Career Outlook

BLS

Mapping “The Hunger Games”: Using location quotients to find the Districts of Panem

Elizabeth Cross | February 2017

“…Panem, the country that rose up out of the ashes of a place that was once called North America.” –The Hunger Games (Scholastic Press)

In *The Hunger Games*, author Suzanne Collins never reveals the exact locations of the Districts of Panem. What if you could map them by using data from the U.S. Bureau of Labor Statistics (BLS)?

Fans of the popular *The Hunger Games* trilogy know that the stories are set in Panem, a futuristic area previously called North America, with a capital located somewhere in what was known as the Rockies. Panem is divided into districts, each of which has a primary industry. BLS employment data can help you solve the puzzle of where in North America those districts would be.

Keep reading to learn how to use BLS data to identify 12 districts of Panem. Because BLS data cover the United States, this article uses clues from U.S. locations rather than from North America as a whole.

Finding data: Total employment and location quotients

Each district's primary industry offers the best evidence of its geographic location. To find where an industry has a high concentration of workers, look at employment data by industry and occupation. Industry employment data tell you how many workers are in a particular type of firm or group of firms; occupation employment data tell you how many workers do a similar set of tasks.

Two BLS sources of employment data that will help in your analysis are the Quarterly Census of Employment and Wages (QCEW) and the Occupational Employment Statistics (OES) programs. QCEW data show industry employment and are provided here at the county level. OES data for occupation employment are shown here for metropolitan and nonmetropolitan statistical areas.

Total employment. Total employment can show you where lots of workers are in an industry or occupation. But the total number employed also may highlight areas where there are a lot of workers in every industry or occupation, such as large cities. Identifying a large number of workers doesn't give you enough information for locating the districts.

Instead, you want to find where there are high concentrations of workers in a particular industry or occupation compared with the nation as a whole. For that, you'll need the location quotient.

Location quotient. The location quotient is a ratio of the percentage of workers in an industry or occupation in a certain area to the percentage of workers in that industry or occupation nationally. A location quotient greater than 1.0 indicates a higher-than-average concentration for an industry or occupation.

For example, according to the 2015 OES estimates, actors make up .0367 percent of national employment. However, more than one-third of all actor employment is concentrated in California and makes up .1103 percent of that state's total employment. To calculate the location quotient for actors in California, you divide the percentage of the occupation's employment in California (.1103) by the percentage of employment nationally (.0367) to get a ratio of 3.01—indicating a higher-than-average concentration of actors in California. (See illustration.)

Do the math!

There are 50,570 actors in the United States out of 137,896,660 total employees, or

$$\frac{50{,}570}{137{,}896{,}660} \times 100\% = .0367\%$$

In California, there are 17,090 actors out of 15,496,600 employees, or

$$\frac{17{,}090}{15{,}496{,}600} \times 100\% = .1103\%$$

The location quotient for actors in California is calculated by dividing the percentage in California by the percentage in the United States:

$$\frac{.1103\%}{.0367\%} = 3.01$$

Finding District 12: Coal mining

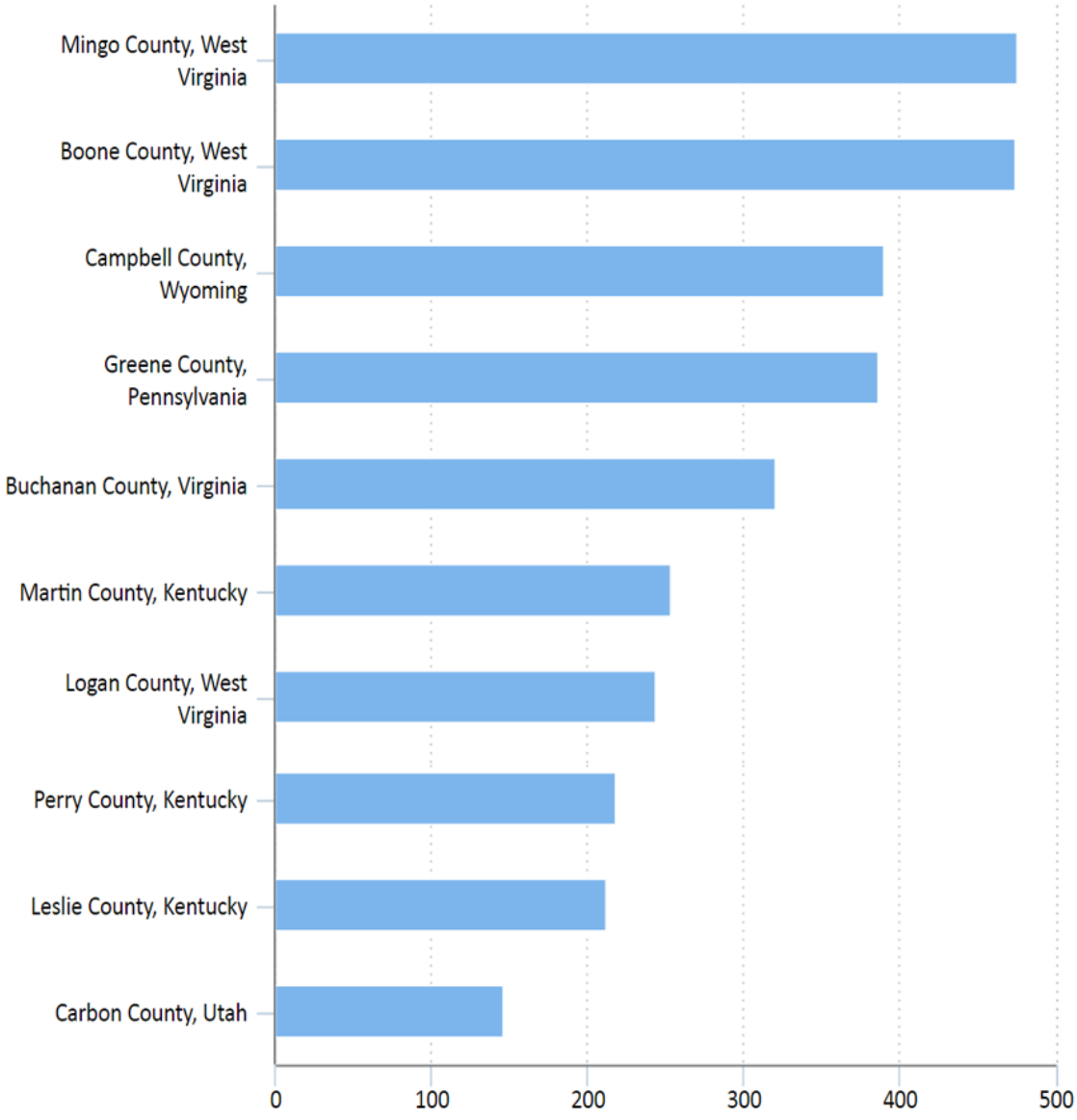
"Even hundreds of years ago, they mined coal here." –The Hunger Games

To use data to find the districts of Panem, you'll need to look for areas with the highest location quotients for the industries and occupations associated with each district. Begin with the district in which Katniss Everdeen, the protagonist of *The Hunger Games*, lived.

Industry location quotients. Using QCEW annual averages for 2015, chart 1 ranks the counties with the highest location quotients for the coal mining industry. Mingo County, West Virginia, had the highest location quotient.

In the United States, there were 64,135 workers in the coal mining industry out of 139,491,699 total workers, or about .05 percent. In Mingo County, there were 1,216 workers in the coal mining industry out of 5,563 total workers. Thus, (1,216/5,563) × 100 percent, or about 22 percent, of the workers in Mingo County were employed in coal mining.

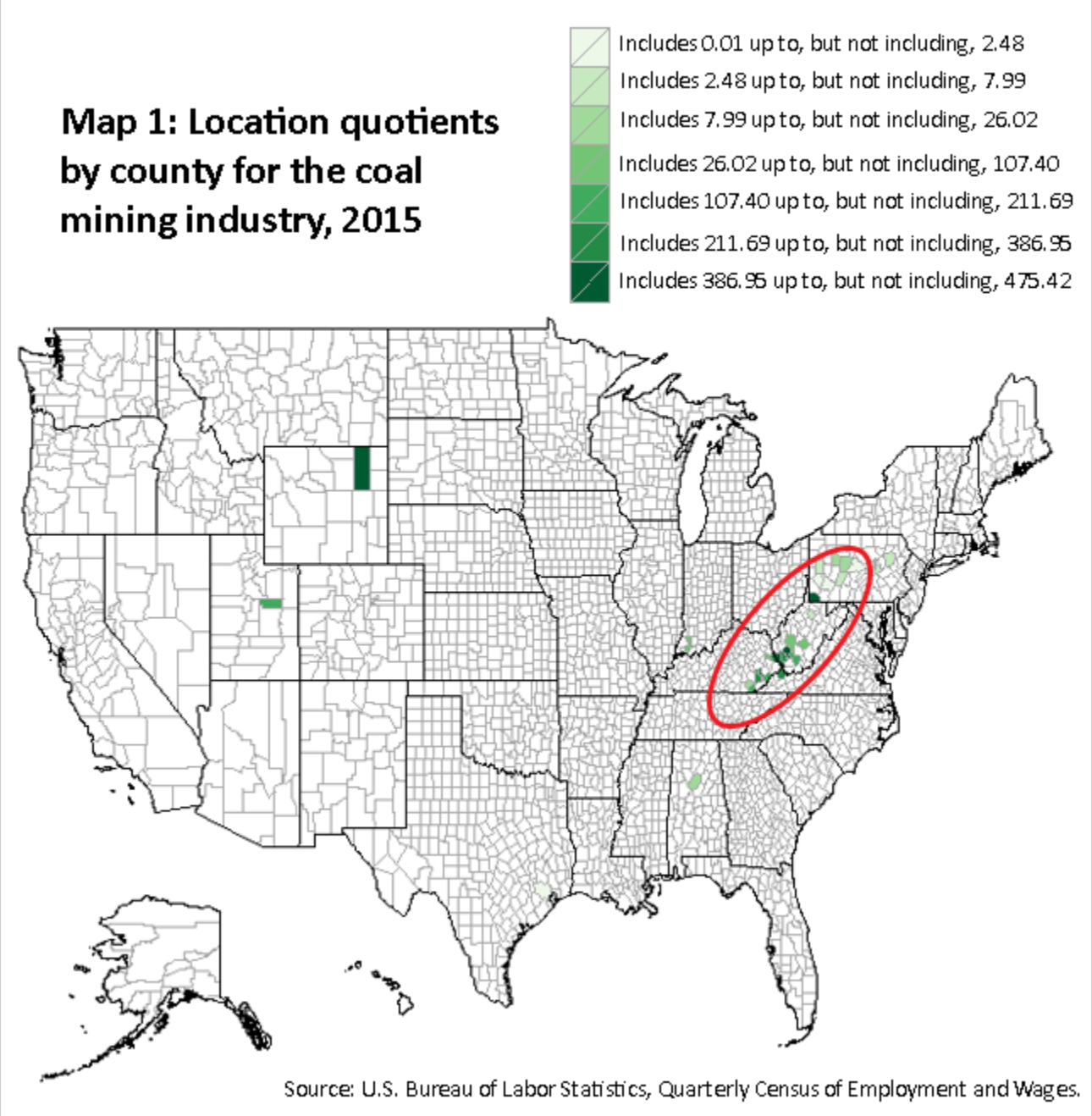
Chart 1. Counties with the highest location quotients in the coal mining industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

To get the location quotient, divide the percentage of workers in coal mining in Mingo County (22) by the percentage nationally (.05). The result is a ratio of 440. (The data used to calculate this number were rounded to simplify the math, so the value shown here differs from the value shown in chart 1.) In other words, Mingo County has more than 400 times the concentration of coal mining employment nationally.

Mapping the industry location quotients shows a concentration of coal mining in an area that encompasses Kentucky, West Virginia, and Pennsylvania. (See map.)



Occupation location quotients. In addition to using industry data to see where coal mining employment is concentrated, you can use occupation data to search for District 12. Occupation employment in the coal mining industry helps you find the occupation in which that industry is the largest employer.

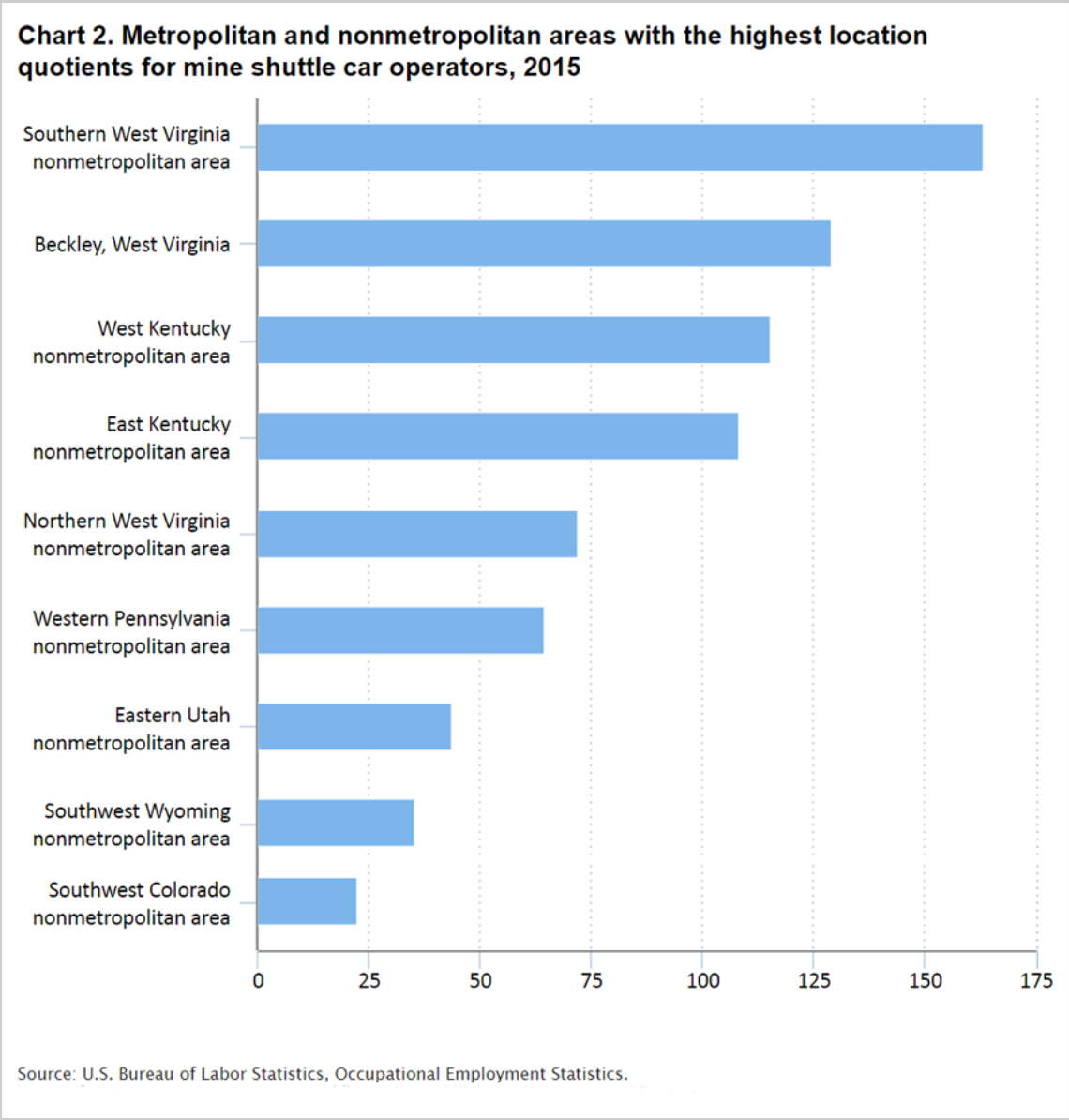
As table 1 shows, nearly all mine shuttle car operators worked in the coal mining industry in 2015. Mine shuttle car operators use shuttle cars to transport materials in underground mines. Location quotients for mine shuttle car operators are a good indicator of where mining activity is concentrated.

Table 1. Occupations in which the coal mining industry is the largest employer, 2015

Occupation	Percent of occupation in coal mining	Total employment	Employment in coal mining
Mine shuttle car operators	93.5	2,310	2,160
Roof bolters, mining	93.1	5,220	4,860
Loading machine operators, underground mining	60.7	3,210	1,950

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Using the 2015 OES estimates, chart 2 ranks the metropolitan and nonmetropolitan areas with the highest location quotients for mine shuttle car operators. With a location quotient of 163.50, the Southern West Virginia nonmetropolitan area had the highest location quotient for mine shuttle car operators. This nonmetropolitan area comprises many counties, including Mingo County.



Conclusion. On the basis of statistical evidence, District 12 is most likely located in an area comprising parts of Kentucky, West Virginia, and Pennsylvania. This tristate area is where employment in the coal mining industry and its associated occupations are concentrated.

Finding other districts: Your turn

Every district of Panem has a dominant industry. Profiles for each district use QCEW and OES data; links to these industry profiles for each district are given below. The data may provide clues, but results are open to interpretation. Using these data, create your own map of Panem.

