

Guidelines for Using the Classification of Instructional Programs to Standard Occupational Classification (CIP-SOC) Crosswalk

A Publication of the National Center for Education Statistics at IES and the Bureau of Labor Statistics

Purpose and Uses of the Classification of Instructional Programs to Standard Occupational Classification Crosswalk

The purpose of the Classification of Instructional Programs (CIP) to Standard Occupational Classification (SOC) Crosswalk is to provide data users with a resource for relating CIP and SOC. A CIP-SOC relationship indicates that postsecondary instructional programs classified in the CIP category typically prepare individuals directly for jobs classified in the SOC category. Potential uses for the CIP-SOC Crosswalk include, but are not limited to, the following:

1. Presenting data on and analyzing the relationship of postsecondary education and training programs to the labor market;
2. Analyzing labor market supply–demand conditions and trends;
3. Providing information on the labor market for use in making postsecondary education and training program funding decisions, including expansion or contraction of program offerings;
4. Providing information on tasks and other characteristics of occupations related to programs for use in developing and maintaining postsecondary education and training curriculum; and
5. Providing information and guidance to individuals in making decisions about careers and education or training choices or conducting a job search, by using the crosswalk to help answer questions such as “For what occupations might this type of education or training program qualify me?” and “To get a job in this occupation, what type of programs should I take?”

This document is intended to assist crosswalk users by providing guidelines on how it might be applied and background information on how the crosswalk was developed.

Guidelines for Using the CIP-SOC Crosswalk

The CIP-SOC Crosswalk is an important tool in relating data about postsecondary instructional programs to data about occupations and the labor market. The CIP-SOC Crosswalk is qualitative, meaning that it is descriptive and conceptual and not necessarily statistically quantifiable. The crosswalk is intended to represent the theoretical possibilities for relationships between degree programs and their content and occupations and their knowledge and skill requirements. It is not a record of the occupational outcomes of postsecondary instructional program completers.

What does a CIP-SOC mapping mean?

A CIP-SOC mapping indicates that programs in the CIP category provide knowledge and skills that are directly applicable to performance in jobs in the SOC occupation. The programs typically satisfy the educational requirements for entry and advancement and/or prepare individuals to meet licensure or certification requirements to work in the occupation.

What does a CIP-SOC mapping NOT mean?

A CIP-SOC mapping does not indicate that anyone who has completed an instructional program in the CIP category is qualified for every job in the related SOC occupation. There are two primary reasons for this. First, these mappings are specific to the educational component of work in an occupation. They do not account for related work experience or other prerequisites that some jobs may demand. Second, in that the CIP and/or SOC category may be broad, the mapping may apply to only a segment of the occupation.

Additionally, a CIP-SOC mapping does not necessarily mean that completion of the instructional program is required to work in the occupation. Some occupations may not require any postsecondary education, but a CIP program may still be matched to an occupation if the CIP program provides knowledge and skills that are directly related to the occupation. For example, SOC code 47-2022 Stonemasons, an occupation that generally requires only a high school diploma for entry, is mapped to CIP code 46.0101 Mason/Masonry.

Level of education

In using the crosswalk, users should consider the level of education required for entry into the occupation. Programs classified in a CIP category may be offered at various levels of postsecondary education (e.g., associate's, bachelor's, or graduate level). It may not be appropriate, for example, to consider the number of completers of associate's programs as a supply to occupations where a bachelor's or higher degree is required. General information on the typical education and training needed for entry into occupations is available from the Bureau of Labor Statistics (BLS) Employment Projections program. BLS also provides data on the educational attainment distribution of workers by occupation, using data from the U.S. Census Bureau's American Community Survey.

How the National Center for Education Statistics and the Bureau of Labor Statistics Developed the 2020 CIP-SOC Crosswalk

The National Center for Education Statistics (NCES) and BLS worked together to prepare the 2020 crosswalk. The process began with using the existing crosswalk between the 2010 editions of CIP and SOC and the crosswalks between the 2010 and 2020 CIP and between the 2010 and 2018 SOC. Initially, each agency worked internally to create a draft of the updated crosswalk according to the guiding principles presented below. The mappings were developed based on the expert knowledge of staff within each agency and qualitative research using publicly available information. NCES put special emphasis on mapping new or changed CIP codes, and BLS put special emphasis on mapping new or changed SOC codes. These initial proposals were then compared, and differences in recommendations were resolved by a series of conference calls.

Guiding principles for mapping CIP and SOC codes

In developing the crosswalk, NCES and BLS agreed on the following guiding principles.

