

LOGGERS' ASSESSMENTS OF RISKS IN THEIR WORK

Lisa Tapp
John Gaskin
Kate Wallace

ABSTRACT

A total of 413 loggers from the Bay of Plenty, Hawkes Bay, Auckland/Northland, Nelson and Otago/Southland regions were surveyed to assess their knowledge of risks involved in their occupation. The survey asked loggers to rank the chances of having an accident while performing specific jobs in an operation, the chances of receiving specific injuries and the parts of their bodies likely to be injured. These results were compared with data from the Accident Reporting Scheme.

Results showed that loggers were well aware of the risks involved in logging. Little regional variation was found to exist. There were some differences in the age and experience of those loggers who had had an accident in their work history, but this did not affect the way in which they ranked the items in the questionnaire.

This study raised a serious question. If the loggers are aware of the risks inherent in their occupation, why are those risks not avoided more often? A subsequent study is to be set up to try and provide a clearer picture on why loggers take risks.

INTRODUCTION

Accident research in the New Zealand logging industry to date has concentrated firstly on developing a reliable data base (Prebble, 1984) and secondly on interpreting the information collected (eg. Gaskin, 1989). The data base established is centered around the Accident Reporting Scheme (ARS), which is a voluntary scheme, with an industry wide coverage estimated at between 80 - 90% of all the log-

ging accidents that occur. The information is then interpreted, trends in the data assessed and the results published to the industry in quarterly one page summary reports and annual summary reports (eg. Gaskin, 1989).

As part of a recently completed survey of the logging workforce (Gaskin, Smith and Wilson, 1989) the loggers involved were questioned on whether or not they had suffered an accident, what job they were doing at the time of the accident and what follow-up had occurred. Within this survey loggers were also asked whether they suffered from an occupational injury, such as back problems, hearing loss, etc.

The information collected through the ARS and the logging workforce survey note that the highest percentage of accidents occur in felling, trimming and skid work. The hands, feet and lower legs are the parts of the body most likely to be injured and lacerations (typically inflicted by a chainsaw) are the most common form of injury. While these statistics are essential for gathering information on the numbers and types of accident that occur, they do not reveal anything about how loggers perceive the risk of the occupation.

Dunn (1972) suggested that a person's judgement of risk may differ from the actual risk to which they are exposed. People must make interpretations about their environments and these interpretations, like any human behaviour, are subject to error. This would suggest that an accident may occur because a person placed themselves in a risky situation without being aware of the danger inherent in their actions.

Furthermore, it has been suggested that adopting a safer procedure or some other safety measure is motivated by a value judgement made by the individual (Green and Brown, 1978). A safety measure is evaluated by an individual and then used if there is a perceived benefit by doing so. An example of this is the protective leg-wear that has been made available to loggers. There is no legislation which makes these articles compulsory yet most loggers now use chaps or trousers and there has been a resultant drop in the number of chainsaw cuts to the legs resulting in lost time accidents (Gaskin, 1986). It would seem that the value of using this protective equipment has been judged to be higher than not wearing them.

This study has implications for future safety programmes. Should some new safety measure be introduced its success could, in some way, be predicted by firstly assessing whether loggers perceive a risk to be present and secondly, whether they judge the measure to have an improved safety value.

The objective of this study was to ascertain how loggers assessed the following:

- (i) the chances of having an accident while performing specific jobs in an operation
- (ii) the chances of receiving specific injuries
- (iii) the part of the body most likely to be injured.

The loggers were asked to make their evaluations based on the likelihood of each item in the questionnaire occurring. It was expected that if their knowledge of the risks was accurate, then, their answers would closely approximate the Accident Reporting Scheme findings where comparisons can be made. Any major deviation from the scheme data would suggest a lack of recognition of the risk.

This study forms the first of a two part study; the second study will investigate how loggers rank specific hazardous situations.

This study also collected biographical information about each logger surveyed such as their age and experience, the type of operation they work in and their level of logger

certification; to assess whether these variables affect their ability to judge risk.

ACKNOWLEDGEMENTS

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METHOD

Subjects

The loggers used in this study were those involved in the year long LIRA study of absenteeism and turnover.

There were 225 loggers interviewed in the Bay of Plenty region, 28 in Hawkes Bay, 44 in Auckland and Northland, 63 in Nelson and 53 in Otago and Southland. This gave a total sample of 413 people.

