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How many workers are employed in sectors directly affected by COVID-19 shutdowns, where do they work, and how much do they earn?

This article examines the labor market impacts of establishment shutdowns implemented in response to coronavirus disease 2019 (COVID-19). The analysis focuses on sectors directly exposed to the shutdowns and uses data from the Quarterly Census of Employment and Wages and Occupational Employment Statistics programs of the U.S. Bureau of Labor Statistics.

Notice: On April 24, 2020, this article was updated to include data on shares of employment and wages, by metropolitan and nonmetropolitan statistical areas, in the sectors most exposed to COVID-19 shutdowns. See appendix tables for more information.

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To reduce the spread of coronavirus disease 2019 (COVID-19), nearly all states have issued stay-at-home orders and shut down establishments deemed nonessential. Answering the following questions is crucial to assessing the potential labor market impacts of the shutdown policy: How many jobs are in the industries that are shut down? Where are these jobs located? What wages do they pay?

We provide answers to these questions by using data from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) and Occupational Employment Statistics (OES) programs.[1] The QCEW program produces quarterly counts of employment and wages reported by employers, covering more than 95 percent of all U.S. jobs. These data are available, by

industry, at the county, metropolitan statistical area, state, and national levels. The OES program produces annual employment and wage estimates for nearly 800 occupations.

Our analysis begins by identifying industries directly affected by the shutdown orders. To this end, we borrow from a recent analysis by Joseph S. Vavra, who notes that "six of the most directly exposed sectors include: Restaurants and Bars, Travel and Transportation, Entertainment (e.g., casinos and amusement parks), Personal Services (e.g., dentists, daycare providers, barbers), other sensitive Retail (e.g., department stores and car dealers), and sensitive Manufacturing (e.g., aircraft and car manufacturing)."[2]

To estimate the shares of total U.S. employment in these sectors, Vavra relies on data published by the BLS Current Employment Statistics program.[3] Using QCEW and OES data and focusing on Vavra's sectors, we provide finer sector breakdowns by firm size class, geography, and wage rates. We focus on data from the second quarter of 2019. This period precedes the current shutdown by roughly a year, so possible seasonality in the data is not a concern.

The QCEW employment counts represent the number of covered workers who worked during, or received pay for, the pay period including the 12th of the month.[4] QCEW wage data represent the total compensation paid during the calendar quarter, regardless of when the services being paid were performed. Under most state laws and regulations, wages include bonuses, stock options, severance pay, the cash value of meals and lodging, and tips and other gratuities. We supplement this information with OES data on wages in each sector.

How many jobs are in the shutdown sectors?

Table 1 presents information on employment in June 2019 and total compensation in the second quarter of 2019, focusing on the most exposed sectors identified by Vavra. Using this information, figure 1 shows the shares of employment and wages in those sectors.[5] The most notable result revealed by the figure is that restaurants and bars accounted for a little more than 8 percent of total employment in June 2019. Employment in the other exposed sectors is substantial as well. In all, 20.4 percent of all workers are employed in industries most immediately affected by the COVID-19 shutdowns.

Table 1. Industry statistics, by firm size class

Firm size (number of employees)	Total	All other	Most exposed sectors						
			Restaurants and bars	Travel and transportation	Entertainment	Personal services	Other sensitive retail	Sensitive manufacturing	Most exposed sectors combined
Employment levels in June 2019 (thousands)									
10 or less	14,139.9	10,813.4	1,124.6	140.1	209.2	845.7	779.8	227.1	3,326.5
11 to 50	22,257.7	14,994.6	4,022.0	545.2	541.1	743.5	961.4	449.9	7,263.1
51 to 100	10,572.4	7,644.2	1,533.8	198.5	294.7	100.9	556.5	243.8	2,928.2
101 to 500	25,483.5	20,893.5	1,668.0	558.9	642.0	146.2	830.9	744.0	4,590.0
More than 500	77,528.8	65,076.8	3,925.1	2,050.6	957.0	249.9	3,419.9	1,849.5	12,452.0

See footnotes at end of table.

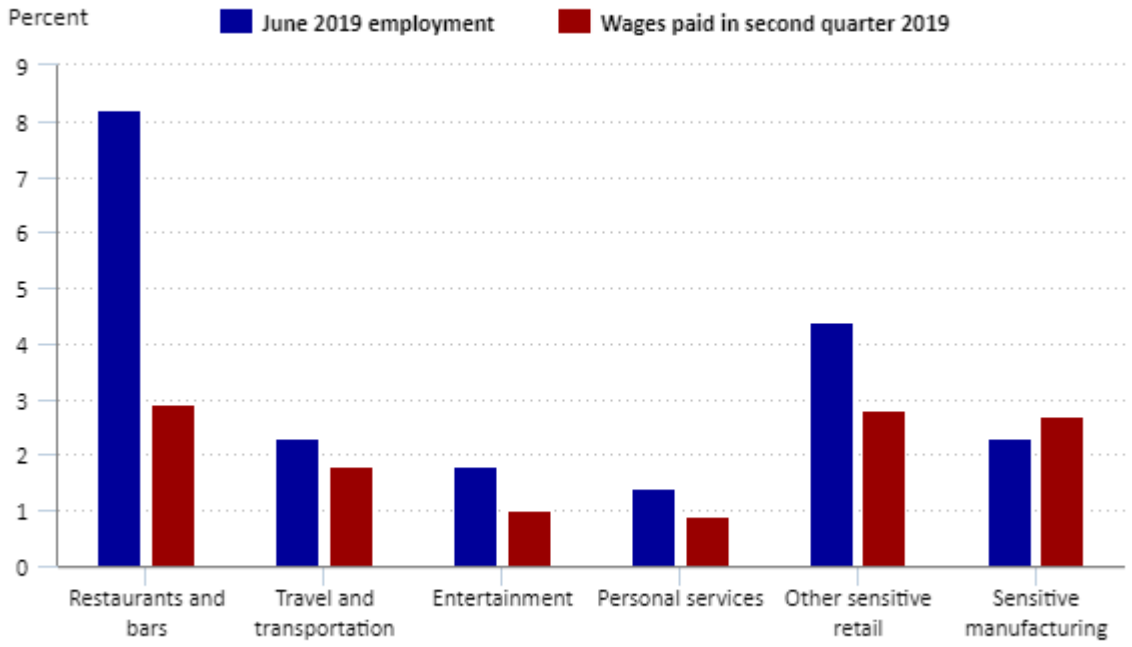
Table 1. Industry statistics, by firm size class

