



# The Performance of Total Payroll as the Exposure Base for Workers Compensation—An Updated Analysis

## Introduction

In the September 1991 edition of *NCCI Digest*, author Ron Retterath penned “Total Payroll/High Wage Payers” to review relationships between high wage payers and low wage payers and determine if there was an inequity in the lost-time and medical benefits awarded.

The 2005 update showed results consistent with the 1991 study and demonstrated that total payroll continues to be the most equitable exposure base for workers compensation insurance. In both studies, average claim costs rose steadily with increases in the average wage level for all classes combined and for each industry group. Furthermore, the relationship of average claim costs to average wage was strong. Actual results confirm that the benefits track strongly with wage levels.

This 2006 update focuses on the characteristics of claims by wage range in order to explain why benefits track strongly with wage levels. This study helps us to understand why medical losses and costs for lost-time claims affected by the cap on maximum benefits rise with increasing wage levels.

## Background

The data used in this study is based on a sample of lost-time claims provided by carriers for Accident Years 1998–2002 for the 36 states where NCCI provides ratemaking services. The data is adjusted to remove wage and benefit cost differences between years and states, which allows us to perform comparisons across all states and years. Analysis is performed for all classes combined and for each industry group separately.

## Key Findings

A study of claim characteristics by wage range shows that claims among the higher wage levels:

- Have a higher proportion of workers aged 45 to 64
- Have a higher proportion of permanent injuries
- Remain open longer
- Are more costly among all major medical cost categories
- Are more likely to involve a surgery

Among the lower wage levels, there are a higher proportion of claims that involve causes of injury and parts of body that are associated with lower average costs.

## Results of the 2006 Update

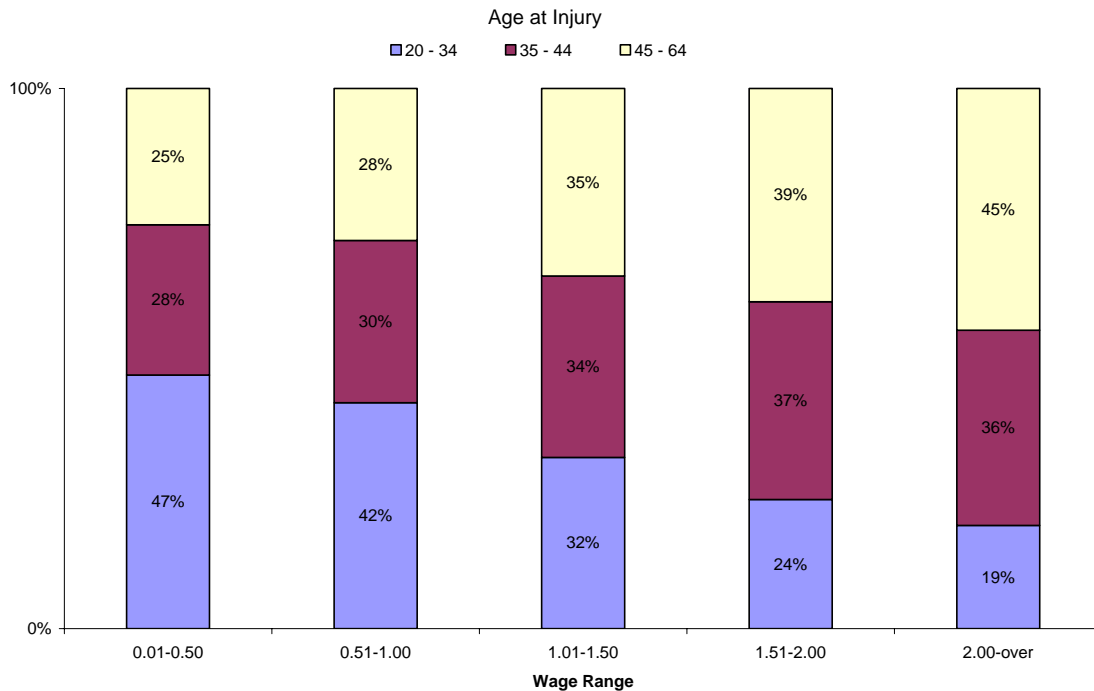
The characteristics of claims were studied over five wage ranges. The data is grouped into ranges for those earning:

