

# IMPROVING WORK-RELATED ROAD SAFETY IN NEW ZEALAND

## A RESEARCH REPORT

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## **SUMMARY**

Work-related road safety remains a significant risk faced by New Zealand employers and employees. There are organisational, business, legal and cost implications. The AA Driver Education Foundation in New Zealand, and several government and industry agencies, invited Dr Will Murray to run a series of risk management workshops on work-related road safety during October 2005, to identify how to improve occupational road safety in New Zealand.

The workshops were hosted in Auckland, Wellington and Christchurch. Representatives from industry and government attended. The workshops focused on why work-related road safety in New Zealand is important for both government and industry.

This report focuses on several areas:

- The extent of the work-related road safety problem in New Zealand
- The main contents of the workshops, including application of the WIPE, Haddon Matrix and PROACTIVE models at the organisational level
- Participant pledges which form a list of useful ideas for audit and improvement
- Government-level opportunities and initiatives in New Zealand
- Recommendations for improving occupational road safety.

This report provides a comprehensive review of, and guidance for the development of work-related road safety in New Zealand, based on the outcome of Dr Murray's research. It is designed to assist in the development of fleet safety policy for government and industry.

## INTRODUCTION

In New Zealand, government and industry are increasingly focussing on occupational road safety<sup>1</sup> in their own fleets. It emerged in 2001 that Government Ministers' cars were involved in 12 crashes during the first three months of 2001 (Milne 2001).

### Your safe driving policy

The New Zealand Land Transport Safety Authority (now Land Transport New Zealand) released 'Your Safe Driving Policy' to show fleet operators how to develop and implement safe driving policies. It covers the following areas:

- How a safe driving policy can save money
- Seven steps towards a safe driving policy
- The responsibilities of management and staff
- The key issues every policy should address
- Descriptions of driver training courses
- Information on vehicle safety features
- A workbook and floppy disc to help implement a customised policy.

The guide has helped organisations develop their own driving policies or update existing ones.

Land Transport New Zealand's guide to vehicle safety covers the following areas:

- Active safety crash prevention features including tyres, brakes, lights/windows/mirrors, steering/traction, handling/stability, seats, air-conditioning, and warning devices
- Passive safety features, including occupant protection such as crush zones and safety cages, frontal impact protection, side impact protection, size of vehicle, safety belts, air bags, seats, head restraints, safe vehicle interiors, load restraint and fire safety.

The guide is available for download from [www.ltsa.govt.nz/vehicle\\_safety/safer\\_car/intro.html](http://www.ltsa.govt.nz/vehicle_safety/safer_car/intro.html)

### HSE Act 1992

Work-related road safety has also increased in importance because of an amendment to the Health and Safety in Employment Act in 2002 see [www.ltsa.govt.nz/commercial/safe-driving/introduction.html](http://www.ltsa.govt.nz/commercial/safe-driving/introduction.html) which clarified that people who are mobile when they work are covered by that Act. The Land Transport Amendment Act (2005) continued the regulation of heavy vehicles, putting in place a Chain of Responsibility framework. It extends liability from the driver to include others in the transport chain who should have acted to prevent an accident or offence, but did not. It applies to driving hours, log books, speeding by commercial vehicles, weight limits, licences, load security and dangerous goods.

### Data issues

There is inadequate data on the extent of the work-related motor vehicle crashes.

- The Crash Analysis System (CAS) is an integrated computer system that provides tools to collect, map, query and report on road crash and related data. The Land Transport New Zealand website ([www.ltsa.govt.nz/research/toll.html](http://www.ltsa.govt.nz/research/toll.html)) posts daily and weekly fatalities. Ministry of Transport (MoT) maintains and analyses road traffic accident data and publishes both monthly and annual statistics on its website ([www.transport.govt.nz/research/](http://www.transport.govt.nz/research/)) and in hard copy. No information is available on

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<sup>1</sup> Note that the terms occupational road safety, work-related road safety and fleet safety are used interchangeably throughout this report.

'Purpose of journey', but incidents involving obvious occupational vehicles, such as trucks and buses, can be identified.

- Health and Safety data in New Zealand does not cover on-road incidents. However, the Department of Labour suggests that as many as 20 of the 70 annual work-related fatalities could involve vehicles on sites (Hodder 2005).

This lack of data means research on work-related fatal traffic injuries undertaken by the Environmental and Occupational Health Research Centre was based on coronial files (IPRU 2003, McNoe et al 2005). It identified that work-related traffic fatalities contributed to 29 percent of all fatal injuries in the workplace in New Zealand during the time period studied. The overall rate of working fatalities was 1.1 per 100,000 workers, and for commuting fatalities the overall rate was 0.9 per 100,000 workers. Fatalities were predominantly male. Notable contributing factors included exposure, speed, lack of occupant restraints and fatigue. Work-related traffic fatalities comprise the country's largest single category, and a sizeable proportion of, work-related deaths. They conclude:

- There needs to be greater awareness and co-ordination of the issues through both Government organisations and private industry.
- More appropriate interventions need to be developed to lower risk, build databases and benchmark outcomes.
- Incident prevention systems need to be developed in a more co-ordinated and structured manner.
- Training/prevention measures need to be agreed upon collectively and standardised.
- An incident investigation process needs to be developed, with particular emphasis on root cause analysis.

### **Vehicle fleet management workshops**

One-day management development workshops were developed by the AA Driver Education Foundation [www.aa.co.nz/def/AADEF%20Workshops.pdf](http://www.aa.co.nz/def/AADEF%20Workshops.pdf) with support from several government agencies and industry organisations, such as Exxon Mobil and Toyota NZ, to begin to address these issues.

The workshops took place in Auckland, Wellington and Christchurch during October 2005. They examined the 'WHY and HOW' of improving work-related road safety, within the framework of the Haddon Matrix and the risk assessment-led PROACTIVE model.

After these industry workshop sessions, several key agencies in New Zealand, including the AADEF, ACC, New Zealand Police, Land Transport New Zealand, Department of Labour, Road Transport and Logistics Industry Training Organisation and Ministry of Transport undertook a joint discussion workshop. This workshop aimed to identify collaborative approaches to move their combined occupational road safety agenda forwards. The focus of the workshop was on definitions, data collection and research.

The remainder of this report focuses on the outcomes from all these workshops. It recommends a series of industry and government-level actions for the effective development of work-related road safety in New Zealand.

## **WHAT IS WORK-RELATED ROAD SAFETY?**

Work-related road safety includes anyone driving for work, irrespective of vehicle ownership. In legal terms, it excludes commuting to a normal place of work, in most jurisdictions around the world. It is acknowledged, that such commuting losses can still cause major problems to individuals, industry and society.

Work-related road safety operates on two levels, both of which are important for government organisations:

1. Macro/governmental/policy level laws, policies, initiatives and enforcement
2. Micro/organisational/operations, policies and programs by individual organisations.

## **WHY IS WORK-RELATED ROAD SAFETY IMPORTANT FOR GOVERNMENT?**

Transport safety statistics [www.transport.govt.nz/motor-vehicle-crashes-in-new-zealand](http://www.transport.govt.nz/motor-vehicle-crashes-in-new-zealand) and [www.ltsa.govt.nz/research/toll.html](http://www.ltsa.govt.nz/research/toll.html) show that there are around 400 road fatalities each year in New Zealand. It is not known how many of these are work-related because 'purpose of journey' data is not available. Data from the UK and Australia suggests that up to a quarter or a third of all road fatalities may be work-related.

