penalties for hogging the right hand lane will be increased from 1 July 2005 from a $130 fine and 2 demerit points to a $225 fine and 3 demerit points. The creation of a new offence of "Failing to merge at prevailing speed" to ensure safe merging on motorways, will be explored.

School Zone review: The RTA will conduct a review of the operation of 40kph zones outside schools on major arterial routes. This would include ensuring that school zones operated at the right times and in the right places; and did not cause inappropriate and unnecessary impacts on motorists, including on pupil-free days.

Driver Education: Improved driver education campaigns will target specific issues such as tail-gating, merging and hogging the right hand lane; In conjunction with better education, an enforcement campaign will target tail-gating on motorways.

Speed Limit Revisions: More consistent speed zoning on main roads will progressively remove 70kph and 90kph speed zones in order to end uncertainty among motorists. This would lead to a basic regime of 60, 80, 100 and 110 kph zones. A wet weather speed limit of 10 kph below normal limits will be trialled on motorways.

Future Summits: Two further summits have been proposed, one on country roads and another on heavy vehicles. *(Source: Local Government Road Safety Program News April 2005)*

Record fine for Transport company
A Queensland transport company recently received a record fine in the Brisbane

Magistrates Court after pleading guilty to more than 300 charges over breaches of driving hours regulations. Geoff Richards Refrigerated Transport Pty Ltd, its director, a subcontractor and eight drivers were fined a total of $165,400 after pleading guilty to 306 charges for breaching driving hours regulations. The company pleaded guilty to 96 charges of allowing drivers to exceed driving hours regulations. The employers pleaded guilty to a further 64 charges for pushing their drivers to exceed driving hours, following investigations by Queensland Transport officers. Eight drivers also faced 146 charges for breaching driving and rest hours regulations and falsifying driving records.

Transport Minister Paul Lucas said the outcome sent a loud message to the transport chain."I make no apology for the Queensland Government taking a tough stand on this issue. Rogue transport companies forcing their drivers to cut corners and break the law places unfair competitive pressure on the vast majority of truckies who do the right thing," he said. Since the introduction of chain of responsibility legislation in 1998, Queensland Transport has successfully prosecuted four companies for driving hours offences, resulting in fines totalling $147,150.
(Source: Queensland Govt Dept of Transport and Main Roads)

Maintenance of Australian Road Rules
Keeping the Australian road rules up to date is a top priority for the National Transport Commission. The Australian Road Rules Maintenance Group meets twice a year to consider amendments put forward by jurisdictions. Current concerns are issues around the use of seatbelts, scooters and personal mobility devices. Robin Dyell, NTC's Australian Road Rules Project Manager, said, "The members of this group bring their expertise and experience to a national forum to ensure full consideration of everyone's ideas, and to seek a national outcome. We are grateful for the time and effort they put into this." An updated copy of the Australian Road Rules is available on the NTC's website – www.ntc.gov.au. *(NTC Newsletter Dec 04)*

Walking School Bus^{TM} program in Victoria receives further funding
The Victorian Department of Health (VicHealth) announced in its Annual Report 2003-2004 that it had made grants, mostly for $25,000, to 30 city and shire councils for their Walking School Bus programs at a total cost of $686,383 . The Department considers that this program delivers considerable individual and community benefits:
> Better physical health through regular physical activity;
> Better environments through reduced traffic congestion and pollution;
> Better safety through children learning pedestrian skills; and
> Better mental health by creating a more positive sense of community and the opportunity for people to access social networks.

According to the VicHealth Summer 2005 Newsletter, more than 2000 Victorian primary school children now walk to and from school and 192 'buses' operate as part of the program. This works out at approximately $300 per child per year or $8 per week (assuming the VicHealth figures were for one (2003-2004) financial year.)

Rita Butera, a Senior Project Officer at VicHealth, says the physical benefits of the program had already been demonstrated in England, New Zealand and other countries. "What we didn't really envisage was the community impact," she said.

Children who participate feel connected to the community they move through and they inspire others to walk." Some Walking School Buses pick up 'taggers', who are often other children walking to school independently. Grandparents, dogs, locals and parents also join in along the way. People talk to each other and friendships are developed along routes that have been audited by local government traffic engineers or safety officers.

Some schools have found that the program also reduces absenteeism and late arrivals. Elizabeth Tomlins, Latrobe City Council's Walking School Bus project officer says that the program is also about educating parents that there are other ways of getting to school and it means leaving the car at home. "That is a cultural shift, and it is beginning to happen in these schools," she said.

VicHealth has trademarked the Walking School Bus ^{TM} in order to maintain a high and safe standard. It claims that its sustainability and value depends on such standards. *(VicHealth Letter summer 2005 and Annual Report 2003-4)*

National Transport Commission and Austroads launch new driver health campaign
Driver health is a key consideration and one that is identified in the National Heavy Vehicle Safety Strategy 2003-2010. The 'Driving and Your Health' campaign alerts operators and drivers to the importance of health for road safety. The safe and efficient transport of goods and passengers is vital, so the task of the commercial vehicle driver is an important and challenging one. The campaign follows the recent release of revised driver medical standards Assessing Fitness to Drive, which apply nationally to all commercial vehicle drivers, including drivers of heavy transport vehicles and public passenger vehicles.

The website www.healthbreak.ibas.org.au provides information for both operators and commercial vehicle drivers including:
- information about the health requirements for safe driving including the roles and responsibilities of drivers and operators, and the features of the revised medical standards;
- resources to raise awareness of health issues and the driver medical standards amongst commercial vehicle drivers; and
- information on Healthbreak - a free and confidential health check that is available to all transport workers in Victoria. The health checks are done by a nurse at the work-site and will be offered to all transport employees over the next three years.

The campaign will also communicate directly to drivers via a comprehensive media strategy, including print and radio media.

CARRS-Q Researches Drug Driving
Researchers at the Queensland University of Technology's Centre for Accident and Road Safety Research recently collected saliva samples from 1,000 drivers in Townsville. The aim of the research was to find out what drugs were in driver's systems, if any. At this stage of the project the researchers were not looking at the impairment that the drugs might cause. The information gained will be used to assist in the development of education programs focusing on the dangers of drug driving.

Principal researcher Dr Jeremy Davey said that the project did not herald the beginning of random roadside drug testing in Queensland.

Parliamentary Inquiries
1) The STAYSAFE Committee of the NSW Parliament is inquiring into the Roads and Traffic Authority and road safety administration in New South Wales. Submissions close 26/09/2005. For information about lodging submissions, please contact the Committee Secretariat, phone (02) 9230 2161, staysafe@parliament.nsw.gov.au

2) The STAYSAFE Committee of the NSW Parliament is inquiring into speed and motor vehicles: vehicle-based measures to monitor, manage and control speed. This inquiry was established in 2003 to report on issues associated with speed control and motor vehicle design and engineering. Over recent years there has been a heavy emphasis in New South Wales, and in other Australian jurisdictions, on speeding enforcement and on lowering or revising speed limits. It is timely to review the role of vehicle technology in allowing for the better management and control of road speeds. While the inquiry is focused on vehicle systems, it will examine the interface between the vehicle and the road infrastructure, and the driver-vehicle interface. Some matters of interest include the interplay between mechanical engineering and electronics in modern motor vehicle design and construction, and the question of whether the process of introducing new technologies for speed control is best driven by regulation or by market forces. Submissions close 26/09/2005. For information about lodging submissions, please contact the Committee Secretariat, phone (02) 9230 2161, staysafe@parliament.nsw.gov.au

NEW ZEALAND NEWS

New Zealand teen driver tells story of deadly crash
A 15 year-old student, whose reckless driving resulted in the death of two of his passengers, pledged in the Napier High Court to tell his story to teenagers at road safety sessions. Jaye Garnham failed to stop at a red light and slammed into the back of a truck, killing two of his friends and severely injuring two others, all passengers in his car. Jaye also offered to spend a Friday night helping in a hospital emergency department to experience what others had to deal with as a result of such tragedies. Jaye was spared a jail sentence because he was under 17 at the time of the crash. He was barred from driving for three years and sentenced to 200 hours community service. The judge said that sending him to prison, even if it had been possible, would have served little purpose. *(Road Safety New Zealand, September 2004)*

170,000 New Zealanders still not wearing seat belts
A recent Government survey of safety belt use in New Zealand showed a 94% level of compliance, the highest ever recorded. That is an improvement from 1994 when the compliance was at 88%. With some 2.85 million licensed drivers in New Zealand, 6% not buckling up means there are still 170,000 people risking their lives unnecessarily. In 2003 94 unrestrained vehicle occupants died in crashes. Police attending these crashes estimated that at least 41 would have survived had they been wearing their seat belts. The 2004 survey also revealed that men are twice as likely as

women not to buckle up. For full details of the survey visit the website
www.ltsa.gov.nz/research/belts2.html. *(Road Safety New Zealand, September 2004)*

Drink-driving ads that belong in the toilet
A New Zealand Drink-driving advertising campaign has created media interest
throughout the English-speaking world and at least one US state wants to take up the
idea. Urinals in 260 pubs and hotels across the country are the latest unconventional
location for getting the sober driving message through to those who need it most when
they need it most. The place most male drinkers visit at least once on a night out
drinking is now a billboard for anti-drink-driving messages. When men visit the urinal
they see one of two messages – "If you drink then don't drive you're a bloody legend"
or "If you drink then drive you're a bloody idiot". *(Road Safety New Zealand,
October 2004)*
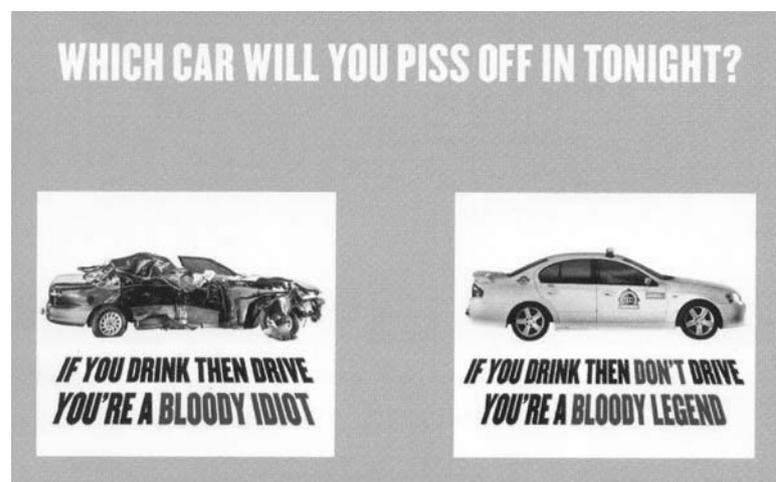
New Zealand's Land Transport Safety Authority merged in new organization
In December 2004 the LTSA was merged with Transfund to form Land Transport
New Zealand. The new authority is under the Ministry of Transport. Wayne Donnelly,
Land Transport NZ's Chief Executive said that the work of Land Transport NZ is not
just about transport. It is part of the country's wider economic and social
development. Mr Donnelly said: "We will know we are being successful when our
partners build and operate good transport systems, users make the system sustainable
and safe, and communities have access and personal security, save energy and are
healthy." *(Road Safety New Zealand, November 2004)*

EUROPEAN NEWS

ETSC stresses enforcement
The ETSC (European Transport Safety Council) is a Brussels-based non-profit
organisation dedicated to the reduction of transport crashes and casualties in Europe.
ETSC seeks to identify and promote effective measures on the basis of international
scientific research and best practice. It brings together 26 international and national
organisations concerned with transport safety from across Europe. The ETSC recently
argued that the EU road safety target could not be reached without increased
enforcement. When Europe's Transport Ministers met recently to discuss road safety,
the ETSC addressed its concerns in a letter to the President of the Council of the
European Union. ETSC stressed that if the objective of halving the number of road

victims by 2010 were to be met, the enforcement of traffic law would need to be given a high priority. According to European Commission estimates, if traffic rules were thoroughly checked and sanctioned, more than 14,000 lives could be saved and 680,000 injuries avoided on European roads each year. ETSC therefore called upon European Transport Ministers

• To account for the progress made so far in implementing the Commission's recommendation on enforcement;
• To promote the use of seat belt reminders and alcohol interlocks, and to stimulate the development and market introduction of intelligent speed adaptation devices;
• To adopt legislation to facilitate the exchange of information on cross-border enforcement of road traffic laws. *(Source: ETSC Dec 2004)*

Fitting Europe's cars with alcohol interlocks?
Alcohol ignition interlock prevents the start of the vehicle motor when a specifiable level of alcohol is detected by the breath alcohol sensor installed in the interlock
A panel of experts met recently in Brussels to discuss the introduction of alcohol interlocks in Europe. The debate demonstrated the existence of still important psychological barriers in society despite higher reliability and technical improvements of most recent alcolocks. "The introduction of alcohol interlocks should be seen as a solution, not a problem. Alcolocks effectively cut the risk of drink driving accidents but still lack the strong political support needed to create wider public acceptance", said Jörg Beckmann, Executive Director of ETSC.

