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SOUTHEAST INFORMATION OFFICE: Atlanta, Ga.

Technical information: (404) 893-4222 BLSInfoAtlanta@bls.gov www.bls.gov/regions/southeast

Media contact: (404) 893-4220

## **Occupational Employment and Wages for Selected Engineers in Selected Metropolitan Areas in the Southeast – May 2016**

Civil engineers in 2 of the 20 selected metropolitan areas in the Southeast earned an average (mean) annual wage significantly higher than the national average for civil engineers. Three areas had above-average wages for electrical engineers, three areas had above-average wages for industrial engineers, and four areas had above-average wages for mechanical engineers. Regional Commissioner Janet S. Rankin noted that, after testing for statistical significance, wages in the Augusta-Richmond County Metropolitan Statistical Area were higher than their respective national averages in 3 of the 4 selected engineering occupations: civil, industrial, and mechanical engineers. Nationwide, the average annual wage for civil engineers was \$89,730; for electrical engineers, \$98,620; for industrial engineers, \$88,530; and for mechanical engineers, \$89,800. (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 2016**

Area	Civil engineers	Electrical engineers	Industrial engineers	Mechanical engineers
United States.....	\$89,730	\$98,620	\$88,530	\$89,800
Birmingham-Hoover, AL .....	89,790	99,280	72,350*	81,020*
Huntsville, AL.....	81,640*	100,320	92,200	91,920
Jacksonville, FL.....	91,730	84,240*	77,060*	82,680*
Miami-Fort Lauderdale-West Palm Beach, FL .....	88,290	79,610*	70,980*	83,760*
Orlando-Kissimmee-Sanford, FL.....	87,840	93,620	76,490*	100,610*
Palm Bay-Melbourne-Titusville, FL .....	80,300*	104,230*	85,960	93,800*
Tampa-St. Petersburg-Clearwater, FL.....	82,220*	88,700*	70,650*	73,460*
Atlanta-Sandy Springs-Roswell, GA.....	93,190	89,170*	83,010*	85,430*
Augusta-Richmond County, GA-SC .....	95,650*	87,720*	93,070*	101,400*
Lexington-Fayette, KY .....	75,730*	92,440	83,480	89,390
Louisville/Jefferson County, KY-IN .....	80,160*	84,880*	72,640*	82,090*
Charlotte-Concord-Gastonia, NC-SC .....	86,320	112,900*	81,470*	82,960*
Durham-Chapel Hill, NC.....	78,370*	108,410*	100,710*	83,310*
Raleigh, NC .....	78,320*	107,330	106,070*	92,270
Charleston-North Charleston, SC.....	70,600*	86,570*	79,290*	84,530*
Columbia, SC .....	70,130*	84,980*	83,430*	68,480*
Greenville-Anderson-Mauldin, SC.....	85,960	92,530	78,700*	98,580*
Knoxville, TN .....	104,780*	93,380	84,940*	87,230
Memphis, TN-MS-AR .....	88,210	75,620*	77,440*	79,590*
Nashville-Davidson--Murfreesboro--Franklin, TN.....	94,230	80,340*	80,190*	73,620*

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 20 selected metropolitan areas in the Southeast, the Atlanta-Sandy Springs-Roswell area had a combined employment of 15,960 in the four selected engineering occupations. Miami-Fort Lauderdale-West Palm Beach had a combined employment of 10,260 and Charlotte-Concord-Gastonia had a combined employment of 8,380 for the four occupations. Employment in these four occupations combined was less than 7,300 in each of the remaining selected metropolitan areas in the Southeast. (See [table B.](#))

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. 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 Augusta area, and at 2.1 times the national rate in the Raleigh area. Electrical engineers were employed at 5.0 times the national rate in Huntsville and at 3.4 times the national rate in Palm Bay-Melbourne-Titusville. Industrial engineers in Huntsville and in Greenville-Anderson-Mauldin were employed at rates of 3.5 and 2.1 times the national rate, respectively. Metropolitan areas with above-average concentrations of employment for mechanical engineers included Huntsville (2.7), Augusta (2.4), and Greenville (2.2). (See [table B.](#))

**Table B. Employment and location quotient of selected engineering occupations in the United States and selected metropolitan areas in the Southeast, May 2016**

