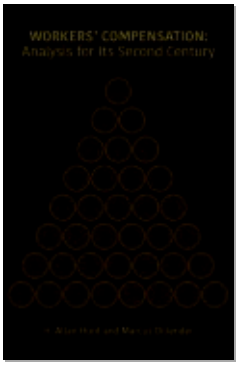
Ch 2 - Benefit Adequacy and Equity



Chapter 2

Benefit Adequacy and Equity

Workers' compensation programs for workers disabled by their work are the oldest social insurance programs in the United States and Canada. Issues of benefit adequacy and equity have been central to workers' compensation systems from the start, at the beginning of the twentieth century.

The simplest way to assess the adequacy and equity of benefits is with reference to the statutory framework.[1] What level of wage replacement is specified by statute? The most common index among U.S. states is 66.67 percent (two-thirds) gross wage replacement.[2] This reflects the fact that such wage-replacement benefits are free of any federal or state tax, as well as a desire by policymakers to maintain work incentives by ensuring that there is a net benefit to working. The fact that there are specific caps on maximum benefits in all workers' compensation states, and that minimum benefits are provided in most, also clearly indicates that there has been some legislative judgment of the amount of wage replacement that is thought to be appropriate.

Equity is also relatively simple to measure in concept. An equitable system is one in which all workers would be treated the same, or those in similar circumstances would be treated in similar ways. These policy concerns directly introduce an element of social welfare into the evaluation of workers' compensation benefits.

Beginning at least with Professor Arthur H. Reede in 1947 (whose seminal work, *Adequacy of Workmen's Compensation*, is cited in Somers and Somers [1954], p. 80), scholars of workers' compensation have struggled to provide an accurate assessment of benefit adequacy. Obviously it is a prime point of contention between the interests of injured workers and the employers who pay for their workers' compensation insurance. It is also a major influence on any assessment of the sociopolitical performance of workers' compensa-

tion programs as a way of handling the consequences of industrial injuries and illnesses.

This chapter will review the empirical evidence from existing studies of benefit adequacy and equity in workers' compensation programs in the United States and Canada. We concentrate on both findings and methods, since there is still disagreement about the "best" way to measure benefit adequacy empirically. We pay particular attention to a pair of recent Canadian studies that have not had much exposure. These studies are notable for their thorough and original exploration of the implications of methodology in such research. Our expectation is that our paper will help to stimulate additional discussion and perhaps prompt new studies of benefit adequacy and equity performance by these important social insurance programs.

PREVIOUS STUDIES

One method that researchers have employed to study benefit adequacy has been to conduct interviews of injured workers. Johnson, Cullinan, and Curington (1979) studied benefit adequacy by interviewing nearly 2,000 workers' compensation beneficiaries with severe permanent impairments in California, Florida, New York, Washington, and Wisconsin. They examined both the extent to which injured workers received workers' compensation benefits and the degree to which people receiving benefits were compensated for their lost wages. They found that the average total wage loss during the five to seven years after injury was $5,842 in 1975 dollars and that almost three-fourths of the sample were still experiencing significant wage loss (at least $500 per annum) at the time of the survey. Approximately 10 percent of the sample never returned to work after their injuries, and these individuals had a 22 percent wage replacement rate for the entire period. Among those still receiving workers' compensation benefits at the time of the survey, only an average of 12 percent of the wage loss was being replaced five years after the injury.

Johnson, Cullinan, and Curington called the replacement rate "clearly inadequate" (p. 97).

The California Workers' Compensation Institute commissioned another interview study of benefit adequacy in California in the early 1980s. As part of the study, an independent research firm interviewed 1,076 people with workers' compensation claims from 1975 and 1976 six to seven years after the injury. The study found that the California workers' compensation system on average replaced 49 percent of lost earnings, and that people with the lowest disability ratings (1–9 percent) had the highest replacement rate—over 80 percent. However, the study also found that for the most serious (permanent and total disability) claims, the replacement rate was 67 percent, as specified by statute. Nevertheless, the study concluded that the California workers' compensation system provided benefits that were both inadequate and inequitable (CWCI [1984], cited in Hunt [2004], p. 105).

More recent benefit adequacy studies generally use workers' compensation administrative data on injured workers, combined with wage records from a sample of comparison workers who were not injured, in an attempt to estimate what workers would have earned in the absence of the injury. They then calculate the loss replacement rate as the extent to which workers' compensation replaces compensation that they would have earned in the absence of the injury.

$$\text{Loss replacement rate} = \frac{\text{WC income benefits}}{\text{Comparison earnings} - \text{postinjury earnings}}$$

Berkowitz and Burton (1987) implemented the first modern wage loss study of state workers' compensation programs. In addition to describing the provisions of the varied programs for compensating permanently disabling injuries in 10 states, they also analyzed wage replacement performance in three states (Wisconsin, California, and Florida) in a project funded by the National Science Foundation and ultimately published by the Upjohn Institute. The findings were particularly stimulating because of the variety of disability evaluation

strategies employed in these states. At the time of the observed injuries in 1968, Wisconsin used an impairment-level standard, California used a loss-of-earning-capacity standard, and Florida offered injured workers their choice between the two standards (Berkowitz and Burton 1987, Chapter 10). If a judgment could be made about benefit adequacy under different disability evaluation methods, this would be valuable information for policymakers.

