

Trends in Workplace Violence for Health Care Occupations and Facilities Over the Last 10 Years



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I. Introduction

Workplace violence (WPV), or “any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site,” facing health workforces is reported to have increased since the start of the COVID-19 pandemic.¹⁻⁶ The consequences of WPV on the workforce are significant - immediate physical harm, psychological distress, lower well-being, decreased job satisfaction. These effects can lead to increased turnover rates and compromised patient care quality. Health settings and professions that have high WPV rates may struggle to recruit individuals and retain them once they are in the workforce.

Relative to other sectors, health care professionals face a disproportionate risk of experiencing violence at work: 73% of all nonfatal injuries due to violence that occurred in a US work setting was experienced by healthcare workers.⁷ Data from surveys of health occupations report high rates of physical assaults from patients for home health care workers (61%), nurses (44%), and emergency department physicians (21%) specifically.⁸⁻¹⁰ WPV rates have been increasing over time. The Bureau of Labor Statistics (BLS) finds that the rate of intentional violence towards healthcare workers increased between 63% between 2011 and 2018.⁷ Yet, it is unclear if the rates of WPV are increasing at similar rates across all health care occupations and facilities or if it varies by setting or occupation. This study investigates trends in workplace violence for different types of health care workers and across different health care facilities over a ten-year period from 2011-2021/2022.

Policy Implications

WPV within health care industries is significantly increasing over time and this upward trend in WPV started at least 10 years prior to the COVID-19 pandemic period. Some health care settings, like psychiatric and substance abuse hospitals, residential intellectual and developmental disability, mental health, and substance abuse facilities, and other residential care facilities have a much higher rate of WPV than other health care settings. However, when examining across all health care occupations there was no statistically significant increase in average rates of WPV, particularly when excluding outlier occupations.

It is unclear if state policies on WPV address the nuances of varied rates of WPV across facilities and occupations. Although many states have laws that increase the punishment for violence towards health care workers, rates found in this study and others suggest WPV is commonly occurring and intractable despite these laws.

II. Methods

This study used data drawn from the BLS Survey of Occupational Injuries and Illness (SOII) which surveys employers about illnesses and injuries that occur within an employment-based setting in the United States. The SOII asks employers to report workplace injury logs mandated by the Occupational Safety & Health Administration (OSHA), total workplace injuries, and details of injuries resulting in days away from work (DAFW). The SOII also asks for employee hours which enables rates of injury and illness incident to be reported and calculated. SOII data are publicly available and annualized per 10,000 full time workers. Beginning in 2022, the SOII began releasing data on a biannual basis to allow for larger sample sizes that would permit public reporting of more detailed information on illnesses and injuries. Prior to 2021-2022, SOII was reported annually.¹¹⁻¹² The SOII captures data for occupations using the Standard Occupational Classification system (SOC) and for setting or facility type using the North American Industry Classification System (NAICS). We included 45 SOC codes that were included in the 29-000 and 31-0000 SOC categories, that also included any yearly data prior on WPV prior to 2021/2022. We included the 17 NAICS four-digit codes that are related to health settings that fall within the Health Care and Social Assistance Industry classification.

This study used SOII data to assess trends in non-fatal workplace injuries that resulted in at least one DAFW related to the event code for “violence and other injuries by persons.” First, we described the rates of injuries from intentional WPV incidents across all the health care facility types and then described the rates of change for each individual facility type. Next, we calculated average annual rates of workplace violence by occupation and industry (between 2011 and 2021-2022) across all occupations and industries. To assess whether annual averages were sensitive to outlier occupations or industries, we also calculated average annual rates of workplace violence after omitting occupations or industries that fell above the 95th percentile in workplace violence rates. To assess whether year-to-year changes among occupations or industries were statistically significant we employed linear mixed effects modeling that created one set of models focused on annual rates of workplace violence (level 1) nested within occupations (level 2) and a second set of models focused on annual rates of workplace violence (level 1) nested within industries (level 2). Models included data between 2011 and 2020, the 2021/2022 were excluded as these data were reported biennially rather than annually.

For each of the two model sets, we specified models in the following stepwise manner: (a) intercept-only model, (b) model with time added as a level-1 predictor, and (c) model with a random slope specified for the time predictor. To assess whether multilevel models were sensitive to outlier occupations or industries, we also estimated these models after omitting occupations or industries that fell above the 95th percentile in workplace violence rates. Model deviance values were assessed to determine whether changes to models yielded general improvement in model fit, where lower deviance values suggest a better fitting model.¹³ In the context of multilevel model-building, we also tested models in which non-linear time effects were estimated.

For both occupations and industries, the non-linear time parameter was non-significant. As a result, we focused on models with linear change assumed.