Australian data shows 58 percent of work-related fatalities involve driving or commuting to work or incidents on work sites. Recent Health and Safety in Employment Act amendments place a duty on employers to train employees to be safe in the public road environment, as it is now a workplace.

Work-related road safety offers an opportunity to reduce road safety fatalities and injuries and to target a 'receptive' audience through policy and programs. For this to occur it would be necessary to add a 'purpose of journey' field to the road safety data collection process.

Government has the capability to lead by setting a good example in work-related road safety research and interventions. The Government's own fleet and workers may be responsible for a significant number of total traffic movements and crashes in New Zealand each year.

This series of workshops provided a catalyst for ongoing collaboration and co-operation to progress workplace driving safety in government and private motor fleets.

This is consistent with the Road Safety to 2010 Strategy implementation and extends the safety message of the social and environmental impacts of work-related road safety to the wider community.

# THE IMPORTANCE OF WORK-RELATED ROAD SAFETY

## Societal factors

Data on the true extent of the employee-driver effect on road safety is limited, because few jurisdictions around the world (including New Zealand) maintain any 'purpose of journey' information. The best data currently available is for Queensland, where at least 16 percent of hospitalisation crashes and 24 percent of fatal crashes over the period 1998-2002 involved someone driving for work. This issue of 'purpose of journey' data is considered in some detail during the remainder of the report.

Figure 1 – Societal reasons to improve work-related road safety (Source: Murray et al 2002)

1. Work-related vehicles are about 30 percent of registered vehicles in New Zealand (including 15 percent of cars).
2. Work drivers travel about three times the distance of the average private motorist in New Zealand (30,000 compared to 10,000 kilometres per annum).
3. Business travel accounts for about a third of all travel in New Zealand; over half if commuting to and from work is included.
4. Over 50 percent of new vehicles in New Zealand are initially purchased for commercial purposes. Most of them will be integrated into the wider vehicle fleet within two to three years. Therefore, the safer they are, the better it is for New Zealand society in general.
5. IPRU (2003) research identified that work-related traffic fatalities make up almost a third of fatal injuries in the workplace in New Zealand.
6. Land Transport New Zealand data shows that obvious work vehicles, including trucks and buses, are involved in a significant number of the road fatalities in New Zealand each year.

Clearly there is a range of macro, societal or government-level reasons why work-related road safety is important to New Zealand. There is also a range of micro or organisational business, legal and cost reasons why it should be taken seriously.

## Business factors

From an organisational or business perspective there is a clear link between benefits to safety, quality, customer service, efficiency and the environment by getting things right first time, achieving cost savings through better fuel efficiency and reduced asset wear and tear. Work-related road safety planning offers marketing, business development, corporate social responsibility, staff well-being and brand enhancement opportunities. At a simple level, it is better for your public profile to be in the news for promoting safety, or winning a safety award, than it is to have to suppress the outcomes of a major incident related to your business operation.

A PROACTIVE safety program can keep an organisation ahead of, and protected from, regulations and legal requirements. Proactive organisations shape and lead forthcoming regulations, giving them a competitive advantage in being ahead of reactive organisations. Many companies have used 'safety' as part of their business development process, and by promoting their safety systems to others.

## Legal factors

The importance of the Occupational Health and Safety regulations, duty of care and chain of responsibility is increasing in the transport and road safety sectors. In the heavy truck sector, in particular, organisations are increasingly being forced to change their practices under the

requirements of chain of responsibility regulations. These regulations make consignors, packers, loaders and customers, in addition to the drivers and transport suppliers, legally accountable for offences that they have contributed to, or encouraged. Although chain of responsibility does not currently apply to light vehicle fleets, it sends a clear message to organisations that require their staff, or those of their contractors and sub-contractors, to drive for work purposes.

Organisations operating light vehicles have legal obligations and a duty of care, under Department of Labour occupational health and safety regulations. These obligations are to provide a safe and healthy workplace, including the safe operation of all vehicle types (including trucks, buses, vans, four wheel drives and cars). Legally, vehicles are considered as part of the workplace in the New Zealand jurisdiction. The Health and Safety in Employment Act, 1992, is the reference statute [HSE]. Its 2002 amendment establishes the generic provision that a vehicle may be regarded as a place of work. This means that there is a requirement to ensure ways they are used do provide a working environment that is safe, and has minimal risk to health. To date, however, this has not been strongly enforced because the Department of Labour has not treated occupational driving as a priority. This may be about to change, however, as the Department of Labour appears to be focusing more attention on transport and there have been increasing calls for work-related road safety to be managed under an occupational health and safety framework by the Department of Labour. This trend is also emerging in the UK, USA and Australia.

### **Cost factors**

The cost implications of work-related road incidents can be massive, with increases occurring in insurance costs, ambulance-chasing and personal injury costs. Workplace injury costs are met 40 percent by the employee, 30 percent by the employer and 30 percent by the community as a whole.

One company recently had damage costs of \$3 million per year. Its hidden costs were approximately as much again and its return on sales figure was 8 percent. This meant that just to pay for the \$3 million of 'metal bashing costs' it had to generate \$75 million in revenues. Over four years this equates to \$12 million in bent metal, \$24 million in total costs and \$300 million in revenues required in order to pay for it.

Workshop participants gave the following reasons for taking a proactive approach to work-related road safety, 'protecting employees and reducing at-work vehicle crashes being a priority': 'safer driving leads to safer culture, reduces risks – for employers and employees', 'moral responsibility', 'keeps/helps attract employees', 'reduction in downtime, costs savings, legal requirements', 'client safety', 'brand image', 'right thing to do' and 'safety trends'.

Other participants highlighted reasons why they felt work-related road safety is not a priority in New Zealand: 'waiting for clear legislation', 'inconsequential issue compared to making a living', 'lack of enforcement', 'costs too much', 'ignorance of benefits', 'vehicles are insured', 'time restraints', 'vehicles have lots of safety features', 'we're not big enough', 'waste of time', 'we're too big', 'casual workers cause the problems', 'apathy', 'it's the driver's responsibility – not the organisations', 'other road users' and 'lack of infrastructure'. This is useful information for government policy agencies to work with

## DATA

Data is a recurring theme for everyone concerned with improving work-related road safety in New Zealand. Two particular problems are that no 'purpose of journey' data is available at the national level in New Zealand, and there is an under-reporting of road crashes. National road safety data tends to be good on fatalities, poor on injuries and almost non-existent on 'damage only' incidents. It is also true that at the lower end of the severity scale, many corporate crashes get 'lost' somewhere between the police, insurers, organisations and government agencies – particularly in cases where no workers' compensation (ACC) claim is involved.

There may be an argument for reviewing the New Zealand Occupational Health and Safety data collection system to include on-road incidents, and for the transport safety data collection system to include 'purpose of journey' information in relation to each crash recorded. Figure 2 shows some sample 'purpose of journey' data from the UK.

Figure 2 - Sample purpose of 'purpose of journey' data from the UK

<b>Purpose of Journey</b>	<b>Percentage of trips</b>
Driving as part of work	27
Driving to and from work	26
Life and network maintenance (e.g. shopping, going out)	18
Holidays and weekends away	11
Life enhancement activities (e.g. hobbies, pleasure)	10
Ferrying kids	5
Car as load carrier	3
Total	100

Having such good data would mean road safety interventions could be targeted much more on the basis of actual risks. The more information that is available related to purpose of journey, the more agencies and enterprises are able to focus initiatives directly at the issues substantiated by data collection.

