

PARLIAMENT OF NEW SOUTH WALES



# Staysafe Committee

## Report on Pedestrian Safety

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MINISTERIAL REFERENCE

New South Wales Parliamentary Library cataloguing-in-publication data:

New South Wales. Parliament. Joint Standing Committee on Road Safety.

Report on pedestrian safety : Ministerial reference / Staysafe Committee, Parliament of New South Wales. [Sydney, N.S.W.] : the Committee, 2009. — 88 p. ; 30 cm. (Report ; no. 3/54).

Chair: Geoff Corrigan, MP.  
"December 2009".

ISBN 9781921686047

1. Pedestrians—New South Wales.
2. Traffic safety—New South Wales.
  - I. Title
  - II. Corrigan, Geoff.
  - III. Series: New South Wales. Parliament. Joint Standing Committee on Road Safety. Report ; no. 3/54

363.125 (DDC22)

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## Membership and Staff

<b>Chair</b>	Mr Geoff Corrigan MP, Member for Camden
<b>Members</b>	Mrs Dawn Fardell MP, Member for Dubbo
	Mr David Harris MP, Member for Wyong
	Ms Noreen Hay MP, Member for Wollongong
	Mr Daryl Maguire MP, Member for Wagga Wagga
	Dr Andrew McDonald MP, Member for Macquarie Fields
	The Hon George Souris MP, Member for Upper Hunter
	The Hon Robert Brown, MLC
	The Hon Richard Colless, MLC
	The Hon Ian West, MLC (Deputy Chair)
<b>Staff</b>	Russell Keith, Committee Manager
	Bjarne Nordin, Senior Committee Officer
	Eve Gallagher, Research Officer
	Alexis Steffen, Committee Officer
	Mohini Mehta, Assistant Committee Officer
<b>Contact Details</b>	Staysafe Committee Parliament of New South Wales Macquarie Street Sydney NSW 2000
<b>Telephone</b>	(02) 9230 2843
<b>Facsimile</b>	(02) 9230 3309
<b>E-mail</b>	staysafe@parliament.nsw.gov.au
<b>URL</b>	www.parliament.nsw.gov.au/staysafe



## Terms of Reference

The Minister for Roads, the Hon Michael Daley MP, has asked the Staysafe Committee to investigate recent increases in pedestrian fatalities in NSW.

Accordingly, the Committee will inquire into and report on pedestrian safety with particular reference to:

- a) Short and long term trends in pedestrian injuries and fatalities in metropolitan and non-metropolitan areas;
- b) Underlying causes of pedestrian injuries and fatalities;
- c) The incidence of drivers leaving the scene of the accident after hitting pedestrians;
- d) Effectiveness of recent measures to address pedestrian safety;
- e) Additional strategies to increase pedestrian safety;
- f) The current emphasis placed on pedestrian road users as part of land use policies and in the planning and management of the road system;
- g) Pedestrian safety issues and strategies in other jurisdictions; and
- h) Any other related matters.



## List of Abbreviations

ABS	Australian Bureau of Statistics
ADRs	Australian Design Rules
AIHW	Australian Institute of Health & Welfare
AIS	Abbreviated Injury Score
ANCAP	Australasian New Car Assessment Program
ARR	Australian Road Rules
ATC	Australian Transport Council
ATSB	Australian Transport Safety Bureau
BAC	Blood Alcohol Concentration
BITRE	Bureau of Infrastructure, Transport & Regional Economics
CBD	Central Business District
COPS	Computerised Operational Policing System
COTA	NSW Council on the Ageing
CTP	Compulsory Third Party
DITRGLD	Department of Infrastructure, Transport, Regional Development & Local Government
EBA	Emergency Brake Assist
ESC	Electronic Stability Control
GPS	Global Positioning System
GTR	Global Technical Regulation
HIC	Head Injury Criteria
HPAA	High Pedestrian Activity Areas
ILC	Independent Living Centre NSW
IPWEA	Institute of Public Works Engineering Australia
IRMRC	NSW Injury Risk Management Research Centre
ISA	Intelligent Speed Adaptation
ISS	Injury Severity Score
ITIM	NSW Institute of Trauma & Injury Management
LEPs	Local Environmental Plans
MAA	Motor Accidents Authority
MUARC	Monash University Accident Research Centre
NSWPF	New South Wales Police Force
OECD	Organisation for Economic Cooperation & Development
OTSI	Office of Transport Safety Investigations
PCA	Pedestrian Council of Australia
PUFIN	Pedestrian User-Friendly Intelligent (crossing)
RSOs	Road Safety Officers
RTA	Roads & Traffic Authority
SCATS	Sydney Coordinated Adaptive Traffic System
TADS	Traffic Accident Data System
VicRoads	Victorian Roads Corporation
WHO	World Health Organisation



## Executive Summary

2008 saw New South Wales record its lowest annual road toll since 1944. In total, 395 persons were killed, constituting 40 fewer fatalities, or 9% less than the preceding year. The improvement in pedestrian safety was greater, with 2008 figures representing a 24% reduction in the number of deaths recorded in 2007 (from 68 to 52 in 2008), and the lowest number of pedestrian fatalities since records were first collected in 1928.

A marked increase in fatalities in 2009, particularly pedestrian fatalities, prompted the then Minister for Roads to write to the Committee requesting it to “enquire into the issue of pedestrian safety and particularly with respect to the rise in pedestrian fatalities in 2009 as a matter of urgency”. At the time of the Ministerial Referral, the preliminary road toll stood at 163, representing an increase of 40 for the corresponding period in 2008. A significant proportion of this increase related to pedestrians.

While the number of pedestrian fatalities has increased by 16.5% nationally for the twelve months ending September 2009, compared to the equivalent period last year, there is considerable variation between the jurisdictions. Despite the rise in pedestrian fatalities in NSW, at this stage it is not possible to determine the significance of this recent increase when compared to longer-term casualty trends. While the increase does represent a break in the general downward movement in pedestrian and total fatality rates in NSW, it is too early to predict whether the upward trendline will continue.

A number of submissions received by the Committee raise concerns about current methods of capturing crash casualty data. This applies to data accuracy as well as the classification of gathered information. The shortcomings identified are not exclusively directed at pedestrian casualty data, but include systemic criticisms affecting all road crash casualty data collection. One of the primary criticisms of currently available crash data is the lack of consistency in national, State and local definitions. The discrepancies in definitions have obvious consequences for comparison of casualty data from different States and Territories, and internationally.

The Committee urges the RTA to engage in greater consultation with road safety organisations and consumer groups to develop improvements in the collection and dissemination of road safety data to the benefit of the entire community and recommends the development of agreed definitions of injury severity to estimate the costs of such injuries, enabling the design of improved treatment options and appropriate countermeasures based on reliable data (Recommendation 1).

In addition, in order to improve data management and dissemination, an interagency working group should be established to develop a comprehensive plan for the collection and dissemination of consistent road statistics in NSW (Recommendation 2), update data capture boundaries (Recommendation 3) and improve user functionality (Recommendation 4).

Specific causes of pedestrian casualties are often difficult to isolate, due to the influence of many contributing variables to a single event. Based on available data, major factors identified as significant predictors of pedestrian casualty risk are judgement errors and alcohol. These factors interact with a range of other variables, including: pedestrian age; gender; location (metropolitan, rural/regional); road classification; speed limits; pedestrian controls; time of day and week; lighting; weather conditions; and type of vehicle involved.

### Executive Summary

The age cohorts 0-16, 17-29 and 60+ represent pedestrians at greatest casualty risk on NSW roads. Particular attention must be given to countermeasures targeting the specific characteristics of each of these groups. The Committee therefore stresses the need for the development of a training program for early childhood centres and primary schools focussing on crossing roads safely (Recommendation 5), the inclusion of training for parents (Recommendation 6) and the publication of a training manual for road safety practitioners (Recommendation 7).

In relation to other risk groups, the Committee supports an increased emphasis on pedestrian safety for secondary students in NSW schools (Recommendation 8) and funding additional transport options for adolescent pedestrians (Recommendation 9). For older pedestrians, deficiencies in road awareness should be addressed by conducting specific public safety and awareness campaigns (Recommendation 10).

A related issue is public awareness and education to reinforce the road safety rules and remind all users of their rights and responsibilities when sharing the roadway. A lack of knowledge about the Road Rules can serve to increase risk for pedestrians. This is particularly the case for Australian Road Rules 72 to 75, dealing with the obligation for motorists to give way to pedestrians at intersections and other road related areas. The Committee therefore recommends that the Roads & Traffic Authority conducts a public education campaign to specifically target the lack of awareness of the requirements of Australian Road Rules 72 to 75, requiring drivers to give way to pedestrians at certain road locations (Recommendation 24).

A consistently highlighted theme during the Inquiry concerns the need for updated and improved engineering solutions to assist vulnerable road user groups. There is a persistent view that road designers do not take adequate account of pedestrians, who are not treated as equal partners when accessing the road network. The lack of recognition of pedestrian needs is demonstrated by issues such as: the short crossing times allowed for in metropolitan settings; gaps in pedestrian infrastructure such as lack of adequate ramps, footpaths and road refuges; inadequate street lighting; and inadequate crossing technology options.

The NSW Council on the Ageing and the NSW Independent Living Centre represent the interests of vulnerable pedestrian groups and the Committee encourages the RTA to consult with these groups in designing engineering solutions to provide safer pedestrian access to the road network (Recommendation 11). Continuing support should also be provided to the *You're Welcome* project run in conjunction with local councils (Recommendation 12).

Alternatives to current pedestrian crossing arrangements at intersections are also recommended. This includes greater use of scrambled crossings (Recommendation 13), and the further extension of shared zones (Recommendation 14), to be renamed pedestrian zones (Recommendation 15).

A major source of frustration for all pedestrians, particularly in metropolitan settings, is the phasing of walk time at signalised intersections. The relatively short time allowed for pedestrians to cross the road limits pedestrian movement and acts to increase risk taking when walking. Current traffic signal technology can be made more pedestrian responsive by extending the pedestrian phase of signals at intersections with high pedestrian traffic and during peak pedestrian commuter times (Recommendation 16), implementing the introduction of pedestrian user-friendly intelligent crossing technology at all appropriate

locations in NSW (Recommendation 17) and examining the feasibility of countdown timers (Recommendation 18).

Technical developments and safety enhancements in vehicle design will increasingly provide improved pedestrian safety benefits. Examples of recently introduced technology designed to reduce impact severity during crashes include Emergency Brake Assist (EBA) which reduces stopping distances by 15% and Electronic Stability Control (ESC) which helps drivers avoid pedestrian impacts in certain situations. While these technologies help to reduce crash severity in emergencies, of more benefit to pedestrian safety will be the use of active and passive on-board detection and vision enhancement systems.

The Committee recommends that the Centre for Road Safety continues its research into the pedestrian safety benefits of new vehicle technologies and actively promotes the most cost effective solutions to vehicle manufacturers and consumers (Recommendation 19). In addition, the Committee recommends that the Roads & Traffic Authority addresses the current shortcomings in the monitoring and enforcement of the Australian Design Regulations in relation to vehicle design protection for pedestrians through appropriate Ministerial and intergovernmental processes (Recommendation 20).

The role of speed in many crashes is a significant concern. Evidence provided by the RTA estimates that speed is the most significant contributor to casualty in all crash categories and contributed to 32% of fatal crashes in 2007. Provisional data for 2008 increases this figure to 39% and preliminary statistics for the first half of 2009 cites the figure of 46% for all speed related fatalities. A major initiative to reduce pedestrian crashes has been the introduction of 40km/h speed limits in selected high pedestrian activity areas. This policy was introduced by the RTA in response to evidence that there would be major safety gains from such a speed reduction.

In order to build on this approach the Committee recommends that the Roads & Traffic Authority ensures there is greater consultation with local councils in relation to the determination of speed zones in their local government areas (Recommendation 22).

Concern about speeding also prompts the Committee to recommend the installation and deployment of random, covert speed cameras throughout NSW in order to reduce the incidence of pedestrian casualties and improve safety for all road users (Recommendation 21).

Finally, in recognition of the more recent trend identified as a contributor to road user distraction, namely the increasing use of electronic and mobile communication devices, the Committee recommends that the Roads & Traffic Authority commissions a major education and media campaign to alert the community to the potential road safety dangers of using mobile communication and entertainment devices when navigating the road system (Recommendation 23).



## Chair's Foreword

This Report concludes an inquiry into pedestrian safety in response to an urgent request from the Minister for Roads to examine recent increases in pedestrian fatalities on NSW roads.

The fatality and injury figures for 2009 are alarming. Although casualties have increased across all categories of road users, the greater rates for vulnerable groups such as pedestrians paints a dramatic and very worrying picture. While the true statistical significance of this year's fatality figures is yet to be determined, it nevertheless presents road safety practitioners and policy makers with a great challenge.

Running through this Report are four overarching themes, namely: the need for improved data collection; a reprioritisation of pedestrians within the road user network and planning hierarchy; greater consultation and collaboration between the Roads & Traffic Authority and other road safety organisations in NSW; and shared responsibility for road safety by all road users.

An impediment to accurate analysis is created by the lack of adequate data on which to make assessments about specific causes of casualties. The lack of availability of comprehensive and timely road safety information creates delays in the implementation of specific and targeted countermeasures. Additionally, it reduces the ability to pool available knowledge and expertise in a cooperative effort involving all stakeholders.

It is important to stress that as road users, we are all pedestrians at some time and rely on others using the road network to share responsibility for our collective safety. This means that while pedestrians have an obligation to obey the rules of the road and to act responsibly, it is also incumbent on vehicle drivers, motorcyclists and others to recognise the vulnerability of pedestrians, particularly those that are young or elderly, and act accordingly.

Within the road hierarchy, motor vehicles tend to dominate. The Committee would like to challenge this status quo and has stressed the need for engineers and planners to give greater weight to pedestrian safety in the design of the road system. Experience in other jurisdictions can inform us how to better cater for pedestrians within the road network and the Committee supports the continuous sharing of knowledge across jurisdictions to improve safety standards.

I am pleased to present this Report and thank my fellow Committee Members and the Committee Secretariat for their contributions and assistance.

Geoff Corrigan MP  
Chair



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# List of Recommendations

## RECOMMENDATION 1:

The Committee recommends that the Roads & Traffic Authority, in consultation with the Institute of Public Works Engineering Australia, the NSW Institute of Trauma & Injury Management, the NSW Police Force and NSW Health, develops agreed definitions of injury severity, based on internationally recognised standards of classification. In addition to obtaining uniform data, this will also assist in estimating the costs of such injuries, enabling the design of improved treatment options and appropriate countermeasures based on reliable data.

## RECOMMENDATION 2:

The Committee reiterates recommendations made in its Young Driver Safety & Education Programs report and again recommends the establishment of an interagency working group, comprising the Centre for Road Safety, NSW Health, NSW Police Force and other government agencies currently collecting statistical information on road safety issues. The working group should examine road safety data management in other jurisdictions in order to develop a comprehensive plan for the collection and dissemination of consistent road statistics in NSW.

## RECOMMENDATION 3:

The Committee recommends that, as part of the interagency working group review of current data collection and management, the Centre for Road Safety updates its local government boundaries in order to accommodate recent changes.

## RECOMMENDATION 4:

The Committee further recommends that the Centre for Road Safety gives priority to examining improved user functionality for professional groups accessing data, such as Road Safety Officers, and ensures that collected data is made widely available, free of charge and in a variety of formats to meet the needs of diverse stakeholders and interest groups.

## RECOMMENDATION 5:

The Committee recommends that the Roads & Traffic Authority and the Department of Education & Training develop a training program for early childhood centres and primary schools focussing on crossing roads safely. This training program should monitor and provide direct feedback on individual responses to traffic in order to strengthen decision making and awareness of risk and include gap selection skills, choosing safe crossing locations and hazard awareness.

**RECOMMENDATION 6:**

The Committee also recommends that the training program should incorporate a module for parents to be made aware of the risks of unsupervised crossing behaviour and the importance of holding young children's hands when crossing the road.

**RECOMMENDATION 7:**

The Committee further recommends that the training program should include a training manual and that the program be promoted to road safety organisations throughout NSW.

**RECOMMENDATION 8:**

The Committee recommends that increased emphasis be placed on pedestrian safety, as part of the Personal Development, Health & Physical Education syllabus in NSW schools, particularly for students commencing their secondary education who are more likely to be travelling independently to school. Additional resources should be provided for students and parents to support them in identifying and managing the risks associated with pedestrian travel to school.

**RECOMMENDATION 9:**

The Committee recommends that the Roads & Traffic Authority provides greater levels of funding and support for the Road Safety Officer Program in order to increase local government involvement in locally based road safety initiatives, such as the provision of additional transport options for younger pedestrians at increased risk of casualty after late night socialising.

**RECOMMENDATION 10:**

The Committee recommends that the Centre for Road Safety commissions increased numbers of safety programs and public awareness campaigns for older pedestrians. These programs and campaigns should focus on increasing understanding of safety risks, improving and refreshing knowledge of road rules and informing older pedestrians about the use of pedestrian facilities and mobility aids.

**RECOMMENDATION 11:**

The Committee recommends that the Roads & Traffic Authority consults the NSW Council on the Ageing and the Independent Living Centre in the design of engineering solutions to provide safer pedestrian access to the road network.

RECOMMENDATION 12:

The Committee also recommends that continuing funding be provided to consolidate and expand the *You're Welcome* project of the Independent Living Centre to support its work with local councils in NSW.

RECOMMENDATION 13:

The Committee sees merit in encouraging greater pedestrian use of designated crossings in busy metropolitan areas and therefore recommends that scrambled crossings be utilised at all appropriate intersections in order to minimise the chance of conflict between pedestrians and vehicles.

RECOMMENDATION 14:

The Committee recommends that the Roads & Traffic Authority extends the system of shared zones in appropriate metropolitan locations, to reduce conflict between motor vehicles and pedestrians in local areas of high pedestrian activity.

RECOMMENDATION 15:

The Committee further recommends that, in order to better reflect the emphasis on pedestrian safety in such areas, shared zones be renamed pedestrian zones.

RECOMMENDATION 16:

The Committee recommends that the Roads & Traffic Authority examines the feasibility of extending the pedestrian phase of signals at intersections with high pedestrian traffic and at peak pedestrian commuter times.

RECOMMENDATION 17:

The Committee recommends that the Roads & Traffic Authority reports on the trial of pedestrian user-friendly intelligent crossing technology conducted in Sydney and, if successfully evaluated, implements the introduction of this technology at all appropriate locations in NSW.

RECOMMENDATION 18:

The Committee recommends that the Roads & Traffic Authority, as a matter of urgency, conducts the proposed trial of pedestrian countdown timers to ascertain their suitability and effectiveness in discouraging pedestrians from disobeying walk signals and to improve safety at major intersections.

**RECOMMENDATION 19:**

The Committee recommends that the Centre for Road Safety continues its research into the pedestrian safety benefits of new vehicle technologies and actively promotes the most cost effective solutions to vehicle manufacturers and consumers.

**RECOMMENDATION 20:**

The Committee recommends that the Roads & Traffic Authority addresses the current shortcomings in the monitoring and enforcement of the Australian Design Regulations in relation to vehicle design protection for pedestrians through appropriate Ministerial and intergovernmental processes.

**RECOMMENDATION 21:**

In order to reduce the incidence of pedestrian casualties and improve safety for all road users, the Committee recommends that the NSW Government introduces legislation to enable the installation and deployment of random, covert speed cameras throughout NSW.

**RECOMMENDATION 22:**

The Committee recommends that the Roads & Traffic Authority ensures there is greater consultation with local councils in relation to the determination of speed zones in their local government areas.

**RECOMMENDATION 23:**

The Committee recommends that the Roads & Traffic Authority commissions a major education and media campaign to alert the community to the potential road safety dangers of using mobile communication and entertainment devices when navigating the road system.

**RECOMMENDATION 24:**

The Committee recommends that the Roads & Traffic Authority conducts a public education campaign to specifically target the lack of awareness of the requirements of Australian Road Rules 72 to 75, requiring drivers to give way to pedestrians at certain road locations.

# Chapter One - Introduction

## Background

- 1.1 On 6 May 2009, the Joint Standing Committee on Road Safety (Staysafe) received a request from the then Minister for Roads, The Hon Michael Daley MP, to “enquire into the issue of pedestrian safety and particularly with respect to the rise in pedestrian fatalities in 2009 as a matter of urgency”.<sup>1</sup> The Minister’s letter stressed that “due to the serious nature of this inquiry, that it take priority over other inquiries that may have been scheduled”.
- 1.2 This Inquiry is being conducted against the background that in 2008, NSW recorded the lowest road toll since World War Two with 395 deaths on the State’s roads. This result was the culmination of a period of six consecutive years of progressive reductions in the road toll.<sup>2</sup>
- 1.3 In a marked change in this trend and at the time of the Ministerial Referral, the preliminary road toll stood at 163, representing an increase of 40 for the corresponding period in 2008.<sup>3</sup> The Minister’ referral letter highlighted the impact on pedestrian safety in the following terms: “I am advised that a significant proportion of this increase relates to pedestrians, with preliminary data showing that 24 pedestrians have been killed to date”.<sup>4</sup>
- 1.4 This amounted to an increase of 9 pedestrians fatalities, or 60% on the previous year. The increase in the overall road toll at the time was approximately 33%. As noted by the Minister, these figures do not include significant injuries sustained by a large number of pedestrians.
- 1.5 Within the context of the overall road crash toll, at the time of the Ministerial referral pedestrian fatalities accounted for 14.7% of the total number of people killed on New South Wales’ roads.<sup>5</sup>
- 1.6 Pedestrians constitute a significant part of the category of road users classified as vulnerable. Pedestrian needs have tended to be overlooked in the design and planning of the road network and in the provision of transport infrastructure to service population centres.
- 1.7 These factors are given more significance in light of forecast increases in the number of pedestrians and the projected ageing of the population. Figures for the City of Sydney local government area anticipate an increase in the number of pedestrians from 660,000 to 1 million by 2030. The NSW Government’s Metropolitan Strategy estimates that the population of Sydney will grow by 1.1 million people between 2004 and 2031.<sup>6</sup>

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<sup>1</sup> Ministerial Reference from the Minister for Roads, 4 May 2009.

<sup>2</sup> Submission 28, Roads & Traffic Authority, p. 6.

<sup>3</sup> NSW Centre for Road Safety, *Running Sheet of Fatal Traffic Data for NSW up to and including Sunday, 3 May 2009*.

<sup>4</sup> Ministerial Reference from the Minister for Roads, 4 May 2009.

<sup>5</sup> NSW Centre for Road Safety, *Running Sheet of Fatal Traffic Data for NSW up to and including Sunday, 3 May 2009*.

<sup>6</sup> NSW Government Metropolitan Strategy, *City of Cities: A Plan for Sydney’s Future*, December 2005, p. 7.

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- 1.8 It is further estimated that 20% of trips made by people in the Sydney metropolitan area are undertaken either on foot or pedal cycle.<sup>7</sup> This figure increases to 50% in the City of Sydney local government area.<sup>8</sup>
- 1.9 The Committee has conducted previous inquiries into issues affecting pedestrian safety including: a four part Inquiry that focussed on the safety of school children and itinerant commercial activities along roadsides (1994-1998); traffic control and safety in the vicinity of schools (2001-2003); road safety in town centres (2003); and 50km/h general urban speed limits (1996 and 1997).
- 1.10 As some time has now elapsed since the Committee's previous report on pedestrian safety and given the increase in pedestrian fatalities this year, it is timely to revisit this issue. Whereas the Ministerial reference focuses on the need to investigate the rise in pedestrian fatalities, the Committee has taken the view that it is equally important to include pedestrian injuries as part of the Inquiry.
- 1.11 An examination of pedestrian injuries as well as fatalities allows a more accurate representation of pedestrian safety issues and the identification of contributing factors and appropriate countermeasures. This Report therefore includes a discussion of contributing factors and strategies to improve pedestrian safety, as far as the available data allows.