Firm size (number of employees)	Total	All other	Most exposed sectors						
			Restaurants and bars	Travel and transportation	Entertainment	Personal services	Other sensitive retail	Sensitive manufacturing	Most exposed sectors combined
Total	149,982.3	119,422.5	12,273.5	3,493.3	2,644.0	2,086.2	6,548.5	3,514.3	30,559.8
Total wages paid in second quarter 2019 (billions of dollars)									
10 or less	$144.894	$120.886	$5.183	$0.926	$1.951	$7.731	$5.844	$2.373	$24.008
11 to 50	242.971	194.789	19.428	3.350	2.581	7.412	9.954	5.457	48.182
51 to 100	132.246	108.932	8.192	1.674	1.649	1.010	7.550	3.239	23.314
101 to 500	358.286	314.502	8.519	5.413	5.783	1.453	12.052	10.564	43.784
More than 500	1,240.032	1,121.793	20.876	27.118	8.879	2.259	24.403	34.704	118.239
Total	2,118.429	1,860.902	62.198	38.481	20.843	19.865	59.803	56.337	257.527

Note: Firms are identified by Employer Identification Number.

Source: Authors' calculations based on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data for June and second quarter 2019. The North American Industry Classification System codes used to define the most exposed sectors can be found in Joseph S. Vavra, "Shutdown sectors represent large share of all U.S. employment" (Chicago, IL: Becker Friedman Institute for Economics at the University of Chicago, March 31, 2020), https://bfi.uchicago.edu/insight/blog/key-economic-facts-about-covid-19/.

Figure 1. Shares of total U.S. employment and wage earnings in most exposed sectors

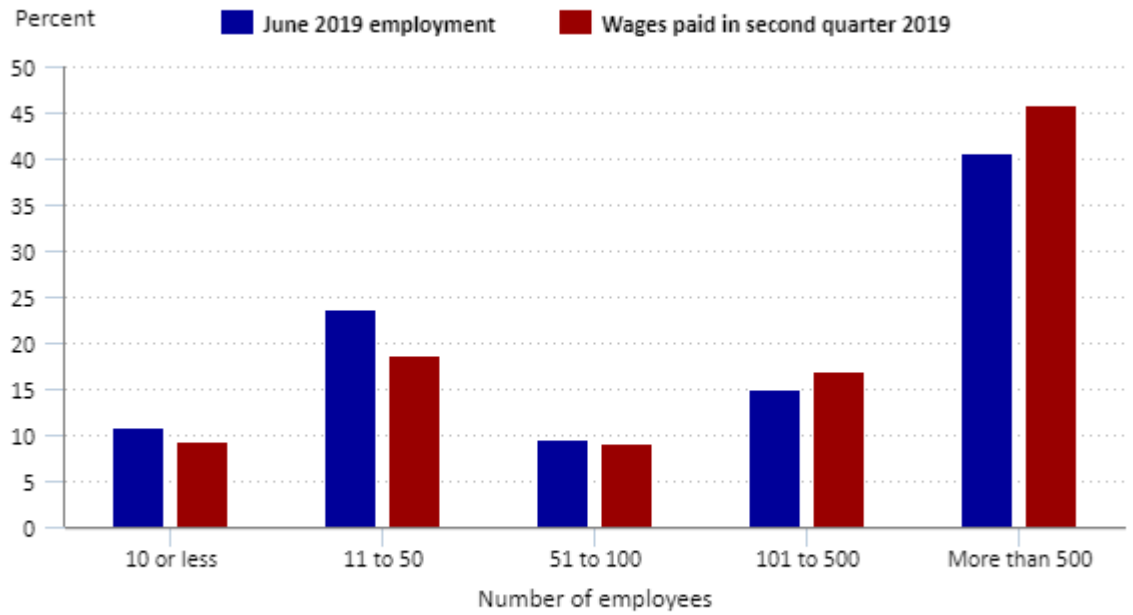


Click legend items to change data display. Hover over chart to view data.
Source: Authors' calculations based on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data for June and second quarter 2019.

Figure 1 also shows the share of total wage earnings accruing to workers in the most at-risk sectors in the second quarter of 2019. In all of these sectors, except sensitive manufacturing, the wage share is lower than the employment share, indicating that, on average, workers in the most highly exposed sectors earn less than workers employed elsewhere. On average, wage earnings in exposed sectors make up 12.2 percent of total wage earnings, which is substantially less than the employment share (20 percent).

Figure 2 shows the size distribution of firms employing workers in the most affected sectors. About 11 percent of workers in those sectors are employed by firms with 10 or fewer workers, 24 percent are employed by firms with 11–50 workers, 10 percent are employed by firms with 51–100 workers, 15 percent are employed by firms with 101–500 workers, and 41 percent are employed by firms with more than 500 workers. In the other sectors of the economy, these figures are 9 percent, 13 percent, 6 percent, 17 percent, and 55 percent, respectively.