Other data issues worth exploring in relation to work-related road safety in New Zealand include the ACC's compulsory insurance data, and the extent to which work-related crash claims can be identified; data from the comprehensive/private insurers; hospital data; and, the integration and standard coding of data from all available sources: national road traffic accident data and statistics, Department of Labour, ACC, other insurers and hospitals.

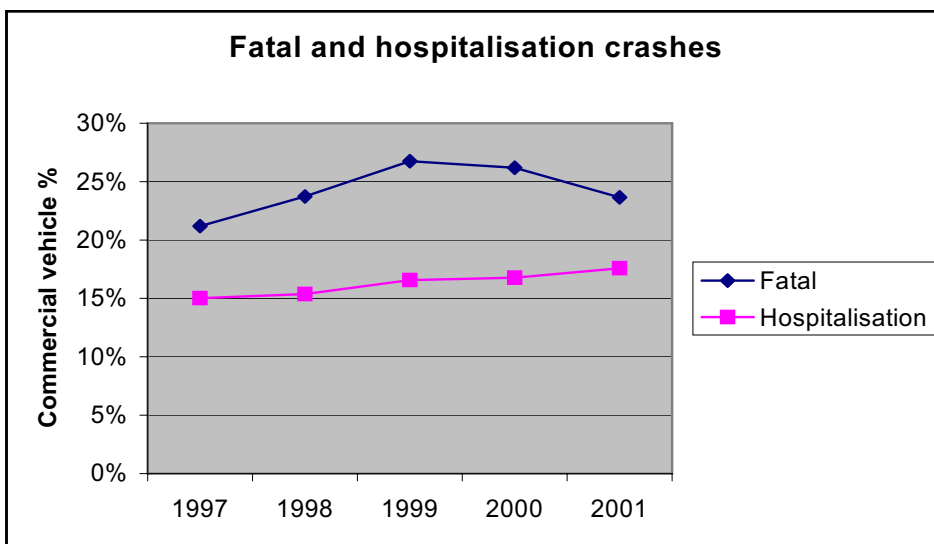
## PURPOSE OF JOURNEY

In New Zealand there is currently no mechanism to collect and understand the **purpose of the driver's journey** at the time of a crash. This means that countermeasures cannot be effectively targeted on the basis of need. To show the importance of such information, a detailed analysis of serious casualty crashes involving one or more commercial vehicles of all types (as determined by the attending police officer) was undertaken in Queensland for the five years from 1997 to 2001. This data was updated and analysed further by Murray (et al 2002). It is summarised in Figure 3.

This analysis was possible because the Queensland Traffic **Incident Recording System** (TIRS) included a question on 'Commercial Usage – yes or no'.

Based on this analysis, approximately a quarter of Queensland's fatal crashes and a sixth of hospitalisation crashes involve at least one commercial vehicle. The higher involvement of commercial vehicles in fatalities than hospitalisations is probably due to the size of heavy vehicles, the distances travelled and the high speeds associated with highway driving.

Figure 3 - Fatal and hospitalisation crashes in Queensland involving commercial vehicles



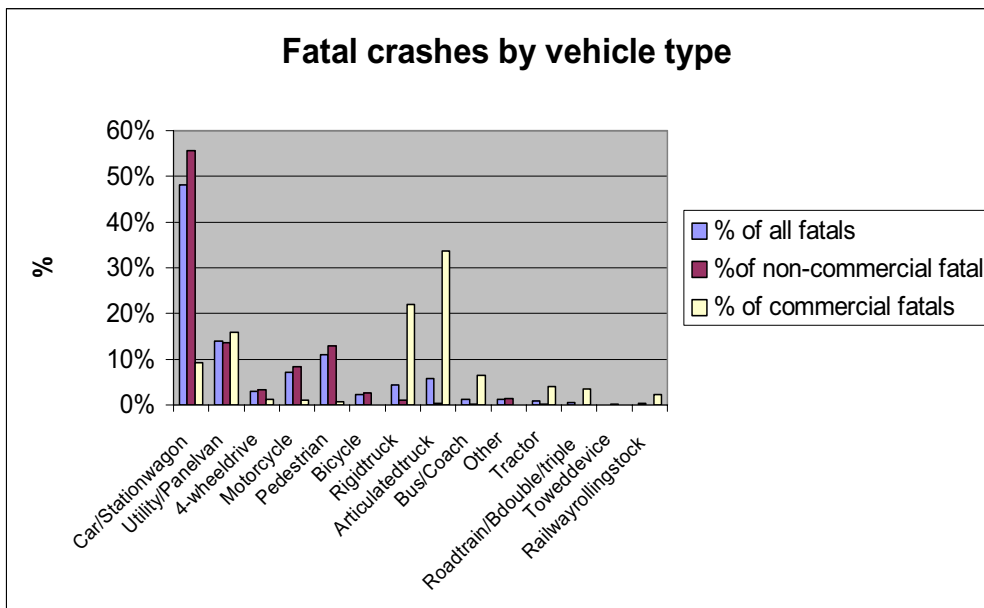
(Source: Queensland Transport crash database)

This data generates a major concern because most Australians are road dependent for work. The data may underestimate the problem of work-related driving, however, as there are limited resources to identify those crashes in which one or more of the vehicles was driven for work-related purposes.

Figure 4 compares commercial and non-commercial vehicles based on all the fatal crashes over the 5-year period from 1997 to 2001. Clearly, trucks are a high-risk group, being involved in over 50 percent of fatal work-related crashes. Interestingly, there is growing evidence from around the world (including the ATSB in Australia and the Automobile Association in the United States) that trucks are at fault less than other road users, who would benefit from more advice on sharing the road effectively with heavy vehicles. The truck data in Figure 4 is likely to be more accurate than that for cars. In the case of cars it is more difficult to identify whether it is a commercial vehicle or not. Further limitations are that there is no 'exposure' information to

relate the data to time on the road, road type or kilometres travelled and the crash database in Queensland has not been linked with the vehicle registration (ownership) database.

Figure 4 – Fatal crashes involving commercial and non-commercial vehicles 1997-2001



(Source: Queensland Transport crash database)

At present, no such data is available for the UK or New Zealand, however both the Queensland and UK governments have recently strengthened the 'purpose of journey' elements of their crash reporting systems. The coding systems applied in each jurisdiction are shown below.