Procedure

A questionnaire with a 5 point Likert type scale was developed and pilot tested on 10 loggers in Tauhara forest. Data collection for the full study was begun in July and was completed in September. Each logger filled out the questionnaire voluntarily and individually.

Questionnaire

The questionnaire was in three parts, each part being contained on a single page. The same 5 point scale (1 being the lowest chance and 5 the greatest) was used for all three parts of the questionnaire. Part I asked the subjects to assess the chances of a logger having an accident while performing various jobs in a logging operation. The jobs were: felling, trimming, skid work, breaking out, operating an extraction machine and loading. The felling and trimming items were sub-divided into flat or steep terrain. Separate evaluations were made for carrying out these jobs on steep ground and flat ground as well as an overall risk assessment. Another item, included as a reference point, asked the risk involved

in travelling to and from work. Loggers were also asked in this section if they had ever suffered a lost time accident and if so, what they were doing at the time and the nature of the injury incurred.

Part 2 asked the loggers what the chances were of incurring specific types of injuries. The injuries were: fractures, back problems, knee injury, strains, deafness, loss of a limb, loss of one or both eyes, death, paralysis, injury from a chainsaw, white finger and cuts (both minor and those requiring stitches).

Part 3 consisted of the cartoon picture which appears on the quarterly reports of the accident reporting scheme. The loggers were asked to use the 5 point scale and place a number indicating the chances of being injured at the places indicated on the picture. These injury sites were: the head, eyes, face, arm, hand, foot, lower leg, upper leg, lower torso, upper torso and back.

Instructions were written at the top of each part of the questionnaire and verbal instructions were also provided. Verbal advice typically involved clarification of the instructions. Care was taken to avoid biasing the subjects' responses.

RESULTS

The mean rating, for each item in the questionnaire, was calculated by region and for the total population. Figure 1 shows the mean for the total sample for Part 1 of the questionnaire. The high and low values shown on the figure are the highest and lowest regional means. There is marked similarity between the regions in their estimates of the risk associated with different logging tasks. Felling and trimming rated as the most risky tasks, which is in line with the actual accident statistics. Skid work was ranked similarly to breaking out and extraction machine operation. This is at

