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Occupational Employment and Wages For Selected Engineering Occupations in Michigan's Metropolitan Areas – May 2015

Among the 15 metropolitan areas located entirely or partially in Michigan, 13 areas had annual wages that were significantly below the national average for civil engineers, the U.S. Bureau of Labor Statistics reported today. Twelve areas had below-average wages for electrical engineers and eight areas had wages that were below the national average for both mechanical engineers and industrial engineers. Assistant Commissioner for Regional Operations Charlene Peiffer noted that one metropolitan area, Detroit-Warren-Dearborn, had annual wages that were significantly higher than the national average for both mechanical engineers and industrial engineers. Nationwide, the average (mean) wage for mechanical engineers was \$88,190; for industrial engineers, \$86,990; for electrical engineers, \$97,340; and for civil engineers, \$87,940. (See [table A](#). For comprehensive definitions of metropolitan areas in Michigan, please see the [Technical Note](#).)

Table A. Average (mean) annual wages for selected engineering occupations in the United States, Michigan, and metropolitan areas in Michigan, May 2015

| Area | Mechanical Engineers | Industrial Engineers | Electrical Engineers | Civil Engineers |
|------------------------------------|----------------------|----------------------|----------------------|-----------------|
| United States | \$88,190 | \$86,990 | \$97,340 | \$87,940 |
| Michigan | 89,160 | 86,700 | 87,640* | 74,050* |
| Ann Arbor | 93,870 | 79,210* | 95,740 | 80,070* |
| Battle Creek..... | 95,270 | 74,170* | 68,170* | 78,040* |
| Bay City | 86,710 | 73,930* | 80,360* | 82,270 |
| Detroit-Warren-Dearborn..... | 92,170* | 92,560* | 90,270* | 74,080* |
| Detroit-Dearborn-Livonia | 94,050* | 91,820* | 95,220 | 75,110* |
| Warren-Troy-Farmington Hills | 90,890 | 92,940* | 87,080* | 73,500* |
| Flint..... | 75,710* | 87,440 | (1) | 74,090* |
| Grand Rapids-Wyoming..... | 71,280* | 78,140* | 78,040* | 71,330* |
| Jackson | 86,640 | 79,710 | 80,290* | 89,500 |
| Kalamazoo-Portage..... | 79,220* | 76,800* | 83,970* | 70,980* |
| Lansing-East Lansing..... | 69,520* | 75,730* | 75,260* | 73,550* |
| Midland..... | 56,420* | 91,770 | 72,760* | 77,280* |
| Monroe | 78,930* | 81,800 | 97,540 | 62,430* |
| Muskegon..... | 76,560* | 66,120* | 88,720* | 73,520* |
| Niles-Benton Harbor..... | 94,370* | 85,660 | 91,790* | 80,790* |
| Saginaw..... | 78,210* | 71,720* | 74,450* | 70,210* |
| South Bend-Mishawaka | 83,450 | 85,510 | 72,670* | 64,730* |

Footnotes:

(1) Data not available.

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.

Combined employment for the four selected engineering occupations in Michigan's 15 metropolitan areas was 77,100. Seventy-three percent (56,130) of the combined employment was located in the Detroit-Warren-Dearborn metropolitan area (the Detroit MSA). In the Warren-Troy-Farmington Hills division (the Warren MD), one of the two metropolitan divisions in the Detroit MSA, combined employment for the selected occupations was 34,700. The Detroit-Dearborn-Livonia division (the Detroit MD), the other metropolitan division in the Detroit MSA, had a combined employment of 21,430 for the four occupations. The Grand Rapids-Wyoming and Ann Arbor areas had a combined employment of 7,200 and 2,920, respectively, for the four occupations. Combined employment was less than 2,000 in each of the remaining areas for which data are available. (See [table B](#).)

Table B. Employment of selected engineering occupations in the United States, Michigan, and metropolitan areas in Michigan, May 2015

| Area | Mechanical Engineers | Industrial Engineers | Electrical Engineers | Civil Engineers |
|-----------------------------------|----------------------|----------------------|----------------------|-----------------|
| United States..... | 278,340 | 247,570 | 178,580 | 275,210 |
| Michigan..... | 40,490 | 24,810 | 9,410 | 6,020 |
| Ann Arbor..... | 1,560 | 980 | 280 | 100 |
| Battle Creek..... | 270 | 270 | 90 | 50 |
| Bay City..... | 70 | 110 | 30 | 60 |
| Detroit-Warren-Dearborn..... | 30,390 | 15,860 | 6,690 | 3,190 |
| Detroit-Dearborn-Livonia..... | 12,270 | 5,380 | 2,630 | 1,150 |
| Warren-Troy-Farmington Hills..... | 18,120 | 10,470 | 4,070 | 2,040 |
| Flint..... | 220 | 300 | (1) | 60 |
| Grand Rapids-Wyoming..... | 2,400 | 3,150 | 880 | 770 |
| Jackson..... | 1,040 | 350 | 190 | 320 |
| Kalamazoo-Portage..... | 630 | 300 | 70 | 120 |
| Lansing-East Lansing..... | 410 | 490 | 130 | 540 |
| Midland..... | 130 | 150 | 50 | (1) |
| Monroe..... | 180 | 110 | 220 | (1) |
| Muskegon..... | 240 | 250 | 40 | 70 |
| Niles-Benton Harbor..... | 940 | 100 | 230 | 40 |
| Saginaw..... | 610 | 390 | 180 | 60 |
| South Bend-Mishawaka..... | 280 | 330 | 30 | 100 |

