

FLEET SAFETY – ROAD SAFETY'S NEXT SILVER BULLET?

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1. A BRIEF STATEMENT OF THE ISSUE

Per-population death rates from road crashes plummeted during the 1970's and 1980's in Australia¹ – with the 'silver bullets' being improved occupant protection (including improved vehicle crashworthiness), decreased drink driving and more effective speed enforcement. During the last decade, however, death rates have remained largely stationary (around 10 deaths per 100,000 population)², leaving many to wonder where the next major road safety advance will be found.

Improved management of light vehicle fleet safety may be one answer.

2. AN ASSESSMENT OF THE ROAD SAFETY ISSUE

Improved fleet safety may have benefits at two levels.

2.1 Reducing work-related casualties

Two recent U.K. studies have shown that people who drive for work are at greater crash risk than other, otherwise-comparable drivers. The first study found that company drivers had a 29-50 per cent higher involvement in all crashes than private drivers matched for age, sex and distance driven³. The second UK study reached a similar conclusion in regard to casualty crashes only: car drivers with high proportions of work-related mileage had a greater risk of involvement in injury crashes than other comparable drivers⁴. Drivers who drove more than 80 per cent of their annual mileage on work-related journeys (almost one-quarter of all drivers who did any work-related travel) had 53 per cent more injury crashes.

In Australia, business travel accounts for around one-third of all driving, and over one-half, if commuting is included⁵. While the full extent of crashes involving work-related vehicles has yet to be quantified⁶, there have been several attempts to measure at least the casualty outcomes:

- a detailed analysis of serious casualty crashes in Queensland from 1997-2001 found that commercial vehicles were involved in around one-quarter of fatal crashes and in a sixth of serious injury (hospitalisation) crashes⁷
- road crashes are the most common form of work-related death, representing around one-half of all such deaths⁸.

These data relate, however, to all work-related travel (including commuting). If attention were restricted to the light vehicle fleet only, the direct road safety problem would be considerably reduced. The best available estimate for Australia is that occupants of light vehicles on work-related travel account for 6 to 7 per cent of all road fatalities⁸. These figures exclude other persons killed as a result of these crashes and exclude the resultant range of non-fatal injuries.

Analyses of work-related crashes have identified at least two driver behaviours that contribute to crash involvement⁸. It is likely that high proportions of car drivers speed on work-related travel, which also has a likely strong association with driver fatigue.

2.2 Reducing all road casualties

If fleet purchasers could be directed towards the safest available vehicles, the benefits would soon spread throughout the entire light vehicle fleet. This argument rests upon the following factors:

- relative to passenger vehicles manufactured in 1964-69, the risk of death or serious injury in tow-away crashes has halved for drivers of vehicles manufactured in 1991-98⁹. In terms of crashworthiness, current vehicles, as a group, are twice as safe as vehicles manufactured some thirty years earlier
- since 1986, the majority of new cars in Australia have been sold as fleet vehicles – with Ford and Holden each selling almost three-quarters of their new cars to fleets⁸. (While the distinction between private and fleet purchases is not always straightforward, in deriving these statistics, fleet vehicles were defined as *vehicles over which a business has some degree of influence in their selection and operation*).

The crash reduction benefits that would result from a more modern, more crashworthy vehicle fleet are indicated by the following factors:

- currently the safest models have less than one-half the estimated risk of death or serious injury in a tow-away crash, compared to vehicles with average crashworthiness
- the least safe models have more than double the estimated risk of death or serious injury in a tow-away crash, compared to vehicles with average crashworthiness
- the least safe model has more than five times the estimated risk of death or serious injury in a tow-away crash, compared to the safest model⁹.

3. CURRENT POLICIES AND PRACTICES IN AUSTRALASIA

Australia's National Road Safety Strategy 2001-2010¹⁰ recognised that improved vehicle design has led to improved crashworthiness, but made no explicit mention of fleet safety policy as a means to ensure a greater spread of crashworthy vehicles. However, the companion National Road Safety Action Plan 2001 and 2002¹¹ details the role that improved fleet safety management can play in both vehicle purchase and vehicle usage. Recommended measures pertinent to the light vehicle fleet include the need to:

- develop resource material to support training on safe road use within workplaces
- develop and achieve significant adoption by business and government of a safe fleet policy comprising appropriate vehicle safety measures
- develop a safe driving policy for business and government employees, including recommended approaches to avoiding speeding, drink driving, fatigue and drug-taking
- foster sponsorship arrangements for road safety initiatives.

Many jurisdictional strategy plans also recognise the importance of a sound fleet safety policy. New South Wales' Road Safety 2010, for example, states:

The Government will ensure that all vehicles purchased or leased by State government bodies provide the highest practicable levels of protection for their occupants and other road users. This will not only ensure maximum safety for these fleets but will also provide a pool of safer vehicles for future used car buyers. The Government will also encourage purchasing policies amongst leading private sector fleet operators to further increase the usage of safer vehicles.

