

**Examining Occupational Safety & Health Administration (OSHA)
Recordkeeping Data to Determine Trends in Worker Injuries &
Illnesses Related to COVID-19**

Submitted By

The Massachusetts Nurses Association



Executive Summary

Rarely has data derived from the Occupational Safety & Health Administration (OSHA) been utilized to determine trends in worker illnesses and reported injuries. In 2020, a group of professionals supported by the Massachusetts Nurses Association (MNA) began to request and compile data from acute care facilities throughout Massachusetts regarding worker injuries and illnesses reported in OSHA injury logs. This IRB-approved study aimed to describe OSHA-recordable injury and illness cases in MNA-represented acute care facilities. The hospitals' OSHA 300 logs of occupational injuries and OSHA 301 incident form data were used to evaluate changes and determine trends of worker injury and illness since the onset of the pandemic.

The team of MNA professionals and staff designed a secondary research study aimed at answering the following questions:

- What were the characteristics of injuries and illnesses among nurses and hospital workers during the COVID-19 pandemic?
- Based on lost work time, transfer, and reassignment related to the reported COVID-19 cases, what was the severity of the illness experienced by the worker?
- How did occupation, location, task, availability of personal protective equipment (PPE), and other factors influence the severity of illness experienced by nurses and hospital workers who contracted COVID-19?

The MNA team of professionals and staff determined that the most effective strategy to answer these questions would be to retrospectively examine data prior to the onset of the pandemic to identify trends of worker illnesses and injuries. Therefore, the decision was made to begin prior to the beginning of the pandemic. The data was collected and reviewed utilizing public OSHA logs in 2020 to gain an understanding and appreciation for the irrefutable evidence presented in the following pages. COVID-19 forever changed the health, safety, and future of healthcare workers in acute settings. To learn from this crisis and prevent the same errors from reoccurring, we must look to the evidence from the past for answers to guide the future of nurses and healthcare professionals.

The Process

Team members gathered via Zoom in late Spring 2021 to discuss the most efficient and effective process for gathering the data that would be required to complete a comprehensive analysis and to determine trends of worker illness and injuries in MNA-represented hospital settings throughout Massachusetts. The decision was made with the approval of the MNA-Executive Director to submit written requests to the hospitals represented by the MNA. The request included access to OSHA 300

logs of occupational injuries and data and OSHA 301 incident form data that would be used to analyze and evaluate changes and determine trends of worker injury and illness since the onset of the pandemic. However, these requests were ignored by many hospital administrators, while others forwarded incomplete or redacted information. These imposed barriers resulted in months of delays and repeated requests for information that MNA should have received following the initial request. Upon receiving the data, team members, including experts in public health, occupational health, epidemiology, industrial hygiene, nursing education, and research, began manually analyzing and coding data to assess and evaluate trends.

Methods

Nursing and healthcare occupations were manually reviewed and revised. Data about full-time equivalency (FTEs) positions in Massachusetts hospitals in 2020 were obtained from the Massachusetts Center for Health Information and Analysis. Data was provided for all hospital workers and stratified for specific occupations. The research team calculated the number and rate (cases per 1,000) FTEs for all events and occupations. The team also examined rates for Covid-19 incidents and cases that were coded as exposures to harmful substances. The rationale for this approach to analyze the harmful substances category to the data was determined as a useful strategy. Within that category, some cases did not have information specifying that they were Covid-19. These cases were extracted and placed into separate categories. Consequently, this category contained data related to both COVID-19 and other infections. During the final stage, the team explored trends for injuries and Covid-19 events in hospitals weekly.

Data regarding injuries and illnesses to Massachusetts workers were obtained from the Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII) for the years 2017 to 2020. Data for the BLS SOII was obtained from sampling OSHA logs from different establishments across the country (U.S Bureau of Labor Statistics, October 20, 2020. *Survey of occupational injuries and illnesses: Overview*: Retrieved from: <https://www.bls.gov/opub/hom/soii/home.htm>).

The data from the BLS SOII in this report describes injuries and illnesses involving at least one lost work day. This analysis focused on injuries and illnesses occurring to private healthcare practitioners (a broad category that contains nurses) and nurses and injuries and illnesses occurring in private sector hospitals. For healthcare practitioners and hospitals, data regarding injury and illnesses rates (expressed as injuries and illnesses per 10,000 full-time workers) and median lost work days were obtained for all incidents, exposures to harmful substances (a category that includes infectious diseases like COVID-19), and intentional injuries from another person. Additionally, we obtained injury counts and median lost work days for nurses regarding all injuries and illnesses, exposures to harmful substances, and intentional

injuries from another person. Due to data limitations, it was not possible to obtain data about injury and illness rates among nurses.

Results

Hospital OSHA Log Data

Nursing and healthcare occupations data was manually reviewed and revised. Information about full-time equivalency (FTEs) positions in Massachusetts hospitals in 2020 was obtained from the Massachusetts Center for Health Information and Analysis. This data was provided for all hospital workers and stratified for specific occupations. The research team calculated the number and rate (cases per 1,000) FTEs for all events and occupations. The team also examined rates for COVID-19 incidents and cases that were coded as exposures to harmful substances. The rationale for this approach was to analyze the harmful substances category because COVID-19 cases were coded only by occupation. Within that category, some cases did not have information specifying that they were COVID-19. These cases were extracted and placed into separate categories. Consequently, this category contained data related to both COVID-19 and other infections. During the final stage, the team explored trends for injuries and COVID-19 events in hospitals weekly.

Results

Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses

As shown in Figure 1, the rate of injuries and illnesses among healthcare practitioners in 2020 (413 injuries and illnesses per 10,000 full-time workers) was substantially higher than rates in the three preceding years, which were all below 200 cases per 10,000 full-time workers. This increase was primarily due to the vast rate of exposure to harmful substances (a category that includes infections like COVID-19), which was 248 injuries and illnesses per 10,000 full-time workers in 2020 and consistently less than 10 injuries and illnesses per 10,000 full-time workers in the preceding three years.

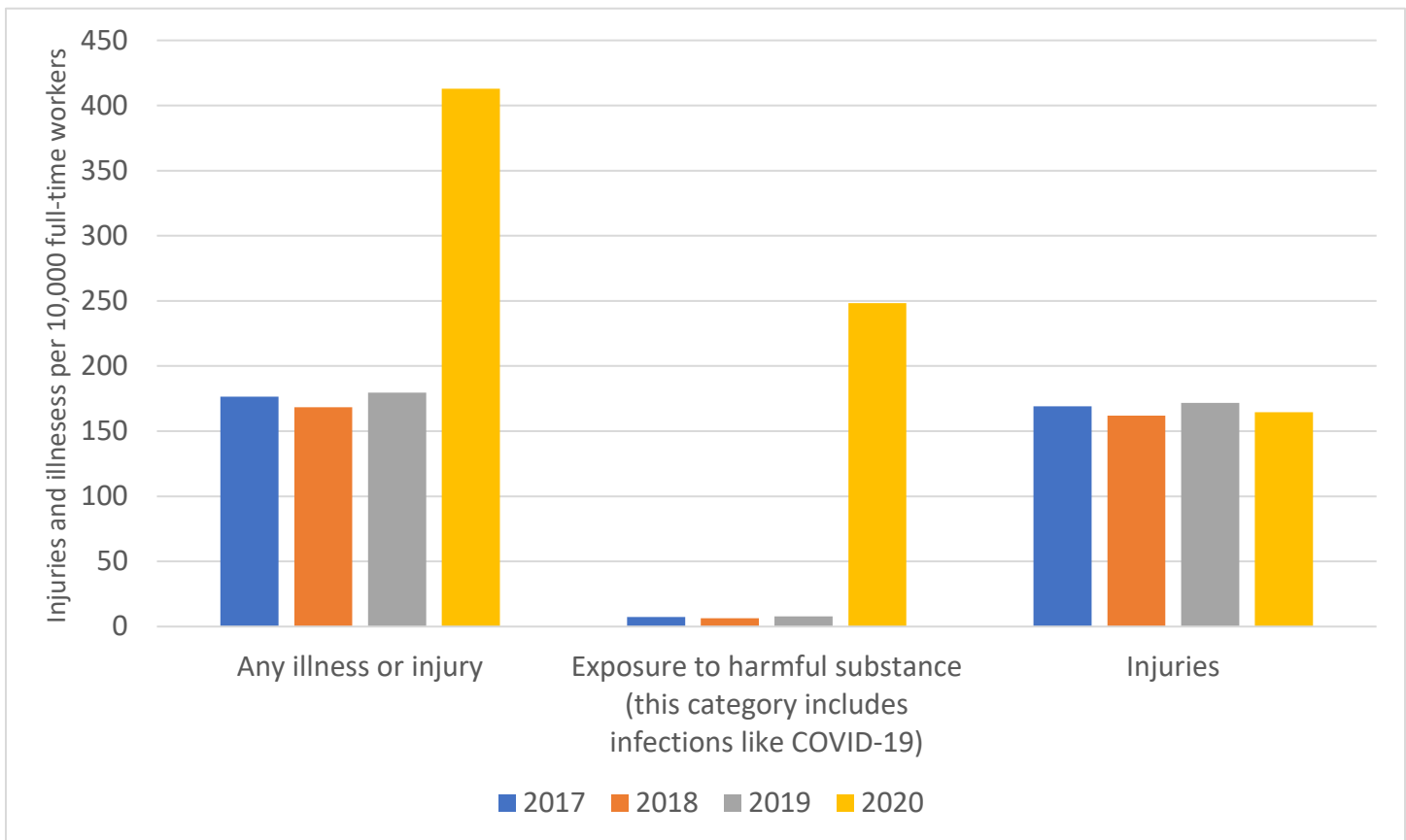


Figure 1. Massachusetts Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, (2020)

Rate of injuries and illnesses among private sector healthcare practitioners in Massachusetts 2017-2020: Retrieved from: <https://www.bls.gov/iif/state-data/fatal-injury-rates-by-state-and-industry-2020.htm>

Figure 2 shows the rate of exposure to harmful substances (a category that includes infectious diseases like COVID-19) among private sector workers in Massachusetts in 2020. Rates are shown for private sector workers overall and the occupation groups with the five highest rates. The two highest rates were among healthcare support (275 illnesses per 10,000 full-time workers) and healthcare practitioners (248 illnesses per 10,000 full-time workers). Healthcare practitioners is a broad category which includes nurses and physicians (see here: https://www.bls.gov/oes/current/oes_stru.htm#29-0000). Healthcare support occupations is also a broad category which includes nursing assistants, aides, and orderlies (see here: https://www.bls.gov/oes/current/oes_stru.htm#31-0000). These rates were substantially higher than the other occupation groups with the higher rates.

