

COVID-19 Case Rates by Industry and Occupation

January 10, 2020 – June 29, 2021, Washington

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SHARP Technical Report 103-09-2022

May 2022



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Information on work is essential to understanding disease transmission and threats to workforce capacity. As the pandemic continues to evolve with emerging variants, shifting behaviors, and changing policies, prevention strategies must also continue to adapt to the current environment. Work information continues to be a relevant piece of information for understanding and controlling this pandemic.

This report describes COVID-19 case rates by industry and occupation across four waves of the pandemic (waves, or time periods, defined by a low in case counts followed by a sustained rise and then fall in cases), between January 10, 2020 and June 29, 2021.

KEY FINDINGS

Industry

- The highest case rate by industry was observed among the Agriculture, Forestry, Fishing, and Hunting sector, between May 14, 2020 and September 12, 2020, which was over three times the rate of any other industry during the same time.
- The Agriculture, Forestry, Fishing, and Hunting and Healthcare and Social Assistance industry sectors experienced the highest case rates in each of the first three time periods. In the fourth time period, occurring March 12, 2021–June 29, 2021, Agriculture, Forestry, Fishing, and Hunting had the 10th highest case rate and Healthcare and Social Assistance had the 13th highest rate, while Accommodation and Food Services experienced a case rate greater than any other industry sector.

Occupation

- Personal Care and Service occupations experienced high case rates in each time period, including the highest case rate of any occupation, between May 14, 2020 and September 12, 2020.
- Only two occupations experienced lower case rates in the fourth period compared to their rates in first time period: Healthcare Practitioners and Technical Occupations and Healthcare Support Occupations.

Changes in infection rates over time likely reflect differences by industry and occupation in vaccine uptake, PPE usage, telework, and other workplace mitigation efforts.

Figure 1. COVID-19 Case Count, 7-day rolling average, Washington, January 10, 2020–June 29, 2021 (T=time period).