The Land Transport Safety Authority in New Zealand has also recognised the importance of this issue by co-sponsoring with the Accident Compensation Corporation (ACC) a publication, aimed at fleet managers, outlining the key components of a fleet safety policy¹². Components include: safe vehicle purchasing; regular vehicle maintenance; driver training and education, particularly in targeting risk factors such as fatigue, speed, drink-driving and seat belt use; incentive schemes for safe driving; and the incorporation of driving policies into occupational health and safety principles.

4. A REVIEW OF THE RESEARCH

4.1 Examples of fleet safety programs

The growing recognition of the potential benefits of improved fleet safety has resulted in the development of many light vehicle fleet safety programs around Australia and internationally. The individual components of these programs may be grouped into the following categories⁸.

- fleet safety guidelines – an early example in Australia being the Fleet Safety Manual produced by the Federal Office of Road Safety (FORS) in 1995¹³. The document was directed at workplace managers and provided a series of tips aimed at improving work-related driving. Since then most other Australasian jurisdictions have produced equivalent or related publications, for the same audience
- driver selection and induction procedures – whereby encouragement is given to ‘safe driving’ as a criterion in job selection or, conversely, non-selection of unsafe drivers. The inherent difficulties of validly implementing this strategy are obvious
- vehicle selection – arguably the key area in fleet management, as the purchase of vehicles equipped with the maximum number of safety features is likely to have both direct and flow-on benefits. (One list of possible safety features is given in Table 1)
- driver training and education – some emerging positive evidence notwithstanding (see the following section), driver training generally has a poor road safety history in terms of crash reductions. Nonetheless, there remains a widely-held belief in the community that workplace driver training should produce safety benefits. In addition, the FORS Fleet Safety Manual points to a range of non-safety benefits: increased fuel efficiency; reduced maintenance costs; reduced insurance premiums arising from specialised training and public relations considerations¹³
- driver management – with the need to avoid unrealistic scheduling being a key component⁸. Other management options which may have safety benefits include: clear specification of responsibility for vehicle maintenance; mandatory reporting of all crashes, near-misses and safety-related incidents; disciplinary policies for driving infringements; monitoring of fuel consumption (as fuel efficiency may be related to safe driving) and restrictions on driving excessive hours and on night-time driving
- incentives and disincentives – examples include¹²: rewards for a given number of years with no at-fault crashes; various forms of penalty, including disciplinary action for infringing fleet safety policies; maintaining driver profile systems so that consistently poor-performing drivers are penalised and taking driving history into account when deciding bonuses.

In addition, FORS urged workplace managers to establish and maintain a crash-reporting system¹³. Crash reports can serve a range of purposes, foremost among them being the identification of crash patterns (whether per individual driver or for the entire fleet), and the subsequent identification of intervention priorities and crash countermeasures.

Table 1: Recommended safety-related features when purchasing vehicles¹⁴

<p>Mandatory requirements, passive safety: Highest possible score in ANCAP crashworthiness test (or equivalent) Highest possible score in real-life crashworthiness rating Dual front airbags Side air bags at least in front + head protection 3-point seat belts in all positions – with at least front belts with pre-tensioners Head restraints for all positions Kerb weight 1300-1700 kg, not sports utility vehicle, van or off-road vehicles If a station wagon or hatchback, vehicle to be equipped with a cargo barrier.</p> <p>Highly desired requirements, passive safety: Anti-whiplash system at least for front occupants Load limiters for seat belts Seat belt reminder system Proven pedestrian protection</p> <p>Mandatory requirements, active safety: Anti-lock braking system Speed alert system</p> <p>Highly desired requirements, active safety: Intelligent speed alert system Alcohol interlock Automatic head lamps</p>
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NOTE: These aspects are not necessarily mutually exclusive, for example, 'highest possible score in real-life crashworthiness rating' will, itself, depend upon a number of other factors listed in the table.

The cost-effectiveness of many of the individual features has not been determined.

4.2 Empirical evidence to support the association between improved fleet safety and reduced crashes

A literature search failed to identify any studies which showed a direct association between the introduction of a comprehensive fleet safety policy and work-related crash reductions. Table 2 shows, however, the estimated safety benefits of the main fleet safety components, based on a review of the available research evidence.

Table 2: Likely safety effectiveness of fleet safety programs⁸

Type of initiative	Effectiveness
Fleet safety guidelines	Unknown
Driver selection and induction	Unlikely to have a significant effect
Selecting safer vehicles	Likely to be effective
Driver training and education	Some specific programs may be effective
Driver management	Realistic scheduling may be effective
Incentives and disincentives	Incentives may be effective, rewards are likely to be ineffective, and the effectiveness of disincentives is unknown

In addition, a number of studies were found that showed crash savings associated with individual features of fleet safety, particularly in regard to safe vehicle features. Safety ratings for the features specified in Table 1 are shown below, based broadly on a recent Monash University Accident Research Centre report¹⁵.

Table 3: Recommended safety-related features when purchasing vehicles¹⁴ and estimated safety ratings.