Figure 2. Shares of employment and wage earnings in most exposed sectors, by firm size class



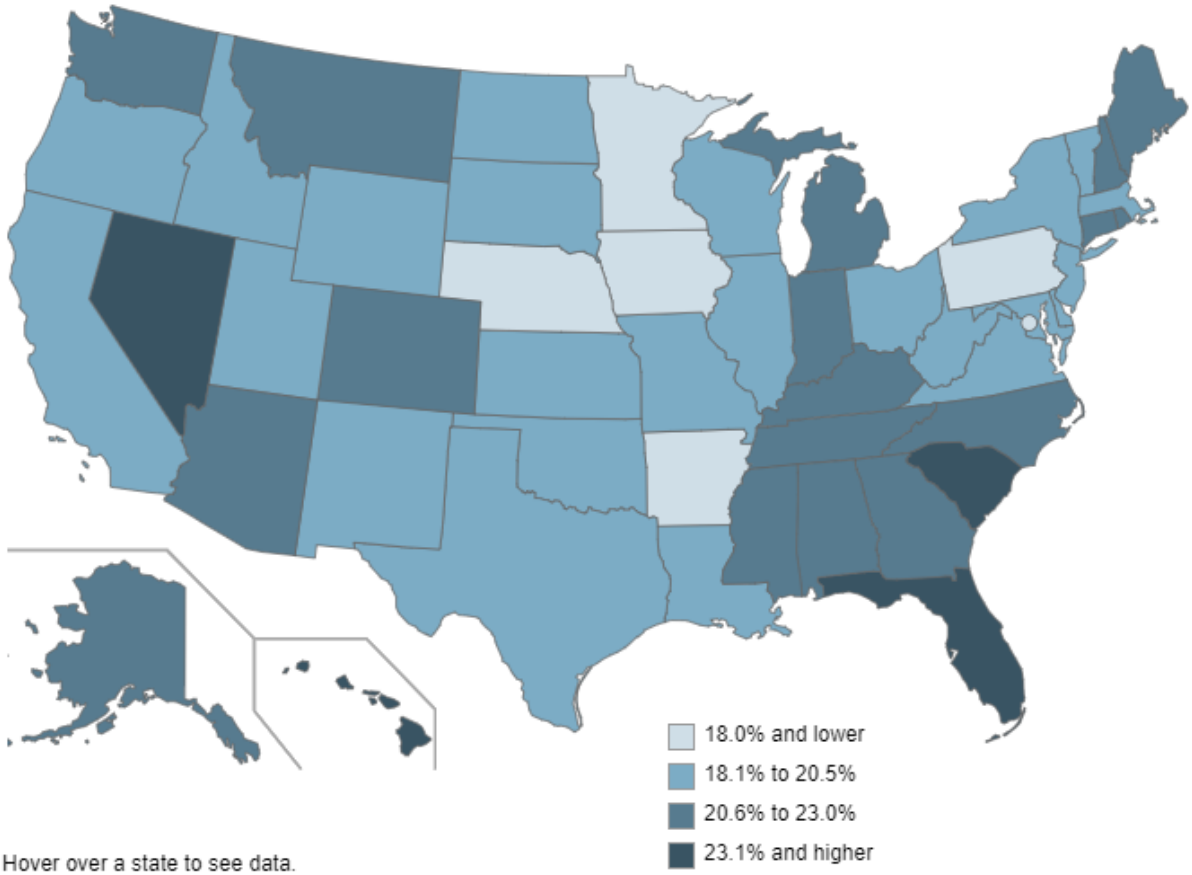
Click legend items to change data display. Hover over chart to view data.
Note: Firms are identified by Employer Identification Number.
Source: Authors' calculations based on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data for June and second quarter 2019.

These results show that, on average, firms in the most exposed sectors tend to be smaller than firms in all other sectors. However, a substantial number of workers in the sectors directly affected by the shutdowns are employed by large firms. While not insubstantial, wage payments to employees at small firms in the exposed sectors do not account for a very large share of total wage payments in the economy. Table 1 reveals that roughly 12 percent of total wages are in the most exposed sectors, and figure 2 shows that 54 percent of these wages are paid by small firms (firms with fewer than 500 workers). This means that about 6.6 percent of total second-quarter wage payments are made by small firms in the most exposed sectors. For wage levels, table 1 shows that $139.3 billion of the $2,119.4 billion in total second-quarter wage payments are payments made by small firms in the most exposed sectors.

Where are the jobs in the shutdown sectors located?

As shown in figure 3, the share of employment in the most directly affected sectors varies greatly by state. Nevada (34.3 percent), Hawaii (31.1 percent), Florida (23.7 percent), and South Carolina (23.1 percent) all have more than 23 percent of their employment concentrated in the highly exposed sectors. This concentration is due to those states' high share of employment in the travel and transportation sector, reflecting the importance of tourism to their economies. On the other hand, Midwestern agricultural states generally have less employment in the most exposed sectors. Nebraska (16.3 percent), Iowa (16.8 percent), Arkansas (17.4 percent), and Minnesota (17.4 percent) all have less than 18 percent of their employment in the highly exposed sectors. Additionally, because of the presence of the federal government, only 12.9 percent of employment in the District of Columbia is in the most exposed sectors.

