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**THE ECONOMIC COSTS OF**

**WORKPLACE INJURIES**

**TO MANITOBA WORKERS AND THEIR CARERS**

**VOLUME I**

**MAIN REPORT**

**PRELIMINARY ESTIMATES**

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# Glossary

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Carer | A *carer* provides emotional, financial, and physical assistance to an injured worker without charge, by virtue of a friendship or familial relationship. See <http://www.carers.org>.  |
| Caregiver | *Caregivers* are individuals who care for injured, sick, or disabled persons. The term “caregiver” encompasses both unpaid carers and paid professionals. This research, however, only involved unpaid carers. |
| Contingent valuation  | This is a survey technique where respondents place a financial value on an intangible commodity or service. Commonly used to value environmental states, it has found increased use to value hypothetical health outcomes. |
| Direct costs | *Direct costs* accrue as the direct result of the injury and include loss of earnings and costs of medical care. In principle, these comprise financial and non-financial (economic) costs. |
| Dyad | This is a matched pair comprised of a primary respondent and their identified carer (defined in this research as a friend/family member who assisted in the recovery, although not necessarily while cohabiting with the worker). The injured workers and carers interviewed for the dyads did not participate in the large-sample survey. |
| Dyadic interviews | An interview technique designed to solicit information simultaneously from the injured worker and their carer. |
| Indirect costs | *Indirect costs* include the costs of training replacements, injury investigation, and the loss of the employer’s positive reputation. |
| Intangible costs | *Intangible costs* are non-time and non-financial costs associated with the accident and its aftermath. Intangible costs also include the worker and his/her family. |
| Primary respondent | This is the injured worker, or claimant for time loss and rehabilitation benefits. Excluded are claimants for occupational disease. An injured worker became a *primary respondent* by virtue of their agreement to participate in the telephone survey. |
| Primary respondent 1 | These *primary respondents* indicated that they had received post-injury support from friends or family members (carers). In this case, the carers did not need to cohabit with the primary respondents. |
| Primary respondent 2 | This is a subset of the *primary respondent* *1* group, where the carers cohabited with the injured workers. |
| Potential respondents | These are workers for which WCB accepted a time loss claim for injuries reported between April 1, 2010 and June 30, 2014. Excluded from this list were fatalities, those suffering occupational disease, and those suffering mental illnesses — those who, in the judgment of the WCB, may be disturbed by the research. |
| Secondary respondent  | A carer living in the home, who assisted the primary respondent in recovering from the workplace injury. The primary respondent needed to identify this person, who also needed to reside in the home of the primary respondent. Injured workers also identified family members and friends who assisted them; however, to manage survey logistics, secondary respondents needed to live with the primary respondents. A carer became a secondary respondent when they participated in a telephone survey.  |
| Willingness to pay (WTP) | This is a financial value that reflects the respondents’ willingness to pay for a good or service.  |
| Workplace injury | Any accident that occurs in the workplace of employers covered by the *Workers Compensation Act* that resulted in one or more days of compensated time loss. |

# Executive summary

**The effects of workplace injuries persist and spread**

Workplace injuries are traumatic for both employers and employees. Unlike employers — whose losses are limited to the workday and possibly the costs of training a replacement to fill in for the employee during their absence — the losses experienced by the workers are 24/7 for the duration of their injury and its aftermath. The injury affects all aspects of the worker’s life, beyond their work life; however, conventional calculations fail to capture or measure these indirect losses.

**Purpose of the study**

This study

*“examines the full cost of workplace accidents, occupational illness, and death in Manitoba over the last 5 years. Using information on fatalities, time lost from work, duration of the absence, and occupational data for each “case,” we will develop a lifetime cost to the individual, employer, and society of accidence, illness, and death.”*

Specifically, the *research is an attempt to estimate the non-economic and indirect economic costs associated with workplace accidents. We believe the research will add the following important innovations to the existing literature:*

* *By including a “significant other” (secondary respondent) in the analysis, we identify a range of family and personal costs that may not be reported by the injured worker (primary respondent). Certainly, WCB administrative data do not capture these costs. The literature only alludes to these costs and this represents the first attempt to quantify them.*
* *In addition to quantitative data (surveys of primary and secondary respondents linked to administrative data), we undertake qualitative research using dyadic interviews (interviews with the primary and secondary respondents). These interviews form the basis of case studies that illustrate the range of indirect non-economic costs experienced by injured workers and their families.*
* *We use survey-based (telephone) contingent valuation methods to estimate the non-economic value of change in the quality of life triggered by the workplace accident, resulting injuries, and their aftermath.*
* *We link primary data (survey information) with administrative data to gain a more complete picture of the economic costs of workplace accidents.*

This research is not an exercise in accounting. Economic costs track a wider range of resource utilization, as well as valuing intangibles such as quality of life losses.

**The study introduces two innovations to the analysis of the costs of injury to workers**

This study focusses on the non-financial economic costs of workplace injuries as experienced by workers and their carers. This study brings the following two new perspectives to the significant literature on the costs of workplace injuries:

1. It attempts to measure indirect non-financial costs of workplace injuries in equivalent monetary terms. It does this by having injured workers place a value on the opportunity to avoid the injury and its aftermath entirely.
2. The research also introduces the carer, who typically incurs direct and indirect costs associated with supporting the injured worker. For every serious workplace injury, a dyad (pair) exists, comprised of the injured worker (who we define as the primary respondent) and a significant “other” (defined as the secondary respondent) who assisted the worker in their recovery.

**How we undertook the research**

This study uses a large-sample survey linked to WCB administrative data to estimate the economic cost of an injury. Such estimates sum up the financial costs of the injury, but do not place a value on the non-economic costs of the injury. Based on a review of the literature, we show that the application of contingent valuation methods to estimate non-economic costs have grown rapidly since their inception in environmental economics. The application of this technique to estimate the non-financial costs of the workplace injury is believed to be a first in the occupational injury literature.

We used three methods to understand the costs of workplace injury:

1. A review of the literature offered context for the entire study. This included two recent Canadian studies from British Columbia and Quebec that offer insights into the costs of workplace accidents. These studies complement the work presented in this report.
2. We collected the stories of 16 different accidents from workers who had total compensation claims in excess of $10,000. Using a technique known as dyadic interviewing, we simultaneously collected accounts of the injury and its aftermath from the worker and a carer who assisted in the recovery process. Typically, this was a family member or friend. Compared to standard interviewing, dyadic interviewing can elicit more accurate and complete accounts of important and traumatic events in a person’s life.
3. A survey of workers and their carers collected more details on the outcomes and aftermath of the accident and obtained estimates of the non-financial economic costs of the injury.

**Workplace accidents have complex and individual outcomes**

Individual stories of injury and recovery reveal multi-dimensional experiences of injured workers and their carers. Each story reveals that the typical workplace injury expresses itself in several psychological, social, and economic effects or themes. Each worker and their informal support system, in this research represented by a single carer, experience several of these effects or themes.

In the dyadic interviews, workers and their carers mentioned the following themes that described the injury and its aftermath:

1. Work interruption was the most important theme, not because everyone mentioned it, but because it clearly contributes to each of the other dimensions. It is the start of a chain of consequences. Aside from limiting financial and economic outcomes, many workers draw much of their social and psychological welfare from the world of work. For some, the work interruption is temporary; however, even this may result in physical and mental outcomes that could mean transferring to other occupations or withdrawing from the world of work entirely.
2. Financial and economic impacts are the most obvious consequence of the injury, but for many workers, the attenuation of economic well-being contributes to some or all of the remaining effects.
3. Social isolation emerges due to career interruption and because physical, mental, and emotional outcomes limit social and recreational activities. The injury itself may limit activities through which the worker previously formed relationships and drew self-worth by contributing to society.
4. Workers spoke of stalling in their personal and professional growth. This may relate to the interruption in work, but it might have more to do with the fact that they can no longer work at all, or that their new occupations do not offer the same opportunities.
5. Finally, all workers and their carers spoke of the impacts that the injury and its consequences have had on their emotional well-being. This includes changes to intimate relationships, depression that alters family and social interaction, and friendships. Depression is a very common outcome, often requiring counselling and in some cases, medication.

The stories of the dyad respondents suggest that the casual chain appearing in Figure 1 presents a high-level hypothesized view of the sequelae or outcomes of the workplace injury. At the centre stands the injury itself, from which three main effects occur in terms of financial impacts (1), stalled career (2), and reduced recreational activities (3). A stalled career attenuates income (4), which, combined with the physical limitations of the injury, truncates recreational/leisure activities (5). Loss of emotional well-being, which the dyads revealed as a very common outcome experienced by injured workers, is usually not a direct outcome of the injury, but arises because careers are interrupted (6), the lack of money provokes anxiety (7), and the joy of life is extinguished as workers are unable to participate in their avocations (8). Finally, personal relationships suffer because of depression (10), social circles narrow as common activities disappear from the workers’ itineraries (9), and financial impacts wear on the family (11).



**Figure 1: The sequelae of a workplace injury**

**A framework for estimating the full economic costs of workplace accidents**

This study developed a comprehensive framework for the economic costs of accidents. It starts by using the accident as the unit of analysis and tracing the costs of the accident to:

1. the worker;
2. the carer (and family);
3. the employer; and
4. society (an aggregation of 1, 2, and 3).

This paper develops a “bottom-up” approach where the direct, indirect, and intangible costs experienced by workers, carers, and employers for each accident sum to the social costs. It is noteworthy that WCB transactions are not part of the economic costs of accidents. WCB presents a “pass-through” mechanism that transfers employer and employee premiums into benefits received by injured workers.

**Workers and their carers can place a value on the cost of recovery time**

Most workers with time loss claims are off work for less than 15 days. The WCB support system works well for these workers, who apparently suffer no lasting effects.

In terms of financial compensation, for those workers we surveyed (n=2,310), WCB paid an average of $2,710 for medical expenses (median=$806) and an average of $3,575 in total compensation (median=$784).

Workers reported a range of physical difficulties after the injury.

Similarly, as shown in the table below, workers reported a range of emotional/psychological impacts.

|  |
| --- |
| Observed emotional/psychological state of the workers (perception of primary respondents) |
| **Response** | **Frequency** | **Percent (yes)** |
| Upsetting thoughts/memories of the injury | 654 | 28.3% |
| Upsetting dreams about the injury | 277 | 12.0% |
| Difficulty talking about the injury with others | 234 | 10.1% |
| Difficulty falling asleep or staying asleep | 875 | 37.9% |
| Unusual irritability or anger | 565 | 24.5% |
| Unwanted weight gain or weight loss | 524 | 22.7% |
| Upsetting feelings that your role in your family has changed | 343 | 14.8% |
| A strained relationship with [partner or name ofsecondary respondent] | 234 | 10.1% |
| Note: Totals sum to more than 100% because respondents could offer more than one response. |

Carers performed a range of tasks to support the injured worker.

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| --- |
| Support for everyday tasks |
| **Response** | **Frequency** | **Percent** |
| Household care, including things like cooking, cleaning, and housework | 350 | 69% |
| Lifting heavy objects around the house or reaching for higher objects | 387 | 76% |
| Performing maintenance on the home, such as painting, carpentry, and general repairs | 213 | 42% |
| Performing yard maintenance, such as mowing the lawn, gardening, and shovelling snow | 322 | 63% |
| Driving to social events  | 257 | 50% |
| Driving to get groceries, or carrying more groceries | 365 | 72% |
| Taking care of children | 148 | 29% |
| Taking care of pets | 199 | 39% |
| Other non-work-related tasks that we have not discussed  | 27 | 5% |
| Note: Respondents could provide more than one answer; totals may sum to more than 100%. |

We estimated the non-financial economic costs of the injury from the worker and carer perspective by asking them their willingness to pay (WTP) for “a quick and painless treatment that would allow the injured worker to recover immediately and avoid all of the necessary recovery time actually required for the injury. With this treatment, you would be able to avoid all the changes that occurred in your life as a result of the injury.” We referenced this payment to a percentage of the respondent’s weekly income, which we presented to the respondent again.

The WTP sum for primary respondents for an annual payment is $101,251 for this “insurance premium,” which — assuming this is a random selection of 2,310 from the administrative database (n=54,481) — totals approximately $2,430,000 annually or $24,300,000 (non-discounted) over 10 years. This forms the estimate of the non-financial, economic costs of workplace injuries over the study period in terms of recovery time from the injury. We limited the estimate to this specific element of injury cost to focus the respondents on a specific and uniform aspect of the costs of the injury.

Several key insights flowed from this approach.

* 1. About half of the primary respondents were not prepared to pay anything to avoid accidents. This aligns with the fact that, for 60% of primary respondents, the injuries were relatively transitory, with limited aftermath and an apparently complete recovery.
	2. Carers seem to value the recovery time more than injured workers. This may be an anomaly and requires further investigation.
	3. Preliminary analysis of the factors that drive the valuation of recovery time by injured workers reveals that before-the-accident income and compensation days (a measure of accident severity) both explain only a fraction of the variation in WTP. Again, the complexity of individual injury outcomes, as revealed in the dyads, underlines the complex bases for valuations of recovery time from the accident.

**Implications of this research**

This research has several broad implications:

1. Most workers recover from their injuries. A large number suffer some lasting effects and a few experience serious lifelong trauma because of the injury.
2. Research on the costs of workplace accidents typically use accounting information organized around conventional categories such as wage replacement, medical expenses, retraining, and rehabilitation. This research analyzes costs resulting from the accident and records a range of intangible and indirect costs. This reorientation supports the collection of the costs experienced during the recovery that WCB administrative data may not include. These include direct and indirect (tangible and intangible) costs experienced by the injured worker, their families, and their carers.
3. For this research, correlating injury severity and other worker attributes with the valuation of avoiding the injury — the core of our method to assess the full economic costs of the injury — is challenging. Intangible, direct, unobservable, and unmeasurable factors significantly influence a worker’s subjective assessment of the injury and its continued aftermath. Our use of contingent valuation shows one way to develop “money” measures for these intangible costs.
4. Traditionally, studies of the costs of accidents have focussed on wage loss replacement and support rehabilitation based on so-called objective medical assessment. The goal was to restore the worker as much as possible to return to productive function. The dyad stories reveal complex, persistent, and enduring losses for those experiencing serious injuries; these injuries extend the concept of rehabilitation into entirely new domains. The challenge of restoring such severely injured workers even part-way to their previous levels of function may be more complex than was previously understood.
5. Carers and the families of injured workers experience a range of harms and losses. WCB does not record these costs of accidents, but they have a wide social and economic impact.

