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ANALYSIS OF LOST TIME ACCIDENTS - 1994 LOGGING

(Accident Reporting Scheme Statistics)

Richard Parker

INTRODUCTION

This is the tenth year of data collection by the Accident Reporting Scheme (ARS). Differences from last year include: an increase in the number of reported lost time injuries, a decrease in the average severity of clearfell injuries, a decline in the proportion of leg injuries due to chainsaw lacerations and a large increase in the number of minor and near miss accidents reported.

Table 1 - Accidents recorded by the Scheme for 1993 and 1994

	1993	1994
Fatal Accidents	6	10
Lost Time Accidents	246	288
Minor Accidents	37	107
Near Miss Accidents	46	154

The following definitions are used by the Scheme:

lost time - the injury causes the injured person to miss the next full day's scheduled work

minor - first aid or medical treatment required, but lost time as defined above does not apply

near miss - first aid or medical treatment not required but the incident could have caused injury.

ANALYSIS OF 1994 LOST TIME ACCIDENTS

Lost Time Per Accident

The average (± standard error) number of days lost per accident was 10.1 ± 1.1 which is less than the 13.1 ± 2.1 days lost per accident in 1993. The number of days lost ranged from one to 200 days. The number of days lost is frequently estimated so caution must be used when interpreting "number of days lost" information.

The distribution of lost time in 1994 is very similar to that of previous years. The majority (60%) of accidents resulted in one to five days off work. These accidents do not come to the attention of the Accident Rehabilitation and Compensation Insurance Corporation (ACC) Integrated Information System database which records information on injuries resulting in more than five days off work. Serious (six to 10 days lost) and very serious (more than 21 days lost) accidents were the second most common group making up 16% and 14% of all lost time accidents respectively (Figure 1).

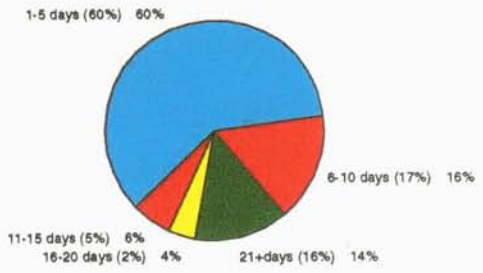

Figure 1 - Distribution of lost time per accident (1993 equivalent in brackets)

A total of 2615 work days were lost. At 236 working days per year, this equates to 11.1 years of lost time. This compares with 11.7, 8.7 and 11.6 years lost in 1991, 1992 and 1993 respectively. The fewer number of days lost in 1994 is due to a decrease in the severity of injuries although there was a greater number of accidents reported than in previous years (Figure 1).

Time of Day of Lost Time Accidents

The trend for the first third of the day to have more than one-third of the accidents continues. A smaller proportion of the lost time accidents occurred in the periods from 10:01 am to 1:00 pm (31 %) and 1:01 pm to 4:00 pm (25 %). There may be a number of reasons for this unequal distribution of accidents. The first run of the day is the longest continuous work period (minimum three hours, 7:00 am to 10:00 am) and this is the one period of the day where almost all loggers will be working and exposed to injury causing hazards. After that time logging crews will break for smoko; less loggers will be working so fewer will be exposed to injury causing situations. Other reasons for more accidents in the morning run could be fatigue due to a poor breakfast (low in energy) and strains and sprains caused by intense physical work without stretching the muscles before working. In the first run of the day strains and sprains comprise 8% of all lost time injuries. In the second and third runs of the day they comprise 6% and 4% respectively.

Accidents that occurred before 7:00 am or after 4:00 pm comprise the "other" category (Figure 2). These were: three injuries to log truck drivers, five injuries to workers travelling to or from work, one injury to a skid worker (hit by a drag) and one hand injury occurring during maintenance on a static delimber.

It is important that the time of accident occurrence is reported. In 1994, 4% of reports did not have this valuable information compared with 5% in 1993.

