



Impact on Utilization From an Increase in Workers Compensation Indemnity Benefits

Abstract

The National Council on Compensation Insurance (NCCI) estimates of impacts of Workers Compensation benefit increases have for some time assumed that in addition to the direct effect of a benefit change there will also be an increase in the utilization of benefits. Support for this assumption comes from several research studies, but until recently no such study was performed by NCCI.

This article reviews prior literature and summarizes the methods and results of a new NCCI study. Using a “difference in differences” methodology to analyze the impact of benefit changes in two states, the NCCI study finds that for each \$1.00 of direct benefit increase, there is an added \$0.54 average cost due to increased claim durations (i.e., increased benefit utilization).

Background

Workers compensation (WC) indemnity benefits are wage replacement benefits awarded to an employee who is unable to work due to an employment-related injury. The amount and duration of these indemnity benefits is typically defined by statutes that vary by state.

Temporary total disability (TTD) benefits are awarded when an employee is injured on the job and is temporarily unable to return to work. Under this injury type classification, the injured employee heals fully, has no permanent impairment, and eventually returns to work without any work restrictions. Most states specify a waiting period and a retroactive period when determining the amount of available indemnity benefits. The waiting period requires that an injured worker must be out of work for a certain number of days before TTD indemnity benefits are paid, with no indemnity benefits paid for the duration of the waiting period. If the worker is out of work beyond the retroactive period, the worker receives TTD indemnity benefits retroactively for the number of days in the waiting period. The analysis conducted by NCCI is restricted to TTD claims, as are some of the earlier research papers in the body of literature that study the duration of WC claims.

Direct Versus Indirect Impact on Benefits

Indemnity benefits are typically awarded on a weekly basis, are generally calculated as a percentage of the worker’s average weekly wage, and may be limited to maximum and minimum benefit amounts depending on the state. Often, the maximum and minimum weekly benefits are a function of the state average weekly wage (SAWW), as defined by state law.

A statutory change resulting in a modification to, or eligibility for, indemnity benefits (e.g., an increase in the maximum weekly benefit) will have an associated direct impact on workers compensation system costs. For example, if a weekly indemnity benefit of \$500 is increased to \$600 due to a change in the statutes (assuming no maximum is applicable), the direct cost impact—20% in this case—can be measured as the difference in the weekly benefit before and after the change. Other examples of statutory benefit changes include changes to:

- The maximum duration for TTD benefits
- The rate of compensation
- The minimum or maximum weekly benefit
- The waiting period or retroactive period

While a direct cost impact is obvious with such changes to indemnity benefits, indirect effects, also known as utilization effects, are less obvious but can also arise when claimants change their behavior in response to a change in benefits. The

two major elements of utilization effects, as identified by Gardner [4], are changes in the duration of disability and in the number of claims.

Claim frequency measures the number of workplace injuries relative to an exposure base, which is typically a dollar amount of premium or payroll. When changes are made to statutory benefits, an unintended change in the frequency of claims may also occur. According to Meyer, Viscusi, and Durbin [6], “higher benefit rates may decrease workers’ incentives to avoid injuries, may increase the incentives to file for compensation for any given job injury, and may foster more claims for nonwork injuries. In addition, higher benefits may make extending the duration of a claim more attractive.” The resulting increase in claim duration, as measured by the number of days for which TTD benefits are received, is considered to be a utilization impact and will thus affect the overall cost of claims.

According to Brooks [1], if utilization effects are ignored, then these effects will ultimately manifest themselves in the trend component of the ratemaking process once such experience becomes available. However, the accuracy and responsiveness of the ratemaking process can be increased if utilization is explicitly quantified and accounted for in the on-level component. By accounting for all sources of potential cost impacts, both direct and indirect, more accurate cost analyses of benefit changes can be produced, and public policy decision-making may be enhanced.

Estimating the cost impact of a statutory change in benefits should ideally acknowledge both the frequency and severity elements of possible utilization effects; however, quantifying a frequency utilization effect can be difficult due to the multitude of factors that influence the number of reported claims. In addition to the effects of the statutory benefit change being analyzed, economic and social trends, as well as other changes to the workers compensation system, are intertwined in the data. Isolating these effects can be a difficult task. Further, the limited availability of accurate and consistent exposure data from external sources makes it difficult to define and measure a frequency impact. However, as will be described hereafter, there are some contexts in which the duration impact of utilization can be isolated.

Review of Literature

Several papers published in the 1990s built the framework and provided supporting evidence for NCCI’s historical assumptions regarding the impact of utilization in response to changes in statutory benefit levels.

