

Supplementary Materials: Additional Documentation of Methods

I. Merging CPS & CANJEM Data

The Canadian Job-exposure Matrix (CANJEM) exposure data are organized by 2010 Standard Occupational Classification (SOC) codes, whereas the 2019 Current Population Survey (CPS) demographic data are organized by 2010 Census codes. In order to merge the CANJEM data with the CPS data, we used the 2010 Census to 2010 SOC crosswalk¹ provided by the U.S. Bureau of Labor Statistics (BLS) to translate between the codes. The final exposure estimates were presented for occupations using 2010 Census codes.

First, we merged the crosswalk to the CPS data by 2010 Census codes, which adds the corresponding 2010 SOC codes to the dataset. All occupations in the CPS data were matched with an equivalent 2010 SOC code, which were a mixture of codes at the detailed occupation, broad group, or minor group level. Because the corresponding SOC codes were found at three different occupation group levels, three CANJEM matrices, based on 6-, 5-, and 3-digit SOC codes², were combined before merging with the CPS data.

Some of the 2010 Census codes corresponded to more than one 2010 SOC code. For each of the Census codes with multiple SOC codes, it was found that either a) the SOC code did not have any exposure information in CANJEM or b) only one of the SOC codes had exposure information in CANJEM. If exposure information was available for a single SOC code, it was applied to the corresponding Census code. This assumes the same probability of exposure across all SOC codes for the corresponding Census code. See Table 1 below for further explanation.

There are 483 unique Census codes in the CPS data. We found that 126 out of 483 (26.1%) Census codes in the CPS data matched with at least one SOC code in the CANJEM data. Of the total workforce, 103,335,590 out of 157,538,027 (65.6%) of employees are covered by CANJEM.

Table 1. CANJEM data issues and solutions associated with 2010 Census to 2010 SOC crosswalk.

2010 Census code	2010 Census code Description	2010 SOC	Solution
1020	Software developers, applications and systems software	15-1132, 15-1133	No CANJEM data available.
2025	Miscellaneous community and social service specialists, including health educators and community health workers	21-1091, 21-1094, 21-1099	CANJEM data is only available for SOC 21-1099. The probability of exposure for SOC 21-1099 was used for Census code 2025.
2550	Other education, training, and library workers	25-9011, 25-9021, 25-9031, 25-9099	CANJEM data is only available for SOC 25-9031. The probability of exposure for SOC 25-9031 was used for Census code 2550.
3655	Miscellaneous healthcare support occupations, including medical equipment preparers	31-9093, 31-9099	No CANJEM data available.

¹ <https://www.bls.gov/cps/cenocc2010.htm>

² None of the 2010 Census codes corresponded to a 4-digit SOC code

3955	Lifeguards and other recreational, and all other protective service workers	33-9092, 33-9099	No CANJEM data available.
4220	Janitors and building cleaners	37-2011, 37-2019	CANJEM data is only available for SOC 37-2011. The probability of exposure for SOC 37-2011 was used for Census code 4220.
4460	Embalmers and funeral attendants	39-4011, 39-4021	No CANJEM data available.
6940	Other extraction workers	47-5051, 47-5099	No CANJEM data available.
7100	Electrical and electronics repairers, industrial and utility	49-2094, 49-2095	No CANJEM data available.
7330	Industrial and refractory machinery mechanics	49-9041, 49-9045	No CANJEM data available.
7630	Other installation, maintenance, and repair workers	49-9093, 49-9099	No CANJEM data available.
9260	Subway, streetcar, and other rail transportation workers	53-4041, 53-4099	No CANJEM data available.
9420	Other transportation workers	53-6041, 53-6099	No CANJEM data available.

II. Merging CPS & OEWS Data

The 2019 CPS demographic data are organized by 2010 Census codes, whereas the Occupational Employment and Wage Statistics (OEWS) wage data are organized using a hybrid structure that is a combination of 2010 SOC and 2018 SOC codes.³ In order to merge the CPS data with the OEWS data, we developed a key to translate between the 2010 Census codes and the codes used by OEWS (i.e., 2019 OEWS codes). The final exposure estimates were presented for occupations using 2010 Census codes.

We merged the key to the CPS data by 2010 Census codes, adding the corresponding 2019 OEWS codes to the dataset. All occupations in the CPS data were matched with the equivalent or closest equivalent 2019 OEWS code(s). We then merged the OEWS wage data to the CPS data by 2019 OEWS codes, adding the 2019 median hourly and annual wage to the dataset. After merging the datasets together, we found that 482 out of 483 (99.8%) Census codes in the CPS dataset had OEWS wage information. Additionally, all 126 occupations that matched between the CPS and CANJEM data had OEWS wage information.

If the median hourly wage was unavailable for an occupation, but the median annual wage was available, the median annual wage was divided by 2080 hours to obtain the median hourly wage. This assumes a 40-hour work week for 52 weeks of the year.

Some of the 2010 Census codes corresponded to more than one 2019 OEWS code. If wage information was available for only a single OEWS code, the single estimate was used to provide an estimate for the corresponding Census code. This assumes the same wage estimate across all OEWS codes for the corresponding Census code. If wage information was available for some or all the OEWS codes, the weighted average of the median hourly wage of the available codes were used to provide an estimate for the corresponding Census code.

III. Development of 2010 Census to 2019 OEWS Key

We developed a key to translate 2010 Census codes to 2019 OEWS codes using the OEWS 2019 Hybrid Structure guide⁴, the 2010 Census to 2010 SOC Crosswalk⁵, the 2010 SOC to 2018 SOC Crosswalk⁶, the 2010 SOC Structure⁷, and the 2018 SOC Structure⁸.

We used the 2010 Census to 2010 SOC Crosswalk as the starting point for the master key. First, we merged the 2010 SOC to 2018 SOC Crosswalk to the initial crosswalk by 2010 SOC codes, adding the corresponding 2018 SOC codes.

³ “The May 2020 estimates, to be published in spring 2021, will be based on 2 panels of data collected using the 2010 SOC and 4 panels of data using the 2018 SOC. [...] During the transition to the 2018 Standard Occupational Classification (SOC) system, OES estimates will be based on a “hybrid” structure that is a combination of the 2010 SOC and 2018 SOC. (https://www.bls.gov/oes/soc_2018.htm)

⁴ www.bls.gov/oes/oes_2019_hybrid_structure.xlsx

⁵ <https://www.bls.gov/cps/cenocc2010.htm>

⁶ https://www.bls.gov/soc/2018/soc_2010_to_2018_crosswalk.xlsx

⁷ https://www.bls.gov/soc/soc_structure_2010.xls

⁸ https://www.bls.gov/soc/2018/soc_structure_2018.xlsx

The 2010 SOC to 2018 SOC Crosswalk only provided translation at the detailed occupation level, so the 2018 SOC codes corresponding to the 2010 SOC codes at the broad or minor level were missing. To address these missing codes, we developed a supplementary key (Key B), shown in Table 2, to translate the 2010 Census and 2010 SOC codes to the missing broad and minor 2018 SOC codes. This was accomplished by looking at the structure of the 2010 and 2018 SOC codes. Due to reorganization of the SOC codes between 2010 and 2018, several codes at the broad or minor level did not cover the same detailed occupations between years. If the coverage of detailed occupations was not equivalent, a 2018 SOC code was not provided for the corresponding 2010 SOC code; the equivalent or closest equivalent combination of detailed occupations were addressed in another supplementary key (Key C) mentioned in the next step. Key B was then merged to the master key by 2010 Census codes, adding the corresponding 2018 SOC codes at the broad or minor occupation level, if available.

We created supplementary Key C, shown in Table 3, in order to address gaps in the data due to reorganization of the SOC structure, as mentioned above, and limitations of the OEWS data. The OEWS data does not contain wage information at every detailed, broad, minor, and major level. For some occupations, wage information was provided only at the detailed occupation level, only at the broad occupation level, or only for a hybrid group containing OEWS-specific aggregation of detailed occupations. This key was developed using the OEWS 2019 Hybrid Structure guide, the 2010 Census to 2010 SOC Crosswalk, the 2010 SOC to 2018 SOC Crosswalk, the 2010 SOC Structure, and the 2018 SOC Structure. For each 2010 Census code, we determined the equivalent or closest equivalent hybrid code, detailed occupation code(s), or broad occupation code in which OEWS provided wage information. For a broad summary of the issues encountered and the solutions, see Table 4. For a thorough review of the issues encountered and the solutions, see Table 5. Key C was then merged the master key by 2010 Census codes, adding the corresponding 2019 OEWS codes.

Table 2. Key B. Key for translating between 2010 Census codes and broad and minor 2010 and 2018 SOC.

2010 Census code	2010 SOC	2010 SOC Description	2018 SOC	2018 SOC Description	Notes
0050	11-2020	Marketing and Sales Managers	11-2020	Marketing and Sales Managers	
0230	11-9030	Education Administrators	11-9030	Education and Childcare Administrators	
0540	13-1030	Claims Adjusters, Appraisers, Examiners, and Investigators	13-1030	Claims Adjusters, Appraisers, Examiners, and Investigators	
0630	13-1070	Human Resources Workers	13-1070	Human Resources Workers	
0910	13-2070	Credit Counselors and Loan Officers	13-2070	Credit Counselors and Loan Officers	
1050	15-1150	Computer Support Specialists	15-1230	Computer Support Specialists	
1240	15-2090	Miscellaneous Mathematical Science Occupations			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
1300	17-1010	Architects, Except Naval	17-1010	Architects, Except Naval	
1310	17-1020	Surveyors, Cartographers, and Photogrammetrists	17-1020	Surveyors, Cartographers, and Photogrammetrists	
1410	17-2070	Electrical and Electronics Engineers	17-2070	Electrical and Electronics Engineers	
1430	17-2110	Industrial Engineers, Including Health and Safety	17-2110	Industrial Engineers, Including Health and Safety	
1540	17-3010	Drafters	17-3010	Drafters	
1550	17-3020	Engineering Technicians, Except Drafters	17-3020	Engineering Technologists and Technicians, Except Drafters	
1600	19-1010	Agricultural and Food Scientists	19-1010	Agricultural and Food Scientists	
1610	19-1020	Biological Scientists	19-1020	Biological Scientists	
1640	19-1030	Conservation Scientists and Foresters	19-1030	Conservation Scientists and Foresters	
1650	19-1040	Medical Scientists	19-1040	Medical Scientists	
1700	19-2010	Astronomers and Physicists	19-2010	Astronomers and Physicists	
1720	19-2030	Chemists and Materials Scientists	19-2030	Chemists and Materials Scientists	
1740	19-2040	Environmental Scientists and Geoscientists	19-2040	Environmental Scientists and Geoscientists	
1820	19-3030	Psychologists	19-3030	Psychologists	
1860	19-3090	Miscellaneous Social Scientists and Related Workers	19-3090	Miscellaneous Social Scientists and Related Workers	
1965	19-4090	Miscellaneous Life, Physical, and Social Science Technicians			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
2000	21-1010	Counselors	21-1010	Counselors	
2010	21-1020	Social Workers	21-1020	Social Workers	
2110	23-1020	Judges, Magistrates, and Other Judicial Workers	23-1020	Judges, Magistrates, and Other Judicial Workers	
2160	23-2090	Miscellaneous Religious Workers			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.

