

## **International tourists and road safety in Australia: developing a national research and management programme**

**Jeffrey Wilks and Barry Watson**

*Centre for Accident Research and Road Safety - Queensland,  
Queensland University of Technology, Beams Road, Carseldine  
Queensland, 4034, Australia*

**Ian J. Faulks**

*Staysafe, Joint Standing Committee on Road Safety, Parliament House,  
Macquarie Street, Sydney, New South Wales, 2000, Australia*

### **FINAL REVISED MANUSCRIPT**

#### **Published as:**

Wilks, J., Watson, B., & Faulks, I.J. (1999) International tourists and road safety in Australia : Developing a national research and management programme. *Tourism Management*, 20(5) 645-654

#### **Copyright: Elsevier**

#### **Abstract**

Motor vehicle crashes are the leading cause of injury death for international tourists. This makes road safety an important issue for tourism authorities. Unfortunately, as it is in other areas of tourist health, the common response from the travel and tourism industry is to remain silent about this problem and to leave any mishaps in the hands of insurers. At the same time, but for different reasons, international tourists are not usually targeted for road safety initiatives by transport authorities. Given that there are considerable "hidden" costs associated with international tourists and motor vehicle crashes, the topic should be of concern to both tourism and transport groups. This paper examines issues concerned with driving in unfamiliar surroundings for international visitors in Australia, and proposes a national research and management programme to guide policy and planning in the area.

The literature on international tourists and road safety is very limited. As Hargarten (1991, p. 106) notes, "Few studies have documented the extent of deaths and non-fatal injuries due to motorised vehicles." However, where figures are available it is clear that motor vehicle crashes are the leading cause of injury death for international tourists (Wilks, 1998). This makes road safety an important issue for tourism authorities. Unfortunately, as it is in other areas of tourist health, the common response from the travel and tourism industry is to remain silent about the problem and to quietly leave any mishaps in the hands of insurers (Wilks & Oldenburg, 1995).

This response is inadequate in several respects. First, while travel organisers may wish to avoid negative publicity by keeping silent about any injuries experienced by their customers, the media are not so constrained (Wilks, Pendergast & Service, 1996). Tourist injuries or deaths make dramatic media stories, as evidenced by the recent Queensland case of missing American scuba divers Thomas and Eileen Lonergan (Metcalf, 1998). These sensationalist stories can irreparably damage the reputation of a tourist destination. Second, without industry acknowledgment of some injuries occurring, there will be no reliable statistics available to show that a particular destination is relatively safe compared with somewhere else (Wilks & Oldenburg, 1995). This means sensationalist media stories cannot be countered or balanced with accurate facts and figures (Wilks & Atherton, 1994). Third, even minor cases of injury or illness will impact on enjoyment of a vacation (Wilks, Walker, Wood, Nicol & Oldenburg, 1995). Since word-of-mouth referrals are one of the main sources of information in holiday-decision making (Sweeney & Associates, 1991), these negative experiences can substantially affect new and repeat business for the tourism industry. As noted by Horovitz and Jurgens-Panak (1992), a customer with a bad service experience will relate their negative story to, on average, 11 other people. A minor traffic incident, or even a 'near miss' may become a negative story when travellers return home. Finally, injuries to travellers result in increased insurance premiums, which in turn are passed on as increases in the price of the tourism product. Failure to address motor vehicle crashes only serves to make local car rental agencies less price competitive in the global market (Wigmore, 1998a, 1998b).

While the tourism industry has chosen to remain silent in relation to motor vehicle crashes because these injuries result in bad publicity, for quite separate reasons transport authorities have traditionally failed to include international tourists as a target group for road safety initiatives. In part, this reflects the low priority assigned to this problem, based on the relatively small number of tourist fatalities that occur each year (Wilks & Watson, 1998). In addition, road safety authorities in Australia have traditionally relied on broad, population-based measures to manage driver behaviour, such as the use of mass media publicity campaigns to support traffic law enforcement programmes like Random Breath Testing and speed cameras (Watson et al., 1996). While an approach of mass advertising and mass invigilation has proven very effective with the general community, it is unlikely to be as effective with groups

who have not been regularly exposed to these campaigns and policing tactics, such as international visitors.

Given the lack of specific attention directed to this issue, it is not surprising that there is a lack of reliable information on which to develop road safety initiatives for the growing body of international travellers worldwide. This paper briefly reviews the information currently available concerning international visitors and road crashes in Australia and identifies potential contributing factors requiring further examination. A research and management plan is then proposed to guide the development of road safety initiatives.

### **Fatal Crashes Involving International Drivers**

In Australia the number of fatal motor vehicle crashes involving international tourists is relatively low in absolute terms. Based on the outcome of coroners' investigations into fatal crashes for the years 1988, 1990 and 1992, a report by the Federal Office of Road Safety (FORS, 1995) found that there were about 30 fatal crashes involving drivers holding a foreign or international driver's licence in Australia each year. Approximately 32 people were killed in these crashes and a further three international tourists were killed as pedestrians each year.

While the overall numbers are small, fatal crashes are not evenly distributed across Australia, as illustrated in Figure 1.

**Insert Figure 1 about here (see appendix)**

The map shows that over half the crashes occur in New South Wales (25%) and Queensland (26%), which are the two most popular state destinations for international tourists (Bureau of Tourism Research, 1996). However, when a comparison is made against each state's share of all fatal crashes, Western Australia and the Northern Territory are over-represented for tourist crashes.

From a transport perspective these crashes represent only 1.5% of all fatal crashes in Australia (FORS, 1995). For many road safety workers, it is understandable that international tourists would not be highlighted as a priority target group. A number of other areas of road trauma are also seldom examined because they are seen as minor contributors to the overall road trauma problem, including school child pedestrian trauma, deaths arising from police chases, and safety issues associated with vehicles towing caravans and trailers.