For a sample of workers' compensation injuries in 1968 from each of the three states, Berkowitz and Burton (1987) secured two years of preinjury wage data and five to six years (1968–1973) of postinjury earnings data from the Social Security Administration, as well as the actual workers' compensation indemnity benefits paid to the injured workers in California, Florida, and Wisconsin. Their comparison group to estimate wage loss consisted of California workers who were also injured in 1968 but whose injuries received less than a 5 percent permanent disability rating. They also calculated "expected growth ratios" for future wages by age, gender, and earnings level of the California sample and applied these ratios to similar workers in other states.

Berkowitz and Burton (1987) found that the overall wage replacement rates were 46 percent for California, 59 percent for Florida, and 75 percent for Wisconsin (p. 357). But the replacement rates varied widely between contested and uncontested cases.[3] For contested cases, the replacement rates were relatively similar to the overall replacement rates for California (41 percent) and Florida (51 percent), which had high rates of disputes (90 percent and 70 percent contested claims, respectively). However, contested claims in Wisconsin were much less common (only 14 percent) and received lower wage replacement compensation at 58 percent.

For uncontested cases, however, the replacement rates were much higher for California and Florida. In California, Berkowitz and Burton (1987) found that injured workers generally had no losses in uncontested cases, meaning the replacement rate was infinite. In Wisconsin, the replacement rate was 85 percent for uncontested cases. In

Florida, they found that workers' compensation replaced 724 percent of earnings losses, on average. These results were troubling.

In addition to the high degree of variability in the replacement rate based on the litigation status of the case, Berkowitz and Burton (1987) found a high degree of variability in the replacement rate based on the age of the worker and the body part injured. These findings indicate that the workers' compensation programs in these states faced serious equity issues as well as adequacy issues.

Boden and Galizzi (1999) estimated wages lost from work-related injuries in Wisconsin by comparing injured workers who missed more than one week of work in 1989–1990 to workers with less severe injuries who missed less than one week of work. They found that the Wisconsin workers' compensation system replaced 64 percent of pretax lost wages for men and 50 percent of pretax lost wages for women with temporary total disability (TTD) and permanent partial disability (PPD) claims in the four to five years after the injury. But the replacement rates varied greatly by the amount of time missed from work. Workers' compensation in Wisconsin provided a replacement rate of over 80 percent for TTD claims lasting less than six weeks but a much lower replacement rate for TTD claims of longer duration. This was because people with longer-duration TTD claims experienced wage losses even after they no longer received workers' compensation benefits. Boden and Galizzi found that PPD benefits replaced 83 percent of lost income for men and 63 percent of lost income for women. So, again, there seem to be equity issues arising from the different rates of wage loss replacement for workers in different situations.

Peterson et al. (1998) and Reville (1999) studied replacement rates for PPD claimants in California by matching workers injured in 1993–1994 to uninjured workers employed at the same firm and with similar preinjury wages. They found that injured workers earned 40 percent less pretax than noninjured workers during the five years following the accident and that workers' compensation replaced 38 percent of this loss. Reville also considered earnings loss and replacement rates by disability ratings. He found that injured workers with

higher disability ratings experienced both higher earnings losses and higher replacement rates of those earnings losses than those with less serious injuries.

Biddle (1998) estimated lost wages for seriously injured workers in the state of Washington by comparing workers injured in 1993–1994 who received indemnity (wage loss) payments in the 3.5 years after an injury to those who had medical-only claims. He first showed that seriously injured workers who experienced time loss of 15 or more days experienced lost wages immediately in the quarter of their injury. After 3.5 years, the difference between the seriously injured workers and the control group of medical-only claims had shrunk but had not gone away completely. Biddle found that the Washington workers' compensation system replaced an average of 40 percent of after-tax lost wages for workers with time-loss claims over the 3.5 years after injury.

Unlike what Boden and Galizzi (1999) found in Wisconsin, injured workers in Washington who missed more time had higher replacement rates than those who missed less time. For workers with permanent disabilities, the after-tax replacement rates were over 100 percent. A possible explanation for this may be that Biddle (1998) had only 3.5 years of data after the injury. The most severely injured workers may have experienced losses for years after their benefits ceased, while PPD benefits are given in a lump sum after the injury in Washington. When Biddle projected 10-year replacement rates based upon presumptions about future earnings and workers' compensation benefits, the average PPD replacement rate shrank to 34 percent.

Biddle (1998) also investigated the distribution of wage losses across workers and how wage losses differed based on demographic characteristics and injury types. He found that a small number of workers experienced very significant wage loss. Of workers missing 15–60 days of work during the observation period, 10 percent were still experiencing large earnings losses one year after the injury. He found that workers under 26 years of age experienced higher earnings losses compared to older workers with similar preinjury wages.

Head injuries led to greater wage losses than injuries to other parts of the body, and married women experienced greater earnings losses than both married men and unmarried men. Injured workers experienced similar losses regardless of whether they were employed at self-insured firms or insured firms.

In the most ambitious effort to date, Reville et al. (2001) evaluated the benefit adequacy of workers' compensation for PPD claimants in New Mexico by comparing replacement rates for PPD claimants in New Mexico in 1994–1998 to PPD claimants in California, Wisconsin, Washington, and Oregon over the same period. To calculate replacement rates, they examined the degree to which workers' compensation benefits offset the earnings differences between workers with partially disabling occupational injuries and similar workers without injuries during the five years after the first group suffered injury. New Mexico PPD claimants lost 23 percent of their earnings on average during the first five years after the injury and 20.5 percent of their wages during the first 10 years after the injury.

