

## ECONOMIC ANALYSIS OF SAFETY AND HYGIENE

**10.1 cost of accidents and diseases:** The European Agency for Safety and Health at Work estimates that every year about 5,500 people are killed in the workplace across the European Union, with another 4.5 million accidents resulting in more than three days absence from work (amounting to around 146 million working days lost). These accidents are estimated to cost the EU about 20 billion euro. The problem affects all sectors of the economy and is particularly acute in enterprises with less than 50 workers. Accidents and occupational diseases can give rise to heavy costs to the company, particularly small companies. Preventing work accidents, occupational injuries and diseases has more benefits than just reducing damages: it has also been shown to be a contributory factor in improving company performance.

Increased female labour force participation has led to the recognition of a specific gender dimension of occupational accidents and diseases. Statistics published by the European Union statistical office, Eurostat, demonstrate that, while women generally suffer lower rates of accidents and occupational illness than men, women account for a high proportion of work-related health problems and are 1.5 times as likely to suffer from these problems. Women account for 45% of allergies, 61% of infectious diseases, 55% of neurological complaints and 48% of hepatic and dermatological conditions. On the other hand, men account for 93% of musculoskeletal problems and haematological illnesses, 97% of hearing complaints and 91% of pulmonary illnesses.

As the economically active population of Europe increasingly includes a higher proportion of workers aged over 50, the risks to older workers of occupational accidents and diseases will become ever more statistically significant. For example, older workers, particularly those aged 55 and above, are likely to suffer the most serious accidents, compared to younger workers. Older workers have the largest incidence of long-term occupational illness and cardiovascular diseases, and asbestos-related cancer are especially common. In part, this is because older workers are generally less qualified and are over-represented in manual industrial occupations.

In 1995, an Industry Commission study<sup>1</sup> estimated that only 25 per cent of the total cost of work-related injury and disease was due to the direct costs of work-related incidents. The remaining 75 per cent was accounted for by indirect costs such as lost productivity, loss of income and quality of life. Using the 1992–93 financial year Australian National Accounts<sup>2</sup> estimate of \$4.83 billion in payments

to household from workers' compensation schemes as an estimate of direct costs, led to an estimate of total cost of work-related injury and disease of \$20 billion for the 1992–93 financial year.

The Industry Commission methodology defined a range of indirect cost items covering various economic agents (employers, workers and the community) and level of severity. The average costs associated with each category were combined with estimates of the number of work-related incidents to produce an estimate of total costs.

In 2004, as part of its strategy of communicating information on the impact of occupational injury, disease and death, the National Occupational Health and Safety Commission (NOHSC) revisited this estimation methodology. Where new or emerging data sources allowed, the update expanded on the previous methodology by including additional estimates for indirect cost items that were identified but not included in the previous study.

The resultant methodology (discussed in detail in Section 1 of this report) and economic cost estimate was reviewed by independent consultants, 345 to examine and enhance the robustness of the methodology and data sources. The recommendations from these reviews were incorporated into the original NOHSC methodology.

The results of the analysis were endorsed at a meeting of the NOHSC Information Committee and published in 2004-6. The study estimated the total costs of workplace injury and illness to the Australian economy for the 2000–01 reference year to be \$34.3 billion.

This total is equivalent to 5 per cent of Australian Gross Domestic Product (GDP) for the 2000–01 financial year. In 2008, the Australian Safety and Compensation Council (ASCC) updated this estimate, using the approved methodology, for the 2005/06 reference financial year.

This year was chosen to align with the most recent Australian Bureau of Statistics (ABS) Work Related Injuries Survey (WRIS) data release<sup>7</sup>. The total economic cost for the 2005–06 financial year was estimated to be \$57.5 billion, representing 5.9 per cent of GDP for the 2005–06 financial year<sup>8</sup>. It should be

noted that this estimate represents foregone economic activity, and not the proportion of GDP that is lost as a result of work-related injury and illness.

**10.2 direct cost of accident and disease and indirect costs:** Many employers believe that the insurer will pick up the costs of an accident, and that's why they pay their insurance. However the costs of an accident can be broken down into the direct costs and indirect (uninsured) costs.