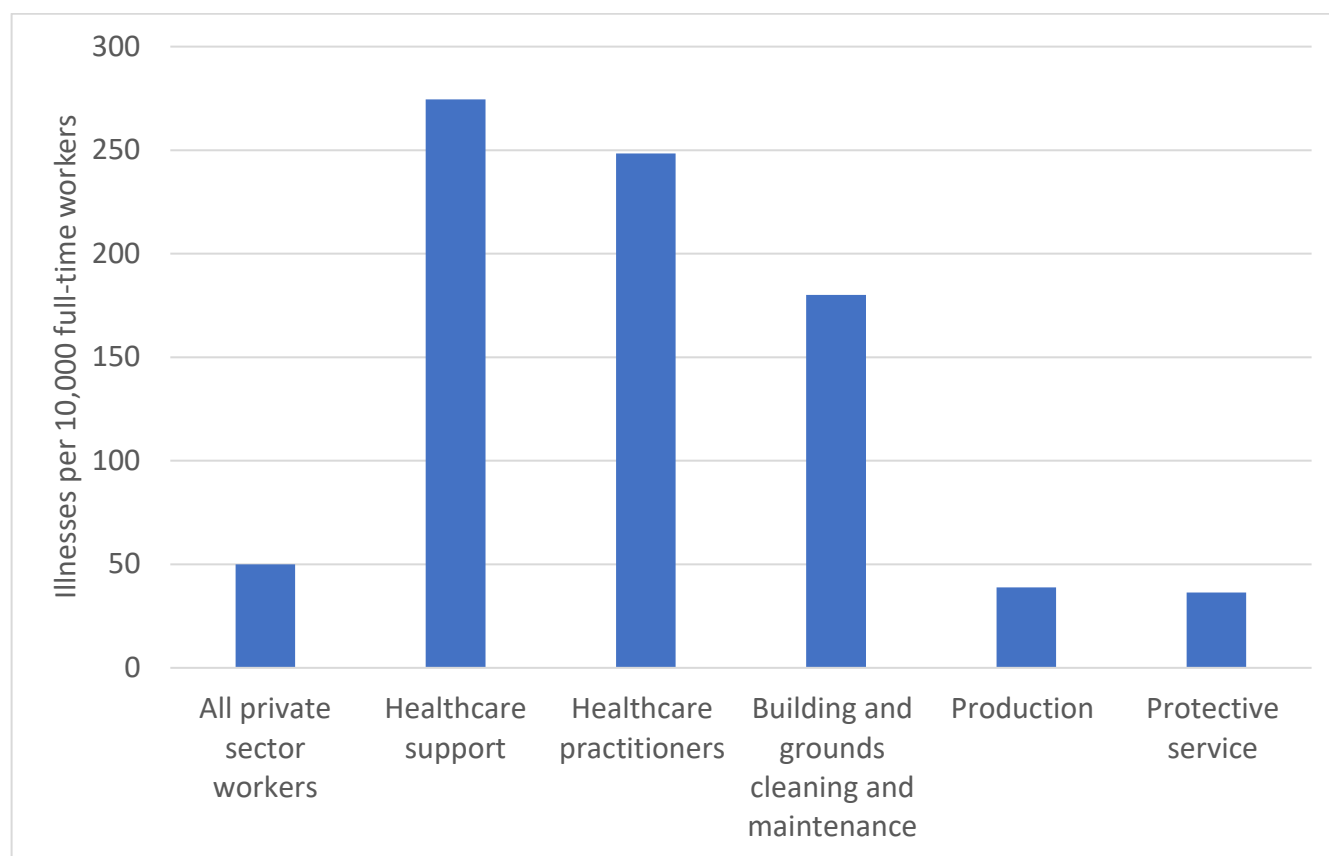


Figure 2. Rate of exposures to harmful substances among private sector workers in Massachusetts with occupation groups with five highest rates, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: [State Occupational Injuries, Illnesses, and Fatalities : U.S. Bureau of Labor Statistics \(bls.gov\)](https://www.bls.gov/publications/stateoccinjuryillnesses/)

As shown in Figure 3, for private sector healthcare practitioner’s median lost work days also increased substantially in 2020, when the median was 13, compared to the preceding three years when the median was consistently less than 10. This difference was even more drastic for exposures to harmful substances where the median lost days in 2020 was 14.

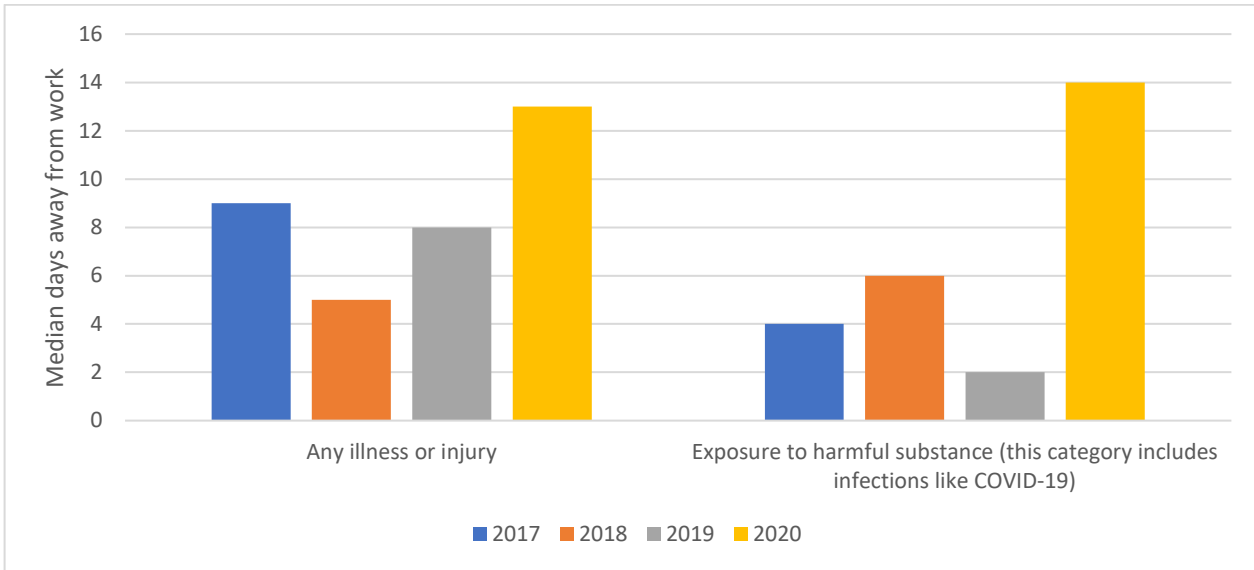


Figure 3. Median days away from work for injuries and illnesses among private sector healthcare practitioners in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020.

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses Retrieved from: <https://www.bls.gov/news.release/pdf/osh.pdf>

Figure 4 shows the rate of intentional injuries to private sector healthcare practitioners in Massachusetts between 2017 and 2020. The rate of these injuries in 2020 (17.2 injuries per 10,000 full-time workers) was higher than the rate in the preceding three years.

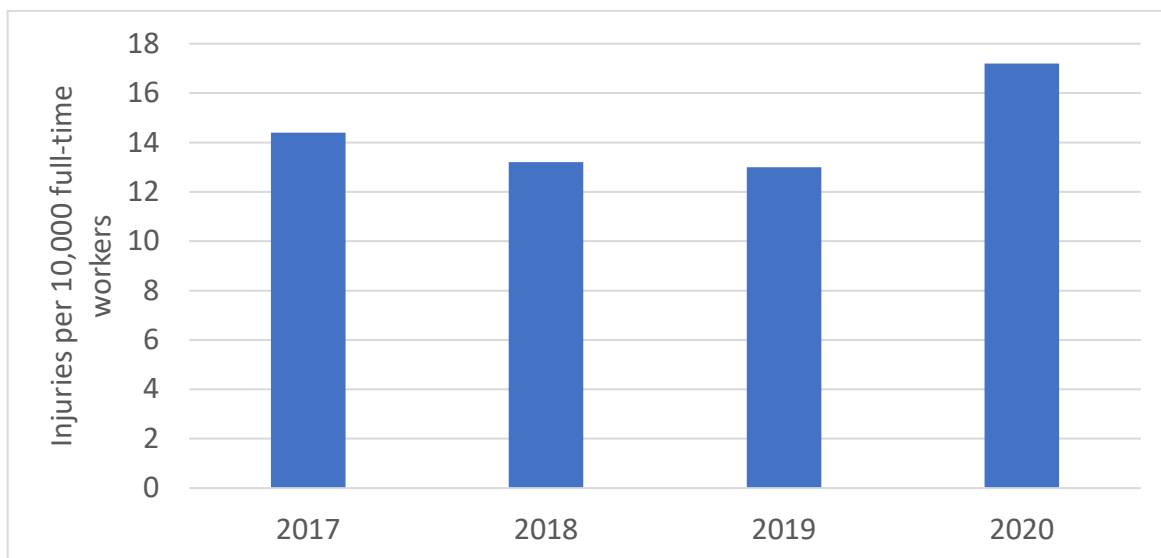


Figure 4. Rate of intentional injuries among private sector healthcare practitioners in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

As shown in Figure 5, not only did the rate of intentional injuries increase among private healthcare practitioners, but also the days away from work associated with these injuries. In 2020, the median days away from work for an intentional injury was 13, while in the preceding three years, the median lost work days for these injuries was 8 or lower.