During the first five years after the injury, the pretax replacement rate in New Mexico was 65 percent, nearly identical to the two-thirds statutory standard. During the 10 years after the injury, the pretax replacement rate fell to 46 percent, as benefits fell off more rapidly than did wage losses. Ten-year pretax loss-replacement rates were 37 percent, 42 percent, 41 percent, and 29 percent in California, Oregon, Washington, and Wisconsin, respectively (Table 2.1). Thus, New Mexico had the highest replacement rates of any of the states. However, after accounting for differences in industry composition between the states, New Mexico had a replacement rate that was in the middle of the states. Reville et al. (2001) found that claimants in the top 20 percent of the income distribution in New Mexico had the lowest earnings replacement, while replacement rates were relatively equitable for the rest of the income distribution.

This was the "state of the science" when the National Academy of Social Insurance and the Upjohn Institute for Employment Research published *Adequacy of Earnings Replacement in Workers' Compen-*

Table 2.1 Ten-Year Earnings Losses and Replacement Rates for PPD Claimants

	NM	WA	CA	WI	OR
Potential earnings ($)	167,244	250,251	238,262	222,055	197,737
10-year losses ($)	34,314	41,220	61,767	49,477	39,202
Total benefits ($)	15,832	16,734	22,612	14,452	16,636
Proportional wage loss (%)[a]	20	16	25	23	20
Pretax wage loss replacement rate (%)[b]	46	41	37	29	42

[a] Row 2 / Row 1.
[b] Row 3 / Row 2.
SOURCE: Adapted from Reville, Bhattacharya, and Weinstein (2001).

sation Programs (Hunt 2004). A Study Panel on Benefit Adequacy of the National Academy spent several years reviewing conceptual issues and evaluating the empirical work that had been done to that time. The study panel endorsed the wage-loss studies as "the best yardstick to measure the adequacy of benefits" (p. 132). However, "for all categories involving substantial lost time from work or permanent disabilities, aggregate replacement rates are considerably below the two-thirds standard when considered over the 10-year period following the injury" (p. 132).

In addition, the study panel called for additional wage loss studies from other states, especially studies that included TTD claims and studies from states using alternative methods for setting PPD benefits. The hope was that additional studies would provide more guidance to policymakers seeking the most adequate, equitable, and efficient wage replacement policy.

However, we are aware of only three other U.S. studies since the release of the study panel report and recommendations in 2004. Seabury et al. (2014) studied New Mexico workers' compensation claims with injury dates from 1994 to 2000. This study linked back to the early Berkowitz and Burton study by utilizing federal data from the Internal Revenue Service and Social Security Administration rather than state unemployment insurance data to determine earnings.

Seabury et al. were able to secure actual earnings data for up to 10 years following the injury. But findings were disappointing, as they estimated that only 16 percent of losses were replaced by workers' compensation benefits.

Dworsky et al. (2016) used the same methods as Reville, Bhattacharya, and Weinstein (2001) to study trends in earnings losses and workers' compensation benefits paid before, during, and after the "Great Recession" in California. This study, funded by the California Commission on Health and Safety and Workers' Compensation, probes the impacts of the recession during a period that also saw considerable policy changes in benefits for permanently disabled California workers. They found that workers injured during and after the Great Recession of 2008–2009 experienced substantially higher earnings losses than those injured earlier. Impairment ratings and workers' compensation benefits both increased, but the loss replacement rate still decreased because of a shift toward lower wage levels for workers injured during the recession.

The third study was supported by the Workers Compensation Research Institute and is reported in some detail below (Savych and Hunt 2016). Covering Michigan workers injured in 2004 and earnings records through 2008, this study raises questions about the most appropriate measure of earnings losses for workers' compensation policy purposes.

MORE RECENT CANADIAN STUDIES

Tompa, Scott-Marshall, et al. (2010), from the Institute for Work and Health in Toronto, have contributed a more recent Canadian perspective to this body of work. In a path-setting but little-known study for the Workplace Safety and Insurance Board (WSIB) in Ontario, they compared the benefit adequacy of three Canadian compensation regimes: 1) the permanent-impairment regime in place in Ontario before the 1990 reforms, 2) the loss-of-earnings-capacity regime

installed in Ontario by the 1990 reforms, and 3) the bifurcated regime (claimant gets the higher of impairment or loss-of-earnings-capacity benefit) in British Columbia before 2002.

Table 2.2 shows the details of compensation regimes for the three Canadian workers' compensation programs studied by Tompa, Scott-Marshall, et al. (2010). Ontario based compensation on after-tax (or spendable) earnings, with a 90 percent nominal replacement rate. British Columbia used the more traditional 75 percent of preinjury gross (i.e., before-tax) earnings.

Tompa, Scott-Marshall, et al. (2010) also provide a painstaking analysis of the different methodologies for measuring the earnings losses of injured workers. For instance, they explain and illustrate the differences between the "loss replacement rate" and the "earnings replacement rate." The loss replacement rate uses the difference between comparison group earnings and injured worker earnings as the denominator, with workers' compensation benefits paid as the numerator to calculate the rate.

$$\text{Loss replacement rate} = \frac{\text{WC income benefits}}{\text{Comparison earnings} - \text{postinjury earnings}}$$

The earnings replacement rate adds the postinjury earnings of injured workers to the numerator, thereby taking into account the residual earning capacity of injured workers. It then compares this total to the estimated earnings in the absence of injury (comparison earnings). The result is a higher measured replacement rate, which is due to the mathematics, but which also more accurately reflects the fact that most injured workers will return to work and their earnings losses will be temporary. Thus, the earnings replacement rate takes the perspective of the injured worker and his/her income flow rather than the perspective of the workers' compensation system.