**Policy opportunities**

This research has just scratched the surface of the economic costs of workplace injuries. WCB could increase the evidence base for policy development in the following ways:

1. A workplace injury involves workers and their groups of friends/families who form a network of carers. Carers are an integral element in the recovery process and each injury is comprised of both the worker and the carers. As the injury severity increases, the support from carers becomes more important. Very little is known about the attributes of the work, family circumstances, and the network of caring that could support the recovery of the worker. Like the details of the accident, some of this information may be collected in the initial interviews that determine eligibility.

WCB should consider bringing the “carer” formally into the support circle for injuries that are more serious. Carers are instrumental in the recovery of the injured worker and formally acknowledging their inclusion in the recovery process may hasten the worker’s return to work.

1. Benefit-cost estimates should include estimates of the economic valuation of pain, career interruption, and so on, to assess the value for money of injury prevention. This research has demonstrated the feasibility of contingent valuation techniques on a specific element of the injury, namely recovery time. These techniques apply to other aspects of the injury to arrive at a more complete valuation of the economic cost of injuries to workers and their carers.
2. The workplace injury triggers complex sequelae. Workers may encounter different outcomes, in different sequences, and with different intensities, despite the same apparent physical manifestation. Applying medically assessed and administratively derived rules to award financial support may appear equitable, but this research has shown that each injury is unique. The increased tailoring of support, especially non-monetary compensation in the form of emotional and psychological services, could well reduce the recovery time and generate value for money.
3. Regular follow-up with workers who have work-time loss in excess of 20 days’ (one month’s) work would increase information on direct and indirect costs, treatment experiences, and career recovery. Such follow-up should be continuous and made at intervals of one, three, and five years after the accident.
4. A workplace accident triggers injury, and yet with the exception of the date, the administrative information maintained by the WCB often contains no detail on the context of the injury about the events that were life-changing for the workers. Increasingly, the details about the circumstances of workplace accidents support greater insights into preventing workplace injuries.
5. Follow-up with employers after each serious accident is important. In addition to verifying changes to the workplace, procedures (and other actions such follow-up) would allow WCB to track employer costs of accidents, adding an important and currently missing component of the economic costs of accidents.
6. The information on the worker lapses once the worker no longer receives compensation. Yet this research shows that, for many, the aftermath of the injury continues indefinitely; for a few, it continues for the rest of their lives. Two opportunities exist for maintaining extended information on the injured worker:
	1. Joining the administrative information on workplace injuries with Manitoba Health data could provide extensive information in longer-term outcomes, as expressed by the follow-up medical treatments needed by the worker. The data repository managed by the Manitoba Centre for Health Policy (MCHP) could retain such a joined dataset. MCHP manages this information in a very controlled environment that assures complete confidentiality.
	2. Periodic surveys of injured workers and the employer offer important insight into factors influencing recovery. These surveys are cost-effective and insightful and can create the foundation for improved policies for injured workers. Focussing on time loss over 10 or 20 days would represent a cost-effective strategy.

# Introduction

Workplace injuries are traumatic for employers and employees. The employer loses the services of a worker and incurs replacement and retraining costs with consequent productivity losses. These losses will vary with the extent of the injury and skill/experience level of the worker. The worker incurs the direct costs comprising employment income losses and health expenditures, much of which may be mitigated by workers’ compensation and provincial health insurance. However, unlike employers whose losses are limited to the workday and possibly the costs of training a replacement to fill in for the employee for the duration of their absence, the losses experienced by the worker are 24/7 for the duration of the injury and its aftermath. The injury affects all aspects of a worker’s life, beyond their work life, but conventional calculations fail to capture or measure these indirect losses.

This study focusses on the non-financial economic costs of workplace injuries as experienced by workers and their carers. This study brings the following two new perspectives to the significant literature on the costs of workplace injuries:

1. It attempts to measure indirect non-financial costs of workplace injuries in equivalent monetary terms. It does this by having injured workers place a value on purchasing the opportunity to avoid the injury and its aftermath entirely.
2. The research also introduces the carer, who typically also incurs direct and indirect costs associated with supporting the injured worker. For every serious workplace injury, a dyad (pair) exists comprising the injured worker (who we defined as the primary respondent) and a significant “other” (defined as the secondary respondent) who assisted the worker in their recovery.

Specifically, our methodology adds the following dimensions to the existing literature:

1. By including a “significant other,” or carer, in the analysis, we identify a range of family and personal costs that may not be reported by the injured worker (primary respondent).
2. We linked the survey information to administrative data to reveal important costs of workplace injuries and to understand the factors involved in how workers place an economic cost on their injury and its aftermath. This reduces respondent burden and increases the variables available for analysis.
3. We used a sample survey to collect attitudes and behaviours not captured by the administrative information held by WCB on each injury. Such a survey-based methodology includes both a primary respondent (injured worker) and a secondary respondent who helped the injured worker to recover and/or shared in the consequences of the injury.
4. In addition to quantitative data (surveys of injured workers and their carers), we undertook qualitative research using dyadic interviews (interviews with injured workers and their carers). These interviews offered deeper insight into the nature and impact of more serious injuries. Since they occurred before the large-sample survey, they calibrate the survey questionnaires and their analysis.
5. We used survey-based (telephone) contingent valuation methods to place a monetary estimate of the loss to the worker’s quality of life that may have been triggered by the workplace injury. We asked both injured workers and their carers to place a financial value on the non-economic losses attributable to the workplace injury. The theoretical framework rests on economic theory, augmented by qualitative research (the use of dyads to increase insight into important elements of full cost) and the use of “stated choice” methods (contingent valuation) to calculate “non-economic” value costs and losses.

# Study methodology — synopsis

This study uses a large-sample survey linked to WCB administrative data to estimate the economic cost of an injury. Such estimates sum up the financial costs of the injury, but do not place a value on the non-economic costs of the injury. Based on a literature review, the application of contingent valuation methods to estimate non-economic costs has grown rapidly since their inception in environmental economics. As the literature in the next section demonstrates, this approach is finding wider acceptance in health economics.

The study method is comprehensive and designed to collect reliable and valid data on what were potentially traumatic events in the lives of workers and their families. It comprises the following steps:

1. A literature review presents the context for measuring the costs of workplace injuries. The literature presents these costs in three general settings:
2. the costs to the economy overall, which is the most developed — dating from the 1950s — and which created the macro-economic rationale for workers’ compensation programs;
3. the economic losses experienced by employers and employees that refined the rationale from a micro-economic perspective; and
4. recently, the literature has recognized the importance of the non-economic costs of workplace injuries for employers and, most importantly, employees.
5. WCB administrative data development is central to this research. This information supported the sample development for the survey of injured workers and their carers, and contributed key variables to the classification of workers, their injuries, and the nature of the costs.
6. Quantitative information cannot communicate the nature of the injury and its sequelae. Qualitative analysis, in the form of the “stories” of the injuries and their consequences as told by injured workers and their carers/support partners, contributes two insights:
7. First, these stories present the context of the injury and its aftermath, revealing complex and highly individualistic impacts. These stories produced a compelling perspective that deepens the understanding of the workplace injury.
8. Second, this information helped to frame the research and supported the survey questionnaire design.
9. The survey of injured workers and their carers involved a carefully controlled process of ethical review, sampling, respondent contact, and interviewing and analysis.
10. Communication with workers and their significant others required careful design and execution. Workplace injuries are traumatic, and while most incidents resolve relatively quickly to the satisfaction of all parties, for some workers the process can be fraught with tension. Further, all employers and employees have the right to ensure that WCB handles their information properly. Researchers worked very closely with WCB to ensure all potential respondents accepted the validity of the research, received full information, and provided informed consent.
11. Sampling involved the systematic selection of potential respondents from the WCB administrative data.
12. Questionnaire development and pretesting set the stage for data collection. In this case, we created two questionnaires, to be completed by each of the primary and secondary respondents.
13. Interviewing occurred in several waves over a three-month period.
14. The resulting survey data are complex, requiring linking with the administrative data and internal reconciliation to resolve inconsistencies. Special protocols ensured that PRA as a third party never linked respondent identities with confidential administrative data.
15. Software — including Excel, SPSS, and STATA — supported the analysis of the collected information.

The final stage in the methodology involved the preparation of reports at various levels. The outline for the report appears below.

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| **Table 1: Outline of the report**  |
| **Section** | **Description** | **Page** |
| **3.0** | Literature review on costs of workplace injury | 3 |
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# Literature review on costs of workplace injury

Significant literature exists on estimating the costs of workplace injuries. Representative studies either treat the costs associated with injuries in a specific sector (Camm,T. & Girard-Dwyer, J, 2005) or attempt to present an economy-wide measure of costs (Leigh, J-P., 2011). Conceptually, the idea of economic costs seems straightforward: they are the lost wages and compensation paid. In fact, the concepts are more complex, with elements that are not mutually exclusive. As a start, it is important to distinguish between the financial and the economic costs.

## Conceptual foundation to the economic cost of injuries

Workplace injuries are commonly identified as having direct and indirect costs (OSHA, n.d. and American Society of Safety Engineers, n.d.):

* *Direct costs* accrue as the direct result of the injury and include the loss of earnings and the cost of medical care. In principle, these comprise the financial and non-financial (economic) costs.
* *Indirect costs* include the costs of training replacements, injury investigation, and the loss of the employer’s positive reputation.

To consider this in more detail, the following four points emerge when considering these ideas in relation to the costs of workplace injuries:

1. For the worker, the direct costs include net wage loss (wage at the time of the injury less the compensation while off work), as well as any out-of-pocket expenses not covered by WCB or health care plans (public or private). Indirect costs are longer-term costs due to the result of the injury, such as any reduction in wage in future employment because the worker has lost some capacity. For those permanently disabled, or who lose their lives, this amounts to the present value of future earnings plus the costs of care.
2. For the employer, the direct costs include (but are not limited to) the loss of productivity when skilled/experienced workers are not available, the cost of retraining replacements, retraining returning workers to new positions, and the costs of workplace modification. As an aside, the interplay between the cost of compensating injured workers and the cost of modifying workplaces to be safer is an important issue. In theory, investing in workplace safety to eliminate injuries could effectively eliminate the need to compensate workers.
3. For the WCB, the direct cost of workplace injuries includes the wage compensation paid, as well as medical/rehabilitation expenses.
4. Finally, for society, the direct cost of workplace injuries is the loss of productivity, approximated by the net wage reduction experienced by employees, the loss of employees available to the labour force in the future, the impacts on carers as well as other family members, and the net costs of using less-skilled workers.

This enumeration is neither exhaustive, nor are the points mutually exclusive. For example, losses to employers and losses to workers would constitute a large share of the costs to society. Also, the lost wages for the workers approximate the cost of worker replacement, if we ignore the productivity losses associated with the employers needing to train new workers, or use less-skilled temporary workers pending the return of the injured workers.

## The costs of workplace injury — workers’ perspective

Research into the incidence of workplace injuries and fatalities, as well as the estimates of associated costs, varies greatly by scope and intent. Some studies attempt to estimate a limited number of costs, often focussing only on lost wages and medical costs. Other research expands the analysis to other types of costs for injured workers, their families, employers, and society as a whole. In addition, some researchers estimate costs for entire countries, whereas others focus on smaller regions (provinces/states). The following are five representative examples of the research:

1. According to some researchers, work-related fatalities in Canada from 1993 to 2005 are high (Sharpe & Hardt, 2006). Although they did not estimate costs, they found that there were 758 reported workplace fatalities in 1993, and 1,097 reported workplace fatalities in 2005 — an increase of 45%. The results also showed that, in 2003, Canada had the fifth-highest workplace fatality rate out of 29 OECD countries, surpassed only by Portugal, Turkey, Korea, and Mexico.
2. The national economic costs of work-related injuries, illnesses, and fatalities in the United States in 2007 may be estimated using publicly available data (Leigh, J-P., 2011). The major data sources for the study included the U.S. Bureau of Labor Statistics (BLS), the Centres for Disease Control and Prevention, the National Council on Compensation Insurance, and the Healthcare Cost and Utilization Project. To calculate total costs, the author multiplied the number of cases by the average cost per case.
3. An example of a specific sector study may be found in “Occupational Fatalities, Injuries, Illnesses, and Related Economic Loss in the Wholesale and Retail Trade Sector” (Anderson, Schulte, Sestito, Linn, & Nguyen, 2010), the authors of which studied the economic costs of work-related injuries, illnesses, and fatalities in the wholesale and retail trade (WRT) sector of the United States. They obtained statistics on injuries, illnesses, and fatalities from the U.S. BLS, and were able to compare the statistics of the WRT sector to a baseline (the private sector as a whole). They obtained cost estimates from the literature.
4. Boden and Galizzi (1999) investigated the lost wages of work-related injuries and illnesses in Wisconsin. Their approach involved analyzing individual wage and injury/illness data and aggregating the overall lost earnings. Using a regression model, they compared post-injury wages across different groups of injured workers.
5. Corso (2006) examined the national incidence and lifetime costs (in this case, medical costs and productivity losses) of injuries in the United States. The researchers combined various datasets to calculate medical and productivity costs. By multiplying these by the incidence rates of various injuries, and discounting to present value, they calculated the total lifetime costs of injuries in the United States in 2000. They found that, in 2000, more than 50 million Americans sustained an injury that was medically treated, resulting in $80 billion in medical treatment costs and $326 billion in lost productivity costs ($406 billion overall lifetime cost).

