



# PARLIAMENTARY TRAVELSAFE COMMITTEE

REPORT NO. 50

SEPTEMBER 2007

## INVESTIGATION INTO CHILD DEATHS AND INJURIES FROM LOW SPEED VEHICLE RUN-OVERS

### THE TRAVELSAFE COMMITTEE

The Travelsafe Committee is a select committee of the 52<sup>nd</sup> Parliament required to monitor, investigate and report on all aspects of road safety and public transport in Queensland, particularly:

- Issues affecting road safety including the causes of crashes and measures aimed at reducing death, injuries and economic costs to the community;
- The safety of passenger transport services, and measures aimed at reducing the incidence of related deaths and injuries; and
- Measures for the enhancement of public transport in Queensland and reducing dependence on private motor vehicles as the predominant mode of transport.

### BACKGROUND TO THE INVESTIGATION

In 2005 the Commission for Children and Young People and Child Guardian (CCYPCG) reported on child deaths in Queensland during the period 1 January 2004 to 30 June 2005. In this report the CCYPCG identified that deaths resulting from low speed run-overs accounted for half of all pedestrian fatalities among toddlers.<sup>1</sup> The CCYPCG recommended that Hon Peter Beattie MP, Premier and Minister for Trade, request that the Travelsafe Committee investigate and report on ways to reduce fatalities and injuries to children from low speed driveway run-overs in Queensland.<sup>2</sup>

On 22 December 2006 a request was received from the Premier for the committee to undertake an investigation and report to parliament on ways to reduce low speed driveway run-overs in Queensland.

### TERMS OF REFERENCE FOR THE INVESTIGATION

In March 2007 the committee commenced its investigation. During the investigation the committee examined:

- The incidence of low speed vehicular collisions with child pedestrians aged under five years in traffic and non-traffic areas in Queensland and the resultant injuries sustained;
- Factors contributing to these collisions;
- Possible countermeasures to prevent or reduce the severity of injuries sustained; and
- The most appropriate agency or agencies to coordinate a public safety campaign about low speed run-over deaths and injuries.

The committee has written this report to outline its investigation methodology, record its research findings, and make recommendations to the Queensland Parliament.

### RESPONSIBILITY OF MINISTERS

Section 107 of the *Parliament of Queensland Act 2001* (Ministerial response to committee report) requires the responsible minister or ministers to respond to recommendations contained in committee reports within three to six months of the report being tabled.

### INVESTIGATION PROCESS

To inform its investigation, the committee consulted with key stakeholders, including relevant government departments, road safety experts, child safety groups, community agencies and individuals by way of:

- Inviting key stakeholders to make submissions to the investigation, and examining these submissions;
- Examining the evidence arising from a public forum held on 23 April 2007 at Parliament House, Brisbane, which discussed low speed run-overs in Queensland and other jurisdictions; and

<sup>1</sup> Commission for Children and Young People and Child Guardian, 2005, p. 43.

<sup>2</sup> Commission for Children and Young People and Child Guardian, 2005, p. 88.

- Reviewing the findings from research into the problem conducted in Queensland and other jurisdictions.

The committee advertised its investigation by issuing two media releases. The first, issued on 13 March 2007, announced the investigation and invited submissions. The second release on 16 April 2007 promoted the committee's public forum.

The committee accepted 12 submissions to the investigation. These are published on the committee website at <http://www.parliament.qld.gov.au/tsafe>.

Approximately 40 participants attended the public forum. Presenters included:

- Ms Emma King, Child Death Review Team, CCYPCG;
- Dr Ruth Barker, Mater Children's Hospital and Queensland Injury Surveillance Unit (QISU);
- Mr Mike Stapleton, Queensland Transport (QT);
- Mr Gary Mahon and Ms Pam Longland, Department of Emergency Services (DES);
- Mr Phil Carswell, Queensland Health (QH);
- Mr Shane O'Brien, Lend Lease Communities; and
- Associate Professor Ann Williamson, University of New South Wales, on behalf of the New South Wales Motor Accident Authority (MAA).

Participants were provided with the opportunity to ask questions and contribute ideas through an open floor discussion. The forum presentations have been published on the committee's website.

### DEFINITION OF LOW SPEED RUN-OVERS

The CCYPCG and QISU define low speed run-overs as incidents where a pedestrian, usually a child, is injured or killed by a slow moving vehicle in both traffic and non-traffic areas.<sup>3</sup> The committee has adopted this definition for its investigation.

A number of submitters and forum guests expressed concern about the committee's decision to limit this investigation to low speed run-overs involving children in the zero to four year age group. For instance, NRMA Insurance was concerned that the incidence of low speed run-overs would be underestimated without due recognition that older children were also vulnerable to death and injury through these incidents.<sup>4</sup> Similarly, at the committee's forum, concerns were raised that other types of vehicle-related unintentional deaths and injuries to

children, such as casualties resulting from leaving children unattended in vehicles, were not under investigation.<sup>5</sup>

The committee recognises that all age groups can be victims of low speed run-overs. The committee also acknowledges that children in the zero to four year age group may be victims of other kinds of vehicle-related incidents. However, it was not within the scope of this investigation to examine a wider range of factors in vehicle-related child deaths and injuries.

### LOW SPEED CHILD RUN-OVER DEATHS & INJURIES IN AUSTRALIA

Data provided by the National Coroners Information System (NCIS) indicates that fifty-one run-over fatalities involving children aged five years and under occurred in Australian jurisdictions between 2000/01 and 2006/07.<sup>6</sup> Table 1 below provides a breakdown of these deaths by jurisdiction.

Table 1. Run-over deaths of 0-5 year olds by jurisdiction 2000/01-2005/06

	2000/ 01	2001/ 02	2002/ 03	2003/ 04	2004/ 05*	2005/ 06*	Total
NSW	6	2	4	1	2	2	17
Queensland	1	1	2	4	4	0	12
WA	1	1	0	1	1	2	6
Victoria	2	0	2	3	0	1	8
SA	2	1	2	0	1	0	6
NT	1	1	0	0	0	0	2
Tasmania	0	0	0	0	0	0	0
ACT	0	0	0	0	0	0	0
Total	13	6	10	9	8	5	51

\* These figures do not include relevant cases still under investigation with the coroner.

Source: National Coroners Information System, *Personal Communication*, 28 August 2007.

As noted above, the actual numbers of deaths in the last three financial years are under-reported as some cases are still under investigation by state coroners.

Based on the limited data available, an average of nine children are fatally run over each year in Australia. Queensland with 12 fatalities during the period was second only to New South Wales (NSW) with 17 fatalities. Almost a quarter (23.5 per cent) of run-over fatalities in Australia occurred in Queensland. Davey et al. argue that Queensland has a higher per capita rate of these deaths than the rest of Australia.<sup>7</sup> Australian Bureau of Statistics

<sup>3</sup> Commission for Children and Young People and Child Guardian, 2005, p. 76; QISU, *Submission no. 6*, p. 1.

<sup>4</sup> NRMA Insurance, *Submission no. 3*, p. 3.

<sup>5</sup> McCall, *Forum Transcript*, 23 April 2007, p. 7.

<sup>6</sup> National Coroners Information System, *Personal Communication*, 22 August 2007.

<sup>7</sup> Davey, Freeman, Dingle, Clark, Johnston, Woods & White, 2007, p. 35.

(ABS) data indicates that, as at the 2006 Census, only 20 per cent of the Australian population aged up to five years resided in Queensland.<sup>8</sup> The committee also notes that no fatalities were recorded in the Australian Capital Territory (ACT) or Tasmania during the seven years examined.

### LOW SPEED CHILD RUN-OVER DEATHS & INJURIES IN QUEENSLAND

The CCYPCG advised the committee that 13 fatalities resulting from low speed run-overs occurred in Queensland during the three years between 1 January 2004 and December 2006.<sup>9</sup> Table 2 below provides a breakdown of these fatalities by year. Unlike the NCIS data, which only includes finalised coronial investigations, the CCYPCG data contains all known run-over fatalities in Queensland.