2010 Census code	2010 SOC	2010 SOC Description	2018 SOC	2018 SOC Description	Notes	
2200	25-1000	Postsecondary Teachers			No equivalent 2018 minor SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.	
2300	25-2010	Preschool and Kindergarten Teachers	25-2010	Preschool and Kindergarten Teachers		
2310	25-2020	Elementary and Middle School Teachers	25-2020	Elementary and Middle School Teachers		
2320	25-2030	Secondary School Teachers	25-2030	Secondary School Teachers		
2330	25-2050	Special Education Teachers	25-2050	Special Education Teachers		
2340	25-3000	Other Teachers and Instructors	25-3000	Other Teachers and Instructors		
2400	25-4010	Archivists, Curators, and Museum Technicians	25-4010	Archivists, Curators, and Museum Technicians		
2600	27-1010	Artists and Related Workers	27-1010	Artists and Related Workers		
2630	27-1020	Designers	27-1020	Designers		
2720	27-2020	Athletes, Coaches, Umpires, and Related Workers	27-2020	Athletes, Coaches, Umpires, and Related Workers		
2740	27-2030	Dancers and Choreographers	27-2030	Dancers and Choreographers		
2750	27-2040	Musicians, Singers, and Related Workers	27-2040	Musicians, Singers, and Related Workers		
2800	27-3010	Announcers				No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
2810	27-3020	News Analysts, Reporters and Correspondents	27-3020	News Analysts, Reporters and Journalists		
2860	27-3090	Miscellaneous Media and Communication Workers			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.	
2900	27-4010	Broadcast and Sound Engineering Technicians and Radio Operators				
2920	27-4030	Television, Video, and Motion Picture Camera Operators and Editors	27-4030	Television, Video, and Film Camera Operators and Editors	No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.	
3010	29-1020	Dentists	29-1020	Dentists		
3060	29-1060	Physicians and Surgeons			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.	
3300	29-2010	Clinical Laboratory Technologists and Technicians	29-2010	Clinical Laboratory Technologists and Technicians		
3320	29-2030	Diagnostic Related Technologists and Technicians			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.	
3420	29-2050	Health Practitioner Support Technologists and Technicians				

2010 Census code	2010 SOC	2010 SOC Description	2018 SOC	2018 SOC Description	Notes
3535	29-2090	Miscellaneous Health Technologists and Technicians			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
3540	29-9000	Other Healthcare Practitioners and Technical Occupations	29-9000	Other Healthcare Practitioners and Technical Occupations	
3600	31-1010	Nursing, Psychiatric, and Home Health Aides			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
3610	31-2010	Occupational Therapy Assistants and Aides	31-2010	Occupational Therapy Assistants and Aides	
3620	31-2020	Physical Therapist Assistants and Aides	31-2020	Physical Therapist Assistants and Aides	
3750	33-2020	Fire Inspectors	33-2020	Fire Inspectors	
3800	33-3010	Bailiffs, Correctional Officers, and Jailers	33-3010	Bailiffs, Correctional Officers, and Jailers	
3930	33-9030	Security Guards and Gaming Surveillance Officers	33-9030	Security Guards and Gaming Surveillance Officers	
4020	35-2010	Cooks	35-2010	Cooks	
4250	37-3010	Grounds Maintenance Workers	37-3010	Grounds Maintenance Workers	
4300	39-1010	First-Line Supervisors of Gaming Workers			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
4400	39-3010	Gaming Services Workers	39-3010	Gaming Services Workers	
4430	39-3090	Miscellaneous Entertainment Attendants and Related Workers	39-3090	Miscellaneous Entertainment Attendants and Related Workers	
4520	39-5090	Miscellaneous Personal Appearance Workers	39-5090	Miscellaneous Personal Appearance Workers	
4530	39-6010	Baggage Porters, Bellhops, and Concierges	39-6010	Baggage Porters, Bellhops, and Concierges	
4540	39-7010	Tour and Travel Guides	39-7010	Tour and Travel Guides	
4620	39-9030	Recreation and Fitness Workers	39-9030	Recreation and Fitness Workers	
4720	41-2010	Cashiers	41-2010	Cashiers	
4850	41-4010	Sales Representatives, Wholesale and Manufacturing	41-4010	Sales Representatives, Wholesale and Manufacturing	
4900	41-9010	Models, Demonstrators, and Product Promoters	41-9010	Models, Demonstrators, and Product Promoters	
4920	41-9020	Real Estate Brokers and Sales Agents	41-9020	Real Estate Brokers and Sales Agents	
5520	43-5030	Dispatchers	43-5030	Dispatchers	
5700	43-6010	Secretaries and Administrative Assistants	43-6010	Secretaries and Administrative Assistants	
6050	45-2090	Miscellaneous Agricultural Workers	45-2090	Miscellaneous Agricultural Workers	
6130	45-4020	Logging Workers	45-4020	Logging Workers	
6220	47-2020	Brickmasons, Blockmasons, and Stonemasons	47-2020	Brickmasons, Blockmasons, and Stonemasons	
6240	47-2040	Carpet, Floor, and Tile Installers and Finishers	47-2040	Carpet, Floor, and Tile Installers and Finishers	
6250	47-2050	Cement Masons, Concrete Finishers, and Terrazzo Workers	47-2050	Cement Masons, Concrete Finishers, and Terrazzo Workers	
6330	47-2080	Drywall Installers, Ceiling Tile Installers, and Tapers	47-2080	Drywall Installers, Ceiling Tile Installers, and Tapers	
6400	47-2130	Insulation Workers	47-2130	Insulation Workers	

2010 Census code	2010 SOC	2010 SOC Description	2018 SOC	2018 SOC Description	Notes
6440	47-2150	Pipelayers, Plumbers, Pipefitters, and Steamfitters	47-2150	Pipelayers, Plumbers, Pipefitters, and Steamfitters	
6600	47-3010	Helpers, Construction Trades	47-3010	Helpers, Construction Trades	
6765	47-4090	Miscellaneous Construction and Related Workers	47-4090	Miscellaneous Construction and Related Workers	
6800	47-5010	Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining	47-5010	Derrick, Rotary Drill, and Service Unit Operators, Oil and Gas	
6840	47-5040	Mining Machine Operators			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
7020	49-2020	Radio and Telecommunications Equipment Installers and Repairers	49-2020	Radio and Telecommunications Equipment Installers and Repairers	
7220	49-3040	Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	49-3040	Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	
7240	49-3050	Small Engine Mechanics	49-3050	Small Engine Mechanics	
7260	49-3090	Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	49-3090	Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	
7300	49-9010	Control and Valve Installers and Repairers	49-9010	Control and Valve Installers and Repairers	
7430	49-9060	Precision Instrument and Equipment Repairers	49-9060	Precision Instrument and Equipment Repairers	
7720	51-2020	Electrical, Electronics, and Electromechanical Assemblers	51-2020	Electrical, Electronics, and Electromechanical Assemblers	
7750	51-2090	Miscellaneous Assemblers and Fabricators			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
7810	51-3020	Butchers and Other Meat, Poultry, and Fish Processing Workers	51-3020	Butchers and Other Meat, Poultry, and Fish Processing Workers	
7900	51-4010	Computer Control Programmers and Operators	51-9160	Computer Numerically Controlled Tool Operators and Programmers	
8040	51-4050	Metal Furnace Operators, Tenders, Pourers, and Casters	51-4050	Metal Furnace Operators, Tenders, Pourers, and Casters	
8060	51-4060	Model Makers and Patternmakers, Metal and Plastic	51-4060	Model Makers and Patternmakers, Metal and Plastic	
8100	51-4070	Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic	51-4070	Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic	
8140	51-4120	Welding, Soldering, and Brazing Workers	51-4120	Welding, Soldering, and Brazing Workers	
8350	51-6050	Tailors, Dressmakers, and Sewers	51-6050	Tailors, Dressmakers, and Sewers	
8520	51-7030	Model Makers and Patternmakers, Wood	51-7030	Model Makers and Patternmakers, Wood	
8600	51-8010	Power Plant Operators, Distributors, and Dispatchers	51-8010	Power Plant Operators, Distributors, and Dispatchers	
8630	51-8090	Miscellaneous Plant and System Operators	51-8090	Miscellaneous Plant and System Operators	
8640	51-9010	Chemical Processing Machine Setters, Operators, and Tenders	51-9010	Chemical Processing Machine Setters, Operators, and Tenders	

2010 Census code	2010 SOC	2010 SOC Description	2018 SOC	2018 SOC Description	Notes
8650	51-9020	Crushing, Grinding, Polishing, Mixing, and Blending Workers	51-9020	Crushing, Grinding, Polishing, Mixing, and Blending Workers	
8710	51-9030	Cutting Workers	51-9030	Cutting Workers	
8760	51-9080	Medical, Dental, and Ophthalmic Laboratory Technicians	51-9080	Medical, Dental, and Ophthalmic Laboratory Technicians	
8810	51-9120	Painting Workers	51-9120	Painting Workers	
9000	53-1000	Supervisors of Transportation and Material Moving Workers	53-1000	Supervisors of Transportation and Material Moving Workers	
9030	53-2010	Aircraft Pilots and Flight Engineers	53-2010	Aircraft Pilots and Flight Engineers	
9040	53-2020	Air Traffic Controllers and Airfield Operations Specialists	53-2020	Air Traffic Controllers and Airfield Operations Specialists	
9120	53-3020	Bus Drivers			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
9130	53-3030	Driver/Sales Workers and Truck Drivers	53-3030	Driver/Sales Workers and Truck Drivers	
9200	53-4010	Locomotive Engineers and Operators			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
9310	53-5020	Ship and Boat Captains and Operators	53-5020	Ship and Boat Captains and Operators	
9520	53-7030	Dredge, Excavating, and Loading Machine Operators			No equivalent 2018 broad SOC. Group was reorganized in 2018 and coverage of detailed occupations are not equivalent between years.
9650	53-7070	Pumping Station Operators	53-7070	Pumping Station Operators	

Table 3. Key C. 2019 OEWS codes used to provide wage estimates for 2010 Census codes.