Queensland –New field on the Traffic Incident Recording System (In use since April 2006)

1. Driving to Work (Code 1)
2. Driving as Part of Work (Code 2)
3. Driving from Work (Code 3)
4. Driving to Educational Facility with child/student/self (Code 4)
5. Driving from Educational Facility with child/student/self (Code 5)
6. Life and Network Necessities and Social Activities (Code 6)
7. Life Enhancement Activities (Code 7)
8. Holidays and Weekend Away (e.g. tourism activities) (Code 8)
9. Other, specify ..... (Code 97)
10. Unknown (code 98)

UK – question 2.29 of Police Stats 19 form: Journey purpose of driver/rider (in use since January 2005)

1. Journey as part of work
2. Commuting to/from work
3. Taking pupil to/from school
4. Pupil riding to/from school
5. Other/Not known

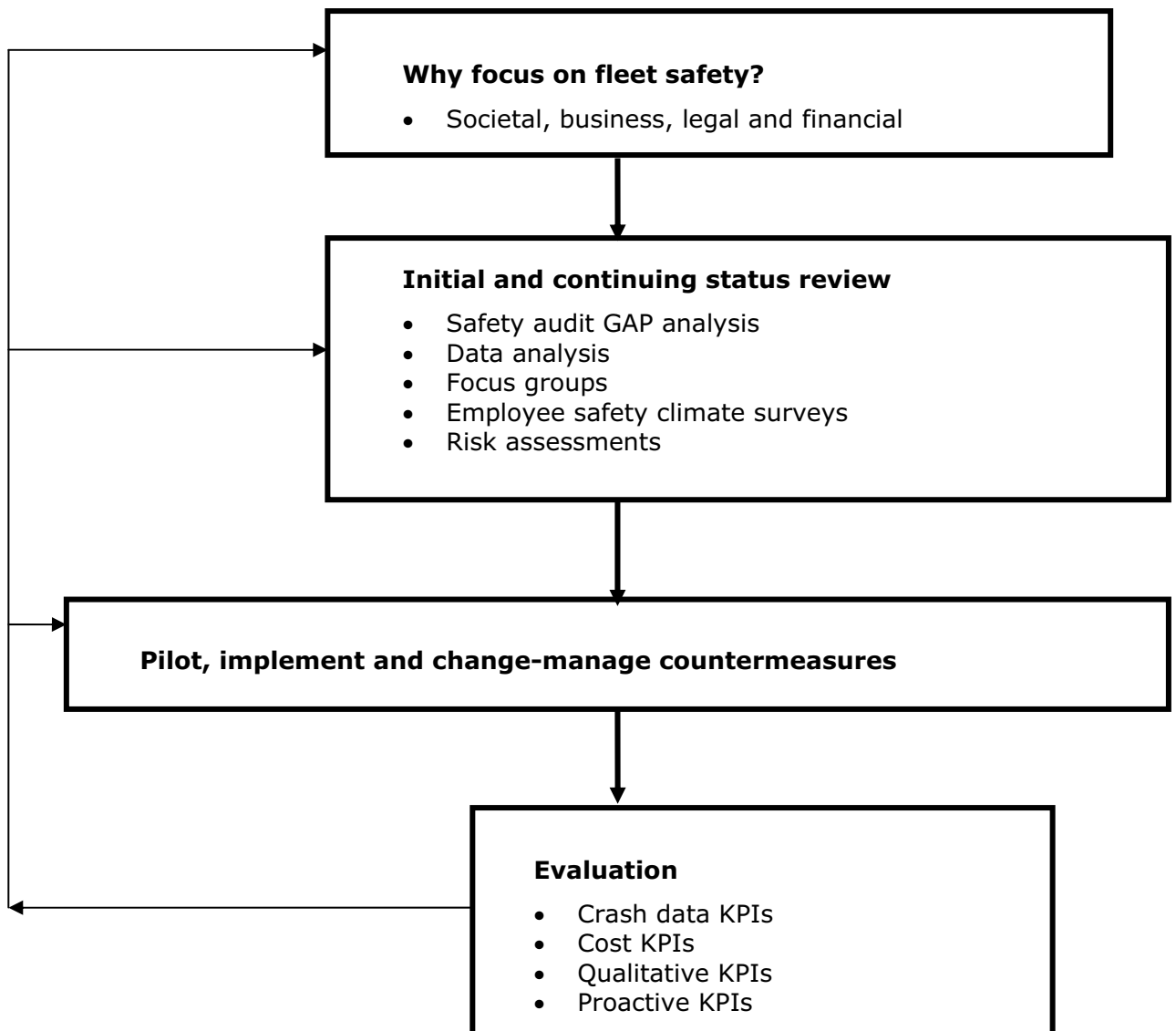
The first set of data based on these Stats 19 codes is due for publication during September 2006. A similar approach to 'purpose of journey' data should be considered for New Zealand, although data quality and police training are key success factors. More detail is available from Dr Will Murray.

## THE WIPE MODEL

Research suggests that work-related road safety is likely to be improved by 'the introduction of an integrated set of risk assessment-led measures based on the safety culture within the organisation'. For this reason the workshops focused on applying the WIPE and PROACTIVE models.

Figure 5 shows the four-stage WIPE process model designed to achieve this. Each element of it is discussed in the remainder of this paper.

Figure 5 – The WIPE work-related road safety process model



## **RISK ASSESSMENTS**

'Journey risk' assessments allow questions such as 'do we really need to travel, what is the safest practical mode and should we break the journey?' 'Vehicle risk' assessments include pre-purchase vehicle selection, pre- and post-use checks, and high quality maintenance. 'People risk' can be assessed at all levels in relation to safety. 'Site risk' assessments and 'black spot' analysis are particularly useful for organisations with regular trips on the same routes or to the same specific locations. Start, stop and end-points are particularly important locations to risk assess. The status review also allows a series of on-going targets, standards or key performance indicators (KPIs) to be developed and identifies areas for change.

## EVALUATION

To date, the program evaluation element of Figure 5 has tended to be overlooked by many organisations. Monitoring of key performance indicators (KPIs) should be a key component of a work-related road safety program. Best-in-class organisations typically include an appropriate mix of lead and lag, or proactive and reactive, indicators - covering crash data, costs, qualitative achievements (such as awards or PR outcomes) and programs implemented.

### Two case studies

The workshops also contained material from:

A British Telecom in the UK [www.vfrm.net](http://www.vfrm.net)

B Exxon Mobil, which has successfully implemented the following 12 point Global Standard in New Zealand:

1. Management Leadership, Commitment and Accountability
2. Risk Assessment and Management
3. Truck Design and Construction
4. Process Information and Documentation
5. Personnel and Training
6. Operations and Maintenance
7. Management of Change
8. Third Party Services
9. Incident Investigation and Analysis
10. Community Awareness and Emergency Preparedness
11. Operations Integrity Assessment and Improvement
12. Personnel Safety Management.

## **PILOTING AND IMPLEMENTING CHANGE, IDEAS FOR BUSINESS AND POLICY**

As well as being a self-audit tool, the Haddon Matrix in Figure 6 is **a useful framework for classifying work-related road safety improvement countermeasures to be piloted, implemented and change-managed.** Pilot studies at one site, or with one team of drivers, help to evaluate the effectiveness of a program, make appropriate cost trade-offs and develop the process for consultation, implementation and change management of any wider program.

Probably the decision not to travel or to change travel mode would be the safest option listed. Where this is not practical, good journey planning can manage fatigue and specify and monitor the safest routes. Selection, recruitment, induction, assessment and relevant training can all improve driver safety. For vehicles, selection, maintenance and checking are key issues. Risk assessing the road environment is particularly important for developing driver guidelines, improving site layouts, and road design.

Managing the scene is an important part of work-related road safety. Providing organisational support to the driver, making sure drivers use the correct processes and tools (including a camera, first aid kit, bump card and crash report form). Crashworthy vehicles help to reduce employee injury. Using Intelligent Transport Systems (**ITS**) to capture data can support an objective investigation process. Managing the scene also minimises the risk of further incidents and ensures that all the available evidence is recorded.