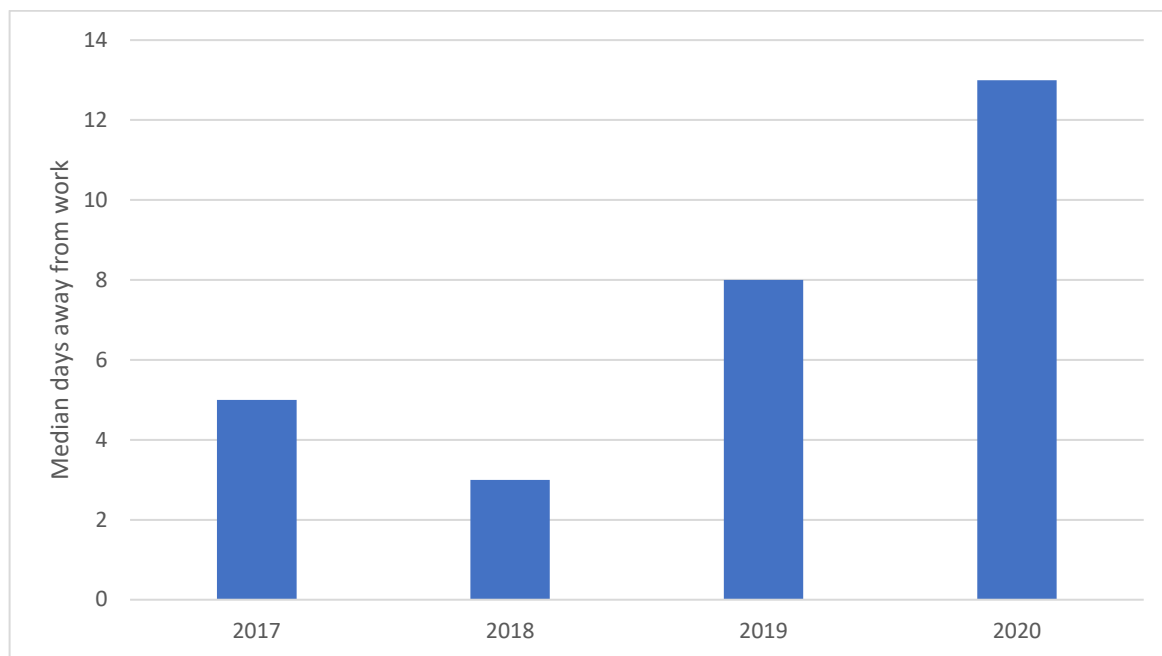


Figure 5. Median days away from work for intentional injuries among private sector healthcare practitioners in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/pub/ted/occupational-safety-and-health.htm>

Similar patterns in injuries and illnesses as those seen from private sector healthcare practitioners were also observed for private sector hospital workers. As shown in Figure 6, the rate of injuries and illnesses among private sector hospital workers in 2020 (437 cases per 10,000 full-time workers) was substantially higher than rates in the three preceding years, which were consistently below 250 cases per 10,000 full-time workers. This change was primarily due to the noted increase in the rate of exposure to harmful substances, which was 211 cases per 10,000 full-time workers in 2020 and consistently less than 10 cases per 10,000 full-time workers in the preceding three years.

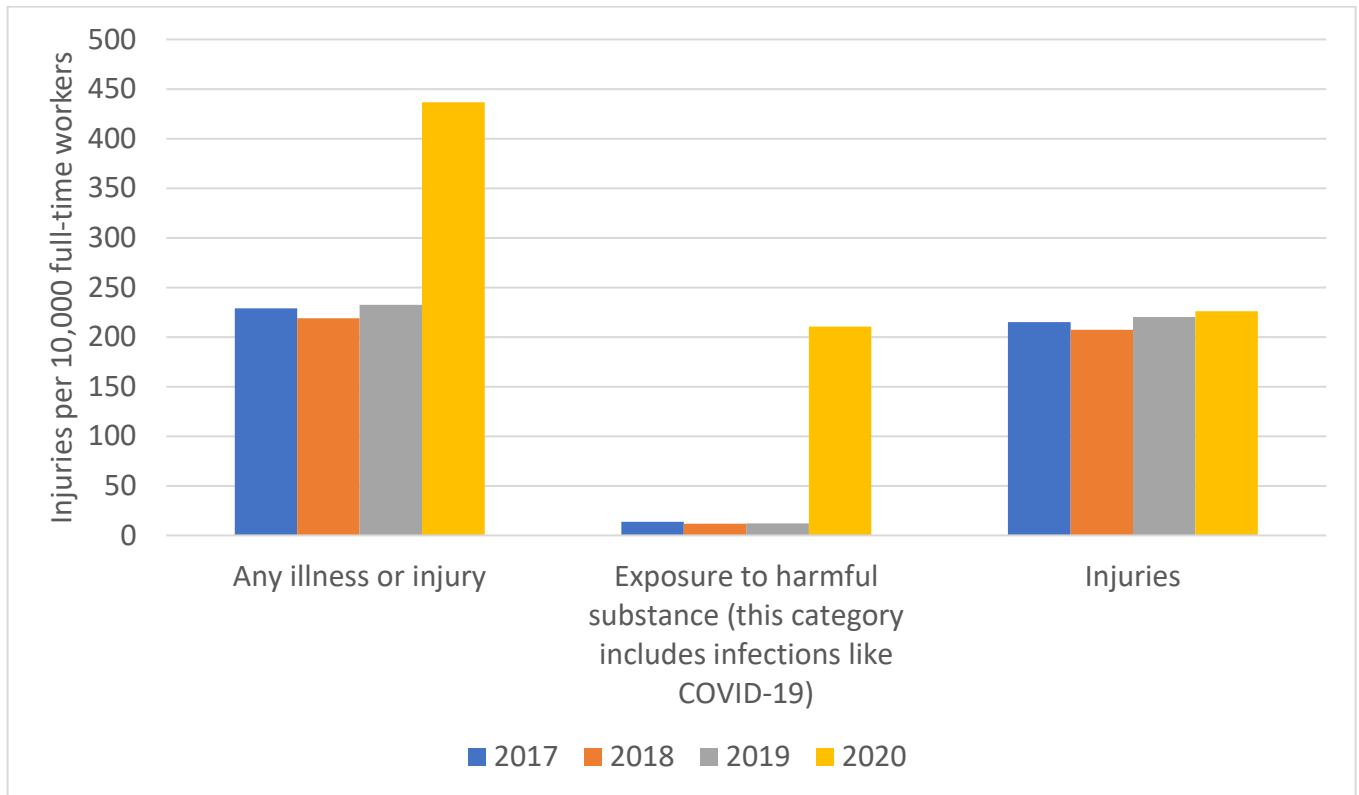


Figure 6. Rate of intentional injuries and illnesses among private sector hospital workers in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

Figure 7 shows the rate of exposure to harmful substances among private sector workers in Massachusetts in 2020. Rates are shown for private sector workers overall and for detailed healthcare industries. The highest rate was for nursing care and residential facilities (748 illnesses per 10,000 full-time workers). The rate for hospital workers (211 illnesses per 10,000 full-time workers) was over four times higher than the rate for workers in the private sector overall (50 illnesses per 10,000 full-time workers).

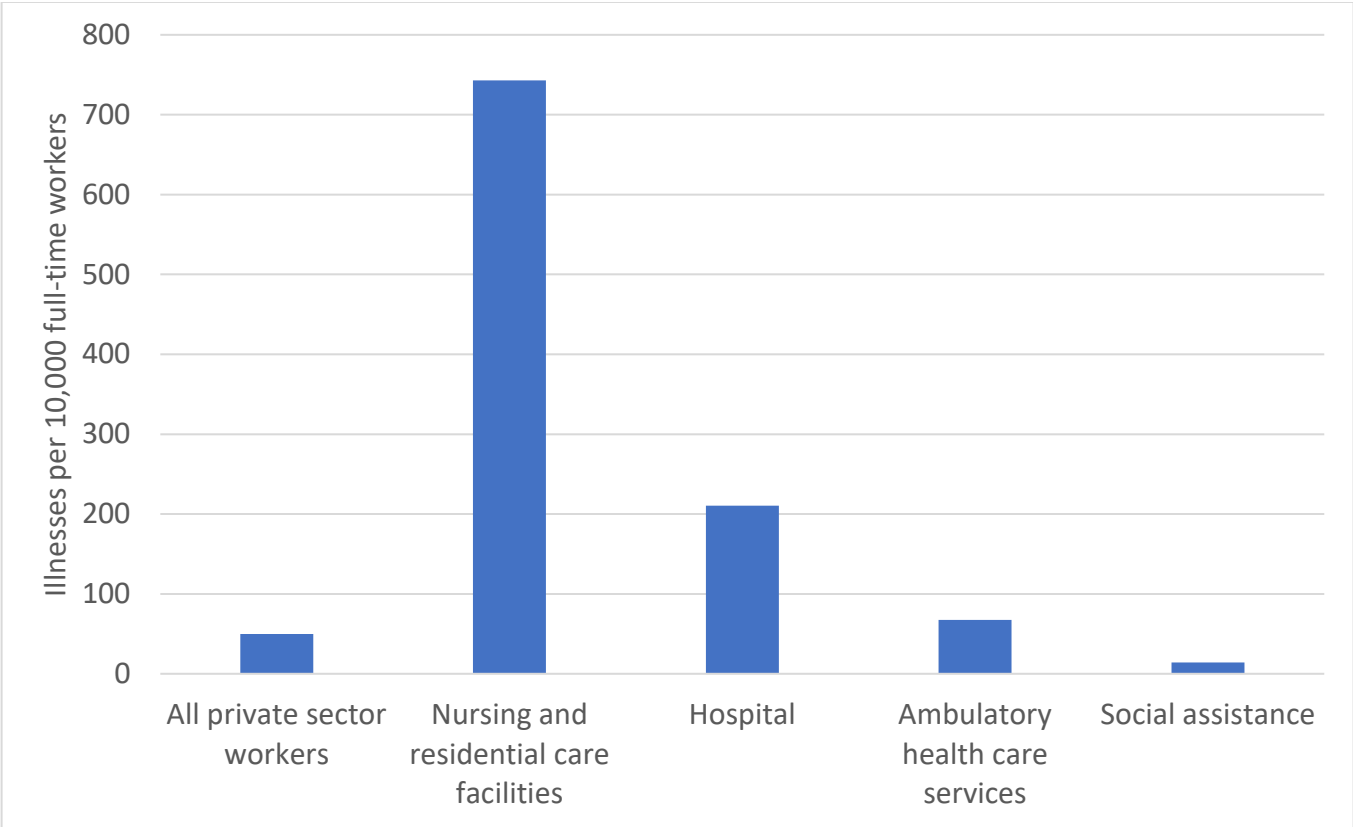


Figure 7. Rate of exposures to harmful substances among private sector workers in Massachusetts with detailed healthcare industries, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

As shown in Figure 8, for private sector hospital workers the median lost work days more than doubled in 2020, when the median was 14, compared to the preceding three years when the median was consistently 6. These differences were even more drastic for exposures to harmful substances where the median lost days in 2020 was 15, five times increase compared to the preceding three years when the median lost days were 3.