$$\text{Earnings replacement rate} = \frac{\text{WC income benefits} + \text{postinjury earnings}}{\text{Comparison earnings}}$$

Table 2.2 Summary of Three Long-Term Disability Compensation Programs

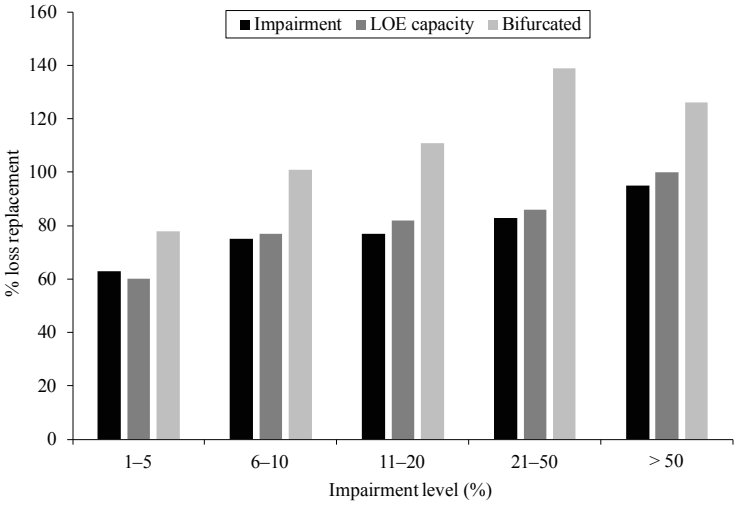
Program	Short-term disability benefit amount[a]	Criteria for long-term disability benefit[b]	Long-term disability benefit amount[a]	Time period for long-term disability benefits	Separate loss of quality of life award paid
Permanent impairment (Ontario, pre-1990)	90% of preaccident, after-tax earnings	Permanent impairment after MMI	90% × preaccident, after-tax earnings × percentage permanent impairment	Benefits paid for life	No
Loss of earnings capacity (Ontario, post-1990)	90% of preaccident, after-tax earnings	12 continuous months on short-term disability benefits	90% × after-tax loss of earnings capacity	Benefits received until age 65, followed by pension based on 10% of benefits received	Yes
Bifurcated (British Columbia, pre-2002)	75% of preaccident, before-tax earnings	Permanent impairment after MMI	Higher of: 1) 75% × preaccident, before-tax earnings × percentage permanent impairment; OR 2) 75% × before-tax loss of earnings capacity	Benefits paid for life	No

[a] Subject to maximum compensable earnings limit.
[b] "MMI" refers to maximum medical improvement, the conventional time for assessing the level of remaining permanent disability.
SOURCE: Tompa, Scott-Marshall, et al. (2010), Table 1.

Figure 2.1 shows the aggregate after-tax loss replacement rates for the Canadian systems analyzed by Tompa, Scott-Marshall, et al. (2010). These workers' compensation systems replace an average of 60–140 percent of lost earnings, with the bifurcated system yielding considerably higher numbers than the other two (which are quite similar). This should not be surprising: since the bifurcated system gives the higher of the two benefits under the other regimes, it is nearly certain to yield a higher average number than either of the others alone, unless one of them is consistently higher than the other.

Overall, it appears that these Canadian systems replace an average of at least 75–80 percent of after-tax lost wages, except for the low (1–5 percent) impairment group. There also appears to be a tendency for loss replacement rates to increase with severity of impairment in all three systems. The exception is for those with greater than 50 percent impairment in the bifurcated system.

Figure 2.1 Aggregate Loss Replacement Rates

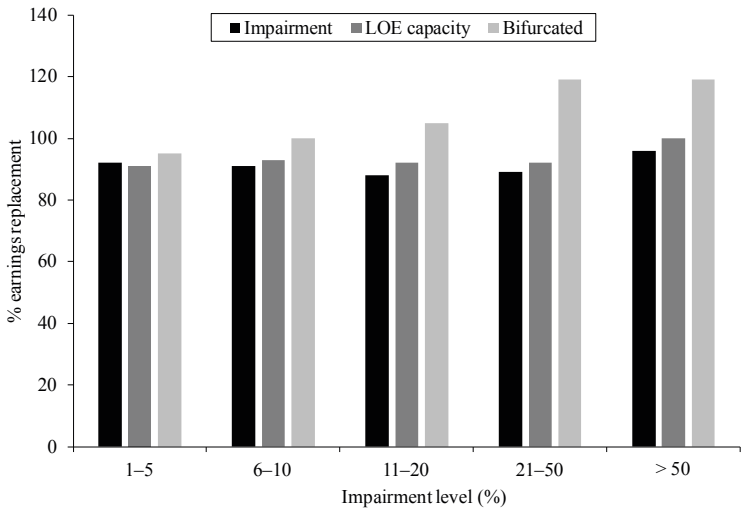


SOURCE: Developed by the authors from Tompa, Scott-Marshall, et al. (2010).

Figure 2.2 compares the postinjury earnings plus workers' compensation benefits paid for each injured worker to the earnings of the uninjured comparison group. It uses this aggregate-level earnings replacement rate as the measure of benefit adequacy. Therefore, benefit adequacy is expressed as the percentage of after-tax lost earnings that are replaced by workers' compensation benefit payments plus workers' estimated earnings for the 10 years following the injury.