### *Direct costs of an accident*

Direct costs are those costs that are accrued directly from the accident. They are quite easy to calculate, and include the medical costs incurred and the compensation payments made to the injured workers. Direct costs are usually insurable by businesses.

### *Indirect costs of an accident*

Indirect costs are the less obvious consequences of an accident that can be costed. While the indirect costs created by accidents are hidden, they too must be paid from profits from the sale of products. They are more difficult to calculate and tend not to be insured. Indirect costs include:

- Time away from the job not covered by workers' compensation insurance;
- Payment of other workers who are not injured, for example those who stopped work to look after or help the injured worker and those who require output from the injured in order to complete their tasks;
- The cost of damage to materials or equipment involved in the accident;
- The cost of overtime imposed by the accident (lost production, additional supervision, and additional heat, light, etc.);
- The cost of wages paid to the supervisor for time spent on activities related to the accident. This includes caring for the injured, investigating the accident, and supervising the activities necessary to resume the operation of business. All of these activities will disrupt the supervisor's productivity;
- Costs associated with instructing, training, and repositioning employees in order to resume production. In some cases, it might even be necessary to hire a replacement with all the associated hiring costs;
- Medical costs paid by the employer that are not covered by the insurance. This may include treatment facilities, personnel, equipment and supplies;
- Cost of managers and clerical personnel investigating and processing claim forms and related paperwork, telephone calls, interviews, etc.
- Wage costs due to decreased productivity once the injured employee returns to work. This is due to restricted movement or nervousness/cautiousness on the part

of the injured employee and time spent discussing the accident with other employees etc.

- Costs brought about from any enforcement action following the accident such as prosecution fines and costs of imposed remedial works.

The average estimated cost of accidents or occupational disease to employers (HSE, 2006)

	Human Cost	Lost Output	Resource Costs	Total
Fatality	£991,200	£520,700	£900	£1,500,000
Major Injury	£18,400	£16,200	£5,200	£40,500
Other Reportable Injury	£2,700	£2,600	£500	£5,800
Minor Injury	£200	£100	£50	£350
Average case of ill health	£5,800	£2,300	£800	£8,900

### **10.3 elements of costs of accidents and disease: The Economic and Social Costs of Occupational Disease and Injury in New Zealand: NOHSAC**

#### **1998 Victoria University Study**

An early study from Victoria University, “The direct and indirect costs of work injuries and diseases in New Zealand”, [3] estimated costs for the year 1995. A review of the international literature review led to a taxonomy of indirect costs loosely based on that of the Australian Industry Commission’s 1995 study, [4] with further sub-categorisation into community, employer and employee costs. Cost estimates were derived primarily from data supplied by the Accident Rehabilitation, Compensation and Insurance Corporation, the Department of Social Welfare and the Department of Labour. Indirect costs did not include lost leisure, low self-esteem, reduced social interaction, care by family members, lost educational investment, travel concessions for disabled workers, increased use of community services nor the replacement and repair of capital and material damaged in a work injury or disease incident. However, the study did include costs omitted from the Industry Commission’s study, such as recruitment, selection and training costs and legal penalties.

Direct costs, defined as those paid by the ACC Employers' Account and financed by employer payroll premiums, were estimated to cost \$912.7 million. Indirect costs, defined as all other estimated costs that were not direct, were estimated as \$314.7 million, a ratio of 1:2.9 relative to direct costs, much lower than other studies. The grand total was thus estimated in 1995 as \$1.23 billion, with component elements.

Methodological weaknesses in the Industry Commission approach are discussed in detail in Access Economics report,[5] which led to the methodological improvements of that report. The Victoria University study itself notes the disparities with international findings and postulates that some of the reasons for the differences may include the following.

Direct costs in New Zealand include what may be indirect costs in other countries (eg, ACC funding of health and medical treatment), so that the ratio of indirect to direct costs is necessarily smaller. (In most studies, indirect costs are generally some multiple of direct costs.)

ACC entitlements are believed to be more generous, widely available and easily accessible in New Zealand than overseas, encouraging more people to claim larger benefits.