Table 2. Low speed run-over fatalities in Queensland 2004-2006

Year	Frequency
2004	6
2005	3
2006	4
Total	13

Source: Commission for Children and Young People and Child Guardian, *Personal Communication*, 20 August 2007

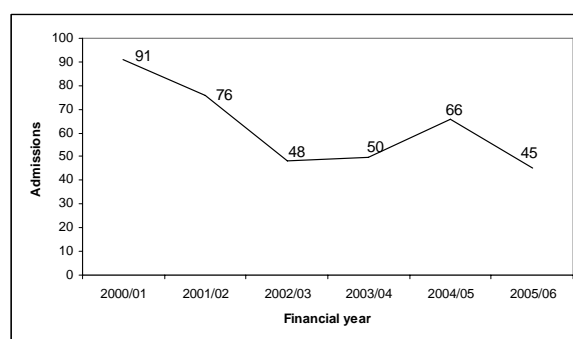
This dramatic fluctuation in fatality rates during consecutive years highlights the sporadic nature of these deaths. It also makes it difficult to identify trends with certainty. The CCYPCG states that, on average, each year in Queensland four young people under the age of five are killed, and 81 present at hospital emergency departments following low speed run-overs.<sup>10</sup>

Despite their low incidence levels, low speed run-overs are one of the leading causes of transport-related deaths and injuries in young children. In 2003, QISU reported low speed run-overs to be the third most frequent cause of accidental injury and fatality in the zero to four year age group after passenger fatalities and drowning.<sup>11</sup> This data was collected from 1994 to 2000 from participating emergency departments across three Queensland districts.<sup>12</sup> Similarly, the CCYPCG found low speed run-overs accounted for half of all transport accident deaths

involving young people aged one to four years between 1 January 2004 and 30 June 2005.<sup>13</sup>

According to QH, 376 young people under five years were admitted to Queensland hospitals between 1 July 2000 and 30 June 2006 as a result of low speed run-overs.<sup>14</sup> QH argues the incidence of low speed run-overs has decreased over the past six years, despite the growth of the Queensland population. Figure 1 below depicts the frequency of admissions to Queensland hospitals resulting from low speed run-overs in each financial year between 2000/01 and 2005/06.

Figure 1. Frequency of admissions to Queensland Hospitals resulting from low speed run-overs by financial year 2000/01-2005/06



Source: Adapted from Queensland Health, 2007a, p. 1.

### CHARACTERISTICS OF LOW SPEED RUN-OVERS

Low speed run-overs most commonly involve infants, toddlers or young children in the zero to four year age group.<sup>15</sup> In Australia between 1996 and 2001, 94 per cent of victims were under five years of age.<sup>16</sup> Collisions that involve older children aged over five years occur more frequently on roads in normal traffic speeds, for instance, when a child runs onto the roadway from between parked cars.<sup>17</sup>

Low speed run-overs usually occur off-road in driveways and car parks when a vehicle is entering or leaving a property. They can also occur on the roadway and street, although this is less common.<sup>18</sup> A review by QISU in 2003 concluded that 60 per cent of vehicles involved in these incidents were reversing slowly, and 54 per cent were driven by a relative or friend of the victim at the time of

<sup>8</sup> Australian Bureau of Statistics, 2007.

<sup>9</sup> Commission for Children and Young People and Child Guardian, *Personal Communication*, 20 August 2007.

<sup>10</sup> Commission for Children and Young People and Child Guardian, 2006, p. 197.

<sup>11</sup> Hockey, Miles & Barker, 2003, p. 1.

<sup>12</sup> Hockey et al., 2003, p. 1.

<sup>13</sup> Commission for Children and Young People and Child Guardian, 2005, p. 76.

<sup>14</sup> Queensland Health, 2007a, p. 1.

<sup>15</sup> Commission for Children and Young People and Child Guardian, 2005, p. 76.

<sup>16</sup> Australian Transport Safety Bureau, 2006a, p. 3.

<sup>17</sup> Davey et al., 2007, p. 34.

<sup>18</sup> Neeman, Wylie, Attewell, Glase & Wallace, 2002, p. 1.

impact.<sup>19</sup> Reportedly, alcohol use was not a factor in these incidents.<sup>20</sup>

Table 3 below lists the common locations for toddler run-over fatalities in Australia between 2000/01 and 2006/07 involving children up to five years of age. The most common location, where 45 per cent of fatalities occurred, was the home driveway.

Table 3. Location of run-over fatalities in Australia 2000/01-2006/07

Location	Frequency	Percentage
Home	23	45.1
Urban Road	18	35.3
Farm	3	5.9
Farm House	2	3.9
Oval/Sports Ground	2	3.9
Caravan Park/Camping Ground	1	2.0
School	1	2.0
Shop	1	2.0
Total	51	100.1

Note: Percentages do not add up to 100 due to rounding.

Note: This data does not include fatalities still under investigation by state coroners.

Source: National Coroners Information System, *Personal Communication*, 22 August 2007.

Other research by Davey et al. using Queensland Ambulance Service (QAS) attendance figures suggests that child run-over deaths and injuries in non-traffic areas:

- occur more frequently in fine weather when children are likely to be playing in the yard;
- 43 per cent occurred between 2pm and 6pm; and
- more incidents occurred on Mondays and Sundays than on the other days of the week, with 24 per cent occurring on Mondays, and 21 per cent on Sundays.<sup>21</sup>

However, the committee notes that children are at risk at all times when they are in the vicinity of a moving vehicle.

Severe and often fatal injuries are sustained by young run-over victims from being crushed and trapped by a vehicle. Dr Ruth Barker, an Emergency Paediatrician at the Mater Children's Hospital told the committee:

*The high proportion of them suffer severe injuries – head, injuries, abdominal organ injuries and fractures... It is the head injuries and the abdominal injuries that kill them.*<sup>22</sup>

<sup>19</sup> Hockey et al., 2003, p. 2.

<sup>20</sup> Australian Transport Safety Bureau, 2006a, p. 1.

<sup>21</sup> Davey et al., 2007, p. 37.

<sup>22</sup> Barker, *Forum Transcript*, 23 April 2007, p. 5.

Three per cent of young children under five years who presented at Queensland hospitals died from their injuries, 77 per cent were discharged on the day of admittance, and the remaining 20 per cent were discharged after at least one day in hospital.<sup>23</sup> Table 4 below shows QISU data on the most common injuries sustained by young children under five years of age who presented at hospitals with injuries from run-overs between 1994 and 2000.

Table 4. Common low speed run-over injuries, 1994-2000

Injury	Percent
Superficial	24
Fracture	22
Intracranial	16
Crushing Injury	9
Internal Injury	7
None	6

Source: Adapted from Hockey et al., 2003, p. 2.

From the table, fractures and intracranial injuries are the most prevalent serious injuries. Thirty per cent of cases examined sustained superficial injuries or no injuries.

Male children were the victims in 62 per cent of low speed run-over related deaths across Australia between 1996 and 2001.<sup>24</sup> This pattern is consistent with Queensland statistics. In Queensland between 1 July 2000 and 30 June 2006, male children accounted for 65 per cent of hospital admissions from these incidents.<sup>25</sup> Research suggests the more frequent involvement of boys in transport related fatalities may be because boys tend to take more risks, and carers might also be more lenient in their supervision of boys.<sup>26</sup>

Most of the drivers involved in low speed run-overs are also male. The Australian Transport Safety Bureau (ATSB) found that male drivers accounted for 80 per cent of cases between 1996 and 2001.<sup>27</sup> Some demographic groups are at a higher risk of becoming victims of low speed run-overs. These included boys, children in remote areas and Aboriginal and Torres Strait Islander children.<sup>28</sup>

Children in remote areas of Queensland are over-represented in Queensland hospital admissions following run-over incidents from 1 July 2000 to 30 June 2006. As shown in Table 5 below, those categorised as residing in

<sup>23</sup> Queensland Health, 2007a, p. 1.