## Conduct of Inquiry

- 1.12 On 6 May 2009, the Committee agreed to the request from the Minister for Roads to commence an immediate inquiry into pedestrian safety and related matters. The Committee resolved to draft appropriate terms of reference for the conduct of the Inquiry.
- 1.13 At a later meeting on 13 May 2009, the Committee adopted the following terms of reference:
- a) Short and long term trends in pedestrian injuries and fatalities in metropolitan and non-metropolitan areas;
  - b) Underlying causes of pedestrian injuries and fatalities;
  - c) The incidence of drivers leaving the scene of the accident after hitting pedestrians;
  - d) Effectiveness of recent measures to address pedestrian safety;
  - e) Additional strategies to increase pedestrian safety;
  - f) The current emphasis placed on pedestrian road users as part of land use policies and in the planning and management of the road system;
  - g) Pedestrian safety issues and strategies in other jurisdictions; and
  - h) Any other related matters.
- 1.14 On 20 May 2009, the Committee announced the Inquiry by advertising its terms of reference and calling for submissions from relevant organisations to be lodged by 19 June 2009. In total, the Committee received 30 submissions from private citizens, local governments, non-government organisations and government departments and agencies. A full list of the submissions received can be found at Appendix 1.
- 1.15 In conducting the Inquiry, the Committee held a public hearing in Sydney and inspected the Roads & Traffic Authority's Transport Management Centre at Eveleigh.

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<sup>7</sup> City of Sydney, *Sustainable Sydney 2030: The Vision*, p. 18.

<sup>8</sup> *Ibid.*

This provided Committee Members with opportunities to explore the full range of issues raised in submissions with relevant agency and community representatives. A full list of witnesses who appeared before the Committee can be found at Appendix 2.

## **Report Structure**

- 1.16 The Report summarises the information provided in submissions and obtained during evidence given at the public hearing, supplemented with other research gathered during the course of the Inquiry.
- 1.17 Chapter 2 discusses short and long term trends in pedestrian injuries and fatalities, including characteristics relating specifically to metropolitan and non-metropolitan areas. Chapter 3 assesses the causal factors that lead to pedestrian casualties and Chapter 4 details the nature of recent measures undertaken and their effectiveness in improving pedestrian safety. Chapter 5 evaluates the extent to which the needs of pedestrians are taken into account in land use policies and during the planning and management of the road system. Chapter 6 summarises pedestrian safety issues and strategies in other jurisdictions and the final Chapter identifies additional strategies and makes recommendations to enhance pedestrian safety.



## Chapter Two - Pedestrian Casualty Trends

- 2.1 In 2008, with 395 deaths on the State's roads, New South Wales recorded its lowest road toll since World War II. This represented the culmination of a six-year period of progressive reductions in the road toll and constitutes the longest consistent period of continued decline since records began in 1908. Significantly, the 2008 pedestrian fatality figure was the lowest since records were first collected in 1928.<sup>1</sup>
- 2.2 This Chapter examines short and long-term trends in pedestrian casualties in New South Wales,<sup>2</sup> based on pedestrian casualty data collected by the NSW Police Force (NSWPF).<sup>3</sup> As with road trauma in general, the incidence of pedestrian fatalities and injuries is correlated with certain demographic and other predisposing factors, resulting in varying risk profiles for different population groups. While this Chapter looks at pedestrian casualty data at an aggregate level, specific risk levels and underlying causes of pedestrian casualties will be addressed in the following Chapter.

### Long-term Trends in Pedestrian Casualties

- 2.3 Over the past two decades, Australia has achieved an impressive 65% reduction in pedestrian fatalities,<sup>4</sup> recorded against the backdrop of a 49% reduction in the number of deaths for all road user groups.<sup>5</sup> Nationally, the decrease in fatalities for pedestrians is second only to that of cyclists, which recorded a 69% reduction.<sup>6</sup>
- 2.4 During this period, the annual number of pedestrian fatalities in New South Wales decreased from 205 to 52, representing a reduction of 75% for this road user group.<sup>7</sup> The proportional reduction in pedestrian fatalities in New South Wales was well above the national average of 65%, and second only to Tasmania, which achieved a reduction of 93% (albeit with a significantly lower incidence of pedestrian fatalities).
- 2.5 Most discussion of road trauma tends to focus on fatalities, although this is only part of the total picture. Comprehensive analysis of the data requires an examination of both fatalities and injuries. An exclusive focus on fatality data can either undermine the significance of broader pedestrian safety issues, or distort the nature of the problem by ignoring the countless pedestrian injury events that occur each year.
- 2.6 It should be noted in this context that, for the purposes of this Report, the term casualty is used to denote fatalities and injuries combined. The discussion in this Chapter differentiates between injuries and fatalities in assessing the trend data.

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<sup>1</sup> Submission 28, Roads & Traffic Authority, p. 6.

<sup>2</sup> For this Inquiry, long-term has been defined as the period from 1988 to 2008 (the last full year for which data is available). Short-term has been defined as the period of five years immediately preceding this Inquiry. Additional reference periods are 2008 and the first ten months of this year, thereby capturing the large increase in road fatalities prompting the Minister's reference to the Committee.

<sup>3</sup> At the time of writing, the data for fatal traffic crashes for 2008 and 2009 was still preliminary and incomplete.

<sup>4</sup> Department of Infrastructure, Transport, Regional Development & Local Government (DITRD LG), *Road Deaths Australia 2008 Statistical Summary*, Road Safety Report No. 4, May 2009, Table 30, Deaths by State/Territory and road user group – 1984 to 2008, p. 38.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

- 2.7 Severe pedestrian injuries can have a significant impact on the community in terms of public resources expended on emergency services, hospitalisation and rehabilitation costs, which can be ongoing. These incidents also have a profound effect on the friends and family members of the injured person.
- 2.8 Similarly, an exclusive focus on pedestrian deaths can potentially distort the nature of pedestrian safety issues, as illustrated by data on older pedestrians. This pedestrian group is recognised to have an increased risk of fatality due to increased frailty. As a result, vehicle-pedestrian collisions for this group can result in more adverse consequences, resulting in an over-representation in pedestrian fatality rates. Accordingly, when interpreting data it is critical to examine the underlying causes of pedestrian trauma.
- 2.9 According to the RTA's submission: "The trends for pedestrian injuries have been similar [to that for pedestrian fatalities], but not as extreme".<sup>8</sup> In 1988, there were 4,177 pedestrian recorded injuries, decreasing to 2,119 in 2007 (the last year for which this data is available).<sup>9</sup> This decrease constitutes a 49% reduction in pedestrian fatalities, compared to the 67% decrease in pedestrian fatalities for the same period.<sup>10</sup>
- 2.10 These trends represent the cumulative impact of many contributing factors, including advances in road engineering, vehicle design and safety, emergency and medical service response times. This is the case for all road user categories.

## Short-term Trends in Pedestrian Casualties

### Recent Trends – 2008 and 2009 (Year to date)

- 2.11 As stated earlier, 2008 saw New South Wales record its lowest annual road toll since 1944. In total, 395 persons were killed, constituting 40 fewer fatalities, or 9% less than the preceding year.<sup>11</sup> The improvement in pedestrian safety was greater, with 2008 figures representing a 24% reduction in the number of deaths recorded in 2007 (from 68 to 52 in 2008), and the lowest number of pedestrian fatalities since records were first collected in 1928.<sup>12</sup>
- 2.12 Contrasted against these improvements and at the time of the Minister's reference (4 May 2009), the preliminary road toll stood at 163, which was an increase of 40 for the corresponding period in 2008.<sup>13</sup> Preliminary data indicated that 24 pedestrians had been killed,<sup>14</sup> an increase of nine pedestrian fatalities, or 60% on the previous year. This compares to an increase in the overall road toll of approximately 33%.<sup>15</sup>

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<sup>8</sup> Submission 28, Roads & Traffic Authority, p. 7.

<sup>9</sup> NSW Centre for Road Safety, *Road Traffic Crashes in New South Wales, Statistical Statement for the year ended 31 December 2007*, Table 5, Casualties, year, road user class, degree of casualty, p. 22.

<sup>10</sup> Department of Transport and Main Roads, *2004 Road Traffic Crashes in Queensland, May 2009*, p. A1-1, Online at: [http://www.transport.qld.gov.au/resources/file/eb9d8807806347c/Pdf\\_stats\\_road\\_traffic\\_crashes\\_in\\_queensland\\_2004.pdf](http://www.transport.qld.gov.au/resources/file/eb9d8807806347c/Pdf_stats_road_traffic_crashes_in_queensland_2004.pdf).

<sup>11</sup> Submission 28, Roads & Traffic Authority, p. 6.

<sup>12</sup> Ibid.

<sup>13</sup> NSW Centre for Road Safety, *Running Sheet of Fatal Traffic Data for NSW up to and including Sunday, 3 May 2009*.

<sup>14</sup> Ministerial Reference from the Minister for Roads, 4 May 2009.

<sup>15</sup> NSW Centre for Road Safety, *Running Sheet of Fatal Traffic Data for NSW up to and including Sunday, 3 May 2009*.

- 2.13 Since the date of the Minister's referral, an additional 241 lives have been lost on NSW roads, of which 33 were pedestrians.<sup>16</sup> Although the rate of fatalities has slowed since May, the 39% proportional increase in pedestrian fatalities remains higher than the corresponding 29% increase for all road users. In the vulnerable road user group, motorcyclists show a 43% increase and pedal cyclists a 133% increase. These are significantly greater than the 16% increase for vehicle drivers. However, except for pedal cyclists, these increases are not significantly higher than the 38% increase for passengers.
- 2.14 In order to assess the significance of this year's figures it is useful to evaluate the increase in pedestrian fatalities in the year to date with statistics for the preceding three to five years. This point is identified by the NRMA in its submission: "In 2009 we have seen 30 pedestrian fatalities as of 4 June which is 11 more than this date in 2008 but only differs by one in a three year average".<sup>17</sup>
- 2.15 According to the latest RTA Monthly Bulletin of Preliminary Traffic Crash Data, the number of pedestrian deaths in New South Wales has increased to 56. This is 18 more than for the corresponding period in 2008,<sup>18</sup> but comparable to the three-year average.<sup>19</sup> The total number of traffic fatalities for all road user groups, however, is up by 32 on the three-year average, representing an increase of 90 deaths on the 2008 count.<sup>20</sup>
- 2.16 An analysis of road crash fatalities for specific road user groups can also be expressed as a percentage of the total number of traffic fatalities. This measure can illustrate whether trends are confined to particular road user groups, or may be symptomatic of broader movements. As the NSW Police Force Commander of Traffic Services highlights, pedestrian fatalities, as a proportion of all road crash fatalities, currently stand at 14.0% (down marginally from the 14.7% at the time of the Minister's reference).<sup>21</sup>

### Three to Five Year Trends

- 2.17 According to the Department of Infrastructure, Transport, Regional Development & Local Government, pedestrian deaths accounted for 13.7% of all road deaths in Australia in the five-year period to May 2009.<sup>22</sup> The New South Wales figure of 15.4% was slightly above the national average but had improved in the last twelve months of that period.
- 2.18 Despite having figures above the national average, the number of pedestrian fatalities in NSW had declined in the last five years, both in absolute numbers and as a proportion of total road deaths. In this period (2003-2008), the number of pedestrian deaths in NSW fell by 10.6%. In other Australian jurisdictions, Tasmania

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<sup>16</sup> Extracted from NSW Centre for Road Safety Running Sheets (up to and including Sunday 8 November 2009, correct at time of printing).

<sup>17</sup> Submission 18, NRMA, pp. 6-7.

<sup>18</sup> Roads & Traffic Authority, *Preliminary Traffic Crash Data Monthly Bulletin*, October 2009, p.2.

<sup>19</sup> NSW Centre for Road Safety, *Running Sheet of Fatal Traffic Data for NSW*, up to and including Sunday, 8 November 2009.

<sup>20</sup> Ibid.

<sup>21</sup> NSW Police Force, Response to Supplementary Questions, 8 October 2009.

<sup>22</sup> Submission 8, Department of Infrastructure, Transport, Regional Development & Local Government, p. 4.

performed best with a reduction of 13.5% against an Australian average decrease of 3.2%.<sup>23</sup>

- 2.19 As with fatalities, the 2,087 pedestrian injuries recorded in 2008 was also the lowest figure on record since 1945.<sup>24</sup> Preliminary data for 2009 does not indicate a significant increase in pedestrian injuries. As Youthsafe highlights in their submission: "Figures for the first four months of 2008 identified 13 pedestrian fatalities and 632 pedestrian injuries...For the first four months of 2009 there...[were] 23 fatalities and...224 injuries."<sup>25</sup>
- 2.20 This is part of a longer trend, as illustrated in the Injury Risk Management Research Centre's submission, which states:
- Our analysis of Traffic Accident Data System (Roads & Traffic Authority) and Patient Data Collection System (NSW Health) suggests a steady downward trend in pedestrian injuries for the period 1999-2007...[and a] downward trend in pedestrian hospitalisations.<sup>26</sup>
- 2.21 While all loss of life is regrettable and the number of pedestrian fatalities has increased this year, this increase is less significant when compared to the trends over the previous five years. The Committee wishes to stress that pedestrian safety is critical, and New South Wales should not become complacent in its attempts to improve the safety of one of the most vulnerable groups using the road.

## Pedestrian Casualties in Other Australian Jurisdictions

- 2.22 It is also informative to compare the trends discussed earlier with the situation in the rest of Australia. In evidence to the Committee, the Director of the NSW Centre for Road Safety states:
- This year we have seen a significant turnaround in the road toll for pedestrians. It is worth noting that the turnaround is part of the much broader turnaround in the road toll...Every type of road user has increased in fatalities. Pedestrian fatalities have increased, motorcycle fatalities have increased, pedal cycle fatalities have increased, passenger fatalities have increased, and driver fatalities have increased. Further, this is, oddly, a broad national trend. Every State of Australia is sitting on a significant increase in the road toll for 2009, compared with 2008.<sup>27</sup>
- 2.23 The RTA's Monthly Bulletin of Preliminary Traffic Crash Data for October 2009 indicates that casualty experiences across Australian jurisdictions for the year-to-date have varied. For the country as a whole, the number of fatal crashes in 2009 has increased by 5.4% from the previous year, with fatalities increasing by 7.0%.<sup>28</sup> However, the jurisdictions are evenly split, with four registering an increase and the other four recording a decrease in fatal crashes and fatalities.
- 2.24 The extent of the change from 2008 to 2009 varies considerably, with Tasmania experiencing an increase of 44.8% in fatal crashes and the Northern Territory a decrease of 58.5%. In the case of fatalities, Tasmania's 2009 toll represents an

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<sup>23</sup> Department of Infrastructure, Transport, Regional Development & Local Government (DITRDLG), *Road Deaths Australia 2008 Statistical Summary*, Road Safety Report No. 4, May 2009, Table 1, Deaths by State/Territory and road user group – 2007, 2008 and five year trend, p. 5.

<sup>24</sup> Submission 28, Roads & Traffic Authority, p. 7.

<sup>25</sup> Submission 15, Youthsafe, p. 2.

<sup>26</sup> Submission 30, Injury Risk Management Research Centre, pp. 1-2.

<sup>27</sup> Transcript of Evidence, 27 August 2009, p. 1.

<sup>28</sup> Roads & Traffic Authority, *Preliminary Traffic Crash Data Monthly Bulletin*, October 2009, p. 4.

increase of 76.7%, while the Northern Territory is currently running at 61.4% fewer fatalities. New South Wales has recorded increases for both counts, 27.7% for the former, and 32.1% for the latter.<sup>29</sup>

- 2.25 Data collated by the Department of Infrastructure, Transport, Regional Development & Local Government indicates a similar trend for pedestrian fatalities. While the number of pedestrian fatalities has increased by 16.5% for the twelve months ending September 2009, compared to the equivalent period last year, there is considerable variation between the jurisdictions. Tasmania, has recorded an increase of 300%, while the Northern Territory's pedestrian fatalities have fallen by 43.8% and the Australian Capital Territory has registered one pedestrian death for the period October 2008 to September 2009, compared to three pedestrian deaths in the preceding twelve months.<sup>30</sup>
- 2.26 While the figures for the smaller States and Territories tend to be skewed by the low number of incidents, it is noteworthy that the second largest jurisdiction, Victoria, has experienced a 12% reduction in pedestrian fatalities this year, when compared with the 2008 corresponding period.<sup>31</sup> The increase in pedestrian fatalities in New South Wales equates to 39%. It would be incorrect, therefore, to explain the increase in pedestrian and other road user fatalities in New South Wales as part of a consistent national trend.

## Differences Between Metropolitan and Non-metropolitan Areas

- 2.27 Any comprehensive analysis of pedestrian casualty data must take account of variations within States as well as between jurisdictions. The data on pedestrian injuries and fatalities reveals significant differences in metropolitan and non-metropolitan areas of New South Wales.<sup>32</sup>
- 2.28 According to the RTA's submission, during the five-year period 2004 to 2008, 85% of pedestrian casualties occurred in metropolitan areas of New South Wales.<sup>33</sup> This is reflected in Compulsory Third Party (CTP) claims data, indicating that a majority of claims lodged are in metropolitan New South Wales, where the population density is greater. The Motor Accidents Authority (MAA) reports that this proportional breakdown has been relatively stable over the past decade.<sup>34</sup>
- 2.29 Pedestrian casualty outcome figures for 2008 reinforce this trend, with metropolitan areas accounting for 85% of pedestrian injuries and 75% of all pedestrian fatalities.<sup>35</sup>
- 2.30 The Roads & Traffic Authority submits that around 2% of pedestrian casualties in metropolitan areas result in the death of the pedestrian, with this ratio rising to 4% for

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<sup>29</sup> Ibid.

<sup>30</sup> Department of Infrastructure, Transport, Regional Development & Local Government, Road Deaths Australia Monthly Bulletin, September 2009, p. 10. Western Australia had registered the second most significant proportional increase of 41.2%.

<sup>31</sup> Data supplied by the Bureau of Infrastructure, Transport & Regional Economics.

<sup>32</sup> The Report has adopted the RTA's definition of these geographical areas. Metropolitan is defined as the Sydney, Newcastle and Wollongong metropolitan areas (as defined); all other LGAs are considered to be non-metropolitan. Please note, that the RTA's Local Government Areas represent the boundaries in force in 2003. See: NSW Centre for Road Safety, *Road Traffic Crashes in New South Wales, Statistical Statement for the year ended 31 December 2007*, pp. 12-13.

<sup>33</sup> Submission 28, Roads & Traffic Authority, p. 15.

<sup>34</sup> Submission 25, Motor Accidents Authority, p. 5.

<sup>35</sup> Submission 28, Roads & Traffic Authority, p.12.

non-metropolitan pedestrian casualties.<sup>36</sup> The RTA contends that improvements in pedestrian safety in metropolitan areas could be attributable to "...lower impact speeds (from lower posted speed limits), safer vehicle design, and possibly improved emergency response times...".<sup>37</sup> In contrast, the higher severity of pedestrian casualties in non-metropolitan areas may be attributable to the prevalence of higher posted speed limits on the road network in these areas.

- 2.31 The trends in pedestrian casualties have also differed markedly between metropolitan and non-metropolitan areas. Since 1996, the number of pedestrian casualties in non-metropolitan New South Wales has been relatively stable, compared to the trend in metropolitan areas. In the same period, the number of pedestrian fatalities in non-metropolitan areas dropped from 23 to 13, a decrease of 43%.<sup>38</sup>
- 2.32 Similarly, non-metropolitan pedestrian injuries registered 514 at the beginning of the period, but decreased to 291 in 2008 (a reduction of 43%). In contrast, during the same period, pedestrian fatalities in the metropolitan areas dropped from a peak of 107 to 39 (a decrease of 64%) and pedestrian injuries reduced from a peak of 2,720 to 1,796 (a decrease of 34%).
- 2.33 The pattern of pedestrian casualty locations also varies. In rural and regional New South Wales, pedestrian fatalities are widely distributed but the RTA has identified two clusters of pedestrian fatalities outside metropolitan centres. These are the Far North Coast and Lower Hunter/Port Stephens areas. Pedestrian injury clusters are concentrated in the same areas, as well as in Nowra to the South, and Taree, Port Macquarie and Coffs Harbour to the North.
- 2.34 Finally, the population characteristics of pedestrian casualties in non-metropolitan areas differ from those in metropolitan areas. For the five-year period 2004-2008, the majority of pedestrian fatalities in metropolitan areas fall into the 70+ age group, whereas the bulk of pedestrian fatalities in non-metropolitan areas fall into the 30-49 year age group.<sup>39</sup> The differences in the underlying causes of pedestrian casualties between the two geographic areas are explored further in the subsequent Chapter.
- 2.35 There is also considerable variation in pedestrian fatality and injury rates within metropolitan boundaries. Available data indicates that distance from the Sydney CBD results in higher pedestrian casualties and a greater proportion of pedestrian fatalities.
- 2.36 The RTA submission to the Inquiry shows that in the period 2004-2008, the City of Sydney local government area accounted for 3% of the State's pedestrian fatalities and 14% of pedestrian injuries. During the same period, the Inner Sydney Metropolitan area accounted for 18% of pedestrian fatalities and 24% of pedestrian injuries, whereas the subregion Rest of Sydney Metropolitan Area accounted for 32% of pedestrian fatalities and 36% of pedestrian injuries.<sup>40</sup>
- 2.37 The Outer Sydney Region appears to counter the trend, with a lower proportion of pedestrian fatalities than the Rest of Sydney Metropolitan area, albeit with the highest ratio of fatalities to injuries. This subregion accounts for 5% of pedestrian fatalities

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<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

<sup>39</sup> Submission 28, Roads & Traffic Authority, Appendix, p. 2.

<sup>40</sup> Submission 28, Roads & Traffic Authority, p.15.

and 1% of pedestrian injuries. The outlying metropolitan areas have similar proportions of pedestrian casualties, with the Central Coast constituting 5% and 3% of pedestrian fatalities and injuries, the Newcastle Metropolitan Area 5% and 4%, and the Wollongong Metropolitan Area, 4% and 3% respectively.<sup>41</sup>

- 2.38 It should be noted that pedestrian casualty data at an aggregate level, while useful, can also conceal localised trends. For example, as stated above, the City of Sydney area in the 2004-2008 period accounted for 3% of the State's pedestrian fatalities and 14% all pedestrian injuries. However, road crash statistics at an individual local government level paint a different picture.
- 2.39 According to the City of Sydney submission, pedestrians accounted for 28.3% of road injuries in 2007. The average for local government areas in the Sydney Regions is 11% and 8.3% for the State.<sup>42</sup> Similarly, throughout New South Wales the number of pedestrian injury crashes in the ten-year period 1998-2007 has been trending down. However, the number of pedestrian injury crashes in the CBD has been increasing since 2003.<sup>43</sup>
- 2.40 The City of Sydney cautions that "...there is a potential for more conflict between pedestrians, cyclists and motor vehicles" as the number of people walking and cycling to work increases.<sup>44</sup> Another submission received by the Committee presents data illustrating that in the fourteen year period, 1994-2007, the number of pedestrians killed in the Sydney Metropolitan Area exceeded the number of motor vehicle drivers killed on eight occasions.<sup>45</sup>

## Deficiencies In Pedestrian Casualty Data

- 2.41 A number of submissions received by the Committee raise concerns about current methods of capturing crash casualty data. This applies to data accuracy as well as the classification of gathered information. The shortcomings identified are not exclusively directed at pedestrian casualty data, but include systemic criticisms affecting all road crash casualty data collection.
- 2.42 The Committee notes, however, that some of the data shortcomings relevant to the current Inquiry are specific to the nature of vehicle-pedestrian collisions. This point was raised by the Director of the Centre for Road Safety in evidence before the Committee:
- ...there is considerable sophistication required to analyse speed for pedestrian crashes, more than for other crashes...If we went out to a crash...and the impact has been so severe that the engine is separate from the vehicle...You are going to know that that is a speed crash...But how many of us could look at the injuries received by a fatally injured pedestrian and assess the speed of impact?<sup>46</sup>

## Inconsistent and Inadequate Definitions and Data

- 2.43 One of the primary criticisms of currently available crash data is the lack of consistency in national, State and local definitions. These discrepancies are

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<sup>41</sup> Submission 23, City of Sydney, p. 13.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid. p. 3.