## Two recent Canadian studies

Two recent Canadian studies represent important contributions to the literature and offer an important context for the work reported in this study.

1. Guzman, Jaime (2012) Non-wage losses associated with occupational injury among healthcare workers *WorkSafeBC,* June Research Study RS2008-OG05.

This study measured the non-wage losses associated with an injury suffered by health care workers in BC. Non-wage losses are defined as a lost-time or medical aid claim, plus weekly out-of-pocket costs not compensated by the insurer or government. In addition, the study attempted to measure the value of time lost from work, the value of time donated by those assisting the injured workers, and a valuation of the injury impact on their life. The study attempted to measure non-wage losses by the nature of the injury.

The methodology used an inception cohort design, in which the workers reporting a musculoskeletal injury completed periodic surveys that recorded various costs associated with the injury and recovery.

The study found that non-wage economic losses averaged $3,131 during the first three weeks, or about 60% of the lost wages. Out-of-pocket wages averaged $338 per injury. The study used a survey of 146 workers who had suffered a musculoskeletal injury between October 2009 and January 2011. The study estimated the loss in quality adjusted life years was estimated to be 7.9 years per injury.

The study recommends that non-wage losses be included in the compensation awarded to injured workers. It also suggests that the benefit-cost ratios of accident/injury prevention programs would become more favourable if these non-wage losses were included.

1. Lebeau, Martin, Duguy,, Patrice; Boucher, Alexandre(2014)The Costs of Occupational Injuries in Québec, 2005–2007 *IRSST,* Report R-843.

This study used administrative and Statistics Canada information to estimate the costs of occupational injuries in Quebec over the period 2005–07. The authors estimate the financial costs for employers, workers, and the community within the following framework, which bears some resemblance to Table 2.

|  |  |  |  |
| --- | --- | --- | --- |
| **Cost** | **Employer** | **Workers** | **Community** |
| **Medical costs** | * Medical aid costs
* Rehabilitation costs
 | N/A | N/A |
| **Funeral costs** | * Compensated funeral costs
 | * Funeral costs net of benefits
 | * QPP death benefits
 |
| **Salary costs** | * Lost pay on day of injury
 | N/A | N/A |
| **Productivity losses** | * Lost wages
* Employee benefits
* Household work paid to the injured worker
 | * Lost wages compensation
* Lost benefits
* Value of unperformed household work
 | * Uncollected income taxes
* Benefits assumed by community
 |
| **Administrative costs** | * Recruitment and training
 | N/A | N/A |
| **Human cost** | * Bodily injury indemnity
 | * Pain, anxiety, stress, loss of enjoyment of life
 | N/A |

This study finds that occupational injury costs in Quebec are high, at about $4.62 billion

for 2005–07. Of this amount, $1.78 billion is due to financial costs and $2.84 billion is due to human costs. The average injury cost is about $38,000. The authors note that the study excludes those costs for which administrative information does not exist. Most pertinent is the exclusion of human costs of pain and suffering, as well as the loss of the enjoyment of life.

These studies offer much more detail on the costs borne by employers and society, which are beyond the scope of the research reported here. To reiterate, the main goals are to bring the impact of the carer into the costs of injuries and to find expression for the intangible costs associated with the injury.

# A revised framework for estimating the economic costs of workplace accidents

One final distinction is important: the difference between financial and economic costs. This often appears as the distinction between the “economic” and the “non-economic,” but given the intent of this research study, the terms “financial” and “economic” are more accurate. One initial classification appears in Table 2, where the financial and economic costs may be classified into direct and indirect costs. This breakdown reflects common practice in many studies.

|  |
| --- |
| **Table 2: Conceptual framework for the costs of workplace injuries**  |
|  | **Direct (immediate) costs****WCB + employees**  | **Indirect (longer-term) costs****Employers + society** |
| **Financial costs** | **WCB**Workers’ compensationMedical costs: emergency services, treatment, rehabilitation, and ongoing careLawsuit costs for employers (could be lumped into a category for general legal fees, with the legal costs for workers)Administrative fees (compensation qualification, administration, legal, etc.)**Employees** Income lossReduced savings/assetsOut-of-pocket and other injury-related costs | **Employers**Replacement trainingReplacement worker costsRetraining of returning workersWorkplace safety enhancementsCapital losses (damage as a consequence of the injury)Work interruption and productivity lossesEmployee moraleCustomer relations and firm reputational lossesLost wages/productivity for carersCosts of home modificationsCosts of disability support tools (crutches, wheelchairs, computers, etc.)**Government/society (social safety net)**Social assistance (income replacement/welfare) programsDisability programs and pensionsVocational rehabilitation |
| **Economic (full) costs** | These include the financial costs above plus intangible impacts such as:* Reduced quality of life for injured workers
* Stress, depression, trauma, other mental/emotional costs for workers
* Pain and suffering
* Reduced confidence/self-esteem
* Job dissatisfaction
* Reduced trust in management
 | These include the financial costs above plus intangible impacts for friends and family such as:* Social services (in-kind services for people with workplace injury-induced disabilities) expenditures
* Reduced quality of life for carers
* Stress, depression, other mental/emotional costs for carers
* Foregone education/work for carers
 |

From this framework, financial costs are those easily expressed in monetary terms: most commonly foregone wages (given absence from work), and medical costs needed to treat and rehabilitate the worker. Other financial costs include legal costs, retraining costs, replacement of lost wages, and social services costs. Economic costs are financial costs plus a range of tangible and intangible outcomes not readily expressed in monetary terms.

Researchers have long recognized that economic costs, especially the intangible costs experienced by the injured worker and their family, are potentially the most important consequences of workplace injuries. Key writings — such as Dembe (2001), Boden and Galizzi (2001), and Revile et al (2001) —have raised this perspective. More recent work appears in Pouliakis and Theodossiou (2013).

Referring to Table 2, the cost of workplace injuries for the economy would represent all direct and indirect costs in this framework.

In fact, the standard classification of costs presents important conceptual challenges, all centering on the concept of economic costs.

## WCB transactions

WCB reports on the direct financial costs for all payments in a fiscal year.

|  |
| --- |
| **Table 3: WCB financial transactions associated with the sampled accidents** |
| **Expenditures** | **Amount** |
| Wage loss  | $ |
| Impairment awards | $ |
| Medical costs | $ |
| * Emergency services
 | $ |
| * Treatment
 | $ |
| * Rehabilitation
 | $ |
| * Ongoing care
 | $ |
| Administrative fees  | $ |
| **Revenues** | $ |
| Premiums | $ |
| Other (interest, rebates…) | $ |

WCB transactions are *not* part of the economic costs of workplace accidents. Rather, WCB transforms employer and employee premiums into wage compensation and other services offered to support injured workers. Including WCB transactions and employer/employee costs risks double counting the direct costs of accidents.

## Employer costs

Theoretically, the economic costs borne by employers for a specific accident are the productivity losses when an established employee becomes unavailable for work — the more skilled the employee, the greater the economy loss. One rough estimate of minimum costs would be the time lost multiplied by the wage paid, assuming that employees receive what they are worth (i.e., what they contribute to the net revenues) and that the employer deploys them with maximum efficiency. This calculation excludes the costs of replacement and other adjustments the employer may need to make, and therefore does not reflect the full economic costs of the accident to the employer. Table 4 presents the direct costs.

|  |
| --- |
| **Table 4: Employer losses arising from an accident** |
| **DIRECT FINANCIAL COSTS** | **INDIRECT COSTS** |
| *WCB premiums (allocated to the injured worker)* | $ | Tangible * Management costs
	+ Employee turnover
	+ Hiring difficulty
	+ Increased oversight by external agencies

Intangible * Customer relations and reputational losses (e.g., ISO-certified consumers who hesitate in doing business for fear of losing accreditation)
 | $ |
| Replacement training | $ |
| Replacement worker costs (hiring and training) | $ |
| Retraining returning workers | $ |
| Workplace safety enhancements (building and equipment expenditures, changed safety procedures, training expenditures, etc.) | $ |
| Capital losses (damage as a consequence of the injury) | $ |
| Work interruption losses | $ |
| Productivity losses associated with engaging less-skilled replacement workers | $ |
| Lost productivity for employers of carers | $ |

Ideally, after each accident, WCB would interview employers to gather these costs. Using the thresholds of accident seriousness, such as 10 and 20 days of time loss, would focus on the more serious, and therefore more costly, accidents. The bottom-up approach involves collecting employer costs associated with individual accidents and summing across all accidents within a specified time.

The one challenge is to apportion the totality of premiums paid by each employer to individual accidents. The premiums are not directly a cost of the accidents, since they represent an insurance premium and are not attributable to individual employees who are involved in accidents. They represent a collective cost. If no accidents ever occurred, no rationale would exist for the WCB and there would be no economic cost of accidents. That is why WCB premiums are in italics and should not be included.

Within the indirect costs, one can discern tangible and intangible costs. Some costs, such as grievances and dealing with accreditation, involve management time and can be valued (at least in principle). Damaged customer relations result in reduced sales, but attributing this to accidents creates many measurement challenges.

The upshot is that the costs in Table 4 require post-accident follow-up through a survey or a monitoring program.

## Employee costs

Employees’ direct losses are straightforward, with some challenges in measuring indirect and intangible costs. Conceptually, the intangible costs are separable; however, measurement of the individual components is not possible, and is limited by the capacity of individuals to separate these concepts.

|  |
| --- |
| **Table 5: Employee losses arising from an accident** |
| **DIRECT FINANCIAL COSTS** | **INDIRECT COSTS** |
| Income loss | $ | Tangible* Time loss in retraining

Intangible* Reduced quality of life for injured workers
* Stress, depression, trauma, other mental/emotional costs for workers
* Pain and suffering
* Reduced confidence/self-esteem
* Job dissatisfaction and reduced trust in management
* Foregone education/work/career
* Foregone leisure/recreation
 | $ |
| Reduced savings/assets\*  | $ |
| Out-of-pocket and other injury-related costs | $ |
| Costs of home modifications  | $ |
| Costs of disability support tools (crutches, wheelchairs, computers, etc.)  | $ |
| \* See discussion on carers below. |  |

For the same reason as stated regarding employer costs, WCB premiums should not be included in employee direct costs. The following are the cost categories used in the survey of employees.

*Q31. I am going to read a number of different types of costs that someone hurt at work may have faced as a direct result of their injury. For each type that I mention, please tell me if you or your household incurred this type of cost as a direct result of your injury, and about how much, in total, you have spent on it since your injury. Remember, please do not include the costs of any services paid for by the WCB.*

|  |
| --- |
| *Medical costs — for example, hospital costs, costs of medication, and therapy costs* |
| *Legal costs* |
| *Transportation costs — for example, ambulances, taxis, gas, or mileage on cars* |
| *Costs of alterations to your house to help you deal with your injury — for example, grab bars, new appliances, or new furniture* |
| *Costs of alterations to a vehicle — for example, grab bars or elevators for accessing the vehicle* |
| *Additional utility costs — for example, hydro, water, or heating costs*  |

## Carer and family losses

The same comment applies to carers as to employees. Some carers would own assets jointly with injured employees and such losses must be apportioned properly. Intangible costs must be measured as a total.

|  |
| --- |
| **Table 6: Carer and family losses** |
| **DIRECT FINANCIAL COSTS** | **INDIRECT COSTS** |
| Lost income (current and future wages) | $ | Tangible* Foregone leisure/recreation and families

Intangible* Reduced quality of life for carers
* Stress, depression, other mental/emotional costs for carers
* Foregone education/work for carers and families
 | $ |
| Reduced assets | $ |

## Costs to society

The most important costs to society arising from workplace accidents are the losses in output and productivity, the costs of treatment/rehabilitation, and the costs of social safety net programming (social assistance). These cannot be estimated from the WCB administrative or PRA survey information at hand. The WCB does not link the accidents to the health care or the social safety net systems. We also did not enumerate these costs in the survey, since no patient has access to the costs of their medical care paid for by the government. The absence of health costs from the record of injured workers is a major gap in understanding the economic costs of workplace injuries.

It is very hard to develop a “net” cost for any of these. We can start by imagining the counterfactual of a state where no workplace accidents occurred and then summing all the netcosts of the system. The word “net” is important. In this ideal world, the WCB would not exist, and therefore the net revenues would be zero (no payments and no premiums). Added to this would be the savings to the health care system and social safety net systems. Finally, in this ideal state, we avoid the direct and indirect costs to the employer, employee, and carer.

The survey of employees did not ask questions about the sources of post-accident income. At any rate, those relatively few employees that had exhausted their savings and other income (carers’ income) may take several years before migrating to social assistance. We would not be able to detect this reliance on the social assistance system using the relatively recent sample of accidents. One way this might be determined is to use the Social Assistance Management Information (SAMIN) data maintained by the Manitoba Centre for Health Policy (MCHP). However, the migration of injured workers to social assistance would typically take several years.

An important category of cost is the insured health costs supported by the tax system. The only way to track these is to link accidents to the health information system maintained by the MCHP.

The costs to society would be the sum of incremental employer costs, employee/carer costs, and costs to the health care/social safety net system. Only by following accidents for at least three years, and preferably five, would it be possible to approximate lifetime costs.

|  |
| --- |
| **Table 7: Social losses — incremental health and social safety net costs for an accident** |
| **DIRECT FINANCIAL COSTS** | **INDIRECT COSTS** |
| Social assistance (income replacement/welfare) programs | $ | Tangible* Social services (in-kind services for workplace injury-induced disabilities) expenditures
 | $ |
| Disability programs and pensions (non-insured) | $ |
| Health system costs (not covered by WCB) | $ |

## Summary

Conceptually, it is easy to understand that workplace accidents impose a cost to society. Simply imagine the costs avoided if no workplace accidents ever occurred. Practically measuring these costs presents many obstacles. A contribution of this research is to re-imagine the framework for measuring the economic costs of accidents. Rather than using aggregate WCB data and disaggregating cost categories (the top-down approach), a bottom-up approach offers important advantages. By defining the accident as the unit of analysis and following employers, employees, and carers over time, we open the possibility of measuring accident costs within a specified period. Using the top-down approach measures the financial transactions relating to all active case accidents, some of which are accidents that occurred many years earlier while others occurred very recently. The bottom-up approach is the only way to introduce the costs to society, namely social assistance and health system costs.