A CIP-SOC relationship must indicate a “direct” relationship; that is, programs in the CIP category provide knowledge and skills that are directly applicable to performance in jobs in the SOC occupation. The programs satisfy the educational requirements for entry and advancement and/or prepare individuals to meet licensure or certification requirements to work in the occupation.

It is possible that there may be no direct correspondence between a CIP code and a SOC code. This may occur because the occupation does not require any postsecondary education, because the CIP program is not career related, or because an insufficient number of institutions offer the program to justify having a CIP code.

Relationships between CIP and SOC may be one-to-one, one-to-many, many-to-one, or many-to-many. This is in part because the CIP codes describe instructional programs that will often provide training that can be applied to multiple occupations.

Treatment of certain SOC and CIP categories

NCES and BLS also agreed on the following treatment of certain SOC and CIP categories.

- **CIP general program codes.** CIP contains general program codes, identified by use of the modifier “General” in the CIP title, such as CIP code 01.0101 Agricultural Business and Management, General. Programs within these CIP codes provide general instruction covering a range of topics within the two-digit CIP series, in contrast to more specialized instruction in programs classified in other detailed CIP codes. If the description for a general CIP code includes content preparing an individual to enter a SOC occupation, the CIP code should be identified as related to that SOC occupation. Note that the same SOC occupation may also be mapped to CIP codes for specialized programs.
- **CIP “other” program codes.** CIP contains “other” program codes. At the detailed CIP level, these are codes ending in “99” (code format XX.XX99 or XX.9999) and the title ends in “Other.” These codes are intended to include specialized programs that are not classified into other detailed six-digit CIP codes in the same group. For example, CIP code 03.0199 Natural Resources Conservation and Research, Other includes programs that provide specialized instruction in Natural Resources Conservation and Research, but are not properly classified in the two detailed six-digit CIP codes in this group: CIP codes 03.0103 Environmental Studies and 03.0104 Environmental Science.

Where the scope of the group containing an “other” CIP code is limited, it may be possible to map the CIP code to specific SOC occupations. For example, CIP code 45.0299 Anthropology, Other may be mapped to SOC code 19-3091 Anthropologist and Archeologists, where all other CIP codes in group 45.02 Anthropology are mapped.

Where the scope of the group containing an “other” CIP code is broader, however, it may not be possible to identify SOC codes for which the CIP program provides direct preparation. This is true, in part, because CIP provides little

or no guidance or information about what specialties are actually classified in the “other” CIP code, and the CIP classification allows for variation by state as to what is classified as “other.” An additional factor is that certain residual “other” CIP codes (code format XX.9999) are by design quite wide ranging, and it cannot be assumed that they provide direct preparation for specific SOC occupations. For example, CIP code 11.9999 Computer and Information Sciences and Support Services, Other is very broad, making it impossible to link this code to SOC codes in any meaningful way. For “other” CIP codes where there is not an obvious SOC match, the SOC assignment for these CIP codes is indicated as “no match” and coded as 99.9999.

- **SOC “all other” detailed occupations.** SOC includes “all other” or “residual” detailed occupations, identified by codes ending in “9.” These SOC codes include specific occupations that are not properly classified into detailed SOC occupations in the same group. For example, SOC code 17-3019 Drafters, All Other includes specific drafting occupations not classified in SOC code 17-3011 Architectural and Civil Drafters, 17-3012 Electrical and Electronics Drafters, or 17-3013 Mechanical Drafters.

The 2018 SOC provides a Direct Match Title File (DMTF) that is useful in identifying CIP codes for “all other” SOC codes. This file lists associated job titles for detailed SOC occupations. Each of these titles is a direct match to a single SOC occupation, meaning that all workers with a job title listed in the DMTF are classified in only one detailed SOC occupation code. For example, the DMTF lists five titles that are direct matches to SOC code 17-3019 Drafters, All Other: Blueprint Tracer, Drafting Layout Worker, Draughtsman, Geological Drafter, and Marine Drafter. These titles generally may be used to identify related CIP codes for this “all other” SOC.

Because the DMTF is not exhaustive of the job titles that may be classified into the residual, however, matches to “all other” SOC codes should be made only where a good rationale can be provided. Note that it does not automatically follow that a residual CIP code matches a residual SOC code.

Identifying CIP-SOC relationships for certain occupational or program groups

- **Managers.** SOC Major Group 11 (SOC codes 11-XXXX) includes detailed occupations for managers. The SOC definitions for these programs generally contain the terms “plan, direct, or coordinate” to distinguish management tasks. Generally, CIP programs mapped to manager occupations contain these same or similar terms or otherwise indicate that the program provides preparation in management. For example, CIP code 52.0801 Finance, General maps to three managerial occupations: SOC codes 11-1011 Chief Executives, 11-1021 General and Operations Managers, and 11-3031 Financial Managers, because programs in CIP code 52.0801 prepare individuals to “plan, manage, and analyze the financial and monetary aspects and performance of business enterprises, banking institutions, or other organizations.”