"And may the odds be ever in your favor." –The Hunger Games

District data links

[District 1: Luxury goods](#)

[District 2: Rock quarrying](#)

[District 3: Electronic goods manufacturing](#)

[District 4: Fishing](#)

[District 5: Power generation](#)

[District 6: Transportation manufacturing](#)

[District 7: Lumber](#)

[District 8: Textiles](#)

[District 9: Grain](#)

[District 10: Livestock](#)

[District 11: Crops](#)

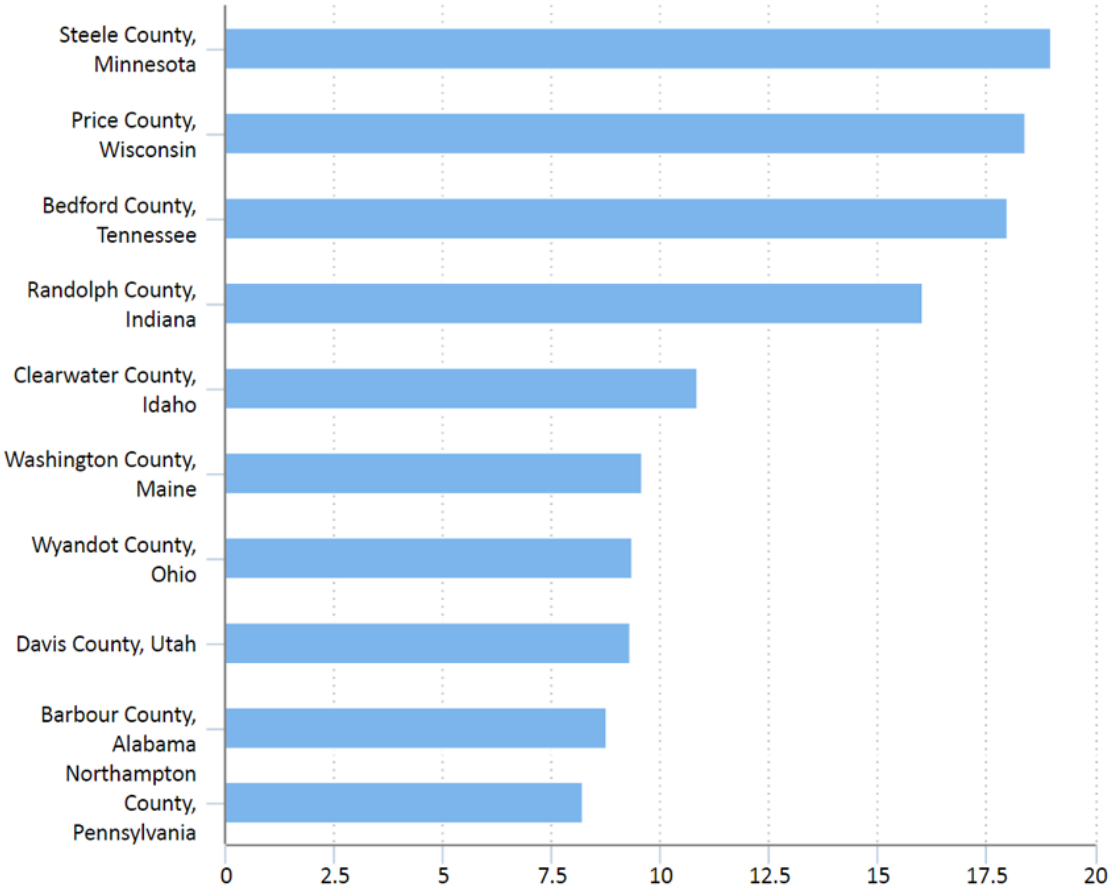
[District 12: Coal mining](#)

District 1

Luxury goods

Note: The North American Industry Classification System groups this industry under “other miscellaneous manufacturing.”

Chart 3. Counties with the highest location quotients in the other miscellaneous manufacturing industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

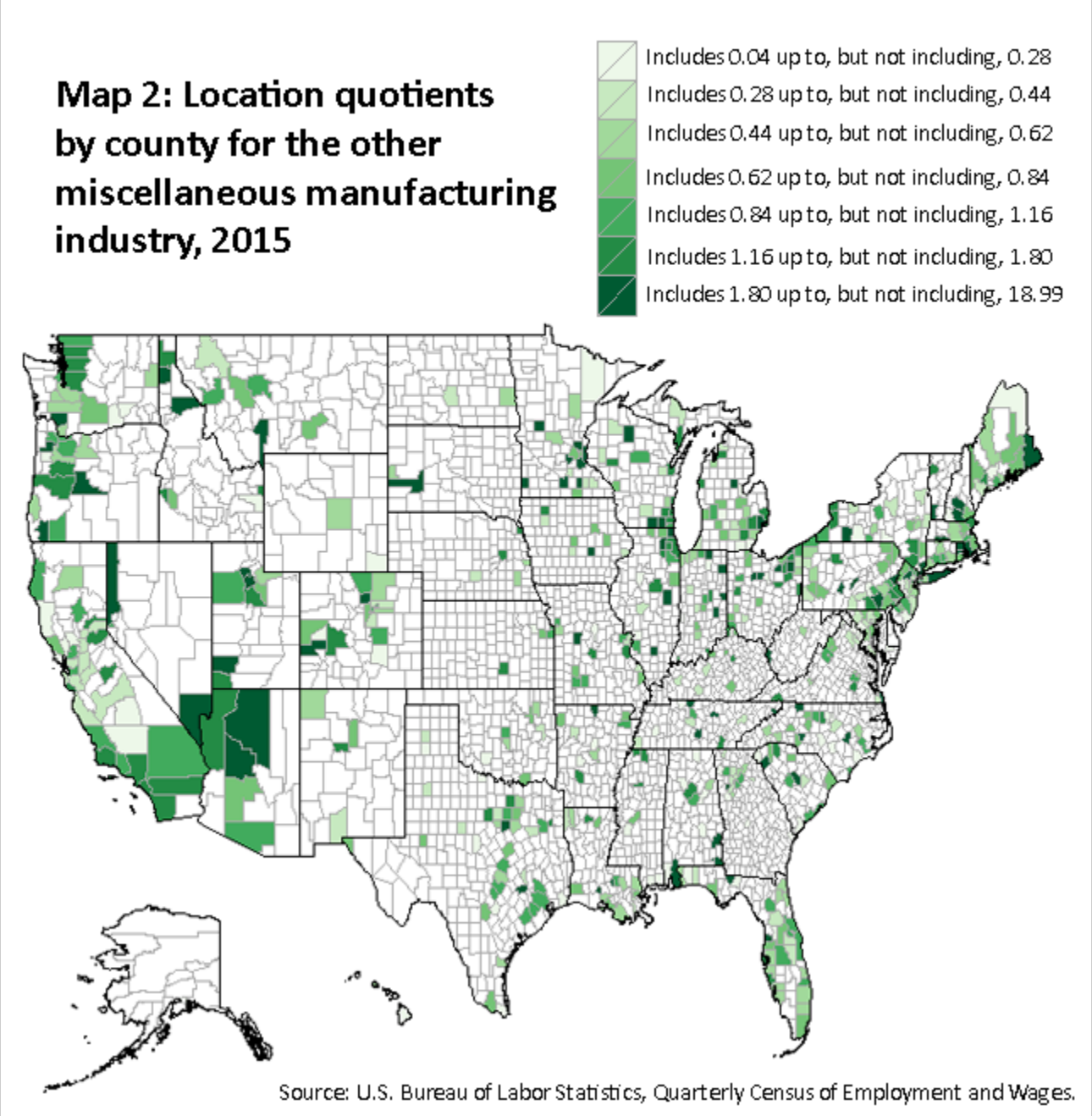


Table 2. Occupations in which the other miscellaneous manufacturing industry is a large employer, 2015

Occupation	Percent of occupation in other miscellaneous manufacturing	Total employment	Employment in other miscellaneous manufacturing
Jewelers and precious stone and metal workers	28.3	25,270	7,160
Etchers and engravers	15.8	9,490	1,500

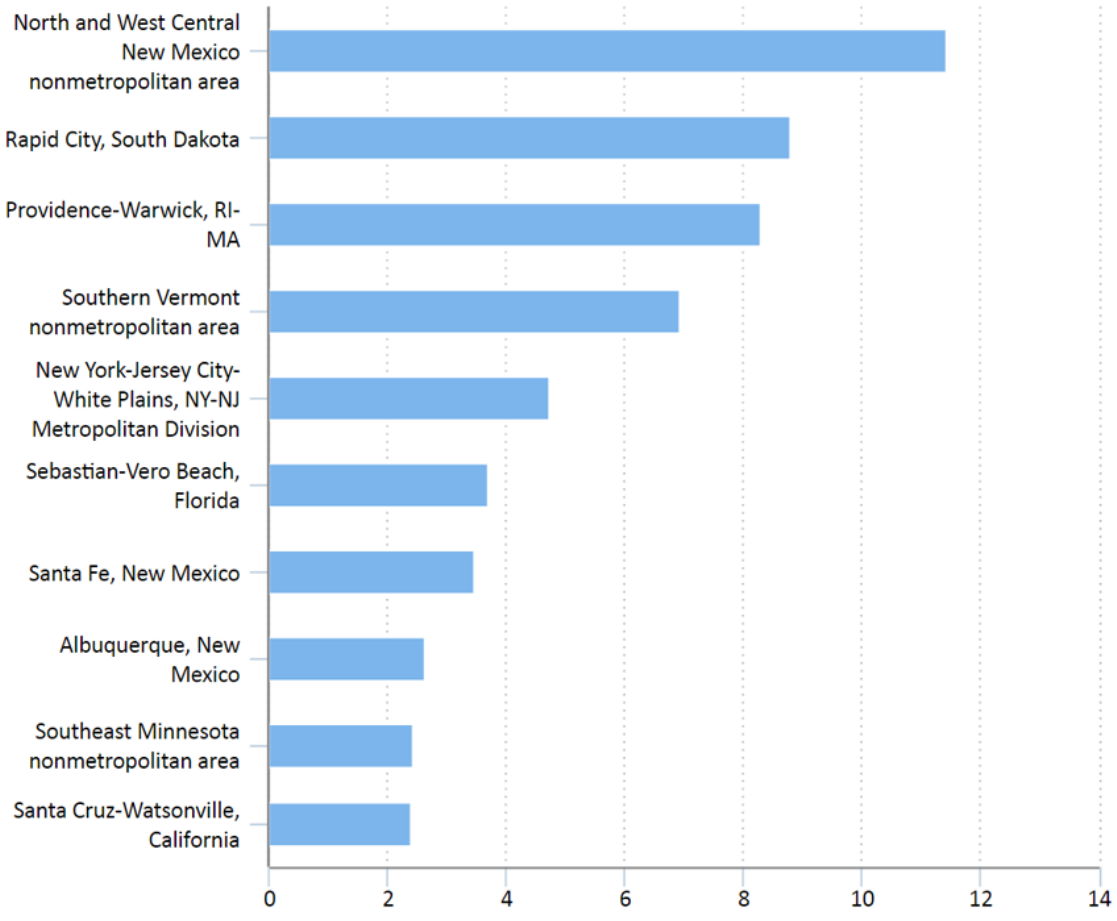
See footnotes at end of table.

Table 2. Occupations in which the other miscellaneous manufacturing industry is a large employer, 2015

Occupation	Percent of occupation in other miscellaneous manufacturing	Total employment	Employment in other miscellaneous manufacturing
Painting, coating, and decorating workers	14.3	16,020	2,290

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Chart 4. Areas with the highest location quotients for jewelers and precious stone and metal workers, 2015



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

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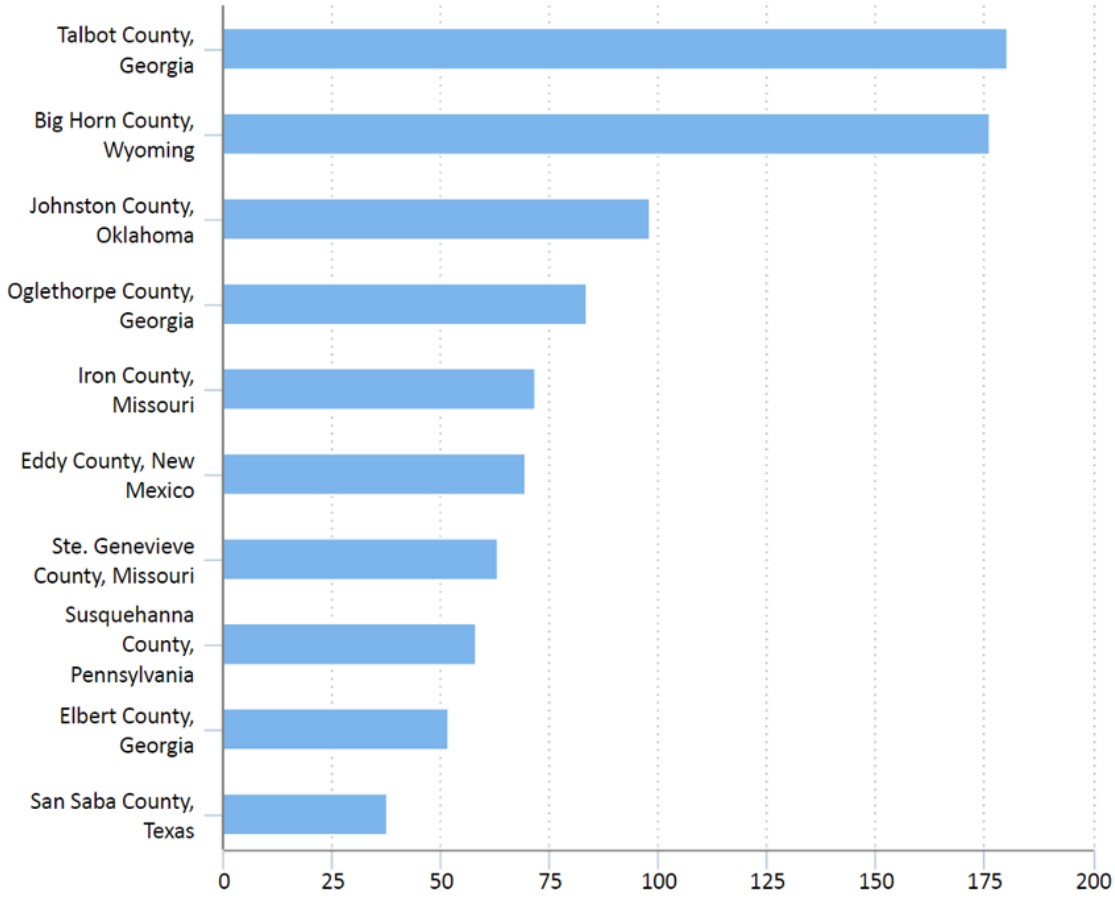
District 2

Rock quarrying

Note: The North American Industry Classification System groups this industry under “nonmetallic mineral mining and quarrying.”

Chart 5. Counties with the highest location quotients in the nonmetallic mineral mining and quarrying industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

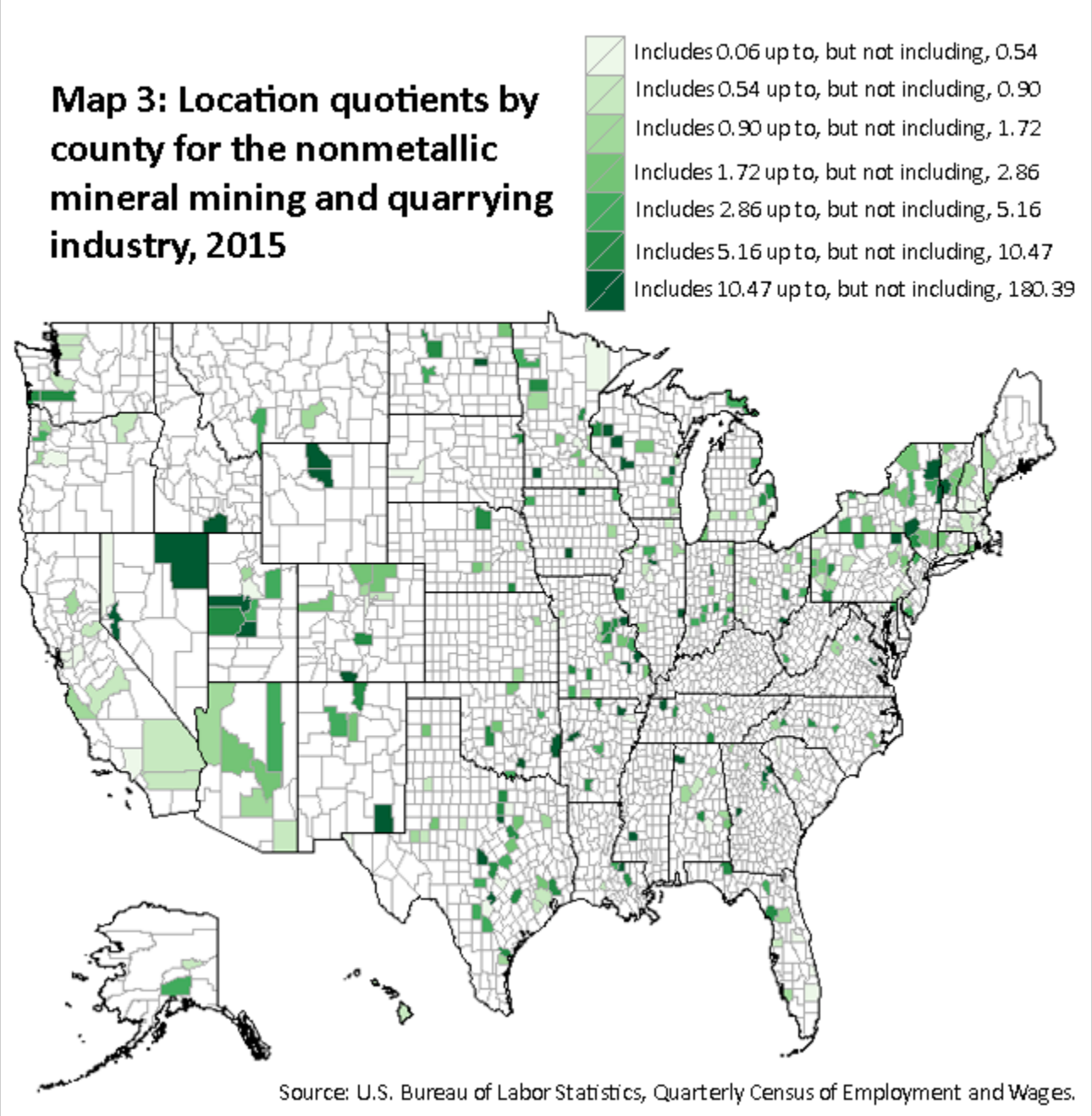


Table 3. Occupations in which the nonmetallic mineral mining and quarrying industry is the largest employer, 2015