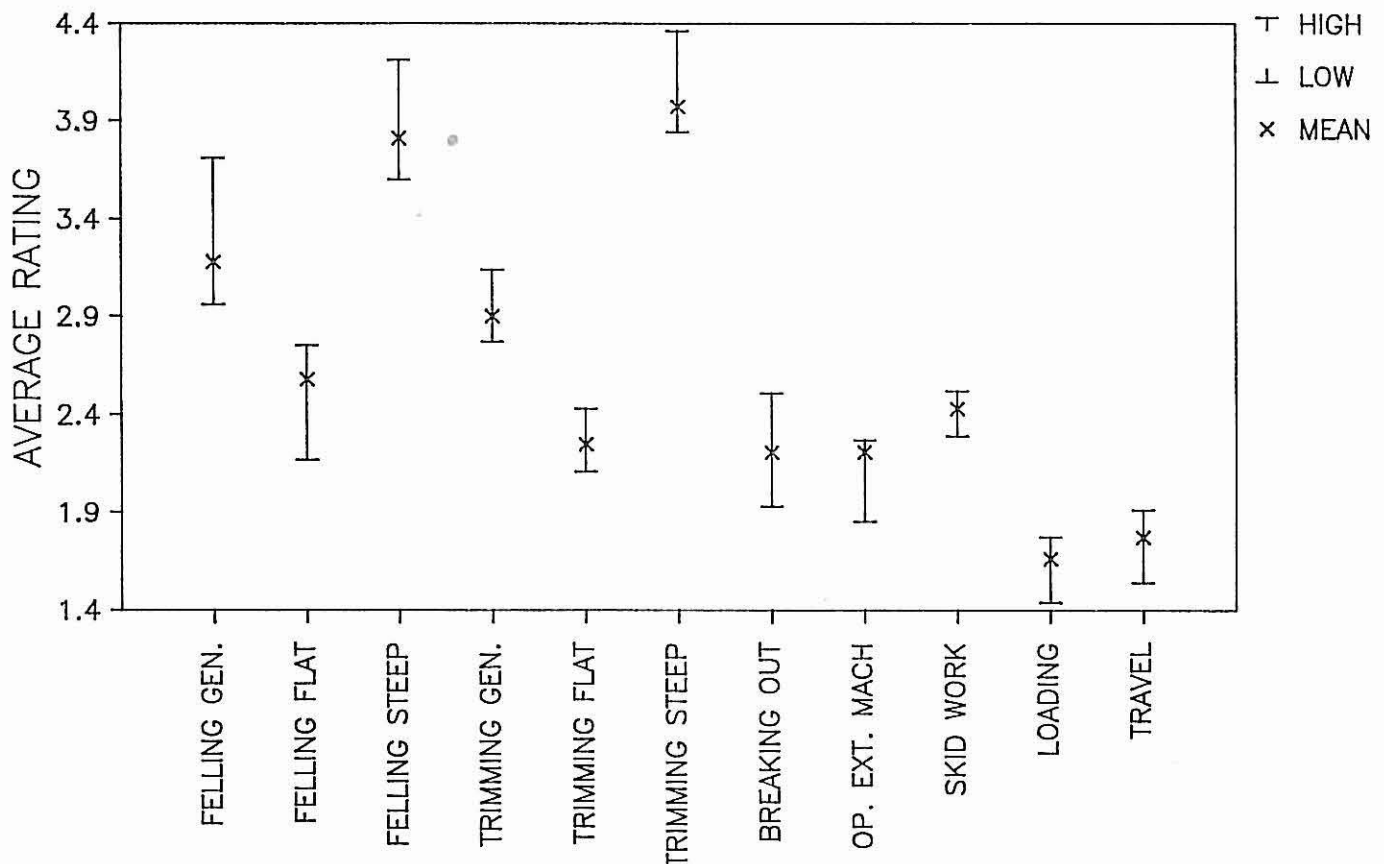


Figure 1 : Average ratings for items in Part I of the questionnaire
- assessing the risk for various jobs in the operation.

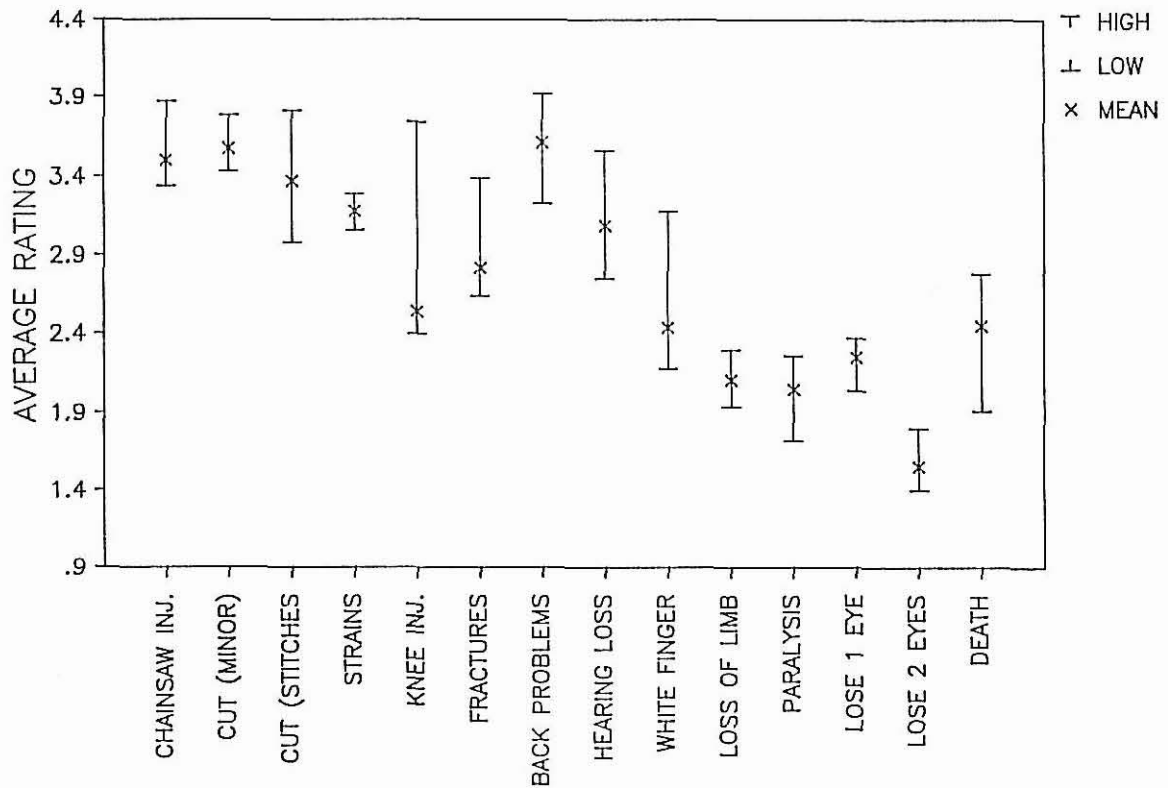


Figure 2 : Average rates for items in Part 2 of the questionnaire - assessing the chances of different types of injuries.

odds with the ARS statistics which show that in 1988 skid work accounted for about 21% of the total accidents recorded while breaking out only accounted for about 12% (Gaskin, 1989).