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.....	287,800	1.0	183,770	1.0	256,550	1.0	285,790	1.0
Birmingham-Hoover, AL.....	980	1.0	1,380	2.1	570	0.6	590	0.6
Huntsville, AL.....	410	0.9	1,430	5.0	1,390	3.5	1,210	2.7
Jacksonville, FL.....	1,320	1.0	510	0.6	900	0.8	510	0.4
Miami-Fort Lauderdale-West Palm Beach, FL.....	4,860	0.9	1,340	0.4	2,220	0.5	1,840	0.4
Orlando-Kissimmee-Sanford, FL.....	2,880	1.2	990	0.7	1,210	0.6	1,180	0.5
Palm Bay-Melbourne-Titusville, FL ...	530	1.3	890	3.4	720	2.0	860	2.1
Tampa-St. Petersburg-Clearwater, FL.....	2,950	1.1	1,160	0.7	2,060	0.9	1,060	0.4
Atlanta-Sandy Springs-Roswell, GA..	7,070	1.4	2,920	0.9	3,390	0.7	2,580	0.5
Augusta-Richmond County, GA-SC ..	1,020	2.3	570	2.1	470	1.2	1,060	2.4
Lexington-Fayette, KY.....	500	0.9	430	1.2	600	1.2	950	1.7
Louisville/Jefferson County, KY-IN ....	900	0.7	420	0.5	1,200	1.0	1,130	0.9
Charlotte-Concord-Gastonia, NC-SC ..	2,680	1.1	1,330	0.9	2,000	0.9	2,370	1.0
Durham-Chapel Hill, NC.....	340	0.6	490	1.3	720	1.4	650	1.1
Raleigh, NC.....	2,500	2.1	2,000	2.6	1,500	1.4	1,260	1.0
Charleston-North Charleston, SC.....	750	1.1	200	0.5	1,010	1.7	480	0.7
Columbia, SC.....	1,430	1.9	310	0.6	820	1.2	630	0.8
Greenville-Anderson-Mauldin, SC.....	1,330	1.6	680	1.3	1,500	2.1	1,740	2.2
Knoxville, TN.....	1,070	1.4	490	1.0	840	1.2	830	1.1
Memphis, TN-MS-AR.....	530	0.4	270	0.3	1,040	0.9	470	0.4
Nashville-Davidson--Murfreesboro--Franklin, TN.....	2,450	1.3	630	0.5	1,730	1.0	820	0.4

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

Knoxville (\$104,780) and Augusta (\$95,650) were the only two metropolitan areas in the selected Southeast areas that had average wages for civil engineers that were significantly higher than the \$89,730 national average for the occupation. Nine areas had significantly below-average wages for civil engineers, including Columbia (\$70,130), Charleston-North Charleston (\$70,600), and Lexington-Fayette (\$75,730).

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

Charlotte (\$112,900), Durham-Chapel Hill (\$108,410), and Palm Bay (\$104,230) had wages that were significantly higher than the U.S. average of \$98,620 for electrical engineers. Ten of the selected metropolitan areas had annual wages measurably below the U.S. average, including Memphis (\$75,620), Miami (\$79,610), and Nashville-Davidson--Murfreesboro--Franklin (\$80,340).

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

Wages for industrial engineers in Raleigh (\$106,070), Durham (\$100,710), and Augusta (\$93,070) were significantly above the nationwide average of \$88,530 for this occupation. Fourteen of the selected Southeast areas had annual wages below the U.S. average for industrial engineers. Tampa-St. Petersburg-Clearwater (\$70,650), Miami (\$70,980), and Birmingham-Hoover (\$72,350) were among the lower paying areas.

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

Wages for mechanical engineers were significantly higher than the U.S. average of \$89,800 in 4 of the 20 selected metropolitan areas in the Southeast: Augusta (\$101,400), Orlando-Kissimmee-Sanford (\$100,610), Greenville (\$98,580), and Palm Bay (\$93,800). Twelve areas had measurably lower annual wages, with Columbia (\$68,480), Tampa (\$73,460), and Nashville (\$73,620) 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 2016 estimates are based on responses from six semiannual panels collected over a 3-year period: May 2016, November 2015, May 2015, November 2014, May 2014, and November 2013. The overall national response rate for the six panels, based on the 50 states and the District of Columbia, is 73 percent based on establishments and 69 percent based on weighted sampled employment. The unweighted employment of sampled establishments 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 2016 OES estimates are based on the 2010 Standard Occupational Classification (SOC) system and the 2012 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 2012 NAICS is available at [www.bls.gov/bls/naics.htm](http://www.bls.gov/bls/naics.htm).

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.
- **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.
- **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.
- **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.
- **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.

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