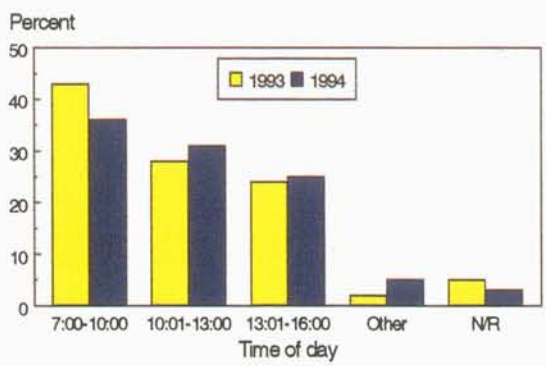

Figure 2 - Lost time accidents by time of day

Type of Operation

The proportion of lost time accidents in clearfell has increased and the proportion of lost time accidents in thinnings has decreased since 1993 (Figure 3). Clearfell operations account for the vast majority of lost time injuries and this is reflected in the greater level of clearfell activity in comparison to thinning.

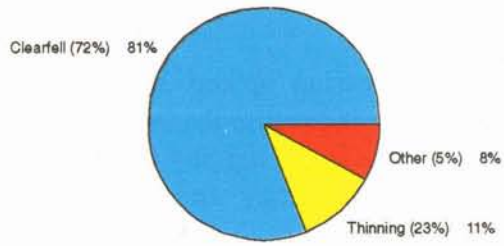

Figure 3 - Lost time accidents by type of operation (1993 equivalent in brackets)

The greatest proportion of lost time accidents, 46% (54%) occurred in skidder operations. Hauler operations continued to account for the second greatest number of lost time accidents with 32% (18%) which is a considerably greater proportion of accidents than last year and reflects the greater number of new hauler operations starting up in 1994. As a proportion of all lost time accidents, tractor operations are unchanged from last year, 19% (19%). There were 57 lost time injuries reported in thinnings operations in 1993 compared with 25 in 1994. The average severity of the injuries has increased since 1993 (Table 2). However, analysis of the injury records suggests under-reporting of the less severe injuries in 1994. There were only nine injuries resulting in less than five days off work in 1994 compared with 33 in 1993.

Logging Task

Felling, trimming and skidwork rate equally, accounting for 21% (32%), 22% (24%) and 22% (22%) of lost time accidents respectively. There has been an 11% decrease in the proportion of lost time injuries during the felling phase. Reasons for the decrease in tree felling accidents could include: a greater number of fallers trained or undergoing training, a great emphasis on safety and an increase in the number of trees felled by mechanised operations (one machine replacing up to eight fallers for the same level of production). However, mechanised operations introduce new opportunities for injury, particularly during maintenance.

There were three injuries which occurred while maintaining harvesting machines resulting in a total of 13 days lost. These injuries highlight the necessity for having more than one experienced operator. If the prime operator of the machine is injured and there is no "backup" operator of equal experience and ability, great production losses will occur.

Table 2 - Accident Severity - Clearfell versus Thinning (Days Lost)*

Type of operation	Number of injuries (1994)*	Severity (average days lost per accident)	
		1993	1994
Clearfell	212	15	10
Thinning	25	5	9
All Lost Time Accidents	258	12	10

* *The number of observations does not correspond with the data in Table 1 due to missing information about the amount of time lost. This follows in all analyses involving lost time.*

Chainsaw laceration accounted for 60% (38 injuries) of lost time injuries during trimming. Three main reasons were given for chainsaw laceration injury: saw pushed into body by tension wood (nine injuries), fell over or off stem on to saw (10) and kickback (nine). Other common trimming injuries were strained backs (six), legs (two), arm (one) and hand (one), bruises (seven) and objects flicked into eye (two).