Footnotes:
(1) Data not available.

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 location quotient of 2.0 indicates that an occupation accounts for twice the share of employment in the area than it does nationally.

Several of Michigan's areas had some of the highest LQs in the country for mechanical engineers and industrial engineers. For mechanical engineers, the Jackson area and the Detroit MSA had LQs of 8.6 and 7.9, respectively, meaning mechanical engineers were employed in these areas at 8.6 and 7.9 times the national rate. In the Detroit MSA, the Detroit MD and the Warren MD had LQs of 8.4 and 7.7, respectively, for mechanical engineers. Niles-Benton Harbor (7.8), Ann Arbor (3.7), and Saginaw (3.6) also had high LQs for mechanical engineers. Areas with high LQs for industrial engineers included the Detroit MSA (4.7) and Grand Rapids (3.4). The Warren MD (5.0) and the Detroit MD (4.1) also had high LQs for industrial engineers. (See [table C](#).)

Table C. Location quotients of selected engineering occupations in the United States, Michigan, and metropolitan areas in Michigan, May 2015

| Area | Mechanical Engineers | Industrial Engineers | Electrical Engineers | Civil Engineers |
|--------------------|----------------------|----------------------|----------------------|-----------------|
| United States..... | 1.0 | 1.0 | 1.0 | 1.0 |

Note: See footnotes at end of table.

Table C. Location quotients of selected engineering occupations in the United States, Michigan, and metropolitan areas in Michigan, May 2015 - Continued

| Area | Mechanical Engineers | Industrial Engineers | Electrical Engineers | Civil Engineers |
|------------------------------------|----------------------|----------------------|----------------------|-----------------|
| Michigan | 4.8 | 3.3 | 1.8 | 0.7 |
| Ann Arbor | 3.7 | 2.6 | 1.0 | 0.2 |
| Battle Creek..... | 2.5 | 2.7 | 1.3 | 0.4 |
| Bay City | 1.0 | 1.7 | 0.7 | 0.8 |
| Detroit-Warren-Dearborn..... | 7.9 | 4.7 | 2.7 | 0.8 |
| Detroit-Dearborn-Livonia | 8.4 | 4.1 | 2.8 | 0.8 |
| Warren-Troy-Farmington Hills | 7.7 | 5.0 | 2.7 | 0.9 |
| Flint..... | 0.8 | 1.2 | (1) | 0.2 |
| Grand Rapids-Wyoming | 2.3 | 3.4 | 1.3 | 0.7 |
| Jackson | 8.6 | 3.3 | 2.4 | 2.7 |
| Kalamazoo-Portage..... | 2.3 | 1.2 | 0.4 | 0.4 |
| Lansing-East Lansing..... | 1.0 | 1.3 | 0.5 | 1.3 |
| Midland..... | 1.9 | 2.4 | 1.1 | (1) |
| Monroe | 2.3 | 1.6 | 4.4 | (1) |
| Muskegon..... | 1.9 | 2.3 | 0.5 | 0.5 |
| Niles-Benton Harbor..... | 7.8 | 0.9 | 3.0 | 0.3 |
| Saginaw..... | 3.6 | 2.6 | 1.7 | 0.3 |
| South Bend-Mishawaka | 1.1 | 1.4 | 0.2 | 0.4 |

Footnotes:

(1) Data not available.

Wages for civil engineers in Michigan’s metropolitan areas

Thirteen of the 15 metropolitan areas in the state had annual wages for civil engineers that were significantly below the national average of \$87,940. Wages in these areas ranged from \$80,790 in Niles-Benton Harbor to \$62,430 in Monroe. Civil engineers in the Bay City and Jackson areas earned wages that were not significantly different from the national average for this occupation.

Wages for electrical engineers in Michigan’s metropolitan areas

Electrical engineers in 12 metropolitan areas for which data were available had annual wages that were significantly lower than the U.S. average of \$97,340. Wages in these 12 areas ranged from \$91,790 in Niles-Benton Harbor to \$68,170 in Battle Creek. Wages were not measurably different from the national average in Ann Arbor and Monroe.