Felling and trimming on steep country are seen as being the most risky. As the Accident Reporting Scheme does not collect information about terrain, this result cannot be compared with the accident statistics. This finding indicates that should companies and contractors wish to increase the amount of log processing on steep slopes they may encounter some resistance from the loggers.

Figure 2 shows the findings from Part 2 of the questionnaire. Again there is similarity between the different regions, of the chances of various sorts of injuries, indicated by the narrow range about the mean. This is particularly so with the occurrence of the more serious and less frequent injuries, such as loss of a limb and blindness.

The loggers' evaluations are again consistent with the accident statistics in that lacerations, back problems and chainsaw injuries are rated the highest, however,

they seem to have over-estimated the chances of being killed. It is possible that the subjects are not just considering the frequency of fatal accidents when they are making their evaluations, but rather severity is weighting their judgements.

The sample from Nelson rate the chances of a knee injury noticeably higher than did the rest of the subjects. No reasonable explanation for this result can be found from the available data.

The similarity of loggers responses is again evident in Figure 3. The hands, feet and lower legs are rated highly which agrees with the accident statistics and the subjects also recognise the high risk of back injury in the industry. The variation in the ratings for the face may be related to the type of operation in which the subjects work. Bay of Plenty loggers working in thinning crews estimate the risk to their faces significantly higher than loggers in clearfell crews. This may be due to the trimming content involved in the work. This perceived risk to the face provides a case for the use of visors by fallers working in thinning operations.

