RESEARCH BRIEF

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Wages and Medical Utilization in Workers Compensation

KEY FINDINGS

- Medical utilization and medical severity increase as injured worker wages increase. The average medical utilization for higher-wage workers making more than 150% of the state's average weekly wage (SAWW) is about 1.6 times that of lower-wage workers making less than 50% of the SAWW. Similarly, a higher-wage worker's medical severity is about 1.5 times that of a lower-wage worker.
- The positive correlation observed in both medical utilization and medical severity indicates that the differences are largely driven by the intensity of services and not prices.
- The positive correlation between wages and medical utilization and medical severity persists across age groups, industry groups, and jurisdictions.
- Higher-wage workers are less likely than lower-wage workers to report less serious claims. As a result, they have a much lower share of less costly claims. They are about twice as likely to undergo major surgery as lower-wage workers, which puts upward pressure on medical costs for services such as professional, facility, prescription drugs, and medical equipment.

INTRODUCTION AND BACKGROUND

Understanding the complex dynamic between medical utilization and demographic factors such as earnings, aging workforce, and temporal changes in mix of injuries is of importance for workers compensation stakeholders. Better insight into such factors can help the stakeholders more accurately project medical utilization, claim outcomes, and the final cost of a claim.

Building upon the research by Chadarevian [1] presented at NCCI's ***Annual Insights Symposium 2026*** and Wiemer [2], this research brief provides a deeper look into the positive correlation between injured worker wages and medical utilization. It provides strong evidence about the drivers behind such a relationship.

DATA SOURCES AND DEFINITIONS

This study examines workers compensation claims for which the indemnity payment has been made or indemnity reserves established. Medical-only claims are not included. To eliminate the influence of large claims on the analysis, we have excluded claims for which incurred benefits exceed $500,000.

See Appendix A for additional details about the data.

Pre-injury wage groups:

- Claimants with wages less than 50% of the SAWW denoted by "<50%"
- Claimants with wages between 50% and 100% of the SAWW denoted by "50%–100%"
- Claimants with wages between 100% and 150% of the SAWW denoted by "100%–150%"
- Claimants with wages greater than 150% of the SAWW denoted by ">150%"

Injured worker age groups:

- Between 20 and 34 years
- Between 35 and 44 years
- Between 45 and 54 years
- Between 55 and 64 years
- 65 years and older

Medical utilization unit (MU) is a relative measure of total medical resources used, developed by NCCI. It accounts for the following medical services:

- Physician (professional) services
- Hospital services (both inpatient and outpatient)
- Ambulatory surgical center services
- Prescription drugs
- Medical equipment

WAGE IMPACTS ON MEDICAL SEVERITY AND MEDICAL UTILIZATION

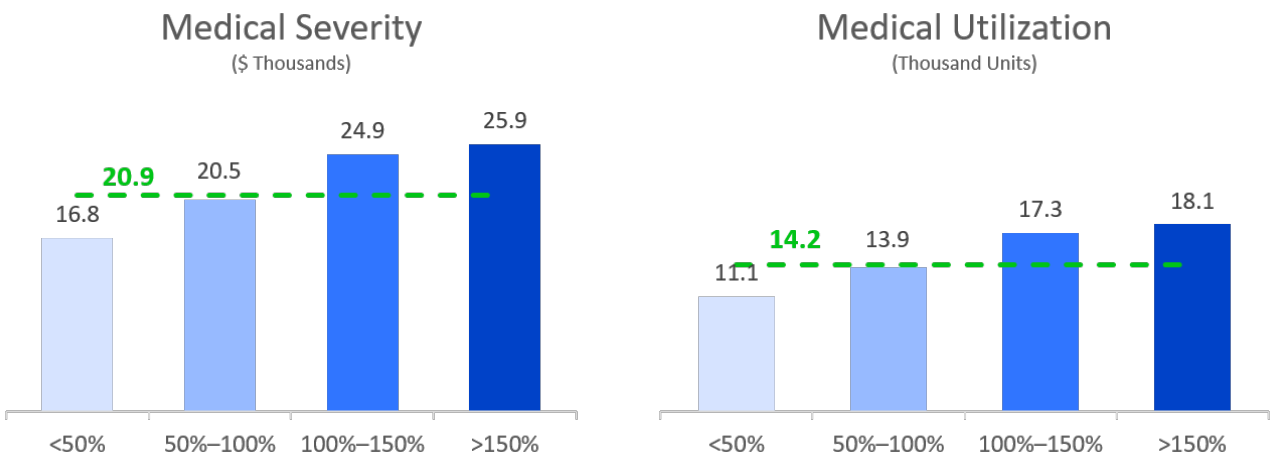
Within any pre-injury wage group, different jobs will have different hazard levels. For example, an executive of a food manufacturing company and a highly skilled and experienced worker in the food manufacturing process might both belong to the ">150%" group. However, their hazard exposures would be different.