Butler [2] examined the effects of increased frequency and severity of workers compensation claims as benefits increase. He identified two explanations:

1. Workers are willing to take on more risk, which he calls “risk bearing moral hazard.”
2. Higher benefits encourage workers to report more injuries and increase the duration of their claims, referred to as “claims reporting moral hazard.”

Butler analyzed NCCI Unit Statistical Plan (USP) data for 39 states over a 31-year period and Occupational Safety and Health Administration (OSHA) data for 43 states over an 11-year period. NCCI data indicated that benefit utilization exists for both frequency and severity. Butler concluded that for every 10% increase in indemnity benefits, average claim costs (severity) increase by 7%, while frequency rises by 4%. His analysis using OSHA data pointed to a lower utilization impact. Butler explained the difference in results between the two data sets by noting differences in the behaviors of self-insured firms. Because the self-insured firms are more likely to take measures to reduce both risk bearing moral hazard and claims reporting moral hazard, these effects will be more prevalent in the NCCI data set, which excluded these firms.

Butler concluded that “actuarial procedures that do not account for benefit utilization, in the sense of higher claims frequency and severity as benefits increase, will likely underestimate the cost consequences of any given change in the structure of future benefits.”

Brooks [1] quantified a frequency utilization effect using unit statistical data from the Workers’ Compensation Insurance Rating Bureau of California to test several regression models. The dependent variable in his models was indemnity claim frequency—policy year claims per million dollars of reported payroll, adjusted to a 1987 wage level. The key explanatory variable was the indemnity benefit level. Brooks tested 84 models; the most statistically powerful model had an elasticity of 0.262, indicating that a 10% increase in the benefit level would yield a 2.6% increase in claim frequency. Brooks concluded that he was successful in determining a sound model to estimate frequency utilization due to a change in the level of benefits. However, he found no evidence of benefit utilization for either medical costs or indemnity severity.

Determining Utilization Effects Using a Natural Experiment and Difference in Differences Approach

Many studies, including this one, are based on a *natural experiment*, where a change in statutory benefits that affects only a subset of workers allows claimants to be divided into treatment and control groups. This is in contrast to a *controlled experiment*, where separate treatment and control groups are established prior to treatment as part of the experimental design; however, controlled experiments are not practical for workers compensation. In our natural experiment, workers uniformly affected by the change in benefits comprise the treatment group, whereas workers unaffected by the change in benefits make up the control group. Data that is available before and after the benefit change can be used to analyze how the treatment and control groups each respond to the change in statutory benefits.

A *difference in differences* analysis captures the effect of utilization by measuring and comparing each group's response to the benefit change. The simplest setup is one where outcomes are observed for two groups for two time periods. The basic premise of a difference in differences approach is to examine the effect of some sort of treatment—in this case, a change in benefits—by comparing the *treatment group after treatment* both to the *treatment group before treatment* and to some other *control group*. While one might consider simply looking at the treatment group before and after treatment to try to deduce the effect of the treatment, there are likely to be other things going on at the exact same time as the treatment. For example, it is expected that certain factors (e.g., variation in economic activity) will uniformly affect the behavior of all claimants. As such, the difference in differences method uses a control group to subtract out other changes at the same time, assuming that these other changes were identical between the treatment and control groups. According to Meyer, Viscusi, and Durbin [6], “difference-in-difference estimates, while less precise [compared to other methods], can be used to remove any bias due to changes over time in factors that are common to [the control and treatment groups].”

It is important to note that the difference in differences approach is most appropriate for quantifying the utilization effect attributable to changes in duration, but less so to measure the utilization effect that originates in changes of claim frequency.

Krueger [5] analyzed the utilization effect of an increase in the minimum and maximum TTD benefits in Minnesota. Krueger performed a natural experiment for the study of injury duration, in which the reform impact (“treatment effect”) is quantified by the difference in differences in injury durations between treatment and control groups; Krueger complemented this approach using regression analysis. Krueger found that a 5% increase in benefits yields an 8% increase in the average duration of TTD injuries. Further, he showed that the utilization response tends to be greater for short-term injuries than long-term injuries, and greater for privately-insured firms than for self-insured firms.

Meyer, Viscusi, and Durbin [6] analyzed the impact of TTD claim duration in response to an increase in the maximum weekly benefit, also using a natural experiment and a difference in differences approach. These authors examined Kentucky and Michigan data from NCCI's Detailed Claim Information (DCI) database and found an elasticity of the duration of claims with respect to the TTD benefit of 0.34 for Kentucky and 0.40 for Michigan. In other words, a 10% increase in the benefit level is associated with an increase in claim durations of 3%–4%. They concluded that there is “a substantial effect of the level of temporary total benefits on the duration of workers' compensation claims.”

