

The ABCs of ATVs:  
Factors Implicated in Child Deaths and Injuries  
Involving All Terrain Vehicles on  
New Zealand Farms

Michelle Basham  
Mark Nicholls  
Maxine Campbell

Department of Societies and Cultures  
Faculty of Arts and Social Sciences  
The University of Waikato

2006

This project was funded through  
Child Accident Prevention Foundation of New Zealand  
2005-6 Summer Research Scholarships awarded to  
Michelle Basham and Mark Nicholls

Project Concept and Research Design

Michelle Basham<sup>1</sup>, Mark Nicholls<sup>2</sup> and Maxine Campbell<sup>3</sup>

Research

Michelle Basham and Mark Nicholls

Report Text

Michelle Basham and Mark Nicholls  
With Maxine Campbell

Supervision

Dr Maxine Campbell

Office and research resources provided by

Department of Societies and Cultures

© 2006 Michelle Basham, Mark Nicholls and Maxine Campbell

The authors may be contacted *via*  
Dr Maxine Campbell  
Department of Societies and Cultures  
Faculty of Arts and Social Sciences  
University of Waikato  
Private Bag 3105, Hamilton  
New Zealand  
Email: [maxine@waikato.ac.nz](mailto:maxine@waikato.ac.nz)

---

<sup>1</sup> Graduate Student, Department of Societies and Cultures, Faculty of Arts and Social Sciences, University of Waikato

<sup>2</sup> Graduate Student, Department of Societies and Cultures, Faculty of Arts and Social Sciences, University of Waikato

<sup>3</sup> Lecturer, Department of Societies and Cultures, Faculty of Arts and Social Sciences, University of Waikato

## **Table of Contents**

Table of Contents .....	3
Acknowledgements .....	5
Executive Summary .....	6
Chapter 1: Introduction .....	8
Preamble .....	8
The Nature and Scope of the Problem .....	8
Research Objectives .....	9
Key Stakeholders .....	10
Safekids .....	10
Accident Compensation Corporation (ACC).....	11
Occupational Safety and Health/Department of Labour .....	11
Agriculture Industry Training Organisation (AgITO; FarmSafe) .....	12
Agribusiness Training Ltd .....	12
Federated Farmers of New Zealand (Inc) .....	13
Methodology.....	13
Literature Review.....	13
Expert Informant Interviews .....	14
Key Informant Interviews .....	15
Generating our Recommendations .....	16
Dissemination of Research Outcomes.....	16
Chapter 2: Regulation and compliance.....	18
Introduction .....	18
Regulatory approaches in New Zealand .....	18
Regulatory approaches abroad .....	20
Consent Decrees.....	20
North American Guidelines for Children’s Agricultural Tasks (NAGCAT) .....	21
Media Reports.....	23
Childcare .....	24
Discussion.....	25
Chapter 3: Literature Review .....	27
Introduction .....	27
A note on the comparability of international data .....	27
ATV Use.....	28
ATV modifications and passengers .....	28
Fatalities.....	29
Injuries .....	30
Gender.....	31
Types of Injury.....	32
How injuries occur .....	32
Types of ATV .....	33
Training on the safe use of ATVs .....	33
Helmet use .....	34
Rollover protection structures (ROPS).....	35
Discussion.....	35
Passengers .....	36
Bystanders .....	36
Child drivers .....	36
Regulation and compliance .....	37
Helmets .....	38
Summary.....	39
Chapter 4: Expert Informant Interviews .....	40
Introduction .....	40

Children’s Involvement on the Farm .....	40
Educational Requirements and Raising Awareness.....	40
The Perceptions and Culture of the Rural Community .....	40
Technical Issues.....	41
Inconsistencies.....	41
Current Legislation .....	41
Education versus Legislation .....	41
Driver Age Limit.....	42
Child Driver Ability .....	42
ATV Maintenance.....	43
Mixed Messages .....	43
Formal Training .....	43
Voluntary Driver Licensing System for Young Drivers.....	44
Involvement and supervision of Children on Farms .....	44
Changing the Culture.....	45
Discussion .....	46
Chapter 5: Key Informant Interviews .....	50
Introduction .....	50
Children and the Farm as a Workplace .....	50
Caring for Children .....	51
Formal Childcare and Child Supervision: The Mothers’ Perspective.....	51
Parental Responsibility for Acculturation: The Fathers’ Perspective.....	51
ATV Safety and Maintenance .....	52
ATVs and Child Safety .....	53
Two-Wheeled Vehicles and Mini ATVs .....	53
Farm Children versus Urban Children .....	54
Legislation versus Education .....	54
Current ATV Safety Guidelines and Information .....	55
Suggestions from the Key Informants.....	55
Discussion.....	56
Childcare and Culture.....	58
Farm-Kid Culture .....	60
Chapter 6: Findings and Conclusions.....	61
Summary.....	62
Chapter 7: Recommendations.....	65
ATV Safety.....	65
1. ATV Safety Guidelines.....	65
2. Helmets and protective clothing.....	66
3. Rollover Protection Structures (ROPS).....	66
4. ACC Rebates.....	67
5. Insurance rebates.....	67
6. ATV Training .....	68
7. Statistical Data.....	69
8. Technology.....	69
9. Childcare .....	70
Glossary.....	72
Bibliography .....	73

## **Acknowledgements**

We would like to acknowledge the contributions of a range of organisations and individuals, who have facilitated the production of this report.

We thank the University of Waikato, particularly the Department of Societies and Cultures, Faculty of Arts and Social Sciences, for providing academic support and access to the resources required to undertake the research. We also thank Bev Campbell, Administrative Secretary, Department of Societies and Cultures, for her very patient and accommodating secretarial and resource support.

We are grateful to Maree McNulty, Media and Publications Manager at the University of Waikato, for her support of the project in its infancy and her assistance in generating media interest in the research. Our thanks must also go to the Waikato Times for publicising this project amongst the rural community.

This research would not have been possible without the contributions of our interviewees. We extend our sincere thanks to Julie Chambers, Joy Gunn, John Wallaart, John Hudson, Gavin Forrest, Grant Hadfield, and Owen Brakenrig, our expert informants, who all provided valuable information and feedback. To Julie Chambers and her team at SafeKids, and John Wallaart at ACC, a special thanks for your encouragement, resources and additional materials.

We also acknowledge our key informants who participated so willingly in the research - without you we could not have presented the human face of the farming community and our understanding would have been the poorer for it. Your lived experiences, as you related them to us, provided insights not available to us in statistical data. Thank you.

We also would like to thank Bianca and her mother, Louise, for providing the striking cover photograph.

Finally, but not least, we acknowledge the support of the Child Accident Prevention Foundation of New Zealand, without whose Summer Research Scholarships this research would not have been possible.

Michelle, Mark and Maxine

## **Executive Summary**

The agricultural sector features prominently in the rates of ATV injuries and fatalities amongst children in New Zealand. This research project assesses the nature and scope of ATV accidents to children on New Zealand farms and provides recommendations that attempt to meet the needs of all relevant stakeholders. In particular, we believe that the most effective means of reducing the rates of ATV injuries and fatalities amongst children involves a strategy which recognises the unique circumstances which give rise to practical impediments to safer farm workplace practices. We identified three distinct groups of children in the literature, each facing a different major risk category. Very young children were most at risk as passengers. As age increased the highest risks applied to bystanders, while older children and teenagers were more likely to be injured as drivers. The high risks to younger children as passengers and bystanders were indicative of underlying problems associated with childcare options – or, more particularly, the lack of childcare options. Accidents involving older children were associated more closely with practices around child supervision and involved aspects of farming culture, rather than practical barriers to safer practices.

Our extensive literature search and interviews with expert and key informants exposed a tendency for the boundaries between the home and the workplace to be blurred in a farming environment. This conflation of spheres exemplifies the complex nature of the issue. Thus, while farmers struggled with practical problems around childcare and were keenly aware of restrictions that this imposed, they also adopted practices which were contrary to widely available safety guidelines on ATV use. Knowledge of risks and awareness of existing recommendations for the safe use of ATVs did not translate into safety compliant behaviour. We found behaviours and attitudes within farming workplaces which were significantly different to those typical of urban workplaces. The high valuation that farmers attached to the benefits of cultivating a sense of responsibility, independence and a good work ethic in their children outweighed the risks associated with ATV use by and around children.

Similarly, the strong family ethos which is expressed in the farming community's commitment to working, living and playing together, inevitably results in children's presence in the farm workplace – an environment that is one of the most dangerous workplaces in New Zealand. We also noted that ATV use, like the use of most farm vehicles, is an under-regulated practice, in which safety guidelines are not always clear or enforceable and farmers often improvise. There is also evidence of strong resistance within the farming community to any further regulation of their practices. The independence which is so characteristic of rural life suggests that safer practices will not ensue if regulation is imposed from above. It is contingent on changes occurring within farming culture and this is more likely to be precipitated by measures designed to facilitate better choices on matters affecting the safety of rural children. Our recommendations therefore focus on the nexus of farm culture and childcare.

We have provided recommendations under nine distinct categories, though the complex nature of child ATV use is such that these categories often overlap and are inter-related. Our suggested strategies for practical solutions range from those connected with the availability of, and access to childcare and the promotion of specialised safety equipment, to the endorsement of a single set of

safety guidelines and advocating formal training programmes. While these types of measures will facilitate changes in practice, we make further recommendations designed to address farm culture directly. In particular, we call for a multi-stakeholder process, similar to that from which the current ATV safety guidelines were derived, to establish safer childhood norms (a *Farm-kid culture*) within New Zealand farm workplaces.

Our recommendations include:

- Adoption of the *Safe use of ATVs on New Zealand Farms Agricultural Guidelines* (2002) as the benchmark in ATV safety in New Zealand;
- Amendment of the Guidelines to incorporate a stronger rephrasing of point 2.2.3, regarding the carriage of passengers;
- Continued promotion of the NZS 8600:2002 specialised farm ATV safety helmet;
- Further research into the effectiveness and design of Rollover Protection Structures;
- Introduction of ACC levy reductions for farmers, their family members and employees upon proof of attendance at approved ATV safety courses;
- Further levy reductions for farmers who devise and implement farm safety plans;
- Insurance premium reductions to farmers who can demonstrate regular servicing of their ATVs;
- Continued government and industry financial support for approved training and safety courses;
- Promotion of subsidised training programmes for teenaged riders;
- Implementation of farm safety programmes, with an emphasis on ATVs, in rural schools;
- Greater detail in the collection of ATV statistical data through all possible avenues: hospital admissions, ACC claims, police reports and fatality records;
- Revisiting the design of the vehicles with a view to lowering their centre of gravity;
- Fitting of a device which governs the speed of ATVs only whilst cornering;
- Development of a purpose-built pod for transporting children more safely in farming environments;
- Urgent government attention to the provision of childcare services in rural areas;
- A state-funded subsidy for childcare expenses in rural communities, additional to any existing childcare subsidies, in recognition of the unique problems faced by rural parents;
- Revival of community-based systems of childcare by the rural community;
- Initiation of dialogue amongst farmers, work and safety organisations, child welfare agencies and vehicle safety experts with a view to establishing an appropriate *Farm-Kid Culture* which delineates safer norms and practices for New Zealand's rural children.

## **Chapter 1: Introduction**

### **Preamble**

Unable to walk since an ATV accident in 1989, farmer Kevin Richards regularly addresses rural communities on the subject of ATV safety through public speaking engagements (Sweetnam, 2000, p.5). His presentations are replete with references to the 'do-anything' ethos of farm culture. He reminds his audiences that "you don't say 'don't' to farmers ... you've got to give practical reasons why they shouldn't do things ... they [farmers] do everything on the farm. They have to, to survive" (Sweetnam, 2000, p.5).

These few, brief lines run to the heart of the issue that this research seeks to illuminate. They resonate with the spirit of the farming community, hint at the practical problems facing farmers on a daily basis and provide a grim reminder of the price that is sometimes paid. Less obvious within the sentiments and pragmatism reflected in the lines above is the particular section of the rural community on which this research focuses: its children. More particularly, this project canvasses elements of farm workplace practices which involve the use of All Terrain Vehicles (ATVs) and examines their repercussions for rural children. In undertaking the research, we have discovered a complex web of inter-related factors which combine to produce a challenging set of circumstances that are unique to the rural community. Providing solutions must therefore recognise the specificity of rural conditions, but, where necessary, it must also challenge practices which pose unacceptable levels of risk to rural children.

ATVs are the new workhorse of the farm, increasingly replacing the tractor as the dominant form of farm transportation. The vehicles have recently attracted considerable attention, not only in the news media, but also from government and community agencies whose concern is to reduce the risks of accidents on these vehicles, and to minimise child-related incidents on ATVs. This attention has resulted in the development of a set of endorsed ATV safety guidelines<sup>4</sup> and a limited number of research projects seeking to shed light on the incidence and types of risks associated with these vehicles.<sup>5</sup> The data are scarce however, and the complexities surrounding children's involvement with ATVs remain relatively unexplored. This research aims to examine these complexities with a view to finding a path forward by which to ensure the enhanced safety of rural New Zealand children.

### **The Nature and Scope of the Problem**

The agricultural sector accounts for one third of all workplace fatalities involving children and one third of farm fatalities involve ATVs (Owens, 2005) and ATVs are the vehicle most commonly involved in child workplace fatalities (Lilley *et al*, 2004). Nearly one fifth of all injuries on farms happen to children under 16 years of age (Lilley *et al*, 2004). While recent longitudinal data are not readily available, between 1985 and 1998 accidents involving young children and ATVs comprised around 8% of the total worksite fatality rate for the period (Lilley *et al*, 2004). In 2001 there were 12 child deaths involving ATVs; all were under the age of 15 (Safekids News, June 2005).

---

<sup>4</sup> *Safe use of ATVs on New Zealand Farms Agricultural Guidelines*, 2002, hereafter referred to as the endorsed Guidelines

<sup>5</sup> See Chapter 3, *Literature Review*



Recent research shows that work-related child fatalities primarily involved children who were bystanders (86%) and just over half of work-related fatalities for children up to five years of age occurred on farms (Lilley *et al*, 2004). This research also tells us that a high proportion of fatalities occur in the under five-year-old age group and is associated with ambulatory activities. That is, the children were playing or helping out in the area where work was being carried out by a parent. For older children, the most common working activity associated with a fatal work-related accident was riding a motorbike or ATV to shift stock on a farm (Lilley *et al*, 2004). The two most common non-working activities at the time of a fatal accident were being a vehicle passenger and playing in or near the workplace (Lilley *et al*, 2004). Males are more at risk than females, with just 18% of fatalities occurring to females. As with most types of accidents, fatalities are simply the tip of an iceberg. ATV accidents between 1990 and 1999 were responsible for more than 900 hospitalisations of children under 15 years of age (Safekids, 2001). Children under 16 years of age account for an average of 50 ATV-related Accident Compensation Commission (ACC) claims each year (ACC, 2002). The increasing popularity of the vehicles does not auger well for future rates of injury and death. Currently, New Zealand's injury mortality rate to under 14 year olds is ranked at 22<sup>nd</sup> from 26 OECD countries (Lilley *et al*, 2004).

Existing data tell us that 54% of ATV users are farmers or farm employees, with a further 43% being family members (OSH, July 1998). In the New Zealand context, children are exposed to ATVs primarily either as bystanders or passengers with their parents as they undertake work on the farm, or as drivers whilst undertaking farm duties themselves. In 2004, safety trainer, Lincoln Armstrong, informally polled students at safety days he held at rural schools. He found that, from 12 rural schools with an average roll of 50 children each, only five or six children had not ridden an ATV (Bell, 2005, p.3). Figures such as these suggest that the majority of rural children ride ATVs at ages well below both the manufacturers' recommended age of 16 years and the ages advised in the endorsed New Zealand guidelines, which allow for riders as young as 12 years under strict conditions. The proliferation of ATVs suggests that the frequency of any risks associated with them may well escalate correspondingly, further compromising the safety of rural children.

## **Research Objectives**

This research sought to enhance understanding of the factors contributing to the high rates of accidental injuries and deaths among children on and around ATVs, with a view to formulating recommendations aimed at minimising the risks associated with the vehicles. In order to achieve this, our research sought to answer the following questions in relation to child ATV safety:

- What were the most common risks to children associated with ATVs?
- What legal restrictions applied to the operation of ATVs?
- What operational and safety guidelines currently exist for ATVs?
- What practices predominate on New Zealand farms in relation to ATVs?
- What factors govern the practices associated with ATVs?
- How does the farming community perceive and accommodate the risks associated with ATVs?
- What sorts of measures will be most successful in enhancing child ATV safety?

An initial review of the literature exposed several key areas requiring further investigation. Our first concern related to significant inconsistencies in the various existing guidelines available to farmers for safe ATV use. Of particular note were

variations in recommended age restrictions and limitations on cc ratings. There was also conflicting advice on safe operation of the vehicles which ultimately provided contradictory guidance. The sources for these guidelines included government departments, NGOs, vehicle manufacturers, and farming advocacy groups. Our review also indicated a lack of consensus on appropriate safety measures for ATVs. For example, the installation of rollover protection systems (ROPS), compulsory use of specialised ATV helmets and recommendations regarding carrying passengers were all suggested, but not universally accepted, as primary safety practices.

Beyond technical issues there were behavioural aspects which needed consideration. The extensive physical surrounds of a farm, for example, present problems with the supervision of children. This is exacerbated by the fact that often care-givers are actively involved in the operation of the farm. Furthermore, the isolation of many farms makes utilisation of external child-care services impractical. Existing literature also demonstrated striking differences in opinions and behaviours amongst farmers regarding the use of ATVs on the farm. For instance, opinion is divided among farmers as to the appropriate minimum age for farm bike use – echoing the inconsistencies evident in the safety guidelines. While the existing data were useful, we identified an urgent need to assess them in a more systematic and analytic manner to better understand the underlying causes for the persistent high rates of child fatalities and injuries. This research has endeavoured to:

- undertake a comprehensive review of existing literature;
- summarise and analyse what the existing literature and guidelines tell us in relation to the safe operation of ATVs on farms;
- identify any significant inconsistencies and omissions within the literature;
- ascertain expert opinion from professionals engaged in farm safety, child safety and work-place safety
- explore the opinions, attitudes and experiences of a sample of the local rural community regarding children and the use of ATVs;
- establish the appropriate domain in which to position this issue; that is, is it best understood and responded to as a transport matter, a work-place matter or a childcare matter?
- make recommendations based on the results of our investigations and analyses

## **Key Stakeholders**

This research draws in part on the expertise of representatives of organisations closely associated with the field of study. Brief descriptions of these key organisations and their particular focus are presented here in order to situate them within the domain of this research and to begin to articulate their perspectives.

### *Safekids*

Safekids New Zealand was established in the early 1990s by the Starship Children's Hospital's Trauma Services and is dedicated to injury prevention, specifically unintentional childhood injury. It is a member of SAFE KIDS Worldwide and provides injury prevention consultancy, along with advocacy. It has a well-stocked Information and Resource Centre which focuses exclusively on injury issues, child injury prevention strategies, programmes, research and initiatives. These resources, which include an online catalogue, are made available to injury prevention workers, health professionals, teachers and the media.

Although Safekids is a government funded agency, it also receives specific programme funding and sponsorship from other government agencies (ACC, New Zealand Fire Service, for example) and private or commercial enterprises (Blue Wing Honda, Panadol). The agency's mission is to "reduce the incidence and severity of unintentional injury to children aged 0 – 14 years in New Zealand" and its major public programme is the *Safekids Campaign*, which is supported by more than 80 community Coalitions and a core group of national partners.<sup>6</sup>

In 2001 Safekids published a report, *Descriptive Epidemiology of ATV Injuries in New Zealand*, which estimated injury and fatality rates of child related ATV accidents in New Zealand. Communicating the ATV safety message at grassroots level is another facet to Safekids, as can be evidenced by extensive media reports of safety-awareness campaigns organised by Safekids throughout New Zealand communities. Many media reports also feature Safekids representatives endorsing the ATV safety message – particularly emphasising that ATVs are not designed to be driven by children. Thus, Safekids (2005) recommend that no children under 16 years of age should ride ATVs (Safekids, 2005, p.3).

### *Accident Compensation Corporation (ACC)*

Established in 1974 and also known as the Accident Rehabilitation and Compensation Insurance Corporation, Accident Compensation Corporation is a Crown entity charged with administering New Zealand's accident compensation scheme. This scheme provides personal injury cover for all New Zealand citizens, residents and temporary visitors to New Zealand. In New Zealand therefore, people do not have the right to sue for personal injury, other than for exemplary damages. ACC also provides injury prevention services aimed at reducing "the incidence of injuries, their severity and costs and to develop a 'safety culture' among all New Zealanders."<sup>7</sup> Among its major areas of focus is *work safety* and farm safety falls within this area. ACC pays out more than \$40 million a year for agriculture-related injuries. The agency maintains an extensive website offering comprehensive information and advice on rural safety.

ACC plays a proactive role in educating ATV users about the safe operation of the vehicles (ACC, 2002) and offers educational resources on farm safety, including a DVD which focuses exclusively on ATVs (ACC, 2005). The DVD canvasses a range of ATV safety issues, though there is an emphasis on technical and mechanical matters. The DVD also includes safe-use recommendations from manufacturers and distributors. Honda, for example, recommends that users never carry passengers, always wear a helmet, and be at least 16 years old. Five glossy ATV fact-sheets are also available from ACC, one of which is dedicated to children and ATVs. The website also offers a range of resources of relevance to both this research and to the rural community. They also offer a special section on and for children, including educational interactive games.

### *Occupational Safety and Health/Department of Labour*

The Department of Labour is a government department which "provides best practice information and guidance to assist New Zealand businesses with health and safety in the workplace."<sup>8</sup> It oversees the Workplace Health and Safety Strategy (launched in June, 2005), which provides a framework for achieving safer and healthier

---

<sup>6</sup> <http://www.safekids.org.nz>

<sup>7</sup> <http://www.acc.co.nz>

<sup>8</sup> <http://www.dol.govt.nz>

workplaces by 2015. One of the key intended outcomes of the strategy is to develop preventative workplace cultures. The strategy has nine objectives and the actions for each are based on an intervention mix which includes effective regulation, appropriate incentives, social dialogue, better design and technology, and sound research and evidence. Among the nine national priorities to be targeted under the strategy are workplace vehicles, which are the single largest cause of work-related injury death in New Zealand.

The Department of Labour also has responsibility for inspecting workplaces to ensure that appropriate safety and health arrangements are in place, and for investigating workplace accidents. It is also charged with monitoring workplace compliance with health and safety legislation. As with previous stakeholders, the Department's website also provides easy access to a range of resources of use to businesses, individuals and researchers.

### *Agriculture Industry Training Organisation (AgITO; FarmSafe)*

Agriculture ITO is one of New Zealand's largest industry training organisations, which offers nationally recognised and New Zealand Qualifications Authority (NZQA) registered qualifications in the agricultural sector. It works with employers, schools and industry partners to provide practical training, often within the workplace, and is funded by the Government via the Tertiary Education Commission (70%), industry (15%) and trainee enrolment fees (15%).<sup>9</sup> It has formed a non-Government subsidised company (ASL) to work with industry partners such as Federated Farmers, ACC, OSH, along with public and private training providers to focus on two major safety training programmes, one of which is FarmSafe™. This is a free injury prevention programme managed by Federated Farmers and ACC, in association with Agriculture ITO, Agriculture New Zealand and Telford Rural Polytechnic. The programme comprises three components including a FarmSafe Skills series of workshops which provide tuition, practice and assessment in driving tractors, riding ATVs, using chainsaws, riding motorbikes and handling animals.

### *Agribusiness Training Ltd*

Agribusiness is one of New Zealand's largest Private Training Establishments and offers high quality training in land-based industries. They have a strong focus on hands-on safety training in core skills essential to land-based industries. Safety programmes include chainsaws, tractors, ATVs, motorcycles, 4WD driver training, and the organisation works closely with AgITO as one of their preferred providers. Delivering both National Certificates and Diploma Qualifications, they provide practical safety courses and programmes which meet OSH requirements. Their tutors have current practical involvement in land-based industries and the organisation strives to provide training at times and in places suited to the demands of its rural students. They provide a specific course on ATV skills, which is promoted by Blue Wing Honda as part of a national agreement. The course includes instruction on towing or carrying a load on an ATV and covers OSH requirements relevant to ATVs. It also provides experience of riding on different types of land contours and teaches students about changes in the vehicles centre of gravity.

---

<sup>9</sup> <http://www.agricultureito.ac.nz>

### *Federated Farmers of New Zealand (Inc)*

Established in 1944, Federated Farmers is New Zealand's primary rural sector organisation and represents 18,000 member farmers and rural families. It is comprised of a network of 24 provinces along with associated area networks and branches to provide a collective voice for farmers, both nationally and provincially. Its main administration centre is based in Hamilton, though it is the Wellington office which provides a centre for policy development, advocacy, lobbying and advisory services.<sup>10</sup> The organisation's policy is driven by the views of the members.