# The impact of a workplace injury on workers and their families: qualitative impacts — dyadic analysis

This research used two approaches to assess the impacts of workplace injuries on workers and their families:

1. Dyadic interviews (dyads) focussed on 20 workers and their carers to develop an in-depth understanding of the nature of the injury and its aftermath. These interviews created stories that allowed the researchers to develop a deep understanding of workplace accidents and the lasting effects these have on workers and their families. The cases selected for the dyads purposely excluded less serious injuries, defined as those that involved less than $10,000 in total compensation (wage loss replacement plus medical/rehabilitation expenses).

**Caregiver versus carer:** The common term for anyone who assists an injured, disabled, or sick person is “caregiver.” This includes paid and unpaid caregivers. All the family members and friends who assisted injured workers in this sample (and in general) offer this assistance without pay. This has led to the term “carer” to identify assistance without pay that friends and family offer the sick or injured person.

1. Surveys of injured workers and their carers, defined respectively as the primary and secondary respondents, collected information on the nature of the injury and recovery as well as on social and economic costs associated with the incident. The survey data, along with the WCB administrative information on the injured worker, supports quantitative measurement.

## The nature and impact of the workplace injury — stories from workers and their carers

The dyads serve two purposes for this research. First, they offer a narrative of the injury/injury experience. Quantitative representations often fail to describe the full experience of workplace injury, especially the aftermath when compensation has concluded and the WCB no longer has the case “on the books.” Second, by increasing the understanding of the injury/injury experience, we obtained important insights into its enduring cost. Conducting these dyadic interviews at the outset allowed us to add important dimensions to the survey questionnaire.

A central goal of this research is to understand how support systems, outside WCB and the formal health care system, helped injured workers to recover. Invariably, this includes family members and friends who provide caring support for the injured worker as they recover. It is intuitive that the more severe and prolonged the injury, the more important such “informal” support becomes. Informal support systems may be comprised of multiple individuals, which is more likely when the family members and friends have other family and work responsibilities, and when the injury is severe with a prolonged aftermath.

Informal support systems are emerging as an important issue in health policy, as certain conditions such as cancer and dementia involve family members and friends. Serious and chronic diseases are now being recognized as having important impacts on family members, especially spouses and children. Increasingly, treatment both includes and requires a “significant other” so that the patient becomes a pair, and not just the individual. The same process can be seen in the victim of workplace injuries, where the carer forms an integral part of the recovery process. The full economic costs of workplace injuries include the costs imposed on those caring for the worker.

The qualitative technique employed to study how injured workers and their carers interact to promote recovery is termed a “dyadic interview” (or “dyads”). This differs from other qualitative research, such as matched individual interviews and focus groups, in some important ways. All three methods share a core process, comprising careful selection of interviewees/participants, a structured interview guide, and experienced interviewers/moderators that can come “off script” to pursue important ideas not foreseen by the researcher. However, dyads differ in promoting a process of “corrective interaction” where the interviewer works to ensure that what emerges is a consensus view of the injury and its aftermath. Aside from the inherent increase in the reliability and validity gained from two perspectives of an incident or process, the injured workers and their carers also have established trust, which means that they have likely both come to a consensus or acceptance/toleration of different perspectives.

### Dyads offer a unique window into the accident and injury and its aftermath

As explained by researchers (David L. Morgan, Ataie, Carder, & Hoffman, 2013), the dyadic interview shares the interactivity of a focus group, but reduces the essential element to the interaction between just two individuals. Like the individual interview, whether in-person or on the phone, a dyadic interview excels at increasing the detail and intimacy of sharing information, compared to the more public sharing that occurs in a focus group. A key feature of the dyad is that the two participants share an intimate personal bond, often familial or within a long-term friendship. In contrast, a focus group usually draws strangers together with selected points of commonality. Participants may share selected demographic lines (such as young, single women between 25 and 35), and they have some common consumption or participation activity (such as recent car purchases) as the focal point of the discussion. In this case, the dyad unites a primary and secondary respondent that have a long-established personal relationship to focus on a workplace injury and the injury aftermath.

All three methods require the researcher to develop among the interviewees an acceptance of the research goals and a willingness to share information. For a focus group, because strangers are united, the moderator must work quickly to develop initial rapport within the group. A contrast between dyads exists with paired individual interviews, in which the two interviewees, such as a husband and wife, or patient and family carer, may be purposely interviewed separately to highlight the differences in perspective.

A benefit of the focus group is that a more diverse participant base may generate a broader range of responses to key ideas, sharpen areas of contrast, and identify areas of agreement (D. L. Morgan, 2010). This can be very productive in developing new products and exploring policy options.

Both dyads and individual interviews will collect more information from the participants than would a focus group. A 90-minute focus group with 10 participants allows an average of nine minutes of “talk-time,” compared to an interview or dyad of the same duration, where each participant may have 45 minutes of discussion “exposure.” This allows both the individual interviews and dyads to share and create an intimate and detailed narrative.

A dyad offers the opportunity to explore a shared event from the perspective of two individuals who have a long-standing relationship based on trust and familiarity. In the context of this research, the primary respondent (injury victim) named the secondary respondent (the carer), and so a degree of trust and familiarity may be assumed. For those workers who suffer an injury requiring a period of recovery and/or leaving a permanent disability, recollection of the event, and especially recollection of the aftermath, may be selective. A trusted confident can often temper the primary respondent’s recollection of this event, and they will also often add details that may have been forgotten, or add important nuance to the narrative. Dyads offer a unique window into the nature of the injury and its aftermath; in this way, this technique will create a context for the full impact of the workplace injury.

## The nature and context (etiology) of the workplace accident

Respondents recounted the nature and context of the injury resulting from the accident. Six general categories of the etiology of workplace accidents emerged from the interviews as summarized by Table 8.

| **Table 8: Outline of the report (Source: dyads)** |
| --- |
| **Category** | **Explanation** | **Example context** |
| **Poor technique** | Workers perform standard tasks with wrong technique | Alice was injured about two and a half years ago, while she was assisting a client who had limited mobility. As she was rolling the client (who was lying on a bed) towards her, she felt a click inside her right shoulder. About an hour later, her shoulder was red and swollen. Ben and his coworkers were unloading cement and other heavy materials into a wheelbarrow. While lifting the wheelbarrow above his shoulders, Ben pulled a hernia near his pelvis, although he did not know it at the time.  |
| **Misjudgement** | Workers fail to assess nature of task correctly | While preparing for a long shift, she was carrying a large bag of supplies. This bag caught on a piece of equipment as she was walking through a narrow space. Not noticing that the bag was caught, she continued to move forward, causing her right arm to be pulled backwards. She felt a snap in her shoulder and immediate pain. She continued to work, not thinking she had a serious injury. |
| **Miscommunication** | Workers fail to communicate  | When Chelsea picked up the metal sheet, she had thought it was attached to another piece. As it was not, she needed to adjust her hands before they moved the sheet. She asked the teaching assistant to wait for a moment; however, he did not hear her request. He turned the metal sheet upright, and it sliced her left hand. The injury happened so quickly that she only noticed the injury when her hand suddenly let go of the metal sheet. |
| **Job unfamiliarity** | Workers performing new tasks | Disassembling this particular piece of equipment was not Ed’s job, but because the office could not send an appropriate worker to the site, the task fell to him. When he was removing a part of the machine, a heavy piece suddenly fell from the top. Emma’s injury occurred about a year and a half ago, when she was employed at a health facility. While at work, she attended a staff training session that was focussing on a new piece of equipment. As part of this training, each staff member used the new machine. During Emma’s turn, she felt a sudden pull and sharp pain in her right shoulder.  |
| **Accident** | Circumstances that could not reasonably be foreseen | One day at work, Carl and his coworkers were doing a job at some apartment buildings. While moving some heavy materials, he slipped and fell on a surface that was covered with slippery frost. He suffered a concussion as well as serious damage to one of his wrists. |
| **Repetitive strain** | Injury occurs over time due to nature of tasks | A large part of Jen’s job has always been to work with medical machinery to perform services on patients. Gradually, she wore out one of her wrists, due to the repetitive and straining motions she was required to do. Although she felt some minor discomfort over time, one day she woke up and found that she could barely move her wrist. The pain was much worse than it usually was, and she was not able to go to work.  |

This table underscores two important challenges in tracing the etiology of workplace accidents:

1. Accidents often reflect a combination of worker unfamiliarity, poor communication, and inadequate training. These six categories are provisional and reflect only what emerged from the 20 dyadic interviews.
2. More important is that these reflect the perspective of the injured worker and not the employer.

These brief vignettes on the etiology of the accident underscore how little is known about the nature and context of the accidents that trigger the injuries and the outcomes that prove so costly for workers, their families, and society. Opportunities exist for WCB to improve its understanding of what triggers each accident in the first place.

## The outcomes of workplace injury — the perspective of injured workers and their carers

Individual stories of injury and recovery reveal multi-dimensional experiences of injured workers and their carers. Each story reveals that the typical workplace injury expresses itself in several psychological, social, and economic effects or themes. Each worker and their informal support system, in this case represented by a single carer, experience several of these effects or themes. Each worker/carer exhibits a different reaction to the injury.

Emerging from the stories in injury and recovery are several common themes. Workers and their carers mentioned the following themes that described the injury and its aftermath:

1. The most important theme, not because everyone mentioned it, but because it clearly contributes to each of the other dimensions, is work interruption. Aside from limiting financial and economic outcomes, many workers draw much of their social and psychological welfare from the world of work. For some, the work interruption is temporary, but may result in physical and mental limitations that mean transferring to other occupations or withdrawing from the world of work entirely.
2. Financial and economic impacts are the most obvious consequence of the injury, but for many workers, the attenuation of economic well-being contributes to some or all of the remaining effects.
3. Social isolation emerges because of not working. The injury itself may limit activities through which the worker previously formed relationships and drew pleasure.
4. Workers spoke of stalling in their personal growth. This is possibly related to an interruption in work, but more to do with the fact that they can no longer work, or that their new occupations do not offer the same opportunities.
5. Finally, all workers and their carers spoke of the impacts that the injury and its consequences have had for emotional well-being.

Table 9 illustrates each of these dimensions and relates story elements to add detail and context. The full stories, as approved by workers and carers, appear in Appendix D. The story elements and their alignment to an impact dimension reflect the emphases of the workers and carers. Because a dyad is intended to synthesize an experience from both the perspective of the worker and that of the carer, we do not separate perceptions of the two participants in the dyad. To make the representation more concise, we have also not represented every story and every dimension.

In this representation, all workers experienced work interruption, temporarily or permanently, which, for most workers and their families, reduced income at least for the recovery period. However, the experience of each worker and their family or network of carers varies. In some cases, factors other than income loss dominated their perception of the impact of the accident. The summary of the stories attempts to classify the main impacts experienced by the workers/carers we interviewed.