- Less than 50% of the average wage
- Between 51% and 100% of the average
- Between 101% and 150% of the average
- Between 151% and 200% of the average
- Over 200% of the average

### Injured Workers Aged 45 to 64 Represent a Higher Proportion of Claims Among the Higher Wage Levels

Research by NCCI and WCRI (Workers Compensation Research Institute), among others, indicates that injuries by older workers result in higher average costs. Older workers tend to have claims for more severe injuries than younger workers. Yet another reason why age matters is that the average duration is longer for older workers (aged 45–64) than for younger workers (aged 20–34). Overall, medical severity tends to be higher for older workers than for younger workers across all diagnoses. Also, older workers have a higher number of treatments for the same diagnosis compared to younger workers. Exhibit 1 illustrates the distribution of claims by age at injury for each of the wage ranges. The higher wage ranges have a higher proportion of claims from workers aged 45 to 64. This result, combined with other studies on demographics, helps explain why claims costs are higher at higher wage ranges.

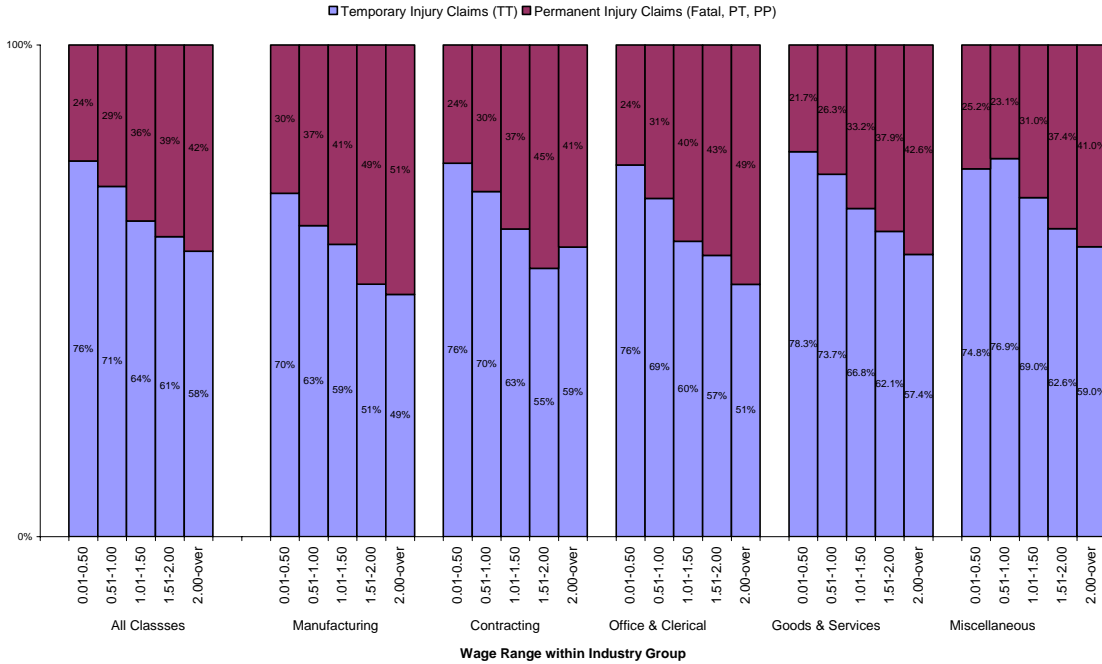
**Exhibit 1: Distribution of Lost-Time Claims Within Wage Range by Age at Injury**



### Permanent Injuries Make Up a Greater Share of Claims Among the Higher Wage Levels

Average indemnity and medical costs for claims with permanent injuries are more than seven times higher than average costs for claims with temporary injuries. Exhibit 2 presents the distribution of claims by injury type and industry group for each of the wage ranges for Accident Year 2001. The higher wage ranges have a higher proportion of claims with permanent injuries. For all industry groups combined, 42% of the claims in the highest wage range are for permanent injuries, compared with just 24% of the claims in the lowest wage range. This pattern also holds by industry group. For contracting codes, 41% of the claims in the highest wage range are for permanent injuries, which is much greater than 24% of the claims in the lowest wage range.

