

# AFTERMATH: USING RESEARCH TO UNDERSTAND THE SOCIAL AND ECONOMIC CONSEQUENCES OF WORKPLACE INJURY AND ILLNESS

Frances Butcher<sup>1</sup>  
Department of Labour

## Abstract

Evaluation research, when assessing something like the impact of workplace illness and injury, often isolates one area or perspective to study, such as clinical, functional, psychological or financial outcomes. Any attempt to identify, separate and quantify the impact of policies is made more challenging by interconnected policies and the complicated effects they have on people's lives. This article describes one example where innovative methods were used to illustrate the complex impacts of health-and-safety and injury-prevention policies, where the majority of costs and consequences remain hidden and borne by society, and therefore not part of official calculations. *Aftermath: The Social and Economic Consequences of Workplace Injury and Illness* explored both quantifiable and non-quantifiable costs by presenting 15 case studies of social and economic consequences. The findings humanised and personalised the burden of occupational injury and illness on society. These findings have been used for a range of health and safety initiatives, including training, media promotion, and providing client-based supporting evidence for new government initiatives and workplace insurance partnership schemes. The *Aftermath* study is one example where the full costs – both positive and negative – of policies are illuminated to provide a complete picture of policy impacts.

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## 1 Acknowledgments

The *Aftermath* report, from which the findings recounted here are taken, was written as a group effort. The authors of *Aftermath* are (in alphabetical order): Mary Adams, Jo Burton, Frances Butcher, Sue Graham, Andrew McLeod, Rashmi Rajan, Richard Whatman (Department of Labour), Margaret Bridge (ACC), Roberta Hill and Roopali Johri (WEB Research).

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## INTRODUCTION

In 2000 the Department of Labour and the Accident Compensation Commission (ACC) began a mixed-method research project called *Aftermath* involving 15 case studies of injured or ill employees. These case studies identified and illustrated the visible as well as the hidden costs and consequences of workplace accidents, from a range of perspectives, to help policy makers and the wider community understand the total cost. Understanding the consequences for people involved in workplace accidents, and for their families, is one example where research can be used to inform policy development from client-based evidence.

This paper explores some issues around using in-depth case studies to evaluate and measure policy outcomes. It does not discuss in detail the findings and conclusions from *Aftermath*, but instead explores some implications of these findings as an example of how research is used as a tool in the policy process.<sup>2</sup> Firstly, current gaps and debates in policy evaluation are briefly discussed. The paper goes on to outline the aims and findings of *Aftermath*, which used imaginative methodology to take a situation, complicated by inter-relationships between work and non-work arenas, and look at it from a range of perspectives in order to provide a full overview of the various impacts on people's lives. It concludes by discussing how providing a truer account of the impact of policies – both positive and negative – can help create a basis for rethinking the premise on which policies are based.

Although these findings are from a study looking at the impact of health and safety policies, the conclusions are relevant for many different areas of government policy, such as crimes, smoking, drug misuse, alcohol abuse, domestic violence, different diseases and injuries, and traffic accidents.

## CURRENT KNOWLEDGE: GAPS AND DEBATES

Evaluating health and safety policies involves determining the purpose of the particular policy being studied, and selecting an appropriate method that provides the information needed. This is a complex and challenging task due to a lack of thorough and rigorous incidence and cost information, debates around cost and value, and the inter-connections between work and other areas of people's lives.

There is ongoing debate about the terms under which policies should be evaluated and judged a success or failure. For health and safety policies, this is further complicated because there is no clear definition of the costs of injuries and illnesses at work, and the

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2 The full report is available from [www.dol.govt.nz](http://www.dol.govt.nz).

value of prevention programmes. What are usually debated are the financial costs of red tape, bureaucracy and complying with legislation.

Some costs are less visible than others. These are the costs – financial, emotional and social – that are typically borne by the employees themselves and their family, friends and community, and are estimated to be up to seven times the amount of visible costs (Health and Safety Executive 1997). Policy evaluation can become very removed from the individual impacts. Often, what really matters to people cannot be easily measured in economic terms, and it requires imaginative techniques to capture the range and depth of complex outcomes for ordinary people of policy programmes and legislation (Dembe 2001, Kiel et al. 2000). In the case of incidences of injury and illness, we do not know how big the problem is, and unless we have experienced an injury or illness at work ourselves it is difficult to imagine what it is like.

