



An Australian Government Initiative

Farm Health & Safety
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Child Injury on Australian Farms

–THE FACTS–

2005

Facts and Figures on Farm
Health and Safety Series
No 5



Australian Centre for Agricultural Health and Safety

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ISBN 1 74151 145 3
ISSN 1440-6845

Child Injury on Australian Farms
Publication No. 05/047; Project No. US-121A

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Printed by Union Offset Printing, Canberra

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1. Introduction

High rates of serious injury and deaths on Australian farms are of concern to agricultural industry agencies, farmers and farm enterprises and federal and state governments. Farmsafe Australia, the national association of agencies with commitment to reducing injury risk on Australian farms, has identified child safety as a key issue that needs attention and auspiced the development and implementation of the National Child Safety On Farms Strategy with key partners from of agricultural industries, farm parents, educational agencies, farm suppliers and government agencies.

Strategic approaches to reducing child injury risk are multifaceted and include:

- establishing a national framework for action
- identification of key hazards
- identification of effective strategies to control key injury risks
- identification of educational needs and development of resources for children, parents and teachers
- identification and development of flexible child care options
- promotion of strategies to farm parents and managers, schools, service providers and others
- identification of further research needs.

This document presents information from a number of studies compiled by the National Farm Injury Data Centre which sources data from agencies including the Australian Bureau of Statistics (ABS), National Coronial Information System, NSW Health Department, Commonwealth Department of Health and Ageing and field day surveys.

This document has been produced to provide guidance to those agencies and individuals who are working to reduce risk to children on Australian farms. The publication is available electronically for use by educators and speakers in their efforts to raise awareness and promote child safety on farms, and for those whose role is the development of public and industry policy to improve safety.

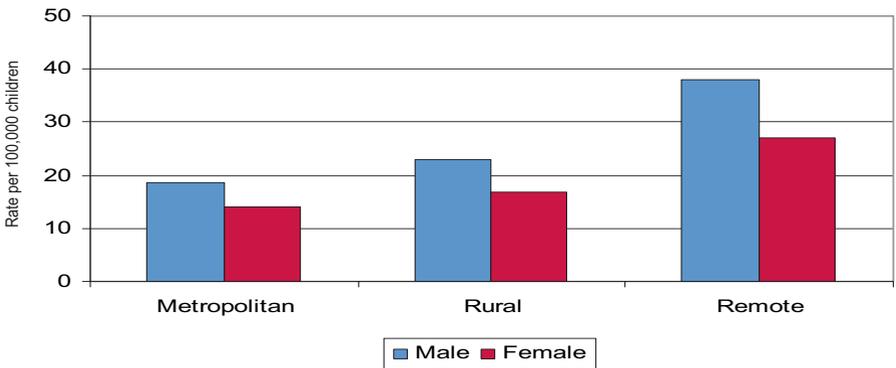


2. Deaths of children on Australian farms

On average, 30 children aged under 15 die on Australian farms each year as a result of farm injury. One-third of these fatalities involve children who are visiting a farm at the time of injury. This equates to roughly one farm-related child fatality every 10 days.

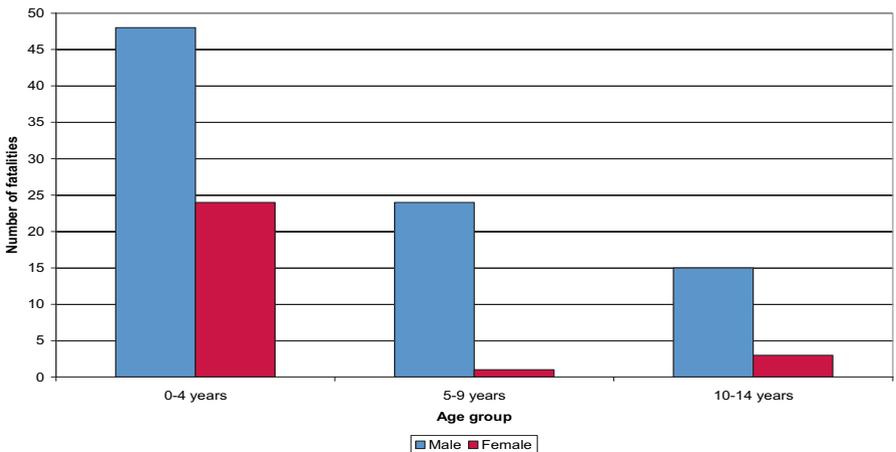
Figure 1 compares child fatalities in rural and metropolitan areas and demonstrates that the rate of child fatality on farms and rural areas is higher than urban areas. Figure 2 shows that 75% of fatal child injury occurred to boys and 63% occurred to children aged less than 5 years.

