

Bureau of Labor Statistics Report on Career and Technical Occupational Data
for
*Committees on Appropriations of the United States House of Representatives and the United
States Senate*
and
*Committee on Education and the Workforce of the U.S. House of Representatives and the
Committee on Health, Education, Labor and Pensions of the U.S. Senate*

Introduction

The following report outlines the response of the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor regarding improving the Current Population Survey (CPS) to provide greater reporting on career and technical occupations. This report is in response to the following language included in the Senate Committee on Appropriations Report (S. Rept. 115-289) that accompanied the Department of Defense and Labor Health and Human Services and Education Appropriations Act, 2019 and Continuing Appropriations Act, 2019 (Pub. L. 115-245):

The Committee believes that the Current Population Survey lacks critical occupational data on career and technical occupations that would be beneficial to Congress as it develops policies related to workforce and higher education. The Committee requests BLS prepare a report on improvements to the Current Population Survey that would allow greater reporting on career and technical occupations. This report should be submitted to the Committees on Appropriations of the House of Representatives and Senate and the Committees on Education and the Workforce and Health, Education, Labor and Pensions of the House of Representatives and Senate not later than 90 days of enactment of this act. (S. Rept. 115-289, p. 38)

BLS has several sources of occupational data—including the CPS, the Occupational Employment Statistics (OES) survey, the Occupational Requirements Survey (ORS), and the Employment Projections program. While the Committee only referenced the CPS, BLS believes the Committee’s need for critical occupational data for career and technical occupations may be met by other BLS programs.

Career/Technical Occupations Definition

Neither BLS nor the Standard Occupational Classification (SOC) system have a standardized definition for Career/Technical occupations. Career/Technical occupations generally refer to occupations that require knowledge gained through extensive on-the-job training, such as an apprenticeship, or through formal technical or trades-based (as opposed to academic) education. The BLS Employment Projections program identifies education, training, and experience typically needed to enter each occupation. This information may be used to identify occupations likely to be considered Career/Technical occupations. The occupations listed in the attached appendices include 103 SOC occupations that, according to BLS, require either long-term (at

least 1 year) on-the-job training or an apprenticeship, but not an associate's degree or higher, plus those that require a postsecondary non-degree award.

The Current Population Survey (CPS)

The CPS is a monthly survey with a sample of 60,000 households. CPS occupational and industry data are coded according to the most detailed level of the relevant classification system possible, accounting for factors such as disclosure concerns for small occupations and the ability to code occupations based on the detail provided by household respondents. This occupational coding system closely aligns with the SOC, but provides data on about 530 occupations, compared with 820 in the full SOC. The CPS is not unique in this regard. Disclosure and coding concerns exist in much larger household surveys like the Census Bureau's American Community Survey (ACS), which has a yearly sample of 3.5 million households. The ACS uses the same occupational coding structure as the CPS. Therefore, simply increasing the sample size of the CPS would not address the Committee's goal of greater reporting detail. Given these concerns, expanding detail on career and technical occupations cannot be accomplished while still protecting respondent confidentiality.

This report contains information currently available from the CPS about Career/Technical occupations. However, as stated above, other BLS occupational data may be of interest to the Committee and also is highlighted.

SOC Level of Detail vs. CPS Level of Detail

The first appendix table lists 45 SOC occupations that meet the above criteria for being Career/Technical occupations. For all of these occupations, the CPS provides the same level of occupational detail as the SOC. For example, Electricians is a SOC occupation, and the CPS provides data specifically for Electricians.

The second appendix table lists 58 SOC occupations that also meet the criteria for being Career/Technical occupations, *but where less detail is available in the CPS*. For example, Nursing Assistants is a SOC occupation, but in the CPS, data are only available for the aggregate occupation Nursing, Psychiatric, and Home Health Aides, which includes Nursing Assistants but also includes two other SOC occupations, Psychiatric Aides and Home Health Aides. No separate CPS data are available for these three SOC occupations. The 58 SOC occupations are combined into 36 CPS occupations, some of which also include SOCs that aren't considered Career/Technical. For example, both Psychiatric Aides and Home Health Aides are not Career/Technical occupations, as they both only require short-term (less than 1 month) on-the-job training.