Society often feels uncomfortable at the idea of having alcohol interlocks installed in all cars. It is therefore up to decision-makers to demonstrate how benefits outweigh both the economic and social costs. This will increase public acceptance and bring clarity as to which groups are targeted by the device. Today alcolocks are mainly used with frequent drink driving offenders' rehabilitation programs or with drivers in the commercial transport sector. *(ETSC Safety Monitor Dec 2004)*

Anti-crash radars
Short-range radars that can detect collision dangers and automatically apply a car's brakes should be available by mid-2005, further to a decision adopted recently by the European Commission. The decision, which allocates a specific radio frequency band to short-range radar devices, is the result of a two-year drive by the Commission and EU radio spectrum and road safety experts. To permit the use of short-range radars, an EU-wide radio frequency band had to be made available. As effectively all radio frequencies are already used, the challenge was to enable short-range radar devices to operate in frequency bands at present used for other important purposes, including mobile telephony, weather satellites, radio telescopes and police radars, without impairing their accuracy or reliability.

The use of short-range radar now made possible by the Commission is the first large-scale application of Ultra-wide Band in Europe. From mid-2005 the 24 GHz frequency band will be available for a time-limited period to the use of car radars across the EU. Beyond 2013, by which time the number of cars using SRR may have grown to a level where other wireless services could be affected, new automotive radar applications will be required to use another frequency band (79 GHz).
(Source: Welcomeurope website)

Europe tightens seatbelt laws
In May 2006 seat belts in countries of the European Union will become mandatory for the occupants of all motor vehicles, including trucks and coaches. To make this possible, changes will be made to the technical requirements for seats, seat belt anchorages and seat belt installations. Some issues remain to be resolved regarding side-facing seats in passenger vehicles. Two studies on side-facing seats have produced contradictory results. A study carried out by the Swiss Dynamic Test Centre concluded on the basis of crash tests that lap belts were an appropriate means of mitigating the impact of a frontal collision on occupants of side-facing seats. However, a study conducted by the Cranfield Impact Centre, UK, supported the results of previous UK research, which found that no type of safety belt could offer sufficient protection in side-facing seats. *(ETSC 'Safety Monitor' May 2005)*

EuroRAP results
EuroRAP, EuroNCAP's sister program to assess the safety of road infrastructure, reported in March 2005 its results for the UK road network and the island of Ireland. Comparison shows that the Irish risk rate is similar to that of the UK, which is one of the lowest in Europe. Both ratings show that ordinary single carriageways have the highest collision rate, some six times the motorway rate. In Sweden similar roads have been shown to be far safer. EuroRAP concludes that there are lessons to learn from Sweden in terms of road design and management, including the more widespread provision of crash barriers and '2+1' lane roads. *(ETSC 'Safety Monitor' May 2005)*

ARMAS is coming
Project ARMAS, or Active Road Management Assisted by Satellite, being developed in Europe, has now moved into its second phase and started the design and implementation of a project demonstrator. Final demonstrations will take place in late 2005 in Portugal, Netherlands and Ireland/UK. ARMAS is a system for monitoring vehicles via satellite based on the European Geostationary Navigation Overlay Service (EGNOS). Once complete, the system will allow vehicles to send out emergency calls automatically, and it will help to avoid accidents by notifying drivers of dangers ahead, such as tailbacks and lane changes. Other potential uses are virtual tolling, obstacle detection and intelligent speed advice. *(ETSC 'Safety Monitor' May 2005)*

ROAD SAFETY IN THE AMERICAN CONTINENT

The USA

A website worth visiting is 'Advocates for Highway and Auto Safety' (www.saferoads.org). Quoting from their website: "Advocates is an alliance of consumer, health and safety groups and insurance companies and agents in the USA working together to make America's roads safer. Advocates encourages the adoption of federal and state laws, policies and programs that save lives and reduce injuries. By joining its resources with others, Advocates helps build coalitions to increase participation of a wide array of groups in public policy initiatives which advance highway and auto safety.

"According to the US federal government, each year motor vehicle crashes claim more than 42,000 lives, are responsible for millions of injuries, and cost Americans over $230 billion in property loss, medical and emergency bills, productivity loss, and other costs. Advocates is pursuing policies and standards that will mitigate this wasteful tragedy.

"Advocates' unique alliance combines the perspectives and resources of its member organizations to implement specific strategies for achieving its policy goals. By working with other coalitions and organizations, Advocates helps to maximize effectiveness and avoid duplication of effort on numerous public policy endeavors."

DIARY

Wednesday 27 to Friday 29 July 2005, the Australian Institute of Traffic Planning and Management (AITPM)'s annual conference, "Priority Treatment - Juggling Competing Demands" at the Sofitel, Brisbane. For more information contact Kim Thomas, tel: 08 8410 7488; email: aitpm@aitpm.com

Sunday 7 to Wednesday 10 August 2005, the Institute of Transportation Engineers annual conference, Melbourne. For more information contact Deborah Donald, tel: (03)9811 3111; email: deborah@obrientraffic.com.

14 – 16 November 2005, the Research, Policing and Education Road Safety Conference, Wellington, New Zealand. For information contact Bill Frith: b.frith@transport.govt.nz

RECENT PUBLICATIONS
The following are recent publications from the Monash University's Accident Research Centre (MUARC):

Lenné, M., Triggs, T. & Regan, M. (2004) Cannabis and road safety: A review of recent epidemiological, driver impairment, and drug screening literature, Monash University Accident Research Centre, Report No. 231

http://www.monash.edu.au/muarc/reports/muarc231.html

Symmons, M. & Haworth, N. (2005) Safety attitudes and behaviours in work-related driving – Stage 1: Analyses of crash data, Monash University Accident Research Centre, Report No. 232

http://www.monash.edu.au/muarc/reports/muarc232.html

Clark, B., Haworth, N. & Lenné, M. (2005) The Victorian Parliamentary Road Safety Committee - A history of Inquiries and outcomes, Monash University Accident Research Centre, Report No. 237

http://www.monash.edu.au/muarc/reports/muarc237.html

Newstead, S., Cameron, M. & Watson, L. (2005) Vehicle safety ratings estimated from police reported crash data: 2005 update. Australian and

New Zealand crashes during 1987-2003, Report No. 241
http://www.monash.edu.au/muarc/reports/muarc241.html

Haworth, N. & Mulvihill, C. (2005) Review of motorcycle licensing and training, Report No. 240
http://www.monash.edu.au/muarc/reports/muarc240.html

Senserrick, T. & Haworth, N. (2005) Review of literature regarding national and international young driver training, licensing and regulatory systems, Report No. 239
http://www.monash.edu.au/muarc/reports/muarc239.html

GENERAL ARTICLES

Bicycle Safety – A Reflection (Dr Brian Connor)

It is nearly thirty years since Don Hurnall and his team set up the Geelong Bike Plan. It was a definitive moment in road safety and an "on-the-ground" implementation of the *systems approach* to traffic safety as advocated for many years earlier by Dr Bob Marshall of the Central Missouri State University in Warrensburg, United States of America. Its visibility becomes its strategic advantage. The strategy developed into what became known as the four "E's" of bicycle safety: engineering, education, enforcement and encouragement. This number has since increased to encompass also the "E's" of evaluation, equipment, evacuation and the environment. The basic thrust of this approach is that no one arm of the strategy is effective without adequate support from the others as, for example, education may only work within a framework of consistent enforcement, appropriate engineering, available equipment and sensible encouragement.

Bicycles are one of the most efficient machines ever invented and their technology is now extremely sophisticated. They are capable of speeds well in excess of 100km/hour (Dana Mackenzie, *New Scientist*, 4 December, pp. 36-41). They are a legitimate form of public transport and their use is associated with improved physical fitness. This has important public health implications given the excessive use of fossil fuels in Australia and increasing threats to our largely urbanised environment. There has been a recent suggestion that increased cycling could help offset global warming (Philip Cohen, *New Scientist*, 18 December, 2004, p. 17).

Controversy surrounds the use of bicycles as they are a source of unrecognised danger and there is still poor understanding of their maintenance. A community survey of bicycle injuries in Armidale, N.S.W., over a period of 32 months, from 1986-1989, revealed an average of almost one serious bicycle injury per week. There were more injuries to limbs than to head or face (Brian Connor, "Bicycle safety in Australia", *Australian Family Physician*, Vol. 18, No 11, November 1989, pp. 1429-1431). These figures, if extrapolated for the rest of Australia, would have suggested that there were as many injuries to pedal cyclists as all other road users combined. This was the first such community survey ever performed and it took place before the implementation of legislation for the compulsory use of bicycle helmets. At the time, 15% of road trauma victims admitted to hospital were cyclists. The point about this research was

that these figures compared dramatically with official figures, which reveal a much smaller number of cyclist injuries (eg., 1218 recorded for New South Wales in 2000. Refer to Chris Rissell, Alex Voukelatos, *RoadWise*, Vol. 14, No. 2, p. 8, where it was demonstrated that even official data for bicycle injuries vary and depend on who is doing the reporting). The "take home" message is that bicycle safety is a much bigger issue than we imagine and should be taken far more seriously than it is.

The Bike Plan strategy is the proven approach to the problem but it needs effective implementation. In Australia, this is done best at Local Government level, with consistent and uniform support from the other two levels of Government.

The 8 "E's" approach involves several challenges not least of which is the willingness of various Government Departments and community groups to work together. Road Safety is littered with the effects of territorial wars and, until we learn to help and support each other, we will get nowhere. Likewise Government needs to stop believing its own rhetoric. We have no effective Bike Plans in Australia and yet we have known for over a quarter of a century how to do it. This sort of morality is equivalent to that of the tobacco companies who suppressed information about the ill-effects of cigarette smoking early last century.

Despite constant calls for integration of bicycle safety efforts there still seems to be a lack of understanding of the process. Each aspect of the strategy is distinctive but is related to the others.

(a) Engineering.
This is not just about constructing cycleways. If cyclists are asked to deviate more than 10% out of their way to proceed to a certain destination they will not use a cycleway. Rather, we are talking about the development of a network of usable cycle routes. These routes are aimed at linking all major community venues, which should also incorporate bicycle-parking facilities.

(b) Education.
Despite the plethora of educational materials available in relation to safe cycling, there is no evidence that it is being used effectively. Quantitative research by the Roads and Traffic Authority in New South Wales in 1999 suggested that teachers were happy about the use of this material. Yet, qualitative research in the previous year in the Armidale District revealed that the use of bicycle education material was sporadic, uncoordinated and not evaluated.

Previously we had been able to demonstrate that peer-tuition was an effective way of delivering bicycle safety education to primary school children and that this could be augmented by the incorporation of traffic safety education into teacher training.

(c) Equipment.

The bicycle registration scheme at the New England Traffic Education Centre in Armidale twenty years ago revealed that more than 10% of bicycles had problems with warning devices, reflectors, saddles, or chains. Constant conspicuousness, well-adjusted brakes and adequate lighting are crucial for safe cycling.

The most important piece of safety equipment for a cyclist is an approved helmet. The majority of bicycle injury deaths are due to head injuries and the use of a helmet reduces the rate of head injury by 70%. For Australian conditions, all cyclists must wear approved helmets, at all times. However, there is still confusion about how these helmets should be worn.

(d) Enforcement.
The enforcement of helmet wearing, in the absence of specially designated Police Bicycle Officers, is the responsibility of the general-duties members of the police force. However, they are ambivalent about the application of this law, which is enforced sporadically, if at all.

(f) Encouragement.
All communities should have maps detailing approved cycle routes and places that can be visited by bicycle riders. The use of cycles on public transport should be approved and be free of charge.

(g) Evaluation.
We need to start and to continue evaluating all aspects of bicycle safety promotion. Also, we must be doing this for the sake of our ailing environment.