Figure 3. Share of June 2019 employment in most exposed sectors, by state



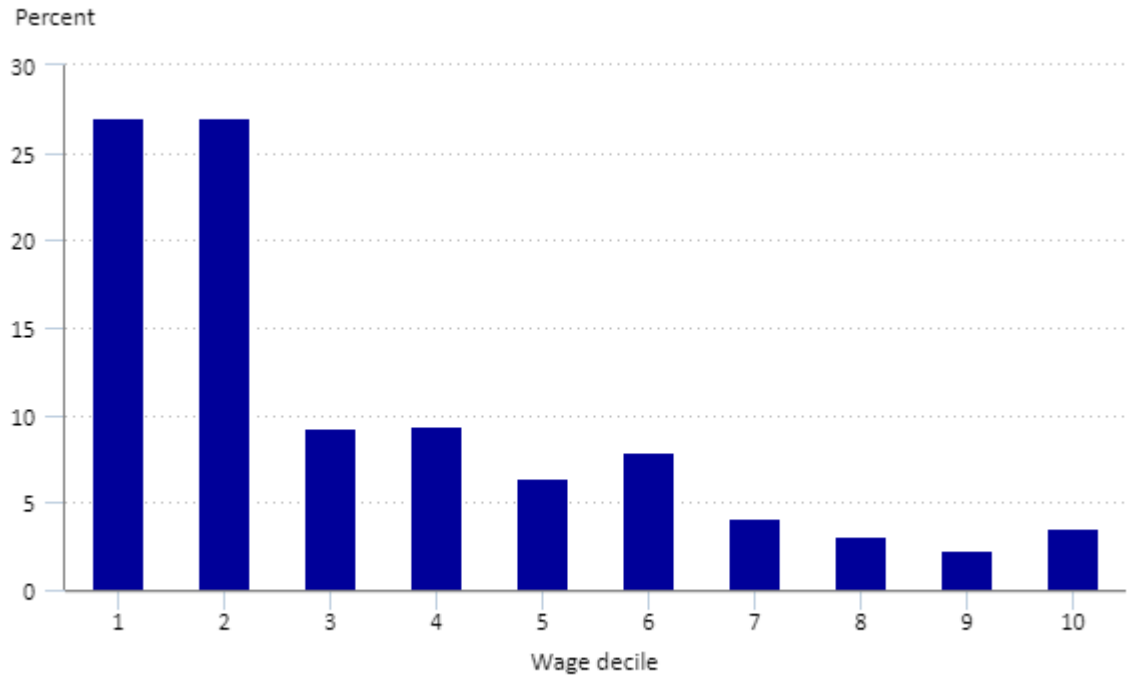
Hover over a state to see data.
Hover over legend items to see states in a category.
Source: Authors' calculations based on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data.

What wages do the shutdown sectors pay?

We use May 2019 OES data to provide more detailed information on wages in the most exposed sectors. We obtain these estimates by first calculating the national average wage and total employment for each occupation and placing each occupation into a wage decile (so that 10 percent of total employment is in each decile).[6] We

then examine how occupational employment is distributed across the various affected sectors. Figure 4 shows the wage decile shares of employment in the most distressed sectors. If the wage distribution in those sectors perfectly matched the economywide wage distribution, 10 percent of employment would be in each wage decile. This is clearly not the case. Most notably, the wage distribution is considerably left skewed, with nearly 54 percent of jobs concentrated in the two lowest paid deciles and only about 13 percent of jobs located in the four highest paid deciles. This result confirms and extends the results from figure 1—while the most exposed sectors account for slightly more than 20 percent of total employment, they account for only about 12 percent of wage earnings.

Figure 4. Wage decile share of employment in most exposed sectors



Hover over chart to view data.
Source: Authors' calculations based on U.S. Bureau of Labor Statistics Occupational Employment Statistics data for May 2019.

Conclusion

Our analysis shows that a large number of jobs are in sectors directly affected by the shutdowns enacted to combat the COVID-19 pandemic. All told, about 20 percent of all employees work in the most exposed sectors identified by Vavra. The proportion of jobs in the shutdown sectors is particularly high in Nevada, Hawaii, Florida, and South Carolina, states that rely heavily on tourism. Besides affecting employment in these jobs, the shutdown orders have indirect impacts on sectors that provide inputs to the directly affected sectors.[7] The longer the shutdown continues, the greater its cumulative direct and indirect effects.

We also find that occupations with lower wages are more common in the shutdown sectors than elsewhere in the economy and that higher paying jobs are less common in those sectors. Consequently, shutdown policies disproportionately affect workers in lower paying jobs.

Appendix: Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area and nonmetropolitan statistical areas of states

Table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

Table A-2. Shares of employment and wages paid in most exposed sectors, by nonmetropolitan statistical areas of states

ACKNOWLEDGMENTS: We are grateful for helpful comments from Jennifer Cassidy-Gilbert, Mike Dalton, Keenan Dworak-Fisher, Elizabeth Handwerker Weber, Julie Hatch, Joe Piacentini, Dave Piccone, Anne Polivka, Ken Robertson, Dave Talan, and Bill Wiatrowski.

Tables

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Abilene, TX	20.1	12.9
Aguadilla-Isabela, PR	16.0	9.4
Akron, OH	19.8	11.3
Albany, GA	17.0	9.7
Albany-Lebanon, OR	14.5	8.4
Albany-Schenectady-Troy, NY	16.2	8.2
Albuquerque, NM	21.4	12.3
Alexandria, LA	16.1	8.9
Allentown-Bethlehem-Easton, PA-NJ	20.3	11.9
Altoona, PA	19.8	10.9
Amarillo, TX	21.3	12.4
Ames, IA	16.0	7.3
Anchorage, AK	22.3	12.5
Ann Arbor, MI	16.5	9.6
Anniston-Oxford, AL	22.6	15.9
Appleton, WI	20.3	12.3
Arecibo, PR	18.3	11.8
Asheville, NC	24.4	16.5
Athens-Clarke County, GA	20.3	10.8
Atlanta-Sandy Springs-Alpharetta, GA	20.6	12.5
Atlantic City-Hammonton, NJ	40.0	27.2
Auburn-Opelika, AL	25.1	15.4
Augusta-Richmond County, GA-SC	19.1	9.9
Austin-Round Rock-Georgetown, TX	20.0	10.0

