

What Industrial Categories Are Workers at Excess Risk of Filing a COVID-19 Workers' Compensation Claim? A Study Conducted in 11 Midwestern US States

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Objective: Determine the industries with the highest proportion of accepted COVID-19 related workers' compensation (WC) claims. **Methods:** Study included 21,336 WC claims (1898 COVID-19 and 19,438 other claims) that were filed between January 1, 2020 and August 31, 2020 from 11 states in the Midwest United States. **Result:** The overwhelming proportion of all COVID-19 related WC claims submitted and accepted were from healthcare workers (83.77%). Healthcare was the only industrial classification that was at significantly higher COVID-19 WC claim submission risk (odds ratio [OR]: 4.00; 95% confidence intervals [CI]: 2.77 to 5.79) controlling for type of employment, sex, age, and presumption of COVID-19 work-relatedness. Within healthcare employment, WC claims submitted by workers in medical laboratories had the highest risk (crude rate ratio of 8.78). **Conclusion:** Healthcare employment is associated with an increased risk of developing COVID-19 infections and submitting a workers' compensation claim.

Keywords: COVID-19, healthcare, industry, laboratories, workers' compensation

In the United States, the various federal and state workers compensation (WC) laws and statutes govern the system that pays for the medical care and lost wages associated with work-related injuries and illnesses. The emergence of the COVID-19 worldwide pandemic in December of 2019 and efforts by all levels of government to control the spread of the disease through lockdowns and travel restrictions, has reduced business activity in many industries. Data released by the Department of Commerce's Bureau of Economic Analysis (BEA) in late July of 2020 indicated that the country's GDP decreased by an annual rate of

Learning Objectives

- Discuss trends in workers' compensation (WC) claims during the COVID-19 pandemic, with special reference to healthcare workers and other essential workers.
- Summarize the new findings on proportions of COVID-19-related WC claims by industry and within healthcare.
- Discuss the effect of presumption of COVID-19 work-relatedness on WC claim submissions.

32.9%. The BEA attributed the decline to "state and local government responses to control the spread of the epidemic."¹ Consequently, the frequency of musculoskeletal work-related injuries especially in the entertainment, travel, and hospitality industries has decreased, as indicated in the California Workers' Compensation Institute's interactive app.²

As the frequency of the traditional injuries associated with work declined, the risk of exposure to SARS-CoV-2 the virus causing COVID-19, increased significantly for various occupational groups. Many jobs that may typically not be considered high-risk, became high-risk for workers exposed to and infected by SARS-CoV-2. At particular risk were essential workers such as health care workers, mass transit operators, and grocery store workers. This presented a challenge to state governments, employers, and the insurance industry to find a mechanism to pay for the medical care and lost time associated with a disease that was acquired during the course of employment but not specific work tasks.

WC laws provide compensation for "occupational diseases" that arise out of and in the course of employment. Many state statutes exclude coverage for routine community-acquired and transmitted diseases like viral upper respiratory infections such as colds or seasonal influenza because they usually cannot be directly tied to the workplace. Some states have made exceptions for workers who develop chronic illnesses, like cancer, resulting from repeated exposure to harmful materials and environments. A number of states have policies indicating that firefighters and other first responders who develop lung and respiratory illnesses are presumed to have work-related condition and may be covered under WC.

During the pandemic, many states have extended WC coverage to include first responders and health care workers impacted by COVID-19. A common approach is to amend state policy so that COVID-19 infections in certain workers are presumed to be work-related and covered under WC.³ This presumption places the burden of proof on the employer and insurer to prove that the infection was not work-related making it easier for those workers to file successful claims.^{4,5}

The purpose of this investigation is to quantify the differences in the proportion of COVID-19 related and non-COVID-19 related injuries and illnesses reported through the workers' compensation system by industrial classification. Our interest is to determine

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Clinical significance: COVID-19 infections and WC claim submissions are a significant risk for healthcare workers by virtue of their employment. Because of this, preventive measures such as universal masking and entry point screening for COVID-19 infections, are essential to reduce the risk of these infections in this population.

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which occupational groups have a greater risk of acquiring an occupationally related COVID-19 infection and submitting a WC claim for it relative to WC claims for all other injuries, controlling for presumption legislation or executive orders. We utilize workers' compensation data from a large workers' compensation insurance carrier providing coverage to a variety of industries in 11 mid-west states to perform the analysis.