2010 Census Code	2010 Census Code Description	2010 SOC	2019 OEWS Code Used for Wage Estimate	2019 OEWS Code Description	Notes
1240	Miscellaneous mathematical science occupations	15-2090	15-2098	Data Scientists and Mathematical Science Occupations, All Other	Census code 1240 corresponds to OEWS hybrid code 15-2098.
1965	Miscellaneous life, physical, and social science technicians	19-4090	19-4090	Miscellaneous Life, Physical, and Social Science Technicians	Census code 1965 corresponds to OEWS codes 19-4090, 19-4042, and 19-4071.
1965	Miscellaneous life, physical, and social science technicians	19-4090	19-4092	Forensic Science Technicians	Census code 1965 corresponds to OEWS codes 19-4090, 19-4042, and 19-4071.
1965	Miscellaneous life, physical, and social science technicians	19-4090	19-4071	Forest and Conservation Technicians	Census code 1965 corresponds to OEWS codes 19-4090, 19-4042, and 19-4071.
2160	Miscellaneous legal support workers	23-2090	23-2090	Miscellaneous Religious Workers	Census code 2160 corresponds to OEWS codes 23-2090 and 27-3092.
2160	Miscellaneous legal support workers	23-2090	27-3092	Court Reporters and Simultaneous Captioners	Census code 2160 corresponds to OEWS codes 23-2090 and 27-3092.
2200	Postsecondary teachers	25-1000	25-1000	Postsecondary Teachers	Census code 2200 corresponds to OEWS codes 25-1000 and 25-9044.
2200	Postsecondary teachers	25-1000	25-9044	Teaching Assistants, Postsecondary	Census code 2200 corresponds to OEWS codes 25-1000 and 25-9044.
2800	Announcers	27-3010	27-3010	Broadcast Announcers and Radio Disc Jockeys	Wage estimates are not available for all equivalent occupations. Only wage estimates provided for OEWS code 27-3010 will be used for Census code 2800.
2860	Miscellaneous media and communication workers	27-3090	27-3091	Interpreters and Translators	Census code 2860 corresponds to OEWS codes 27-3091 and 27-3099.
2860	Miscellaneous media and communication workers	27-3090	27-3099	Media and Communication Workers, All Other	Census code 2860 corresponds to OEWS codes 27-3091 and 27-3099.
2900	Broadcast and sound engineering technicians and radio operators	27-4010	27-4011	Audio and Video Technicians	Wage estimates are not available for all equivalent occupations. Only wage estimates provided for OEWS codes 27-4011, 27-4012, and 27-4014 will be used for Census code 2900.
2900	Broadcast and sound engineering technicians and radio operators	27-4010	27-4012	Broadcast Technicians	Wage estimates are not available for all equivalent occupations. Only wage estimates provided for OEWS codes 27-4011, 27-4012, and 27-4014 will be used for Census code 2900.
2900	Broadcast and sound engineering technicians and radio operators	27-4010	27-4014	Sound Engineering Technicians	Wage estimates are not available for all equivalent occupations. Only wage estimates provided for OEWS codes 27-4011, 27-4012, and 27-4014 will be used for Census code 2900.
3060	Physicians and surgeons	29-1060	29-1211	Anesthesiologists	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1215	Family Medicine Physicians	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.

2010 Census Code	2010 Census Code Description	2010 SOC	2019 OEWS Code Used for Wage Estimate	2019 OEWS Code Description	Notes
3060	Physicians and surgeons	29-1060	29-1216	General Internal Medicine Physicians	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1218	Obstetricians and Gynecologists	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1221	Pediatricians, General	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1223	Psychiatrists	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3060	Physicians and surgeons	29-1060	29-1248	Surgeons, Except Ophthalmologists	Census code 3060 corresponds to OEWS codes 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, 29-1223, hybrid 29-1228, and hybrid 29-1248.
3320	Diagnostic related technologists and technicians	29-2030	29-2031	Cardiovascular Technologists and Technicians	Census code 3320 corresponds to OEWS codes 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035.
3320	Diagnostic related technologists and technicians	29-2030	29-2032	Diagnostic Medical Sonographers	Census code 3320 corresponds OEWS codes 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035.
3320	Diagnostic related technologists and technicians	29-2030	29-2033	Nuclear Medicine Technologists	Census code 3320 corresponds to OEWS codes 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035.
3320	Diagnostic related technologists and technicians	29-2030	29-2034	Radiologic Technologists and Technicians	Census code 3320 corresponds to OEWS codes 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035.
3320	Diagnostic related technologists and technicians	29-2030	29-2035	Magnetic Resonance Imaging Technologists	Census code 3320 corresponds to OEWS codes 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035.
3420	Health practitioner support technologists and technicians	29-2050	29-2050	Health Practitioner Support Technologists and Technicians	OEWS code 29-2050 has differing coverage of detailed occupations than Census code 3420 due to reorganization. However, it is the best available representation.
3535	Miscellaneous health technologists and technicians	29-2090	29-2091	Orthotists and Prosthetists	Wage estimates are not available for all equivalent occupations. Wage estimates provided for OEWS codes 29-2091, 29-2092, and hybrid 29-2098 will be used for Census code 3535.
3535	Miscellaneous health technologists and technicians	29-2090	29-2092	Hearing Aid Specialists	Wage estimates are not available for all equivalent occupations. Wage estimates provided for OEWS codes 29-2091, 29-2092, and hybrid 29-2098 will be used for Census code 3535.
3535	Miscellaneous health technologists and technicians	29-2090	29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	Wage estimates are not available for all equivalent occupations. Wage estimates provided for OEWS codes 29-2091, 29-2092, and hybrid 29-2098 will be used for Census code 3535.

2010 Census Code	2010 Census Code Description	2010 SOC	2019 OEWS Code Used for Wage Estimate	2019 OEWS Code Description	Notes
3600	Nursing, psychiatric, and home health aides	31-1010	31-1120	Home Health and Personal Care Aides	Census code 3600 corresponds to OEWS code 31-1130 and part of 31-1120. Wage information is not available for detailed groups in 31-1120, so estimates for the broad group are used instead.
3600	Nursing, psychiatric, and home health aides	31-1010	31-1130	Nursing Assistants, Orderlies, and Psychiatric Aides	Census code 3600 corresponds to OEWS code 31-1130 and part of 31-1120. Wage information is not available for detailed groups in 31-1120, so estimates for the broad group are used instead.
4300	First-line supervisors of gaming workers	39-1010	39-1013	First-line Supervisors of Gambling Services Workers	Census code 4300 corresponds to OEWS code 39-1013.
6840	Mining machine operators	47-5040	47-5041	Continuous Mining Machine Operators	Census code 6840 corresponds to OEWS code 47-5041 and part of hybrid 47-5097. Wage information is not available for all detailed groups in 47-5040, so estimates from 47-5041 and hybrid 47-5097 are used instead.
6840	Mining machine operators	47-5040	47-5097	Continuous Mining Machine Operators	Census code 6840 corresponds to OEWS code 47-5041 and part of hybrid 47-5097. Wage information is not available for all detailed groups in 47-5040, so estimates from 47-5041 and hybrid 47-5097 are used instead.
7750	Miscellaneous assemblers and fabricators	51-2090	51-2090	Miscellaneous Assemblers and Fabricators	Census code 7750 corresponds to OEWS codes 51-2090, 51-2051, and 51-2061.
7750	Miscellaneous assemblers and fabricators	51-2090	51-2051	Miscellaneous Assemblers and Fabricators	Census code 7750 corresponds to OEWS codes 51-2090, 51-2051, and 51-2061.
7750	Miscellaneous assemblers and fabricators	51-2090	51-2061	Miscellaneous Assemblers and Fabricators	Census code 7750 corresponds to OEWS codes 51-2090, 51-2051, and 51-2061.
9120	Bus drivers	53-3020	53-3050	Passenger Vehicle Drivers	Wage estimates provided for OEWS code 53-3050 are used for Census code 9120, as it is the closest equivalent.
9200	Locomotive engineers and operators	53-4010	53-4010	Locomotive Engineers and Operators	Wage estimates are not available for all equivalent occupations. Only estimates provided for OEWS code 53-4010 will be used for Census code 9200.
9520	Dredge, excavating, and loading machine operators	53-7030	53-7030	Dredge Operators	Wage estimates are not available for all equivalent occupations. Only estimates provided for 53-7030 and 47-5022 will be used for Census code 9520.
9520	Dredge, excavating, and loading machine operators	53-7030	47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	Wage estimates are not available for all equivalent occupations. Only estimates provided for 53-7030 and 47-5022 will be used for Census code 9520.
0060	Public relations and fundraising managers	11-2031	11-2030	Public Relations and Fundraising Managers	Census code 0060 corresponds to OEWS code 11-2030.
0100	Administrative services managers	11-3011	11-3010	Administrative Services and Facilities Managers	Census code 0100 corresponds to OEWS code 11-3010.
0430	Managers, all other	11-9199	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	Census code 0430 corresponds to OEWS hybrid code 11-9198.

