

RESEARCH NOTE

Data systems for occupational injury - the current position

P. Colin Cryer*

Occupational injuries are a major cause of mortality and morbidity in New Zealand. Despite this, existing national data systems are not easily manipulated to produce occupational injury statistics. No detailed national statistics on occupational injuries have been produced since 1983. There is a need for data on these injuries for research, surveillance, intervention, identification and development, evaluation and planning. This paper highlights the limitations of New Zealand's national data systems for the production of occupational injury statistics.

Size of the occupational injury problem

Occupational injuries are a major cause of mortality and morbidity in the workplace. A research study of fatal injury, which reviewed the period 1975-84, found that there were around 100 work-related fatal injuries each year, excluding motor vehicle traffic related injury occurring on public roads (Cryer and Fleming, 1987). In the USA (Maryland), events related to motor vehicles on public roads comprised 25% of the fatal injuries that were recorded (Baker, Samkoff, Fisher and Van Buren, 1982). The rates of work-related fatal injuries in New Zealand have been found to vary quite markedly across occupational groups, with high annual rates found for agricultural and helicopter pilots (10 per 1000), fishermen (3 per 1000) and forestry workers (0.8 per 1000) and high numbers found amongst farmers (109), farm workers (53), and earthmoving machinery operators (54). A higher industry-specific rate was found in mines and quarries (0.6 per 1000), and a high number in construction (Cryer and Fleming, 1987).

In 1983, the year for which the Accident Compensation Corporation (ACC) last published detailed statistics, there were over 45,000 ACC compensated claims for injuries occurring at work, which is a rate of 34 per 1000 workers per year. High rates or high numbers were found amongst food and beverage processors, miners and quarryers, forestry workers, farmers, farm workers, construction workers, and transport equipment operators. The cost of these injuries to the ACC in that financial year was over \$42 million (Accident Compensation Corporation, 1985).

* Department of Community Health, Wellington School of Medicine

The need for data

There is obviously an occupational injury problem in New Zealand. However, without special study, it is difficult from existing sources to describe, in acceptable detail, the nature of that problem. To address the problem of injury in New Zealand, there is a need for adequate data. Expanding a quote from Sheppard: "If we do not know what is happening, and where, [how, why it is happening, and to whom] corrective action is no more than guesswork" (Sheppard, 1973). It is important to identify the most significant problems so that scarce resources can be targeted most appropriately.

There is a need for adequate data for research, surveillance, intervention identification and development, evaluation, planning and for the provision of information on occupational injury to workers, unions, employers and government agencies. Information generated from this data can then be used by affected groups as a stimulus for action for specific problem identification, and in conjunction with other work completed here or overseas, for the identification of factors affecting the risk and severity of injury, and for identifying interventions and strategies for implementing these interventions.

Several reports have commented on this need for data, most recently the discussion document *Occupational Health and Safety Reform* produced by the Advisory Council for Occupational Safety and Health (1988). However, it has also been discussed by Walker (1981) in the State Services Commission *Report on Occupational Safety*, in the Department of Statistics review *Accidents Involving Injury* (Review Committee on New Zealand Statistics, 1984), in the FOL/CSU report *Occupational Health and Safety in New Zealand* (New Zealand Federation of Labour and Combined State Unions, 1985), and in the Medical Research Council *Review of Research on Unintentional Injury* (Langley and McLoughlin, 1987).

The majority of these reports recommended that there is a need for a separate annual publication of occupational injury statistics, and that its production should involve the ACC, the Department of Health (National Health Statistics Centre), and the Department of Labour. The Medical Research Council report also stresses the need for collaboration between users and producers of injury statistics in order that relevant information is produced.

Limitations of traditional data sources

Existing national sources of data include the ACC compensated claims file, the National Health Statistics Centre's (NHSC) mortality and hospital patient discharge files, the Department of Labour and the Ministries of Energy and Transport investigation reports, as well as the files of coroners, police and autopsy reports held at the Department of Justice (Coroner's files). Each of these has problems associated with them when attempting to use them for occupational injury research. These sources and their problems are described briefly below.

ACC

The ACC has a wealth of information on injuries for which compensation has been paid. For work-related fatal injuries, coverage has been a problem (i.e. not all cases known to exist were found on the file) (Cryer and Fleming, 1987). This problem may be isolated to fatalities. On the other hand, there could also be a coverage problem for non-fatal occupational injuries. Due to the eligibility criteria for compensation (Accident Compensation Corporation, 1987), it is expected that many of the injuries resulting in less than one week absence from work will not be present on the ACC's compensated

claims file. This is not a major problem if interest is in the more severe injuries, since a crude indicator of the level of severity is given by the number of days off work.

