A critical review of literature on experience rating in workers’ compensation systems

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Abstract

In this paper we present a review of the English language peer-reviewed literature on experience rating and critically examine the framing of research questions, methodology selection, study findings, the interpretation of results and underlying logic. Two main questions are addressed: what is known about how experience rating motivates employer and worker behaviour?; what is known about how experience rating affects workplace health and safety?

We conducted a comprehensive search of quantitative and qualitative literature on experience rating and claims management. Studies were appraised on several key characteristics (eg central objective, relevance), study quality (eg study design, interpretation of results) and experience-rating findings (eg how it motivates stakeholders, other health and safety incentives, cost-shifting).

While some qualitative studies consider claims management, we found that few focus directly on the topic of experience rating. Several of the qualitative studies do not adequately theorise the power relations, socioeconomic context and politics of experience rating. Many of the quantitative studies were based on simplified understandings of human behaviours, and made substantial conclusions from proxy measures used in statistical models. Several studies aggregate data across multiple jurisdictions and pay little attention to the variety of contextual details.

This review finds that the social and economic logic of experience rating, as well as the effects of its implementation, is an important and neglected subject in occupational safety and health research. There is still much to be learned about the topic.

Key words
Claims management, experience rating, financial incentives, health and safety incentives, injured workers, injury reporting, insurance, workers’ compensation

Introduction

Experience rating is a controversial way of setting employer workers’ compensation premiums based on an employer’s historical cost performance. Since the late 1970s, this approach has become increasingly prevalent across jurisdictions, including Canada, the USA, Australia and New Zealand. The premise of experience rating is that employers who maintain safer workplaces should be rewarded with lower premiums, while those with more workplace accidents should be penalised with higher premiums. The approach is meant to remedy
deficiencies in flat-rate or manual-rated systems by adjusting premiums on the basis of injury costs, thereby providing incentives for employers to invest in health and safety.  

Although experience rating is intended to stimulate safer workplaces, a growing body of literature reveals that it has not achieved that effect and that, in some cases, it has contributed to unsafe workplaces. The absence of a safety effect may arise because employers focus on managing reported claims rather than prevention. 5 Also, financial incentives may discourage employers from reporting injuries and put those employers who do report at an economic disadvantage relative to their peers. 6,7 Furthermore, there is evidence that experience rating stimulates employer behaviours which can undermine the physical and mental health of injured workers. 8–10

In this study, we present a critical review of the English-language, peer-reviewed literature on experience rating. A critical review is sensitive to theoretical and methodological trends and assumptions that shape research questions posed of a topic, and the interpretation of findings. A critical review might give rise to the discovery of theoretical assumptions and research questions embedded in the literature. 11 Our goal is to characterise current knowledge in order to better understand the range of behavioural incentives and effects experience rating engenders, and to identify knowledge gaps in the literature. In particular, we seek to identify political and ideological dimensions that give rise to different theoretical assumptions and research questions. 11

The review investigates themes at three different levels of analysis:

- societal
- workplace
- worker.

Following a synopsis of the historical context and methods, the results section reviews the themes and related issues. The discussion section considers strengths, challenges and gaps in the experience-rating literature and the topic’s polemical character, and then suggests possible directions for future research.

**Historical background**

Prior to the implementation of workers’ compensation legislation, workers who were injured or became ill in the course of their employment were only eligible for compensation under a system of negligence liability, based on the principles of common and tort law. They were responsible for their medical costs and lost wages unless they were able to successfully sue their employer under common law for negligence. Common law favoured the employer because the burden of proof was placed on the injured worker. Few workers under this system had the financial resources to participate in a protracted legal case, nor could they muster the support of co-workers, who were reluctant to testify for fear of the losing their jobs. 12–14

At the turn of the 20th century, the increasing industrialisation gave rise to more reported injuries and a greater number of injured workers who managed to bring their cases to court. Juries increasingly ruled in favour of workers. 14 Companies were hard hit, with some even going out of business. The system was ripe for change.

Many workers’ compensation systems were introduced in the early decades of the 20th century. They were based on a no-fault model, assuming collective responsibility for
workplace injuries and representing an historical compromise between employers and workers. Workers needed only to demonstrate that the injury was caused by work.\textsuperscript{15} This no-fault approach protected employers from the financial impacts of lawsuits. Workers’ compensation became the ‘exclusive remedy’. In exchange for giving up the right to sue, injured workers became entitled to medical care and wage-loss benefits for as long as their disability lasted.

Methods
This critical review examines experience rating and its impact on employer and worker behaviour in workers’ compensation systems. The character of the existing literature is described in terms of quality (whether the literature is credible), content (how the topic of experience rating is conceptualised) and substantive gaps.

The review follows a metasynthesis approach.\textsuperscript{16} Metasynthesis not only identifies and characterises previous relevant research, but also locates, interprets and compares cross-cutting themes and concepts. It represents a stage in the review where concepts and explanations are brought together by identifying shared themes from individual papers.\textsuperscript{17} This methodology encourages the interrogation of relationships between papers, a holistic view of the topic area, sensitivity to dominant ideas in the literature, and a consideration of what may be missing or in need of further development.

Two main questions are addressed: what is known about how experience rating motivates employer and worker behaviour?; what is known about how experience rating affects workplace health and safety? Both overt and secondary consequences of experience-rating programmes are examined, providing insight into, and evidence supporting, our understanding of this topic and its relevance for future policy decisions. These questions provided a guiding framework for the search strategy.