On the other hand, wage groupings do offer some kind of proxy for the level of hazard. For example, a 45-year-old administrative assistant and a 45-year-old firefighter would likely belong to different wage groups. Thus, it is important to look at several variables in this analysis, such as age, industry group, and geographical region.

Figure 1 shows the average medical severity and medical utilization by wage group as well as the average medical severity for all claimants, seen in green. For example, in the "<50%" group, the average medical severity is $16.8K, which is approximately 20% lower than the overall medical severity of $20.9K. In the ">150%" group, the average medical severity is $25.9K and is about 1.5 times higher than the lowest group shown here.

Similarly, in the "<50%" group, the average medical utilization is 11.1K units, which is about 22% lower than the overall medical utilization of 14.2K. In the ">150%" group, the average medical utilization is 18.1K and is more than 1.6 times higher than the "<50%" group.

Figure 1—Both Average Medical Severity and Average Medical Utilization Increase With Increased Wage Group



There are several caveats to be aware of when using medical severity as a measure of the difference among wage groups:

1. Medical severity depends on medical service and commodity prices in the respective jurisdiction.
2. Within any given jurisdiction, prices typically change over time due to inflation and fee schedules.
3. Incurred severity includes a prospective component in the form of case reserves. It may be impacted by inflationary assumptions and carrier practices in calculations of case reserves.

NCCI has recently developed a measure that addresses the first two caveats above and allows a more apples-to-apples comparisons that otherwise cannot be performed when working with medical severity. This metric is called medical utilization and has the following properties:

1. It allows the analysis of intensity of services within any medical cost category, such as physician, hospital inpatient, and hospital outpatient. The analysis is not distorted by price differences across jurisdictions.
2. It is additive, which means that the intensity of services across medical cost categories can simply be added together to form an overall, claim level service intensity. It brings ease of use and intuitiveness together.
3. It is constant over time. A physician visit for evaluating a new patient with an average problem carries the same level of intensity as future visits for that patient spaced several years apart.
4. The intensity for the same service does not vary across jurisdictions.

Medical utilization is based only on reported claim payments and excludes case reserves. In this study, it is based on a common valuation point of claim payments through two years from the date of injury. Therefore, by design, it does not include the case reserve component and sidesteps the last caveat mentioned about medical severity.

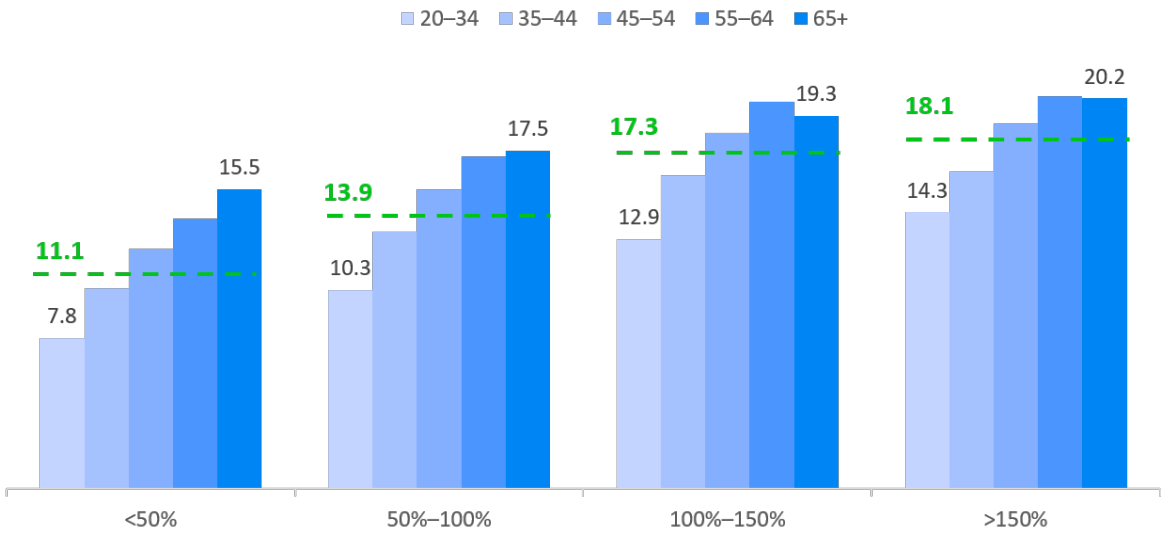
For the remainder of this section, we will focus on the relationship between injured worker wages and medical utilization.

Typically, older workers earn more than younger workers, but this is influenced by several factors, such as industry, experience, and education. With experience comes the aging of the human body. So, to better understand the results presented in Figure 1, we examine whether there is still a positive correlation between worker wages and medical utilization when controlling for the age of the worker.

