



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

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Abstract

“Aftermath: The Social and Economic Consequences of Workplace Injury and Illness” study is an example of undertaking research to link with policy development. Much evaluation research (for example, assessing the impact of workplace illness and injury) isolates one area or perspective to study: clinical, functional, psychological, or financial outcomes. This study aimed to explore both quantifiable and non-quantifiable costs, and presents social and economic consequences case studies. This allowed the inter-connections between various areas and perspectives to be included, to present an overall picture of the visible as well as hidden costs. Behind the eventual products from this study are some lessons learnt about the research process, and how this contributes to policy development.

Introduction

I was angry. I was so angry at the firm. How can they have done that to me? (Jenny, whose husband Ian died as a result of a workplace accident)

... 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.

In 2000, the Department of Labour and ACC began a mixed method research project called “Aftermath”, involving 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. This paper explores some issues around evaluating and measuring the outcome of policies using research techniques – specifically, in-depth case studies. 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.² Understanding the consequences for Jenny and her family, and for thousands more just like them, is part of using research to inform policy development from client-based evidence.

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 only. 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, tangible, costs that appear on the accounting balance sheet, are compensated and identifiable); and indirect (invisible, intangible, costs that are real but have no dollar value assigned to them, incalculable, are subjective).³

Current Knowledge: Gaps and Debates

Evaluating policy involves determining the purpose of the policy being studied, and selecting an appropriate method that provides the information needed. This is made more complex and challenging 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 on what terms policies should be evaluated, and be judged a ‘success’ or

'failure'. For health and safety, this is because there is no clear definition of what injuries and illnesses at work 'cost', and the 'value' of prevention programmes. What are usually debated are the financial costs of red tape, bureaucracy, and complying with legislation.

The 'hidden' costs are less visible. These are the costs – financial, emotional, and social – that are typically borne by the employee themselves, their family, friends, and community, and are estimated to be up to seven times the amount of visible costs (HSE UK 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 requires imaginative techniques to capture the range and depth of complex outcomes to ordinary people of policy programmes and legislation (Dembe 2001, Kiel et al 2000). And in the case of incidences of injury and illness, we do not even 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.

Policy makers commonly use a variety of data and outcome measures to assess impacts of their policies. For occupational health and safety, this includes using administrative, insurance, or employment data; or for smaller studies, self-rating outcomes using validated scales. There are limitations and assumptions associated with these. Studies often measure the total, aggregated incidence or cost of injury or illness, usually ignoring intangibles or, in some cases, attempting to quantify them. This may include measuring changes to physiological and physical function, or assigning values to intangibles, such as 'quality of life'.

For these '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 minutiae of detail required to allow for individual outcomes, they do not use standardised methodology so are not comparable with each other. 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 has been scarcely any which combined 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 it is rare that one area learns about or appreciates the experiences of another.⁴

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 policies (such as employment policies) before evaluating their inter-connections, is made further complex because work affects many other areas of our lives. This means that identifying and separating the various effects is difficult. The definition of social costs and its 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 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 and 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 impacts of health and safety policies, like other policies affecting individuals, vary 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. Dembe (2001) outlines the areas to which these outcomes are subject to:

Occupationally induced injuries and illnesses have many outcomes including the payment of ... benefits, economic costs for employers, delivery of medical care services, 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 observed that evaluating the complex impacts of legislation and policy on human situations requires imaginative methods to capture the full range of inter-related outcomes of particular policies, such as focus groups or case-studies.

The sum of these gaps in our knowledge is that 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 findings

With these questions in mind, the Department of Labour, together with ACC, initiated a project looking at these wide ranging costs from a variety of perspectives. This required an imaginative methodology.

The purpose of this 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 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 OSH notes, triangulated with a literature review.

One of the main aims of the study was to identify and understand ‘costs’. The definition of ‘cost’ was widened to include the ‘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 describing how these costs ripple out from the injured or ill employee to reach their family, friends, work-mates and employer, community and eventually the wider society.

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 one hundred ‘near misses’, which have the potential to become serious injuries (HSE UK 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 injuries. The Australian Industry Commission found that the family, and of course, the employee, bears the largest proportion of cost for these fatal injuries or illnesses.

The “Aftermath” study found a range of costs: some were quantifiable while others were non-quantifiable. Some consequences were financial, although establishing an accurate calculation is impossible, for example counting the loss of future earnings and medical costs. For the employer, costs observed included lost production, negative impacts on staff morale, bad publicity, and 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 simply investigating and administering these cases. Many costs to the government are non-recoverable – for example, lost labour, and voluntary, casual and unpaid work, treatment and rehabilitation costs.

Importantly, “Aftermath” included a breakdown of economic costs for the fifteen participants. 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 the ‘tip of the iceberg’ of the costs to this family and workplace. The ultimate cost, of course, was the loss of Ian: a husband, father, wage earner, and employee of the same company for almost thirty years.

The total documented costs (based on participant recall and ACC notes), for these fifteen cases was \$1,167,471.84. The total projected future costs of seven cases that are still receiving ACC 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, workplace, individuals, and their families. Costs of emergency medical treatment are estimated, and these totals also do 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 fifteen cases would far exceed this figure.

A considerable proportion of the indirect costs was borne by the injured or ill employee or their family. For example, the effects on their relationships were considerable. Loss of intimacy, increased distance between spouses or parents and children, employer to employee, 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 – loss of a close friend, or helping them through their illness or injury with support – often at their own cost. This may have meant 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, with partners forced to separate:

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

Or the changes were sudden, irreversible, and final. 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)

And her 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, whose father died from workplace injuries)

There are also changes to their working lives. John was forced to retrain at age twenty-seven:

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

Work-mates are 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' 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 twelve kilometres before I actually caught up with him. (OSH Inspector)

While 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: crimes, smoking, drug misuse, alcohol abuse, domestic violence, different diseases and injuries, and traffic accidents.