Post-crash reporting, recording and investigation should identify to fleet managers the key areas for improvement. Journeys should be reviewed alongside driver debriefs, counselling, support and retraining, if necessary. Vehicles should be inspected in detail before repair and ITS data should be used as part of the investigation process. The road or site environment should be reviewed and risk-assessed to identify improvements.

Typically, operational managers have to make a trade-off between focussing time and resources on investigation or their day-to-day operations. Safety and Health practitioners have a duty of care to take a major role in championing, implementing, leading and evaluating this process.

## THE PROACTIVE MODEL

A PROACTIVE model provides a basis for implementing a fleet risk management process. Applying the ideas in the Haddon Matrix fits the PROACTIVE model. This involves:

- **P**olicy – doing it rather than *just* having one
- **R**isk assessments and safety audits
- **O**ccupational health and safety integration
- **A**ssessment and relevant training for managers, supervisors, work schedulers and drivers
- **C**rash investigation, data analysis and corrective action process
- **T**rade off analysis – particularly between operational and safety costs
- **I**mplementation and change management – using the Haddon Matrix as a framework
- **V**ery enthusiastic management Safety Champions
- **E**valuation of quantitative, cost and qualitative key performance indicators (KPIs), on an on-going basis.

Many organisations that have a fleet safety policy rarely do anything to implement it. Only the best organisations live it, breathe it, make it happen and understand the wider trade-offs and relationships with quality, business effectiveness, customer service, environmental sustainability, company image and public relations.

Occupational health and safety structures and approaches provide an excellent framework for improving fleet safety, and will become more important as vehicles increasingly become recognised as workplaces – both in law and in practice. Assessment and auditing should come before any training – to identify needs. Managers, supervisors and work schedulers should be included in training, before drivers.

Detailed claims analysis and investigation allows a better understanding of the extent, costs and treatment of the problem. All fleets are managing their insurance more effectively. Trade-off analysis, implementation and change management skills are all key requirements in improving fleet safety. Evaluation is a vital element in fleet safety – because it lets you see that you are doing the right things – or not. It also helps to justify the cost of change and identify areas for future action to manage occupational road risk.

## THE HADDON MATRIX

Whatever the motivation for focusing on improving work-related road safety, the next step is to gain a detailed understanding of the current situation or 'where are we now?' The Haddon Matrix<sup>2</sup> (Figure 6) is a very useful self audit tool. It is used simply by asking the question 'do we have the following in place?' for each of the statements in the matrix. Analysis of the available data (typically insurance claims) allows the extent and full costs of the problem to be understood. Employee surveys and focus groups allow a consultation, involvement and pledging process to be developed.

Figure 6 – Work-related road safety countermeasures in a Haddon Matrix framework

	Management culture	Journey	Road/site environment	Drivers and managers	Vehicle	Society/community
Pre-crash	Mission statement Policy and procedures Organisational climate tools Management structure Board level champion Quality-led safety committee Safety pledge	Travel surveys Purpose Need to travel Modal choice Journey planning and route selection Shifts/working time	Risk assessments Guidelines Site layouts Road improvement	Selection Recruitment Induction Training handbook Risk assessment Incentives Driving pledge Monitoring Corrective action	Selection Maintenance Checking Intelligent Transport Systems ( <b>ITS</b> ) to monitor	Marketing program Community involvement Safety groups Road Safety Week Conference circuit Media and public relations Safety awards External benchmarking Regulator briefings and involvement
At scene	Emergency support to driver	-	Manage scene	Use known process to manage scene	Crashworthy ITS to capture data	Escalation process
Post-crash	Report, record, investigate and evaluate Change management	Debrief and review	Investigate and improve	Debrief driver. Counselling & support Reassess/ remedial training	Investigate ITS data Vehicle inspection & repair	Manage reputation and community learning process

<sup>2</sup> William Haddon was an American epidemiologist specializing in road traffic injuries. His original focus on the road, vehicle and driver has been extended here to include journey planning, management culture and societal issues.

## MANAGEMENT WORKSHOPS

### Road safety data

Figure 7 shows that the survey participants:

- Operate over 13,300 vehicles, with a further 1,800+ people driving their own vehicle for work
- Represent almost 18,000 people who drive as part of their work
- Employ people who typically commute to work by car (over 80 percent of them)
- Are involved in over 400 crashes or collisions involving human harm and a further 1,559 involving asset damage – at a crash rate of 0.25 per vehicle per annum (i.e. 1 in 4 participant vehicles will be involved in a crash each year)
- Spend over NZ\$1.5 million in fleet claims costs, and a further NZ\$1.6 in hidden costs, such as vehicle downtime. Assuming that the average participant organisation makes a return on sales figure of 10 percent, they (in total) need to generate over NZ\$30 million, just to pay for these costs.

Figure 7 – Exposure, crash and cost data provided by the participants

Question	Total	Average	Max.	Min.	n.	Std. dev.
How many vehicles do you operate (include all types)?	13,357	176	3,000	1	76	369
How many staff drive their own or a funded vehicle for work?	1,832	36	400	-	51	65
How many people drive on work business?	17,961	246	2,000	1	73	437
What % of staff regularly commute to work by car?	-	82%	100%	1%	67	29%
Number of road fatalities or injuries per year?	436	10	200	-	44	37
Number of motor insurance claims per year?	1,559	28	300	-	55	56
Total annual number of vehicle collisions/crashes?	1,995	33	301	-	61	61
What is your annual vehicle collision/crash rate?	-	0.25	2.5	-	61	0.34
Total annual driving near hits?	1,940	78	300	-	25	97
What are your annual motor fleet claims costs (NZ\$)?	1,563,700	57,915	300,000	-	27	87,743
Annual hidden cost on motor fleet claims (NZ\$)?	1,698,000	121,286	800,000	2,000	14	212,252
What are your total fleet safety costs (NZ\$)?	3,261,700	105,216	1,100,000	-	31	212,794

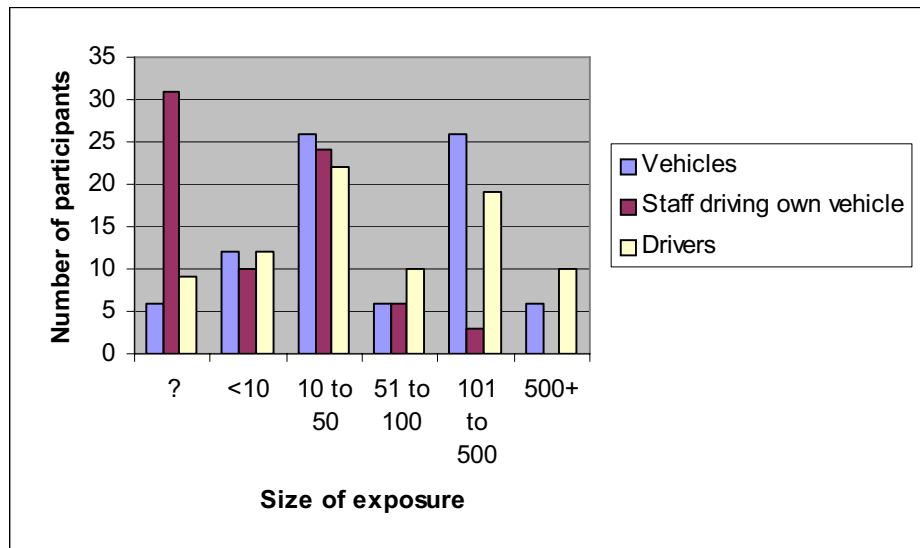
Figure 7 indicates the relatively high standard deviations on some of the data, more detailed analysis should be undertaken.