Outcome research commonly uses statistics as its data source – administrative data or validated scales. The study population offers evidence from one perspective, and the cost information collected is usually limited to one type of cost. Because employment outcomes both affect and are affected by different areas of society, the information collected is limited and frequently underestimates the true range and depth of effects. In the literature, costs are generally divided into direct (visible or tangible costs that appear on the accounting balance sheet, and are compensated and identifiable) and indirect (invisible or intangible costs that are real, but have no dollar value assigned to them, and are incalculable and subjective).<sup>3</sup>

For “total cost” studies, as well as smaller, discrete population-based studies, the methodology depends on whether the purpose is to measure functional, clinical, psychological or financial outcomes. These studies illuminate certain outcomes by isolating and magnifying consequences for a particular segment of the total population, but although they retain the minute detail required to allow for individual outcomes, they do not use standardised methodology and so are not comparable. In addition, they often use clinical measures, such as validated scales, that miss the depth of qualitative information required to provide a full picture of all the consequences.

Most importantly, there have been scarcely any studies that combine a range of perspectives on one case. Because no one person sees, experiences or accounts for the full range of consequences of policy outcomes, including workplace injury or illness, the full depth and breadth of consequences are often not measured or recorded in any official statistic. Different areas view these outcomes from a range of perspectives, and

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3 A discussion of these costs is contained in the literature review of *Aftermath*.

it is rare that one area learns about or appreciates the experiences of another.<sup>4</sup> This is often the case with subjective experiences, because factors that are unique to the individual affect the type and extent of an injury's social consequence. Dembe (2001) comments that:

Characteristics such as the injured worker's age, gender, race, ethnicity, nationality, education, and socio-economic status could influence the responses of the worker, employer, insurer, and medical provider.

Isolating and measuring the impact of employment policies is particularly complex because work affects many other areas of our lives. This means that identifying, separating and quantifying the various effects is difficult. The definition of social costs and their links to other areas of our lives is aptly summarised by Keller (2001):

Social costs are typically described in losses or limitations in a person's ability to engage in major social roles and activities. These include working, parenting, or sharing leisure activities with or caring for friends and family. Impacts commonly discussed are the ability to perform tasks that are dictated by the work role (social consequences), as opposed to lost wages (economic consequences), or losing a range of motion (clinical consequences).

Following an injury or illness, each area outlined above by Keller is linked. An example is provided by Coulton et al. (1995):

Tensions from prolonged home care can lower the self-esteem of the affected employee, which in turn affects the work environment. This could lead to poor work performance when the employee returns to work.

Therefore, using case studies to show the human costs of non-compliance with health and safety regulations, and using the positive outcomes from compliance as an incentive to comply, may prove useful. Understanding the true extent of costs is important, as the community pays for injuries and illnesses at work, and other negative policy outcomes, even if not directly.

The impact of health and safety policies, like policy generally, varies between people and situations. Just as work affects many areas of our lives, these impacts reach all aspects of society, rippling out to affect personal, social and workplace relationships. As Dembe (2001) puts it:

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4 One example is Kiel et al. (2000), who used a selection of case studies exploring the outcomes for employees injured or made ill at work, using a mixture of quantitative and qualitative information.

Occupationally induced injuries and illnesses have many outcomes including the payment of ... benefits, economic costs for employers, delivery of medical care services and work disability. In addition, there are less obvious implications for labour relations, family dynamics, domestic activities, community involvement and personal mental health.

Commenting on cost research, Dembe (2001) further observes that evaluating the complex impacts of legislation and policy on human situations requires imaginative methods, such as focus groups or case studies, to capture the full range of interrelated outcomes of particular policies. In the absence of such research, our understanding of the range of effects of occupational injury and illness, how these elements interact with each other, and the outcomes of other government policies, remains limited.

#### AFTERMATH: AIMS AND METHOD

The Department of Labour, together with ACC, initiated a project looking at the wide-ranging costs of occupational injury and ill health from a variety of perspectives. This required an imaginative methodology.

The purpose of the study was to show the human stories behind the statistics, and to personalise the impacts of policy and legislation. The project used a mixed-method approach to elucidate experiences and perspectives for a range of organisations and people involved, and to identify "cost determinants" that acted to cause and prevent, exacerbate and alleviate these outcomes. The methodology was selected to provide a depth of information, as opposed to a total population survey, and used qualitative in-depth interviews to provide social and economic outcomes, and analysis of ACC and Occupational Safety and Health (OSH) notes, triangulated with a literature review.

The findings were the result of an iterative process. Because this was an exploratory study, the method used to analyse the interview and cost data revealed the themes. There were no specific hypotheses decided at the beginning of the project. The aims were to explore both the visible and invisible costs and how they were affected by individual factors such as age and family status.