Literature search
Peer-reviewed papers were gathered using a common search strategy across seven databases (Medline, EMBASE, EconLit, Health and Safety Science Abstracts, Social Science Abstracts, Sociological Abstracts and ABI Inform Global). In order to be retrieved, citations had to contain at least one term from each of the four categories:

- population
- compensation or insurance
- intervention
- outcome.

The search terms were developed using input from community representatives for worker advocacy groups, subject matter experts, and a librarian with extensive experience in both systematic review search strategies and the subject area. No publication date restrictions were set; however, only English-language papers were considered. Searches were performed in August 2010. Additional papers were identified by suggestions from content experts and reference lists in retrieved papers.

All titles and abstracts were reviewed to determine relevance. Multiple reviewers assessed a sample ($n = 160$) of citations to check inter-rater reliability. The full paper was retrieved if its main focus was workers’ compensation, financial incentives or insurance costs. Papers were sorted by methodology:
• qualitative, which in this review included empirical studies, legal/policy analyses and sociological critiques
• quantitative, which included mostly economic analyses
• mixed methods, which included survey and interview data.

Some papers were excluded after full inspection revealed they were beyond the scope of the review. During data assessment, studies were reviewed for quality, but all studies were retained in the review in order to fully present the breadth of the literature.

Critical assessment and paper synthesis
A common data extraction form was developed for the assessment of all included studies. Data were appraised on basic study characteristics (eg central objective, relevance), study quality (eg study design, interpretation of results) and experience-rating findings (eg how it motivates stakeholders, other health and safety incentives, cost-shifting). The study team was split into a qualitative and a quantitative group, based on expertise, to extract data from the studies.

Data assessment was performed independently, although the quantitative and qualitative groups held regular meetings to ensure consensus among researchers. The study team also met throughout the review process to discuss shared and distinct themes in the qualitative and quantitative literature.

Search results
The database searches were merged with 50 papers suggested by experts. Duplicate citations were removed, leaving a total of 3,940 citations (titles and abstracts). After applying the inclusion criteria, 369 papers were selected for full-text retrieval. This set was combined with 22 supplemental papers drawn from reference lists. The papers were separated by methodology for data extraction, resulting in 47 quantitative studies, 41 qualitative studies and four mixed methods studies. The remaining studies were excluded, as they were not considered relevant to the review. Details of the search results are presented in Figure 1.

Findings
Experience rating at the societal level
The literature examining experience rating recognises the influence of financial incentives in occupational safety and health systems and addresses the following themes:

• market incentives and deregulation
• the return of fault
• cost increases associated with experience rating
• cost-cutting and cost-shifting.

Market incentives and deregulation
The theory underlying experience rating as a financial incentive is based on the economics of insurance. A key concept in this area of behavioural modelling is the notion of ‘financial incentives’. Specifically, if premiums are based solely on the average risk and all firms pay the same rate, there is little incentive for firm-level preventive efforts. Ruser describes why experience rating should provide incentives for investing in occupational safety and health. Assuming that firms are profit-maximising, they will invest in safety until the marginal benefit of safety is equal to its marginal cost. Many economists believe that financial incentives are
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Step 1: Library search

- Medline: Total = 1,317
- EMBASE: Total = 2,067
- EconLit: Total = 747
- Health and Safety Science Abstracts: Total = 483
- Social Science Abstracts: Total = 203
- Sociological Abstracts: Total = 91
- ABI Inform Global: Total = 426
- Other sources: Total = 50

Merge databases and remove duplicates
5,384 – 1,444 = 3,940

Step 2: Study relevance

Inclusion criteria applied to paper titles and abstracts
Supplementary papers from reference lists
n = 22

Full text of papers retrieved for further review
n = 391 (369 + 22)

Excluded
n = 5,571

Step 3: Division of studies by methodology

- Qualitative studies
  n = 134 (130 + 4)
  Excluded
  n = 93

- Quantitative studies
  n = 249 (231 + 18)
  Excluded
  n = 202

- Mixed methods studies
  n = 8
  Excluded
  n = 4

Step 4: Data extraction

- Qualitative studies
  n = 41

- Quantitative studies
  n = 47

- Mixed methods studies
  n = 4

Figure 1 Flowchart of studies
preferred to regulatory ones, as the latter require direct government involvement through enforcement, which is often scorned by proponents of free markets. Financial incentives are perceived as more akin to the tenets of market mechanisms, which rely on self-interest and competition to ensure the efficient allocation of resources\textsuperscript{20–24}

The market economy or economic liberalism approach prioritises the dynamics of the marketplace, rather than the role of government, in creating a prosperous economy and society\textsuperscript{1,13,25–32} Hopkins\textsuperscript{1} locates the business case for health and safety in the broader setting of market deregulation trends and the popularisation of occupational safety and health management systems in the 1970s and 1980s. The ‘ideological underpinnings’ of the 1980s are characterised as an era in which social and economic goals were best achieved through the unfettered operation of market forces.\textsuperscript{1}

Hart\textsuperscript{28} argues that mechanisms such as experience rating – and other financial incentives that reward employers for health and safety – are promoted by the business case, which includes the assumption that labour standards can be managed by the mores and community values integral to the philosophy of corporate social responsibility. Key to corporate social responsibility is the belief that corporations will initiate and adhere to good workplace practices because they lead to more harmonious labour relations, greater productivity and an enhanced business and public image. Meanwhile, Hart\textsuperscript{28} observes that the discourse of corporate social responsibility conceals the contradictions between profitability and safety, and the unequal power relations between employers and employees in the workplace.