Stewart has questioned the accuracy of the data (Stewart, 1988). He found that there were problems with the accuracy of coding the circumstances of the injury. The estimated accuracy of coding the cause of injury and the external agent of injury was less than 60 percent, and the activity and injury contact fields had an estimated accuracy of between 60 and 70 percent. He recommended that there is a need for more extensive work to confirm these findings. Unpublished work on dental injury that I have supervised, which involved the analysis of ACC claims data, produced some unusual results which may stem from data validity problems (Esson, 1988). This may reflect a more widespread problem of data validity, across all injuries.

It has been suggested that compensated claims data is limited regarding details of the workplace and the circumstances of injury. For example, the circumstances of injury data are coded in a manner which makes meaningful data summary difficult. Nevertheless, the data does contain useful information for initial problem identification.

National Health Statistics Centre

The National Health Statistics Centre (NHSC) collects data on all fatalities and all discharges of patients from public hospitals. The coding system used permits the identification of injuries (as distinct from disease) in both these systems. However, the systems do not contain coded data which permit the identification of those injuries that are work-related. This represents a drawback for occupational injury research since if identification of work-related events were possible, then rates could be calculated for these more serious occupational injuries. Nevertheless, the data is still of use for research in some occupational environments since policy makers are often interested in all injury resulting from exposure to a workplace (e.g. farm), whether the injuries are work-related or not.

The coding system for circumstances of injury, i.e. the International Classification of Diseases (ICD) External Causes code (World Health Organisation, 1979), which is used on the NHSC systems, has been reported as having many shortcomings (Heidenstrom, 1982; Langley, 1982; Baker, 1982). Additionally, Langley and Chalmers (1989) have reported on the major limitations of the place of occurrence codes used, which are again ICD codes. Also, occupation is not coded within the hospital discharge system, and nature of injury is not coded in the mortality file. The industry class is not recorded or coded on either system.

On the positive side, the NHSC computer records include descriptor fields for circumstances and nature of injury, place of occurrence and occupation, and these provide a good source of additional information. From this combined information on the NHSC files, preliminary work indicates that many of the work-related injury cases can be identified.

Government agencies

Reported occupational injury data kept by the Department of Labour and the Ministries of Transport and Energy also has limitations. For example, for those injuries that are covered by acts administered by the Department of Labour, employers are required to notify the Department of Labour, and a report of the injury event is filed. A Department of Statistics report has commented on the lack of complete information available through this system (Review Committee on New Zealand Statistics, 1984) and a further report suggested that 'there is serious under-reporting of injuries to the Department of Labour' (Langley and McLoughlin, 1987). A further major drawback is that much of the data is not held on computer, but is stored in paper files, so most of the information collected cannot be readily retrieved. In the other ministries, computers are

not used to the same extent for data storage, retrieval and analysis and so the problem of access to data is greater still.

Coroner's files

The Department of Justice Coroner's files contain a wealth of information concerning almost all work-related *fatal* injuries. The major drawback of this data is that it is held on paper files and so does not permit the rapid retrieval and summary of information contained within these files.

The study by Cryer and Fleming (Cryer and Fleming, 1987) found that it was not possible to make a reliable distinction between occupational and non-occupational injury for many road traffic related injuries from the information held in these files.

Most of the information available in these files is in the form of description and the detail provided varies between cases. A small proportion of the information within the coroner's files is abstracted for the NHSC mortality file.

Responsibility

Many of the recommendations of the reports mentioned in section 2 identified the ACC as the organisation that should take initiatives to produce complete and timely occupational injury data. However, despite all the reports and recommendations this decade, there has been no real action in improving access to and quality of occupational injury data. In 1986, a Department of Statistics review of progress on the recommendations contained in *Accidents Involving Injury* (Review Committee on New Zealand Statistics, 1984) reported that lack of resources within the ACC had resulted in no action (Survey Control Section, Department of Statistics, 1986). It seems that the same is still true in 1989. If anyone wants information on occupational injuries today, they are confronted with more difficulties than they had at the beginning of the decade.

The ACC has a statutory responsibility for injury prevention, and to address injury prevention satisfactorily, they need access to good data from which can be produced relevant and timely information. However, the Law Commission Report (1988, paragraph 126) has this to say:

To quote ACOSH, the report of the Review Committee on New Zealand Statistics of Accidents Involving Injury noted the deficiencies in the Accident Compensation Corporation statistics "because the most pressing requirements [for the Corporation] were the receipt of claims and the prompt payment of compensation - statistics were produced as a byproduct. Since 1984 the Corporation has developed an Integrated Information System which became fully operational in December 1986. The Council's statistics committee is not examining the new system to determine whether it can provide adequate statistical information to meet the needs of other organisations, in particular Government departments, unions, and employers' organisations." We can confirm from our own experience that adequate statistics in several areas do not appear to exist.

Additionally, the ACC appear not to have available the resources or the appropriate expertise to fulfil this need for information.