Occupation	Percent of occupation in nonmetallic mineral mining and quarrying	Total employment	Employment in nonmetallic mineral mining and quarrying
Rock splitters, quarry	80.5	3,790	3,050
Dredge operators	46.5	1,850	860

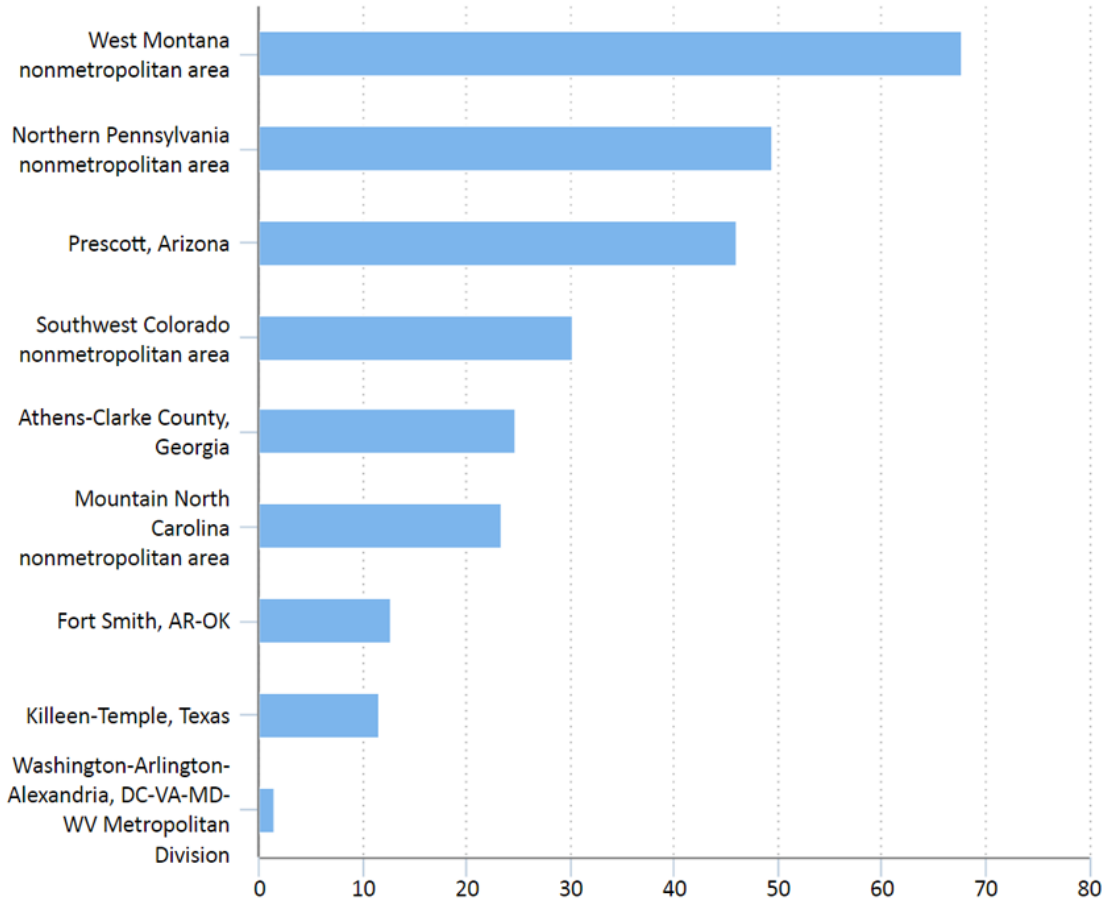
See footnotes at end of table.

Table 3. Occupations in which the nonmetallic mineral mining and quarrying industry is the largest employer, 2015

Occupation	Percent of occupation in nonmetallic mineral mining and quarrying	Total employment	Employment in nonmetallic mineral mining and quarrying
Crushing, grinding, and polishing machine setters, operators, and tenders	12.2	31,140	3,800

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Chart 6. Areas with the highest location quotients for quarry rock splitters, 2015



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

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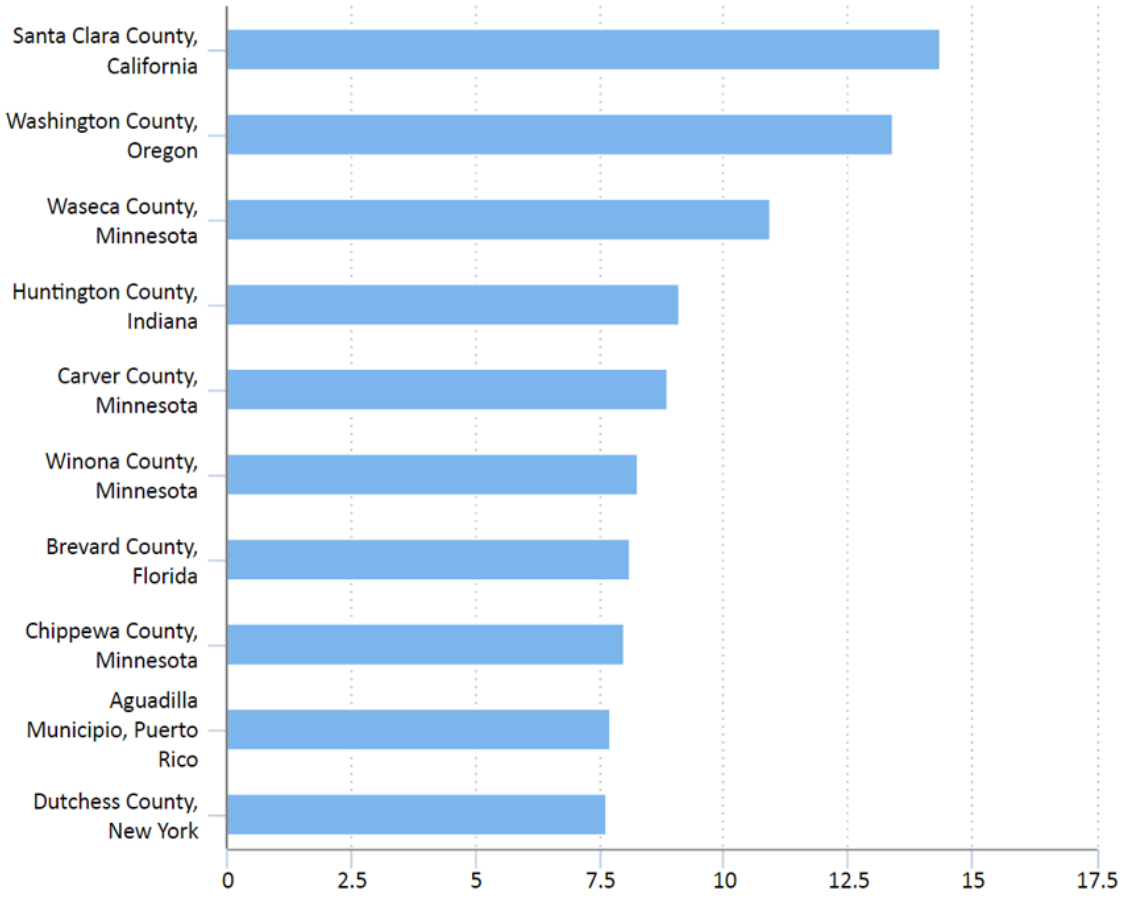
District 3

Electronic goods manufacturing

Note: The North American Industry Classification System groups this industry under “computer and electronic product manufacturing.”

Chart 7. Counties with the highest location quotients in the computer and electronic product manufacturing industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

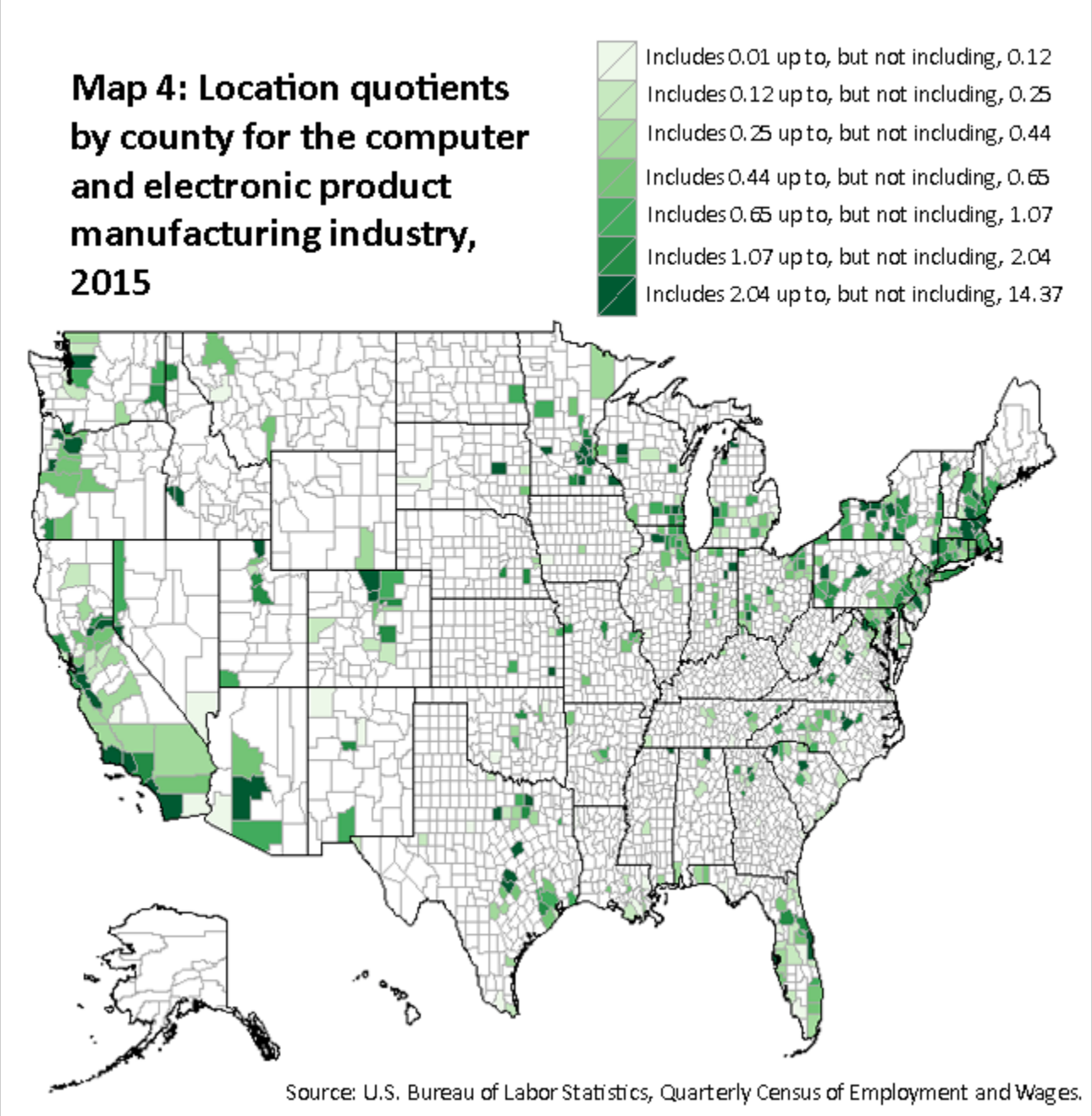


Table 4. Occupations in which the computer and electronic product industry is the largest employer, 2015

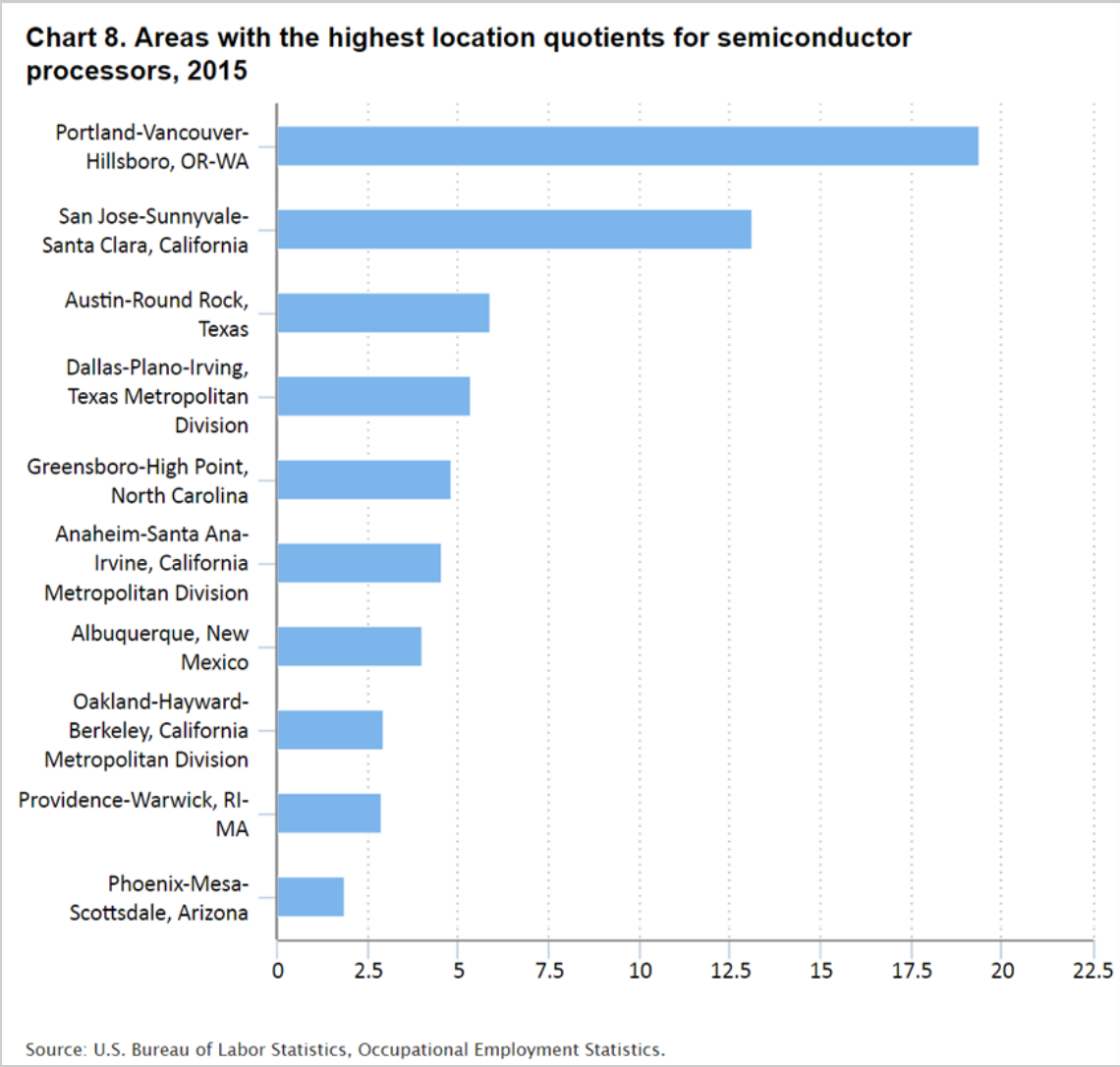
Occupation	Percent of occupation in computer and electronic products manufacturing	Total employment	Employment in computer and electronic products manufacturing
Semiconductor processors	93.1	24,230	22,570

See footnotes at end of table.

Table 4. Occupations in which the computer and electronic product industry is the largest employer, 2015

Occupation	Percent of occupation in computer and electronic products manufacturing	Total employment	Employment in computer and electronic products manufacturing
Timing device assemblers and adjusters	46.2	1,190	550
Electrical and electronic equipment assemblers	45.8	212,170	97,200
Computer hardware engineers	37.4	75,870	28,370
Electromechanical equipment assemblers	30.3	46,400	14,060
Electrical and electronics engineering technicians	27.3	139,080	38,010
Electro-mechanical technicians	26.8	14,720	3,950
Industrial engineering technicians	20.4	62,290	12,730

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.