### **Non Fatal Crashes**

Not all motor vehicle crashes involving international tourists result in a fatality. Indeed, fatalities can be considered merely the 'tip of the iceberg' (Wilks & Watson, 1998), with the "hidden costs" including other forms of injury, as well as property damage. Based on Queensland Transport (1997) crash data, Table 1 illustrates this point for crashes involving international drivers that occurred during the period 1992-1997.

**Insert Table 1 about here (see appendix)**

In Queensland, a 'fatal' crash is defined as a road crash where at least one person dies within 30 days as a result of injuries sustained in that crash (Queensland Transport, 1997). A 'hospitalisation' crash relates to cases where at least one person is formally admitted to hospital. 'Medical treatment' refers to instances where a person is treated at hospital outpatients or other medical centre, while a minor injury covers cases where someone received first aid treatment only. A 'property damage only' crash refers to those crashes where at least one vehicle was towed away or the damage cost was estimated to be greater than \$2,500, but no one was injured. In Queensland, all drivers are obliged to report crashes meeting the above criteria to the police, under Section 31 of the Traffic Act (1949).

The point to be made from Table 1 is that over the six year period, the figures have remained relatively stable, suggesting that the problem, if unattended, will continue unabated. Moreover, unless there is some coordinated intervention, the cost impact of these crashes will surely rise substantially with the larger number of international tourists driving throughout Australia pre and post the Sydney 2000 Olympic Games.

### **The Sydney 2000 Olympic Games**

During 1996 there were 3,829,800 international visitors to Australia aged 15 years and over, which represented an increase of 12% over the 3,422,000 who visited in 1995 (Bureau of Tourism Research, 1996). Notwithstanding recent changes in the Asian economies, the number of international visitors to Australia is forecast to rise to 4.6 million in the year 2000, the main attraction being the Olympic Games in Sydney (Australian Tourism Forecasting Council, 1998).

In addition to the Games themselves, research suggests that the "Olympic Effect" will be broadly felt throughout Australia at least until the year 2004. For example, 50% of the extra visitors attracted by the Games are expected to visit Queensland, 25% Victoria, 13% Western Australia and 9% the Northern Territory (Department of Sport & Tourism (1998).

Based on current figures, 43% of all international visitors drive a private or company car while in Australia, 15% rent a car, 2% drive a motor-home or camper van, and 3% use a four wheel drive vehicle (Bureau of Tourism Research, 1996). On these figures, pre and post-Olympic Games road travel will involve larger numbers of tourists than usual moving about in all Australian states and territories.

In terms of health and safety for travellers, Australia has a very good reputation (Wilks & Oldenburg, 1995). The country can boast clean drinking water, hygienic waste disposal systems, and well equipped and coordinated medical services. There is a low incidence of infectious disease in the country, and Australia is fortunate not to be greatly affected by problems of crime, violence and terrorism that undermine tourism in other countries (Ryan, 1993). Travellers with an international driver's licence can readily rent a motor vehicle in Australia without any driving preparation or restrictions. This freedom is, however, a two-edged sword, for many problems experienced by international drivers appear to stem from driving in unfamiliar surroundings without adequate preparation.

### **Driving in Unfamiliar Surroundings**

The Federal Office of Road Safety (FORS, 1995) report drew attention to certain characteristics of the crashes involving overseas drivers which appeared to be a product of driving in unfamiliar surroundings. In particular, the three issues of driver fatigue, not wearing a seat belt, and overturning their vehicle were more prominent in fatal crashes involving overseas tourists, than for Australians. While excessive speed and drink driving were also implicated in the fatal crashes involving overseas drivers, these factors were less prominent for tourists than they were for Australian drivers.

Problems arising from driving in unfamiliar surroundings are not unique to overseas visitors in Australia. Any tourist visiting a new destination is exposed to conditions they do not normally encounter, and this places them at increased risk for a motor vehicle crash (Waller & Brink, 1987). While the standard concerns of speed, alcohol and fatigue apply universally to tourist drivers, Australia has some specific issues that should be brought to the attention of international drivers. Most important are: driving on the left hand side of the road; the legal requirements to always wear a seat belt; a lower legal blood alcohol limit than in many other countries overseas; an awareness of the size of Australia and the distances involved when planning each day of travel; unique animal hazards; and finally, unusual road and environmental conditions (Wilks, 1998; Wilks & Watson, 1998). The significance of these issues can be demonstrated by comparing driving conditions in Australia with those of other countries.

### **Driving Conditions in Other Countries**

The International Visitor Survey (Bureau of Tourism Research, 1996) identifies the origin of the main overseas tourist groups visiting Australia each year. Table 2 shows some of the driving conditions in their home country for these main groups, and also the comparative information for Australia. The table was developed from a variety of sources (Austroads, 1996; Bureau of Tourism Research, 1996; Health Canada, 1994; Kinkaid, 1986), including many telephone calls to overseas embassies and consulates, since this was the only way to gain comparative data. While all attempts were made to ensure that the figures are accurate, the reader is cautioned to use the table only as an indicator of driving conditions in the listed countries and to check for changing regulations.

**Insert Table 2 about here (see appendix)**

#### Side of the Road Driven On in Home Country

As can be seen in Table 2, many visitors to Australia come from countries where they drive on the right side of the road, rather than the left. Indeed, an analysis of the data in Table 2 shows that almost 30% of the visitors to Australia in 1996 came from right-side driving countries. More recently, the economic downturn in Asia has temporarily reduced the level of visitors from regional areas which are predominantly left-side drive nations (e.g., Hong Kong, Indonesia, Malaysia and Thailand). At the same time new forecasts predict a substantial rise in the number of visitors from right-side driving nations such as North America, France, Italy and the Netherlands (Australian Tourism Forecasting Council, 1998).