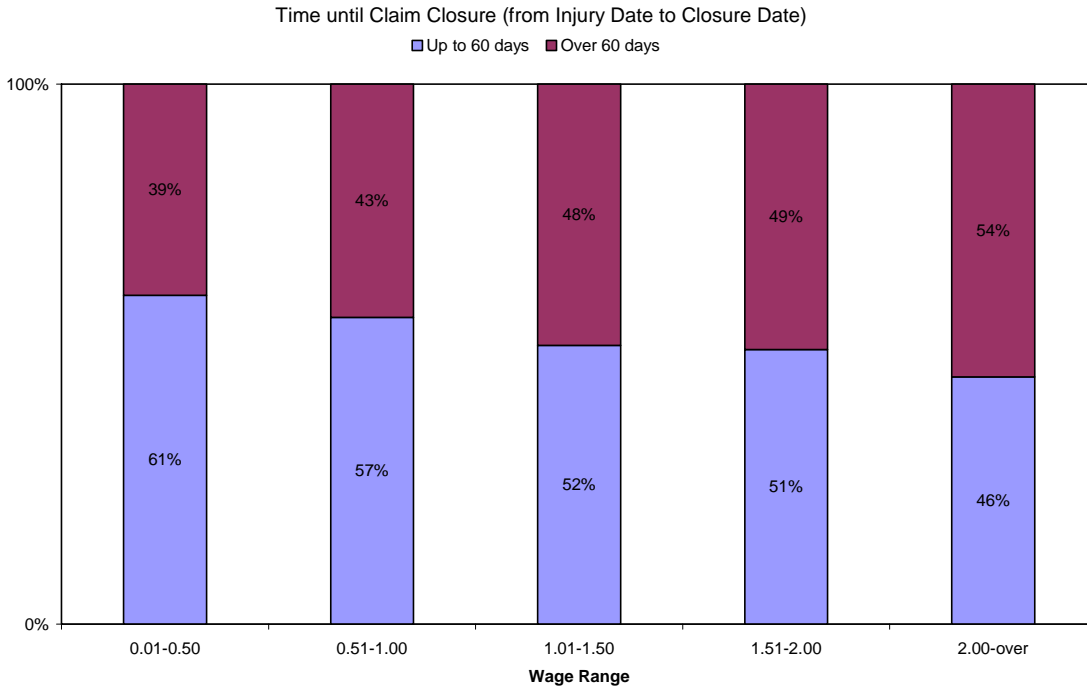
Exhibit 2: Distribution of Lost-Time Claims Within Wage Range by Injury Type and Industry Group for AY 2001



### Claims Among the Higher Wage Levels Remain Open Longer

The average cost of claims that take over 60 days to close is more than six times higher than claims that close within 60 days. Exhibit 3 shows information relating to the duration of claims for each of the wage ranges. Claims that take longer than 60 days to close represent 54% of claims in the highest wage range, compared to only 39% of claims in the lowest wage range.