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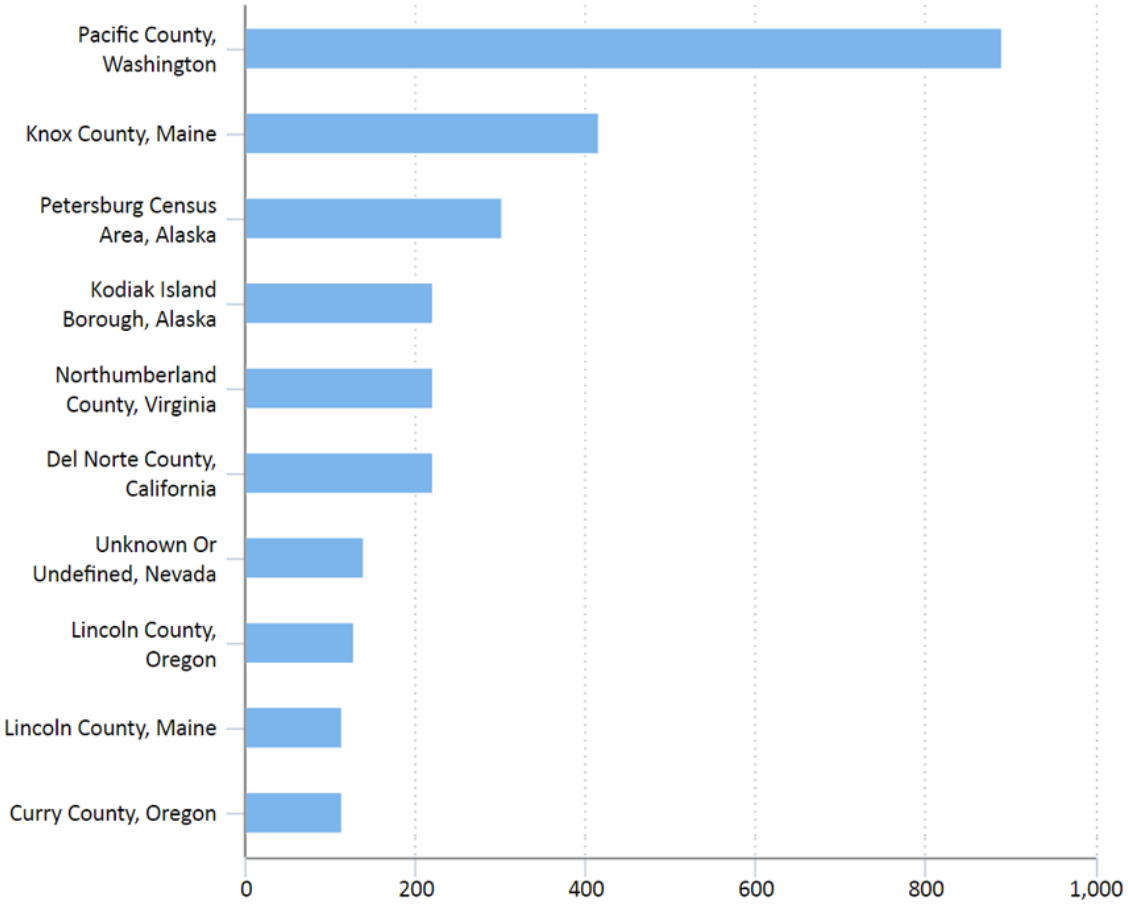
District 4

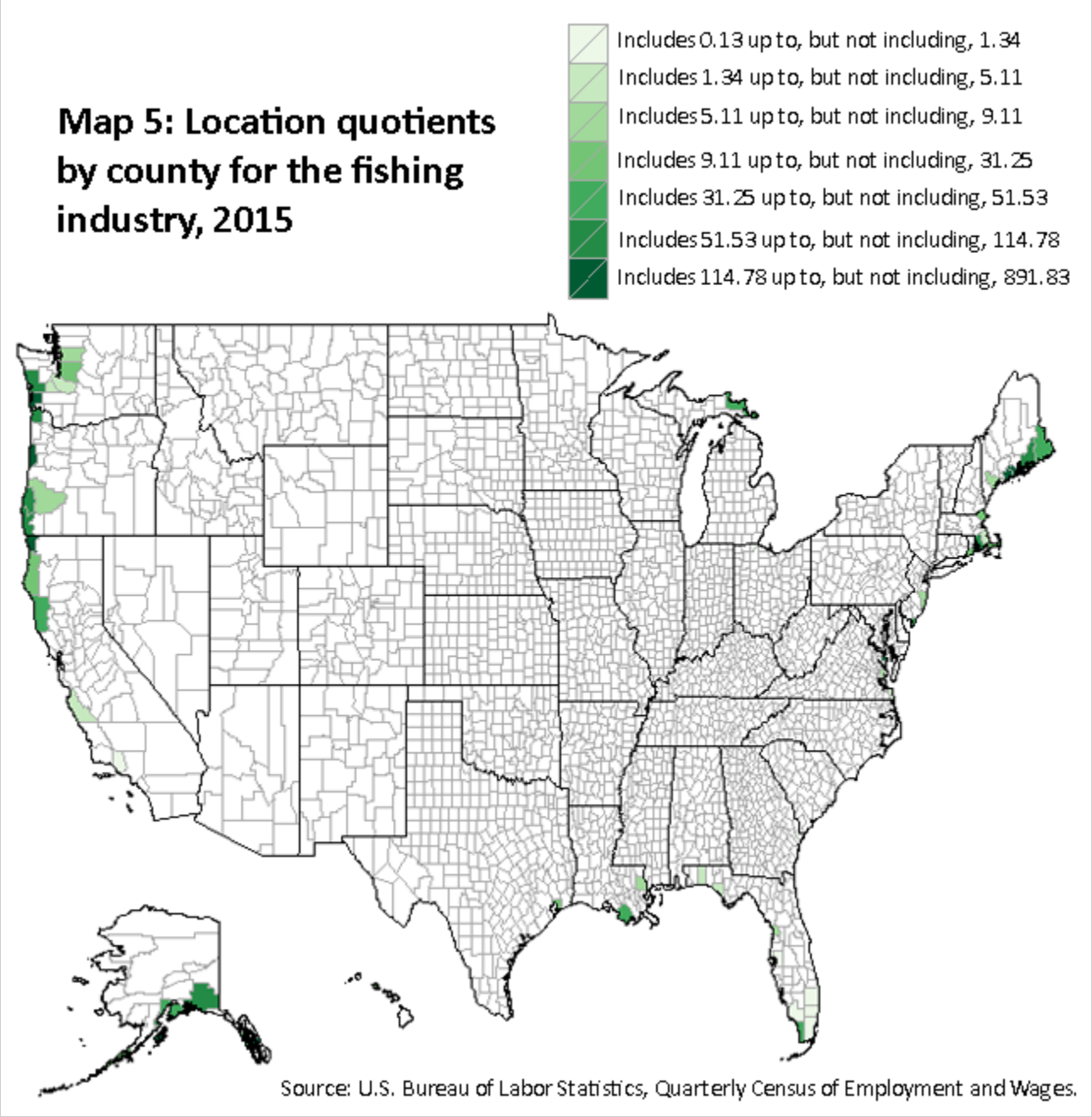
Fishing

Note : The OES survey excludes most of the agricultural sector, with the exception of logging, support activities for crop production, and support activities for animal production. The OES survey does not include the fishing industry; therefore, occupation location quotients cannot be calculated.

Chart 9. Counties with the highest location quotients in the fishing industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



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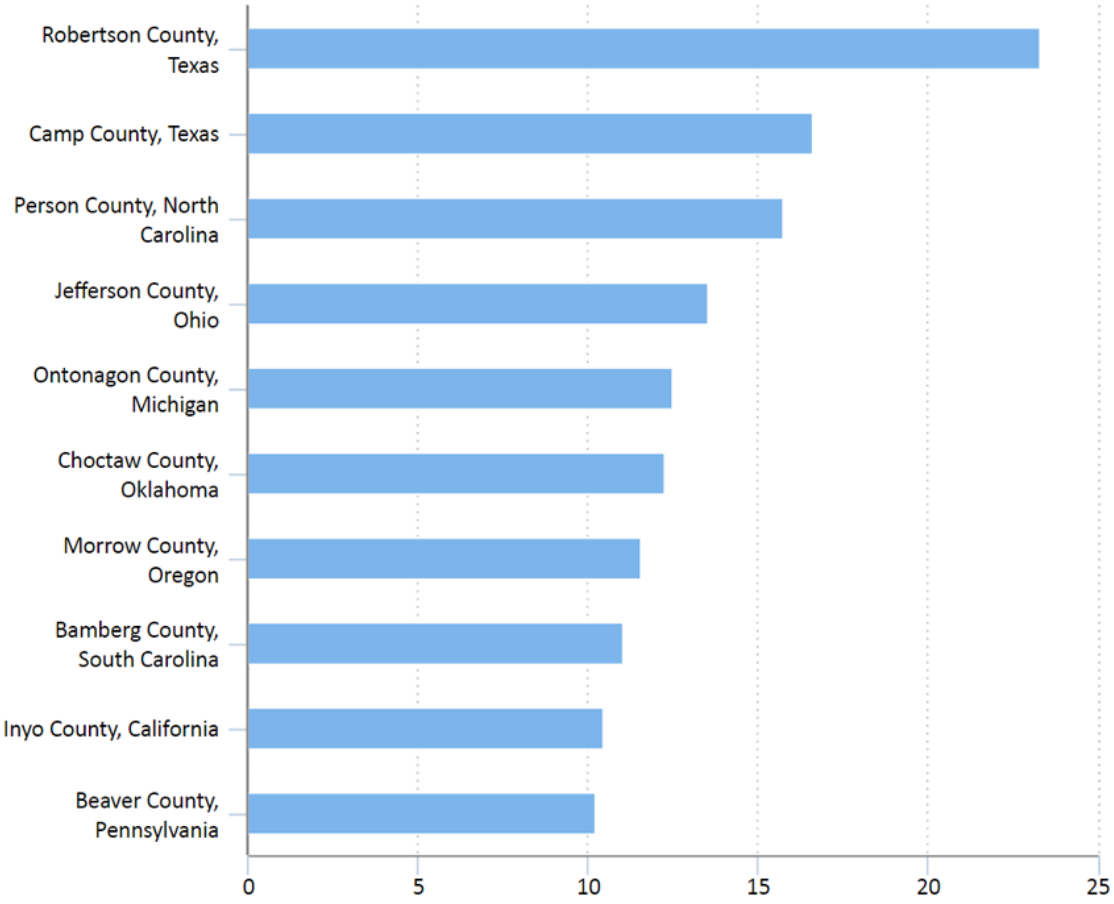
District 5

Power generation

Note: The North American Industry Classification System groups this industry under “electric power generation, transmission and distribution.”

Chart 10. Counties with the highest location quotients in the electric power generation, transmission and distribution industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

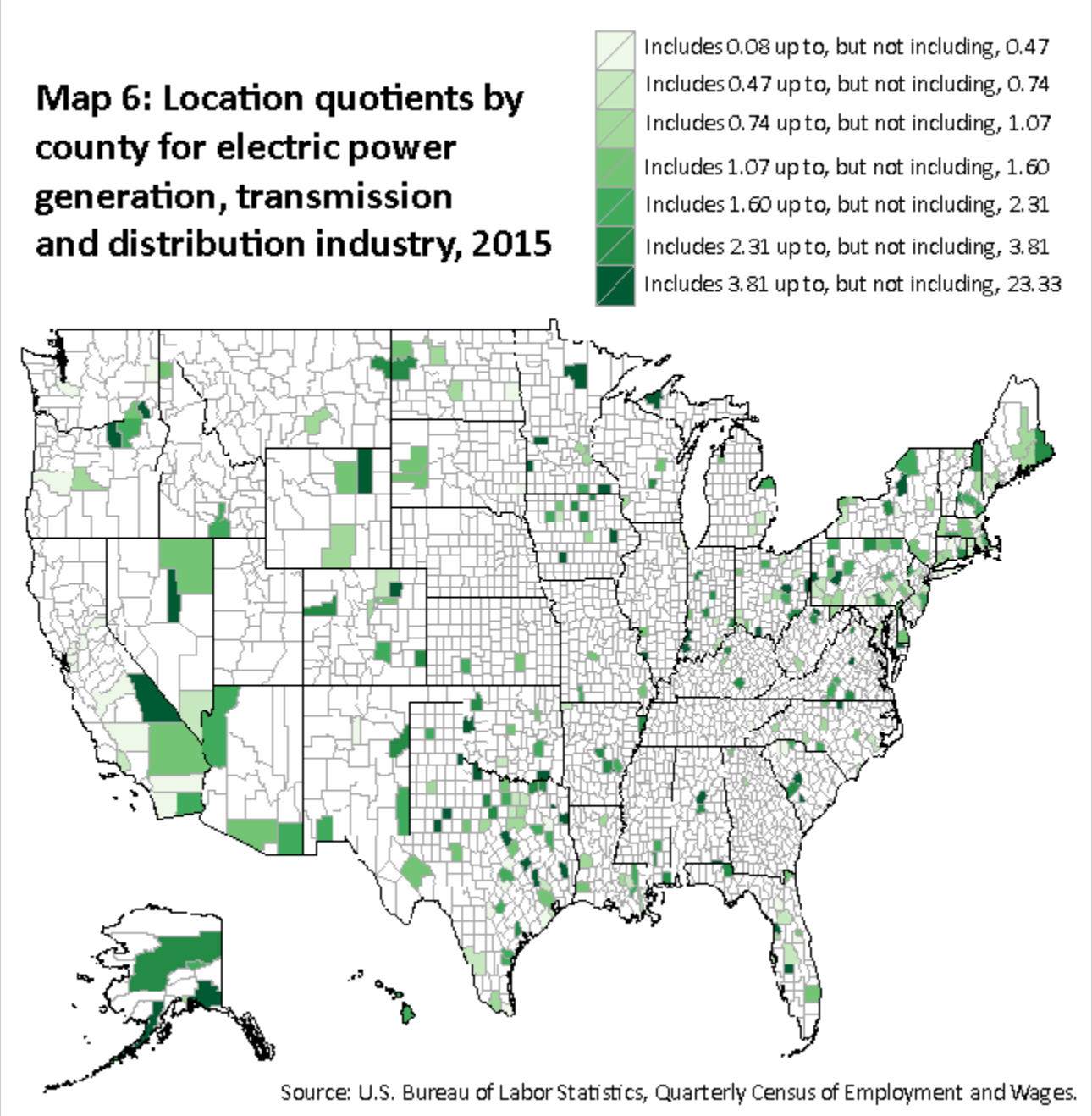


Table 5. Selected occupations in which the electric power generation, transmission and distribution industry is the largest employer, 2015

Occupation	Percent of occupation in electric power generation, transmission and distribution	Total employment	Employment in electric power generation, transmission and distribution
Power plant operators	70.0	37,510	26,240

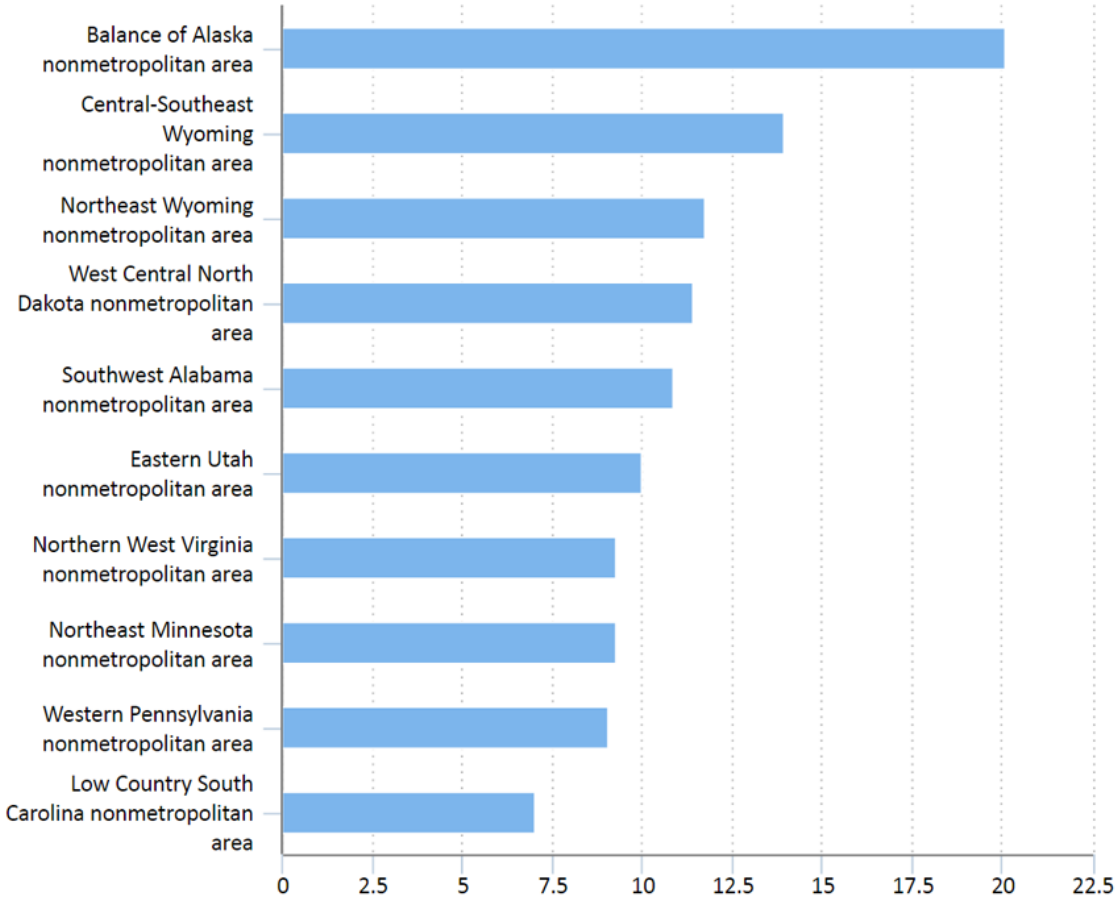
See footnotes at end of table.