One aim of the study was to identify and understand costs. The definition of cost was widened to include non-economic costs, which are often invisible and not included in the usual economic cost calculations. The study achieved this by illustrating where the costs fell, the nature and extent of these costs, and how these costs ripple out from the injured or ill employee to reach their family, friends, workmates and employer, community and, eventually, the wider society. One example was Jenny, wife of Ian (who was fatally injured in a workplace accident) and mother of four boys:

“I was angry. I was so angry at the firm. How can they have done that to me?”  
(Jenny)

“She saw [the unit manager], that would have been about half past ten at night... And he'd come to the hospital and met her ... and made the comment, 'It wasn't our fault, Ian shouldn't have been there'. Or words to that effect.”  
(Company Occupational Health Nurse)

Jenny described how she felt that the company avoided blame by making Ian responsible for the workplace accident. It was not until during the trial, a year after, that she found out that the crushing injuries that caused Ian's death were not his fault. The company was fined \$35,000 under the Health and Safety in Employment Act 1992.

The impact of cost shifting was also discussed. If the costs (both economic and non-economic) are not internalised by the employer, this removes most incentives to reduce these costs. Research since the 1950s has estimated that for every one fatality there are up to a hundred “near misses” (Health and Safety Executive 1997). The Australian Industry Commission (1995) concluded that for minor injuries, where there is a short time before return to work and no compensation, the largest proportion of cost is borne by the employer. These minor injuries occur the most frequently, and preventing these may prevent more serious, or even fatal injuries. The Australian Industry Commission found that the family and, ultimately, the employee bear the largest proportion of cost for these fatal injuries or illnesses.

The Aftermath study found a range of costs: some quantifiable, others not. Although some consequences were financial, establishing an accurate calculation was impossible; for example, taking into account the loss of future earnings and medical costs. For the employer, costs observed included lost production, negative impacts on staff morale, bad publicity, the costs of replacing employees or equipment and, in some cases, legal costs. For the government, the impact on officials carrying out statutory functions was observed, including the psychological impact of investigating fatalities, dealing with recalcitrant employers and comforting bereaved or confused families. Often forgotten are the costs of investigating and administering these cases. Many costs to the government are non-recoverable – for example, lost labour; voluntary, casual and unpaid work; and treatment and rehabilitation costs.

Importantly, Aftermath included a breakdown of economic costs for the 15 case studies. For example, Ian's death cost his workplace a minimum of \$109,402.00 during the first year, plus other undocumented costs that were either one-off or ongoing. Costs such as lost production, hiring of a compliance manager and eight-person team, implementation of a site safety programme, administrative time and legal time were not accounted for separately, and thus remain hidden. The family received ACC

payments of approximately \$72,912.08, plus future projected ACC payments of \$32,097.00. The large amount of undocumented costs and impacts that have no dollar figure attached illustrate how the overt costs are merely the tip of the iceberg of the total costs to this family and workplace. The ultimate cost, of course, was the loss of Ian: husband, father, wage earner and employee of the same company for almost 30 years.

The total documented costs (based on participant recall and ACC notes) for these 15 cases was \$1,167,471.84. The total projected future costs of the seven cases that were still receiving ACC payments and, in one case, payments from a private insurer, were expected to be \$3,985,989.00. This does not include the time of OSH inspectors, ACC case managers, the workplace, the individuals themselves and their families. Costs of emergency medical treatment were estimated, but the totals did not include the loss of income borne by individuals and their families as a result of their injury or illness. The actual costs for these 15 cases would far exceed the figure calculated for total documented costs.

A significant proportion of the indirect costs was borne by the injured or ill employees and their family. For example, the effects on their relationships were considerable. Loss of intimacy between spouses, and increased distance between parents and children, between employer and employee and between workmates, were common. Feeling isolated or self-imposed isolation put relationships under pressure – some broke down while others emerged from the difficult period strengthened through shared experiences. There were major lifestyle changes for many of the families, with many participants changing their careers, beginning or stopping study, and giving up hobbies to care for the injured or ill family member. Friends of the individual were also affected through loss of a close friend, or helping them through their illness or injury with support. Friends often undertook this support at personal cost, including spending less time with their own families.