BLS Projections Data at the SOC level

BLS has employment projections data available for occupations at the SOC level. The Occupational Outlook Handbook (<https://www.bls.gov/ooh/>), the BLS career information publication, provides narrative descriptions of what workers do, the work environment, the education and training requirements for entry (described above in defining Career/Technical

occupations), and the job outlook for 84 of the 103 occupations in the attachment. For example, the profile on Nursing Assistants is available from <https://www.bls.gov/ooh/healthcare/nursing-assistants.htm>. 576 SOC occupations are covered in the Handbook. The job outlook information in the Handbook provides context to the 10-year projections of employment by occupation that BLS produces. National employment projections from BLS are used by each state to develop state and area projections, which are funded by the Employment and Training Administration. Projections are a critical component of workforce development systems and serve as the basis for determining jobs in demand. Determining jobs in demand helps align education and training programs with the hiring needs of businesses and is a key component of the Workforce Innovation and Opportunity Act. Projections also are used for individual career decision purposes by students, parents, counselors, dislocated workers, jobseekers, and career changers. The most recent 2016-26 projections cover 819 SOC occupations. BLS is improving the frequency of the Employment Projection program by moving from biannual projections to annual projections. Another planned improvement is moving the release month from October to September to better coincide with back to school planning activities.

BLS Employment and Wage Data at the SOC Level

The BLS OES program provides employment and wages for each of the SOC occupations, including data by industry, state, and area, and is a key input to the occupational projections. Unlike CPS, the OES is an employer-based survey, where employers report occupational data for all workers in their establishment. The size of the OES survey allows for extensive detail on employment and wages. Using the example of Licensed Practical Nurses (LPNs), OES data show that the 702,000 LPNs in the US had a mean hourly wage of \$21.98 in 2017. Of these, almost 209,000 worked in nursing care facilities where the mean hourly wage was \$22.61. OES data also show geographic detail for occupations – employment was highest in Texas, California, and Florida, while wages were highest in the northeast states of Rhode Island, Massachusetts, and Connecticut. By metropolitan area, employment was highest in New York, Los Angeles, and Houston, while wages were highest in San Francisco, Boston, and San Jose. These and other selected data for LPNs can be found in the OES occupational profile for the occupation:

<https://www.bls.gov/oes/current/oes292061.htm>

OES has similar profiles for all 103 career and technical occupations, with data for hundreds of industries and up to 600 areas.

The OES program is exploring improvements in data collection to improve data quality and estimation enhancements to improve the reliability of the estimates.

BLS Occupational Requirements Data

The BLS ORS does not provide employment data but instead produces data on job-related physical demands, environmental conditions, mental and cognitive demands, and vocational preparation requirements. The ORS is an establishment survey, like the OES, and is intended to provide detail for SOC occupations, although the survey is new and data based on the full sample size will be released in early 2019. BLS conducts this survey under an agreement with the Social Security Administration (SSA). The goal of ORS is to collect and publish occupational information that will be used by SSA to help make decisions for their disability programs.

Continuing with the example of LPNs, the ORS reports that crouching is required for 65.8% of workers, 27.9% of workers are exposed to hazardous contaminants, and that an associate's degree is the minimum required education for 25.3% of workers. Many additional metrics are available for LPNs, and for other occupations, in the ORS database.

Additional information on the ORS is available from <https://www.bls.gov/ors/>. BLS is continuing to work with SSA to more accurately capture job requirements while still identifying changes in the way work is performed in the modern economy.

Conclusion

BLS believes that other occupational data highlighted in this report may prove beneficial to the Committee as it develops policies related to workforce and higher education. BLS would be happy to work with the Committee to identify the occupational data that would best fit their needs.