Federated Farmers covers seven industry groups representing the specific interests of meat and wool, dairy, mohair, rural butchers, high country and grain farmers and beekeepers. It is a voluntary organisation, funded by its members and dedicated to securing and improving the business of farming. Although primarily focussed on maintaining the value of the business of farming, it regularly distributes press releases to remind farmers and the general public of specific farm hazards. These are frequently related to risks to children during school holidays.

### **Methodology**

The complexities associated with this research topic indicated that relying solely on a review of existing literature would provide insufficient insight into the problem. We therefore undertook to augment the literature with insights provided by two groups of people with first-hand knowledge related to key aspects of the topic. This information was provided by way of interviews, firstly with experts in child, farm, ATV and work-place safety and secondly, with individuals who own and use ATVs on their farms. Collation of these three different sources of data provided a more comprehensive understanding of the multiple factors involved in child ATV safety and assisted in generating recommendations that attempt to accommodate the full range of factors involved.

### *Literature Review*

An extensive literature review was undertaken in order to establish a framework by which to understand as accurately as possible, the extent and nature of ATV accidents to children. The literature search largely involved accessing library and World Wide Web resources, with the majority of the material coming from New Zealand, Australia, and North America. Moreover, we attempted to review as far as possible, the research specifically focussed on child ATV injury, with a more selective review of general ATV injury, and farm safety resources. In particular, we examined a large number of American ATV studies that adopted a retrospective approach, utilising statistics from sources such as hospital admissions and coroners' records. Most of these US studies appeared in medical and paediatric journals and were accessible from online academic databases. The Australian studies were similar in nature to New Zealand studies, with a particular focus on farm safety. All the New Zealand and Australian studies from governmental agencies were easily accessed from the respective agencies websites, as were many other studies from these countries.

Within New Zealand, key studies included a report which examined accidental child fatalities that were work-related (Lilley *et al*, 2004). The farm as a work-place featured prominently in this research. Further statistical data were obtained from

---

<sup>10</sup> <http://www.fedfarm.org.nz>

Safekids (2001), along with survey research from OSH (1998) and COHFE (2002). We also utilised a standardised set of safety guidelines for ATV use on farms (the endorsed Guidelines). Further less formal data were also supplied by Safekids. This resulted in a review of a sizable body of New Zealand newspaper reports from 1999 to 2005 concerning child and general ATV safety and accidents, along with editorial commentaries and responses from the rural community. These media reports and editorial contributions provided a further means of substantiation of the research data and are utilised here accordingly.

The New Zealand and Australian data were notable for their lack of specific studies on child ATV injuries, and also in terms of an absence of quantifiable data concerning the incidence of ATV injury, especially amongst the paediatric population. This may, in part, have resulted from the way official statistics are collected, whereby a distinction between two and three-wheeled farm bikes and ATVs is not made. It also reflects the general scarcity of ATV studies published in New Zealand. Conversely, an abundance of statistical data from the largely recreational United States context was not always directly transferable to the predominantly farming situation in New Zealand. The US data also presented conflicting analyses, particularly in regard to safety attachments and the effects of regulation.

### *Expert Informant Interviews*

The expert informants were drawn from agencies with direct involvement in workplace and farm safety, and child advocacy. In all, seven experts contributed to this part of the research and all the interviews were recorded on audiotape. Assembling the expert informant group was initiated through personal association with an ACC staff member who referred us to ACC's, John Wallaart. John, in turn, provided us with two ACC-produced CD-ROMs on ATV safety, which included interviews with various government and industry experts, who were subsequently approached to discuss and arrange interviews. On occasion, for reasons of either availability or specialised knowledge, we were referred to other representatives of the organisation. By means of this process, we gathered informants from four organisations, representing government bodies, farmer groups and rural training agencies. All the informants had been directly involved with the development of the endorsed ATV Safety Guidelines. These organisations were ACC, OSH/Dept of Labour, Federated Farmers, AgITO. A fifth organisation was sourced through media publicity which called for interest from the rural community to participate in the key informant component of the research; this organisation was Agribusiness.

Our first interview was undertaken with representatives of Safekids, an organisation which has been involved with CAPFNZ<sup>11</sup> Summer Scholarship research projects in previous years and has maintained an association with staff within the Department of Societies and Cultures at the University of Waikato. This interview was perhaps the most complex, since it involved two representatives simultaneously, one in person and the other participating *via* speaker phone. It also served as a pilot interview, allowing us to identify potential areas of investigation and lines of questioning for subsequent expert informant interviews. Information provided during the interview with Safekids' representatives and information gathered from the initial review of existing literature, assisted us in compiling an interview format designed to explore each organisation's approach to ATV child safety and their current safety initiatives and awareness strategies. It also canvassed their perceptions of ATV safety in general and child safety in particular, and their impressions of the rural approach to

---

<sup>11</sup> Child Accident Prevention Foundation of New Zealand

ATV child safety. As four of the six informants were based in Wellington, their interviews were undertaken by telephone; the remaining two were conducted in person in Auckland and Hamilton.

### *Key Informant Interviews*

Key informants were located via media publicity in regional and rural newspapers. The publicity appealed for respondents who were owners of ATVs, with children who may have access to the vehicles, and who wished to share their views on ATV child safety. We intended that the key informant group would comprise up to twelve participants, but the response from the rural community was subdued, resulting in five respondents in total. Four of these came from the Waikato district and one was from the Taranaki region. Two respondents were fathers of children aged four years to fifteen years; the remaining three were all mothers of children under the age of six. We can only speculate as to the reasons for this rate of response and therefore choose to limit our comments. The scale of this response may reflect a despondent view present in the rural community towards the issue of child related ATV safety. That is to say, farming parents may have been reluctant to participate in a research project which was not generated from within the rural community, and which may have been perceived by some farming parents as a critical review of rural approaches to the issue. Findings from a sample group of five can not be deemed to be representative of the rural community as a whole, as with findings from a group of twelve. However they do allow for recognition of the lived experiences and authentic rural perceptions which play a considerable part in the discussion of ATV child safety. Also, through their personal accounts, the key informants were able to provide illustrative representations of the issues that were raised by the literature review and the expert informant interviews, providing a personalised narrative of the issues surrounding ATV child safety.

In addition, we were contacted by three other members of the public through the media publicity. One person contacted us by phone and wanted to discuss her neighbour's misuse of ATVs; a second contacted us by letter offering support to the research project and proposed a return to the use of horses on New Zealand farms. Both these respondents did not fit the profile which required ATV ownership and that they own or use ATVs in the presence of children. A third contact was a principal from a rural school in the greater Waikato district who was concerned about the high number of her students who were driving, or were passengers on, ATVs. Wanting to instil better ATV safety in her students, she proposed to provide specific safety lessons in the school. Her suggestion met with a very negative response from the school's Board of Trustees. The lessons did not proceed, but her concerns persisted, prompting her call to us, though she was not seeking to be interviewed. She supported the research and looked forward to the publication of the final report.

We had three primary objectives when designing the question guides for the key informant interviews. First, we wished to gauge the level of awareness already present in the rural community regarding ATV safety generally, and child-safety in particular. Second, we needed to determine the practical issues which contributed to children's exposure to the vehicles. Third, we wanted to ascertain the personal and parental views of the rural community regarding children's ATV safety. Our intention was to understand these issues in concert and provide a comprehensive qualitative analysis of an issue which was considerably more complex than it initially appeared to be.

## *Generating our Recommendations*

The data gathered during the literature review served a dual purpose in this research. Firstly, it provided information in its own right which was analysed thematically and also comparatively, with the context and approaches in other countries providing useful supplementary data. Secondly, the literature helped to guide the substance of the interviews with both expert and key informants. The data from each of these methods were analysed separately initially and then collated into common themes. The media analysis provided substantiation of key themes and provided further insights into rural behaviours and attitudes. We then developed recommendations around the different themes. The overlaps and interconnections between the various influencing factors indicated that there was no single response that could adequately ensure higher levels of child ATV safety. We therefore took a broad approach to finding workable solutions, though addressing some factors presented a dilemma. It is our firm belief that children should not drive or ride on ATVs, yet in generating recommendations which are aimed at improving children's safety while on ATVs, we inherently imply support of child ATV use. In the interests of minimising risks – and therefore harm – to children, we must live with this contradiction.

Much discussion preceded the eventual recommendations, though practical measures were more readily identified than less tangible strategies. Similarly, we were aware that proposing a particular course of action could in itself cause further problems. Thus, while recommending better access to childcare falls within the range of obvious measures that can be taken, how it is funded may well cause consternation within urban communities, if it is seen to be providing rural parents with extra funding. Ultimately, we accepted that achieving better levels of safety for rural children was not going to occur without some level of discomfort at the community level (both rural and urban). If this were not the case, this research would not have been necessary. We could not, therefore, allow difficult decisions to be deferred indefinitely. Finally, while this is a rural phenomenon, our recommendations do not confine responsibility to rural communities, nor do they establish the resolutions as purely governmental responsibilities, though we do see a substantial role for government. Urban communities contribute largely through their role as taxpayers. We have provided recommendations under nine different categories, but we stress that none can work in isolation. A comprehensive, concerted approach is needed.

## *Dissemination of Research Outcomes*

Initial publicity about this project was initiated through the University of Waikato's Marketing and Public Relations division, resulting in an explanatory article in the Waikato Times (November 29, 2005). A number of smaller publications subsequently ran similar articles, each explaining the scope of the project and calling for interviewees from within the rural community. This generated interest from as far afield as Taranaki from the general public, while our contact with stakeholder organisations has ensured even wider dissemination. During the course of the research, we have fielded further media enquiries and we have arrangements in place for a press release through our Marketing and Public Relations division on completion of the report. We expect that this will generate further enquiries.

The individuals and organisations who have contributed to this research have expressed a keen interest in its findings. All will have access to copies of this report and some have expressed considerable interest in disseminating our findings further. ACC have requested that we present our findings to the Agricultural Council meeting in Wellington in April 2006. Safekids, as they have done in previous years, will



distribute our findings *via* their networks, particularly to those contacts in the rural community. The report will be available in the library at the University of Waikato and in the Department of Societies and Cultures, with further copies dispatched to the Child Accident Prevention Foundation of New Zealand. Lastly, the findings of this project will provide the substance of a lecture to students of a first year sociology paper at the University of Waikato in 2006.

## **Chapter 2: Regulation and compliance**

### **Introduction**

We begin our investigation of ATV accidents involving children with an examination of the legal and regulatory context in New Zealand. There is no legislation which specifically refers to child drivers of ATVs on private land in New Zealand. We note the difficulties in placing responsibility for the regulation of child ATV use with any particular agency. It encompasses a variety of possible policy domains, ranging from child welfare and workplace safety to land transport. ATVs are however, subject to two forms of regulation in terms of farm use. Health and Safety statutes cover ATVs in a work environment involving paid staff, while the 1961 Crimes Act can be used to prosecute in cases which do not come under the auspices of paid employment legislation. The use of ATVs by children on farms is therefore only minimally covered by legislation and the agricultural sector is guided, though not governed, by a set of operational guidelines – the endorsed Guidelines, discussed below.

The New Zealand context is followed by an examination of regulatory regimes in the United States. The data here are particularly useful for what they reveal about the effectiveness of regulation over time. They also allude to some degree of dissociation between knowledge and action by those who use ATVs, though we note that use in the United States has a large recreational component. Rates of compliance with regulations, however, are not high and in order to afford comparison with the New Zealand context, we examine news media reports and commentaries from recent years. These suggest that levels of compliance are also low in New Zealand, but also indicate reasons for the low compliance rates.

### **Regulatory approaches in New Zealand**

Published in 2002 by OSH, the *Safe use of ATVs on New Zealand Farms Agricultural Guidelines* (2002)<sup>12</sup> is a key document on ATV safety. A short and easily readable document, the guidelines were assembled in consultation with a wide coverage of relevant stakeholders under the auspices of the Agricultural Health and Safety Council.<sup>13</sup> They are intended to set standardised ground rules and provide practical safety advice to rural users of ATVs. As noted in the guidelines' preamble, their primary aim is to prevent ATV related accidents. The following guides and recommendations, of particular relevance to this research, are stated within the guidelines:<sup>14</sup>

- Age restrictions: youth from 12 to 15 *should* not drive ATVs – unless their guardian establishes certain safety criteria are met (training, physical strength, helmet, no passengers, no loads/additions attached, speed limited, difficult terrain limited, rider supervised).
- Age restrictions: children under 12 *shall* not be permitted to drive ATVs
- Those in charge of ATVs must ensure all riders are competent and are adequately supervised and instructed in the safe use of ATVs. Competency can be gained through recognised training.

---

<sup>12</sup> Hereafter referred to as the “endorsed Guidelines.”

<sup>13</sup> Federated Farmers, NZ Young Farmers' Clubs, Rural Women NZ, NZ Deer Farmers' Association, NZ Farm Forestry Association, the Agricultural Industry Training Organisation, the Council of Trade Unions, MAF Policy, OSH and ACC.

<sup>14</sup> The guidelines define 'shall' as a 'mandatory recommendation' for compliance with the guidelines, whereas 'should' is defined as 'a preferred practice or recommendation' (OSH, 2002, p.4).

- ATVs are not designed for carrying passengers. If passengers are carried precautions must be taken (establish passengers ATV experience, reduce speed, avoid steep terrain, wear helmets/protective footwear, passengers should walk if terrain is risky).
- Approved helmets should be worn.
- Appropriate footwear should be worn.
- Farmers have the right to fit ROPS<sup>15</sup> if desired.
- Farmers/managers should ensure *all people* using farm machinery are aware of areas posing a risk, and areas not suitable for ATVs.
- ATVs must be maintained by owners.

The authors note in the Guidelines preamble, that:

It is likely that, in the future, OSH and the Police will refer to this guideline when considering taking legal action in the unfortunate situation of a person being seriously injured or killed as a result of an ATV accident. (OSH, 2002b)

That is, while unable to be legally enforced, the guidelines can be interpreted by the Courts as an industry agreed position and best practice. Such eventualities are illustrative of the difficulties inherent in the minimal regulation of ATV use and the absence of specific statutes prohibiting or enforcing certain practices in the off-road ATV environment. Most off-road ATV regulations consist of recommendations, rather than proscribed laws. Further, no single statute covers all on-farm situations. Work-related on-farm use of ATVs is covered by OSH, whereas non-work-related on-farm use of ATVs comes under the 1961 Crimes Act, which is enforced by the Police (OSH, 2002b).

The riding of ATVs more generally is specifically regulated by only our Land Transport Legislation. This legislation prohibits children under 15 riding ATVs “on roads and beaches” (OSH, 2002b). While OSH (2002b) recommend children between 12 and 15 years old should not drive an ATV on farms (other than after stringent age guidelines have been applied), and that children under 12 shall not drive ATVs at all, there are no laws to prevent these age groups from actually driving ATVs off road, including on farms (OSH, 2002b).<sup>16</sup> Regulations developed to support the Health and Safety in Employment Act 1992 required employers to take practicable steps to ensure children under 15 do not operate tractors and other “self-propelled mechanical plant” (*Children*, no. 22, p.10). However, this applies to employees only and, because most motorbikes and ATVs weigh less than 700kg, no age or employment restrictions actually come into effect (*Children*, no. 22, p.10).

There is no legal requirement to wear a safety helmet when operating an ATV off-road (Land Transport New Zealand, 2005). Helmets are compulsory only when riding ATVs on the road, though OSH recommends that they be worn at all times (OSH, 2002b). ATVs must be registered only if used on the road (Land Transport New Zealand, 2005). Farmers are not legally bound to wear helmets when riding ATVs on public roads which border or intersect their own farm, or an adjoining farm that is also owned or occupied by the farmer. Their speed however, must not exceed 30 kilometres per hour in such instances (OSH, 2002b).

---

<sup>15</sup> Rollover protection structures (ROPS), also commonly referred to as ‘roll bars’ or a ‘roll cage’.

<sup>16</sup> In 1996, OSH issued *Guidelines for the Provision of Safety, Health and Accommodation in Agriculture*, a best practice document which allows children aged 12 to 15 years to operate tractors on farms under specific conditions (Section 2.22) and this informed the development of ATV user guidelines in New Zealand.

In a joint submission on *Land Transport Rule 32017 Vehicle Equipment*, Plunket and Safekids recommended (Section 2.2, Clause 2.2) the installation of a speed measuring device (on all agricultural vehicles, but particularly on ATVs), which emits a beep once speeds over 30 kilometres an hour have been reached (Plunket & SafeKids, 2003, p.24). This recommendation was designed with the new standard ATV helmet in mind. The helmet was designed for speeds under 30 kilometres an hour – the rationale being the device would inform farmers wearing the helmets if they are going too fast (p.24). The recommendation was not adopted.

## Regulatory approaches abroad

Various types of legal regulation have been employed in the United States, with varying effects. We examine the major developments here in order to afford some comparison with the New Zealand context, as well as to provide some understanding of the efficacy or otherwise of different approaches. We begin with an initiative introduced almost twenty years ago, Consent Decrees.

### *Consent Decrees*

As a result of legal action brought against Honda by the US Consumer Product Safety Commission (CPSC) in 1987, Consent Decrees were introduced into America in 1988. These were legally binding, but voluntary agreements with the five leading ATV manufacturers and were designed to reduce and eliminate ATV fatalities and injuries – especially in regard to children (Lynch *et al*, 1998, pp.329, 330). The agreements were of limited duration, but included provisions for eliminating the production and sale of three wheeled ATVs<sup>17</sup> and developing free safety courses for beginners. They also included recommendations against carrying passengers or using the vehicles on roads. Other recommendations covered helmet use, supervision of children less than 16 years of age and matching age to engine size (Brown *et al*, 2002, p. 378).

After the decrees were signed, there was a marked decrease in fatalities and injuries, yet Lynch *et al* contend that paediatric injuries did not benefit significantly from the decrees (p. 331). Firstly, injuries to under 16 year olds levelled off to about 25 000 per annum a few years after the decrees were signed (p. 331). Secondly, upon review of the decrees in 1993, the CPSC ruled no further follow up was needed, as a 30% decrease in all age group ATV fatalities and injuries was deemed adequate (p. 331). Lynch *et al* point out however, that “40% of the injured patients continued to be under 16 years of age, and 20% were still under 12 years” (p. 331). Their harshest criticism was directed towards CPSC’s failure to take action to ban under 16-year-olds from driving ATVs (p. 331). Similarly, Brown *et al* (2002) found the Consent Decrees to have been ineffective in the paediatric population, and that it may have even been detrimental in that dealers were not providing safety equipment or training to children, in fear of litigation (p. 380). This effectively undermined, rather than enhanced child ATV safety. Further, Brown *et al* note that parents continued to purchase ATVs for their children, ignoring official warnings and safety guidelines (p. 380).

In retrospect, the Consent Decrees, which expired in April 1998, are seen by many as having failed to reduce ATV related injury amongst children. Cvijanovich *et al* (2001) believe one reason for this inefficacy was that, although the decrees were federally sponsored and signed by national manufacturers, because each state

---

<sup>17</sup> Manufacture of three-wheeled vehicles has now ceased.

individually legislates ATV use, the actual implementation of the decrees had been haphazard, with different states implementing the decrees to a different level (p. 631). In short, different states may not have implemented age or passenger restrictions, as recommended in the decrees (Phrampus *et al*, 2005, p.58; Cvijanovich *et al*, 2001, p.634). The American Academy of Paediatrics however, considers the decrees to have been most effective in the period leading up to, during, and straight after their implementation (2000, p. 1353). Their analysis suggests that the publicity associated with the decrees, and the subsequent educational campaigns generated by this publicity, produced higher levels of awareness of ATV risks and served to reduce injuries, perhaps more effectively than the decrees themselves (p. 1353).

Following the expiry of the decrees, participating ATV manufacturers agreed to an ATV action plan that was designed to remove children under 16 riding ATVs (Phrampus *et al*, 2005, p.58). Yet, as Phrampus *et al* (2005) point out, there are currently no national ATV regulations, and perhaps of particular importance, there are still no restrictions on the driver's age (p. 58), an assessment echoed by Keenan & Bratton (2004, p. 330). Similarly, and again reflecting Phrampus *et al*'s sentiments, Kelleher *et al* (2005) also find little or no action to reduce steadily increasing child ATV related injuries and fatalities since the decrees expired (p. 929). In 1996, Tormoehlen and Sheldon argued that both educational and regulatory efforts to stop children under 16 years old from riding adult-sized ATVs had been ineffective, with 88% of young riders questioned in their survey (n 2 098) indicating they used adult-sized ATVs (p. 153).

Upperman *et al* (2003) analysed data from across the USA for the period 1982 to 1998, assigning states into two groups – those with the highest child ATV mortality rates (26 states named the TOP group), and those with lower rates, referred to as the OTH group (p. 1284). The existence or otherwise of licensing legislation appears not to have had a significant influence over which group a state was likely to fall into. Ninety-two percent of the TOP group states did not have licensing laws, while 73% of the states in the OTH group were without licensing laws (p.1284). Further, Upperman *et al* believe that current laws are not stringent enough to contribute to significant decreases in paediatric mortality (current laws do not restrict children under 16 riding ATVs, for instance), and that in many instances, current laws are ignored by riders (p. 1286).

Citing data from their 1996 study of ATV injuries and fatalities in Utah, Cvijanovich *et al* (2001) conclude that “by adhering to existing state regulations and recommendations governing ATVs, 61 children would not have been injured as passengers on ATVs, 15 children would not have been injured while driving ATVs, and four children would not have died” (p. 634). On the other hand, Utah's laws also seem inadequate, particularly given that drivers less than eight years old made up 25% of all injuries. Utah law allows eight year olds to drive ATVs on public land (Cvijanovich *et al*, 2001, p.634). Further, Cvijanovich *et al* argue that if the recommendations of the consent decree had been followed, 120 children would not have been injured, an estimated half a million dollars in hospital care would have been saved, and a 60% reduction in fatalities would have resulted (p. 634).

### *North American Guidelines for Children's Agricultural Tasks (NAGCAT)*

Introduced in 1999 in the USA and Canada, NAGCAT are a series of assessment tools, in the form of booklets and posters that cover the safest way to carry out 62 typical agricultural jobs or tasks (Marlenga, 2002, p.150). The posters include a job

illustration and indicate adults' responsibilities, and the major hazards, along with listing safety reminders and recommending appropriate supervision. In short, NAGCAT was designed to support adults in assigning safe and appropriate farm jobs to children aged 7 to 16 years old (Marlenga, 2002, p.150).

In 2004, Zentner *et al* (2005) tested the effectiveness of NAGCAT, by collecting data obtained through phone interviews from 440 farms in the US and Canada (p. 860). The results indicated that although 81% of the families (n. 440) reported that they believed farming was more dangerous than other occupations, only 66% of these same parents perceived farming to be more dangerous than other occupations for their own children (p. 864). This suggests that a noteworthy proportion of farmers believe that farming is dangerous, but 'not for my children.'

Perhaps of even greater significance was that beliefs and attitudes do not necessarily translate into action. With six and 15 month follow-up interviews, Zentner *et al* (2005) reported that 68% of parents (n 294) indicated that NAGCAT had influenced them to the degree that they had prevented a child from doing a potentially hazardous job as a result. Recommendations requiring positive action however, were afforded much lower levels of compliance. Only 4.5% of parents had added roll-over protection to their tractors and low rates of compliance were reported in most of the other 'individual changes made on the farm' category (p.865). Zentner *et al* report that:

Perceptions and knowledge of farm hazards did not appear to motivate farmers to protect themselves ... the majority of farm parents perceived farming to be more dangerous than other occupations, yet substantially fewer thought it was more dangerous for children to work on the farm than to work in other settings, and even fewer perceived their children to be at risk for a farm injury (p. 865).

Zentner *et al* cite similar findings in other research, which notes that a discrepancy exists between beliefs and action. For example, Elkind found farmers' knowledge of farm hazards was unrelated to safety precautions they took themselves and among Washington farmers who thought that farming was more dangerous than other occupations, 90% would not discourage their children from farming (p. 865). Other studies highlighted the strong cultural undercurrents which predispose farm parents to expose their children to potentially dangerous farm work. Of particular note, Lee *et al* examined the factors that influenced fathers' decisions to expose their children to hazardous farm activities. They concluded that the attainment of values such as the development of a strong work ethic, building strong self-esteem, and spending family time together during work, amounted to a trade off with *potentially* exposing their children to hazardous farm activities (Zentner, 2005). In other words, the benefits of developing a work ethic and sense of responsibility, acquiring useful knowledge and skills, learning cooperation and teamwork, and bringing the family closer together, outweighed the potential risks of farm work.

