# MAA Pedestrian Seminar

## *Evaluation of NSW 50 km/h urban speed limit: Impact on fatalities and injuries — Don Carseldine, RTA*

### The rationale for a 50 k limit on urban streets

The first point to make is that a 50 k urban speed limit (USL) is not at all new or unusual by world standards. It is commonplace in Great Britain, Europe and North America. Closer to home, it is in place in Hong Kong, Korea and New Zealand. So we should not think that we are doing something at all radical by adopting 50 k as the limit for our neighbourhood roads.

Studies conducted in these countries have demonstrated very substantial road safety benefits, particularly for pedestrians, of the 50 k limit as opposed to 60 ks. For example, a study comparing the death rate of pedestrians in Europe and North America with countries with a 60 k USL found an average rate of 30 percent less (pedestrians aged 25 to 64 years) for the former. When the speed limit in Zurich was reduced from 60 k to 50 k, pedestrian crashes fell by 20 percent and pedestrian deaths by 25% (Walz, Hoeflinger & Fehlmann, 1983).

Victoria, Queensland, ACT, Tasmania and Western Australia have already introduced the 50 k USL over at least part of their jurisdictions.

In NSW, a very large proportion of all casualty crashes occur on streets with a limit of 60 or lower. For example, in 1999, 190 people were killed and 17,967 were injured on such streets. Speeding was a factor in around 40 percent of these crashes. Historically, pedestrians have accounted for the highest number of fatalities on 60 k streets.

Studies have shown that small reductions in speeds have the potential to greatly improve safety outcomes. For example, McLean et al, 1994 have shown that if a car hits a pedestrian at 60 k, there is an 85 percent chance of death. On the other hand, at 50 km/h the chance of death is reduced to 40 percent. So this small reduction in speeds around our neighbourhoods has considerable potential to reduce road trauma with little loss due to increased travel time. An important by-product is an improvement in neighbourhood amenity associated with lower vehicle speeds.

### Implementation in NSW

In 1997, the RTA undertook a three-month trial of the 50 k USL in conjunction with 26 local councils. Following the success of this trial, in 1998, Minister Scully invited all local councils to implement the 50 USL throughout their LGAs. All implementation costs were covered by the RTA.

Across Australia, in recent times, there has been debate about the best approach to implementing the 50 k USL throughout a state. The NSW Government is satisfied that by forging a partnership between local councils and the RTA, a strong commitment to the new limit is established in the affected communities. This approach improves the likelihood of success, but increases the cost and the amount of time for the State to change-over. Incidentally, the staggered starting dates for LGAs also makes it more difficult to assess the road safety benefits. By way of contrast, in January 2001, Victoria made 50 k the default urban speed limit across the State.

The effectiveness of the 50 k implementation was evaluated by a multifaceted study commissioned by the RTA. The study, undertaken by ARRB Transport Research examined crash data, vehicle speeds and community attitudes over a 21-month period from April 1998 to December 1999.

Currently, 141 councils and 2 communities in the unincorporated areas are participating in the 50 k USL initiative. All Sydney councils are participating. Over 96 percent of the NSW population now resides in an area where the 50 k USL applies.

### Crash data from the 1998-99 evaluation

The crash data from this evaluation were very encouraging. All accidents were down by 23 percent on 50 k roads compared with a reduction of 2 percent on similar streets that retained the 60 k limit. Pedestrian crashes were down by 20 percent on 50 k streets compared with a reduction of 9 percent on similar 60 k streets.

### Current NSW crash data

Now that most of the State has adopted the 50 k USL, what has been the impact on crashes, particularly pedestrian crashes?

A detailed study is complicated by the staggered starting dates across LGAs. In addition, some participating councils have not included their entire areas in the scheme. So the analysis about to be described is a 'broad brush'. It will examine the crash statistics across the State and over a period of several years to see whether a downturn of crashes on the affected roads, particularly pedestrian crashes, is associated with the introduction of the 50 k USL.

It was decided to compile crash data over a period of years for 'unclassified' roads with speed limits of 50 or 60 k – mostly residential access roads – where the 50 k USL was being increasingly applied and use 'classified' roads with speed limits of 50 or 60 k – which generally would **not** have the 50 k limit applied – as a comparison. If 50 k was working (and other things being equal) over recent years we would expect to see a greater reduction (or lower growth rate) in crashes on unclassified roads than on classified roads.

The biggest year of growth of 50 k was 2000. In that year, 49 new LGAs joined the scheme; the proportion of all councils participating grew from much less than half (72) to much more than half (121). It was also an unusual year because of the influence Olympic Games activity on transport patterns. For these reasons, it was decided to compare four years of pre-2000 crash data with post-2000 crash data.

To set the scene, the figures for all crash-types, not just pedestrian crashes, are presented here. All fatal crashes on Classified Roads in 2001 fell by 6% relative to the average for 1996-99. There was a greater reduction of 21% on all NSW unclassified roads. Thus there was a net reduction in all fatal crashes of 15% on unclassified roads.

Casualty crashes on all NSW Classified Roads increased by 21% in 2001 relative to 1996-99. On all NSW Unclassified Roads there was a smaller increase of 11%. Thus there was a net reduction in casualty crashes of 10%. It is worth noting that there has been a general increase in the number of casualty crashes, for all road types, in recent years.