As demonstrated by the results of the studies reviewed, while there may be some variability in the estimated elasticities with respect to the frequency and duration of claims, the consensus is that there is an increase in the utilization of benefits in response to an increase in indemnity benefits.

Method—Event Study

Many past studies on the impact of workers compensation benefit changes on injury duration can be classified as either cross-sectional studies or event studies.¹ The research framework underlying NCCI's study is a natural experiment, with two separate *event studies* selected for analysis. According to Krueger [5], the event study allows us to focus on the variation over time in a given state, unlike the cross-sectional study which is “unavoidably hindered” due to the fact that many institutional factors and the administration of workers compensation benefits vary from state to state.

¹ In cross-sectional studies, differences in legislative provisions across states are modeled in attempts to gauge the impact of these differences on claimant behavior. Event studies, where the event is defined as the legislative change, focus on variation over time in a given state instead of focusing on variation across states at a given point in time.

In order to conduct an event study, one must have the following elements:

- An event; in our case, a legislative reform
- A time window surrounding the event, such that the impact of the event can be isolated
- Control and treatment groups, which differentiate between claimants who are affected and those who are not affected by the event

The utilization effect is then estimated using a difference in differences approach. In other words, the utilization effect can be measured as the difference in the “post-reform minus pre-reform” differences between the treatment group and the control group. The observable change in duration for the treatment group from the pre-reform period to post-reform period can be attributed to the utilization effect plus any change common to all claimants (as may be caused by changes in economic activity, for instance). By subtracting the difference in duration for the control group from the pre-reform to post-reform periods, we are able to isolate the utilization effect that is causal to the reform (Schmid [7]).

$$\begin{array}{ccc}
 & \text{Utilization Effect =} & \\
 \left[\begin{array}{c} \text{Mean Benefit Duration in} \\ \text{Post-Reform } \underline{\text{Treatment}} \text{ Group} \\ \text{Minus} \\ \text{Mean Benefit Duration in} \\ \text{Pre-Reform } \underline{\text{Treatment}} \text{ Group} \end{array} \right] & \text{MINUS} & \left[\begin{array}{c} \text{Mean Benefit Duration in} \\ \text{Post-Reform } \underline{\text{Control}} \text{ Group} \\ \text{Minus} \\ \text{Mean Benefit Duration in} \\ \text{Pre-Reform } \underline{\text{Control}} \text{ Group} \end{array} \right]
 \end{array}$$

After obtaining an estimate of the utilization effect, the probability distribution around this estimated effect is obtained by means of a statistical technique called “bootstrapping.”²

Event Studies Examined: Oregon and New Mexico

NCCI selected two relatively recent benefit reforms to analyze the impact of utilization within the chosen research framework. Oregon and New Mexico were identified as two states with significant changes in TTD benefits and, at the same time, with no major changes to the workers compensation system in the three years prior or subsequent to the TTD benefit change being studied. The selection of an isolated benefit change allows for the quantification of the effects of utilization by isolating the effect of the legislative reform from other potential influences in the workers compensation system.

In the two states studied, TTD claims account for 63.4%–68.8% of lost-time claims, with TTD benefit dollars comprising 13.6%–19.5% of total indemnity costs.³ Oregon statutes place no limit on the duration of TTD benefits, and the maximum duration of TTD benefits in New Mexico is generous (700 weeks) when compared to other states. This common feature of the two states in our study is of particular importance because it gives the injured worker some control over the duration of disability. An increase in the TTD indemnity benefits may therefore offer an incentive for behavioral changes, leading to a potential utilization impact.

Included below is a description of the two benefit reforms that underlie our analysis along with the experimental groups for our natural experiment.

² The term *bootstrapping* comes from the expression “pulling oneself up by one’s bootstraps”—in this case, using the sample data as a population from which repeated samples are drawn.

³ Based on NCCI’s Statistical Plan data from the latest 5 policy periods available for Oregon (1/01–12/05) and New Mexico (7/01–6/06).