“Aftermath”: conclusions

This study increased our understanding of how costs operate. Generating information on the outcomes of policy that goes beyond and behind the statistics – in-depth qualitative and quantitative information complements previously collected statistical evidence. We 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 are many times the direct, visible ‘compensated’ costs that typically appear on the accounting balance sheet. These hidden costs have significant meaning for people, but have no dollar value assigned to them, and therefore are not usually part of economic calculations.

This study also taught us some lessons about using research within the policy environment. Initially the project was an OSH initiative, but other units in the Department of Labour, and a contract research company, became involved in determining the purpose and the subsequent mixed method. The multidisciplinary nature of the team created its own challenges, but overall the different perspectives and areas of expertise enriched the analysis.

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, beyond the aims of exploring both the visible and invisible costs and how they were affected by individual factors such as age and family status.

The exploratory nature of the study meant that a unique mixture of qualitative and quantitative methodology could, and should, be used. This project has provided a valuable example of how research may be used as a tool for evidence-based outcome measurement.

“Aftermath” has many uses in policy development

Research such as the “Aftermath” project aimed to provide in-depth 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.

Learning about the effects of policies on the individual means using mixed methods that give a total and full picture for a limited amount of people. The case studies in “Aftermath” may have only been fifteen in number, but involved sixty-eight interviews and data analysis to provide as wide information as possible. There were some common features between them, such as factors leading to or resulting from the injury or illness. But there were also important differences, meaning some participants experienced more positive outcomes than others. Learning about what determines these outcomes can help ensure more positive outcomes for more people.

The result of this research, and of future projects with similar aims in mind, 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 long-term ‘human’ cost saving must be emphasised as part of the cost-benefit calculation. For employers, these costs extend past the fine imposed or temporary interruptions to production. These 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 costs of the injury to the company were higher than this. The undocumented costs were much higher.

Knowing the true extent of the costs, both the direct and indirect, the 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, so to help alleviate negative outcomes. Successful policies impact on both society and the economy. Resources in New Zealand’s economy which 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, to create both an attitude and behaviour change: injuries and illnesses at work that should have been avoided are seen as being as unacceptable as speeding or drunk driving. However, there is also a further use, in that this research provides a complementary set of data, used to enrich current projects, or as a baseline for future work, such as the macro study ‘Cost of Injury’ project currently underway, which is being led by the Department of Labour.

Using research in policy development

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 ‘true’ cost of policies are evaluated. What matters most to those who are impacted 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 this qualitative, descriptive, data with quantitative data analysis and analysis of official reports. This approach necessarily requires methods that go beyond counting cases, presenting statistics, and calculating dollar figures.

Macro studies fulfil a different purpose – but complementing these methods could also be econometric techniques based on surveys or administrative data, with discrete, detailed studies showing the minutiae of inter-related outcomes can only enrich our knowledge of policy outcomes and how they affect individuals and their relationships. These smaller, 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, these are ‘instrumental’, where research provides practical, incremental, implementable recommendations that can be applied directly to policy or programme; and 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.

Ringen (1999) explains how humanising these statistics is one way policy makers can bring about attitude and

behaviour change amongst 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 ...

The "Aftermath" project was launched at the beginning of November 2002. Already, an early use of the report has been the use of the personal stories as a training resource for employees. In addition, the results of "Aftermath" are being used to inform illness and injury prevention activities (by the government, employers, and employee groups) by providing a fuller account of the range of costs and consequences. It is envisaged that the information gained from participants about their experiences with the legal process will be used in training new OSH inspectors. These results show that studies such as "Aftermath" which extend the definition of cost to include intangibles prevent evaluations of policy from being narrowly defined or aggregated, therefore losing important individual detail. The results also provide valuable 'client-based' information to services and officials.

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 area has many experiences that others can learn from, and it is rare that all these different views are presented together to act as a learning tool for those involved, in this particular case, in workplace health and safety.

In addition, because the outcomes of policy may be multiple, inter-related, 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.

Using policy-relevant research to minimise the aftermath and enhance positive outcomes by raising awareness of the effects of non-compliance with legislation, will have a positive effect on the lives of employees and their families, their workplaces and its productivity and morale, and the wider community. Policy and legislation has an impact on the community. If the community accepts that certain things are unacceptable, then change can happen. The majority of the population now sees speeding and drunk driving as unacceptable, and there is the certainty of getting caught. As a result, the road toll is

falling. The consequences for the community of workplace injury and illness also must 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).⁵ One lesson that has been learnt from this project is that qualitative findings are not mutually exclusive of quantitative data. They can complement quantitative data and begin 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 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.

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 or the CES-D scale to measure subjective conditions in an objective way is ideal.⁶ 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, by providing a real life context to what are commonly anonymous statistics. Jenny's experiences, and that of her family, would usually be hidden from public view, expressed as a single fatality statistic. Describing the impact at an individual level gave Jenny an opportunity to tell policy makers, employers and

employees, and the general 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 crushing 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

Notes

- ¹ The views represented in this paper are the author's own and should not be taken to represent the views of the Department of Labour.
- ² The full report is available from www.osh.dol.govt.nz.
- ³ A discussion of these costs is contained in the Literature Review of "Aftermath".
- 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.
- ⁵ 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).
- ⁶ ADL: activities of daily living. CES-D: symptoms of depression.

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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 OHN)

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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