Vehicle safety features and safety ratings	
Mandatory requirements, passive safety:	
Dual front airbags	not quantified, considered highly effective
Side air bags at least in front + head protection	4 points
3-point seat belts in all positions – at least front belts with pre-tensioners	3 points
Head restraints for all positions	3 points
Kerb weight 1300-1700 kg	3 points
Cargo barrier (station wagon or hatchback)	2 points
Highly desired requirements, passive safety:	
Anti-whiplash system at least for front occupants	4 points
Load limiters for seat belts	3 points
Seat belt reminder system	4 points
Proven pedestrian protection	3 points
Mandatory requirements, active safety:	
Anti-lock braking system	2 points
Speed alert system	not quantified, considered effective
Highly desired requirements, active safety:	
Intelligent speed alert system	not quantified, considered effective
Alcohol interlock	not quantified, considered effective
Automatic head lamps	2 points

N.B.: 1 point = shown or believed to have a low potential effect on reducing injuries/fatalities
 2 points = demonstrated to reduce injury/fatality risk by more than 10% for appropriate crash types
 3 points = demonstrated to reduce injury/fatality risk by more than 20% for appropriate crash types
 4 points = demonstrated to reduce injury/fatality risk by more than 40% for appropriate crash types
 5 points = demonstrated to reduce injury/fatality risk by more than 60% for appropriate crash types

Table 3 should be regarded only as a guide to vehicle safety features and it needs to be recognized that new safety technologies are continually being released onto the market (for example: electronic stability control and intelligent speed adaptors).

Looking beyond vehicle aspects, there are other promising fleet safety components, including workplace driver training¹⁶. A sample of drivers from the Swedish telecommunications company Televerket was formed into five groups. One group underwent non-traditional ‘Insight’ training; one group was exposed to a series of information sessions on safe driving; another formed a set of discussion sub-groups covering road safety problems and solutions; the fourth group was offered a monetary bonus for safe driving, and the fifth group acted as naïve controls. Each group contained around 900 drivers. The training, discussion and bonus groups all demonstrated reduced crash risks – with the training and discussion measures proving to be the most effective overall (based on reductions in both crash frequency and crash cost).

5. POLITICAL, SOCIAL AND OTHER FACTORS

The evidence suggests that safety has not been a paramount concern to fleet purchasers, who have been largely guided by operational needs and budget. Although even standard vehicles are increasingly including more extensive safety features, it remains that buying a safer vehicle often entails additional initial cost. Too often, fleet purchasers decide upon the cheaper alternative.

While the promotion of safer vehicles is currently occurring on a number of different fronts, it is likely that fleet purchasing decisions are best influenced through three main strategies. First, there is the possibility of greater involvement of occupational health and safety (OHS) personnel in fleet decisions generally and vehicle purchases specifically⁸. OHS statutes impose a strong and explicit duty-of-care upon employers and self-employed persons to provide a safe working environment and safe working conditions, which includes work cars and work-related travel. This duty-of-care extends to protecting, as far as practicable, the safety of other members of the public who may be in contact with employees and self-employed workers. To date, however, in at least some jurisdictions, there seems to be little communication between OHS personnel and fleet managers⁸.

The second strategy relates to providing economic incentives to select safer vehicles. This approach is consistent with the recommendation in the National Road Safety Action Plan 2001 and 2002¹¹, to foster sponsorship arrangements for road safety initiatives in the context of improving fleet safety. Also as part of this strategy, there is the need to develop stronger evidence for fleet managers, attesting to the direct economic benefits of safer fleet purchases. Austroads is currently funding a project to meet this objective, whereby fleet vehicle crashes will be analysed to estimate the savings had improved vehicle safety features been present.

Failure to respond more adequately at either of these levels may well prompt a third strategy for encouraging safer vehicle purchases: litigation. Car hire companies whose vehicle purchase policies do not allow clients a reasonable choice of safety features, or firms which require workers to use vehicles offering reduced protection, may feasibly be held liable in the event of injury-producing crashes.

Success in establishing safety as the leading priority in vehicle purchase policies may also spread into other areas of fleet safety, including safer management practices, especially the acceptance of more realistic scheduling, and reduced emphasis on getting the job done, even if at some safety cost¹⁷.

As a final point, a major factor underpinning the limited responses made to date to fleet safety, is the lack of recognition of the problem. Mass crash databases do not include 'purpose of journey' as part of standard collection procedures and, as a consequence, the amount of work-related casualties occurring on the road in regard to the light vehicle fleet can be only broadly estimated¹⁷. If governments and businesses are to treat fleet safety as a priority, the issue needs to be better measured and promoted.

6. CONCLUSIONS

Improved fleet safety policies, especially, increased emphasis upon vehicle crashworthiness in purchasing policies, will lead to a substantial reduction in Australasia's road toll. This will come about partly through a reduction in crashes arising from work-related travel and, more importantly, through the spread of more crashworthy vehicles throughout the whole driving population. However, there are short-term economic barriers – especially fleet managers' reluctance to purchase more expensive, safer vehicles - to the widespread development of safer fleet policies which need to be targeted by national and State governments.

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