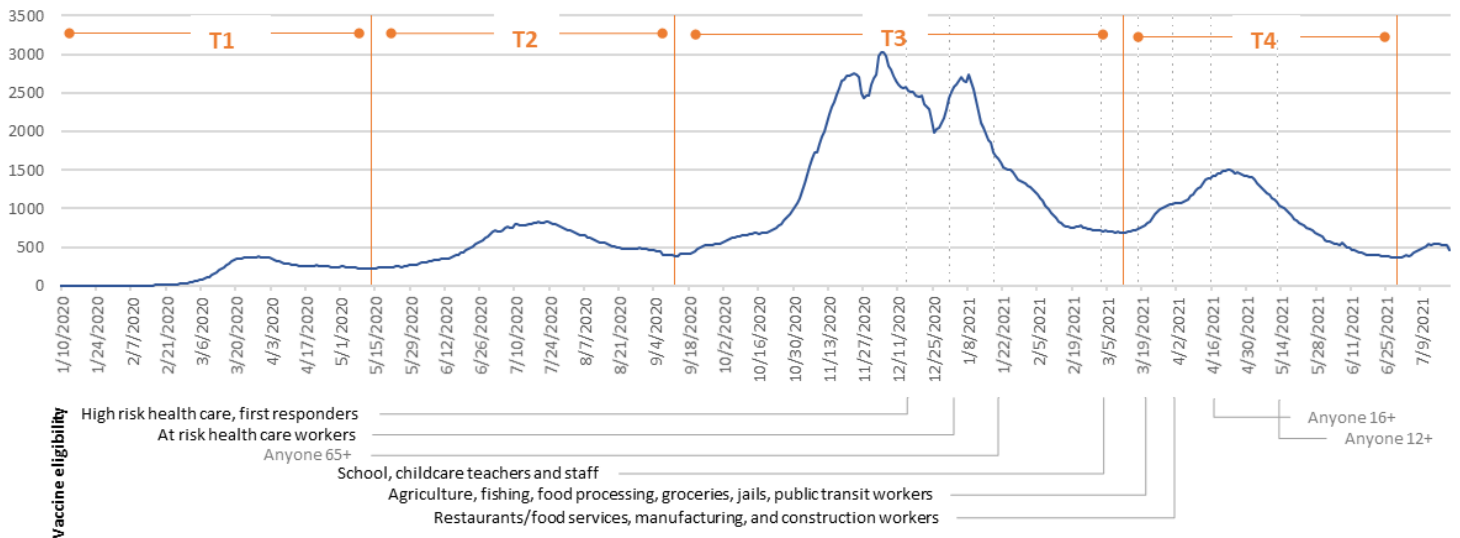
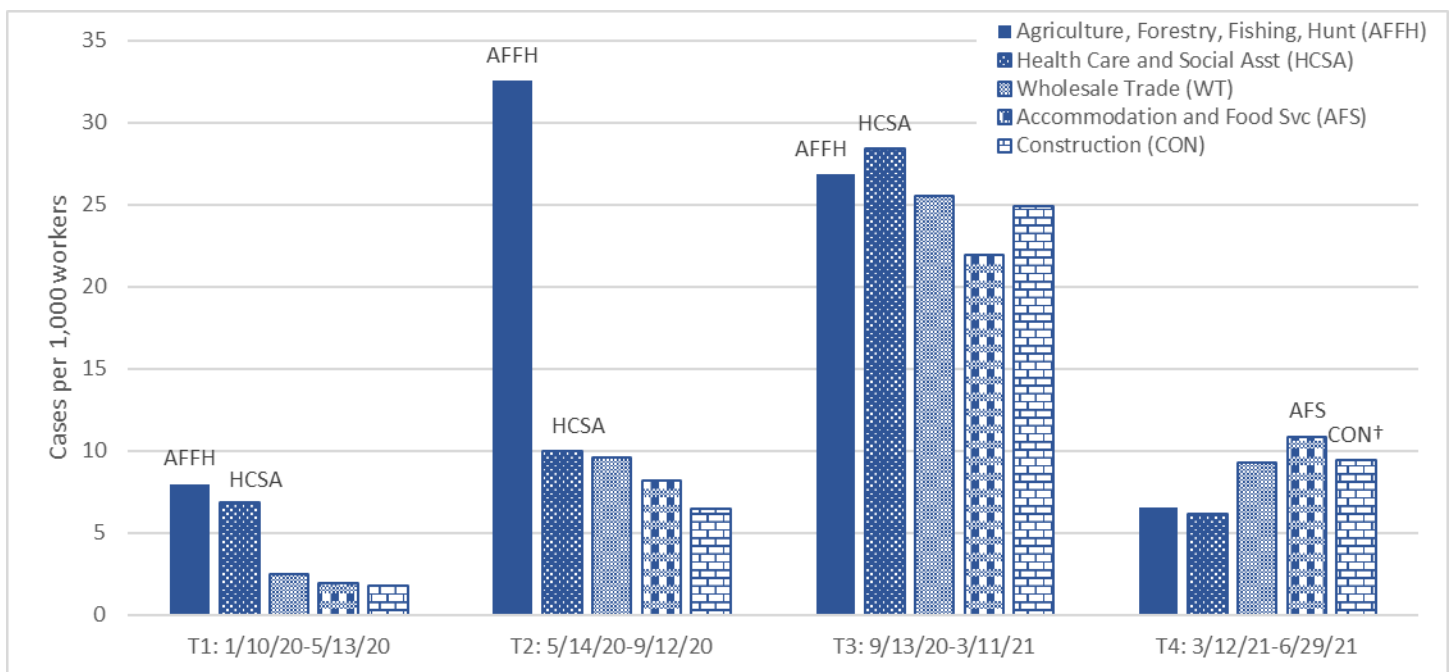