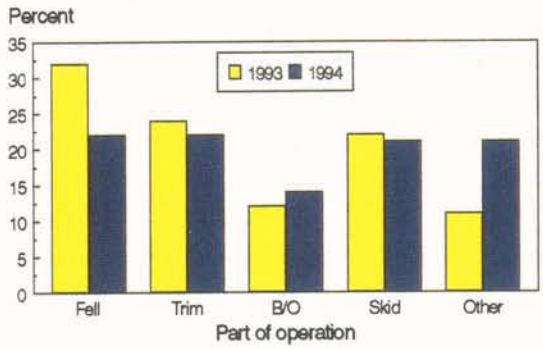

Figure 4 - Lost time accidents by part of operation

The proportion of accidents occurring during skid work has not changed in the last four years and remains at 22%. Breaking out accidents however, have risen back to historical levels, comprising 14% of lost time accidents (15, 13 and 11% in 1991, 1992 and 1993 respectively). Lost time accidents classified as "other" were mainly involved with: maintenance ("crushed finger when replacing hydraulic grapple hose", "stabbed finger with file when put hand into toolbox", "static delimber cover fell on hand, severed finger", "caught finger under excavator bonnet"), supervision/contract co-ordination ("wearing gumboots, slipped on ground while getting out of ute", "stepped backwards into hole") and travel to/from work ("ute hit bank, not wearing seatbelt", "passenger in van that rolled").

Part of Body Injured

The proportion of lost time injuries to the head, eyes, hands, upper torso and lower leg are unchanged from 1993. However, injuries to the upper leg, feet and multiple injuries have increased since 1993.

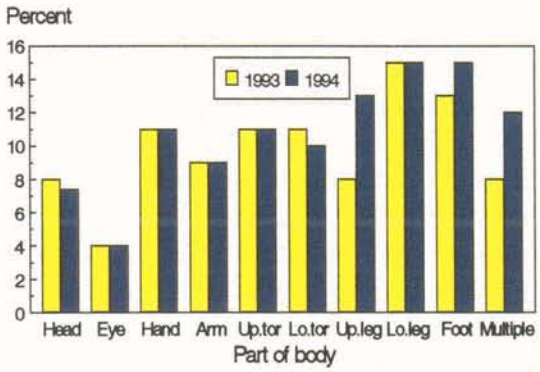

Figure 5 - Lost time accidents by part of body

There were 36 injuries to the hands in 1994 compared with 13 and 28 in 1992 and 1993 respectively. The proportion of hand injuries due to chainsaw laceration has declined since 1991 (68, 54, 39 and 39% for 1991, 1992, 1993 and 1994 respectively). This decline may be due to improved chainbrake design and greater training and chainsaw maintenance. There were five serious hand injuries (total of 18 days lost) inflicted during sharpening of the chainsaw: supporting the chainsaw in a clamp or on a stump cut for the purpose and wearing cut resistant gloves would eliminate these injuries. Four hand injuries to log truck drivers were reported in 1994 ("thumb caught as putting in bolster pin", "jam finger in turntable", "bolster falls on hand", "hit by log while truck being loaded").

The upper leg was the part of the body with the greatest increase in reported lost time injuries, 13% (8%). The single most common injury was chainsaw laceration to the left (nine) and right (two) legs with almost all occurring during trimming on the cutover. Three of these injuries were to the unprotected back of the leg. However, the proportion of upper leg

injuries inflicted by the chainsaw has declined over the years (58, 58, 43 and 31% for 1991, 1992, 1993 and 1994 respectively) and may be attributed to improvements in chainsaw cut resistant legwear and improved chainsaw technique gained from training.

There was a small increase in the proportion of foot injuries in 1994 (15%) compared with 1993 (13%). Of the total of 42 foot injuries, most (26) were chainsaw lacerations to the left foot. There were four chainsaw lacerations to the right foot. A total of 321 work days were lost due to chainsaw lacerations to the feet during trimming and skidwork. Chainsaw cut resistant rubber boots do offer more protection than leather boots but are not a complete barrier to the chainsaw and one injury resulted in 20 days off work after being cut while wearing these boots.

Injured Body Part by Logging Task

The part of the body most at risk varies with the particular logging task being carried out (Figure 6). For example, the head and upper torso (shoulders and back) are the most frequently injured parts of the body during felling. There were 11 head injuries in the felling phase. The most common causes of injury were being hit by sailers (four injuries, 30 days lost) and hit in the face while hammering in wedges (four injuries, four days lost). Twelve of the 13 upper torso injuries in felling were from being hit by falling sailers and trees with a total of 156 days lost.