Figure 2.2 shows this estimate for the range of impairment levels, from the minor to the very serious. This makes it possible to judge the equity of the benefits paid by the workers' compensation system. It would be desirable for all injured workers to receive the same replacement level of their lost earnings, subject to the impact of benefit caps, which would tend to reduce the replacement rates for higher-earning workers. The Ontario impairment scheme comes very close to achieving that objective, with consistent earnings replacement rates until the

Figure 2.2 Aggregate Earnings Replacement Rates



SOURCE: Developed by the authors from Tompa, Scott-Marshall, et al. (2010).

50 percent impairment level. British Columbia shows more variation by impairment level.

These benefit adequacy rates cannot be precisely compared with the earlier studies in the United States because of the differences in methodology. However, since Tompa, Scott-Marshall, et al. (2010) did report the aggregate-level loss replacement rates for these three workers' compensation regimes, this facilitates rough comparisons with the U.S. studies cited earlier. Table 2.3 shows that for the Ontario pre-1990 impairment rating system, the after-tax aggregate loss replacement rate was 76 percent. For the post-1990 Ontario loss-of-earnings-capacity rating system, the aggregate loss replacement rate was 80 percent; for the British Columbia bifurcated system, the aggregate loss replacement rate was 95 percent. Clearly, all three of these regimes were more generous in replacing lost earnings for injured workers than any of the U.S. states studied to date. Furthermore, all but the 1–5 percent impairment group in British Columbia achieved more than 100 percent aggregate-level after-tax loss replacement rates. Concern about this apparent overcompensation was a major motivating factor in the elimination of the British Columbia bifurcated system of compensation in 2002.

In another commissioned study, Tompa, Mustard, et al. (2010) evaluated the impact of the major revisions to the workers' compensation benefits in British Columbia that took effect in June 2002 (Bill 49). These changes included altering the compensation benefit formula from 75 percent of preaccident, before-tax gross earnings to 90 percent of after-tax net earnings. It also involved moving from the "bifurcated" system of compensating permanent disabilities described earlier to a dominant focus on loss of functional capacity, and a restriction of the cost-of-living adjustment to annual (rather than semiannual) adjustment at 1 percent less than the change in the consumer price index (CPI), with a cap of 4 percent annually (rather than just CPI without a cap).[4]

The research team specifically was asked "to assess the adequacy and equity of benefits provided to claimants under the pre–Bill 49

Table 2.3 Replacement Rates by Impairment Stratum for Losses in Three Canadian Workers' Compensation Programs

Program	Strata (% impairment)	Sample size	Proportion w/ loss (%)	Loss replacement rate (%)	Earnings replacement rate (%)
Permanent-impairment program sample	1–5	3,235	71	63	92
	6–10	3,415	83	75	91
	11–20	3,630	88	77	88
	21–50	1,270	93	83	89
	> 50	145	97	95	96
	Entire sample	11,700	83	76	90
Loss-of-earnings-capacity program sample	1–5	3,005	71	80	91
	6–10	2,750	77	77	93
	11–20	4,225	83	82	92
	21–50	2,755	91	86	92
	> 50	150	97	100	100
	Entire sample	12,885	81	80	92
Bifurcated program sample	1–5	1,670	70	78	95
	6–10	515	79	101	100
	11–20	290	86	111	105
	21–50	125	88	139	119
	> 50	45	89	126	119
	Entire sample	2,645	75	95	99

SOURCE: Tompa, Scott-Marshall, et al. (2010), Table 5.

policy and to assess the impact of Bill 49 changes on benefits for claimants" (Tompa, Mustard, et al. 2010, p. 4). The researchers followed the actual earnings of injured workers for 10 years if their injury was permanent and six years if temporary. They evaluated the impact of these benefit changes by gender, age, geographic location, and severity of functional impairment. They used several alternative analytical methods, as in the Ontario study. They also used actual preinjury earnings to estimate the wage loss for the uninjured state instead of a comparison worker method. Again, all empirical results were reported so that readers could select the measure they found most compelling.

Overall, Bill 49 was estimated to have reduced workers' compensation benefits in British Columbia by 15 percent. Lesser functional impairment categories had higher earnings recovery, males did better than females, and geography did not appear to matter significantly. The long-term disability sample showed an average estimated aggregate-level after-tax earnings replacement rate of 96 percent. However, for the 50-to-59-year-old group of injured workers, the 90 percent target replacement rate was not reached, either before or after Bill 49. Average aggregate earnings replacement for the 50–59 age group was 78 percent.

The short-term disability sample suffered an estimated average reduction of 9 percent in earnings over six years, but most demographic strata still did achieve 90 percent earnings replacement. Again, the exception was the 50–59-year-old group, which had an aggregate earnings replacement rate of 88 percent.

WORKERS COMPENSATION RESEARCH INSTITUTE STUDY IN MICHIGAN

The Workers Compensation Research Institute (WCRI) and the Upjohn Institute for Employment Research recently collaborated on a study of the workers' compensation system in Michigan (Savych and