Road safety is ultimately about power: in the hands of those who use the traffic system and those who control its resources. It is a sophisticated form of institutional violence. In Australia, the issue is even more complicated because of our short term funding cycles. This system makes it difficult to implement and satisfactorily evaluate educational programs where the major cost/benefit ratios might apply.

In Armidale, we attempted to solve this problem by forming a public/private partnership, with the development of the New South Wales Traffic Education Centre. However, the State Government proved unable to honour its side of the commitment with the consequence that the results of over a decade of research into cycling and other traffic user behaviour disappeared.

Until cyclists are seen as legitimate road users, their facilities attract appropriate funding and we learn to work together to support these healthy but vulnerable travellers, we will get nowhere. And that is what the research has shown as well.

Bicycle Education and Safety by Barry Collis

Bicycles have been a major mode of transport for many Australians since their inception in this country. Even though this fact was not recognised by Governments in the early stages of our growth they have made up for this 'oversight' or 'short sightedness' in recent times.

Planning and funding has recognised the bicycle as a real, effective and necessary mode of transport in our developing communities.

As the bicycle is classified as a vehicle in our country our riders should be 'licensed' to operate these vehicles safely. The 'license' should be obtained at school level. The basic fundamentals of any good road safety program are:

- Education
- Enforcement
- Engineering
- Encouragement.

It is said that it is easier to educate children in the ways of Road Safety when they are 'young and vulnerable' rather than when 'older and think they are invincible'. I think any person involved in Road Safety with the younger generation would agree with the above statement.

There is no doubt in my mind that the responsibility for Bicycle Education is the responsibility of the various State Education systems with the support of other Government agencies and Community groups.

We should dispel the myth that all Road Safety can be taught 'online' – especially in the area of bike safety. I firmly believe it is about time that bike safety was included as an essential component of all teacher training courses. I know that Teacher Educators will reject this concept as an imposition and trop out the old line – 'the course is already overloaded' but is it overloaded with practical education segments such as bike education? If teachers are trained as the primary presenters of bike education, then they are also ideally situated to extend this program to the community and involve its members in the delivery of the bike education program, as many people believe that Road Safety is a School Community Issue. Supporting groups for the delivery of bike education could include:

- Police
- PCYC's
- Service clubs
- Retirees
- Parents
- Senior Secondary students.

Any bike education program should be structured on the following lines:

- Road Rules
- Skills
- Safety Equipment
- Practical Maintenance.

The program should be presented in a lesson plan format, not only for ease of presentation but such a structure would encourage non-teachers in the community to use the program, especially if the program is not included in Teacher training programs. If the bike education program is not included in Teacher training programs

it should be included in teacher in service programs and teachers given credit for adding bike education to their profession teaching package.

Special emphasis should be placed on the encouragement of helmet wearing. Even though helmet wearing is mandatory in Australia – the law does not have an effective enforcement component in it for school age children. An ongoing program should be devised and directed at helmet wearing – a program that creates awareness and the necessity for the wearing of helmets to protect a vital part of the body. An incentive system should be an essential component of such a program – young students respond to incentives.

Young children: (1) lack the mental maturity to interpret complex traffic situations; (2) they have poor perception of speed, distance and time; (3) their peripheral vision is not fully developed.

Due to my belief in the above I believe bike education courses should start with nine year olds. Not only should the course be aimed at Primary School but also at lower Secondary as well.

It also amazes me that bike education courses do not include bike education for children with disabilities – some of these children may never ride on the road, some will. The group that will never ride on the road still have a burning ambition to simply ride a bike. This is why we used the following types of bikes to encourage riding by the disabled:
- Different size three wheelers
- Tandem bikes
- Hand propelled bikes
- Side by side bikes.

Children with a disability deserve the right to ride bikes. Whether it is on-road or off-road.

One way to deliver the bike education program is the use of bike trailers. Our trailers were set up as follows:
- 12 two wheelers
- 1 three wheeler
- Basic road signs
- Witches hats – skills
- Helmets
- Bike Ed Program.
- AV. resources.

We used one Special Ed. Trailer – set up as follows:
- 3 different size three wheelers
- 2 different size hand propelled bikes
- 1 side by side bike
- 6 different size two wheelers
- Helmets
- Witches hats
- Special Ed Bike Program.

These trailers were not only used in country areas but also in city schools where most of the students travelled to school by bus or where schools were situated in high density traffic areas where bicycle riding was not the ideal mode of transport.

Bide Ed Programs are a necessary part of a child's education and not something that should be taught only if there is time. I believe that Bike Ed should be the prime responsibility of State Education Departments and as a matter of urgency they should accept that Bike Ed is an

essential component of our students' education and should implement the program in <u>ALL</u> schools, not just in some schools.

SUMMARY:

1. Bike Ed should be the responsibility of State Education Programs with the support of other Government agencies.
2. Bike Ed should be included in Teacher training or Teacher in-service programs.
3. The program should be presented in a lesson format.
4. Special emphasis should be placed on a program for students with disabilities.
5. A greater ongoing awareness incentive program for bicycle helmet wearing should be produced as a matter of urgency to stem falling helmet wearing

(Barry Collis is a long-term member of the Australasian College of Road Safety. His career has included the position of Coordinator, Road Safety Education with the Queensland Department of Education).

Australian Bicycle Council by Rupert Johns
The Australian Bicycle Council has a home page at http://www.abc.dotars.gov.au/

It also has a National Cycling Strategy endorsed by the Australian Transport Council and with an introduction and commitment from the Deputy Prime Minister and Minister for Transport and Regional Services. The National Cycling Strategy is called "Australia Cycling: the National Strategy, 1999-2004" and is currently being renewed.

Objective 4 of this document is "Safety for Cyclists, on and off road, is continuously improved". There are a variety of useful strategies that go with this - see p.11 of the document available at http://www.abc.dotars.gov.au/auscycling.pdf

Unfortunately, there has never been any real commitment to this strategy from the Commonwealth Government and this has meant that not even Strategy 4.6 of Objective 4 (To establish and monitor the casualty rate for cyclists) has been implemented. The last time the Commonwealth did anything useful in this direction was the 1985 INSTAT transport exposure study by FORS. FORS also produced a booklet on cycle safety for children some years back, but it is viewed by most as less than useful. The current ATSB management could be contacted for copies of this document, but there might not be any left.

There are a few stories on their Latest News page - e.g.

http://www.abc.dotars.gov.au/news.htm#ag1,
http://www.abc.dotars.gov.au/news.htm#bfa1
http://www.abc.dotars.gov.au/gnssept2004.htm#bfa2.

Also, attached are some useful resources you might consider. If you require further information, I suggest you ring (02) 9273-3242 (office hours).

The Cyclist

Out on the highway riding my bike,
wearing a helmet and clothing that's bright.
With feet strapped to toe-clips, and gloves on my hands,
I'm off on a journey I'd previously planned.
I'm fully insured, and I've made out a will,
for I'm sure some drivers have a licence to kill.

One by one they go whizzing by;
they haven't a care for you or I.
You know the type -
you've seen them drive -
and this makes you wonder how you're still alive.
The highway to travel is better by far
than the highway to heaven, when you're under a car.

So if you see a cyclist, remember this ode:
Please give them some room as you pass on the road.
Show that you care! Please hear my plea,
For the man on the bike is probably me.

Mostyn Reynolds
The Road Safety Anthology
Christian Road Safety Association

LOCAL GOVERNMENT ROAD SAFETY PROGRAMS

By Cr Paul Bell AM, President, Australian Local Government Association

One of the reasons that fewer people are dying on our roads is that the perception of road safety is changing. These incidents are no longer seen purely as 'a transport problem' but also as a preventable community health issue. With this increasing community focus, local government is now playing a vital role in road safety.

Local roads comprise 85% - by length - of Australia's road network. They are the essential means of accessing homes, businesses, health, education and community services and recreational opportunities. They are a vital component of the residential amenity of our neighbourhoods – and a crucial part of this amenity is safety.

But the pressure on our roads – and on safety – is dramatically accelerating. By 2020:

- Australia's total freight task will almost double;
- Urban passenger trips will increase by about a third; and
- Non-urban passenger travel could rise by about 70%.

This growth will place much greater demands on local transport infrastructure and the safety margins of our road system. To manage this challenge, local government must be a key partner in the efficient and effective planning, funding and delivery of road services.

The 'Roads to Recovery' (R2R) and 'Black Spots' programs are excellent examples of federal and local government partnerships that are providing direct benefits to our community. Increased safety has been a major outcome of the more than 12,700 R2R projects in local government areas. Improving the surface condition, width and alignment of many local roads, upgrading dangerous intersections and better signage, all make a real difference to road safety in our community.

The Australian Local Government Association (ALGA) is a founding partner of the 'SaferRoads' program. ALGA represents local government on a wide range of national road safety bodies and promotes best-practice road safety initiatives across local government.

One of ALGA's major initiatives is the National Local Roads and Transport Congress, which brings together more than 400 elected council members, council officers responsible for roads and transport portfolios, state and federal government senior executives and transport industry representatives from across Australia to discuss essential information on a wide range of local roads issues, including policy, road use, maintenance and funding.

This year's program, themed **Unifying Local Government's Transport Agenda**, will cover a wide range of policy and operational issues for both metropolitan and regional/rural delegates. Local government has achieved a vital extension of the Roads to Recovery program for the next four years. In this period, it will be important to demonstrate effective use of the funds and use the opportunity to strengthen the local transport agenda right across the board.

This Congress will provide thought-provoking debate on options for funding the future roads and transport needs of local government - in particular, how we should

best use our existing resources (especially R2R) to set up a strong case for further transport funding partnerships with all levels of government.

An especially vital partnership is ALGA's membership and advocacy of the SaferRoads' program. This was strongly promoted at the Roads Congress, with AAA Executive Director Lauchlan McIntosh making a strong and well-received presentation on this initiative.

Local government also has a valuable partnership with state governments in providing community-based road safety officer programs. Some examples are:

- The Western Australian Local Government Association co-ordinates the RoadWise Program as an important element of the WA Road Safety Strategy. Since 1994, RoadWise road safety officers have established a state-wide network of local road safety committees in the state's 11 regions. They provide advice and assistance in the promotion of road safety and facilitate the planning, implementation and evaluation of local activities aimed at addressing road safety priorities.

  Funding is provided for projects such as the Local Area Targeted Enforcement program, Speed Alert Mobile projects, Driver Reviver Stops, and Belt Up and Win. Annual awareness raising activities such as the White Ribbons for Road Safety Christmas campaign and the Blessing of the Roads Easter campaign are also supported by the community road safety network.

- In NSW, the Local Government Road Safety Officer program is a collaborative approach for achieving road safety in NSW councils. Initiated in 1992, the program brings together the Roads and Traffic Authority, the Institute of Public Works Engineering Australia (NSW Division), the Local Government Association and Shires Associations of NSW, the Motor Accidents Authority and council road safety officers.

  The program delivers behavioural, enforcement and educational strategies which complement engineering and planning solutions that address local road safety problems. There are currently 101 participating councils and 78 road safety officers, with 33 councils from the Sydney metropolitan area and 68 in regional areas.

These initiatives illustrate the active partnerships used by local government to promote road safety. ALGA's membership of the 'SaferRoads' program, its support of road safety research and councils' development of safer road infrastructure, all combine to help deliver safer communities and reduce road trauma across Australia.

International Technical Conference on Enhanced Safety of Vehicles – report by A/Prof Raphael Grzebieta

I would like to relate my impressions from attending the International Technical Conference on Enhanced Safety of Vehicles held in Washington DC in June 2005. Over 30 Australian experts and students attended the conference this year. Australia is regarded as one of the world's leaders in vehicle safety, with very strong participation in ESV conferences. The major portion of this reputation can be attributed to the Australian NCAP program that to a large extent rejuvenated focus on vehicle

crashworthiness safety around the world. This reputation was also established on the basis of the introduction of Australian Design Rules (ADR's), regulations and standards that have led other countries in terms of vehicle crashworthiness and safety such as: bus rollover, seat anchorage and lap sash seat belt requirements; mandatory seat belt wearing; and child restraint systems to name a few.

ESV conferences are, without doubt, one of the world's foremost events in the field of motor vehicle safety research. The conferences are instigated by the US Department of Transportation, National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Research. They are usually run every two years and hosted by a participating Government from one of a number of member countries. Australia is a key member. Delegates and attendees to the conference include representatives of different government regulatory authorities, automotive industries, motor vehicle research engineers and scientists; medical, insurance, and legal professions; consumers; academia; private corporations; and international media.