Table 5. Selected occupations in which the electric power generation, transmission and distribution industry is the largest employer, 2015

Occupation	Percent of occupation in electric power generation, transmission and distribution	Total employment	Employment in electric power generation, transmission and distribution
Electrical and electronics repairers, powerhouse, substation, and relay	65.3	23,070	15,060
Nuclear technicians	64.9	6,500	4,220
Power distributors and dispatchers	61.3	11,540	7,070
Electrical power-line installers and repairers	48.8	115,380	56,270
Nuclear engineers	43.0	16,880	7,250

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Chart 11. Areas with the highest location quotients for power plant operators, 2015



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

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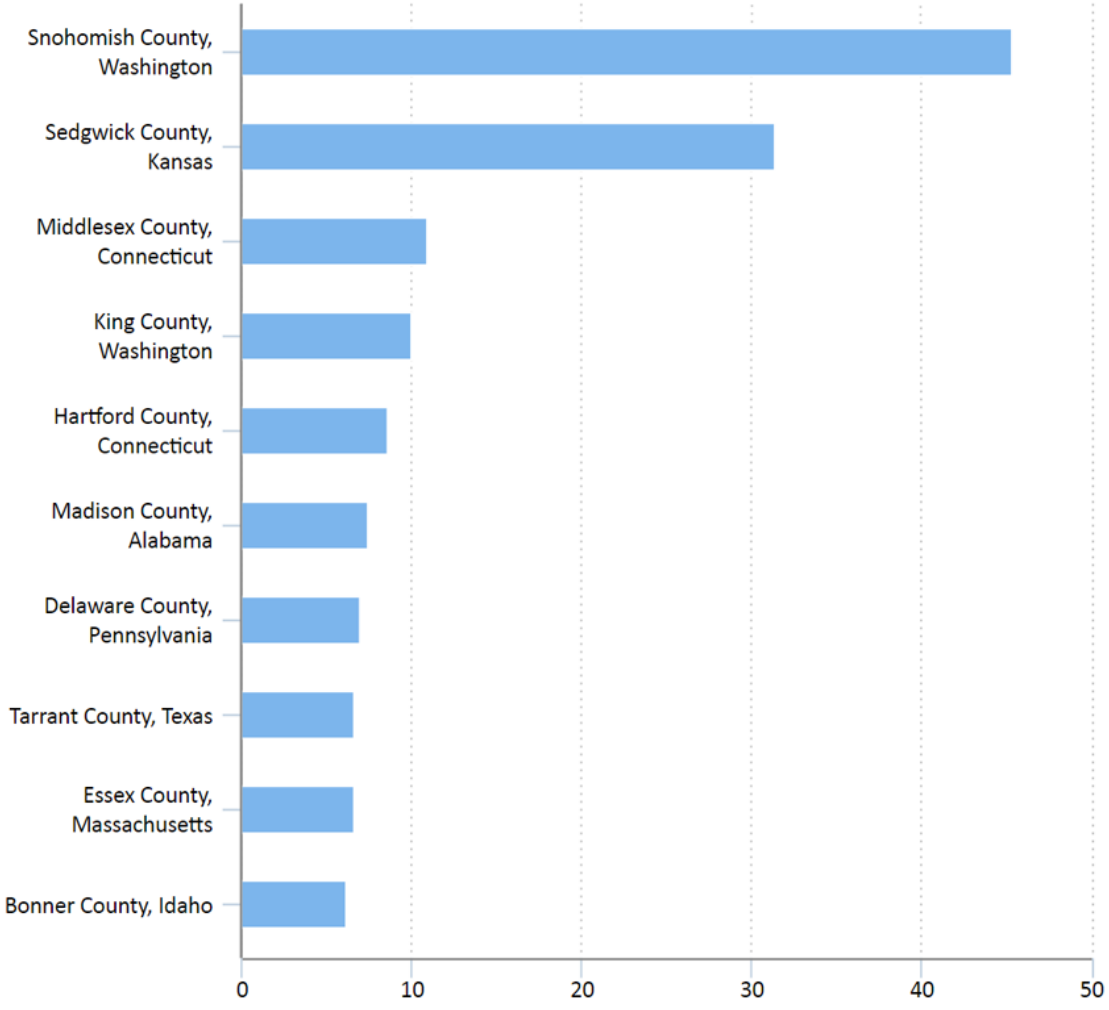
District 6

Transportation manufacturing

Note: The North American Industry Classification System groups this industry under “aerospace product and parts manufacturing.”

Chart 12. Counties with the highest location quotients in the aerospace product and parts manufacturing industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

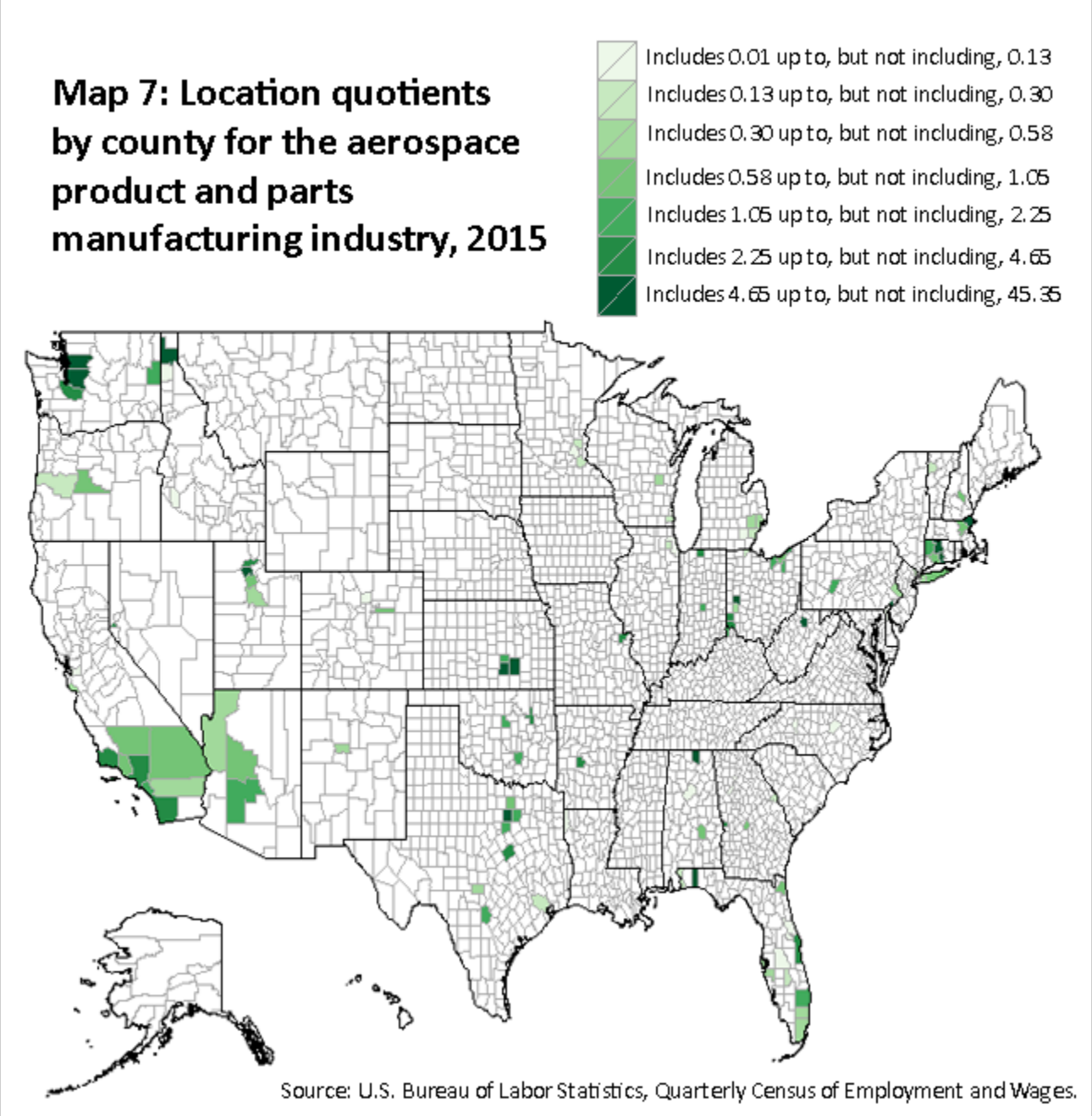


Table 6. Occupations in which the aerospace product and parts manufacturing industry is the largest employer, 2015

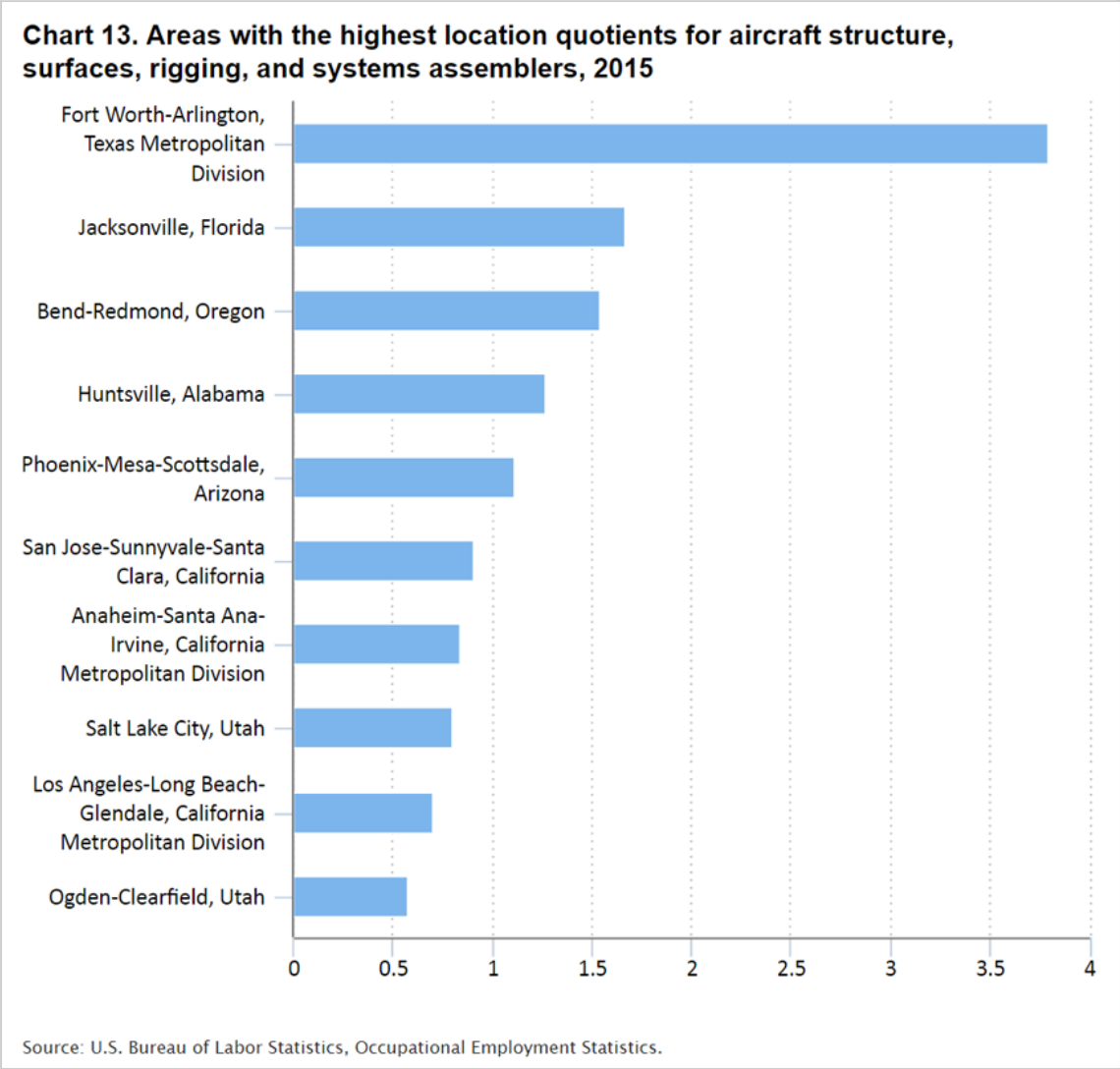
Occupation	Percent of occupation in aerospace product and parts manufacturing	Total employment	Employment in aerospace product and parts manufacturing
Aircraft structure, surfaces, rigging, and systems assemblers	91.4	42,810	39,110

See footnotes at end of table.

Table 6. Occupations in which the aerospace product and parts manufacturing industry is the largest employer, 2015

Occupation	Percent of occupation in aerospace product and parts manufacturing	Total employment	Employment in aerospace product and parts manufacturing
Aerospace engineers	40.1	66,980	26,840
Aerospace engineering and operations technicians	33.7	12,890	4,340
Avionics technicians	30.5	17,340	5,290
Materials engineers	13.1	27,040	3,530
Industrial engineers	8.3	247,570	20,470

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.



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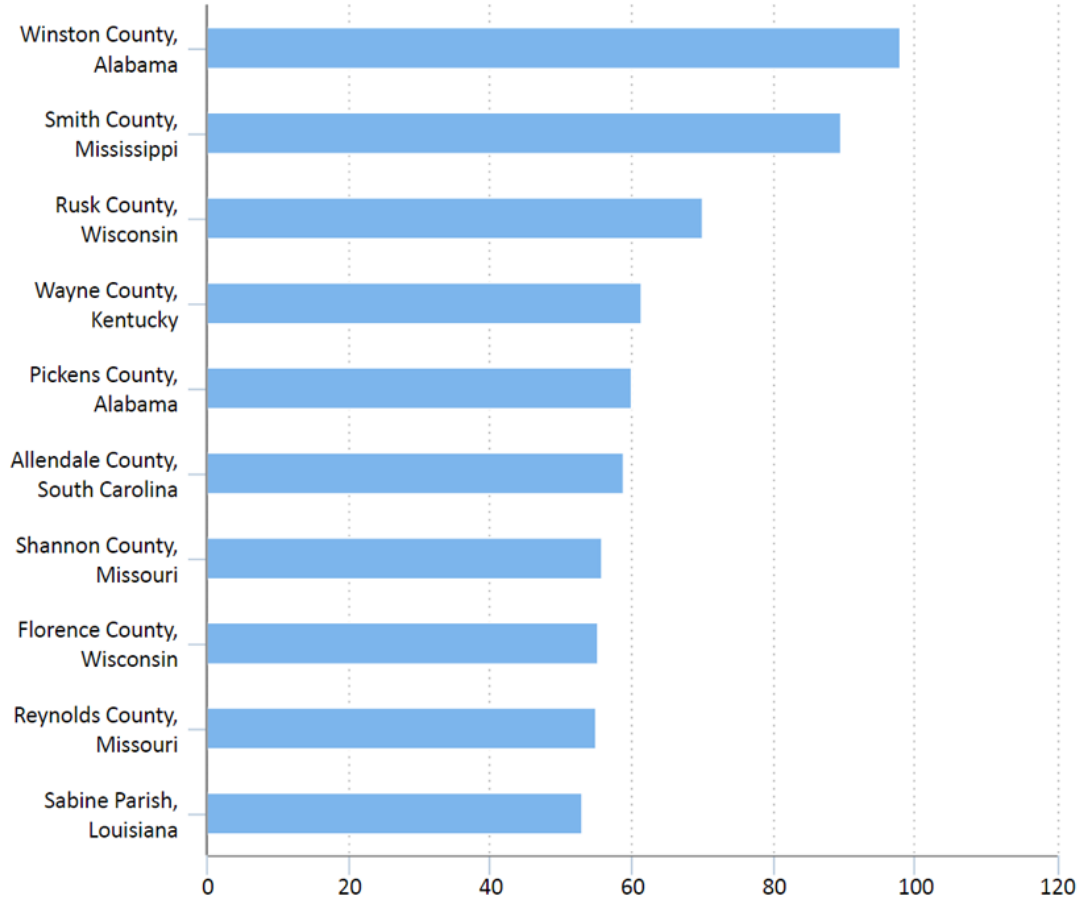
District 7

Lumber

Note: The North American Industry Classification System groups this industry under “wood product manufacturing.”