Figure 1 Average death rates for children aged 0-14 in metropolitan, rural and remote areas, Australia 1998-2000



Source: Australian Institute of Health & Welfare (2002)

Figure 2 Number of child deaths on Australian farms, by sex and age group, 1989-1992



Source: Franklin et al (2000)

3. Cause of child fatality

The major causes of deaths to children on farms are :

- drowning of children (particularly 0-4 years of age)
- fatal injury associated with farm vehicles including motorcycles (all ages)
- tractors (with toddlers being most at risk).

In the study of child fatalities between 1989 and 1992, most children were classified as playing when the incident occurred. Only 8% were classified as working, although 77% of the incidents occurred in an area where farm work was being carried out.

Table 1 Agent of injury associated with child fatalities on Australian farms, by age group, 1989-1992

Broad agent of injury	Age group (years)			Total no of fatalities
	0-4	5-9	10-14	
Vehicle	12	7	12	31
Tractor	7	2	2	11
Other machinery	4	1	1	6
Water body	43	5	1	49
Horse	1	3	1	5
Other animal	1	0	0	1
Other	6	7	1	14
Total	74	25	18	117

Source: Franklin et al (2000)

Priorities of child safety programs on farms must include **drowning** (particularly of toddlers), and aim to reduce vehicle and tractor related deaths. The development of any program must consider farm visitors.



4. Injury causing hospitalisation of children

There are on average 575 children hospitalised each year in Australia as a result of farm related injuries (NSW Health, 2002). This equates to more than 10 children admitted to hospitals with farm-related injuries each week. Many more children with farm related injuries present at Emergency Departments of country hospitals and to General Practitioners (Franklin & Crosby, 2002).

An average of 20-25% of all hospital admissions resulting from a farm injury occur to children under 15 years (Fragar & Franklin, 2000). Table 2 shows that for 1994-1998, the most common causes associated with hospital admission of children with farm injuries were:

- motorcycles
- farm vehicles
- horses
- falls.

Table 2 Children injured on farms who were discharged from hospital between July 1994-June 1998, by selected External Cause code groups and age group, Australia (excluding SA)

Description	0-4 yrs		5-9 yrs		10-14 yrs		Total	
	n	%	n	%	n	%	n	%
Motor vehicle non-traffic accident & other road vehicle accidents								
<i>motorcycles</i>	13	2.7	116	17.3	346	27.5		19.7
<i>other vehicles</i>	65	13.5	76	11.3	186	14.8		13.6
<i>animal ridden</i>	20	4.2	109	16.3	237	18.9		15.2
Poisoning by agricultural chemicals	11	2.3	*	*	*	*	14	0.6
Fire & flames	*	*	8	1.2	21	1.7	32	1.3
Venomous animal/plants	18	3.7	19	2.8	26	2.1	63	2.6
Dog bite	16	3.3	*	*	*	*	21	0.9
Injury by other animal	31	6.4	39	5.8	44	3.5		4.7
Agricultural machinery	31	6.4	51	7.6	41	3.3		5.1
Other machinery	15	3.1	5	0.7	6	0.5	26	1.1
Cutting & piercing	16	3.3	33	4.9	32	2.5	81	3.4
Subtotal	246	51.1	463	69.1	949	75.5		68.9
Motor vehicle accidents	20	4.2	36	5.4	110	8.8		6.9
Poisoning	14	2.9	0	0.0	4	0.3	18	0.7
Falls	81	16.8	102	15.2	84	6.7		11.1
Natural & environmental factors	15	3.1	11	1.6	15	1.2	41	1.7
Drowning	26	5.4	*	*	*	*	27	1.1
Other E Codes	na	na	na	na	na	na		10.2
Group Total	481	100	670	100	1257	100		100

Source: Franklin & Harrison (2002)

*Number of cases less than 4

^{na}Not available

5. Drowning

Drowning accounts for the greatest number of deaths of children on farms, especially amongst toddlers (50-60% of under 4 year old deaths). A study across Australia by the Royal Life Saving Society in 2002 showed that whilst drowning rates across Australia are decreasing in backyard swimming pools, they are increasing in farm dams and other inland waterways (Franklin & Fragar, 2002). This research also indicates that 2 year olds and boys are at highest risk.