In some cases, detailed subject-matter knowledge is required for managers, and in these cases CIP programs not specifically tailored for managers are mapped, as well. For example, CIP code 11.0701 Computer Science maps to SOC code 11-3021 Computer and Information Systems Managers.

- **Supervisors.** For SOC occupations in Major Groups 33-0000 through 53-0000, SOC may contain a first-line supervisory SOC occupation relevant to the nonsupervisory occupation. If so, generally the first-line supervisor occupation should be assigned the CIP programs related to the worker occupations under the specific supervisory occupations. For example, programs that map to detailed occupations in Minor Group 47-2000 Construction Trades Workers also generally map to the corresponding supervisory occupation for these workers, SOC code 47-1011 First-Line Supervisors of Construction Trades and Extraction Workers. These supervisory occupations may also map to additional CIP programs.
- **Teachers.** Qualifications to enter teaching occupations vary across jurisdictions, types of schools, and levels of education. For SOC occupations for teachers (Minor Groups 25-1000 through 25-3000), two types of CIP programs were considered: (1) programs that prepare individuals to teach (found in Series 13, Education) and (2) programs that provide instruction in the subject matter taught in the SOC occupation (found throughout CIP in the diverse arts and sciences series).

In applying the crosswalk to compare education program data to employment information for teaching occupations, users should consider the level of education of program completers and the level of education required in the occupation (e.g., bachelor's degree completers would not be qualified for university-level postsecondary positions that generally require a doctorate, but might be qualified for other postsecondary teaching positions). Also, teacher entry requirements may vary among state and local jurisdictions.

CIP titles and descriptions for programs that prepare individuals to teach usually identify the level of education (preschool, elementary, etc.). These programs generally are mapped to SOC occupations based on the subject matter and level of education. For example, CIP code 13.1301 Agricultural Teacher Education is described as "A program that prepares individuals to teach vocational agricultural programs at various educational levels." This indicates that this program may be mapped to SOC codes 25-2023 Career/Technical Education Teachers, Middle School and 25-2032 Career/Technical Education Teachers, Secondary School.

CIP programs that provide instruction in the subject matter taught are generally assigned to detailed occupations in SOC Minor Group 25-1000 Postsecondary Teachers. For example, CIP code 26.0307 Plant Physiology may be mapped to SOC code 25-1042 Biological Sciences Teachers, Postsecondary. These programs may also be mapped to middle school and secondary school teacher occupations in SOC Minor Group 25-2000, unless the subject matter is not generally taught at these levels. For example, because biology is generally taught at the middle and secondary school levels, CIP code 26.0101 Biology/Biological Sciences, General may be mapped to SOC codes 25-2031 Secondary School Teachers, Except Special and Career/Technical Education and 25-2022 Middle School Teachers, Except Special and Career/Technical Education.

Residency programs and physicians and surgeons occupations

Series 60, Residency Programs. Since CIP-2010, the number and variety of residency and fellowship programs for nurse practitioners, physician assistants, pharmacists, and other health professions have increased. Series 60 now includes residency and fellowship programs for these professions, instead of focusing predominantly on medical residencies typically completed by physicians. These programs are matched to the SOC code to which the residency or fellowship applies (e.g., CIP code 60.0703 Acute Care Nurse Practitioner Residency/Fellowship Program is matched to SOC code 29-1171 Nurse Practitioners).

Series 61, Medical Residency/Fellowship Programs. Prior to the 2020 CIP, all medical residency programs were divided into two separate four-digit series: 60.04 Medical Residency Programs—General Certificates and 60.05 Medical Residency Programs—Subspecialty Certificates. CIP-2020 moves these programs into a new two-digit series, Series 61, Medical Residency/Fellowship Programs, with four-digit groupings based on medical specialty instead of level (e.g., internal medicine, emergency medicine, surgery). The list of residency and fellowship programs is based on information from the website for the Accreditation Council for Graduate Medical Education, which is responsible for accrediting most graduate medical education programs. These programs are linked to either SOC code 29-1229 (Physicians, All Other) or 29-1249 (Surgeons, All Other) unless specific SOC codes are available; for example, pathology programs are matched to SOC code 29-1222 (Physicians, Pathologists). The CIP codes in this series are also matched to SOC code 25-1071 (Health Specialties Teachers, Postsecondary). Since fellowship programs generally include a research component, fellowship programs are also linked to SOC code 19-1042 (Medical Scientists, Except Epidemiologists).