| Table 9: Summary of workplace injuries and their outcomes (results from the dyads) |
| --- |
| **Primary impact dimension** | **Worker/carer** | **Story element** | **Current work status** | **Major secondary impacts** |
| Financial impacts | Emma/father | Emma’s shoulder injury has responded only slowly to treatment; she has had to take alternate lower-paying work. | Working in lower-wage alternate job | **Emotional/physical well-being:** Emma has gained weight because she cannot exercise, and she cannot participate in her previous social life that revolved around fitness. |
| Logan/fiancée | Logan has not worked for 10 years, since his injury. | Not working  | **All dimensions:** Logan has filed for bankruptcy, experienced social isolation, experienced a failed romantic relationship, and experienced major depression — at one point not leaving home for 12 months. |
| Alice/husband | Alice injured her rotator cuff and her recovery has been complicated by an initial misdiagnosis. She encountered lowered income. | Working full-time in previous job  | **Family obligations:** Alice regrets not being able to care for her family as well as she could before-the-accident. |
| Mike/girlfriend | Mike has been off work since his injury, which was difficult to initially diagnose. He has exhausted his WCB benefits and now must live on his girlfriend’s income. | Not working | **Emotional/physical well-being:** Mike suffers from depression and feels socially isolated. |
| Robert/wife | Robert injured his shoulder and has experienced a long recovery. He works as a contractor, and so his physical limitations have constrained his income.  | Not working | **Emotional/physical well-being:** After a successful 30-year career, Robert now worries about caring for his family and retirement. |
| Jack/girlfriend | Jack tore a tendon in his arm and has been unable to find full-time work. This has resulted in considerable loss of income and financial strain. | Casual work | **Emotional/physical well-being:** The financial strain resulting from lack of work and other non-compensated costs, contributes to depression and constant anxiety about money on the worker and carer. |
| Personal relationships/family obligations | Ben/girlfriend | Ben had a hernia that required a prolonged recovery period. This injury contributed to depression, placed stress on his partner and family, and reduced social interactions. | Part-time work | **Emotional/physical well-being:** This injury and recovery process has strained Ben’s relationships, as he has experienced emotional and mental health issues. |
| Stalled personal growth | Sophie/husband | Sophie injured herself in the parking lot of her place of employment, and her career progress was interrupted while she recovered.  | Working full-time in previous job | **Emotional/physical well-being:** Sophie has given up physical activities that she will never be able to resume, which has contributed to depression. |
| Noah/father | Noah suffered carpal tunnel syndrome and the extended recovery has limited his career growth. The gap in his resumé and the nature of the condition (with possible recurrence) has meant he is no longer an attractive job candidate. | Working sporadically  | **Emotional/physical well-being:** Noah has experienced depression, which creates difficulty in his relationship with his girlfriend and daughter. |
| Erin/husband | Erin suffered a shoulder injury in an industry she had worked in for 20 years. She believes her career progress has been compromised. | Working full-time in previous job with limitations | **Emotional/physical well-being:** The reduced income has created stress within Erin’s family, as previous spending customs had to be altered. |
| Chelsea/boyfriend | Chelsea suffered an injury to her hand, which means she had to leave her chosen profession and is now in what she feels is a dead-end job. | Working full-time in alternate trade/job | **Emotional/physical well-being:** Chelsea feels frustrated that she cannot pursue her chosen career, and is in therapy to deal with her feelings. |
| Emotional/physical well-beingEmotional/physical well-being (continued) | Ed/wife | Ed lost a thumb and has had multiple surgeries. He has not returned to work at his previous job and has started a university program, which he does not enjoy, and which he believes will not produce the same income as his prior job. He has suffered significant emotional stress as a result of all the dimensions of his injury. | At school/not working | **Financial impacts:** Ed receives WCB benefits, but his overall income has decline. His family has eliminated vacations and has been forced to move from a house to an apartment. |
| Sara/parents | Sara has suffered serious Post-Traumatic Stress Disorder (PTSD) since witnessing a workplace fatality. She no longer works in her chosen field and lives on a fixed income. In addition to mental health challenges, her physical health has deteriorated. | Not working | **Financial impacts:** Sara is socially isolated due in part to her reduced fixed income, which constrains her ability to participate in social and recreational activities that might contribute to her recovery. |
| Carl/friend | Carl suffered a broken wrist and a concussion as a result of slipping on frost-covered ground. This injury has limited his ability to work and study, now that he has resumed his education. He suffers from headaches and depression, for which he takes medication. | At school/not working | **Financial impacts:** Carl is now on a very limited budget, which has meant many sacrifices. |
| Anne/husband | Anne injured her back at work and now suffers chronic pain. She suffers from depression and has a much-constrained social life and scope of activity. | Not working  | **Financial impacts:** Anne and her husband have a much lower income, which creates additional anxiety.  |
| Olivia/husband | Olivia experienced a shoulder injury that has limited her professional involvement. | Working full-time with amended duties | **Emotional/physical well-being:** Olivia has experienced depression as a result of pain and isolation.  |
| Recreational activities  | Evan/wife | Evan lost four fingers, but has adjusted to the disability and has returned to work.  | Working full-time in previous job | **Emotional/physical well-being:** Despite having to give up recreational activities, Evan is optimistic that he will eventually be able to find satisfactory replacement activities. |
| Jen/friend | Jen experienced a repetitive motion injury to her wrist, which has reduced her ability to exercise. | Working full-time in previous job | **Emotional/physical well-being:** Jen has experienced weight gain leading to depression, because of not being able to exercise. |
| Fiona/boyfriend | Fiona tore a ligament in her knee, but after surgery and recovery, has returned to work. She has had to give up a range of recreational activities. | Working full-time in previous job | **Financial impacts:** Fiona and her boyfriend have adjusted their income, which has interrupted their plans for the future. |
| Harold/wife | Harold suffered a knee injury after a long career in maintenance. This occurred just before his planned retirement, so financially the consequences are minor. He has had to give up a range of active recreational activities. | Retired | The injury required a level of compensation that qualified Harold for inclusion in the study, but aside from the frustrations associated with attenuated recreational activities, other outcomes of the injury have been relatively minor. This care illustrates the range of injuries and consequences that characterizes the WCB caseload. |

The stories of the dyad respondents suggest the relationships appearing in Figure 2 present a high-level hypothesized view of the outcomes of workplace injury. At the centre stands the injury itself, from which three main effects occur in terms of financial impacts (1), stalled career (2), and reduced recreational activities (3). A stalled career attenuates income (4), which combined with the physical limitations of the injury, truncates recreational/leisure activities (5). Loss of emotional well-being, which the dyads revealed as a very common outcome experienced by injured workers, is usually not a direct outcome of the injury, but arises because careers are interrupted (6), the lack of money provokes anxiety (7), and the joy of life is extinguished as workers are unable to participate in their avocations (8). Finally, personal relationships suffer because of depression (10), social circles narrow as common activities disappear from the workers’ itineraries (9), and financial impacts wear on the family (11).



Figure 2: The sequelae of a workplace injury

## Summary on injury etiology and sequelae

It is important to note that the injured workers and their carers interviewed for this research have all experienced injuries that required some extended absence from work. Several themes run through the dyads:

1. The aftermath of more serious injuries persists, resulting in a range of losses — financial as well as psychological/social. Although obvious, it bears repeating that many injured workers experience loss well after WCB has concluded a formal relationship.
2. For the most part, the dyads confirm the importance of the carers in managing the recovery and aftermath of any injury. In many ways, they are the silent partner to WCB in supporting the workers.

Immediate wage loss is universal, but less well-appreciated is that injuries that result in serious or permanent injuries set the affected worker on a lower economic trajectory, compared to their uninjured counterparts. This can strain social relationships and cause workers to withdraw from society.

1. The most important finding is that only a very general correlation exists between the “seriousness” of the injury and the reaction of the worker. A casual review of these studies suggests that many factors are at play. An injury that occurs later in life, just before retirement, may have much less impact than the same injury would if experienced by a younger person just starting their career. In other cases, such as PTSD, the damage is not physical and no object metric exists to assess injury severity.

Two implications exist:

* For this research, correlating injury severity and other worker attributes with the valuation of avoiding the injury, which is the core of our method to assess the full economic costs of the injury, will be challenging. Unobservable and unmeasurable factors may significantly influence a worker’s subjective assessment of the injury and its continued aftermath.
* For WCB, the challenge of getting compensation “right” is significant. Traditionally, workers’ compensation focussed solely on wage loss replacement and support rehabilitation based on “objective” medical assessment. The goal was to restore the worker as much as possible to return to productive function. These dyad stories reveal complex, persistent, and enduing losses that extend the concept of rehabilitation into entirely new domains. The challenge of restoring workers to their previous levels of function may be much more complex than commonly understood.

# The impact of workplace injuries: quantitative impacts — administrative file and survey analysis

This section reports on the survey of primary and secondary respondents that measured the social, psychological, and economic costs of a workplace injury. It comprises the following topics:

1. Analysis of potential respondents
2. Psychological impacts of the injury — primary and secondary respondents
3. Financial and non-financial costs of the injury to employees and employers

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| **Workplace injuries:** The focus of this research is on workplace injuries that qualify for compensation. Therefore, the unit of analysis for this study is the *workplace injury* and its attributes. Since WCB does not retain much information on circumstances that led to the injury, for this study, the attributes of the injury comprise the terms of compensation (days of benefit, wage loss paid, social/psychological/economic costs, etc.). Some attributes of the worker (gender, age, etc.) were derived from the administrative data, with more important additional worker attributes and injury aftermath collected from the survey questionnaires.  |

The first step in the quantitative analysis is defining *potential respondents* according to the attributes of their injuries.

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| *Potential respondents* were those workers for whom WCB accepted a time loss claim for an injury from April 2010–June 30, 2014. Included in these were time loss claims (a claim where the worker lost time from work the day after their injury). Excluded were fatalities, as well as time loss arising from occupational diseases, and those whom WCB requested we not contact due to prior experience in managing mental health issues. This resulted in 54,361 time loss injuries for the sample. This may seem to be a lot, but a time loss injury often results in a single day of compensation. Almost 60% of all time loss injuries resulted in two weeks of time loss with workers returning to their prior employment. |

## An overview of injured workers — administrative extract

This section offers a snapshot of 54,361 time loss injuries in the administrative extract prepared by WCB that supported the sample survey for this research. This presents workplace injuries in Manitoba between April 2010 and July 2014 that resulted in WCB compensation (subject to the restriction noted above).

Table 10 shows that the mean age of injured workers is 40 and, since the median is close, this is likely a symmetrical distribution. The minimum age of 16 reflects the legal working age of some in the database: seven respondents fall into this age group; 932 are under 20; and 342 are over 70. Some of the high extreme values may represent data errors in the administrative database.[[1]](#footnote-1) However, it is possible that an older person may report a health condition as a result of an injury that occurred several years earlier. Therefore, the maximum age of 83 may be a valid entry.

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| Table 10: Attributes of the WCB claimant sample frame (n=54,361) |
|  | **Age**  | **Weekly wage (average)** | **Total benefits days** | **Total benefits paid by WCB** |
| Mean | 40 | $785.00 | 30.7 | $4,748.00 |
| Median | 41 | $721.00 | 7 | $1,328.00 |
| Minimum | 16 | $0.00 | 1 | $5.00 |
| Maximum | 83 | $10,498.00 | 1,531 | $833,878.00 |
| Note: This information draws from the entire sample frame provided by WCB of Manitoba and does not reflect the attributes of the final survey sample (n=54,500). Note in the next set of tables, total samples vary slightly due to missing and invalid entries. We did not spend time cleaning and reconciling administrative data at this stage except to delete invalid entries that impeded summary statistics. |

The majority of claimants are men, reflecting the occupational differences between genders and the corresponding WCB coverage in Manitoba’s workplaces. See Table 11.

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| Table 11: Gender of claimant |
|  | **Number** | **Percent** |
| Male | 35,890 | 65.8% |
| Female | 18,635 | 34.2% |
| Note: This information was drawn from the sample frame provided by WCB of Manitoba and reflects its coding convention (n=54,525). |

Table 12 reflects the distribution of the working population, which again closely aligns with the distribution of population.

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| Table 12: Region of claimant residence |
|  | **Number** | **Percent** |
| Winnipeg | 33,729 | 61.8% |
| North | 4,856 | 8.9% |
| Central | 5,928 | 10.9% |
| Southeast/central | 3,364 | 6.2% |
| Southwest | 5,813 | 10.7% |
| Data missing | 870 | 1.6% |
| Note: This information draws from the sample frame provided by WCB of Manitoba and reflects its coding convention (n=54,500). |

Table 13 shows that almost 60% (56.9%) of claimants were off for fewer than 10 working days, which amounts to two weeks. Over 80% received benefits for fewer than 40 days (two months). In most of these cases, workers would have returned to work, either at the same job or at another job. It is hard to discern the nature of longer-term outcomes experienced by workers with these less “serious” injuries from the administrative data.

**Serious injuries:** An injury has physical and psychological dimensions. Seriousness of an injury depends on objective measures of the extent of physical damage and ongoing limitations. It also has psychological dimensions: the same objective level of physical injury may affect workers differently. Measuring the seriousness of an injury requires a multi-dimensional framework, which simply does not exist. In this research, we measure seriousness using total benefit days, an admittedly simplistic indicator.

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| Table 13: Total benefit days (compensation days) |
| Fewer than 2 days off | 8,954 | 16.4% |
| 2–5 days off | 13,094 | 24.0% |
| 6–10 days off | 9,025 | 16.5% |
| 11–40 days off | 13,686 | 25.1% |
| 41+ days off | 9,801 | 18.0% |
| Total | 54,560 | 100.0% |
| Mean |  | 29.4 days |
| Median |  | 7 days |
| Minimum |  | 1 day |
| Maximum |  | 1,532 days |
| Note: *Compensation days* are paid days of wage loss starting the day after injury when the worker cannot go back to work immediately due to their injury. Manitoba pays 90% of net earnings after deductions for EI, CPP, and income tax. We also have a floor on this amount so that the 90% of net calculation does not fall below minimum wage if the injured worker is earning minimum wage (n=54,361). |

Figure 3: Distribution of claimants by days of compensation

Figure 3 shows the distribution of benefit days (days of wage loss compensation plus rehabilitation days). Most workers received fewer than 15 days (three weeks). A relatively small number received benefits for more than 100 days.

This study tends to focus on workers who have experienced serious injuries. For those who were off for 10 working days or fewer, the injury and the resulting income/emotional impacts were probably transitory, representing a minor interruption to their work and personal lives. Many of these workers would not have experienced major complications to their lives after the injury. If selected as part of the sampling, these workers may have declined to participate in the survey, or they were unwilling/unable to assign non-financial costs to their experiences. Such self-selection is common in survey research and should not obscure the fact that over 60% of injured workers have experienced timely and complete recoveries.

## Socio-psychological impact of the injury on workers and their carers

An injured worker’s carer could be anyone who has offered assistance to the injured worker. To maintain clarity in the survey research process, we redefined workers and their carers as follows:

* *Primary respondents* are the injured workers selected from the sample provided by WCB.
* *Secondary respondents* are the carers who resided with the workers and who are familiar with their injuries. They may not be the people most important to assisting the injured workers.

Primary respondents are injured workers who fall into the following three categories:

* without carers
* with carers living in his/her home or separately
* with carers with whom they cohabit.

The study focussed on carers who cohabited with injured workers, to reduce data collection costs. It is very likely that carers in the home would already be familiar with the study, and restricting the definition of the carer in this way eliminated a complex process of tracing, contacting, and obtaining consent from named carers.

The specific method started with the initial call to a primary respondent who received a letter (see Appendix B), and who, at the end of their interview, was asked whether an individual lived with them who was familiar with their injury. The exact script appears in the box below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| In the letter I mentioned at the start of this survey, we noted that it would be very helpful to also speak to your spouse, partner, or another adult living with you who is familiar with your injury.

|  |
| --- |
| 1. Is there someone like this in your household?
 |
|  | Yes | 1 |   |
|  | No | 0 | [Conclude the interview with final questions] |
| 1. Would they be willing to answer some questions as well? If they do, they will also be entered to win a gift card.
 |
|  | Yes | 1 | [Set callback time and take second person’s name] |
|  | No | 0 | [Conclude the interview with final questions] |

 |

This section now presents a brief overview of the primary and secondary respondents to assess the representativeness of the sample.[[2]](#footnote-2)

The total sample comprises 2,310 primary and 510 secondary respondents. Primary respondents with carers in the home who were willing to participate in the survey (i.e., the secondary respondents) comprised 22% of the sample, while some 38% of primary respondents indicated that they had the assistance of a carer in general (either cohabiting or a friend/relative not in the home). See Table 14.