As an aside some College members and people who contact the College often wonder why a particular safety feature, e.g. non seat belt wearing warning buzzer, is not immediately introduced into the ADR's. The excuse usually presented by the Government of the day is that Australia must harmonise its vehicle regulations with the rest of the world through various Treaties. The following short history of the ESV conference program and its origins quoted from the ESV website provides some enlightenment in regards to this issue:[1]

"…The ESV Program originated in 1970 under the North Atlantic Treaty Organization (NATO) Committee on the Challenges of Modern Society, and was implemented through bilateral agreements between the governments of the United States, France, the Federal Republic of Germany, Italy, the United Kingdom, Japan, and Sweden. The participating nations agreed to develop experimental safety vehicles to advance the state-of-the-art technology in automotive engineering and to meet periodically to exchange information on their progress. Since its inception the number of international partners has grown to include the governments of Canada, Australia, the Netherlands, Hungary, Poland and two international organizations – the European Enhanced Vehicle-safety Committee, and the European Commission.[2] A representative from each country and organization serves as a Government Focal Point in support of the Conference.
In 1971, the Conference was known as the International Experimental Safety of Vehicles Conference. Over time, the focus of the Conference shifted from concentration on the development of experimental safety vehicles to broader issues of safety and international cooperation seeking reductions in motor vehicle fatalities and injuries. These issues include program advances such as Pedestrian Safety, Frontal and Side Impact Protection, Biomechanics, Intelligent Transportation Systems, and Vehicle Compatibility. In 1991, the participating governments agreed to change the name of the Conference to "The International Technical Conference on the Enhanced Safety of Vehicles" to reflect the current focus….

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[1] http://www-nrd.nhtsa.dot.gov/departments/nrd-01/esv/esv.html
[2] Korea has just recently become a member.

…The 15th ESV Conference, held in Melbourne, Australia, May 1996, was precedence-setting as well. A new 5-year priority research program known as International Harmonized Research Activities (IHRA) was established under the auspices of the ESV Conference. The program established six international priority research areas: Biomechanics, Advanced Offset Frontal, Crash Protection, Vehicle Compatibility, Pedestrian Safety, Intelligent Transportation Systems, and recently chosen Side Impact Protection. In May of 1997, NHTSA hosted a Public Workshop to share with its partners the goals and objectives of IHRA. In November of 1997, the ESV Government Focal Points agreed that all participating governments would join in these priority research programs, and that the programs would be governed by an IHRA Steering Committee comprised mainly of the ESV Government Focal Points. Five Working Groups that now exist in each of the priority research areas are led by participating Governments and are comprised of government and industry experts. The IHRA Steering Committee consisting of Government members meets biannually to review recommendations and research plans being developed by the Working Groups.

It was interesting to note that at the last Conference in Nagoya Japan in 2003, the IHRA program was evaluated and their vision, goals, and objectives for the future were discussed in a special IHRA Panel session. Some conference delegates highlighted that little progress was being made over the past 7 years and that the NCAP program was achieving much more in terms of progressing the implementation of crashworthiness and safety systems into vehicles than any Government regulations have been able to address to date.

This years ESV conference in Washington DC was no different in terms of strong debate between Government regulators, vehicle manufacturers and road safety advocates and professionals. The two main issues that evolved from the conference from my perspective of proceedings was the rapid growth of on board intelligent vehicle active safety systems. Manufacturers were quick to point out that such systems were going to overcome many of the problems confronting governments in trying to reduce road trauma. However road safety advocates were quick to respond that whilst such systems would address a large proportion of fatalities and serious injuries, they should not be considered as a substitute for passive safety systems.

An example case-in-point presented dealt with vehicle rollover. The introduction of electronic stability control (ESC) was being lauded as another silver bullet in terms of reducing rollover crashes. There are currently more than 42,000 road fatalities per annum in the USA of which more than 31,000 are vehicle occupants and of those fatalities more than 10,000 result from rollover crashes! However road safety advocates again emphasised that ESC would not eliminate all rollover crashes and that passive safety systems will still be required and urged governments to begin to consider urgent introduction of effective rollover crashworthiness regulations. It was also pleasing to see from the conference presentations that there was considerable research activity occurring in Europe and in the US related to development of roll over crashworthiness passive safety systems and proposed test procedures.

As a final activity of the ESV conference, a tour of the Insurance Institute of Highway Safety (IIHS) impressive crash test facilities in Charlottesville Virginia.[3] IIHS retains a number of vehicles for visitors to inspect and assess how vehicle manufacturers have responded over the past decade to IHHS crash testing with the introduction of passive crashworthiness systems. Delegates were treated to a side impact crash test after touring their extensive facilities.[4] Some photographs of the large Australian NCAP delegation touring the facility are shown below.

At the IHHS side impact demonstration crash test. Left to right: Ross McArthur (Vicroads), Michael Case (RACV) and Raphael Grzebieta (ACRS).

In front of the now famous 1997 Pontiac Trans Sport vehicle that demonstrated poor structural crashworthiness survival space in an offset crash. Left to right: Valeri Melik (Autoliv), Jack Haley (NRMA), Ross McArthur (Vicroads), James Hurnall (AAA) and Chris Coxon (Transport South Australia).
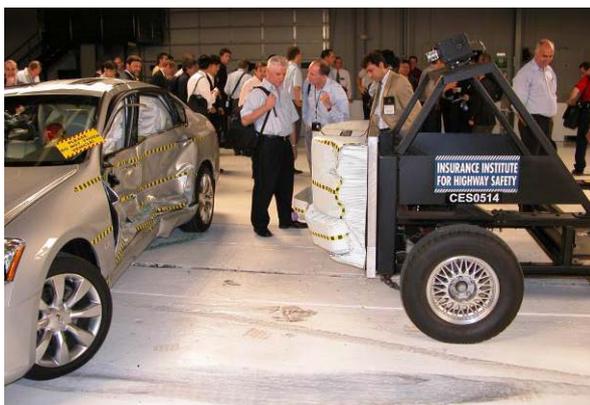
Inspecting the results of the IHHS side impact demonstration crash test. Forground left to right: Ross McArthur (Vicroads), Chris Coxon (Transport South Australia), Valeri Melik (Autoliv), Michael Case (RACV).

Jack Haley (NRMA) pointing out features of the IHHS's elevated movable crush barrier to Michael Case (RACV) with Lauchlan McIntosh (AAA) in the background looking on.

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[3] See http://www.hwysafety.org/vehicle_ratings/vrc.htm
[4] http://search.hwysafety.org/news_releases/2005/pr060505.htm

Managing risk in a workplace bicycle pool

By C Rissel* and B Telfer**

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Abstract

The health benefits of cycling are greater than the risk of injury. For organisations to promote cycling through workplace related activities, a risk assessment and risk management plan is necessary. This paper describes how the risks associated with establishing a bicycle pool were managed, to facilitate cycling by staff for work-related activities. This includes conducting a risk assessment, developing control strategies for hazards identified and writing a bicycle use policy. Specific bicycle pool procedures were developed which include health screening and checking bicycle-riding proficiency of potential users. This package of policies and procedures supports organisations in encouraging cycling by staff within a risk management framework.

Introduction

There are many health reasons why cycling should be encouraged. Cycling improves cardiovascular fitness, uses all the major muscle group, strengthens bones and helps prevent osteoporosis, improves circulation, reduces cholesterol levels, relieves the effects of rheumatoid arthritis and like all physical activity, helps people cope better with stress.[1] A number of cohort and case-control studies have found substantial health benefits associated with regular riding. In a large cohort study involving 30,000 people in Denmark followed over 14 years, bicycling to work decreased the risk of mortality 40 per cent after taking into account leisure time physical activity.[2] In a another cohort study involving 21,000 people in Finland followed over 12 years, people who spent more than 30 minutes a day cycling to and from work had close to a 40 percent lower risk of developing diabetes.[3] In a case-control study in Germany with 1246 pre-menopausal women, frequent cycling was associated with a 34 per cent reduction in breast cancer.[4]

While there are no reliable measures of cycling frequency in Australia, in 2003, cycling was the fourth most popular physical activity among people aged 15 years and older, with nine per cent of the population cycling at least once.[5] Sixty two per cent of children aged between five and 14 years cycled at least once in the year to April 2003.[6] Only about one and a half per cent of the population cycled to work all or part of the way on census day 2001.[7] Further, almost 50 per cent of Australians are not physically active at a level that is beneficial to health.[8]

A common barrier frequently mentioned by people who would like to cycle but do not, is concerns about safety. In the UK, about 140 people are killed each year while riding a bike (almost always involving cars) while around 20,000 others die prematurely from lack of any exercise.[9] In Australia in 2003, 26 people were killed while riding a bicycle,[10] with physical inactivity estimated to contribute to the risk of death of 6,400 deaths per annum in Australia

from CHD (Coronary Heart Disease), NIDDM (Non-Insulin Dependent Diabetes Mellitus) and colon cancer, and up to 2200 more due to other conditions, including breast cancer and stroke.[11] After balancing the benefits of physical activity from cycling and the risk of injury, the British Medical Association concluded that the benefits clearly outweighed the risks.[12] This assessment that the benefits of cycling outweigh injury risks has also been recently endorsed by the Australian Transport Safety Bureau.[10] Every form of human movement involves some degree of health risk, but inactivity is the greater health problem.

One strategy for encouraging higher levels of cycling is to replace motor vehicle trips of up to five or 10 kilometres with bicycle trips. In some traffic conditions, particularly inner-city areas, the bicycle trip can be quicker than driving a car and finding parking. While bicycle commuting can be readily taken up for the journey to and from work, use of a bicycle during the work day is far less common. Where staff need to attend meetings at various sites, the bicycle is not usually the first choice of transport mode.

For adults, self-reported barriers to cycling include the perceived effort required (for example, 'cycling takes too long', 'not fit enough'), perceived traffic danger, adverse weather, unsupportive cycling environments (for example, pollution, traffic volumes, poor quality on-street measures), lack of end of trip facilities (for example, showers, lockers, secure cycle parking), difficulty taking bikes on public transport, theft of equipment, lack of cycling information and skills, compulsory helmet wearing and that in some societies people perceive cycling to be associated with low social status, or to be a pre-driving form of transport.[13] Societal level barriers to people cycling include transport and planning policies and cultures that give priority to the motor vehicle, poor urban planning and land use mix resulting in people residing long distances from work, school and other facilities, poor connections between passenger transport systems and lack of cycle infrastructure.[14,15] Possibly one of the biggest barriers to cycling during work or as part of work-related travel is the perception by managers that cycling is dangerous. While cycling may not be possible in all circumstances, many of the barriers can be overcome.

The following bicycle pool procedures were developed as a result of establishing two bicycle pools, one at Rozelle Hospital and the other at the Health Promotion Unit, Central Sydney Area Health Service.

Risk Assessment
With the recent changes in the Australian insurance industry and increased threats of litigation, almost every activity an organisation supports must have a risk assessment and a risk management plan. Risk management strategies around establishing a pool of bicycles for use by staff for work-related activity are no different from those associated with the introduction of any new program into the workplace. In the first instance the level of risk needs to be assessed, and a decision made that the possible risks once controlled for are outweighed by the benefits. It is recommended that a working group be established which includes an Occupational Health and Safety representative and someone with skills in risk assessment. Table I illustrates a standard risk assessment grid.[16]

Table I: Risk Level Chart

1. How severely could it hurt someone?	2. How likely is it for the hazard to cause harm?			
	Very likely - Could happen frequently	**Likely -** Could happen occasionally	**Unlikely -** Could happen, but rare	**Very unlikely -** Could happen, but probably never will
Kill or cause permanent disability	1	1	2	3
Long term illness or serious injury	1	2	3	4
Medical attention and several days off work	2	3	4	5
First aid needed	3	4	5	6

A number 1 indicates the highest risk level and a number 6 being lowest.
The numbers show you how important it is to do something – HIGH, MEDIUM or LOW priority.
1 indicates HIGH PRIORITY - controls must be implemented.
6 indicates LOW PRIORITY - do something when reasonably possible

For those risks that are identified, a strategy needs to be put into place to address it. The essence of risk management is to identify, describe and quantify possible hazards and associated risks so that they can be minimised as much as possible. A cycling specific hazard assessment developed for the Central Sydney Health Promotion Unit is given in Appendix 1. For each risk that is identified, a strategy needs to be put into place to address it. For example, the likelihood of an injury to a rider from a bicycle not being sufficiently maintained, leading to malfunction of the bike while riding is likely, and the consequences could be severe. Therefore a number of risk control measures need to be set into place, including procedures for bicycling or work such as regular maintenance, procedures for and organisation of cycling proficiency training where necessary, and specific procedures for operating bicycle pool that include reporting mechanical problems. As would be expected to satisfy organisational concerns about a bicycle pool for work-related travel by staff, a number of policies and procedures need to be established.