<sup>45</sup> Submission 21, Mr Russell Webber, Attachment.

<sup>46</sup> Transcript of Evidence, 27 August 2009, p. 6.

highlighted in the submission made by the Institute of Public Works Engineering Australia (IPWEA).

- 2.44 At the Commonwealth level, the Australian Institute of Health & Welfare (AIHW) and Australian Transport Safety Bureau (ATSB), define serious injury as "...an injury which results in the person being admitted to hospital and subsequently discharged alive either on the same day or after one or more nights stay in a hospital bed".<sup>47</sup>
- 2.45 In Queensland, a "serious injury" is defined as "...any person involved in a traffic crash requiring hospitalisation (admitted to hospital), or requiring medical treatment." In that jurisdiction, the distinction between "serious injury" and an "injury" is even more ambiguous, with the latter defined as "...any person involved in a road traffic crash [that] requires hospitalisation, medical treatment, or receives a minor injury (i.e. first aid treatment only)".<sup>48</sup>
- 2.46 The discrepancies in definitions have obvious consequences for comparison of casualty data from different States and Territories, and internationally.
- 2.47 In New South Wales, the Roads & Traffic Authority does not make a distinction between injuries and serious injuries. The Authority's Annual Statistical Statement provides information on injury crashes, which are defined as: "A non-fatal crash for which at least one person is injured".<sup>49</sup>
- 2.48 The submission lodged by the Institute of Public Works Engineering details the current methodology for determining the number of "serious" crash injuries in New South Wales. While this relates to all road crashes, the same process is followed for pedestrian crashes.

The NSW RTA Accident Statistics...for 1997-2006 indicates there was an average of approximately 25,000 injury crashes each year in NSW alone, with a peak of almost 30,000 in 2000. The RTA *imputes* the number of serious crashes from this yearly total to be over 8,000. The RTA data cannot extract whether or not the injury was actually serious or not.<sup>50</sup>

- 2.49 According to the RTA's Annual Statistical Statement, the classification of injury data into "serious" injury or "other" injury was discontinued in 1998, "...as the police reported that 'admitted to hospital data' were no longer considered reliable".<sup>51</sup>
- 2.50 Since that time, the number of different types of accidents coded has been progressively reduced. Data up to 1996 was classified according to five categories: fatal, admitted injury, treated injury, non-treated injury and non-casualty (tow away). In 1996, the number of categories was reduced to four, namely: fatal, serious injury, other injury and non-casualty (tow away). The categories were further refined in 1997 to include only three categories: fatal, injury and non-casualty (tow away).<sup>52</sup>

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<sup>47</sup> Australian Institute of Health & Welfare, Australian Transport Safety Bureau, *Serious injury due to transport accidents, Australia 2003-04*, AIHW Injury Research & Statistics Series, No. 35, October 2007, p. 8, Online at: <http://www.nisu.flinders.edu.au/pubs/reports/2007/injcat101.pdf>, Accessed 19/10/2009.

<sup>48</sup> Department of Transport and Main Roads, *2004 Road Traffic Crashes in Queensland*, May 2009, p. A1-1, Online at: [http://www.transport.qld.gov.au/resources/file/eb9d8807806347c/Pdf\\_stats\\_road\\_traffic\\_crashes\\_in\\_queensland\\_2004.pdf](http://www.transport.qld.gov.au/resources/file/eb9d8807806347c/Pdf_stats_road_traffic_crashes_in_queensland_2004.pdf).

<sup>49</sup> NSW Centre for Road Safety, *Road Traffic Crashes in New South Wales, Statistical Statement for the year ended 31 December 2007*, p.12.

<sup>50</sup> Submission 14, Institute of Public Works & Engineering Australia, p. 5.

<sup>51</sup> NSW Centre for Road Safety, *Road Traffic Crashes in New South Wales, Statistical Statement for the year ended 31 December 2007*, p. 11.

<sup>52</sup> Roads & Traffic Authority, *Traffic Accident Database Data Manual* (Jul-03), pp. 2-1, 2-2.

- 2.51 Associated with the problem of inconsistent definitions, several submissions claim that the adopted definitions are inadequate or meaningless. The City of Sydney, among others, argues that crash data ought to identify severe injuries.<sup>53</sup> This is echoed by Institute of Public Works Engineering Australia: “The use of an ambulance trip to hospital [to define ‘serious injury’] is in no way indicative of severity of injury and thus can give false and misleading data on pedestrian injury.”<sup>54</sup>
- 2.52 This view is in accordance with the NSWPF’s assertion that ‘admitted to hospital data’ is no longer considered reliable as a definition for serious injury. However, IPWEA and other organisations have expressly rejected the definition utilised but not the need for the categorisation of serious injuries.
- 2.53 The inability of road safety practitioners to distinguish between the severity of pedestrian injuries makes it very difficult to accurately calculate the costs to the community of such crashes. According to IPWEA, improvements to the fatal traffic crash data that define serious injuries would help determine: “...how badly people are being injured, what [it] is costing the community, and the most appropriate methods of treating these known problem areas”.<sup>55</sup>
- 2.54 The NSW Institute of Trauma & Injury Management, however, reports on serious to critical injuries in patients treated in the State’s trauma centres.<sup>56</sup> Trauma centres utilise the Injury Severity Score (ISS) to categorise the severity of injuries sustained by patients. A “serious injury” is defined as one which scores in the range of 16-24, on a total scale from 0 to 75.<sup>57</sup>
- 2.55 The Institute advocates the adoption of the Abbreviated Injury Score (AIS) to define serious injury. The AIS classifies individual injuries by body region on a 6-point severity scale.<sup>58</sup> Injury Severity Scores, (as used by the NSW Institute of Trauma Management) are calculated based on the AIS classification. Such classifications are undertaken by health professionals, thus removing the difficulties encountered by “...police officer[s] trying to make some sort of judgement without any expertise in the injury level of a person”.<sup>59</sup>
- 2.56 In addition to improved information regarding pedestrian injuries, several submissions contend that more detailed analysis of pedestrian crashes is required in order to determine appropriate countermeasures. NRMA Motoring & Services provided a list of factors and characteristics that ought to be collated for pedestrian casualties, including: age of casualty; crash location (intersection or mid-block); date; time of day; type of road (speed zone); presence of pedestrian facilities (e.g. zebra crossing, traffic signals, refuge island); prevailing weather conditions; and involvement of drugs/alcohol.<sup>60</sup>

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<sup>53</sup> Submission 23, City of Sydney, p. 12.

<sup>54</sup> Submission 14, Institute of Public Works & Engineering Australia, p 7.

<sup>55</sup> Ibid. p. 9.

<sup>56</sup> While not all trauma injuries are sustained in traffic crashes, road trauma constitutes the most significant mechanism of injury. In 2006, 1,055 road trauma victims were admitted to NSW trauma centres, representing 44% of the total number of seriously injured persons. Source: NSW Health, Institute of Trauma & Injury Management, *The NSW Trauma Registry Profile of Serious to Critical Injuries 2006*, p. 11.

<sup>57</sup> NSW Health, Institute of Trauma & Injury Management, *The NSW Trauma Registry Profile of Serious to Critical Injuries 2006*, p. 5.

<sup>58</sup> The Abbreviated Injury Score categories are as follows: 1-Minor, 2-Moderate, 3-Serious, 4-Severe, 5-Critical and 6-Unsurvivable.

<sup>59</sup> Transcript of Evidence, 27 August 2009, p.19.

<sup>60</sup> Submission 18, NRMA Motoring & Services, p. 11.

- 2.57 In response to supplementary questions from the Committee, the NSWPF provided information on the fields of data entry that officers are required to complete on the Computerised Operational Policing System (COPS), which feeds into the RTA's Traffic Accident Database (TADS). NSW Police advises that:
- ...for a very basic single vehicle crash, owner driver, no person injured, no alcohol involved, approximately 100 fields of data need to be entered on COPS...For a persons injured or fatal crash with multiple vehicles, more than 200 fields of data are required...[and furthermore] the programming costs for writing new questions/fields can run into hundreds of thousands of dollars.<sup>61</sup>
- 2.58 Therefore, even though the NSWPF Commander of Traffic Services acknowledges that there is room for improving data collection in relation to accidents (including vehicle-pedestrian collisions),<sup>62</sup> such changes need to be supported by an identified critical need and undertaken on a system wide basis, rather than by responding in a piecemeal fashion.
- 2.59 However, given the extent of the information captured by police attending traffic crashes, there may be a case of improving stakeholder access to crash data, as the RTA suggests, and not a problem with the specificity of the data collected by the NSWPF.
- 2.60 Local Government Road Safety Officers are provided with information on traffic crashes in their local government area on a biannual basis. This information is provided in an Excel spreadsheet, with only limited capacity for filtering the data. The task of sorting through the data is further complicated by the RTA's reporting methods.
- 2.61 According to the RTA's Annual Statistical Statement: "The Local Government Areas used in this statement represent boundaries in force in 2003. There have been some boundary changes since then".<sup>63</sup>
- 2.62 Changes to local government areas occur on an ad hoc basis and often involve changes of minor significance, such as moving a boundary so that it does not partition a property. However, since 2003 there have been several significant boundary changes, including the amalgamation of numerous councils in 2004, which resulted in the reduction of local government areas from 111 to 98. Consequently, the City of Sydney Council, for example, receives three separate data sets: one for the City of Sydney; one for Leichhardt Municipal Council; and another for the South Sydney City (now abolished).
- 2.63 Other road safety stakeholders, such as the NRMA, have access only to the data that is made publicly available. Currently the RTA produces an Annual Statistical Statement on Road Traffic Crashes in New South Wales, published around November of the following year. The Statement is accompanied by a Monthly Bulletin, and a daily road toll of fatal crash statistics. As the NRMA states:
- Currently it is difficult for any agency other than the RTA to analyse the data and track trends or emerging issues on involvement of pedestrians in the road toll as the data which is made publicly available is limited.<sup>64</sup>

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<sup>61</sup> NSW Police Force, Response to Supplementary Questions, 8 October 2009, Appendix.

<sup>62</sup> Transcript of Evidence, 27 August 2009, p.19.

<sup>63</sup> NSW Centre for Road Safety, *Road Traffic Crashes in New South Wales, Statistical Statement for the year ended 31 December 2007*, p. 11.

<sup>64</sup> Submission 18, NRMA Motoring & Services, p. 6.

- 2.64 In contrast, the equivalent organisation in Victoria, VicRoads, has developed an accident statistics and mapping program, CrashStats, available on the Internet. CrashStats is available in two versions, the public application and a restricted application. The latter version is available for road safety practitioners and contains detailed information from the crash site in a form able to be modified to suit individual requirements.
- 2.65 The collation of pedestrian injury data is also problematic because of less rigorous reporting requirements. Accordingly, there is a considerable lag in reporting pedestrian (and other road user) injuries. The main means of accessing information about pedestrian injuries is the Roads & Traffic Authority's Monthly Bulletin and the Annual Statistical Statement.
- 2.66 The difficulties associated with the collation of data on pedestrian injuries is illustrated by the fact that the Monthly Bulletin reports on fatalities for the latest month, whereas there is a one month delay for data on pedestrian casualties.
- 2.67 Furthermore, the data published by the RTA is derived from information collected by NSW Police Force officers attending crash sites. This information is uploaded onto the COPS database and supplied to the RTA.
- 2.68 According to the submission provided by IPWEA, "Police are not mandated to attend every crash and frequently are unable to do this due to limits of resource allocation".<sup>65</sup> In other instances, "...people do not want the police involved in what they consider minor incidents and thus will avoid calling for assistance".<sup>66</sup> Because of this, the data available to the NSWPF and provided to the RTA is incomplete.
- 2.69 An additional issue in relation to the completeness of collected data involves the status of local, or unclassified, roads. According to the Institute of Public Works Administration, this category of roads is often not included in the database. These issues are discussed in greater detail in the following Chapter.

### Lag in Provision of Traffic Casualty Data to Stakeholders

- 2.70 According to the City of Sydney, the RTA provides biannual crash data to local governments.<sup>67</sup> At the time of preparing their submission, the latest data available included crashes up to 31 December 2007. Several local councils submitted that delays in crash data (of up to 18 months) inhibit their ability to respond to new and emerging trends in a timely manner. The City of Sydney notes, however, that upgrades to the RTA's CrashLink system currently underway should provide more up to date information to road safety professionals.
- 2.71 The Committee has raised deficiencies in traffic crash data in a previous inquiry into Young Driver Safety and Education Programs. The ensuing report noted the benefit to be gained from improved sharing of this information. Specifically, the Committee recommended that an interagency working group be established to "...develop a comprehensive plan to collect and disseminate consistent road safety statistics and information".<sup>68</sup> A further recommendation was made to ensure that data is made widely available, and in a variety of formats to meet the needs of diverse stakeholders and interest groups.<sup>69</sup>

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<sup>65</sup> Submission 14, Institute of Public Works & Engineering Australia, p. 7.

<sup>66</sup> Ibid.

<sup>67</sup> Submission 23, City of Sydney, p. 12.

<sup>68</sup> Staysafe Committee, *Report on Young Driver Safety and Education Programs*, November 2008, p.11.

<sup>69</sup> Ibid.

- 2.72 These previous recommendations, not yet responded to, remain critical to the provision of timely and accurate statistical data to road safety organisations, researchers, road safety professionals and members of the public. The Committee reiterates the need for urgent action to resolve this issue.

## Incidence of 'Fail to Stop' Crashes

- 2.73 The *Road Transport (Safety and Traffic Management) Act 1999* imposes a duty on participants and others involved in road accidents to stop and render assistance if the impact results in injury.<sup>70</sup> The legislation provides that a person failing to stop and render assistance after being involved in an impact occasioning the death of, or injury to, another person, where that person knows (or ought to have known) that they were involved in such an impact, has committed an offence.
- 2.74 The NSWPF, in its submission, gave figures for the number of incidents in which motorists fail to stop after involvement in a pedestrian crash as a proportion of all motor vehicle crashes. Presented in this way, the incidence of this offence appears to be infrequent, with figures indicating that for the three-year period from 2006-08, NSW registered a progressive reduction from 0.89% to 0.82%, and finally 0.81%.<sup>71</sup>
- 2.75 According to the RTA, however, approximately 7% of fatal pedestrian crashes and 11% of pedestrian injury crashes involve the driver (or rider) leaving the scene without rendering assistance or exchanging particulars.<sup>72</sup>
- 2.76 The reason for the discrepancy is twofold. Whereas the RTA measures the offence as a proportion of all fatal pedestrian crashes, or, alternatively, all pedestrian injury crashes, the Police Force measures the offence as a proportion of all motor vehicle crashes, a more frequent occurrence.
- 2.77 Secondly, the NSW Police Force submission provides data solely for failing to stop and render assistance, an offence under the *Road Transport (Safety and Traffic Management) Act 1999*. The RTA, on the other hand, has grouped this with another offence, namely the responsibility for drivers to stop at the scene of a crash and give the required particulars to any other person involved in the crash who is injured (or any other driver involved, or the owner of any property damaged in the crash). This is an offence under the Road Rules 2008,<sup>73</sup> made under the *Road Transport (Safety and Traffic Management) Act 1999*.
- 2.78 The NSWPF has characterised these offences as "crime[s] of opportunity". In the opinion of the Police Force, the incidence of these offences is affected by the degree of isolation of the crash site, the availability of a witness and the effect of alcohol and/or drugs on the judgement of the driver involved.<sup>74</sup> The first factor may explain why the incidence is slightly higher in non-metropolitan than in urban areas (8% and 6% respectively for fatal crashes, and 13% and 11% for injury crashes).<sup>75</sup>
- 2.79 Other evidence to the Committee refers to the possibility that large vehicles such as buses, trucks and 4WDs may cause a pedestrian casualty without the driver's

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<sup>70</sup> *Road Transport (Safety and Traffic Management) Act 1999* No 20, Part 5 Division 3, s70.

<sup>71</sup> Submission 24, NSW Police Force, p. 4.

<sup>72</sup> Submission 28, Roads & Traffic Authority, p. 44.

<sup>73</sup> Part 18, Division 1, Rule 287.

<sup>74</sup> NSW Police Force, Response to Supplementary Questions, 8 October 2009.

<sup>75</sup> Submission 28, Roads & Traffic Authority, p. 44.

knowledge.<sup>76</sup> In such cases, the design of the vehicle may prevent drivers having a direct view of a pedestrian venturing into the vehicle's path and is particularly hazardous for younger pedestrians.

- 2.80 While the incidence in the number of "fail to stop" incidents declined in New South Wales between 2006 and 2008, a comparison with other Australian jurisdictions is not easily made due to differences in crash classifications.<sup>77</sup> While the progressive decline in such offences is reassuring, the Committee remains concerned about all instances when drivers neglect to render assistance to others.

## Conclusions and Recommendations

- 2.81 It is apparent from the information available that 2009 has seen a rise in pedestrian fatalities in NSW. This trend has also been observed in some other States. However, at this stage it is not possible to determine the significance of this recent increase when compared to longer-term casualty trends. While the increase does represent a break in the general downward movement in pedestrian and total fatality rates in NSW, it is too early to predict whether the upward trendline will continue.
- 2.82 Underlying determinants of pedestrian casualties are complex and varied and the following Chapter of the Report will canvass some of the causes identified to date. An important precondition to identifying critical factors and designing interventions to improve road safety is the availability of useful data.
- 2.83 Comprehensive data collection is vital in the development and execution of sound public policy. The timely and efficient availability of accurate information should provide an increased capacity to deliver effective services and programs to all stakeholders, including members of the public.
- 2.84 Evidence taken by the Committee reinforces the need for improvements in the way statistical information is collected and shared within the road safety community. The Committee agrees with concerns expressed during the Inquiry and stresses the urgency for action to be taken to address current shortcomings. The lack of rigorous definitions, ready availability and comprehensive capture of up-to-date information has been a source of frustration and complaint by many organisations consulted by Staysafe.
- 2.85 The Committee urges the RTA to engage in greater consultation with road safety organisations and consumer groups to develop improvements in the collection and dissemination of road safety data to the benefit of the entire community.

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<sup>76</sup> Submission 30, Injury Risk Management Research Centre, p. 3.

<sup>77</sup> NSW Police Force, Response to Supplementary Questions, 8 October 2009.

**RECOMMENDATION 1:**

The Committee recommends that the Roads & Traffic Authority, in consultation with the Institute of Public Works Engineering Australia, the NSW Institute of Trauma & Injury Management, the NSW Police Force and NSW Health, develops agreed definitions of injury severity, based on internationally recognised standards of classification. In addition to obtaining uniform data, this will also assist in estimating the costs of such injuries, enabling the design of improved treatment options and appropriate countermeasures based on reliable data.

**RECOMMENDATION 2:**

The Committee reiterates recommendations made in its Young Driver Safety & Education Programs report and again recommends the establishment of an interagency working group, comprising the Centre for Road Safety, NSW Health, NSW Police Force and other government agencies currently collecting statistical information on road safety issues. The working group should examine road safety data management in other jurisdictions in order to develop a comprehensive plan for the collection and dissemination of consistent road statistics in NSW.

**RECOMMENDATION 3:**

The Committee recommends that, as part of the interagency working group review of current data collection and management, the Centre for Road Safety updates its local government boundaries in order to accommodate recent changes.

**RECOMMENDATION 4:**

The Committee further recommends that the Centre for Road Safety gives priority to examining improved user functionality for professional groups accessing data, such as Road Safety Officers, and ensures that collected data is made widely available, free of charge and in a variety of formats to meet the needs of diverse stakeholders and interest groups.

# Chapter Three - Causes of Pedestrian Casualties

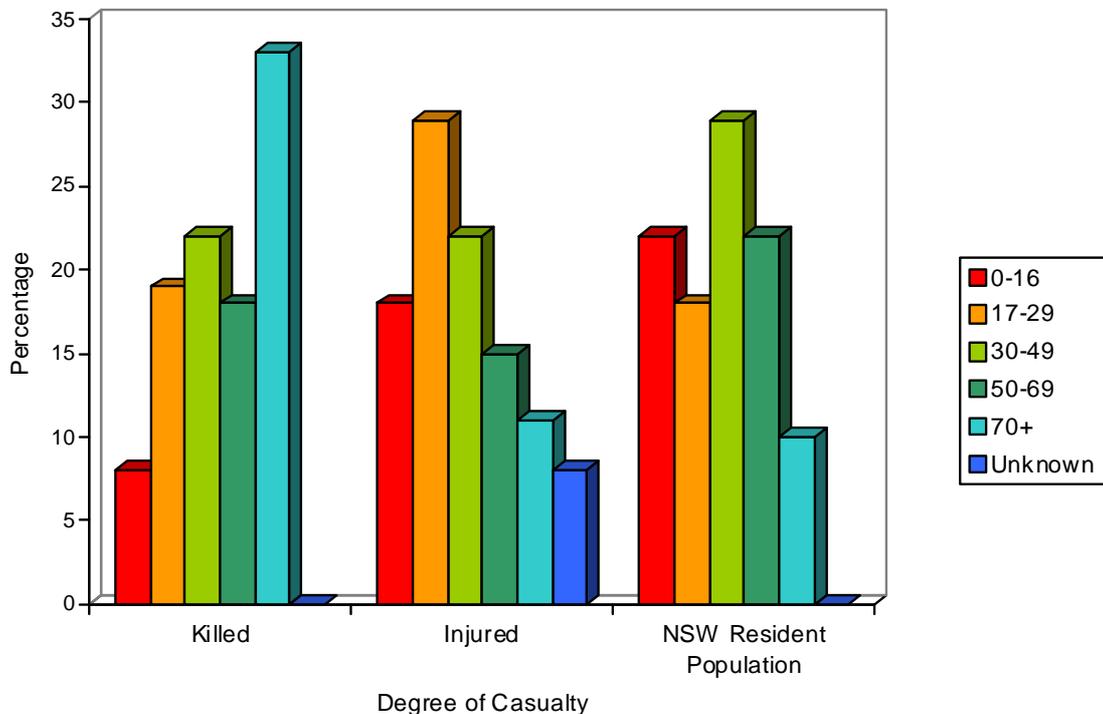
## Background

- 3.1 As described in the previous Chapter, pedestrian fatalities in NSW from 1970 until 2005 represented about one fifth of the road toll and constituted as much as one third of all road deaths in metropolitan areas. Between 2002 and 2006, around 70% of pedestrian fatalities occurred in the greater Sydney, Newcastle and Wollongong areas. These figures were markedly reduced in 2006 to 2008 but have increased substantially this year.
- 3.2 Specific causes of pedestrian casualties are often difficult to isolate, due to the influence of many contributing variables to a single event. Based on available data, major factors identified as significant predictors of pedestrian casualty risk are judgement errors and alcohol. These factors interact with a range of other variables, including: pedestrian age; gender; location (metropolitan, rural/regional); road classification; speed limits; pedestrian controls; time of day and week; lighting; weather conditions; and type of vehicle involved.
- 3.3 It should not be assumed, however, that pedestrians are necessarily at fault in all pedestrian casualties. The responses of drivers and other road users to pedestrians obviously also play a major factor in determining the cause and severity of any crash incident. The notion of shared responsibility is vital in designing and implementing strategies to reduce the incidence and severity of pedestrian crashes. It is also important to acknowledge that attributing fault, rather than focussing on crash avoidance, may not always assist in designing optimal strategies to improve pedestrian safety.
- 3.4 Another confounding variable in documenting underlying casualty causation is the quality and accuracy of available data. As indicated in the previous Chapter, and in previous Staysafe Committee reports, data collection in NSW suffers from a range of deficiencies. These include recording accuracy and timeliness.
- 3.5 Evidence provided to the Committee by organisations such as the Institute of Public Works Engineering Australia and the NRMA highlight the need for greater interagency collaboration in the collection and sharing of data sets to provide a more accurate picture of the crash scene and the extent of injuries incurred. Greater specificity in data collection would allow improved in-depth analysis, more timely access to road crash information by a range of organisations with responsibility for road safety and enhance treatment priorities for serious injuries.
- 3.6 A description of pedestrian casualties detailed in the previous Chapter indicates that until 2009, the rate of fatalities was trending downward as was the case for all road user categories. In an attempt to describe the underlying features of pedestrian casualties, the following typology serves to illustrate the nature and range of situations identified in research data and evidence provided to the Committee. This may usefully provide some clues as to where and how interventions and countermeasures may be most effectively applied for improved and optimal outcomes in addition to strategies already undertaken.