Chart 14. Counties with the highest location quotients in the wood product manufacturing industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

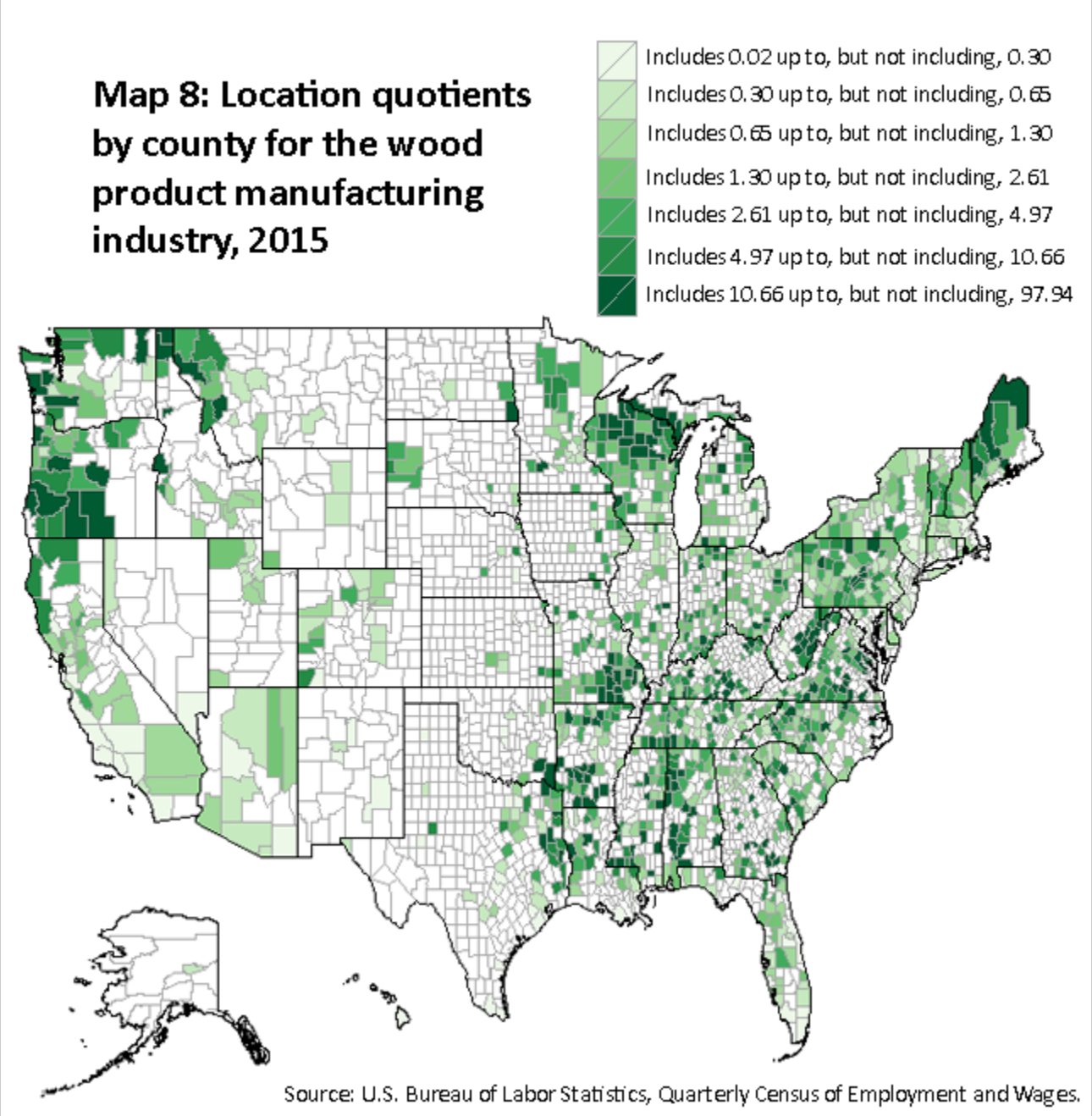


Table 7. Occupations in which the wood product manufacturing industry is the largest employer, 2015

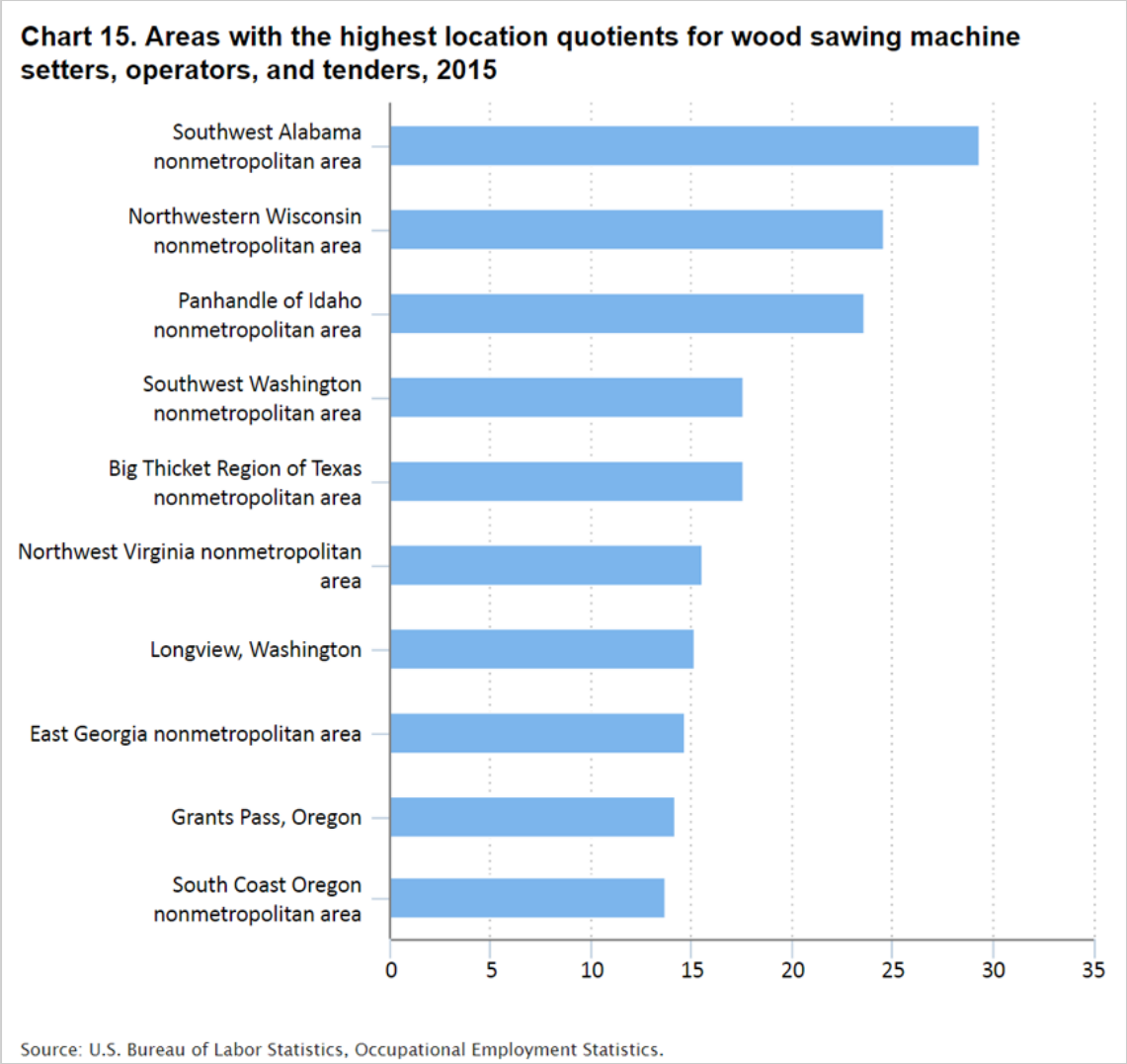
Occupation	Percent of occupation in wood product manufacturing	Total employment	Employment in wood product manufacturing
Sawing machine setters, operators, and tenders, wood	77.1	48,600	37,470
Log graders and scalers	75.2	2,740	2,060

See footnotes at end of table.

Table 7. Occupations in which the wood product manufacturing industry is the largest employer, 2015

Occupation	Percent of occupation in wood product manufacturing	Total employment	Employment in wood product manufacturing
Woodworking machine setters, operators, and tenders, except sawing	64.5	75,540	48,760
Woodworkers, all other	42.8	6,900	2,950

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.



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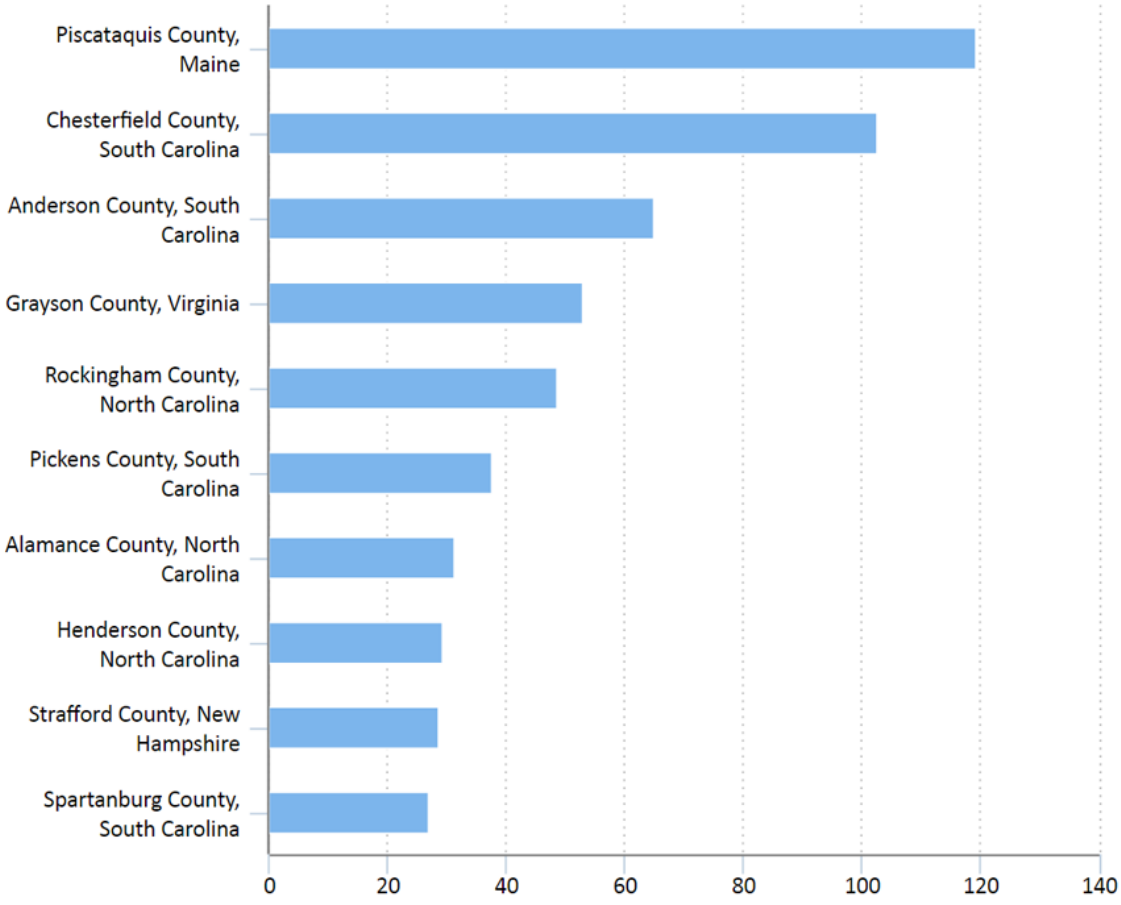
District 8

Textiles

Note: The North American Industry Classification System groups this industry under “fabric mills.”

Chart 16. Counties with the highest location quotients in the fabric mills industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

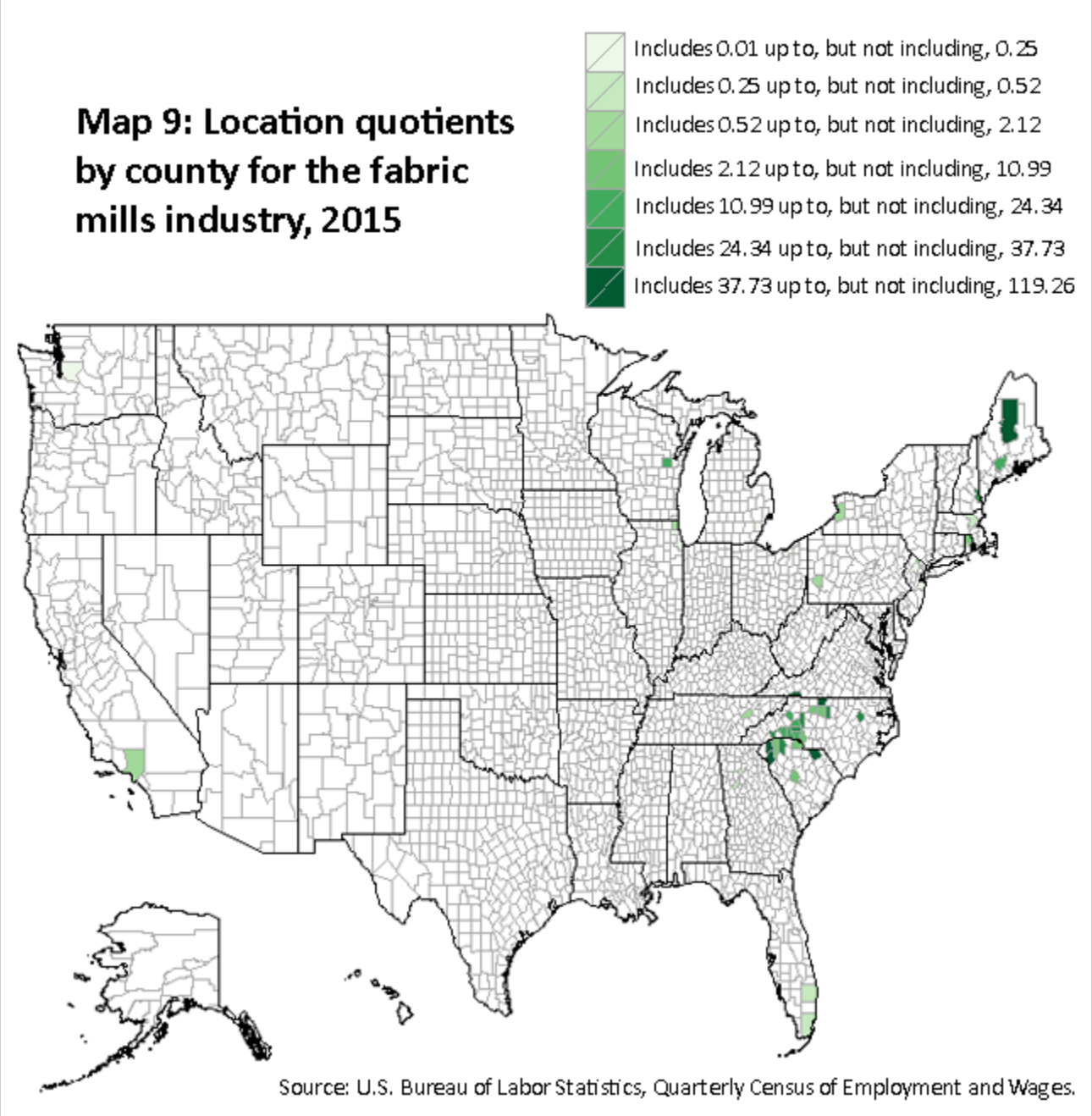


Table 8. Occupations in which the fabric mills industry is a large employer, 2015

Occupation	Percent of occupation in fabric mills	Total employment	Employment in fabric mills
Textile knitting and weaving machine setters, operators, and tenders	60.2	22,560	13,570
Textile winding, twisting, and drawing out machine setters, operators, and tenders	19.8	27,760	5,490

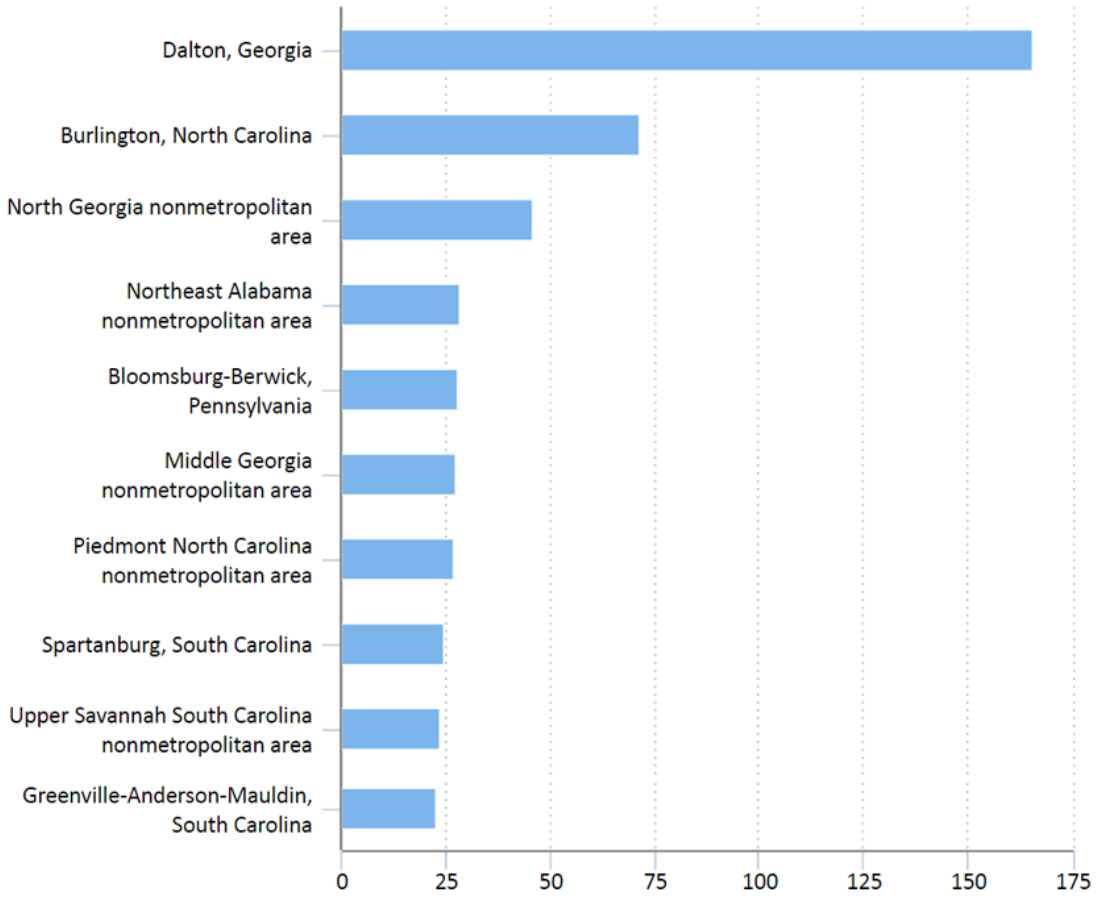
See footnotes at end of table.