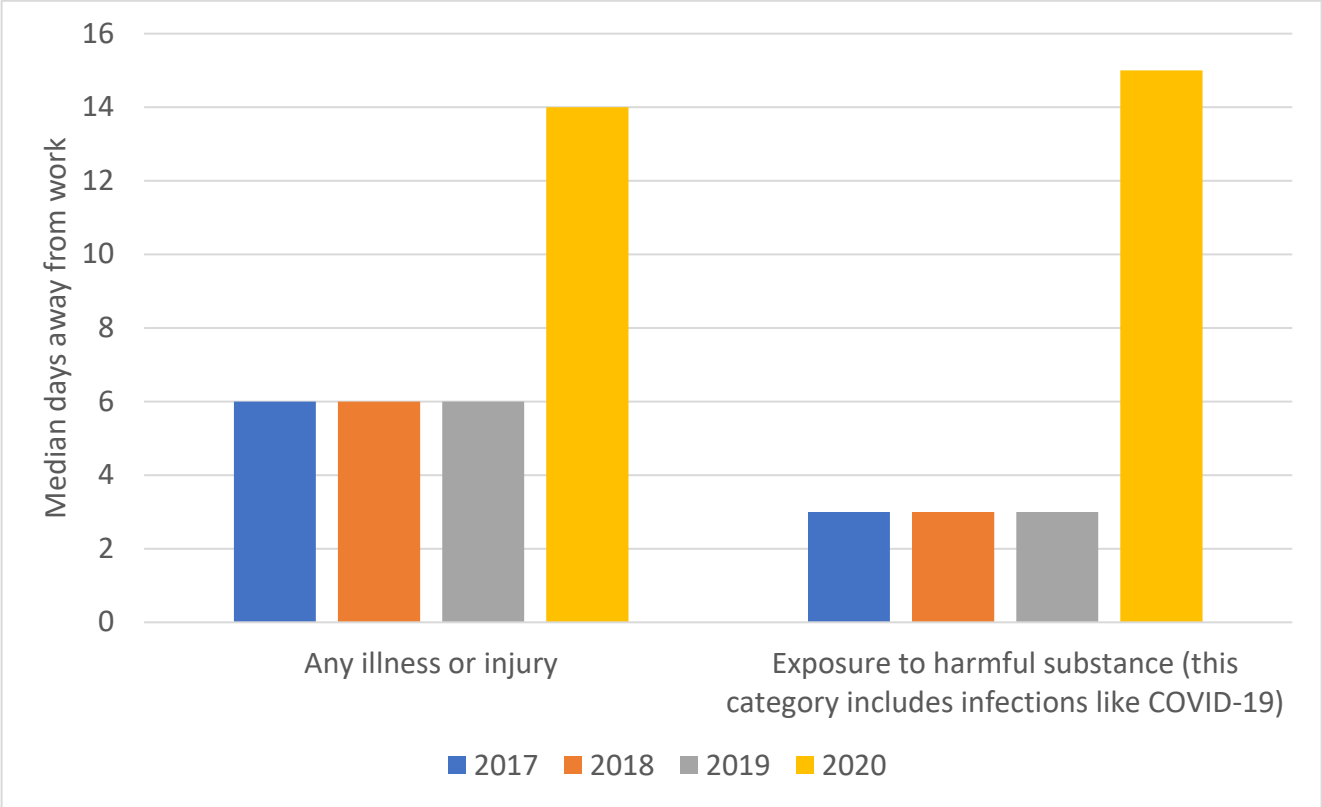


Figure 8. Median days away from work for injuries and illnesses among private sector hospital workers in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

Figure 9 shows the rate of intentional injuries to private-sector hospital workers in Massachusetts between 2017 and 2020. The rate of these injuries in 2020 (31.9 injuries per 10,000 full-time workers) was higher than the rate in the preceding three years.

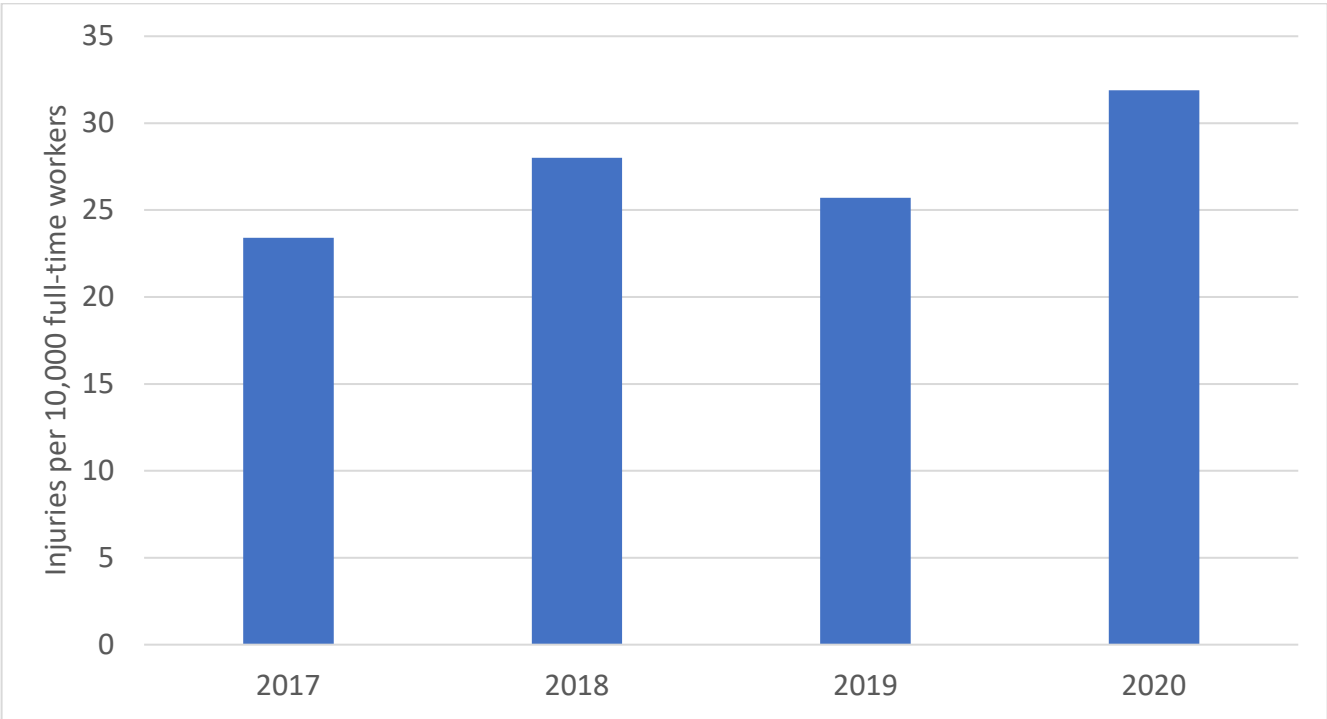


Figure 9. Rate of intentional injuries among private sector hospital workers in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

As shown in Figure 10, days away from work associated with intentional injuries were also higher in 2020 compared to the preceding three years. In 2020, the median days away from work for an intentional injury was 9, while in the preceding three years, the median lost workdays for these injuries were 6 or lower.

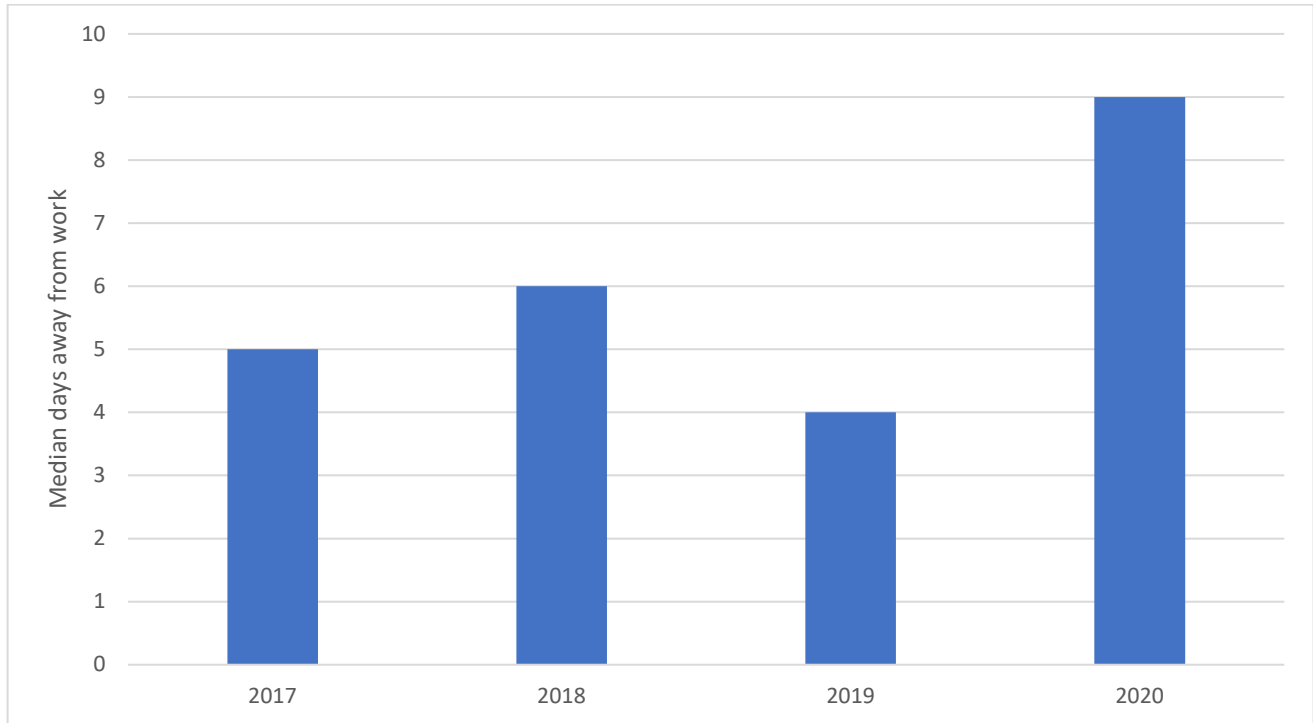


Figure 10. Median days away from work for intentional injuries among private sector hospital workers in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/pub/ted/occupational-safety-and-health.htm>

Although information about injury and illness rates for nurses in Massachusetts was not available from the BLS SOIL, data about the number of injuries and illnesses were available. In 2020, there was an exceptionally substantial increase in the number of injuries and illnesses going up from 1,500 from 2017 to 2019 to 3,420 in 2020. The major increase was due to exposure to harmful substances.

