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## **Occupational Employment and Wages for Selected Engineering Occupations in Selected Southeast Metropolitan Areas – May 2017**

Civil engineers in 4 of 25 selected metropolitan areas in the Southeast earned an average (mean) annual wage significantly higher than the national average for civil engineers. Regional Commissioner Janet S. Rankin noted that, after testing for statistical significance, 4 of 25 selected southeast metropolitan areas had above-average wages for electrical engineers, five areas had above-average wages for industrial engineers, and four areas had above-average wages for mechanical engineers. Nationwide, the average annual wage for civil engineers was \$91,790; for electrical engineers, \$99,580; for industrial engineers, \$90,340; and for mechanical engineers, \$91,500. (See [table A](#). For comprehensive definitions of the selected metropolitan areas in the Southeast, see [Technical Note](#).)

**Table A. Average (mean) annual wages for selected engineering occupations in the United States and selected metropolitan areas in the Southeast, May 2017**

Area	Civil engineers	Electrical engineers	Industrial engineers	Mechanical engineers
United States.....	\$91,790	\$99,580	\$90,340	\$91,500
Birmingham-Hoover, AL .....	88,880	95,420	75,860*	83,260*
Huntsville, AL.....	79,640*	101,940*	95,690*	93,910
Jacksonville, FL.....	106,620*	77,090*	76,260*	81,370*
Miami-Fort Lauderdale-West Palm Beach, FL .....	89,170	82,560*	68,480*	84,400*
Orlando-Kissimmee-Sanford, FL.....	86,360*	90,030*	81,220*	100,860*
Palm Bay-Melbourne-Titusville, FL .....	83,110*	107,810*	87,380	98,250*
Tampa-St. Petersburg-Clearwater, FL.....	82,780*	92,160*	71,470*	75,700*
Atlanta-Sandy Springs-Roswell, GA.....	91,700	92,750*	84,560*	82,800*
Augusta-Richmond County, GA-SC .....	101,040*	86,840*	94,110*	113,020*
Savannah, GA .....	88,180	102,200	90,130	86,270*
Lexington-Fayette, KY.....	78,300*	91,760*	83,100*	90,390
Louisville/Jefferson County, KY-IN .....	79,420*	89,390*	76,960*	83,900*
Gulfport-Biloxi-Pascagoula, MS .....	82,970	101,980	85,910*	106,190*
Jackson, MS.....	80,940*	94,170*	78,050*	85,990*
Charlotte-Concord-Gastonia, NC-SC .....	90,380	103,850	84,540*	86,730*
Durham-Chapel Hill, NC.....	72,060*	105,710*	102,050*	81,010*
Greensboro-High Point, NC .....	71,590*	97,660	84,180*	79,750*
Raleigh, NC.....	82,990*	111,250*	105,710*	94,660
Charleston-North Charleston, SC.....	70,700*	86,670*	83,220*	81,980*
Columbia, SC .....	76,400*	87,200*	88,680	70,910*
Greenville-Anderson-Mauldin, SC.....	92,270	88,970*	81,740*	95,470
Chattanooga, TN-GA.....	104,440*	97,060	98,010*	93,120
Knoxville, TN .....	113,180*	99,180	89,600	92,370
Memphis, TN-MS-AR .....	88,620	78,420*	82,010*	81,830*
Nashville-Davidson--Murfreesboro--Franklin, TN.....	89,680	86,900*	85,750*	84,800

Note: See footnotes at end of table.

Note: An asterisk indicates that the mean annual wage for this area is significantly different from the national average of all areas at the 90-percent confidence level.

## Employment for civil, electrical, industrial, and mechanical engineers in selected metropolitan areas in the Southeast

Of the 25 selected metropolitan areas in the Southeast, the Atlanta-Sandy Springs-Roswell area had a combined employment of 16,690 in the four selected engineering occupations. (See [table B.](#)) Miami-Fort Lauderdale-West Palm Beach had a combined employment of 10,720 and Charlotte-Concord-Gastonia had a combined employment of 8,830 for the four occupations. Employment in these four occupations combined was less than 7,900 in each of the remaining selected metropolitan areas in the Southeast.

Location quotients (LQs) allow us to explore the occupational make-up of a metropolitan area by comparing the composition of jobs in an area relative to the national average. (See [table B.](#)) For example, a LQ of 2.0 indicates that an occupation accounts for twice the share of employment in the area than it does nationally.