Table 8. Occupations in which the fabric mills industry is a large employer, 2015

Occupation	Percent of occupation in fabric mills	Total employment	Employment in fabric mills
Fabric menders, except garment	17.7	620	110

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Chart 17. Areas with the highest location quotients for textile knitting and weaving machine setters, operators, and tenders, 2015



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

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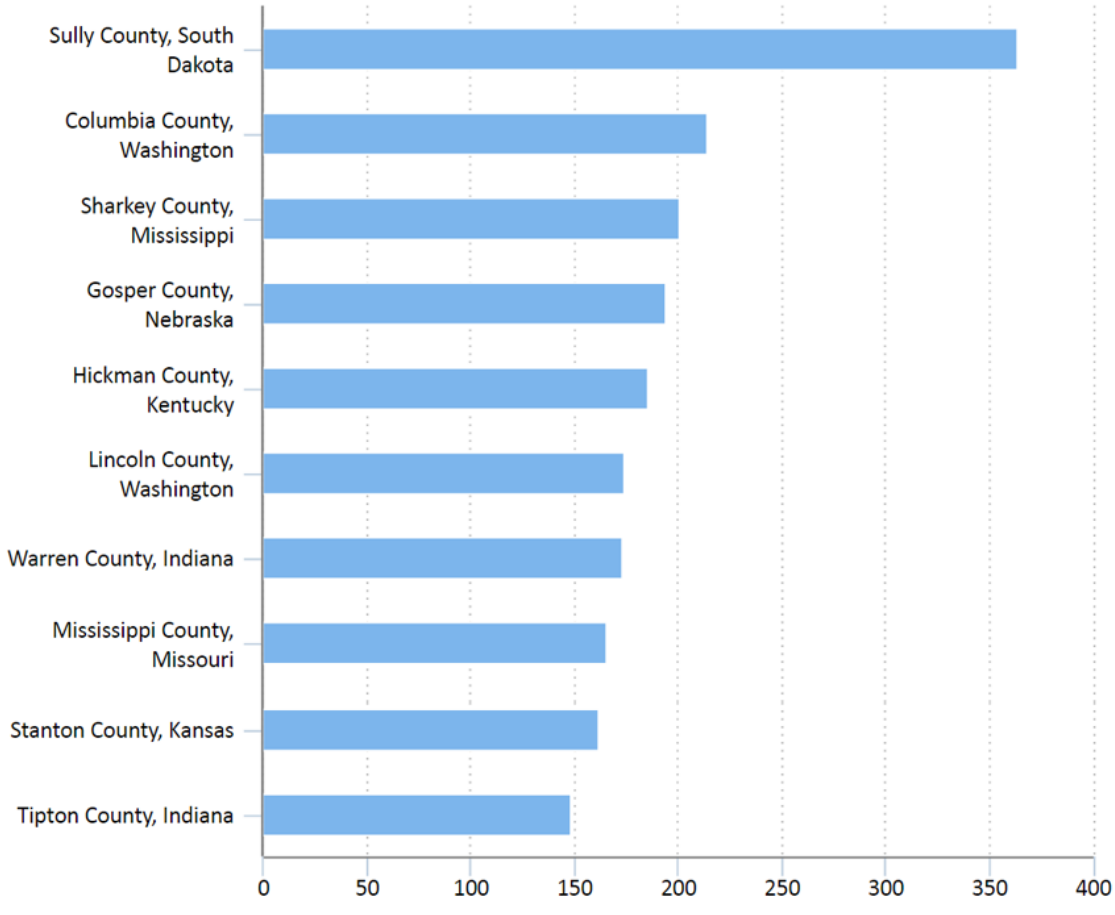
District 9

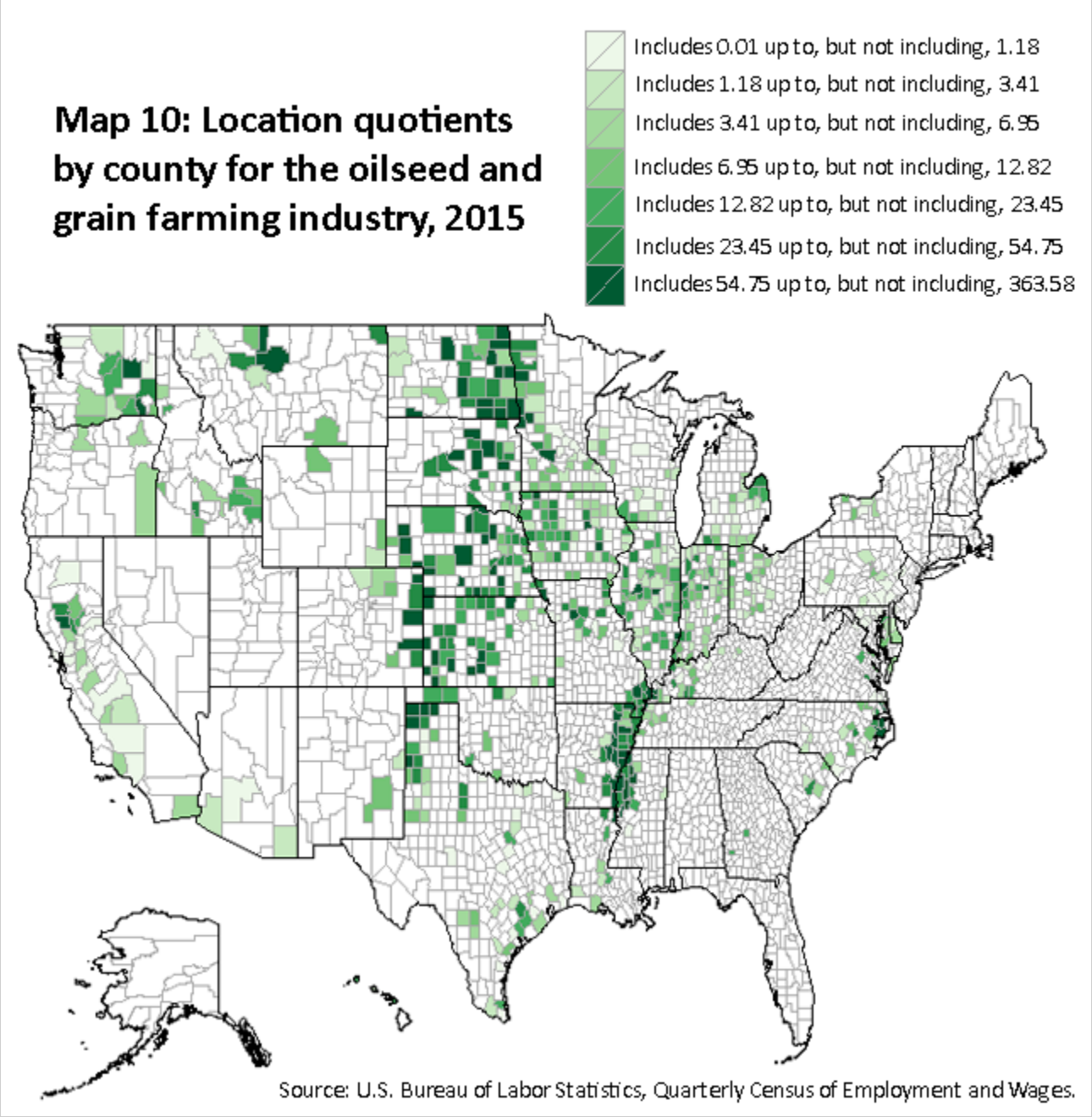
Grain

Note: The North American Industry Classification System groups this industry under “oilseed and grain farming.” The OES survey excludes most of the agricultural sector, with the exception of logging, support activities for crop production, and support activities for animal production. The OES survey does not include the oilseed and grain farming industry; therefore, occupation location quotients cannot be calculated.

Chart 18. Counties with the highest location quotients in the oilseed and grain farming industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



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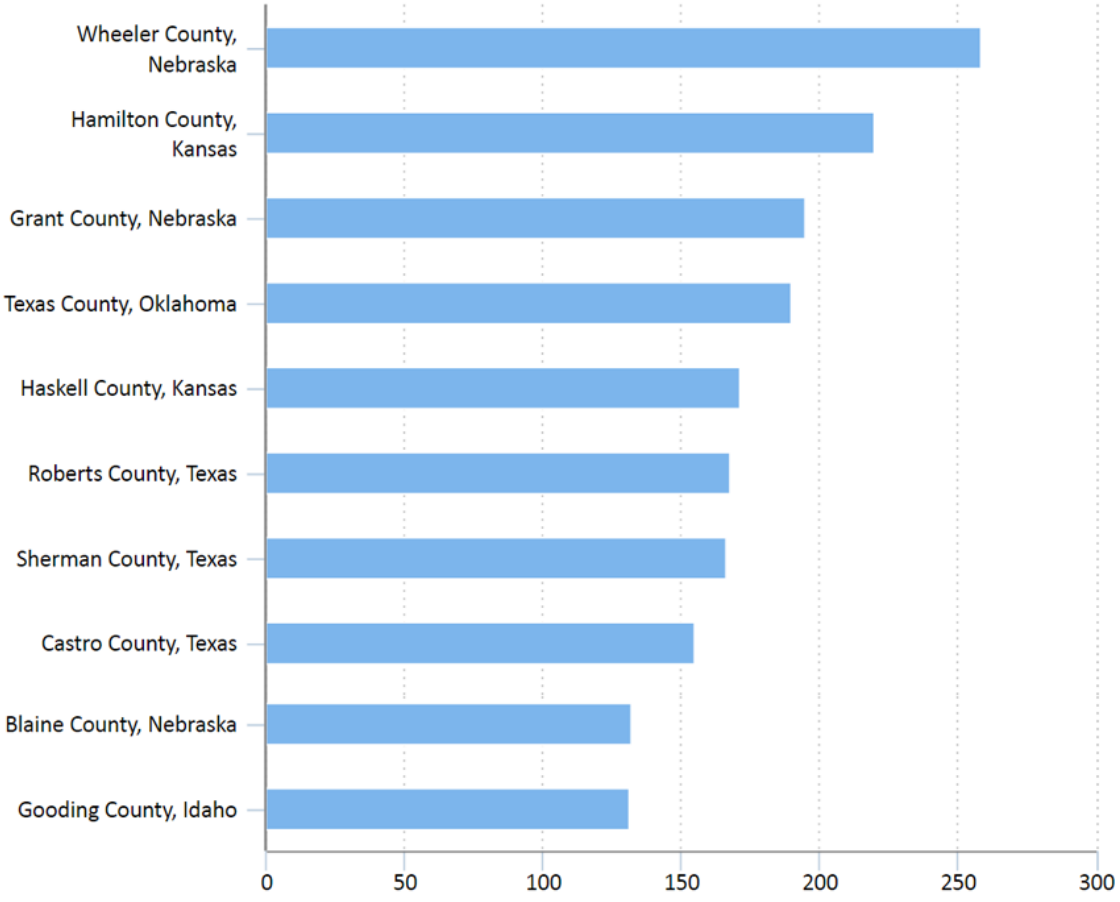
District 10

Livestock

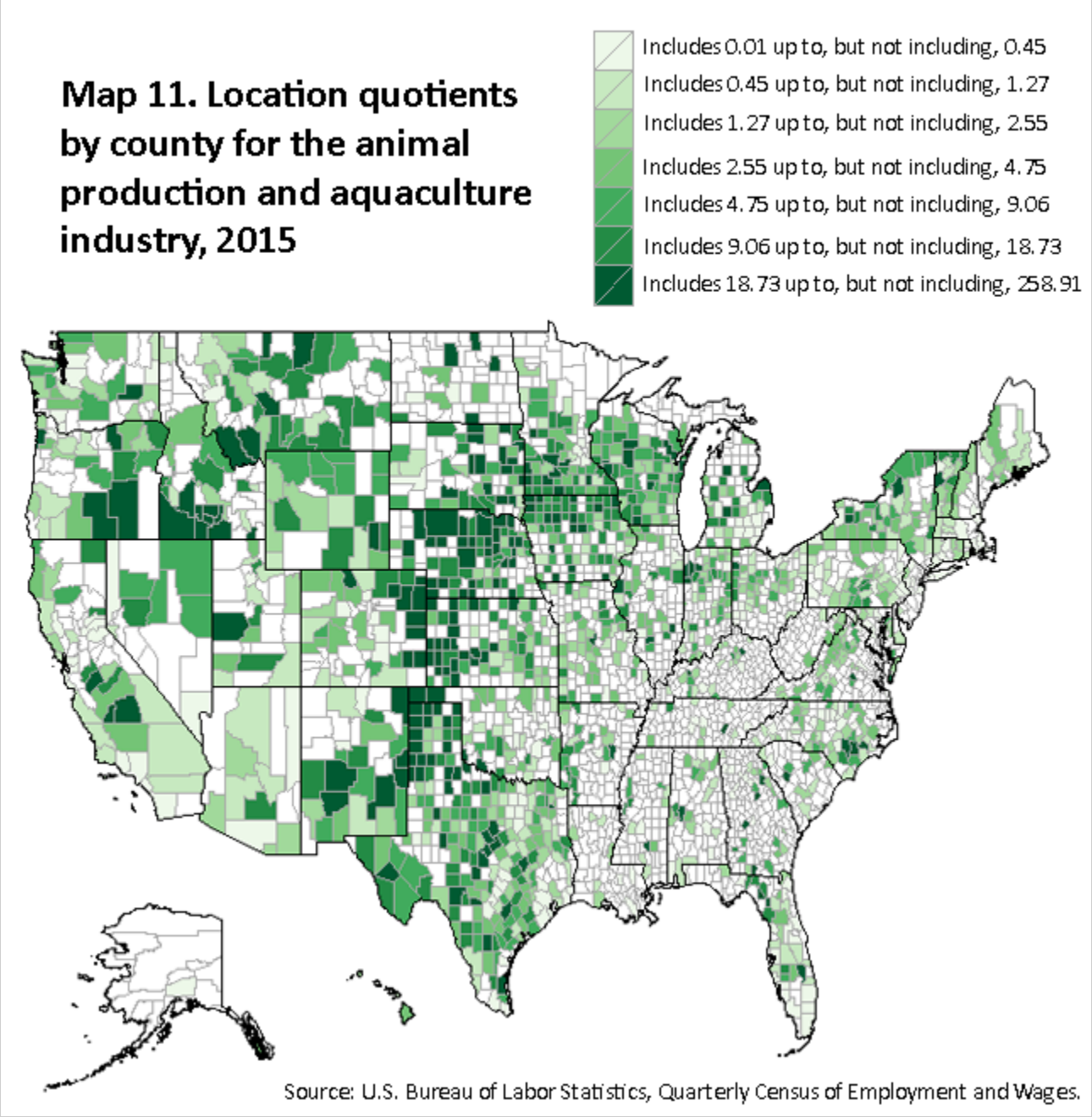
Note: The North American Industry Classification System groups this industry under “animal production and aquaculture.” The OES survey excludes most of the agricultural sector, with the exception of logging, support activities for crop production, and support activities for animal

production. The OES survey does not include the animal production and aquaculture industry; therefore, occupation location quotients cannot be calculated.