Oregon—Senate Bill (SB) 485, Effective January 1, 2002

SB 485 contained a number of changes to the workers compensation system in Oregon:

- Increased the maximum weekly benefit for TTD injuries from 100% to 133% of the SAWW (an increase of 33.0%)
- Increased the amount of compensation per degree of impairment for both scheduled and nonscheduled PPD injuries
- Redefined “preexisting condition” in a stricter manner, and placed the burden of proof of preexisting conditions on the employer
- Changed the benefit calculation for workers with more than one job, and provided for reimbursement to the carrier on behalf of the Workers’ Benefit Fund in these cases
- Several provisions affecting medical costs only
- Other administrative changes

Our analysis of SB 485 is limited to the increase in the maximum weekly TTD benefit from 100% to 133% of the SAWW. Hereafter, the term SB 485 is confined to this aspect of the reform.

In Oregon, workers who sustain job-related injuries are subject to a 3-day waiting period before they are eligible for TTD indemnity benefits, and they are subject to a 14-day retroactive period.⁴ The compensation rate for Oregon TTD benefits is 66⅔% of the worker’s preinjury wage.

In the original pricing of the increase in the maximum weekly TTD benefit, NCCI estimated a direct cost impact of +3.6% on TTD indemnity costs and assumed a utilization impact of 25% of the direct cost impact (based on past studies), which amounts to an additional +0.9%, thus generating a total impact on TTD indemnity costs of +4.5%. The direct cost impact was based on a countrywide wage distribution⁵ indexed to Oregon’s average weekly wage and assumed that only a portion of the workers currently receiving the maximum benefit would realize the full 33% increase in TTD benefits (while others would see an increase between 0% and 33%).

Oregon—Natural Experiment

We set up a natural experiment to measure the effect of utilization in response to the TTD benefit change included in Oregon SB 485. The following three groups were constructed:

Table 1: Oregon SB 485 Experimental Groups for Natural Experiment

| Group | Workers Earning: | Affected by Increase? |
|--------------|--|------------------------------|
| C | ≤ 150% of the SAWW * | No |
| B | Between 150% and 199.5% of the SAWW ** | Partially |
| T | ≥ 199.5% of the SAWW | Fully |

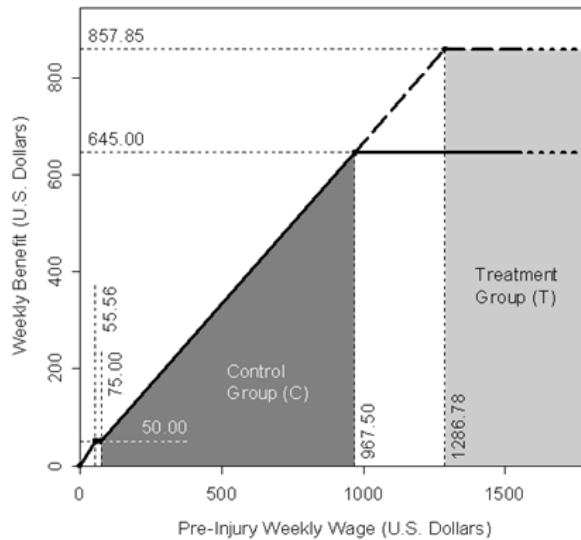
* Old Maximum Benefit equals 100% of SAWW; $100\% / 66\frac{2}{3}\% = 150\%$

** New Maximum Benefit equals 133% of SAWW; $133\% / 66\frac{2}{3}\% = 199.5\%$

⁴ The worker is eligible to receive benefits for the first 3 days of disability if the worker is admitted as an inpatient to a hospital within 14 days of the first onset of total disability.

⁵ Based on NCCI’s Detailed Claim Information data.

Chart 1: Oregon TTD Weekly Benefit as a Function of Preinjury Weekly Wage



Before the benefit change, the maximum weekly benefit in Oregon was equal to 100% of the SAWW, which was \$645.00 as of January 1, 2002. In order to receive the maximum weekly benefit, a worker must have earned a weekly wage of \$967.50 or more ($\$967.50 \times 66\frac{2}{3}\% = \645.00). SB 485 increased the maximum weekly benefit by 33% to 133% of the SAWW, or \$857.85. A worker must earn a weekly wage of \$1,286.78 or more to receive the new maximum weekly benefit ($\$1,286.78 \times 66\frac{2}{3}\% = \857.85).

In Chart 1, the dark gray shaded area labeled “Control Group (C)” corresponds to Group C in Table 1, the light gray shaded area labeled “Treatment Group (T)” corresponds to Group T, and the area under the curve between these two groups corresponds to Group B. Workers earning less than \$75.00 per week are not considered in the Control Group because they are subject to the various minimum weekly benefits depending on their wages, as determined by Oregon statutes.