Duncan\textsuperscript{13} notes that the past 25 years have seen the rise to prominence of US neoliberalism based on economic rationalism and the attempt to redefine the social sphere as an economic domain. Neoliberal reforms to compensation have shifted the costs of workplace accidents to workers, and transformed a collective employment obligation into an individualised worker responsibility. In a similar way, Hart\textsuperscript{28} views this reframing of workplace health and safety as moving occupational safety and health from the public domain to the private sector, where there is a focus on behaviour-based safety and individual responsibility, and where workers bear the burden of safety. Further, the implementation of experience rating and other incentive structures shape behaviours that influence the reporting of injuries, acceptance of claims and distribution of benefits.

Moral hazard, an approach that focuses on adverse behaviour incited by insurance, frequently arises in the theoretical underpinnings of the economics literature. In theory, moral hazard may occur when there is asymmetric information (eg where the worker has more information about their health condition than the employer, or where the employer has more information about the extent of an injury than the insurance provider). Some papers in the review characterise firms as ‘active, calculating, and economically responsive entities, while everyone else involved in workers’ compensation is viewed as passive, docile and entirely unaffected by economic incentives’\textsuperscript{33} However, others address the often conflicting incentive effects of experience rating on both workers and employers.\textsuperscript{2,34,35} Many empirical studies struggle to distinguish between true changes in injuries associated with the incentives of experience rating and claims suppression efforts on the part of employers.\textsuperscript{36–38} This is largely due to the dependence on administrative claims data for their analysis. Claims management is presented as an issue of concern, although most often is only commented on rather than investigated directly.\textsuperscript{36,37}

The business case for occupational safety and health can be contrasted with Campbell’s\textsuperscript{25} description of the social justice model of injury compensation, established in New Zealand in
1974. The Accident Compensation Commission (ACC) was considered a revolutionary model because it established a universal accident compensation scheme providing around-the-clock coverage for injuries that occurred in work and non-work settings and covered all injured persons. This universal scheme was based on the principles of community responsibility, which subsequently became known as the ‘social contract’. The social justice approach to workplace health and safety includes government intervention and regulatory and enforcement mechanisms, while the business case emphasises the role of market incentives and deregulation in improving workplace health and safety.

Return of fault

Outside the economics literature, experience rating is challenged for reintroducing the notion of fault within a no-fault system. Experience rating is seen as introducing an adversarial and judicialised process in which employers are penalised for high-injury reports and, in turn, are motivated to challenge claims. In this way, experience rating can be seen as bringing back the adversarial process of the tort system that no-fault was designed to eliminate. With experience rating, the focus is once again on the interrogation and investigation of the injured worker.

Another way that experience rating is seen to be at odds with ‘no-fault’ is its incompatibility with compensation models that are based on etiological claims. Experience rating provides incentives for employers and insurers to scrutinise claims and claimants, thereby infusing no-fault systems with blame, fault and adversarial characteristics of tort systems. In contrast, the New Zealand model, as originally introduced in 1974, provided a non-etiological compensation for all workplace and non-workplace injury victims and eliminated tort remedies.

Our search of the economics literature found very few studies that addressed the notion of fault. Instead, the focus was on whether incentives were working as intended (through the examination of post-accident claim data). A few studies attempt to quantify the impact of experience rating on the number of appeals in the workers’ compensation system. Card & McCall used game theory to model the financial incentives of appealing a workers’ compensation claim and tested their model using Minnesota injury claims data from 1985 to 1989. Assuming that injured workers differ in their likelihood of pursuing a contested claim, employers have an incentive to deny liability for high-cost claims, even if the probability of being found liable is relatively high. Hyatt & Kralj explore the likelihood of firms appealing workers’ compensation claims using 1986–1988 claims data from Ontario. The authors show that experience-rated firms are more likely than non-experience-rated firms to formally appeal workers’ compensation board decisions. This effect is greater for larger firms than for smaller firms. For firms of all sizes, the amount of the award is also a significant factor in whether they appeal against a claim. The authors find that 83 per cent of workers’ compensation appeals in Ontario are for claims in experience-rated firms. Reasons suggested for these appeals include:

- establishing a credible threat to counter moral hazard on the part of the worker
- maintaining a good health and safety record
- avoiding fines if accident costs exceed a certain threshold.

Park & Butler find that contingent workers in Minnesota have a 7 per cent higher chance of having their claim denied when the temporary agency is a self-insured, or fully experience-rated, firm. As with other authors, Park & Butler caution that it is unclear if the higher claim denial
rate is caused by the firm’s perception of moral hazard on the part of the contingent workers, or if the agencies are fighting legitimate claims. Studies that rely on administrative data to identify a relationship between experience rating and reduced claims activity are either agnostic about whether the observed relationship is due to occupational safety and health improvements or claims suppression, or fail to mention the issue. Although the economics literature is unable to clearly determine if employers are responding appropriately to incentives, the sociological and legal literature draws attention to the logic that employers will seek to avoid costs and therefore are incentivised to engage in adversarial behaviour toward the injured worker and their claim.

Cost increases associated with experience rating
Several papers suggest that experience rating drives up the costs of workers’ compensation. While experience rating is designed to improve system efficiency, it is argued that it does not consider hidden (ie indirect) costs. Many of these are incurred in the form of the administrative costs of the system, claimant investigation costs, costs to employers, and costs to workers. Ison also describes the hidden costs associated with complaints and applications to special funds providing cost relief for pre-existing injuries; incremental costs associated with claims administration and adjudication due to the system being more adversarial; and costs to employers (eg lawyers, paralegals, detectives) and unions and other organisations representing workers. Ison argues that, as a result of these incremental costs, experience rating has spawned a new industry of employer claims management consultants, which he describes as ‘parasitic occupations’.