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| Table 14: Primary and secondary respondents surveyed |
|  | **Number** | **Percent** |
| Primary (injured worker) | 2,310 | 100% |
| Secondary (carer) | 510 | 22% |
| Note: Secondary respondents are aligned to the primary respondent pool.Source: PRA Survey of primary and secondary respondents (August 2014–January 2015) |

The original target sample sizes were 1,500 for primary and 1,000 for secondary respondents. As the field operations progressed, it became apparent that securing this number of secondary respondents would not be possible for two reasons:

1. Only more serious injuries with some time loss and protracted recovery required a carer for duties beyond what would be usual for any family member or friend to render for a routine sickness or injury. The sample included the complete range of injuries, including those that required minimal time loss and those that were permanently disabling.
2. Even when identified, securing the participation of secondary respondents encountered the following specific barriers:
	* participants were not willing to refer the interviewers to a secondary respondent
	* the identified secondary respondent declined to participate
	* it proved difficult to arrange a mutually convenient time for follow-up to secure a response
	* to manage logistics, only cohabiting secondary respondents were solicited, unlike the dyads in which we accepted carers who did not live with the injured workers
	* survey resources were finite

Table 15 shows the basic attributes of primary and secondary respondents. Ages are closely matched for each type of respondent. The gender split reflects the occupational pattern among men and women and matches the administrative data, offering validation for the sample representation on these two dimensions. Note that primary respondents include those with support from carers in the home or otherwise.

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| --- |
| Table 15: Age and gender of the primary respondents |
|  | **Primary respondents**(n=2,310) | **Primary respondents with…** |
| A carer in the home(n=530) | A carer either in the home or not(n=887) |
| Mean age | 43 | 46 | 45 |
| Median age | 45 | 48 | 47 |
| Minimum | 15 | 15 | 15 |
| Maximum | 65 | 65 | 65 |
| Male | 892 *(39%)\** | 159 *(31%)* | 328 *(37%)* |
| Female | 1,416 *(61%)* | 350 *(69%)* | 557 *(63%)* |
| Undetermined | 2 *(<1%)* | 1 *(<1%)* | 2 *(<1%)* |
| \* Columns may not sum to 100% due to rounding.Source: PRA Survey of primary and secondary respondents (August 2014–January 2015)  |

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| Primary respondents include those with any type of career (in the home and externally). When comparing the responses for primary respondents, it is important to bear in mind that we do not isolate primary respondents who are without care assistance. Overwhelmingly, these respondents had less severe injuries and did not need to call on friends and family in any significant way.  |

The distribution of occupations for primary respondents is as expected. Most injuries occur among labourers and those whose work involves lifting. See Table 16.

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| Table 16: Occupation of primary respondents |
|  | **n** | ***%*** |
| Labour | 516 | 22% |
| Health and wellness | 373 | 16% |
| Sales and services | 343 | 15% |
| Drivers and equipment operators | 318 | 14% |
| Construction and trades | 217 | 9% |
| Technicians | 198 | 9% |
| Civic services | 115 | 5% |
| Education and law | 80 | 4% |
| Management | 72 | 3% |
| Childcare | 1 | <1% |
| Natural sciences | 5 | <1% |
| Other | 18 | 1% |
| No information  | 54 | 2% |
| **Total** | **2,310** | **100%** |
| Source: WCB administrative data matched to the survey sample. |

The region also mirrors the distribution of the population. See Table 17.

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| --- |
| **Table 17: Region of injury** |
| **Region** | **Primary** |
| **n** | ***%*** |
| 1 (Winnipeg) | 1,380 | 60% |
| 3 (North/South Central) | 292 | 13% |
| 5 (South West/Parklands) | 245 | 11% |
| 2 (Interlake North) | 207 | 9% |
| 4 (South East) | 148 | 6% |
| No information | 38 | 2% |
| **Total** | **2,310** | **100%** |
| Source: WCB administrative data matched to the survey sample. |

## Most workers do not experience severe injuries

Most workers in the survey sample were injured for fewer than 15 days (61%), and 5% were off work for six months or more. As expected, those with carers (either in or outside the home) are characterized by a slightly longer duration of injuries. See Table 18.

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| Table 18: Length of injury (days of compensation and rehabilitation benefits) |
|  | **Primary** | **Primary respondents with…** |
| A career in the home | A career either in the home or not |
| **n** | **%** | **n** | **%** | **n** | **%** |
| 0–7 days | 1,084 | 47% | 198 | 39% | 365 | 41% |
| 8–14 days | 314 | 14% | 76 | 15% | 128 | 14% |
| 15–30 days | 308 | 13% | 62 | 12% | 127 | 14% |
| 31–182 days | 503 | 22% | 140 | 28% | 216 | 24% |
| 183–365 days | 59 | 3% | 20 | 4% | 28 | 3% |
| 366+ days | 42 | 2% | 14 | 3% | 23 | 3% |
| **Total** | **2,310** | **100%** | **510** | **100%** | **887** | **100%** |
| Note: Due to rounding, totals may not sum to 100%.Source: WCB administrative data linked to survey sample. |

We classified injury severity by the time loss as seen in Table 19 as “mild,” “moderate,” “serious,” and “severe.” Using the duration of benefits paid as a proxy for injury severity is only an approximation. It is possible that the return to work varies among injured workers who have apparently the same degree of injury. In other words, as noted in the discussion of the dyad stories, injury comprises both an objective clinical element and a psychological element, due partly to the injury event, and partly to the individual reaction to the injury and its aftermath.

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| **Table 19: Severity of injury** |
|  | **Primary** |
| **n** | ***%*** |
| Mild (0–14 days) | 1,398 | 61% |
| Moderate (15–30 days) | 308 | 13% |
| Serious (31–90 days) | 370 | 16% |
| Severe (91+ days) | 234 | 10% |
| **Total** | **2,310** | **100%** |
| Source: WCB administrative data linked to survey sample. |

Another measure of injury severity is compensation paid, in the form of compensation benefits or rehabilitation benefits. Table 20 shows the total compensation paid for primary respondents, classified by the nature of their carer support. The median amount paid was less than $1,000.

|  |
| --- |
| Table 20: Compensation paid |
|  | **Total compensation paid** | **Total medical aid paid** |
| Min | $0.00 | $0.00 |
| Max | $127,420.00 | $72,537.00 |
| Mean | $3,575.00 | $2,170.00 |
| Median | $784.00 | $806.00 |
| **Total** | **$2,310** | **$2,310** |
| Source: WCB administrative data. |

## The impact of the injury — primary respondent perspective

Primary respondents are the centre of this research. This section describes the nature of employment at the time of the injury, the impact of the injuries on employment and employment income, the non-WCB-covered expenses associated with the injuries, the self-reported impact of the injuries on activities of daily living, and the emotional impacts of the injuries.

### Impact on employment and return to work

Most of the primary respondents that we interviewed returned to work. See Table 21.

|  |
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| Table 21: Current employment status*Are you currently off work because of your injury?* |
| **Response** | **Frequency** | **Percent** |
| No | 2,028 | 88% |
| Yes — due to injury | 96 | 4% |
| Yes — retired  | 86 | 4% |
| Yes — returned to school | 7 | - |
| Yes — other reason | 93 | 4% |
| **Total** | **2,310** | **100%** |
| Source: Survey of primary respondents. |

Most injured workers were off work for fewer than two weeks (an average of 12 days and a median of five days), with an average time lost of 11.8 working days. Some 35% reported they had lost more than 20 days (one month). The longest time loss reported within the survey sample was 80 days (four months). See Table 22.

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| Table 22: Time lost due to injury*How much time, in total, were you off work because of your injury (days)* |
| **Response** | **Frequency** | **Percent** |
| None | 14 | 1% |
| 1–10 days | 1,181 | 51% |
| 11–20 days | 308 | 13% |
| 21+ days  | 807 | 35% |
| Total | 2,310 | 100% |
| Source: Survey of primary respondents. |

### Post-injury impacts

The dyads revealed that those with serious injuries experienced prolonged effects. However, since most of the injuries were relatively mild (i.e., they involved a time loss of fewer than two weeks), the aftermath of the injury affected about half of those interviewed. Figure 4 shows that most injured workers who reported experiencing difficulties had trouble “getting around” — a generic term that covers walking, climbing stairs, and using transportation (driving and transit). Inability to “get around” clearly affects other activities; these physical difficulties clearly interact.

Figure 4: Post-injury difficulties

Those who needed the assistance of carers typically reported somewhat higher incidences of physical difficulties. For example, 50% of those reporting a carer typically reported more problems in getting around and participating in leisure activities.

Using days off as a proxy for the severity of the injuries reveals how the injuries affect physical capacities. See Table 23.

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| Table 23: Physical difficulty by days off by percentage  |
|  | **n** | **Getting around** | **Leisure and recreation** | **Household care** | **Personal care** | **Socializing** | **Taking care of children** | **Taking care of pets** |
| 0–7 days | 1,084 | 34% | 31% | 29% | 29% | 15% | 11% | 10% |
| 8–14 days | 314 | 45% | 45% | 43% | 40% | 26% | 16% | 15% |
| 15–30 days | 308 | 54% | 53% | 50% | 49% | 29% | 21% | 15% |
| 31–182 days | 503 | 61% | 60% | 59% | 58% | 33% | 22% | 19% |
| 183–365 days | 59 | 75% | 70% | 68% | 68% | 42% | 27% | 20% |
| Over 365 days | 42 | 71% | 74% | 69% | 76% | 43% | 33% | 24% |

In addition to physical challenges, injured workers experience psychological and emotional changes as a result of their injuries. The most important consequences are disturbed sleep, upsetting thoughts, irritability/anger, and weight changes. See Table 24.

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| Table 24: Observed emotional/psychological state of the workers (perception of primary respondents) |
| **Response** | **Frequency** | **Percent (yes)** |
| Upsetting thoughts/memories of the injury | 654 | 28.3% |
| Upsetting dreams about the injury | 277 | 12.0% |
| Difficulty talking about the injury with others | 234 | 10.1% |
| Difficulty falling asleep or staying asleep | 875 | 37.9% |
| Unusual irritability or anger | 565 | 24.5% |
| Unwanted weight gain or weight loss | 524 | 22.7% |
| Upsetting feelings that your role in your family has changed | 343 | 14.8% |
| A strained relationship with [partner or name of *secondary respondent*] | 234 | 10.1% |
| Note: Totals sum to more than 100% because respondents could offer more than one response. |

Few respondents (n=67) think they will miss additional time from work due to their injuries. See Table 25.

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| Table 25: Expected time loss due to injury*P19: How much more time do you think you will be off work because of your injury?* |
| **Response** | **Frequency** | **Percent** |
| Not returning to work | 47 | 70% |
| 1–10 days | 15 | 22% |
| 11–20 days | 2 | 3% |
| 21+ days | 3 | 4% |
| Total | 67 | 99% |

Of those off work at the time of the survey (n=235), most think they will not return to same job; however, across the sample, most have returned to the same jobs they had at the time of their injury. See Table 26.

|  |
| --- |
| Table 26: Return to the same job |
| **Response** | **Those back at work** | **Those currently off work** **(at time of survey)**  |
| *P20 Did you return to the job you had at the time of your injury?* | *P20 Do you anticipate returning to the job you had at the time of your injury?* |
| **Frequency** | **Percent** | **Frequency** | **Percent** |
| Yes | 2,007 | 87% | 90 | 38% |
| No | 191 | 8% | 129 | 55% |
| Don’t know/no response | 16 | 5% | 16 | 7% |
| Subtotal | 2,214 | 100% | 235 | 100% |
| System missing (not qualified for question) | 96 |  | 2,075 |  |
| **Total** | **2,310** |  | **2,310** |  |

In summary, because the injuries sustained from workplace injuries did not usually result in permanent incapacitation, most injured workers will return to the same job they held at the time of their injuries.

### Impact of injury on employment income

By far, the most important potential impact of a workplace injury is the income loss associated with wage interruption and incremental medical and living costs not borne by WCB. See Table27.

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| **Table 27: Income since the injury***P23. Since your injury, has the amount that you earned at your job increased, decreased, or stayed about the same?* |
|  | **Percent****(n=2,028)** |
| Increase | 49% |
| About the same | 37% |
| Decreased | 13% |
| No response | 1% |
| Note: Percentages may not add to 100% due to rounding.  |

The average weekly wages before injury was $761.00 (with a median of $600.00). The lowest weekly wage reported was $130.00 and the highest was $3,000.00. Most respondents had one job, but 148 had one or more jobs, with an average weekly wage of $308.00 (with a median of $218.00). See Table 28.

Many injured workers (43% or n=991) have other sources of household income (aside from extra jobs they may hold). Presumably, this would consist of income earned by other adult household members. Respondents reported that the average weekly income from these other sources was $272.00 (or about $14,000.00 per year). This income may appear relatively small, but it is likely that many of these other sources have part-time employment.