Given that in the US, family farms are exempted from child labour laws (the Fair Labor Standard Act), and that parents are left to decide what work is hazardous and the extent of their child's involvement in such work (Zentner, 2005), the potential for child injury on farms, and with ATV farm work, is huge. Marlenga *et al* (2002) note that although complex reasons exist for the exclusion of farmers in the US from occupational health and safety legislation, the values of independence and self-sufficiency exert a strong cultural influence in the rural sector (p.150). Similar values, attitudes and behaviours are evident within the New Zealand context, not only in academic research, but also in our news media.

## Media Reports

In 2001 there were many media reports calling for children to be banned from riding ATVs, following the high number of child ATV fatalities (12) in that year. Child fatalities began to decrease from 2002 (Countrywide Northern, 2004, p.15), leading to fewer media reports calling for ATVs to be banned. John Hudson (OSH) believed the lower rate of fatalities was partly due to the endorsed Guidelines being published in 2002. The guidelines were a compromise between the more regulatory and prescriptive approach favoured by manufacturers and a practicable solution for farmers – safety equipment and supervision, for example (Countrywide Northern, 2004, p.15). Their formulation and release ensured a high level of awareness amongst the rural community at the time. As occurred with the Consent Decrees in the US however, their effects dissipated over time.

The news media readily report ATV fatalities and these – and responses to them – provide useful insights into prevailing opinions and debates. One particular case in 2005 has been exceptional – that of four-year-old Molly Vanner.<sup>18</sup> The prosecution of Molly's father in relation to her accident ensures that the case continues to attract significant media coverage, raising the issue of ATV safety in the public consciousness. Several syndicated reports on Molly's death included a quotation from Ann Weaver of Safekids, who stated children under 15 should not ride ATVs, and that Molly's death was tragic but preventable (Rennie, 2005, p.4). Editorial commentaries and rural readers' responses highlight a sharp divergence of opinion between the rural community and its urban counterpart – a community perceived by farmers as having scant understanding of the exigencies of farming life. In the wake of Molly's tragedy, editorial comments lamented the rural community's pride in pragmatism and adaptability for its repercussions in those cases where this involved "bending the rules" (*Farmers Weekly*, 2005, p.12). In particular, this editorial argued that ignoring standard safety measures – such as not letting children ride ATVs – because of a culture of pragmatism, will result in a continuation of child ATV accidents and fatalities in the future.

In response, farmer, Roger Smith (2005, p.10), argued that "ATV pragmatism is the only workable option", since farmers' cannot leave children at home alone and it is illegal to carry under 14 year olds on tractor, while utility vehicles or 4-wheel drive vehicles are impractical on a lot of terrain. Smith denounces the editorial as failing to offer a viable alternative and maintains that, "we bend the rules and regulations, but most of us do it with caution." Some official responses to fatalities have advocated extreme measures. When commenting upon the ATV related death of 12 year old Jayden Bond, coroner, Roger Mori, recommended farmers consider safer alternatives to ATVs (Northern Advocate, 2005, p.7; The Courier [Timaru], 2005, p.3). Again farmers' responses reflected a pragmatic approach. They pointed out that ATVs were the backbone of their industry and that there were no alternative vehicles that could be usefully substituted for them. In support of its membership, Federated Farmers argued that complying with the endorsed Guidelines was a more viable option than trying to replace the vehicles. (Northern Advocate, 2005, p.7; The Courier, 2005, p.3).

Farm culture has historically encompassed a rugged, individualistic, independent aspect, with the image of the "Kiwi farmer" achieving an almost iconic status within New Zealand society, as epitomised by the *Southern Man* series of advertisements for a locally produced beverage. Farming culture, somewhat contrarily, espouses both personal responsibility and a 'she'll be right' attitude. These attitudes were

---

<sup>18</sup> See Chapter 4, *Expert interviews*

reflected in responses to another ATV child fatality in 2002, that of Hamilton schoolgirl, Amanda Pearse. In correspondence to the Editor of the *Waikato Times*, the rural community emphatically rejected suggestions that rollbars should be made compulsory on ATVs (for pragmatic reasons, such as ease of operation) and universally reiterated rider or supervisor responsibility (Waikato Times, 2002). Personal responsibility however, does not inevitably equate to safety in practice and paraplegic farmer, Kevin Richards, argues that farm culture lacks safety awareness in regard to ATVs. "It's not instilled into the farming culture to be safe" (Sweetnam, 2000, p.5). This sentiment is echoed by co-author of an Otago study into work-place related child fatalities, Rebecca Lilley, who comments that "a safety culture has been lacking within this community for a long time" and she argues that "the culture of farming ... needs to change" (The Press, 2005b, p.3).

### *Childcare*

Many media reports touched on the repercussions for farming families of a lack of childcare when a farmer and his or her partner have to attend to urgent farm work and the issue is evident in some of the farmers' responses above. Brosnahan (2000, p.3) reporting in *Straight Furrow*<sup>19</sup>, states that many farmers agree that laws prohibiting passengers on ATVs will not be complied with, because farmers often have no alternative but to take their children on ATVs as passengers. Brosnahan recounts the regular experiences of farming mother Ali Maw, who sees affixing seats to ATVs to accommodate the children as often the only practical alternative to childcare. Formal childcare for her children would require a round trip of 56 kilometres – and many women, she believes, are in a worse situation.

Childcare issues were highlighted again in 2005 when two Otago children died after being left alone in a utility which rolled down a hill while their father was clearing thistles nearby (Otago Daily times, 2005, p.2). This incident received widespread media coverage, with many of the reports noting the blurred boundaries between work and home that farm life entailed.<sup>20</sup> Indeed, a major concern and a distinctive facet of the farm as a workplace is that the boundaries between home and the workplace are often blurred beyond recognition (Goodger, 2005, p.2). With his wife off the property at the time, the father had taken the children with him to work as he had no other childcare arrangements (Otago Daily Times, 2005, p.10).

While the news media play a role in bringing ATV safety matters to attention, they can also serve – unintentionally – to normalise unsafe practices. Two photographs published in the media in 1999 demonstrate this process (Labes, 1999). One photograph won a national photographic competition depicting rural women, and was organised by the Ministry of Women's Affairs. Both photographs depicted women riding ATVs with seats welded or fixed onto them and children riding in the seats (Labes, 1999). Attaching seats on ATVs increases their centre of gravity and children in the seats have little protection in the event of an accident. This practice is discouraged in all existing guidelines, but continues unabated. In 2002 Plunket expressed concern that rural mothers were still asking them for old car seats to attach to ATVs (Pickering, 2002).

Media reports may also foster skewed impressions of ATV accident characteristics. Within the literature and the interviews undertaken for this project is evidence of a tendency for the farming community to view ATV accidents as a phenomenon related

---

<sup>19</sup> Straight Furrow is a monthly rural bulletin

<sup>20</sup> See Robinson, 2005, p.10; Otago Daily Times, 2005a, p.2; 2005b, p.30; Horowhenua Kapiti Chronicle, 2005, p.4.



to urban children visiting farms. Whilst media coverage of ATV accidents predominantly features rural children and adults, one of the most high profile cases in recent years involved a Hamilton teenager. Amanda Pearse died while using an ATV on a visit to a friend's farm. Media reports suggested that inexperience and unfamiliarity played a role in her death. Amanda put the ATV into reverse, panicked and worked the accelerator, rather than the brake. She was killed partly by the weight of the ATV and partly by hitting an electric fence (Holt and Cooper, 2002). Subsequent reporting included the coroner as describing Amanda as "a 'town girl' who had no idea of the danger of farm bikes" (Holt, 2002). While this is indeed a credible explanation, inexperience is readily associated with urban children, but seldom publicly ascribed to rural children. This effectively adds further weight to erroneous impressions that ATV accidents happen more commonly to urban children than to rural children. Efforts by Federated Farmers to improve child and farm safety may have a similar effect. Each school holiday period they provide timely reminders to the rural community to take extra care on the farm during the holiday period. Their press releases commonly refer to visits by city children, who will have little knowledge or experience of hazards on the farm. These are valid observations, but ones which may have an unintended consequence in as much as they are interpreted as confirmation that ATV accidents are more likely to occur to urban children. The data do not support such an interpretation. Most ATV accidents involve rural children.

Clearly, media coverage of ATV safety has been relatively extensive. In early January 2005, 18 press reports highlighted Otago University research that found farms as having the highest workplace related child fatality rate in the country. Several reports from 1999 to 2005 also examined general farm safety measures, which included information on ATVs and children. Many recommended specific measures farmers could take to make their farms safer. Additionally, each year many reports prior to and during school holidays reinforce the farm safety message in regard to school-aged visitors to farms and school children at home on farms. A good number of reports also pointed to specific safety resources, such as the endorsed Guidelines for safe ATV use. The print media also regularly promoted various farm safety courses or safety training days held at rural schools. Lastly, individual child fatalities also served to reinforce public awareness of safety on ATVs, and farm life in general. Despite considerable media coverage of ATV and farm safety, accidents to children are still occurring. John Hudson (OSH) asserts that while farmers are aware of farm risks, familiarity breeds a laxness – which then extends to the children (The Press, 2005, p.3).

## **Discussion**

A pioneering attitude is part and parcel of farm culture in New Zealand, as attested to by many media reports and media correspondence. There are two distinct, but interconnected issues involved here. On the one hand, many farmers ignore rules, regulations and recommendations almost as a matter of course. This fits with the general ethos of a culture that values independence, toughness, initiative and self-reliance, and, in the case of ATV safety, a lack of stringent regulations and laws allows them to do so. On the other hand, farmers also ignore or bend rules and regulations because often there is no alternative. This relates especially to a lack of available childcare as often both parents may have to attend to urgent farm work. Yet having children on the farm is also part of the farm lifestyle, and a reason many families had taken up farming – so the whole family could live, work and play together. In other words, a strong family ethos is also part of farm culture.

Farmers' comments in the media (and those interviewed for this research) consistently refer to the lack of options they have when the operation of the farm conflicts with their responsibilities as parents. They must habitually make decisions which compromise the safety of their children, simply because they have no other option. Their comments provide evidence that they are conscious of the risks – and of the recommendations in the endorsed Guidelines – but their behaviour is necessarily at odds with both because of a lack of childcare options. Childcare is quite clearly a key determining factor in the decisions they make and, by implication, in the degree of safety afforded to rural children. Compliance rates are unlikely to improve until this issue is addressed.

We should also draw a distinction between childcare and child supervision. The former applies more readily to younger children, particularly pre-schoolers, while the latter is more strongly associated with school-aged children. That is, very young children have no legitimate place in the farm workplace, but their safety is routinely compromised because of the complications arising from the farm being both home and workplace. They require childcare, though the physical parameters of childcare on the farm are difficult to define. Older children, on the other hand, may well have a role to play in the operation of a farm and require supervision, rather than care, presenting a slightly different set of problems. Risks to this group involve not merely providing adequate supervision, but also ensuring that their skills and capacities are appropriate to the intended task. This assessment is necessarily subjective and is undertaken in a context imbued with a strong appreciation of the merits of encouraging those qualities characteristic of the farming community – independence, responsibility and rugged individualism. Compliance with regulations and guidelines in regard to older children therefore, is less connected to the availability of childcare and more readily reflects decisions premised on personal choice rather than a lack of choice.

## **Chapter 3: Literature Review**

### **Introduction**

In New Zealand, one third of all workplace related child fatalities occur in the agricultural sector (Lilley *et al*, 2004, p. 1). Additionally, one third of accidental child fatalities on farms involve ATVs (Owens, 2005). In 2002, OSH estimated that about 70 000 ATVs were in use on New Zealand farms; they were also the most widely used motor vehicle on New Zealand farms (OSH, 2002b). Approximately 95% of ATV use in New Zealand is for farm work, the remaining 5% being for recreational use (ACC, 2005). The operation of ATVs by or around children is largely unregulated and reliable data are sparse, if not rare.

In the United States, data are more readily available and present a sobering picture. Overall, the data show that ATV accidents have increased dramatically in recent years, in tandem with increased sales. In their review of child accident statistics over two distinct periods (1993-98 and 1998-2000), Kelleher *et al* (2005) found a 318% increase in accidents between the two periods. Over the course of the second period, sales of ATVs increased by 89%; they also noted increases in the weight and speed capacities of the vehicles. These factors, they argue, have contributed not only to increased injuries and fatalities amongst the paediatric population, but also to the increased severity of the injuries sustained (Kelleher *et al*, 2005, p. 933).

Facing similar trends in New Zealand, a number of government and non-government agencies in New Zealand (e.g. ACC, Federated Farmers, Safekids and OSH) have jointly and individually sought to improve safety on and around ATVs. Between 1995 and 1996 OSH, in conjunction with Federated Farmers and industry organisations, carried out a survey of ATV use and general demographics pertaining to ATV safety on New Zealand farms. Though dated, the resulting report, *Safe Use of ATVs on New Zealand Farms* (1998), provides solid background information and much of the data are summarised in the following sections. This chapter presents a summary of such New Zealand data as are available, along with relevant international literature, principally from Australia and North America.

#### *A note on the comparability of international data*

As we have noted, New Zealand data are somewhat sparse. Considerable research has been undertaken abroad and is utilised here. Comparisons are not straightforward, however, particularly given that our focus is on the farm environment. In terms of the physical environment and farming practices, Australia's situation most closely resembles that of New Zealand, though even here there are significant differences. Farming in America is even further removed from farming in New Zealand and the same may be said of Canada. There are also differences in the types of use for which ATVs are employed. In New Zealand, the overwhelming majority of ATVs are used on farms; in the United States, recreational use has much more prominence than in New Zealand.

A further complication relates to the collection and recording of data. One obvious difference is the age group classification in different countries, which is often predicated on the legal driving age in the respective countries. New Zealand's driving age is 15 and our data usually cover children from 0 to 15 years, while other countries may have an upper limit of 18 or 20. Overseas research also suffers from similar limitations to those experienced here – missing data or failures to collect and record accurate information, for example. While we acknowledge these impediments

to direct comparisons, there is good reason to include the international data. Firstly, the can assist in substantiating impressions or indicators gleaned from the New Zealand data. Secondly, while the environment and type of use may differ, the vehicles and many of the associated risks are consistent. The types of accidents and injuries are similar, as are the debates surrounding best practice.

## **ATV Use**

As noted above, with more than 70 000 vehicles, ATV use in New Zealand is primarily agricultural. American research shows a trend towards decreasing recreational use, but the balance remains substantially different from New Zealand's situation. Tormoehlen and Sheldon (1996) note that ATVs were initially developed in America solely for recreational use, but have now become a 'production machine' (p. 151). Rodgers (1999) estimated that there were approximately 5.85 million ATV drivers in the USA in 1997 and that just 50.8% of respondents used ATVs for farming or ranching. He also notes however, a trend toward more non-recreational use. Of the non-recreational ATV drivers surveyed, 83% used their ATVs for farming or ranching. Paradoxically, a 2004 analysis of 1080 child ATV injuries in two states (Pennsylvania and North Carolina), found there were only 18 injuries on farms (1.7%), with the author's also stating that ATVs are used largely as recreational vehicles (Keenan & Bratton, 2004, pp. 332, 333). These conflicting data seem to reflect the differing legal, geographic, recreational and agricultural situations across the various American states.

## **ATV modifications and passengers**

Because ATVs have a high centre of gravity, they tend to be unstable, as well as being difficult to turn (American Academy of Pediatrics, 2000, p. 1352; Phrampus *et al*, 2005, p. 58). Moreover, they have an ineffective, or no suspension system and no rear wheel differential (American Academy of Pediatrics, 2000, p. 1352). Because ATVs rely on the driver's ability to manoeuvre their body weight, Murphy *et al* (2004) argue that small children have neither sufficient height nor weight to operate the vehicles effectively and safely. They add that children may also not have the fine motor skills required to react appropriately over difficult, rolling or steep terrain. Both these factors are implicated in the data, with 59% of child ATV injuries in their study resulting from the vehicles flipping or rolling (p. 1188).

ATVs are not designed to be modified or to carry passengers (Phrampus *et al*, 2005, p. 58). In New Zealand however, many bikes are modified. For example, they are used for carrying farm equipment or supplies, which automatically further increases the high centre of gravity. Another typical modification is the welding of infant car-seats to the ATV, which again alters the balance of the vehicle. OSH's 1998 survey noted that 92.5% of farmers surveyed admitted to carrying passengers (p. 11). This is significantly higher than the rates reported elsewhere. In Australia, for example, Fragar *et al* report that field-days surveys undertaken in 2004 show that about 35% of respondents indicated that children often or sometimes rode on ATVs as passengers (p. 14). Rodgers (1999) nationwide (US) telephone survey of 500 ATV users of all age groups, recorded 53.7% of respondents indicating they frequently carry passengers (p. 413). In Tormoehlen and Sheldon's (1996) questionnaire survey of 2 098 youth in Indiana, 75.8% of respondents indicated they had ridden on ATVs as passengers (p. 151).

The lesser incidence of carrying passengers in the US surveys is no doubt related to the different types of use between the two countries – New Zealand's being

predominantly for farming and the US with much higher rates of recreational use. By and large, recreational use does not present the rider with any need to carry passengers, whereas the need to combine childcare and farm work predicts higher rates of carrying passengers. The Australian survey illustrates the difficulties with making direct comparisons in that it reports specifically on children as passengers, rather than passengers in general. None-the-less, the rates reported are substantially lower than the New Zealand rates and it is not clear whether including adult passengers would raise the rates to anything approximating the New Zealand data.

Research that does not rely on self-reported behaviours does not clarify the matter, though it does reinforce the evidence, noted above, that New Zealand ATV users are much more likely to carry passengers than their American counterparts. In America, of 1 342 child ATV fatalities between 1982 and 1998, 75% were passengers (Upperman *et al*, 2003, p. 1285). By contrast, child injury rates for passengers were lower, with a 2005 study carried out in St. Louis producing rates of 25% for the period 1993-98 and 30.7% for the period 1998-2003 (Kelleher *et al*, 2005, p.931). In Pittsburgh, ATV injuries to 51 children consisted of 35 drivers and 16 passengers (Lynch *et al*, 1998, p. 329), while in Brown *et al*'s (2002) study of 109 ATV paediatric injuries, 19 children were passengers (p. 377).

In Utah in 1996, 15% of the children involved in ATV related injuries were passengers (Cvijanovich *et al*, 2001, p. 634) and the data showed that the majority of these (just under 60%) were aged under nine (p. 634). Within this age group, 25% were injured as drivers. In contrast, children aged 12 to 15 years were, in over 75% of the cases, injured as drivers (Cvijanovich *et al*, 2001, p. 634), suggesting that, irrespective of local regulation, riding ATVs is a practice engaged in by children at ages well below the legal driving age in both countries, but with lower rates at younger ages. This is supported by Australian research. Three children aged up to four years, were fatally injured as passengers on ATVs in New South Wales (Australia) from 2000 to 2003, and one child was fatally injured as a pedestrian in the same period. No children in this age group were fatally injured as drivers (Fragar *et al*, 2005, p. 10). In contrast, three child fatalities in the 5 to 14 age group occurred to drivers, and only one fatality was to a passenger (p. 10).

## **Fatalities**

Owens (2005) reports that approximately one third of all farm fatalities are ATV related. Using data sourced from the Injury Prevention Research Unit's *ATV Mortality and Morbidity in NZ*, Safekids (2001) report that between 1990 and 1997, there were five ATV related fatalities to children under the age of 15, representing 16.7% of all age group fatalities for this period (p. 2). These data are somewhat dated and we rely here on international data to assist in demonstrating the trends associated with ATV use. According to Lilley *et al* (2004), patterns associated with fatal injuries to children in New Zealand and abroad include inadequate supervision of small children in work environments and permitting children to be in an area of moving/unguarded machinery. There is also a tendency to let children accompany adult workers using machinery and to allow children to perform work-related activities which are inappropriate for their age and physical size.

In the period 1989 to 1992 there were six ATV fatalities in total on *farms* in Australia (Fragar *et al*, 2005, p.10). The increasing popularity of the vehicles is reflected in more recent statistics. Farm fatalities to children under 15 now average 30 annually in Australia (Fragar *et al*, 2005, p. 5). Of these fatalities, one third involved children

visiting farms.<sup>21</sup> In their retrospective analysis of 115 child farm fatalities in Australia, Mitchell *et al* (2001) report that in the 0 to 14 years age group, two fatalities involved 'transport for work purposes' and 16 fatalities involved 'transport for recreation' (p. 312). The majority (77.4%) of the 115 child farm fatalities in this study were bystanders, with only nine children actually considered to be involved in farm work when fatally injured. None-the-less, Fragar *et al* (2005) note that of the 117 child fatalities on farms between 1989 and 1992, 77% of the accidents occurred in areas where farm-work was being undertaken (p. 6).

Upperman *et al* (2003) recorded 1 342 paediatric (under 16) ATV related fatalities from 1982 to 1998 across the USA, with most fatalities occurring to children aged between 12 and 16 years old (p. 1285). Of the total age spectrum of ATV accidents, Phrampus *et al* (2005) note that 37% of all ATV injuries and 33% of all fatalities since 1985 involved children under 16 years of age (p. 59). This is consistent with Rodgers and Adler's (2001) figure for the US in 1997, where they reported that from 54 000 injuries and 300 fatalities, 35% involved children under 16 years of age (p. 1112). Other studies, however, present data containing higher proportions of child injuries and fatalities, reflecting the fact that from the late 1990s, child ATV related fatalities have been steadily increasing (Kelleher *et al*, 2005, p. 929).

Rogers (1999) and Lynch (1998) report that 40% of all injuries and fatalities occurred to those aged 16 years and younger. Similarly, Brown *et al* (2002) calculate that 47% of all reported injuries, and over 35% of all fatalities occur to children under 16 (p. 378), while Cvijanovich *et al* (2001) estimate that 40% of all fatalities involved children under 16 (p. 631). A number of American studies have calculated the average age of child ATV fatalities to be between 11.2 and 12.4 years.<sup>22</sup> The US CPSC have estimated that drivers under 16 years of age are 2.5 times more likely than drivers 16 to 34, and 4.5 time more likely than drivers 35 to 54, to be seriously injured on or around ATVs (Brown *et al*, 2002, p. 379).

## Injuries

There were 919 hospitalisations in New Zealand of children under 15 with ATV related injuries between 1990 and 1999 (Safekids, 2001), representing 23.4% of all age group injuries. Each year ACC receives approximately 50 claims for ATV related injuries to children under 16 years of age (ACC, 2002), though the 'average' injury is to a male in his forties, and not to young drivers (COHFE, 2002, p. 18). ACC data from 156 injury claims between July 2000 and July 2001 show that 12% were for injuries to children and young adults up to 20 years of age (COHFE, 2002, p. 2).

Farm related injuries to children under 15 years in Australia average 575 annually (Fragar *et al*, 2005, p. 7). From 1994 to 1998 the most common causes of hospital admission to children under 15 years of age, were motorcycle related accidents, including ATVs. Of all ATV related injuries in the USA in 1997, 47% occurred to children younger than 16 years of age (American Academy of Pediatrics, 2000, p. 1353). Browne *et al* (2002) found that of 109 ATV injuries to under 16 year olds in Cincinnati between 1991 and 2000, 62% were 11 to 15 years old, 31% were aged from six to ten years, and seven percent were zero to five years old (pp. 376-77). Similar percentages are reported in Cvijanovich *et al* (2001) and Kelleher *et al* (2005). Injury to children is steadily increasing nationally (Kelleher *et al*, 2005, p. 929) and Phrampus *et al* (2005), citing the Consumer's Product Safety Commission's

---

<sup>21</sup> This is supported by earlier data from Mitchell *et al* (2001), who noted that of 115 farm-related child fatalities in Australia from 1989 to 1992, 30.4% were visitors to the farm.

<sup>22</sup> See Cvijanovich *et al*, 2001; Lister *et al*, 1998; Lynch *et al*, 1998.

(CPSC)<sup>23</sup> figures, recorded approximately 33 000 children injured in ATV related accidents across the USA in 2000, increasing to 34 300 child ATV injuries in 2001, and 37 100 injuries in 2002 (pp. 58-9). Further, Phrampus *et al* (2005) noted an increase of 140% in admissions to Children's Hospital of Pittsburgh during the period 1999 – 2003 (p. 59).<sup>24</sup> Upperman *et al* (2003) and Phrampus *et al* (2005) reported similar findings.