Some authors suggest that claims management-related costs are often in excess of the saving in premiums produced by experience rating. In his review of the Australia workers’ compensation system, Hopkins suggests that the focus on experience rating diverts attention away from the total costs of accidents. Material and equipment costs accompanying an accident, lost productivity, and the effect of the incident on co-workers are costs that are not covered by the insurance mechanism of experience rating. Following a workplace accident, there is also the potential threat for union action and the deterioration of labour relations. Boden et al. also note other accident-related costs include the cost of hiring and training replacement workers, redundancy costs related to the injured workers’ downtime, and increased supervisory and administrative demands. As Ison argues, the incremental costs of an industrial accident associated with experience rating are far greater than savings in premiums associated with these programmes.

The economics literature also identifies costs associated with a workplace accident as direct or indirect, but its conceptualisation of indirect costs is limited in relation to those described above in the sociological and legal literature. Direct costs generally include wage replacement and medical care costs incurred by the workers’ compensation authority and paid for through premiums, while indirect costs generally include items paid for by the employer, such as damage to machinery, management time for claims administration, and lost production time of the injured worker and co-workers. The estimated ratio of direct to indirect costs ranges from as low as 1:1 to as high as 1:20, suggesting that indirect costs are at least as high as, if not significantly greater than, direct costs. Given the high costs of occupational safety and health, employers may be incentivised to seek cost saving at the margins through every means, including appealing legitimate claims.

Boden observes that experience rating in the USA provides minimal safety incentives to small businesses, where most injuries occur. Experience rating is seen as redistributing costs in ways that favour large employers. This is in part because large employers are in a better position
to monitor and manage claims, a phenomenon known as ‘economies of scale’. In some jurisdictions, large firms can also opt out of experience-rated workers’ compensation schemes by becoming self-insuring, as long as they have a sufficient number of employees to allow for the distribution of risk. Indeed, experience rating can have a variable impact on cost redistributions based on the size of the firm and sector because most programmes have a higher degree of experience rating for larger firms. Varying the degree of experience rating by firm size is necessary for statistical reasons because it is difficult to distinguish between random fluctuations in reported accidents versus fluctuations caused by accident prevention efforts. Insurance premiums for a small business could rise dramatically with a single costly accident, even if the firm is genuinely safety conscious and not at fault. As a result, risk for small firms is generally pooled to a greater degree.

In some studies, the variable impact on cost redistributions associated with experience rating is viewed as cross-subsidisation. For example, Chelius & Smith examined the cross-subsidisation of workers’ compensation costs across firms, grouped by size, using data from across the USA. They find that small firms face the highest workers’ compensation costs per dollar of loss because of the relatively high overhead costs of serving them. Even though the largest firms are the safest and benefit from economies of scale, their premium-to-loss ratios are as high as those of the smallest firms.

Cost-cutting and cost-shifting
Cost-cutting and cost-shifting is a common theme in the experience-rating literature. Industry- and firm-level efforts to reduce the claims cost burden often result in costs being borne by other stakeholders in the system and, at times, society at large. For example, costs may be shifted to workers, or to publicly funded social safety net programmes. In many countries, the workers’ compensation system is not the only programme that provides disability benefits to individuals unable to work. Several studies have looked at the interdependency of income support programmes, including workers’ compensation, unemployment insurance and disability pensions. Two Canadian studies explore the substitution between Canada’s various disability support programmes. Fortin & Lanoie find that lower unemployment insurance benefits raise the frequency and duration of workers’ compensation claims. Campolieti et al. describe how changes in workers’ compensation and social assistance programmes can have an impact on the number of claimants in the Canadian pension plan disability programmes. Koning provides an example from the Netherlands about how the number of claims in a system can increase dramatically if there are inadequate checks and balances in place. Before the introduction of experience rating in the Netherlands in 1998, the Dutch disability compensation system appeared to serve as a substitute for unemployment insurance. In the past decade, the role of financial incentives in these two Dutch programmes has been reversed, with the disability insurance programme becoming experience-rated and the unemployment insurance programme switching to a flat-rate system.

The cutting and shifting of workplace health-related costs have shaped the policies and practices of compensation schemes. LaDou notes that the insurance industry acts as a powerful lobbying group, influencing the policies and practices of state workers’ compensation schemes through its aggressive pursuit of ways to reduce the incidence and costs of claims. He observes that the insurance industry is only interested in being involved in workers’ compensation as long as it is profitable and argues that public sector provision often serves as the default for firms and sectors that are not profitable for private providers. His investigation of the shifting of costs to Medicare/Medicaid, social security and a number of federally funded programmes suggests that workers and tax-payers carry some of the economic burden of workplace injuries
and illnesses. Private entities (insurers and workplaces) increase their profitability through these shifting efforts. Shifting may also occur between different private providers. For example, Clayton\(^2\) notes that one-fifth of experience-rated employers in Ontario, Canada made use of private disability plans in lieu of the province’s workers’ compensation programme.

In the context of experience rating, case management and managed care have been used as a cost-cutting mechanism for US workers’ compensation insurance boards and private insurers since the 1990s.\(^{15}\) Managed care strategies include fee schedules limiting hospital and physician costs, limiting physician choice, reduced benefits and tougher eligibility criteria. For example, some states deny claims when work is deemed to only be a contributing factor, along with characteristics such as age and pre-existing conditions. D’Andrea & Meyer\(^{15}\) estimate that in the 1990s, Washington State, Florida and New Hampshire managed care brought about reductions of between 20 and 30 per cent per claim in medical and indemnity costs.