Above-average concentrations of employment for the four engineering occupations were found in several of the selected metropolitan areas in the Southeast. For example, civil engineers were employed at 2.3 times the national rate in the Raleigh area, and at 2.0 times the national rate in the Augusta-Richmond County area. Electrical engineers were employed at 6.5 times the national rate in Huntsville and at 3.6 times the national rate in Palm Bay-Melbourne-Titusville. Industrial engineers in Huntsville and in Palm Bay were employed at rates of 3.5 and 2.2 times the national rate, respectively. Metropolitan areas with above-average concentrations of employment for mechanical engineers included Huntsville (2.5), Greenville-Anderson-Mauldin (2.2) and Palm Bay (2.2).

**Table B. Employment and location quotient of selected engineering occupations in the United States and selected metropolitan areas in the Southeast, May 2017**

Area	Civil engineers		Electrical engineers		Industrial engineers		Mechanical engineers	
	Employment level	Location quotient	Employment level	Location quotient	Employment level	Location quotient	Employment level	Location quotient
United States.....	298,910	1.0	183,370	1.0	265,520	1.0	291,290	1.0
Birmingham-Hoover, AL .....	940	0.9	1,220	1.9	550	0.6	750	0.7
Huntsville, AL.....	490	1.1	1,860	6.5	1,430	3.5	1,140	2.5
Jacksonville, FL.....	1,300	0.9	440	0.5	960	0.8	450	0.3
Miami-Fort Lauderdale-West Palm Beach, FL .....	5,060	0.9	1,290	0.4	2,180	0.5	2,190	0.4
Orlando-Kissimmee-Sanford, FL....	2,910	1.2	870	0.6	1,510	0.7	1,180	0.5
Palm Bay-Melbourne-Titusville, FL .	820	1.9	960	3.6	840	2.2	910	2.2
Tampa-St. Petersburg-Clearwater, FL .....	2,850	1.1	920	0.6	1,990	0.8	1,080	0.4
Atlanta-Sandy Springs-Roswell, GA.	7,290	1.3	2,960	0.9	3,660	0.8	2,780	0.5
Augusta-Richmond County, GA-SC .	930	2.0	530	1.9	470	1.2	730	1.6
Savannah, GA .....	450	1.3	140	0.6	560	1.8	220	0.6
Lexington-Fayette, KY .....	590	1.0	410	1.2	680	1.3	830	1.5
Louisville/Jefferson County, KY-IN .	1,210	0.9	700	0.8	1,360	1.1	2,110	1.6
Gulfport-Biloxi-Pascagoula, MS .....	230	0.8	270	1.4	300	1.1	180	0.6
Jackson, MS.....	410	0.8	330	1.0	520	1.1	180	0.3
Charlotte-Concord-Gastonia, NC-SC .....	2,740	1.1	1,420	0.9	2,260	1.0	2,410	1.0
Durham-Chapel Hill, NC.....	380	0.6	420	1.1	630	1.1	760	1.3
Greensboro-High Point, NC .....	430	0.6	380	0.8	1,200	1.8	910	1.2
Raleigh, NC .....	2,980	2.3	1,970	2.5	1,540	1.4	1,360	1.1
Charleston-North Charleston, SC...	710	1.0	230	0.5	1,040	1.7	440	0.6
Columbia, SC .....	1,100	1.4	420	0.9	710	1.0	430	0.6
Greenville-Anderson-Mauldin, SC..	1,860	2.2	830	1.6	1,400	1.9	1,770	2.2

**Table B. Employment and location quotient of selected engineering occupations in the United States and selected metropolitan areas in the Southeast, May 2017 - Continued**

Area	Civil engineers		Electrical engineers		Industrial engineers		Mechanical engineers	
	Employment level	Location quotient	Employment level	Location quotient	Employment level	Location quotient	Employment level	Location quotient
Chattanooga, TN-GA.....	330	0.7	380	1.2	560	1.2	350	0.7
Knoxville, TN .....	1,020	1.3	420	0.9	620	0.9	800	1.0
Memphis, TN-MS-AR .....	550	0.4	290	0.4	890	0.8	560	0.4
Nashville-Davidson--Murfreesboro--Franklin, TN .....	1,550	0.8	810	0.7	1,690	1.0	990	0.5

**Wages for civil engineers in selected metropolitan areas in the Southeast**

Knoxville (\$113,180), Jacksonville (\$106,620), Chattanooga (\$104,440) and Augusta (\$101,040) were the only four metropolitan areas among the selected Southeast areas that had annual average wages for civil engineers that were significantly higher than the \$91,790 national average for the occupation. Twelve areas had significantly below-average annual wages for civil engineers, including Charleston-North Charleston (\$70,700), Greensboro-High Point (\$71,590), and Durham-Chapel Hill (\$72,060).