III. Findings

Average rates of WPV per 10,000 widely varied across industries over the study period. More than 38% (n=7) of industries/facility types had an average of 10 or more incidents per 10,000 full-time workers (Table 1). Psychiatric and substance abuse hospitals, residential intellectual and developmental disability, mental health, and substance abuse facilities, and other residential care facilities had greater than 43 WPV incidents per 10,000 full time workers on average. Some health care facility types had high but stable rates of WPV between 2011 and 2021/2, while others had rates that doubled over the study period. Yet, on average there were more incidents of WPV at nursing care facilities across the study period (15 per 10,000) as compared to general and medical surgical hospitals (8 per 10,000).

Outlier industries and occupations were defined based on having rates outside the 95th percentile of the average rates across occupations and industries (Table 2). Using this measure, three occupations were (Psychiatric Technicians, Psychiatric Aides, Occupational Therapy Aides) and one industry type (psychiatric and substance use hospitals) were considered outliers. Average annual rates of WPV were significantly larger before excluding these outliers. For industries, average annual WPV rates ranged from 1.3 times higher before excluding outliers in 2013 to nearly twice as high in 2013, 2017 and 2018. Differences in average annual WPV rates for occupations were even more striking, ranging from 2.4 times greater in 2017 to 4.7 times larger in 2013 before excluding outliers.

Volatility in yearly estimates makes discerning trends difficult but WPV rates appeared to generally increase over time. For industries, there was an average rate of 13.4 in 2011 and an average rate of 18.4 in 2021/2022. For occupations, there was an average rate of 23.8 in 2011 to an average rate of 29.0 in 2021/2022. After omitting outlier cases, trends over time for occupations appeared flattened, with an average rate of 9.4 in 2011 and an average rate of 10.1 in 2020 (and 7.2 in 2021-2022). An apparent upward trend remained for industries, however, when outliers were omitted, with an average rate of 9.7 in 2011 and an average rate of 11.6 in 2020 (and 12.6 in 2021-2022).

Longitudinal multilevel modeling and associated annual rate estimates were performed (Table 3). For both occupations and industries, including outliers yielded the lowest model deviance value for the model in which a random slope for time was specified. However, the association between time (in year units) and annual rate of workplace violence proved significant for industries ($b = 0.71$, $p = 0.03$) but not significant for occupations ($b = 1.14$, $p = 0.30$). Yet, the association between time and annual rate of workplace violence varied significantly across occupations and industries. Thus, we favored the more parsimonious model (i.e., the model with fewer parameter estimates), and removed the random slope for time from the final model. Results from this model also yielded a non-significant association between time (in year units) and annual rates of workplace violence ($b = 0.16$, $p = 0.26$) for occupations and a significant and positive association ($b = 0.34$, $p < .001$) for industries; In

the absence of outlier industries, annual rates of workplace violence increased by 0.34-units per year. The models with outlier industries and occupations omitted also yielded notably lower model deviance values relative to models that retained outliers, suggesting the removal of outliers improved model fit.

◆ IV. Policy Implications

Overall, this study's findings suggest that WPV within health care industries is significantly increasing over time. Rates of WPV across healthcare facility types increased by nearly 30% between 2011 and 2021/2022 (when excluding outliers). However, the rate of WPV in 2021/2022 was lower than the 2020 for health care occupations, suggesting that although the pandemic increased stress within health care settings, there may be other and possibly systemic factors contributing to the rising rates of WPV which should be considered in efforts to protect healthcare workers. Earlier studies have typically focused on WPV within single healthcare occupations or settings. Recognizing that WPV is rising across all healthcare settings is crucial information because interventions are often targeted at the organizational or facility level. Yet across all health care occupations there was no statistically significant increase in average rates of WPV, particularly when excluding outlier occupations.

These findings raise several implications for policy. Many states have enacted legislation to ameliorate WPV.¹⁴ However, it is unclear if state policies on WPV address the nuances of varied rates of WPV across facilities and occupations. Although most states have laws that increase the punishment for violence towards health care workers,¹⁴ rates found in this study and others suggest WPV is commonly occurring and intractable despite these laws. Some states have begun to enact policies that require health care systems to implement prevention strategies to reduce WPV. For example, Minnesota passed legislation in 2022 that requires hospitals document action plans for WPV, including systematically reviewing incidents, requiring staff training, and creating procedures to allow health workers to request additional staffing to prevent WPV. This study did not observe within-state variation of WPV and future work would benefit from examining how state WPV laws and policies impact rates of WPV for health care workers across health care settings. Future work examining the impact of state policy and health system interventions to address WPV is greatly needed.

