

# Technical Notes for May 2021 OEWS Estimates

## Scope of the survey

The Occupational Employment and Wage Statistics (OEWS) survey is a semiannual survey measuring occupational employment and wage rates for wage and salary workers in nonfarm establishments in the United States. The OEWS 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 OEWS 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 SWAs collect most of the data. OEWS estimates are constructed from a sample of about 1.1 million establishments. Each year, two semiannual panels of approximately 179,000 to 187,000 sampled establishments are contacted, one panel in May and the other in November. Responses are obtained by Internet or other electronic means, mail, email, telephone, or personal visit. The May 2021 estimates are based on responses from six semiannual panels collected over a 3-year period: May 2021, November 2020, May 2020, November 2019, May 2019, and November 2018. The unweighted sampled employment of 82 million across all six semiannual panels represents approximately 62 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 67.2 percent based on establishments and 64.5 percent based on weighted sampled employment.

## The occupational coding system

The May 2021 OEWS estimates contain approximately 830 occupational categories based on the Office of Management and Budget's 2018 Standard Occupational Classification (SOC) system. Together, these 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 [www.bls.gov/soc/](http://www.bls.gov/soc/).

## The industry coding system

The May 2021 OEWS estimates use the 2017 North American Industry Classification System (NAICS). For more information about NAICS, see the BLS website at [www.bls.gov/bls/naics.htm](http://www.bls.gov/bls/naics.htm). The OEWS 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. OEWS 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 OEWS 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 OEWS 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 OEWS 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 OEWS 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.

The responding establishments are instructed to report hourly rates 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.

OEWS receives wage rate data for the federal government, the U.S. Postal Service, most state governments, and some local government and private sector establishments. For the remaining establishments, the OEWS survey data were 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.

## Estimation methodology

The OEWS survey is designed to produce estimates by combining six panels of data collected over a 3-year period. Each OEWS panel contains approximately 179,000 to 187,000 establishments. The full six-panel sample of 1.1 million establishments allows the production of estimates at detailed levels of geography, industry, and occupation.

The May 2021 estimates were produced by a model-based estimation method using three years of OEWS data (MB3). Under MB3, data provided by survey respondents are used to model occupational staffing patterns and wages for all unobserved establishments in the

population, including establishments that were not sampled, sampled establishments that did not respond, and respondents that did not meet stability criteria.

A donor pool typically consisting of 10 nearest neighbor responding establishments is used to predict data for each unobserved establishment; if 10 donors are not available, then as few as 5 can be used. Donors are matched to recipients based on detailed industry, geographic area, ownership, size, and survey panel. Within a given donor pool, donors that are more similar to the unobserved establishment are given more weight in determining the modeled data.

Each establishment's population employment is set as the average of its May 2021 and November 2020 employment from the Quarterly Census of Employment and Wages, the UI database from which the OEWS sample is drawn. Using adjustment factors derived from the OEWS survey data, wages collected in earlier survey panels are adjusted to the reference date of the estimates and donor wages are adjusted for differences between donor and recipient characteristics such as geographic area and industry.

## Changes and special procedures in the May 2021 estimates

With the May 2021 estimates, the OEWS program has implemented a new estimation method. This new model-based method, called MB3, has advantages over the previous estimation method, as described in the Monthly Labor Review article at [www.bls.gov/opub/mlr/2019/article/model-based-estimates-for-the-occupational-employment-statistics-program.htm](http://www.bls.gov/opub/mlr/2019/article/model-based-estimates-for-the-occupational-employment-statistics-program.htm). For more information, see the May 2021 Survey Methods and Reliability Statement at [www.bls.gov/oes/methods\\_21.pdf](http://www.bls.gov/oes/methods_21.pdf).

The May 2021 estimates are the first OEWS estimates based entirely on survey data collected using the 2018 SOC. The May 2019 and May 2020 estimates were based on a combination of survey data collected using the 2010 SOC and survey data collected using the 2018 SOC and used a hybrid of the two classification systems.

See [www.bls.gov/soc/2018](http://www.bls.gov/soc/2018) and [www.bls.gov/oes/oes\\_ques.htm#qf10](http://www.bls.gov/oes/oes_ques.htm#qf10) for more information. May 2021 OEWS data are available for most 2018 SOC detailed occupations. To improve data quality, the OEWS program has replaced some 2018 SOC detailed occupations with SOC broad occupations or OEWS-specific aggregations.

The May 2021 OEWS estimates use the metropolitan area definitions delineated in Office of Management and Budget (OMB) Bulletin 17-01. For more information, please see [www.bls.gov/oes/current/msa\\_def.htm](http://www.bls.gov/oes/current/msa_def.htm).

Response rates for the May 2021 estimates were negatively affected by the difficulty of collecting data from employers during the COVID-19 pandemic. Lower response rates may negatively affect data availability and data quality.

## For more information

Answers to frequently asked questions about the OEWS data are available at [www.bls.gov/oes/oes\\_ques.htm](http://www.bls.gov/oes/oes_ques.htm).