<sup>24</sup> Australian Transport Safety Bureau, 2006a, p. 1.

<sup>25</sup> Queensland Health, 2007a, p. 1.

<sup>26</sup> Commission for Children and Young People and Child Guardian, 2006, p. 91.

<sup>27</sup> Australian Transport Safety Bureau, 2006a, p. 4.

<sup>28</sup> Australian Transport Safety Bureau, 2006a, pp. 3-4.

'remote' or 'very remote' areas have hospitalisation rates over two times higher than those categorised as 'major city' or 'inner regional' residents.

Table 5. Standardised rates of admissions to Queensland hospitals resulting from low speed run-overs by the Accessibility/Remoteness Index of Australia per 100,000 people

Area	Admissions per 100,000 people
Remote	60.8
Very Remote	56.6
Outer Regional	34.1
Major City	19.7
Inner Regional	24.4

Source: Queensland Health, 2007a, p. 2.

Aboriginal and Torres Strait Islander children are over-represented in deaths resulting from low speed run-overs. Australia's 2001 census data indicates that 2.3 per cent of Australians and 4.6 per cent of the population in rural and remote areas identify themselves as 'indigenous'. However, between 1996 and 2001, at least 10.6 per cent of victims aged up to seven years who died from low speed run-overs were Aboriginal or Torres Strait Islander, and at least 28.6 per cent of low speed run-over deaths in rural and remote areas involved indigenous children.<sup>29</sup> These rates of involvement of indigenous children may be conservative. According to the ATSB, the rate of transport-related deaths in the Aboriginal and Torres Strait Islander population may be underestimated as those completing death certificates may be hesitant to ask about the indigenous status of victims.<sup>30</sup>

The ATSB reviewed 36 fatal low speed run-overs involving children under seven years of age that occurred in Australia between 1996 and 1998. The following circumstances were found to be common for many incidents:

- Most cases involved toddlers who positioned themselves close to a stationary vehicle;
- Most incidents occurred at or near the child's home;
- The children were old enough to be mobile, but too small to be seen by the driver from the driving position;
- The driver of the vehicle was most often male and usually a family member or friend;
- None of the cases involved a shared driveway; and
- The vehicles tended to be large, the majority being four-wheel-drives (4WDs), utilities, delivery vans or

trucks, with only 20 per cent of cases involving sedans or station wagons.<sup>31</sup>

Low speed run-overs typically occur when a number of factors come together at a single moment. Three broad factors contributing to these collisions include:

- The behaviour of children and their carers;
- Environmental factors, including housing and driveway design; and
- The type of vehicle, especially vehicles with poor rearward visibility.<sup>32</sup>

These factors are discussed in more detail later in this report in the context of possible countermeasures to reduce the incidence of low speed run-overs.

The committee identified inconsistencies in the reporting of low speed run-overs. No Queensland agency is solely responsible for data collection and reporting of collisions that occur off-road. QT has a long history of collecting detailed statistics for motor vehicle crashes and trauma on public roads. However, low speed run-over crashes that occur on driveways and private property are outside of the department's jurisdiction and not recorded. QT only collects data regarding on-road crashes.<sup>33</sup> In addition, incidents that occur on private property may not be reported to police.

Faced by the lack of comprehensive crash data, researchers across Australia have utilised a variety of other data sets to examine low speed run-overs. These include ABS data, coroners' reports, Office of Economic and Statistical Research data, ambulance service records, and hospital admission data. Often, researchers must access secondary sources to verify the exact cause of death for certain cases, which can result in errors and omissions. The ABS publishes statistics on child deaths using coronial data and the ICD-10 codes<sup>34</sup> for cause of death. However, child deaths through low speed run-overs are not specified in this coding.<sup>35</sup>

Comparison of data across years is also difficult because of the sporadic nature of these crashes. That is, low speed run-overs may occur significantly more frequently in one year than the next. Additionally, many data sets omit crucial cause of death data and have changed the coding

<sup>29</sup> Australian Transport Safety Bureau, 2006a, p. 4.

<sup>30</sup> Australian Transport Safety Bureau, 2006b, p. 2.

<sup>31</sup> Neeman et al., 2002, p. 16.

<sup>32</sup> Williamson, *Forum Transcript*, 23 April 2007, pp. 24-25.

<sup>33</sup> Stapleton, *Forum Transcript*, 23 April 2007, p. 9.

<sup>34</sup> ICD-10 codes relate to the International Classification of Diseases and Related Health Problems developed by the World Health Organisation to achieve international consistency in collection of morbidity and mortality statistics.

<sup>35</sup> Commission for Children and Young People and Child Guardian, 2005, p. 31.

methodology over time. For example, Aboriginal and Torres Strait Islander status has only been included on death certificates since 1996, making it impossible to identify trends in cause of death for Aborigines and Torres Strait Islanders prior to that time.<sup>36</sup>

Comparing research findings within and across jurisdictions is also problematic. Findings may vary according to the data source and whether researchers include fatalities only, or fatalities and injuries.<sup>37</sup> Various studies might also differ by time period, age and location variables. Table 6 summarises the differences in variables for a selection of key Australian and New Zealand studies.

Table 6. Comparison of Australian low speed vehicle run-over research designs

Research	Time Period	Age	Location	Scope	Data Source
ATSB, 2006	1996-2001	Younger than 7 years	Australian traffic and non-traffic areas	Deaths	ABS data and Coronial records
CCYPCG, 2005 & 2006	1991-30 June 2006	Younger than 18 years	Queensland traffic and non-traffic areas	Deaths	Registry of Births, Deaths and Marriages & Coronial reports
Davey et al., 2007	1998-2001	Up to 15 years	Queensland non-traffic areas	Deaths and injuries	QAS records
Hockey et al., 2003	1994-2000	Younger than 5 years	Queensland non-traffic areas	Deaths and injuries	Participating Queensland hospitals
Murphy et al., 2002	1998-October 2001	Younger than 15 years	Auckland, New Zealand driveways	Deaths and injuries	Hospital records, interviews and site inspections
Neeman et al., 2002	1996-1999	Younger than 7 years	Australian traffic and non-traffic areas	Deaths	ABS data, Births, Deaths and Marriages Registries & Coronial reports
Williamson et al., 2002	1995-2002	Younger than 6 years	NSW off-road areas	Deaths	Coronial reports

Establishing an authoritative and reliable source for data in Queensland, and the regular reporting of the data, are crucial first steps to understanding and addressing trauma caused by low speed run-overs. The committee considered which agencies could undertake this role in Queensland. The committee identified QH, QT, DES,

CCYPCG and QISU as having the skills and experience to assume this responsibility. The committee concludes that of these agencies the CCYPCG is best placed to collect, classify and report this data.

The CCYPCG is responsible for centralised collection and coding of all child death information in Queensland. Under the *Commission for Children and Young People and Child Guardian Act 2000*, the CCYPCG is required to maintain a Child Death Register of all deaths of children under 18 years in Queensland and to report annually to Parliament.<sup>38</sup> This register includes information provided from the Register of Births, Deaths and Marriages and the Office of the State Coroner. Coronial reports include police reports, autopsy reports and coroner's findings for 'reportable' deaths. The CCYPCG have reported low speed run-over fatalities involving young children in Queensland since 2004. The committee concludes that the continued regular reporting of fatal low speed run-overs by the CCYPCG will provide a useful data set for wider research of these crashes in Queensland.