Figure 2 examines the relationship between wage groups and average medical utilization by introducing the age variable. There are several takeaways from Figure 2[1]:

1. For a fixed *wage* group, the average medical utilization increases across age groups. For example, consider the workers belonging to the "50%–100%" wage group. The average medical utilization for workers between 20 and 34 years of age at the time of injury is 10.3K, while the average medical utilization for 65 and older is 17.5K.
2. For a fixed *age* group, the average medical utilization differential monotonically increases across wage groups. For example, consider the workers who are older than 65 at the time of injury. The average medical utilization for workers making less than 50% of SAWW is 15.5K and increases to 20.2K for workers making more than 150% of SAWW. This dynamic persists across all age groups.
3. The workers in the 20–34 age group have the below-average medical utilization, while the workers in the 65 and older group have the above-average medical utilization.

Figure 2—The Increasing Trend in Average Medical Utilization Is Consistent Across Age Groups (Thousand Units)

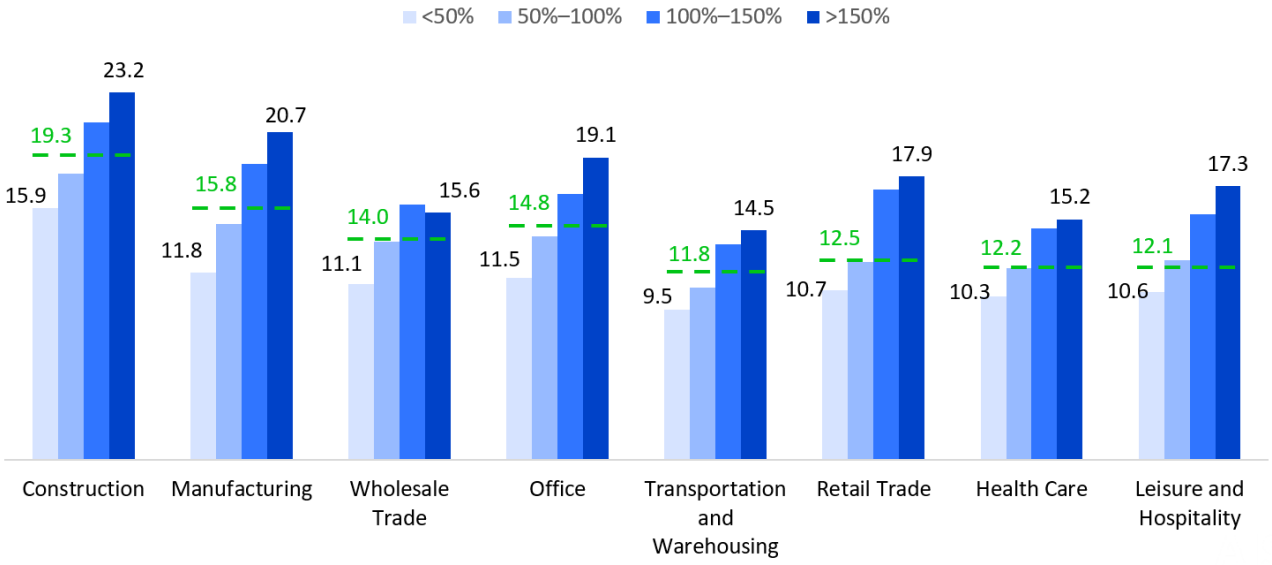


[1] For brevity, Figure 2 displays the average medical utilization values for only the 20–34 and 65+ age groups. See Appendix B for the average medical utilization for all age groups.

The age of the worker is an important factor in this analysis, but a worker's wages are heavily influenced by the industry where the worker is employed and what they do. A 23-year-old software engineer is expected to earn more than a 23-year-old construction worker, with the expectation that medical utilization would be higher for a construction worker than for an office worker. This necessitates bringing the industry group into the analysis.

Figure 3[2] shows that the positive correlation of injured worker wages and medical utilization also persists across industry groups. For example, for Construction, the average utilization for the "<50%" group is 15.9K units, while the average utilization for the ">150%" group is 23.2K units. For this industry group, the ratio of the average utilization for the ">150%" group to the average utilization for the "<50%" group is 1.5 (= 23.2K / 15.9K). We call this the utilization ratio. This ratio ranges between 1.4 and 1.8, indicating the positive correlation between medical utilization and wages across industry groups, albeit to a different degree.

Figure 3—Average Medical Utilization Across Industry Groups (Thousand Units)



[2] For brevity, Figure 3 displays the average medical utilization values for only the "<50%" and ">150%" wage groups. See Appendix B for the average medical utilization for all wage groups.

In Figure 4[3], we bring together age *and* industry group and show the dynamic within the **Construction** industry group. For any age group, there is a positive correlation between wages and medical utilization when controlling for this industry sector. This correlation persists even for workers compensation classes belonging to the Construction industry group, such as Class Code 5645 (Carpentry—Construction of Residential Dwellings Not Exceeding Three Stories in Height) and Class Code 5537 (Heating, Ventilation, Air-Conditioning and Refrigeration Systems—Installation, Service and Repair, Shop, Yard & Drivers), albeit to different degrees of magnitude. Lastly, this behavior is seen in all the other industry groups.