Table 3 shows the agents associated with child drowning for the period 1989-1992 where dams were associated with nearly 70% of all child farm drowning incidents. Approximately 12 fatalities occurred per year due to drowning. Table 2 (previous page) also indicates that across Australia a further 7 children per year are involved in nonfatal drowning incidents.

Table 3 Drowning-related agent of child fatality on farms, by age group, Australia 1989-1992

Agent	Age group (years)			Total	%
	0-4	5-9	10-14		
Farm structures associated with drowning					
<i>dam</i>	30	3	-	33	28.7
<i>creek/river</i>	2	2	1	5	4.3
<i>irrigation channel</i>	3	-	-	3	2.6
<i>tank</i>	7	-	-	7	6.1
<i>swimming pool</i>	1	-	-	1	0.9
<i>cattle dip trough</i>	1	-	-	1	0.9
Subtotal drowning	42	5	1	48	41.7
Farm vehicles	12	7	12	31	27.0
Mobile machinery & plant	11	3	3	17	14.8
Other equipment & materials	-	1	-	1	0.9
Other farm structures	-	4	-	4	1.7
Animals	2	3	1	6	5.2
Hazardous substances	2	-	-	2	1.7
Working environment	1	2	1	4	3.5
Total	72	25	18	115	100.0

Source: Franklin et al (2000)



6. Farm machinery

Farm machinery has been shown to cause a large number of deaths and injury to children on farms.

Tractors were the second single major cause of child death, following drowning, in Australia between 1989-1992. Toddlers, who represent 60% of tractor-related child fatalities, may be at greater risk of tractor runover. Farm machinery has also been estimated to be associated with 5% of hospitalised child injury throughout Australia (see Table 2).

Table 4 Farm machinery related agents of child fatality, by age group, Australia 1989-1992

Agent	Age group (years)			Total	%
	0-4	5-9	10-14		
Mobile machinery & plant					
<i>tractor</i>	7	2	2	11	9.6
<i>linkage</i>	1	-	-	1	0.9
<i>tillage seeder</i>	1	-	-	1	0.9
<i>grain auger</i>	-	1	-	1	0.9
<i>slasher</i>	-	-	1	1	0.9
<i>other mobile farm machinery</i>	2	-	-	2	1.7
Subtotal mobile farm machinery	11	3	3	17	14.8
Farm vehicles	12	7	12	31	27.0
Other equipment & materials	-	1	-	1	0.9
Farm structures	44	9	1	54	47
Animals	2	3	1	6	5.2
Hazardous substances	2	-	-	2	1.7
Working environment	1	2	1	4	3.5
Total	72	25	18	115	100.0

Source: Franklin et al (2000)

Farm machinery remains a significant risk for children, especially toddlers, on farms.



7. Farm vehicles and motorcycles

Farm vehicles, including farm motorcycles and ATVs, have been estimated to cause over a quarter of all child fatalities on Australian farms (Table 5).

Vehicles, such as utes and trailers, and ATVs where children can ride unrestrained on the back are a particular risk, as is evident from the fatality data in Tables 5 and 6. Farm motorcycles have been estimated to be associated with nearly 10% of child fatalities (Table 5).