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Table 1. Rate of WPV Incidents per 10,000 Full Time Workers within Selected Health Care Occupations and Industries (2011-2021/22)

Health Care and Social Assistance Industry Classification	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021/22
Offices of physicians (except mental health specialists)	0.3	0.1	0.3	0.3	0.4	0.2		0.8	0.5	0.4	0.8
Offices of physicians, mental health specialists		17.3		8.5			6.1		26.6	6.0	8.7
Offices of other health practitioners		1.6	0.9		1.3	1.9	2.6		10.5	2.7	4.0
Outpatient care centers	2.5	4.7	4.2	4.1	3.2	2.9	3.1	3.9	4.8	5.2	2.9
Medical and diagnostic laboratories				5.6			7.1	0.6			
Home health care services	3.0	2.8	3.8	5.0	4.1	4.6	6.6	4.1	4.1	5.0	2.9
Other ambulatory health care services	2.2	1.9	1.5	3.1	3.4	2.4	2.7	2.0	5.4	9.2	3.8
General medical and surgical hospitals	5.0	5.8	6.8	6.7	6.6	7.2	8.0	9.7	9.4	14.3	12.9
Psychiatric and substance abuse hospitals	64.5	69.6	85.1	109.5	84.6	82.7	121.1	124.9	107.5	114.2	110.4
Specialty (except psychiatric and substance abuse) hospitals	5.4	6.2	5.4	7.3	11.2	8.3	7.9	12.8	8.4	7.2	12.7
Nursing care facilities (skilled nursing facilities)	11.4	12.6	13.6	15.8	16.3	14.7	15.6	14.9	14.8	16.4	14.5
Residential intellectual and developmental disability, mental health, and substance abuse facilities	39.5	40.7	52.3	34.9	42.4	37.5	52.1	41.7	44.4	41.3	46.2
Continuing care retirement communities and assisted living facilities for the elderly	8.2	10.2	8.6	7.2	10.0	8.4	9.0	8.5	10.0	13.7	10.5
Other residential care facilities	35.2	31.8	40.6	39.9	43.8	63.0	40.2	61.0	59.4	34.8	45.8
Individual and family services	5.5	9.6	7.3	10.2	9.6	15.2	9.9	14.7	9.1	7.2	10.2
Community food and housing, and emergency and other relief services	3.0	6.1	4.9		4.2	4.2	15.7	7.5	7.2	9.5	11.0
Vocational rehabilitation services	10.8	9.0	11.3	20.8	14.1	18.0	12.2	17.0	19.1	11.6	12.2
Child day care services	3.9		2.4	6.5	1.6	2.9	0.6	7.8	5.8	0.7	2.9

Table 2. Average Annual Rates of Workplace Violence Over Time Across Healthcare Occupations and Industries

Year^a	Occupation (Outliers Removed)^c	Occupation (All)	Industry (Outliers Removed)^c	Industry (All)
2011	9.4	23.8	9.7	13.4
2012	10.2	24.5	10.7	14.4
2013	7.3	34.7	8.0	15.6
2014	9.1	35.8	11.7	17.8
2015	10.6	34.1	11.5	16.1
2016	9.8	28.4	9.2	17.1
2017	11.3	25.3	9.8	18.9
2018	8.5	29.9	10.4	20.7
2019	7.0	32.1	12.0	20.4
2020	10.1	30.5	11.6	17.6
2021-2022 ^b	7.2	29.0	12.6	18.4

^aAnnual estimates represent average rates across units (e.g., occupation, industry). ^bEstimate represents the average 2021-2022 biannual rate across units. ^cCases with rates greater than 50 were treated as outliers; a rate of 50 was around the 95th percentile in the overall distribution of rates across cases.

Table 3. Estimated Rates of Workplace Violence Over Time Across Healthcare Occupations and Industries

Year ^a	Occupation (Outliers Removed) ^c	Occupation (All)	Industry (Outliers Removed) ^c	Industry (All)
2011	8.8	20.1	9.3	13.0
2012	9.0	21.2	9.7	13.7
2013	9.2	22.4	10.0	14.4
2014	9.3	23.5	10.4	15.1
2015	9.5	24.6	10.7	15.8
2016	9.6	25.8	11.0	16.5
2017	9.8	26.9	11.4	17.2
2018	9.9	28.1	11.7	17.9
2019	10.1	29.2	12.1	18.6
2020	10.2	30.3	12.4	19.3
2021-2022 ^b	7.2	29.0	12.6	18.4
Average Annual Rate of Change from 2011 to 2020	0.16 (ns; p = 0.26)	1.14 (ns; p = 0.30)	0.34***	0.71*
# of units	42	45	17	18
# of observations	189	210	147	162

^aAnnual estimates were derived from linear mixed effects models, with annual rates nested in units (e.g., occupation, industry). ^bEstimate represents the average 2021-2022 biannual rate across units. ^cCases with rates greater than 50 were treated as outliers; a rate of 50 was around the 95th percentile in the overall distribution of rates across cases. *p<.05; ***p<.001; ns = non-significant (p > .05)