Figure 4—Average Medical Utilization Across Construction (Thousand Units)

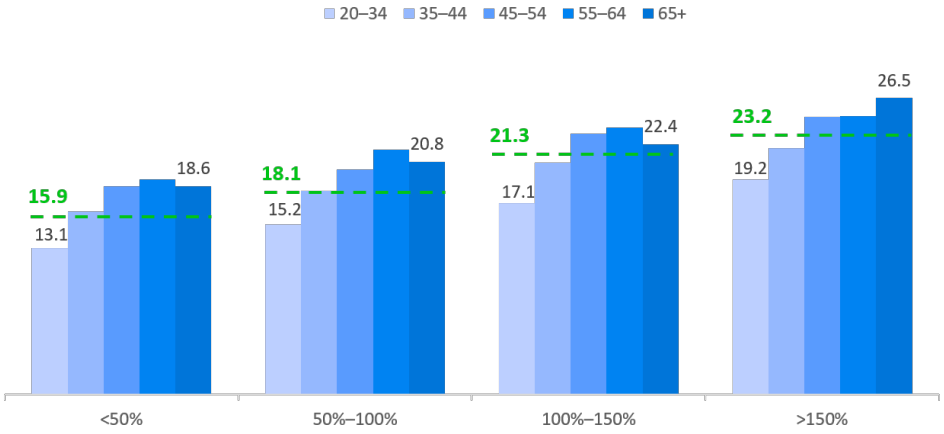
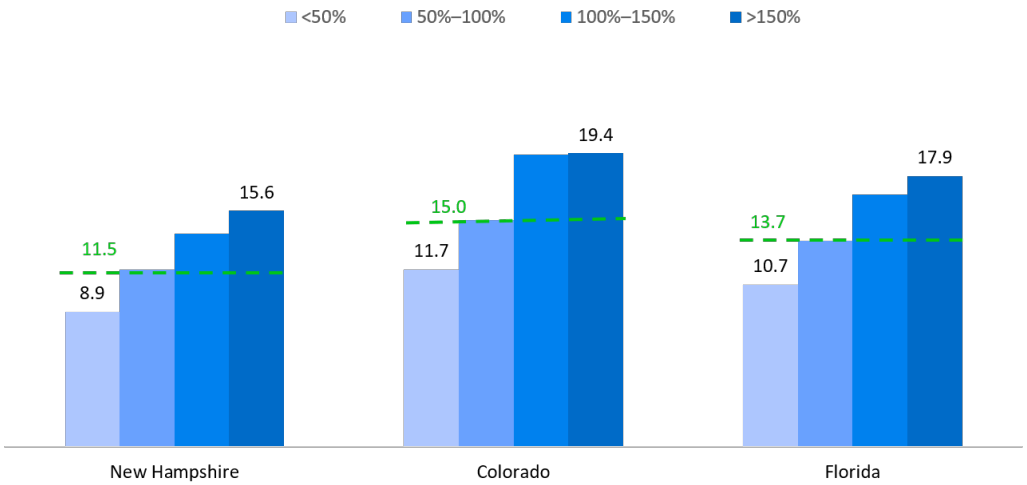


Figure 5 shows the correlation in a select few NCCI states.[4] We can see that the correlation persists across geographical regions as well.

Figure 5—Average Medical Utilization Across Select States (Thousand Units)



[3] For brevity, Figure 4 displays the average medical utilization for only the 20–34 and 65+ age groups. See Appendix B for the average medical utilization for all age groups.
[4] See Appendix B for the average medical utilization for all states in the study.

To summarize, the positive correlation between wages and medical utilization persists across age groups, industry sectors, class codes within an industry sector, and geographical regions, indicating that the differences are largely driven by the intensity of services and not prices.