#### RECOMMENDATION 1

That the Commission for Children and Young People and Child Guardian continue to include in its annual reports to Parliament statistics on deaths that have occurred as the result of low speed run-overs.

*Ministerial Responsibility:  
Minister for Child Safety*

#### THE IMPACT OF THESE COLLISIONS ON THE VICTIM AND COMMUNITY

As noted above, the numbers of deaths and injuries from low speed run-overs are low and fluctuate from year to year. The social costs from these crashes, however, can be very high with enormous long-term impacts on the families, drivers and witnesses involved. As the vehicle is often driven by a parent, relative or friend, and the driver is physically confronted by the victim, low speed run-overs cause an exceptional amount of grief and guilt.<sup>39</sup> Many people involved in these incidents experience post-traumatic stress and other psychological damage. During the investigation, the committee was made aware of an incident where a father who had run over and killed his child committed suicide on the first anniversary of the child's death.<sup>40</sup>

Children who survive low speed run-overs can suffer serious long-term injuries. The height of young children means that injuries are often to the upper body, chest and

<sup>36</sup> Commission for Children and Young People and Child Guardian, 2005, p. 39.

<sup>37</sup> Davey et al., 2007, p. 35.

<sup>38</sup> Commission for Children and Young People and Child Guardian, 2006, p. 29.

<sup>39</sup> Department of Emergency Services, *Submission no. 9*, p. 1.

<sup>40</sup> Name withheld, *Submission no. 1*, p. 1.

head, rather than the lower body. Injuries to the head, neck, torso, limbs and pelvis are common. Injuries can range from the superficial to severe, such as fractures, head injuries and organ damage. A QISU study of incidents presenting at participating Queensland hospitals between 1994 and 2000 found that head, face and neck injuries were sustained in 26 per cent of cases, followed by lower limbs (25 per cent), multiple areas (13 per cent) and the thorax and upper back (12 per cent).<sup>41</sup>

Between 1998 and 2001, the QAS responded to 76 off-road pedestrian accidents. Fifty-one per cent involved children less than five years of age.<sup>42</sup> Overall 88 per cent of incidents were considered to be life threatening.<sup>43</sup> These ambulance statistics are supported by hospital data which indicates that approximately 80 per cent of cases are assigned a triage category of urgent or higher, and that one in ten require resuscitation.<sup>44</sup>

## COUNTERMEASURES

Preventing child deaths and injuries from low speed run-overs requires a multi-faceted approach.<sup>45</sup>

A focus on behaviour modification alone will not be effective. As with countermeasures to reduce swimming pool drownings, some passive measures should be adopted to ensure injuries and deaths from low speed run-overs are minimised. These include changes to the home environment and vehicles.

During the investigation, the committee identified three broad areas where intervention strategies might have a preventative impact on these collisions:

- Changes to vehicle design to increase reversing visibility and decrease unintentional acceleration;
- Modifications to housing design, including separation of driveways and garages from play areas; and
- Raising public awareness of the dangers of low speed run-overs and methods to prevent them.

These countermeasures are discussed below.

### Vehicle design and technology

Measurements of the rearward visibility of many popular vehicles have shown a poor view of objects the size of

toddlers.<sup>46</sup> As shown in Table 7 below, larger vehicles are more frequently involved in low speed run-overs than smaller cars. While cars and taxis accounted for 49 per cent of run-over fatalities in Australia during 2000/01 to 2006/07, 4WDs, vans, trucks and farm machinery accounted for 51 per cent of fatalities.

Table 7. Vehicles involved in run-over fatalities in Australia 2000/01-2006/07

Vehicle type	Frequency	Percentage
Passenger car	23	45.1
Taxi	2	3.9
Other specified transport, including 4WDs	13	25.5
Light transport/Pickup truck/Van	7	13.7
Heavy transport vehicle	2	3.9
Waste collection truck	1	2
Bobcat	1	2
Tractor	2	3.9
Total	51	100

Note: This data does not include fatalities still under investigation by state coroners.

Source: National Coroners Information System, *Personal Communication*, 22 August 2007.

It appears that 4WDs are included in a category of vehicles that are particularly over-represented in low speed run-overs. There is an increased risk of a child being more severely injured by a 4WD or heavy vehicle compared to a smaller sedan.<sup>47</sup> Queensland registration statistics do not identify the number of 4WDs in the vehicle fleet. NSW data shows, however, that 4WDs accounted for less than 30.4 per cent of registered motor vehicles in 1998, though were involved in 42 per cent of low speed run-over child injuries and 64 per cent of injuries to children who had subsequently died after admission to a Sydney hospital between 1995 and 2000.<sup>48</sup>

All vehicles have blind spots where rearward visibility is lost to the driver.<sup>49</sup> In fact, it has been demonstrated that some 4WDs have better reversing visibility than some popular smaller model vehicles.<sup>50</sup> The extent of the blind spots is dependent on the eye height of the driver when seated, and the height of the object to be detected.<sup>51</sup> Head rests and spare tyres may obstruct visibility.<sup>52</sup>

<sup>41</sup> Hockey et al., 2003, p. 2.

<sup>42</sup> Davey et al., 2007, p. 36.

<sup>43</sup> Davey et al., 2007, p. 36.

<sup>44</sup> Hockey et al., 2003, p. 2.

<sup>45</sup> Commission for Children and Young People and Child Guardian, *Submission no. 7*; Federal Chamber of Automotive Industries, *Submission no. 2*; Henderson, 2000; MAA, *Submission no. 4*; Neeman et al., 2002; NRMA Insurance, *Submission no. 3*; Queensland Transport, *Submission no. 12*; RACQ, *Submission no. 8*; Williamson, *Forum Transcript*, 23 April 2007.

<sup>46</sup> Paine, Macbeth & Henderson, 2003, p. 1.

<sup>47</sup> Paine et al., 2003, p. 5.

<sup>48</sup> Holland, Liang, Singh, Schell, Ross & Cass, 2000.

<sup>49</sup> NRMA Insurance, *Submission no. 3*, p. 3.

<sup>50</sup> NRMA Insurance, *Submission no. 3*, p. 3.

<sup>51</sup> Paine & Henderson, 2001, p. 5.

<sup>52</sup> Hockey et al., 2003, p. 3.

In NSW, NRMA Insurance is actively engaged in educating the community about reversing blind spots and encouraging car manufacturers to improve reversing visibility. NRMA Insurance designed the world's first Reversing Visibility Index (RVI). The index rates vehicles according to the ability of drivers to see children and objects when reversing.<sup>53</sup> Vehicles fitted with proximity sensors and reversing cameras receive the best star ratings.<sup>54</sup> The rear blind spots for vehicles without these devices range from 1.2 metres to over 15 metres.<sup>55</sup>

The NRMA states the RVI has:

*...encouraged all manufacturers to look seriously at reversing visibility in the same way that other safety ratings, such as head restraint testing and ANCAP safety ratings, have become the benchmark for injury prevention in vehicle design.*<sup>56</sup>

The index can be accessed through NRMA Insurance's website at [www.nrma.com.au](http://www.nrma.com.au). The index is updated annually and can assist drivers to assess their vehicles' safety in terms of rearward visibility.

Enhancing the safety of vehicles, particularly regarding driver visibility when reversing, is an important preventative measure. There is potential for emerging technologies to be utilised in this area to improve vehicle safety. Technologies that are available include wide-angle lenses, proximity sensors and camera systems. Reversing alarms, that alert pedestrians when a vehicle is in reverse, are generally not considered to be effective for young children. Children do not understand the purpose of these alarms, and may even be attracted to the sound.<sup>57</sup> The MAA commissioned a review to assess the ability of wide-angle lenses, proximity sensors and camera systems to detect small children.<sup>58</sup> The findings from this review are discussed in the following sections.