The transition from familiar driving on the right hand side of the road at home to the left in Australia may be difficult for some international visitors. This transition has been recognised as a major contributing factor to car crashes in Australia's left side driving neighbour, New Zealand (Page & Meyer, 1996). Similar concerns have been found in relation to the transition from left-side to right-side driving among tourists on the Island of Crete (Petridou, Askitopoulou, Vourvahakis, Skalkidis & Trichopoulos, 1997).

To date there has been no empirical investigation of the problems experienced by visitors to Australia from right hand side of the road driving countries. However, there is considerable anecdotal evidence from car rental operators and insurance companies to support this topic as a key area for education and advice to intending overseas drivers. It is also worth noting that German, Canadian and American visitors, all from right hand side of the road countries, are among the main visitor groups renting cars in Australia (Bureau of Tourism Research, 1996). This highlights the need to target information on this topic to specific tourists groups.

#### Miles of Road in Home Country

The miles of road in the home country provides a partial indicator of the likely exposure of drivers to long distance driving. As can be seen in Table 2, a majority of the visitor countries have much smaller road networks than Australia. However, this measure does not fully illustrate the vastness of Australia, nor the distance between major population areas that drivers can encounter. For example, while Japan has a large road network, it is relatively compact given the geography of the country.

Wilks and Watson (1998) point out that one of the hardest concepts to convey to the first time visitor to Australia is the size of the country and the vast distances that can be travelled. Fatigue has been identified as a particular problem for international drivers (FORS, 1995), especially if they are tired from a long international flight even before they begin their journey by road (Wilks & Watson, 1998). "Driver Reviver" rest-stops, with detailed information on distances from the nearest town and amenities available have been emphasised in a new Queensland motoring guide (Main Roads, 1998). This is a very positive approach that should be widely marketed to overseas drivers, since fatigue can clearly compound other potential problems encountered in an unfamiliar driving environment (e.g., heat exhaustion, glare, road dust).

#### Blood Alcohol Limit in Home Country

The legal Blood Alcohol Limit (BAL) in Australia for experienced drivers is .05 g/100mls and zero (or .02 in some States) for novice drivers and professional drivers. The use of a lower limit for novice drivers is becoming common around the world. However, to avoid confusion, Table 2 only reports the maximum BAL applying in each country.

As can be seen from Table 2, many countries have a BAL that exceeds that in Australia. This suggests that drivers from these countries may have different expectations regarding the amount of alcohol they can consume before driving. It should be noted that the risk of being involved in a crash increases dramatically with blood alcohol concentrations exceeding .05. For example, while the probability of

being involved in a crash at .05 is double that of a sober driver, there is upwards of 10 times the risk at .10 (Breakspeare & Starmer, 1986).

In addition, a major determinant of drink driving behaviour will be a driver's perceived risk of being apprehended for the offence. In this regard, the introduction of Random Breath Testing (RBT) throughout Australia has proven very effective in reducing the incidence of drink driving and alcohol-related crashes in this country (Henstridge, Homel & Mackay, 1997). The general deterrent value of RBT appears to be linked to its high visibility, the intensity of the testing, and the use of supporting mass-media publicity (Homel, 1988).

Forms of random breath testing operate in a number of other countries, including Finland, Sweden, France, the Netherlands and New Zealand (Watson, Fraine & Mitchell, 1994). While many other countries have been able to achieve reductions in the level of alcohol-related crashes without using this approach, the reasons for their success are often unclear (Sweedler, 1997). Over and above this, it is unlikely that drivers from these countries would be accustomed to the levels of drink driving enforcement common in Australia.

#### Seat Belt Wearing Laws

Australia is among the world leaders in introducing compulsory seat belt (and child restraint) legislation and supporting it with high levels of enforcement and publicity (Bhattacharyya & Layton, 1979; Trinca et al., 1988). Australia has required seat belts to be worn in all seating positions in passenger vehicles for many years. However, this is not always the case in other countries (Hargarten, 1992). For example, the United States has been relatively slow to introduce compulsory seat belt wearing. Indeed, while 49 states now have compulsory seat belt wearing in front seating positions, only 12 states require it in the rear (Insurance Institute for Highway Safety, 1998). Similarly, Hong Kong only introduced compulsory seat belt wearing in the rear seat of passenger cars in 1996 (Hong Kong Transport Department, 1997). It is perhaps not surprising then that many of the international drivers involved in fatal crashes in Australia are found to be unbelted (FORS, 1995).

#### Other Differences in Driving Conditions

Many countries utilise road signs conforming with international standards (Australian Automobile Association, 1998). While Australia is progressively adopting the use of these international signs, overseas drivers are likely to encounter many signs unique to this country, particularly warning signs relating to wildlife (Browne, 1998).

Australia, like the majority of countries, uses kilometres as the unit of measure for distance and speed. While most visitors will be familiar with this, some overseas drivers will need to make a transition from signage presented in miles per hour, particularly those from the United Kingdom and the United States.

The maximum speed limit in Australia on high quality roads (i.e., freeways) is predominantly 110 km/h (Fildes & Lee, 1993). This may prove restrictive for those drivers who come from countries where there are no speed limits on high quality roads, such as the German Autobahns. In contrast, there is no speed limit on roads outside population centres in the Northern Territory of Australia. This could cause

potential problems for some overseas drivers who have only obtained experience in roads with more restrictive speed limits.