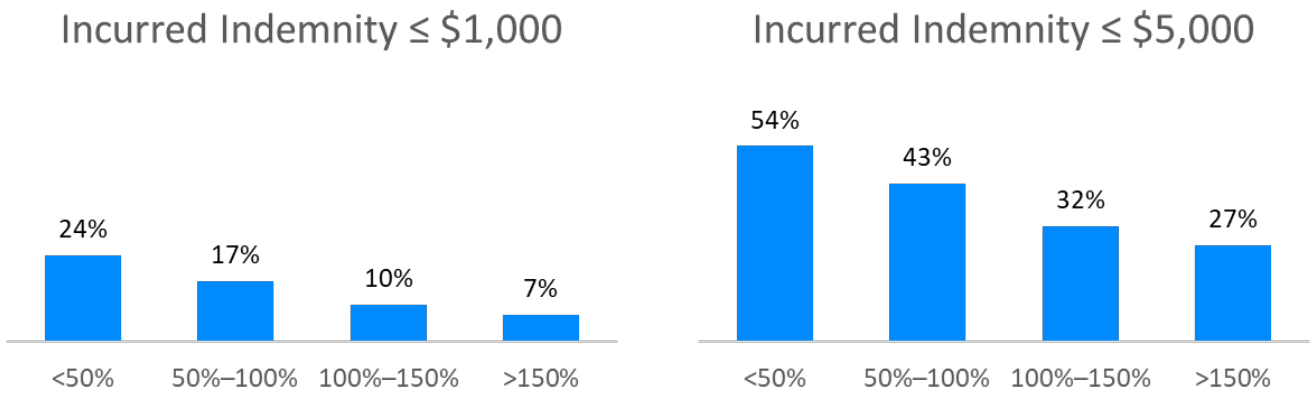
DRIVERS BEHIND THE POSITIVE CORRELATION OF WAGES AND MEDICAL UTILIZATION

At first glance, the positive correlation between injured worker wages and medical utilization may seem counterintuitive, given the assumption that higher-wage workers are more likely to hold managerial or office-based roles and therefore would likely face lower exposure to workplace injuries. Below are some potential explanations for this trend:

1. Higher-wage workers are less likely to file a less serious claim compared to lower-wage workers. There are several possible reasons behind this, such as the following:
   a. Fear of losing the job once the employer finds out about the injury and the required rehabilitation time
   b. Fear of indemnity benefits not being enough to cover the living expenses
   c. If an injured worker is a small business owner or an important contributor to the business, that worker may let the initial injury get progressively worse in order to keep the business and other employees financially secure for as long as possible
2. Higher-wage workers may be more experienced in their craft, which may cause them to become complacent regarding workplace safety protocols
3. Higher-wage workers are exposed to greater hazards on the job

One way to assess the impact of the lower likelihood of higher-wage workers filing a claim is to examine the share of claims where the incurred indemnity amount is small, say less than $1,000 or $5,000. This is done in Figure 6. For example, in the "<50%" group, the share of claims where the incurred indemnity is at most $1,000 is 24%, while the share of claims in the ">150%" group is 7%, *more than three times lower*. Similarly, the share of claims in the "<50%" group where the incurred indemnity amount is at most $5,000 is 54%. In the ">150%" group, it is 27%, *about two times lower*. This figure provides evidence that higher-wage workers are less likely to file a less serious claim and provides some explanation for the correlation discussed in the previous section.

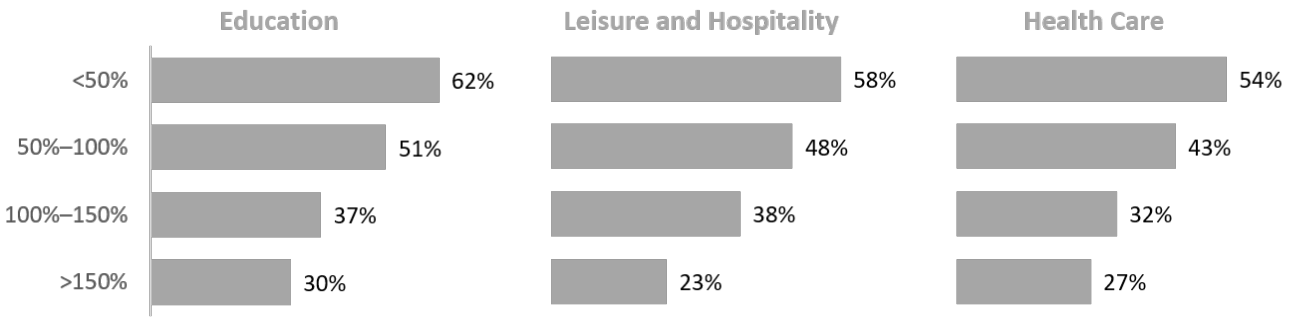
Figure 6—Share of Claims Where Incurred Indemnity Is Small



One interesting question to ask is the following: How does the share of small claims vary by industry group?

Figure 7 shows the top three industry groups with the largest share of small claims in the "<50%" wage group. Education takes the first place at 62%, followed by Leisure and Hospitality at 58% and Health Care at 54%. On the other hand, as shown in Figure 8, the bottom three industry groups are Wholesale Trade at 51%, Manufacturing at 49%, and Construction at 42%. Nonetheless, for any industry group, there is a consistent and large difference in the likelihood of filing a claim for a less serious injury between lower-wage and higher-wage workers.