#### *Wide-angle lenses*

Wide-angle lenses, which cost approximately \$20, adhere to the rear window of a vehicle and are intended to increase rearward visibility. However, the evaluation found these lenses to be limited in their field of view and image quality. They may also inhibit normal rearward visibility.<sup>59</sup>

Some commercial vans have mirrors attached externally to the rear window to assist when reversing. The study

concluded that while these could be useful for parking, they were not effective in detecting children.<sup>60</sup>

#### *Proximity sensors*

Proximity sensors detect objects behind a vehicle and beep or flash to alert the driver. Proximity sensors are primarily designed as parking aids and use ultrasonic, microwave or capacitive technology.<sup>61</sup> Three ultrasonic sensors and one microwave sensor were tested in the MAA study. Outcomes of the evaluation are provided in Table 8 below.

Table 8. Evaluation of four proximity sensors

Sensor Type	Price (AUD\$)	Maximum range	% avoided at 5km/h	Max speed for 95% avoidance
Ultrasonic	\$60 supplied	1 metre	15%	2km/h
Ultrasonic	\$649 supplied and installed	1.5 metres	64%	3km/h
Ultrasonic	\$400 supplied	1 metre	15%	2km/h
Microwave	\$700 supplied	3 metres	100%	6km/h

Source: Adapted from Paine & Henderson, 2001, pp. 9-10.

On their own, proximity sensors were not found to be reliable in providing sufficient warning that a toddler was in the path of a reversing vehicle. Two of the sensors tested only detected an object when it was one metre from the vehicle. The longest range was provided by the microwave sensor, which detected an object three metres away. None of the sensors were found to be 95 per cent effective in detecting objects at the average reversing speed of 8 km/h.<sup>62</sup>

While sensitive proximity sensors may be more likely to detect a child, they may also provide more false alarms, detecting variations in the road or driveway surface. These false alarms could result in the driver ignoring alarms that indicate the presence of a small child or other object.<sup>63</sup>

#### *Camera systems*

Camera systems use a small camera to send a wide-angle image of the rear of the vehicle to a video screen inside the cabin. They feature a screen that is built into, or fits on top of, the rear view mirror, or is custom built into the vehicle console. The camera may be mounted on the vehicle's rear bumper bar or bodywork and wired to activate automatically when the reverse gear is engaged.

<sup>53</sup> NRMA Insurance, *Submission no. 3*, p. 2.

<sup>54</sup> NRMA Insurance, *Submission no. 3*, p. 3.

<sup>55</sup> NRMA Insurance, 2006.

<sup>56</sup> NRMA Insurance, *Submission no. 3*, p. 2.

<sup>57</sup> Road Traffic Authority, 2005, p. 2.

<sup>58</sup> Paine & Henderson, 2001.

<sup>59</sup> Paine & Henderson, 2001, pp. 11-12.

<sup>60</sup> Paine & Henderson, 2001, p. 11.

<sup>61</sup> Paine & Henderson, 2001, p. 1.

*Ultrasonic* uses similar technology to sonar location.

*Microwave* uses radar technology.

*Capacitive* detects changes in electric field near the vehicle.

<sup>62</sup> Paine & Henderson, 2001, pp. 9-10.

<sup>63</sup> Paine & Henderson, 2001, p. 6.



The MAA evaluation tested one camera system, which retailed for \$180. This camera, which was designed as a video security system, not specifically for vehicles, provided a view from 1.4 to five metres behind the vehicle. While the image quality was poor, the study concluded that the system had “the potential to provide a very good rearward field of view”,<sup>64</sup> though the cost of video cameras may be prohibitive for some people.<sup>65</sup>

A separate study of camera systems in the United States of America (USA) also concluded that they were the most reliable method of identifying pedestrians at the rear of a vehicle when reversing.<sup>66</sup> However, this study identified that environmental factors such as rain, fog and the glare of the sun may limit their effectiveness in detecting pedestrians.<sup>67</sup> Cameras may also be prone to weather damage, vandalism and theft.<sup>68</sup>

Perhaps the most critical weakness of camera-based systems is the lack of audible or visual warning signals to alert the driver. Instead, the systems rely on drivers to monitor the display while reversing the vehicle, which is problematic. Because of this, driver attentiveness and reaction time may reduce the reliability of camera systems in preventing run-overs.<sup>69</sup> Road safety experts have warned that reliance on cameras should not be a substitute for driver awareness and caution.<sup>70</sup>

The MAA evaluation in Australia concluded that the most effective vehicle-based countermeasures would involve a combination of proximity sensors and video cameras.<sup>71</sup>

Despite their inherent weakness, camera based systems could be a key life-saving technology. As discussed in a subsequent section of this report, the committee believes camera-based systems should undergo further investigation to determine their optimal use.

#### *Unintentional acceleration*

Another vehicle design factor that contributes to low speed run-overs, as well as many other vehicle accidents, is ‘pedal confusion’. This is when the driver inadvertently depresses the accelerator pedal instead of the brake causing the ‘unintentional acceleration’ of the vehicle. A study by Williamson et al. identified that of ten off-road

pedestrian fatalities that were examined, two occurred due to unintentional acceleration.<sup>72</sup>

The committee believes that it is important to determine the extent of unintentional acceleration as a causal factor in low speed run-overs, as well as other motor vehicle accidents.

#### *Vehicle standards*

Pursuant to section 7 of the *Motor Vehicle Standards Act 1989* (Commonwealth), the Federal Minister for Transport and Regional Services can determine vehicle standards, known as the Australian Design Rules (ADRs), for road vehicles or vehicle components. All vehicles must comply with these standards.

Section 42.10.1 of the Vehicle Standard (Australian Design Rule 42/00 – General Safety Requirements) 2006 states:

*A motor vehicle must not be constructed or equipped nor must anything be affixed thereto in such a manner as to prevent the driver from having an adequate view of traffic on either side of the vehicle and in all directions in front of the vehicle to enable the vehicle to be driven with safety.*

While the ADRs provide very detailed standards for rear view mirrors,<sup>73</sup> there is no minimum requirement for rearward visibility, which may also be affected by vehicle design, including:

- High rear windows;
- High boot lids;
- Rear mounted spare tyres;
- Rear head restraints;
- Rear mounted brake lights;
- Rear mounted wipers; and
- Rear spoilers.<sup>74</sup>

ADRs are, in the most part, aligned with the standards set out in an international treaty known as the “1958 Agreement”.<sup>75</sup> In 2000, Australia acceded to this treaty which governs the use of vehicles and components fitted or used on vehicles.<sup>76</sup> The Federal Government has recently conducted extensive consultation to determine whether Australia should adopt an additional 1998

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<sup>64</sup> Paine & Henderson, 2001, p. 13.

<sup>65</sup> Paine & Henderson, 2001, p. 13.

<sup>66</sup> National Highway Traffic Safety Administration, 2006.

<sup>67</sup> National Highway Traffic Safety Administration, 2006, p. i.

<sup>68</sup> Road Traffic Authority, 2005, p. 4.

<sup>69</sup> National Highway Traffic Safety Administration, 2006, p. ii.

<sup>70</sup> National Highway Traffic Safety Administration, 2006, p. ii.

<sup>71</sup> Paine & Henderson, 2001, p. 13.

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<sup>72</sup> Williamson, Irvine & Sadural, 2002, p. 29.

<sup>73</sup> Vehicle Standard (Australian Design Rule 14/02 – Rear Vision Mirrors) 2006

<sup>74</sup> Paine et al., 2003, p. 8.

<sup>75</sup> Federal Chamber of Automotive Industries, *Submission no. 2*, p. 1.

<sup>76</sup> Hon Peter Beattie MP, *National Interest Analyses for the proposed treaty action* tabled 24 April 2007.

treaty.<sup>77</sup> Acceding to this treaty would allow Australia to gain a voice in the development of global standards of vehicles.<sup>78</sup>

The committee believes that changes to Australian and international standards to increase the safety of pedestrians are important. This includes standards concerning rearward visibility, as well as vehicle-based technologies that are proven to safely and reliably reduce the incidence of low speed run-overs. Even at a cursory level, it is apparent that modern vehicles provide poor visibility for drivers when reversing.