In 1996, just over half of the international arrivals to Australia were people visiting for the first time (Bureau of Tourism Research, 1996). Among the unfamiliar driving conditions they could encounter in Australia are: wandering stock; native and feral animals (including such large animals as kangaroos, wallabies and donkeys, as well as smaller animals such as wombats, possums, rabbits and foxes) (Faulks, 1998); poor road shoulders; dust on unsealed roads; Road Trains, which can be up to 53.5 metres long and 2.5 metres wide and have three trailers; and flash flooding, especially on rural and remote roads.

According to Hargarten (1991), imparting knowledge of these variable in-country risks is essential if international travellers are to develop strategies to prevent injuries. A number of information sources are currently available in Australia, though none have been formally evaluated to determine their value in injury prevention.

### **Currently Available Information**

Commercially available guide books such as that produced by Lonely Planet Publications (Finlay et al., 1996) provide useful, but very general, information about road rules and driving conditions in Australia. State and Territory transport authorities produce some excellent guides with maps and safety tips, though they are sometimes difficult to obtain even after arriving in the country (Northern Territory Road Safety Council, 1995; Queensland Tourist & Travel Corporation, 1998a). There is also the question of how many international tourists take the time to read and utilise printed literature.

More recently, tourism and transport authorities have started developing Internet sites to convey road safety information. Some sites, such as that of the Singapore Police Force (1998) provide detailed and specific road safety advice; whereas others, like the Queensland Tourist and Travel Corporation (1998b) include limited road safety messages within the context of broad tourist information. While a very detailed guide for international and interstate drivers is currently being developed by Queensland Transport (due on-line in November 1998), the question remains as to how many international visitors will use this form of information technology? The 1996 International Visitor Survey (Bureau of Tourism Research, 1996) found that only 1% of international visitors used the Internet as an information source on Australia. Further research needs to be undertaken to monitor Internet activity on sites with road safety information and also to determine their use by specific market segments.

Road safety videos targeting international visitors are not generally available in Australia. In the course of this review, only one video from a local car rental franchise in Western Australia was identified. However, recent market research commissioned by the Northern Territory Road Safety Council (Erickson, Loan & Dunstone, 1997) found strong support among tourism operators for a road safety information video package. Similarly, in other areas of workplace health and safety the tourism industry has expressed support for videos as a means of conveying information (Patterson, O'Connor, Farr & Wilks, 1994), so this method of communication has promising possibilities in the area of road safety.



While a variety of road safety campaigns targeting international visitors have been conducted over the years (Roads & Traffic Authority, 1995; Queensland Transport, 1995), none appear to have been systematically evaluated. One reason for this is that international visitors have a limited exposure to mass media campaigns, or even policing deterrents like Random Breath Testing and speed cameras. Indeed, the police often complain that international visitors are not deterred by fines since the penalties are unenforceable when the visitor has left Australia (Parliamentary Travelsafe Committee, 1996). Finally, because of their short stay in Australia, international visitors' attitudes, beliefs and behaviours in response to any campaign are difficult to assess using standard pre- and post-test evaluation measures. Given these constraints, the most promising avenue for research appears to be a focus on the factors contributing to crashes involving international visitors to identify potential prevention strategies.

### **Developing a National Research Programme**

The national research agenda proposed for general tourist health and safety by Wilks and Atherton (1994) provides a useful starting framework for addressing issues specifically related to road safety. First, it is necessary to establish a base-line of empirical data on the incidence of road crashes involving international tourists. Without this baseline, Hargarten (1991, p. 107) points out:

It is difficult to assign risk to a cause of death and non-fatal injury if the numerator is incomplete and the denominator is virtually unknown.

The second step is to better establish the predominant factors contributing to the crashes involving overseas visitors, particularly those associated with driving in unfamiliar surroundings. While anecdotal evidence suggests that driver fatigue, driving on the left hand side of the road (if that is not familiar), not wearing a seat belt, speed, drink driving and unfamiliar road rules may all contribute to road crashes for international visitors, these contributing factors need to be investigated empirically. Three specific data collection points are identified for this road safety research: road crash data; hospital records; and insurance claims.

### Road Crash Data

In the first instance, an analysis of road crash data provides a means of establishing the scale of the international driver safety problem. Some preliminary work has already been conducted in this area (FORS, 1995; Wilks & Watson, 1998). However, this work has tended to focus on those crashes where tourists are involved as drivers. More needs to be understood about the role of tourists in all types of crashes, including their involvement as passengers, pedestrians, cyclists, and moped riders.

In addition, road crash data can be used to establish the characteristics of the crashes involving international visitors, which in turn can be used to inform the development of prevention strategies. In this regard, a range of issues have been identified in preceding sections which need closer examination to establish their relative contribution to tourist crashes. For example, while overseas studies have suggested that the difficulties associated with driving on the opposite side of the road can

contribute to crashes (Page & Meyer, 1996; Petridou et al., 1997), this needs to be more closely examined in the Australian context.

This research may also identify ways in which the collection of crash data relating to overseas visitors may need to be standardised or improved. In particular, it would be useful for more specific information to be collected about the home country of international drivers involved in crashes in Australia. This would assist in identifying factors related to unfamiliarity. Finally, there is an ongoing need to collect exposure data which will provide an insight into the road use patterns of overseas visitors. This will assist in better quantifying the relative risk faced by this target group, compared to other Australian road users.

#### Hospital Records

The second point of information collection must be the hospital system, to determine details of patient treatment and outcome. Previous Australian studies have shown motor vehicle crashes to be the leading injury-related cause of hospital admission for international tourists (Nicol, Wilks & Wood, 1996) and a serious financial burden for host hospitals (Walker et al., 1995). To date, however, no detailed work has been undertaken to examine the medical consequences of motor vehicle crashes for international tourists to Australia. Within the broader context of tourist health, analysis of hospital data is considered a key component in any national research programme (Wilks, 1995).