Two substantial sources of risk that the organisation can somewhat directly manage focus on the cycling skills of the user and their ability to ride confidently, and the health and fitness of the user. Therefore, less experienced rides may need to complete a cycling proficiency course, and all potential users need to complete a standard health risk assessment and a job demands checklist (which involves assessing the ability of a potential rider to perform the mechanical aspects of riding a bicycle).

Responsibilities of Employers and Employees
Prior to the introduction of a cycling for work program, employers and employees need to consider their respective responsibilities and duties under the legislative framework that the Commonwealth, State and Territory governments have in place that may cover such activity.[17] A general duty of care is imposed on both employers and employees by the various occupational health and safety legislation. Workers' compensation legislation varies across the jurisdictions as to "at work" coverage and may impact on employer obligations and employee entitlements if injured while cycling to or from work. The duties of road users also need to be taken into account.

To set up a bicycle pool, procedures for use will need to be established. The aim of these procedures is to:

- ⚲ Provide a safe and supportive bicycling environment for employees, and other persons working in or visiting the organisation using a risk management approach.[16]
- ⚲ Ensure that a systematic approach is taken to minimise all hazards and associated risks that may arise from operating a bicycle pool for employees.
- ⚲ Specify the procedures (both preparatory and operational), provisions and resources necessary for the safe operation of a bicycle pool for employees.

Employers

Employers have a duty to provide and maintain, as far as practicable, a safe working environment free of risks to the health and safety of employees.[17] In the interests of contributing to the welfare of their employees who undertake to cycle for work, some areas employers may wish to consider are:

• ensuring that any equipment and facilities provided for employee cyclists are safe to use and free from risk of injury;

• promoting the use of appropriate safety equipment, such as helmets;

• providing appropriate storage facilities for bikes and equipment;

• providing bicycle and road safety information;

• encouraging cyclists to seek medical advice before commencing a program.

• encouraging cyclists to attend relevant training.

Employees

Employees also have a duty to take reasonable care of their own health and safety.[17] Employees participating in cycling for work programs must:

• take all reasonable precautions to protect their own safety and that of other road users and/or employees

• wear helmets and other safety equipment

• cycle in a manner consistent with road and bicycle safety guidelines

• use facilities provided in the manner intended, and

• ensure equipment is maintained at a safe standard

• be in sufficient health to participate in moderate intensity physical activity

To establish a work-place bicycle pool within a risk management framework, planning needs to address organisational and policy issues, equipment safety, user issues and evaluation.

Organisational and policy issues

To support a bicycle pool within the workplace, the management of the organisation need to endorse it, and provide sufficient resources for it to be safely managed. This includes a written statement of policy (see Appendix 2 for an example). It is important that there is written evidence of support for the bicycle pool, its intentions and any limitations around its use. This helps to protect both the organisation and the user if something were to go wrong. A written policy is particularly useful if there is a change in personnel or new staff.

The clear delineation and documentation of roles, such as a bike pool coordinator, is also important. Someone needs to be designated as responsible for ensuring maintenance is performed regularly and when a hazard is reported. One role, that of conducting a hazard analysis (Appendix 1), is an essential part of the preparatory work that needs to be completed before the bicycle pool can become operational.

Equipment safety

One critical element of management support that intersects with equipment safety is the allocation of resources. Managers need to approve the purchase of resources and equipment required, including bicycles, helmets, locks, repair kits and tyre pump. Ongoing regular

maintenance and replacement of worn equipment is essential to minimise hazards and reduce liability. More than simply the hardware required for functioning, sufficient space and secure storage is needed, as well as the time needed by the bicycle pool coordinator to complete relevant tasks.

User issues

One element of the risk of a bicycle pool revolves around the bicycle user. The user needs to be healthy enough to ride a bicycle, and to ride it in a safe and responsible manner. To use the bike pool people must be in sufficient health to participate in moderate intensity physical activity, determined by completion of the standardised assessment such as the revised Physical Activity Readiness Questionnaire[18] (r-PARQ) and/or a medical assessment. Further, the user must be able to meet the demands of cycling, specified in a job demands checklist for cycling, which is list of all the physical movements required for cycling, the frequency of these movements and an assessment of whether the user is able to perform the actions without assistance.

When a potential bicycle pool user is not experienced riding a bicycle, they need to complete some kind of cycling proficiency (skills) training. These courses are now offered by some community colleges or private coaches. All users need to attend a bike pool induction session, which provides information on how users can borrow a bike and what they need to do if something goes wrong with a bicycle or piece of equipment. Users must agree to comply with all safe bicycle pool procedures and other relevant policies.

Accessing the Bicycle Pool

To set up a viable bicycle pool it is important that the various steps for potential users to gain access are as clear and easy as possible. These steps may vary to some extent from organisation to organisation.

Step 1: Employee interested in using the bike pool contacts the bicycle pool manager or designated administrative officer.

Step 2: Employee completes the Physical Activity Readiness Questionnaire and Cycling Demands Checklist forms prior to bike pool induction. A medical assessment may be required if warranted due to poor health (see Table 2).

Step 3: Employee complies with the action/s recommended by the bike pool manager, based on screening results. Where necessary, employee must provide bike pool manager with medical certificate and/or complete cycling proficiency training.

Step 4: Employee completes bike pool induction and registers to use the bike pool. Employees agree to comply with the safe bike pool procedures and other relevant policies and procedures. A bicycle pool Induction Session could include: bicycle pool registration, review of the cycling policy and bike pool procedures, review of road rules, bicycle user checklist, recommended cycling routes and end-of-trip facilities. Safe bicycle pool procedures cover daily operational procedures for users of the bike pool, including pre-ride bike checklist and what an employee should do in the event of experiencing a bike malfunction while cycling en-route.

Step 5: Employee approved to use Bike Pool.

The employee must comply with all cycling and other relevant policy and procedures. If an accident or incident arises from use of the bike pool or from cycling, the usual accident/incident management systems are to be complied with. Participation in evaluation related data collection should be required as necessary.

Table 2. Bike pool screening results and corresponding recommendations for bike pool use

Screening results	Corresponding action recommended by Bike Pool Manager
1. Health screen indicates employee to be in sufficient health to participate in cycling. Job Demands Checklist for Cycling indicates the employee is currently capable of meeting the demands of cycling.	1. Complete Bike Pool Induction and registration form. Approved to use bike pool. Must agree to adhere to all relevant cycling procedures.
2. Health screen indicates employee to be in sufficient health to participate in cycling. Job Demands Checklist for Cycling indicates that the employee is currently unlikely to be able to meet the demands of cycling.	2. Refer employee to Cycling Proficiency Training course (CPT). Employee must be able to ride a bicycle in order to participate in group-based CPT. Following completion of CPT the employee is eligible to attend a Bike Pool induction session and register to use the bike pool, unless the CPT trainer determines that the employee is unlikely to be safe to cycle for work.
3. Health screen indicates employee needs to be assessed by medical doctor before becoming more physically active. Job Demands Checklist for Cycling indicates the employee is currently capable of meeting the demands of cycling.	3. Employee instructed to seek a medical assessment with staff health services or a general medical practitioner. The employee will be given a copy of their health screening result to take to a doctor. Employee to provide bike pool manager with medical certificate deeming them medically fit to participate in cycling. Once medical clearance is attained the employee is eligible to attend a bike pool induction session and register to use the bike pool. The bike pool manager will recommend that the employee complete Cycling Proficiency Training (CPT) prior to attending a bike pool induction session, however, this is not a compulsory requirement.
4. Health screen indicates employee needs to be assessed by medical doctor before becoming more physically active. Job Demands Checklist for Cycling indicates that the employee is currently unlikely to be able to meet the demands of cycling.	4. Employee instructed to seek a medical assessment with staff health services or their general medical practitioner. The employee will be given a copy of their health screening result to take to a doctor. Employee to provide bike pool manager with medical certificate deeming them medically fit to participate in cycling. Once medical clearance is attained the employee is referred to and must complete Cycling Proficiency Training (CPT). Employee must be able to ride a bicycle in order to participate in group-based CPT. After completing CPT the employee is eligible to attend a Bike Pool induction session and register to use the bike pool, unless the CPT trainer determines that the employee is not safe to cycle for work.

Evaluation

It is highly desirable that the bicycle pool coordinator monitor, evaluate and improve the quality and operation of the bike pool on a continuing basis. Factors to be investigated may include:

- Staff use of, and perceptions of, the bike pool
- Impact of the bike pool on staff cycling and physical activity levels
- Validity of cycling procedures
- Compliance with these procedures and the safe bike pool procedures.
- Safety and maintenance of bike pool equipment
- Safety and supportiveness of the on-site cycling environment
- Review of risk management systems and incident/accident management

Staff feedback will be an invaluable source of information about how easy it is to use the bicycle pool and any problems they may have encountered. To our knowledge there are currently no published evaluations of the process or impact of establishing a workplace bicycle pool.

Supporting Cyclists

Despite there being few Australian evaluations of how to increase cycling in general, the lessons learned from European countries that have substantially increased levels of cycling are very clear.[19,20] They are in practice consistent with the (unfunded) national cycling strategy for Australia[21] as well as state bicycle policies,[22] although the European models go much further with legislative support that favours pedestrians and cyclists. The

recommendations of the NSW Childhood Obesity Summit, Transport Section,[23] also follow similar lines.

The major areas of general policy that can be influenced to encourage cycling include:
- Mixed land use policies that encourage homes and workplaces to be closer together
- Lower motor vehicle speeds
- Area-wide traffic calming measures
- Increased technical skills regarding the construction of cycling infrastructure by local civil engineers and town planners
- Dedicated bicycle lanes (off-road and on-road), that are clearly signposted and marked
- Connecting bicycle lanes with good intersection treatments, including 'bicycle streets' where bikes have right of way
- Seamless connections between cycle ways and public transport
- End of trip facilities (for example, secure bicycle storage, showers and change rooms)
- Extensive driver education
- Enforcement of traffic regulations that heavily favour pedestrians and cyclists (even when pedestrians and cyclists do the wrong thing)
- Restrictions on motor vehicle use, including limited parking

Workplaces can primarily support cycling by providing suitable end of trip facilities for their employees. This should be considered a minimum. Other ways that workplaces can support cycling is by using their corporate citizen status to lobby local and state government for appropriate bicycle paths and lanes to connect to their facilities. They can work with existing community-based bicycle user groups to provide information and resources to employees about where suitable bicycle paths and suggested routes are (for an example of a bicycle specific transport access guide see www.cs.nsw.gov.au).[24] Again with existing users, workplaces can organise 'commuter discovery' rides that take people wanting to cycle to work on rides to demonstrate the most bicycle friendly routes. Another variation on this approach is to support the organisation of a 'bike bus', where several riders meet along a particular route at different points and ride together.

Conclusion

Organisations wishing to establish a bicycle pool to support staff cycling need not be deterred by concerns of employer liability if a bicycle pool is established within a risk management framework. Appropriate policies and procedures are needed to ensure that all potential hazards have a matching risk reduction strategy. Staff are highly likely to appreciate the option of being able to cycle as part of work, and are likely to follow the recommended safety procedures because it is in their interests to do so.

Acknowledgement

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Appendix 2: Cycling Policy (example)

1.   Policy:
1.1 Central Sydney Area Health Service Health Promotion Unit (CSAHS HPU) has a commitment to achieve and maintain the best possible standard of health, safety and welfare for all staff, patients and visitors, and other persons working in or visiting its premises.

1.2 CSAHS HPU is committed to:

- ensuring safe and supportive cycling conditions and practice for staff and other persons working in or visiting its premises
- promoting and supporting cycling as a form of active transport among staff and other persons working in or visiting its premises.