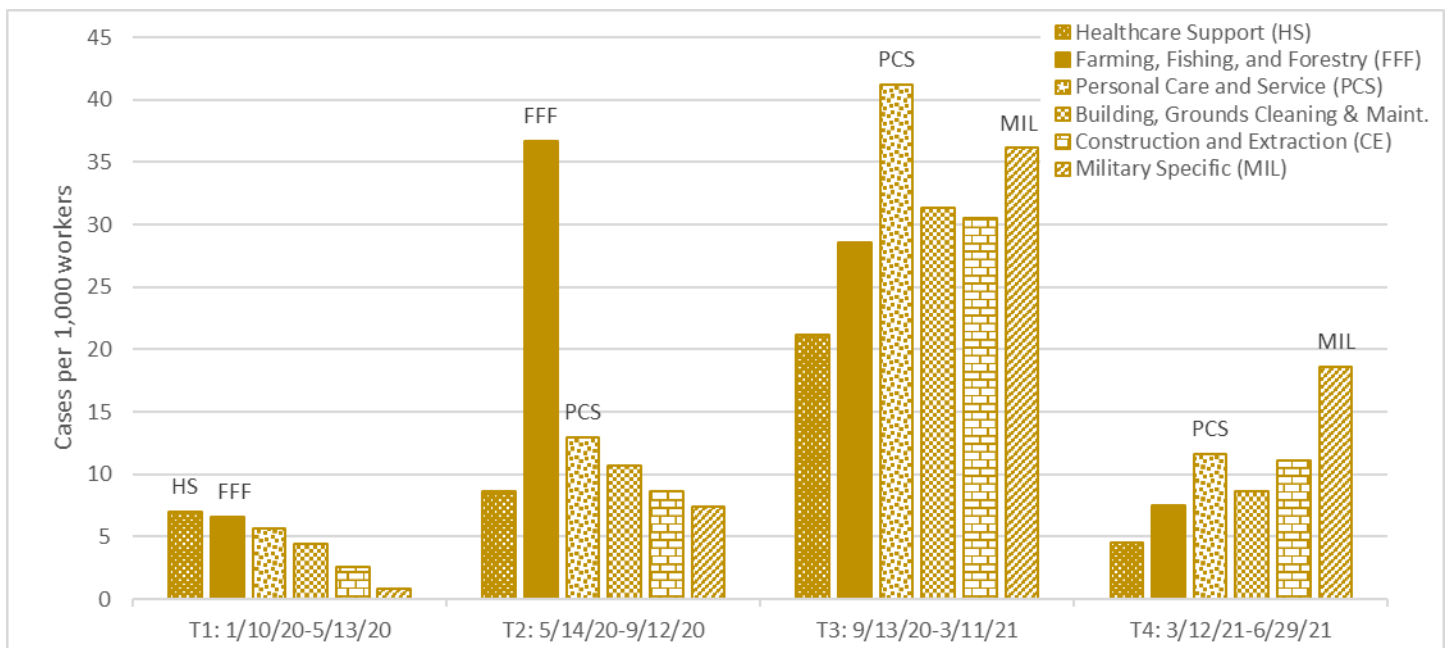