Table 28 shows that the survey sample declined sharply from pre- to post-injury weekly wage. Part of the sharp decline is due to the fact that many respondents are still recovering from their injury and have not returned to work, and so they have no income.

|  |
| --- |
| Table 28: Weekly wage before and after injury |
| **Response** | **Before injury** | **After injury** |
| **Frequency** | **Percent** | **Frequency** | **Percent** |
| $0.00–$500.00 | 460 | 20% | 1,318 | 62% |
| $501.00–$700.00 | 567 | 25% | 202 | 9% |
| $701.00–$1,000.00 | 683 | 30% | 310 | 15% |
| $1,001.0–$1,500.00 | 459 | 20% | 218 | 10% |
| $1,501.00–$2,000.00 | 109 | 5% | 65 | 3% |
| $2,000.00+ | 32 | 1% | 26 | 1% |
| **Mean** | $817 |  | $445 |  |
| **Median** | $750 |  | $153 |  |

Some 15% (n=352) of primary respondents received some fringe benefits at their jobs before injury, as shown in Table 29. Because workers tend to be in physical occupations, the prevalence of collateral fringe benefits such as health/vision/dental is comparatively low, making the WCB medical support for injury even more important.

|  |
| --- |
| Table 29: Fringe benefits in job prior to injury*P12:* *Before you were injured, did you receive any additional fringe benefits through your job such as a pension or the use of a company car*? |
| **Response** | **Frequency** | **Percent\*** |
| Private health insurance  | 210 | 60% |
| Other insurance (travel/life) | 39 | 11% |
| Pension/RRSP | 186 | 53% |
| Dental/vision | 114 | 33% |
| Company vehicle | 34 | 10% |
| Other | 33 | 9% |
| Don’t know/no response | 9 | 3% |
| Total (number of mentions) | 591 |  |
| Total (one or more fringe benefits) | 352 |  |
| \*Respondents could offer more than one response. Totals sum to more than 100%. |

Most respondents (75%) who reported fringe benefits before injury, and who have returned to work, reported that these are unchanged. For those who report a change (9% increase and 14% decrease), it is unclear whether this change is related to injury, but it is unlikely.

### Other expenses related to injury

Most respondents could not identify other costs related to their injuries. The most significant other expenses included medical, transportation, property maintenance, and special equipment. See Table 30.

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| Table 30: Other expenses related to the injury*P30: What out-of-pocket costs have you or your household faced because of your injury that were not covered by WCB?* |
| **Cost** | **Number** | **Percent** | **Mean expense** | **Maximum expense** |
| Medical  | 488 | 21% | $128 | $19,800 |
| Legal  | 4 | - | $193 | $700 |
| Transportation  | 492 | 21% | $73 | $16,000 |
| House modifications | 31 | 1% | - | $3,000 |
| Vehicle modifications | 6 | - | $6,620 | $28,000 |
| Additional utilities | 50 | 2% | - | $15,000 |
| Hiring medical carers | 8 | - | $874 | $5,000 |
| Property maintenance | 104 | 5% | - | $10,000 |
| Special equipment | 193 | 8% | - | $2,000 |
| No response | 970 | 42% | - | - |
| Note: Dash denotes no response. |

Most respondents could not identify other costs, but those who did cited the following along with typical additional expenditures:

1. Pharmaceuticals (over-the-counter pain killers)
2. Various health care services (chiropractic, acupuncture, massage, etc.)
3. Medical equipment (bandages, braces, slings, etc.)

The average spending on these other costs related to injury was about $728.00. Again, this average is influenced by a few extreme examples.

### Sale of assets to fund treatment

Again, most respondents did not need to sell assets to finance the treatment and rehabilitation costs not funded by WCB, but 55 (2.5%) reported they needed to take this step. Most of the asset dispersal involved small items (furniture, electronics, etc.); median-valued cars; and, in a few cases apparently, homes. The value realized by these sales has a very wide distribution, with a median value that lies well below the mean, suggesting that most assets sold realized more than $10,000, and a few realized very large sums. See Table 31.

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| Table 31: Funds realized from the sale of assets to support injury-related costs*P32: Since the injury, did you have to sell off any personal assets to pay for any of the costs directly related to your injury? These assets may include your home, a car, tools, sporting equipment, or other similar things.* |
| **Response** | **Frequency** | **Percent** |
| Yes | 55 | 2% |
| No  | 2,253 | 98% |
| Mean | $19,136.00 |  |
| Median | $2,000.00 |
| Minimum | $200.00 |
| Maximum | $300,000.00 |

### Mutual aid — carers and the injured worker

A central goal for this research is to understand the network of supports received by injured workers outside the services offered by WCB and the provincial health system. This network typically will include family and friends. In some cases, a single carer will assume most of the collateral support duties, and in other cases injured workers will call on “serial” carers.

Most people can call on family or friends during times of sickness. In fact, the health and social services systems presume that this will be a primary line of support outside the emergency services and the technical services needed to address a situation. In this case, rather than asking whether the injured workers received assistance from family or friends (since a very high percentage would respond affirmatively), we asked whether family or friends had taken time off work as the measure of involvement in supporting the injured workers. This omits non-working cohabiting partners (spouses, parents, and children), and therefore truncates the measure of collateral support.

Some 15% of primary respondents reported that they had family members or friends take time off work to assist their recovery. See Table 32 and Table 33.

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| Table 32: Number of family members/friends that took time off work*Q34: Since your injury, have any of your* ***friends or family*** *members taken time off work to help you during your recovery? For example, have they taken* ***time off work*** *to help you get to medical appointments, to help you do things around the house, or to help you with other things that you could not do because you were injured?* |
| **Number of carers identified** | **Frequency** | **Percent** |
| 1 | 255 | 72% |
| 2 | 62 | 18% |
| 3 | 23 | <1% |
| 4 | 8 | - |
| 5+ | 5 | - |
| Total  | 353 | 100% |

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| Table 33: Who assisted the injured worker?*Q36 Who are these friends or family members?* |
| **Response** | **Frequency** | **Percent** |
| Spouse/fiancé(e)/boy- or girlfriend | 226 | 64% |
| Family (parent/sibling/child) | 107 | 30% |
| Friend (non-family) | 14 | 4% |
| Other  | 6 | 2% |
| **Total** | **353** | **100%** |

Referring to the first identified carers (presumably the most important), these people took about 11.2 hours off work per week to provide support for the injured workers. The second named carers were reported to have taken 7.8 hours off work per week. Of course, the time off work would presumably have been only for the duration that the injured worker was off work. Table 34 presents the time commitments for the first three mentioned carers. In reading the table, note that 255 primary respondents reported one carer and relatively few had more than one.

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| Table 34: Time off work by carers*Q34: Over the entire course of your injury, on average, how many hours per week did each of the people we have been talking about take off from work to help you?* |
|  | **Carer 1** | **Carer 2** | **Carer 3** |
| n | 227 | 65 | 27 |
| Mean | 11.2 | 7.8 | 5.45 |
| Median | 8.0 | 5.0 | 2.0 |
| Note: This question allowed primary respondents to present information on up to three family members or friends who had cared for them. |

## The impact of the injury — secondary respondent perspective

Primary respondents identified a large number of family members and friends who were familiar with their injuries, and we were able to interview 510 of them. This number is larger than the number the primary respondents identified as carers who took time off work, although in many cases these would be the same people. Based on the contact information provided by a primary respondent, we either completed the interview with their secondary respondent, booked a time for the interview, or scheduled a time for a follow-up.

Most secondary respondents reported being employed in a broad range of occupations at the time of the injury. See Table 35.

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| **Table 35: Occupation of secondary respondent at the time of the injury***QS3: Were you employed, either part-time or full-time, at the time of [name of**primary respondent]’s workplace injury? What was your job at this time?* |
| **Response** | **Frequency** | **Percent** |
| Management (including sales) | 129 | 33% |
| Health care | 64 | 17% |
| Labour | 43 | 11% |
| Education  | 35 | 9% |
| Retired/student/other | 26 | 7% |
| Transportation | 25 | 6% |
| Technical | 25 | 6% |
| Public services | 18 | 5% |
| Construction  | 15 | 4% |
| Childcare | 11 | 3% |
| Sciences | 4 | 1% |
| **Total** | **395** | **100%** |
| Note: Totals may sum to more than 100% due to rounding. |

Secondary respondents earned an average of $1,114 per week at the time of injury, and reported that other income amounted to $18,000. Note that the primary and secondary respondents were not matched at this point, so comparisons and simple aggregation to obtain an average household income are not possible.

Almost 40% (36.7%) of secondary respondents reported taking time off work. Table 36 shows two views of this. Only a few secondary respondents believed that they would need to take more time off work to assist the worker (n=15).

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| Table 36: Time off work used to support the injured worker |
| **Response** | **Frequency** | **Mean** | **Median** |
| Hours per week (if primary respondent had more than five days off work)  | 90 | 11.8 | 5.0 |
| Total hours (if primary respondent had five or fewer days off work)  | 25 | 27.3 | 16 |

Secondary respondents also reported taking from their leisure time to assist the injured workers. Table 37 shows that the injury had a substantial impact on the leisure time of the secondary respondents. This is entirely understandable, especially if the secondary respondent was also a major income earner for the household.

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| Table 37: Time from leisure used to support the injured worker |
| **Response** | **Frequency** | **Mean** | **Median** |
| Hours per week (if primary respondent had more than five days off work)  | 345 | 15.3 | 10.0 |
| Total hours (if primary respondent had five or fewer days off work) | 159 | -- | -- |

Secondary respondents reported assisting with a wide variety activities to support the injured workers. See Table 38.

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| Table 38: Support activities provided to the injured worker by the secondary respondent*QS23: At any time, as a result of the injury, have you had to help [name of primary respondent] with any of the following personal activities?* |
| **Response** | **Frequency** | **Percent** |
| Personal care, including things like bathing, getting dressed, and tying shoes | 305 | 60% |
| Leisure and recreation, including things like sports and going to restaurants | 159 | 31% |
| Getting around, including things like walking and driving | 322 | 63% |
| Socializing, including things like visiting friends and family  | 160 | 31% |
| Other personal activities that we have not discussed  | 98 | 19% |
| Note: Respondents could provide more than one answer; totals may sum to more than 100%. |

Secondary respondents also reported on the household activities they performed for the injured worker. See Table 39.

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| Table 39: Support for everyday tasks*QS24: At any time, as a result of [name of primary respondent]’s injury, have you had to take over any of the following tasks that [name of primary respondent] would normally do?* |
| **Response** | **Frequency** | **Percent** |
| Household care, including things like cooking, cleaning, and housework | 350 | 69% |
| Lifting heavy objects around the house or reaching for higher objects | 387 | 76% |
| Performing maintenance on the home, such as painting, carpentry, and general repairs | 213 | 42% |
| Performing yard maintenance, such as mowing the lawn, gardening, and shovelling snow | 322 | 63% |
| Driving to social events  | 257 | 50% |
| Driving to get groceries, or carrying more groceries | 365 | 72% |
| Taking care of children | 148 | 29% |
| Taking care of pets | 199 | 39% |
| Other non-work-related tasks that we have not discussed  | 27 | 5% |
| Note: Respondents could provide more than one answer; totals may sum to more than 100%. |

The carers we interviewed observed a range of emotional and psychological changes in the primary respondents. This is important data, since it will corroborate the self-report information offered by the primary respondents. See Table 40.

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| Table 40: Observed emotional/psychological state of the worker (perception of secondary respondents) |
| **Response** | **Frequency** | **Percent** |
| Upsetting thoughts about the injury | 208 | 41% |
| Difficulty talking about the injury with others | 75 | 15% |
| Difficulty falling asleep or staying asleep | 171 | 34% |
| Unusual irritability or anger | 175 | 34% |
| Unwanted weight gain or weight loss | 86 | 17% |
| Upsetting feelings that your role in your family has changed | 146 | 29% |
| A strained relationship with [name of *primary respondent*] | 102 | 20% |
| Note: Respondents could provide more than one answer; totals may sum to more than 100%. |

Secondary respondents noted areas in which they had to cut back as a result of the injuries. To reiterate, these carers cohabited with the injured workers and, therefore, likely participated in budget decisions or were affected by the income losses caused by the injuries. See Table 41.

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| Table 41: Areas where secondary respondents reported cutbacks*QS26: Since the time of the injury until now, have you had to cut back on non-work-related spending in any of the following areas in order to help pay for some of the injury-related costs?* |
| **Response** | **Frequency** | **Percent** |
| Purchasing food  | 115 | 23% |
| Purchasing clothes | 135 | 27% |
| Purchasing items for your leisure activities and hobbies | 168 | 33% |
| Going on vacations | 148 | 29% |
| Going to social events | 140 | 28% |
| Note: Respondents could provide more than one answer; totals may sum to more than 100%. |

## Summary on primary and secondary respondent perceptions of workplace injury and its consequences

Over half of injured workers did not experience a serious aftermath from their injuries. These workers had few lasting effects — financial, physical, or emotional. The remainder experienced varying degrees of interruption in their lives. About 26% of the injured workers reported time loss in excess of 31 days, and of these, about a third (10% of the entire sample) were off for three or more months. Most of the adverse psychological, social, and economic impacts of workplace injury fall on a few workers.

# The intangible costs of workplace injuries for injured workers and their carers

This research examines the economic cost of the injury, not by summing financial costs, but by determining what primary and secondary respondents would be willing to pay to avoid the costs and trouble of the injury in the first place. Finding the price someone would be willing to pay to mitigate an adverse event is the function of insurance and insurance premiums.

Here we take a slightly different approach. After reminding the respondents (primary and secondary) about the injury and its aftermath, we offer a “quick and painless treatment that allows one to recover immediately” and ask what price they would be willing to pay for that treatment.

The core “value” or WTP question to avoid the injury in the first place appears as the following:

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| --- |
| **Primary respondent (injured worker):**Knowing what you now know about the injury and the recovery process that you had to go through, I would like you to think back to the time when you were first injured. Imagine that, immediately afterward, someone offered you a quick and painless treatment that would let you recover immediately and avoid all of the necessary recovery time actually required for your injury. With this treatment, you would be able to avoid all the changes that occurred in your life as a result of the injury. |

The question for the secondary respondent is a little more involved:

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| --- |
| **Secondary respondent (carer):**Knowing what you now know about [name of ***primary respondent***]’s injury and what you had to go through afterward, I would like you to think back to the time when the injury happened. Imagine that, immediately afterward, someone offered a quick and painless treatment that would let [name of ***primary respondent***] recover immediately and avoid all of the necessary recovery time actually required for the injury. With this treatment, you would be able to avoid all the changes that occurred in your life as a result of the injury.  |

We referenced this payment to a percentage of the respondent’s weekly income, which we then presented to the respondent again. The process used 10% as the first “price.” Then, those who said “yes” were tested with 15%, and those who said “no” were tested with 5%. Those who said “no” throughout were assigned a WTP price of $0.