Table 5 Farm vehicle related agents of child fatality, by age group, Australia 1989-1992

Agent	Age group (years)			Total	%
	0-4	5-9	10-14		
Farm vehicles					
<i>truck</i>	2	1	-	3	1.7
<i>utility</i>	4	1	3	8	7.0
<i>car</i>	2	-	-	2	1.7
<i>trailer</i>	4	2	-	6	5.2
<i>2 wheel motorcycle</i>	-	2	3	5	4.3
<i>3 wheel motorcycle</i>	-	-	2	2	1.7
<i>4 wheel motorcycle</i>	-	1	3	4	3.5
<i>bicycle</i>	-	-	1	1	0.9
Subtotal farm vehicles	12	7	12	31	27.0
Mobile machinery & plant	11	3	3	17	14.8
Other equipment & materials	-	1	-	1	0.9
Farm structures	44	9	1	54	47
Animals	2	3	1	6	5.2
Hazardous substances	2	-	-	2	1.7
Working environment	1	2	1	4	3.5
Total	72	25	18	115	100.0

Source: Franklin et al (2000)

Table 6 ATV fatalities, by age group and riding status, Australia 2000-2003

Age group (years)	Status at time of death			Total
	Rider	Passenger	Pedestrian	
0-4	-	3	1	4
5-14	3	1	-	4
15-24	6	2	-	8
25-44	2	-	1	3
45-64	10	-	1	11
65+	4	-	-	4
Total	25	6	3	34

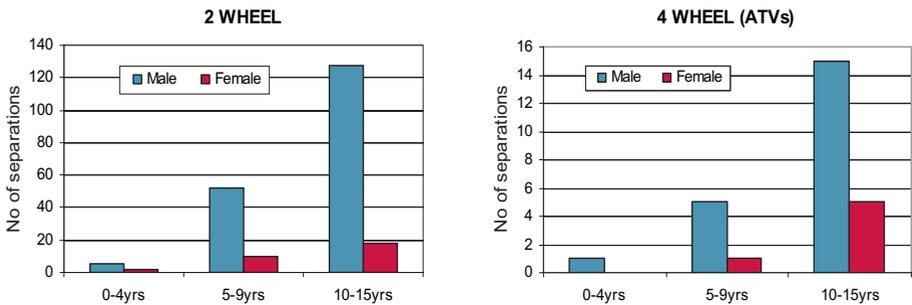
Source: NFIDC ATV Deaths Register (2000-2003)

7. Farm vehicles and motorcycles (continued)

Across Australia nearly 20% of all child injury admitted to hospitals has also been found to be associated with motorcycles (See Table 2). In NSW, 42% of children (n=578) hospitalized between July 2000 and June 2003 with a farm injury had injuries associated with 2 and 4 wheel motorcycles. Eighty five percent (85%) of those injuries occurred to boys. Two wheel motorcycles (89%) and older children were more frequently involved (Figure 3).

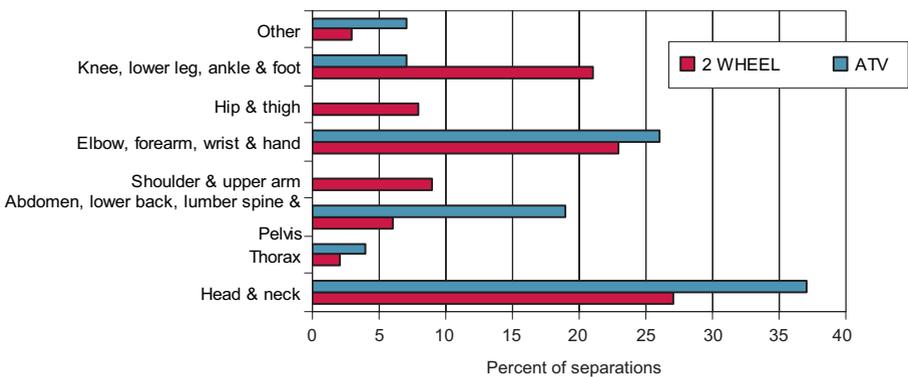
While ATVs are involved in fewer injuries, they tend to be associated with a higher proportion of more serious injury such as head injuries and crush injury to trunk and chest (Figure 4).