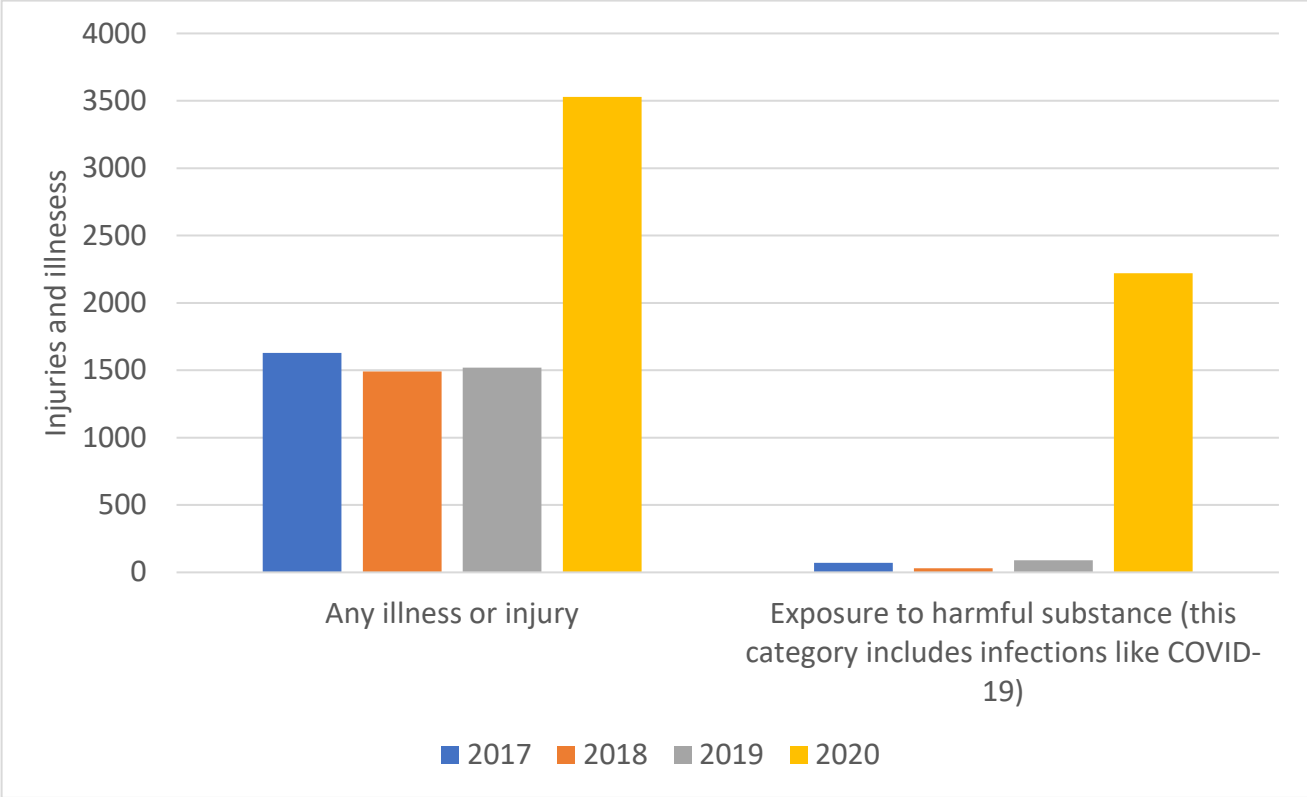


Figure 11. Injury and illnesses cases among private sector nurses in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/pub/ted/occupational-safety-and-health.htm>

As shown in Figure 12, median days away from work also increased in 2020 for Massachusetts private sector nurses going from between 5 and 11 in 2017 to 2019 to 14 in 2020.

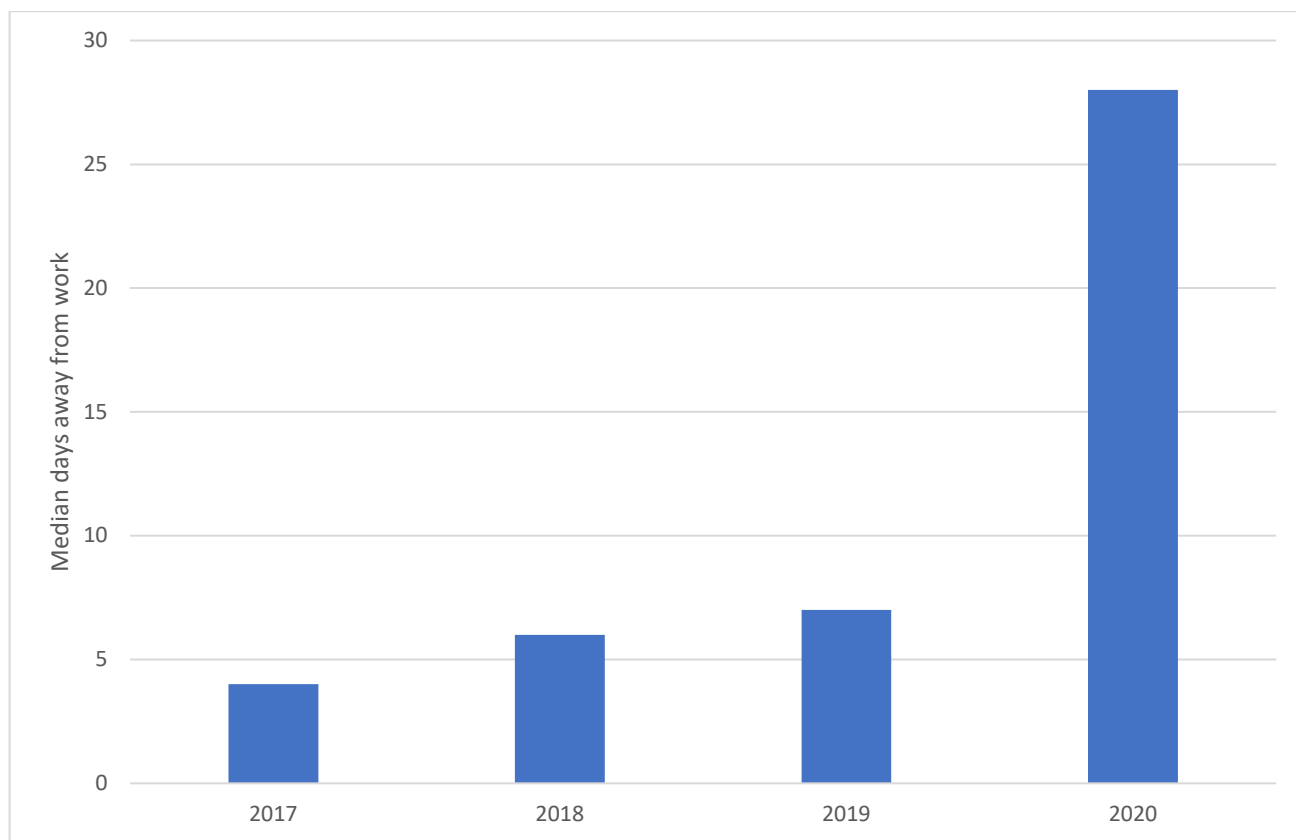


Figure 12. Median days away from work for intentional injuries among private sector nurses in Massachusetts, Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2017-2020

Data sources: Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses. Retrieved from: <https://www.bls.gov/opub/ted/occupational-safety-and-health.htm>

Hospital OSHA Log Data

Data was obtained from 29 Massachusetts acute care hospitals. As shown in Table 1, there were a total of 3,531 hospital incidents reported on OSHA logs in the studied hospitals in 2020, with a rate of 53.9 incidents per 1,000 FTEs. Exposures to other substances account for the highest number of cases (1,236, 35%). Most of these were COVID-19 cases (906, 25.7%). The next highest number of events were categorized by overexertion involving outside sources (i.e., excessive physical effort), followed by needle sticks, struck by objects or equipment, falls on the same level, and injury by another person.