2010 Census Code	2010 Census Code Description	2010 SOC	2019 OEWS Code Used for Wage Estimate	2019 OEWS Code Description	Notes
0510	Buyers and purchasing agents, farm products	13-1021	13-1020	Buyers and Purchasing Agents	Census code 0510 corresponds to part of OEWS code 13-1020. OEWS does not provide a wage estimate for the detailed occupation.
0520	Wholesale and retail buyers, except farm products	13-1022	13-1020	Buyers and Purchasing Agents	Census code 0520 corresponds to part of OEWS code 13-1020. OEWS does not provide an estimate for the detailed occupation.
0530	Purchasing agents, except wholesale, retail, and farm products	13-1023	13-1020	Buyers and Purchasing Agents	Census code 0530 corresponds to part of OEWS code 13-1020. OEWS does not provide an estimate for the detailed occupation.
0740	Business operations specialists, all other	13-1199	13-1198	Project Management Specialists and Business Operations Specialists, All Other	Census code 0740 corresponds to OEWS hybrid code 13-1198.
0810	Appraisers and assessors of real estate	13-2021	13-2020	Property Appraisers and Assessors	Census code 0810 corresponds to OEWS hybrid code 13-2020.
0840	Financial analysts	13-2051	13-2098	Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other	Census code 0840 corresponds to part of OEWS hybrid code 13-2098. OEWS does not provide an estimate for the detailed occupation.
0950	Financial Specialists, All Other	13-2099	13-2098	Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other	Census code 0950 corresponds to part of OEWS hybrid code 13-2098. OEWS does not provide an estimate for the detailed occupation.
1060	Database administrators	15-1141	15-1245	Database Administrators and Architects	Census code 1060 corresponds part of OEWS hybrid code 15-1245. OEWS does not provide an estimate for the detailed occupation.
1020	Software developers, applications and systems software	15-1132	15-1256	Software Developers and Software Quality Assurance Analysts and Testers	Census code 1020 corresponds to estimates provided for part of OEWS hybrid code 15-1256. OEWS does not provide an estimate for the detailed occupation.
1030	Web developers	15-1134	15-1257	Web Developers and Digital Interface Designers	Census code 1030 corresponds to part of OEWS hybrid code 15-1257. OEWS does not provide an estimate for the detailed occupation.
1900	Agricultural and food science technicians	19-4011	19-4010	Agricultural and Food Science Technicians	Census code 1900 corresponds to OEWS code 19-4010.
1930	Geological and petroleum technicians	19-4041	19-4045	Geological and Hydrologic Technicians	Census code 1930 corresponds to part of OEWS hybrid code 19-4045.
2540	Teacher assistants	25-9041	25-9045	Teaching Assistants, Except Postsecondary	Census code 2540 corresponds to OEWS hybrid code 25-9045.
2760	Entertainers and performers, sports and related workers, all other	27-2099	27-2090	Miscellaneous Entertainers and Performers, Sports and Related Workers	Census code 2760 corresponds to part of OEWS code 27-2090.
3260	Health diagnosing and treating practitioners, all other	25-1199	29-1298	Acupuncturists and Healthcare Diagnosing or Treating Practitioners, All Other	Census code 3260 corresponds to OEWS hybrid code 29-1298.
3400	Emergency medical technicians and paramedics	29-2041	29-2040	Emergency Medical Technicians and Paramedics	Census code 3400 corresponds to OEWS code 29-2040.

2010 Census Code	2010 Census Code Description	2010 SOC	2019 OEWS Code Used for Wage Estimate	2019 OEWS Code Description	Notes
3510	Medical records and health information technicians	29-2071	29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	Census code 3510 corresponds to parts of OEWS hybrid codes, 29-2098 and 29-9098.
3510	Medical records and health information technicians	29-2071	29-9098	Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers, All Other	Census code 3510 corresponds to parts of OEWS hybrid codes, 29-2098 and 29-9098.
4610	Personal Care Aides	39-9021	31-1120	Home Health and Personal Care Aides	Census code 4610 corresponds to part of OEWS code 31-1120.
3730	First-line supervisors of protective service workers, all other	33-1099	33-1090	Miscellaneous First-Line Supervisors, Protective Service Workers	Census code 3730 corresponds to OEWS code 33-1090.
3955	Lifeguards and other recreational, and all other protective service workers	33-9099	33-9098	School Bus Monitors and Protective Service Workers, All Other	Census code 3955 corresponds to OEWS hybrid code 33-9098.
4320	First-line supervisors of personal service workers	39-1021	39-1098	First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services	Census code 4320 partially corresponds to OEWS hybrid code 39-1098.
4650	Personal care and service workers, all other	39-9099	39-9098	Crematory Operators and Personal Care and Service Workers, All Other	Census code 4650 corresponds to OEWS hybrid code 39-9098.
6820	Earth drillers, except oil and gas	47-5021	47-5097	Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters	Census code 6820 corresponds to part of OEWS hybrid code 47-5021.
6830	Explosives workers, ordnance handling experts, and blasters	47-5031	47-5097	Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters	Census code 6830 corresponds to part of OEWS hybrid code 47-5021.
6940	Other extraction workers	47-5099	47-5098	Underground Mining Machine Operators and Extraction Workers, All Other	Census code 6940 corresponds to part of OEWS hybrid code 47-5098
9140	Taxi drivers and chauffeurs	53-3041	53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	Census code 9140 corresponds to part of OEWS hybrid code 53-3058.
9420	Other transportation workers	53-6099	53-6098	Aircraft Service Attendants and Transportation Workers, All Other	Census code 9420 corresponds to OEWS hybrid code 53-6098.

Table 4. Summary of OEWS data issues and solutions.

Issue	Solution	Coverage of Occupations	Census codes Affected
The detailed or broad SOC occupation code corresponding to the 2010 Census code was reorganized in 2018. OEWS provided wage information for a hybrid code, with no change in coverage of occupations.	Used the hybrid code.	No change	1240, 2540, 3260, 3955, 4650, 9420
The broad SOC occupation code corresponding to the 2010 Census code was reorganized in 2018. OEWS provided wage information for all applicable occupations corresponding to the 2010 Census code. One or more of the applicable occupation codes may be a hybrid code.	Took the weighted average of the wage estimates for applicable codes.	No change	2160, 2200, 3060, 3320, 4300, 7750
OEWS only provided wage information for the 2018 broad SOC code corresponding to the 2010 Census code. The wage estimate covers the same occupations that correspond to the 2010 Census code.	Used the wage estimate for the broad occupation code.	No change	0060, 0100, 0810, 1900, 2760, 3400, 3730
The detailed or broad SOC occupation code corresponding to the 2010 Census code was reorganized in 2018. One or more detailed occupation codes within the coverage of the 2010 Census code was absorbed or disaggregated into one or more codes that include other occupations outside the Census code coverage. Wage information for one or more of the codes was either a) not provided or b) includes occupations outside of the 2010 Census code. One or more of the applicable occupation codes may be a hybrid code.	Used the wage estimate for the hybrid group, the broad occupation group, or took the weighted average of the wage estimates for applicable codes. Did not include estimates of codes outside of the 2010 Census code.	Decrease in coverage	1965, 2800, 2900, 3420, 9200, 9520, 0430, 4320
The broad occupation code corresponding to the 2010 Census code was reorganized in 2018. One or more detailed occupation codes within the coverage of the 2010 Census code absorbed one or more codes outside the intended coverage. Wage information for one or more of the codes includes occupations outside of the 2010 Census code.	Took the weighted average of the wage estimates for applicable codes. Included estimates that included codes outside of the 2010 Census code as no other estimate available.	Increase in coverage	2860
The broad occupation code corresponding to the 2010 Census code was reorganized in 2018. One or more detailed occupation codes within the coverage of the 2010 Census code both a) absorbed one or more codes outside the intended coverage and b) was absorbed or disaggregated into one or more codes that include other occupations outside the intended coverage. Wage information for one or more of the codes includes occupations outside of the 2010 Census code.	Took the weighted average of the wage estimates for applicable codes. Included estimates that included codes outside of the 2010 Census code as no other estimate available.	Both increase and decrease in coverage	3535
The broad occupation code corresponding to the 2010 Census code was reorganized in 2018. Wage estimates were not provided for all the detailed occupations corresponding to the 2010 Census code. Wage estimates were provided for the broad occupation group(s), at least one of which included other occupations outside of the 2010 Census code.	Used the broad occupation group or took the weighted average of the wage estimates of the broad occupation codes. As no other estimate was available, used or included the estimate for the broad code that includes occupations outside of the 2010 Census code	Increase in coverage	3600, 9120

Issue	Solution	Coverage of Occupations	Census codes Affected
<p>The detailed or broad occupation code corresponding to the 2010 Census code was reorganized in 2018. One or more detailed occupation codes within the coverage of the 2010 Census code was absorbed or disaggregated into one or more codes that include other occupations outside the intended coverage. Wage information for one or more of the codes was only provided as part of a hybrid code that included occupations outside of the 2010 Census code.</p>	<p>Used the wage estimate for the hybrid group, the broad occupation group, or took the weighted average of the wage estimates for applicable codes.</p> <p>Included the estimate for the hybrid code that included codes outside of the 2010 Census code as no other estimate was available.</p>	<p>Increase in coverage</p>	<p>6840, 0740, 0840, 0950, 1060, 1020, 1030, 1930, 3510, 6820, 6830, 6940, 9140</p>
<p>The 2010 Census code corresponds to 2010 and 2018 SOC codes at the detailed occupation level. However, OEWS only provided wage information for the 2018 broad SOC code that contains the detailed occupation. The wage estimate covers more occupations than the 2010 Census code.</p>	<p>Used the wage estimate for the broad occupation code.</p>	<p>Increase in coverage</p>	<p>0510, 0520, 0530, 4610</p>

Table 5. Detailed OEWS data issues and solutions.

* indicates that the 2018 broad SOC has undergone organizational changes and does not cover the equivalent detailed occupations that were originally in the 2010 SOC.

** indicates that the listed 2018 SOC code correspond to one or more 2010 SOC codes outside the coverage of the corresponding 2010 Census code.