**Wages for electrical engineers in selected metropolitan areas in the Southeast**

Four metropolitan areas—Raleigh (\$111,250), Palm Bay (\$107,810), Durham (\$105,710), and Huntsville (\$101,940)—had significantly higher annual wages than the U.S. average for electrical engineers (\$99,580). Fourteen of the selected metropolitan areas had annual wages measurably below the U.S. average, including Jacksonville (\$77,090), Memphis (\$78,420), and Miami (\$82,560).

**Wages for industrial engineers in selected metropolitan areas in the Southeast**

Annual wages for industrial engineers in Raleigh (\$105,710), Durham (\$102,050), Chattanooga (\$98,010), Huntsville (\$95,690), and Augusta (\$94,110) were significantly above the nationwide average of \$90,340 for this occupation. Sixteen of the selected Southeast areas had annual wages below the U.S. average for industrial engineers. Miami (\$68,480), Tampa-St. Petersburg-Clearwater (\$71,470), and Birmingham-Hoover (\$75,860) were among the lower-paying areas.

**Wages for mechanical engineers in selected metropolitan areas in the Southeast**

Annual wages for mechanical engineers were significantly higher than the U.S. average of \$91,500 in 4 of the 25 selected metropolitan areas in the Southeast: Augusta (\$113,020), Gulfport-Biloxi-Pascagoula (\$106,190), Orlando-Kissimmee-Sanford (\$100,860), and Palm Bay (\$98,250). Fourteen areas had measurably lower annual wages, with Columbia (\$70,910), Tampa (\$75,700), and Greensboro (\$79,750) among the lower-paying areas.

These statistics are from the Occupational Employment Statistics (OES) survey, a federal-state cooperative program between BLS and State Workforce Agencies.

## Note on Occupational Employment Statistics data

A value that is statistically different from another does not necessarily mean that the difference has economic or practical significance. Statistical significance is concerned with the ability to make confident statements about a universe based on a sample. It is entirely possible that a large difference between two values is not significantly different statistically, while a small difference is, since both the size and heterogeneity of the sample affect the relative error of the data being tested.

## Technical Note

The Occupational Employment Statistics (OES) survey is a semiannual survey measuring occupational employment and wage rates for wage and salary workers in nonfarm establishments in the United States. The OES data available from BLS include cross-industry occupational employment and wage estimates for the nation; over 650 areas, including states and the District of Columbia, metropolitan statistical areas (MSAs), metropolitan divisions, nonmetropolitan areas, and territories; national industry-specific estimates at the NAICS sector, 3-, 4-, and selected 5- and 6-digit industry levels; and national estimates by ownership across all industries and for schools and hospitals. OES data are available at [www.bls.gov/oes/tables.htm](http://www.bls.gov/oes/tables.htm).

OES estimates are constructed from a sample of about 1.2 million establishments. Each year, two semiannual panels of approximately 200,000 sampled establishments are contacted, one panel in May and the other in November. Responses are obtained by mail, Internet or other electronic means, email, telephone, or personal visit. The May 2017 estimates are based on responses from six semiannual panels collected over a 3-year period: May 2017, November 2016, May 2016, November 2015, May 2015, and November 2014. The overall national response rate for the six panels, based on the 50 states and the District of Columbia, is 72 percent based on establishments and 68 percent based on weighted sampled employment. The unweighted sample employment of 82 million across all six semiannual panels represents approximately 58 percent of total national employment. For more information about OES concepts and methodology, go to [www.bls.gov/oes/current/oes\\_tec.htm](http://www.bls.gov/oes/current/oes_tec.htm).

The May 2017 OES estimates are based on the 2010 Standard Occupational Classification (SOC) system and the 2017 North American Industry Classification System (NAICS). Information about the 2010 SOC is available on the BLS website at [www.bls.gov/soc](http://www.bls.gov/soc) and information about the 2017 NAICS is available at [www.bls.gov/bls/naics.htm](http://www.bls.gov/bls/naics.htm).

## Metropolitan Area definitions

The substate area data published in this release reflect the standards and definitions established by the U.S. Office of Management and Budget.

- **Birmingham-Hoover, Ala. Metropolitan Statistical Area (MSA)** includes Bibb, Blount, Chilton, Jefferson, Shelby, St. Clair, and Walker Counties in Alabama.
- **Huntsville, Ala. MSA** includes Limestone and Madison Counties in Alabama.
- **Jacksonville, Fla. MSA** includes Baker, Clay, Duval, Nassau, and St. Johns Counties in Florida.