New Mexico—Senate Bill (SB) 148, Effective January 1, 2000

SB 148 enacted the following two changes to the New Mexico workers compensation system:

- Increased the maximum weekly benefit for all injury types from 85% to 100% of the SAWW (an increase of 17.6%)
- Increased the maximum funeral expense from \$3,000 to \$7,500

Our analysis of SB 148 is limited to the increase in the maximum weekly TTD benefit. Hereafter, “SB 148” refers strictly to this aspect of the reform.

In New Mexico, workers who sustain a work-related injury are subject to a 7-day waiting period before they are eligible for TTD indemnity benefits, and they are subject to a 28-day retroactive period. The compensation rate for New Mexico TTD benefits is set at 66 2/3% of the worker’s preinjury weekly wage.

In the original pricing of the change in the maximum weekly benefit, NCCI estimated a direct cost impact of +5.9% on TTD indemnity costs, and it did not include an impact for utilization. This cost impact was based on a countrywide wage distribution⁶ indexed to New Mexico’s average weekly wage and assumed that only a portion of the workers currently receiving the maximum benefit would realize the full 17.6% increase in TTD benefits (while others would see an increase between 0% and 17.6%).

⁶ Based on NCCI’s Detailed Claim Information data.

New Mexico—Natural Experiment

We constructed the following three groups in order to set up a natural experiment for the purpose of quantifying the effect of utilization in response to the TTD benefit change included in New Mexico SB 148:

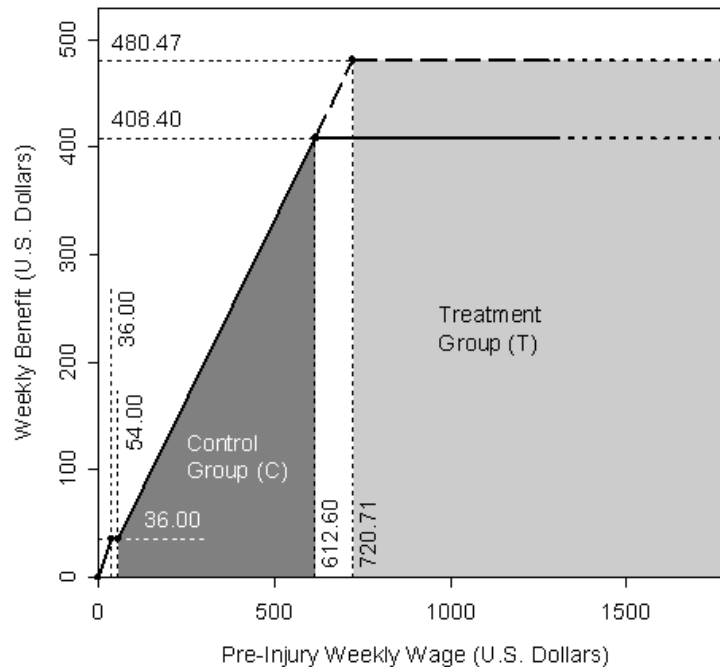
Table 2: New Mexico SB 148 Experimental Groups for Natural Experiment

| Group | Workers Earning: | Affected by Increase? |
|-------|--|-----------------------|
| C | ≤ 127.5% of the SAWW * | No |
| B | Between 127.5% and 150% of the SAWW ** | Partially |
| T | ≥ 150% of the SAWW | Fully |

* Old Maximum Benefit equals 85% of SAWW; $85\% / 66\frac{2}{3}\% = 127.5\%$

** New Maximum Benefit equals 100% of SAWW; $100\% / 66\frac{2}{3}\% = 150\%$

Chart 2: New Mexico TTD Weekly Benefit as a Function of Preinjury Weekly Wage



Before the benefit change, the maximum weekly benefit in New Mexico was equal to 85% of the SAWW, which was \$408.40 as of January 1, 2000. In order to receive the maximum weekly benefit, a worker must have earned a weekly wage of \$612.60 or more ($\$612.60 \times 66\frac{2}{3}\% = \408.40). SB 148 increased the maximum weekly benefit by 17.6% from 85% to 100% of the SAWW, or \$480.47. A worker must earn a weekly wage of \$720.71 or more to receive the new maximum weekly benefit ($\$720.71 \times 66\frac{2}{3}\% = \480.47).

In Chart 2, the dark gray shaded area labeled “Control Group (C)” corresponds to Group C in Table 2, the light gray shaded area labeled “Treatment Group (T)” corresponds to Group T, and the area under the curve between these two groups corresponds to Group B. Workers earning less than \$54.00 per week are not considered in the Control Group because they are subject to the various minimum weekly benefits depending on their wages, as determined by New Mexico statutes.