## Demographic Factors

3.7 The following figure provides an overview of pedestrian casualties from 2004-2008 and highlights vulnerabilities in a range of age groups, by degree of severity contrasted against their representation in the general population.

Figure 1 – Pedestrian Casualties, 2004-2008p, Degree of Casualty, Age Group<sup>1</sup>



## Younger Pedestrians

3.8 Children and young people comprise two separate cohorts in the RTA crash database. In the 0-16 year category, representing 22% of the NSW resident population for the period 2004-2008, this group incurred 18% of total pedestrian injuries and 8% of total pedestrian fatalities. The contrasting young adult category, aged 17-29 years and representing 18% of the NSW resident population, accounted for 26% of all pedestrian injuries and 19% of fatalities.<sup>2</sup>

3.9 In the twelve months to August 2009, preliminary RTA data indicates that the percentage of pedestrian fatalities in the 0-16 category is 13% as opposed to 22% for the 17-29 years category.<sup>3</sup>

3.10 As previously discussed, causality is not clear-cut. However, by further differentiating between young age groups, it is possible to highlight some of the predisposing factors which gives rise to different risk profiles.

3.11 According to Kidsafe NSW, a not-for-profit organisation involved in injury prevention and providing research and advocacy services based at the Children's Hospital Westmead: "Children need assistance dealing with the traffic environment until at

<sup>1</sup> Submission 28, Roads & Traffic Authority, p.31.

<sup>2</sup> Ibid.

<sup>3</sup> Roads & Traffic Authority, *Preliminary Traffic Crash Data Monthly Bulletin*, August 2009, p. 6.

least the age of 10 as they are not equipped physically or developmentally to make the crucial decisions to keep them safe".<sup>4</sup>

- 3.12 Kidsafe NSW stresses that children are vulnerable road users, who may think they can handle crossing a road by themselves, but are subject to a number of limiting physical and behavioural factors, including that children:
- Are easily distracted and focus on only one aspect of what is happening;
  - Are smaller and harder for drivers to see;
  - Are less predictable than other pedestrians;
  - Cannot accurately judge the speed and distance of moving vehicles;
  - Cannot accurately predict the direction sounds are coming from;
  - Are unable to cope with sudden changes in traffic conditions;
  - Do not understand abstract ideas - such as road safety;
  - Are unable to identify safe places to cross the road; and
  - Tend to act inconsistently in and around traffic.<sup>5</sup>
- 3.13 This view is reinforced by The George Institute for International Health, which submits that: "...child pedestrian injury remains one of the leading causes of death for children aged 5 to 9 years in Australia although the incidence of injury has declined...".<sup>6</sup>
- 3.14 The George Institute continues:
- There is now considerable evidence that developmental processes have a large impact on a child's ability to make safe decisions when crossing the road. Crossing a road is physically an easy task for the child. However, making a decision about when to cross is a difficult cognitive task if traffic is present. It requires that the child detects motion, ascertains if the motion is toward or away as well as requiring the child to estimate the time of the vehicle's arrival. Execution of these tasks relies on figure-ground discrimination, distance depth cues, and the relative size of the vehicle and its velocity. These various cognitive tasks, which must be completed before crossing takes place, demand considerable abilities particularly for children younger than 10 years.<sup>7</sup>
- 3.15 A 2008 research study using a road simulated environment conducted by the Monash University Accident Research Centre (MUARC), similarly found that children predominantly made decisions based on the distance gap of vehicles and that younger children (6-7 year olds) were 12 times more likely than older children (8-10 year olds) to make critically incorrect crossing decisions (where a 'yes' response was made but walking time was less than the time gap and may have resulted in a collision in a real life scenario).<sup>8</sup>
- 3.16 Cases of driveway casualties involving young children were not highlighted in the evidence received by the Committee, although the failure to include private roadway incidents in the data collection process gives rise to criticism about the adequacy of the available statistics.

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<sup>4</sup> Kidsafe NSW, *Pedestrian Safety*, Online at: [http://www.kidsafensw.org/roadsafety/pedestrian\\_safety.htm](http://www.kidsafensw.org/roadsafety/pedestrian_safety.htm), Accessed 15 September 2009.

<sup>5</sup> *ibid.*

<sup>6</sup> Submission 29, The George Institute for International Health, p. 1.

<sup>7</sup> *Ibid.* p. 2.

<sup>8</sup> Monash University Accident Research Centre, *Child Pedestrians: Factors associated with ability to cross roads safely and development of a training package*, Report No. 283, November 2008, p. III.

Causes of Pedestrian Casualties

- 3.17 According to The George Institute: "...events in which a car reverses over a child are limited almost completely to very young children (children in the 1-2 year age group) who are small in stature and physically unable to alert the driver. The proportion of these injury events varies between published reports, with recent findings in New South Wales suggesting 18% of fatal child pedestrian injuries are driveway incidents predominantly involving 4WD type vehicles.<sup>9</sup>
- 3.18 Additionally, The George Institute contends that a large proportion of child pedestrian injuries occur near the child's home. Risk factors include residential areas where there are few vehicles, but where these vehicles are exceeding the speed limit. Other high-risk situations include busy roads with slow moving vehicles, such as drop off points near schools or shops. Visual obstructions such as rubbish bins, telephone booths, trees and post boxes compound the risk.<sup>10</sup>
- 3.19 The George Institute also makes the point that child developmental psychology is, of itself, insufficient to explain the incidence of casualties and that there is a complex interaction of environmental, vehicular and driver factors in such situations.
- 3.20 In the case of adolescents, Youthsafe, the peak NSW body for injury prevention representing young people 15 to 24 years of age, lists a number of predisposing risk factors contributing to increased injury risk. These include:
- The still maturing adolescent brain – particularly the areas of the brain responsible for identifying risks and making better judgements about how to manage risks are not fully mature until the mid to late 20s;
  - New levels of independence and responsibility;
  - Inexperience with new activities and with alcohol/drugs;
  - The strong influence of peers during teenager years;
  - Attitudes and behaviours established early on in a young person's life;
  - A desire for experimentation and thrill seeking;
  - Societal expectations of young people as risk takers;
  - Common beliefs in young people about their inability to control safety; and
  - Fatigue due to busy lifestyles, which often include a combination of study, work and socialising and a potential for new media to impact on sleep obtained by young people.<sup>11</sup>
- 3.21 Youthsafe also makes the point in relation to injuries in young pedestrians that:
- The consequence of serious injury is often lifelong disability with profound effects on the individual, family and community at large. Head injury is one of the more common injuries sustained by pedestrians, often associated with brain injury resulting in very serious long term consequences. The NSW Motor Accidents Authority puts the average claim cost for a pedestrian with brain injury at \$656,260 as compared to the average claim cost for vehicle passengers of \$66,010. When young people sustain serious injury the lifetime care implications in particular are significantly greater than those for older people.<sup>12</sup>

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Submission 15, Youthsafe, p. 3.

<sup>12</sup> Ibid. p. 2.

- 3.22 Two constituency sub-groups identified by Youthsafe as being at high risk of pedestrian casualty are young people walking home after socialising and drinking (15-19 years of age) and new high school students walking to and from school (10-14 years of age).<sup>13</sup> Different strategies are required to address risks in these two groups and these are discussed in greater detail in Chapter 7.

## Older Pedestrians

- 3.23 Australian Bureau of Statistics figures for 2008 indicate that people aged over 60 years, while constituting 27% of the population of NSW, account for 40% of pedestrian fatalities.<sup>14</sup> The RTA database confirms that pedestrians aged over 70 are at significant risk of casualty. Representing 10% of the NSW population, this age group accounts for 33% of all pedestrian fatalities, but only 11% of all injuries.<sup>15</sup>
- 3.24 In its submission, the RTA refers to a 1995 Monash University Accident Research Centre (MUARC) road crossing behavioural study of older pedestrians. The study revealed that older pedestrians:
- Took twice as long to assess the traffic and cross the road than younger adults;
  - Spent more time looking at the ground on the approach to and while crossing the road;
  - Found difficulty in assessing the gap in traffic;
  - Were slow to react to approaching traffic; and
  - Failed to check and re-check for traffic prior to and whilst crossing the road.<sup>16</sup>
- 3.25 Another study conducted by MUARC in 2005, examined the effect of cognitive impairment on older pedestrian behaviour and crash risk. This study concluded that most people experience a degree of cognitive decline as they age and that this does not have significant impacts on performance in less demanding traffic situations. There was, however, a range of effects in more demanding traffic situations related to slowed information processing, attentional and memory decline, poor decision making and slowed response initiation.<sup>17</sup> These effects are often exacerbated by underlying medical conditions.
- 3.26 While the authors acknowledge that older road users are generally considered to be safe and cautious, the report recommends further research in the area of age related cognitive decline and impairment and pedestrian safety.
- 3.27 A major contributing factor to the high rate of fatalities of older pedestrians is frailty, resulting in reduced survivability from trauma compared to younger people.
- 3.28 According to the NSW Council on the Ageing (COTA), other contributing factors include vision and/or hearing impairments and restricted mobility. These, when combined with unsafe conditions on roads, footpaths and kerbs as well as poor pedestrian access cause further hindrances to pedestrian safety. The COTA submission quotes the words of an 80 year old Eastern suburbs resident as follows:

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<sup>13</sup> Ibid. pp. 3-4.

<sup>14</sup> Submission 9, Independent Living Centre NSW, p. 1.

<sup>15</sup> Submission 28, Roads & Traffic Authority, p. 30.

<sup>16</sup> Ibid. p. 98.

<sup>17</sup> Monash University Accident Research Centre, *The Effect of Cognitive Impairment on Older Pedestrian Behaviour and Crash Risk*, Report No.244, December 2005, p. VIII.

“The roads and footpaths are in such disrepair and the pedestrian lights change so quickly that I just don’t feel safe going out anymore.”<sup>18</sup>

- 3.29 The NSW Injury Risk Management Research Centre (IRMRC) echoes these sentiments in its submission and highlights the difficulties of older pedestrians in negotiating poorly designed and badly maintained road environments. In its submission, the IRMRC states:

In 2008, focus groups and structured interviews conducted with older (60 years and above) residents of the City of Sydney (n=130) identified that outdoor falls are frequent, and often associated with poorly maintained road surfaces or “unfriendly” kerbs (Santos, Hatfield, and van Kamp, manuscript in preparation). For example, study participants who regarded maintenance of roads as a problem, or who disagreed with the statement “it is easy to get on and off the kerbs” were more likely to have experienced an outdoor fall or near fall. Falls while crossing the road, or difficulty crossing the road, may contribute to pedestrian trauma for older pedestrians, who are a particularly “at risk” for pedestrian road trauma.<sup>19</sup>

- 3.30 The IRMRC is currently involved in conducting a detailed investigation of trends in pedestrian hospitalisations, fatalities, and severity of injury among older people in NSW, the results of which should become shortly. Such research is particularly important, given the ageing of the population and the consequential impact on pedestrian injury and fatality rates.

## Gender

- 3.31 A publication by the Australian Transport Safety Bureau on the characteristics of Australian road fatalities involving male pedestrians aged 15 to 54 from 1997–1999, cites overall primary responsibility for such fatalities residing with pedestrians in 75.9% of cases. Drivers were considered responsible in 12.5% of cases and shared responsibility constituted 11.6%.<sup>20</sup>
- 3.32 Pedestrian casualty figures from 2004-2008 indicate that males, representing half the NSW population, constituted 65% of fatalities and 56% of injuries.<sup>21</sup> These figures are higher in non-metropolitan areas of the State. Young to middle-aged males also account for 80% of alcohol-affected fatalities, mainly occurring at night or early morning, between Thursday and Saturday.<sup>22</sup>
- 3.33 Data on alcohol affected pedestrians varies according to casualty severity. The presence of alcohol can be determined in 88% of fatalities, compared to injuries where only 33% of alcohol results are known. Where data exists, 30% of fatalities and 24% of injuries involve a pedestrian with a blood alcohol concentration of 0.05 or greater. Males aged 17-29 make up 31% of alcohol affected pedestrian fatalities and 37% of injuries.<sup>23</sup>
- 3.34 According to the ATSB analysis of male pedestrian fatalities:
- Seventy per cent of the male pedestrians had a blood alcohol concentration (BAC) that would have made them ineligible to be in control of a motor vehicle. Of even greater concern is the extreme nature of these BACs. Five of every six alcohol-affected pedestrians had a BAC of 0.15 gm/100ml or greater. Heavy intoxication is reflected in

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<sup>18</sup> Submission 20, Council on the Ageing (NSW), p. 2.

<sup>19</sup> Submission 30, Injury Risk Management Research Centre, pp. 2-3.

<sup>20</sup> Australian Transport Safety Bureau, *Monograph 14 - Male Pedestrian Fatalities*, May 2003.

<sup>21</sup> Submission 28, Roads & Traffic Authority, p. 30.

<sup>22</sup> *Ibid.* p. 45.

<sup>23</sup> *Ibid.* p. 40.

the manner in which many of the pedestrians came into collision with a vehicle. About one in every three of the pedestrians had been struck while simply standing or lying on the road. About one in every four pedestrians had been struck by the wheel or undercarriage of a vehicle.<sup>24</sup>

- 3.35 Youthsafe also confirms the high involvement of young males in alcohol affected pedestrian casualties. In its submission, Youthsafe states that: "...in NSW for 15 to 24 year olds, pedestrian injury has the highest proportion of deaths attributed to alcohol compared with other mechanisms of injury. Male deaths are more likely to be attributable to alcohol than female."<sup>25</sup>

## Road Engineering and Environmental Factors

### Location and Road Classification

- 3.36 As previously described and for the purposes of this Report, the Committee has adopted the RTA definition of metropolitan areas as comprising the Sydney, Newcastle and Wollongong conurbation and the non-metropolitan areas as the rest of NSW. This means that metropolitan also encompasses Wyong, Gosford, Hawkesbury, the Blue Mountains and Wollondilly local government areas.
- 3.37 In the latest figures available from the RTA, 2008 saw 75% of all pedestrian fatalities and 85% of all injuries occurring in metropolitan areas of NSW.<sup>26</sup> In figures provided in an attachment to the RTA submission it is evident that from 2004-2008 in metropolitan NSW, intersections and undivided two-way roads constitute an equal risk to pedestrians, with 74% of fatalities combined. In non-metropolitan areas, two-way undivided roads represent the greatest pedestrian hazard, with 68% of fatalities. This pattern is repeated in pedestrian injuries on two-way undivided roads in non-metropolitan areas, where the corresponding figure is 55%.<sup>27</sup>
- 3.38 Additionally, the majority of fatalities occur at mid-block locations on two-way undivided roads and divided roads, with figures of 45% and 19% respectively.<sup>28</sup> For pedestrian injuries, 50% occur at intersections or within 10 metres of such intersections.<sup>29</sup>
- 3.39 Approximately 1 in 50 metropolitan casualties in 2008 resulted in a fatality, compared to 1 in 23 in non-metropolitan areas. According to the RTA: "With the non-metropolitan areas tending to have higher posted speed limits, as well as these areas perhaps having longer emergency response times, a higher risk of fatality outcome is not unexpected."<sup>30</sup>
- 3.40 A further category of roads is what is described as local, or unclassified, roads. Data provided by the RTA indicates that such roads account for 40% of pedestrian fatalities and 60% of injuries, while 27% of fatalities and 11% of injuries occur on freeways, motorways and State highways. According to the RTA, this is because local roads tend to have lower posted speed limits.<sup>31</sup>

<sup>24</sup> ATSB, op cit.

<sup>25</sup> Submission 15, Youthsafe, p. 3.

<sup>26</sup> Submission 28, Roads & Traffic Authority, p. 12.

<sup>27</sup> Submission 28, Roads & Traffic Authority, Appendix 1, p. 15.

<sup>28</sup> Submission 28, Roads & Traffic Authority, p. 31.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid. p. 13.

<sup>31</sup> Ibid. p. 32.

Causes of Pedestrian Casualties

- 3.41 The Road Safety Manager of the Institute of Public Works Engineering Australia told the Committee that:
- ... there are forestry roads in and around New South Wales. Because it is not a public road, it does not get onto a lot of databases. There are private roads and car parks. There are some fairly significant injuries in car parks. There are also cycleways that do not get onto the database because they are not public roads, or they are near it but quite often are not included.<sup>32</sup>
- 3.42 In further information provided following its appearance before the Committee on 27 August 2009, the NRMA made the following point:
- The National Guidelines should not constrain the RTA from collecting serious injury and fatality data on crashes that occur on roads not designated public roads. The data could be collected from hospitals, the NSW Police, from coroner's reports (or a combination of these sources) and if necessary it could be held in a separate database.<sup>33</sup>
- 3.43 It is of some concern that these roads are not represented in data sets in such a way as to enable more detailed analysis of the conditions giving rise to the number of pedestrian casualties recorded on unclassified roads. The lack of comprehensive crash data on local roads reinforces the concerns of researchers and safety policy analysts who criticise the current lack of access to detailed and timely statistical information concerning road safety.

## Road Engineering

- 3.44 The physical condition of roads is another source of danger to pedestrian safety. Badly designed and maintained roads, footpaths and kerbs are dangerous for all pedestrian groups, but particularly the elderly and the disabled. In its submission, the Council on the Ageing NSW (COTA) stresses the poor state of repair of roads and footpaths and voices the concerns of its membership in using the road network.<sup>34</sup>
- 3.45 In a related submission from the Independent Living Centre NSW (ILC), safety issues concerning roadway and footway designs and their implications for pedestrian safety are raised.<sup>35</sup> This includes problems identified with intersections, kerb ramps, traffic islands and slip lanes.
- 3.46 According to the ILC, pedestrians are put at risk by left turning vehicles at intersections where there is no requirement for cars to slow down and where there are large kerb corners. Another concern is the construction of traffic islands of insufficient size to accommodate pedestrians, particularly those with a disability or in a wheelchair. Slip lanes are also cited as a concern, where kerb ramps are located outside the sight lines of drivers. Strategies to address such safety issues are developed in greater detail in Chapter 7.

## Pedestrian Controls

- 3.47 The absence of traffic signals and pedestrian controls is another predictor of pedestrian casualty. Overall, 79% of fatalities and 60% of injuries occur at locations

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<sup>32</sup> Transcript of Evidence, 27 August 2009, p. 24.

<sup>33</sup> NRMA Motoring & Services, Responses to Supplementary Questions, 14 September 2009.

<sup>34</sup> Submission 20, Council on the Ageing (NSW), p. 2.

<sup>35</sup> Submission 9, Independent Living Centre NSW, p. 3.

without such controls. In non-metropolitan settings, these percentages rise to 81% for injuries and 92% for fatalities.<sup>36</sup>

- 3.48 A related issue, particularly in urban settings, is the appropriate use of and adherence to existing pedestrian controls. The City of Sydney makes the case for increased pedestrian access to the road system when crossing at intersections. According to their submission:
- ... many pedestrians are frustrated at the time it takes for traffic lights to change to green. In addition the time allowed to cross a street safely is often considered too short...many pedestrians especially under crowded city conditions cannot cross safely in the time allowed.<sup>37</sup>
- 3.49 This view is reinforced in a major study into public spaces and public life in Sydney conducted by Gehl Architects, urban quality consultants. According to this study, commissioned by the City of Sydney, the major focus of Sydney planning to date has been to facilitate car movements at the expense of pedestrian traffic.
- 3.50 A general conclusion of the study was that waiting time at crossings is a substantial problem and that pedestrians, in order to deal with a vehicular traffic dominated environment, take risks to gain better access. This dangerous situation puts pedestrians at risk of casualty and reinforces the perception that pedestrians are a secondary consideration in the planning system.<sup>38</sup>
- 3.51 North Sydney Council, in acknowledging inadequate crossing times for elderly and less mobile pedestrians, have succeeded in adding two seconds to the pedestrian phase of traffic lights at an intersection in its local government area. This was achieved after a pedestrian fatality at the site, but involved a lengthy period of negotiation with the RTA.<sup>39</sup>
- 3.52 The downgrading of pedestrians in the road hierarchy in Sydney is further compounded by cluttered footpaths and a lack of adequate planning for pedestrian groups with special needs, such as people in wheelchairs, the elderly, parents with prams and the sight impaired. Such pedestrian groups are thereby further disadvantaged and at increased risk of casualty. These issues are developed further in Chapter 5.

## Environmental Conditions and Time of Impact

- 3.53 Lighting levels, day of week, time of day and weather conditions all have an additional bearing on pedestrian safety risk and severity of casualty. Fatalities are skewed towards the end of the week, while injuries increase during the week to peak on Fridays. There is also a slight increase in pedestrian casualties in non-metropolitan areas on weekends.<sup>40</sup>
- 3.54 Fatalities are overrepresented in the late evening and early morning, peaking at 28% between 10pm and 6am and rising to 40% in non-metropolitan settings. Injuries, particularly in metropolitan areas, peak between 8am and 10am and 2pm to 6pm.<sup>41</sup>

<sup>36</sup> Submission 28, Roads and Traffic Authority, p. 33.

<sup>37</sup> Submission 23, City of Sydney, p. 9.

<sup>38</sup> Gehl Architects ApS, *Public Spaces - Public Life Sydney*, 2007, pp. 52-60.