Appendix 1 - CPS at SOC Level

SOC Code	SOC Title	Education	Training	Work Experience	CPS/ Census code	CPS/Census Title
25-4031	Library technicians	Postsecondary nondegree award	None	None	2440	Library technicians
27-2011	Actors	Some college, no degree	Long-term on-the-job training	None	2700	Actors
27-4021	Photographers	High school diploma or equivalent	Long-term on-the-job training	None	2910	Photographers
29-2041	Emergency medical technicians and paramedics	Postsecondary nondegree award	None	None	3400	Emergency medical technicians and paramedics
29-2061	Licensed practical and licensed vocational nurses	Postsecondary nondegree award	None	None	3500	Licensed practical and licensed vocational nurses
29-2071	Medical records and health information technicians	Postsecondary nondegree award	None	None	3510	Medical records and health information technicians
29-2081	Opticians, dispensing	High school diploma or equivalent	Long-term on-the-job training	None	3520	Opticians, dispensing
31-9011	Massage therapists	Postsecondary nondegree award	None	None	3630	Massage therapists
31-9091	Dental assistants	Postsecondary nondegree award	None	None	3640	Dental assistants
31-9092	Medical assistants	Postsecondary nondegree award	None	None	3645	Medical assistants
31-9094	Medical transcriptionists	Postsecondary nondegree award	None	None	3646	Medical transcriptionists
31-9097	Phlebotomists	Postsecondary nondegree award	None	None	3649	Phlebotomists
33-1021	First-line supervisors of fire fighting and prevention workers	Postsecondary nondegree award	Moderate-term on-the-job training	Less than 5 years	3720	First-line supervisors/managers of fire fighting and prevention workers
33-2011	Firefighters	Postsecondary nondegree award	Long-term on-the-job training	None	3740	Fire fighters
39-5011	Barbers	Postsecondary nondegree award	None	None	4500	Barbers
39-5012	Hairdressers, hairstylists, and cosmetologists	Postsecondary nondegree award	None	None	4510	Hairdressers, hairstylists, and cosmetologists
47-2011	Boilermakers	High school diploma or equivalent	Apprenticeship	None	6210	Boilermakers
47-2031	Carpenters	High school diploma or equivalent	Apprenticeship	None	6230	Carpenters
47-2111	Electricians	High school diploma or equivalent	Apprenticeship	None	6355	Electricians
47-2121	Glaziers	High school diploma or equivalent	Apprenticeship	None	6360	Glaziers
47-2161	Plasterers and stucco masons	No formal educational credential	Long-term on-the-job training	None	6460	Plasterers and stucco masons
47-2171	Reinforcing iron and rebar workers	High school diploma or equivalent	Apprenticeship	None	6500	Reinforcing iron and rebar workers