The Underlying Data

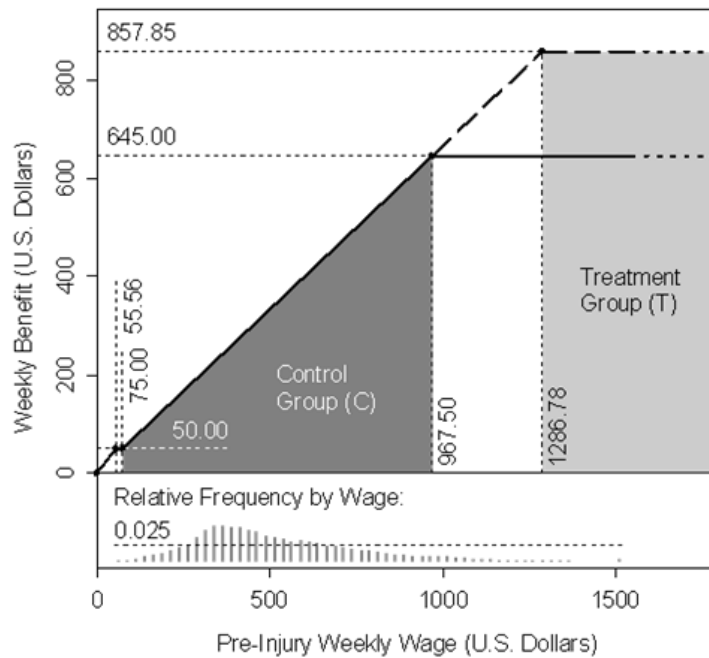
For the analysis of Oregon SB 485, claims records were supplied by the Oregon Department of Consumer and Business Services. The data set comprises all lost-time claims with dates of injury between (and inclusive of) January 1, 1999 and December 31, 2004, evaluated as of December 31, 2008, thus creating a 36-month window on either side of the January 1, 2002 reform effective date.

The New Mexico Workers Compensation Administration provided claims records for the New Mexico SB 148 analysis. This data set encompasses all lost-time claims in the 36-month windows surrounding the reform effective date of January 1, 2000, thus encompassing claims with injury dates between (and inclusive of) January 1, 1997 and December 31, 2002, evaluated as of December 31, 2008.

The detailed records provided by each party represent a rich collection of data elements, including information on the duration of injury and claim characteristics such as demographic information and the preinjury weekly wage. Cleansing the raw data leaves us with a set of 53,681 TTD claims for Oregon, and a set of 14,778 TTD claims for New Mexico. All claims in the final two data sets may be considered closed (which eliminates the problem of right-censoring). For a detailed description of the data cleansing process, see Schmid [7].

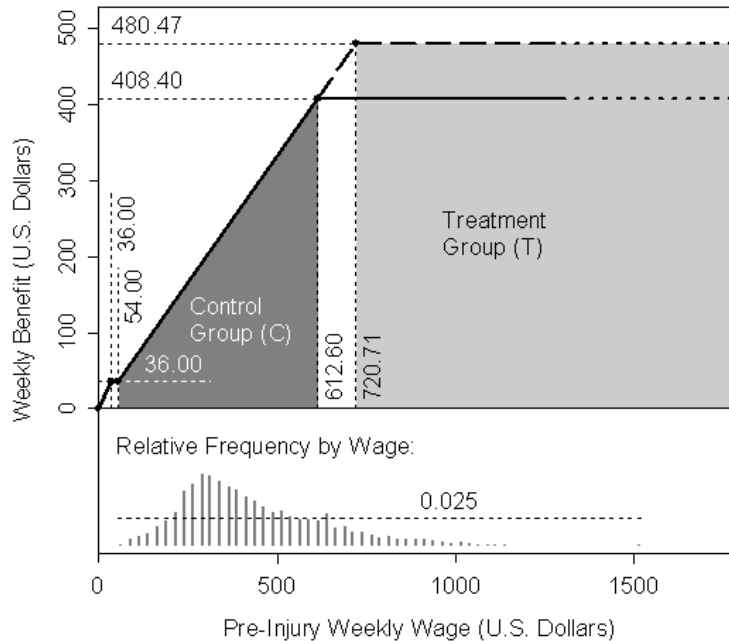
Chart 3 illustrates the relative frequency of the Oregon claim records by preinjury wage. It is evident that the great majority of the claims reside in the control group, as compared to the treatment group (92.8% versus 1.2%). The New Mexico data set exhibits a similar distribution of claims, as seen in Chart 4. Again, the control group is more heavily populated than the treatment group (83.1% versus 9.4%, respectively)⁷.