1.3 CSAHS HPU will use a Risk Management framework to:

- plan and implement procedures and provisions to ensure safe bicycling conditions and practices; and

- monitor, evaluate and control risks associated with:

    - Cycling for work including the journey to work
    - Operating a bicycle pool for employees
    - Conducting of, or referral to, cycling proficiency training (CPT)

1.4 CSAHS HPU will work with relevant stakeholders to:

- provide safe and secure bicycle parking that is in reasonable proximity to major entry points of CSAHS facilities.

- increase provision of end-of-trip facilities across CSAHS, including provision of bicycle parking and lockers, showers and change rooms for employees.

- provide a bicycle pool and ensure the safety of HPU staff and property in relation to the operation and use of a bicycle pool.

- conduct or provide referral to cycling proficiency training for employees

- ensure the safety of staff and property when CSAHS staff or others participate in cycling proficiency training or other cycling activities provided by CSAHS.

- promote cycling and ensure the safety of CSAHS staff and property when employees cycle for work.

- improve the environmental conditions for cycling, such as the provision of dedicated on and off road cycle paths.

1.5 CSAHS HPU will ensure that cycling procedures and programs comply with all relevant legislation, policies and Australian Standards.

1.6 Management will consult and work with employees and cycling representatives to achieve continued improvements in workplace health and safety for cycling using risk management strategies. Every reasonable effort will be made in the areas of:
- safety and security;
- accident prevention and injury protection;
- health preservation and promotion;
- rehabilitation of injured employees.

1.7 The safety of staff and property when employees ride any bicycle for work purposes, including cycling on the journey to and from work, is a joint responsibility of management and staff.

1.8 The Cycling Policy is to be read in conjunction with Procedures for cycling for work, Procedures for operating a bicycle pool for employees of CSAHS HPU, Procedures for Conducting Cycling Proficiency Training, and all other relevant CSAHS and Division of Population Health Polices and Procedures.

2.   **Responsibility for implementation:** Director of the Health Promotion Unit, CSAHS.

3.   **Enquiries:** Enquiries relating to this policy and its implementation should be directed to the Director of the Health Promotion Unit, CSAHS.

4.   **For further information, see also:**
- Procedures for cycling for work
- Procedures for operating a bicycle pool for employees of CSAHS HPU.
- Procedures for conducting cycling proficiency training
- Division of Population Health OH&S Policies and Procedures
- Standards Australia Guidelines for Managing Risk in Sport and Recreation HB 246–2002
- NSW OHS Act 2000
- NSW OHS Regulation 2001
- NSW RTA Cycling to work, works! Available at www.rta.nsw.gov.au.

Appendix 1: Sample Hazards Assessment Table for cycling for work

Cycling on journey to and from work 'sub-activities'.	Possible hazards arising from each 'sub-activity'	Likelihood	Consequences	Estimate of level of risk*	Risk control measures and methods op
Employees riding as part of a workday i.e. for work	Injury to rider from riding bicycle in motor traffic	Unlikely	Rider- Kill or cause permanent disability or ill health Property damage Bicycle damage, write-off	2	Cycling Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP) Job demands checklist for cycling for wo
	'Road rage' towards employees on bikes causing injury to rider	Likely	Rider- Kill or cause permanent disability or ill health	1	As above
	Injury to rider due to contact with a moving motor vehicle	Unlikely	Rider- Kill or cause permanent disability or ill health	2	As above Work with local BUGs and councils, NS
	Injury to rider due to underlying health conditions being exacerbated due to riding	Unlikely	Rider- Kill or cause permanent disability or ill health	2	Pre-participatory (CPT and use of bike p Questionnaire (r-PARQ). When indicated medical certificate prior to joining CPT o As above
	Injury to pedestrian from contact with moving bike	Unlikely	Long term illness or serious injury	3	Cycling Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP) Job demands checklist for cycling for wo
	Injury to rider due to a fall from a bike.	Likely	Long term illness or serious injury	3	As above Screening
	Injury to rider from sustaining a tyre puncture	Unlikely	Medical attention and several days off work	4	As above
	Injury to rider from rider's clothing becoming caught in bike parts.	Likely	First aid needed	4	As above
	Injury to rider from riding with unsuitable footwear	Unlikely	First aid needed	5	As above
	Injury to rider from loss of balance, due to riding a bike while also carrying items.	Unlikely	Long term illness or serious injury	3	As above
	Injury to rider from not complying with road rules	Likely	Rider- Kill or cause permanent disability or ill health	1	As above

Cycling on journey to and from work 'sub-activities'.	Possible hazards arising from each 'sub-activity'	Likelihood	Consequences	Estimate of level of risk*	Risk control measures and methods op

Riding in wet conditions	Cold exposure due to employees getting wet.	Unlikely	First aid needed	5	Cycling Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP) Employees discouraged from riding in w
	Injury to rider associated with riding in poor weather conditions	Likely	Rider- Kill or cause permanent disability or ill health	1	Employees discouraged from riding in w Cycling Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP)
Riding in hot sunny weather	Dehydration	Unlikely	First aid needed	5	Riders encouraged to stop and drink fluid
	Sun burn	Unlikely	First aid needed	5	Riders encouraged to apply sun protectio
Bike maintenance	Injury to rider from bicycle not being sufficiently maintained, leading to malfunction of bike while riding	Likely	Rider- Kill or cause permanent disability or ill health	1	Cycling Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP)
	Injury to rider due to derailment of chain en-route.	Likely	First aid needed	4	As above
	Injury to rider due to repairing a tyre puncture en-route.	Likely	First aid needed	4	As above
Cycle route selection	Injury to rider from riding on high volume high speed roads	Likely	Rider- Kill or cause permanent disability or ill health	1	As above Provision of maps for staff who ride with each of the CSAHS sites. Assistance provided to staff who cycle to Sydney destinations.
Wearing a helmet while cycling.	Injury to rider from riding without a helmet	Likely	Rider- Kill or cause permanent disability or ill health	1	Policy that all staff must wear helmet at a Policy Procedures for bicycling or work Procedures for and provision of Cycling Procedures for Operating a Bicycle Pool Safe Bike Pool Procedures (SBPP)
Project / Administration Risk	Injury to CSAHS employee hit by bicycle	Unlikely	Legal action against CSAHS; Program failure, Financial loss	2	Cycling policy and procedures Workers compensation covers the emplo
	Injury to non-CSAHS employee hit by bicycle	Unlikely	Legal action against CSAHS; Cycling program failure, Financial loss	2	Cycling policy and procedures CSAHS Third Party Insurance covers the
	Injury to CSAHS employee while riding a bike	Likely	Legal action against CSAHS; Cycling program failure, Financial loss	2	Cycling policy and procedures Workers compensation covers the emplo
	Staff not participating in the program due to lack of 'end of trip facilities', such as lack of secure bicycle lockers, shower facilities, personal lockers, ironing facilities, on-site signage to warn motorists of cyclists presence, etc.	Likely	Cycling program failure	5	Promotion of cycling and communication Cycling policy and procedures CSAHS Travel Action Working Group to infrastructure for cycling, such as provid: Job Demands Checklist for cycling (JDC Provision of Cycling Proficiency Trainin Site specific, end-of-trip-facility audit. Transport Access Guides for each CSAH CSAHS Active Transport Policy and Pla Central Sydney Cycling Map
	Bicycles parked inappropriately and in way of pedestrians or vehicles.	Likely	Personal injury to pedestrian; Complaints; Program failure; Property damage. Legal action against CSAHS, financial loss.	4	Provision of secure bike parking facilities Cycling policy and procedures CSAHS Third Party Insurance
	Parking bicycle		potential property damage, damage to bicycle and personal injury	5	As above CSAHS Travel Action Working Group to facilities.
	Loss of property due to inadequate bicycle security at the rider's destination site.			5	Cycling policy and procedures CSAHS Travel Action Working Group to facilities.

* Estimate of level of risk determined using the Central Sydney Area Health Service's Hazard Analysis matrix (accessed November 2003). Produced by the Rozelle Hospital cycling working group and adapted by the Central Sydney Health Promotion Unit cycling working group, February 2004.

An Overview of Bicycle Crashes and Injuries in Western Australia

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Abstract

The aim of this study was to examine the trends in bicycle crashes in Western Australia. Police reports and hospital admissions from the Western Australian Road Injury Database for the period of 1987 to 2000 were analysed. There were 11,114 crashes reported to police involving 11,385 cyclists over the study period. Of these cyclists 81 were fatalities and 1,851 hospitalised. There was a significant decrease in the number of police reported crashes involving cyclists, from 1,012 in 1987 to 612 in the year 2000. The hospital admissions data shows a different trend. Over the study period 9,878 cyclists were admitted to hospital, increasing from 630 in 1987 to 913 in 2000. It was concluded that the use of both police reports and hospital admissions data is crucial to providing an accurate picture of bicyclist crashes. Serious cyclist injury seems to be under-reported in the police data. This is highlighted with the reduction in the number of bicycle crashes reported in the police data, compared to the significant increase in the number of cyclists admitted to hospital.

Notation

ATSB	Australian Transport Safety Bureau
ICECI	International Classification of External Causes of Injuries
HMDS	Hospital Morbidity Data System

Introduction

Bicycle riding is one of the most popular recreational activities in Australia and is fast becoming an increasingly popular form of transportation [1,2]. However cyclists have a higher risk of being injured than any other group of road users [3,4]. They are "unprotected" in traffic, despite being capable of reaching high speeds.

Most studies investigating the age and gender distribution of people involved in bicycle crashes have found that the majority of casualties are less than 20 years old and are predominantly male. In a study of bicycle crashes in New Zealand, young males and children in the 5 to 14 year age group were identified as having the highest rates of injury [5]. In Western Australia, Piggott et al [6] demonstrated that injury rates of police-reported and hospitalised casualties were highest for young cyclists, although there were variations in rates by age in the police and hospital data.

Information about factors associated with bicycle crashes is mainly derived from police reports of crashes. These data are known to under-estimate the actual number of bicycle crashes as certain types of crashes involving bicyclists are not reported such as those deemed relatively minor by those involved or those that are not legally required to be reported (e.g. minor, off-road incident without serious injury). There is evidence of low level of completeness in accident databases involving cyclists in many countries. For example, Stutts

et al [7] found that only 11% of crashes involving cyclists receiving treatment at hospital emergency rooms in North Carolina (US) were reported to the police. This study also found that the police-reporting rate for crashes involving a motor vehicle was 60%, while those not involving a motor vehicle the reporting rate was less than 1%. In developing countries bicycle injuries are also seriously underreported. In Colombo, Sri Lanka 92% of children and 54 % of adults who were hospitalized for bicycling injuries were not included in police reports [8]. In Australia, studies of the reporting rate of bicycle crashes to the police have also shown under-reporting. In Western Australia, Hendrie and Ryan [9] found the reporting rate of injury crashes involving a cyclist was 2.2% if all injured cyclists were used for the denominator, and 3.5% if only cyclists injured on-road were used for the calculation.

The aim of this study is to provide an overview of bicycle crashes in Western Australia. This will utilise both police reported crash data and hospital admissions data due to an understanding of the under-reporting of bicycle crashes to police, and examine the trends of bicycle crashes over the 14 year period of 1987-2000.

Methods

The study population is derived from Police reports and hospital admissions records contained in the Western Australian Road Injury Database and covers the 14-year period from 1987-2000. In Western Australia all road crashes are required to be reported to police if a person was killed or injured, or the crash results in property damage of $1,000 or more. This data source contains detailed information on the characteristics of the people and vehicles involved in road crashes and the crash circumstances. Crashes involving cyclists were identified using the unit type classification in this data source.

The hospital admission records were obtained from the Hospital Morbidity Data System (HMDS). The Road Injury Database contains a subset of the HMDS that contains all hospital admissions that were as a result of a road traffic crash. The hospital admission data provides only limited information about crash circumstances but detailed information about the injuries sustained by casualties. Another benefit of the HMDS is that it contains records from all hospital admissions in Western Australia [10]. This is especially important for this study because many road crash casualties are not reported to police, and as previously mentioned under-reporting of bicycle crashes is significant [11,12]. Hospitalised bicyclists were identified using external cause of injury codes of the ICD-9-CM (E810 to E825 using the fourth digit classification of '.6' relevant to bicyclists and E826 to E829 using the fourth digit classification of '.1') and ICD-10-AM (V10.0 to V19.9 excluding V10.3 to V18.3).