ATV injuries are the third highest sporting and recreational type of injury in Canada (Fisher, 2005). Yanchar (2004), citing the Canadian Institute for Health, reported a 50% increase in all age group ATV injuries resulting in hospitalisation from 1996/1997 to 2000/2001, including a 36% rise in injuries involving children (p.303). In the Maritime Provinces of Canada, the child injury rate tripled, with eight injuries in 1995-96 to 24 injuries in 2001-02 and it continues to increase, with 14 injuries in 2003 (Murphy *et al*, 2004, p. 1187). Males aged 15 to 19 years comprise the age group with the highest injury rate in Canada (Fisher, 2005). By contrast, children aged 13 to 15 were involved in 63% of the injuries in Murphy *et al's* (2004) study, while 16% were less than 10 years old (p. 1186). The mean age of drivers in Murphy *et al's* (2004) study was 12.9 years (p. 1186) and they also report that of those injured from 1990 to 2003, 51 children were drivers and 29 were passengers (p. 1186). Of the injured passengers, the mean age was 10.4 years (p. 1186). Further, 15 children from 92 injured, were recorded as under the age of 10, of whom 5 were drivers and 10 were passengers.

## Gender

Boys consistently feature in the statistics at higher rates than girls. For those under 15 years of age in New Zealand, Safekids (2001) reports that, of the five child ATV related fatalities identified between 1990 and 1997, four were boys (Safekids, 2001, p. 2). Similarly, of ATV related injuries (1990-1999) for the same age group, 787 injuries were to boys compared with 132 injuries to girls (p. 3). In New South Wales, there were 27 farm related ATV injuries to children under 15 years of age between 2000 and 2003, this being comprised of 21 boys and 6 girls (p. 11). This over-representation of boys was also a salient factor in Lower *et al's* (2003) study of agricultural motorcycle injuries to adolescents in Western Australia (p. 333).

About two thirds of all American ATV drivers were male (Rodgers, 1999, p. 412) and boys tended to be over-represented in ATV accidents, comprising 82% percent of under 16 year old ATV fatalities from 1 342 fatalities between 1982 and 1998 (Upperman *et al*, 2003, p. 1285). In St. Louis, Kelleher *et al* (2005) found that of 184 child ATV related injuries, 71% were boys (p. 932). In Lynch *et al's* 1991 to 1995 survey of child ATV injuries in the greater Pittsburgh area, there were 44 boys and seven girls (1998, p. 329). A three-to-one male to female ratio occurred in Brown *et al's* (2002) study of ATV injuries in Cincinnati (pp. 376-77), while boys made up 81% of all child ATV injuries in Keenan and Bratton's (2004) analysis of 1080 injuries in Pennsylvania and North Carolina from 1997 to 2000 (p. 332).<sup>25</sup> Canada's statistics reflect the same patterns. Murphy *et al* (2004) note that from 92 child ATV related injuries (1990-2003, MPC), 79% were to boys (p. 1186).

---

<sup>23</sup> The CPSC initiated legal action against Honda in 1987. Through this action, the consent decrees were introduced by the CPSC in conjunction with all five leading ATV manufacturers, and were legally binding on all parties (Lynch, 1998, p.330). Since this time the CPSC has taken the lead role in monitoring the effectiveness of the decrees by examining injury rates across the USA.

<sup>24</sup> Also see Keenan & Bratton, 2004; Cvijanovich *et al*, 2001; <sup>24</sup> Kelleher *et al*, 2005.

<sup>25</sup> Also see Cvijanovich *et al*, 2001 and Lister *et al*, 1998 for data on Utah and West Virginia.

## Types of Injury

COHFE (2002) determined that of the 37 most serious injuries reviewed in its study, crushing to the trunk and shoulders was the leading form of injury (20 people), and was also exclusively due to rollover accidents (p. 20). The remaining types of injuries were crushing to legs (5), strain/sprain (5), fractured limbs (4), and head injuries (2). The low incidence of head injuries in COHFE's sample contrasts markedly with Safekids (2001) analysis of data from IPRU, which returned an approximate head injury rate of 21% (Safekids, 2001, p. 1). This study suggests that children may be more likely to suffer head injuries in the event of an accident.

In Australian research, Fragar *et al* (2005) note that although ATV related injuries to children on farms are fewer in number than two wheeled motorcycle injuries, the injuries tend to be more serious, often involving head injuries, and crushes to the trunk and chest (p. 11). Injuries to the lower leg, knee, ankle and foot are more prevalent in motorcycle injuries (p. 11). The more serious nature of injuries sustained by ATV riders relative to two-wheeled motorcycle riders, was also noted by Lower *et al* (2002, p. 333) and is supported by American research. In comparison to paediatric bicycle injuries, ATV accident victims were more likely to "sustain multiple injuries and more often required surgical intervention ... [and tended to] require longer hospitalisations ..." (Brown *et al*, 2002, p. 377). Kelleher *et al* (2005), also highlight the phenomenon of multiple injuries, with two thirds of child ATV accident victims receiving multiple injuries (p. 933). Head and neck injuries accounted for 20% of injuries in Brown *et al*'s study (p. 377), while Keenan & Bratton (2004) found head injuries accounted for 45.1 % of injuries and 45.7% of fatalities (pp. 330, 333).<sup>26</sup>

## How injuries occur

According to Phrampus *et al* (2005), most injuries occur when the driver loses control, resulting in the ATV rolling over and then throwing the driver (p. 59). Rollovers are a prominent cause of injury to ATV riders in New Zealand, with 26 of 37 of the most serious injuries reviewed by COHFE (2002) attributed to rollovers, while the remaining 11 were a combination of whiplash, being thrown away or against a machine, or becoming entrapped while riding (p. 20). Entrapment was a feature of just under a third of these rollovers, with 11 riders who were trapped but managed to get free without help and three riders who were trapped until someone else assisted them (p.21). Entrapment may be more likely to occur on flatter land, with 65% (nine from 14 entrapments) taking place on flat, undulating or rolling land (p. 21).

The obvious disadvantage to being trapped by an ATV on flat land is that there is no 'natural fall' to assist the rider in using gravity to push the ATV off (p. 21). Of the 37 most serious injuries in COHFE's study, 12 ATV related accidents occurred on terrain described as 'flat, undulating or rolling', while five accidents were on 'strongly rolling or moderately steep', and nine accidents happened on terrain described as 'steep or very steep'(p. 19). Almost half the farmers in OSH's 1998 survey were dairy farmers, whose farms are less likely to have steep terrain. In all, 92.5% of ATV users in the study were on three types of farms: dairy (178 farms), beef (14 farms), or sheep (12 farms), while 132 farms were a combination of all three (pp. 8, 13). Of the 377 farms, 55 were steep and hilly, 112 were rolling and flat and 113 were a mixture of both (pp. 8, 14).

---

<sup>26</sup> Using data from a national electronic database, Rodgers (1990) determined that about 70% of ATV fatalities in the USA (all ages) were due to head injuries (p. 51). We should note that this research is now some 15 years old and reports on data associated with the recreational role for which the vehicles were originally designed.



For child injuries, the data present a different picture. Brown *et al* (2002) report that falls from the ATV (rather than rollovers) were the most common source of injury, with 40% occurring this way (p. 377). They also found that child ATV drivers were more likely to collide with a stationary object rather than a moving one (p. 377). While only one child driver collided with a moving object in Lynch *et al*'s (1998) study, of 51 child ATV injuries admitted to Pittsburgh's Children's Hospital (1991-1995), loss of control by driver was the overwhelming cause of injuries (p. 331). In Canada, twenty-nine injuries in Murphy *et al*'s (2003) study involved the ATV rolling or flipping, whereas 28 injuries involved a collision with a moving or stationary object (p. 1186).

## **Types of ATV**

Of the 377 farmers surveyed by OSH in 1998, 279 of the bikes used were four-wheelers and 62 were three-wheelers (p.15). Engine capacities varied from 450cc (2 bikes) to 80cc (4 bikes). Mid-range engine capacities were the most popular, with 57 bikes have a 350cc rating, 290 having a 300cc rating, 131 having a 250cc rating and 48 having 200cc (p. 15). As engine size has increased, ATVs have become heavier and larger. They have also become more popular. Sales of ATVs in the United States increased by 89% in the five years to 2004 (Kelleher *et al*, 2005, p. 933). Rodgers (1999) notes an increase in average engine size from 190cc in 1989, to 250cc in 1997, which he attributes in part to the increase in non-recreational use of ATVs (p. 418). Working vehicles, as opposed to recreational vehicles, require bigger engines.

Rogers' analysis of national (US) ATV injury statistics found that "fatal accidents are more likely on ATVs with larger engines" (1990, p. 51). He calculated the 'fatality risk' of an ATV with a 125cc engine, to be 50% lower than an ATV with a 250cc engine (pp. 52-3). Currently, engine sizes range from 50cc to more than 500cc, and ATVs can weigh from 100 to 600lbs and are capable of speeds up to 75mph (Phrampus *et al*, 2005, p. 58). Safety concerns in the US prompted the Consumer's Product Safety Commission's (CPSC) Consent Decrees<sup>27</sup> which included agreements to stop manufacturing three-wheeled ATVs (Lynch *et al*, 1999, p. 330). Currently three-wheeled ATVs are no longer sold or manufactured (Cvijanovich *et al*, 2001, p. 631). One study further recommended that consumers dispose of all three-wheeler ATVs (Rodgers *et al*, 2001), while another recommended banning all used and new three-wheelers, and the recall of all existing three-wheelers (American Academy of Pediatrics, 2000).

## **Training on the safe use of ATVs**

OSH (1998) reported that 72% of New Zealand farmers were self-taught or had no prior training in general ATV use. Similarly, 52% of employees and 33% of family members did not receive any training or were self taught. Most farm visitors (69%) received no training prior to ATV use (p. 9). In America, Tormoehlen and Sheldon's 1996 research found little formal or professional training on ATV use had been undertaken by respondents, with most reporting that they had been trained by a friend (27.3%), or father (21.9%), and lesser numbers attributing their training to brothers, friend's parent, or mother (1996, p. 151). Only 1% of the respondents specified they were taught by a certified professional ATV instructor.

---

<sup>27</sup> The consent decrees were legally binding agreements between the CPSC and all major manufacturers of ATVs, and were designed to reduce ATV injuries to ATV riders (Lynch, 1998, p. 330).

Rodgers (1999) presents similar results, though greater numbers (11%) reported some formal training (p. 414). In relation to free ATV training offered as part of the Consent Decrees, Rodgers (1999) found that about 7.3% of US riders took up such free training offered by the Speciality Vehicle Institute of America (SVIA)<sup>28</sup> in 1997, while just 3.6% of free point-of-sale training provided by Polaris (also due to the decrees) when selling their brand of ATVs, was undertaken (p. 415). Primary reasons for not undertaking the training were that they already knew how to ride and/or did not have enough time for the training (p. 415).

## Helmet use

According to Rodgers (1990), using a helmet while riding ATVs (all ages), reduces the likelihood of death by about 42% and there is the potential for a 64% reduction in non-fatal head injuries (all ages) if helmets are worn (p. 47). Earlier, Kubala and Shrontz (1987) had estimated that the wearing of helmets reduced head-related ATV fatalities by 25% (p. 28). Analysing national (US) databases, Rodgers found that approximately 76% of un-helmeted ATV drivers of all ages, and approximately 52% of helmeted drivers, suffered fatal head injuries (p. 54). Moreover, Rodgers' data indicated younger drivers of ATVs were more likely to suffer non-fatal head injuries, which he suggests may be due to higher risk taking amongst younger drivers (p. 54).

Phrampus *et al* (2005) cite data from the Center for Disease Control and Prevention, and the National Traffic Safety Board, which indicate the fatality rates in states without safety regulations are more than double the rates in states with helmet and other safety regulations (p. 59). Furthermore, the Injury Severity Score (ISS) is lower in patients wearing helmets as opposed to those not wearing helmets (Kelleher *et al*, 2005, p. 932). Low rates of helmet use are evident in most studies of accident and injury records.<sup>29</sup> Despite the fact that Missouri law requires ATV riders under 16 years old to wear a helmet, only one third of the children in Kelleher *et al*'s study were wearing a helmet, leading to the conclusion "that legislation has variable effectiveness in promoting helmet use and decreasing the rate of very young users" (p. 934).

The highest rate of helmet use was reported by Brown *et al* (2002) with 42% of children who sustained ATV injuries in Cincinnati (1991-2000), wearing helmets when their injury occurred (p. 378). These rates are somewhat lower than the rates determined from surveys of ATV users. According to responses from questionnaires administered to 2 098 youth in Indiana, 44.25% of respondents who were taught by an adult, indicated they wore helmets 'usually' or 'always' (Tormoehlen & Sheldon, 1996, p. 152). A national telephone survey of 500 ATV riders of all ages, reported 35.5% of ATV drivers always wearing helmets, with a further 51.8% of drivers indicating they frequently wear helmets (Rodgers, 1999, p. 414).

Keenan & Bratton (2004) compared the state of Pennsylvania, which has laws requiring that helmet are worn, with the state of North Carolina, which does not. Not unexpectedly, fewer children in North Carolina (16.7%) wore helmets than in Pennsylvania (35.8%), but even in Pennsylvania, rates were low. Furthermore, while children in Pennsylvania were more likely to wear helmets and be older (both decreased risk factors for ATV injury), many children still suffered serious injuries and fatalities despite the helmet regulations (pp. 330, 333). Moreover, Keenan & Bratton noted that of 70 fatalities, 19 of the children had been wearing helmets (p. 333).

---

<sup>28</sup> As an agreed to requirement of the 1988 consent decrees, all distributors who were members of SIVA had to offer purchasers of new ATVs free training (Rodgers, 1999, p. 415).

<sup>29</sup> See, for example, Kelleher *et al*, 2005, Carr, 2004, Lister *et al*, 1998 and Lynch *et al*, 1998.

Phrampus *et al* (2005) pointed out that helmets may offer insufficient protection, due to the potentially fast speeds and heavy weight of ATVs (p. 59). Although head injuries made up nearly half of all injuries reviewed, Keenan & Bratton also concluded that helmets would offer little or no protection to the other half of injuries – mostly spinal, thoracic and abdominal, or due to asphyxiation (p. 333). Their main recommendation was to ban children under 16 riding ATVs (p. 334).

Missing data were evident in Murphy *et al*'s Canadian study, with helmet use recorded in only 60 of 92 injuries reviewed. Of those 60 children, 69% were wearing helmets (p. 1186). Also within this group, of the 40 children who received no head or facial injury, 37 were wearing a helmet (p. 1186). Canadian rates of helmet use tended to be higher overall. Murphy *et al* also noted an increase in helmet use over the 13 years that their study covered, with 53% between 1990 and 1998, increasing to 76% from 1999 to 2001 (p. 1187).

### **Rollover protection structures (ROPS)**

Rollover protection structures (ROPS) are often referred to as 'roll bars' or 'roll cages', and are fitted around the ATV, where their purpose is to protect the ATV rider from injury, specifically from being crushed or being hit, in the event that an ATV rolls or make contact with a dangerous object. Within the literature the evidence as to the effectiveness of ROPS is limited and disputed. McDougall & Kahler contend that when used in conjunction with seat-belts, ROPS have the greatest potential to reduce ATV injuries and fatalities (2000, p. 4). Many farmers however, find seat-belts ill-suited to the constant on-and-off pattern of ATV farm work. Seat-belts may also not be compatible with the active riding techniques required for ATVs, though McDougall & Kahler argue this assumption needs to be challenged.

ROPS also serve to increase the high centre of gravity and weight of an ATV, making them more prone to rolling and one UK study (Motor Industry Research Association, 1999, cited in McDougall & Kahler, 2000, pp. 50-51) argued that the rider is at greater risk with ROPS because he or she is kept close to the ATV during the overturning sequence, and is therefore potentially more likely to suffer injury from the ATV and ROPS. Manufacturers are adamant ROPS should not be fitted to ATVs (OSH, 2002b, p. 5). Further, the New Zealand endorsed Guidelines reserve judgement as to the efficacy of ROPS, reserving farmers' right to install them, but, for want of conclusive evidence, not advocating them.

### **Discussion**

With bigger sized and more powerful ATVs being increasingly common (Kelleher *et al*, 2005, p. 933), the potential for injury to children is also increased. Moreover, in New Zealand the ATV is fast making the traditional tractor obsolete – ATVs are now considered by farmers as indispensable to daily farm life. While ATV use in New Zealand is predominantly of an agricultural nature, ATV use in the United States has a large recreational component. However, a comparatively extensive body of research into paediatric ATV injuries in the US illuminates some facets of child ATV injuries which are not as evident in the limited research in New Zealand.

Typically, ATV injuries to under-15-year-olds in New Zealand occur on dairy farms, mainly to boys, and a collision with another vehicle or stationary object is the least likely type of accident. More serious injuries are associated with flat land, as an individual trapped under a heavy machine is often unable to use gravity to lift the ATV off, as he or she would be more likely to be able to do on a slope. Head injuries

and crushing to the trunk and shoulders are the main types of injuries sustained in New Zealand, Australia, and the USA. Further, three distinct groups of child injuries and fatalities emerge: injuries to passengers, bystanders, and to child drivers.

### *Passengers*

Passengers typically tend to be younger, while on average, drivers are usually older children, and often but not always, in their early teens. In the countries reviewed however, contrary to widespread warnings against the carriage of passengers by official organisations and manufacturers, the practice is commonplace. In New Zealand, it is common for farmers to take children as passengers while they attend to urgent work, because both partners are involved in farm work and many rural areas lack childcare alternatives. Accordingly, young children dominate the statistics relating to injuries to passengers. It would seem then that, almost exclusively, the carriage of very young children on ATVs is related to a lack of access to childcare. Strategies to reduce injury within this distinct category therefore need to focus on addressing the practical problems associated with finding an alternative means of caring for young children, rather than carrying them on ATVs.

### *Bystanders*

Bystanders killed on farms in New Zealand are more likely to be younger. Lilley et al (2004) found all workplace fatalities to children under five years old were to bystanders, while 68% of workplace fatalities to 10 to 14 year olds were to bystanders. Reducing injury to children as bystanders again involves providing practical alternatives like childcare, though these injuries are not as clear cut as those to passengers. The blurring of boundaries between the home and the workplace is a situation almost unique to the farm. (Although we recognise a growing trend toward “working from home”, this is usually associated with IT or clerical types of work, which pose minimal risks to children.) It would be impossible to limit children absolutely from areas of the farm where the possibility of a workplace injury may occur. However, the problem of bystander injury and fatalities involving children is a major one and finding ways to minimise the risks is imperative. Resolving the issue will require more safety compliant behaviours on the farm, perhaps by ensuring that certain areas of work are avoided by children at certain times of the day and by excluding children from any areas where machinery is in operation, including ATVs.

### *Child drivers*

Existing research and accident data show that children begin to drive ATVs at well below the age recommended by manufacturers and safety guidelines, resulting in a higher incidence of death and injury to older children as drivers, rather than as passengers or bystanders. While the literature is unanimous in its insistence that ATVs are not designed for children to ride, and that in many cases, children lack the physical strength and cognitive capacity to operate them safely, the common use of ATVs by children on farms in New Zealand suggests a number of reasons why such advice is frequently ignored. The literature suggests a different level of safety consciousness amongst the rural community, where behaviours in the workplace do not correspond with accepted practice in urban workplaces. Of particular note is Zentner *et al*'s notion that farmers view the benefits of working on the farm (fostering a sense of personal responsibility and independence, for example) as a worthy trade-off against the risk of potential injury (p. 865). This attitude coupled with a failure to appreciate the real dangers of farms as a dangerous workplace (see Lilley et al,

2004) result in an unacceptable level of ATV related injury to children on New Zealand farms.

There is also a sub-group of children injured and killed at ages that common sense would dictate should never be driving ATVs. In the US, for instance, Cvijanovich *et al* (2001) recorded four fatalities to children under eight years of age who were driving an ATV at the time of their death (p. 631). Similarly, in New Zealand four year old Molly Vanner was recently killed on a farm when her father allowed her to drive an ATV while he made a call on his cell-phone (Rennie, 2005, p. 4). The practice of allowing very young children to drive ATVs does not indicate a practical problem, such as childcare. Nor could it be argued that children in this age group should be working. Rather, it is indicative of the variation in levels of safety consciousness and the inappropriateness of such young children driving ATVs needs to be asserted as an integral aspect of the development of a more safety compliant culture.

### *Regulation and compliance*

Common to ATV use in the countries reviewed, is a low rate of compliance with regulations or official recommendations on the safe use of ATVs. Indeed much of the literature, especially in the US, was directed toward legislation of an ATV age limit. This encompassed arguments both in support of stringent laws (Helmkamp, 2001), and against attempting to legislate ATV use to any significant degree (Tormoehlen & Sheldon, 1996). In the USA, Uppermann *et al* (2003) argued for more stringent laws regarding ATV use with children. They do so in the context of pointing out that “we found that current laws would have had little effect on paediatric mortality, because the laws appear to be insufficient, and they are ignored by many ATV enthusiasts” (p. 1286). In contrast, Kelleher *et al* (2005) note that legislation has “variable effectiveness” in gaining compliance with helmet regulations or in reducing the number of young riders (p. 934). They argue that:

Despite a growing body of data in the literature, there is a lack of public awareness regarding the risk of injury with childhood ATV use. Because stopping children from riding ATVs altogether presents an insurmountable task, increasing public awareness regarding pediatric (*sic*) ATV trauma, the implementation of mandatory rider training, age restrictions and helmet use, and strict enforcement of existing laws ... may enable us to effect safer practices to decrease the incidence and severity of ATV-related injuries in children (Kelleher *et al*, 2005, p. 934).

New Zealand children also continue to ride and be killed or injured on ATVs, despite safety guidelines and advice from organisations such as ACC, OSH and Safekids, as is evidenced by statistics presented here. The endorsed Guidelines are the closest New Zealand has to ATV regulations. However, the guidelines do not categorically ban under 16-year-olds from riding ATVs. Rather, they set a benchmark in safety standards that inherently condones, though does not overtly encourage, ATV use amongst under 16-year-olds.

Two competing lines of argument emerge from New Zealand's almost exclusive dependence on the endorsed Guidelines in terms of regulations and legislation. On the one hand, a parallel exists between the endorsed Guidelines and the US Consent Decrees in terms of the ‘lack of teeth’ or regulatory power ascribed to each. Many US authors expressed concern that the Decrees’ inability to reduce paediatric injuries and fatalities was due to the Decrees not banning children under 16 years of age from driving ATVs. A similar argument could then be applied to the New Zealand

context; that farmers are less likely to engage in safety compliant behaviour with their children, and let their children ride ATVs if the law allows them to do so. Yet, a fundamental difference between the New Zealand and US context is that the New Zealand situation is one of private farms as opposed to public recreational use. This presents a major problem of monitoring compliance with regulations on geographically isolated private property in New Zealand. Further, other US research points to lack of compliance to regulations in states which did have laws banning under 16-year-olds from riding ATVs.

The alternative argument suggests the need for a more flexible approach to regulations, such as exists with the endorsed Guidelines, but an approach which combined this data and information from relevant research (see Zentner, 2005). Such an approach would seek to isolate unsafe cultural attitudes amongst the rural population and would therefore attempt to achieve behavioural change by firstly attempting to foster cultural change.

### *Helmets*

Similarly, helmet compliance, even in US states with helmet regulations, has been poor, while in New Zealand it is not compulsory to wear a helmet if operating an ATV on a farm – though most organisations recommend that one be worn. Low compliance rates in both countries suggest user resistance to the practice, yet with around half of accidents resulting in head injuries, helmet use is an essential part of any effective strategy to reduce child ATV injuries.

Further, the use of helmets requires both passive action and behavioural modification by the ATV driver, in as much as choosing to use a helmet is a behavioural consideration, while the actual wearing of a helmet constitutes a passive measure (as no behaviour is required from the rider in the event of an accident). The actual wearing of a helmet – as opposed to owning one – however, involves a considerable level of choice, despite any helmet legislation. Research has indicated that, even with such legislation in place, rates of helmet use tend to be low. Again it would seem from the literature that some kind of strategy that aimed to change farm culture about the wearing of helmets is needed.

Studies in the US show that about half of child ATV injuries involve the victim's head (Keenan & Bratton, 2004, p. 333). Given this, helmets would appear to be beneficial to half of all injuries, but provide little protection to the other half. Further, data attesting to the actual effectiveness of helmets in reducing injury raises further discussion. While studies indicate children wearing helmets have both lower Injury Severity Scores and reduced overall injury and fatality rates, then non-helmeted ATV riders, a US study by Keenan & Bratton (2004) that compared a state with, and a state without helmet laws, found that from 70 fatalities, 19% of the children had been wearing a helmet (p. 333). Thus, while helmets do save lives, they can never be universally effective.