Chart 3: Population of Treatment and Control Groups in Oregon Data Set



⁷ The larger percentage of claims in the treatment group in New Mexico (9.4%) compared to Oregon (1.2%) is due to the lower maximum benefit threshold as a percent of the SAWW in New Mexico (100%) compared to Oregon (133%).

Chart 4: Population of Treatment and Control Groups in New Mexico Data Set



Statistical Analysis

The statistical analysis starts with the computation of the utilization effect, as measured by the difference in differences approach.⁸ Due to the multitude of factors affecting the claims count, the natural experiment is not a suitable research framework for studying changes in claim frequency. Therefore, the difference in difference approach used here focuses only on benefit duration.

The benefit duration (in weeks of calendar time) for each record is calculated as the number of lost-time days for which the claimant received benefits, divided by the preinjury number of days the claimant worked per week.⁹ NCCI's estimate of the utilization effect is calculated based on the difference in mean benefit duration, postreform versus prereform. The first difference corresponds to the treatment group, and the second to the control group.

For the Oregon data set, the resulting utilization effect equals 0.76 weeks. When applying a "ratio of ratios" approach (akin to the difference in differences approach), these 0.76 weeks translate into a utilization effect of 17.5%. In other words, the indirect response to the reform of injured workers in the treatment group was to increase the injury duration by 17.5%, on average.

In New Mexico, the difference in differences analysis yields for the treatment group a utilization effect of 0.41 weeks, or 7.6%. It is noteworthy that the increase in the maximum TTD benefit in the New Mexico reform was only about half the amount of the increase in the maximum TTD benefit in the Oregon reform, 17.6% compared to 33%, thus explaining the lower utilization effect.

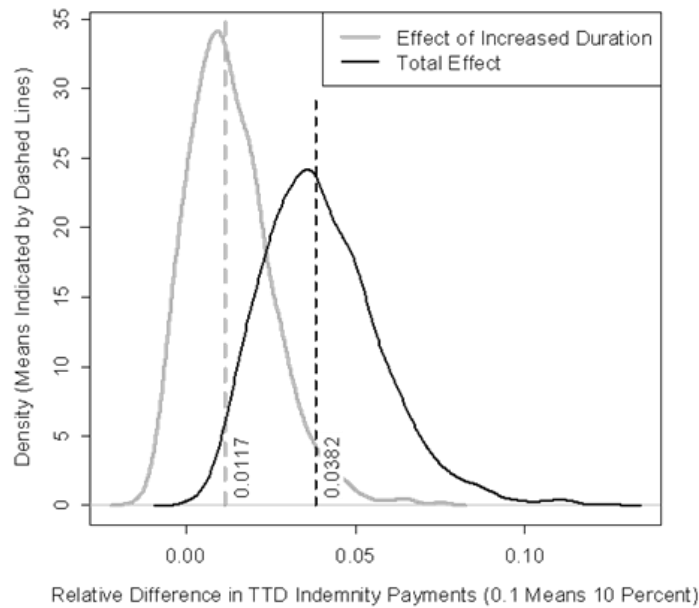
⁸ For a more technical discussion of the statistical analysis summarized here, refer to *Indemnity Benefit Duration, Maximum Weekly Benefits, and Claim Attributes* (Schmid [7]).

⁹ If the number of days the claimant worked per week was not available, a 5-day workweek was assumed.

While this difference in difference analysis generates the utilization effect we seek, we are also interested in knowing how this translates into a total impact on indemnity payments. The total TTD indemnity cost impact in Oregon, accounting for both the direct and indirect (utilization) effects of the reform, was measured at 3.82%. The effect of utilization alone, at prereform benefit levels, was 1.17%, or about 31% of the total impact. For the New Mexico data set, the total effect of the reform was measured at 4.50%; the effect of utilization alone, at prereform levels, was 1.30%, or about 29% of the total impact. If the utilization impact is calculated at postreform benefit levels, then this effect amounts to 38% and 33% (respectively) of the total cost impact.¹⁰