The number of vehicles operated, number of staff driving their own or a funded vehicle for work and the total number of people driving on work business are the focus of Figure 8. Those driving private vehicles on work business are an important group of drivers, who under the HSE act need to be managed in the same way as drivers using work-provided vehicles. The question mark (?) shows where the participants had no answer to the question.

**A clear starting point for many participants would be building the understanding of the full extent of risk, to allow them to manage it more effectively.**

Figure 8 shows participants who represented a range of fleet sizes, from those with less than ten vehicles to those with more than 500.

Figure 8 – Participant exposure to work-related road safety risks

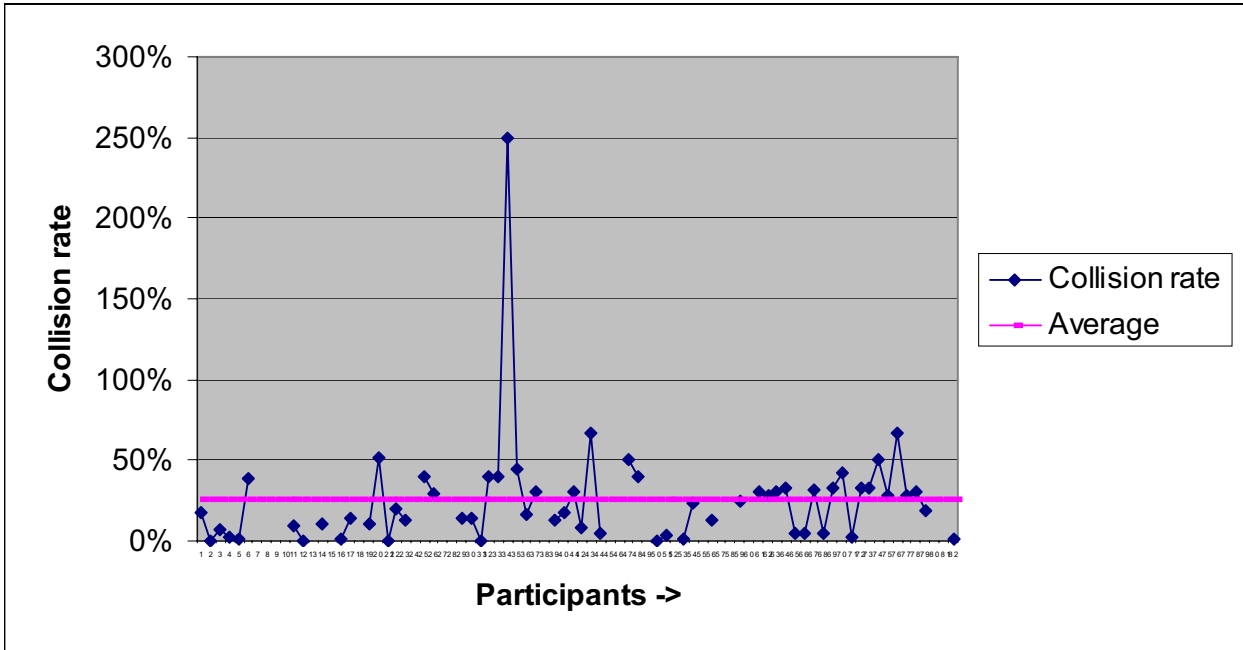


Based on the data provided at the workshop, 25% of participant vehicles will be involved in an asset damage or personal injury causing crash each year.

Figure 9 illustrates this data on a participant-by-participant basis. The only anomaly, with a crash rate of 250 percent, operated a very small fleet of its own, but had lots of owner drivers. When the crashes were related to the number of drivers (rather than vehicles) in this case, the rate was much closer to the average figure.

The 25 percent average figure is in line with similar studies undertaken in other countries, including Australia (Murray et al 2002) and the UK (Murray 2003). Although it should not be seen as an industry standard, it provides a benchmark ratio for organisations to monitor themselves against or to track improvements over time. There are other KPIs that can be used.

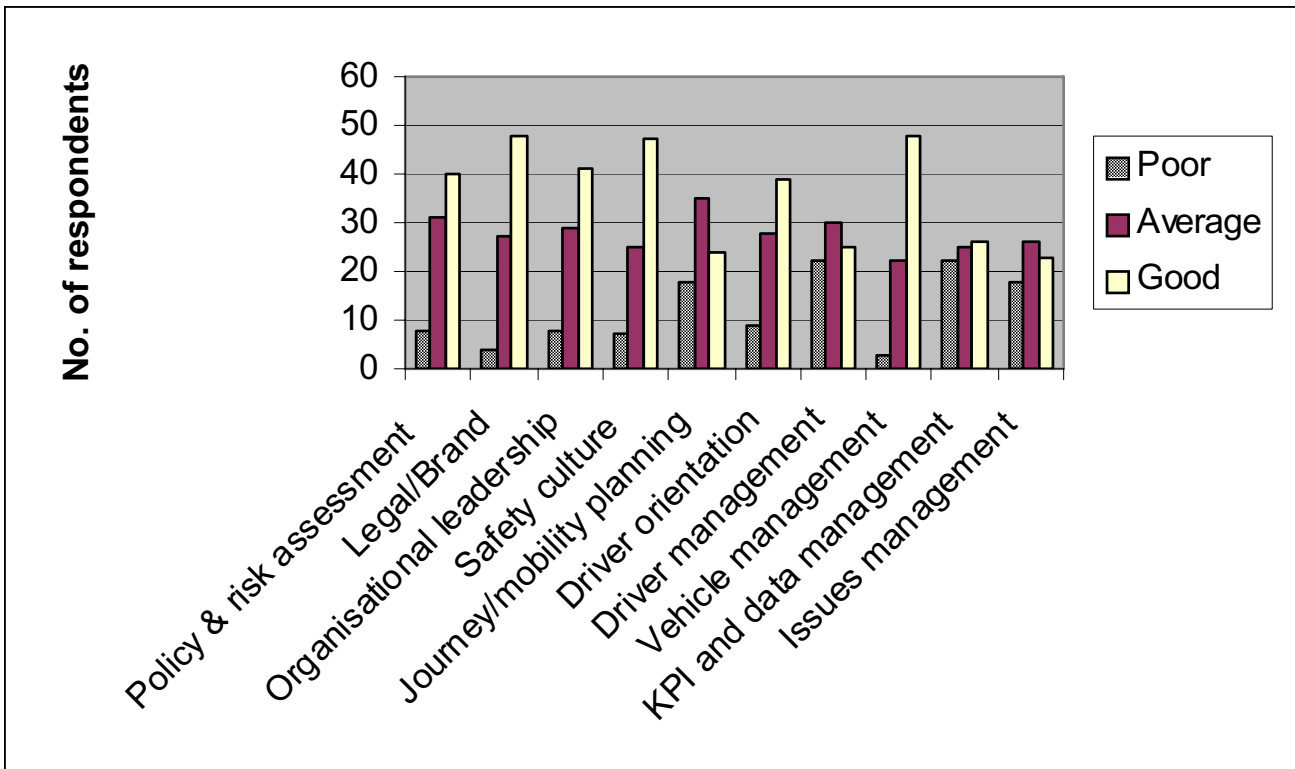
Figure 9 – Crash rates (Crashes per vehicle per annum) by participant organisation



**Existing fleet safety processes**

Participants were asked to audit themselves against the 10 factors shown in Figure 10. The dark grey bars show the gaps identified in their systems.