METHODS

Study Population

This study included 21,336 workers compensation claims (1898 COVID-19 and 19,438 other claims) that were filed between January 1, 2020 and August 31, 2020 from 11 states in Midwest area including Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin, to AF Group, a workers' compensation insurance carrier operating as Accident Fund Insurance Company of America, United Heartland, Third Coast Underwriters, and CompWest Insurance Company.

Data Collection

Claim specific data were obtained from AF Group's database, containing information on claim demographics (sex and age), type of claim (COVID-19 or other), and six-digit NAICS code for claims' working industries.⁶ The National Council on Compensation Insurance (NCCI)'s State Activity: COVID-19 Workers Compensation Compensability Presumptions report was used to mark the states that enacted legislation or promulgated executive orders related to rebuttable presumptions of eligibility for that states' workers' compensation benefits.⁷ Presumption states included Illinois, Michigan, Minnesota, Missouri, and Wisconsin in this analysis. Rebuttable presumptions were granted by all these states for first responders and healthcare workers with Illinois, Michigan, and Minnesota also granting a presumption to essential workers and Minnesota including teachers in their presumption language.⁷

Claim Submission Workflow

AF Holdings developed a COVID-19 claims process to ensure a consistent approach to accepting and managing the workers' compensation claim submission process. A workflow was created where each claim for benefits was evaluated by a team which included claims adjusters, selected AF Group leadership representatives, legal representation, and the company's medical director. Essential information used by the team to make compensability determinations included documentation of COVID-19 disease presence through laboratory testing, healthcare provider clinical diagnosis, and a high probability that the infection was work related. This platform was the foundation to guide claims decisions across all jurisdictions.

Statistical Analysis

Descriptive statistics were used to describe the claims filing by claim type and month of filing. Percentage distributions by two-digit North American Industry Classification System (NAICS) codes were presented for COVID-19 and other claims, respectively. A logistic regression analysis was used to examine the risk of having COVID-19 claims in each industry as odds ratio (OR) and 95% confidence intervals (CI), adjusting for sex, age, and presumption state. The reference group, "Retail Trade," was chosen for the risk comparison among two-digit NAICS industry codes, because its percentage distributions in COVID-19 and other claims were the closest to each other among all two-digit NAICS industries. A further analysis was performed to explore the risks of having COVID-19 claims within "Healthcare and Social Assistance" by four-digit NAICS industry codes also adjusting for sex, age, and presumption state. "Other Residential Care Facilities," was chosen

TABLE 1. Workers Compensation Claims Received by Month

Month	2020 Other	%	2020 COVID	%
January	724	3.7%	3	0.2%
February	3,937	20.3%	2	0.1%
March	2,751	14.2%	228	12.0%
April	1,838	9.5%	603	31.8%
May	2,312	11.9%	471	24.8%
June	3,039	15.6%	214	11.3%
July	2,993	15.4%	237	12.5%
August	1,844	9.5%	140	7.4%
Total	19,438	100.0%	1,898	100.0%

as reference for the risk of having COVID-19 comparison among four-digit NAICS industrial codes. We utilized the same strategy to perform the logistic regression as the percentage distribution in COVID-19 and other claims were the closest to each other for "Other Residential Care Facilities" among all four-digit NAICS industries. OR and 95% CI were used to present the likelihood of filing workers' compensation claims for each of industries as well as potential confounding factors described above.

RESULTS

In Table 1 and Fig. 1 you will note that 19,438 WC claims were submitted from January through August of 2020, of which 1898 were for COVID-19 related infections. The proportion of COVID-19 related claims submitted increased from 0.2% of all claims in January of 2020, peaking at 31.8% of all claims in April, 2020 and decreased to 7.4% of all claims by August of 2020. WC claims from the presumption states accounted for 77.3% of the COVID-19 related WC claims and 64.7% for all other WC claims in the study population.

Table 2 indicates that the overwhelming proportion of all COVID-19 related WC claims submitted and accepted were from healthcare workers (83.77%) followed by individuals employed in retail trades (2.42%) and real estate and leasing (2.37%). However, WC claims submitted by healthcare workers represented 34.71% of overall WC claims submitted by these workers for all conditions compared with claims submitted for all conditions by retail workers at 2.78% and individuals working in real estate (3.78%). Therefore, the rate of WC claims filed by workers in the healthcare industry for COVID-19 infections was 2.41 times higher than their rate of filing a WC claim for all non-COVID-19 related conditions during the study period. Individuals employed in retail trades were less likely to file a COVID-19 related WC claim than a claim for non-COVID-19 injuries and illnesses (Crude RR = 0.87). This was true for all other job categories studied.