Some of the intangible, hidden impacts on relationships are described below. In the Aftermath study, some relationships did not survive the injury or illness:

“We separated ... The reason was that she said I had changed that much and ... I was a harder person to get along with ... which I was.” (Murray, who suffered from solvent neurotoxicity)

Sometimes the changes were sudden, irreversible and final, as when Jenny lost her husband, Ian:

“There was never a point to say goodbye to a marriage, and that, of all things of the whole lot, I feel I have lost. I have lost my marriage ... You live, you survive, but the joy is gone.” (Jenny)

Jenny's son, Daniel, also missed his father:

"The loneliness comes back and it's like usually just before I go to sleep, it's like my imagination, and I remember Dad, and I just want to speak to him, y'know?" (Daniel)

There were also changes to participants' working lives. John was forced to retrain at age 27:

"I guess it's a new career now, a new start, something different." (John, who suffered from solvent-induced neurotoxicity)

Workmates were also affected, sometimes witnessing harrowing events or feeling responsible for the injury or illness. When Thomas cut off three fingers with a chainsaw, several workmates witnessed the accident:

"I picked up the first finger by the pile of wood inside the Dry-end shed. Then I saw the second finger by the small shed. Blood was everywhere." (Thomas's workmate)

Often not included are the personal costs to officials of dealing with these cases:

"I have been to several fatal accidents with various [inspectors] in the past ... at least two where the other [inspector] has gone back to the car. In fact, one of them walked ... left the site and started walking back to the office. And he walked something like 12 kilometres before I actually caught up with him." (OSH Inspector)

## AFTERMATH: FINDINGS

The Aftermath study increased our understanding of how costs operate. It generated information on the outcomes of policy that went beyond and behind the statistics, using in-depth qualitative and quantitative information that complemented the statistical evidence. The study found that there are protective factors that helped prevent or alleviate negative outcomes of policy and legislation for our case studies. There were also factors that helped create positive outcomes for our participants. Understanding these factors can help policy makers plan appropriate measures that ensure they are present, or minimised.

Briefly, some of the cost determinants found included socio-economic status, labour market status, visibility or invisibility of the injury or illness, establishing the work-relatedness of the injury or illness, acknowledgement (that is, timely diagnosis and



appropriate support), and the level of safety awareness by the employer and their employees. There were other cost-determining factors involved in the outcomes for participants.

The hidden costs, comprising both social effects and non-compensated financial costs, have a ripple effect: not only are the full range of costs borne by the injured or ill employee and their family, but consequences extend out beyond the home to affect friends and the wider community. Eventually these consequences are borne by society itself in the form of levies, insurance, taxes and loss of social capital. These costs amount to many times the direct, visible, compensated costs that typically appear on the accounting balance sheet. The hidden costs are significant, but have no dollar value assigned to them, and are therefore not usually part of economic calculations.

#### USING RESEARCH DURING POLICY DEVELOPMENT

The Aftermath project was launched at the beginning of November 2002. Since then, these personal stories have been used as an employee training resource in many companies, both in New Zealand and overseas, and by OSH itself to promote its core health and safety messages to the public and to its own field staff.<sup>5</sup> The results of Aftermath are also used to provide a full account of the range of costs and consequences of non-compliance when promoting and discussing workplace insurance partnership schemes with employers. The contributing factors identified in Aftermath have also been used as client-based supporting evidence for new government health and safety initiatives, in particular, encouraging employers to involve their employees in health and safety management and provide adequate information and training about their rights and obligations in the workplace.

Research like the Aftermath project provides an impressive depth of qualitative and quantitative information about the impacts of policy on ordinary people. Evaluating the outcomes at an individual level complements, but does not replace, aggregated results that give a total, overall scan of the entire population. The 15 case studies in Aftermath involved 68 interviews and data analysis. The case studies contained common features, such as factors leading to or resulting from the injury or illness. However, there were also important differences between cases, with some participants experiencing more positive outcomes than others. Learning about what determines these outcomes can help ensure more positive outcomes for more people.

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5 Three products were produced, presenting the research in a range of formats: the main report, a small booklet of personal stories, and a digital movie illustrating a selection of the 15 cases.

The result of this and similar research, now and in the future, is that policy is informed by the reality of what is happening at the individual level. Evaluation is based on the consequences as they happen to ordinary people, with a wide interpretation of cost as the measure of success. For many policies, and particularly for social justice legislation such as occupational health and safety, it is vital to personalise the cost. Because safety costs represent an initial outlay for employers, the savings in long-term human costs must be emphasised as part of the cost-benefit calculation. For employers, these costs extend past the fine imposed or temporary interruptions to production. There are the costs that are usually hidden in overheads, sick pay, increased insurance and maintenance budgets that are actually quite substantial. For example, Ian's employers were fined \$35,000, but the total documented costs of the injury to the company were higher than this. The undocumented costs were higher still.