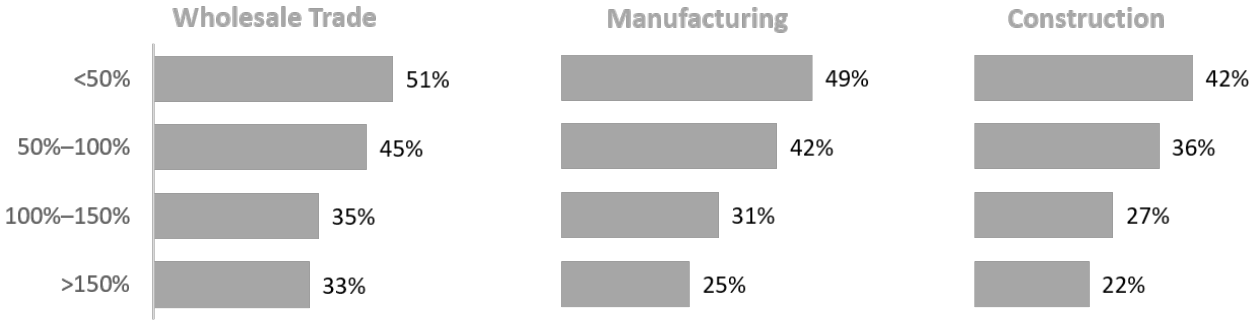
Figure 7—Top Three Industry Groups With Largest Share of Small Claims in "<50%" Wage Group



(Incurred Indemnity ≤ $5,000)

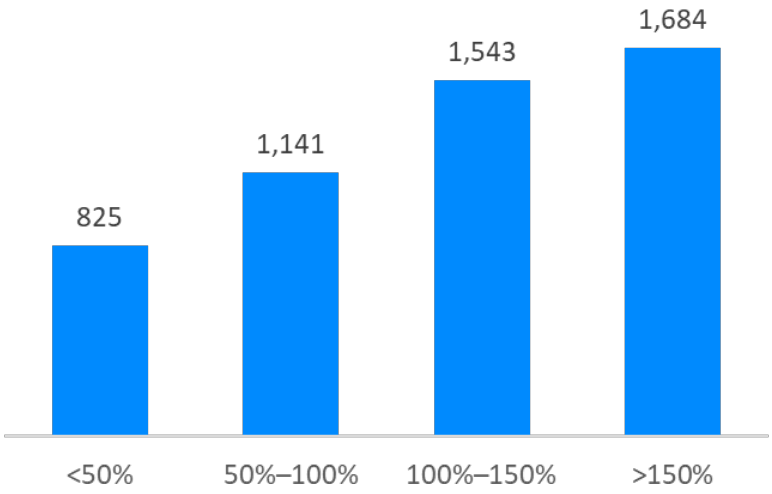
Figure 8—Bottom Three Industry Groups With Smallest Share of Small Claims in "<50%" Wage Group

(Incurred Indemnity ≤ $5,000)



So, we now see that higher-wage workers are less likely to file a claim for a less serious injury. The implication of this finding is the hypothesis that they may be more likely to undergo major surgery. In turn, this would incur higher costs across medical cost categories such as physicians, hospital outpatient, and prescription drugs. We start the investigation of this hypothesis by showing average major surgery physician payment per claim in Figure 9,[5] which illustrates the approach for determining whether higher-wage workers are more likely to have a major surgery.

Figure 9—Average Major Surgery Physician Payment per Claim ($)



Values in Figure 9 can be decomposed into three components that when multiplied together give the average major surgery physician payment:

A. **Probability of major surgery** defined as a ratio of number of claims with at least one major surgery and total number of claims
B. **Average number of visits with major surgery** defined as a ratio of number of visits with at least one major surgery and number of claims with at least one major surgery
C. **Average physician payment for major surgery visit**

For example, the average major surgery physician payment per claim for the "50%–100%" group is $1,141. This value can be decomposed into the three components above as follows, rounding errors notwithstanding.

$1,141 = 30.7% (**Probability of major surgery**) x

1.282 (**Average number of visits with major surgery**) x

$2,896 (**Average physician payment for major surgery visit**)

[5] This average was computed as the sum of medical payments made to physicians performing major surgery procedures divided by the total number of claims in the study data regardless of whether a claim had a major surgery episode or not.

Figure 10 shows the decomposition for all wage groups. There are three key observations:

1. Probability of major surgery increases across wage groups, indicating a more "severe" claim mix in this cohort than in others
2. Number of major surgery visits per claim with at least one major surgery is constant across wage groups
3. Average physician payment per major surgery visit is constant across wage groups

The decomposition in Figure 10 provides evidence that higher-wage workers are more likely to undergo major surgery. This, in turn, drives higher overall medical costs as shown in Figure 11.

Figure 10—Decomposition of Average Major Surgery Physician Payment per Claim Into Three Components