Figure 10 – Gaps in the participants’ fleet safety processes



## CONCLUSIONS

Work-related road safety is an important issue for government and industry in New Zealand, and offers considerable opportunities for occupational health and safety and road safety improvement. It requires further data/agency integration, policy, research and proactive government and industry leadership.

This report has identified areas for action at two levels:

Government could provide data on the full extent of the work-related road safety problem through better data collection, analysis and interagency collaboration.

Industry needs to build a holistic safety culture, risk assessment-led approach, drawing on international research. This would enable it to manage the risks facing drivers, and vehicles and allow better planning of journeys. The 'WIPE' process, described in this report, provides a proactive, risk-assessment and needs-based approach.

### Limitations

- Work-related road safety data is incomplete and fragmented between the transport authorities, the workplace health and safety and accident compensation agencies, insurers, and the fleets themselves – making it difficult to integrate all these sources of data to gain a true picture of the extent of the work-related road safety problem in New Zealand.
- Much of the information used in the report was only exploratory and based on observations. It also relied heavily on self-reporting of often sensitive information. Only limited crash data has been published from the participating organisations. This means that the material is based on what people say, which may not always be exactly what they do.

Overall, the research on which this report is based can be seen to have further developed the level of knowledge and understanding about work-related road safety in New Zealand, but it is clear that a great deal of work is still required.

### Recommendations for improving work-related safety in New Zealand

- Government agencies need to continue taking a 'whole of government' approach through a cross-agency taskforce to identify the extent of the problem and then working through ways to reduce the risks.
- Government agency research and statistics personnel should monitor the range of data they are collecting and its analysis, and to consider, together with their policy colleagues, new options for carrying out research which might enhance road safety long-term.
- Maximising and linking data sources, including 'exposure' and 'purpose of journey' data.
- Develop relevant safety audit and risk assessment tools to assist organisations to review, improve and manage their performance, as a shared resource between all relevant agencies.

- Assess the link between heavy and light vehicle initiatives. Using existing heavy vehicle systems and applying them to other types of work vehicles, where appropriate.
- Motor vehicle insurance companies should be encouraged to provide risk management services such as best practice safety management systems to fleets.
- Link driver licensing and motor vehicle registration data systems based on a risk targeted control plan, this could enable government agencies and employers to confirm license validity and driver on-road performance.
- Improve the accessibility of the hardcopy New Zealand Road Code.
- Encourage the use of 'route' and 'journey' risk assessments. If employees classify regular journeys and routes in terms of risk, it gives employees an opportunity to plan the safest journey possible.
- Government agencies can manage their own fleets and drivers and 'lead by example'. The government fleet could pilot a health and safety driving policy. The results of the pilot could be used to develop a policy that might be offered to other fleets nationwide.
- Continue a networking process that will hopefully lead to a more formal calendar of regular inter-agency meetings

### **Suggestions for further work**

- Continue initiatives to improve work-related road safety in New Zealand.
- Government and industry work together to encourage the implementation of 'purpose of journey' data. This would allow the full extent of the problem to be quantified. More exposure data on fleet tasks would also be useful.
- Improve the availability and promotion of, as well as access to the New Zealand Road Code in hardcopy as a basic safe driving intervention for organisations and drivers.
- The government agencies responsible for workplace road safety, and insurance companies should work together to ensure better data collection and risk assessment for the effective targeting of countermeasures.
- Individual sectors, agencies, organisations and individuals should work together to allow well evaluated, targeted and needs-based approaches to be developed, based on a detailed integration and analysis of all the available data sources.
- Quantify and promote the full costs and benefits of fleet safety. What are the 'real' costs of crashes? What is the actual impact of safety features on vehicle resale values? How does investment in 'safety' affect other areas of an operation? Does work safety really affect home safety and what are the real benefits of work-related road safety for the wider community? What is the relationship between near hits, asset damage and human harm?
- Review the growth in freight and passenger vehicles, and the over-dependence on roads for transporting people and goods. Explore how such on-road movements can be reduced and the likely impact on the road toll and the environment.

Several of these processes are already underway or planned, but all require further research, funding, policy, enforcement and support from government and industry. The extent of the work-related road safety problem identified in this report would suggest that it would be a very good use of some of New Zealand's road safety, and business improvement research and project management dollars.

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## APPENDICES

### Pre-workshop participant survey

To engage participants, understand the scale of the problem of work-related road safety and identify what processes they have already implemented, the questionnaire shown in Appendix 1 was used. Although not very sophisticated, scientific or in-depth, the survey provides an interesting insight into the work-related road safety exposure, outcomes and processes of the participant organisations. It can also help to guide where initiatives should focus improvement attention.

### Fleet safety workshop – pre-event audit

Before the workshop, please try to answer the following questions – which will help the discussion and help to identify areas for improvement.

#### Questions on your fleet risk exposure and costs

#### *Response*

1. How many vehicles do you operate (include all types)?
2. How many staff receive a car allowance or drive their own vehicle for work?
3. What is the total number of people who drive on work business?
4. What proportion of your staff regularly commute to work by car?
5. How many road safety incidents involving a fatality or injury are your people involved in each year?
6. How many motor insurance claims are your people involved in each year?
7. How many driving near hits are your people involved in each year?
8. What are your annual motor fleet claims costs?
9. What are your annual hidden costs on motor fleet claims?

#### How would you rate your organisation on the following in relation to your motor fleet and employees driving for work?