Results

Trends in reporting and hospitalization from 1987 to 2000

The number of cyclists involved in police reported crashes from 1987-2000 was 11,385 (Figure 1). The number significantly decreased from 1,044 in 1987 to 625 in 2000 (p=0.001) which represents a decrease of approximately 32 cyclists involved in crashes per year. Over this period, the share of cyclists reported as a percentage of all people involved in police reported crashes was 1.0% and decreased from 1.3% in 1987 to 0.7% in 2000 (p<0.001). Of these 11,385 cyclists involved in police reported crashes, 81 were fatally injured and 1,851 reported as hospitalised (see Table 1). In comparison the number of hospital admissions for bicycle crashes from 1987-2000 was 9,897. Figure 1 illustrates a significant increase in hospital admissions (p=0.001) from 630 in 1987 to 913 in 2000. Cyclist related admissions as a proportion of all admissions due to road injury showed no significant change. Cyclists contributed 14.0% of all road injury hospital admissions, fluctuating from 12.7% in 1987 to 15.8% in 2000 (n.s, p=0.061).
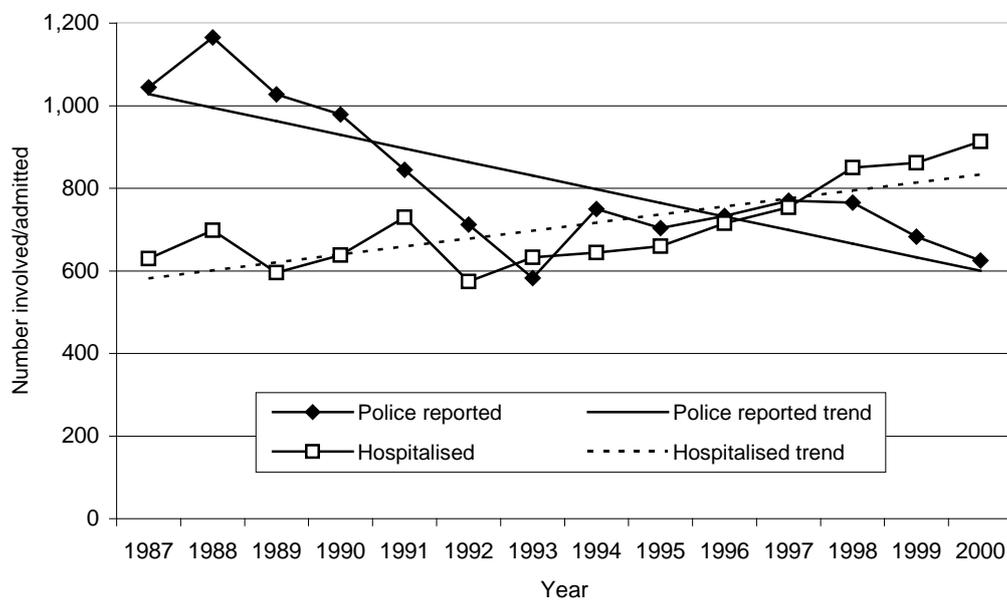
Figure 1: The number of bicyclists involved in police reported crashes and hospitalised with associated trends, 1987-2000

Table 1: Characteristics common to police reports and hospital admissions data for bicyclists, 1987-2000

Bicyclist/environment characteristics	Data source			
	Police (n = 11,385)		Hospital (n = 9,878)	
	n	%	n	%
Road User Group				
Bicyclists	11,385	1.0	9,878	14.2
Other road users	1,128,455	99.0	59,594	85.8
Injury Severity				
Fatal	81	0.7	N/A	N/A
Hospitalised	1,851	16.3	9,878	100.0
Medical attention	4,486	39.4	N/A	N/A
Other	4,967	43.6	N/A	N/A
Gender				
Male	8,457	81.2	7,495	75.9
Female	1,955	18.8	2,383	24.1
Age (years)				
0-5	84	1.0	1,011	10.2
6-12	1,346	16.5	3,429	34.7
13-16	1,940	23.8	2,183	22.1
17-24	1,720	21.1	950	9.6
25-39	1,859	22.8	1,090	11.0
40-59	891	10.9	770	7.8
60+	301	3.7	442	4.5
Location	1987-2000		1993-2000	
On-road	10,657	93.6	2,373	40.0
Off-road	728	6.4	3,558	60.0
Region				
Metropolitan	9,552	84.2	7,055	71.4
Regional	1,798	15.8	2,823	28.6

* Unknown values are not included in the analysis

Common characteristics in both data sources

Table 1 shows that bicycle casualties were less likely to appear in police records than hospital admissions. Both police reports and hospital admissions show that males are more likely to be involved in crashes as a cyclist, 81.2% of cyclist casualties with known gender in police reports were males and 75.9% of hospital admissions were for males.

The age group distributions between bicyclists involved in police reported crashes and those hospitalised were also different (see Table 1). The hospital admissions for age groups 0-5 and 6-12 years of age accounted for 10.2% and 34.7% of cyclists admitted to hospital respectively, while these age groups accounted for 1.0% and 16.5% of cyclists in their respective age groups involved in police reported crashes. Conversely, 21.1% of cyclists involved in police reported crashes were aged 17-24 years and 22.8% aged 25-39 years, compared to 9.6% and 11.0% of hospital admissions to cyclists in the respective age groups.

Another important contrast between the data sources is the location of the crash (see Table 1). Police reported bicycle crashes occurred mainly on roads open to public access (93.6%), with

a small proportion (6.4%) occurring in off-road locations such as private driveways, recreation areas, bike paths and other off-road locations. This distribution is markedly different to that of bicycle riders admitted to hospital. Where the location was known 60.0% of bicycle riders admitted to hospital were injured in off-road locations.

Table 1 shows that most of the reported crashes were in the metropolitan areas. Bicycle riders involved in police reported crashes were more likely to be in the metropolitan area than those admitted to hospital, with 84.2% and 71.4% from metropolitan areas in the respective data sources. It must be noted that the police reported data contains the location of the crash, while hospital admission location indicates the location of residence.

Helmet wearing

Figure 2 presents the helmet wearing status of cyclists in police reported crashes. This information is not available in the hospital admissions data. The police crash data does not record helmet wearing status for the majority of cyclists, although this information has been available for a higher percentage of cyclists in recent years. In 2000, helmet wearing status was unknown for 55.7% of cyclists involved in police reported crashes compared to 72.0% in 1994 and 100.0% in 1987. In 1992 - the year that compulsory helmet wearing was introduced - helmet wearing status was unknown for 76.3% of cyclists involved in police-reported crashes, 14.5% were known to have been wearing a helmet , and 9.3% were known not to have been wearing a helmet. This implies a helmet wearing rate of 60.9% for cyclists, whose helmet wearing status was known. In 2000, 33.6% were known to have been wearing a helmet, and 10.7% were known not to have been wearing a helmet. For the cyclists whose helmet wearing status was known, this indicates a helmet-wearing rate of 75.8%.
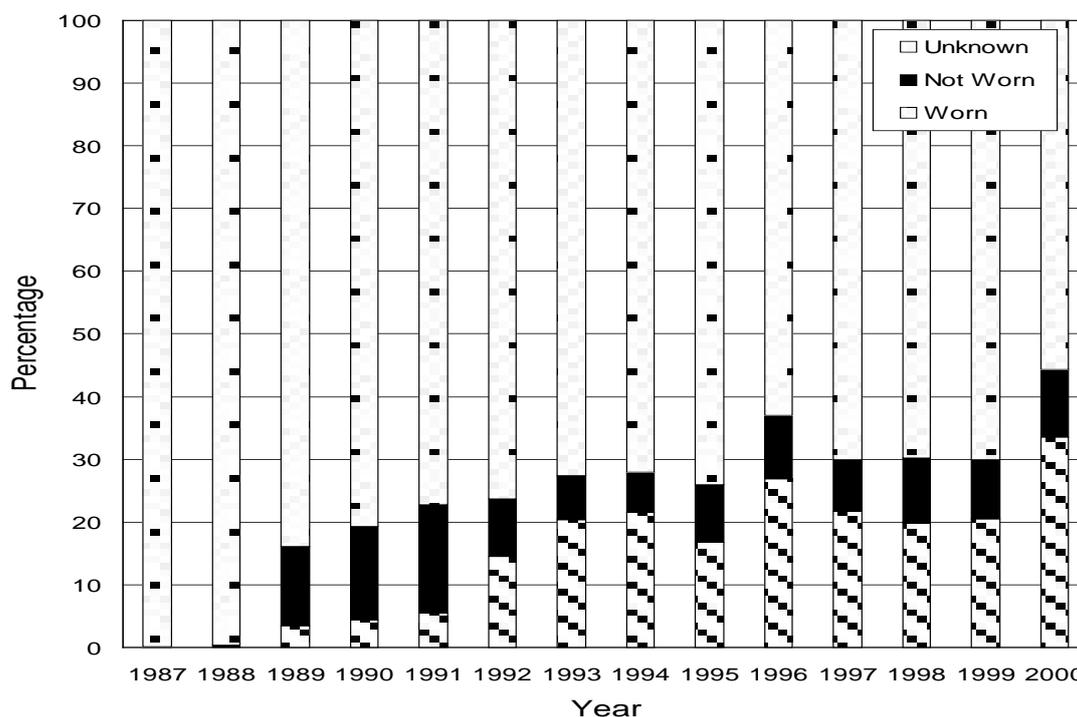

Figure 2: Percentage of bicycle riders by helmet wearing status, police reported crashes 1987-2000

Length of stay in hospital

Information about the length of stay for cyclists admitted to hospital is only available in the hospital admissions data. Over the 14-year period 56.9% of cyclists spent one day in hospital, 33.4% of cyclists spent between two and seven days in hospital, 8.3% spent between eight

and 30 days in hospital and 1.3% spent more than 30 days in hospital. Figure 3 examines length of stay by age group. The percentage of casualties with lengths of stay of one day or less decreased with age from 67.5% for cyclists aged 6 to 12 years of age to 28.3% for cyclists in the 60 years and older group. On the other hand, 26.7% of cyclists aged 60 years and older stayed in hospital between eight and 30 days compared with 4.8% of cyclists in the 6 to 12 year age group.
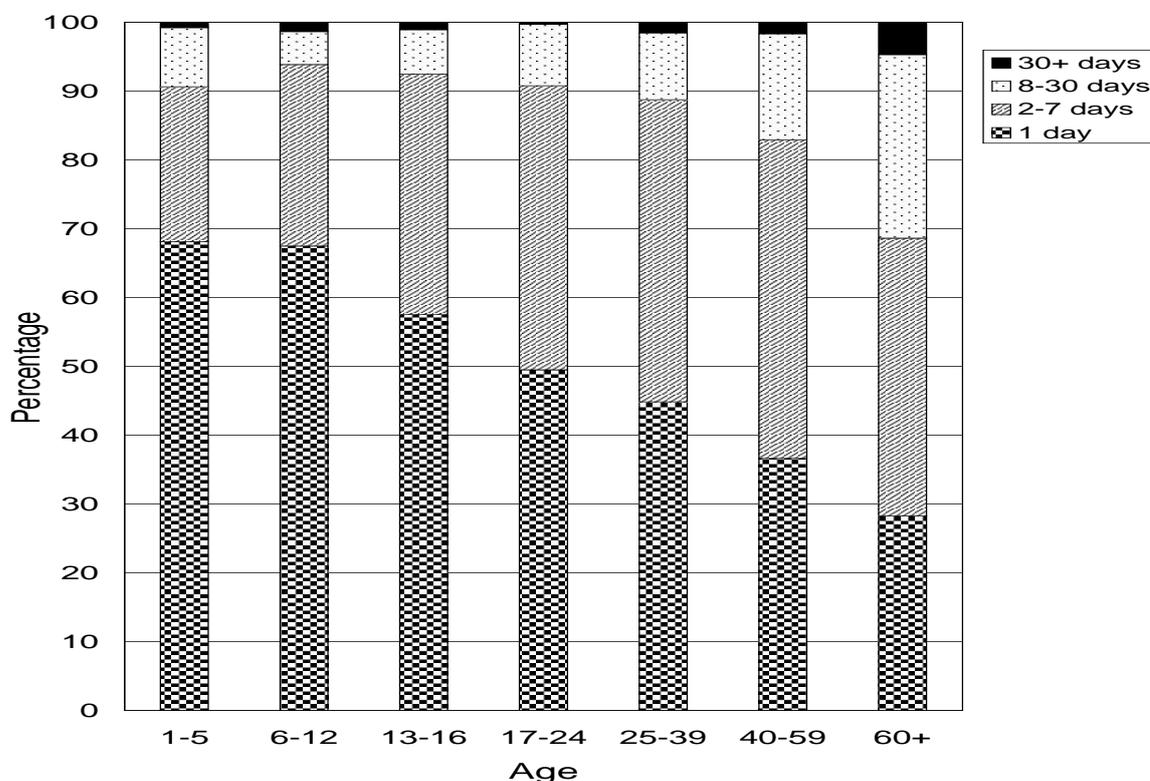
Figure 3: Percentage distribution of cyclists by age and length of stay, hospital admissions 1987-2000

Discussion

The main purpose of this study was to analyse police and hospital data relating to bicycle crashes in Western Australia over the period 1987 to 2000. Cyclists involved in crashes were generally young and male. The age distribution of hospitalised cyclists compared to those reported to police differed, with hospitalised cyclists considerably younger than those reported to police. In terms of age and gender distribution the results are generally consistent with other Australian and international studies that have investigated police and hospital data for bicycle crashes [7-9].