Table 1. Hospital incidents by event type, Massachusetts hospitals, 2020

	n	Events per 1,000 FTEs (95% CI)
Total	3,531 (100.0)	53.9 (52.1, 55.7)
Exposure to harmful substance	1,236 (35.0)	18.9 (17.8, 19.9)
COVID-19	906 (25.7)	13.8 (12.9, 14.7)
Overexertion involving outside sources	641 (18.2)	9.8 (9.0, 10.5)
Needle sticks	622 (17.6)	9.5 (8.7, 10.2)
Struck by object/equipment	232 (6.6)	3.5 (3.1, 4.0)
Falls on same level	214 (6.1)	3.3 (2.8, 3.7)
Injury by another person	169 (4.8)	2.6 (2.2, 3.0)
Intentional injury by person	90 (2.5)	1.4 (1.1, 1.7)
Injury by person unintentional/unknown	79 (2.2)	1.2 (0.9, 1.5)
Struck against object/equip	67 (1.9)	1.0 (0.8, 1.3)
Slip/trip without fall	62 (1.8)	0.9 (0.7, 1.2)
Caught in or compressed by object/equip.	34 (1.0)	0.5 (0.3, 0.7)
Falls to lower level	28 (0.8)	0.4 (0.3, 0.6)
Repetitive motions	19 (0.5)	0.3 (0.2, 0.4)
Exposure to temperature extreme	13 (0.4)	0.2 (0.1, 0.3)
Other/unknown	194 (5.5)	3.0 (2.5, 3.4)

Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Table 2 highlights the number and rate of exposure to harmful substances and COVID-19 by occupation. Registered Nurses had the highest number of both harmful substance exposure (639, 51.7%) and COVID-19 exposure (390, 43.0%) nurses. The highest rate of these incidents was among nursing assistants (41.7 per 1,000 FTEs for exposure to harmful substances and 38.2 for COVID-19, followed by nurses; 38.3 per 1,000 FTEs for exposure to harmful substances and 23.4 for COVID-19).

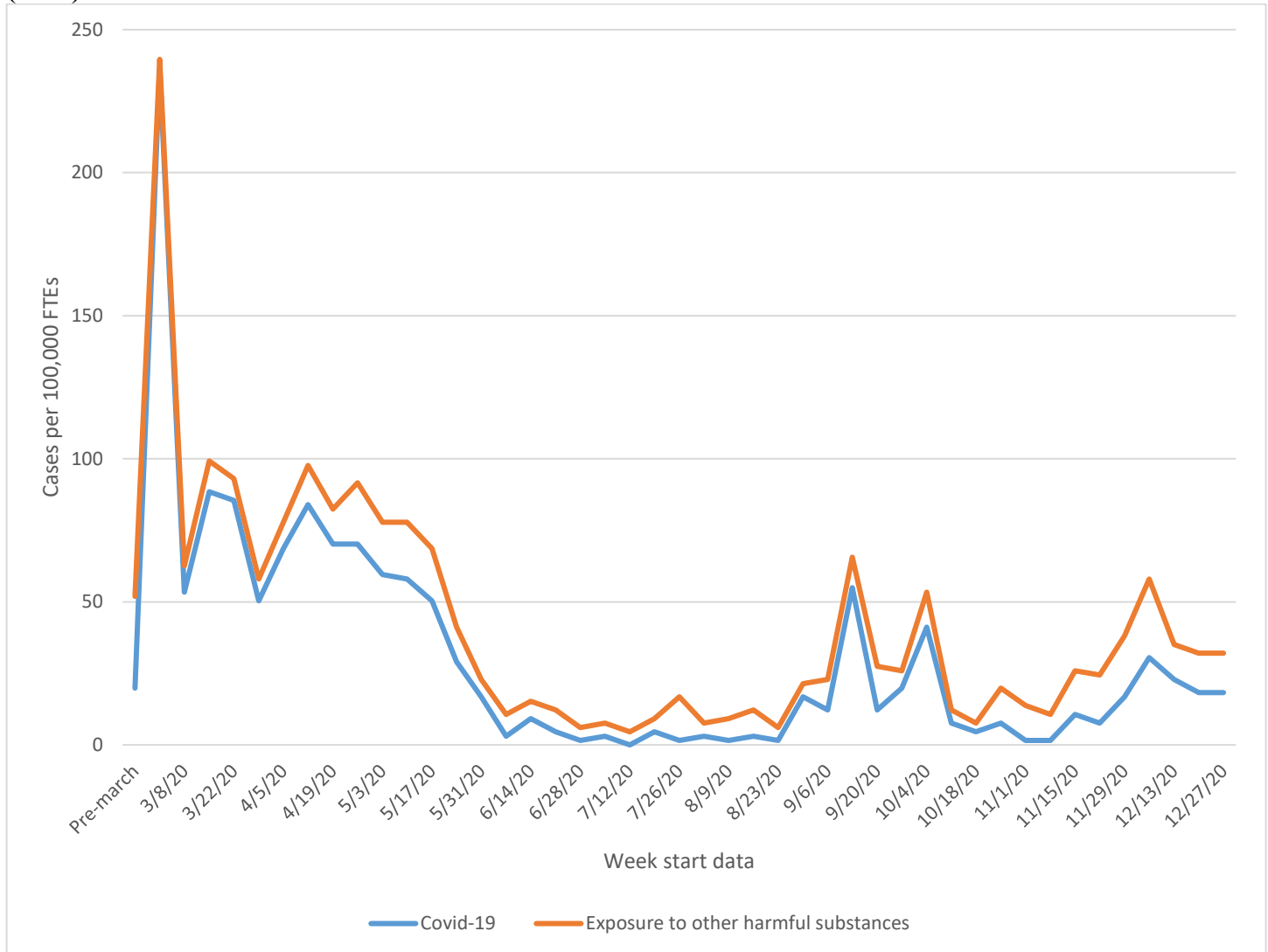
Table 2. Harmful exposure and COVID-19 cases by occupation, Massachusetts hospitals, 2020

	Exposure to harmful substances		COVID-19	
	n	Events per 1,000 FTEs	n (%)	Events per 1,000 FTEs (95% CI)
Total	1,236 (100.0)	18.9 (17.8, 19.9)	906 (100.0)	13.8 (12.9, 14.7)
Registered nurses	639 (51.7)	38.3 (35.3, 41.3)	390 (43.0)	23.4 (21.1, 25.7)
Nursing assistants	96 (7.8)	41.7 (33.3, 50.0)	88 (9.7)	38.2 (30.2, 46.2)
Technicians and specialists	93 (7.5)	7.0 (5.6, 8.4)	77 (8.5)	5.8 (4.5, 7.1)
Physicians (with interns, residents, and fellows included in the denominator)	46 (3.7)	10.4 (7.4, 13.4)	45 (5.0)	10.2 (7.2, 13.2)
Aides, orderlies, and attendants	29 (2.3)	7.8 (5.0, 10.7)	22 (2.4)	5.9 (3.5, 8.4)
Other	125 (10.1)	.	88 (9.7)	
Privacy case	85 (6.9)	.	76 (8.4)	
Insufficient Information -	123 (10.0)	.	120 (13.2)	

Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Figure 13 shows the rate of harmful exposure and COVID-19 cases reported weekly in Massachusetts in 2020. Cases spiked precipitately in early March before falling. There was a rapid decline in rates in the summer before increasing in the fall. Notable spikes occurred in September, October, and December.

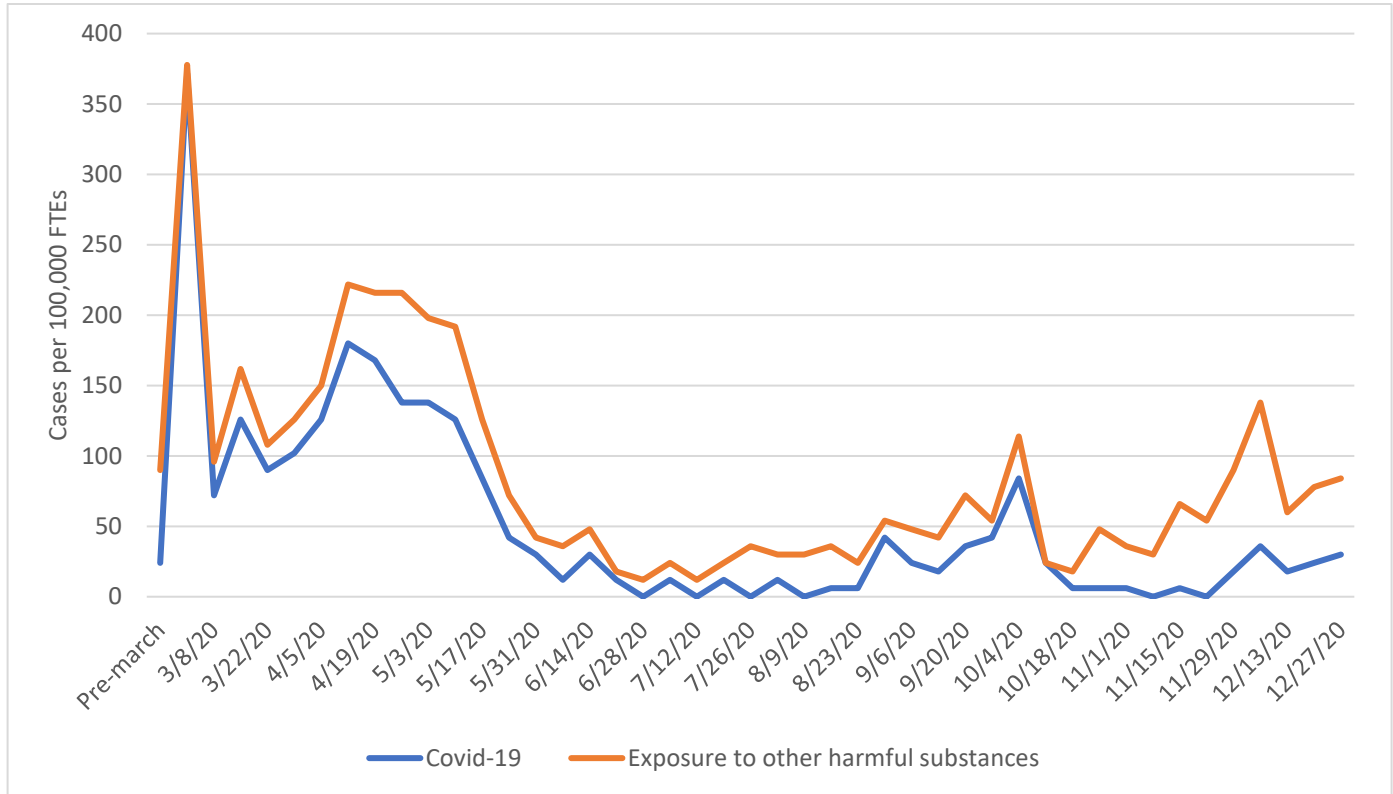
Figure 13. Rate of Harmful Exposures and Weekly COVID-19 cases reported in Massachusetts (2020).



Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Compared to all workers, a similar pattern was noted in harmful exposure and COVID-19 among Registered Nurses. Notably, rates were consistently higher among registered nurses compared to all other workers.

Figure 14. Harmful Exposure and COVID-19 case rates by Week among registered nurses in Massachusetts Hospitals, 2020



Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

As shown in Table 3, on average, COVID-19 resulted in 20.1 days away from work with a median of 13. Overall, there were 18,253 days away from work due to COVID-19.

Table 3. Days away from workdays due to COVID-19, Massachusetts Hospitals, 2020

	Mean	Std Dev	Median	Total
Days away from work	20.1	24.1	13	18,253
Days away from work	n	Percent		
0	72	7.9		
1 to 5	52	5.7		
6 to 10	182	20.1		
11 to 20	320	35.3		
21 or more	280	30.9		
Total	906	100.0		

Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis 2020. Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Registered Nurses accounted for 1/3 of injuries in Massachusetts hospitals (739, 33.2%) Technicians and specialists (226, 9.8%), and aides, orderlies, and attendants (117, 5.1%) had the next highest number of injuries. Nursing assistants (46.0 per 1,000 FTEs) and nurses (44.3 per 1,000 FTEs) had the highest rates of injuries.

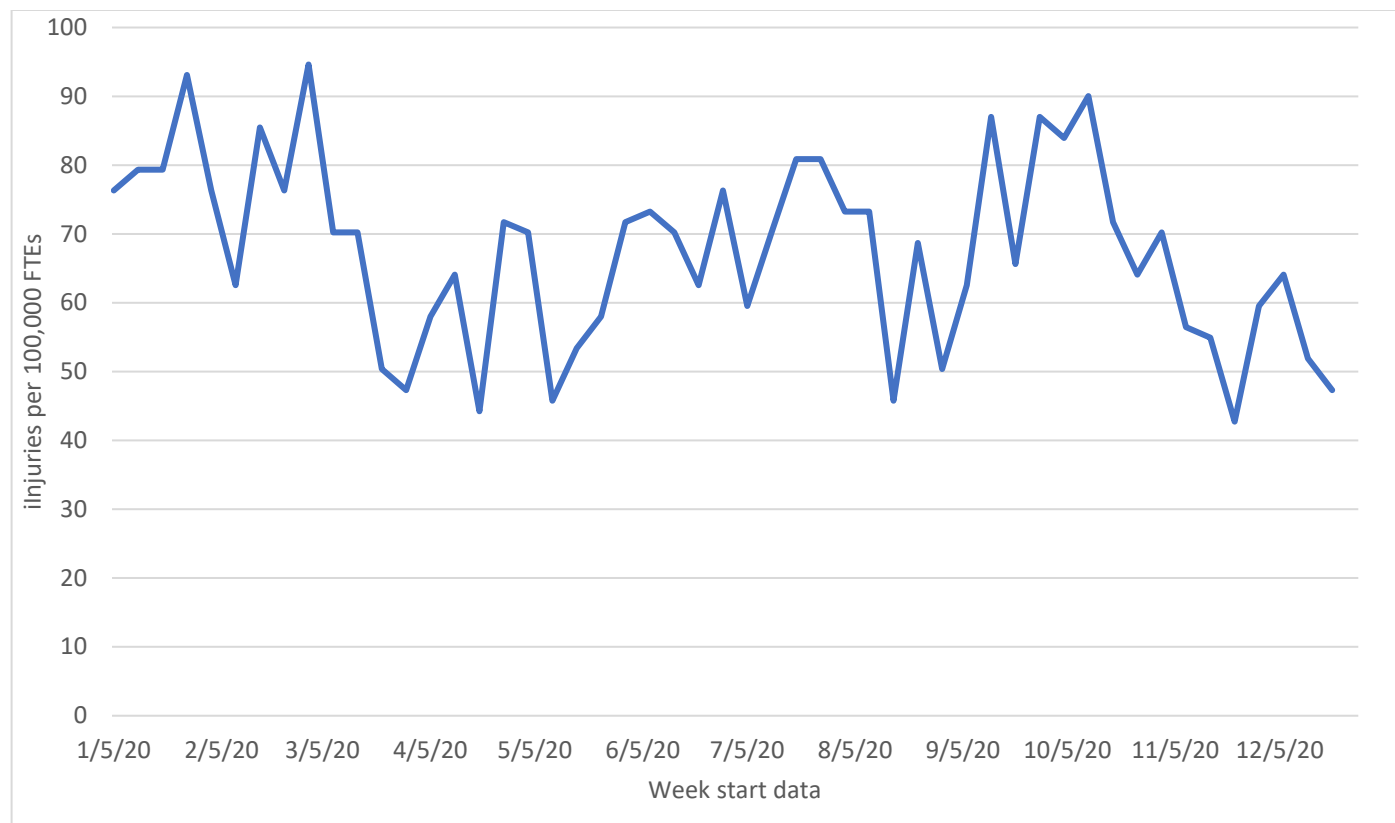
Table 4. Injury cases by occupation, Massachusetts hospitals, 2020

	n (%)	Events per 1,000 FTEs
Total	2,295 (100.0)	35.0 (33.6, 36.5)
Registered nurses	739 (32.2)	44.3 (41.1, 47.5)
Technicians and specialists	226 (9.8)	16.9 (14.7, 19.1)
Aides, orderlies, and attendants	117 (5.1)	31.5 (25.8, 37.3)
Nursing assistants	106 (4.6)	46.0 (37.2, 54.7)
Physicians (with interns, residents, and fellows included in the denominator)	68 (3.0)	15.4 (11.7, 19.1)
Management and supervision	21 (0.9)	3.9 (2.3, 5.6)
Other	516 (22.5)	.
Privacy case	288 (12.5)	.
Insufficient Information	214 (9.3)	.

Data sources: Occupational Health and Safety Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

As shown in Figure 15, injury rates were fairly high through January before falling in April. They returned to similar levels earlier in the year before falling in December.

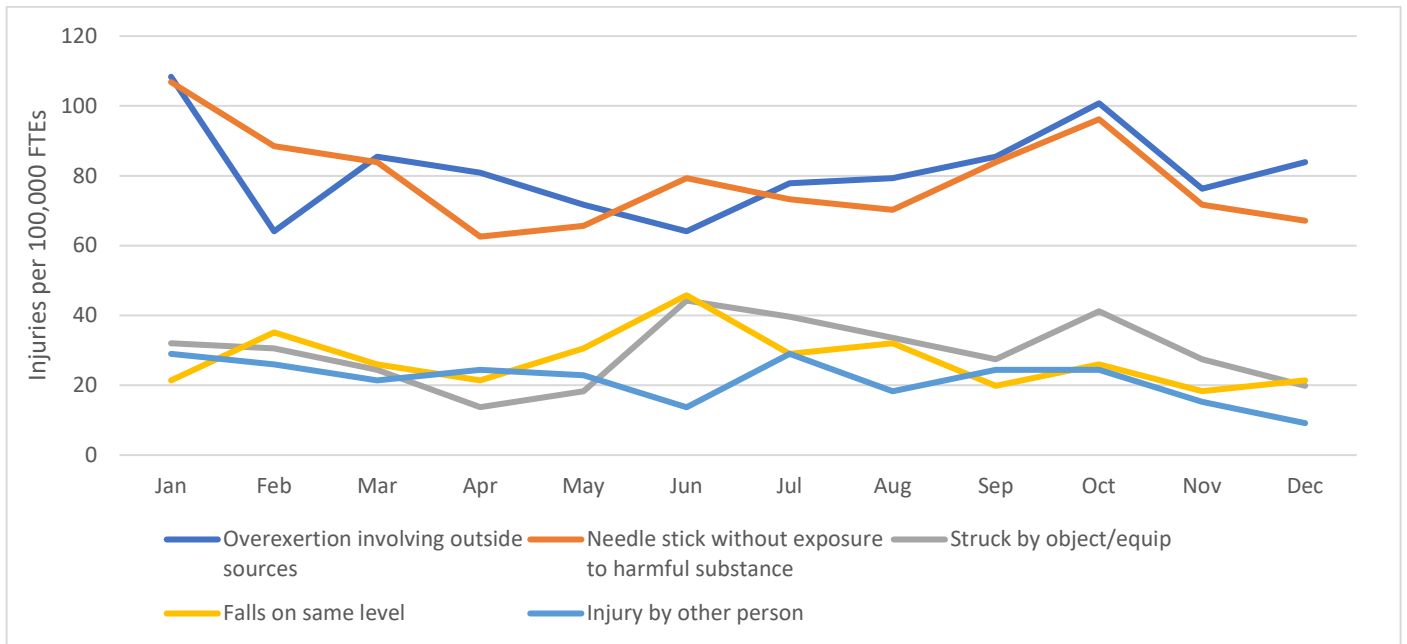
Figure 15. Injury rates by week, Massachusetts Hospitals, 2020



Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

As shown in Figure 16, there was no substantial monthly variation in rates of injuries by event type.