The NSW Government has proposed that reversing proximity sensors be included in the ADRs as a mandatory requirement for all new cars. This matter is under examination by the Australian Transport Council (ATC).<sup>79</sup> The ATC consists of Commonwealth, State, Territory and New Zealand Ministers responsible for road and transport matters.<sup>80</sup> QT, in its submission to the investigation, has indicated that the Queensland Government supports this proposal.<sup>81</sup>

The committee concludes that standards for rearward visibility should be included in the ADRs. Camera systems may be beneficial for improving rearward visibility for vehicles. The committee recommends that the Minister for Transport and Main Roads seek to have the Vehicle Standard (Australian Design Rule 42/00 – General Safety Requirements) 2006 amended to include a requirement for rearward visibility of pedestrians.

#### RECOMMENDATION 2

That the Minister for Transport and Main Roads seek to have the Vehicle Standard (Australian Design Rule 42/00 – General Safety Requirements) 2006 amended to include standards for rearward visibility.

*Ministerial Responsibility:  
Minister for Transport and Main Roads*

#### Housing design

The risk of low speed run-overs involving children is heightened in homes where driveways are not separated from houses or children's play areas.<sup>82</sup> The committee notes similar risks occur to children in driveways of multiple dwellings.<sup>83</sup> One study found that the lack of a

barrier between a play area and a driveway increased the risk of a child being run over by 3.5 times.<sup>84</sup> A New Zealand study of 77 low speed run-over accidents found that none occurred where driveways were fenced or otherwise separated from the main house.<sup>85</sup> Other work found that, in the majority of cases where children had been inside immediately prior to being run over, barriers that would normally have prevented them from running into the path of the vehicle, such as gates and doors, had been left open.<sup>86</sup> Landscaping design may also reduce visibility of children around the yard and driveway areas.<sup>87</sup>

Many researchers have identified the compulsory fencing of driveways from play areas as a possible countermeasure to low speed run-overs. QISU recommended that such fencing should incorporate self-closing and self-locking doors, as used for swimming pool fencing.<sup>88</sup> MAA's submission also identified driveway gradient, the siting and design of houses, child-proof door locks and temporary fencing as additional environmental options for reducing driveway risk.<sup>89</sup> Another submitter to the investigation suggested the use of convex mirrors in residential driveways to assist drivers to detect items behind their vehicles.<sup>90</sup>

The Australian Standard for Safe Housing Design, AS 4226-1994, as amended in August 2001, contains recommendations for the design of outdoor play areas for children. The standard recommends consideration should be given to:

- Adequate shade;
- Shelter from wind;
- Ground slope;
- Drainage;
- Degree of supervision possible from indoors;
- Separation from water hazards, work sheds and rubbish areas;
- Fencing; and
- Separation from vehicle moving areas.

It also recommends that garages and parking spaces be separated from children's play areas; vehicles be driven on and off a site in a forward direction; and that driveways allow for good visibility of pedestrians on footpaths and traffic on roads. Further, the standard recommends child

<sup>77</sup> Hon Peter Beattie MP, *National Interest Analyses for the proposed treaty action* tabled 24 April 2007.

<sup>78</sup> Hon Peter Beattie MP, *National Interest Analyses for the proposed treaty action* tabled 24 April 2007.

<sup>79</sup> Queensland Transport, *Submission no. 12*, p. 11.

<sup>80</sup> Australian Transport Council, 2007.

<sup>81</sup> Queensland Transport, *Submission no. 12*, p. 11.

<sup>82</sup> Williamson, *Forum Transcript*, 23 April 2007, p. 25.

<sup>83</sup> Kelly, 2007.

<sup>84</sup> Roberts, Norton & Jackson, 1995; cited in Davey et al., 2007, p. 40.

<sup>85</sup> Murphy, White & Morreau, 2002, pp. 2-3.

<sup>86</sup> Williams et al., 2002, p. 24.

<sup>87</sup> O'Brien, *Forum Transcript*, 23 April 2007, p. 20.

<sup>88</sup> QISU, *Submission no. 6*, p. 2.

<sup>89</sup> MAA, *Submission no. 4*, p. 5.

<sup>90</sup> Francis, *Submission no. 5*, p. 6.

proof entries/exits to homes, but it does not specify self-closing and latching doors.

*Smart Housing*, an initiative of the Queensland Department of Housing, provides guidelines on safe housing design. *Smart Housing* recommends that play areas be separated from driveways.<sup>91</sup> The committee acknowledges the soundness of this recommendation, however believes that it should explicitly identify carports and garages as risk areas, in addition to driveways, and that other living areas should be mentioned, not limiting barriers to play areas.

### RECOMMENDATION 3

That the Department of Public Works amend the *Smart Housing* guidelines for gardens and yards to include the following:

*The driveways, carports and garages are separated from living and play areas by child resistant barriers, including self-closing and self-latching gates and doors, to reduce the risk of children being injured in or by vehicles.*

*Ministerial Responsibility:  
Minister for Public Works, Housing and Information and  
Communication Technology*

QISU suggests that a driveway design separating driveways and garages from play areas be included in the building code for new homes.<sup>92</sup> The *Building Code of Australia 2007*, which covers technical provisions for the design and construction of buildings and other structures,<sup>93</sup> does not incorporate any provisions for driveways or play areas to be fenced or separated. Queensland's building legislation, which specifies swimming pool fencing requirements, is also silent on this subject. The *Queensland Development Code*, which covers matters in addition to, and outside the scope of, the *Building Code of Australia*,<sup>94</sup> simply states that:

*The location of a driveway must not be hazardous to persons or vehicles using the roadway.*

Given the success of pool fencing in reducing toddler drownings,<sup>95</sup> it is reasonable to assume that mandating the construction of physical barriers between play areas and driveways or garages would similarly reduce the risk of low speed run-overs of small children. However, research undertaken by New Zealand's University of Waikato, commissioned by the Child Accident Prevention Foundation of New Zealand, suggests that compulsory

<sup>91</sup> Department of Housing, 2003, p. 23.

<sup>92</sup> Hockey et al., 2003, p. 3.

<sup>93</sup> Henderson, 2000, p. 30.

<sup>94</sup> Department of Local Government, Planning, Sport and Recreation, 2007.

<sup>95</sup> Pitt & Balanda, 1991, p. 661.

fencing is unpopular, the cost of making fencing compulsory is unfeasible, and spatial constraints, particularly in high-density housing areas, makes this measure prohibitive.<sup>96</sup>

The committee concludes that child-resistant fencing and self-closing and self-locking doors and gates separating living/play areas and car areas in dwellings would be effective in preventing child run-overs. These physical barriers are best incorporated at the design stage for new dwellings. The committee could not identify similar requirements in other Australian jurisdictions.

Retrofitting barriers to existing dwellings can be both impractical and expensive, and less effective. The installation of barriers should be encouraged and promoted by the Government, though not made a mandatory requirement for residential premises.

### RECOMMENDATION 4

That the Department of Public Works continue to promote the benefits of separating driveways and other vehicle areas from living and play areas in dwellings using child resistant, self-closing and self-locking doors and gates to driveway accesses.

*Ministerial Responsibility:  
Minister for Public Works, Housing and Information and  
Communication Technology*

### Raising public awareness

Many low speed run-overs occur when the driver mistakenly believes the child to be in a safe place away from the vehicle. An analysis of vehicle related fatalities involving children under the age of six years between 1995 and 2000 found that half of all fatal off-road collisions and two thirds of all driveway collisions occurred when parents or carers thought the child was in a safe location, but instead the child found their way into the path of a moving vehicle.<sup>97</sup>

Responsible carers may not appreciate the dangers to young children, their curiosity and unpredictability in the vicinity of slow moving vehicles in and around the home environment. The home is a familiar place that is generally considered safe, so carers may be less vigilant when supervising children than in public places. Carers may also be unaware of the dangers to being distracted, including by other children.