A logistic regression (Table 3) was performed to assess the odds of filing a COVID-19 WC claim versus a non-COVID-19 WC claim, for the various industrial classifications (NAICS two-digit codes). It was also performed by sex designation, age, and whether or not the state in which the WC claim was filed had enacted legislation or an executive order that evidence of a COVID-19 infection was presumed to be work related because of the industry the claimant worked in. Retail trade was chosen as the comparison classification to perform the logistic regression because the proportion of WC claims filled for retail industry non-Covid-19 WC claims to all industries and retail industry COVID-19 related WC claims to all industries, were similar. Health care and social assistance had the highest odd ratio (OR: 4.00; 95% CI: 2.77 to 5.79) versus retail trade. All other industries showed no significant ORs versus retail trade. Compared with workers at or over 70 years of age, younger aged individuals (particularly those aged 30 to less

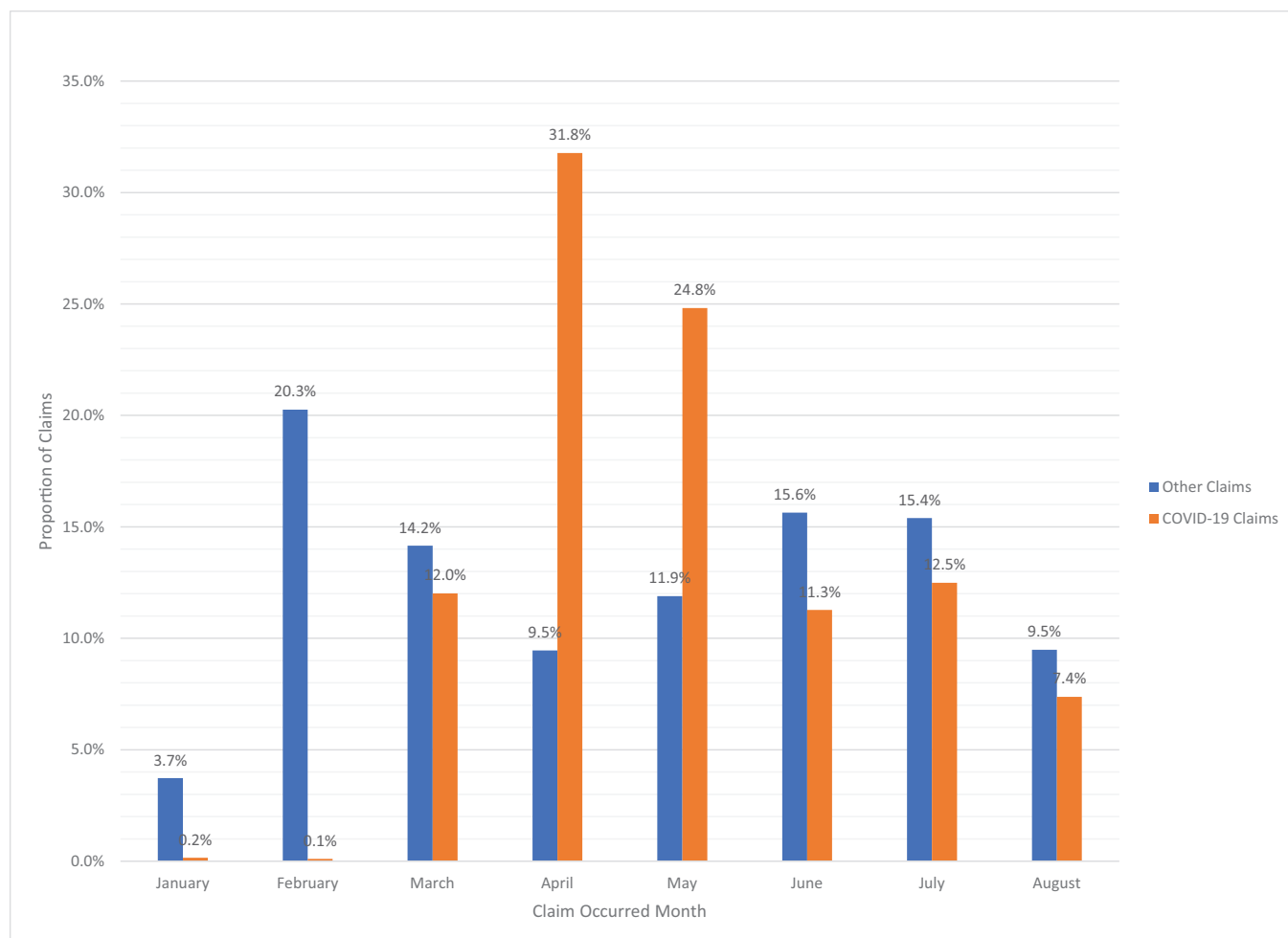


FIGURE 1. Proportion distribution for claims received by month in January to August, 2020.

