

# Technical Notes for May 2018 OES Estimates

## Scope of the survey

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 580 areas, including states and the District of Columbia, metropolitan statistical areas (MSAs), nonmetropolitan areas, and territories; national industry-specific estimates at the NAICS sector, 3-digit, most 4-digit, and selected 5- and 6-digit industry levels; and national estimates by ownership across all industries and for schools and hospitals.

The OES survey is a cooperative effort between BLS and the State Workforce Agencies (SWAs). BLS funds the survey and provides the procedures and technical support, while the State Workforce Agencies collect most of the data. OES estimates are constructed from a sample of about 1.2 million establishments. Each year, two semiannual panels of approximately 180,000 to 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 2018 estimates are based on responses from six semiannual panels collected over a 3-year period: May 2018, November 2017, May 2017, November 2016, May 2016, and November 2015. The unweighted sampled employment of 83 million across all six semiannual panels represents approximately 58 percent of total national employment. The overall national response rate for the six panels, based on the 50 states and the District of Columbia, is 71 percent based on establishments and 68 percent based on weighted sampled employment.

## The occupational coding system

The OES survey categorizes workers into 810 detailed occupations based on the Office of Management and Budget's 2010 Standard Occupational Classification (SOC) system. Together, these detailed occupations make up 22 of the 23 SOC major occupational groups. Major group 55, Military Specific Occupations, is not included.

For more information about the SOC system, please see the BLS website at <https://www.bls.gov/soc/>.

## The industry coding system

The May 2018 OES estimates use the 2017 North American Industry Classification System (NAICS). For more information about NAICS, see the BLS website at <https://www.bls.gov/bls/naics.htm>.

The OES survey excludes the majority of the agricultural sector, with the exception of logging (NAICS 113310), support activities for crop production (NAICS 1151), and support activities for animal production (NAICS 1152). Private households (NAICS 814) also are

excluded. OES federal government data include the U.S. Postal Service and the federal executive branch only. All other industries, including state and local government, are covered by the survey.

## Survey sample

The OES survey draws its sample from state unemployment insurance (UI) files. Supplemental sources are used for rail transportation (NAICS 4821) and Guam because they do not report to the UI program. The OES survey sample is stratified by metropolitan and nonmetropolitan area, industry, and size.

To provide the most occupational coverage, larger employers are more likely to be selected than smaller employers. A census is taken of the executive branch of the federal government, the U.S. Postal Service, and state government.

## Concepts

*Occupational employment* is the estimate of total wage and salary employment in an occupation. The OES survey defines employment as the number of workers who can be classified as full- or part-time employees, including workers on paid vacations or other types of paid leave; workers on unpaid short-term absences; salaried officers, executives, and staff members of incorporated firms; employees temporarily assigned to other units; and employees for whom the reporting unit is their permanent duty station, regardless of whether that unit prepares their paycheck. The survey does not include the self-employed, owners and partners in unincorporated firms, household workers, or unpaid family workers. *Wages* for the OES survey are straight-time, gross pay, exclusive of premium pay. Base rate; cost-of-living allowances; guaranteed pay; hazardous-duty pay; incentive pay, including commissions and production bonuses; and tips are included. Excluded are overtime pay, severance pay, shift differentials, nonproduction bonuses, employer cost for supplementary benefits, and tuition reimbursements.

OES receives wage rate data for the federal government, the U.S. Postal Service, and most state governments. For the remaining establishments, the OES survey data are placed into 12 intervals. The intervals are defined both as hourly rates and the corresponding annual rates, where the annual rate for an occupation is calculated by multiplying the hourly wage rate by a typical work year of 2,080 hours. The responding establishments are instructed to report the hourly rate for part-time workers, and to report annual rates for occupations that are typically paid at an annual rate but do not work 2,080 hours per year, such as teachers, pilots, and flight attendants. Other workers, such as some entertainment workers, are paid hourly rates, but generally do not work 40 hours per week, year round. For these workers, only an hourly wage is reported.

## Estimation methodology

The OES survey is designed to produce estimates by combining six panels of data collected over a 3-year period. Each OES panel contains approximately 180,000 to 200,000 establishments. Recent OES survey panels have a reduced sample; see the “Changes to the May 2018 estimates” section below for more information. The full six-panel sample of nearly 1.2 million establishments allows the production of estimates at detailed levels of geography, industry, and occupation.

*Wage updating.* Significant reductions in sampling errors are obtained by combining six panels of data, particularly for small geographic areas and occupations. Wages for the current panel need no adjustment. However, wages in the five previous panels need to be updated to the current panel’s reference period.

The OES program uses the BLS Employment Cost Index (ECI) to adjust survey data from prior panels before combining them with the current panel’s data. The wage updating procedure adjusts each detailed occupation’s wage rate, as measured in the earlier panel, according to the average movement of its broader occupational division.

*Imputation.* Some establishments do not respond for a given panel. For most employers, a “nearest neighbor” hot deck imputation procedure is used to impute missing occupational employment totals. A variant of mean imputation is used to impute missing wage distributions. In some cases, data for nonrespondents are available from earlier panels. In those cases, the older data may be used and aged to represent the current reference period.

*Weighting and benchmarking.* The sampled establishments are weighted to represent all establishments for the reference period. Weights are further adjusted by the ratio of employment totals (the average of November 2017 and May 2018 employment) from the BLS Quarterly Census of Employment and Wages to employment totals from the OES survey.

### **Changes to the May 2018 estimates**

The OES sample has been reduced in recent survey panels. The November 2017 and May 2018 OES survey panels each had a sample of approximately 186,000 establishments. The May 2017 panel sample consisted of approximately 195,000 establishments, and the November 2016, May 2016, and November 2015 survey panels each consisted of approximately 200,000 establishments.

With the publication of the May 2018 estimates, the OES program has made changes to the metropolitan and nonmetropolitan area data. OES continues to publish data for metropolitan and nonmetropolitan areas that cover the full geography of the United States. However, the level of detail available has been reduced.

*Elimination of metropolitan division data.* OES no longer publishes data for the metropolitan divisions within the 11 large metropolitan areas that are further broken down into divisions. Data for these 11 areas are available at the Metropolitan Statistical Area (MSA) or New England City and Town Area (NECTA) level only. For a list of metropolitan divisions and the corresponding MSAs/NECTAs, see [www.bls.gov/oes/divisions\\_2018.xlsx](http://www.bls.gov/oes/divisions_2018.xlsx).

*Consolidation of some nonmetropolitan areas.* Some nonmetropolitan areas published in the May 2017 estimates have been combined to form larger nonmetropolitan areas. The May 2018 estimates contain data for 134 nonmetropolitan areas, compared with 167 nonmetropolitan areas in the May 2017 estimates. For a list of the 2018 nonmetropolitan areas, see [www.bls.gov/oes/nonmet\\_2018.xlsx](http://www.bls.gov/oes/nonmet_2018.xlsx).

A spreadsheet showing all of the new area definitions and names used for the May 2018 OES estimates is available at [www.bls.gov/oes/area\\_definitions\\_2018.xlsx](http://www.bls.gov/oes/area_definitions_2018.xlsx).

### **For more information**

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