Implementing the 2018 Standard Occupational Classification System into the American Community Survey

Julia Beckhusen, Lynda Laughlin, Ana Montalvo, and Rochelle Cooper
Industry and Occupation Statistics Branch
Outline

• Occupation classification overview
• Updating the Census Occupation Code List for 2018
• Comparing ACS occupation data across time
Assign best code:
- Autocoder
- Clerical coders

4-digit code and title assigned from 2018 Census Occupation Code List:

1032 Web and digital interface designers

2018 Census Occupation Code List based on:

2018 Standard Occupation Classification (SOC) System

1032 Crosswalks to 15-1255 in SOC
Occupation Classification Overview

• SOC system is a statistical standard under the auspices of the Office of Management and Budget
  • SOC used by all federal statistical agencies to classify occupation since 1980

• The SOC classifies paid work or work for profit into occupational categories based on the *work performed*

• Changes to the occupational classification system are needed
  • to recognize the growth and decline of occupations
  • to provide data users the greatest detail
    • Considering collectability and confidentiality
Occupation Classification Overview

• The Census Occupation Code List is an aggregate form of SOC
  • The Census Bureau has maintained its own code list since 1850
  • Many SOC detailed occupations are aggregated due to collectability, confidentiality and statistical precision
  • Every Census code crosswalks to an SOC code
  • The 2010 SOC was updated in 2018 ⇒ 2010 Census list updated in 2018
2018 SOC and Census Revision Process

- Federal Register Notices issued in 2014 and 2016: SOC solicited public comments, questions, and suggestions
- Interagency workgroups formed, representatives from 11 agencies, including Census

- Workgroups addressed hundreds of public comments
- Final decisions submitted to Office of Management and Budget
- 2018 SOC Manual Published

- Census updated the Census Occupation Code List, Alphabetical Index of Occupations, and data dictionaries
- Publish reports, tables, and technical documentation with new classifications in 2019 with ACS 2018 data
Updating the Census Code List for 2018

• Title changes
  • Example: Education administrators to Education and childcare administrators,
  • Example: Funeral service managers to Funeral home managers

• Occupations move between minor and major categories
  • Example: Personal care aides moved from Personal Care and Service Occupations to Healthcare Support Occupations
  • Example: Stockers and order fillers moved from Office and Administrative Support to Transportation and Material Moving Occupations
Updating the Census Code List for 2018

• New SOC occupations assigned their own Census code
  • Examples: Project management specialists, Tutors, Acupuncturists, EMTs, Paramedics

• Deleted SOC occupations collapsed with similar occupations
  • Examples: Computer operators, Hunters and trappers
Updating the Census Code List for 2018

• The Census Occupation Code List is an aggregate form of the SOC

• Annual ACS data allows Census to make adjustments to the aggregations:
  • Growing occupations are assigned their own Census code
    • Example: Physicians and surgeons expanded to 4 new Census occupations
    • Example: Counselors, Social workers, Designers, and others expanded to more detail

• Declining occupations are collapsed with similar occupations
  • Remain in the SOC but no longer shown on the Census Code List
  • Example: Motion picture projectionists, Transit and railroad police, Painters, and Paperhangers
Example 1: Social Workers

2000 Census Title

Social workers

2010 Census Title

Social workers

2018 Census Title

Child, family, & school social workers

Healthcare social workers

Mental health and substance abuse social workers

Social workers, all other
Example 2: Computer Scientists and Systems Analysts

- Computer scientists and system analysts
- Computer and information research scientists
- Computer systems analysts
- Computer network architects
- Computer occupations, all other

2010 Census Title

2018 Census Title
- Project management specialists
- Computer occupations, all other
- Database administrators and architects
- Software quality assurance analysts and testers
- Web and digital interface designers
Example 3: Fishing and Hunting Workers

<table>
<thead>
<tr>
<th>2000 Census Title</th>
<th>2010 Census Title</th>
<th>2018 Census Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunters and trappers</td>
<td>Hunters and trappers</td>
<td>Fishing and hunting workers</td>
</tr>
<tr>
<td>Fishers and related fishing workers</td>
<td>Fishers and related fishing workers</td>
<td></td>
</tr>
</tbody>
</table>
Updating the Census Code List for 2018

• 2000: 504 occupation codes
• 2010: 540 occupation codes
• 2018: 570 occupation codes
  • 125 Census occupation codes deleted
  • 155 new Census occupation codes added
  • Total increase of 30 codes
What Does This Mean for Data Users?