TABLE 2. Rate Ratios (RR) by Industry (Two-Digit NAICS Code)

Industry (Two-Digit NAICS Code)	Other Claims	%	COVID Claims	%	Crude RR
Health care and social assistance	6,746	34.71%	1,590	83.77%	2.41
Retail trade	541	2.78%	46	2.42%	0.87
Real estate rental and leasing	735	3.78%	45	2.37%	0.63
Arts, entertainment, and recreation	619	3.18%	41	2.16%	0.68
Other services (except public administration)	619	3.18%	29	1.53%	0.48
Wholesale trade	965	4.96%	35	1.84%	0.37
Accommodation and food services	881	4.53%	25	1.32%	0.29
Administrative and support and waste management and remediation services	545	2.80%	25	1.32%	0.47
Public administration	550	2.83%	14	0.74%	0.26
Educational services	812	4.18%	14	0.74%	0.18
Manufacturing	2,990	15.38%	25	1.32%	0.09
Agriculture, forestry, fishing, and hunting	1,195	6.15%	5	0.26%	0.04
Construction	1,025	5.27%	2	0.11%	0.02
Finance and insurance	166	0.85%	0	0.00%	0.00
Information	26	0.13%	0	0.00%	0.00
Management of companies and enterprises	41	0.21%	0	0.00%	0.00
Mining	18	0.09%	0	0.00%	0.00
Professional, scientific, and technical services	88	0.45%	0	0.00%	0.00
Transportation and warehousing	826	4.25%	0	0.00%	0.00
Utilities	28	0.14%	0	0.00%	0.00
Unknown	22	0.11%	2	0.11%	0.93
Total	19,438	100.00%	1,898	100.00%	1.00

NAICS, North American Industry Classification System.

TABLE 3. The Results of Logistic Regression Analysis for Industries (Two-Digit NAICS Code)

Variables	Odds Ratios	95% CI	
Sex female vs male	1.20	1.06	1.36
Age <30 vs 70+	1.30	0.85	1.98
Age 30 to <40 vs 70+	1.77	1.16	2.70
Age 40 to <50 vs 70+	1.68	1.10	2.56
Age 50 to <60 vs 70+	1.49	0.98	2.28
Age 60 to <70 vs 70+	1.35	0.87	2.09
Presumption state	1.75	1.55	1.97
Health care and social assistance vs retail trade	4.05	2.80	5.87
Real estate rental and leasing vs retail trade	1.54	0.95	2.51
UNK vs retail trade	1.32	0.31	5.63
Administrative and support and waste management and remediation services vs retail trade	1.08	0.68	1.71
Arts, entertainment, and recreation vs retail trade	1.06	0.65	1.71
Wholesale trade vs retail trade	0.79	0.47	1.33
Other services (except public administration) vs retail trade	0.68	0.41	1.12
Public administration vs retail trade	0.60	0.33	1.09
Accommodation and food services vs retail trade	0.44	0.25	0.76
Professional, scientific, and technical services vs retail trade	0.26	0.10	0.68
Manufacturing vs retail trade	0.16	0.09	0.27
Educational services vs retail trade	0.08	0.03	0.18
Construction vs retail trade	0.02	0.00	0.16
Agriculture, forestry, fishing, and hunting vs retail trade	<0.01	<0.001	>999.99
Finance and insurance vs retail trade	<0.02	<0.001	>999.99
Information vs retail trade	<0.03	<0.001	>999.99
Management of companies and enterprises vs retail trade	<0.04	<0.001	>999.99
Mining vs retail trade	<0.05	<0.001	>999.99
Transportation and warehousing vs retail trade	<0.06	<0.001	>999.99
Utilities vs retail trade	<0.07	<0.001	>999.99

NAICS, North American Industry Classification System.

than 40) filed WC claims at significantly higher rates (33% to 79%) than their older peers controlling for all other variables. Women were 21% more likely to file a COVID-19 claim than men. The risk of filling a WC claim in a state with a presumption of COVID-19 work-relatedness was 96% greater than the risk of filling a COVID-19 WC claim in a “non-presumption” state, again controlling for all other variables.