McInerney\(^{60}\) investigated Ohio’s efforts to reduce the workers’ compensation costs of employers by facilitating return to work for injured workers through third-party case managers – another example of the diversion of organisational resources away from occupational safety and health in favour of claims management. A complex bonus structure was created for the third-party case managers in which only some claims were included as part of the incentive scheme, primarily short-duration claims. Using regression analysis techniques, McInerney\(^{60}\) found that third-party case managers did not reduce the duration of minor injury claims sufficiently to impact on the cash benefits paid for wage replacement. Similarly, there was no evidence that third-party case managers reduced the duration of moderately severe claims. Most surprising was the finding that the bonus payment system induced third-party case managers to increase days away from work for severe claims extending beyond the 15-month threshold because the programme did not incorporate these long-duration claims into the incentive programme.

Experience rating at the workplace level
The literature examining experience rating at the workplace level looks at how financial incentives drive occupational safety and health behaviour, and addresses the following themes:

- injury reduction
- claims/cost management
- behaviour-based safety
- healthcare professionals as gatekeepers
- long-latency and difficult-to-diagnose injuries and illnesses.

Injury reduction
In much of the economics literature, studies investigating the injury reduction effects of experience rating intuit the behaviours of firms rather than observing them directly. Studies using data from earlier time periods exploit natural experiments created by the introduction of experience rating to assess whether the programmes did indeed reduce injuries.\(^{35,50,52,61,62}\) Many of these studies use simple measures (eg a variable indicating whether experience rating was in place in a particular time period) to test for reductions attributable to the programme. Studies using data from jurisdictions that have had experience rating in place for some time often test whether the varying degrees of firm-level financial responsibility for claims cost (known as the ‘degree of experience rating’) have parallel degrees of effect on claims activity.\(^{19,22,63-65}\)

Generally, these studies also use crude proxy measures for the degree of experience rating
because of the lack of access to direct measures of programme features. A systematic review of this literature found that, because of the crude measures used, there was only moderate evidence that the introduction of experience rating reduces the frequency and severity of work injuries and illnesses, and that the degree of experience rating reduces them.

Using a large sample of workers’ compensation claims from Washington State, Cheadle et al. examine the predictors of work disability duration. The authors find that firm size is a significant and stable predictor of duration and that larger (more highly experience-rated) firms have shorter disability duration. Firms participating in the retrospective experience-rating programme have significantly shorter claims durations. The measure of work disability in the study is ‘time on benefits’, although it is not clear that the cessation of benefits is indicative of full recovery or return to work.

A more recent study by Campolieti et al. examines the impact of the introduction of experience rating on employers in British Columbia, Canada. The analysis finds that the introduction of experience rating reduced the frequency of lost-time claims, healthcare-only claims, and short-term disability claims; however, long-term disability claims increased, the frequency of fatality claims remained unchanged, and average cost per claim increased. The authors acknowledge that they cannot attribute the reduction in some claims outcomes to either an investment in health and safety or claims and cost management. They also propose that the 30-month cost window for experience rating in the new programme could possibly create a perverse incentive for employers to dispute long-term disability claims until they are past the period of responsibility. Other perverse incentives incited may include suppression of healthcare-only and short-term disability claims.

Many of the quantitative studies are unable to distinguish between actual reductions in injuries and illness and those reductions attributed to claims management because of limitations in their data sources. These sources include administrative data, US Bureau of Labor Statistics data and simulated data. Numerous papers question the accuracy of the number of injuries reported to both workers’ compensation systems and the Bureau of Labor Statistics by quantifying the extent of under-reporting of workplace injuries. A few studies focus on fatality claims to circumvent the possibility that claims/cost management is the driving force behind reductions. For example, Bruce & Atkins examine the impact of the introduction of experience rating on fatality rates in Ontario’s construction and forestry industries. Using aggregated administrative data, the authors find that experience rating is associated with a decline in fatality rates, and the adjustment is made within one year. Experience rating results in a 40 per cent decrease in fatalities in forestry and 20 per cent in construction. However, the period of experience rating included in the data is extremely short, and the time period of the entire data set very long, with contextual factors not explicitly addressed.

Many studies on the impact of the degree of experience rating on injury reduction have used crude proxies for the degree of firm-level financial responsibility, although some have had access to more direct measures of programme features. A series of studies by Ruser, based on US Bureau of Labor Statistics data, finds relationships in the hypothesised direction for only some types of claims outcome. Kotz & Schäfer employ a more direct measure – the amount of rebates and surcharges in the sector under study – and find that these financial incentives do indeed result in lower claims activity. Two more recent studies have also benefited from more direct measures of programme features. Using claims data from Wisconsin, Barth et al. examine the effect of changes in employers’ experience-rating programmes on their subsequent
lost-time claims for workers’ compensation insurance. The study finds that experience-rating programme changes had a significant negative relationship to subsequent lost-time claim counts, indicating that an increase in experience rating is associated with a decrease in the number of claims. Although the study finds that financial incentives reduce claims activity, the results may reflect firms’ efforts to discourage claims filing, since safety investments are not observed. Koning also used firm-level information on premium rate adjustments in his study, and finds that they are associated with a reduction in claims.

As noted, few studies attempt, or are able, to distinguish between reduced claims rates based on fewer reported injuries and the true underlying injury rate. Most simply comment on the inability to distinguish between the two. One exception is Rautiainen et al., a study on the impact among self-employed Finnish farmers of the introduction of a workers’ compensation premium discount. The study finds that the introduction of a premium discount reduced claim rates; however, rates did not decrease across all severity levels. The authors speculate that the reasons for reductions may be due, in part, to under-reporting. However, in some cases, under-reporting is not in the financial interest of the farmers. Reasons put forward to explain this reduction in claims are an over-estimation of the impact on premium discounts, confusion about the value of the premium discounts, and the potential for a good rating to affect the cost of other insurance products.