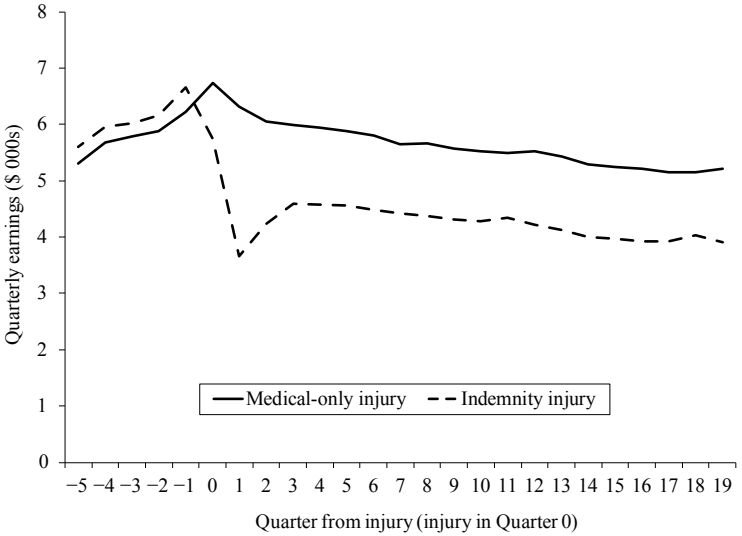
Hunt 2017). The adequacy of workers' compensation benefits, their equity, and their efficacy in promoting return to work were assessed based on a 2004 sample of over 77,000 injured workers evaluated at the end of 2008 (an average of 4.5 years after injury date).

A total of 8,781 Michigan indemnity claims from 2004 with at least one month of lost work time and some wage loss compensation paid were available from the Detailed Benchmark/Evaluation database maintained by WCRI. These claims were matched using propensity-score reweighting procedures against a sample of 63,887 medical-only claims from 2004, which provided the comparison group for estimating what postinjury earnings would have been for the injured workers if they had not been injured.[5] Quarterly earnings for these claimants from 2003–2008 were obtained from the Michigan Department of Energy, Labor, and Economic Growth. Earnings are observed from 4 to 7 quarters before the injury date and from 16 to 19 quarters following the injury date, depending upon the actual quarter of the injury in 2004. Thus, postinjury earnings and compensation are observed for an average of 4.5 years, ranging from 4 to 5 years, depending upon the specific date of the injury.

Figure 2.3 shows the average earnings for injured workers who receive workers' compensation indemnity payments for at least one month and those who have medical-only injuries. Note that earnings of the comparison group peak in Quarter 0, which is the quarter of the injury. This reflects the requirement that all injured workers must have been working in Quarter 0 or they would not have been covered. Earnings of injured workers peak one quarter before the injury (since no work time is lost in that quarter), decline rapidly in the quarter of injury and the following quarter, and then begin to recover, but not to the level of the comparison group of medical-only injuries. It is the gap between these two earnings lines that represents the wage losses that the workers' compensation system is designed to replace.[6]

For the sample, the average after-tax loss of earnings following the injury is about $1,000 per quarter. And, as in other wage-loss studies in the United States and Canada, those losses appear to be very

Figure 2.3 Unadjusted Average Quarterly Earnings of Michigan Workers Injured in 2004, by Quarter from Injury and Injury Type



NOTE: Quarterly earnings information covers the period between 2003 and 2008. Sample includes workers injured in Michigan in 2004. Indemnity injury sample includes workers who had more than one month of lost time or received lump-sum payments. Medical-only injury sample includes workers with medical-only injuries.
SOURCE: Savych and Hunt (2017).

persistent or even permanent (at least, there is no indication of significant improvement after five years). Because only quarterly earnings data are available, we cannot tell whether the losses are the result of reduced labor force participation, reduced hours of work, or hourly wage reductions.

Because Michigan is a wage-loss state, there is no independent assessment of the degree of permanent impairment for injured workers. All one can do is compare the amount of compensation received from the workers' compensation system to the lost earnings. As a proxy for severity of injury, the number of weeks of wage-loss compensation that are paid to the injured worker is used. An injury that

requires more weeks away from work is probably more serious, but there may be other things that influence the duration of disability payments, so this is not the equivalent of an estimate of residual disability that would be available from an impairment system.

Table 2.4 shows the after-tax earnings replacement rates and loss replacement rates for all injured workers with more than one month of temporary total disability or a lump sum and for subgroups by disability duration. Both the earnings replacement rate for the average observed duration of 4.5 years and the projection of the earnings replacement rate out to 10 years are shown for each group. For the 10-year projections, claim-specific reserves were added to payments already made to estimate the total workers' compensation payments, while wage losses were projected to continue at the level observed at the end of 2008. For all injured workers with more than one month of lost time, the after-tax earnings replacement rate after 4.5 years is 97 percent, and after 10 years we estimate that it is 88 percent. Subgroup earnings replacement rates at 4.5 years vary from 94 to 96 percent for those with temporary disability compensation only, and from 91 to 95 percent at 10 years.

This is a good deal higher than earlier U.S. studies found, but roughly comparable to the Canadian results. This primarily reflects the addition of postinjury earnings to workers' compensation payments when calculating the losses associated with the injuries. These earnings were not included in the same manner with workers' compensation payments in the U.S. studies, but they *were* in the Canadian studies cited. Also, most U.S. studies only included injured workers with permanent partial disabilities, whereas the Michigan study included all injured workers with more than one month of lost work time. It is widely understood that compensation for permanent partial injuries tends to be lower than for temporary injuries in workers' compensation programs. This reflects the disputed elements involved in such injury claims.