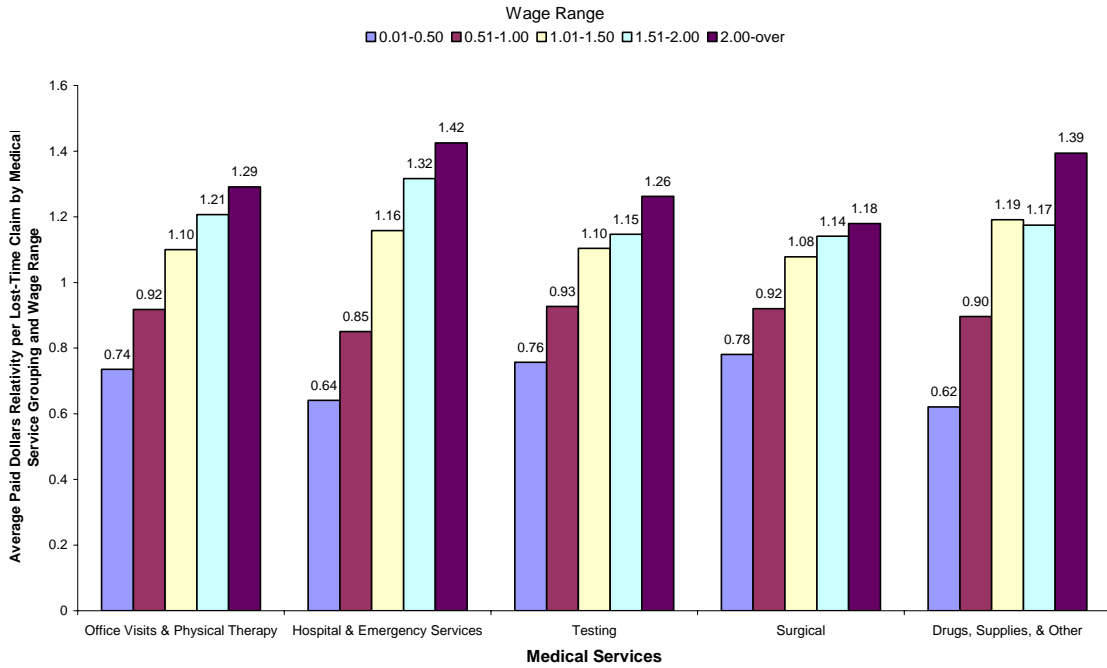
**Exhibit 3: Distribution of Lost-Time Claims within Wage Range by Claim Duration for AY 2001**



### Costs Track Wage Levels for All Major Medical Cost Categories

Exhibit 4 shows a comparison of average paid dollars by wage range for major medical service groupings. For each category of medical services, the higher wage ranges have higher medical costs per claim. Part of the explanation for this chart is that injured workers in the higher wage ranges have more complicated, severe claims (see Exhibit 2), which may require more medical services and more expensive medical services. Whether the higher relativities observed in the higher wage ranges are also due to more being paid for the same medical procedure or to higher utilization of these medical procedures for the same diagnosis is currently unknown. More analysis on this topic is necessary to understand what is driving the results in this chart.

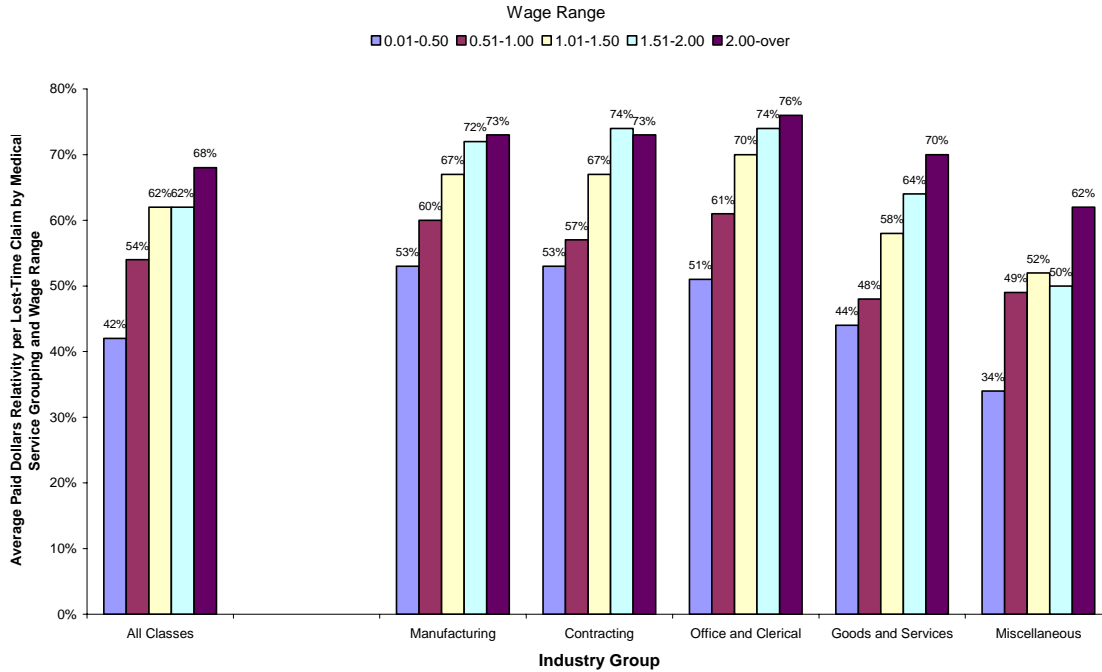
**Exhibit 4: Average Paid Dollars Relativity per Lost-Time Claim by Medical Service Grouping and Wage Range**