## Measuring the non-economic cost of injuries, WTP — primary respondents

Many primary respondents would be willing to pay certain amounts out of their annual income for 10 years to avoid the injury. Although not strictly an insurance plan, it represents a *retrospective valuation* of the pain and dislocation experienced with the injury. Table 42 shows the responses to the offer in the questionnaire.

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| Table 42: WTP (primary respondents)*QP43: If the treatment cost X% of your annual household income for the next 10 years, would you have been willing to pay for it?* |
| **Percentage of income (X)** | **Number “yes”** | **Percentage** (out of 2,310) |
| 0% (No and NR) | 1,225 | 53.0% |
| 10% | 323 | 13.9% |
| 5% | 218 | 9.4% |
| 15% | 544 | 23.5% |

Figure 5 below helps clarify Table 42. The questionnaire (see Appendix B) starts with the entire sample of 2,310 primary respondents. We asked each whether he/she would be willing to pay 10% of their annual household income for the quick and painless treatment. Some 844 said “Yes.” The questionnaire then probed to determine whether the respondent would be willing to go to 15% and 544 said “Yes,” while 323 said “No” explicitly (hard “No’s”); these respondents remained at 10%. Note that 17 primary respondents offered no response and we recorded these as “No.” These numbers appear in Table 42 and Figure 5.

In total, 1,327 interviewees responded “No” to this question. The next question then became, “Would you be willing to pay 5%?” Some 218 said, “Yes,” leaving 1,120 who were hard no’s. As before, we interpreted non-responses as “No’s” and added these to the hard no’s for a total of 1,225.



Figure 5: WTP — primary respondents

Slightly over half the respondents were unwilling to pay any amount to avoid the injury in the first place. This represents a payment out of the respondents’ *before injury income*. Of those willing to pay, the distribution is skewed right, as shown in Table 43.

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| --- |
| **Table 43: WTP — primary respondents** |
| **WTP (annually)** | **Frequency** | **Percent** |
| $0 | 1,225 | 53.0% |
| $20 | 35 | 1.5% |
| $40 | 151 | 6.5% |
| $60 | 176 | 7.6% |
| $80 | 168 | 7.3% |
| $100 | 150 | 6.5% |
| $120 | 136 | 5.9% |
| $140 | 88 | 3.8% |
| $160 | 54 | 2.3% |
| $180 | 38 | 1.6% |
| $200 | 27 | 1.2% |
| $220 | 20 | 0.9% |
| $240 | 13 | 0.6% |
| $260 | 12 | 0.5% |
| $280 | 3 | 0.1% |
| $300 | 4 | 0.2% |
| $320 | 3 | 0.1% |
| $340 | 1 | 0.0% |
| $360 | 2 | 0.1% |
| $380 | 1 | 0.0% |
| >$380 | 3 | 0.1% |
| **Total**  | **2,310** |  |

We are able to plot the frequency of WTP levels (see Figure 6). The average value for the WTP among primary respondents is $43 annually for 10 years ($430). It is important to note that over half are unwilling to pay anything. At the same time, 3.5% are prepared to pay $200 annually for 10 years, and 23% are prepared to pay $100 annually for 10 years. Think of this as an insurance premium, which for a house of $400,000 is about $1,500 annually.



Figure 6: WTP to avoid the injury (primary respondents)

## WTP — secondary respondents

Secondary respondents would be willing to pay to avoid the effects of injury. Table 44 and Figure 7 show the same information as shown for the primary respondents.

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| Table 44: WTP (secondary respondents)*QS28: If the treatment cost X% of your annual household income for the next 10 years, would you have been willing to pay for it?* |
| **Percent of household income (X)** | **Number of respondents** | **Percent of respondents (out of 510)** |
| 0% (No and NR) | 161 | 32.0% |
| 10% | 83 | 17.3% |
| 5% | 42 | 8.3% |
| 15% | 213 | 42.3% |



Figure 7: WTP map for secondary respondents

The logical link between Table 44 and Figure 7 is the same as for the primary respondents. Each of the 510 secondary respondents answered the question about WTP to avoid the experience of the injury suffered by the paired primary respondent. Of this total, 300 said “Yes” to a 10% value of the household’s annual income (before injury) for a “quick and painless treatment that would let [name of ***primary respondent***] recover immediately and avoid all of the necessary recovery time actually required for the injury.” These respondents were prompted with a follow-up question as to whether he/she would be willing to pay 15%, and 213 respondents said “Yes.”

Similarly, those respondents that answered “No” to the initial question (179) received a follow-up prompt about the WTP of 5% of the annual income for that treatment, and 42 respondents said “No.” The non-responders joined those that offered an explicit “No.”

## Intangible costs of workplace injuries experienced by workers and their carers

Applying these percentages to actual before injury incomes, secondary respondents have an average WTP of $87 out of annual income, which is double that of the primary respondents who were willing to pay $43 out of their annual income. Compared to car and home insurance, these seem like low amounts. However, this is typical of other valuations to avoid illnesses. No patient or injured worker can access insurance markets to mitigate the pain and suffering, and so no “market price” exists for such an intangible “product.”

It is also useful to recall that 75% of primary respondents in our sample were not matched with a secondary respondent. By definition, these workers experienced less serious injuries. Most primary respondents who had injuries recovered completely, with a loss of less than 15 working days; therefore, it is unsurprising that they were unwilling to pay anything to mitigate the tangible costs of that injury.

Primary respondents with matched secondary respondents have an average WTP of $57, out of annual income narrowing the gap in the valuation of injured workers and their carers. This suggests a difference remains between primary respondents and secondary respondents in the perceptions of the value of avoiding injury. It also indicates that carers perceive the impact of injury differently. Here gender and relationship status (whether the carer is a parent, child, or spouse) may be important. These issues will be explored in a separate technical analysis.

The sum of WTP for all 2,312 primary respondents for an annual payment is $101,251 for this “insurance premium,” which — assuming this is a random selection of 2,312 from the administrative database (n=54,481) — totals approximately $2,430,000 annually or $24,300,000 (non-discounted) over 10 years.[[3]](#footnote-3) This forms the estimate of the non-financial, economic costs of workplace injuries over the study period.

The exact question probed respondents for their WTP to avoid the “necessary recovery time.” The intangible costs associated with their injury — such as mental health consequences — are implicit, which may have resulted in an underestimation of their WTP. Focussing on this specific aspect of the injury was intentional as, through the questionnaire pretesting, it became apparent that respondents understood a more limited concept of cost than a more expansive question on the intangible costs of workplace injury. This is another critical research issue that future research must address.

# Summary and policy implications

This research has sought to revise the perception that only the injured worker experiences a workplace injury. It attempts to align the concept of workplace injury as a shared experience between the worker and their carers. Recent literature in health economics has seen increasing serious and chronic disease as a shared experience between patients and their families.

## Summary

This research presents four innovations in understanding the economic costs of workplace accidents.

1. The unit of analysis is the workplace accident. All reference is to this incident, and it serves as the conceptual foundation for the study.
2. A revised framework for analyzing the costs of workplace accidents uses the accident as the start, with costs tracked “downstream” from that incident. This shifts the calculation of costs from the administrative constraints of the fiscal year to an estimation of the “lifetime” costs of accidents that occur within a predefined period. Practically, lifetime costs are tracked within a three- or five-year period.
3. Dyadic interviews that involved injured workers and their trusted carers mapped the outcomes of workplace injuries qualitatively. Workplace injuries trigger a range of outcomes, the complexity of which is often suppressed in large-sample administrative studies.

Key insights, including the following, flowed from this qualitative analysis:

* 1. Economic loss is not the only, or most important, consequence of workplace injury. Outcomes include a range of social, psychological, emotional, and financial impacts.
	2. The sequence of consequences varies among workers. Sometimes, the financial impacts trigger emotional and mental health challenges and, in other cases, the psychological impacts intensify financial loss.
	3. Carers are instrumental to workers’ successful recovery from more serious injuries.
	4. Most important is that the worker’s reaction to the injury is individualistic and situational. One critical hypothesis that needs more research is that objectively, closely similar injuries can provoke very different outcomes. It is possible that the degree and rapidity of recovery contributes to a complex range of individual and social attributes.

This challenges the WCB, who endeavours to ensure that workers’ lives are restored to the fullest extent possible, as quickly as possible, and as fairly as possible. Policy and program delivery becomes more complex, once it is evident that outcomes are interconnected and interactive.

1. The economic cost of workplace accidents is more than the tangible financial costs of wage loss and medical services. Typically omitted from studies of the costs of occupational and workplace accidents are the intangible costs associated with the pain, suffering, and reduction in the scope of life experiences. The technique to value intangible costs typically uses contingent valuation. Originally used to value environmental preservation, this technique is finding its way into other policy areas, notably health.

The application attempted in this research of contingent valuation to the intangible costs of workplace accidents appears unique. Rather than asking injured workers and their carers to value all aspects of the injury, recovery, and remaining effects, the question we posed focussed on recovery time. This purposeful restriction focussed attention on one aspect of the consequence of a workplace injury, increasing the likelihood of consistent valuations of the WTP to avoid the injury in the first place.

## Implications of this research

This research has several broad implications:

1. Most workers recover from their injuries. A large number suffer some lasting effects and a few workers experience lasting lifelong trauma from the accident and its aftermath.
2. Research on the costs of workplace accidents typically uses accounting information organized around conventional categories, such as wage replacement, medical expenses, retraining, and rehabilitation. This research analyzes costs around the accidents and records a range of intangible and indirect costs of the accidents. This reorientation supports the collection of the costs experienced during the recovery that WCB administrative data may not include. These include direct and indirect (tangible and intangible) costs experienced by the injured worker, their families, and their carers.
3. For this research, correlating injury severity and other worker attributes with the valuation of avoiding the injury — the core of our method to assess the full economic costs of the injury — is challenging. Intangible, direct, unobservable, and unmeasurable factors significantly influence a worker’s subjective assessment of the injury and its continued aftermath. Our use of contingent valuation shows one way to develop “monetary” measures of these intangibles.
4. WCB faces significant challenges in getting compensation right. Traditionally, studies of the costs of accidents have focussed on wage loss replacement and support rehabilitation based on so-called objective medical assessment. The goal was to restore the worker as much as possible to return to productive function. The dyad stories reveal complex, persistent, and enduring losses for those experiencing serious injuries; these injuries extend the concept of rehabilitation into entirely new domains. The challenge of restoring such severely injured workers even part-way to their previous levels of function may be more complex than was previously understood.
5. Carers and the families of injured workers experience a range of harms and losses. WCB does not record these costs of accidents, but they have a wide social and economic impact.

## Policy opportunities

This research has just scratched the surface of the economic cost of workplace injuries. WCB could increase the evidence base for policy development in the following ways:

1. A workplace injury involves workers and their groups of friends/families who form a network of carers. Carers are an integral element in the recovery process and each injury is comprised of both the worker and the carers. As the injury severity increases, the support from carers becomes more important. Very little is known about the attributes of the work, the family circumstances, and the network of caring that could support the recovery of the worker. Like the details of the accident, some of this information may be collected in the initial interviews that determine eligibility.

WCB should consider bringing the “carer” formally into the support circle for injuries that are more serious. Carers are instrumental in the recovery of the injured worker, and formally acknowledging their inclusion in the recovery process may hasten the worker’s return to work.

1. Benefit-cost estimates should include estimates of the economic valuation of pain, career interruption, and so on, to assess the value for money of injury prevention. This research has demonstrated the feasibility of contingent valuation techniques on a specific element of the injury, namely, recovery time. These techniques apply to other aspects of the injury to arrive at a more complete valuation of the economic cost of injuries to workers and their carers.
2. The workplace injury triggers complex sequelae. Workers may encounter different outcomes, in different sequences, and with different intensities, despite the same apparent physical manifestation. Applying medically assessed and administratively derived rules to award financial support may appear equitable, but this research has shown each injury is unique. The increased tailoring of support, especially non-monetary compensation in the form of emotional and psychological services, could well reduce the recovery time and generate value for money.
3. Regular follow-up with workers who have work-time loss in excess of 20 days’ (one month’s) work would increase information on direct and indirect costs, treatment experiences, and career recovery. Such follow-up should be continuous and made at intervals of one, three, and five years after the accident.
4. A workplace accident triggers injury, and yet with the exception of the date, the administrative information maintained by the WCB often contains no detail on the context of the injury about the events that were life-changing for the workers. Increasingly, the details about the circumstances of workplace accidents will support greater insight into preventing workplace injuries.
5. Follow-up with employers after each serious accident is important. In addition to verifying changes to the workplace, procedures (and other actions such follow-up) would allow WCB to track employer costs of accidents, adding an important and currently missing component of the economic costs of accidents.
6. The information on the worker lapses once the worker no longer receives compensation. Yet this research shows that, for many, the aftermath of the injury continues indefinitely; for a few, it continues for the rest of their lives. Two opportunities exist for maintaining extended information on the injured worker:
	1. Joining the administrative information on workplace injuries with Manitoba Health data could provide extensive information in longer-term outcomes, as expressed by the follow-up medical treatments needed by the worker. The data repository managed by the MCHP could retain such a joined dataset. The MCHP manages this information in a very controlled environment that assures complete confidentiality.
	2. Periodic surveys of injured workers and the employer offer important insight into factors influencing recovery. These surveys are cost-effective and insightful and can create the foundation for improved policies for injured workers. Focussing on time loss over 10 or 20 days would represent a cost-effective strategy.

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1. Technically, the extract recorded some ages as young as 14 and several over 85. It is common to have errors in an administrative database. As records are accessed, information may be corrected in sub-files, but usually not in the source administrative data. These minor discrepancies have no impact on this research. [↑](#footnote-ref-1)
2. Note that those workers and carers included in dyads were not included in the survey. [↑](#footnote-ref-2)
3. Recall that many respondents were unwilling to pay anything. [↑](#footnote-ref-3)