- **Miami-Fort Lauderdale-West Palm Beach, Fla. MSA** includes the following:
  - **Fort Lauderdale-Pompano Beach-Deerfield Beach, Fla. Metropolitan Division (MD)** includes Broward County in Florida.
  - **Miami-Miami Beach-Kendall, Fla. MD** includes Miami-Dade County in Florida.
  - **West Palm Beach-Boca Raton-Delray Beach, Fla. MD** includes Palm Beach County in Florida.
- **Orlando-Kissimmee-Sanford, Fla. MSA** includes Lake, Orange, Osceola, and Seminole Counties in Florida.
- **Palm Bay-Melbourne-Titusville, Fla. MSA** includes Brevard County in Florida.
- **Tampa-St. Petersburg-Clearwater, Fla. MSA** includes Hernando, Hillsborough, Pasco, and Pinellas Counties in Florida.
- **Atlanta-Sandy Springs-Roswell, Ga. MSA** includes Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Haralson, Heard, Henry, Jasper, Lamar, Meriwether, Morgan, Newton, Paulding, Pickens, Pike, Rockdale, Spalding, and Walton Counties in Georgia.
- **Augusta-Richmond County, Ga.-S.C. MSA** includes Aiken and Edgefield Counties in South Carolina; Burke, Columbia, Lincoln, McDuffie, and Richmond Counties in Georgia.
- **Savannah, Ga. MSA** includes Bryan, Chatham, and Effingham Counties in Georgia.
- **Lexington-Fayette, Ky. MSA** includes Bourbon, Clark, Fayette, Jessamine, Scott, and Woodford Counties in Kentucky.
- **Louisville/Jefferson County, Ky.-Ind. MSA** includes Bullitt, Henry, Jefferson, Oldham, Shelby, Spencer, and Trimble Counties in Kentucky; Clark, Floyd, Harrison, Scott, and Washington Counties in Indiana.
- **Gulfport-Biloxi-Pascagoula, Miss. MSA** includes Hancock, Harrison, and Jackson Counties in Mississippi.
- **Jackson, Miss. MSA** includes Copiah, Hinds, Madison, Rankin, Simpson, and Yazoo Counties in Mississippi.
- **Charlotte-Concord-Gastonia, N.C.-S.C. MSA** includes Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, and Union Counties in North Carolina; Chester, Lancaster, and York Counties in South Carolina.
- **Durham-Chapel Hill, N.C. MSA** includes Chatham, Durham, Orange, and Person Counties in North Carolina.
- **Greensboro-High Point, N.C. MSA** includes Guilford, Randolph, and Rockingham Counties in North Carolina.
- **Raleigh, N.C. MSA** includes Franklin, Johnston, and Wake Counties in North Carolina.
- **Charleston-North Charleston, S.C. MSA** includes Berkeley, Charleston, and Dorchester Counties in South Carolina.
- **Columbia, S.C. MSA** includes Calhoun, Fairfield, Kershaw, Lexington, Richland, and Saluda Counties in South Carolina.
- **Greenville-Anderson-Mauldin, S.C. MSA** includes Anderson, Greenville, Laurens, and Pickens Counties in South Carolina.
- **Chattanooga, Tenn.-Ga. MSA** includes Catoosa, Dade, and Walker Counties in Georgia; Hamilton, Marion, and Sequatchie Counties in Tennessee.
- **Knoxville, Tenn. MSA** includes Anderson, Blount, Campbell, Grainger, Knox, Loudon, Morgan, Roane, and Union Counties in Tennessee.
- **Memphis, Tenn.-Miss.-Ar. MSA** includes Benton, DeSoto, Marshall, Tate, and Tunica Counties in Mississippi; Crittenden County in Arkansas; Fayette, Shelby, and Tipton Counties in Tennessee.

- **Nashville-Davidson--Murfreesboro--Franklin, Tenn. MSA** includes Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Maury, Robertson, Rutherford, Smith, Sumner, Trousdale, Williamson, and Wilson Counties in Tennessee.

### **Additional information**

OES data are available on our regional web page at [www.bls.gov/regions/southeast](http://www.bls.gov/regions/southeast). Answers to frequently asked questions about the OES data are available at [www.bls.gov/oes/oes\\_ques.htm](http://www.bls.gov/oes/oes_ques.htm). Detailed technical information about the OES survey is available in our Survey Methods and Reliability Statement on the BLS website at [www.bls.gov/oes/current/methods\\_statement.pdf](http://www.bls.gov/oes/current/methods_statement.pdf).

Information in this release will be made available to sensory impaired individuals upon request. Voice phone: (202) 691-5200; Federal Relay Service: (800) 877-8339.