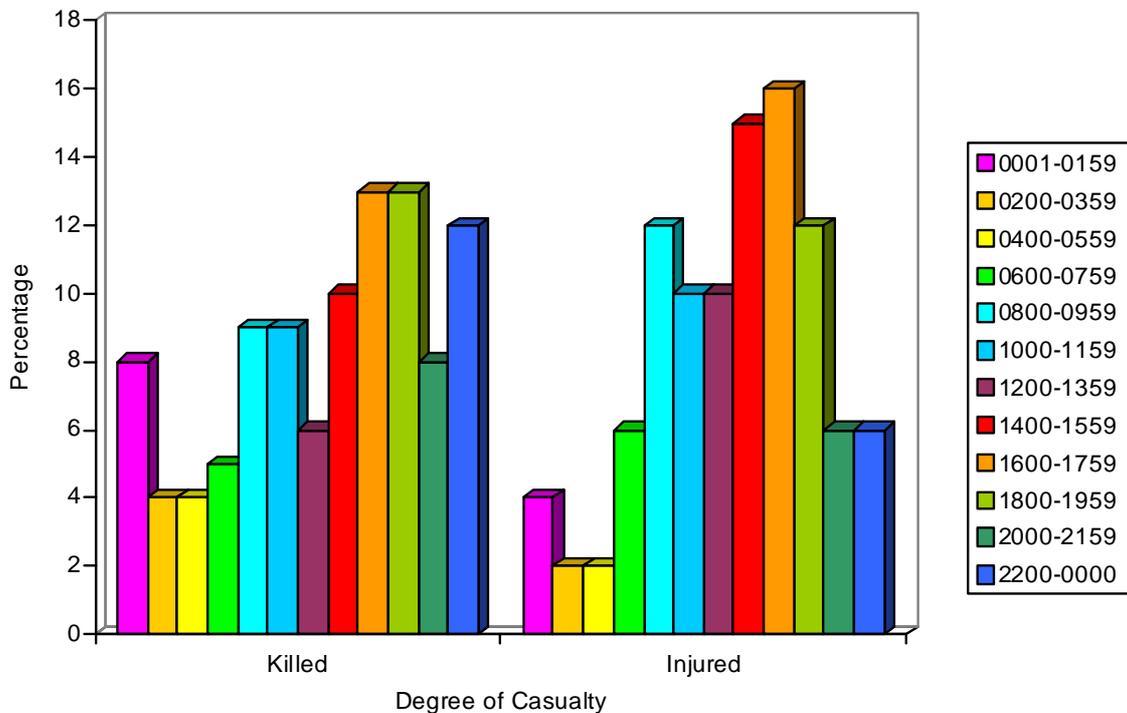
<sup>39</sup> Submission 27, North Sydney Council, p. 5.

<sup>40</sup> Submission 28, Roads & Traffic Authority, p. 34.

<sup>41</sup> Ibid.

3.55 The relationship between day of week, time of day and casualty severity has been further described in a classification system known as McLean periods, dividing the week into daily activity periods and developed for the Department of Transport Australia. The following table illustrates the results of this analysis:<sup>42</sup>

FIGURE 2 – Pedestrian Casualties, 2004 to 2008p, Degree of Casualty, Hour of Day



3.56 The McLean period table supports the contention that fatalities are overrepresented in late evenings and early mornings through the week and injuries during the day on weekdays and late afternoon and early evening through the week.<sup>43</sup>

3.57 Two additional variables impacting on casualty risk are lighting and weather conditions. Approximately half of all pedestrian fatalities occur at night, while just over a quarter of injuries occur at this time. Therefore, most injuries happen during the day. Available data in relation to weather conditions indicates that 83% of injuries and the majority of overall casualties occur during fine weather.<sup>44</sup> It must be recognised, however, that the significance of the weather data is questionable, given the prevailing dry weather conditions during the period when the data was collected.

### Driver and Vehicle Factors

3.58 Pedestrian casualties predominantly involve a motorcar. In the case of fatalities, 66% result from a car crash. The remaining categories of vehicles include trucks, buses, motorcycles and pedal cycles. In these categories, trucks and buses are

<sup>42</sup> Ibid. p. 35.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid. p. 37.

overrepresented in the statistics. Heavy trucks, in particular, are involved in 2% of injuries but 16% of fatalities.<sup>45</sup>

- 3.59 While bus casualties are not high (4.6% of fatalities and 2.9% of injuries), an overwhelming majority of such events occur in metropolitan areas (94%). The City of Sydney local government area represents 36% of all bus involved pedestrian injuries, occurring along the main bus corridors of the Sydney central business district.<sup>46</sup>
- 3.60 According to the RTA, speed is the main contributor to all types of crashes. RTA provisional crash data for 2008 indicates that 39% of all fatalities were speed related and preliminary data for early 2009 suggests that this figure has increased to 46%.<sup>47</sup>
- 3.61 Speeding vehicles create conditions of greater risk to pedestrians by dramatically increasing the severity of casualty and in reducing response times for evasive action by both drivers and pedestrians.
- 3.62 The Director of the Centre for Road Safety reinforces the centrality of speed as a causal pedestrian casualty factor in evidence provided at the Committee's public hearing:
- Speed is very much underestimated as a factor in pedestrian crashes ... in the case of a fatally injured pedestrian, the primary witnesses are going to be the vehicle occupants. They are obviously motivated not to reveal that they have been speeding. Yet we know that speed is a huge factor for pedestrians because when we get anything that reduces speeds, we see a major benefit to pedestrians. When Victoria implemented its stronger speed management regime with more cameras and with reduced tolerance on speed enforcement, it made a gain of over 60 in terms of Victorian fatalities per year. The biggest single group in terms of percentage reduction was pedestrians. Pedestrians gained hugely from small reductions in speed. We know that speed is a major factor in pedestrian crashes, yet in our crash database, it does not appear to be so. Speed is missed as a factor very often in pedestrian fatalities.<sup>48</sup>
- 3.63 Research referred to in the submissions from the RTA and the NSW Injury Risk Management Research Centre (IRMRC) provide estimates of pedestrian survivability based on vehicle speed. The RTA indicates that a pedestrian crash at an impact speed of 30km/h or less gives the pedestrian a 95% chance of survival, with the survival chance reducing from 74% at 40km/h to negligible at 60km/h or greater.<sup>49</sup> The IRMRC cites research indicating a 15% probability of pedestrian injury or death when struck at 40km/h and a 40% chance at 50km/h.<sup>50</sup>
- 3.64 A complicating factor in determining speed at impact is that excessive speed is less likely to be recorded in urban areas, where exceeding the speed limit by up to 10km/h is not readily detected. In addition, there may not be any other eyewitness accounts of speeding other than the pedestrian and driver involved.
- 3.65 Other contributing risk factors are fatigue and alcohol. In the period 2004-2008, while driver fatigue was involved in 18% of fatalities and 8% of injuries overall, the figure for pedestrian involvement was 1%. Illegal alcohol use was detected in 19% of fatalities and 6% of injuries and in 3% of pedestrian fatalities and 1% of pedestrian injuries.<sup>51</sup>

<sup>45</sup> Submission 28, Roads & Traffic Authority, p. 38.

<sup>46</sup> Ibid. p.43.

<sup>47</sup> Ibid. p.55.

<sup>48</sup> Transcript of Evidence, 27 August 2009, p. 6.

<sup>49</sup> Ibid, p. 42.

<sup>50</sup> Submission 30, Injury Risk Management Research Centre, p. 4.

<sup>51</sup> Submission 28, Roads & Traffic Authority, p. 41.

## Other Factors

- 3.66 As previously described, pedestrian judgement errors are also implicated in casualty figures. RTA data indicates that 10% of fatalities and 14% of injuries involve pedestrians disobeying a traffic control or emerging from behind a parked or stationary vehicle.<sup>52</sup>
- 3.67 Mobile phones and other electronic devices are also cited in evidence presented to the Committee as constituting a significant pedestrian risk factor. The cognitive and visual distraction caused by such devices, combined with the masking of auditory cues when crossing roads due to use of portable music systems, complicate the decision making process of pedestrians negotiating vehicular traffic.
- 3.68 While no local data is available to quantify the level of risk electronic devices pose to pedestrian safety, this is an obvious area for further research and is discussed later in the Report.

## Conclusions

- 3.69 As can be seen from the information presented in this Chapter, the underlying causes of pedestrian casualty are multivariate and, to a large extent, speculative.
- 3.70 This is not to say that some useful information exists, but there have to be greater attempts made to integrate data collection and to refine the categories under which this data is collected to enable a more precise picture to emerge.
- 3.71 From information available, the overall profile of pedestrian casualty risk indicates that the most vulnerable group is young males in the 17 to 29 age cohort, using the road system during late afternoon and evening periods at the end of the week and on weekends. The involvement of alcohol further increases their risk of serious injury and death.
- 3.72 Preliminary figures for 2009 suggest that major increases this year have occurred in the above category in the Sydney region, where speed limits are 70km/h to 90km/h and on State Highways.<sup>53</sup>
- 3.73 Other vulnerable groups, such as children and young people, the elderly and the disabled have particular needs which require additional engineering and access solutions. This is discussed in greater detail in succeeding chapters of the Report.

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<sup>52</sup> Ibid. p. 40.

<sup>53</sup> Ibid. p. 54.

# Chapter Four - Effectiveness of Recent Countermeasures

## Background

- 4.1 The previous Chapter sets out a range of factors characterising pedestrian casualty risk. Based on available data, these risk factors underpin responses and countermeasures adopted by the RTA and other road safety organisations to address the rate of pedestrian casualty.
- 4.2 The recent rise in fatalities indicates that it is timely to review current approaches and assess the extent to which they are meeting the NSW State Plan Priority S7 objective of creating safer roads and reducing fatalities.
- 4.3 The State Plan sets out a commitment to improve road safety by adopting a series of evidence based actions to reduce fatalities, such as:
- Red light cameras;
  - Zero alcohol limits for P platers;
  - Public education campaigns on the effects of speeding, fatigue and drink driving;
  - 40 km/h zones near schools, supported by additional road safety features such as flashing lights;
  - Restrictions on high-powered vehicles for P platers;
  - Random roadside drug testing to detect cannabis, methamphetamine and ecstasy;
  - Compulsory drug and alcohol testing of motorists involved in fatal crashes;
  - Heavy vehicle initiatives to address overloading, speeding and driver fatigue; and
  - High visibility RTA/NSW Police operations targeting speeding, drink driving, fatigue, heavy vehicle safety, seatbelt use and helmet use.<sup>1</sup>
- 4.4 These priorities mainly reflect an emphasis on drivers. Since the State Plan was first released, additional consultations have been held to further refine their scope. An updated version of the State Plan has recently been released.
- 4.5 In response to the recent increase in fatalities, including pedestrians, on the NSW road system, a Road Safety Roundtable was convened by the then Minister for Roads on 9 July 2009. The consultation process involved government agencies and road safety experts and was designed to examine critical issues in a range of areas, including vulnerable road users. Emergent themes from this process included the role of speed as a major contributor to the increase in the road toll, the importance of greater community awareness and a whole-of-community approach to road safety and the need for improved access to data for research organisations.
- 4.6 In the area of pedestrian safety, the following issues were afforded priority:
- Where feasible, road infrastructure should include cost effective features such as increased lighting for pedestrians, improved pavement conditions for motorcyclists and additional pedestrian fencing;

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<sup>1</sup> NSW Government, *NSW State Plan – Investing in a Better Future*, November 2006, p. 63.

Effectiveness of Recent Countermeasures

- Examine the improvement of pedestrian movement at traffic lights;
  - Continue road maintenance programs that address local road safety issues;
  - Investigate the possibility of an education campaign to remind motorists of the need to drive to the conditions – particularly in rainy, foggy, icy weather;
  - Ensure data is readily available, particularly for road safety research purposes;
  - Regularly review the ever-changing mix of road users on our roads, particularly in city centres such as Sydney;
  - Acknowledge and manage the different types of road users (drivers, cyclists, pedestrians etc.), and also the road users on the increase (motorcyclists, pedal cyclists etc.) – and all needs have to be balanced; and
  - Educate drivers on the danger of distractions, particularly in-car distractions such as GPS devices, iPods, and mobiles phones.<sup>2</sup>
- 4.7 The Roundtable is expected to reconvene at a later date to review outcomes, report on progress and make further recommendations.
- 4.8 At the national level, the incidence of pedestrian fatalities is 25% in metropolitan/urban areas. The recent *National Road Safety Action Plan 2009 and 2010* published by the Australian Transport Council lists specific actions to be undertaken to address pedestrian safety, including:
- Developing infrastructure which reduces the risk of collisions between motor vehicles and pedestrians;
  - Installing lower speed limits in areas and at times of higher pedestrian activity; and
  - Raising awareness of risks associated with pedestrian intoxication and implementing targeted countermeasures, including extension of responsible serving of alcohol programs.<sup>3</sup>
- 4.9 The Action Plan bases its conclusions on evidence that past improvements in speed management have been a major factor in reducing pedestrian fatalities and that improved infrastructure and speed management measures "...would produce further substantial safety gains for pedestrians and cyclists".<sup>4</sup>
- 4.10 Evidence provided to Staysafe, in response to the request for submissions, has detailed a range of measures undertaken to mitigate pedestrian safety risks on NSW roads. These include speed reductions in residential and urban areas, education, awareness and media campaigns, road and traffic engineering, increased enforcement of violations and safer vehicle technology.
- 4.11 The benefits of these approaches are outlined in submissions and reinforced in evidence provided at the public hearing conducted as part of the Inquiry.

## Speeding Restrictions

- 4.12 Evidence provided by the RTA estimates that speed is the most significant contributor to casualty in all crash categories. As described in previous chapters of

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<sup>2</sup> NSW Road Safety Roundtable, Summary of Ideas, 10 July 2009, pp. 2-3.

<sup>3</sup> Australian Transport Council, *National Road Safety Action Plan 2009 and 2010*, 28 August 2009, pp 48-49.

<sup>4</sup> Ibid.

this Report, speeding contributed to 32% of fatal crashes in 2007. Provisional data for 2008 increases this figure to 39% and preliminary statistics for the first half of 2009 cites the figure of 46% for all speed related fatalities.<sup>5</sup>

- 4.13 A major initiative to reduce pedestrian crashes has been the introduction of 40km/h speed limits in selected high pedestrian activity areas. This policy was introduced by the RTA in response to evidence that there would be major safety gains from such a speed reduction. According to the Director of the Centre for Road Safety:
- ...the evidence suggests that one of the main groups to gain from that reduced speed limit in safety terms are pedestrians. The reason for that is that when you are talking about those speed limit changes from 50 down to 40 kilometre an hour, then survivability for a car occupant is reasonable at 50 kilometre an hour anyway, whereas survivability for a pedestrian halves from a 40 kilometre an hour impact to a 50 kilometre an hour impact. The material influence on the road toll for changes in speeding of those orders is substantial for pedestrians, for motorcyclists and for pedal cyclists, the unprotected road users. So we would clearly see a gain for them. It then becomes a matter of the community's view of the compromise between those road safety gains for the speed limit reduction versus the mobility loss.<sup>6</sup>
- 4.14 The 40km/h speed limit applies to locations with relatively large volumes of pedestrian usage and in local traffic areas, where local roads are bounded by arterial roads as part of the road network. Across NSW, some 120 locations are designated high pedestrian activity areas with 40km/h limits and additional measures designed to slow traffic, including traffic calming devices and pedestrian crossings.<sup>7</sup>
- 4.15 The NRMA confirms the value of this approach by citing crash studies findings that the risk of a fatal pedestrian injury rises steeply for impact speeds above 40km/h. This research indicates that a change from 60km/h to 50km/h speed limits on residential roads results in a drop in pedestrian fatalities by more than 30% in many areas.<sup>8</sup>
- 4.16 Speed limit reductions from 60km/h to 50km/h on residential roads in certain local government area locations have also been trialled as part of an ongoing RTA review of traffic management. Current operational areas are Fairfield, Camden and Canada Bay.<sup>9</sup>
- 4.17 Another focus of speed related pedestrian safety measures is the provision of additional safeguards for children around schools, where school access points restrict vehicular traffic to 40km/h. Designated school zones apply the 40km/h limit at times when children are arriving or leaving school grounds and are clearly marked with signage and road markings. Around 20% of schools also utilise school crossing supervisors at pedestrian crossings and the recently commenced flashing lights program is progressively rolling out flashing lights to around 100 school zones per year over a four year period. Approximately 300 schools now have flashing lights.<sup>10</sup>

<sup>5</sup> Submission 28, Roads & Traffic Authority, p. 55.

<sup>6</sup> Transcript of Evidence, 27 August 2009, p. 2.

<sup>7</sup> Submission 28, Roads & Traffic Authority, p. 61.

<sup>8</sup> Submission 18, NRMA Motoring & Services, p. 12.

<sup>9</sup> Submission 28, Roads & Traffic Authority, p. 70.

<sup>10</sup> Ibid. p. 63.

## Road and Traffic Engineering

- 4.18 Other measures employed to enhance pedestrian safety around schools and more generally throughout the road network include pedestrian overbridges and subways, kerb ramps, various types of pedestrian crossings and purpose built fencing providing vehicular/pedestrian separation. Such physical safety measures aim to minimise direct contact between vehicles and pedestrians. The RTA undertakes localised treatments and improvements of roadsides and roadways on an annual basis and engages in upgrades of existing facilities based on incident reports and regular safety assessments.
- 4.19 According to the RTA: "In 2008-09 approximately 87 individual pedestrian projects to provide treatments such as crossings, refuges and kerb ramps are being funded jointly by RTA and Local Councils".<sup>11</sup> A review of the benefit of pedestrian fencing to prevent jay walking across heavily trafficked roads compared crashes at sites without pedestrian or traffic signal controls with crashes where these controls were in place. The results indicated that fencing resulted in a reduction of 75% in pedestrian crashes at the sites selected.<sup>12</sup>
- 4.20 The Director of the Centre for Road Safety, in evidence provided at the public hearing, reinforced the benefit of physical barriers:
- Pedestrians do not run out because they do not know there is a risk, but because they are confident that they can afford to take the risk. So education does not seem to work against that. What does work is engineering solutions. Sometimes the best way to fix a behaviour is to physically barrier that behaviour. I believe that one of our best solutions is the effective use of pedestrian fencing to stop access to the road at points where it is dangerous and at points where within a reasonable walking distance there is a point where it is safe to cross. So we need to channel people more effectively to the safe locations.<sup>13</sup>
- 4.21 Local Councils also engage in initiatives to improve pedestrian safety. The City of Sydney has embarked on substantial footpath widening programs and kerb extensions to provide increased areas for pedestrians to wait for traffic signals to change and is looking at ways of improving local amenity by use of local area traffic management schemes.<sup>14</sup> The City of Sydney is also seeking assistance from the RTA with the wider establishment of shared, or pedestrian zones, on roadways or laneways where vehicles would be restricted to 10km/h.
- 4.22 North Sydney Council, which has a high level of pedestrian casualties, has established a Pedestrian Committee to improve access and safety for pedestrians. North Sydney has prioritised improved road design and traffic management solutions to assist in managing pedestrian road use. The Council recommends greater use of scrambled crossings (diagonal travel across two sets of traffic lights) at intersections, that additional time be provided to pedestrians at signalised crossings and that an automatic pedestrian phase be included at all signalised intersections.<sup>15</sup>
- 4.23 The RTA utilises crash information to prioritise installation of traffic control signals which are required to incorporate a pedestrian phase in all locations except in rural areas, locations without footpaths or where allowing pedestrians to cross could

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<sup>11</sup> Ibid. p. 66.

<sup>12</sup> Ibid.

<sup>13</sup> Transcript of Evidence, 27 August 2009, p. 3.

<sup>14</sup> Submission 23, City of Sydney, p. 6.

<sup>15</sup> Submission 27, North Sydney Council, p. 6.

compromise safety. Traffic control signals are linked into the Sydney Coordinated Adaptive Traffic System (SCATS), which controls the rate at which traffic signals change colour at 3,600 intersections across NSW. A centralised computer system coordinates information and continually reviews signal times for pedestrians based on information provided by activity monitoring from sensors and cameras and input from Councils, the public, schools, pedestrian groups and agencies.

- 4.24 The Committee has received overwhelming evidence from pedestrian organisations, Councils and other road safety agencies that the phasing of signals for pedestrians, particularly in the Sydney area, does not sufficiently accommodate pedestrian needs, resulting in high levels of frustration and consequential risk taking by pedestrians. This is developed in greater detail in Chapter 7.
- 4.25 Another means of protecting pedestrians is the use of red-light cameras, which deter vehicles from running red lights. The RTA reports that evaluations of red-light cameras demonstrate that they reduce injury crashes by 25%-30%.<sup>16</sup> There is currently a program to replace outdated red-light cameras at 200 signalised intersections with a history of high crash rates, where they will have the greatest safety benefit.
- 4.26 Road infrastructure improvements to make visually impaired pedestrians safer include the installation of audio tactile push buttons at traffic signals and tactile paving on kerb ramps. The RTA has installed 18,846 audio tactile buttons to date.<sup>17</sup>
- 4.27 Other means to encourage a more collaborative approach to managing the road system include shared paths to be used by pedestrians, bicycles and wheeled recreational devices, and shared zones, to be used by vehicles and pedestrians with pedestrians having priority. A recent development being trialled overseas is the notion of naked streets. This will be explored in greater detail in Chapter 6.

## Education and Media Campaigns

- 4.28 The RTA employs a range of activities to reinforce pedestrian safety awareness messages. Public campaigns targeting pedestrians are localised and timed to coincide with activities and events involving large numbers of pedestrian participants, such as sporting fixtures and festivals. Campaign material is disseminated through radio and print media, in-venue announcements and public transport advertisements.
- 4.29 Safety messages are also contained in publications and brochures such as the RTA's *Road Users' Handbook*; *Pedestrian Crossings*; and *Guide to Using Motorised Wheelchairs*. However, according to the RTA, awareness campaigns and safety messages "...are largely ineffective for influencing pedestrian behaviour on a broader scale".<sup>18</sup> Therefore, such campaigns are run in conjunction with driver awareness campaigns, police enforcement and local traffic management treatments such as fencing and signage.
- 4.30 Due to the high incidence of alcohol involvement in pedestrian casualty, the RTA also targets road safety risks associated with drink driving and drink walking. According to the RTA:

<sup>16</sup> Submission 28, Roads & Traffic Authority, p. 67.

<sup>17</sup> Ibid. p. 68.

<sup>18</sup> Ibid. p. 73.

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Campaigns directed toward motorists (i.e. advising drivers to be aware of pedestrian activity/look out for pedestrians) are seen as more effective than campaigns seeking to discourage walking whilst under the influence of alcohol as alcohol affected pedestrians are unlikely to recall key messages.<sup>19</sup>

- 4.31 As part of its strategy, the RTA provides support for the Liquor Accords, promoting responsible service of alcohol and provides breath-testing units in selected venues. Other measures include ensuring easier access to taxi services and alternative transport services, including buses.
- 4.32 A vital component of education and awareness is collaboration in the enforcement of road rules. The RTA provides funding to Police operations targeting behaviour contributing to road trauma. This includes speeding, drink driving and non-use of seat belts and is provided in conjunction with public education to increase police visibility and strengthen the enforcement message. Additional incentives to obey road rules are provided through the fine and demerit points system and by strictly enforcing parking regulations, to assist in enhancing vehicle visibility and pedestrian sightlines along roads and intersections.
- 4.33 An alternative initiative adopted by the NSW Police Force in September 2009, designated "Operation Obedience", attempted to enforce pedestrian adherence to road rules. The operation, conducted across the South West Metropolitan Region, responded to the failure of many pedestrians to correctly obey traffic control lights and use designated crossings at intersections.
- 4.34 According to public information provided in connection with the operation:  
...police would also target pedestrians who put themselves or others in danger when attempting to cross a road...Pedestrians who cross contrary to signals, or who randomly cross roadways in near vicinity to intersections where traffic lights provide pedestrian safety will also be spoken to. There have been far too many preventable pedestrian crashes this year and through Operation Obedience we hope to reverse this trend.<sup>20</sup>
- 4.35 Operation Obedience will be monitored and evaluated prior to the launch of similar initiatives. The rolling out of such operations has obvious resource implications and any additional commitment of resources requires reallocation and reprioritisation.
- 4.36 The NSW Police Force Commander of Traffic Services, when appearing before the Committee, discussed resource limitations which impact on the enforcement capability of the police:  
We obviously have a cap on our resources. We have 1,088 highway patrol positions and around 1,050 or 1,060 positions filled across the State at any one time. Those resources are deployed to target high-speed areas. That may be out on the roads preventing car crashes more than pedestrian crashes. Highway patrols target school zones every morning and every afternoon for an hour of each shift, even though the fatality rate in school zones is very low—in fact, there have been two deaths in school zones in the past five years. However, we still target them as a reminder to drivers to slow down. Our role is, first, enforcement and, secondly, to present a high profile to have an impact before people do something wrong.<sup>21</sup>

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<sup>19</sup> Ibid. p. 75.