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SOC Code	SOC Title	Education	Training	Work Experience	CPS/Census code	CPS/Census Title
47-2211	Sheet metal workers	High school diploma or equivalent	Apprenticeship	None	6520	Sheet metal workers
47-2221	Structural iron and steel workers	High school diploma or equivalent	Apprenticeship	None	6530	Structural iron and steel workers
47-4021	Elevator installers and repairers	High school diploma or equivalent	Apprenticeship	None	6700	Elevator installers and repairers
47-5031	Explosives workers, ordnance handling experts, and blasters	High school diploma or equivalent	Long-term on-the-job training	Less than 5 years	6830	Explosives workers, ordnance handling experts, and blasters
49-2097	Electronic home entertainment equipment installers and repairers	Postsecondary nondegree award	Short-term on-the-job training	None	7120	Electronic home entertainment equipment installers and repairers
49-3011	Aircraft mechanics and service technicians	Postsecondary nondegree award	None	None	7140	Aircraft mechanics and service technicians
49-3021	Automotive body and related repairers	High school diploma or equivalent	Long-term on-the-job training	None	7150	Automotive body and related repairers
49-3023	Automotive service technicians and mechanics	Postsecondary nondegree award	Short-term on-the-job training	None	7200	Automotive service technicians and mechanics
49-3031	Bus and truck mechanics and diesel engine specialists	High school diploma or equivalent	Long-term on-the-job training	None	7210	Bus and truck mechanics and diesel engine specialists
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	Postsecondary nondegree award	Long-term on-the-job training	None	7315	Heating, air conditioning, and refrigeration mechanics and installers
49-9043	Maintenance workers, machinery	High school diploma or equivalent	Long-term on-the-job training	None	7350	Maintenance workers, machinery
49-9044	Millwrights	High school diploma or equivalent	Apprenticeship	None	7360	Millwrights
49-9051	Electrical power-line installers and repairers	High school diploma or equivalent	Long-term on-the-job training	None	7410	Electrical power-line installers and repairers
49-9052	Telecommunications line installers and repairers	High school diploma or equivalent	Long-term on-the-job training	None	7420	Telecommunications line installers and repairers
49-9094	Locksmiths and safe repairers	High school diploma or equivalent	Long-term on-the-job training	None	7540	Locksmiths and safe repairers
51-3011	Bakers	No formal educational credential	Long-term on-the-job training	None	7800	Bakers
51-4041	Machinists	High school diploma or equivalent	Long-term on-the-job training	None	8030	Machinists
51-4111	Tool and die makers	Postsecondary nondegree award	Long-term on-the-job training	None	8130	Tool and die makers
51-5111	Prepress technicians and workers	Postsecondary nondegree award	None	None	8250	Prepress technicians and workers
51-8021	Stationary engineers and boiler operators	High school diploma or equivalent	Long-term on-the-job training	None	8610	Stationary engineers and boiler operators
51-8031	Water and wastewater treatment plant and system operators	High school diploma or equivalent	Long-term on-the-job training	None	8620	Water and liquid waste treatment plant and system operators
51-9071	Jewelers and precious stone and metal workers	High school diploma or equivalent	Long-term on-the-job training	None	8750	Jewelers and precious stone and metal workers

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SOC Code	SOC Title	Education	Training	Work Experience	CPS/Census code	CPS/Census Title
51-9195	Molders, shapers, and casters, except metal and plastic	High school diploma or equivalent	Long-term on-the-job training	None	8920	Molders, shapers, and casters, except metal and plastic