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Bakersfield, CA	13.8	8.3
Baltimore-Columbia-Towson, MD	18.6	9.9
Bangor, ME	19.7	13.0
Barnstable Town, MA	32.8	18.5
Baton Rouge, LA	17.4	8.8
Battle Creek, MI	27.8	22.7
Bay City, MI	22.1	14.2
Beaumont-Port Arthur, TX	17.7	8.8
Beckley, WV	21.8	11.8
Bellingham, WA	21.1	12.2
Bend, OR	26.5	16.3
Billings, MT	23.6	13.6
Binghamton, NY	17.4	9.5
Birmingham-Hoover, AL	19.0	10.2
Bismarck, ND	20.7	10.8
Blacksburg-Christiansburg, VA	25.4	20.7
Bloomington, IL	18.6	8.4
Bloomington, IN	18.5	9.5
Bloomsburg-Berwick, PA	16.8	8.2
Boise City, ID	19.1	11.0
Boston-Cambridge-Newton, MA-NH	18.6	9.0
Boulder, CO	18.2	8.8
Bowling Green, KY	26.5	19.5
Bremerton-Silverdale-Port Orchard, WA	36.9	38.2
Bridgeport-Stamford-Norwalk, CT	22.3	11.3
Brownsville-Harlingen, TX	20.8	14.0
Brunswick, GA	31.5	22.4
Buffalo-Cheektowaga, NY	20.3	13.0
Burlington, NC	25.1	15.1
Burlington-South Burlington, VT	18.8	10.5
California-Lexington Park, MD	19.2	8.8
Canton-Massillon, OH	20.3	11.9
Cape Coral-Fort Myers, FL	25.6	16.6
Cape Girardeau, MO-IL	20.6	11.6
Carbondale-Marion, IL	22.1	12.9
Carson City, NV	20.2	12.3
Casper, WY	19.6	10.5
Cedar Rapids, IA	13.7	6.6
Chambersburg-Waynesboro, PA	16.2	8.6
Champaign-Urbana, IL	19.0	9.5
Charleston, WV	17.6	10.1
Charleston-North Charleston, SC	27.4	19.7

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Charlotte-Concord-Gastonia, NC-SC	21.9	13.3
Charlottesville, VA	18.5	9.4
Chattanooga, TN-GA	22.9	15.3
Cheyenne, WY	17.7	9.4
Chicago-Naperville-Elgin, IL-IN-WI	20.3	11.2
Chico, CA	20.6	12.9
Cincinnati, OH-KY-IN	22.1	14.4
Clarksville, TN-KY	25.6	18.3
Cleveland, TN	24.8	16.1
Cleveland-Elyria, OH	19.3	11.2
Coeur d'Alene, ID	26.9	16.8
College Station-Bryan, TX	20.7	12.3
Colorado Springs, CO	21.2	11.7
Columbia, MO	20.3	10.4
Columbia, SC	18.8	10.8
Columbus, GA-AL	21.1	13.3
Columbus, IN	24.5	17.6
Columbus, OH	19.1	11.5
Corpus Christi, TX	23.1	14.0
Corvallis, OR	18.0	8.0
Crestview-Fort Walton Beach-Destin, FL	32.5	19.6
Cumberland, MD-WV	24.9	19.9
Dallas-Fort Worth-Arlington, TX	21.4	14.1
Dalton, GA	39.4	34.5
Danville, IL	19.6	13.9
Daphne-Fairhope-Foley, AL	35.8	26.4
Davenport-Moline-Rock Island, IA-IL	18.6	10.2
Dayton-Kettering, OH	20.1	11.5
Decatur, AL	19.3	13.9
Decatur, IL	17.0	7.3
Deltona-Daytona Beach-Ormond Beach, FL	26.7	17.3
Denver-Aurora-Lakewood, CO	20.6	12.5
Des Moines-West Des Moines, IA	17.4	8.9
Detroit-Warren-Dearborn, MI	24.5	18.8
Dothan, AL	22.1	13.7
Dover, DE	20.5	12.5
Dubuque, IA	18.0	11.3
Duluth, MN-WI	21.1	11.3
Durham-Chapel Hill, NC	15.0	7.0
East Stroudsburg, PA	31.0	17.9
Eau Claire, WI	19.1	10.9

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
El Centro, CA	13.9	8.1
Elizabethtown-Fort Knox, KY	24.3	17.9
Elkhart-Goshen, IN	42.2	44.2
Elmira, NY	19.6	10.8
El Paso, TX	21.9	13.2
Erie, PA	20.2	11.0
Eugene-Springfield, OR	21.4	13.2
Evansville, IN-KY	18.7	10.2
Fairbanks, AK	23.9	12.6
Fargo, ND-MN	19.1	10.5
Farmington, NM	19.5	10.1
Fayetteville, NC	22.5	12.1
Fayetteville-Springdale-Rogers, AR	18.1	9.2
Flagstaff, AZ	32.7	19.7
Flint, MI	23.8	18.4
Florence, SC	19.1	10.3
Florence-Muscle Shoals, AL	24.7	16.2
Fond du Lac, WI	18.1	9.9
Fort Collins, CO	22.0	11.3
Fort Smith, AR-OK	17.5	10.7
Fort Wayne, IN	21.9	16.1
Fresno, CA	15.6	9.6
Gadsden, AL	19.8	12.6
Gainesville, FL	17.4	9.3
Gainesville, GA	18.0	15.5
Gettysburg, PA	22.0	11.5
Glens Falls, NY	24.1	13.6
Goldsboro, NC	20.0	12.1
Grand Forks, ND-MN	20.5	11.3
Grand Island, NE	15.7	8.9
Grand Junction, CO	22.2	13.9
Grand Rapids-Kentwood, MI	21.8	16.8
Grants Pass, OR	24.3	17.5
Great Falls, MT	21.9	12.4
Greeley, CO	14.4	8.0
Green Bay, WI	18.8	11.5
Greensboro-High Point, NC	24.2	16.8
Greenville, NC	19.6	9.4
Greenville-Anderson, SC	22.4	14.9
Guayama, PR	11.8	6.2
Gulfport-Biloxi, MS	36.0	27.9
Hagerstown-Martinsburg, MD-WV	18.9	11.4
Hammond, LA	20.6	12.7
Hanford-Corcoran, CA	17.5	13.2