<sup>20</sup> NSW Police Force, Media Release, 14 September 2009.

<sup>21</sup> Transcript of Evidence, 27 August 2009, pp. 15-16.

- 4.37 The NSW Police Force has employed two main strategies to improve safety. These are a requirement for all Highway Patrol Officers to undertake an hour of morning and afternoon enforcement of speed and parking restrictions in school zones and the launch of an advertising campaign to highlight the dangers of using headphones and other devices causing distraction when crossing roads.<sup>22</sup>
- 4.38 Road Safety Officers, attached to local councils, also run educational and promotional programs targeting pedestrian safety. The City of Sydney has been involved in pedestrian safety awareness activities since 1995, including local advertising at key transport nodes, supported by on-street promotions and providing some city businesses with road safety resources. Additional activities include pilot programs initiated with local schools, incorporating pedestrian safety issues delivered to high school students and other programs delivered to youth groups emphasising road safety for pedestrian and other vulnerable road users.<sup>23</sup>
- 4.39 Other contributors to the Inquiry, such as the NRMA, have stressed the necessity for targeted programs and campaigns for vulnerable and high-risk groups, such as children and older pedestrians. The NRMA, in partnership with Kidsafe, the Motor Accidents Authority and other agencies, has targeted parents and carers of children between 5 and 10 years of age in a project to highlight their role in reinforcing child pedestrian safety. The project involved a website for information and resources, a media campaign and small grants for community based initiatives.<sup>24</sup>
- 4.40 The Senior Road Policy Advisor for NRMA Motoring & Services, when appearing before the Committee, reinforced this point:
- The campaigns that are very effective are targeted at specific groups. They often have more impact if it is young people being involved in the development of that, because young people know what will work with their peers. The same thing applies to parents. We do not do that much for parents. There is an assumption that suddenly when you have children you will understand all the things that will make them safe. Road crashes are one of those things that no-one expects will happen to him or her, or to family members...Public health campaigns have a fairly high success rate in behaviour change because they are so specific and targeted.<sup>25</sup>
- 4.41 Youthsafe, which works with young people from 15-25 years of age, tailors its activities around educational programs and research based activities in youth injury prevention. One of the strategies currently being developed involves safe transport alternatives, involving schools and Road Safety Officers as part of a broadly based community approach to casualty prevention.
- 4.42 The Chief Executive of Youthsafe explained their work in this area to the Committee as follows:
- The view that we take is that all young people are vulnerable road users...There are no easy answers, and these are complex issues. There is not a one size fits all solution; it has to be a multi-strategy approach. We are really trying to understand young people, the way they work, what is normal and important for them, what risks confront them, and look at a whole range of options that help to support them to make safer decisions, to plan properly, to engage parents to support them, to assist with transport and be backups. Then there are a lot of other options that probably work best at the

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<sup>22</sup> Submission 24, NSW Police Force, p. 2.

<sup>23</sup> City of Sydney, Responses to Supplementary Questions, 9 October 2009.

<sup>24</sup> Submission 18, NRMA Motoring & Services, pp. 25-26.

<sup>25</sup> Transcript of Evidence, 27 August 2009, p 30.

community level but with statewide infrastructure support. That is the sort of approach that we would advocate.<sup>26</sup>

- 4.43 Similarly, the NSW Council on the Ageing (COTA) advocates on behalf of older pedestrians and takes a particular interest in targeting its activities and approaches specifically for its client base. The organisation also consults more broadly with its State and Federal counterparts in promoting the interests of its constituency. COTA representatives stressed that planning for older pedestrians must be “a whole-of-community responsibility; it is not just the councils or the police or planning and infrastructure.”<sup>27</sup>

## Vehicle Safety

- 4.44 Technical developments and safety enhancements in vehicle design will increasingly provide improved pedestrian safety benefits. Examples of recently introduced technology designed to reduce impact severity during crashes include Emergency Brake Assist (EBA) which reduces stopping distances by 15% and Electronic Stability Control (ESC) which helps drivers avoid pedestrian impacts in certain situations.<sup>28</sup> While these technologies help to reduce crash severity in emergencies, of more benefit to pedestrian safety will be the use of active and passive on-board detection and vision enhancement systems.
- 4.45 Other technology solutions include Intelligent Speed Adaptation (ISA), which can reduce vehicle speed in areas where there is a known risk of pedestrian casualty. ISA systems constantly monitor the local speed limit and the vehicle speed and take action when the vehicle is found to be exceeding the speed limit. This action can be advisory or “passive”, where the driver is warned, or “active” where there is some degree of automated control of vehicle speed.
- 4.46 The RTA is currently conducting Australia’s largest trial of Intelligent Speed Adaptation. The Director of the Centre for Road Safety provided background to the trial in evidence at the Committee’s public hearing:
- It is being conducted in the Wollongong and Illawarra area and it will involve around 100 vehicles being fitted with intelligent speed adaptation technology. Right now we are collecting the pre-data...We will then collect post-data as a comparison...I think it will be an interesting trial. We are interested in that trial because we hope it will demonstrate—we expect that it will—improvements in road safety...and result in fewer crashes. There are all sorts of benefits that we hope will help to promote that kind of technology.<sup>29</sup>
- 4.47 An associated issue for drivers is distraction either inside or outside the vehicle. There is increasing concern that mobile phones, even in the hands-free mode, constitute a significant distraction by diverting attention from the driving task. Other communication and navigation aids include GPS and multi-function devices which, if badly positioned in the vehicle, may reduce external vision, particularly at night if the screen illumination is too bright, obscuring pedestrians on the road outside.
- 4.48 Examples of distractions outside the vehicle include advertising and street signs, which add to other external distractions such as other road users and objects on the road. Research is currently being conducted to improve night vision systems for use

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<sup>26</sup> Transcript of Evidence, 27 August 2009, p. 58.

<sup>27</sup> Ibid. p. 65.

<sup>28</sup> Submission 18, NRMA Motoring & Services. p. 79.

<sup>29</sup> Transcript of Evidence, 27 August 2009, pp. 13-14.

in vehicles, including radar technology. Such technology is, however, expensive and not widely available in its current form.

- 4.49 As far as vehicle design is concerned, there is increasing recognition that sharp edges and objects fitted to the front of vehicles compound the risk of severe injury impact to pedestrians. Australian Design Rules (ADRs) specify the safety, environmental and technical compliance specifications for Australian vehicles and prohibit the fixing of sharp edges to a vehicle. This requirement, however, only applies to new vehicles.
- 4.50 There is no reference in the ADRs to vehicle frontal protection systems, but the *Road Transport (Vehicle Registration) Regulation 2007* allows bull bars to be fitted as an after-market device. Furthermore, compliance with Australian Standard AS 4876.1 (*Motor vehicle frontal protection systems Part 1: Road user protection*) has governed the fitting of bull bars and frontal protection systems to vehicles since 2003.
- 4.51 While NSW crash data does not include information about the contribution of bull bars to injury severity, the RTA submission highlights that: "Exclusion of clause 3.2 of the Standard from the Regulation allows bull bars to be manufactured to a design and of materials that impact a Head Injury Criteria (HIC) greater than 1500."<sup>30</sup> The submission goes on to state that: "Research has shown that polymer bull bars, as opposed to those manufactured from steel or aluminium can actually *increase* the level of protection a vehicle affords a pedestrian in the event of a crash".<sup>31</sup>
- 4.52 The Committee has concerns about the adequacy of current vehicle design protections for pedestrians. Although the Australian Design Regulations allow for the fitting of an external item to a vehicle providing it is "designed, built and fitted to the vehicle in a way that minimises the likelihood of injury to a person making contact with the vehicle,"<sup>32</sup> it is unclear to the Committee how well this requirement is monitored and enforced. This issue will be further explored in Chapter 7.
- 4.53 The extension of the Australasian New Car Assessment Program (ANCAP) to include pedestrian safety has been a welcome development. The testing regime includes assessing the injury impacts of a vehicle bonnet, windscreen and bumper bar on a pedestrian test dummy. The scores are based on potential injuries to a person struck by a vehicle travelling at 40km/h and provide a star rating for the make of vehicle tested on a four-point scale.
- 4.54 According to the RTA, while an increasing number of new cars achieve a five star occupant rating, there is no equivalent improvement in their pedestrian safety rating and very few vehicles to date have achieved the maximum pedestrian rating of four stars.<sup>33</sup> In this context, it should be recognised that technological safety enhancements to vehicles is an evolving process. At present, while sophisticated electronic devices tend to be standard issue in newer and more expensive classes of motor vehicles, they will become standard issue over time and should result in improved safety outcomes for all road users.

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<sup>30</sup> Submission 28, Roads & Traffic Authority, p. 84.

<sup>31</sup> Ibid.

<sup>32</sup> Ibid. p. 85.

<sup>33</sup> Ibid.

## Conclusions

- 4.55 Although it is difficult to empirically verify the benefits of each of these approaches, improving trends in pedestrian casualty data for 2004-2008 would support the contention that there has been a consistent reduction in overall casualty risk in that period. The increase in pedestrian fatalities for 2009 poses a significant challenge in identifying causes and designing effective countermeasures. The Committee, in examining the evidence received, has developed a set of recommendations and suggested policy responses to identified issues. These are set out in Chapter 7 of the Report.

## Chapter Five - Land Use Policies, Planning and Management of the Road System

- 5.1 Previous chapters of this Report have examined the trends and underlying causes of pedestrian casualties and recent measures taken to address safety concerns. Any analysis of causal factors and remedies must also take account of the broader land use and planning framework within which road safety policies are developed. Land use planning and urban design principles have a major impact on the built environment and effective management of the road network entails meeting the needs of all road users as well as ensuring their safety.
- 5.2 The RTA has over the past decade issued a set of documents reflecting its urban design policy priorities for roads in NSW. These include the *Planning Guidelines for Walking and Cycling*<sup>1</sup> and various iterations of the publication entitled *Beyond the Pavement - RTA Urban and Regional Design Practice Notes*, the latest version of which was published earlier this year. According to the Practice Notes document:
- ...the RTA has systematically incorporated urban design thinking into the infrastructure projects for which it is responsible. These projects include arterial road upgrades, new highways, motorways, bridges, tunnels, bus transitways, street improvements and related pedestrian, bicycle and bus networks and facilities.<sup>2</sup>
- 5.3 In *Beyond the Pavement*, the RTA acknowledges that urban design should incorporate more than engineering principles and deliver outcomes through:
- The design of road infrastructure as part a total transport network – including the contribution that road infrastructure can make to public transport, cycling and walking...How we create a road environment that is safe for everyone.<sup>3</sup>
- 5.4 The RTA states that: “Existing land use patterns such as strip shopping centres on major arterials do not support the objective to remove or minimise pedestrian–vehicle conflicts”.<sup>4</sup> The RTA, in recognising that amenity and safety should have equal priority in land use planning and road development, is revising its guidelines and policies for road projects. This revision aims to meet the twin objectives of providing accessible and connected road networks as well as meeting the safety needs of road users.

### Planning Guidelines

- 5.5 Local and regional planning guidelines must reflect an emphasis on public safety. The RTA *Planning Guidelines for Walking and Cycling* were developed to assist land use planners and related professionals to incorporate walking and cycling as part of an integrated approach to the provision of transport services. The Guidelines encourage increased involvement by local councils in the early planning and development process.

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<sup>1</sup> NSW Government, *Planning Guidelines for Walking and Cycling*, December 2004.

<sup>2</sup> Roads & Traffic Authority, *Beyond the Pavement – RTA Urban Design Policy, Procedures and Design Principles*, July 2009, p. 2.

<sup>3</sup> Ibid, p. 4.

<sup>4</sup> Submission 28, Roads & Traffic Authority, p. 99.

- 5.6 Councils, in developing their own Local Environmental Plans (LEPs), are also encouraged to include walking and cycling as key components of such plans. These activities increasingly reflect greater community awareness of and commitment to improved health and sustainability.
- 5.7 An important component of any planning process is to accommodate the requirements of all sectors of the population, as demographic settings shift and the population ages. A representative of the NSW Council on the Aging made the following comment in evidence to the Committee:
- Cities are very much designed around cars, and we can be forgiven for that. Because of the ageing population we really need to redirect that. One of the recommendations from the age-friendly working groups that we will be putting in our pre-budget submission to the State Government and the Opposition later this year will be that a very sensible way of moving forward is to overlay population maps over infrastructure and planning maps. Currently that is not done.<sup>5</sup>
- 5.8 The NSW Council on the Ageing, as a representative body for the ageing population, does not consider that its client group is adequately consulted in planning decisions impacting on their health and safety. The Council informed the Committee that it is not formally included in consultations on behalf of their membership with Government agencies on planning issues. This is of concern, as the views of vulnerable road users must be taken into account in order to plan adequately for their needs.

## Metropolitan Settings

- 5.9 Increasing emphasis on alternative transport and travel options, partly in response to energy concerns and personal fitness goals, has resulted in greater pedestrian and cycling pressure in metropolitan areas, particularly in Central Sydney. Attempts have been made to address the previous neglect of pedestrian and other non-vehicular users of the road network. The RTA Planning Guidelines refer to:
- ...a number of city-scale design principles that can assist the creation of walkable and cycleable cities and neighbourhoods. All emphasise urban renewal and the creation of compact mixed use accessible centres around public transport stops. Walking and cycling catchment mapping, accessibility zoning and integration of regional walking and cycling networks can assist this process. At the neighbourhood-scale, city-scale design principles can be reinforced through the creation of local accessible centres and neighbourhoods with connected street patterns. The detailed design of road reserves, public transport stops, development sites and open space corridors aims to reinforce local walking and cycling networks and create a safe and comfortable walking and cycling environment.<sup>6</sup>
- 5.10 The City of Sydney, in its submission, draws on the results of research and consultation activities conducted as part of its *Sustainable Sydney 2030: The Vision* project. The summary document<sup>7</sup> maps out a series of key objectives for pedestrian road safety including: integrating pedestrian movement into transport planning; managing the road space to encourage walking; giving pedestrians higher priority at traffic signals; reducing vehicular speed limits; and developing green networks between activity hubs.<sup>8</sup>

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<sup>5</sup> Transcript of Evidence, 27 August 2009, p. 65.

<sup>6</sup> NSW Government, *Planning Guidelines for Walking and Cycling*, December 2004, p. iv.

<sup>7</sup> City of Sydney, *Sustainable Sydney 2030: The Vision*, 2009, p. 84.

<sup>8</sup> Submission 23, City of Sydney, p. 4.

- 5.11 North Sydney Council has similar priorities to those of the City of Sydney and makes the case for improved regional pedestrian links. In its submission, North Sydney Council made the following observation:
- Planners and transport planners must undertake a shift in their thinking and recognise pedestrians as performing an important and essential transport role. Pedestrians must be considered upfront when the land for various modes is being allocated. Pedestrians must be able to move efficiently and safely particularly in areas of high demand. The interactions between the various modes means that each transport mode cannot be addressed in isolation, but rather planning for all modes must be undertaken together.<sup>9</sup>
- 5.12 Moreover, North Sydney Council supports the creation of additional shared zones and high pedestrian activity areas within its Council boundaries.
- 5.13 It is clear that major issues in highly urbanised settings centre around equitable access by pedestrians to the road system and reducing the speed of vehicles in high pedestrian traffic areas in order to address safety concerns. Local Councils, with the assistance of Road Safety Officers and associated Council Transport Committees can play an invaluable role in formulating strategies to address pedestrian safety as part of the planning process.
- 5.14 Evidence to the Committee indicates that there has been some resistance by the RTA to engage in meaningful consultations about planning issues with relevant stakeholders. The City of Sydney referred to the issue of vehicle speed limits in Central Sydney and the lack of responsiveness by the RTA to recommendations made by their Council.
- 5.15 Supplementary information provided to the Committee indicates that a recommendation made by the City of Sydney in 2005 concerning 40km/h speed limits in Central Sydney was rejected by the then Minister for Roads and the Chief Executive of the RTA. According to the City of Sydney:
- Further approaches have been made to the RTA for lower speed limits in central Sydney but so far the decisions made in 2005 have not been reversed or reviewed. The City has to make separate applications for each stretch of road that it wishes to have a lower speed limit applied to. This is subject to RTA guidelines and is a lengthy process that does not take into consideration the specific needs of the unique City environment or the needs of the City's residential and inner city areas. Also introducing new speed limits on a piecemeal basis leads to confusion by motorists and makes enforcement difficult.<sup>10</sup>
- 5.16 The *Road Transport (Safety and Management) Act 1999* empowers the RTA to set speed limits through traffic regulations. Speed zones take account of a wide range of variables including road function, roadside development, physical road characteristics (alignment, access, hazards, lane width and adjacent speed zones) and intersections. In addition, traffic characteristics such as traffic patterns and other road users also play a part in their determination.
- 5.17 According to the guidelines, while speed zones are administered by the RTA, "...there is scope for relevant stakeholders (e.g. local council, members of public and road safety experts) to make requests to the RTA for change in speed zones".<sup>11</sup> Although the speed zoning guidelines detail procedures for reviewing speed limits and zones on NSW roads, there appears to be some misgivings about the extent to

<sup>9</sup> Submission 27, North Sydney Council, p. 7.

<sup>10</sup> City of Sydney, Response to Supplementary Questions, 9 October 2009.

<sup>11</sup> NSW Centre for Road Safety, *NSW Speed Zoning Guidelines*, 2009, p. 3.

which the review process takes into account and accommodates the specific requirements of local conditions.

- 5.18 The question of more inclusive consultation and collaborative decision making as part of the planning process is addressed further in Chapter 7 of the Report.

## Suburban Redevelopment and Growth Centres

- 5.19 Addressing safety deficiencies in established areas involves adding to the existing infrastructure by using improved technology and traffic management treatments. Growth centres and wholesale redevelopment of established areas provide greater opportunities for innovative planning to achieve optimal access, connectivity and road safety outcomes.
- 5.20 Substantial new redevelopments call for planning strategies designed to ensure the availability of safe crossing points in the vicinity of the redevelopment and within the existing road network. Growth centres, on the other hand, involve the construction of new roads which extend and augment existing road networks in order to provide the best possible access, traffic, amenity and safety outcomes for all road users.
- 5.21 In its *Growth Centres road framework*<sup>12</sup> publication, the RTA details principles for the development of emerging road networks in the North West and South West Growth Centres on the outskirts of Sydney. The document provides guidance on road types and hierarchies, balanced against land use to ensure a strong emphasis on transit oriented development and sets down a framework for appropriate major road networks within the Metro Strategy.
- 5.22 According to the RTA:
- The description of road hierarchies specifies the need to create infrastructure that avoids vehicle and pedestrian conflicts...and outlines the design objectives and design principles to ensure pedestrian and bicycle amenity and safety and specifies the threshold for pedestrian crossing intervals.<sup>13</sup>
- 5.23 The Growth Centres document specifies the following design objectives in the planning and design of the Growth Centre roads:
- Good pedestrian and cyclist **connectivity** along and across the major roads should be provided along existing and potential desire lines. This avoids pedestrians taking risks and crossing roads in dangerous places.
  - Footpaths and cycleways on Growth Centre major roads should be **integrated** into the local pedestrian and cyclist network. This ensures pedestrians and cyclists are provided with safe, easy connections to their destinations. They should also be connected to public transport nodes – bus stops, public railway stations, taxi ranks. This encourages public transport use and reduces private traffic.
  - Footpaths and cycleways should be well designed, providing adequate space for users and protection from traffic and a pleasant travelling experience. They should be safe and secure from crime, with passive surveillance maximised.<sup>14</sup>

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<sup>12</sup> Submission 28, Roads & Traffic Authority, Appendix 4, Growth Centres Road Framework, p. 30.

<sup>13</sup> Submission 28, Roads & Traffic Authority, p. 100.

<sup>14</sup> Submission 28, Roads & Traffic Authority, Appendix 4, Growth Centres Road Framework, p. 30.

- 5.24 The document also details design principles to be adopted to ensure that the objectives are met. This includes the provision of adequate crossing points, the spacing of signalised intersections, size of footpaths and the speed environment.
- 5.25 Speed limits also form part of the overall design standards for roads. As previously highlighted, vehicle speed is a critical factor in pedestrian safety. New development proposals provide opportunities to examine the appropriateness of speed limits within the road hierarchy, while also recognising the need for consistency in the application of such speed limits.

## Conclusions

- 5.26 A consistent theme contained in many submissions received and in evidence taken by the Committee reinforces the view that pedestrians need to be given a higher priority in the early stages of land use planning and road system design. There is a justified perception that the efficient movement of motor vehicles is the major determinant in road infrastructure planning, rather than the needs and safety of pedestrians and other road users. The recent increase in pedestrian fatalities has provided the impetus for the reprioritising of pedestrian safety within the road safety hierarchy.
- 5.27 These themes are reinforced in the Committee's recommendations set out in Chapter 7 of the Report.



## Chapter Six - Pedestrian Safety in Other Jurisdictions

- 6.1 Pedestrian safety poses policy challenges shared by jurisdictions throughout Australia and the rest of the world. Although many of the strategies implemented to address these issues are common, some jurisdictions have trialled or adopted alternative approaches to improve pedestrian safety in their own areas.
- 6.2 This Chapter will detail some of the strategies adopted in other Australian States and internationally to mitigate the increased vulnerability of pedestrians, grouped according to the nature of the strategy employed. Recommendations for additional strategies to improve pedestrian safety in New South Wales are detailed in Chapter 7.

### Engineering Strategies

- 6.3 Engineering strategies cover a wide range of treatments applied to the road environment from very simple line markings on roads to grade separation. While NSW has introduced a range of engineering measures to benefit vulnerable road users, other Australian and international jurisdictions have implemented alternative solutions that may yield benefits for pedestrian safety in this State. According to the Director of the NSW Centre for Road Safety, "...in principle it is correct to assert that the engineering solution is one which will work for road safety and one where other countries are doing better than all of Australia".<sup>1</sup>

### Pedestrian User-Friendly Intelligent (PUFIN) Crossings

- 6.4 Several submissions received by the Committee recommend an increase in the pedestrian phase, or amount of time allowed for pedestrians to cross at traffic signals. The pedestrian phase comprises a combination of "pedestrian walk time" (the time afforded for pedestrians to commence their crossing) and "pedestrian clearance time" (the time afforded for pedestrians to clear a crossing).
- 6.5 While the purpose of these settings is to provide sufficient time for pedestrians to "...begin and establish their crossing movement...[and] complete their crossing with safety",<sup>2</sup> there is a widely held view that the settings are inadequate.
- 6.6 Both the NRMA and the NSW Council on the Ageing are strong supporters of the introduction of PUFIN technology on NSW roads, currently in use in the United Kingdom. The technology uses pedestrian detection on the crossing to vary the length of time for the pedestrian crossing phase of the traffic signal and to monitor the presence of pedestrians on the kerb.
- 6.7 PUFIN technology benefits vulnerable road users by allowing slower moving pedestrians, in particular older and disabled people, more time to cross the road,<sup>3</sup> and assists drivers by reducing time at traffic lights when no pedestrians are waiting. Another benefit of PUFIN crossings is that signals are located on the approach side

<sup>1</sup> Transcript of Evidence, Thursday 27 August 2009, p. 5.

<sup>2</sup> Austroads, *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing*, Table 5.6 – Summary of Signal Controller Settings, p.77.