Knowing the true extent of the costs, both direct and indirect, visible and invisible, provides policy makers with useful advice for evaluating the adequacy of legislation, prevention policies and after-care programmes. Policy research like the Aftermath project also helps policy makers and researchers learn how to create the right incentives to encourage commitment to protective policies, such as occupational health and safety, to help alleviate negative outcomes. Successful policies affect both society and the economy. Resources in New Zealand's economy that are currently being used to pick up the pieces after an injury or illness at work can be used somewhere else.

The ultimate aim of research such as this is to humanise the problem and create a change in attitude and behaviour: injuries and illnesses at work that should have been avoided will come to be as unacceptable as speeding or drunk driving. Furthermore, this research provides a complementary set of data that can be used to enrich current projects or as a baseline for future work, such as the multiple-agency, macro-level Cost of Injury research project.

The challenge for policy makers and evaluators is to use research to make an impact. Extending the definition of cost to include those intangibles that are significant to people, but do not necessarily have a dollar value attached, helps ensure that the full costs of policies are evaluated. What matters most to those who are affected by policy is often difficult to measure in an economic sense. Imaginative methods that show the full and complex outcomes of policy may include case studies, interviews and longitudinal studies. This approach is made more rigorous by triangulating qualitative and descriptive data with quantitative data and analysis of official reports. This approach necessarily requires methods that go beyond counting cases, presenting statistics and calculating dollar figures.

Macro-level studies fulfil a different purpose, but it is useful to complement them with econometric techniques based on surveys or administrative data and with discrete,

detailed studies showing the minutiae of interrelated outcomes. Such a research strategy can only enrich our knowledge of policy outcomes and how they affect individuals and their relationships. These small, in-depth studies can help us learn about the actual impacts, as opposed to the typical impacts, of legislation and policy.

#### CONCEPTUAL CHANGE THROUGH EVIDENCE-BASED POLICY DEVELOPMENT

Decision-makers generally use information for either of two purposes. According to Weiss, one of these purposes is “instrumental”, where research provides practical, incremental recommendations that can be applied directly to a policy or programme. The other is the “conceptual” purpose, where research questions fundamental premises on which policies or programmes are based, and provides a basis for rethinking those premises (Weiss 1980). The project discussed in this paper falls into the latter category.

Ringen (1999) explains how humanising these statistics is one way policy makers can bring about attitude and behaviour change among policy makers and the end users of policy decisions:

Research that holds out the consequences of our failure to prevent injuries and illnesses from occurring is a powerful stimulus for change. Prevention results from change, and change results from our ability to influence decision-makers in industry, unions, and government ... This is research that decision-makers can understand. Statistical methods are important, but they are not an end.

Presenting the perspective of a variety of people and organisations involved in injury and illness in the workplace is an important means of providing a full, in-depth picture of outcomes, as no one person sees or experiences all the different outcomes. Each person involved has many experiences that others can learn from and it is rare for all these different views to be presented together to act as a learning tool – in this case, in the area of workplace health and safety.

In addition, because the outcomes of policy may be multiple, interrelated, complex, ongoing or temporary, severe or seemingly minor, trivial or fatal, imaginative methods are needed to illustrate the full breadth and depth of these consequences for ordinary people. These consequences are both economic and social, and two people who appear to have the same circumstances may experience very different outcomes depending on the presence or absence of certain factors.

## CONCLUSION

Research relevant to workplace health and safety policy can be used to minimise the aftermath and enhance positive outcomes by raising awareness of the effects of non-compliance with legislation. This can be expected to have a positive effect on the lives of employees and their families, their workplace and its productivity and morale, and the wider community. Policy and legislation have an impact on the community, and if the community comes to believe that certain things are unacceptable, then change can happen. The majority of the population now sees speeding and drunk driving as unacceptable, and expects violators to be caught. As a result, the road toll is falling. The consequences for the community of workplace injury and illness also need to be communicated clearly.

There are other strengths in evidence-based policy development. McDonald comments that well-conducted research using experimental methods helps create “a rich portfolio of approaches to evaluation, and a particularly strong history of client-opinion research” (McDonald 2000).<sup>6</sup> One lesson that has been learnt from this project is that qualitative findings are not mutually exclusive of quantitative data. Qualitative and quantitative data complement each other. Together they can be used to explain social survey findings. Davies (2000) comments that:

Observational and ethnographic studies provide invaluable qualitative evidence about policy and practice by going beyond, behind and below the surface level of experimental and statistical evidence, and identifying variations within apparently independent variables as well as providing explanations for why these variations occur. They also provide valuable evidence about the role of institutional and organisational processes.