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Harrisburg-Carlisle, PA	17.2	8.3
Harrisonburg, VA	20.5	13.6
Hartford-East Hartford-Middletown, CT	21.1	14.6
Hattiesburg, MS	21.7	12.4
Hickory-Lenoir-Morganton, NC	28.3	22.1
Hilton Head Island-Bluffton, SC	32.3	21.0
Hinesville, GA	18.2	9.1
Homosassa Springs, FL	22.2	15.3
Hot Springs, AR	30.8	22.4
Houma-Thibodaux, LA	23.2	18.8
Houston-The Woodlands-Sugar Land, TX	18.9	9.9
Huntington-Ashland, WV-KY-OH	19.5	11.8
Huntsville, AL	21.0	14.3
Idaho Falls, ID	17.9	9.4
Indianapolis-Carmel-Anderson, IN	19.4	12.4
Iowa City, IA	17.4	8.7
Ithaca, NY	18.1	10.8
Jackson, MI	19.5	12.4
Jackson, MS	19.9	13.7
Jackson, TN	18.6	11.9
Jacksonville, FL	21.8	13.7
Jacksonville, NC	32.3	21.1
Janesville-Beloit, WI	20.3	11.8
Jefferson City, MO	13.6	7.6
Johnson City, TN	21.7	12.7
Johnstown, PA	18.2	10.7
Jonesboro, AR	18.7	11.1
Joplin, MO	19.6	12.3
Kahului-Wailuku-Lahaina, HI	43.0	37.1
Kalamazoo-Portage, MI	20.2	11.9
Kankakee, IL	16.5	8.9
Kansas City, MO-KS	19.9	12.1
Kennewick-Richland, WA	14.8	7.6
Killeen-Temple, TX	21.0	11.6
Kingsport-Bristol, TN-VA	21.1	12.9
Kingston, NY	21.8	12.6
Knoxville, TN	22.2	13.9
Kokomo, IN	43.5	50.9
La Crosse-Onalaska, WI-MN	19.5	10.4
Lafayette, LA	19.6	11.2
Lafayette-West Lafayette, IN	26.4	21.1
Lake Charles, LA	20.1	11.1
Lake Havasu City-Kingman, AZ	26.5	19.3

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Lakeland-Winter Haven, FL	17.8	10.9
Lancaster, PA	19.8	11.7
Lansing-East Lansing, MI	19.0	12.5
Laredo, TX	18.6	11.0
Las Cruces, NM	18.3	11.2
Las Vegas-Henderson-Paradise, NV	38.4	29.5
Lawrence, KS	21.1	11.5
Lawton, OK	22.2	12.6
Lebanon, PA	17.7	10.3
Lewiston, ID-WA	19.8	12.5
Lewiston-Auburn, ME	15.8	10.7
Lexington-Fayette, KY	23.3	18.0
Lima, OH	22.4	18.7
Lincoln, NE	17.9	10.3
Little Rock-North Little Rock-Conway, AR	18.3	10.5
Logan, UT-ID	18.0	11.9
Longview, TX	16.6	9.5
Longview, WA	18.3	14.4
Los Angeles-Long Beach-Anaheim, CA	22.9	15.5
Louisville/Jefferson County, KY-IN	22.2	15.2
Lubbock, TX	22.6	12.5
Lynchburg, VA	18.4	10.4
Macon-Bibb County, GA	18.7	11.0
Madera, CA	13.5	8.5
Madison, WI	17.5	8.4
Manchester-Nashua, NH	18.9	9.9
Manhattan, KS	19.3	11.1
Mankato, MN	18.5	11.2
Mansfield, OH	21.7	14.0
Mayagüez, PR	23.6	15.4
McAllen-Edinburg-Mission, TX	18.0	12.1
Medford, OR	22.2	14.7
Memphis, TN-MS-AR	19.3	11.4
Merced, CA	13.3	8.4
Miami-Fort Lauderdale-Pompano Beach, FL	23.9	16.2
Michigan City-La Porte, IN	21.9	12.7
Midland, MI	13.1	5.9
Midland, TX	15.6	6.6
Milwaukee-Waukesha, WI	17.4	9.7
Minneapolis-St. Paul-Bloomington, MN-WI	18.1	9.9

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Missoula, MT	22.6	12.7
Mobile, AL	22.9	16.0
Modesto, CA	17.4	9.7
Monroe, LA	18.7	10.1
Monroe, MI	22.2	13.9
Montgomery, AL	23.4	16.5
Morgantown, WV	17.6	7.9
Morristown, TN	27.2	20.9
Mount Vernon-Anacortes, WA	21.2	13.1
Muncie, IN	21.7	13.8
Muskegon, MI	26.7	17.9
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	37.6	23.8
Napa, CA	22.0	13.9
Naples-Marco Island, FL	30.0	21.8
Nashville-Davidson--Murfreesboro--Franklin, TN	23.0	15.7
New Bern, NC	24.2	16.7
New Haven-Milford, CT	18.2	9.4
New Orleans-Metairie, LA	24.3	15.1
New York-Newark-Jersey City, NY-NJ-PA	18.9	10.6
Niles, MI	29.2	27.2
North Port-Sarasota-Bradenton, FL	25.4	17.3
Norwich-New London, CT	41.0	33.4
Ocala, FL	22.8	16.2
Ocean City, NJ	42.8	23.7
Odessa, TX	17.7	9.5
Ogden-Clearfield, UT	22.3	15.2
Oklahoma City, OK	20.4	12.1
Olympia-Lacey-Tumwater, WA	17.9	9.9
Omaha-Council Bluffs, NE-IA	17.9	9.4
Orlando-Kissimmee-Sanford, FL	31.1	21.3
Oshkosh-Neenah, WI	18.7	11.9
Owensboro, KY	17.9	10.2
Oxnard-Thousand Oaks-Ventura, CA	20.0	11.0
Palm Bay-Melbourne-Titusville, FL	23.1	15.6
Panama City, FL	28.1	18.3
Parkersburg-Vienna, WV	23.4	13.4
Pensacola-Ferry Pass-Brent, FL	23.1	13.6
Peoria, IL	18.0	8.2
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	18.9	10.1