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
0060: Public relations and fundraising managers	Detailed Occupation				
	11-2031: Public Relations and Fundraising Managers	11-2032: Public Relations Managers 11-2033: Fundraising Managers	Wage estimate provided for broad occupation group, 11-2030 (Public Relations and Fundraising Managers), which includes 11-2032 and 11-2033.	X	The 2018 broad SOC code, 11-2030, covers the same occupations that fall under Census code 0060. For this reason, OEWS wage estimate for the 2018 broad SOC code, 11-2030, will be used to provide an estimate for Census code 0060.
0100: Administrative services managers	Detailed Occupation				
	11-3011: Administrative Services Managers	11-3012: Administrative Services Managers 11-3013: Facilities Managers	Wage estimate provided for broad occupation group, 11-3010 (Administrative Services and Facilities Managers), which includes 11-3012 and 11-3013.	X	The 2018 broad SOC code, 11-3010, covers the same occupations that fall under Census code 0100. For this reason, OEWS wage estimate for the 2018 broad SOC code, 11-3010, will be used to provide an estimate for Census code 0100.
0430: Managers, all other	Detailed Occupation				
	11-9199: Managers, All Other	11-9072: Entertainment and Recreation Managers, Except Gambling	Wage estimate provided for hybrid group, 11-9198 (Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other), which includes 11-9072, 11-9179, and 11-9199.	X	The 2010 SOC code, 11-9199, was reorganized in 2018 into new or existing codes, one of which includes workers outside of Census code 0430. For this reason, only the wage estimate for OEWS hybrid code, 11-9198, will be used to provide an estimate for Census code 0430.
		11-9179: Personal Service Managers, All Other			
		11-9199: Managers, All Other			
13-1082**: Project Management Specialists	Wage estimate provided for hybrid group, 13-1198 (Project Management Specialists and Business Operations Specialists, All Other), which includes 13-1199 and 13-1082.				
0510: Buyers and purchasing agents, farm products	Detailed Occupation				
13-1021: Buyers and Purchasing Agents, Farm Products	13-1021: Buyers and Purchasing Agents, Farm Products	Wage estimate provided for broad occupation group, 13-1020 (Buyers and Purchasing Agents), which includes 13-1021, 13-1022, and 13-1023.	X	OEWS only provided wage estimates for the 2018 broad SOC code, 13-1020. For this reason, the broad SOC code will be used to provide an estimate for Census code 0510. However, it is important to note that the broad code includes occupations outside of Census code 0510.	
0520: Wholesale and retail buyers, except farm products	Detailed Occupation				
13-1022: Wholesale and Retail Buyers, Except Farm Products	13-1022: Wholesale and Retail Buyers, Except Farm Products	Wage estimate provided for broad occupation group, 13-1020 (Buyers and Purchasing Agents), which includes 13-1021, 13-1022, and 13-1023.	X	OEWS only provided wage estimates for the 2018 broad SOC code, 13-1020. For this reason, the broad SOC code will be used to provide an estimate for Census code 0510. However, it is important to note that the broad code includes occupations outside of Census code 0520.	
0530:	Detailed Occupation				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
Purchasing agents, except wholesale, retail, and farm products	13-1023: Purchasing Agents, Except Wholesale, Retail, and Farm Products	13-1023: Purchasing Agents, Except Wholesale, Retail, and Farm Products	Wage estimate provided for broad occupation group, 13-1020 (Buyers and Purchasing Agents), which includes 13-1021, 13-1022, and 13-1023.	X	OEWS only provided wage estimates for the 2018 broad SOC code, 13-1020. For this reason, the broad SOC code will be used to provide an estimate for Census code 0510. However, it is important to note that the broad code includes occupations outside of Census code 0530.
0740: Business operations specialists, all other	Detailed Occupation		Wage estimate provided for hybrid group, 13-1198 (Project Management Specialists and Business Operations Specialists, All Other), which includes 13-1082 and 13-1199.	X	<p>The OEWS hybrid code, 13-1198, will be used to provide an estimate for Census code 0740.</p> <p>In 2018, parts of 2010 SOC codes, 11-9199 and 15-1199, were reorganized into 13-1082. Workers classified under 2010 SOC 11-9199 and 15-1199 are outside of Census code 0740, so the wage estimate for the OEWS hybrid code, 13-1198, may include some workers outside of those originally coded under Census code 0740.</p>
	13-1199: Business Operations Specialists, All Other	13-1199: Business Operations Specialists, All Other			
0810: Appraisers and assessors of real estate	Detailed Occupation		Wage estimate provided for broad occupation group, 13-2020 (Property Appraisers and Assessors), which includes 13-2022 and 13-2023.	X	The 2018 broad SOC code, 13-2020, covers the same occupations that fall under Census code 0810. For this reason, OEWS wage estimate for the 2018 broad SOC code, 13-2020, will be used to provide an estimate for Census code 0810.
	13-2021: Appraisers and Assessors of Real Estate	13-2022: Appraisers of Personal and Business Property			
0840: Financial analysts	Detailed Occupation		Wage estimate provided for hybrid group, 13-2098 (Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other), which includes 13-2051, 13-2054, and 13-2099.	X	<p>The OEWS hybrid code, 13-2098, will be used to provide an estimate for Census code 0840.</p> <p>Note that the OEWS hybrid code, 13-2098, includes occupations outside of Census code 840. However, with no other estimate available for the detailed occupations, it was used as the best wage estimate for Census code 0840.</p>
	13-2051: Financial Analysts	13-2051: Financial Analysts			

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
0950: Financial specialists, all other	Detailed Occupation				
	13-2099: Financial Specialists, All Other	13-2099: Financial Specialists, All Other	13-2054**: Financial Risk Specialists	Wage estimate provided for hybrid group, 13-2098 (Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other), which includes 13-2051, 13-2054, and 13-2099.	X
1020: Software developers, applications and systems software	Detailed Occupation				
	15-1132: Software Developers, Applications	15-1252**: Software Developers	15-1253**: Software Quality Assurance Analysts and Testers	Wage estimate provided for hybrid group, 15-1256 (Software Developers and Software Quality Assurance Analysts and Testers), which includes 15-1252 and 15-1253.	X
1030: Web developers	Detailed Occupation				
	15-1134: Web developers	15-1254: Web Developers	15-1255**: Web and Digital Interface Designers	Wage estimate provided for hybrid group, 15-1257 (Web Developers and Digital Interface Designers), which includes 15-1254 and 15-1255.	X
1060: Database administrators	15-1141: Database Administrators	15-1242: Database Administrators	Wage estimate provided for hybrid group, 15-1245 (Database Administrators and Architects), which includes 15-1242 and 15-1243.	X	The OEWS hybrid code, 15-1245, will be used to provide an estimate for Census code 1060.

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
		15-1243**: Database Architects			In 2018, part of 2010 SOC code, 15-1199, was reorganized into 15-1243. Workers classified under 2010 SOC 15-1199 are outside of Census code 1060, so the wage estimate for the OEWS hybrid code, 15-1245, may include some workers outside of those originally coded under Census code 1060.	
1240: Miscellaneous mathematical science occupations	Broad group					
	15-2090: Miscellaneous Mathematical Science Occupations	15-2090*: Miscellaneous Computer Occupations	Wage estimate provided for hybrid group, 15-2098 (Data Scientists and Mathematical Science Occupations, All Other), which includes 15-2051 and 15-2099.	X	Due to organizational changes within the SOC code, 15-2090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the OEWS hybrid code, 15-2098, will be used to provide a wage estimate for Census code 1240. The hybrid code includes all detailed occupations that correspond to Census code 1240.	
	Detailed occupation					
	15-2091: Mathematical Technicians	15-2099: Computer Occupations, All Other	No wage estimate provided			
15-2099: Mathematical Science Occupations, All Other	15-2051: Data Scientists (Not part of 15-2090)	No wage estimate provided				
1900: Agricultural and food science technicians	Detailed/Broad Occupation					
	19-4011: Agricultural and Food Science Technicians	19-4012: Agricultural Technicians 19-4013: Food Science Technicians	Wage estimate provided for broad occupation group, 19-4010 (Agricultural and Food Science Technicians), which includes 19-4012 and 19-4013.	X	The 2018 broad SOC code, 19-4010, covers the same occupations that fall under Census code 1900. For this reason, OEWS wage estimate for the 2018 broad SOC code, 19-4010, will be used to provide an estimate for Census code 1900.	
1930: Geological and petroleum technicians	Detailed Occupation					
	19-4041: Agricultural and Food Science Technicians	19-4043: Geological Technicians, Except Hydrologic Technicians	Wage estimate provided for hybrid group, 19-4045 (Geological and Hydrologic Technicians), which includes 19-4043 and 19-4044.	X	The OEWS hybrid code, 19-4045, will be used to provide an estimate for Census code 1930. In 2018, part of 2010 SOC code, 19-4099, was reorganized into 19-4044. Workers classified under 2010 SOC 19-4099 are outside of Census code 1930 so the wage estimate for the OEWS	

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
		19-4044**: Hydrologic Technicians			hybrid code, 19-4045, may include some workers outside of those originally coded under Census code 1930.	
1965: Miscellaneous life, physical, and social science technicians	Broad group					
	19-4090: Miscellaneous Life, Physical, and Social Science Technicians	19-4090*: Miscellaneous Life, Physical, and Social Science Technicians	Wage estimate provided	X	Due to organizational changes within the SOC code, 19-4090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. The 2010 SOC code, 19-4099, was reorganized in 2018 into either 19-4044 or kept in 19-4099. The 2018 SOC code, 19-4044, includes other occupations outside the coverage of Census code 1965. For these reasons, the weighted average of the wage estimates for 2018 SOC codes, 19-4090, 19-4042, and 19-4071, will be used to provide an estimate for Census code 1965.	
	Detailed occupation					
	19-4091: Environmental Science and Protection Technicians, Including Health	19-4042: Environmental Science and Protection Technicians, Including Health (Not part of 19-4090)	Wage estimate provided	X		
	19-4092: Forensic Science Technicians	19-4092: Forensic Science Technicians	Wage estimate provided			
	19-4093: Forest and Conservation Technicians	19-4071: Forest and Conservation Technicians (Not part of 19-4090)	Wage estimate provided	X		
19-4099: Life, Physical, and Social Science Technicians, All Other	19-4044**: Hydrologic Technicians (Not part of 19-4090)	Wage estimate provided for hybrid group, 19-4045 (Geological and Hydrologic Technicians), which includes 19-4043 and 19-4044.				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
		19-4099: Life, Physical, and Social Science Technicians, All Other	Wage estimate provided			
2160: Miscellaneous legal support workers	Broad group					
	23-2090: Miscellaneous Legal Support Workers	23-2090*: Miscellaneous Legal Support Workers	Wage estimate provided	X	Due to organizational changes within the SOC code, 23-2090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC codes, 23-2090 and 27-3092, will be used to provide an estimate for Census code 2160.	
	Detailed occupation					
	23-2091: Court Reporters	27-3092: Court Reporters and Simultaneous Captioners (Not part of 23-2090)	Wage estimate provided	X		
	23-2093: Title Examiners, Abstractors, and Searchers	23-2093: Title Examiners, Abstractors, and Searchers	No wage estimate provided			
23-2099: Legal Support Workers, All Other	23-2099: Legal Support Workers, All Other	No wage estimate provided				
2200: Postsecondary Teachers	Minor group					
	25-1000: Postsecondary Teachers	25-1000*: Postsecondary Teachers	Wage estimate provided	X	Due to organizational changes within the SOC code, 25-1000, from 2010 to 2018, the coverage of detailed occupations within the minor group differs. For this reason, the weighted average of	