Appendix 2 - CPS less detailed

SOC Code	SOC Title	Education	Training	Work Experience	CPS/ Census code	CPS/Census Title
13-1031	Claims adjusters, examiners, and investigators	High school diploma or equivalent	Long-term on-the-job training	None	0540	Claims adjusters, appraisers, examiners, and investigators
13-1032	Insurance appraisers, auto damage	Postsecondary nondegree award	Moderate-term on-the-job training	None	0540	Claims adjusters, appraisers, examiners, and investigators
23-2091	Court reporters	Postsecondary nondegree award	Short-term on-the-job training	None	2160	Miscellaneous legal support workers
27-1012	Craft artists	No formal educational credential	Long-term on-the-job training	None	2600	Artists and related workers
27-1019	Artists and related workers, all other	No formal educational credential	Long-term on-the-job training	None	2600	Artists and related workers
27-2021	Athletes and sports competitors	No formal educational credential	Long-term on-the-job training	None	2720	Athletes, coaches, umpires, and related workers
27-2031	Dancers	No formal educational credential	Long-term on-the-job training	None	2740	Dancers and choreographers
27-2032	Choreographers	High school diploma or equivalent	Long-term on-the-job training	5 years or more	2740	Dancers and choreographers
27-2042	Musicians and singers	No formal educational credential	Long-term on-the-job training	None	2750	Musicians, singers, and related workers
27-4011	Audio and video equipment technicians	Postsecondary nondegree award	Short-term on-the-job training	None	2900	Broadcast and sound engineering technicians and radio operators, and media and communication equipment workers, all other
27-4014	Sound engineering technicians	Postsecondary nondegree award	Short-term on-the-job training	None	2900	Broadcast and sound engineering technicians and radio operators, and media and communication equipment workers, all other
29-2053	Psychiatric technicians	Postsecondary nondegree award	Short-term on-the-job training	Less than 5 years	3420	Health diagnosing and treating practitioner support technicians
29-2055	Surgical technologists	Postsecondary nondegree award	None	None	3420	Health diagnosing and treating practitioner support technicians
29-2057	Ophthalmic medical technicians	Postsecondary nondegree award	None	None	3420	Health diagnosing and treating practitioner support technicians
29-2099	Health technologists and technicians, all other	Postsecondary nondegree award	None	None	3535	Miscellaneous health technologists and technicians
29-9099	Healthcare practitioners and technical workers, all other	Postsecondary nondegree award	None	None	3540	Other healthcare practitioners and technical occupations, including podiatrists
31-1014	Nursing assistants	Postsecondary nondegree award	None	None	3600	Nursing, psychiatric, and home health aides
33-2021	Fire inspectors and investigators	Postsecondary nondegree award	Moderate-term on-the-job training	5 years or more	3750	Fire inspectors
35-2013	Cooks, private household	Postsecondary nondegree award	None	Less than 5 years	4020	Cooks
39-5091	Makeup artists, theatrical and performance	Postsecondary nondegree award	None	None	4520	Miscellaneous personal appearance workers
39-5092	Manicurists and pedicurists	Postsecondary nondegree award	None	None	4520	Miscellaneous personal appearance workers
39-5094	Skincare specialists	Postsecondary nondegree award	None	None	4520	Miscellaneous personal appearance workers

Appendix 2 - CPS less detailed

SOC Code	SOC Title	Education	Training	Work Experience	CPS/ Census code	CPS/Census Title
47-2021	Brickmasons and blockmasons	High school diploma or equivalent	Apprenticeship	None	6220	Brickmasons, blockmasons, and stonemasons
47-2022	Stonemasons	High school diploma or equivalent	Apprenticeship	None	6220	Brickmasons, blockmasons, and stonemasons
47-2044	Tile and marble setters	No formal educational credential	Long-term on-the-job training	None	6240	Carpet, floor, and tile installers and finishers
47-2053	Terrazzo workers and finishers	High school diploma or equivalent	Apprenticeship	None	6250	Cement masons, concrete finishers, and terrazzo workers
47-2132	Insulation workers, mechanical	High school diploma or equivalent	Apprenticeship	None	6400	Insulation workers
47-2142	Paperhangers	No formal educational credential	Long-term on-the-job training	None	6420	Painters, construction and maintenance and paperhangers
47-2152	Plumbers, pipefitters, and steamfitters	High school diploma or equivalent	Apprenticeship	None	6440	Pipelayers, plumbers, pipefitters, and steamfitters
49-2022	Telecommunications equipment installers and repairers, except line installers	Postsecondary nondegree award	Moderate-term on-the-job training	None	7020	Radio and telecommunications equipment installers and repairers
49-2093	Electrical and electronics installers and repairers, transportation equipment	Postsecondary nondegree award	Long-term on-the-job training	None	7100	Electrical and electronics repairers, transportation equipment, industrial and utility
49-2094	Electrical and electronics repairers, commercial and industrial equipment	Postsecondary nondegree award	Long-term on-the-job training	None	7100	Electrical and electronics repairers, transportation equipment, industrial and utility
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay	Postsecondary nondegree award	Moderate-term on-the-job training	Less than 5 years	7100	Electrical and electronics repairers, transportation equipment, industrial and utility
49-3041	Farm equipment mechanics and service technicians	High school diploma or equivalent	Long-term on-the-job training	None	7220	Heavy vehicle and mobile equipment service technicians and mechanics
49-3042	Mobile heavy equipment mechanics, except engines	High school diploma or equivalent	Long-term on-the-job training	None	7220	Heavy vehicle and mobile equipment service technicians and mechanics
49-3043	Rail car repairers	High school diploma or equivalent	Long-term on-the-job training	None	7220	Heavy vehicle and mobile equipment service technicians and mechanics
49-3051	Motorboat mechanics and service technicians	High school diploma or equivalent	Long-term on-the-job training	None	7240	Small engine mechanics
49-3052	Motorcycle mechanics	Postsecondary nondegree award	Short-term on-the-job training	None	7240	Small engine mechanics
49-3092	Recreational vehicle service technicians	High school diploma or equivalent	Long-term on-the-job training	None	7260	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers
49-9041	Industrial machinery mechanics	High school diploma or equivalent	Long-term on-the-job training	None	7330	Industrial and refractory machinery mechanics
49-9061	Camera and photographic equipment repairers	High school diploma or equivalent	Long-term on-the-job training	None	7430	Precision instrument and equipment repairers
49-9063	Musical instrument repairers and tuners	High school diploma or equivalent	Apprenticeship	None	7430	Precision instrument and equipment repairers
49-9064	Watch repairers	High school diploma or equivalent	Long-term on-the-job training	None	7430	Precision instrument and equipment repairers
49-9069	Precision instrument and equipment repairers, all other	High school diploma or equivalent	Long-term on-the-job training	None	7430	Precision instrument and equipment repairers