Chart 19. Counties with the highest location quotients in the animal production and aquaculture industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



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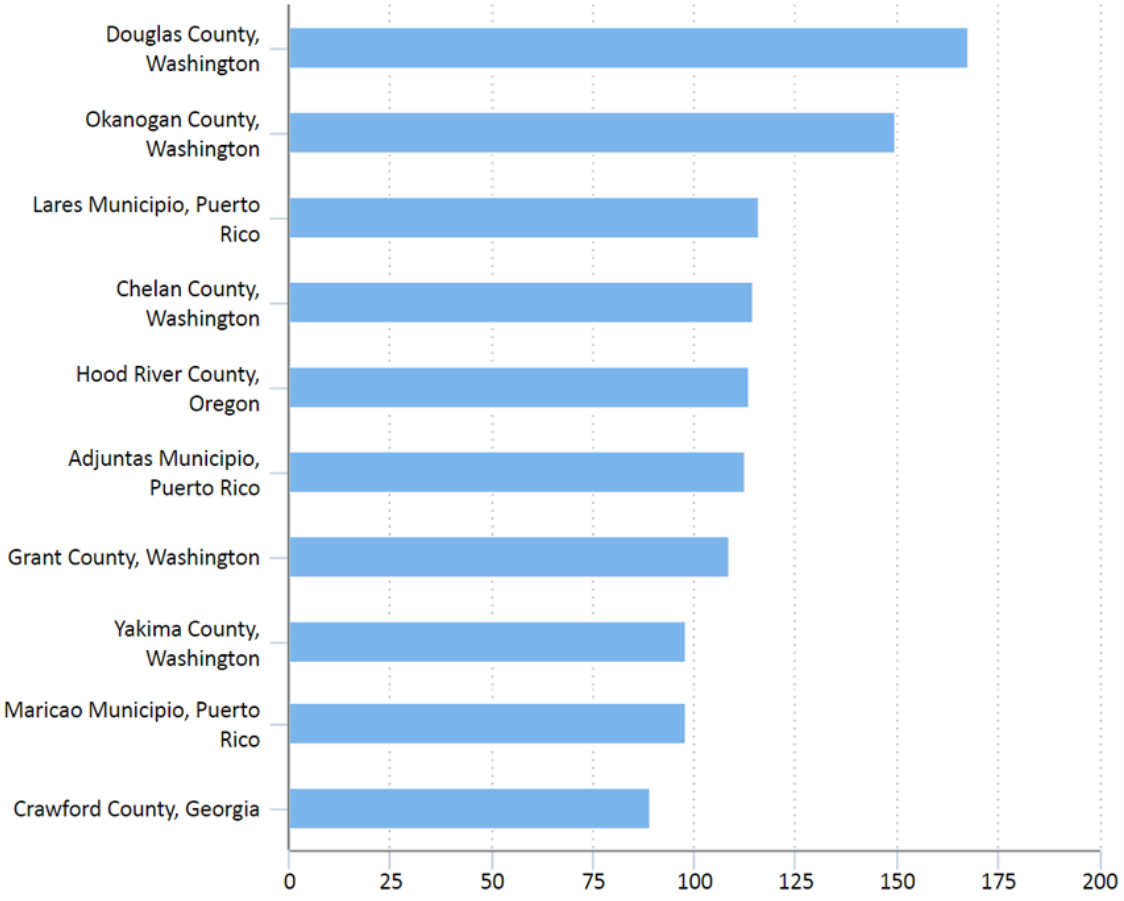
District 11

Crops

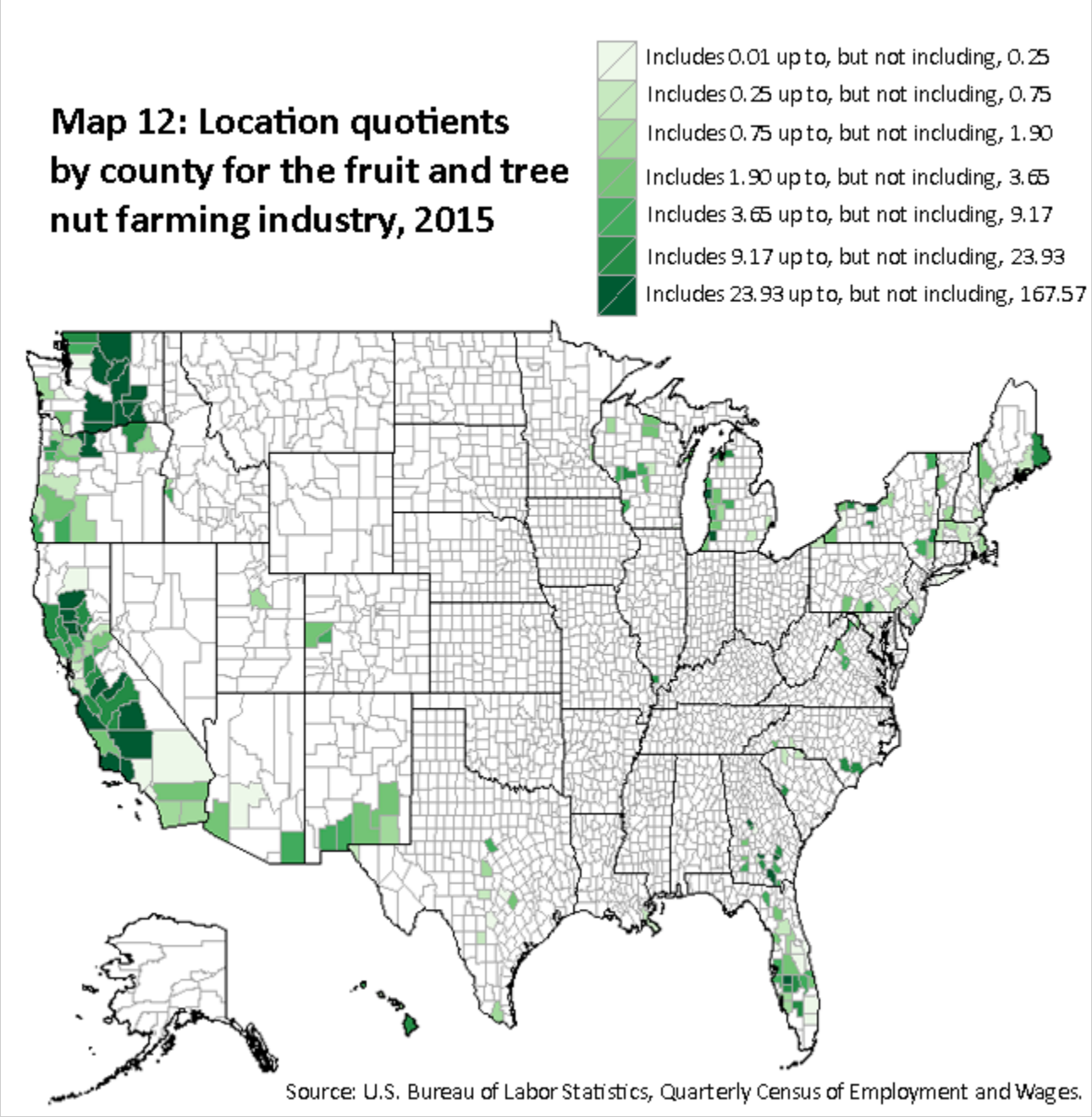
Note: The North American Industry Classification System groups this industry under “fruit and tree nut farming.” The OES survey excludes most of the agricultural sector, with the exception of logging, support activities for crop production, and support activities for animal production. The OES survey

does not include the fruit and tree nut farming industry; therefore, occupation location quotients cannot be calculated.

Chart 20. Counties with the highest location quotients in the fruit and tree nut farming industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



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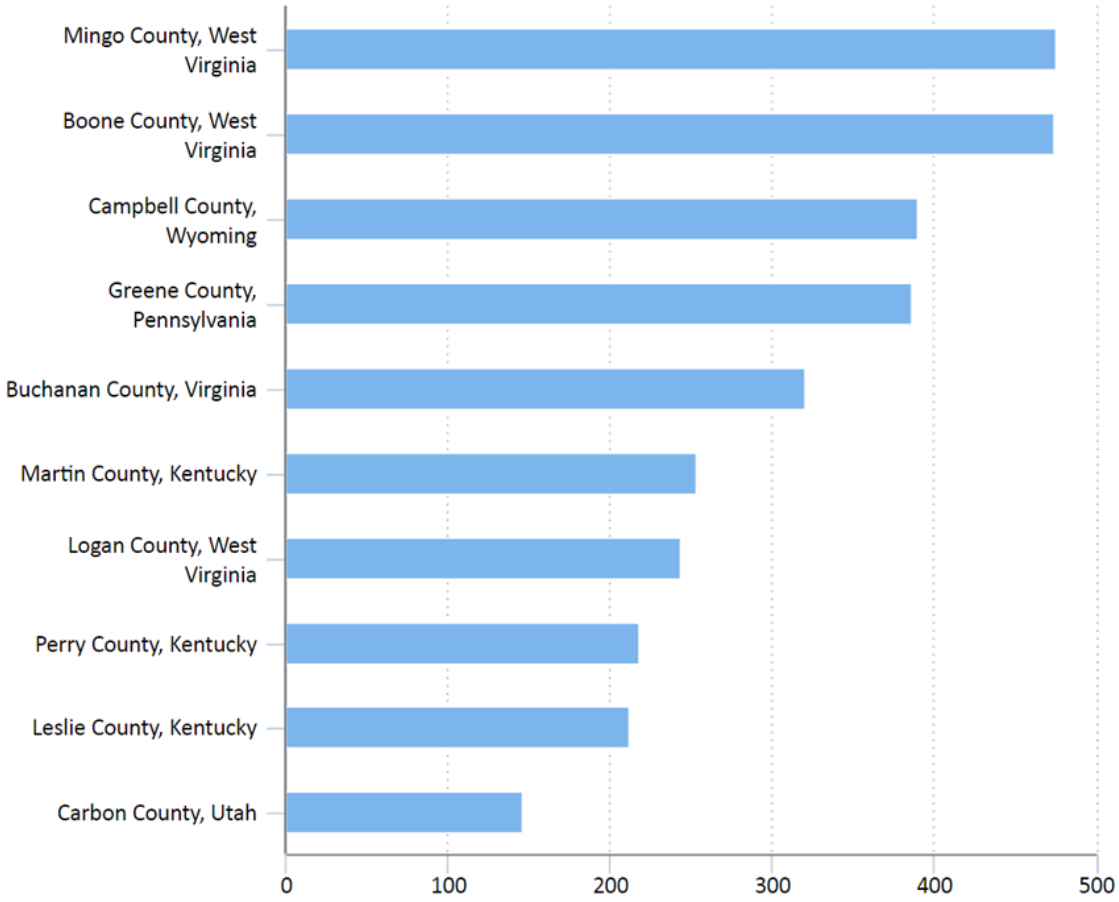
District 12

Coal mining

Chart 1. Counties with the highest location quotients in the coal mining industry, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

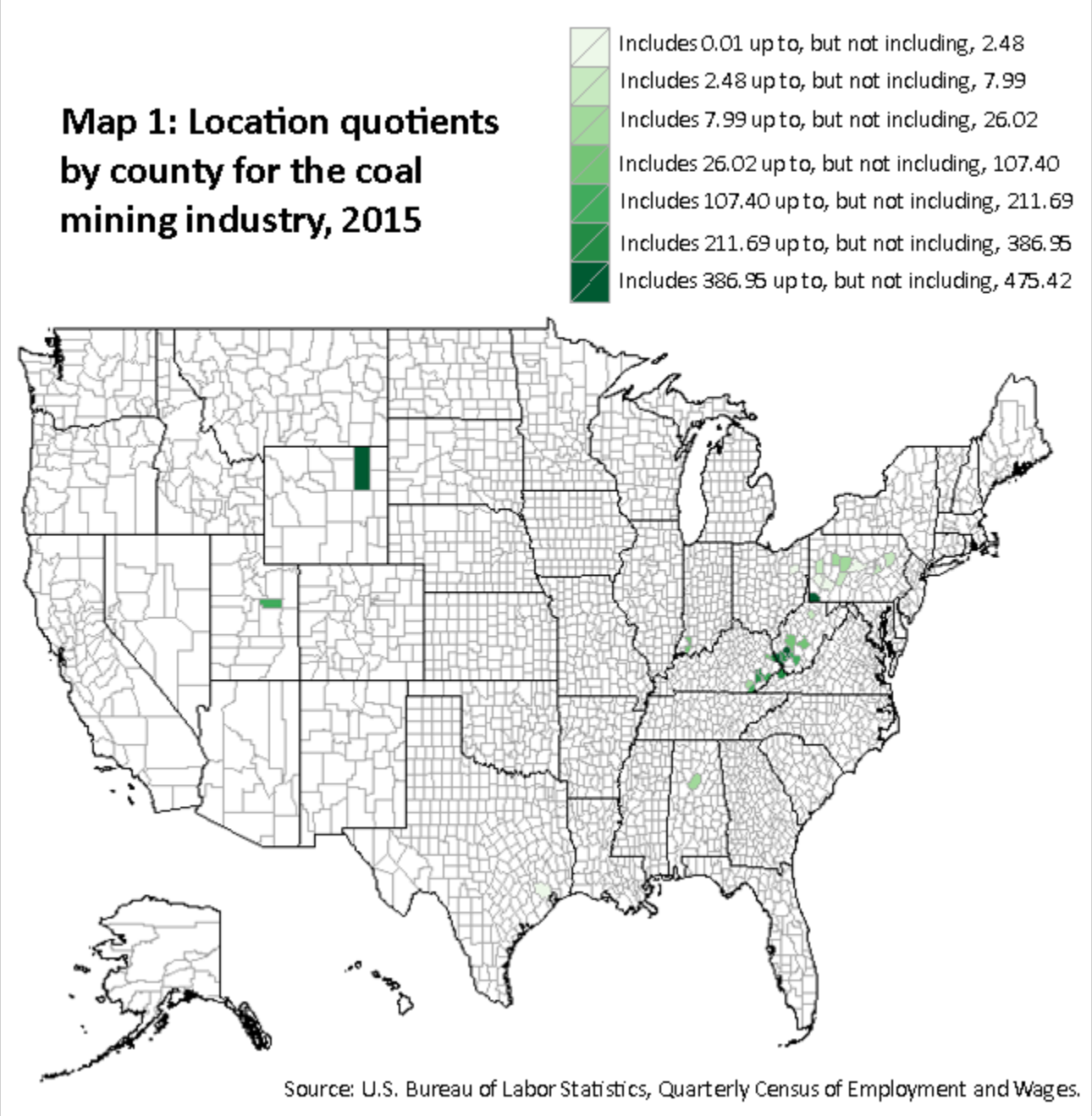
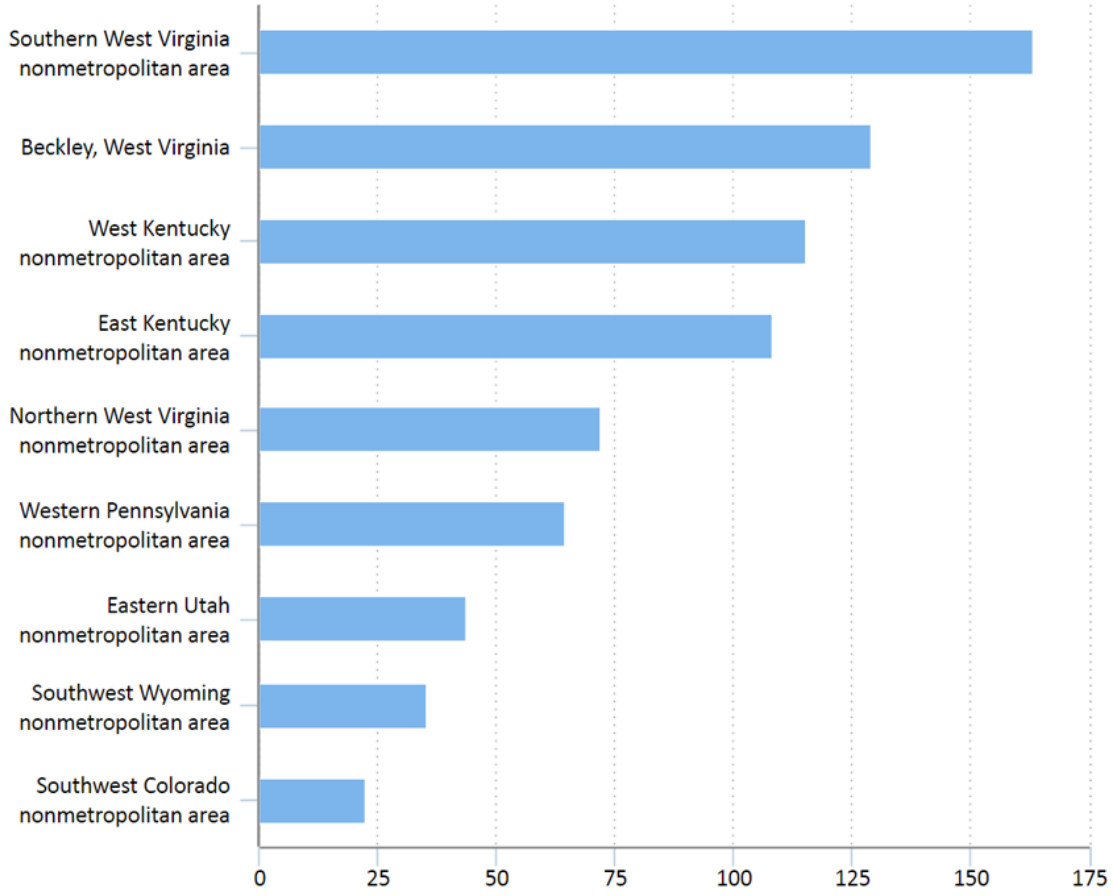


Table 1. Occupations in which the coal mining industry is the largest employer, 2015

Occupation	Percent of occupation in coal mining	Total employment	Employment in coal mining
Mine shuttle car operators	93.5	2,310	2,160
Roof bolters, mining	93.1	5,220	4,860
Loading machine operators, underground mining	60.7	3,210	1,950

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

Chart 2. Metropolitan and nonmetropolitan areas with the highest location quotients for mine shuttle car operators, 2015



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics.

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