Utilisation of US studies suggests a need for further research in the New Zealand context, particularly in regard to the effectiveness of helmets on farms. With New Zealand's ATV use being predominantly agricultural and the United States' predominantly recreational, further questions need to be asked:

- Do recreational ATV users regularly attain higher speeds than farm ATV users?

- Do recreational users in the US engage in risky behaviour, such as attempting jumps or dangerous stunts?
- What is the extent of ATV recreational use by children on New Zealand farms?
- Are high speeds attained by ATV users in the course of daily farm work?

Moreover, farmers in New Zealand have indicated a need for an unrestrictive helmet. This has been answered with the availability in New Zealand of an affordable and specifically designed ATV helmet that suits the needs of farm work: ATV helmet New Zealand Standard 8600:2002 (OSH, 2002b). The rate of use of these helmets is still relatively low, suggesting that further promotion of the helmets is needed. While helmets are a necessary component of any strategy to improve child ATV safety however, they are not sufficient in themselves, especially with half of all injuries involving other parts of the body.

Similar user resistance is apparent in regard to professional training, with participation rates falling as low as 1% in some studies and the vast majority of riders indicating that they taught themselves how to ride. Specific training programmes for child riders were non-existent, which is unsurprising given that riding is not endorsed for this group. Some US studies also found a discrepancy between people's attitudes to training and ATV safety, and their actual practice. For instance Zentner's (2005) survey research noted that several farmers were aware of the increased dangers farms posed to children, and were instructed in practical measures to make their farms safer (p. 864). Yet upon follow-up 15 months later, the majority had not made physical changes to their farming activities and environment (p. 865). This suggests either a belief that accidents only happen to other people, or that knowledge alone is an insufficient generator of change – or perhaps a combination of both.

## **Summary**

The overall picture the literature presents is one of an under-regulated sector, typically displaying low compliance rates with officially endorsed safety messages and an unacceptable level of injuries amongst the paediatric population. Despite official warnings as to the dangers of ATV use by those under 16 years of age, widespread use by this population continues to be the norm. The situation in New Zealand is unique in that the combination of ATVs as an indispensable piece of farm machinery, and the 'farm kid' as an essential part of the farm workforce, considerably increases the exposure of farm children to ATV related death and injury. Further, due to the blurring of boundaries between the home and the workplace on farms, the potential for younger farm children to become caught up in ATV related injury is extended. Ultimately, an improvement in safety compliant behaviours is less contingent upon tighter regulation (particularly in view of the problems inherent in policing and monitoring such geographically diverse and isolated workplaces) and than it is upon effecting cultural change. That is, enhancement of child ATV safety will depend on strategies devised to encourage changes in farming culture before there is likely to be significant change in farming practices.

## **Chapter 4: Expert Informant Interviews**

### **Introduction**

The expert informants were sourced through personal association, referrals, and by direct approaches to various government and non-government bodies with an interest in the issue. Two of the six interviews were conducted in person, the remaining four by telephone. The seven informants were Julie Chambers (Policy Analyst) and Joy Gunn (National Co-ordinator Safekids Campaign and Communications Advisor) from Safekids (interviewed jointly), John Wallaart (Injury Prevention Programme Manager) from ACC, John Hudson (Business Advisor, Agriculture) from OSH/Department of Labour, Owen Brakenrig (Trainer) of Agribusiness, Gavin Forrest (Manager of General Policy) from Federated Farmers and Grant Hadfield (FarmSafe Project Manager) of FarmSafe, AgITO. The perspective of each of these informants was contingent upon the specific focus of their respective organisations. For instance, reducing injury rates was a particular focus of the ACC, while the rural perspective was a focal point for Federated Farmers.

The view that the ATV is now the work vehicle of choice on New Zealand farms underpinned the discussions with the expert respondents, with John Hudson and John Wallaart suggesting that around 70,000 to 75,000 such vehicles were currently in use. According to the respondents, the preference for ATVs stems from their mobility, efficiency and 'pasture friendly' features, particularly in the dairy farming sector. The expert informants all held similar views regarding ATV safety in general and child related safety in particular, although they varied in what they saw as of primary importance across a range of key issues. These issues included:

#### *Children's Involvement on the Farm*

- The tendency for children to undertake farm work;
- The practicalities of child supervision on the farm;
- Defining the issue as a workplace, child welfare or child supervision concern;
- Increasing opposition from some rural mothers to their children driving ATVs;
- Defining appropriate minimum driver age limits for ATVs;

#### *Educational Requirements and Raising Awareness*

- The need to increase awareness of child safety on the farm generally and ATV safety specifically;
- References to the high, but temporary, impact of the endorsed Guidelines produced by the Agricultural Health and Safety Council,<sup>30</sup> and safety awareness campaigns;
- The role of ATV safety education and its possible effects;
- The rate of uptake of industry safety training;

#### *The Perceptions and Culture of the Rural Community*

- The need to change "social attitudes and practices" (John Wallaart) in New Zealand farming culture through a wide-ranging strategy;
- The 'risk taking' approach of many in the rural community due, in part, to the misperception of low injury rates on the farm;
- The rural community's perception of Health and Safety practices;

---

<sup>30</sup> At the time of consultation, this body was known as the Agricultural Industry Focus Group and comprises various government departments (including ACC, OSH, Land Transport New Zealand, MAF Policy, and the Police), and industry organisations (including Federated Farmers, Rural Women, Farm Forestry, Deer Farmers, Young Farmers, FarmSafe, The Council of Trade Unions, and Agriculture ITO).



- How perceptions of ATV safety are affected by media coverage;
- The assessment of the physical and cognitive capacities of children in relation to ATVs;
- The effect of two-wheeled vehicles and child-size ATVs on perceptions of child driver ability;
- How ATVs can be perceived as safe amusements for children;

#### *Technical Issues*

- The increasing engine sizes, weights and speeds of ATVs;
- How ATVs are used in the farming environment;
- The use of ATV safety equipment by adults and children;

#### *Inconsistencies*

- Inconsistent and incomplete data in the New Zealand context;
- Mixed messages in terms of safety and age recommendations.

### **Current Legislation**

The respondents reiterated that there is no legislation which specifically refers to child drivers of ATVs on private land, but that they are regulated in terms of Health and Safety statutes when operated in a work environment involving paid staff. Alternatively, when employment legislation does not apply, the 1961 Crimes Act can be used for the purposes of prosecution. The Crimes Act is currently being applied to the case of a Taranaki farmer who was charged with manslaughter (under Clause 156) following the death of his four-year old daughter while riding an ATV in September 2005.

### **Education versus Legislation**

All the respondents favoured the strategy of increasing ATV child safety awareness through engaging the rural community in education programmes and safety campaigns. Regulation, by contrast, would not induce “the cultural change we are trying to effect” (John Hudson) as legislation would focus on prosecution rather than on raising safety awareness and minimising actual risk to children (Gavin Forrest). Introducing legislation to alter ATV safety practices - or installing ‘punitive action as the key solution’ - was not the preferred approach of the expert informants for several reasons. First, they saw regulation as an impractical solution, since no single area of legislation (for instance child welfare or land transport) could properly encompass ATV child safety. Also, as monitoring rural compliance with such legislation would be impossible to achieve, enforcement would prove unfeasible. Finally, the informants spoke of a potential backlash from the rural community in protest to the imposition of any legislation which restricts vehicle use on private land.

John Wallaart was the only expert informant to state that ATV safety legislation is “inevitable, it’s coming”, although he agrees with the other informants that authorities “can’t enforce [such] legislation on farms; it’s impossible”. The geographic distribution of New Zealand’s farms and the resources required to monitor the implementation of safety statutes in the farming environment would mean that instituting ATV specific regulation would prove impractical. He suggested instead that a change of ATV safety practice in the rural community would only happen through the establishment of ‘self-enforcement’. This ‘self-enforcement’ could be motivated by modifying current attitudes through education, and would need to be established before any form of legislation could be installed successfully.

## Driver Age Limit

Generally, the respondents expressed their preference for a minimum ATV driver age limit to be set at 16 years. Owen Brakenrig of Agribusiness stated that the courses he facilitates generally follow the manufacturer's recommendation of a minimum driver age of 16 years. However, most of the respondents reaffirmed the recommendations presented in the endorsed Guidelines produced by the Agricultural Health and Safety Council. This 'best practice' document, *The Safe Use of ATVs on New Zealand Farms*, recommends that those aged 15 and under should not be permitted to drive an ATV unless under strict supervisory conditions, and those under the age of 12 should not be permitted to drive a vehicle under any circumstances.

This position was seen by some of the respondents as a compromise on the "gold standard" (John Hudson) age limit of 16 years. This age concession came into effect after consideration of several factors. The upper limit of 15 years takes into account the road vehicle licensing age; the 'concessionary' age of 12 acknowledges that other farm vehicles, such as tractors, can be legally driven by those aged 12 years and older; the practical implications of children being "essential for the productivity of the farm" (and so requiring access to on-farm transport) were also taken into consideration. Some respondents reiterated that although they endorse (reluctantly) the age limits endorsed by the Guidelines, they did not encourage parents to allow those aged less than 16 years to ride ATVs.

## Child Driver Ability

All of the expert respondents expressed concern at the rural community's assumption around children's ability and skill when driving an ATV. All of the respondents stated that those under the age of 16, and particularly those under the age of 12, did not possess the physical or cognitive ability to operate an ATV safely. John Hudson also questioned the ability of children to fully understand the risks involved in operating such a vehicle, stating that those under the age of 12 especially, "don't have the vision of what might happen...it's a cognitive [issue]." He also stated that while some children may be very capable of driving ATVs, "it can't be shown that they can drive them well in an emergency." In common with the other expert informants, Owen Brakenrig contends that ATVs are 'actively' driven vehicles, requiring an appreciation of driver balance and constant redistribution of weight, both of which are often beyond the capacities of younger drivers. In addition, younger drivers have neither the weight nor the strength to corner the vehicles safely, while their lack of height may limit their ability to reach and operate the pedals and other instruments properly. In summary he states that children simply "haven't got control over the bike." John Hudson expands on the significance of a child driver's lighter weight by noting that younger drivers would lack the strength required to lift such a vehicle in the event of a roll-over accident.

Several factors were suggested by the expert informants for this misperception of child driver ability. Owen Brakenrig and Grant Hadfield both suggested that because children on farms often ride smaller 2-wheel vehicles from a young age, this feeds a misconception that children can 'graduate' to the heavier ATVs before they are really able. Owen Brakenrig also explained that part of the perception of child driver ability stems from a "misconception of safety", or equating the simplicity of ATV operation with a corresponding lack of risk. ATVs seem simple to drive, lack a clutch, have a basic gear-change system and possess an almost effortless throttle. These factors combine to make an ATV "seem like a car or golf-cart to drive, but it's not."

## **ATV Maintenance**

While some of the respondents did state their concern regarding the condition of ATVs on New Zealand farms, it was not explored by most participants as a primary issue in regard to ATV child safety. Owen Brakenrig stated that satisfactory ATV maintenance is lacking “across the board”, with the incidence of faulty brakes, bald tyres and irregular vehicle checks commonplace among the rural community. Poor maintenance (combined with poor driver ability) ultimately affects cornering and the general operational capacity of the vehicle. While he reiterates that driver ability is the more prominent factor in ATV safety, frequent vehicle checks and maintenance are also contributing issues.

## **Mixed Messages**

One of the most pressing requirements regarding ATV safety in general and child safety in particular, is the need for clear guidelines and simple messages. According to Julie Chambers and Joy Gunn, the conflicting advice given to the rural community regarding the appropriate ATV minimum driver age is just one issue which needs to be clarified. Differing recommendations regarding safety equipment and carrying passengers, for example, also add to the difficulty in changing practices in the rural community. The problematic effects of mixed messages were also highlighted by other expert informants. John Wallaart expressed his concern about deviating from the 16 year minimum driver age or in presenting any recommendations which might encourage the practice. The media was cited by some informants as presenting images (particularly in television programmes targeted at the farming community) which deviated from safety recommendations – images of ATVs being driven with (often young) passengers and with little or no safety equipment will inevitably shape the perceptions of the rural community regarding ATV safety practices.

## **Formal Training**

All the organisations to which the expert informants belonged offered training material, courses, or information. Federated Farmers distributed the endorsed Guidelines to all of its members. These provided safety conventions for both adult riders and children around the vehicles. The organisation also publicises training programmes and course information. Agribusiness offers training courses covering ATV skills and safety to farmers, but focuses particularly on government agencies, high-schools and prisons. Such training in schools is NZQA accredited and offered only to those in years 11, 12, and 13, with students who are usually in the 16-18 years age range. The FarmSafe programme (which is administered by Ag ITO and is NZQA accredited) focuses on increasing “FarmSafe Awareness” and changing the culture of the rural community by raising awareness of the “high number of injuries and the potential financial, physical and psychological ramifications of serious injury” (Grant Hadfield). FarmSafe runs workshops which cover several areas of farm safety and centre on developing three key aspects; awareness, plans and skills. ATVs are addressed in the ‘Farm Skills’ workshop, although no specific reference is made to child safety in any of the FarmSafe courses. As of the 5<sup>th</sup> of February 2006, 20,008 participants had enrolled in a FarmSafe workshop, with 12,740 participants having attended an “Awareness” workshop (Grant Hadfield). The ACC regularly distributes safety information to farmers, contributes to media publications and articles, and promotes driver training programmes to the rural community. John Wallaart noted however that both the ACC and the general media regularly commented on a variety of farm safety issues and that perhaps ATV safety messages became subsumed and lost their specificity in the process.

Owen Brakenrig believed that, because the courses offered by Agribusiness are NZQA accredited, both farmers and student participants view them as beneficial to future employment opportunities. Also, younger course participants view the training as enjoyable and often consider the courses as “interesting and fun”. The other significant factor in the uptake of farm safety courses is that of cost. Costs for farm safety courses are set to rise in the future, potentially discouraging some farmer participation. Owen also suggested a 1 hour training session at ATV purchasing sites as one way to encourage ATV rider training and maintain low training costs.

### **Voluntary Driver Licensing System for Young Drivers**

During the course of the interviews, the possibility of a voluntary licensing system for 12 to 15 year old ATV drivers was introduced. This suggestion was raised with some of the expert informants who generally agreed that an age-graduated licence would have some merit. It would ensure a minimum level of driver training and discourage those under the age of 12 from driving ATVs. However two significant concerns arose from this discussion. The first is that if the cost of such a system were too high, the uptake of the licence would be minimal (Owen Brakenrig). The second problem involved concerns regarding consistency. As John Wallaart contended, the better approach would be to “keep guidelines consistent” and not be seen to encourage 12 to 15 year olds to drive ATVs at all. It is also not clear that farmers would engage with a voluntary system in any greater numbers than those currently investing in training courses.

Julie Chambers and Joy Gunn highlighted a further concern regarding the ATV Safety Guideline’s recommendation that those between 12 and 15 years could drive ATVs with training and under strict supervisory conditions. Their concern centred on the training component of this recommendation and subsequent monitoring of the practices of young riders. They were concerned about where the training would be undertaken, who would assure that the quality of training courses was maintained and how younger driver’s compliance with safe practices would be monitored. Informal training by relatives and friends was insufficient; formal training was imperative. They further contended that any formal training made available to the younger ATV drivers should comply with the wishes of many farmers that such a programme should be voluntary and allow for choice.

### **Involvement and supervision of Children on Farms**

The involvement of children in the day-to-day operation of farms was seen as one of the fundamental issues surrounding ATV child safety by all of the expert informants. This was seen as a traditional farming practice by the rural community, and as a positive one by the expert informants. Gavin Forrest viewed this practice as one which taught children about work ethics, working with others and the operation of a farm in a functioning environment. John Hudson stated that children working on the farm was a long-held practice and “...that’s not a bad thing, that’s a good thing”. Generally, all the expert informants agreed that involving children in farming operations was a positive practice for both parents and children. However, Julie Chambers and Joy Gunn highlighted one effect of this “everyone pitches in” approach as producing a perception among the rural community that older children were similar, if not equivalent to adult farm workers. This, in turn, feeds a potential misconception of increased ability among young ATV drivers, while age and relevant differences are often not considered.

Although the notion of 'banning children from the farm' was considered to be unrealistic and impractical, the potential for children to become "entangled up in hazards" needed to be acknowledged (Gavin Forrest). According to Gavin, "there are limits" in terms of appropriate tasks for children to undertake in the farm environment, although he did not suggest how these limits could be defined, or by whom. Owen Brakenrig maintained that the high likelihood of rural children being injured on the farm was a directly related to the longer hours they spend undertaking farm chores, including riding ATVs. These views were echoed by all the expert informants, though the general opinion was that due to the contribution children make to the 'family business' and the benefits children receive from participating on the farm, discouraging such a practice would be "too simplistic", detrimental and unworkable.

All of the expert respondents viewed child supervision, along with the involvement of children on the farm, as a key area for ATV child safety. Julie Chambers and Joy Gunn summarised the view of all the expert informants. They stated that constant supervision of children in a working environment is complicated and problematic, as it is difficult to balance an environment that combines work and family. They add that rural parents 'lack options' in terms of childcare and receive almost no childcare services or assistance. The practical consequences of this are illustrated by the practice of attaching baby seats to ATVs when children have to accompany their parents (usually their mothers) onto the farm. Often the informants would state that taking children into the farming environment was "unavoidable" as many parents feel obliged to take their children with them while working. Grant Hadfield noted that this is a practice undertaken by both rural and urban parents. John Wallaart concurred that childcare is an issue which affects all aspects of rural life but questioned the practical options available for farming families.

The option of communal childcare facilities (a rural practice which has diminished over the years according to Gavin Forrest) and/or more subsidies for rural childcare may provide a solution according to Julie Chambers and Joy Gun. This approach is questioned by other informants however. Because these "kids are more responsible ... because they have been bought up in a totally different environment to urban kids" (Grant Hadfield), it is suggested that particular consideration should be given to re-assessing the kinds of situations where supervision may be required. While acknowledging the limitations imposed on rural parents regarding access to childcare, Gavin Forrest did assert that "there are sacrifices to be made" in terms of childcare. He maintains that while consideration does need to be given to the unique circumstances surrounding childcare and supervision on the working farm, it should not exempt parents from finding practical alternatives and exploring other options where possible.

## **Changing the Culture**

According to all the expert informants, the most practical way to approach the issue of ATV child safety is by "changing the culture" (Gavin Forrest). This process is a difficult one for two reasons. First, most farms are independent, private businesses which makes standardising practices, at best, problematic. The second is that the farming community is made up of "rugged individuals in varied environments... [who] are exposed to hazards every day". This leads to an element of desensitisation to the risks involved in the farming workplace. In combination, these factors produce an "independent, gung-ho attitude" and the "we know what we're doing approach" which hinder the development of better rural safety practices.

Gavin Forrest posited three particular elements which could best motivate culture change: the influence of neighbours, friends and family in the rural community, the support of strong data when proposing any changes to practice, and the influence of an increasing number of mothers who are opposed to their children driving ATVs. Changes in rural culture would be dependent on the “full agreement” of the rural community and would need to include practical solutions for the potential problems farmers would face in implementing changes to farm practices (John Wallaart). Also, any safety campaign could only be successful with strong “facts behind it” (Gavin Forrest). The agricultural community would not accept any suggestions for change unless it was “logical and ... [presented] good reason to change” (John Wallaart). As noted above, two informants observed that an increasing number of rural mothers were voicing their resistance to their children driving ATVs, but in the face of opposition from their partners, they often “give up” their stance and allowed their children access to the vehicles. One informant suggested that the current endorsed Guidelines provide ‘support’ to mothers who oppose their children having access to ATVs and this may be an avenue worthy of further exploration.

Some expert informants also suggested that future strategies for changing rural culture could include provision for positive financial incentives to encourage farmers to adopt changes in their farm practices. This view reinforces the belief amongst all of the expert informants that legislating for changes in farm practice is impractical and would not induce the changes in culture that the informants’ organisations seek to encourage. The general view is that “education is a more encompassing process than legislation” (Grant Hadfield), though some form of regulation is seen as either a last resort by some informants or as an inevitable progression by others. The informants affirm that due to the promotion of farm safety initiatives through agricultural organisations, the release of the endorsed Guidelines, and increasing media publicity around ATV accidents, awareness of the issue among the rural community has risen and attitudes are changing. “Slowly the message seems to be getting through” (John Wallaart). Despite this, the informants also state that ATV injury statistics are beginning to rise and that any change in the rural approach to ATV safety has historically shown itself to be a ‘short-lived’ one.

## **Discussion**

The expert respondents held similar views on a range of issues, and presented the same array of concerns regarding ATV child safety. Although there was some variation in terms of how the informants would prioritise the significance of each issue, all informants endorsed an approach which included presenting strong data to support any proposed recommendations. They also advocated encouraging education before legislation, choice before compulsion, and practicality before idealism. Together, the interviews illustrate how improving ATV child safety can only be considered within a framework which takes multiple factors into account.

The most dominant objective advanced by the informants was that of effecting a rural culture change. The culture of the rural community is one of self-sufficiency, independence and established practice and it is this culture that informs the rural community’s perspective on safety issues in general and ATV safety in particular. All the issues discussed by the expert informants were approached within the framework of this culture and revising it appears to be the motivating force behind the approaches of all the respondents’ organisations. This approach is reflected in how training programmes are marketed, awareness campaigns designed, and safety information disseminated to the rural community. It is an approach that attempts to

promote safe workplace practices and risk awareness by working with the practical realities of the working farm environment and the requirements of family life.

During the course of the interviews, almost all the respondents used the word 'incremental' to describe the pace of implementing rural culture change. In addition, some respondents articulated the temporary nature of any increase in awareness, often quoting recent statistics to illustrate the 'regression' of farm and ATV safety practices. This would indicate that, while the current organisational and policy approaches have enjoyed some success, implementing more sustained and targeted measures is becoming increasingly necessary. To maintain an effective and enduring awareness campaign, the most efficient modes of communication with the rural community need to be identified. The content of any safety awareness campaign would also need to include a strong line of reasoning, supported by the evidence, if there is to be any hope of the rural community adopting the safety practices desired.

The informants placed much emphasis on the inefficiency and impracticality of ATV legislation in inducing a rural culture shift, expressing instead overwhelming support for increasing ATV and farm safety awareness through education. According to the expert informants, the New Zealand rural community would resist the introduction of such regulation, while the monitoring and enforcement of ATV safety laws would prove almost impossible. Legislation then is seen by the expert informants as a 'last resort' approach. As the literature review indicates, where (US) legislation governing ATV use has been introduced, the incidence of general ATV injury and death initially declined significantly. When the relevant statutes were rescinded however, the injury and mortality statistics rose considerably. At first sight, this seems to support the introduction of legislation. Critical reviews of the associated data, however, suggest otherwise.

Compliance with the legislation was generally poor and the legislation failed to "reduce ATV injury amongst children" at all. There were also suggestions that the legislation may have actually exacerbated unsafe ATV practices.<sup>31</sup> In common with the contentions of the expert informants, the literature review also suggests that the awareness campaign that accompanied the installation of the ATV safety legislation was the primary cause for the decline in general ATV accidents, and not the law itself. Also, the rise of ATV injury and mortality statistics following the retraction of the legislation, illustrates the expert informants' view that legislation would not necessarily effect a sustained change in ATV safety practices. Clearly, the same might be said of the publicity campaign. The experts reiterated, however, that sustaining improved practices is dependent on ensuring ongoing safety campaigns which constantly reinforce consistent safety guidelines.

Although the American agricultural industry differs in many ways to the New Zealand situation, instituting ATV safety law in either country presents similar complications. In order to regulate the behaviour of any given group, at least one of two requisites need to exist. First, legislation may be introduced to reflect existing social attitudes. This is illustrated by the amendments made in 2003 to the Smokefree Environments Act (1990). The amendments prohibited smoking tobacco in workplaces, on public transport, and in hospitality venues.<sup>32</sup> According to the Ministry of Health's *The Smoke is Clearing: Anniversary Report 2005*:

---

<sup>31</sup> See Chapter 2, *Regulation and Compliance*

<sup>32</sup> <http://www.moh.govt.nz/smokefreelaw>

“Over 90 percent of New Zealanders, including most smokers, strongly support the smoke-free provisions, and so the focus of enforcement has been on encouraging voluntary compliance and support for public health protection...”<sup>33</sup>

The outcome of this approach has produced, according to the Ministry of Health, an approximate compliance rate of 95 percent, as well as “downstream” effects which have reduced second-hand smoke exposure in private homes by over 5 percent (ibid). The Ministry also cites media campaigns and targeted awareness programmes as factors which influenced the legislation’s success (ibid).