Figure 3 Children hospitalised in association with farm motorbikes, by sex and age, NSW July 2000-June 2003



Source: NFIDC (NSW Health HOIST database)

Figure 4 Percent of hospitalised children injured in association with 2 wheel (n=214) and ATV (n=27) motorcycles, by body part, NSW July 2000-June 2003



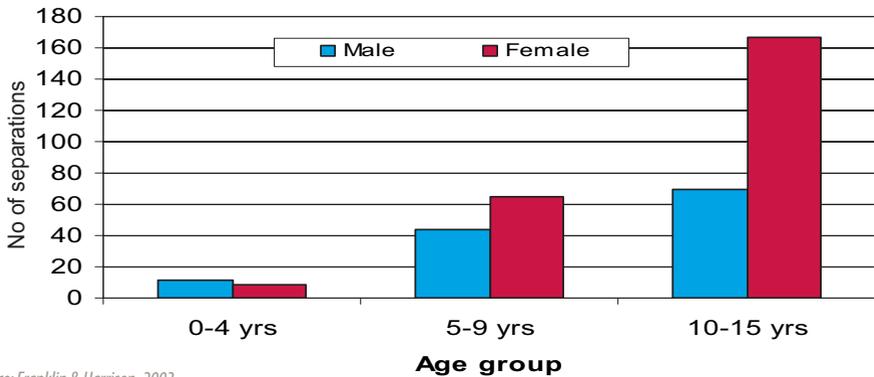
Source: NFIDC (NSW Health HOIST database)

Motorcycles and ATVs are a priority of injury prevention programs for all children on farms.

8. Horses

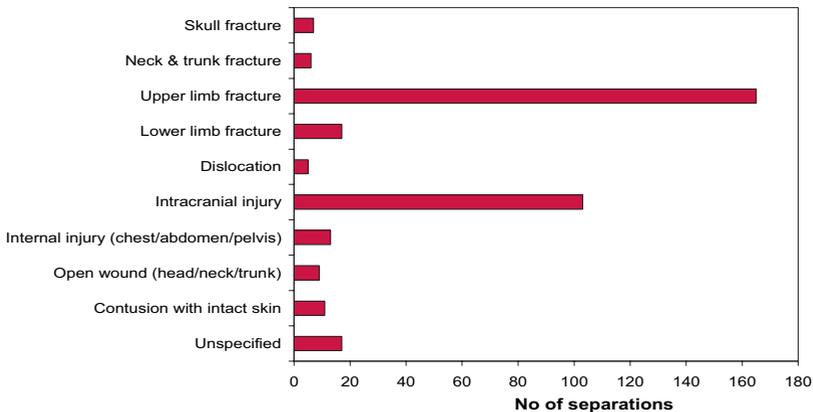
Horse-related injury has been estimated to be the cause of approximately 15% of farm injury and 5% of farm fatality in Australian children (Franklin et al, 2000) where hospital separation data has been coded as 'animal ridden' (Figures 5 and 6). Where more detailed coding is available in NSW, on-farm horse related injury accounted for 5.4% of children hospitalised between 2000 and 2003 (Figure 7).

Figure 5 Children hospitalised with on-farm injury coded as animal ridden, by age and sex, Australia July 1994-June 1998



Source: Franklin & Harrison, 2003

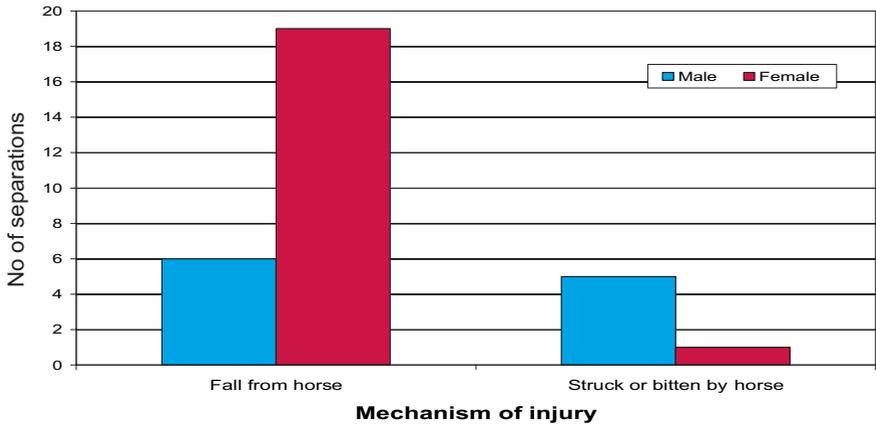
Figure 6 Children hospitalised with on-farm injury coded as animal ridden, by diagnosis, Australia July 1994-June 1998



Source: Franklin & Harrison, 2003

8. Horses (continued)

Figure 7 Mechanism of on-farm horse injury in children hospitalized, NSW July 2000-June 2003



Source: NSW HOIST database

Horse injury prevention programs should target **girls aged 10-15 years**.