Presumably, workers with what are called permanent partial injuries in other states would end up receiving redemption payments

Table 2.4 Earnings Replacement and Loss Replacement Rates for Workers with Indemnity Injuries in Michigan in 2004

Indemnity groups based on duration of temporary disability payments and receipt of lump-sum settlement	Earnings replacement rate (%)		Loss replacement rate (%)	
	at 4.5 years	at 10 years	at 4.5 years	at 10 years
All injured workers with lump sum or > 1 month temporary disability	97	88	87	52
Subgroups of temporary disability duration (no lump sum)				
1–3 months	96	95	40	23
4–6 months	94	91	51	31
7–12 months	96	95	77	59
> 12 months	94	95	89	91
Subgroups with lump-sum settlements				
Lump sum and no TD payments	30	74	57	57
Lump sum and 1–3 months TD	35	85	62	71
Lump sum and 4–12 months TD	49	98	67	97
Lump sum and > 12 months TD	91	155	92	170

NOTE: Claims assessed at between 4 and 5 years after injury. This projects to 10 years based on current earnings and workers' compensation payments at time of assessment plus claim reserves.

SOURCE: Savych and Hunt (2017), Technical Appendix Tables C4a and C4b.

("lump sum" payments) in Michigan, so it is relevant to examine this group in more detail. For all claims receiving lump-sum payments, the average after-tax earnings replacement rate is 101 percent at 4.5 years (reflecting the impact of the lump-sum payment some time during the first 4.5 years). This falls to 69 percent when projected out to 10 years since the lump-sum payment will close the claim for good and there will be no remaining claim reserves.

The distribution of results for lump-sum claims when including their temporary disability payments indicates that, on average, those receiving some TTD were more adequately compensated. This probably reflects the high level of controversion among lump-sum claims. Those showing no temporary disability payments likely had their claims disputed from the start and therefore ended up with lower compensation overall.

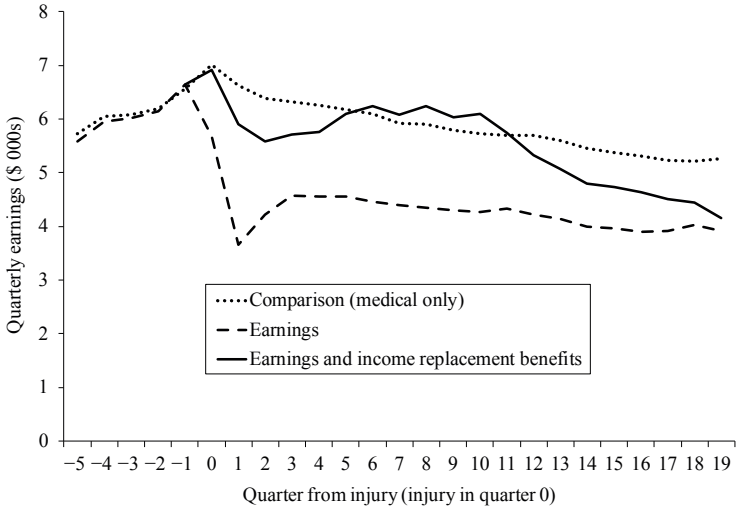
Table 2.4 also reports the loss replacement rates for Michigan workers. As discussed earlier, this is the typical measure of benefit adequacy that has been used in most previous studies. Except for the omission of workers with injuries that received less than one month of TTD, and the fact that all such indemnity claims—not just permanent partial disability claims—were included, these after-tax loss replacement rates should be more comparable with those of other U.S. studies than the earnings replacement rates used in this study.

With one exception, all the loss replacement rates are lower than the earnings replacement rates. The one exception is for claims with more than 12 months of TTD followed by a lump-sum settlement. Presumably, these injured workers at 4.5 years after the injury have recent lump-sum settlements. Note that the projected replacement rates for this group at 10 years are nearly identical for both measures.

It is interesting that the difference between the earnings replacement rate and the loss replacement rate is greatest for the shortest-duration claims. This sustains our belief that it is the "overweighting" of short-term claims that drags the aggregate loss replacement rate down.

Figure 2.4 shows the net effect of the workers' compensation benefits paid to injured workers in Michigan. The total income from

Figure 2.4 Average Quarterly Earnings, Workers' Compensation Income Replacement Benefits, and Reweighted Comparison Earnings, by Quarter from Injury, Injuries in Michigan in 2004



NOTE: Sample includes workers injured in Michigan in 2004. Indemnity injury sample includes workers who had more than one month of lost time or received lump-sum payments. Comparison-sample quarterly earnings information covers period between 2003 and 2008.

SOURCE: Savych and Hunt (2017).

earnings and income replacement benefits (solid line) falls for two quarters and then begins to rise, and it actually exceeds that of the comparison workers (light dashed line) between 1.5 years and 2.5 years after the injury (Quarters 6 through 10) as lump sums are paid out. However, the total income of the injured workers falls rapidly after these payments are mostly completed, and the shortfall with comparison workers grows significantly after 2.5 years (Quarter 10). It seems clear that the total income from earnings and benefits is headed for convergence with the line for earnings alone five years after the injury, as the vast majority of workers' compensation benefits will have been paid out.

CONCLUSION

It is 30 years since the initial wage-loss study by Berkowitz and Burton (1987) was published, but we continue to struggle toward a better understanding of the adequacy and equity of workers' compensation benefits. While we have wage loss benefit adequacy studies from the states of California, Michigan, New Mexico, Oregon, Washington, and Wisconsin, plus the provinces of British Columbia and Ontario in Canada, it is still difficult to make summary judgments or accurate comparisons across the jurisdictions. There are several reasons for this. First, the workers' compensation systems themselves differ substantially, both in design and in actual application. This has plagued research on workers' compensation systems and limited the generalizability of any findings.

Second, there are small but significant differences in methodology between the studies, which lead to differences in the findings. These differences reflect the specific data available to the researchers, as well as honest differences of opinion about how best to measure benefit adequacy in these complicated social insurance systems.