### Claims Among Higher Wage Levels Are More Likely to Involve a Surgery

Exhibit 5 illustrates the percentage of claims that involve at least one surgical procedure. Claims that involve surgery are more than nine times more costly than claims that do not involve a surgery. This chart shows that the higher wage ranges have a higher percentage of claims that involve a surgery. For all industry groups combined, 68% of the claims in the highest wage range involve a surgery, which is much greater than 42% of the claims in the lowest wage range. This pattern also holds by industry group. For contracting codes, 73% of the claims in the highest wage range involve a surgery, compared to just 53% of the claims in the lowest wage range.

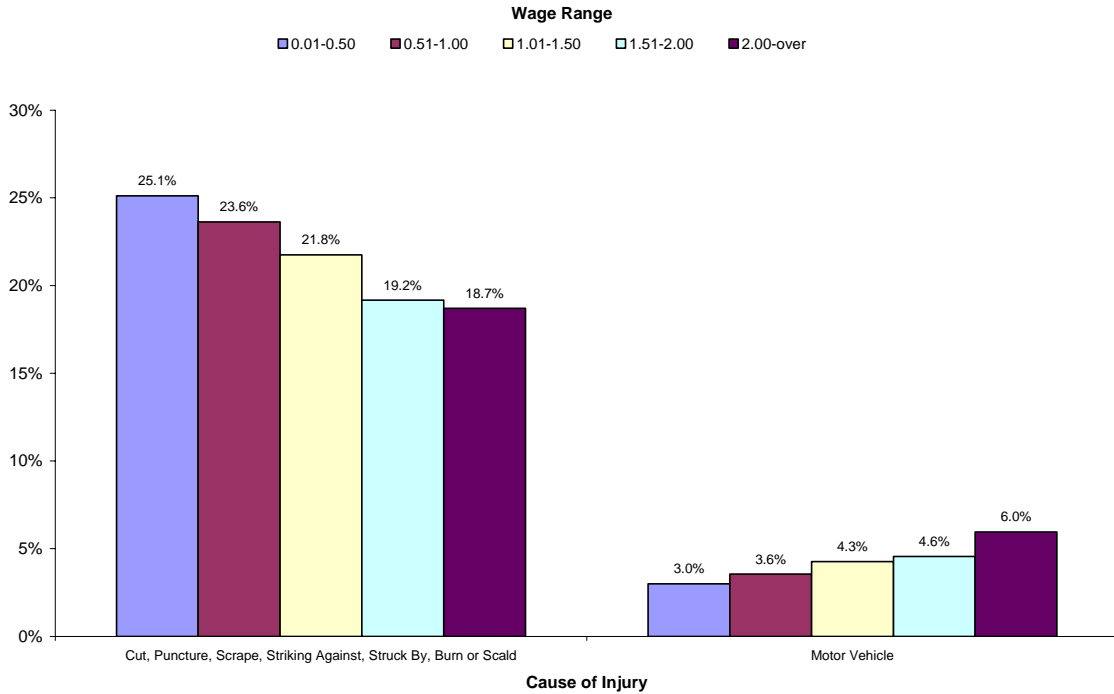
**Exhibit 5: Percentage of Lost-Time Claims That Involve a Surgery**