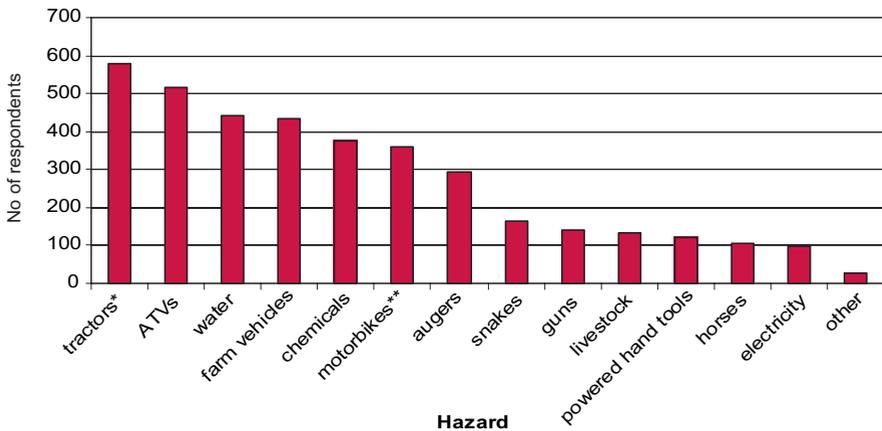


9. Hazard awareness and child safety behaviour

A quota survey conducted in 2004 of attendees of agricultural field days in Victoria, NSW, WA and SA sampled 859 respondents who lived or worked on a farm. Similar numbers of men and women were surveyed and 56% of respondents had children under the age of 15 living on their farms. A further 36% of respondents reported that children visited their farm at least once a year.

The preliminary results of the study are shown in Figures 8 to 11. The major risks to children identified by injury data were also nominated most frequently by respondents (although risk of horse injury was perceived as low and chemical injury high) suggesting that many farm families are aware of hazards to children on farms (Figure 8).

Figure 8 Number of field day respondents who identified key child safety hazards, NSW, Vic, SA, WA, 2004 (n=844)



Source: Stiller et al (unpublished)

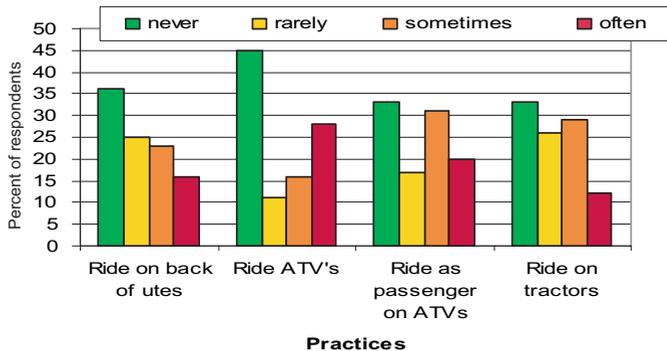
*Tractors & mobile plant

**2 wheel only

Figure 9 Percent of field day respondents* who reported children riding as passengers on farm vehicles, NSW, Vic, SA, WA, 2004 (n=859)

Source: Stiller et al (unpublished)