Table 4 indicates that the proportion of COVID-19 WC claims submitted by individuals working in nursing care facilities amounted to 22.18% of all COVID-19 WC claims filled by workers in healthcare followed by continuing care retirement communities and assisted living for the elderly (11.28%) and general medical and surgical hospitals (10.96%). However, WC claims submitted by workers in medical and diagnostic laboratories represented 3.79%

TABLE 4. Crude Rate Ratios (RR) by Industry (Four-Digit NAICS Code) in Health Care and Social Assistance

Industry (Four-Digit NAICS Code)	Other Claims	%	COVID Claims	%	Crude RR
Medical and diagnostic laboratories	84	0.43%	72	3.79%	8.78
Offices of other health practitioners	161	0.83%	100	5.27%	6.36
Nursing care facilities (skilled nursing facilities)	1025	5.27%	421	22.18%	4.21
Home health care services	198	1.02%	73	3.85%	3.78
Offices of physicians	198	1.02%	69	3.64%	3.57
General medical and surgical hospitals	683	3.51%	208	10.96%	3.12
Residential intellectual and developmental disability, mental health, and substance abuse facilities	260	1.34%	79	4.16%	3.11
Continuing care retirement communities and assisted living facilities for the elderly	899	4.62%	214	11.28%	2.44
Other ambulatory health care services	447	2.30%	106	5.58%	2.43
Outpatient care centers	185	0.95%	30	1.58%	1.66
Vocational rehabilitation services	331	1.70%	52	2.74%	1.61
Other residential care facilities	465	2.39%	48	2.53%	1.06
Individual and family services	708	3.64%	55	2.90%	0.80
Child day care services	862	4.43%	52	2.74%	0.62
Psychiatric and substance abuse hospitals	168	0.86%	10	0.53%	0.61
Community food and housing, and emergency and other relief services	2695	13.86%	152	8.01%	0.58
All other industries than healthcare and social assistance	10061	51.76%	157	8.27%	0.16
Offices of dentists	5	0.03%	0	0.00%	0.00
Specialty (except psychiatric and substance abuse) hospitals	3	0.02%	0	0.00%	0.00
Total	19438	100.00%	1898	100.00%	1.00

NAICS, North American Industry Classification System.

TABLE 5. The Odds Ratios (OR) of Logistic Regression Analysis by Industries Within Healthcare and Social Assistance (Four-Digit NAICS Codes)

Variables	OR	95% CI	
Sex female vs male	1.24	1.08	1.41
Age <30 vs 70+	1.28	0.82	2.00
Age 30 to <40 vs 70+	1.75	1.12	2.73
Age 40 to <50 vs 70+	1.71	1.09	2.68
Age 50 to <60 vs 70+	1.48	0.94	2.32
Age 60 to <70 vs 70+	1.31	0.82	2.07
Presumption state	2.19	1.92	2.50
Medical and diagnostic laboratories vs other residential care facilities	3.08	1.95	4.86
Residential intellectual and developmental disability, mental health, and substance abuse facilities vs other residential care facilities	3.03	2.13	4.29
Nursing care facilities (skilled nursing facilities) vs other residential care facilities	2.50	1.87	3.35
Offices of physicians vs other residential care facilities	2.03	1.38	2.99
Outpatient care centers vs other residential care facilities	1.82	1.18	2.82
Continuing care retirement communities and assisted living facilities for the elderly vs other residential care facilities	1.51	1.12	2.03
Other ambulatory health care services vs other residential care facilities	1.22	0.86	1.72
Home health care services vs other residential care facilities	1.14	0.73	1.79
Individual and family services vs other residential care facilities	1.13	0.81	1.56
Vocational rehabilitation services vs other residential care facilities	1.09	0.73	1.63
Psychiatric and substance abuse hospitals vs other residential care facilities	0.81	0.50	1.32
General medical and surgical hospitals vs other residential care facilities	0.52	0.35	0.77
Offices of other health practitioners vs other residential care facilities	0.47	0.18	1.23
Child day care services vs other residential care facilities	0.29	0.19	0.42
Other industries vs other residential care facilities	0.14	0.11	0.19
Community food and housing, and emergency and other relief services vs other residential care facilities	<0.01	<0.01	>999.99
Offices of dentists vs other residential care facilities	<0.01	<0.01	>999.99
Specialty (except psychiatric and substance abuse) hospitals vs other residential care facilities	<0.01	<0.01	>999.99

NAICS, North American Industry Classification System.

of COVID-19 WC claims filed in healthcare and social assistance but only 0.43% of WC claims for all conditions resulting in a crude rate ratio of 8.78, the highest for all healthcare and social assistance categories. Similarly, in contrasting the proportion of COVID-19 WC claims to all WC submitted for an industrial classification within healthcare, the next highest crude rate ratio was observed for offices of other health practitioners (6.36) and nursing care facilities (4.21). The crude rate ratios are presented in Table 4 for all listed healthcare classifications.