The second requisite for the regulation of behaviour is that of enforcement. The success of a given law (in the absence of its social support) depends on its ability to be enforced; it depends on the presence of an effective monitoring mechanism. In the context of ATV safety, no such mechanism is feasible due to the geographical distribution of New Zealand’s farms, and the financial and personnel constraints of law enforcement agencies. These bases for legislation echo John Wallaart’s contention that any successful regulation surrounding ATV safety in general and child safety in particular, would require a form of “self-enforcement” - or ‘voluntary compliance’ - from the rural community. Imposing regulation that is neither supported by the group it wishes to influence, nor amenable to adequate monitoring and enforcement, would not fulfil the objectives of removing children from ATVs or ensuring their safety around the vehicles.

In terms of ATV safety education, there are several training programmes currently available to farmers and their staff. These often preclude family members however, and are not mandatory in nature. Establishing a mandatory training programme could prove problematic as farm staff are a very mobile workforce, frequently moving between farms and employers. Safety training requirements differ according to the staff and the farm, and the required administration would be complex. The informants reaffirmed their preference for voluntary, low-cost, short-course training programmes, which may account for the encouraging enrolment numbers in courses such as the FarmSafe workshops currently offered. These courses are short in duration and are subsidised by the government and the agricultural sector. This would suggest that to deviate from this format may reduce the uptake of safety training programmes by the rural community. Again, the nature of this discussion would appear to favour the support of voluntary programmes rather than obligatory ones. While encouraging the rural community to participate in these types of training programmes would be an essential component of any strategy to change rural culture, the content of these programmes also warrants further discussion. Although these courses offer training in ATV riding skills, they place little emphasis on child specific aspects of ATV safety. While the expert informants did not discuss this to any significant extent, it does highlight the lack of consideration given to child safety at the general level.

The complex issues surrounding rural childcare were also examined within the context of existing rural culture. Universally, the lack of practical options available to farming families was seen as a primary contributing factor in ATV accidents involving children. Rural parents, often lacking access to external childcare services, were frequently left with little alternative but to have their children accompany them on to the farm and into potentially hazardous situations. To counter this, childcare subsidies to rural families were suggested but the geographic location of many farms

---

<sup>33</sup> <http://www.moh.govt.nz/moh.nsf/by+unid/7EC01E1971949178CC2570D20019E782?Open>



and the difficulties encountered in accessing external childcare tended to limit consideration of this option. In addition, while the expert informants were mindful of the practical implications regarding rural childcare, most did reiterate the need for rural parents to challenge the limitations imposed on formal childcare services in the rural environment and find alternatives in accommodating their children on their farm. The prevailing opinion from the expert informants was that the most practical solution to this issue should come from the rural community itself. Due to the remoteness of some rural households and issues surrounding transport, time restraints and costs, a return to the informal practice of reciprocal community-based childcare was proposed. Although this approach is perhaps the most practical (with home-based childcare most favoured by the key informants), it raises several issues that need further consideration. First, further discussion is needed to delineate how this system would be administered and by whom. Second, the limitations imposed on this approach from existing childcare regulation could impede its establishment in the rural environment. Home-based childcare is currently subject to child number restrictions and qualification requisites for the carer. The relevance of these conditions in the rural setting, and how they could be accommodated, would need to be jointly addressed by rural parents, relevant childcare agencies and government bodies.

The perspective of the expert informants epitomised the thrust of current child welfare policy and prevailing urban perceptions of child welfare. In the course of their discussions, the informants cast a spotlight on significant issues which contribute to ATV child safety, and which are derived from the child advocacy perspective. Prominent amongst these issues was the concern surrounding children's participation in farming activity. Although the expert informants viewed this practice as a positive and productive one, they questioned the rural perception that farm children should assume similar tasks to their parents and, in doing so, become subjected to similar risks. Working farms in the U.S. are exempt from child labour laws which results in rural parents deciding what farm work is appropriate for their children (Zentner, 2005, p. 860). While not specifically exempted from child labour laws, New Zealand farming operations also benefit from the contributions of children. Again, the particular contributions of specific children are contingent upon their parents' assessment of individual capacities. It is this application of subjective judgement which the expert informants wish to address in order to reduce ATV accidents involving children.

The expert informants also brought to light the prevailing approach when formally addressing child safety in the farming environment. Child specific issues are largely invisible in the formulation of safety guidelines and only incidentally covered by legislation. Child safety issues are often viewed as ancillary concerns to be examined within the context of general farm practices, and are often not distinguished from adult safety issues. This situation, coupled with the lack of comprehensive data available on child related injury and death (for both farming accidents generally, and ATVs specifically), highlight the lack of recognition afforded to children when discussing farm and ATV safety. Rural preferences tend to be at odds with this perspective, and this is extensively discussed in the key informant interview chapter.

## **Chapter 5: Key Informant Interviews**

### **Introduction**

Five individuals, each representing a separate farming family, volunteered to be interviewed as key informants for this research; three mothers and two fathers. Each of the mothers had children under the age of six years, while the fathers had children aged between four and fifteen years of age. None of the respondents' partners was present during the interview. All the participants responded to media publicity about the research in rural and regional newspapers, with four of the five respondents residing in the Waikato area, and one father coming from the Taranaki region. As noted in the methodology section, this small sample cannot be considered as representative of the rural community as a whole. None-the-less the data provided by these informants (when combined with findings from the literature review and expert informant interviews) allow an insight into the lived experiences of farming families and the challenges and contradictions they frequently face.

All respondents possessed a single ATV of various engine capacities and all reported that their ATV was employed primarily as a work vehicle, or the "workhorse" of the farm. ATVs are the vehicle of choice among the respondents because of their mobility, efficiency, adaptability and minimal damage to pasture. They are also perceived as superior to two-wheeled vehicles in terms of safety. The respondents generally held similar views in terms of the practicalities and expectations involved in the rural family lifestyle, but a significant divergence of views could be found between the mothers and fathers regarding the requirements of childcare, the presence of children in a working-farm environment, and assessing age-related driver ability. These differences appear to be associated with gender, since on those occasions in which the fathers voiced the views of their partners, these concurred with the respondent mothers' views.

### **Children and the Farm as a Workplace**

The involvement of children on the farm was discussed by all the respondents, though they addressed the matter via slightly different means. The fathers did not directly refer to their children undertaking duties on the farm. Their discussions implied that this – and by implication, the riding of ATVs by their children - was an inevitable practice on any farm where children resided. The group of mothers, by contrast, recognised that children would be involved in the farming environment, but saw this as a practice conditional upon age and task. The paternal view was illustrated by one of the fathers in his account of a current legal case involving manslaughter charges against a Taranaki farmer. The farmer's 4-year old daughter died whilst operating an ATV.<sup>34</sup> The respondent disagreed with the father's actions being defined as a "major departure from the norm" (the legal basis of the manslaughter charge) because, in his view, children riding ATVs on the farm is seen by the rural community as "the norm".

While the fathers exhibited enthusiasm for their children's increasing involvement and responsibilities on the farm, the group of mothers were more reluctant for the children to undertake farm duties, preferring for their children to wait until older before undertaking potentially hazardous tasks. One mother saw children's involvement in farm duties as something to be undertaken for enjoyment, rather than being a chore or responsibility. Another summarised her approach by insisting that "we would

---

<sup>34</sup> See Chapter 4, *Expert informant interviews*.

expect them to do more [around the farm] as they got older”, but reiterated that the increase of responsibilities would be provisional on age. Furthermore, the mothers were more likely to make a distinction between the home environment and the farm environment, recognising the farming environment as a workplace. They articulated a more extensive appreciation of its associated risks than the fathers, with one mother stating that if the Taranaki accident had occurred in any other type of work area, the probability of prosecution would have significantly increased.

## **Caring for Children**

Parents viewed the issue of caring for children from two very different perspectives. With the exception of one mother (who voiced both views), the parents were divided into two distinct groups of opinion when considering the impact of childcare on ATV safety. The mothers viewed childcare as an issue centred on child supervision, the fathers as an issue of parental responsibility for the acculturation of their children into working farm life.

### *Formal Childcare and Child Supervision: The Mothers' Perspective*

The group of mothers viewed the issue of childcare to be predominantly concerned with child supervision. They all described their difficulties with combining the supervision of their children with the practical requirements of the farm. For instance, the group of mothers often spoke of the need to take their children with them when undertaking farm duties, as a direct result of the lack of child supervision options. They therefore had to take their children on to the farm, primarily as passengers on ATVs and sometimes attaching child car-seats to ATVs for easier transportation. Calving time presented particular difficulties as both parents were often needed on the farm and involved in intensive duties for a significant part of the day. It is at these times – and when unexpected events occur – that trying to assure their child's safety creates 'extra work' in an already full schedule. The decision to raise children in a rural environment was seen by the mothers as a 'lifestyle choice', and one which enabled their children to grow in a diverse environment while being close to their parents. In line with this approach, the option of placing their children in day-care was seen not only as impractical, costly, and inefficient, but also as contradictory in terms of their lifestyle choice.

The mothers' preferred form of childcare was one which both accommodated the unremitting nature of farming and was based in the home, with one mother commenting “a free nanny would be great!” Another of the mothers had already put in place a home-based system of child supervision, utilising family and friends to supervise her children, especially during peak working periods such as calving. When considering additional childcare subsidies for rural families, one mother discouraged the idea asserting that the urban perception of a rural 'lifestyle choice' coupled with the notion of a 'high farming income' would produce opposition from urban communities. After consideration of the risks inherent in taking her children onto the farm, one mother had made the choice to stay at home full-time. She attributes this decision to her family's lack of access to childcare services and, although this significantly impacts on the work undertaken on the farm, she states that “it is just easier” for her to stay home.

### *Parental Responsibility for Acculturation: The Fathers' Perspective*

By contrast, the fathers viewed the issue of childcare as one centred on parental supervision and education. They focussed on the need for parents to judge the

ability, experience, and level of awareness of individual children when assessing their suitability for driving an ATV. According to the fathers, the essence of childcare incorporates both parental choice and the responsibility for individual parents to educate themselves and their children about the risks and safety issues associated with ATVs. Accordingly, another objective of the fathers within this process was to encourage a sense of personal responsibility in their children – for their own safety and for the good of the ‘family business.’ The fathers’ approach is characterised in the words of one father, who noted that his eldest daughter (aged 11 years) was cautious and responsible when riding their family’s ATV and therefore was allowed to do so under strict supervision; his 8 year old son however, will “have to wait until he’s later in age” because he has already shown his disregard for ATV safety, riding “flat-out” on the vehicle. The over-riding view of the two fathers was that the ‘younger they are educated, the better off they will be’, and it was the responsibility of the parents to ensure that their children are educated appropriately.

The two fathers acknowledged a ‘gap’ in the childcare services available to the rural community, citing geographical distance and lack of choice as the main concerns regarding current childcare facilities. They, too, describe the common occurrence of taking their children on to the farm in front-packs or back-packs while riding ATVs due to lack of child supervision options. The fathers however, maintained that this type of practice was safe and did not impede their driving ability or endanger the child.

### **ATV Safety and Maintenance**

None of the respondents or their partners wore safety helmets. The overall assessment of ATV safety helmets was that they are inconvenient, impractical, “bloody annoying” and inhibited work operations. One mother stated that as their farm occupied flat land, the need for a safety helmet was reduced. Most of the respondents questioned their usefulness, with one stating that she and her partner have “never done it and probably never will”. Of those asked, none was aware of the release of the specialised ATV riding helmets. Roll bars were generally dismissed as useless safety equipment and were seen as reducing the operational efficiency of the vehicles. According to the informants, roll bars affected the weight distribution of the vehicle, provided a false sense of security to drivers, and were a significant cause of injury in themselves. Roll bars were viewed as potentially helpful, but most respondents viewed driver responsibility and “instinctive driving” as the primary protections when considering their own ATV safety. In contrast to roll bars, ATV safety frames - which encircle the body of the vehicle - were cited by some in the group of informants as more practical safety additions. They had, in their estimation, minimal effects on the operation of the vehicle and did not interfere with undertaking normal farming activities.

Both of the fathers and two of the mothers stated that they carried passengers, including children. The placement of the passengers ranged from the front of the vehicle to the back, and on the side foot rests. Both fathers stressed the importance of regular vehicle servicing, citing brakes and lights as areas of particular importance. One father ensures his ATV is serviced three times a year and he recommends this be promoted as a norm for rural ATV maintenance. The other father viewed some ATVs as “not fit to be ridden” and affirmed that the mechanical condition and maintenance of the vehicle involved were factors being investigated in the Taranaki manslaughter case.<sup>35</sup>

---

<sup>35</sup> Subsequent to this interview, an article was published in *The New Zealand Herald* (Thursday, December 22, 2005, Section A3). This article outlined the condition of the Suzuki King quad bike

## ATVs and Child Safety

All the respondents stated that it was ultimately the responsibility of the bike owner/farmer to minimise risks and supervise children when driving or around ATVs. Again, this issue highlighted a difference of opinion between the fathers and mothers. While all respondents affirmed that their children do, or would, ride ATVs while helping on the farm, the way they gauged the appropriate time for this practice differed slightly. Both mothers and fathers cited physical size, previous experience, levels of skill and confidence, sense of responsibility, maturity and individual capability as the bases for allowing their children to ride ATVs. The group of mothers however, also placed importance on the age of the children; the significance of age was not mentioned by either of the fathers. Although the mothers considered age to be an important factor when assessing their children's access to ATVs, they did not suggest a universal minimum age limit for drivers. Rather, their perceptions of the pace at which increasing age allowed for increased responsibility were somewhat more cautious than their male counterparts. Furthermore, two of the mothers were concerned by their partners allowing their children to ride ATVs at a younger age than they would prefer. The fathers also spoke of their partners' resistance to allowing their younger children on ATVs. Both fathers allowed their eldest children to regularly drive ATVs; one mother allowed her five and a half year old to drive, and in two families, children as young as four had been permitted to drive the vehicles.

All the parents reiterated their commitment to strict parental supervision, education and awareness when allowing children to ride ATVs, but they also spoke of previous accidents in which their children had been involved. A mother told of how her child (now five and a half) had misjudged a gateway when riding an ATV alone. A father recounted his experience of his son falling off an ATV while being carried as a passenger by him (four of the five respondents carry their children as passengers). Although the father's response was "my whole heart just collapsed ... what am I doing?" he continued to carry his children as passengers on ATVs. The suggestion of a conditional ATV driver's licence was put forward by one father, to accommodate the need for older children to drive vehicles on the farm and on public roads.<sup>36</sup> The other respondents agreed that this could increase awareness and responsibility amongst older children, but the possible costs (and any suggestion of a compulsory component) of such a system produced some resistance from the respondents.

Helmets appear to be inconsistently or never used by children on ATVs, even though most respondents encouraged their children to wear the equipment when driving two-wheeled vehicles. Although one father insisted on his children wearing helmets when they rode the ATVs, the other father thought that it was inappropriate to ask his children to wear a safety helmet when he did not do so himself.

## Two-Wheeled Vehicles and Mini ATVs

Three significant points arose from the discussion of two-wheeled vehicles and child-sized, or mini, ATVs. First, the respondents saw these vehicles as part of a graduated process. Parents viewed children driving smaller vehicles (usually of 50cc

---

involved in the accident. The bike "had loose steering, poor foot brakes and tyre pressures which ranged from 3psi (pounds per square inch), to 21psi." According to the *Herald* report, this made the vehicle easier to turn to the right; the direction in which the 4-year old girl was travelling; however, it may have also made the vehicle easier to roll.

<sup>36</sup> As the informant proposed, this licence would be a voluntary one, based on individual ability. The respondent suggested the license could be conditional upon particular requirements such as physical ability and experience. Although he suggested that it be made available to rural children "earlier", he did not recommend a particular minimum age.

engine capacity) as a precursor to driving larger ATVs. Driving small two-wheeled or mini ATVs allowed a young driver to develop an appreciation of vehicle balance, experience of the terrain, and control of the vehicle, while the light weight of the bikes provided for easier control. They were also easier to lift off the body in the event of an accident. The second major point of discussion centred on which of the two types of vehicles was superior as a training vehicle for the larger ATVs and here, opinion was divided. One father viewed mini ATVs as producing a 'false sense of security' since there was no requirement to develop driver and vehicle balance and a lower level of 'skill and attention' was needed to operate one. By contrast, one of the mothers discussed her husband's preference to purchase a mini ATV for their son, because of its 'stability' and small engine size.

The third point relates to safety equipment. Children who drove two-wheeled vehicles were universally required to wear safety helmets – in fact one father insisted that his children always wear "the full kit" when driving two-wheeled vehicles. However, these same children were often not required to wear helmets when driving ATVs. This was explained in terms of perceptions of speed and stability. Because ATVs have four wheels and often operate at lower speeds, the need for safety equipment was seen to be decreased accordingly. Again, mothers were more apprehensive than fathers about two-wheeled vehicles, though one mother had allowed her son to ride a 50cc two-wheeled vehicle since the age of four. The age at which children were first permitted to ride two-wheeled vehicles ranged from four to eleven years.

### **Farm Children versus Urban Children**

Farm children were seen as being at risk of farm accidents more frequently because of their constant presence on and around the farm workplace. Urban children, however, were seen as more susceptible to farming and ATV accidents because their lack of experience meant they were not as aware of the inherent risks of the farming environment as their rural counterparts. According to the respondents, urban children accounted for the majority of farm accidents involving children as they lacked the responsibility, respect and awareness required in a rural workplace. Urban children often became 'blasé' about the hazards to which they were exposing themselves. Additionally, the presence of urban children was seen as a catalyst for rural children to 'show off' for their peers, and expose themselves to risks they would normally avoid.

### **Legislation versus Education**

Both of the fathers expressed considerable concern regarding the prospect of safety recommendations becoming enshrined in law. This apprehension applied to ATV safety in particular and farm safety in general. Both fathers instead recommended a proliferation of educational programmes and awareness campaigns as opposed to legislation, with one father stating that "anything imposed will be opposed" by the rural community. Enforcement of any such legislation was seen as an impossible task and the legislation itself would effectively be dismissive of the realities of rural children's involvement on farms. It would also encourage an inappropriate focus on the punitive legal consequences of child-related ATV incidents, rather than accentuating the "possible trauma" of such events. By contrast, although the group of mothers did assess education and awareness as key mechanisms for improving ATV safety, they did not raise farm safety legislation as a primary point of concern. Never-the-less, according to the group of mothers, legislation was a measure which did not acknowledge the multifaceted nature of the problem, or the practical issues of

a combined workplace/family environment. As one mother stated, legislation takes “one component out of context with the next.”

### **Current ATV Safety Guidelines and Information**

Both fathers saw existing recommendations as being unsuitable for the farming workplace. One father stated that the current ATV Safety Guidelines “don’t suit everybody” as they are too restrictive for contemporary farming practices. For instance, the fathers assert that the minimum age recommendations will never be adhered to because rural children are perceived of as capable individuals who are taught responsible farming practices from a very early age. Further, the advice given by published guidelines does not allow individual skill and ability to be recognised. The mothers also commented on the impracticability of the existing guidelines; one mother reiterated that a primary reason for retaining an ATV is to transport the family on the farm. The same mother also affirmed that abiding by the endorsed Guidelines was a matter of choice for her family, saying that information should be available to parents to ‘guide’ them, but the choice to ‘accept’ the guidelines should remain within the family unit.

Like the fathers, the group of mothers received their information regarding ATV child safety primarily through newspapers and television – particularly those television programmes targeted at the rural community, according to one mother. Two of the respondents stated that they were aware of the current guidelines but have chosen to disregard some of the recommendations for practical reasons. Three of the respondents were aware of – and named – agencies or courses which included ATV safety advice and/or training, but all five commented on the lack of child-specific information disseminated through farming agencies and the rural community more generally.

### **Suggestions from the Key Informants**

Again, the suggestions put forward by the informants were markedly divided by gender. The two fathers tended towards recommendations which focussed on education and awareness, and improving the operational condition and construction of ATVs. The fathers emphasised the importance of maintaining the condition of ATVs and cited the simple operation of the vehicles as a major concern in relation to ATV child safety. According to the fathers, the very simplicity of ATV operation fostered a false sense of driver security and accomplishment. One father affirmed the need for ATVs to be “made safer” by reducing their maximum speed capability, changing the current centrifugal clutch system, and modifying the throttle mechanism. One father suggested vehicle servicing rebates as a form of ‘positive incentive’ to encourage ATV owners to regularly service and maintain their vehicles. The fathers also encouraged the creation of formal training programmes for young drivers (subject to cost and time constraints), and the dissemination of safety material through motorbike dealers, trail-riding clubs (to which both fathers belonged) and farming agencies.

The group of mothers directed their comments towards minimising the exposure of children to ATVs and other farming risks. The mothers also pressed for increased safety and awareness campaigns, though they thought these should be directed towards older children, as well as their partners. The most appropriate arena in which awareness could be raised was also important, with one mother commenting that “if [information] was on the news I think my husband would take more notice of it.” The mothers suggested making the wearing of safety helmets and regular ATV

servicing compulsory, but expressed concerns about the costs involved if such regulations were established. They emphasised their preference for not allowing children to drive (or be passengers) on ATVs in any circumstances, but conceded that this was often over-ridden by managing the priorities of the farm; or as one mother put it, it was often a matter of “safety versus efficiency.”

## Discussion

Three primary issues have been highlighted by the key informant interviews. The first was the perception of safety practices in the farming environment, and how they might be established or enhanced. The second issue was the type of recommendations suggested by the informants to promote ATV child safety. And third, the division of opinion between the mothers and fathers interviewed regarding ATV safety generally and child-related safety in particular.

Evident in the opinions presented by all key informants, was the view that formal legislation which imposes safety recommendations on New Zealand farms would restrict current workplace practices, be resisted by the rural community and be impossible to monitor and enforce. Their comments reflected the view that rural businesses should not be subject to safety legislation, especially in regard to ATVs, and echoes the culture of independence and self-sufficiency which characterises New Zealand farming life. The mothers in particular, however, were insistent in their view that farms should be considered as workplace environments and any approach to child safety should reflect this. As one mother pointed out, if the Taranaki case - which featured a work vehicle driven by a child - had occurred in any other workplace, it would have been subject to strongly enforced workplace safety legislation. This underscores the problematic issue of legislating safety practices on New Zealand farms.

The rural community challenges the view that businesses, which are privately owned and operated on private land, should be subject to extensive safety legislation. By comparison, in other workplace environs, work-vehicles are subject to more stringent registration and maintenance programmes and their drivers to appropriate licensing requirements. As with the expert informants, the key informants allowed for legislation as a ‘last resort’ option if educational programmes and awareness campaigns failed to influence rural safety practices. Because most informants recognised farms as workplace environments *before* family or home settings, the successful implementation of any ATV-safety legislation would depend on the specific targeting of workplace practices. For instance, by initiating a licensing requirement for ATVs, a minimum driver age limit would be legislatively imposed via the work vehicles themselves, and not by regulating familial autonomy. None-the-less, the key informants were insistent that the rural community should be given the opportunity to respond to better, more widely disseminated information, consistent safety recommendations and comprehensive educational strategies.

Recommendations advanced by the respondents also require further discussion. Emphasis was placed by both groups of parents on the need for increased educational programmes and awareness campaigns. According to the expert informants however, any rise in awareness among the rural community has only a temporary effect on practices. Recent increases in ATV injury statistics illustrate this and the literature also supports the expert informants’ view. For example, an examination of US farmers’ knowledge of farm-related risks, and the subsequent practical measures they undertake to minimise these risks (both to themselves and their children) found that practices did not consistently align with knowledge and any



connection that existed between knowledge and practice tended to dissipate over time. The study noted that, “farmers’ knowledge of farm hazards was unrelated to safety precautions they took themselves” (Zentner, 2005, p. 865). The study also found that there is a “belief held by a noteworthy proportion ... of individual farmers, that farming is dangerous, but ‘not for my children’” (Zentner, 2005, p. 865). This review of U.S. practices was undertaken by New Zealand researchers who found strong parallels with New Zealand rural attitudes.

The key informants for this current study were conversant with recommended ATV safety precautions, including not carrying passengers and the recommended minimum driver age limit of 15 years. However, four of the five informants still carried passengers on their ATVs and allowed those under the age of 15 to drive the vehicles. These findings indicate two essential requirements when considering the promotion of ATV child safety. First, any ATV safety campaign would need to convey consistent messages which are supported by strong empirical data. They would also need to be seen by the rural community as facilitating their business objectives. In effect, the key informants stressed the need for a ‘strong line of argument’ tactic when endeavouring to change entrenched rural practices.