To address this issue, the Centre for Accident Research and Road Safety (CARRS-Q) and Queensland Health are currently examining all hospital inpatient admissions for international visitors involved in a motor vehicle crash. For the 1996/97 financial year a total of 130 admissions have been identified. A detailed analysis of patient characteristics, diagnoses, length of stay in hospital and estimated treatment costs has yet to be completed. When available, this data will provide a unique view of the personal and medical costs of road crashes on a state-wide basis. Due to confidentiality issues, this picture will never be complete, but it will contribute to our understanding of the consequences of road crashes by focusing on the nature of the injuries sustained and the time an international visitor will spend in hospital. In addition, hospital data will show the extent of the patient care burden being placed on local hospitals, many of which will be required to write these costs off as a bad debt (Industry Commission, 1991; Barraclough & McBain, 1992).

#### Insurance Claims

The third source of vital information is insurance claims. As noted in Table 1, many motor vehicle crashes result in minor injury and property damage, the details of which would not necessarily be captured in road crash data or hospital reports. Information from insurance claims can provide a more complete picture of crash consequences, particularly by highlighting the 'hidden' costs associated with crashes which do not meet the criteria for reporting to the police. For example, costs such as minor vehicle repairs, the use of replacement vehicles, insurance excesses, legal fees, and the impact of these hidden costs on future insurance premiums. From discussions with the managers of New Zealand insurance companies responsible for paying claims on travel policies, Ryan (1996) concluded that insurance data could be a rich source of information, not only for revealing patterns of tourist injuries, but also for guiding

prevention strategies. This, in turn, “might ensure a marginally higher profitability for the companies” (Ryan, 1996, p. 593).

The difficulty in dealing with individual insurance companies is that data are not readily available, primarily for commercial reasons (Ryan, 1996). A more appropriate alternative for road safety research, at least initially, is to seek data from a centralised point. For example, CARRS-Q is currently working with the Motor Accident Insurance Commission (MAIC) in Queensland to identify all compulsory third party (CTP) claims involving an international driver. Since 1936, Queensland has operated a common law “fault” based CTP motor vehicle insurance scheme (MAIC, 1997). The Queensland CTP scheme is currently underwritten by six licensed private insurers, all of whom contribute to a central claims database.

The exploration of CTP claims will not provide the whole picture for international visitors crashes as it only covers those situations where a third party was involved. However, a unique aspect of analysing CTP claims is that two types of profile can be generated. First, an injury profile, which includes details of both the initial hospital treatment and also any longer term rehabilitation. This compliments the hospital-based records by providing a more detailed financial analysis of injuries resulting from motor vehicle crashes. Secondly, CTP data can provide an economic profile of all payments made on the claim. This may include legal costs, economic loss, investigation costs, long-term care and home care, and general damages (MAIC, 1997). Rather than rely on aggregate crash costing used by transport authorities (Andreassen, 1992; Wilks & Watson, 1998), analysis of CTP claims should provide a more detailed understanding of the financial burden of road crashes involving international visitors.

Road crash data, hospital records and insurance claims will all contribute valuable ‘snap-shots’ of road safety problems and consequences experienced by international visitors to Australia. While recognising the additional value of other methodologies, such as field observations, interviews with international drivers, and controlled trials to further understand international driver behaviour, analysis of the three initial data sources will comprehensively set the foundation for a national management programme.

### **Translation of Research into Practice**

Having identified and assessed the relative contribution of factors involved in driving problems for international visitors, the research must be translated into practical countermeasures. Among the suggestions put forward by Page and Meyer (1996, p. 688) to alert tourists in New Zealand to the common precautions they might take are:

...compulsory screening of video-based safety messages at car rental agencies prior to rental; pamphlets and leaflets distributed to tourists to reinforce video-based messages without being alarmist; cassette tapes provided with cars to inform drivers of the relevant road laws; prominent signage near airports, tourist resorts, and rental car agencies reminding drivers that New Zealand drives on the left-hand side of the

road; and signs on car dashboard panels to remind drivers of the road rules.

A comprehensive management plan will need to address two broad prevention strategies: direct education of tourists, and education of tourism operators. Both of these strategies are evident in the suggestions of Page and Meyer (1996) above. Interestingly, however, these researchers concluded that tourist operators would be unlikely to take voluntary action unless they could be convinced that a real and pressing problem existed. This argument can only be made with definitive primary data on the topic.

The current research programme at CARRS-Q is designed to provide this hard data from the three identified key sources of road crash statistics, hospital records and insurance claims. However, to ensure that the research agenda is made possible, the issues to be researched need to be recognised and “owned” by all relevant parties (Wilks & Atherton, 1994). In this case ownership is the joint responsibility of the tourism industry, transport authorities, and related government agencies.

### **A Collaborative Approach**

As noted above, none of the publicly available information sources on international visitors and road safety in Australia appear to have ever been evaluated. Neither have government campaigns been tested for their effectiveness. At the same time, some of the existing material is very valuable. For example, the Northern Territory’s publication “The Territory by Road” (Northern Territory Road Safety Council, 1995) is an excellent model for a motoring guide, with maps and information presented in seven languages.

To ensure that all publicly distributed road safety material targeting international visitors is able to be assessed, an Australia-wide collection and audit is needed. Rather than reinvent the wheel, existing material should be used, subject to any copyright restrictions, to build the best possible road safety messages.

Another approach to synthesising information and resources is to involve relevant groups from commerce and industry. Lawyers, insurance companies, car rental operators, travel agents and the media all have a stake in promoting international visitor road safety. Some of these groups also have in-house marketing research, risk assessments, policies and procedures that are not publicly available (Ryan, 1996), but are very valuable for guiding education and prevention strategies. One-day industry seminars appear to be an appropriate way to facilitate some sharing between government agencies, researchers and private industry interests (Patterson et al., 1994). Two such seminars are being planned by CARRS-Q for early 1999.