• More detail in microdata
• More detail in published tables
• More detail in PUMS
• Greater difficulty in comparing occupation data across time
How Can Data Users Make Comparisons Over Time?

- Example: Project management specialists
- New occupation in 2018 SOC and 2018 Census code list
  - With “old” 2010 code list, were likely coded as:
    - Managers, all other
    - Business operations specialists
    - Computer occupations, all other
- How can data users make comparisons across time?
  - Need to know the proportion of each “old” occupation that was actually project management specialists
  - These proportions, “conversion rates” are provided by Census with every new code list released
How Can Data Users Make Comparisons Over Time?

• Example: Nurse practitioners, new Census occupation in 2010
• A data user wants to compare Nurse practitioners between ACS 2009 and 2010
  • Find occupation table on data.census.gov and look for Nurse practitioners
    • In 2010, Nurse Practitioners are there along with other nursing occupations
      ![Occupation Table](image)
  • In 2009, only see a line for Registered nurses
    ![Registered Nurses Table](image)
  • Tables do not have a line for Nurse practitioners before 2010
How Can Data Users Make Comparisons Over Time?

• Example: compare Nurse practitioners between 2009 and 2010

ACS 2009
Table B24124
Registered nurses
n=1,933,000

ACS 2010
Table B24124
Registered nurses
n=1,900,000

Use conversion rates to calculate 2009 estimates
1,933,000 X Conversion rate

Compare to:

Registered nurses
n=1,855,680

Nurse anesthetists
n=15,464

Nurse midwives
n=3,866

Nurse practitioners
n=52,191

Conversion rate

0.96

0.008

0.002

0.028

1

2

3

How Can Data Users Make Comparisons Over Time?

• How are the conversion rates created?
  • Data from 2014-2017 ACS was double coded using the “new” 2018 code list
    • Autocoder, Clerical coders
    • Example: a 2015 response for occupation, “Project manager” that was coded as 0430 Manager, all other from the 2010 list would likely be double coded as 0705 Project management specialist
  • Cross-tabulations of the old codes by the new codes in SAS to calculate the proportion of cases with each old code that was double coded into the new code
    • Total
    • By sex, educational attainment
  • Conversion rate=proportion of cases with old code double coded to the new code
Example: Computer Scientists and Systems Analysts

2000 Census Title
Computer scientists and systems analysts

Conversion Rates
- 0.02
- 0.60
- 0.02
- 0.36

2010 Census Title
- Computer and information research scientists
- Computer systems analysts
- Computer network architects
- Computer occupations, all other

2018 Census Title
- Project management specialists
- Computer occupations, all other
- Database administrators and architects
- Software quality assurance analysts and testers
- Web and digital interface designers

Conversion Rates (forthcoming)
Example: Computer Occupations

Takeaways and Forthcoming

• NEW 2018 Census Occupation Code List; based on NEW 2018 SOC
• More detailed occupation data in ACS 2018 released this Fall
  • 1-year, 5-year and PUMS

• New Occupation tables will no longer be directly comparable with previously released tables (even if the title remains the same)

• Documentation released this Fall
  • Technical paper
  • Occupation code list crosswalks between 2010 an 2018
  • Conversion rates
    • Separate set of conversion rates for PUMS
Contact Information

Industry and Occupation Statistics Branch
301-763-3239
https://www.census.gov/topics/employment/industry-occupation.html
julia.b.beckhusen@census.gov