<sup>3</sup> Note, the maximum "clearance" or crossing time can be pre-set for each crossing. If this limit is reached, an additional three seconds is provided before the traffic signals change.

to a crossing. As well as providing advantages for sight-impaired pedestrians, this positioning of the signals encourages waiting pedestrians to observe the approaching traffic.

- 6.8 According to the NRMA, PUFIN technology has been trialled at two metropolitan mid-block pedestrian crossings in Perth, Western Australia. Each crossing utilised different electronic detectors, namely infrared and microwave, to determine the most appropriate system for Australian conditions.<sup>4</sup> Main Roads Western Australia has stated that it will "...install new PUFIN crossings or convert existing mid-block crossings to PUFIN operation where the need is identified", subject to funding.<sup>5</sup>
- 6.9 The submission further states that the RTA has trialled the technology at a mid-block pedestrian crossing on Campbell Parade, Bondi Beach. The effectiveness of the trial is not known, as the results have not been published.
- 6.10 An alternative to the introduction of PUFIN crossings is modification of the traffic light phasing to provide "...additional time where a significant number of aged or impaired pedestrians use signalised crossings".<sup>6</sup> This is discussed in greater detail in Chapter 7.

## Countdown Timers

- 6.11 Related to the issue of inadequate pedestrian walk and clearance time, is the issue of signal phasing time. According to one submission, the 'perceived' amount of waiting time for pedestrians is approximately twice the 'actual' waiting time, prompting pedestrians to engage in risky behaviour by crossing against the lights.<sup>7</sup> Countdown timers have been employed in other jurisdictions to reduce this risk.
- 6.12 'Countdown timers', or 'countdown clocks', are typically operated in one of three configurations, namely:
- i) the amount of time that pedestrians have to wait before the next opportunity to cross is counted down;
  - ii) the amount of time afforded to commence crossing the road can be counted down; and
  - iii) the 'clearance' time can be counted down, that is, the amount of time left to complete the crossing.

Variations of these devices are found in numerous cities throughout America, Europe and Asia.

- 6.13 In its submission, the Roads & Traffic Authority states that only certain types of countdown timers are compatible with the Sydney Coordinated Adaptive Traffic System (SCATS), the traffic signal system in use in New South Wales.<sup>8</sup> Furthermore, according to the RTA, only one of three countdown clock configurations delivers a road safety benefit, namely the type that counts down the time before the next opportunity for pedestrians to cross.

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<sup>4</sup> Main Roads Western Australia, *Trialling New Technologies*, Online at: [http://www.mainroads.wa.gov.au/UnderstandingRoads/FactsFigures/WhatsITS/Pages/Trialing\\_New\\_Technologies.aspx](http://www.mainroads.wa.gov.au/UnderstandingRoads/FactsFigures/WhatsITS/Pages/Trialing_New_Technologies.aspx), Accessed 28 October, 2009.

<sup>5</sup> Ibid.

<sup>6</sup> Austroads, *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing*, Table 5.6 – Summary of Signal Controller Settings, p. 56.

<sup>7</sup> Submission 11, *Walking Volunteers*, p. 2.

<sup>8</sup> Submission 28, *Roads & Traffic Authority*, p. 97.

People seem more prepared to wait for the signal and to wait for the green...If they know they have to wait for only 20 seconds, or whatever it is...If that is the only one that gives us a safety benefit we do not want to trial the others. Research that we have done to date suggests that we might get a road safety harm, as people will walk up and say, "It is flashing, "Do not walk", so I will not walk. But if they walk up and see it flashing, "Do not walk", they will say, "I have five seconds; I can get across the road in five seconds." That is when you get a road safety disbenefit.<sup>9</sup>

- 6.14 In response to an investigation into a pedestrian seriously injured on Druitt Street in the Sydney CBD on 27 June 2007, the Office of Transport Safety Investigations (OTSI) recommended a range of strategies to improve pedestrian safety. One such suggestion was the introduction of pedestrian countdown timers.<sup>10</sup>

### 'Dwell on Red' Technology

- 6.15 Traffic signals equipped with dwell-on-red technology display red lights in all traffic directions when no traffic is detected. Traffic lights change to green when motor vehicles are detected and, once the traffic passes through, revert to red. Preliminary analysis of a trial of the technology in Ballarat, Victoria indicates that the treatment led to "...significant reductions in vehicle speed".<sup>11</sup>
- 6.16 According to a study conducted by Monash University Accident Research Centre (MUARC), these modified traffic signal operations can be used during high-risk periods, and at high-risk locations to reduce alcohol-affected pedestrian crashes, and the severity of crashes that might otherwise occur.<sup>12</sup>
- 6.17 A subsequent trial of dwell-on-red technology was conducted at an intersection in Melbourne in 2006-07. The results of the Melbourne trial indicated that the technology brought about significant reductions in overall average speed. The reductions observed were of an order likely to contribute to "...a reduction in crash frequency and crash outcome severity, particularly for pedestrian impacts".<sup>13</sup>
- 6.18 North Sydney Council recommends the trial or introduction of 'dwell-on-red' technology in high pedestrian activity areas, especially those in which pedestrians are likely to be affected by alcohol. The Council further advocates the introduction, or trial, of this technology during peak hours only, to ensure that the flow-on effects on the surrounding road network are kept to a minimum.

### Speed Limits

- 6.19 The Roads & Traffic Authority has implemented a range of strategies aimed at reducing pedestrian crashes, such as 40km/h high pedestrian activity areas, school zones, school crossing supervisors, speed limits around school buses and 50km/h urban speed limits. Notwithstanding these initiatives, the speed limits on much of the

<sup>9</sup> Transcript of Evidence, 27 August 2009, p. 12.

<sup>10</sup> Office of Transport Safety Investigations, *Bus Safety Investigation Report, Bus Accidents Occasioning Death and Serious Injury, West Pennant Hills, Rutherford and Sydney CBD, 19-27 June 2007*, p. 45.

<sup>11</sup> Michael Lenné & Bruce Corben (Monash University Accident Research Centre), *Modifications to Traffic Signal Operations to Improve Safety for Alcohol-affected Pedestrians*, Paper Delivered at Australasian Road Safety Research, Policing & Education Conference 2005, p. 1.

<sup>12</sup> Ibid.

<sup>13</sup> Jeffery Archer, Nimmi Candappa & Bruce Corben, *Effectiveness of the Dwell-on-Red Signal Treatment to Improve Pedestrian Safety during High-Alcohol Hours*, Paper Delivered at Australasian Road Safety Research, Policing & Education Conference 2008, p. 243.

Australian road network are higher than the limits set on comparable roads in other OECD countries.

- 6.20 In Australia, most local and collector roads in urban areas are zoned 50km/h, whereas in most OECD countries the limit is 30km/h.<sup>14</sup> Many submissions to the Committee argue for lower traffic speed limits in high pedestrian activity areas, such as the Sydney CBD.
- 6.21 In evidence to the Committee, the Director of the NSW Centre for Road Safety concedes that reducing the speed limit from 50km/h to 40km/h would result in a road safety gain. "The material influence on the road toll for changes in speeding of those orders is substantial for pedestrians, for motorcyclists and for pedal cyclists, the unprotected road users."<sup>15</sup>
- 6.22 Vehicle travelling speed (and therefore posted speed limit) is closely linked to crash risk, and impact speed is strongly correlated to injury severity. Therefore, the higher the impact speed, the more serious the injury outcome. According to the RTA submission, the average pedestrian has a 5% chance of surviving a collision involving a vehicle impact speed of 60km/h or faster. This increases to 16% at 50km/h, 74% at 40km/h and 95% at 30km/h.<sup>16</sup>
- 6.23 In light of this, several European states have adopted 30km/h speed limit standards in residential and CBD areas.<sup>17</sup> According to the City of Sydney, this speed is "generally considered to be the standard, best practice limit for areas where there is potential for conflict between vulnerable road users and vehicles".<sup>18</sup>
- 6.24 In Australia, Victoria has trialled 40km/h speed limits around 18 of Melbourne's busiest strip shopping centres "to increase road safety for all users, especially pedestrians and cyclists".<sup>19</sup> These areas are identified by variable messaging signs. Following the success of this trial, VicRoads has pledged to introduce lower speed limits in other shopping centre malls on a gradual basis.

## Naked Streets

- 6.25 Several European cities have gone further than simply reducing vehicle speed limits and created zones where pedestrians have priority over other road users. In contrast to other engineering treatments that aim to improve pedestrian safety by separating the most vulnerable road users from vehicles (e.g. pedestrian fencing), the "naked streets" concept involves the removal of road priority management devices such as kerbs, lines, signs and signals. According to the City of Sydney submission:

It is a significant departure from attempts to control behaviour through interventions like road humps, or engineering pedestrians out of our streetscape through subways or guardrail. The shared space concept...is based on a principle that removing all priorities will make road users work together to bring traffic speeds down and improving pedestrian access and safety.<sup>20</sup>

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<sup>14</sup> Submission 23, City of Sydney, p. 3.

<sup>15</sup> Transcript of Evidence, Thursday 27 August 2009, p.2.

<sup>16</sup> Submission 28, Roads & Traffic Authority, p. 42.

<sup>17</sup> Urban speed limits are set at 20mph in the United Kingdom.

<sup>18</sup> Submission 23, City of Sydney, p. 6.

<sup>19</sup> VicRoads, *Victoria's Speed Limits*, Online at:

<http://www.vicroads.vic.gov.au/Home/RoadSafety/SpeedingAndSafety/VictoriasSpeedLimits/>, Accessed 5 November 2009.

<sup>20</sup> Submission 23, City of Sydney, p. 16.

- 6.26 Similar treatments, called *Woonerf* systems, have been utilised in the Netherlands since 1999. These zones give pedestrians and cyclists right of way. In Germany's *Verkehrsberuhigter Bereichs*, vehicles are restricted to 7km/h speed limits and pedestrians may use the entire street. In 2007, Bendigo City Council in Victoria announced plans to implement the "naked streets" concept as part of a broader makeover of the city centre.
- 6.27 The closest treatment option currently available in New South Wales is the establishment of "shared zone" areas at selected sites in New South Wales. However, submissions from local councils are critical of the RTA's stringent rules for the establishment of such shared zones.<sup>21</sup>
- 6.28 Under current arrangements, potential shared zones are required to have less than 300 daily vehicle movements, a figure that is considered arbitrary and at odds with the limits reached in other Australian jurisdictions. Furthermore, the assessment criteria explicitly exclude any consideration of pedestrian volumes.<sup>22</sup>
- 6.29 The City of Sydney further contends that such zones need to be renamed to reflect a change in the road rules. Whereas shared zones initially gave equal priority to all road users, changes implemented in 1999 now give priority to pedestrians over other road users. Accordingly, a change in name from "shared" to "pedestrian" zone is suggested to reflect the changes in priority among road user groups.

### Retro-reflectivity of Pedestrian Crossings

- 6.30 The issue of inadequate street lighting has also been raised during the Inquiry.<sup>23</sup> Problems of pedestrian visibility are a contributing factor in vehicle-pedestrian collisions, with 28% of pedestrian injuries and 49% of pedestrian fatalities occurring during hours of darkness.<sup>24</sup> In evidence to the Committee, the NSW Police Force Commander of Traffic Services acknowledges that: "a lot of the country crashes are on dark roads with no lighting".<sup>25</sup> Despite lighting improvements in metropolitan areas, similar improvements in non-metropolitan areas are unlikely due to a combination of limited resources and the expanse of the road network.
- 6.31 The NRMA, in its submission, refers to the development of innovative road marking solutions to overcome problems associated with low lighting. These products consist of reactive paint embedded with glass beads. They work by reflecting vehicle headlights (up to five times the normal standard), thus reducing the reliance on street and purpose-built lighting to illuminate pedestrian crossings. Several councils in the United Kingdom have implemented these road markings to provide a low-cost engineering solution.

### Education Strategies

- 6.32 Road safety education campaigns are an essential component of the school-based curriculum. Many submissions, however, identify a need for broader based public education campaigns. One submission, from a private citizen, calls for the

<sup>21</sup> Submission 27, North Sydney Council, p. 8.

<sup>22</sup> Submission 23, City of Sydney, p. 7.

<sup>23</sup> Submission 18, NRMA Motoring & Services, passim.

<sup>24</sup> Submission 28, Roads & Traffic Authority, p. 36.

<sup>25</sup> Transcript of Evidence, 27 August 2009, p.15.

introduction of measures to address the "...aggressive and inconsiderate behaviour of motorists towards pedestrians and cyclists" demonstrated in Sydney.<sup>26</sup>

6.33 While it is unlikely that such behaviour is confined to Sydney, New South Wales did perform poorly in AAMI's 2007 Crash Index, which sought the opinion of pedestrians about safety issues. In response to the question, "As a pedestrian, I have experienced aggression from impatient motorists", 35% of respondents from New South Wales strongly agreed. This was the highest result for any Australian jurisdiction.

6.34 In evidence to the Committee, the Director of the Centre for Road Safety issued a qualified statement about the effectiveness of education programs:

...very often when we hear the kind of issue you are raising [somebody walks across the road not on a pedestrian crossing...darting in between traffic] we tend to think the solution is to educate pedestrians. I am very resistant to that. Pedestrians do not run out because they do not know there is a risk, but because they are confident that they can afford to take the risk. So education does not seem to work against that.<sup>27</sup>

6.35 While education strategies aimed at addressing known high-risk pedestrian behaviour may not yield dramatic results, there may be benefits to be gained in targeting less well-known risk behaviour. For example, the NRMA submission highlights a Canadian education campaign that aims to encourage pedestrian understanding of the importance of making themselves visible to motorists.<sup>28</sup>

6.36 Recommendations made during the course of the Inquiry include a proposal to develop education strategies to inform drivers, bicyclists and pedestrians of their rights and obligations when interacting with other road users.<sup>29</sup> Submissions from local councils also express a view that the level of understanding of the road rules is limited. The City of Sydney submission points out that:

The Australian Road Rules...allows pedestrians to cross a road at any point if they are more than 20 metres from a controlled crossing, provided they cross by the shortest and safest route and do not stay on the road longer than is necessary. There are no "jaywalking" laws...However, many drivers have the incorrect perception that pedestrians doing so are "jaywalking" and committing an offence.<sup>30</sup>

6.37 Similarly North Sydney Council submits that: "Many motorists seem to be unaware of some of the Australian Road Rules (ARR) in relation to giving way to pedestrians".<sup>31</sup> The submission claims that motorists are either unaware, or choose to ignore ARR 72 to 75 which require motorists to give way to pedestrians at T-intersections, and road and road-related areas. This is further addressed in the following Chapter.

6.38 However, pedestrians can contribute to the cycle of aggression through their own behaviour. As one submission states, pedestrians "...amble across [crossings] with no regard to the traffic. Instead of waiting and crossing as a group, pedestrians walk individually...holding traffic up..." causing drivers to get frustrated.<sup>32</sup> Thus, education strategies may assist in remedying these misunderstandings and promote understanding amongst all road users. In the words of the Chair of Road Safety at

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<sup>26</sup> Submission 21, Mr Russell Webber, p. 3.

<sup>27</sup> Transcript of Evidence, 27 August 2009, p. 3.

<sup>28</sup> Submission 18, NRMA Motoring & Services, p. 24.

<sup>29</sup> Ibid. p. 32.

<sup>30</sup> Submission 23, City of Sydney, pp. 10-11.

<sup>31</sup> Submission 27, North Sydney Council, p. 10.

<sup>32</sup> Submission 5, Mr John Tyler, p. 3.

the NSW Injury Risk Management Research Centre: “There must be a responsibility of usage for every road user...we need that mutual respect”.<sup>33</sup>

## Conclusions

- 6.39 The benefits of pedestrian safety countermeasures adopted in other jurisdictions should be fully investigated for potential implementation in NSW. Lessons from other settings provide useful information on which to modify or improve current practice and to share knowledge. The following Chapter examines alternative options and strategies to supplement and strengthen recent pedestrian safety initiatives.

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<sup>33</sup> Transcript of Evidence, 27 August 2009, p. 69.



## Chapter Seven - Strategies to Improve Pedestrian Safety

- 7.1 Previous chapters of this Report have documented current approaches to managing pedestrian safety in NSW and contrasted those with strategies adopted in other jurisdictions. This Chapter sets out a range of additional countermeasures and strategies to build on and augment initiatives implemented to date.
- 7.2 The recent World Health Organisation *Global Status Report on Road Safety* stresses the urgency for Government to consider the needs of all road users, particularly vulnerable groups, when making policy decisions impacting on road safety overall.<sup>1</sup>
- 7.3 A renewed emphasis on pedestrian safety sits well within this framework and is particularly important given the rise in pedestrian fatalities in 2009. Additional countermeasures will be discussed in the context of road user category, road engineering and infrastructure development, vehicle and driver factors and technological solutions.
- 7.4 It is also important to emphasise that such countermeasures constitute a multilayered approach to public policy, with all road users playing an equal part in sharing responsibility for improving safety on NSW roads.

### Vulnerable Groups of Road Users

- 7.5 Two particularly vulnerable groups of road users are younger and older pedestrians. As described in Chapter 3, the age cohorts 0-16, 17-29 and 60+ represent pedestrians at greatest casualty risk on NSW roads. Particular attention must be given to countermeasures targeting the specific characteristics of each of these groups.

### Younger Pedestrians

- 7.6 Studies conducted by the Monash University Accident Research Centre have identified children aged 6-10 years at greatest risk of pedestrian casualty, due to "...the beginning of unsupervised independent travel at a time when their road strategies, skills and understanding are not yet fully developed".<sup>2</sup> This claim is supported by research and studies conducted by The George Institute and other evidence cited in Chapter 3.
- 7.7 The contention that cognitive development for children under 10 years of age is insufficient for complex tasks such as crossing roads provides the rationale for targeted early school based training programs focussing on the skills and functional abilities needed to cross roads safely. While the Committee recognises that the RTA and the NSW Department of Education & Training provide educational resources in the form of publications to parents and the school community in early childhood centres and primary schools,<sup>3</sup> there is scope for more intensive training in the functional aspects of crossing roads.

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<sup>1</sup> World Health Organisation, *Global Status Report on Road Safety: Time for Action*, 2009, p. x.

<sup>2</sup> Monash University Accident Research Centre, *Child Pedestrians: Factors associated with ability to cross roads safely and development of a training package*, Report No. 283, November 2008, p. III.

<sup>3</sup> Submission 28, Roads & Traffic Authority, p. 72.

**RECOMMENDATION 5:**

The Committee recommends that the Roads & Traffic Authority and the Department of Education & Training develop a training program for early childhood centres and primary schools focussing on crossing roads safely. This training program should monitor and provide direct feedback on individual responses to traffic in order to strengthen decision making and awareness of risk and include gap selection skills, choosing safe crossing locations and hazard awareness.

**RECOMMENDATION 6:**

The Committee also recommends that the training program should incorporate a module for parents to be made aware of the risks of unsupervised crossing behaviour and the importance of holding young children's hands when crossing the road.

**RECOMMENDATION 7:**

The Committee further recommends that the training program should include a training manual and that the program be promoted to road safety organisations throughout NSW.

7.8 Another group of young people identified as being at high risk of pedestrian casualty are those aged 10-14 years walking to and from school. Youthsafe identifies a range of factors contributing to risk in this age group as follows:

- Travelling more independently than they are likely to have travelled in primary school;
- Travelling longer distances;
- Travelling in more complex road environments;
- Using more than one mode of transport, including walking to, from and between different modes of transport, such as bus or train, and sometimes rushing to catch public transport;
- Travelling while more fatigued due to more commitments within and outside school;
- Carrying heavier bags; and
- Experiencing more distractions travelling with new friends or using mobile phones or MP3s.<sup>4</sup>

7.9 The RTA provides funding for the NSW School Road Safety Education Program and road safety forms a component of the mandatory Personal Development, Health and Physical Education syllabus in all NSW schools. The syllabus incorporates pedestrian safety as part of the Program and provides resources for teachers, students, parents and school communities throughout NSW.<sup>5</sup>

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<sup>4</sup> Submission 15, Youthsafe, p. 4.

<sup>5</sup> Submission 28, Roads & Traffic Authority, p. 72.

- 7.10 There is scope, however, for increased emphasis on school travel risks, particularly for the age group starting school. Pedestrian awareness strategies aimed at this group should also include parent education.

**RECOMMENDATION 8:**

The Committee recommends that increased emphasis be placed on pedestrian safety, as part of the Personal Development, Health & Physical Education syllabus in NSW schools, particularly for students commencing their secondary education who are more likely to be travelling independently to school. Additional resources should be provided for students and parents to support them in identifying and managing the risks associated with pedestrian travel to school.

- 7.11 As previously described, young people aged 15-24 are also undergoing significant changes in cognitive development and brain maturation and are prone to risk taking and a desire for experimentation. Youthsafe has provided a list of predisposing risk factors contributing to increased injury risk in adolescence. This is set out in Chapter 3.
- 7.12 Staysafe, as part of its inquiry into Young Driver Safety & Education Programs completed last year, made a series of recommendation to address adolescent risk taking behaviour in the context of driver education and training. The Committee's report discussed the lack of public transport alternatives in rural and regional areas resulting in young people taking risks such as drink walking after socialising in late evenings, particularly on weekends.<sup>6</sup>
- 7.13 This point is reinforced in the submission by Youthsafe, which states:  
Australian road fatality data indicates that for the 15 to 19 year age group a greater number of pedestrian fatalities occur during the early hours from midnight compared with other times of the day. Young people of this age are typically travelling home after being out socialising in the evening. Reports from the NSW Injury Risk Management Centre also indicate that in NSW for 15 to 24 year olds, pedestrian injury has the highest proportion of deaths attributed to alcohol compared with other mechanisms of injury. Male deaths are more likely to be attributable to alcohol than female. While it is difficult to find comprehensive data on death and injury in young people associated with social activity, the data that are available on the peak times of pedestrian injury in young people and the significance of alcohol in pedestrian injury in young people points to a need to address transport safety for young people after they have been out socialising, including pedestrian safety.<sup>7</sup>
- 7.14 The 2008 Staysafe report recommended that the provision of local transport alternatives be given a higher priority, particularly in rural and regional areas of NSW and within the scope of funding provided for the Road Safety Officer Program.<sup>8</sup> The Committee reiterates this recommendation in the context of the current Inquiry.

<sup>6</sup> Staysafe Committee, *Report on Young Driver Safety and Education Programs*, November 2008, p. 28.

<sup>7</sup> Submission 15, Youthsafe, p. 3.

<sup>8</sup> Staysafe, *op. cit.*, p. 63.

**RECOMMENDATION 9:**

The Committee recommends that the Roads & Traffic Authority provides greater levels of funding and support for the Road Safety Officer Program in order to increase local government involvement in locally based road safety initiatives, such as the provision of additional transport options for younger pedestrians at increased risk of casualty after late night socialising.