A logistic regression analysis was performed for the component industrial classifications within the healthcare and social assistance 2-digit industrial code (Table 5). The purpose of the analysis was to assess the odds of filing a COVID-19 WC claim versus a non-COVID-19 WC claim, for various healthcare industrial sub-classifications, sex designation, age, and whether or not the state in which the WC claim was filled had enacted legislation or an executive order presuming that a COVID-19 infection work-related because of the industry the claimant worked in. Other residential care facilities was chosen as comparison category to calculate the crude rate ratio because the proportion of other residential care facilities WC claims for all conditions and for COVID-19 related WC claims were similar (2.39% vs 2.53%).

Like Table 3 comparing odds ratios for a COVID-19 WC claim submission for the two-digit industrial classifications, Table 5 presents the odds ratios in the various four-digit sub-classifications for healthcare workers. The odds of a younger individual within the healthcare industry submitting a COVID-19 WC claim compared with than an individual 70 years of age or older ranged from 31% to 79% controlling for all variables in the regression. Female healthcare workers were 24% more likely to submit a COVID-19 WC claim than male healthcare workers.

Of particular note in Table 5 are the significantly elevated odds ratios in descending order: medical and diagnostic laboratories (OR: 4.40; 95% CI: 2.77 to 6.97), residential facilities dealing with mental health (OR: 2.84; 95% CI: 2.00 to 4.03) and substance abuse

and skilled nursing facilities (OR: 2.14; 95% CI: 1.60 to 2.87), offices of physicians (OR: 1.80; 95% CI: 1.22 to 2.64), outpatient care centers (OR: 1.59; 95% CI: 1.03 to 2.45), and continuing care retirement communities and assisted living facilities for the elderly (OR: 1.42; 95% CI: 1.06 to 1.92), compared with other residential care facilities and adjusted for sex, age, and presumption state.

DISCUSSION

Not surprisingly, our investigation of workers' compensation claims revealed what many other reports and studies, related and not related to workers' compensation, have shown, that healthcare workers are at greater risk of contracting COVID-19 by virtue of their work.^{8–24} Regarding the risk stratification among healthcare workers we confirmed the observations of other investigators that workers in certain healthcare occupations, notably residential facility and skilled nursing employment were at high risk of contracting COVID-19.^{14,15,17,19} What may be more important to employees and employers outside the healthcare industry, is our finding that risk of exposure and submitting a job related COVID-19 WC claim is lower than the mostly physical hazards of the industry itself of submitting a non-COVID-19 occupational injury or illness WC claim. Even controlling for states with a rebuttable presumption of COVID-19 work-relatedness for healthcare and other high risk occupations, the only industrial category where a relationship between submitting a WC claim and occupation could be demonstrated, was healthcare. This suggests that the vast majority of workplaces will not be subject to a high frequency of COVID-19 related WC claims over the course of the pandemic.

The Occupational Safety and Health Administration (OSHA) risk stratifies various types of employment based on probable exposure to SARS-CoV-2.¹⁰ This agency places medical laboratory workers and those performing aerosol generating procedures at very high exposure risk with other healthcare workers at high risk. Our study confirms the accuracy of this risk stratification that was based

primarily on the probable frequency of workers coming in contact with an asymptomatic or pre-symptomatic SAR CoV-2 infected individuals.¹⁰

The California Workers Compensation Institute (CWCI) interactive COVID-19 App reveals that 38.1% of COVID-19 claims submitted in California during 2020 COVID-19 epidemic period was related to healthcare industry employment whereas about 10% of employed persons in California work in this industry. Relative to the population of workers in this industry, this represents a crude risk ratio of about 3.8% of acquiring and submitting a WC claim for COVID-19 by virtue of employment.^{2,9}

The Washington State Department of Labor and Industry (L&I) reported that, although healthcare and social assistance occupations represent 13% of employment in that state, 37% of the all claims for payment under workers' compensation were healthcare related (a ratio of 2.8 to 1).¹¹ In our study, we found an almost similar relationship with healthcare employment having approximately 2.5 times the COVID-19 WC claims submitted in relation to the proportion of non-COVID-19 claims submitted during the January to August 2020 study period.