*Respondents who had children living on-farm or visiting at least monthly



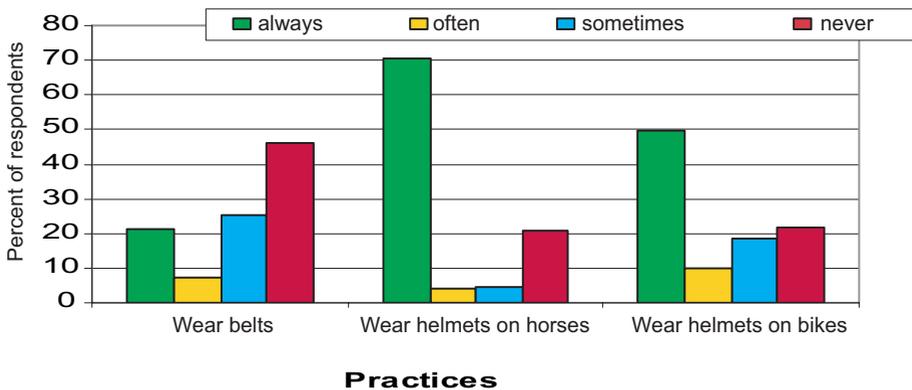
9. Hazard awareness and child safety behaviour (continued)

Over a third (30-45%) of respondents reported that children on their farm adhered to recommended safe practice – avoiding hazards by not riding on farm vehicles and machinery and by wearing helmets.

The responses for ATV riding (Figure 9) suggest that there is mixed assessment of the risks associated with these relatively new machines. The results of the survey also suggest that seatbelt wearing on farms is the least adhered to child safety practice and that helmets are more commonly worn while riding horses than motorcycles (Figure 10).

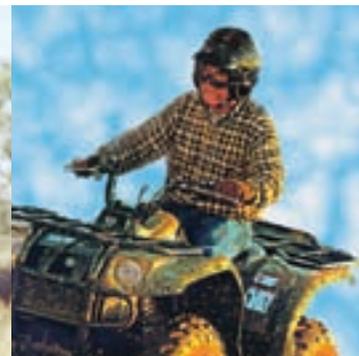
Although safe play areas are a key prevention strategy for toddler drowning and rollover, there did not appear to be a marked difference in the security of self reported farm house yard enclosures between families with and without children (Figure 11).

Figure 10 Percent of field day respondents* who reported children wearing seatbelts and helmets, NSW, Vic, SA, WA, 2004 (n=859)



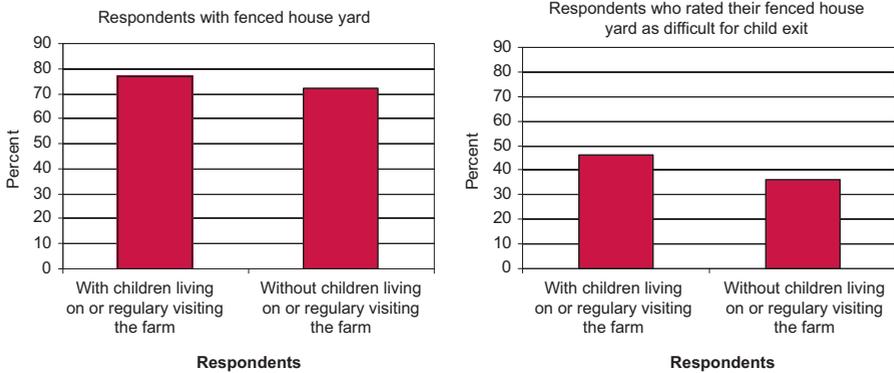
Source: Stiller et al (unpublished)

*Respondents who had children living on-farm or visiting at least monthly



9. Hazard awareness and child safety behaviour (continued)

Figure 11 Self-reported house yard fencing by field day respondents with and without children, NSW,Vic,SA,WA, 2004 (n=483)



Source: Stiller et al (unpublished)

The results of the survey suggest that there is fair compliance in the farming community with key safety practices which aim to protect children from major risks on farms. However more work is required to encourage consistent and widespread application of these practices to reduce child injury.

Given the number of children on farm who may be riding tractors and farm vehicles without head protection or seatbelts, farm child safety programs should continue to include:

- Promotion of helmet wearing on motorcycles
- Prevention of children riding on tractors and ATVs
- Prevention of children riding on the back of farm vehicles without a restraint
- Promotion of safe play areas on farms.



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Child Injury on Australian Farms

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This document has been produced to provide guidance to those agencies and individuals who are working to reduce risk to children on Australian farms. The publication is also available electronically for use by educators and speakers in their efforts to raise awareness and promote child safety on farms, and for those whose role is the development of public and industry policy to improve safety.

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