Figure 2. Washington COVID-19 case rates by industry and time period, among the five industry sectors with highest overall case rates.*



*The two industries in each time period with the highest case rates are denoted in the chart by their industry abbreviation.
 †Construction experienced the third highest rate among all industries in T4, exceeded by the rate among Military (see Table 1).

Figure 3. Washington COVID-19 case rates by occupation and time period, among the five occupations with highest overall case rates, plus Healthcare Support, which experienced the highest rate in T1.*



*The two industries in each time period with the highest case rates are denoted in the chart by their industry abbreviation.

Table 1. COVID-19 case rate by industry and time. Data presented are cases per 1,000 workers (rate rank in parentheses), Washington, January 10, 2020 – June 29, 2021.

Industry	Overall: 1/10/20- 6/29/21	T1: 1/10/20- 5/13/20	T2: 5/14/20- 9/12/20	T3: 9/13/20- 3/11/21	T4: 3/12/21- 6/29/21
Agriculture, Forestry, Fishing, and Hunting	74.0 (1)	8.0 (1)	32.5 (1)	26.8 (2)	6.6 (10)
Health Care and Social Assistance	51.3 (2)	6.8 (2)	10.0 (2)	28.4 (1)	6.1 (13)
Wholesale Trade	46.9 (3)	2.5 (4)	9.6 (3)	25.5 (3)	9.3 (4)
Accommodation and Food Services	43.0 (4)	1.9 (8)	8.2 (4)	21.9 (7)	10.9 (1)
Construction	42.6 (5)	1.8 (10)	6.5 (6)	24.9 (4)	9.4 (3)
Administrative and support and waste management Svc	42.4 (6)	2.5 (5)	7.2 (5)	24.3 (6)	8.5 (5)
Public Administration	37.7 (7)	2.1 (7)	5.1 (10)	24.6 (5)	5.9 (15)
Manufacturing	36.2 (8)	3.7 (3)	6.2 (7)	19.8 (10)	6.5 (11)
Retail Trade	35.6 (9)	1.9 (9)	5.7 (9)	20.4 (8)	7.7 (6)
Transportation and Warehousing	35.1 (10)	2.4 (6)	5.8 (8)	20.2 (9)	6.8 (8)
Military	32.4 (11)	0.4 (20)	3.8 (14)	18.6 (11)	9.5 (2)
Real Estate and Rental and Leasing	30.8 (12)	1.7 (11)	4.2 (11)	18.0 (12)	6.9 (7)
Other Services, Except Public Administration	29.1 (13)	1.3 (14)	4.2 (12)	17.6 (13)	6.1 (14)
Arts, Entertainment, and Recreation	25.9 (14)	1.7 (12)	3.5 (15)	14.1 (17)	6.6 (9)
Finance and Insurance	24.9 (15)	1.2 (15)	3.8 (13)	14.5 (15)	5.4 (19)
Information	23.9 (16)	1.4 (13)	3.1 (17)	13.8 (19)	5.6 (16)
Utilities	23.6 (17)	0.7 (18)	3.3 (16)	14.1 (18)	5.5 (18)
Mining, Quarrying, and Oil and Gas Extraction	23.0 (18)	<0.1 (21)	1.0 (21)	16.5 (14)	5.5 (17)
Management of companies and enterprises	22.5 (19)	1.2 (16)	1.5 (19)	13.2 (20)	6.5 (12)
Educational Services	21.5 (20)	1.0 (17)	2.4 (18)	14.2 (16)	4.0 (20)
Professional, Scientific, and Technical Services	11.5 (21)	0.5 (19)	1.5 (20)	7.1 (21)	2.4 (21)

Table 2. COVID-19 case rate by occupation and time. Data presented are cases per 1,000 workers (rate rank in parentheses), Washington, January 10, 2020 – June 29, 2021.

Occupation	Overall: 1/10/20- 6/29/21	T1: 1/10/20- 5/13/20	T2: 5/14/20- 9/12/20	T3: 9/13/20- 3/11/21	T4: 3/12/21- 6/29/21
Farming, Fishing, and Forestry Occupations	79.4 (1)	6.6 (2)	36.7 (1)	28.6 (5)	7.5 (6)
Personal Care and Service Occupations	71.4 (2)	5.7 (3)	12.9 (2)	41.1 (1)	11.6 (2)
Military Specific Occupations	63.0 (3)	0.8 (19)	7.4 (7)	36.2 (2)	18.6 (1)
Building, Grounds Cleaning & Maintenance Occupations	55.3 (4)	4.5 (6)	10.7 (3)	31.4 (3)	8.7 (5)
Construction and Extraction Occupations	52.8 (5)	2.6 (9)	8.7 (4)	30.5 (4)	11.1 (3)
Food Preparation and Serving Related Occupations	43.3 (6)	2.3 (10)	8.4 (6)	22.2 (7)	10.5 (4)
Healthcare Support Occupations	41.3 (7)	7.0 (1)	8.6 (5)	21.1 (8)	4.6 (14)
Protective Service Occupations	40.2 (8)	2.9 (8)	6.3 (10)	23.7 (6)	7.3 (7)
Production Occupations	38.2 (9)	4.9 (5)	7.3 (8)	19.3 (10)	6.7 (9)
Transportation and Material Moving Occupations	35.1 (10)	3.0 (7)	7.0 (9)	18.9 (12)	6.2 (12)
Healthcare Practitioners and Technical Occupations	34.4 (11)	5.4 (4)	6.3 (11)	19.1 (11)	3.6 (17)
Installation, Maintenance, and Repair Occupations	33.9 (12)	1.6 (13)	4.7 (14)	20.3 (9)	7.2 (8)
Office and Administrative Support Occupations	31.5 (13)	1.5 (14)	4.9 (13)	18.5 (13)	6.6 (10)
Sales and Related Occupations	31.2 (14)	1.6 (12)	5.1 (12)	18.0 (14)	6.5 (11)
Community and Social Service Occupations	26.1 (15)	2.1 (11)	4.3 (15)	15.1 (15)	4.6 (13)
Management Occupations	19.7 (16)	1.2 (15)	2.8 (16)	11.8 (17)	3.8 (15)
Educational Instruction and Library Occupations	19.3 (17)	0.9 (18)	2.1 (19)	12.8 (16)	3.5 (18)
Business and Financial Operations Occupations	16.0 (18)	0.8 (20)	2.4 (17)	9.5 (18)	3.3 (19)
Legal Occupations	15.4 (19)	1.0 (17)	2.2 (18)	9.1 (19)	3.1 (20)
Arts, Design, Entertainment, Sports, Media Occupations	15.3 (20)	1.2 (16)	1.9 (20)	8.6 (20)	3.6 (16)
Computer, Engineering, and Science Occupations	11.7 (21)	0.6 (21)	1.4 (21)	7.0 (21)	2.7 (21)