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	Detailed occupation				the wage estimates for 2018 SOC codes, 25-1000 and 25-9044, will be used to provide an estimate for Census code 2200.
	25-1011: Business Teachers, Postsecondary	25-1011: Business Teachers, Postsecondary		Wage estimate provided	
	25-1021: Computer Science Teachers, Postsecondary	25-1021: Computer Science Teachers, Postsecondary		Wage estimate provided	
	25-1022: Mathematical Science Teachers, Postsecondary	25-1022: Mathematical Science Teachers, Postsecondary		Wage estimate provided	
	25-1031: Architecture Teachers, Postsecondary	25-1031: Architecture Teachers, Postsecondary		Wage estimate provided	
	25-1032: Engineering Teachers, Postsecondary	25-1032: Engineering Teachers, Postsecondary		Wage estimate provided	
	25-1041: Agricultural Sciences Teachers, Postsecondary	25-1041: Agricultural Sciences Teachers, Postsecondary		Wage estimate provided	
	25-1042: Biological Science Teachers, Postsecondary	25-1042: Biological Science Teachers, Postsecondary		Wage estimate provided	
	25-1043: Forestry and Conservation Science Teachers, Postsecondary	25-1043: Forestry and Conservation Science Teachers, Postsecondary		Wage estimate provided	
	25-1051: Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	25-1051: Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary		Wage estimate provided	
	25-1052: Chemistry Teachers, Postsecondary	25-1052: Chemistry Teachers, Postsecondary		Wage estimate provided	
	25-1053: Environmental Science Teachers, Postsecondary	25-1053: Environmental Science Teachers, Postsecondary		Wage estimate provided	
	25-1054:	25-1054:		Wage estimate provided	

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	Physics Teachers, Postsecondary	Physics Teachers, Postsecondary			
	25-1061: Anthropology and Archeology Teachers, Postsecondary	25-1061: Anthropology and Archeology Teachers, Postsecondary	Wage estimate provided		
	25-1062: Area, Ethnic, and Cultural Studies Teachers, Postsecondary	25-1062: Area, Ethnic, and Cultural Studies Teachers, Postsecondary	Wage estimate provided		
	25-1063: Economics Teachers, Postsecondary	25-1063: Economics Teachers, Postsecondary	Wage estimate provided		
	25-1064: Geography Teachers, Postsecondary	25-1064: Geography Teachers, Postsecondary	Wage estimate provided		
	25-1065: Political Science Teachers, Postsecondary	25-1065: Political Science Teachers, Postsecondary	Wage estimate provided		
	25-1066: Psychology Teachers, Postsecondary	25-1066: Psychology Teachers, Postsecondary	Wage estimate provided		
	25-1067: Sociology Teachers, Postsecondary	25-1067: Sociology Teachers, Postsecondary	Wage estimate provided		
	25-1069: Social Sciences Teachers, Postsecondary, All Other	25-1069: Social Sciences Teachers, Postsecondary, All Other	Wage estimate provided		
	25-1071: Health Specialties Teachers, Postsecondary	25-1071: Health Specialties Teachers, Postsecondary	Wage estimate provided		
	25-1072: Nursing Instructors and Teachers, Postsecondary	25-1072: Nursing Instructors and Teachers, Postsecondary	Wage estimate provided		
	25-1081: Education Teachers, Postsecondary	25-1081: Education Teachers, Postsecondary	Wage estimate provided		
	25-1082: Library Science Teachers, Postsecondary	25-1082: Library Science Teachers, Postsecondary	Wage estimate provided		

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	25-1111: Criminal Justice and Law Enforcement Teachers, Postsecondary	25-1111: Criminal Justice and Law Enforcement Teachers, Postsecondary	Wage estimate provided		
	25-1112: Law Teachers, Postsecondary	25-1112: Law Teachers, Postsecondary	Wage estimate provided		
	25-1113: Social Work Teachers, Postsecondary	25-1113: Social Work Teachers, Postsecondary	Wage estimate provided		
	25-1121: Art, Drama, and Music Teachers, Postsecondary	25-1121: Art, Drama, and Music Teachers, Postsecondary	Wage estimate provided		
	25-1122: Communications Teachers, Postsecondary	25-1122: Communications Teachers, Postsecondary	Wage estimate provided		
	25-1123: English Language and Literature Teachers, Postsecondary	25-1123: English Language and Literature Teachers, Postsecondary	Wage estimate provided		
	25-1124: Foreign Language and Literature Teachers, Postsecondary	25-1124: Foreign Language and Literature Teachers, Postsecondary	Wage estimate provided		
	25-1125: History Teachers, Postsecondary	25-1125: History Teachers, Postsecondary	Wage estimate provided		
	25-1126: Philosophy and Religion Teachers, Postsecondary	25-1126: Philosophy and Religion Teachers, Postsecondary	Wage estimate provided		
	25-1191: Graduate Teaching Assistants	25-9044: Teaching Assistants, Postsecondary (Not part of 25-1000)	Wage estimate provided	X	
	25-1192: Home Economics Teachers, Postsecondary	25-1192: Home Economics Teachers, Postsecondary	Wage estimate provided		
	25-1193: Recreation and Fitness Studies Teachers, Postsecondary	25-1193: Recreation and Fitness Studies Teachers, Postsecondary	Wage estimate provided		
	25-1194:	25-1194:	Wage estimate provided		

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes		
	Vocational Education Teachers, Postsecondary	Vocational Education Teachers, Postsecondary					
	25-1199: Postsecondary Teachers, All Other	25-1199: Postsecondary Teachers, All Other	Wage estimate provided				
	Detailed Occupation						
2540: Teacher assistants	25-9041: Teacher Assistants	25-9042: Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Wage estimate provided for hybrid group, 25-9045 (Teaching Assistants, Except Postsecondary), which includes 25-9042, 25-9043, and 25-9049.	X	The OEWS hybrid code, 25-9045, covers the same occupations that fall under Census code 2540. For this reason, the hybrid code will be used to provide an estimate for Census code 2540.		
		25-9043: Teaching Assistants, Special Education					
		25-9049: Teaching Assistants, All Other					
	Detailed Occupation						
2760: Entertainers and performers, sports and related workers, all other	27-2099: Entertainers and Performers, Sports and Related Workers, All Other	27-2091: Disc Jockeys, Except Radio	Wage estimate provided for broad occupation group, 27-2090 (Miscellaneous Entertainers and Performers, Sports and Related Workers), which includes 27-2091 and 27-2099.	X	The 2018 broad SOC code, 27-2090, covers the same occupations that fall under Census code 2760. For this reason, OEWS wage estimate for the 2018 broad SOC code, 27-2090, will be used to provide an estimate for Census code 2760.		
		27-2099: Entertainers and Performers, Sports and Related Workers, All Other					
	Broad group						
2800: Announcers	27-3010: Announcers	27-3010*: Broadcast Announcers and Radio Disc Jockeys	Wage estimate provided	X	Due to organizational changes within the SOC code, 27-3010, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. The 2010 SOC code, 27-3012, was reorganized in 2018 into 27-3099, which includes other workers outside of Census code 2800. For these reasons, only the wage estimate for 2018 SOC code, 27-3010, will be used to provide an estimate for Census code 2800.		
		Detailed occupation					
		27-3011: Radio and Television Announcers	27-3011: Broadcast Announcers and Radio Disc Jockeys	Wage estimate provided			
	27-3012: Public Address System and Other Announcers	27-3099**: Media and Communication Workers, All Other (Not part of 27-3010)	Wage estimate provided				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
2860: Miscellaneous media and communication workers	Broad group				<p>Due to organizational changes within the SOC code, 27-3090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC codes, 27-3091 and 27-3099, will be used to provide an estimate for Census code 2860.</p> <p>Note the 2010 SOC code, 27-3012, was reorganized in 2018 into 27-3099, so there may be more workers included in the wage estimates that would not have originally been included in the 2010 code.</p>	
	27-3090: Miscellaneous Media and Communication Workers	27-3090*: Miscellaneous Media and Communication Workers		Wage estimate provided		
	Detailed occupation					
	27-3091: Interpreters and Translators	27-3091: Interpreters and Translators		Wage estimate provided		X
	27-3099: Media and Communication Workers, All Other	27-3099**: Media and Communication Workers, All Other		Wage estimate provided		X
		27-3092**: Court Reporters and Simultaneous Captioners		Wage estimate provided		
2900: Broadcast and sound engineering technicians and radio operators	Broad group				<p>Due to organizational changes within the SOC code, 27-4010, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. The 2010 SOC code, 27-4013, was reorganized in 2018 into 27-2099, which includes other workers outside of Census code 2900. For these reasons, the weighted average of the wage estimates for 2018 SOC codes, 27-4011, 27-4012, and 27-4014, will be used to provide an estimate for Census code 2900.</p>	
	27-4010: Broadcast and Sound Engineering Technicians and Radio Operators	27-4010*: Broadcast, Sound, and Lighting Technicians		No wage estimate provided		
	Detailed occupation					
	27-4011: Audio and Video Equipment Technicians	27-4011: Audio and Video Technicians		Wage estimate provided		X
	27-4012: Broadcast Technicians	27-4012: Broadcast Technicians		Wage estimate provided	X	

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	27-4013: Radio Operators	43-2099**: Communications Equipment Operators, All Other (Not part of 27-4010)	Wage estimate provided		
	27-4014: Sound Engineering Technicians	27-4014: Sound Engineering Technicians	Wage estimate provided	X	
		27-4015**: Lighting Technicians	No wage estimate provided		
	Broad group				
	29-1060: Physicians and Surgeons	29-1210*: Physicians	No wage estimate provided		
		29-1240*: Surgeons	No wage estimate provided		
	Detailed occupation				
	29-1061: Anesthesiologists	29-1211: Anesthesiologists	Wage estimate provided	X	
	29-1062: Family and General Practitioners	29-1215: Family Medicine Physicians	Wage estimate provided	X	
	29-1063: Internists, General	29-1216: General Internal Medicine Physicians	Wage estimate provided	X	
	29-1064: Obstetricians and Gynecologists	29-1218: Obstetricians and Gynecologists	Wage estimate provided	X	
	29-1065: Pediatricians, General	29-1221: Pediatricians, General	Wage estimate provided	X	
	29-1066: Psychiatrists	29-1223: Psychiatrists	Wage estimate provided	X	
	29-1067: Surgeons	29-1242: Orthopedic Surgeons, Except Pediatric	Wage estimate provided for hybrid group, 29-1248 (Surgeons, Except Ophthalmologists), which includes 29-1242, 29-1243, and 29-1249.	X	From 2010 to 2018, the SOC code, 29-1060, was reorganized into SOC codes, 29-1210 and 29-1240. No wage estimates were provided for the broad occupation groups. For these reasons, the the weighted average of the wage estimates for the 2018 SOC codes, 29-1211, 29-1215, 29-1216, 29-1218, 29-1221, and 29-1223, and the hybrid codes, 29-1248 and 29-1228, will be used to provide an estimate for Census code 3060.
		29-1243: Pediatric Surgeons			
		29-1249: Surgeons, All Other			
3060: Physicians and surgeons	29-1069: Physicians and Surgeons, All Other	29-1212 Cardiologists	Wage estimate provided for hybrid group, 29-1228, (Physicians, All Other; and Ophthalmologists, Except Pediatric), which includes 29-1212, 29-	X	
		29-1213 Dermatologists			