The legal and sociological literature echoes the problem that improved claim rates cannot be assumed to be equated with superior health and safety practices. Inaccuracies in reported claims prompted by experience rating may provide inaccurate statistical evidence that, in turn, misinforms the development of prevention initiatives, which may subsequently act as a measure confirming experience-rating success. A fundamental flaw of experience-rating systems is that they are based on the assumption that reported claims data accurately reflect the frequency and severity of accidents. Indeed, the reporting of low injury rates may mask unsafe workplaces and, concomitantly, increase the risk of harm to workers.

Claims/cost management
Ison outlines a number of claims management techniques resulting from experience rating. For example, some employers keep employees on the payroll post-injury and discourage reporting to the workers’ compensation authority. The worker may be brought back to work on light duties to avoid the filing of a lost-time claim. Another strategy is to force workers back to work too soon in an effort to minimise the duration of the claim. Employees are sometimes forced to return to work even when there is no modified work available. Employers may encourage workers to delay or interfere with the submission of forms so that the injured worker is forced to go on welfare. In some cases, injured workers are let go or taken back to work, only to be fired when the period of modified work ends. Claims arising from an old injury or a health condition unrelated to work exposure, in some experience-rated programmes, are excluded from a firm’s experience profile because these injuries are attributed to previous workplaces.

In some economic studies, the term ‘claims management’ is used to include both desirable and undesirable behaviours. Thomason & Pozzebon include worker rehabilitation, worker accommodation and claim appeals under the claims management umbrella. Thomason & Pozzebon carried out a telephone survey of Quebec manufacturers in order to explore the relationship between experience rating, investment in occupational safety and health, and claims management practices. Claims management techniques and accident prevention practices are regarded as substitute inputs to the process of reducing the number and cost of workers’
compensation claims. The study findings indicate that experience rating incites both improvements in occupational safety and health, and more aggressive claims management. Furthermore, there is some evidence that higher wage firms focus more on accident prevention than lower wage firms.

Many of the qualitative studies make reference to the pressure on workers not to report injuries.8–10,26,31,45–47,54,81–85 In a study of a meat-packing factory, researchers describe the underlying informal ‘if you get injured you get fired’ atmosphere.82 A study of a grain elevator facility found that workers were motivated not to report injury incidents or near misses because they would face repercussions when managers reviewed this information during annual performance evaluations.86 In a healthcare sector study, it was found that managers pressurise healthcare workers to under-report in an effort to decrease premiums and increase personal bonuses.85 The authors report that healthcare workers were often hesitant to make claims because they feared the stigma of reporting an injury, could not afford the delays in compensation pay, and perceived that reporting an injury would have a negative effect on their careers. Some papers have reported extreme claims management practices, such as those by a construction company that kept no records of occupational safety and health meetings and where members were instructed not to discuss health and safety issues by email or phone.81 In general, under-reporting may be linked to worker vulnerability, which is associated with factors such as ethnicity, class and gender.83

Claim suppression can be facilitated through the use of temporary work agencies. These agencies are considered the temporary worker’s employer and therefore they pay the insurance premiums.87 In effect, organisations that employ temporary workers outsource the risk of increased premiums. Temporary workers generally receive minimal health and safety information and on-the-job training, and are often designated to do the most undesirable and hazardous tasks on a job site. In some cases, it is difficult to identify the source of exposure if a temporary worker has been to multiple sites.87 Papadopoulos et al.88 state that the most hazardous jobs are often outsourced to temporary workers, exposing this flexible workforce to greater levels of risk than permanent workers. Furthermore, temporary workers are often reticent to make a claim because they are fearful of losing future assignments with an agency or, in some cases, because of their undeclared status, for example, as an illegal worker.

**Behaviour-based safety**

Several papers discussed safety programmes that reward employees and managers for injury-free days or months.1,5,7,41,89 Such bonus schemes are criticised for creating peer pressure to not report injuries because a single claim can cancel the reward for the whole group.9

Safety reward programmes have been described as ‘gimmicky’ because they create incentives for managers and employees to keep their reported claim rates low.9 These programmes tend to focus on shop floor behaviour rather than structural determinants of risk, such as poorly designed work environments or equipment in need of replacement. In a grain elevator facility study,86 the author notes that the mere presence of a health and safety programme created the impression of occupational safety and health compliance and may have offered some measure of protection against audits and inspections, especially when injury reports were kept to a minimum.

**Healthcare professionals influenced by insurers**

The management of claims facilitated by medical doctors, health and safety consultants and other healthcare workers is a trend observed in several of the qualitative papers. This issue is largely unaddressed in the economics literature. Ison9 argues that when doctors are employed
by experience-rated employers, their implicit role is to reduce compensation costs. Injured workers interviewed in Strunin & Boden’s study reported being pressurised to return to work and threatened with the termination of medical benefits by insurance company doctors.

D’Andrea & Meyer suggest the impact of managed care, capped fee schedules and limited provider choice in many US states has had a negative impact on the recovery of the injured worker. They report that submitted injury claims declined by half between 1992 and 2001. In the 1990s, more than half of US states amended workers’ compensation laws by introducing stricter eligibility rules, substantially reduced benefits levels, and more restrictive criteria for the acceptance of permanent disability. Under these new rules, the insured employee does not have freedom of choice when selecting healthcare providers or hospitals, while medical and rehabilitative services are increasingly restricted by stringent fee schedules. Further, employers and insurers are granted the right to challenge claims on the basis of the claimant’s overuse of the medical system.