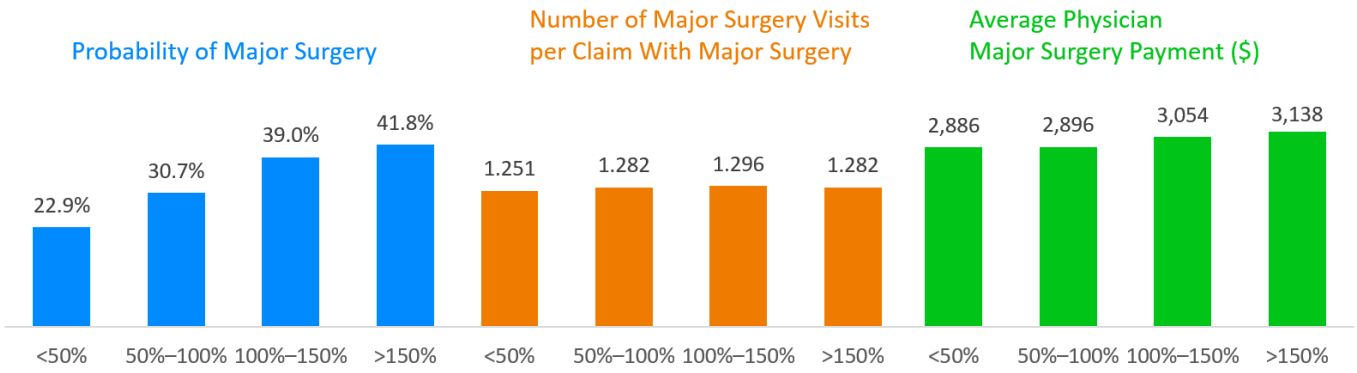
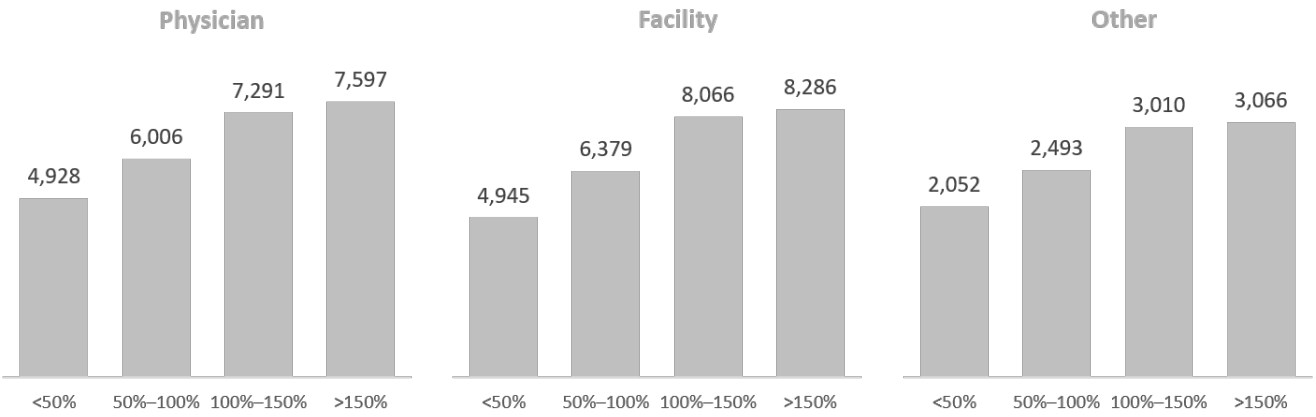


Figure 11—Medical Costs by Category ($)[6]



[6] The medical cost category named "Other" includes costs for prescription drugs, durable medical equipment, supplies, home healthcare, and transportation, among others.

CONCLUSION

For lost-time claims, medical utilization grows as injured worker wages rise. This correlation persists across age groups, jurisdictions, industry groups, and even NCCI class codes within a particular industry group. Since this dynamic is seen in the context of medical utilization, it indicates that the differences are largely due to intensity of services and not prices. NCCI's analysis indicates that higher-wage workers are less likely to file claims for less serious injuries than lower-wage workers. It also shows that higher-wage workers are about twice as likely to undergo major surgery, which in turn puts upward pressure on medical costs across all medical categories.

BIBLIOGRAPHY

[1] Chadarevian, Raji. "Navigating Medical Severity and Claim Outcomes." National Council on Compensation Insurance (**ncci.com**), May 2026.

[2] Wiemer, Mitch. "The Relationship Between Benefits and Wages." National Council on Compensation Insurance (**ncci.com**), June 2026.

APPENDIX A—DATA

For this study, we used Indemnity Data Call (IDC) experience reported to NCCI as of December 31, 2025 for:

- Claims with accident dates between January 1, 2021, and December 31, 2023. Incurred indemnity and incurred medical values were valued two years since the date of injury.
- The 35 jurisdictions: AK, AL, AR, CO, CT, DC, FL, GA, HI, IA, ID, IL, KS, KY, LA, MD, ME, MO, MS, MT, NC, NE, NH, NM, OK, OR, RI, SC, SD, TN, TX, UT, VA, VT, and WV.

Claims with incurred indemnity and incurred medical totaling more than $500,000 were excluded from the analysis.

IDC includes all workers compensation claims for which an indemnity payment has been made or indemnity reserve established. It does not include medical-only claims.

For each claim obtained from IDC, the detailed medical transaction history was obtained from the Medical Data Call (MDC) up to two years from the date of injury. MDC captures transaction-level detail for medical billings that were processed on or after July 1, 2010. All medical transactions with the jurisdiction state in any applicable MDC are reportable.