A child may move suddenly into the path of a vehicle even when they are being directly supervised. Children under five are at a developmental stage where mobility is increasing along with curiosity and imitating behaviours,

<sup>96</sup> Cowley, Nicholls, Parkinson & Swain, 2005, p. 80.

<sup>97</sup> Williamson et al., 2002, p. 24.

but the awareness of personal safety is poor.<sup>98</sup> Children at this age move quickly and are unpredictable. They are also difficult to see from inside a vehicle.

No external measure can substitute for knowing exactly where a child is when a vehicle is being moved. Parents and other carers need to exercise extreme caution and care whenever children are near vehicles. Teaching children not to play near vehicles or on driveways and ensuring gates and doors are securely closed may be good practice. However, there is no substitute for holding a child or having them firmly restrained in car seats before moving vehicles.

Drivers must also exercise extreme care, especially when reversing. Some researchers recommend rolling windows down to hear children, walking around a vehicle before entering it to check for children, toys and pets and adjusting side mirrors to reduce blind spaces.

Placing children inside vehicles before the vehicles are moved is also a good practice. One submitter suggested that "...the departing parent make the farewell special by routinely putting the toddler in the car, driving out to the street, then returning the toddler to the house." In addition, this submitter suggested that signs be placed inside exit doors to remind parents to consciously consider the whereabouts of their children before driving.<sup>99</sup>

Submitters to the committee's investigation agreed that a public awareness campaign would be an effective strategy for preventing low speed run-overs. The committee also agrees. A public awareness campaign should be aimed at heightening community awareness of the risk to children from low speed run-overs in the home and surrounding environment, and outlining ways to avoid these incidents. This would include promoting vigilance and supervision of children around vehicles.

Public awareness campaigns have previously been conducted overseas and in Australia. These include:

- *Where are your kids: Child safety in your driveway* consists of a brochure distributed by the ATSB in early childhood centres, NRMA offices, through Kidsafe NSW, and with parent information packs produced by NSW Health and the NSW Department of Community Services;<sup>100</sup>
- *Spot the Tot* conducted in the USA, which is aimed at raising awareness and providing vehicle safety tips to parents, carers, drivers and children;<sup>101</sup>

- A television commercial piloted by MAA in northern NSW in late 2003 and metropolitan Sydney in 2004.<sup>102</sup> A subsequent evaluation commissioned by the MAA found that 75 per cent of parents and carers reported that they were likely to change their behaviour as a result of seeing the advertisement, and that the majority of those who indicated they were unlikely to change claimed to have already been vigilant before seeing the advertisement;<sup>103</sup>
- Metropolitan and rural projects conducted by councils, and health and community agencies promoting driveway safety. These projects included television and radio commercials, the distribution of a height chart to remind parents of pedestrian risks faced by children as they develop, holding a driveway safety display at a 4WD Expo, and campaigning for safe play areas on farms. These projects are funded by grants from the MAA;<sup>104</sup>
- *Who's behind your car? LOOK NOW* consisted of promotional materials, such as post-it notes, key rings and car tidy bags distributed through GPs, child care centres, childhood health centres and child seat fitters. This project was coordinated by the City of Ryde, Kidsafe and the Early Childhood Road Safety Education Program;<sup>105</sup>
- *Child Safety at Home – Mission Possible* is a pilot communication campaign administered by the DES and QH in Mount Isa and Mackay as part of the Child Injury Prevention Project (ChIPP). The campaign includes television and radio advertisements, a home safety checklist, and associated print material. Focusing on hazardous home environments, the campaign also highlights the dangers of low speed run-overs.<sup>106</sup> An evaluation of the campaign indicated that 36 per cent of respondents accurately recalled driveway safety as one of the messages portrayed in the advertisements.<sup>107</sup> QH have informed the committee that, in conjunction with the DES, they will seek to deliver the campaign state-wide, commencing late 2007;<sup>108</sup>
- *Safer Queensland* is a community safety website portal located at <http://www.safer.qld.gov.au/> that is aimed at improving personal and public safety for all Queenslanders.<sup>109</sup> This site is administered by the

<sup>98</sup> Australian Transport Safety Bureau, 2006a, p. 6.

<sup>99</sup> Name withheld, *Submission no. 1*, p. 1.

<sup>100</sup> Edwards, 2004, p. 3; MAA, *Submission no. 4*, p. 8.

<sup>101</sup> Safe Kids Worldwide, 2006.

<sup>102</sup> Edwards, 2004, p. 3; MAA, *Submission no. 4*, p. 8.

<sup>103</sup> Walker, 2004, pp. 19-20

<sup>104</sup> Edwards, 2004, pp. 3-4.

<sup>105</sup> RACQ, *Submission no. 8*, p. 19.

<sup>106</sup> Department of Emergency Services, *Submission no. 9*, p. 3.

<sup>107</sup> Smith, Davis, Vardon, Bright, Longland, Carswell & McClure, 2007.

<sup>108</sup> Queensland Health, *Personal Communication*, 1 August 2007.

<sup>109</sup> Department of Emergency Services, 2007.

DES and includes links to the *Child Safety at Home – Mission Possible* campaign and a fact sheet on preventing low speed run-overs published by Kidsafe QLD; and

- Kidsafe QLD, funded by NRMA, is soon to commence a pilot program distributing stickers designed for the front windows of vehicles to remind drivers to check for nearby children. The pilot program involves the distribution of stickers in a child care centre and subsequent evaluation.<sup>110</sup> Kidsafe QLD also discusses driveway safety with visitors to the display Kidsafe House.<sup>111</sup>

Additionally, in Australia there has been a high level of media attention to low speed run-over incidents.<sup>112</sup> This was in part because of the involvement of a child of a high profile sports person in a low speed run-over.<sup>113</sup> Media attention to the issue may have raised public awareness of the occurrence of these incidents for a time.

The committee notes that public awareness campaigns need to be targeted at the appropriate audience, which includes drivers, parents, other supervisors/carers and children. In addition, campaigns must be ongoing. The committee believes public education campaigns by all agencies involved in this problem should be encouraged and evaluated as good practice.

In our view the Queensland Government should follow the lead of NSW and distribute the ATSB's *Where are your kids: Child safety in your driveway* brochure in the Personal Health Records provided to new parents with every baby born in Queensland. In 2005 Queensland registered 51,661 births.<sup>114</sup> The ATSB have informed the committee that they will assist with the costs of this initiative. The committee applauds this offer.

#### RECOMMENDATION 5

That Queensland Health distribute the Australian Transport Safety Bureau's *Where are your kids: Child safety in your driveway* brochure with the Personal Health Records provided to new parents with every baby born in Queensland.

*Ministerial Responsibility:  
Minister for Health*

The committee considered other strategies for educating the public on this issue. There is some excellent work

being done by government agencies and groups such as Kidsafe QLD. The committee also considered a wider distribution of the brochures with motor vehicle registration renewals to directly target motor vehicle users. There were over 3.7 million vehicles registered in Queensland in 2005.<sup>115</sup> The ATSB have advised the committee that four million brochures could cost in the vicinity of \$85,000. This does not include the cost of distribution. There are a number of issues to be considered before this, or other options, can be recommended. These issues include ways to accommodate the needs of certain high risk groups and those who do not speak English.