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Phoenix-Mesa-Chandler, AZ	20.6	13.9
Pine Bluff, AR	13.3	8.5
Pittsburgh, PA	18.4	9.3
Pittsfield, MA	22.7	13.4
Pocatello, ID	19.6	10.3
Ponce, PR	18.1	11.4
Portland-South Portland, ME	26.4	19.6
Portland-Vancouver-Hillsboro, OR-WA	19.3	11.0
Port St. Lucie, FL	24.5	18.3
Prescott, AZ	24.9	17.3
Providence-Warwick, RI-MA	22.8	13.3
Provo-Orem, UT	20.3	11.1
Pueblo, CO	18.1	10.5
Punta Gorda, FL	27.3	18.5
Racine, WI	21.1	15.0
Raleigh-Cary, NC	18.9	8.8
Rapid City, SD	25.3	14.7
Reading, PA	18.9	11.2
Redding, CA	18.3	11.7
Reno, NV	24.1	15.5
Richmond, VA	17.7	8.9
Riverside-San Bernardino-Ontario, CA	21.9	14.7
Roanoke, VA	18.8	10.5
Rochester, MN	16.1	7.8
Rochester, NY	16.8	8.7
Rockford, IL	23.7	17.1
Rocky Mount, NC	16.5	9.2
Rome, GA	23.0	15.3
Sacramento-Roseville-Folsom, CA	18.4	9.6
Saginaw, MI	25.5	19.1
St. Cloud, MN	19.7	13.5
St. George, UT	28.2	20.3
St. Joseph, MO-KS	15.2	7.9
St. Louis, MO-IL	21.2	13.0
Salem, OR	17.0	10.7
Salinas, CA	16.7	11.6
Salisbury, MD-DE	30.1	17.3
Salt Lake City, UT	17.5	11.6
San Angelo, TX	21.3	12.3
San Antonio-New Braunfels, TX	22.2	13.9
San Diego-Chula Vista-Carlsbad, CA	23.9	14.0

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
San Francisco-Oakland-Berkeley, CA	19.6	10.1
San Germán, PR	22.9	15.6
San Jose-Sunnyvale-Santa Clara, CA	15.3	4.8
San Juan-Bayamón-Caguas, PR	18.1	11.4
San Luis Obispo-Paso Robles, CA	24.5	13.4
Santa Cruz-Watsonville, CA	21.5	12.5
Santa Fe, NM	29.4	20.2
Santa Maria-Santa Barbara, CA	21.3	12.7
Santa Rosa-Petaluma, CA	20.8	12.4
Savannah, GA	30.4	26.7
Scranton--Wilkes-Barre, PA	17.0	9.3
Seattle-Tacoma-Bellevue, WA	23.0	15.4
Sebastian-Vero Beach, FL	27.1	19.3
Sebring-Avon Park, FL	22.0	14.8
Sheboygan, WI	15.4	7.6
Sherman-Denison, TX	19.3	11.1
Shreveport-Bossier City, LA	21.3	12.4
Sierra Vista-Douglas, AZ	18.4	9.7
Sioux City, IA-NE-SD	16.9	9.8
Sioux Falls, SD	20.2	12.1
South Bend-Mishawaka, IN-MI	21.2	15.0
Spartanburg, SC	26.8	24.4
Spokane-Spokane Valley, WA	19.8	12.0
Springfield, IL	14.3	6.0
Springfield, MA	18.8	11.1
Springfield, MO	20.8	12.9
Springfield, OH	23.1	17.5
State College, PA	17.5	8.3
Staunton, VA	16.0	9.2
Stockton, CA	16.0	10.0
Sumter, SC	18.1	9.5
Syracuse, NY	16.9	9.3
Tallahassee, FL	17.1	8.9
Tampa-St. Petersburg-Clearwater, FL	20.8	12.4
Terre Haute, IN	22.9	15.2
Texarkana, TX-AR	22.5	14.2
The Villages, FL	18.8	12.1
Toledo, OH	24.4	17.9
Topeka, KS	14.6	7.6
Trenton-Princeton, NJ	12.5	5.8
Tucson, AZ	23.8	19.5
Tulsa, OK	21.7	14.5

See footnotes at end of table.