Second, the long-term success of such a campaign would require a sustained marketing approach supported by the use of targeted media in order to maintain raised awareness levels amongst the rural community. According to the key informants, the rural community garnered most of its information in regard to ATV safety (and accidents) through regional and rural newspapers, and television programming directed at the rural community. Hence, an ATV child safety publicity campaign would need to focus on print and television media, rather than through postal campaigns or direct marketing. Although the distribution of the endorsed Guidelines to rural households did effect some change in the rural approach to ATV safety, this change has proven, via rising injury statistics, to be short-lived. By contrast, utilising rural publications and television may prove more effective in instituting sustained compliance with recommended ATV safety practices. In this respect, child ATV safety is no different to any number of safety issues in recent years. Changes in behaviour at the community level in regard to wearing car seat belts, refraining from drinking and driving, or reducing vehicle speeds has been achieved only through sustained publicity campaigns of sufficient duration to embed the desired behaviours.

The differences between the approaches of the male and female informants were striking. Fathers more readily accepted the presence and involvement of children on the farm as inevitable. Hence, they stressed the importance of education, awareness and vehicle maintenance when considering ATV child-safety. The mothers, on the other hand, sought to minimise the presence and involvement of children in farm operations. Therefore, they accentuated the importance of access to rural childcare services, and perceived a stronger demarcation between the home and work environment on the farm. While both groups preferred to retain personal choice, along with raising safety awareness, the mothers examined in more depth the multiple factors which increased their children’s exposure to ATVs and other farm risks. The increasing opposition of many rural mothers to the access children have to ATVs was identified by two expert informants as a key factor in raising safety awareness on New Zealand farms. However this option requires further exploration as, although it could provide an avenue for rural culture change, it raises several related, but unresolved issues. First, while there does appear to be evidence of an upward trend, maternal resistance to children riding ATVs is not necessarily universal. It is unclear what proportion of rural mothers would be necessary for their support to be an effective factor in changing rural behaviours. Secondly, it does not

directly address some mother's concerns regarding access to external childcare or in-home child supervision. Providing practical solutions to rural mothers' core concerns involving childcare would be imperative in garnering the support of this group to induce rural culture change.

According to all informants, the concerns surrounding rural childcare and child supervision are significant factors when considering the issue of ATV child safety, and these need to be specifically addressed. The preference amongst the key informants was for an in-home form of childcare. This lends support to the suggestion, outlined by one expert informant, of a return to an informal community-based childcare system. In addition, to accommodate rural families who may not be able to participate in such an arrangement (due to geographic location, costs, or time constraints), the option of receiving a rural-specific childcare subsidy (to off-set transport expenses and external childcare costs) could also be strongly recommended.

While a clear dichotomy arose between the mothers and fathers of the key informant group, another emerged between the expert and key informants groups themselves. While the expert informants advanced the view that, ideally, the driving of ATVs by children - or riding on the vehicles as passengers - should under no circumstances be legitimised or endorsed, the rural perspective was that rural children should assume similar responsibilities to their parents and that such behaviour was inevitable within the farming environment. The key informants cited two primary reasons for this view: the lack of access to rural childcare services and the (encouraged) involvement of children in the day-to-day operation of the 'family business.'

The two divergent perspectives mean that this issue has been subject to two different approaches that have often been in conflict with each other. The 'child-welfare' perspective, advocated to varying degrees by the expert informants, focuses on implementing policies which could eventually include legislation and imposing minimum driver age limits. The rural perspective, by contrast, aims to reduce the risks to which rural children are exposed in the farming environment, while also retaining the personal and parental autonomy of parents. These contradictory approaches bring to light an historical neglect of coherent dialogue regarding children on New Zealand farms. In addition, the multi-faceted nature of this issue requires extensive discussion in order to delineate a comprehensive approach to children's involvement in the farming environment. These multiple factors include the issues of: childcare and supervision, children's access to farm vehicles generally and ATVs specifically, the age-appropriateness of tasks given to children, perceptions of children's abilities, risk assessments, the parental approach to farm and ATV safety, the form and efficacy of educational and awareness campaigns, the practical requirements of combining a working farm and family commitments, the retention of familial autonomy and the regulation of farming practices. In short, there is a need to establish an effective platform from which to address the specific perceptions, experiences, and requirements of New Zealand's rural children comprehensively.

## **Childcare and Culture**

Childcare is unquestionably a key determinant of decisions made on the farm. The paucity of childcare options is frequently cited by farmers as leaving them no option other than to take their children into farm workplaces, often transporting them on ATVs. Improved child ATV safety is therefore dependent on addressing this issue. We recognise the problems faced by farming families in terms of the availability of

childcare and appreciate that there is an urgent need to improve availability and access. We take issue, however, with some of the arguments put forward by farmers as justification for the continued presence of their children in farm workplaces.

The first point of contention is the argument that the farm requires the services of both parents. This may well be accurate, but it is not a justification for unsafe practices. New Zealand's economy relies in large measure on thousands of small – often family – businesses. The proprietors of those family businesses must make decisions about whether both parents will be actively involved in the business and, if so, must make arrangements for the care of their children during the hours that they both work. Parents who work for wages also face these decisions and it is not the case that all urban workers have the luxury of working hours which coincide with the common hours of operation of childcare facilities. The decision for both parents to work automatically precipitates consideration of childcare arrangements. Those who make inadequate arrangements are held to account by both workplace safety and child welfare organisations. While many urban workplaces pose obvious risks to child safety (construction sites or factories, for example) children are seldom present even in those workplaces with few obvious risks (offices or retail outlets, for example) – largely because of their tendency to interfere with the completion of work obligations. Generally, where children are present in the workplace, it is the result of unexpected or unavoidable circumstances.

Clearly, the unpredictability of farm operations presents unique problems for rural parents and these need serious consideration. While we argue here that childcare arrangements must become a routine part of the rural lifestyle, we are also conscious of the shortcomings of urban systems of childcare if applied to the rural environment. Farming is a twenty-four hour operation, subject to all manner of unexpected emergencies. Formal childcare does not offer a viable option under all circumstances, unless it is live-in care. We appreciate that even with comprehensive care arrangements in place, situations will still arise which necessitate taking children into the farm workplace. With good care arrangements, such occasions will be vastly less common than is the case at present.

Secondly, farmers argue that the isolated location of many farms and the long distances involved in accessing formal childcare act as practical impediments to safer practices on the farm. Again, drawing parallels with urban parents can be useful. In some cities, the journey to work and/or childcare can involve many tens of kilometres, often in heavy traffic. It is not our intention here to further entrench the rural/urban divide. Our point is that duties of parenthood do not vary according to location. The details and dynamics of the situations may differ in significant ways, but this indicates a need for different solutions, rather than assignment of the problem to the “too hard” basket. That is the point of this research. All parents have a duty to protect their children from harm, irrespective of lifestyle, occupation or geographic location. We are also not suggesting that rural parents care less for their children than urban parents. The family ethos that forms part of rural culture is testament to their dedication and commitment to their children. This same rural culture, however, is implicated in the current unsafe practices of farming parents, where a pioneering spirit has underpinned decisions around combining working responsibilities with parenting responsibilities.

Childcare norms have changed over the last few generations and urban parents have been required to change behaviours learned from their parents and their parents' parents. These changes range from interpersonal relationships with children to practical matters, such as using car seatbelts. In other words, there has been a cultural shift which facilitates better parenting practices and safer childhoods. Rural

culture also needs to adjust to take account of the norms now associated with the care of children. That said, we recognise that rural parents continue to face impediments not encountered by their rural counterparts.

Child supervision also requires some comment. One of the great advantages of a rural childhood is children's exposure to a range of experiences not available to urban children. Through this, they are in a position to gain skills also not easily acquired by urban children. Acquiring these skills needs constant supervision – media articles reflect the consequences of a moment's inattention. On-the-job training is an excellent means of transferring skills, but we note that, at times, combining work operations with skills training is not optimal in terms of child safety. Assessments of the abilities and skills of individual children can also be problematic and we explore this below.

### **Farm-Kid Culture**

Like all parents, rural parents have traditionally assumed the responsibility for identifying the types of work that can be undertaken by their children, though neither group has *carte blanche* in making these decisions. All parents are bound by laws which stipulate, for example, minimum ages for particular activities. Thus, children under 14 years of age cannot be left unsupervised, and that children under 16 years of age cannot acquire a gun licence. Clearly, there will always be individual children who will be capable of unsupervised periods at substantially lower ages, just as there will be those who may not be sufficiently mature to engage with guns, even when of legal age. The law, however, is enacted in the interests of the safety of all children and is guided by a developmental approach, premised on the abilities of the average child at a given age. As technology has advanced, the law has needed to change or expand. Hence, the popularity of motorcars prompted the regulation of the age at which individuals could operate the vehicles, removing from parents the ability to choose an earlier age.

Regulation of parental choices is therefore not uncommon. Ideally, it is premised on solid research, involves informed decisions and is open to change when change is indicated. One of our experts was of the opinion that legislation was inevitable, but doubted that it would be effective, given the present lack of support for it amongst the rural community. We contend that its ultimate acceptance would require the same sort of cultural shift that preceded the introduction of the *Smokefree* legislation. Cultural changes such as this cannot be unilaterally imposed from above. In the absence of regulation and in the face of conflicting or inconsistent advice, rural parents have adopted a range of approaches in their attempts to accommodate the demands of both family life and a rural business. The literature, experts and parents in this research leave no doubt that the farming community is averse to further regulation of their choices, especially its imposition by external agencies; their preference is for informed guidance which considers the practicalities and requirements of rural life. This, coupled with rural parents' extensive knowledge of those practical requirements, suggests that the involvement of rural parents in developing the appropriate parameters for children's safe involvement on New Zealand farms is pivotal to the successful enhancement of rural children's safety.

## **Chapter 6: Findings and Conclusions**

This research was undertaken to identify the factors contributing to child ATV related injuries and deaths on New Zealand farms. This required an extensive review of current literature to ascertain existing guidelines, understand previous and current approaches to the issue, identify primary risk factors, and begin to determine possible strategies for preventing child ATV accidents. The key and expert interview component allowed us to ascertain the approach of government agencies and child-advocacy groups to the issue and to establish the views of the rural community in terms of their perceptions of ATV child-safety. The interviews also gave us a clearer understanding of how the rural community view the suitability (or otherwise) of current guidelines, and allowed us to assess the likely rural response to alternative safety strategies.

One of the most significant contributing factors to children's exposure to ATVs was their direct involvement in farm work. Children often assist in a variety of jobs on the farm and utilise the family's ATV to transport themselves and equipment around the farming workplace. During the course of this research, we have found that New Zealand farming children are involved in a diverse array of farming activities, have access to various types of farm vehicles, and are given levels of responsibility on the farm which their urban peers would not usually encounter. We also found a clear divergence of opinion between the rural community and the various official bodies whose objective is to raise child safety awareness on New Zealand farms. While these agencies' strategies and guidelines are premised on a child welfare approach, the rural community resists the imposition of such an approach on their family's home and workplace. Many rural parents view these approaches as being derived from distinctly urban perceptions and as therefore dismissive of the practical requirements of farming operations. They see the urban perspective as ignoring the importance of their children's contribution to their farming businesses and as being unconcerned with the unique experiences and position of rural children.

A purposive and comprehensive approach to children's safety on the farm is urgently required as children's involvement with ATVs is dependent upon – and in turn influences – a range of inter-related factors. For instance, two-wheeled motorbikes are seen by many rural parents as precursor vehicles to ATVs, since they allow for the development of balance and driver skill before graduating to an adult sized All Terrain Vehicle. Two-wheeled vehicles therefore should be included in any discussion surrounding children's access to ATVs. Our findings suggest that ATV child safety cannot be adequately discussed without considering several key factors in concert. These include:

- Defining appropriate types of farm work which can be safely undertaken by children of various ages;
- Examining what types of vehicles (and other machinery) children may have access to, under what circumstances, and to what extent;
- Identifying areas in the farming workplace that can be deemed as 'safe zones' for children;
- Establishing suitable training programmes to increase skill levels, and educational campaigns to raise the safety awareness, of rural children who undertake farming work.

We have been struck during this research by the relative absence of dialogue about children in the literature, other than that which refers to their presence in the

statistics. They are barely evident in the legislation. Whilst we heard varying opinions about what children should or should not be involved in, we found no evidence of considered discussions or dialogue about how child farm safety can be enhanced while still preserving the integrity of parental choices. We suggest that this dialogue is urgently needed and should focus on developing what we term “farm-kid culture.” This concept is intended to engender a clearer understanding of the norms relating to children within farm culture. In consultation with official bodies and other agencies, rural parents can contribute extensively to the formation of a set of standards and practices identifying levels of on-farm involvement appropriate for children, which is reflective of the perspective of the rural community. The role of government bodies and child welfare agencies would be to facilitate an accord between their own child safety objectives and the needs of the farming community. The consultative process previously used by the Agricultural Health and Safety Council to produce the endorsed Guidelines, could be employed as a template for this process, with consultation rounds administered by the Council. The promotion of the practices and policies subsumed in *Farm-Kid Culture* could also be advanced through this body, via media campaigns in rural television programming and newspapers, in-school programmes, and rural events.

## Summary

This research has identified three distinct groups of children involved in ATV accidents, each facing a different major risk category. Very young children are most at risk as passengers, while slightly older children are at higher risk as bystanders. The third group – older children and teenagers – are more likely to be injured as drivers. The risks to the first two groups are indicative of underlying problems associated with the lack of childcare options, while accidents involving older children are associated better explained by practices around child supervision and farming culture. Our research also exposed a tendency for the boundaries between the home and the workplace to be blurred in a farming environment, a phenomenon which inherently presents a complex array of challenges to farming parents. While some challenges are of an eminently practical nature (absence of childcare, for example), others reflect more personal challenges. For example, risk assessments tend to be influenced by cultural factors, wherein the benefits of cultivating a sense of responsibility, independence and a good work ethic in their children outweigh the risks associated with ATV use by and around children. Similarly, knowledge of risks and awareness of existing recommendations does not guarantee safety compliant behaviour.

We also noted that ATV use is an under-regulated activity, in which safety guidelines are not always clear or enforceable and farmers often improvise. The strong resistance of the farming community to any further regulation of their practices suggests that safer practices are contingent on changes first occurring within farming culture. We found that the types of recommendations least likely to be implemented successfully are those which involve punitive regulation as, without an effective monitoring or enforcement mechanism, this option would prove to be ineffective in removing children from ATVs. Furthermore, while legislation could be recommended to address specific workplace concerns (such as farm vehicle licensing), the regulation of children’s access to privately owned, off-road vehicles would be vigorously challenged by the rural community and sections of the urban community alike. While some would view such restrictions as encroaching on their

parental autonomy, others would lament the restriction of popular recreational activities.

We have canvassed a wide range of data sources for this research, though we note, again, that more comprehensive statistical data are urgently needed. We have augmented the statistical data with expert opinion and information drawn from those directly involved with ATVs on farms. The news media added a further dimension to our research and tended to corroborate the information provided by our experts. The combined data provided insights into multiple factors which can contribute to child ATV related accidents. They are:

- The significant lack of consistent and comprehensive data regarding child injury and death for ATV accidents particularly, and farm accidents generally;
- Rural parents' lack of access to flexible, cost-effective and well-located childcare for younger children directly increases their exposure to the vehicles, particularly as passengers and bystanders;
- The widespread practice of children undertaking farm duties significantly increases their contact with ATVs, farm machinery, and other vehicles;
- Current recommendations and legislation surrounding children's access to farm vehicles (including ATVs, tractors and two-wheeled vehicles) is inconsistent and difficult to monitor;
- In the absence of specific legislation or consistency among the various sets of safety guidelines, the rural community relies on personal choice and parental responsibility when making decisions about their children's access to ATVs;
- Parents often over-estimate the physical and cognitive capacities of their children to operate ATVs safely;
- Findings from both the literature review and the expert informant interviews overwhelmingly support a minimum driver age limit (16 years and 15 years respectively);
- Punitive responses are 'last resort' alternatives; such a measure would be impossible to enforce, impractical to implement and without the support of either government agencies or the rural community. In addition, legislation *per se* does not ensure compliance with safety recommendations;
- Amending the existing rural culture through educational programmes and awareness campaigns is the more favoured approach of both relevant official bodies and the rural community;
- Rural parents hold subtle but distinct differences in perception, which appear to be related to gender; mothers prefer to minimise their children's exposure to ATVs, while fathers accept ATV use by children as inevitable;
- A significant degree of tension exists between the child welfare perspective characteristic of official agencies and the robust independence which has historically typified the rural community;
- Children's exposure to ATVs is affected by an array of contributory factors which can not be addressed in isolation.

These findings underscore the complex nature of the issue, but reiterate the inappropriateness of ATVs as vehicles of choice when transporting children on the farm, or as vehicles to be driven by children when undertaking farm duties. They also indicate that any subsequent recommendations require practical alternatives to the concerns presented by the rural community, in addition to an element of consistency within a general context of child safety on the farm.

Generally, we found that the most viable recommendations would include consistent messages, positive re-enforcement of children's involvement in appropriate farm

activity, and ideas for practical solutions to the unique problems which contribute to children's exposure to ATVs. Viable recommendations would also require support from relevant official bodies and the wider rural community, as well as recognition of the multiple issues which influence ATV child-safety. It is also necessary to consider the financial implications and practical viability of any proposed solutions. Finally, the success of any strategies proposed will be dependent upon their acceptance by the rural community; a community which places a high valuation on independence and autonomy. As far as practicable therefore, the accommodation of parental choice within the farming environment needs to be assured. Our recommendations proceed from this premise and seek to provide measures that will encourage a shift in farming culture by facilitating safety compliant behaviour.



## **Chapter 7: Recommendations**

### **ATV Safety**

It is clear that a significant section of the rural community currently employs practices which are at variance with the recommendations of the endorsed safety guidelines for ATVs. There are a number of inter-related factors implicated in current rural behaviours which need to be considered in concert when attempting to devise strategies that will enhance the safety of rural children. It is also evident that there is resistance within the rural community to legislative governance of ATVs on farms. We believe that safety compliant behaviour is more likely to succeed if strategies are in the first instance directed toward changing socio-cultural factors, and only then are regulatory and legislative strategies able to be effectively implemented. This approach is reflected in our recommendations, and entails taking into account practicalities that may prevent ATV owners from adopting safety compliant behaviour, and offering as far as practicable, generalised flexible solutions to overcome these constraints. The need to provide flexible options to farmers is essential within the rural environment, given that the alternative, the monitoring and enforcement of rigid regulations, is likely to be exceptionally difficult.

Further, while the scope of this project is to examine the factors that specifically affect child safety and ATVs, several extraneous factors have been found to contribute either directly or indirectly to the perceptions of, and practices around child involvement with ATVs. Thus some recommendations are framed with a broader context, rather than exclusively targeting child ATV users. Overall, we believe that our recommendations will contribute to strengthening and embedding the focus on education and enhanced awareness, as promoted by both official bodies and the rural community, and they are intended to augment and improve current vehicle and driver safety, along with informing the direction of further research into the field.

#### *1. ATV Safety Guidelines*

We see the current endorsed Guidelines as an integral part of any child ATV safety strategy, particularly because relevant stakeholders have been consulted and have contributed to the Guidelines' construction. Developed in consultation with farming groups, the Guidelines were structured to recognise the dynamism of the farm environment, and thus they incorporate a practical approach and somewhat flexible minimum driver age limit and related conditions, but do not entail rigid legislative restrictions. Their extensive stakeholder acceptance and the associated widespread publicity, suggest they serve as the best available benchmark in disseminating a standardised set of ground rules for ATV users. Further, the Guidelines are of sufficient significance to be referred to by the Police and OSH when considering legal charges, following a serious accident or fatality.

We recommend:

- Adoption of the *Safe use of ATVs on New Zealand Farms Agricultural Guidelines* (2002) as the single best practice document for the safe use of ATVs;
- Continued widespread publicity campaigns featuring the Guidelines, particularly within press, radio and television media;

- Regular and sustained reinforcement of the publicity campaigns to counter the effects previously noted, wherein their initial launch and wide dissemination was followed by a predictable trailing off in public awareness;
- Review of the Guidelines to incorporate findings from emerging data and new farm practices.

We envisage future amendments to the Guidelines including:

- A stronger rephrasing of point 2.2.3, regarding the carriage of passengers;
- As more research becomes available, a clearer recommendation as to whether ROPS should be used or not;
- The incorporation of recommendations which support clear delineation of work areas on the farm and their risks for children.

## *2. Helmets and protective clothing*

Wearing of approved safety helmets and protective clothing has been shown to lessen the incidence and the severity of injuries and fatalities amongst the ATV riding paediatric population. Wearing helmets and protective clothing is also a behavioural issue, as studies have shown that compliance with the wearing of helmets and protective clothing is not always high, even when regulations and legislation are in place. Further, the geographically isolated nature of farming, and an understanding of farms as private property, makes the monitoring of helmet use and associated protective clothing extremely difficult. Additionally, wearing helmets and protective clothing is only likely amongst the rural community if it meets the operational needs of farm work in particular. Clearly then, an effective strategy must encompass both standardised, yet flexible recommendations, coupled with public awareness and training.

We recommend:

- Continued promotion of the safety helmet NZS 8600:2002, designed for use by farmers driving at speeds under 30 kilometres per hour, who require a lightweight and unrestrictive helmet;
- ATV riders always use protective footwear;
- ATV riders wear goggles, as deemed necessary for the environment.<sup>37</sup>

## *3. Rollover Protection Structures (ROPS)*

At this stage the scant data available on the effectiveness of ROPS confound attempts to make a well-informed and reasoned recommendation. McDougall and Kahler's work (2000, pp. 49-52) notes some major problems with particular systems trialled in 1993 and 1999, including results that indicated no advantage to the driver from ROPS and problems associated with increasing the centre of gravity. None-the-less, other research continues to provide support for ROPS as a potential means of reducing future ATV injuries.

We recommend:

- Further research into the effectiveness of ROPS in general, and further funding for research and development of innovative ROPS.

---

<sup>37</sup> These recommendations correspond with the existing endorsed Guidelines

#### 4. ACC Rebates

In order to encourage participation in recognised professional ATV training, a financial incentive could be offered to ATV owners. This would take the form of a percentage reduction in ACC levies, not dissimilar in structure and operation to schemes offered by local councils with dog licensing.<sup>38</sup> The most important criterion, if such a scheme is to be successfully implemented, is that it is financially attractive to both farmers and ACC. That is, there must be clear advantages to ACC in terms of savings resulting from reduced payouts on ATV related compensation claims. Because much of the commentary suggests that training and publicity have strong short-term effects on behaviour, but taper off over time, an effective strategy would need to incorporate a regular refresher component, perhaps every 3 years. Continuation of the reduced levies would then be contingent upon attending a recognised refresher course.<sup>39</sup>

We recommend:

- A reduction in ACC levies on proof of attendance at an approved ATV safety course;
- Further percentage reductions associated with employees and family members' attendance at an approved ATV safety course;
- Attendance at an approved refresher course at regular intervals in order to qualify for continuing ACC levy reductions;
- Further discount for farmers who have created and implemented a comprehensive farm safety plan, which includes the provision of instruction to all farm personnel (paid and unpaid) of its correct operation.

#### 5. Insurance rebates

Similar in concept to our recommendation for ACC rebate reductions, percentage reductions in insurance premiums, subject to regular mechanical maintenance are a further option. Premium reductions would need to be of sufficient magnitude to provide farmers with an incentive, while also needing to be offset by reduced insurance claims for ATV repairs, if insurance companies are to be attracted to the scheme. Given that several studies and expert informants have identified poorly maintained ATVs as contributing to accidents, an incentive that raises the frequency of ATV maintenance would make a substantial impact in reducing ATV accidents and therefore claims. In as much as it focuses on risk reduction, the rationale for this option is similar to that for the existing practice whereby premiums are reduced if the insured's vehicle is regularly kept in a locked garage. An online system accessible to ATV dealers and insurance companies would readily enable verification of a vehicle's service history.

We recommend:

---

<sup>38</sup> The Hamilton City Council, offers a reduced annual dog licensing fee, that is graduated upon compliance of several key criteria, including no complaints in a given year, a fenced section, de-sexed dog and attendance at dog obedience course. Retrieved 6 February from: <http://hamilton.co.nz/page/pageid/2145827179>

<sup>39</sup> This is similar to current process for first aid training, where a certificate is valid for two years, then an eight hour refresher course is required every two years following this. OSH. (2001). *Guidance notes on providing first aid equipment, facilities and training*. p.13. Retrieved 6 February from: <http://www.osh.org.nz/order/catalogue/pdf/1staid3-g.pdf>

- A percentage reduction in premiums for ATV insurance policies to farmers who can demonstrate biennial servicing of their ATVs.

## 6. ATV Training

Professional training on the safe use of ATVs is already a reality in New Zealand. As is evident in the literature from New Zealand and the United States however, the number of ATV users who have been professionally trained is extremely low.<sup>40</sup> We note that these New Zealand data were gathered some seven years ago and do not include those who may have availed themselves of the training that has been available in New Zealand for the past seven years. Nevertheless, given that ATVs are extremely difficult machines to handle, requiring considerable physical strength and cognitive capabilities, the continuing availability of approved safety training courses is an essential component of an overall ATV safety strategy. In particular, resources should be directed toward the continued funding of courses that can be measured as effective in reducing ATV accidents in all age groups.