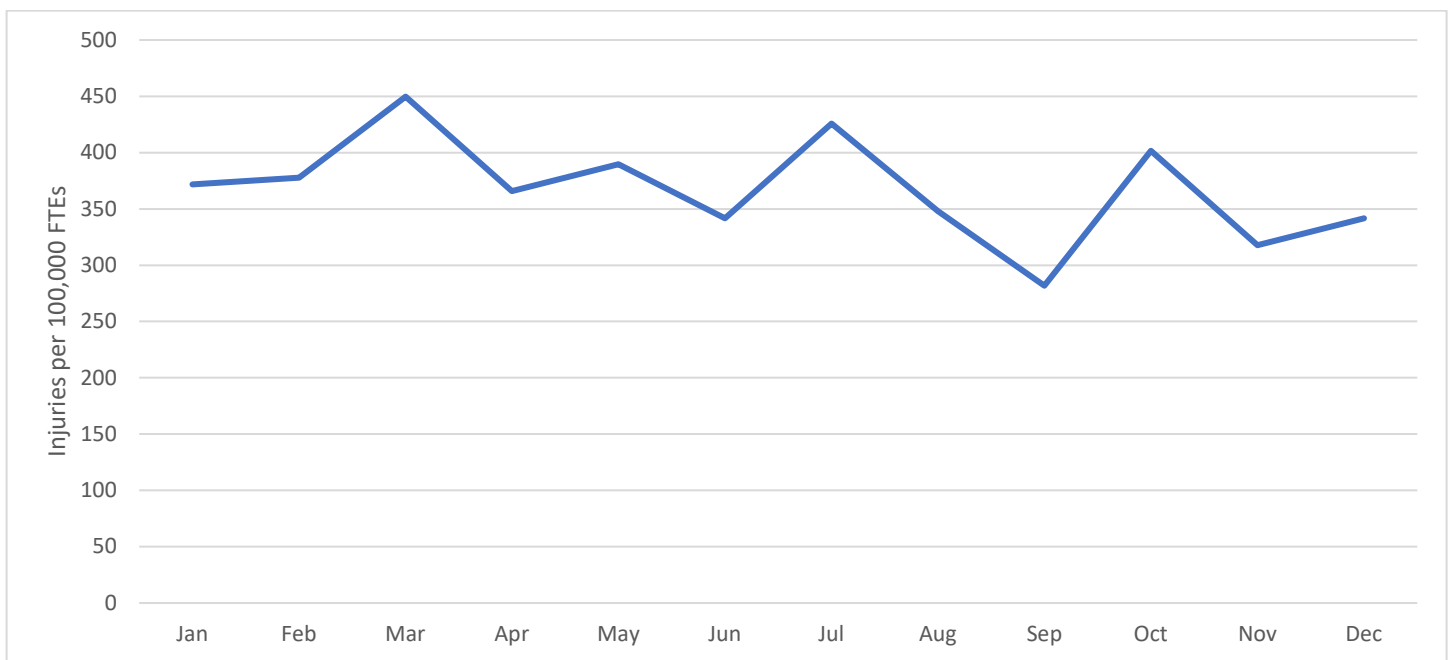
Figure 16. Injury rates by month and event type, Massachusetts Hospitals, 2020



Data sources: Occupational Safety and Health Administration (OSHA) Logs and Massachusetts Center for Health Information and Analysis (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

As shown in Figure 17, the weekly pattern of injuries among nurses was similar to the patterns for the overall workforce.

Figure 17. Injury rates by month among Nurses, Massachusetts Hospitals, 2020



Data sources: Occupational Health and Safety Administration Logs (OSHA) and Massachusetts Center for Health Information and Analysis. (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Table 5 shows information on days away from work due to injuries. The average lost workdays were 15.2, with a median of 1. There was a total of 34,832 away from work days due to injuries. The average number of lost workdays increased substantially in April and May.

Table 5. Days away from workdays due to injuries, Massachusetts Hospitals, 2020

	Mean	Std Dev	Median	Total
Days away from work	15.2	35.6	1	34,832
Jan	11.7	34.0	0	2661
Feb	12.3	32.5	1	2556
Mar	11.5	31.5	0	2344
Apr	21.1	44.0	3	3331
May	22.3	43.6	2.5	3704
Jun	14.5	37.9	1	2952
Jul	19.7	43.0	2	4086
Aug	15.1	37.6	1	2873
Sep	12.8	27.2	1	2422
Oct	12.4	24.6	1	2832
Nov	15.7	35.3	2	2438
Dec	16.7	32.8	2	2540
Days away from work	n	Percent		
0	1084	47.3		
1 to 5	459	20.0		
6 to 10	188	8.2		
11 to 20	190	8.3		
21 or more	370	16.2		
Total	2291	100.0		

Data sources: 2020 OSHA Logs

Most events occurred in large hospitals (2,286, 64.7%). Injuries were the principal reason in this category. In contrast, exposure to harmful substances and COVID-19 were more common in medium-sized hospitals. The highest rate of overall events, injuries, harmful exposures, and COVID-19 were highest in medium-sized hospitals. Boston area hospitals accounted for the highest number of events (1,572, 44.5%). The Cape and Islands/Central/Metro Southern Massachusetts and Western Massachusetts regional hospitals accounted for the highest number of exposures to harmful substances and COVID-19 cases. The highest rates were among Western Massachusetts Hospitals for overall events, exposure to harmful substances, and injuries. However, at the same time, Massachusetts Hospitals in the Northeast Region had the singular highest rate of injuries.

Table 6. Hospital incidents by hospital characteristics, Massachusetts Hospitals, 2020

Hospital characteristic	Number of hospitals	Overall events		Exposure to harmful substance		COVID-19		Injuries	
		n (%)	rate	n (%)	rate	n	rate	n	rate
Small	6	139 (3.9)	18.5 (15.4, 21.6)	41 (3.3)	5.5 (3.8, 7.1)	35 (3.9)	4.7 (3.1, 6.2)	98 (4.3)	13.1 (10.5, 15.6)
Medium	11	1,106 (31.3)	81.2 (76.4, 86.0)	532 (43.0)	39.1 (35.7, 42.4)	485 (53.5)	35.6 (32.4, 38.8)	574 (25.0)	42.1 (38.7, 45.6)
Large	12	2,286 (64.7)	51.5 (49.4, 53.6)	663 (14.9)	14.9 (13.8, 16.1)	386 (42.6)	8.7 (7.8, 9.6)	1,623 (70.7)	36.6 (34.8, 38.3)
Region									
Boston	7	1,572 (44.5)	47.9 (45.5, 50.3)	316 (25.6)	9.6 (8.6, 10.7)	251 (27.7)	7.6 (6.7, 8.6)	1,256 (54.7)	38.3 (36.2, 40.4)
Cape and islands/central/metro south and west	11	920 (26.1)	49.0 (45.8, 52.1)	499 (40.4)	26.6 (24.2, 28.9)	269 (29.7)	14.3 (12.6, 16.0)	423 (18.4)	22.5 (20.4, 24.7)
Northeast	6	580 (16.4)	71.0 (65.2, 76.8)	154 (12.5)	18.9 (15.9, 21.8)	134 (14.8)	16.4 (13.6, 19.2)	426 (18.6)	52.2 (47.2, 57.1)
West	5	459 (13.0)	80.0 (72.7, 87.3)	267 (21.6)	46.5 (40.9, 52.1)	252 (27.8)	43.9 (38.5, 49.3)	190 (8.3)	33.1 (28.4, 37.8)
Total	29	3,531 (100.0)	53.9 (52.1, 55.7)	1,236 (100.0)	18.9 (17.8, 19.9)	906 (100.0)	13.8 (12.9, 14.7)	2,295 (100.0)	35.0 (33.6, 36.5)

Data sources: OSHA Logs and Massachusetts Center for Health Information and Analysis. (2020). Retrieved from: <https://www.chiamass.gov/covid-19-data-and-analysis/>

Implications for Health, Safety & Nursing Practice

Three years following the initial diagnosis of COVID-19, 1,963,376 cases of the virus were reported, and more than 21,000 deaths throughout Massachusetts (CDC, March 3, 2023. Retrieved: [Massachusetts coronavirus cases and deaths | USAFacts](#)). Prior to the pandemic, there were well-established “best practices” for infection control for nurses and healthcare providers, including those specifying proper utilization of N-95 respirators and other personal protective equipment (Gray, et. al. 2019). These best practices were incorporated into Occupational Health and Safety Administration’s (OSHA’s) respiratory protection standard. The national standard applied and was adhered to by the healthcare industry for years. OSHA revised the respiratory protection standard, (Appendix C to Sec. 1910.134) which went into effect on April 8, 1998 (Occupational Safety and Health Administration (OSHA) *OSHA Respiratory Standard* (update, August 7, 2012).

[1910.134 App C - OSHA Respirator Medical Evaluation Questionnaire \(Mandatory\). | Occupational Safety and Health Administration](#)). That final standard replaced the respiratory protection standard adopted by OSHA in 1971. Regrettably following the onset of the pandemic, numerous changes were made to these practices, both by state and federal agencies as well as by employers, which undercut previously established best practices, removing layers of protection for healthcare workers, leaving them exposed to harm and the injuries documented in this paper.

The weakening of established infection control standards coupled with decades of neglect of the public health infrastructure led to a cascade of system failures evidenced by the lack of adequate PPE resources, the delays in standing up good community and patient COVID-19 testing and diagnosis, poor data collection as well as the lack of clear consistent communication contributed to high patient morbidity and mortality despite the best efforts of frontline healthcare providers. In this period of chaos due to the then necessary visitor restriction, nurses were often left as the only means of connection between patients and families and far too many nurses were the ones holding patient’s hands and providing comfort as they died alone in hospitals.

The evidence presented in this report demonstrates egregious failures on the part of some employers to provide vital equipment, protection, and guidance that may have mitigated losses to worker health and safety.

In order to move forward into a future where appropriate worker protections are available to all healthcare workers across our state, the Massachusetts Nurses Association (MNA) will continue to advocate for the health and safety of nurses and frontline healthcare workers. The MNA holds healthcare organizations accountable for their lack of transparency and mismanagement of the COVID-19 crisis and the resulting consequence that contributed to lack of access and supply shortages of PPE and durable

medical equipment along with their egregious failures to create a process to evaluate patient care needs and the continuity of our most vulnerable population impacted by the COVID-19 pandemic. We now need to do the work involved to stabilize our healthcare workforce and offer frontline providers the necessary protections and other tools to work in a harmless environment while providing safe patient care on the job. It is imperative that we ensure the availability of PPE and other life-saving equipment as well as strong quality infection control standards that may be needed in the event of the development of a new COVID-19 variant or the emergence of a new contagion. We will fight for the availability and access to adequate staffing, equipment, and supplies in all hospital and medical/home settings.

In the coming months, we will enter the next phase of our investigation. As we approach more than three years of living with COVID-19, we aim to understand better the physical, emotional, and financial costs that nurses have experienced due to providing care on the frontlines of the COVID-19 pandemic. We will meet with hospital and government leaders to create a plan to offer nurses and other frontline healthcare workers the support they need now and in the future. The MNA will continue to stand strong with our members and other healthcare workers as we move forward into a future where nurses and nursing practice can learn from the last three years and emerge stronger for our patients and our communities.

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