Wages for industrial engineers in Michigan’s metropolitan areas

Industrial engineers in the Detroit MSA earned an average wage of \$92,560 per year, making this the only area in the state with wages significantly above the U.S. average of \$86,990 for this occupation. Eight metropolitan areas had average wages for industrial engineers that were significantly lower than the U.S. average, ranging from \$79,210 in Ann Arbor to \$66,120 in Muskegon. Wages for industrial engineers were not significantly different from the national average in the remaining six areas.

Wages for mechanical engineers in Michigan’s metropolitan areas

Mechanical engineers in Niles-Benton Harbor and in the Detroit MSA earned an average wage of \$94,370 and \$92,170, respectively. These were the only areas in the state with wages that were significantly above the U.S. average of \$88,190 for this occupation. Eight metropolitan areas had wages that were significantly lower than

the national average, ranging from \$79,220 in Kalamazoo-Portage to \$56,420 in Midland. Mechanical engineers in the remaining five areas earned wages that were not measurably different from the national average.

These statistics are from the Occupational Employment Statistics (OES) survey, a federal-state cooperative program between BLS and State Workforce Agencies, in this case, the Michigan State Department of Technology, Management and Budget, and the Indiana Department of Workforce Development.

With the issuance of data for May 2015, the OES program has incorporated redefined metropolitan area definitions as designated by the Office of Management and Budget. OES data are available for 394 metropolitan areas, 38 metropolitan divisions, and 167 OES-defined nonmetropolitan areas. A listing of the areas and their definitions can be found at www.bls.gov/oes/current/msa_def.htm.

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 mail survey measuring occupational employment and wage rates for wage and salary workers in nonfarm establishments in the United States. The OES program produces employment and wage estimates for over 800 occupations for all industries combined in the nation; the 50 states and the District of Columbia; 432 metropolitan areas and divisions; 167 nonmetropolitan areas; and Guam, Puerto Rico, and the U.S. Virgin Islands. National estimates are also available by industry for NAICS sectors, 3-, 4-, and selected 5- and 6-digit industries, and by ownership across all industries and for schools and hospitals. OES data are available at www.bls.gov/oes/tables.htm.

OES estimates are constructed from a sample of about 1.2 million establishments. Forms are mailed to approximately 200,000 sampled establishments in May and November each year. May 2015 estimates are based on responses from six semiannual panels collected over a 3-year period: May 2015, November 2014, May 2014, November 2013, May 2013, and November 2012. The overall national response rate for the six panels is 73.5 percent based on establishments and 69.6 percent based on weighted sampled employment. (Response rates are slightly lower for these estimates due to the federal shutdown in October 2013.) The unweighted employment of sampled establishments across all six semiannual panels represents approximately 57.9 percent of total national employment. For more information about OES concepts and methodology, go to www.bls.gov/news.release/ocwage.tn.htm.

The May 2015 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 and information about the 2012 NAICS is available at 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.

- **Ann Arbor, Mich. Metropolitan Statistical Area (MSA)** includes Washtenaw County in Michigan.
- **Battle Creek, Mich. MSA** includes Calhoun County in Michigan.
- **Bay City, Mich. MSA** includes Bay County in Michigan.
- **Detroit-Warren-Dearborn, Mich. MSA** includes the following:
 - **Detroit-Dearborn-Livonia, Mich. Metropolitan Division (MD)** includes Wayne County in Michigan.
 - **Warren-Troy-Farmington Hills, Mich. MD** includes Lapeer, Livingston, Macomb, Oakland and St. Clair Counties in Michigan.
- **Flint, Mich. MSA** includes Genesee County in Michigan.
- **Grand Rapids-Wyoming, Mich. MSA** includes Barry, Kent, Montcalm, and Ottawa Counties in Michigan.
- **Jackson, Mich. MSA** includes Jackson County in Michigan.
- **Kalamazoo-Portage, Mich. MSA** includes Kalamazoo and Van Buren Counties in Michigan.
- **Lansing-East Lansing, Mich. MSA** includes Clinton, Eaton, and Ingham Counties in Michigan.
- **Midland, Mich. MSA** includes Midland County in Michigan.
- **Monroe, Mich. MSA** includes Monroe County in Michigan.
- **Muskegon, Mich. MSA** includes Muskegon County in Michigan.
- **Niles-Benton Harbor, Mich. MSA** includes Berrien County in Michigan.
- **Saginaw, Mich. MSA** includes Saginaw County in Michigan.
- **South Bend-Mishawaka, Ind.-Mich. MSA** includes Cass County in Michigan and St. Joseph County in Indiana.

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