While the research programme outlined above will provide a great deal of new information, and ideally some quality educational materials to assist international visitors driving in Australia, the real test for the management component of the programme will be to convince tourism operators to adopt a pro-active approach toward the problem. Traditionally, tourism operators appear most concerned about their legal liability should a client be injured and with the financial costs/benefits of adopting additional client responsibilities in the area of health and safety (Patterson et

al., 1994). As most tourism operators in Australia are small businesses with less than 20 staff (Australian Bureau of Statistics, 1993; Network Australia, 1992), these commercial concerns are understandable. A final component of the proposed management programme would therefore be an examination and adoption of 'best practice' methods for selling road safety to the tourism industry.

### **Conclusions**

While motor vehicle crashes are the leading cause of injury death for international tourists, these fatalities are only the tip of the iceberg. Less visible but equally important are the tourist injuries, property damage and other hidden costs which should be of particular concern to tourism and transport authorities. From the available literature it appears that many road safety problems are related to driving in unfamiliar surroundings. Some differences in driving conditions between Australia and other countries are highlighted in this report. However, further research is needed to clarify the relative contribution of driver, vehicle and environment factors in Australian road crashes involving international visitors.

Three main sources of information have been identified to provide direction for a national research programme: road crash data, hospital reports and insurance claims. From this research a number of practical responses, such as industry videos, can be developed. However, for the full programme to be successful the tourism industry needs to accept that a problem of road safety for international visitors does exist. In the lead up to the Olympics more tourists will be moving about on Australian roads, and consequently more crashes involving international drivers are likely unless a coordinated approach to prevention is adopted. While the Sydney 2000 Olympics is an ideal motivator for Australia to take a proactive stand on this issue, the benefits of developing a best practice model for road safety in Australia can also be shared with other countries. As Page and Meyer (1996, p. 689) note:

No accident, however caused, is good publicity for a tourism industry becoming reliant upon international visitor spending.

### **Acknowledgments**

This research was supported by funds from the Motor Accident Insurance Commission (Queensland). The authors would like to thank Queensland Transport and the Federal Office of Road Safety for data used in the paper. Special thanks also to Anna Johnson for assistance with gathering the international literature.

## References

- Andreassen, D. (1992). Cost for accident-types and casualty classes (Research Report ARR 227). Vermont South, Australia: Australian Road Research Board.
- Australian Automobile Association (1998). Handbook for motorists. Canberra, Australia: Australian Automobile Association.
- Australian Bureau of Statistics (1993). Profiles of Australian Businesses 1992 (Catalogue No. 1322.0). Canberra, Australia: Australian Government Publishing Service.
- Australian Tourism Forecasting Council (1998). International visitor arrival forecasts. Canberra, Australia: Australian Tourism Forecasting Council.
- Austroroads (1996). Urban speed management in Australia (Report AP118). Sydney, Australia: Austroroads.
- Barraclough, S. & McBain, C. (1992). The use of Australian health care services by overseas visitors: some data-related problems for policy makers. Australian Medical Record Journal, 22, 51-55.
- Bhattacharyya, M. N. & Layton, A. P. (1979). Effectiveness of seat belt legislation on the Queensland road toll – An Australian case study in intervention analysis. Journal of the American Statistical Association, 74, 596-603.
- Breakspeare, R. & Starmer, G. (1986). The art of sensible drinking. Chippendale, Australia: Ellsyd Press.
- Browne, A. (1998). Explore Australia: The complete touring companion 1999. Ringwood, Australia: Penguin Books.
- Bureau of Tourism Research (1996). International visitor survey 1996. Canberra, Australia: Bureau of Tourism Research.
- Department of Sport & Tourism (1998). Federal government says Olympics will bring extra 1.6 million tourists to Australia. (Media release by The Hon. Andrew Thomson MP, Minister for Sport and Tourism, 1 July 1998).
- Erickson, D., Loan, D. & Dunstone, J. (1997). Visitor road safety video feasibility study and the Territory by road multi-lingual map distribution research. (Report prepared for the Road Safety Council of the Northern Territory). Darwin, Australia: McGregor Marketing.
- Faulks, I. J. (1998, June). Animals and roads. Paper presented to a meeting of the Sydney Metropolitan Wildlife, Dee Why, Australia.
- Federal Office of Road Safety (1995). Driving in unfamiliar surroundings Part 1: International drivers (Monograph 3), Canberra, Australia: Federal Office of Road Safety (FORS).

Fildes, B. N. & Lee, S. J. (1993). The speed review: road environment, behaviour, speed limits, enforcement and crashes. Canberra, Australia: Federal Office of Road Safety.

Finlay, H., Armstrong, M., Chapman, J. et al. (1996). Australia: A Lonely Planet survival kit. Hawthorn, Australia: Lonely Planet Publications.

Hargarten, S. W. (1991). International travel and motor vehicle crash deaths: the problems, risks, and prevention. Travel Medicine International, 9, 106-110.

Hargarten, S. W. (1992). Availability of safety devices in rental cars: an international survey. Travel Medicine International, 10, 109-110.

Health Canada (1994). International BAC limits for drivers. Impact, 5 (2), 5.

Henstridge, J., Homel, R. & Mackay, P. (1997). The long-term effects of random breath testing in four Australian states: A time series analysis. Canberra, Australia: Federal Office of Road Safety.

Homel, R. (1988). Policing and punishing the drinking driver: A study of general and specific deterrence. New York, NY: Springer-Verlag.