For each claim from IDC, additional information, such as the North American Industry Classification System (NAICS) code, was determined based on NCCI's ***Statistical Plan*** data. The ***Statistical Plan*** contains audited exposure, premium, and loss information for each state on the policy.

APPENDIX B—VALUES FOR FIGURES 2 THROUGH 5

Values for Figure 2—Average Medical Utilization by Wage Group and Age Group (Thousand Units)

	Wage Group			
Age Group	**<50%**	**50%–100%**	**100%–150%**	**>150%**
20–34	7.8	10.3	12.9	14.3
35–44	10.4	13.3	16.2	16.4
45–54	12.4	15.5	18.4	18.9
55–64	14.0	17.2	20.0	20.3
65+	15.5	17.5	19.3	20.2
All Age Groups	11.1	13.9	17.3	18.1

Values for Figure 3—Average Medical Utilization by Wage Group and Industry Group (Thousand Units)

	Wage Group				
Industry Group	**<50%**	**50%–100%**	**100%–150%**	**>150%**	**All Wage Groups**
Construction	15.9	18.1	21.3	23.2	**19.3**
Manufacturing	11.8	14.9	18.7	20.7	**15.8**
Wholesale Trade	11.1	13.8	16.1	15.6	**14.0**
Office	11.5	14.1	16.8	19.1	**14.8**
Transportation and Warehousing	9.5	10.9	13.6	14.5	**11.8**
Retail Trade	10.7	12.5	17.1	17.9	**12.5**
Health Care	10.3	12.1	14.6	15.2	**12.2**
Leasure and Hospitality	10.6	12.6	15.5	17.3	**12.1**

Values for Figure 4—Average Medical Utilization by Wage Group and Age Group for Construction (Thousand Units)

	Wage Group			
Age Group	**<50%**	**50%–100%**	**100%–150%**	**>150%**
20–34	13.1	15.2	17.1	19.2
35–44	16.4	18.2	20.7	22.0
45–54	18.6	20.1	23.3	24.8
55–64	19.2	21.9	23.9	24.9
65+	18.6	20.8	22.4	26.5
All Age Groups	**15.9**	**18.1**	**21.3**	**23.2**

Values for Figure 5—Average Medical Utilization by Wage Group and State (Thousand Units)

	Wage Group				
State	**<50%**	**50%–100%**	**100%–150%**	**>150%**	**All Wage Groups**
Alabama	13.3	16.0	18.4	19.2	**16.6**
Alaska	8.9	12.1	16.5	19.8	**12.9**
Arkansas	12.6	14.9	18.4	18.6	**15.8**
Colorado	11.7	15.0	19.3	19.4	**15.0**
Connecticut	9.3	12.7	15.9	18.9	**12.1**
District of Columbia	8.4	11.4	13.5	15.9	**10.6**
Florida	10.7	13.6	16.7	17.9	**13.7**
Georgia	11.6	16.1	18.8	18.4	**14.9**
Hawaii	9.9	10.2	12.9	15.9	**11.4**
Idaho	14.1	15.7	20.3	21.0	**17.5**
Illinois	13.1	16.7	20.5	22.0	**16.4**
Iowa	13.1	15.4	18.2	19.7	**16.2**
Kansas	13.4	15.6	19.0	18.1	**16.3**
Kentucky	12.2	14.7	19.1	19.9	**15.9**
Louisiana	15.3	19.5	24.6	25.5	**20.4**
Maine	10.2	12.9	16.9	16.8	**13.9**
Maryland	8.5	11.8	14.2	16.0	**11.5**

Values for Figure 5—Average Medical Utilization by Wage Group and State (cont'd)
(Thousand Units)

	Wage Group				
State	**<50%**	**50%–100%**	**100%–150%**	**>150%**	**All Wage Groups**
Mississippi	12.3	14.0	17.0	18.3	**15.0**
Missouri	11.9	15.1	18.7	20.5	**15.7**
Montana	13.2	14.6	18.4	20.5	**16.0**
Nebraska	16.0	18.5	22.4	23.8	**19.8**
New Hampshire	8.9	11.7	14.1	15.6	**11.5**
New Mexico	11.3	12.9	17.1	17.0	**14.0**
North Carolina	11.4	13.9	16.5	17.0	**14.1**
Oklahoma	12.8	15.5	19.8	19.4	**16.3**
Oregon	7.4	8.2	11.4	12.5	**8.7**
Rhode Island	7.0	8.3	12.6	14.5	**9.3**
South Carolina	12.1	14.7	18.6	19.4	**15.6**
South Dakota	16.4	17.5	21.2	21.5	**18.7**
Tennessee	11.6	13.9	16.5	17.3	**14.2**
Texas	8.6	11.1	13.4	14.3	**11.6**
Utah	11.5	14.6	18.3	18.0	**15.2**
Vermont	10.6	10.8	14.6	16.9	**12.3**
Virginia	11.9	16.2	19.0	21.1	**15.6**
West Virginia	8.6	10.1	14.0	15.9	**11.8**