#### *Good? Average? Poor?*

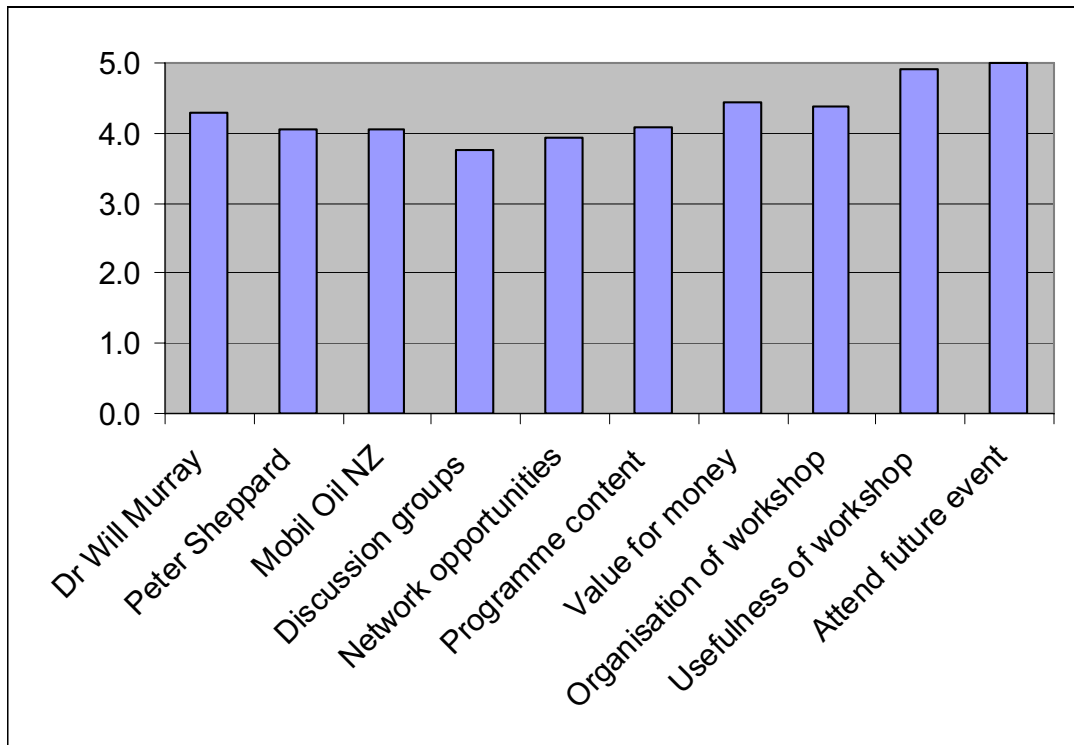
1. Fleet Safety, Health and Environment policy and risk assessments
2. Legal compliance and brand enhancement
3. Organisation, responsibilities clarified, and leadership
4. Organisational safety culture
5. Journey/mobility planning
6. Recruitment, selection and induction
7. Driver monitoring, wellbeing, assessment and improvement
8. Vehicle selection, checking and maintenance
9. Safety/fuel reporting, investigation, recording, analysis, KPI monitoring and evaluation
10. Specific issues e.g. reversing safety, temporary/agency labour, fraud/theft

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## WORKSHOP EVALUATION

The workshops scored well on most elements (1 = poor; 5 = excellent).

Figure 11 – Workshop evaluation data



As well as these 'scores', more detailed and useful feedback and safety ideas were also provided on the evaluation forms. This is summarised below.

### Strengths and weaknesses

The strengths of the workshops as seen by the participants were:

- An excellent starting point for me to get an overall view of what can be done in driver/fleet safety and education.
- Enjoyed Will as a presenter. He packaged and delivered his message clearly and well.
- Excellent workshop, information, topics, speakers, discussion and great value for money.
- Extremely beneficial with broad content. Initiatives were very well received.
- Good collective discussions.
- Important for the Ministry of Transport to be the leader. All government departments should lead by example.
- Informative day - valuable in moving forward with our people safely.
- Key words from the day: 'No blame culture'; 'Nobody gets hurt'; 'It's alright to produce procedures but you must work it'; 'Selective honesty'; 'Walk the talk'; and, 'There is no competitive advantage in safety and health – lets keep sharing!'
- Marvellous value day. I would like to see a follow up in 9 months so people could take a look at the actions they took to assess needs and put in a safety culture program, and what gains they have noticed.
- More of these types of workshops please.
- People are in charge of their own health and safety and need management to acknowledge this.
- The illustration of 'Best Practice' (e.g. Exxon Mobil) was particularly good.

- Thought provoking - Lots of information.
- Variety of discussion - allowed for all organisations' needs to be addressed.
- Very good overall seminar, food for thought about the complexities of the subject.
- Very helpful workshop giving me some ideas and tools to improve road safety in my organization. Workshop was a great networking opportunity.
- Very interesting to compare the attendances to this series of seminars compared to 2002 - we're gradually learning.
- Well run, given size of group.
- Well worth the time spent, with great information and networking opportunities.
- Wide range of support promised by speakers including:  
Successful case studies and risk assessment tools (see [www.virtualriskmanager.net](http://www.virtualriskmanager.net)).

The weaknesses of the workshops were seen by participants as:

- Would have been good to have the NZ Police and emergency services lead a session.
- More factual results for NZ required.
- Obvious knowledge, but in many cases speaking to the 'converted'.
- Ran out of time.
- Some companies don't want or haven't got the information you need to complete to see where they have problems.
- Three seminars in three days showed - it was an ambitious task given the travel. I felt the introduction of Data Brake and Company Vehicle interrupted the continuity.
- Too hot, so get sleepy when it's just a person that doesn't really vary his presentation. Data Brake guys were really excellent presenters. Need more quick breaks and movement.
- Well above the basic level I came for.

### **Fleet safety recommendations**

Most international research and evidence on fleet safety suggests that managers need to lead by example. During the workshops participants were asked what they would like their manager or the organisation to change. A summary of these suggestions follows:

- Analyse data and give positive feedback to staff
- Change some of our employment contracts which would have a positive effect on culture
- Check the safe driving policy and get it rolled out more effectively
- Continue to be very positive in all regards
- Develop a Fleet Safety policy
- Encourage staff to embrace safety policies
- Ensure better communication within the organisation
- Focus on our crash risk and safety culture
- Implement a better vehicle safety policy
- Mandatory checking that driver licences have been renewed
- Monitoring additional fleet KPI's
- Not applicable to our organisation
- Put more of an emphasis on leading from the top by demonstrating good practices and adopting a 'no blame' policy
- Recognise value of reporting near miss incidents
- Support my suggestions for improvement
- Take more management ownership of the risks.

Management need to lead by example and implementing some of the fleet safety suggestions can help develop a **proactive** safety culture within their workplaces.

## Workshop participants

The workshops were attended by 153 participants. This provided a good mix of government and industry organisations, with participants having both operational and safety management backgrounds, participants were from the 85 different organisations listed:

A.G. Walter & Sons	Longford Consulting
AA Driver Training	Lyttelton Port of Christchurch
AADEF	Massey University
ACC	Master Drive Service
Advanced Roadskills	McCarthy & Wilshier Transport
Allied Concrete	McCormick Motors Lincoln
Allied Petroleum	Ministry of Transport
AMS Group	MTA
Bay of Plenty Polytechnic	NJR Int. Chornco
Business NZ	Northpower
Calcon Limited	NZ Army
Caltex NZ	NZ Car Safety
Capital Coast DHB	NZ Company Vehicle
Charter Trucks	NZ Fire Service
Chevon	NZ Police
Combined Owner Driver Association	NZL Group
Commercial Roadskills	NZRT&L ITO
Corrections Dept CIE	Oldfield Group
Corus NZ	Pan Pac Forest Products
Counties Manukau District Health Board	ProDriver Training
Databrake International	Regent Training Centre
DECA Training	Roulston Safety Driving School
Department of Labour	Safeguard magazine
Drivertek Int	Sicon
Dunedin College of Education	Smith & Davies
Environment Canterbury	Southland District Council
Excel Driving Academy	Stuart Drummond Transport
Exxon Mobil	Sureplan
Fleetwise	Tanlaw Corporation
Fonterra	Taranaki District Health Board
Freight Lines	Te Roopu Taurima O Manukau Trust
Fulton Hogan	Timaru District Council
Goodman Fielder	TNL Freighting
Heathstock Haulage	Triple A Driver Training Centre
Heavy Diesel Specialists	Tulloch Transport
Higgins Contractors	Waimea Forest Distribution
Hooker Pacific	Waste Management NZ
Hyundai Automotive	Weltec
Interactive Driving Systems	Williams & Adams
K & S Freighters	Works Infrastructure
Kerikeri Rentals & Buses	
Kokiri Health & Social Services	
Land Transport NZ	
Leaseplan	