Dew & Taupo’s study of the health and safety experiences of workers employed in a New Zealand meat packing factory also focuses on the cost management role of company physicians. Workers described company doctors administering cortisone on a regular basis to employees complaining of shoulder, wrist, back or leg pain and then sending them straight back to work. Brown & Barab, reporting on a California case, described employees as pressurised to see the employer-designated doctor and found that health and safety consultants would often accompany injured workers to the examination room, which influenced the wording and information recorded on the incident report. A case study of a ballet company explicitly recommends employers ‘entertain an expanded role for the company physician as gatekeeper for all types of treatment and therapy’ if they wanted to reduce their workers’ compensation costs.

Nurses and safety personnel interviewed in Pransky’s exploratory case study of a US manufacturing company reported pressure from management not to report injuries, while new employees were instructed not to record injuries in Occupational Safety and Health Administration logs. Company healthcare personnel were encouraged to treat injuries in-house, create plans for informal light duty, categorise injuries as non-occupational and not file lost-time claims.

**Long-latency and difficult-to-diagnose injuries and illnesses**

A particular challenge with experience rating is that it is better at addressing exposures related to acute trauma injury than properly addressing occupational diseases. Experience rating is difficult, if not impossible, to apply to slowly developing occupational illnesses, long-latency injuries, and difficult-to-diagnose injuries. As Campbell observes, financial incentives could conceivably reward an employer who maintains an excellent safety record, yet at the same time expose workers to workplace conditions that could cause problems in the future. Occupational diseases are problematic for private insurers because their long latency periods make it difficult to identify the employer responsible and cause. The long latency of occupational diseases, coupled with inadequate documentation, increases their likelihood of being disputed or diagnosed as non-work-related.

Experience rating at the level of the worker

Two themes were identified at the individual level: how experience rating can result in the aggressive interrogation and harassment of the injured worker and their claim; and how such behaviour can intensify workers’ vulnerability and adversely affect their health.
Worker vulnerability
Experience rating is regularly described as encouraging proactive claims management practices by employers and insurers. In the adversarial environment that can be created by such practices, the vulnerability of the injured worker is intensified. Employers and insurers have more resources and experience than injured workers to successfully contest claims. Ison reports that employers and insurers may press the attending physician of the injured worker for confidential medical information and, in doing so, violate the confidentiality of the physician–patient relationship. Lippel observes that workers are put on the defensive as employers and insurers are motivated to reduce injury claims and minimise premium costs. Indeed, the financial incentives of experience rating can lead to intrusive behaviours. Lippel reports on the demeaning and stigmatising effects of video and other surveillance techniques used by private investigators hired by employers, insurers or compensation boards covertly collecting evidence to challenge the claims of injured workers. Entrapment techniques used by private investigators included slashing car tyres or planting money by an injured worker’s vehicle and then photographing or videotaping the injured worker stooping. Strunin & Boden record similar discrediting treatment, with injured workers from both Florida and Wisconsin reporting being filmed, photographed and monitored by claims representatives. Workers were viewed with suspicion and some reported that insurer representatives interrogated neighbours about the injured worker’s condition.

In this environment, it is possible that many eligible workers do not pursue benefits or, if they have the option, rely on private health insurance plans or general insurance after being turned down by the workers’ compensation system. Workers can perceive that reporting injuries places them in a vulnerable position. When considering costs and benefits after a work injury, they may decide that the costs of reporting an injury (in terms of career advancement, claim processing time, loss of income) and pursuing compensation outweigh the benefits. A study of healthcare workers by Galizzi et al. also noted reporting an injury did not necessarily lead to management’s implementation of health and safety improvements, but rather employee reprimands and admonitions to be more careful in the future.

Robert-Yates study of injured workers in Australia who had applied for, or were receiving, WorkCover benefits, reports that injured workers felt stigmatised because they were assumed to be abusing the system. Indeed, Eakin et al. describe adversarial compensation relations as being characterised by the ‘discourse of abuse’, in which injured workers and their families suffer from imputations of fraudulent behaviour and overusing their rights.

The economics literature rarely addresses the impact of experience rating on the worker. One exception is Harcourt et al., who examine the relationship between experience rating and discrimination in hiring practices in New Zealand. Using data extracted from job application forms and firm variables collected from a variety of sources, a multinomial regression analysis is performed to analyse the odds of firms asking either lawful or unlawful questions about the applicant’s health or disability status. The authors find that employers facing higher premiums by class were more likely to ask both lawful and unlawful questions about disability. Also, larger employers are more likely to ask lawful questions. The authors suggest a positive relationship between experience rating and hiring discrimination. However, their analysis does not include a direct measure of experience rating; rather, organisational size is used as a proxy.

Worker health
The financial incentive of experience rating to manage claims in ways that reduce premiums for individual employers can have implications for the health of injured workers and their
families. Some authors described therapeutic damage to the injured worker, via unnecessary testing, invasive processes and examinations by multiple physicians, as an effect of the experience-rating system. Experience rating exacerbates the tendency of etiological compensation systems to be based on the medical and legal suspicion of claimant dishonesty. Experience rating can also lead to perverse practices that may harm the injured worker, such as returning the claimant to work too soon or pressurising doctors to certify that the worker is ready for light work when there is no modified work available. This can result in further physical injury, as well as psychological distress as a result of resentment towards them on the part of co-workers and managers.