Appendix 2 - CPS less detailed

SOC Code	SOC Title	Education	Training	Work Experience	CPS/ Census code	CPS/Census Title
49-9081	Wind turbine service technicians	Postsecondary nondegree award	Long-term on-the-job training	None	7630	Other installation, maintenance, and repair workers, including wind turbine service technicians, commercial divers, and signal and train switch repairers
49-9092	Commercial divers	Postsecondary nondegree award	Moderate-term on-the-job training	None	7630	Other installation, maintenance, and repair workers, including wind turbine service technicians, commercial divers, and signal and train switch repairers
49-9093	Fabric menders, except garment	High school diploma or equivalent	Long-term on-the-job training	None	7630	Other installation, maintenance, and repair workers, including wind turbine service technicians, commercial divers, and signal and train switch repairers
51-3021	Butchers and meat cutters	No formal educational credential	Long-term on-the-job training	None	7810	Butchers and other meat, poultry, and fish processing workers
51-4012	Computer numerically controlled machine tool programmers, metal and plastic	Postsecondary nondegree award	Moderate-term on-the-job training	None	7900	Computer control programmers and operators
51-8011	Nuclear power reactor operators	High school diploma or equivalent	Long-term on-the-job training	None	8600	Power plant operators, distributors, and dispatchers
51-8012	Power distributors and dispatchers	High school diploma or equivalent	Long-term on-the-job training	None	8600	Power plant operators, distributors, and dispatchers
51-8013	Power plant operators	High school diploma or equivalent	Long-term on-the-job training	None	8600	Power plant operators, distributors, and dispatchers
51-8092	Gas plant operators	High school diploma or equivalent	Long-term on-the-job training	None	8630	Miscellaneous plant and system operators
53-2022	Airfield operations specialists	High school diploma or equivalent	Long-term on-the-job training	None	9040	Air traffic controllers and airfield operations specialists
53-3032	Heavy and tractor-trailer truck drivers	Postsecondary nondegree award	Short-term on-the-job training	None	9130	Driver/sales workers and truck drivers
53-5021	Captains, mates, and pilots of water vessels	Postsecondary nondegree award	None	Less than 5 years	9310	Ship and boat captains and operators
53-5022	Motorboat operators	Postsecondary nondegree award	None	Less than 5 years	9310	Ship and boat captains and operators
53-5031	Ship engineers	Postsecondary nondegree award	None	Less than 5 years	9300	Sailors and marine oilers, and ship engineers