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
		29-1214 Emergency Medicine Physicians	1213, 29-1214, 29-1217, 29-1222, 29-1224, 29-1229, and 29-1241.		
		29-1217 Neurologists			
		29-1222 Physicians, Pathologists			
		29-1224 Radiologists			
		29-1229 Physicians, All Other			
		29-1241 Ophthalmologists, Except Pediatric			
3260: Health diagnosing and treating practitioners, all other	Detailed occupation		Wage estimate provided for hybrid group, 29-1298 (Acupuncturists and Healthcare Diagnosing or Treating Practitioners, All Other), which includes 29-1291 and 29-1299.	X	The OEWS hybrid code, 29-1298, covers the same occupations that fall under Census code 3260. For this reason, the hybrid code will be used to provide an estimate for Census code 3260.
	29-1199: Health Diagnosing and Treating Practitioners, All Other	29-1291: Acupuncturists			
		29-1299: Healthcare Diagnosing or Treating Practitioners, All Other			
3320: Diagnostic related technologists and technicians	Broad group		No wage estimate provided		Due to organizational changes within the SOC code, 29-2030, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC codes, 29-2031, 29-2032, 29-2033, 29-2034, and 29-2035, will be used to provide an estimate for Census code 3320.
	29-2030: Diagnostic Related Technologists and Technicians	29-2030*: Diagnostic Related Technologists and Technicians			
	Detailed occupation		Wage estimate provided	X	
	29-2031: Cardiovascular Technologists and Technicians	29-2031 Cardiovascular Technologists and Technicians			
	29-2032: Diagnostic Medical Sonographers	29-2032: Diagnostic Medical Sonographers	Wage estimate provided	X	
	29-2033: Nuclear Medicine Technologists	29-2033: Nuclear Medicine Technologists	Wage estimate provided	X	
29-2034: Radiologic Technologists	29-2034: Radiologic Technologists	Wage estimate provided	X		

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
		Radiologic Technologists and Technicians			
	29-2035: Magnetic Resonance Imaging Technologists	29-2035: Magnetic Resonance Imaging Technologists	Wage estimate provided	X	
		29-2036**: Medical Dosimetrists	Wage estimate provided for hybrid group, 29-2098 (Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other), which includes 29-2099, 29-2072, 29-2036.		
3400: Emergency medical technicians and paramedics	Detailed occupation				
	29-2041: Emergency Medical Technicians and Paramedics	29-2042: Emergency Medical Technicians 29-2043: Paramedics	Wage estimate provided for broad occupation group, 29-2040 (Emergency Medical Technicians and Paramedics), which includes 29-2042 and 29-2043.	X	The 2018 broad SOC code, 29-2040, covers the same occupations that fall under Census code 3400. For this reason, OEWS wage estimate for the 2018 broad SOC code, 29-2040, will be used to provide an estimate for Census code 3400.
3420: Health practitioner support technologists and technicians	Broad group				
	29-2050: Health Practitioner Support Technologists and Technicians	29-2050*: Health Practitioner Support Technologists and Technicians	Wage estimate provided	X	
	Detailed occupation				
	29-2051: Dietetic Technicians	29-2051: Dietetic Technicians	Wage estimate provided		
	29-2052: Pharmacy Technicians	29-2052: Pharmacy Technicians	Wage estimate provided		
	29-2053: Psychiatric Technicians	29-2053: Psychiatric Technicians	Wage estimate provided		
	29-2054: Respiratory Therapy Technicians	29-2099**: Health Technologists and Technicians, All Other (Not part of 29-2050)	Wage estimate provided for hybrid group, 29-2098 (Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other), which includes 29-2099, 29-2072, 29-2036.		
	29-2055: Surgical Technologists	29-2055: Surgical Technologists	Wage estimate provided		
	29-2056: Veterinary Technologists and Technicians	29-2056: Veterinary Technologists and Technicians	Wage estimate provided		Due to organizational changes within the SOC code, 29-2050, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. The 2010 SOC 29-2054 was reorganized in 2018 into 29-2099, which includes other workers outside of Census code 3420. Wage estimates for 29-2099 were only provided as part of a hybrid group that included other occupations. For these reasons, the wage estimates for 2018 SOC code, 29-2050, will be used to provide a wage estimate for Census code 3420, and the hybrid code, 29-2098, will be excluded.

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
	29-2057: Ophthalmic Medical Technicians	29-2057: Ophthalmic Medical Technicians	Wage estimate provided			
3510: Medical records and health information technicians	Detailed occupation					
		29-2072: Medical Records Specialists	Wage estimate provided for hybrid group, 29-2098 (Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other), which includes 29-2072, 29-2099, and 29-2036.	X	OEWS does not include wage information for the detailed occupation codes, 29-2072 or 29-9021. These codes are included in hybrid groups, 29-2098 and 29-9098, which include more occupations than those that match Census code 3510. Additionally, in 2018, part of 2010 SOC code, 29-9099, was reorganized into 29-9021. Workers classified under 2010 SOC 29-9099 are outside of Census code 3510. As no other wage information is available except for the hybrid groups, the weighted average of the hybrid codes will be used to provide a wage estimate for Census code 3510.	
	29-2071: Medical Records and Health Information Technicians	29-9021**: Health Information Technologists and Medical Registrars	Wage estimate provided for hybrid group, 29-9098 (Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers, All Other), which includes 29-9021, 29-9093, 29-9099.	X		
Broad group						
3535: Miscellaneous health technologists and technicians	29-2090: Miscellaneous Health Technologists and Technicians	29-2090*: Miscellaneous Health Technologists and Technicians	No wage estimate provided		Due to organizational changes within the SOC code, 29-2090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC codes, 29-2091 and 29-2092, and the OEWS hybrid code, 29-2098, will be used to provide a wage estimate for Census code 3535. Note that the OEWS hybrid code, 29-2098, includes occupations outside of Census code 3535. However, with no other estimate available for the detailed occupations, it was included in the wage estimate for Census code 3535.	
	Detailed occupation					
	29-2091: Orthotists and Prosthetists	29-2091: Orthotists and Prosthetists	Wage estimate provided	X		
	29-2092: Hearing Aid Specialists	29-2092: Hearing Aid Specialists	Wage estimate provided	X		
	29-2099:	29-2036: Medical Dosimetrists (Not part of 29-2090)	Wage estimate provided for hybrid group, 29-2098 (Medical Dosimetrists, Medical Records Specialists, and Health Technologists and	X		

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	Health Technologists and Technicians, All Other	29-2099**: Health Technologists and Technicians, All Other	Technicians, All Other), which includes 29-2099, 29-2072, 29-2036.		
3600: Nursing, psychiatric, and home health aides	Broad group				
	31-1010: Nursing, Psychiatric, and Home Health Aides	31-1120*: Home Health and Personal Care Aides		Wage estimate provided	X
		31-1130*: Nursing Assistants, Orderlies, and Psychiatric Aides		Wage estimate provided	X
	Detailed occupation				
	31-1011: Home Health Aides	31-1121: Home Health Aides		No wage estimate provided	
	31-1013: Psychiatric Aides	31-1133: Psychiatric Aides		Wage estimate provided	
	31-1014: Nursing Assistants	31-1131: Nursing Assistants		Wage estimate provided	
	31-1015: Orderlies	31-1132: Orderlies		Wage estimate provided	
		31-1122**: Personal Care Aides		No wage estimate provided	
	3730: First-line supervisors of protective service workers, all other	Detailed occupation			
33-1099: First-Line Supervisors of Protective Service Workers, All Other		33-1091: First-Line Supervisors of Security Workers		Wage estimate provided for broad occupation group, 33-1090 (Miscellaneous First-Line Supervisors, Protective Service Workers), which includes 33-1091 and 33-1099.	X
3955: Lifeguards and other recreational,	Detailed occupation				
	33-9099: Protective Service Workers, All Other	33-9094: School Bus Monitors		Wage estimate provided for hybrid group, 33-9098 (School Bus Monitors and Protective Service	X
					From 2010 to 2018, the SOC code, 31-1010, was reorganized into SOC codes, 31-1120 and 31-1130. The 2018 SOC code, 31-1120, includes a new detailed occupation, 31-1122, which was not previously included in the 2010 SOC code, 31-1010. However, wage estimates are not available for all the detailed occupations, so estimates for 31-1120 and 31-1130 provide the best information for Census code 3600. For these reasons, the weighted average of the wage estimates for the 2018 SOC codes, 31-1120 and 31-1130, will be used to provide an estimate for Census code 3060.
					The 2018 broad SOC code, 33-1090, covers the same occupations that fall under Census code 3730. For this reason, OEWS wage estimate for the 2018 broad SOC code, 33-1090, will be used to provide an estimate for Census code 3730.
					The OEWS hybrid code, 33-9098, covers the same occupations that fall under Census code 3955. For this reason, the hybrid code will be

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
and all other protective service workers		33-9099: Protective Service Workers, All Other	Workers, All Other), which includes 33-9094 and 33-9099.		used to provide an estimate for Census code 3955.
4300: First-line supervisors of gaming workers	Broad group				
	39-1010: First-Line Supervisors of Gaming Workers	39-1010*: First-Line Supervisors of Entertainment and Recreation Workers	No wage estimate provided		
	Detailed occupation				
	39-1011: Gaming Supervisors	39-1013: First-line Supervisors of Gambling Services Workers	Wage estimate provided		X
	39-1012: Slot Supervisors				
	39-1014**: First-line Supervisors of Entertainment and Recreation Workers, Except Gambling Services	No wage estimate provided			Due to organizational changes within the SOC code, 39-1010, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the wage estimate for 2018 SOC code, 39-1013, will be used to provide an estimate for Census code 4300.
4320: First-line supervisors of personal service workers	Detailed occupation				
	39-1021: First-Line Supervisors of Personal Service Workers	39-1014: First-line Supervisors of Entertainment and Recreation Workers, Except Gambling Services	Wage estimate provided for hybrid group, 39-1098 (First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services), which includes 39-1014 and 39-1022.		X
39-1022: First-Line Supervisors of Personal Service Workers					