Criticism of the ACC for not meeting their responsibilities has not been made forcefully enough. Furthermore, experience has shown that what criticism has been made has not been effective in stimulating change. The ACC has attracted critics right from its inception. Up until the establishment of the Accident Compensation Commission in 1974, information was produced from claims under the Worker's Compensation Act.

After 1974, the ACC did not produce any information from their claims data until they had been operating for 8 years, for which they received much criticism.

Any criticism levelled at the ACC has lacked power since there has existed a diffusion of responsibility for occupational safety, with a number of government and quasi-government organisations having responsibility for various aspects of the problem. In such circumstances, criticism of one organisation can be deflected to another.

When existing occupational safety and health legislation is replaced by a single act, when policy and administration of occupational safety and health are brought together within a single authority, the Department of Labour, and when an Occupational Safety and Health Commission is established, as announced in the July 1989 Budget (*Occupational Safety and Health, 1989*), then it will be clear where the organisational responsibility lies for addressing this area and its deficiencies. In future years, should the current problems persist, any criticism could be focussed on the Department of Labour and the Commission. Consequently, such an organisational change should be helpful for addressing these data deficiencies in the long term.

Concluding remarks

In the short term, the success of future recommendations for improvements in national occupational injury data systems is likely to depend on:

- (a) identifying accurate sources of data that can provide the required information;
- (b) identifying those with expertise to produce the required information;
- (c) identifying and getting a commitment from organisations to fund this activity.

Unless *all* of these are addressed, it is likely that many more reports will make many more fine recommendations, which result in the same level of inaction that has already been experienced this decade.

There are two additional initiatives that could affect the type and quality of occupational injury data available in future. The first is an initiative by the Department of Labour to stimulate work to develop models, and to develop an associated data base, for policy development and for management of occupational safety and health. The second is the Review of Health Statistics, administered by the Department of Statistics, which may review and make recommendations on the need for occupational injury data, statistics and systems. Time will tell whether these additional initiatives lead to the same lack of progress that has been experienced over the past decade. They certainly will unless resources are found to support any recommendations that are made.

References

- Accident Compensation Corporation (1985) 1983 Compensated claims analysis *ACC Statistics, Volume 4* Wellington, Accident Compensation Corporation.
- Accident Compensation Corporation (1987) *Unintentional injury: New Zealand Accident Compensation Corporation scheme* Wellington, Accident Compensation Corporation.
- Advisory Council for Occupational Safety and Health (1988) *Occupational safety and health reform* Wellington, Department of Labour.
- Baker, S P (1982) Injury classification and the International Classification of Disease codes *Accident analysis and prevention* 14:199-201.

Baker, S P, Samkoff, J S, Fisher, R S, Van Buren, C B (1982) Fatal occupational injuries *Journal of the American Medical Association* 248:692-697.

Cryer, P C and Fleming, C (1987) A review of work-related fatal injuries in New Zealand 1975-84 - numbers, rates and trends *New Zealand medical journal* 100:1-6.

Esson, I A (1988) *Unintentional dental injury events in New Zealand 1987-88* Diploma in Community Health project, Wellington School of Medicine.

Heidenstrom, P N (1982) Accident recording: the need for a new approach *ACC Statistics* 1:4, Wellington, Accident Compensation Corporation.

Langley, J D (1982) The International Classification of Diseases codes for describing injuries and the circumstances surrounding injuries: a critical comment and suggestion for improvement *Accident analysis and prevention* 14:195.

Langley, J D, and Chalmers, D (1989) Place of occurrence of injury events in New Zealand compared with available ICD codes *Methods of information and medicine* 28:109-113.

Langley, J, and McLoughlin, E (1987) *A review of research on unintentional injury* Special Report Series No. 10, Medical Research Council of New Zealand.

Law Commission (1988) *Personal injury: prevention and recovery. Report on the Accident Compensation scheme* Law Commission Report No. 4, Wellington, Government Printer.

New Zealand Federation of Labour and Combined State Unions (1985) *Occupational health and safety in New Zealand 1985* Wellington, Federation of Labour and Combined State Unions.

Occupational Safety and Health (1989) Minister announces one Act, one Authority, to cover work place safety and health *Safeguard* 4:1, Wellington, Department of Labour.

Review Committee on New Zealand Statistics (1984) *Accidents involving injury* Wellington, Department of Statistics.

Sheppard, V E (1973) The collection of data and its processing. In Royal Australian College of Surgeons, *Occupational injuries* Melbourne, McCarron Bird Pty:167-168.

Stewart, K A (1988) *How accurate are the statistics from the Accident Compensation Corporation? A comparative study* Diploma in Safety Management project, Massey University.

Survey Control Section (1986) *Review of accidents involving injury statistics. First report on the implementation of recommendations* Wellington, Department of Statistics.

Walker, I K (1981) *Occupational safety: an enquiry into the coordination of legislation on industrial safety, health and welfare* Wellington, State Services Commission.

World Health Organisation (1979) *International classification of diseases 1975 revision*, Geneva, WHO.