**Older Pedestrians**

- 7.15 The road network, primarily designed for motor vehicles, actively discriminates against safe and efficient travel by vulnerable groups, particularly elderly users. Older pedestrians are more vulnerable than most other road users due to age related frailty. Research conducted by the Monash University Accident Research Centre, cited in Chapter 3, refers to evidence that older pedestrians are in greater danger of being seriously injured due to their susceptibility to fractures, longer recovery times and long term disability.<sup>9</sup>
- 7.16 Based on current population trends, the number of older pedestrians is estimated to increase substantially due to a reduction in birth rates and increased life expectancy. The authors of a report prepared for the Motor Accidents Authority of NSW argue that older road users will be "...generally healthier and more active in their later years than earlier cohorts".<sup>10</sup>
- 7.17 The same study of older pedestrians in the Sydney metropolitan area also reports that: "...they consider themselves to be careful and safe road users... and men tended to be more confident of their own abilities and less likely to consider other factors, such as route selection, important to pedestrian safety".<sup>11</sup> Key conclusions of this study are that targeted education campaigns and changes to the road environment would be the most effective strategies for reducing accident rates for older pedestrians.
- 7.18 In the RTA submission, reference is made to the conduct of awareness programs for older pedestrians in areas where there are large numbers of elderly residents. The submission proposes that such programs include a range of components to increase knowledge and awareness of safety related issues.<sup>12</sup>

**RECOMMENDATION 10:**

The Committee recommends that the Centre for Road Safety commissions increased numbers of safety programs and public awareness campaigns for older pedestrians. These programs and campaigns should focus on increasing understanding of safety risks, improving and refreshing knowledge of road rules and informing older pedestrians about the use of pedestrian facilities and mobility aids.

<sup>9</sup> Monash University Accident Research Centre, *Older Vulnerable Road Users – Measures to Reduce Crash and Injury Risk*, Report 218, April 2004, p. xiv.

<sup>10</sup> C.A. Gorrie & P.M.E. Waite, *A Survey of Older Pedestrians in Metropolitan Sydney: Walking Patterns, Perceptions and Risk Exposure*, November 2005, p. 1.

<sup>11</sup> *Ibid*, p. xiii.

<sup>12</sup> Submission 28, Roads & Traffic Authority, p. 73.

## Road Engineering Improvements

- 7.19 A consistently highlighted theme during the Inquiry concerns the need for updated and improved engineering solutions to assist vulnerable road user groups. There is a persistent view that road designers do not take adequate account of pedestrians, who are not treated as equal partners when accessing the road network.
- 7.20 The lack of recognition of pedestrian needs is demonstrated by issues such as: the short crossing times allowed for in metropolitan settings; gaps in pedestrian infrastructure such as lack of adequate ramps, footpaths and road refuges; inadequate street lighting; and inadequate crossing technology options. The difficulty of negotiating crossings in a safe manner due to poor design is exacerbated for the groups identified earlier in this Chapter, namely younger and older pedestrians.
- 7.21 One of the witnesses appearing before the Committee, representing the Independent Living Centre of NSW, discussed options to improve road design in order to assist people of all ages and abilities to access the road system more safely. The Centre is particularly concerned about the design and location of kerb ramps and traffic islands and makes a case for improving the amenity of the roadside to cater for pedestrians with special needs, such as:
- ... older people, people who use scooters and wheelchairs, people with mobility disabilities, people with hidden disabilities such as heart disease and asthma, people with cognitive disabilities such as vision and hearing impairment, parents with strollers, parents with small walking children, people with temporary disabilities such as pregnancy or football injuries, people with luggage or groceries, and delivery personnel.<sup>13</sup>
- 7.22 In association with the NSW Council on the Ageing, the Centre is attempting to work with local government to advocate on behalf of consumers to provide safer access when crossing the road. The *You're Welcome* project, managed by the Centre, is designed to assist councils to solve barrier and road engineering problems. This includes the provision of paved footways and footpaths, improved sight lines to crossings, reconstructing intersections to reduce risks associated with slip lanes and left hand turns and redesigning kerb ramps and traffic islands. Funding for the project is being reviewed.

### RECOMMENDATION 11:

The Committee recommends that the Roads & Traffic Authority consults the NSW Council on the Ageing and the Independent Living Centre in the design of engineering solutions to provide safer pedestrian access to the road network.

### RECOMMENDATION 12:

The Committee also recommends that continuing funding be provided to consolidate and expand the *You're Welcome* project of the Independent Living Centre to support its work with local councils in NSW.

<sup>13</sup> Transcript of Evidence, 27 August 2009, p. 61.

7.23 Another engineering solution to reduce pedestrian casualties advocated by the RTA and the NSW Police Force is the use of pedestrian fencing to prevent road access at dangerous crossing points. The Committee has received conflicting evidence regarding the benefits of such an approach. The NRMA submits that, while it may be useful in certain situations such as adjacent to licensed venues, it is not always the best solution. According to the NRMA submission:

These fences are very effective in compelling pedestrians to utilise the pedestrian facilities. However, there remain disadvantages associated with fencing, in particular the restriction of parking, high maintenance costs and potential roadside obstructions. In addition, fences can 'trap' pedestrians on the carriageways and may limit options for pedestrians to access the road and adjacent land.<sup>14</sup>

7.24 Whereas the use of fencing may be seen as an authoritarian response to pedestrian crossing management, there is a need for strategies to encourage greater use of dedicated crossings, particularly in urban settings. A design solution to make crossings more attractive is to improve locations where pedestrians have to navigate two sets of lights in order to cross an intersection diagonally. In the words of the Director of the Centre for Road Safety:

One of the other good solutions to that is what is called the scrambled crossing. That is a crossing where instead of allowing parallel movements, all the traffic is stopped and all the pedestrian movements can occur at once. A good example is the one outside Town Hall in George Street. That kind of arrangement stops the conflict of those parallel movements.<sup>15</sup>

7.25 This approach is also supported by North Sydney Council, which submits that:

Pedestrians who wish to travel in a diagonal direction at an intersection have to wait for two light phases at the vast majority of intersections. By comparison, a vehicle can undertake this change in direction in one manoeuvre. This means that pedestrians are forced to wait for two green phases, increasing delay at the intersection. Scramble/diagonal crossings allow pedestrians to cross diagonally, decreasing delay. Scramble/diagonal crossings are also safer, because all vehicles are stopped. At most intersections, without signalised left and right turn phases and arrows, vehicles must wait whilst pedestrians are crossing the road. There is therefore the potential for conflict if a motorist misjudges the gap to a pedestrian or does not see the pedestrian.<sup>16</sup>

**RECOMMENDATION 13:**

The Committee sees merit in encouraging greater pedestrian use of designated crossings in busy metropolitan areas and therefore recommends that scrambled crossings be utilised at all appropriate intersections in order to minimise the chance of conflict between pedestrians and vehicles.

7.26 In order to further avoid conflict between vehicles and pedestrians, a number of other approaches to managing traffic in urban areas have been suggested to the Committee. As detailed in Chapters 4 and 6, the City of Sydney is seeking assistance from the RTA with the wider establishment of shared, or pedestrian

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<sup>14</sup> Submission 18, NRMA Motoring & Services, p. 19.

<sup>15</sup> Transcript of Evidence, 27 August 2009, p. 4.

<sup>16</sup> Submission 27, North Sydney Council, p. 5.

zones, on roadways or laneways where vehicles would be restricted to 10km/h. The Committee supports this suggestion.

**RECOMMENDATION 14:**

The Committee recommends that the Roads & Traffic Authority extends the system of shared zones in appropriate metropolitan locations, to reduce conflict between motor vehicles and pedestrians in local areas of high pedestrian activity.

**RECOMMENDATION 15:**

The Committee further recommends that, in order to better reflect the emphasis on pedestrian safety in such areas, shared zones be renamed pedestrian zones.

7.27 School zones have also been identified as an issue of concern in many submissions. The Audit Office of NSW is currently conducting a performance review of these locations. The audit is examining whether changes made to speed limits and flashing lights have made a difference to pedestrian safety around schools. The Committee will await the outcome of this audit before commenting further.

**Technological Solutions**

7.28 A major source of frustration for all pedestrians, particularly in metropolitan settings, is the phasing of walk time at signalised intersections. The relatively short time allowed for pedestrians to cross the road limits pedestrian movement and acts to increase risk taking when walking. As previously stated, the road network prioritises motor vehicles and does not allow equitable access for pedestrians at intersections. In addition, the lack of adequate time to cross is an even greater problem for older and less mobile pedestrians.

7.29 As detailed in Chapters 4 and 6, control of traffic signals is coordinated through a computerised system linked to the RTA's Transport Management Centre in Sydney. The Centre scrutinises cameras and sensors embedded in the road to control the speed at which traffic signals change colour at 3,600 intersections across NSW. The Centre also assists in the provision of traffic alerts to motorists and emergency service response teams. The Committee conducted an inspection of the operation of the Transport Management Centre at Eveleigh as part of the Inquiry.

**RECOMMENDATION 16:**

The Committee recommends that the Roads & Traffic Authority examines the feasibility of extending the pedestrian phase of signals at intersections with high pedestrian traffic and at peak pedestrian commuter times.

7.30 Another approach to enhance pedestrian accessibility is the use of specific crossing technology. Suggestions to improve crossing safety by use of improved signals and

sensors at intersections have been made by the NRMA and other road safety organisations. One such example is the use of pedestrian user-friendly intelligent (PUFIN) crossings. According to the NRMA: “Technology can now provide intelligent pedestrian crossing signals that automatically cater for all users.”<sup>17</sup>

- 7.31 PUFIN crossings automatically detect the presence of approaching traffic and pedestrians crossing the road and will allocate extra time to the walk phase if needed, to accommodate slow or fast moving pedestrians respectively. Use of sophisticated electronic detectors track the progress of pedestrians and extend crossing time if necessary. Trials of PUFIN technology, using both infrared and microwave detectors have been conducted in WA and NSW.

**RECOMMENDATION 17:**

The Committee recommends that the Roads & Traffic Authority reports on the trial of pedestrian user-friendly intelligent crossing technology conducted in Sydney and, if successfully evaluated, implements the introduction of this technology at all appropriate locations in NSW.

- 7.32 A related issue is that of pedestrian countdown timers at traffic lights, a practice utilised in many overseas jurisdictions and discussed in greater detail in Chapter 6. Such timers advise pedestrians about waiting times before the walk signal appears. The rationale for this system is to alleviate impatience and risk taking by pedestrians at intersections by informing them about the waiting time before the signal change and reducing the tendency to cross against the walk signal.
- 7.33 The RTA is currently examining a proposed trial of such timers conducted in conjunction with the City of Sydney, “...to ascertain their feasibility, effectiveness and cost. A trial may facilitate a better understanding of potential safety benefits (or disbenefits) in the context of their application in Sydney. Such a trial would involve a very detailed evaluation involving the use of sophisticated cameras and software to observe pedestrian behaviour (and compliance) prior to and during the trial.”<sup>18</sup>

**RECOMMENDATION 18:**

The Committee recommends that the Roads & Traffic Authority, as a matter of urgency, conducts the proposed trial of pedestrian countdown timers to ascertain their suitability and effectiveness in discouraging pedestrians from disobeying walk signals and to improve safety at major intersections.

## Vehicle and Driver Factors

- 7.34 The recently established Centre for Road Safety houses a dedicated road safety technology section. “The section primarily conducts research into systems that use devices with sensors and advanced processors to warn or interact with road users and vehicles to prevent crashes or minimise injuries.”<sup>19</sup>

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<sup>17</sup> Submission 18, NRMA Motoring & Services, p. 19.

<sup>18</sup> Submission 28, Roads & Traffic Authority, p. 97.

<sup>19</sup> Ibid, p. 87.

- 7.35 Advanced vehicle technology can provide active or passive safety systems to assist drivers. Active systems require initiation by the driver, whereas passive systems deploy automatically when vehicle sensors detect a problem. A more recent development is a combined active and passive system, which deploys automatically if the driver fails to react after having been alerted to potential danger.
- 7.36 Examples of advanced technology safety systems, detailed in the submission from the RTA, include: pedestrian tracking and location services; roadside video detection systems; in-vehicle pedestrian detection systems; adaptive headlights; and collision avoidance systems. Other such systems are also described in Chapter 4 of the Report. While advanced vehicle technologies undoubtedly improve safety, it is important to recognise that many of these are not currently available, or are only featured in vehicles at the more expensive end of the market with a long lag time in being comprehensively adopted by all car manufacturers.

**RECOMMENDATION 19:**

The Committee recommends that the Centre for Road Safety continues its research into the pedestrian safety benefits of new vehicle technologies and actively promotes the most cost effective solutions to vehicle manufacturers and consumers.

- 7.37 Another issue, already discussed in Chapter 4, concerns the adequacy of current vehicle design protections for pedestrians. Although the Australian Design Regulations allow for the fitting of an external item to a vehicle providing it is “designed, built and fitted to the vehicle in a way that minimises the likelihood of injury to a person making contact with the vehicle,”<sup>20</sup> it is unclear to the Committee how well this requirement is monitored and enforced.
- 7.38 At the national level, the Department of Infrastructure, Transport, Regional Development and Local Government has commenced a review of its obligations under the United Nations Global Technical Regulation (GTR) 9 on pedestrian safety. According to the Department’s submission: “GTR 9 specifies performance requirements for bonnet tops, front wings (mudguards), and front bumpers, in order to reduce injuries when the vehicle collides with a pedestrian or other vulnerable road user.”<sup>21</sup> An impact statement is expected to be released shortly.
- 7.39 In the interests of a consistent and effective approach to safer vehicle design, the Committee encourages increased interagency collaboration in order to improve the current regulatory regime.

**RECOMMENDATION 20:**

The Committee recommends that the Roads & Traffic Authority addresses the current shortcomings in the monitoring and enforcement of the Australian Design Regulations in relation to vehicle design protection for pedestrians through appropriate Ministerial and intergovernmental processes.

<sup>20</sup> Ibid. p. 85.

<sup>21</sup> Submission 8, Department of Infrastructure, Transport, Regional Development & Local Government, p. 5.

- 7.40 As discussed earlier in the Report, current data indicates that speed is the most significant contributor to casualty in all crash categories. According to the Director of the Centre for Road Safety:

Our formal data say that around 40 per cent, and this year over 40 per cent, of our fatalities are speed related. My view is that that is an underestimate for the reasons I have already outlined. I believe we missed speed-related fatalities in a large number of pedestrian crashes. If we look at studies where speed is almost removed as a factor—for example, where people overseas have put in point-to-point speed enforcement—you see a reduction of approximately 50 per cent in fatalities. That says to me that you may have thought only 30 per cent were speed, but when you take speed out and if 50 per cent of your fatalities disappear, 50 per cent were speed related.<sup>22</sup>

- 7.41 Signposted, fixed speed cameras provide a limited, if somewhat controversial, tool for moderating speeding behaviour. Critics of such cameras cite the short-term impact of this deterrent when its location is known and claim a revenue raising motive for its use. The NSW Police Force Commander of Traffic Services responded to this criticism as follows:

It is difficult. I know that traffic operations cost the NSW Police Force about \$240 million. Even though the revenue does not come to us, it is probably less than \$100 million. My argument is that we are not paying our way if that is the case. It costs a hell of a lot to have all these vehicles and people on the roads. We do not care about revenue. I read in a report what it costs us to enforce and the revenue collected by the Government, but we are way behind the eight ball if we are talking about cost recovery with regard to policing activity.<sup>23</sup>

- 7.42 Another approach to the enforcement of speed limits, adopted in Victoria, is the introduction of covert speed cameras. Random, covert cameras would have the additional benefit of encouraging more sustained behaviour change on the part of drivers, rather than responding sporadically by reducing speed at known camera locations.

- 7.43 The Chair of Road Safety at the University of NSW Injury Risk Management Research Centre is a strong supporter of this approach. In evidence to the Committee, he argued that:

Random speed cameras need to be reintroduced—in particular, covert speed mixed with overt cameras. It is an imposition put onto the driver that they should drive at the speed limit. If they do not, they could be caught and they could be pinged. That has a direct effect. Certainly, there is a direct connection between speed and risk of injury. That has been proven and shown internationally. Victoria has had a good track record in that regard. I strongly support the introduction of extra speed cameras, and particularly the mix of covert and overt cameras.<sup>24</sup>

- 7.44 Evidence for pedestrian safety gains from the introduction of covert cameras was also supported by the Director of the Centre for Road Safety, who told the Committee that:

When Victoria implemented its stronger speed management regime with more cameras and with reduced tolerance on speed enforcement, it made a gain of over 60 in terms of Victorian fatalities per year. The biggest single group in terms of percentage reduction was pedestrians. Pedestrians gained hugely from small reductions in speed. We know

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<sup>22</sup> Transcript of Evidence, 27 August 2009, p. 8.

<sup>23</sup> *Ibid.* p. 16.

<sup>24</sup> *Ibid.* p. 71.

that speed is a major factor in pedestrian crashes, yet in our crash database, it does not appear to be so. Speed is missed as a factor very often in pedestrian fatalities.<sup>25</sup>

**RECOMMENDATION 21:**

In order to reduce the incidence of pedestrian casualties and improve safety for all road users, the Committee recommends that the NSW Government introduces legislation to enable the installation and deployment of random, covert speed cameras throughout NSW.

- 7.45 The use of speed cameras also raises the issue of the adequacy of police enforcement of speed limits. The NRMA asserts that enforcement is vital in changing the behaviour of every road user group. When questioned about this, the NSW Police Force Commander of Traffic Services detailed the constraints on police resources, as outlined earlier in the Report.
- 7.46 Allied to the issue of speed cameras and speed limit enforcement is the determination of suitable speed zones for different road environments. Most of the evidence about speed zones taken throughout the Inquiry relates specifically to metropolitan settings.
- 7.47 Chapters 4 and 5 deal with the safety benefits of reduced speed limits, particularly in high pedestrian activity areas, and the importance of collaborative and inclusive consultative processes, especially with local councils, when determining appropriate speed zones. The City of Sydney and North Sydney Council have misgivings about the adequacy of consultations with the RTA in relation to setting speed limits in their local government areas.

**RECOMMENDATION 22:**

The Committee recommends that the Roads & Traffic Authority ensures there is greater consultation with local councils in relation to the determination of speed zones in their local government areas.

- 7.48 Although evidence presented to the Committee supports a reduction in the speed limit in the Sydney CBD and other high pedestrian activity areas to 40 km/h, the Committee is not in agreement concerning the real benefit of this approach.
- 7.49 A contrary view of traffic management in the CBD indicates that traffic congestion prevents vehicles from travelling faster than 40km/h, particularly at peak times. Any safety gains resulting from a mandatory 40km/h would therefore not be realised and potentially further restrict traffic flow.

**Other Factors**

- 7.50 One of the more recent trends identified as a contributor to road user distraction is the increasing use of electronic and mobile communication devices. The features of

<sup>25</sup> Transcript of Evidence, 27 August 2009, p. 6.

this trend were described by the Director of the Centre for Road Safety in the following terms:

...one of the reasons we have a pedestrian problem is that pedestrians are distracted, they are on the mobile phone, and they are using walkmans. I think that that actually contributes two things. First, it is a significant cognitive distracter, and so their judgement in crossing the road is impaired. Second, it actually removes a very important cue. The auditory cue is not a trivial cue when you are crossing the road. I think we have all had the experience of looking but not seeing, but then you hear something coming around the corner and you pull back; you get back on the kerb. If you have your Walkman in, you miss those cues; so, I agree. There are also a number of studies of the actual on-road observation of pedestrian behaviour. One was conducted by Julie Hatfield and Susanne Murphy from the University of New South Wales in Sydney, which shows that people using these devices cross less safely. I think the evidence is quite good to support the assertion that this is contributing to the pedestrian problem.<sup>26</sup>

- 7.51 The risks associated with this distraction are compounded when utilised by vulnerable groups such as younger pedestrians, identified earlier in the Report, who are already at a cognitive disadvantage in terms of judgement and decision making.
- 7.52 The British Government, in 2008, introduced guidelines for custodial sentences to be imposed for using a hand held phone when causing death on the roads. The new guidelines regard “reading or composing text messages over a period of time as a gross avoidable distraction while driving”. This is in the same category as driving while drunk or under the influence of drugs.<sup>27</sup>

**RECOMMENDATION 23:**

The Committee recommends that the Roads & Traffic Authority commissions a major education and media campaign to alert the community to the potential road safety dangers of using mobile communication and entertainment devices when navigating the road system.

- 7.53 Public awareness and education can also play a role in reinforcing the road safety rules and remind all users of their rights and responsibilities when sharing the roadway. Chapter 6 highlights instances where a lack of knowledge about the Road Rules can serve to increase risk for pedestrians. This is particularly the case for Australian Road Rules 72 to 75, dealing with the obligation for motorists to give way to pedestrians at intersections and other road related areas.

**RECOMMENDATION 24:**

The Committee recommends that the Roads & Traffic Authority conducts a public education campaign to specifically target the lack of awareness of the requirements of Australian Road Rules 72 to 75, requiring drivers to give way to pedestrians at certain road locations.

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<sup>26</sup> Ibid, p. 5.

<sup>27</sup> When Texting Kills, Britain Offers Path to Prison, New York Times, 2/11/2009.

# Appendices

## Appendix 1 – List of Submissions

<b>No.</b>	<b>Author</b>	<b>Organisation</b>
1.	Ms Bea Sochan	Private Citizen
2.	Mr Edward Ellis	Private Citizen
3.	Dr Tuly Rosenfeld	Private Citizen
4.	Ms Roisin Kelly	Private Citizen
5.	Mr John Tyler	Private Citizen
6.	Mr Andrew Mitchell	Private Citizen
7.	Mr Allan Miles	Action for Public Transport (NSW) Inc
8.	Mr Andrew Wilson	Department of Infrastructure, Transport, Regional Development & Local Government
9.	Ms Robyn Chapman	Independent Living Centre NSW
10.	Mr Tony Khoury	Waste Contractors & Recyclers Association of NSW
11.	Mr Bill Orme	Walking Volunteers
12.	Mr Alan Johnson	Private Citizen
13.	Mr Borys Pluznyk	Private Citizen
14.	Mr Paul Riley	Institute of Public Works Engineering Australia
15.	Ms Anne Deans	Youthsafe
16.	Mr Harold Scruby	Pedestrian Council of Australia
17.	Confidential	
18.	Mr Chris Siorokos	NRMA Motoring & Services
19.	Ms Breda Kelly	Private Citizen
20.	Mr Jon Bisset	Council on the Ageing NSW
21.	Mr Russell Webber	Private Citizen
22.	Mr Kevin Eadie	Private Citizen
23.	Ms Monica Barone	City of Sydney
24.	Commissioner Andrew Scipione	NSW Police Force
25.	The Hon Joe Tripodi MP	Minister for Finance
26.	The Hon Barbara Perry MP	Minister for Local Government
27.	Cr Genia McCaffery	North Sydney Council
28.	The Hon Michael Daley MP	Minister for Roads
29.	Professor Mark Stevenson	The George Institute for International Health
30.	Professor Raphael Grzebieta	NSW Injury Risk Management Centre

## **Appendix 2 – List of Witnesses**

**Thursday 27 August 2009**

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Dr Soames Job  
Director NSW Centre for Road Safety, Roads & Traffic Authority (RTA)

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Assistant Commissioner John Hartley  
Commander Traffic Services Branch, NSW Police Force (NSWPF)

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Mr Paul Riley  
Road Safety Manager, Institute of Public Works Engineering Australia (IPWEA)

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Ms Anne Morphett  
Senior Policy Adviser - Road Safety, NRMA Motoring & Services

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Mr Harold Scruby  
Chairman, Pedestrian Council of Australia (PCA)

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Ms Monica Barone, Chief Executive Officer  
Mr Len Woodman, Road Safety Officer  
City of Sydney

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Clr Michael Reymond  
North Sydney Council

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Ms Carmel Donnelly  
Acting General Manager, Motor Accidents Authority (MAA)

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Ms Anne Deans, Chief Executive  
Dr Maureen Owen, Assistant Chief Executive  
Youthsafe

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Ms Anne-Marie Elias  
Policy & Communication Manager, Council on the Ageing NSW (COTA)

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Mr John Evernden  
Access Consultant, NSW Independent Living Centre (ILC)

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Professor Raphael Grzebieta, Chair of Road Safety  
Dr Julie Hatfield, Senior Research Fellow  
Dr Jake Olivier, Senior Research Fellow  
Injury Risk Management Research Centre (IRMRC)

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