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
		53-1044**: First-line Supervisors of Passenger Attendants	Wage estimate provided for hybrid group, 53-1047 (First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors), which includes 53-1042, 53-1043, 53-1044, and 53-1049.		
	Detailed occupation				
4610: Personal care aides	39-9021: Personal Care Aides	31-1122: Personal Care Aides	Wage estimate provided for broad occupation group, 31-1120 (Home Health and Personal Care Aides), which includes 31-1122 and 31-1121.	X	OEWS only provided wage estimates for the 2018 broad SOC code, 31-1120. For this reason, the broad SOC code will be used to provide an estimate for Census code 4610. However, it is important to note that the broad code includes occupations outside of Census code 4610.
	Detailed occupation				
4650: Personal care and service workers, all other	39-9099: Personal Care and Service Workers, All Other	39-4012: Crematory Operators	Wage estimate provided for hybrid group, 39-9098 (Crematory Operators and Personal Care and Service Workers, All Other), which includes 39-4012 and 39-9099.	X	The OEWS hybrid code, 39-9098, covers the same occupations that fall under Census code 4650. For this reason, the hybrid code will be used to provide an estimate for Census code 4650.
		39-9099: Personal Care and Service Workers, All Other			
	Detailed occupation				
6820: Earth drillers, except oil and gas	47-5021: Earth Drillers, Except Oil and Gas	47-5023: Earth Drillers, Except Oil and Gas	Wage estimate provided for hybrid group, 47-5097 (Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters), which includes 47-5023, 47-5032.	X	The OEWS hybrid code, 47-5097, will be used to provide an estimate for Census code 6820. In 2018, 2010 SOC code, 47-5031, was reorganized into 47-5032. Workers classified under 2010 SOC 47-5031 are outside of Census code 6820, so the wage estimate for the OEWS hybrid code, 47-5097, may include some workers outside of those originally coded under Census code 6820.
		47-5032**: Explosives Workers, Ordnance Handling Experts, and Blasters			
6830:	Detailed occupation				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
Explosives workers, ordnance handling experts, and blasters	47-5031: Explosives Workers, Ordnance Handling Experts, and Blasters	47-5032**: Explosives Workers, Ordnance Handling Experts, and Blasters	Wage estimate provided for hybrid group, 47-5097 (Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters), which includes 47-5023 and 47-5032.	X	The OEWS hybrid code, 47-5097, will be used to provide an estimate for Census code 6830. In 2018, part of 2010 SOC code, 47-5021, was reorganized into 47-5032. Workers classified under 2010 SOC 47-5021 are outside of Census code 6830, so the wage estimate for the OEWS hybrid code, 47-5097, may include some workers outside of those originally coded under Census code 6830.	
6840: Mining Machine Operators	Broad group					
	47-5040: Mining Machine Operators	47-5040*: Underground Mining Machine Operators	No wage estimate provided		Due to organizational changes within the SOC code, 47-5040, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC code, 47-5041, and OEWS hybrid code, 47-5097, will be used to provide an estimate for Census code 6840. Note that the OEWS hybrid code, 47-5097, includes occupations outside of Census code 6840. However, with no other estimate available for the detailed occupations, it was included in the wage estimate for Census code 6840.	
	Detailed occupation					
	47-5041: Continuous Mining Machine Operators	47-5041: Continuous Mining Machine Operators	Wage estimate provided	X		
	47-5042: Mine Cutting and Channeling Machine Operators	47-5049: Underground Mining Machine Operators, All Other	Wage estimate provided for hybrid group, 47-5097 (Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters), which includes 47-5023, 47-5032, 47-5049, 47-5099.	X		
47-5049: Mining Machine Operators, All Other	47-5099**: Extraction Workers, All Other (Not part of 57-5040)					
	47-5043**: Roof Bolters, Mining	Wage estimate provided				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
		47-5044**: Loading and Moving Machine Operators, Underground Mining	Wage estimate provided			
6940: Other extraction workers	Detailed occupation					
	47-5099: Extraction Workers, All Other	47-5099**: Extraction Workers, All Other	Wage estimate provided for hybrid group, 47-5098 (Underground Mining Machine Operators and Extraction Workers, All Other), which includes 47-5049 and 47-5099.	X	The OEWS hybrid code, 47-5098, will be used to provide an estimate for Census code 6940. In 2018, part of 2010 SOC code, 47-5049, was reorganized into 47-5099. Workers classified under 2010 SOC 47-5049 are outside of Census code 6940, so the wage estimate for the OEWS hybrid code, 47-5098, may include some workers outside of those originally coded under Census code 6940.	
7750: Miscellaneous assemblers and fabricators	Broad group					
	51-2090: Miscellaneous Assemblers and Fabricators	51-2090*: Miscellaneous Assemblers and Fabricators	Wage estimate provided	X	Due to organizational changes within the SOC code, 51-2090, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. For this reason, the weighted average of the wage estimates for 2018 SOC code, 51-2090, 51-2051, and 51-2061, will be used to provide an estimate for Census code 7750.	
	Detailed occupation					
	51-2091: Fiberglass Laminators and Fabricators	51-2051: Fiberglass Laminators and Fabricators (Not part of 51-2090)	Wage estimate provided	X		
	51-2092: Team Assemblers	51-2092: Team Assemblers	No wage estimate provided			
	51-2093: Timing Device Assemblers and Adjusters	51-2061: Timing Device Assemblers and Adjusters (Not part of 51-2090)	Wage estimate provided	X		
51-2099:	51-2099:	No wage estimate provided				

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes	
	Assemblers and Fabricators, All Other	Assemblers and Fabricators, All Other				
9120: Bus drivers	Broad group					
	53-3020: Bus Drivers	Closest equivalent is 53-3050*: Passenger Vehicle Drivers	Wage estimate provided	X	In 2018, the 2010 SOC code, 53-3020, was reorganized into 2018 SOC code, 53-3050. Due to the change, the coverage of detailed occupations within the broad groups differ. Wage information for all detailed occupations within 53-3050 are not available. For these reasons, the wage estimate for the 2018 SOC code, 53-3050, will be used to provide an estimate for Census code 9120.	
	Detailed occupation					
	53-3021: Bus Drivers, Transit and Intercity	53-3052: Bus Drivers, Transit and Intercity	Wage estimate provided			
	53-3022: Bus Drivers, School or Special Client	53-3051: Bus Drivers, School	Wage estimate provided for hybrid group, 53-3058 (Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity), which includes 53-3053, 53-3054, and 35-3051.			
53-3053**: Shuttle Drivers and Chauffeurs						
	53-3054**: Taxi Drivers					
9140: Taxi drivers and chauffeurs	Detailed occupation					
	53-3041: Taxi Drivers and Chauffeurs	53-3053**: Shuttle Drivers and Chauffeurs	Wage estimate provided for hybrid group, 53-3058 (Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity), which includes 53-3053, 53-3054, and 35-3051.	X	The OEWS hybrid code, 53-3058, will be used to provide an estimate for Census code 9140. In 2018, part of 2010 SOC code, 53-3022, was reorganized into 53-3053. Workers classified under 2010 SOC 53-3022 are outside of Census code 9140, so the wage estimate for the OEWS hybrid code, 53-3058, may include some workers outside of those originally coded under Census code 9140.	
9200: Locomotive Engineers and Operators	Broad Group					
	53-4010: Locomotive Engineers and Operators	53-4010*: Locomotive Engineers and Operators	Wage estimate provided	X	Due to organizational changes within the SOC code, 53-4010, from 2010 to 2018, the coverage of detailed occupations within the broad group differs.	
	Detailed Occupation					
	53-4011: Locomotive Engineers	53-4011: Locomotive Engineers	Wage estimate provided			
53-4012: Locomotive Firers	53-4022**: Railroad Brake, Signal, and Switch Operators and Locomotive Firers (Not part of 53-4010)	Wage estimate provided		The 2010 SOC code, 53-4012, was reorganized in 2018 into 53-4022, which includes other workers outside of Census code 9200. For these reasons, only the wage estimate for 2018 SOC code, 53-4010, will be used to provide an estimate for Census code 9200.		

Cen 2010	2010 SOC	2018 SOC	OEWS 2019	Wage estimate used	Notes
	53-4013: Rail Yard Engineers, Dinkey Operators, and Hostlers	53-4013: Rail Yard Engineers, Dinkey Operators, and Hostlers	Wage estimate provided		
9420: Other transportation workers	Detailed occupation				The OEWS hybrid code, 53-6098, covers the same occupations that fall under Census code 9420. For this reason, the hybrid code will be used to provide an estimate for Census code 9420.
	53-6099: Transportation Workers, All Other	53-6032: Aircraft Service Attendants 53-6099: Transportation Workers, All Other	Wage estimate provided for hybrid group, 53-6098 (Aircraft Service Attendants and Transportation Workers, All Other), which includes 53-6032 and 53-6099.	X	
9520: Dredge, excavating, and loading machine operators	Broad Group				Due to organizational changes within the SOC code, 53-7030, from 2010 to 2018, the coverage of detailed occupations within the broad group differs. The 2010 SOC codes, 53-7032 and 53-7033, were reorganized in 2018 into other codes, some of which include other workers outside of Census code 9520. For these reasons, the weighted average of the wage estimates for 2018 SOC codes, 53-7030 and 47-5022 will be used to provide an estimate for Census code 9520.
	53-7030: Dredge, Excavating, and Loading Machine Operators	53-7030*: Dredge Operators	Wage estimate provided	X	
	Detailed Occupation				
	53-7031: Dredge Operators	53-7031: Dredge Operators	Wage estimate provided		
		47-5022: Excavating and Loading Machine and Dragline Operators, Surface Mining (Not part of 53-7030)	Wage estimate provided	X	
	53-7032: Excavating and Loading Machine and Dragline Operators	53-7199**: Material Moving Workers, All Other (Not part of 53-7030)	Wage estimate provided		
	53-7033: Loading Machine Operators, Underground Mining	47-5044**: Loading and Moving Machine Operators, Underground Mining (Not part of 53-7030)	Wage estimate provided		