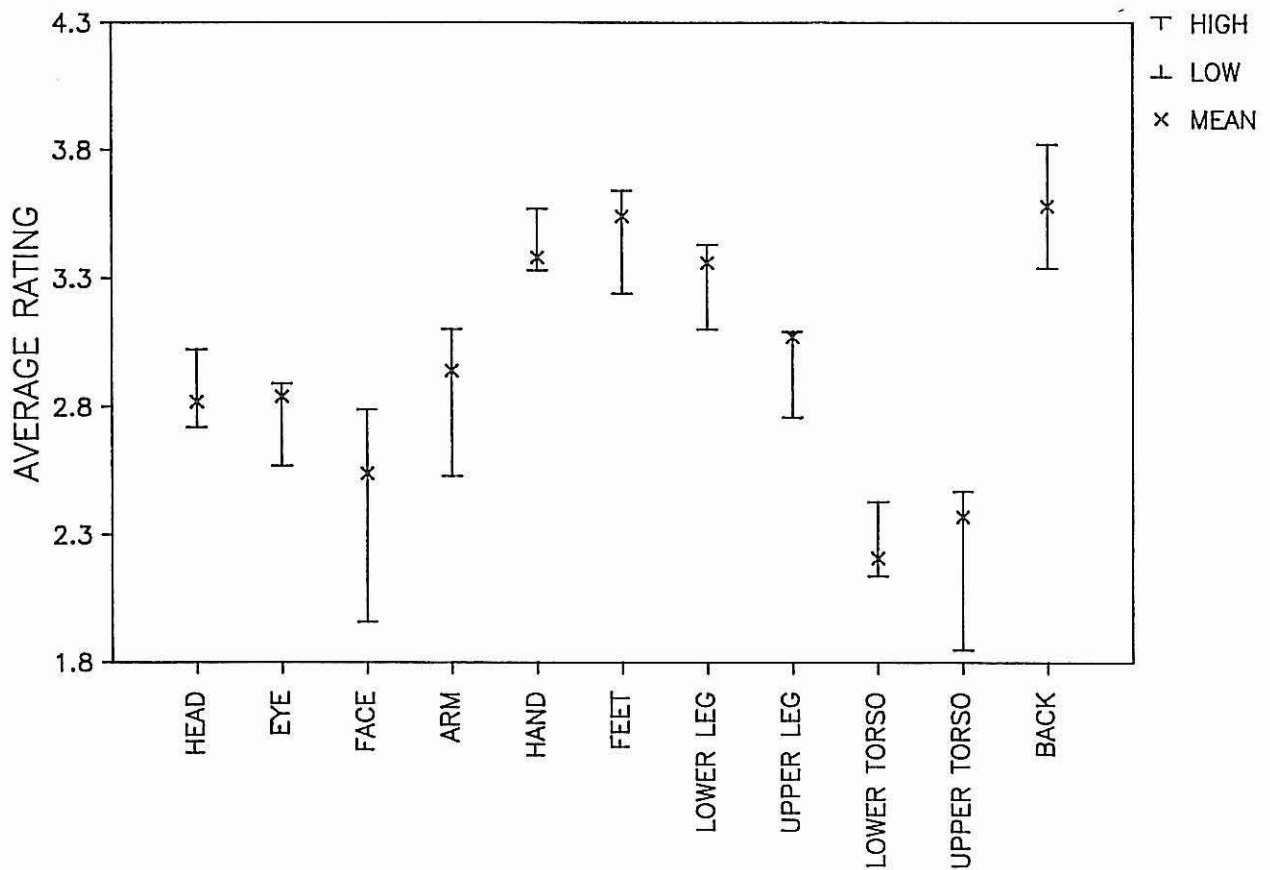


Figure 3 : Average rating for items in part 3, which examines the parts of the body most vulnerable to injury.

This difference between thinning and clear-fell crews was the only major area of departure between the loggers in the sample. Hauler crews, for example, who work in typically steeper country than other

logging operations do not seem to rate the risks in their environments any differently from gangs working with other methods of extraction.

Table 1: Comparison of Age, Experience and Accident Record by Region

	TOTAL	Bay of Plenty	Hawkes Bay	Auckland/ Northland	Nelson	Otago/ Southland
TOTAL SURVEY						
Ave Age	31.5	31.0	31.1	32.2	33.8	30.9
Ave Years Logging	10.3	10.6	5.9	8.7	13.4	9.5
% Accident	55	55	50	52	68	49
ACCIDENT						
Ave Age	32.7	33.1	30.0	31.2	33.4	32.9
Ave Years Logging	12.2	12.8	6.1	11.2	13.8	11.6
NO ACCIDENT						
Ave Age	29.9	28.4	32.3	33.2	34.6	28.7
Ave Years Logging	7.9	7.9	5.7	6.2	12.4	7.5

THE EFFECT OF AN ACCIDENT

The first section of Table 1 shows the average age and length of service of the total sample and the percentage of loggers who have had an accident.

Fifty six per cent of the sample indicated that they had suffered a lost time accident in their logging careers. In Nelson, however, this proportion was higher at 68%. The Nelson group have, on average, spent longer in logging so it is likely that the higher accident rate reflects a longer exposure to the risks in logging. The linkage between accident and experience is strongly supported in Bay of Plenty, Auckland/Northland and Otago/Southland where accident victims have significantly longer experience than the average for the total population.

The survey results for each area were subdivided into those loggers who have had an accident and those who have not, and the mean ratings for each item of the questionnaire were re-calculated. These mean ratings were then used to rank the items in the three parts of the questionnaire from highest to lowest. It was found that the order in which the loggers ranked the items, was very similar regardless of whether they had had an accident at some stage in their work history.

CONCLUSION

From the data collected during this study, it appears that New Zealand loggers are well aware of which parts of the operation are risky, what types of injuries occur and the parts of the body which are most vulnerable. There was a great deal of similarity between loggers in the way they rated the items in the questionnaire regardless of whether they had suffered an accident or the type of operation and terrain in which they worked. In this study, the loggers' evaluations of risk closely approximated the accident statistics, which is a major departure from the findings of Dunn. One possible explanation to explain this is that the loggers have access to the quarterly summaries from the Accident Reporting Scheme so are well informed. Further research is needed to test whether in fact this is the case.

This study, however, raises a serious question. If the loggers are aware of the risks inherent in their occupation, why are those risks not avoided on more occasions? The second part of this study should go some way towards providing a clearer picture on why loggers take risks.

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For further information, contact:

N.Z. LOGGING INDUSTRY RESEARCH ASSOC. INC.
P.O. Box 147,
ROTORUA, NEW ZEALAND.

Fax: (073) 462-886

Telephone (073) 487-168