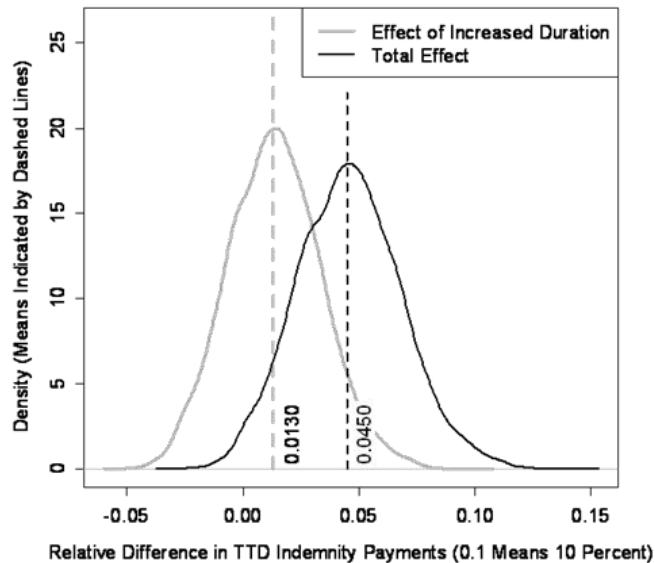
Charts 5 and 6 display the total effects for Oregon and New Mexico alongside of the utilization effect, at prereform benefit levels, alongside of bootstrapped probability distributions.

Chart 5: Relative Increase in Payments on Oregon TTD Claims: Treatment Effect and Total Effect



¹⁰ For details on how the utilization impact is translated from a percentage increase in injury duration of the treatment group into a percentage increase in indemnity benefits for all affected claimants, see Schmid [7].

**Chart 6: Relative Increase in Payments on New Mexico TTD Claims:
Treatment Effect and Total Effect**



Results and Conclusions

The results of this analysis provide support for the utilization effects of statutory changes in indemnity benefits.

For the Oregon study, the 33.0% increase in the maximum weekly TTD benefit resulted in a 17.5% impact on utilization. This implies a duration/benefit elasticity of 0.53 (17.5% / 33.0%). The 7.6% increase in benefit duration in response to a 17.6% increase in the maximum weekly indemnity benefit in New Mexico translates into a duration/benefit elasticity of 0.43 (7.6% / 17.6%). These elasticities are comparable to the range of results from previous research:

- Gardner [3] stated that a 20% increase in benefits comes with a (minimum) increase in utilization of 10% (for an implied minimum elasticity of 0.50)
- Meyer, Viscusi, and Durbin [6] reported elasticities ranging from 0.27 to 0.62, which clustered mostly within the range of 0.3 to 0.4, for TTD benefit increases of about 50% in Kentucky and Michigan
- Krueger [5] established an elasticity of 1.67 in his study of a 5% TTD benefit increase in Minnesota
- Gardner [4], who studied a 50% increase in the maximum TTD benefit in Connecticut, found that for every 20% increase in benefits, utilization increases by about 18%, thus proposing an elasticity of 0.9

In terms of TTD indemnity costs, both the Oregon (38%) and New Mexico (33%) studies show that approximately 35% of the total cost impact can be attributed to a duration utilization effect. Therefore, one could estimate the total impact of a change in TTD benefits by applying a factor of 1.54 [$=1/(1 - 0.35)$] to the direct cost impact. The focus of this research has been on two event studies where TTD benefits had increased. Some might interpret our findings to also conclude that a decrease in TTD indemnity benefits would result in a utilization impact. However, no such analysis was performed with which to reach such a conclusion.

Note that the difference in differences approach used here captures the portion of the utilization effect that is attributable to changes in duration only; in other words, this method is not suitable for measuring the impact on the frequency of claims that may arise from a statutory indemnity benefit change. However, there are studies indicating that statutory indemnity benefit changes may affect frequency. For instance, Gardner [4] found for Connecticut that a 50% increase in the maximum weekly benefit was associated with an increase in the number of indemnity claims of 5%. Therefore, it may be appropriate to include both a duration utilization effect and frequency utilization effect when estimating the final cost impact of legislative benefit changes.

According to Gardner [4], “the costs of increased or decreased utilization that go hand in hand with a benefit change can be substantial—possibly even greater than the direct costs.” The quantification of such utilization impacts are important in the pricing of statutory benefit reforms, which are ultimately reflected in the ratemaking process. NCCI’s estimate of the utilization impact on claim durations from a change in statutory indemnity benefits reasonably agrees with estimates of prior studies, thereby providing additional support for the inclusion of such utilization impacts in legislative cost analyses. Producing more accurate and responsive cost impacts will enhance the legislative pricing and ratemaking services offered by NCCI, and it will provide valuable information to aid public policy decision making. NCCI continues to look for ways to enhance the products and services available to workers compensation stakeholders. In the meantime, we are pleased to have made a significant contribution toward a better understanding of workers compensation benefit utilization.

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