Over the 14 year period there were 9,897 hospital admissions for cyclists while there were 11,385 cyclists reported to police as involved in a crash, with 1,851 of these reported as hospitalised. The hospital admissions data captures a larger proportion of cyclists involved in crashes (14.0%) compared to police reports (1.0%). It is clear from these figures that bicycle crashes are under-reported to police and that it is inappropriate to use this data source as an indicator of the size of the bicycle related road safety problem.

This point of view is further enhanced with the knowledge that police reported bicycle crashes have shown a significant decrease from 1987 to 2000 whilst there has been a significant

increase in hospital admissions over the same time period. Whilst it has long been known that police reports under-estimate the true number of injured bicyclists [11,12], the magnitude of this under-reporting appears to be increasing.

One important difference between the two data sources is that the police reported crashes occurred most often on-road (93.6%) compared to the hospital admissions where 59.9% are due to crashes in off-road locations. This may in part be due to the hospital data including admissions relating to crashes that are not 'reportable' (which includes some locations that are deemed off-road). Previous research has shown that bicycle crashes are consistently under-reported even when the hospital admissions data is restricted to casualties in 'reportable' road crashes [11,12].

One limitation of this study is the lack of reliable cycling exposure data. This limitation has been highlighted recently at a national level by the ATSB (ATSB, 2004). Without this information it is not possible to determine if bicycle related deaths, hospitalisations and police reported crashes are increasing, decreasing or remaining stable in comparison to cycling activity.

Conclusions and Recommendations

This study has highlighted some important findings regarding bicycle crashes in Western Australia. The contrasting trends in the police and hospital data have given greater support for the use of hospital admissions as the primary source of serious bicycle crashes, with the exception of fatalities which are well documented in police reports. It is recommended that the reduction in the number of bicycle crashes reported in the police data should be examined, especially as hospital admissions for bicycle crashes increased over the same time period.

Along the same lines it is further recommended that in assigning priority to cyclists as a target group in road safety programs, the under-reporting of serious injuries involving cyclists to the police should be recognized. The extent of this under-reporting of serious injuries to cyclists is considerable. It is recommended that further analysis of this data in Western Australia, and other states, be conducted. This analysis should utilise the linkage of the police and hospital data sources and use a capture-recapture methodology that is potentially useful for evaluating the completeness of data sources and identifying biases within datasets. This methodology has traditionally been employed to estimate animal populations [13], and has increasingly been used in health studies to generate more accurate rates of disease and disability [13,14]. More recently a small number of studies have employed capture-recapture in the field of road injury [15].

Due to the under-reporting in police data it is recommended that other data sources such as those maintained by hospital emergency departments be explored in order to provide more information relating to the magnitude and nature of bicycle crash and injury problem in Western Australia. This recommendation may be possible due to the recent implementation of the International Classification of External Causes of Injuries (ICECI) in Perth metropolitan teaching hospital emergency departments to code injuries [16]. The use of emergency department data will assist in providing a more reliable measure of less serious cycling related injuries.

This study has draw attention to the fact that cycling safety programs, particularly ones targeting helmet wearing, should be aimed at children aged 16 or younger as this age group constitutes 67% of cyclists admitted to hospital. It has also highlighted that a large number of bicycle crashes occur in off-road locations such as private driveways, recreation areas, bike paths and other off-road locations, and not on the general road network.

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C.1.8 Improve the Safety of Bicyclists
· Coordinated high-visibility publicity/enforcement deterrence programs (to achieve) high levels of helmet wearing.
· Educative and promotional programs (to achieve) improved understanding and application of safety principles by cyclists and parents of young cyclists.

* Oehlert K, Wölk T, Hassenpflug J, 2004, **"**Injuries, training and driving technique of competitive mountain-bikers", *Sportverletz Sportschaden***,** pp. 190-195, 18(4)

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Abstracts on cyclists and cycling

Alleman A, Akande A, Bukacek M, Geib J, Simonson -Younger J, 2004, "Prevention of head injuries in children bicyclists: a proposal", *Journal of Oklahoma State Medical Association*, **pp. 160-162, 97(4).**

Bicycle-related head injury is a significant source of child death and injury. As a result of reviewing and summarising contemporary approaches for reducing injuries, the authors conclude that a school-based promotion of proper helmet usage represents a reasonable compromise between expediency and probability of success. This proposal contains an outline for a pilot program to be implemented in an elementary school setting. It is postulated that a large-scale implementation of this program in combination with other discussed interventions will achieve the long-term goal of reducing bicycle-related pediatric head injuries.

Australian Transport Safety Bureau, "Cycle Safety: A National Perspective", *Monograph 17*, **ATSB, Canberra.**
Full Report: http://www.atsb.gov.au/road/mgraph/mgraph17/index.sfm
Cycling is an important form of transport and recreation for many Australians. It is accessible to a wide range of people and has significant health and environmental benefits for the community (1). This monograph provides a statistical overview of the number of cyclists killed or seriously injured on the public road system Australia-wide and a discussion of the available national activity data. It does not include data on cyclists killed and seriously injured in areas outside the public road system.

Key Facts
* On average, 35 cyclists are killed and around 2500 are seriously injured on the public road system each year.
* The number of cyclists killed has declined from 142 in 1950 to 26 in 2003.
* Cyclists account for around 2 per cent of road deaths and about 11 per cent of seriously injured each year.
* Cyclists aged 16 years and under account for the greatest proportion (almost half) of those seriously injured.
* Over 1 million cycles were sold in Australia in the 2002–03 financial year.
* In 2003, cycling was the fourth most popular physical activity among people aged 15 years and above.
* Around 62 per cent of children aged between five and 14 cycled at least once in the year to April 2003.
* There are no data available that reliably measure cycle use at a national level, making it difficult to compare the safety of cyclists over time or relative to other road users.
* Australian Bureau of Statistics data from the 1996 and 2001 censuses indicate there was a small increase in cycling activity over this time period among people riding to work.
* The overall community benefits gained from regular cycling are likely to outweigh the loss of life through cycling accidents.

Reference: (1) Austroads, (1999), "Australia Cycling 1999–2004 – The National Strategy", Sydney.

LeBlanc JC, Huybers S, 2004, "Improving bicycle safety: The role of Paediatricians and family Physicians", *Paediatrics and Child Health* **(Official Journal of the Canadian Paediatric Society), pp. 315-318, Vol. 9(5).**

Young people are introduced to cycling haphazardly and yet cycling is a complex activity. It requires motor, sensory and cognitive skills that develop at different rates from childhood to adolescence. There are two factors involved, viz., ability to balance and ride a cycle and, on the other hand, safely cope with the surroundings. While children can successfully ride a two-wheeled bicycle at age five or six, judgment of road hazards is poor at that age and matures slowly until adult-like judgment is reached in early adolescence.

Safety is dependent on (a) the care, skills and judgment of both cyclists and motorists; (b) the use of safety devices, including bicycle helmets, lights and reflective tape; and (c) roadway design that promotes safe coexistence of bicycles and motor vehicles. The benefits of (b) wearing bicycle helmets and programs to enhance their use have been clearly shown. However, mixed results have been obtained from research into (a) educational programs for drivers and riders to improve road safety and (c) optimal roadway design, has yielded contradictory results.

This paper has the following objectives for Pediatricians and family Physicians:
1. To understand the relationship between bicycle safety and children's motor and cognitive skills.
2. To understand the effectiveness and limitations of strategies to improve bicycle safety.
3. To describe activities to promote bicycle safety that physicians can undertake in clinical settings and in the community.

Miller T R, Zaloshnja E, Lawrence B A, Crandall J, Ivarsson J, Finkelstein A E, 2004, "Pedestrian and pedal-cyclist injury costs in the United States by age and injury severity", *Annual Proceedings of the Association for the Advancement of Automotive Medicine***, pp. 265-284, No 48.**

These authors have estimated the incidence, unit costs, and annual costs of pedestrian and pedal-cycle crash injuries in the United States, using primarily data from the health care system. The estimates include costs of medical care, work losses (household and employment), and the value of pain, suffering, and lost quality of life.

Costs of pedestrian and pedal-cycle injuries in 2000 were estimated at $40 billion over the lifetimes of the injured. Most pedal-cyclist injury costs and half of pedestrian injury costs do not involve motor vehicles. Children in the 5-14 year group face greater annual risks when walking or driving their own pedal-cycles than when being driven.

Oehlert K, Wölk T, Hassenpflug J, 2004, "**Injuries, training and driving technique of competitive mountain-bikers",** *Sportverletz Sportschaden***, pp. 190-195, 18(4)**

This study was performed to evaluate injuries, training and driving style of professional cross-country-mountain-bikers. It involved retrospective interviews, with a standardised questionnaire, with 49 professional mountain-bikers from Germany, Austria and Switzerland.

The most common recurrent disorders in competitive mountain-bikers are in the cervical and lumbar spine and the knee. These disorders are more common in the pre-season and at the end of the season. The most common fracture is the clavicula fracture. Ligament and tendon injuries are less frequent.

Most riders choose jogging and cross-country running for compensation and stretching while massage is used for regeneration. Regular training for trunk strength was practised by more than half the riders in the study. Most riders engage in specific strength training in the pre-season, while some riders practise this type of training during the season.

There should be more emphasis on trunk training. There would be advantages in further research on how improvement in riding technique could reduce the reported disorders of the musculoskeletal system.

Plumert JM, Kearney JK, Cremer JF, 2004, "Children's Perception of Gap Affordances: Bicycling Across Traffic-Filled Intersections in an Immersive Virtual Environment", *Child Development*, pp.1243-1253, 75(4).

In the study, a simulator was used to provide a virtual, interactive environment consisting of a street with 6 intersections. In these artificial conditions the subjects were faced with gap choices and crossing behaviour. The study involved 10 – 12 year old children and adults riding a bicycle mounted on a stationary trainer.

The simulator provided continuous cross traffic, travelling at 25 mph or 35 mph. Participants were required to wait for gaps between vehicles that they judged to be adequate to enable safe carriageway crossing. While children and adults chose the same sized temporal gaps, children left far less elapse time between themselves and the approaching vehicle before they crossed the intersection. Relative to adults, the reaction time of children before getting started was slower and they took longer to reach the roadway.

Discussion in the article focuses on the coordination of self-movement with object-movement in child development.

Wang Y, Nihan NL, 2004, "Estimating the risk of collisions between bicycles and motor vehicles at signalised intersections", *Accident Analysis and Prevention*, pp. 313-321, 36(3).

This study was prompted by the recognition that collisions between bicycles and motor vehicles have caused severe life and property losses in many nations. Also, data shows that the majority of bicycle/motor vehicle crashes occur at intersections. A study of the causal factors was undertaken in order to understand the reasons for and reduce the number of crashes at intersections.

Crashes at intersections were classified into three types based on the movements of the involved motor vehicles and bicycles.
(a) through motor vehicle related collisions;
(b) left-turn motor vehicle related collisions; and
(c) right-turn motor vehicle related collisions.

A methodology for estimating the risk of crashes was developed based on probability theory. A significant difference between this proposed methodology and most current approaches is that it explicitly relates the risk of each specific crash type to its related flows.

The methodology was demonstrated using data from a 4-year (1992-1995) period, collected from 115 signalised intersections in the Tokyo Metropolitan area. This data contains bicycle/motor vehicle crash data, bicycle flow data, motor vehicle flow data, traffic control data, and geometric data for each intersection approach.

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