In our study, 84% of the COVID-19 WC claims were related to healthcare employment. However, given the high proportion of healthcare WC claims to non-healthcare WC claims (35%), healthcare policyholders most likely constituted a larger proportion in our insured population than the 10% observed in California and 13% in Washington and most US states. We were unable to obtain data on the exact number and percent of workers in each industrial category from our data set to directly compare our finding to these studies.

However, we reasoned that proportion of WC claim submissions by industry for non-COVID-19 claims may be an acceptable proxy for healthcare employment relative to other employment in our study population. In addition as mentioned, non-COVID-19 WC claims amounted to about 35% of the study population's WC claims. This occurred in both 2019 and 2020 (Fig. 2), representing a ratio of approximately 2.5:1 of COVID-19 WC claims to non-COVID-19 related WC claims. This ratio is similar to the State of Washington's ratio of COVID-19 claim to the number of individuals in healthcare but differs from California's, 3.8:1.

If this assumption seems reasonable, our study then confirms that COVID-19 WC claims are over-represented in healthcare workers. The difference in the magnitude of the rate ratios between our study and California's is difficult to explain. Both California and Washington State enacted a presumption of work-relatedness of a COVID-19 infection among first responders and healthcare workers early. California created a presumption of work-relatedness for COVID-19 disease WC claim submission through a May 5, 2020 executive order by the governor of that state. A similar executive order by the Governor of Washington was enacted on March 5, 2020. This difference in the crude rate ratios of Washington State's and our study with the California rate ratios suggests that a presumption of work-relatedness may act as a variable geographic incentive to file a claim through workers' compensation versus other types of medical insurance.

We determined that the odds ratio of presumption versus no presumption controlling for all other factors was approximately two. Because of this finding, we did control for presumption in our