### Additional Claim Characteristics Among Wage Levels

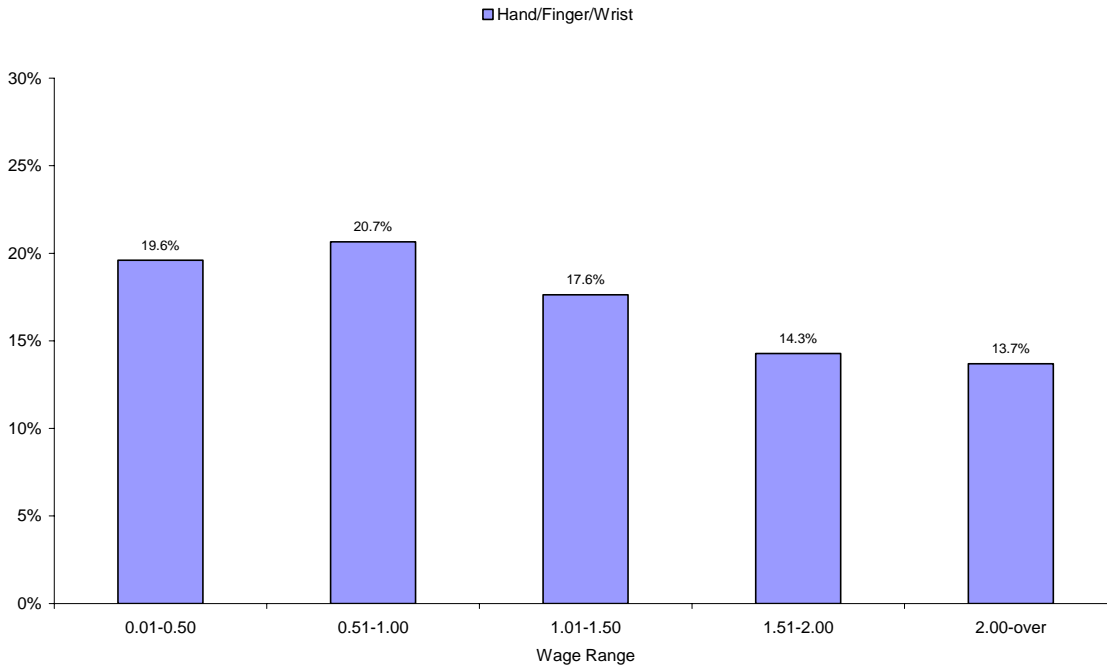
Exhibit 6 shows the percentage of claims involving various causes of injury. Lower wage ranges have a higher percentage of claims involving cause of injury with lower average costs such as cut, struck by, and burn. These types of claims are less than 50% of the average costs of all claims. These claims represent 25.1% of claims in the lowest wage range and only 18.7% of claims in the highest wage range. Higher wage ranges have a higher percentage of claims with higher average costs such as injuries caused by motor vehicles. The average cost of motor vehicle claims is almost 80% higher than the average costs of all claims. These claims represent 6% of the highest wage range but only 3% of the lowest wage range.

**Exhibit 6: Percent of Lost-Time Claims within Wage Range by Cause of Injury**



Claims that involve hands, fingers, or wrists are, on average, 40% less costly than the average of all claims. Exhibit 7 shows the percentage of claims that involve these types of claims by wage range. The percentage of claims in the highest wage range that involve hands, fingers, or wrists is less than the percentage of claims in the lowest wage range. The highest wage range has 14% of these types of claims, whereas the lowest wage range has 20% of these types of claims.

**Exhibit 7: Percent of Lost-Time Claims within Wage Range Involving the Hand, Finger, or Wrist**



## Conclusions

Total payroll as an exposure base is an appropriate reflection of loss potential for all classes and for each industry group. This study highlights the characteristics of claims that explain why benefits track strongly with wage levels. As we have seen here, claims in the higher wage ranges involve a higher proportion of claims with higher than average costs.

The higher wage ranges have a higher proportion of older workers and claims for permanent injuries. Claims take longer to close and are more likely to involve a surgery. Also, medical costs within each major medical grouping of services track with wage levels. Claims among the lower wage levels have a higher proportion of claims that involve causes of injury and body parts that are associated with lower average costs.

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