#### COORDINATED RESPONSE

In Queensland, the identification and scrutiny of low speed run-overs as a significant problem mirrors the course of events in NSW. Low speed run-overs were first reported as a concern in NSW by the Child Death Review Team (CDRT) in 1999. In its 1998-1999 report, the CDRT recommended the MAA take a lead role in developing a coordinated response to this issue, including developing strategies to reduce the number of deaths from low speed run-overs and commissioning further research into preventative measures.<sup>116</sup>

The MAA convened the Child Driveway Safety Committee which included representatives from a broad range of agencies. This committee developed a multi-disciplinary approach aimed at preventing low speed run-overs in NSW, known as the Child Driveway Safety Project.<sup>117</sup> The Child Driveway Safety Committee continues to provide a coordinated strategic approach to the issue; guiding the development, implementation and evaluation of initiatives; facilitating the work of its member agencies; and linking various agency services to reduce driveway run-overs.<sup>118</sup> The CDRT reported only one low speed run-over fatality in NSW in 2005, the lowest figure since the CDRT began reporting in 1999. The CDRT attributed the decline in low speed run-overs to the efforts of agencies led by the MAA to implement a range of targeted policies, including public awareness campaigns.<sup>119</sup>

In 2004, the CCYPCG's Child Death Review Team, the Queensland agency equivalent to the NSW CDRT, similarly identified low speed run-overs as a significant issue in Queensland. As part of its recommendation that the Travelsafe Committee investigate and report on measures to reduce the incidence of low speed run-overs,

<sup>110</sup> Kidsafe QLD, *Personal Communication*, 11 July 2007.

<sup>111</sup> Kidsafe QLD, *Personal Communication*, 11 July 2007.

<sup>112</sup> Commission for Children and Young People and Child Guardian, 2006, p. 197.

<sup>113</sup> Commission for Children and Young People and Child Guardian, 2006, p. 100.

<sup>114</sup> Australian Bureau of Statistics, 2006, p. 16.

<sup>115</sup> Queensland Transport, 2006, p. 8.

<sup>116</sup> Child Death Review Team, 1999, pp. 42-43.

<sup>117</sup> MAA, *Submission no. 4*, p. 3.

<sup>118</sup> MAA, *Submission no. 4*, p. 6.

<sup>119</sup> Child Death Review Team, 2006, p. 57.

the CCYPCG included a task to identify a lead agency to coordinate a response to the issue in this state.<sup>120</sup>

The committee believes that a collaborative effort by government and non-government agencies, child safety groups, motoring groups and car companies is required to identify and implement preventative strategies. RACQ, in its submission to the investigation, indicated its willingness to take a role in raising public awareness to this issue.<sup>121</sup> From its investigation, the committee concludes that collaboration should be coordinated by the anticipated Queensland Injury Prevention Council.

The ChIPP project implemented by DES and QH was a five year initiative that commenced in 2002 and concluded on 30 June 2007.<sup>122</sup> The project focused on reducing high rates of injuries sustained by children aged up to four years of age, including injuries sustained from low speed run-overs. The *Child Safety at Home – Mission Possible* campaign that constitutes part of this project has been outlined above. Whilst ChIPP project has now concluded, QH have indicated that a similar program will continue to be run in the Mt Isa and Mackay areas.<sup>123</sup>

By September 2007, the DES intends to establish and lead a Queensland Injury Prevention Council. This cross agency council will focus on addressing non-intentional injury in Queensland through preventative initiatives. It will have a monitoring and evaluation directive and will provide strategic advice to the Director-General of DES. Led by the DES, other government departments to be involved include QH, QT, the Department of Main Roads, the Queensland Police Service and the Department of Communities. There will also be private sector involvement from academic bodies, professional and community organisations and insurance groups. The council will report to the Minister for Emergency Services, the Queensland Emergency Medical System Advisory Council and Queensland Inter-Facility Transport. Partnering agencies will contribute establishment funds to the council.<sup>124</sup>

The committee believes that this council will be an appropriate body to advise the government on the implementation of future strategies for reducing low speed run-overs in Queensland. The council should also develop and implement public awareness campaigns.

<sup>120</sup> Commission for Children and Young People and Child Guardian, 2005, p. 196.

<sup>121</sup> RACQ, *Submission no. 8*, p. 20.

<sup>122</sup> Queensland Health, 2007b.

<sup>123</sup> Queensland Health, *Personal Communication*, 1 August 2007.

<sup>124</sup> Department of Emergency Services, *Personal Communication*, 30 April 2007.

In the event that public education proves ineffective in reducing the incidence of low speed run-overs, the council should examine the efficacy of mandatory requirements for new dwellings to restrict unsupervised access by small children from living and play areas to driveways, carports and garages.

#### RECOMMENDATION 6

That the Queensland Injury Prevention Council implements future strategies for reducing low speed run-overs in Queensland and, if public education proves ineffective, should examine the efficacy of mandatory requirements for new dwellings to restrict unsupervised access by small children from living and play areas to driveways, carports and garages.

*Ministerial Responsibility:  
Minister for Emergency Services*

#### FUTURE RESEARCH

During this investigation the committee has noted where they would have benefited from further research into relevant subject areas, including:

- The best size and placement of camera systems, and the combination of accompanying warning systems to alert drivers when a person or object is in the path of a vehicle;
- The extent that unintentional acceleration contributes to motor vehicle accidents, including low speed run-overs, and how it may be minimised; and
- Why certain groups, such as Aboriginal and Torres Strait Islanders, males, and rural residents are over-represented in injury statistics.

The committee notes that under the *Motor Accident Insurance Act 1994*, one of the functions of the Motor Accident Insurance Commission (MAIC) includes the provision of funds, subject to availability, for research into the causes of motor vehicle accidents and their prevention.<sup>125</sup> The committee believes that MAIC should commission research examining these matters.

#### RECOMMENDATION 7

That the Motor Accident Insurance Commission provide funds to conduct rigorous research examining causal factors and preventative strategies for incidents involving low speed run-overs.

*Ministerial Responsibility:  
Deputy Premier, Treasurer and Minister for Infrastructure*

<sup>125</sup> Motor Accident Insurance Commission, *Submission no. 10*, p. 1.

## CONCLUSIONS

Low speed run-overs are one of the leading causes of transport-related deaths and injuries in young children. However this has been under-recognised due to a lack of comprehensive crash and injury data. The majority of these incidents occur away from public roads, and are not included in road crash data. Children most at risk are in the zero to four year age group, particularly those in their early stages of mobility. On average nine young children are killed in low speed run-overs each year in Australia. Almost a quarter (23.5 percent) of run-over fatalities occur in Queensland.

For each fatal low speed run-over, approximately 20 non-fatal cases present to hospitals for treatment. Boy victims outnumber girls by two to one. Other high risk groups include Aboriginal and Torres Strait Islander children and children in rural and remote communities. Forty-five percent of fatalities occur in home driveways, often involving vehicles driven by someone known to the victims. The most common injuries are fractures, intracranial injuries and superficial injuries. The fatalities usually involve severe injuries to the head or abdomen.

Low speed run-overs tend to involve small and unpredictable children who are unsupervised in the vicinity of moving vehicles. In addition to the injuries to the child victims, these incidents traumatise the victims' families and the drivers of the vehicles involved.

The committee has identified possible countermeasures to prevent or reduce the severity of injuries sustained. These countermeasures include: changes to vehicle design to give drivers a better view of spaces behind the rear of their vehicles, modifications to housing design to encourage the separation of vehicle and living/play areas, and raising public awareness. Submitters to the committee's investigation agreed that a public awareness campaign aimed at promoting vigilance and supervision of children around vehicles would be an effective strategy for preventing low speed run-overs.

Because the issue of low speed run-overs straddles a number of areas in government as well as injury prevention and child safety community groups, a collaborative response by agencies is essential. The Queensland Injury Prevention Council should lead this collaborative work to develop and monitor education and other strategies to reduce the number of deaths from low speed run-overs and commission further research into preventative measures.

Jim Pearce MP

Chair

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