Appendix table A-1. Shares of employment and wages paid in most exposed sectors, by metropolitan statistical area

MSA name	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Tuscaloosa, AL	24.8	20.3
Tyler, TX	19.9	11.6
Urban Honolulu, HI	29.0	21.5
Utica-Rome, NY	19.0	11.8
Valdosta, GA	21.7	11.9
Vallejo, CA	20.4	10.4
Victoria, TX	19.2	10.2
Vineland-Bridgeton, NJ	15.5	9.3
Virginia Beach-Norfolk-Newport News, VA-NC	26.5	19.9
Visalia, CA	13.0	8.2
Waco, TX	20.4	14.3
Walla Walla, WA	13.5	7.4
Warner Robins, GA	22.6	12.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	17.5	7.9
Waterloo-Cedar Falls, IA	18.3	12.7
Watertown-Fort Drum, NY	21.2	12.2
Wausau-Weston, WI	16.6	9.6
Weirton-Steubenville, WV-OH	18.8	9.8
Wenatchee, WA	17.4	11.1
Wheeling, WV-OH	19.4	9.6
Wichita, KS	28.9	26.1
Wichita Falls, TX	22.8	16.2
Williamsport, PA	18.8	11.2
Wilmington, NC	26.4	16.2
Winchester, VA-WV	17.7	10.0
Winston-Salem, NC	20.7	13.1
Worcester, MA-CT	17.2	9.4
Yakima, WA	12.1	9.0
York-Hanover, PA	17.1	8.8
Youngstown-Warren-Boardman, OH-PA	20.6	11.5
Yuba City, CA	15.4	9.4
Yuma, AZ	20.3	12.9

Source: U.S. Bureau of Labor Statistics.

Appendix table A-2. Shares of employment and wages paid in most exposed sectors, by nonmetropolitan statistical areas of states

State	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Alabama	22.8	19.3

See footnotes at end of table.

Appendix table A-2. Shares of employment and wages paid in most exposed sectors, by nonmetropolitan statistical areas of states

State	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Alaska	18.1	9.6
Arizona	17.3	8.9
Arkansas	16.0	10.3
California	20.8	13.6
Colorado	26.5	18.5
Connecticut	21.1	13.7
Florida	22.3	16.2
Geogia	21.4	17.0
Hawaii	32.2	26.1
Idaho	18.1	11.3
Illinois	18.6	12.3
Indiana	23.7	20.4
Iowa	15.4	10.1
Kansas	14.8	9.0
Kentucky	19.2	12.6
Louisiana	15.7	10.1
Maine	19.5	12.5
Maryland	20.8	12.8
Massachusetts	26.6	16.0
Michigan	23.6	16.9
Minnesota	17.9	10.3
Mississippi	21.2	15.5
Missouri	20.1	13.1
Montana	22.0	12.5
Nebraska	15.2	9.6
Nevada	24.9	14.0
New Hampshire	21.2	12.8
New Mexico	18.1	8.9
New York	18.5	11.0
North Carolina	20.8	13.8
North Dakota	15.7	7.3
Ohio	22.8	16.4
Oklahoma	19.1	11.6
Oregon	20.7	13.6
Pennsylvania	16.5	9.1
South Carolina	19.1	12.5
South Dakota	18.6	12.2
Tennessee	25.5	19.3
Texas	15.5	9.1
Utah	26.8	16.8
Vermont	21.1	14.4
Virginia	16.8	10.7
Washington	17.3	11.9
West Virginia	17.7	10.8

See footnotes at end of table.

Appendix table A-2. Shares of employment and wages paid in most exposed sectors, by nonmetropolitan statistical areas of states

State	Share of June 2019 employment in most exposed sectors	Share of second quarter 2019 wages paid in most exposed sectors
Wisconsin	20.2	12.1
Wyoming	20.5	10.0

Source: U.S. Bureau of Labor Statistics.

SUGGESTED CITATION

Matthew Dey and Mark A. Loewenstein, "How many workers are employed in sectors directly affected by COVID-19 shutdowns, where do they work, and how much do they earn?," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, April 2020, https://doi.org/10.21916/mlr.2020.6.

NOTES

1 "Quarterly Census of Employment and Wages" (U.S. Bureau of Labor Statistics), https://www.bls.gov/cew/; and "Occupational Employment Statistics" (U.S. Bureau of Labor Statistics), https://www.bls.gov/oes/home.htm.

2 Joseph S. Vavra, "Shutdown sectors represent large share of all U.S. employment" (Chicago, IL: Becker Friedman Institute for Economics at the University of Chicago, March 31, 2020), https://bfi.uchicago.edu/insight/blog/key-economic-facts-about-covid-19/. In his communication with us, Vavra made it clear that his designation of certain industries as being highly exposed was subjective, but we found his listing quite reasonable. One could quibble about certain industries, but we are convinced that reasonable modifications to the list are likely to have relatively minor effects on our overall findings.

3 "Current Employment Statistics—CES (national)" (U.S. Bureau of Labor Statistics), https://www.bls.gov/ces/.

4 Covered employees in the private sector and in state and local governments include most corporate officials, all executives, all supervisory personnel, all professionals, all clerical workers, many farmworkers, all wage earners, all piece workers, and all part-time workers. Workers on paid sick leave, paid holiday, paid vacation, and the like are also covered. Importantly, the QCEW excludes proprietors, the unincorporated self-employed, unpaid family members, and certain farm and domestic workers from having to report employment data; railroad workers covered by the railroad unemployment insurance system are also excluded. The QCEW is an establishment-based survey. We obtain firm estimates by grouping establishments with the same federal Employer Identification Number.

5 The employment shares in figure 1, which are obtained from the QCEW, are very similar to those Vavra obtains by using the CES. The QCEW is the sampling frame for the CES. Thus, as detailed in the previous note, independent contractors, freelancers, and other unincorporated self-employed workers are excluded from both sets of estimates.

6 Because occupational employment is lumpy, the employment of occupations that span the deciles is distributed so that exactly 10 percent of employment is in each decile. Our classification scheme ignores wage variation within occupations (which is much less important than variation across occupations).

7 Carlos Garriga, Juan Sanchez, and Ryan Mather, "How closing restaurants and hotels spills over to total employment," *On the Economy Blog* (Federal Reserve Bank of St. Louis, April 2, 2020), https://www.stlouisfed.org/on-the-economy/2020/april/closing-restaurants-hotels-spills-total-employment.

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