Strunin & Boden found that claims management strategies exacerbated by experience rating were humiliating for workers, who felt stigmatised in their relations with compensation representatives. In addition to their injuries, workers experienced further psychological, medical and financial stress due to adversarial relations with compensation representatives and delays and terminations of benefits. Workers also felt that they had very little knowledge or control during the compensation process.

Ison argues that attributing secondary gain motives and using labels such as ‘compensation neurosis’ may undermine comprehensive investigation of the organic cause of a work disability, resulting in a misdiagnosis that may have serious health consequences. The damage caused by a diagnostic psychological overlay may also interfere with a worker’s future employment prospects. Portraying the worker’s injury as a psychological problem is stigmatising and can put them in a state of financial and emotional despair due to fear of claim rejection. As a result of employer strategies to avoid claim costs, injured workers, especially those with serious and complex claims, may experience rejection or long delays in receiving compensation. In turn, this can have profound psychological, economic and social consequences for injured workers and their families.

The popularisation of managed care programmes as a cost-cutting strategy implemented by workers’ compensation boards and the insurance industry may have adverse effects on the recovery of an injured worker because of the potential limitations on treatment options and duration. Experience rating may result in rehabilitation plans being more responsive to the financial interests of the employer rather than the health issues of the injured worker.

Discussion
This review of the literature on experience rating suggests strengths, challenges and research areas that need to be addressed. Many legal and policy papers examine experience rating in jurisdictional and cross-jurisdictional frameworks. The qualitative literature has identified several claims management strategies that may be intensified by financial incentives such as experience rating. In particular, studies from the USA, New Zealand and Australia have described several firm cost-cutting and cost-shifting techniques that warrant further investigation. Some studies have considered the impact of experience rating on injured workers through the stimulus it provides to employers, insurers, compensation boards and allied professionals to contest and scrutinise claims. It is noteworthy that recent studies on the impact of experience rating on injured workers and on claims management practices replicate some of the work carried out in the 1980s.

The search found many legal/policy analyses of experience rating and claims management studies based on data collected from workers. The more recent papers were mostly from Australia, with only a few emerging from North America since the 1980s. The topic appears
to have been dropped in North America, after experience rating became entrenched. There are a number of empirical qualitative studies that consider claims management, but few that focus directly on the topic of experience rating and, in particular, address employer incentives and how these motivate behaviour. Empirical qualitative studies investigating the politics, practices and perspectives of employers, claims management professionals, workers’ compensation boards and private insurers might add to our knowledge of experience rating.

The absence of experience rating as an explicit factor in several qualitative studies needs to be addressed. There is a tendency to consider the symptoms of experience rating without exploring their causal roots. Experience rating is rarely considered in many qualitative studies examining return to work, claims suppression, and a host of other topics related to the study of workers’ compensation insurance systems.

At times, the political and ideological dimensions of the experience-rating studies result in analyses that lack rigour. Few of the existing qualitative studies provide a comprehensive description of theory, methods and data. Both the legal/policy papers and qualitative studies that refer to experience rating frequently rely on anecdotal evidence that is in need of context. The absence of well-formulated theoretical frameworks in this research field also results in a narrow interpretation of findings. There needs to be a stronger link between the possible effects of experience rating and the employment, compensation and economic contexts surrounding occupational injuries and illness. Several of the qualitative studies do not adequately theorise the power relations, socioeconomic context and politics of experience rating.

Issues worthy of investigation in future studies include whether the absence of experience rating:

• decreases adversarial relations between employers and employees
• encourages a shift toward collective compensation based on principles of social justice
• propels employers, insurers and compensation authorities to search for alternative ways of challenging claims and reducing benefits
• fosters the development of alternative financial incentive models that have the potential to improve workplace health and safety.

Equally important is the need for future studies to consider how the presence of experience rating relates to broader economic and labour market conditions. For example, how does experience rating operate during times of high unemployment, and how does experience rating inform the growth of the temporary employment sector, supply chain management and subcontracting relations?

The simplified economic models in many of the studies do not take into account fluctuations in the business cycle, technological improvements and changes in the economy. Several studies aggregate data across jurisdictions, not attending to their varied contexts. With such variation in the data, it is difficult to conclude that injuries are being reduced by experience rating, rather than by some other omitted factor. Furthermore, limitations in the data do not allow researchers to differentiate between reductions in claim rates and true injury rates. The use of crude proxy measures for programme features in many of the studies can make it challenging to distinguish between the effects of experience rating and economies of scale. Without access to accurate and detailed injury data and programme features, it is difficult for researchers to report on the true impact of experience rating.
Conclusions
This review finds that discussions on the occupational safety and health incentives of experience rating in the peer-reviewed literature tend to be either not critical or to dismiss its effectiveness, generating a polemic that can dichotomise researchers. This suggests that research is needed that considers and acknowledges arguments on all sides of the issue, thereby avoiding dogmatism. A balanced research approach is required to provide more definitive answers as to how experience rating motivates employer and worker behaviour, and also how experience rating affects workplace health and safety.

The social and economic logic of experience rating, as well as the effects of its implementation, is an important and neglected topic in occupational safety and health research. The role of experience rating in transforming collective responsibility for occupational health into deregulated, individualised responses is an important issue for future discussions of workplace health policy and practice. The majority of legal and policy papers, sociological critiques and empirical studies reviewed here suggest that experience rating in no-fault workers’ compensation schemes exacerbates power relation differences in workplaces. Furthermore, the experience-rating literature does not adequately address the impact of financial incentives in workers’ compensation systems on the lives of injured workers and their families.

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