Third, there are inevitable differences in interpretation of the findings that are derived from these studies. Some of these differences unfortunately will be interpreted as political leanings in this age of political polarization. It would be difficult to expect a social insurance system like workers' compensation to be exempt from political influences or interpretations.

Upon completion of the multiyear Study Panel on Benefit Adequacy at the National Academy of Social Insurance more than a decade ago, the members of the panel called for "additional wage loss studies from different jurisdictions" (Hunt 2004, p. 133). These studies have not been forthcoming. As we have seen, in the past decade there have only been the two Canadian studies, one study in New Mexico, another in California, and the recent study from Michigan. The analytical techniques have certainly been developed and refined,

but there has been little progress in our understanding of what works better in a workers' compensation system and why. It appears to us at this time that there is insufficient interest in the answer to the question, "Are workers' compensation benefits adequate and equitable?" It is possible that recent discussions, prompted by a series of articles published in ProPublica (e.g., Grabell and Berkes 2015a,b), may raise the interest sufficiently to start a movement in this direction.

Our review indicates that the Michigan wage-loss workers' compensation system seems to provide better benefit adequacy than other U.S. systems that use the impairment method of compensation. But Michigan's is not as good as some Canadian systems for injured workers. Unfortunately, we cannot discern whether this is due to the wage-loss principle upon which the Michigan system is based or some other factor. Theoretically, one would expect a benefit system based on actual wage loss experienced, rather than a medical diagnosis of impairment or an estimate of loss of wage-earning capacity, to yield more accurate earnings replacement results at the individual level. And this does seem to be the case.

The Michigan system appears to be performing as designed, and it also demonstrates increasing replacement rates for more serious injuries, which may represent an element of social welfare thinking. Workers who are more seriously injured, but not seriously enough to qualify for Federal SSDI benefits, may have fewer income maintenance options and may not be able to respond to a financial incentive that promotes return to work.

Short-duration workers' compensation claims show the impact of the waiting period (effectively a copay for injured workers), which suppresses replacement rates for such claims. But such claims also achieve very high return-to-work rates and quickly achieve near parity of earnings with those who did not lose any work time (medical-only claims).

The findings from the Michigan study indicate that taking account of the postinjury earnings of injured workers makes a significant difference in judgments about benefit adequacy. That is, earnings replace-

ment rates are significantly "more adequate" than loss replacement rates for the Michigan system as well as some Canadian provinces.

Furthermore, we believe that this is a preferable way to analyze benefit adequacy, particularly for temporary disabilities, since the societal goal is to return the injured worker to productive employment with minimal disruption. Using earnings replacement rates rather than loss replacement rates reflects this policy focus. It also highlights the distinction between injured workers who need temporary support while they recover from their injuries and those who will likely not recover and need permanent support.

It is difficult to explain what seems to be a permanent drop in earnings among injured workers who file workers' compensation claims. This has been found in all the wage loss studies to date and confirmed in the WCRI interview studies of worker outcomes (Savych and Thumula 2016). Apparently, injured workers suffer some kind of "separation effect" similar to that of economically displaced workers. This could be due to supply factors such as changed preferences for income and work, or to demand factors such as discrimination by employers against workers' compensation claimants. This is a subject that clearly deserves more investigation.

Concerns remain about the adequacy of lump-sum redemption payments in Michigan to sustain injured workers over the remainder of their lives, but our analysis shows better outcomes than those previously reported for other U.S. states. However, average earnings replacement rates decline from 95 percent at 4.5 years to 67 percent at 10 years, even with knowledge of the claim reserves held by the workers' compensation insurers in Michigan.

So are the Michigan workers' compensation benefits adequate? That perception still remains largely in the eye of the beholder. The finding that both earnings replacement rates and loss replacement rates are higher in Michigan than in other U.S. states that have been studied is encouraging, and it raises questions about the unique aspects of the Michigan system. Are wage-loss systems inherently superior in replacing lost earnings? Or is this finding due to the specific method-

ology adopted for this study? Only more such studies of other states with different methodologies can tell us. We sincerely hope that such studies will be forthcoming in the near future.

Notes

1. See the extensive discussion of the issue of adequacy in Hunt (2004), Chapter 2.
2. However, there are also five states (including Michigan) that use a formula based on spendable earnings, which is gross earnings less estimated taxes based on family size, and seven states that use some other percentage of gross earnings (three at 60 percent, three at 70 percent, and one at 72 percent). See WCRI (2014), Table 4.
3. Contested cases are those in which the employer or insurer disputes either the work-relatedness or the level of the disability. These cases generally require an administrative hearing and usually feature legal counsel for both sides. Disputed cases usually involve more severe disabilities and are considerably more expensive.
4. Loss of earnings benefits were still available in circumstances that were "so exceptional" as to create undue hardship under the loss-of-functional-capacity evaluation method.
5. This sample represents about one quarter of the indemnity claims in Michigan. See WCRI (2014) for discussion of the representativeness of the Michigan Detailed Benchmark/Evaluation sample.
6. This is not strictly correct, since the Michigan workers' compensation system uses a benefit formula that aims to replace 80 percent of preinjury spendable earnings, subject to a maximum benefit at 90 percent of the state average weekly wage. Thus, the system uses the preinjury wage as the standard and does not aim to replace 100 percent of lost earnings. However, since the adoption of the comparison-worker analytical model to estimate lost earnings after the injury, it has become routine to think of the gap between the postinjury earnings of injured workers and the comparison group as the target for the system.