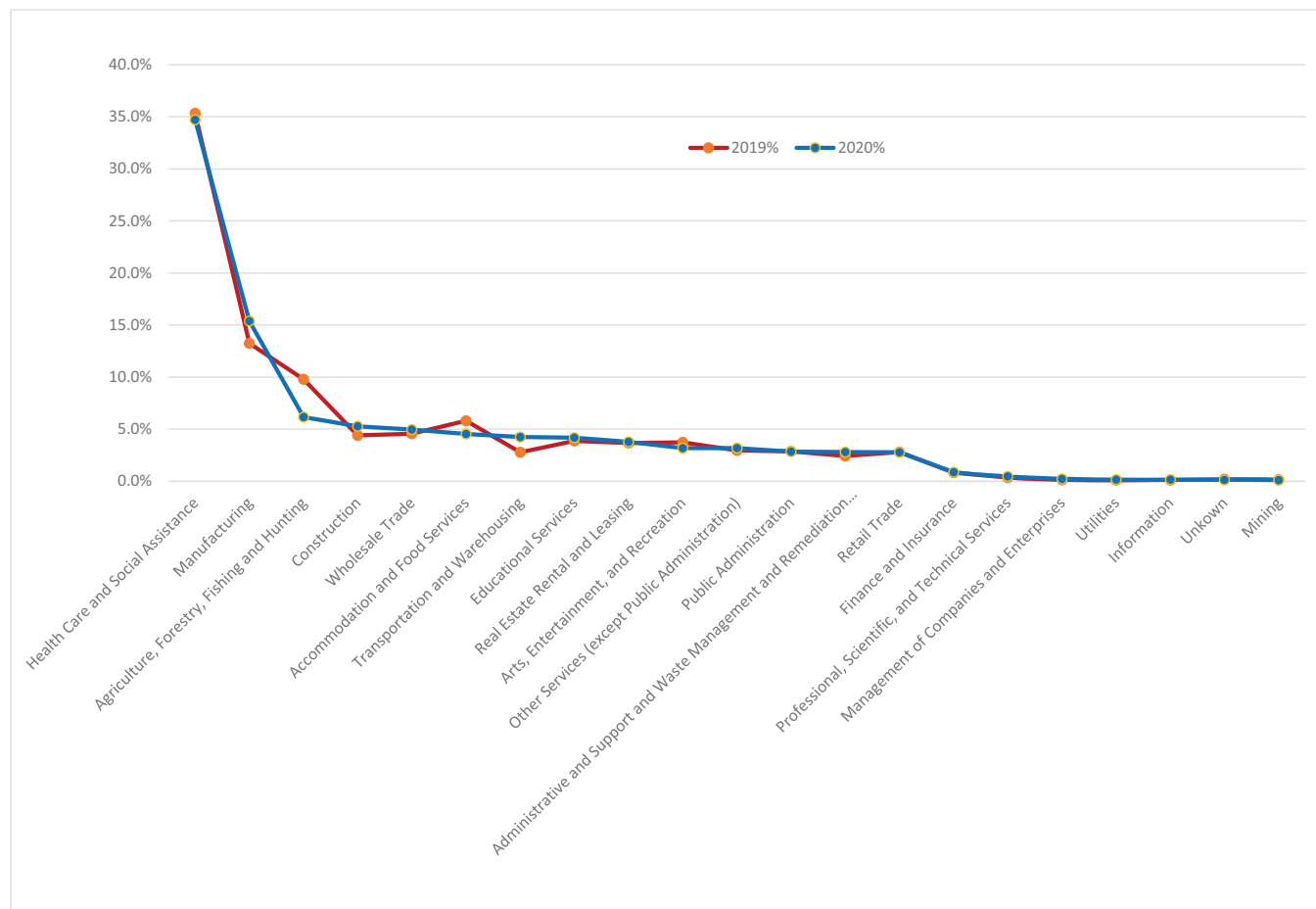


FIGURE 2. The distribution of claims other than COVID-19 by industry between 2019 and 2020 (January to August).

regression model and found that presumption legislation or executive orders in the study states did not change the outcomes; the proportion of workers acquiring a SARS-CoV-2 infection in healthcare and filing a COVID-19 related claim was higher than submissions from workers employed in all other sectors regardless of state.⁷

When we assessed the odds ratio of employment in healthcare to real estate employment of submitting a COVID-19 claim, the only industry classification that was significant (OR: 4.00; 95% CI: 2.77 to 5.79) was healthcare. We controlled for sex, age, presumption of COVID-19 work-relatedness, and all other types of employment in the model. We chose retail trade as a comparison group because the percent of non-COVID-19 claims in this industry was 2.78% of all claims similar to the percentage of COVID-19 claims in this industry (2.4%) compared with submissions from other industries. This would suggest that type of employment other than healthcare is not a consistent risk factor for acquiring a COVID-19 diagnosis and submitting a COVID-19 related WC claim.¹²

Within healthcare and social services employment, we found large differences between the risk of acquiring a COVID-19 infection and submitting a COVID-19 related WC claim. Workers in medical laboratories, residential facilities for mental illness, substance abuse, etc, and skilled nursing facilities had much higher risk of filing a COVID-19 WC claim than other healthcare workers. This is consistent with the published literature that indicates that these occupations within healthcare are at the highest risk of a SARS-CoV-2 infection.^{9,13–24}

The major weakness of the study was the inability to obtain information from the data-set regarding the population at risk for submitting a COVID-19 WC claim to directly contrast our outcomes to other studies. We utilized the proportion of WC claims submitted in an industrial classification to all classifications for non-COVID-19 conditions to represent the baseline risk of submitting a WC claim for that classification. We would have preferred to utilize the relative proportion of COVID-19 WC claims in an industrial classification to the proportion of workers in that classification to assess the risk ratio. However, the information in Fig. 2 strengthens our argument that this may be an acceptable strategy. The figure presents the proportion of WC claims filed for non-COVID-19 injuries and illnesses in 2019 and 2020 for the two-digit industrial classifications. The proportion of WC claims in agriculture and the hotel and accommodation industry declined and the proportion of claims related to manufacturing and transportation increased in 2020 compared with 2019. However, this figure indicates that for the most part, individuals in each industry filed non-COVID-19 claims in a similar proportion each year. It also indicates that while economic activity decreased in the United States, the relative composition of the workforce in the population we studied did not change appreciably.

CONCLUSION

Healthcare employment is associated with an increased risk of developing COVID-19 infections and submitting a workers' compensation claim. Conversely, in our study population, employment outside healthcare did not appear to consistently elevate the risk of infection with SARS-CoV-2 and filing a claim for workers' compensation to pay for the medical care and lost time associated with this condition. Within healthcare employment, we identified laboratory personnel as an additional high-risk occupation for contracting SARS-CoV-2 and submitting a WC claim for Covid-19. Lastly, that presumption of COVID-19 work-relatedness is a factor associated with WC claim submissions. The effect of presumption on WC claim submissions does not appear to change the relationship between COVID-19 infection rates between industrial classifications.

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