**Pedestrian fatalities on unclassified roads**
Table 1 shows trends in pedestrian fatalities on roads with a speed limit of 50 or 60 k for the years 1996 through to 2001.

| | Unclassified Roads | | | | | Classified Roads |
|---|---|---|---|---|---|---|
| Year | Western Sydney | Rest of Sydney RTA Region | Sydney RTA Region Total | Rest of NSW | All NSW | All NSW |
| 1996 | 17 | 22 | 39 | 11 | 89 | 39 |
| 1997 | 13 | 17 | 30 | 13 | 73 | 35 |
| 1998 | 14 | 10 | 24 | 14 | 62 | 36 |
| 1999 | 11 | 15 | 26 | 9 | 61 | 33 |
| 1996-1999 Ave | 13.75 | 16.00 | 29.75 | 11.75 | 71.25 | 35.75 |
| 2000 | 17 | 17 | 34 | 10 | 78 | 37 |
| 2001 | 8 | 8 | 16 | 7 | 39 | 31 |
| 2001 v 1996-99 Ave | -42% | -50% | -46% | -40% | -45% | -13% |

**Table 1: Pedestrian fatalities on roads with a speed limit of 50 or 60 k for the years 1996 through to 2001**

The first thing to note in Table 1 is that in 2001, pedestrian fatalities on classified roads were down 13% in 2001 compared with the average for 1996-99. Therefore, if the 50 k USL is effective, we would expect to see a greater reduction than 13% on unclassified roads. The *All NSW/ Unclassified Roads* result shows a very pleasing reduction of 45%. The net reduction in pedestrian fatalities on unclassified in 2001, taking into account the 'expected' 13% reduction based on the observed reduction on classified roads, is 37%.

The reduction in pedestrian fatalities on Unclassified Roads in the *Sydney RTA Region* in 2001 was somewhat better than for the *Rest of NSW*. This may be explained by the fact that Sydney was quicker to adopt the 50 k USL than the rest of the State and because the transition is still incomplete in rural NSW.

**Pedestrian casualties on unclassified roads**
Table 2 shows trends in pedestrian injuries on roads with a speed limit of 50 or 60 k for the years 1996 through to 2001.

| | Unclassified Roads | | | | | Classified Roads |
|---|---|---|---|---|---|---|
| Year | Western Sydney | Rest of Sydney RTA Region | Sydney RTA Region Total | Rest of NSW | All NSW | All NSW |
| 1996 | 418 | 850 | 1268 | 447 | 2983 | 1164 |
| 1997 | 414 | 782 | 1196 | 363 | 2755 | 1109 |
| 1998 | 409 | 851 | 1260 | 433 | 2953 | 1179 |
| 1999 | 456 | 833 | 1289 | 374 | 2952 | 1098 |
| 1996-1999 Ave | 424.25 | 829.00 | 1253.25 | 404.25 | 2910.75 | 1137.50 |
| 2000 | 396 | 822 | 1218 | 369 | 2805 | 1104 |
| 2001 | 382 | 801 | 1183 | 410 | 2776 | 939 |
| 2001 v 1996-99 Ave | -10% | -3% | -6% | 1% | -5% | -17% |

**Table 2: Pedestrian injuries on roads with a speed limit of 50 or 60 k for the years 1996 through to 2001.**

Looking now at Table 2, once again, the first thing to note is that in 2001 there was a reduction in pedestrian injuries on classified roads across NSW of 17%. There was also a reduction for the *All of NSW/Unclassified Roads,* but it was less at 5%. The net change in pedestrian casualties on unclassified in 2001, taking into account the 'expected' 17% reduction based on the observed reduction on classified roads, is an **increase** of 16%. This is difficult to explain, especially in the light of the very favourable fatality results reported above.

As was the case for pedestrian fatalities, the reduction in pedestrian injuries on Unclassified Roads in the *Sydney RTA Region* for 2001 is somewhat better than for the *Rest of NSW*.

## Victorian crash data

MUARC recently prepared a report on a preliminary evaluation of the 50 k USL in Victoria. This evaluation covered the first five months of operation. Compared with the NSW situation, the analysis was simplified by the uniform starting date across the State.

Considering all crash types, there was a 13.3 percent reduction in crashes on 50 k USL roads relative to roads that remained at 60 k.

Pedestrian crashes on 50 k USL roads reduced by 22.2 percent relative to roads that remained at 60 k. Fatal and serious injury crashes involving pedestrians on 50 k USL roads fell by 46.1 percent relative to roads that remained at 60 k.

All of these results are statistically significant.

## The NRTC/MUARC discussion paper

There is national momentum toward amending the Australian Road Rules to make 50 k the default urban speed limit. All Australian transport ministers will soon be voting through the Australian Transport Council (a national forum for all Transport Ministers) on this proposal. To prepare for this vote, the National Road Transport Commission contracted MUARC to prepare a discussion paper that:

- evaluates available data from Australian trials
- reviews local and overseas research on the impact of lowering speed limits in urban areas
- analyses estimates of the costs and benefits of reducing the current national urban limit to 50 km/h.

The report found that, although from a cost/benefit analysis perspective the merits of introducing an urban limit to 50 km/h are equivocal, the potential road safety and pollution benefits are considerable. It recommended therefore that consideration should be given to implementing the lower limit nationally through amendment of the Australian Road Rules.

## Conclusion

The 50 k USL has great potential for reducing the number and severity of pedestrian crashes. On the basis of the rather insensitive analysis reported in this paper, it appears that NSW is probably reaping the benefits of the lowered limit on neighbourhood roads. The benefit is certainly evident for pedestrian fatalities. In this regards, it is worth noting that in 2001, NSW had the lowest recorded pedestrian fatalities since the 1920s.

A recent Victorian evaluation of its 50 k USL has demonstrated strong safety benefits for pedestrians.

It appears that Australia is on a path toward adoption of the 50 k USL as the national standard.