Because work affects so many areas of our lives (including personal relationships and self-esteem, household income, roles in the community, access to services, and quality of retirement life), it is important to attempt to define and isolate the relevant variables and evaluate their intricate connections. The impact of employment outcomes on the personal lives of ordinary people may be illustrated by this quotation from Keogh et al. (2000):

The worse the injury, the more likely you are to lose your job. Having more impairment and being out of work makes it more likely that you will suffer from symptoms of depression.

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<sup>6</sup> The arguments surrounding the use of research, and its place in political decision-making, are too extensive to debate here. See Davies et al. (2000) and Weiss (1980).

Information on the non-economic costs of workplace injury and illness, such as pain and suffering, is required to fully understand the societal impacts of occupational health and safety legislation. In the end, the methodology selected will be determined by the purpose of the study. If the purpose is to provide information on clinical outcomes, such as the adequacy of certain medical interventions, then using a clinical test such as the ADL-scale (activities of daily living) or the CES-D scale (symptoms of depression) to measure subjective conditions in an objective way is ideal. However, if the aim is to motivate change – in the behaviour and attitudes of management, workers, and the Government – then this requires a human perspective of the social and economic impacts of policy and legislation.

Aftermath is but one example where research adds to the policy process, in this case, by providing a real-life context for what are commonly anonymous statistics. Jenny's experiences and those of her family would usually be hidden from public view, expressed as a single fatality datum. Describing the impact at an individual level gave Jenny an opportunity to tell policy makers, employers and employees, and the public about the devastating impact of a workplace accident on herself and her family. For Jenny, the prosecution process meant the company was held accountable, and she finally heard the truth about what led to the accident that killed her husband:

"On that first night, I honestly thought Ian had done it to himself. He had done something really wrong ... And I was angry with him for doing it to himself, and then I was angry at myself for thinking that." (Jenny)

"From what I can gather, the statement was made that they had a problem with the transfer tables. And there was a great discussion about it and apparently Ian said 'I know what it is, we've got an air leak.' And they sort of, I think took no notice of what Ian had said. And he went down to have a look and, ... whether he followed the procedure or didn't follow the procedure. The procedure was actually shit anyway, I mean I was unaware of that procedure, because the last time I was there, those gates were totally still opening up." (Company Occupational Health Nurse)

## REFERENCES

- Australian Industry Commission (1995) *Work, Health, and Safety: Inquiry into Occupational Safety and Health*, Report no.47, volumes I and II, Canberra.
- Coulton, R., A. McCulloch and R Noble (1995) *The Social Dimensions of Occupational Health and Safety*, Social Science Press, Australia.
- Davies, P. (2000) "Contributions from qualitative research" in H. Davies, S. Nutley and P. Smith (eds.) *What Works? Evidence Based Policy and Practice in Public Services*, The Policy Press, Bristol.
- Dembe, A.E. (2001) "The social consequences of occupational injuries and illness" *American Journal of Industrial Medicine*, 40:403-17.
- Health and Safety Executive (1997) *The Costs of Accidents at Work, Health and Safety Executive*, HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA.
- Keller, S.D. (2001) "Quantifying social consequences of occupational injuries and illnesses: State of the art and research agenda" *American Journal of Industrial Medicine*, 40:438-51.
- Keogh, J.P., I. Nuwayhid, J. Gordon and P. Gucer (2000) "The impact of occupational injury on the injured worker and family: Outcomes of upper extremity cumulative trauma disorders in Maryland workers" *American Journal of Industrial Medicine*, 38:498-506.
- Kiel, G., H. Kolsen and C. Smith (2000) "Investigating the economic cost of injury in the workplace: A case study approach" *Economic and Labour Relations Review*, 11(2):109-35.
- McDonald, G. (2000) "Social care: Rhetoric and reality" in H. Davies, S. Nutley and P. Smith (eds.) *What Works? Evidence Based Policy and Practice in Public Services*, The Policy Press, Bristol.
- Ringen, K. (1999) "Where do all the injured workers go? Or, how about a little humanity in research?" *American Journal of Industrial Medicine*, 36:587-8.
- Weiss, C. (1980) *Social Science Research and Decision-Making*, Columbia University Press, New York.