Hong Kong Transport Department (1997). Who has to wear a seat belt? [Online]. Available: [http://www.info.gov.hk/td/nwbel\\_t3.htm](http://www.info.gov.hk/td/nwbel_t3.htm) [1998, August 20].

Horovitz, J. & Jurgens-Panak, M. (1992). Total customer satisfaction: Lessons from 50 companies with top quality customer service. London, UK: Pitman Publishing.

Industry Commission (1991). Exports of health services (Report No. 16). Canberra, Australia: Australian Government Publishing Service.

Insurance Institute for Highway Safety (1997). State law facts 1997: Child restraint, belt laws [Online]. Available: <http://www.hwysafety.org/facts/restrain.htm> [1998, August 28].

Kinkaid, P. (1986). The rule of the road. New York, NY: Greenwood Press.

Main Roads (1998). Guide to Queensland roads. Brisbane, Australia: Main Roads.

Metcalf, F. (1998, June 27). Lawyers call for dive industry overhaul. Courier Mail, p. 19.

Motor Accident Insurance Commission (1997). Annual Report 1996-1997 Ensuring a Balance. Brisbane, Australia Motor Accident Insurance Commission (MAIC).

Network Australia (1992). Industry education project discussion paper (Confidential report submitted to Queensland Tourist and Travel Corporation, June 1992).

Nicol, J., Wilks, J. & Wood, M. (1996). Tourists as inpatients in Queensland regional hospitals. Australian Health Review, 19, 55-72.

Northern Territory Road Safety Council (1995). The Territory by road: In seven languages with maps included. Darwin, Australia: NT Road Safety Council.

Page, S. J. & Meyer, D. (1996). Tourist accidents: An exploratory analysis. Annals of Tourism Research, 23, 666-690.

Parliamentary Travelsafe Committee (1996). Report on driver training and licencing. (Report No. 16). Brisbane, Australia: Legislative Assembly of Queensland.

Patterson, C., O'Connor, M., Farr, T. & Wilks, J. (1994). Workplace health and safety needs in the Queensland tourism and hospitality industry: A pilot study. Journal of Occupational Health and Safety: Australia and New Zealand, 10 (3), 251-257.

Petridou, E., Askitopoulou, H., Vourvanhakis, D., Skalkidis, Y. & Trichopoulos, D. (1997). Epidemiology of road traffic accidents during pleasure travelling: The evidence from the Island of Crete. Accident Analysis and Prevention, 29 (5), 687-693.

Queensland Tourist and Travel Corporation (1998a). Queensland's motoring holiday guide. Brisbane, Australia: Queensland Tourist and Travel Corporation.

Queensland Tourist and Travel Corporation (1998b). [Online]. Available: <http://www.qttc.com.au> [1998, August].

Queensland Transport (1995). Welcome: Some handy hints on Queensland road rules and conditions. Brisbane, Australia: Queensland Transport.

Queensland Transport (1997). Road traffic crashes in Queensland. A report on the road toll: 1996. Brisbane, Australia: Queensland Transport.

Roads and Traffic Authority (1995). Sydney region targets tourists in new road safety campaign. RTA News, December 1995, 14.

Ryan, C. (1993). Crime, violence, terrorism and tourism: an accidental or intrinsic relationship? Tourism Management, 14 (3), 173-183.

Ryan, C. (1996). Linkages between holiday travel risk and insurance claims: evidence from New Zealand. Tourism Management, 17 (8), 593-601.

Singapore Police Force (1998). Public education programmes: road safety [Online]. Available: <http://www.spinet.gov.sg/aboutus/org/tp/safe/safe.html> [1998, September].

Sweedler, B. M. (1997). The worldwide decline in drinking and driving- where are we now. In C. Mercier-Guyon (Ed.), Proceedings of the 14th International Conference on Alcohol, Drugs and Traffic Safety Volume 3, (pp. 1205-1210), Annecy, France: Centre d'Etudes et de Recherches en Medecine du Trafic.

Sweeney, B. & Associates (1991). Domestic tourism segmentation study: Report of the Islands. Brisbane, Australia: Queensland Tourist and Travel Corporation.

Traffic Act 1949, Brisbane, Australia: Queensland Government Printer.



Trinca, G. W., Johnston, I. R., Campbell, B. J., Haight, F. A., Knight, P. R., Mackay, G. M., McLean, A. J. & Petrucelli, E. (1988). Reducing traffic injury – a global challenge. Melbourne, Australia: Royal Australasian College of Surgeons.

Walker, S., Wilks, J., Ring, I., Nicol, J., Oldenburg, B. & Mutzelburg, C. (1995). Use of Queensland hospital services by interstate and overseas visitors. Health Information Management, 25, 12-15.

Waller, J. A. & Brink, S. (1987). Trauma in tourist towns. Journal of Rural Health, 3, 35-46.

Watson, B., Fraine, G. & Mitchell, L. (1994). Enhancing the effectiveness of RBT in Queensland. Alcohol Related Road Crashes: Social and Legal Approaches – Conference Proceedings, 31-49. Brisbane, Australia: Centre for Crime Policy and Public Safety, Griffith University.

Watson, B., Fresta, J., Whan, H., McDonald, J., Dray, R., Beuermann, C. & Churchward, R. (1996). Enhancing driver management in Queensland. Brisbane, Australia: Queensland Transport.

Wigmore, S. (1998a, July). The hidden hazards on the road. The Weekly Telegraph, Issue No. 365, p. 1.

Wigmore, S. (1998b, July). The world can be your oyster with the right car hire deal. The Weekly Telegraph, Issue No. 365, p. 2.

Wilks, J. (1995). Tourist health: developing a national research program. Paper presented at the 27th Annual Conference of the Public Health Association of Australia, Cairns, September 26, 1995.