In Australia, for example, only 45% of victims file claims for compensation (Worksafe Australia, 1994:ix) whereas the ACC maintains that nearly all injured workers in New Zealand do so. In addition, Australian compensation is in many cases limited to small lump sum payments rather than, as in New Zealand, weekly compensation until retirement.[3]

In addition, several direct costs may have an additional indirect component, because of insufficient funding by the ACC, eg, the "tiny" independence allowances for pain and suffering or rehabilitation, and medical or travel (eg, ambulance) expenses borne by the employee or their employer that are not claimed, partially reimbursed or rejected.

The annual indirect costs could be larger than the total cost estimated in the study, because so many costs were omitted or underestimated due to the absence of

reliable data. This was particularly true for the cost of recruitment, selection and training, for lost labour time and for full and partial losses of earnings.

#### 2000–2001 research

In 2001, the Department of Labour and the Accident Compensation Corporation (ACC) undertook research into the effectiveness of health and safety legislation through case studies. This followed earlier (2000) New Zealand research that focused on the potential costs to the business sector arising from complying with the Health and Safety in Employment Act 1992 (HSE Act). It found that these costs were hard to identify and quantify. Other research by the Ministry of Economic Development examined the effect of the costs of compliance on employers. Although these costs were seen as part of business, there were concerns about their nature and extent, particularly for small-to medium-size enterprises, and their impact on competitiveness, innovation and investment. However, this research has provided only indirect insight into the social consequences of injury and illness in the workplace, focusing more on compliance.

#### Costs of Injury Project

The Costs of Injury Project, initiated by the Ministry of Research, Science, and Technology in 2002–2004, involved two phases. The first phase in 2002 reviewed alternative cost methodologies, undertaken by Business and Economic Research Limited (BERL) in 2002 and also reviewed agencies' costs of injury information needs, undertaken by the Department of Labour, as well as a Costs of Injury Symposium in 2002.

The key message that emerged from the Symposium was that a clear direction needed to be set for the project over the next 5–10 years.

The second phase of the project, therefore, involved the development of a Costs of Injury Strategy. A Costs of Injury Framework was identified as an achievable output for the strategy. To assist with refining this framework, a stock-take was commissioned in 2003 from BERL, and an investigation of a method to estimate the cost of inpatient care was commissioned in 2003 from the Injury Research

Prevention Unit (IPRU) at Otago University. The second phase of the costs of injury project culminated in the preparation of a report jointly undertaken and supported by the Department of Labour, Accident Compensation Corporation (ACC), NZHIS, Land Transport Safety Authority (LTSA), the Ministry of Transport, and Statistics New Zealand.

#### 2004 Measuring the costs of injury in New Zealand[6]

The DOL report was premised on the fact that information on the costs of injury is necessary to assist with managing the incidence and severity of injuries in New Zealand, and that the costs of injury provide an important and readily interpretable insight into the relative impact of injuries on New Zealanders to inform decision-making such as:

deciding whether to invest in injury prevention, rehabilitation and compensation initiatives and, if so, how much

setting and evaluating outcomes and priorities for allocating resources between different injuries

deciding who should bear the costs of injury.

A Costs of Injury Framework was used to explore the current state of information, based on cost categories and perspectives. Cost categories included resource costs (costs relating to treatment and rehabilitation and loss of output or productivity) and human costs. Cost perspectives refer to who bears the costs in the first instance, and include individuals and their families, employers, government and society. A series of key statistics and indicators were identified from key policy questions in the report to support each cost category-perspective combination in the framework.

This report explored information on consequential costs of injury only (ie, not preventive costs and not disease). The report found that current information for measuring the resource costs of injury to government is noticeably better than for individuals, employers and society. In contrast, current information for measuring the human costs to individuals is noticeably better than for employers and

government, but is not complete or consistent across injury sectors, although there is scope to enhance this with the aid of data-integration or economic modelling. For example, a monetary value of a statistical life (VSL) is used in some sectors (eg, transport), while qualitative costs have been identified for workplace injuries. (This current report will help in this respect.)