TECHNICAL NOTES

The report includes positive cases of COVID-19 in Washington between January 10, 2020 and June 29, 2021 (date of symptom onset or, if symptom onset date is unknown, date of positive test result), based on data collected through July 21, 2021. Positive cases of COVID-19 are defined as positive molecular test or positive antigen test with no positive molecular test.

Time periods were defined by a case count nadir, followed by a sustained rise and then fall in cases.

Information on employment, industry, occupation, employer, and worksite was collected during case investigations, and responses were recorded as narrative text. Data on primary jobs were classified using Census Industry and Occupation codes. To classify industry, the employer name as reported in the COVID case investigation was compared to state agency administrative databases in order to identify industry codes associated with employers in Washington's Worker's Compensation and Unemployment Insurance programs. When the employer data was insufficient for identifying an agency-assigned industry code, cases were uploaded to the NIOSH Industry and Occupation Computerized Coding System (NIOCCS)¹, an auto-coding system that uses machine learning to assign codes based on the industry and occupation narrative text fields. Occupation codes were assigned by NIOCCS. Trained staff at L&I reviewed all cases to ensure that assigned codes were accurate.

Rates were calculated from Washington State Department of Health COVID-19 case data contained in the Washington State Disease Reporting System and employment estimates from the American Community Survey IPUMS data² for 2020.

LIMITATIONS

Given the shortages in COVID tests and the number of symptomatic and asymptomatic people who were not tested, the numbers of cases presented here is an underestimate of the true magnitude of the infection. Testing may have been more common among some industries and occupations, potentially distorting the observed distribution of cases by industry and occupation.

The portion of cases among working age adults with industry and occupation data reported declined over time, from a high in T1 of 64.0% of cases age 18-64 years to 31.7% of cases in T4. Thus, industry- and occupation-specific case rates likely are increasingly underestimated over time. Additionally, industry- and occupation-specific case rates are likely greater than estimated, especially in the later time periods, because of the preponderance of missing data, which increased over time.

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Employment estimates do not account for seasonal variation or other potential changes over time. True case rates may be higher or lower than estimated, based on accuracy of the employment data.

ACKNOWLEDGEMENTS

Data presented in this report were provided by the Washington State Department of Health through a Data Sharing Agreement with the Department of Labor & Industries. Industry and occupation codes were assigned by the Department of Labor & Industries. Case rates presented are the author's calculations.

¹ NIOSH (2021). NIOSH Industry and Occupation Computerized Coding System (NIOCCS). U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Division of Field Studies & Engineering, Health Informatics Branch. <https://csams.cdc.gov/nioccs/Default.aspx>

² Steven Ruggles, Sarah Flood, Sophia Foster, Ronald Goeken, Jose Pacas, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 11.0 [dataset]. Minneapolis, MN: IPUMS, 2021. <https://doi.org/10.18128/D010.V11.0>