Wilks, J. (1998). International tourists, motor vehicles and road safety: A review of the literature leading up to the Sydney 2000 Olympics. Manuscript submitted for publication.

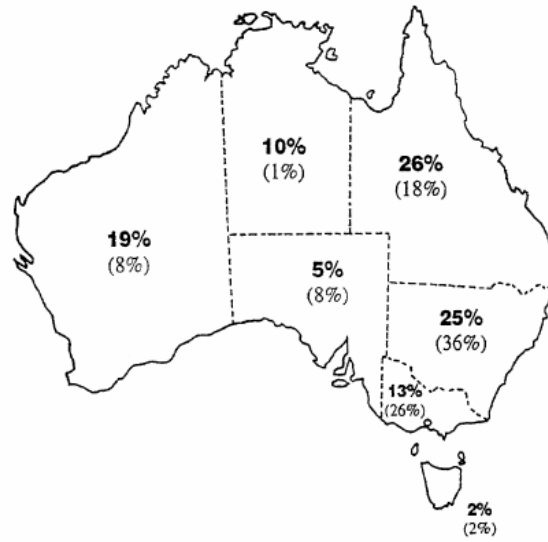
Wilks, J. & Atherton, T. (1994). Health and safety in Australian marine tourism: A social, medical and legal appraisal. Journal of Tourism Studies, 5 (2), 2-16.

Wilks, J. & Oldenburg, B. (1995). Tourist health: the silent factor in customer service. Australian Journal of Hospitality Management, 2, 13-23.

Wilks, J. & Watson, B. (1998). Road safety and international visitors in Australia: looking beyond the tip of the iceberg. Manuscript submitted for publication.

Wilks, J., Pendergast, D. & Service, M. (1996). Newspaper reporting of tourist health and safety issues. Australian Leisure, 7 (3), 45-48.

Wilks, J., Walker, S., Wood, M., Nicol, J. & Oldenburg, B. (1995). Tourist health services at tropical island resorts. Australian Health Review, 18 (3), 45-62.



**Bold figure** = State share of fatal crashes involving international drivers  
**(Bracket figure)** = State share of all fatal crashes

Fig. 1. Fatal crashes in Australia involving international drivers. (Reproduced from Federal Office of Road Safety (1995), with permission).

**Figure 1.**

**Table 1**

**Queensland Road Crashes Involving International Drivers by Severity of Crash:**

**1992-1997**

Year	Fatal	Hospitalisation	Medical Treatment	Minor Injury	Property Damage	Total
1992	6	63	61	30	197	357
1993	10	63	71	35	209	388
1994	4	63	67	32	217	383
1995	9	65	109	56	230	469
1996	4	78	96	57	227	462
1997	6	65	99	51	202	423

**Table 2****Key Traffic Laws and Road Conditions in the Home Country of Visitors to Australia**

Country/area of Residence	Number of international visitors: 1996	Side of road driven on in home country	Miles of road in home country	Road Signage Miles/kilometres	Blood Alcohol Limit in home country (g/100mls)	Maximum Speed Limit		Compulsory seat belt wearing laws
						Urban	Rural*	
Japan	813,100	Left	652,260	Kilometres	.05	50 km/h	100km/h	Front only
New Zealand	671,900	Left	57,402	Kilometres	.08	50 km/h	100km/h	Front & rear
United Kingdom	367,500	Left	213,326	Miles	.08	30m/h	70 m/h	Front & rear
United States	316,900	Right	3,806,173	Miles	.08 - .10	30 m/h	65 m/h	49 states- front 12 states- also rear
Korea	227,900	Right	21,622	Kilometres	.05	50 km/h	120 km/h	Front only
Singapore	222,800	Left	1,339	Kilometres	.08	50 km/h	80 km/h	Front & rear
Taiwan	159,400	Right	10,778	Kilometres	.05	60 km/h	100 km/h	Front & rear
Indonesia	154,400	Left	22,115	Kilometres	Not applicable	60 km/h	100 km/h	Not compulsory
Hong Kong	153,200	Left	651	Kilometres	.08	50 km/h	100 km/h	Front & rear
Malaysia	134,400	Left	11,247	Kilometres	.05	50 km/h	110 km/h	Front only
Germany	125,400	Right	361,622	Kilometres	.08	50 km/h	Unrestricted	Front & rear
Thailand	88,900	Left	17898	Kilometres	.05	50 km/h	90 km/h	Front only
Canada	61,100	Right	306,024	Kilometres	.08	50 km/h	80 km/h	Front & rear
China	54,000	Right	435,000	Kilometres	-	30 km/h	110 km/h	Front only
PNG	43,500	Left	10,401	Kilometres	.08	60 km/h	100 km/h	Not compulsory
South Africa	42,600	Left	206,600	Kilometres	.08	60 km/h	120 km/h	Front & rear
Italy	40,600	Right	178,000	Kilometres	.08	50 km/h	130 km/h	Front & rear
Switzerland	39,400	Right	37,900	Kilometres	.05	50 km/h	120 km/h	Front & rear
Netherlands	38,800	Right	40,457	Kilometres	.05	50 km/h	120 km/h	Front & rear
France	34,900	Right	493,400	Kilometres	.05	50 km/h	130 km/h	Front & rear
New Caledonia	23,500	Right	3,206	Kilometres	.05	60 km/h	80 km/h	Front & rear
Fiji	21,200	Left	1,751	Kilometres	.35	50 km/h	80 km/h	Front only
<b>Australia</b>		<b>Left</b>	<b>536,685</b>	<b>Kilometres</b>	<b>.05</b>	<b>60 km/h</b>	<b>110 km/h</b>	<b>Front &amp; rear</b>

\* This maximum may only apply on high quality roads, such as freeways