The most frequently injured parts of the body during trimming were the upper legs (12 injuries) and feet (23 injuries). Half of the upper leg injuries were chainsaw lacerations and the remaining six injuries were bruises and strains caused by blows from tension wood and falling from the stem. All injuries to the feet while trimming were chainsaw inflicted lacerations resulting in a total of 221 days lost.

During breaking out the upper leg was the most frequently injured part of the body with eight injuries: four injuries from being hit by the drag (total of 70 days lost) and four injuries from blows from rolling logs (total 21 days lost).

Lower torso injuries were the next most common with six: five strained backs (20 days lost) and one crush between stems while hooking up the drag (60 days lost).

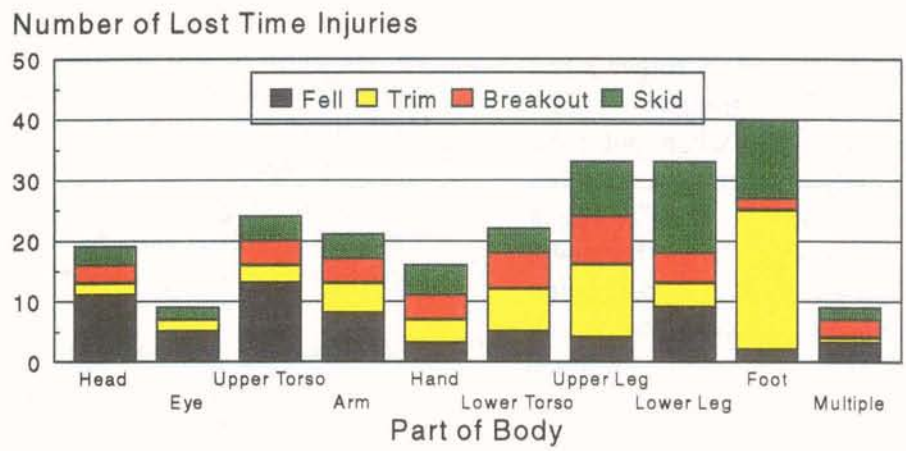

Figure 6 - Part of body injured in felling, trimming, breaking out and skid work

Table 3 - Injuries to the hands, legs and feet

Part of Body	Number	Cause of Injury			
		Chainsaw		Other	
		No.	%	No.	%
Hands	31	12	39	19	61
Upper Leg	36	11	31	25	69
Lower Leg	43	5	12	38	88
Feet	42	30	71	12	29

Skidwork injuries were mostly to the lower legs (15 injuries) and feet (13 injuries). The majority of lower leg injuries were inflicted by moving logs: bruises (seven injuries, 57 days lost), fractures (two injuries, 30 days lost), crushes (two injuries, 76 days lost) and strains from stumbling or falling over (three injuries, 63 days lost).

Chainsaw lacerations to the feet resulted in seven injuries (100 days lost) and bruises, crushes and fractures from moving logs resulted in five injuries (43 days lost).

DISCUSSION AND CONCLUSION

The number of reported lost time accidents has increased since 1993 but there has been a reduction in the average severity of injuries. Overall, fewer work days have been lost in 1994 than in 1993.

The legs and feet are again the most frequently injured parts of the body and chainsaw lacerations are the single most common type of injury. New Zealand Standards approved legwear will help reduce the number and severity of chainsaw inflicted injuries to the legs. However, completely chainsaw cut resistant boots do not yet exist. Protective equipment is not an excuse for poor technique or haste. The chainsaw is a potentially very dangerous device and must be used carefully at all times.

There have been few reports of loggers slipping over while on logs, in slash or in dirt while wearing spiked soled boots. Hopefully this is because the increased use of spiked boots in the logging industry has reduced the frequency and severity of such accidents.

There has been a large rise in the number of minor and near miss accidents reported compared with previous years. The information contained in these reports is valuable because it is used in the assessment of trends in accident type and severity and to identify problems with protective clothing or equipment.

It is important that the industry continues to report lost time, minor and near miss accidents so the Scheme can continue to focus research and training efforts in logging safety.

For further information, contact:

LOGGING INDUSTRY RESEARCH ORGANISATION
P.O. Box 147,
ROTORUA, NEW ZEALAND.

Fax: 0 7 346-2886 *Telephone: 0 7 348-7168*