While we do not support ATV use by children under the age of 15 years, we recognise that farm practices currently include children riding ATVs. For this reason, we advocate the provision of easily accessible, formal training for those aged 12 – 15 years, as per the endorsed Guidelines. For younger ages, the data indicate that the highest risks occur to bystanders and passengers. Given that ATVs are not the only farm machinery to which young children are exposed, education in farm safety more generally is appropriate. None-the-less, the popularity of ATVs suggests that any farm safety course should have a significant component related to the vehicles. Rural schools offer the most sensible option for presenting a farm safety programme.

We recommend:

- Continued government and industry financial support for approved training and safety courses;
- Promotion of subsidised training programmes for teenaged riders;
- Implementation of farm safety programmes, with an emphasis on ATVs, in rural schools;
- Extended research into ATV training courses and their efficacy through four chronological steps:
  - Updated survey research to establish the current rates of uptake of existing ATV driver training and safety courses;
  - Research into the effectiveness of the various ATV courses currently available;
  - Retrospective analysis of injury data and the introduction of improvements in data collection at key agencies, such as ACC and medical facilities. The type of training undertaken by an accident victim should be among the data collected;
  - Continued funding of recognised courses proven to have an effective rate of injury reduction, in order to enable these courses to remain affordable.

---

<sup>40</sup> In NZ, 72% of 377 farmers indicated in a survey that they were self-taught (OSH, 1998, p. 9). In the USA, just one percent of respondents in a survey indicated that they had been taught by a certified professional ATV instructor (Tormoehlen & Sheldon, 1996, p. 151).

## *7. Statistical Data*

There is little consistency in the data in terms of delineation of age groups, or vehicle type (ATVs, three-wheelers and two-wheeled farm bikes). In order to better understand the extent of the problem of child ATV accidents, we first need to understand the data. Further, in order to provide effective and timely strategies that can be specifically targeted at reducing ATV injuries, comprehensive data on accident victims are required. Such data could include, but should not be limited to age, gender, time of day, injury severity scores, type of injury, how the accident occurred, type of accident (roll-over or collision), engine size, whether the injured person was a bystander, passenger or driver, and whether safety equipment or a helmet was utilised. There is also a need to ensure consistent and sustained dissemination of relevant information amongst the rural community.

We recommend:

- A distinction be made in all forms of official record keeping between ATVs, three wheelers and two-wheeled motorbikes;
- Greater detail in the collection of ATV statistics through all possible avenues: hospital admissions, ACC claims, police reports and fatality records;
- The assignment of responsibility for collection and collation of ATV accident data to a single agency. This agency should also be responsible for dissemination of evidence-based information and advice to the rural community.

## *8. Technology*

Investigation of the design and engineering of ATVs was beyond the scope of this project and we limited our research to those safety enhancements already in existence – helmets and ROPS. We endorse existing suggestions for modifications to the vehicles' clutch and throttle mechanisms and recognise the (safety) problems inherent in governing the speed of the vehicles at all times. Identification of a number of risk factors associated with the vehicles however, has allowed us to formulate recommendations which may serve to reduce these risks. In this category of recommendations, we again struggled with two opposing objectives. Primarily, our aim is to remove children from ATVs, but that will not become generalised behaviour overnight and there will always be unexpected circumstances which result in the need to take children into the farm workplace. In the interests of improved child safety under such conditions, we see the need to develop a purpose-built means of transport for young children on the farm. We envisage some sort of enclosed trailer (a capsule or pod), complete with seatbelts and perhaps similar in design to the more modern sidecars attached to large motorbikes. Assuming improvements in the stability of ATVs, this pod could be towed behind the vehicles, with the children at no risk of a fall from the vehicle and entirely encased for protection in the event of a rollover. Side mounting of the pods is also an option (which might also improve stability), but this is more likely to interfere with rider operations.

We are not engineers. We recognise that we may be asking for the impossible and some of the recommendations that follow might best be regarded as in the nature of a wish list. We present them in the belief that in the end, nothing is impossible!

We recommend:

- Revisiting the design of the vehicles with a view to lowering their centre of gravity;
- Manufacturing some parts of the vehicles from alternative materials (such as fibreglass) to prevent the welding on of attachments;
- Fitting of a device which governs speed only whilst cornering;
- Development of a dual gearing system, such that owners/supervisors may choose the operational capacities of the vehicle according to the abilities of the driver and the tasks anticipated;
- Further development of ATV safety frames, such that they inhibit the vehicles' tendency to roll;
- Development of a purpose-built pod for transporting children more safely in farming environments.

## 9. Childcare

The presence of children in the farm workplace emerged in this research as the most influential factor associated with child ATV accidents in the rural community. Their presence in the workplace is directly related to childcare and child supervision. A high percentage of children are injured when carried on ATVs as passengers, which is commonly a direct result of the unavailability of someone to mind the children. Additionally, as Lilley *et al's* (2004) research makes apparent, children are overwhelmingly killed in the farm workplace as bystanders – again, a situation often related to a lack of childcare. Farmers themselves, both in the key informant interviews and in the media attest to the difficulties they face in regard to access to, and availability of childcare in rural areas.

Providing suitable childcare on farms is an area fraught with practical complications. The sheer geographic distance to main centres and other farms means that pursuing formal childcare is difficult for some and untenable for others. Similarly, engaging an in-home child-minder might also involve travelling great distances on a regular basis, unless a live-in position is possible, though even in such circumstances, the childminder's days off would be problematic. Further, the costs involved may be prohibitive in terms of the financial viability of the farm – though we note that this is among the matters that must be considered by all working parents. We also note that one of our key informants had chosen to be a full-time carer and to forgo involvement on the farm while her children are very young.

There are several policy domains which might serve to secure better childcare options for the rural community. Current policy has a focus on improving the circumstances of working families, including the costs of childcare. New Zealand also faces a skills shortage and government is working to encourage more women into the workforce. Similarly, there has been a growing emphasis on early childhood education. All three domains offer avenues for enhancing the rural community's access to childcare. The unique circumstances of rural parents suggest the need for enhanced government programmes and policies if real assistance is to eventuate. Establishing and subsidising formal childcare in rural areas is one option, though it will not account for all circumstances. Extra financial support for live-in childcare may therefore be necessary. Subsidised transport to and from childcare may provide further assistance. We do not view this problem as solely the responsibility of the state, however. Rural parents also have a role and we advocate the revival of rural systems of community childcare, facilitated by government, if necessary.

While the lack of childcare options is problematic, it is not the only factor influencing children's presence in the farm workplace. Fundamental to farm culture is the value

attached to the ability and opportunity for the family to live, work and play together. At the theoretical level, we have no objections to this – indeed it is something to be encouraged in all families. At the practical level however, the conflation of home and workplace that is inherent in the farming environment presents a unique set of circumstances which often precipitate unsafe practices. To date, children have been conspicuous by their absence in the dialogue around farm safety. We seek to correct that omission. In the context of a wider rural cultural shift, our findings have given rise to a concept that we have coined *Farm-Kid Culture*. While rural children are clearly subject to different experiences from their urban counterparts, and any measures to advance child safety on New Zealand farms should reflect this, the fact remains that rural children are still subject to the same physical and cognitive limitations associated with their age group. Dialogue and debate about appropriate norms for rural children is urgently required in order to minimise any risks associated with the blurring of boundaries between work and home in rural environments.

We recommend:

- Urgent government attention to the provision of childcare services in rural areas;
- A state-funded subsidy for childcare expenses in rural communities, additional to any existing childcare subsidies, in recognition of the unique problems faced by rural parents;
- Subsidised transport to and from childcare services or early childhood education facilities;
- Revival of community-based systems of childcare by the rural community;
- Initiation of dialogue amongst the rural community, work and safety organisations, child welfare agencies and vehicle safety experts with a view to establishing an appropriate *Farm-Kid Culture* which delineates safer norms for New Zealand's rural children.

## **Glossary**

### **ATV**

*All terrain vehicle.*

Otherwise known as quad bikes, farm bikes or three and four wheelers. ATVs have either three or four wheels and are designed for off road environments. Their soft tyres make them ideal for farm work, but they are generally unsuitable for road travel.

### **COHFE**

*Centre for Human Factors and Ergonomics.*

A New Zealand based company that provides ergonomics research, consultancy and educational related services. This company produced a report based on survey research into ATV safety on New Zealand farms.

### **CPSC**

*Consumer's Product Safety Commission.*

The United States agency which brought legal action against Honda in 1987 regarding the danger of ATVs, and was subsequently responsible for initiating the Consent Decrees with the major manufacturers of ATVs sold in America.

### **NAGCAT**

*North American Guidelines for Children's Agricultural Tasks.*

A series of tools in the form of posters and wall charts, which are aimed at demonstrating to children the correct safety behaviours to be used when undertaking tasks on farms.

### **OSH**

*Occupational Safety and Health Service.*

A New Zealand Government organisation within the Department of Labour, which is responsible for overseeing health and safety issues within the workplace.

### **Driver**

Especially for the purpose of having a common definition throughout our report, we have elected to use 'driver' to indicate the person actively driving and controlling the ATV, as opposed to riding as a passenger.

### **Rider**

While some of the literature did not distinguish between a rider who was riding on an ATV and one who was actually driving one, we have elected to use 'rider' in instances when it was not clear from the literature whether the person was driving the ATV, or riding as a passenger. Thus, in our report a 'rider' can refer to someone either actively driving an ATV, or riding an ATV as a passenger. If known, we have by preference used the term driver or passenger to differentiate the rider.

### **Passenger**

A 'passenger' refers to someone riding on a moving ATV and not actively in control and driving it.



## **Bibliography**

- Accident Compensation Corporation. (2002). *All-terrain bikes are still taking too many farmers to funerals*. Wellington: ACC, WorkSafe
- Accident Compensation Corporation. (n/d). *Children and ATVs*. Factsheet number five. Wellington: ACC
- Accident Compensation Corporation. (2005). *Precautionary tales: Latest update on farm ATV safety*. Wellington: ACC
- American Academy of Pediatrics. (2000, June). All-terrain vehicle injury prevention: Two, three, and four wheeled unlicensed motor vehicles. Committee on Injury and Poison Prevention. *Pediatrics*, 105(6), pp.1352-1354.
- Brown, R.L., Koepflinger, M.E., Mehlman, C.T., Gittelman, M., and Garcia, V.F. (2002, March). All-terrain vehicle and bicycle crashes in children: Epidemiology and comparison of injury severity. *Journal of Pediatric Surgery*, 37(3), pp.375-380.
- Centre for Human Factors and Ergonomics. (2002). *Quad bikes: Factors in loss of control events on New Zealand farms*. Rotorua: Scion
- Cvijanovich, N.Z., Cook, L.J., Mann, N.C., & Dean, M. (2001, 3 September). A population based assessment of pediatric All-terrain vehicle injuries. *Pediatrics*, 108(3), pp.631-635.
- Farmsafe Australia. (1999, October). *Child safety on farms: A framework for a national strategy in Australia*. Moree, New South Wales: Farmsafe.
- Federated Farmers. (2003, 23 December). *Kids and machinery do not mix*. Media Release. Retrieved 23 September 2005, from <http://www.fedfarm.org.nz/media%20releases/PR268-03.html>
- Federated Farmers. (2004, 6 May). *Minutes of Meeting of Agricultural Health and Safety Council*. Wellington, pp.1-6.
- Fragar, L.J., Stiller, L., and Thomas, P. (2005). *Child injury on Australian farms*. Australian Centre for Agricultural Health and Safety. Barton, ACT: Rural Research and Development Corporation and Australian Centre for Agricultural Health and Safety.
- Franklin, V. (2001, 16 November). *All-terrain vehicles put children at risk*. Kentucky: University of Kentucky Chandler Medical Center.
- Fisher, M. (2005, May). *ATV's – new regulations and safety resources*. Alberta Centre for Injury Control and Research, 7(9).
- Injury Prevention Research Unit. (1996, August). *Injuries on farms*. Factsheet number eight. Wellington: EPRU
- Helmkamp, J.C. (2001, November). A comparison of state specific All-terrain vehicle related death rates, 1990-1999. *American Journal of Public Health*, 91(11), pp.1792-1795.
- Keenan, H.T., & Bratton, S.L. (2004, 4 April). All-terrain vehicle legislation for children: A comparison of a state with and a state without a helmet law. *Pediatrics*, 113(4), pp..330-334.
- Kelleher, C.M., Metze, S.L., Dillon, P.A., Mychaliska, G.B., Keshen, T.H., and Fogila, R.P. (2005). Unsafe at any speed – kids riding all terrain vehicles. *Journal of Pediatric Surgery*, 40, pp.929-935.
- Kubala, M.J. & Shrontz, C.E. (1987, December). All-terrain vehicle accidents. *Texas Medicine*, 83, pp.27-30.
- Land Transport New Zealand. (2005, February). *All-terrain vehicles: ATV registration, licensing and safety*. Factsheet 19. Retrieved 13 September 2005, from <http://www.ltsa.govt.nz/factsheets/19.html>
- Lifestyleblock.co.nz. (2005). *ATV skills*. Retrieved 23 September 2005, from [http://www.lifestyleblock.co.nz/articles/machinery/02\\_atv\\_skills.htm](http://www.lifestyleblock.co.nz/articles/machinery/02_atv_skills.htm)

- Lilley, R., Feyer, A., Langley, J., and Wren, J. (2004, 21 May). The New Zealand child work-related fatal injury study: 1985-1998. *Journal of the New Zealand Medical Association*, 117(1194).
- Lister, D.G., Carl, J., Morgan, J., Denning, D.A., Valentovic, M., Trent, B., & Beaver, B. (1998, July). Pediatric All-terrain vehicle trauma: a 5-year statewide experience. *Journal of Pediatric Surgery*, 33(7), pp.1081-1083.
- Lower, T., Egginton, N., & Owen, R. (2003, February). Agricultural motorcycle injuries in Western Australian adolescents. *Australian and New Zealand Journal of Public Health*, 27(3), pp.333-336.
- Lynch, J.M., Gardner, M.J., and Worsley, J. (1998, February). The continuing problem of all-terrain vehicle injuries in children. *Journal of Pediatric Surgery*, 33(2), pp.329-332.
- Mangus, R.S., Simons, C.J., Jacobson, L.E., Streib, E.W., & Gomez, G.A. (2004, February). Current helmet and protective equipment usage among previously injured ATV and motorcycle riders. *Injury Prevention*, 10(1), pp.1-6.
- Marciani, R.D., Caldwell, G.T., & Levine, H.J. (1999). Maxillofacial injuries associated with ATVs. *Journal of Oral and Maxillofacial Surgery*, 57, 119-123.
- Marlenga, B., Pickett, W., and Berg, R.L. (2002). Evaluation of an enhanced approach to the dissemination of the *North American Guidelines for Children's Agricultural Tasks*: A Randomized Controlled Trial. *Preventive Medicine*, 35, pp.150-159.
- McDougall, B., & Kahler, R. (2000). *Literature review: personal damage associated with all-terrain vehicles*. The Intersafe Group Pty Limited.
- Ministry of Health. (2006). *Smokefree law in New Zealand*. Retrieved February 12, 2006, from <http://www.moh.govt.nz/smokefreelaw>
- Mitchell, R., Franklin, R., Driscoll, T., and Fragar, L. (2001). Farm-related fatalities involving children in Australia, 1989-92. *Australian and New Zealand Journal of Public Health*, 25(4), pp.307-315.
- Moroney, P., Doyle, M., and Mealy, K. (2003). All terrain vehicles – unstable, unsafe and unregulated. A prospective study of ATV related trauma in rural Ireland. *International Journal of the Care of the Injured*, 34, pp.203-205.
- Murphy, N., & Yanchar, N.L. (2004). Yet more pediatric injuries associated with all-terrain vehicles: Should kids be using them? *The Journal of Trauma, Injury, Infection, and Critical Care*, 56(6), pp.1185-1190.
- Occupational Safety and Health Service. (1996). *Guidelines for the provision of Safety, Health and Accommodation in Agriculture*. Wellington: Department of Labour.
- Occupational Safety and Health Service. (1998, July). *Safe use of ATVs on New Zealand farms*. Wellington: Department of Labour.
- Occupational Safety and Health Service. (2002a, January). ATVs in agriculture. *Farming Bulletin*, no.2. Wellington: Department of Labour
- Occupational Safety and Health Service. (2002b, November). *Safe use of ATVs on New Zealand farms: Agricultural guideline*. Wellington: Department of Labour.
- Owens, P. (2005, 13 September). Farm deaths lowest in six years. *Rural News*. Retrieved 24 September 2005, from <http://www.ruralnews.co.nz/article.asp?channelid=34&articleid=9648>
- Phrampus, E.S., Shultz, B.L., & Saladino, R.A. (2005). Injuries associated with All-terrain vehicles: A new epidemic. *Clinical Pediatric Emergency Medicine*, pp.57-61.
- Rodgers, E. (2004, 18 February). *Be careful when riding quad bikes*. ABC Western Queensland. Retrieved 12 November 2005, from <http://www.abc.net.au/westqld/stories/s1047728.htm>
- Rodgers, G.B. (1990). The effectiveness of helmets in reducing All-terrain vehicle injuries and deaths. *Accident Analysis and Prevention*, 22(1), pp.47-58.

- Rodgers, G.B. (1998). The characteristics and use patterns of all-terrain vehicle drivers in the United States. *Accident Analysis and Prevention*, 31, pp.409-419.
- Rodgers, G.B., & Alder, P. (2001). Risk factors for All-terrain vehicle injuries: A national case-control study. *American Journal of Epidemiology*, 153(11), pp.1112-1118.
- Safekids. (2001, 24 October). *Descriptive epidemiology of ATV injuries in NZ*. Prepared by John Wren, Senior Analyst, Safekids.
- Safekids. (2005, June). *Safekids News*, issue no.29, pp.1-8.
- Taylor, M. (2005, 18 November). *Changes to law reflect reality of farm life*. New Zealand Farmers Weekly. Countrywide Publications Limited. Retrieved 18 November 2005, from <http://www.country-wide.co.nz/article/2770.html>
- Tormoehlen, R.L., & Sheldon, E.J. (1996). ATV use, safety practices, and injuries among Indian's youth. *Journal of Safety Research*, 27(3), 147-155.
- Upperman, J.S., Shultz, B., Gaines, D.H., Cassidy, L.D., Ford, H.R., and Helm Kemp, J. (2003, September). All-terrain vehicle rules and regulations: Impact on pediatric mortality. *Journal of Pediatric Surgery*, 38(9), pp.1284-1286.
- Warda, L., Klassen, T.P., Buchan, N., & Zierler, A. (1998). All terrain vehicle ownership, use, and self reported safety behaviours in rural children. *Injury Prevention*, 4, 44-49.
- Worksafe Western Australia. (1993, 19 August). *Workplace safety is not child's play*. Department of Consumer and Employment Protection, Government of Western Australia. Retrieved 24 September 2005, from <http://www.safetyline.wa.gov.au/pagebin/workgen10003.htm>
- Wren, J., & Campbell, S. (2003, June). Joint Royal New Zealand Plunket and Safekids Submission on Land Transport Rule 32017 Vehicle Equipment.
- Yanchar, N.L. (2004, May/June). All-terrain vehicle injuries in children – it's time for advocacy. *Paediatrics and Child Health*, 9(5), 303-305.
- Zetner, J., Berg, R.L., Pickett, W., & Marlenga, B. (2005). Do parents' perceptions of risks protect children engaged in farm work? *Preventive Medicine*, 40, pp.860-866.

## News media references

- Ashburton Guardian*. (2005, 3 January). Farm accidents make up third of children's deaths in workplaces, p.6.
- Bay of Plenty Times*. (2005, 5 January). Farm accidents top figures, p.7.
- Bell, A. (2005, 31 October). ATV safety in spotlight. *Central Districts Farmer*, p.3.
- Caspari, A. (2002, 30 November). Call for ban on quad bikes. *The Daily Post*.
- Central Districts Farmer*. (2005, 30 September). Awards for safety, p. 2.
- Central Districts Times*. (2005, 26 October). Safety lessons for kids, p.6.
- Countrywide Northern*. (2004, 30 November). Changes to law reflect reality of farm life, p.15.
- Countrywide Northern*. (2005, 31 July). Updated safety chart released, p.74.
- Countrywide Southern*. (2005, 28 February). Free chart provides useful safety tips, p.70.
- Dannevirke Evening News*. (2005, 5 January). Children at high risk on farms report says, p.1.
- Gisborne Herald*. (2005, 5 January). Farm accidents make up third of child deaths in workplaces, p.20.
- Goodger, G. (2005, 3 January). Vulnerable to farm hazards. *Otago Daily Times*, p.2.
- Hembry, O. (2005, 8 August). Farming safety in the spotlight. *New Zealand Herald*, p.27.

Holt, M. (2002, 6 November). Girl in farm death unaware of dangers. *Waikato Times*.

Holt, M. & Cooper, T. (2002, 21 November). Are they killers? *Waikato Times*.

*Horowhenua Kapiti Chronicle*. (2005, 11 January). Farm accidents deadly for children, p.8.

*Horowhenua Kapiti Chronicle*. (2005, 18 May). No legal action over farm deaths, p.4.

*Farmers Weekly*. (2005a, 30 May). User guidelines 'good solution', p.12.

*Farmers Weekly*. (2005b, 26 September). ATV pragmatism is verging on stupidity. Editorial, p.12.

Labes, N. (1999, 27 January). Double standard seen: two sides of ATV argument. *Clutha Leader*.

*Marlborough Express*. (2005, 5 January). Children figure in fatal farm accidents, p.8.

*Manawatu Standard*. (2005a, 3 January). Farms prove fatal for many children, p.3.

*Manawatu Standard*. (2005b, 31 October). Keeping kids safe, p.9.

*Nelson Mail*. (2005, 3 January). Farm accidents top list, p.5.

*Northern Advocate*. (2005, 24 May). Call to ban quad bikes not welcome, p.7.

*Otago Daily times*. (2005a, 18 May). No action over children's deaths, p.2.

*Otago Daily Times*. (2005b, 26 August). Children's deaths tragic: coroner, p.30.

*Otago Daily times*. (2005c, 10 November.). Girl drowned in farm – coroner.

*Otago Southland Farmer*. (2002, 4 October). Child car seats not for ATVs.

*Otago Southland Farmer*. (2003, 7 February). Aim to reduce rural property accidents.

Pickering, S. (2002, 20 September). Farm bike child seats worry group. *Waikato Times*.

Smith, R. (2005, 10 October). ATV pragmatism only workable option. *Farmers Weekly*, letters to the editor, p.10.

Robinson, F. (2005, 8 January). Deaths spark safety warning. *Ashburton Guardian*, p.10.

*Southern Rural Lifestyle*. (2005, 29 June). Follow these safety tips, p.20.

*Southern Rural Lifestyle*. (2005, 10 August). Good safety practices should be standard, p.17.

Rennie, R. (2005, 26 September). ATV rules defended after girl's deaths. *Farmers weekly*, p.4.

*Taranaki Daily News*. (2005, 3 January). Farm dangers for kids highlighted, p.2.

*The Daily Post*. (2005, 6 January). Farms prove hazardous for children, p.11.

*The Dominion Post*. (2005, 4 January). Farms dominate child deaths, p.6.

*The New Zealand Herald*. (2005, 3 January). Children vulnerable to work hazards on farms, p.5.

*The Press*. (2005a, 4 January). Child-death figures high on farms, p.4.

*The Press*. (2005b, 5 February). Deadly times on the farm, p.3.

*Timaru's The Courier*. (2005, 25 May). Quad bikes essential on farm, p.3.

Tyler, F. (2002, 23 August). Four deadly wheels. *The Dominion Post*.

Vannisseiroy, J. (2005, 5 August). Rural school shows pupils the safe way. *Otago Daily Times*, p.17.

*Waikato Times*. (2002, 22 November). Have your say: email the editor. [isay@waikatotimes.co.nz](mailto:isay@waikatotimes.co.nz)

*Waikato Times*. (2005, 5 January). Farms deadly workplaces for children, p.13.

*Wairarapa Midweek*. (2005, 16 August). Farming safety in the spotlight, p.27.

*Wairarapa Times*. (2005, 3 January). Farm accidents make up a third of children's deaths, p.3.

*Waitomo News*. (2005, 11 January). Otago study reveals farms can be fatal, p.8.

*Wanganui Chronicle*. (2005, 11 August). Safety week focuses on farmyard. Supplement, p.4.