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Proposed Category System for 1960-2000 Census Occupations

Peter B. Meyer, U.S. Bureau of Labor Statistics  
Anastasiya M. Osborne, U.S. Bureau of Labor Statistics

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By Peter B. Meyer and Anastasiya M. Osborne  
Office of Productivity and Technology<sup>1</sup>  
U.S. Bureau of Labor Statistics

## Abstract

This paper proposes a detailed, consistent category system for occupations in the Census of Population data from 1960 to 2000. Most of the categories are based on the 1990 Census occupation definitions. We analyze employment levels, average earnings levels, and earnings variance in our occupation categories over time, compare these to similar trends for occupations defined in the *occ1950* IPUMS classification, and test both classifications for consistency over time.

## 1. Introduction and goals

The decennial Census of Population provides data on the earnings and occupations of individuals living in the U.S. The occupations reported by respondents are placed in different categories based upon a list of several hundred defined for each Census by the Census Bureau. Since 1968, the monthly Current Population Survey (CPS) has used the Census occupational categories, periodically updating them to the latest category system. Researchers can therefore use either the Census or CPS to study occupations over time in detail, but only with some restrictions because the classifications have changed from decade to decade. Some occupation categories disappeared while new ones emerged, partly due to technological reasons but mostly because the category system was evolving. In some cases, the content of an ongoing job category changed. This paper proposes a mapping between occupational category systems as they existed in the Census of

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Population from 1960 to 2000, and in the CPS from 1968 to 2003, into a unified set of categories, and tests the proposed system for consistency over time.

Matt Sobek of the IPUMS project<sup>2</sup> developed a consistent occupational category system and made it available for the IPUMS Census and CPS samples. The central variable, *occ1950*, represents a consistent occupational system based on the 1950 Census which Sobek extended to subsequent Censuses. Sobek assigned each occupation observed in a given year to a job category from the list of occupations used in the 1950 Census. As part of our project, we studied the IPUMS common occupational classification, since it is the only one we know of. With the exception of the military in one year, IPUMS assigned each reported Census occupational code to a single occupation in the 1950 category system. Data for each Census and CPS year has consequently been *dual-coded*, in other words, an occupational code for its own year has also been assigned a parallel code to tell us what that occupation would have been in 1950.

The text below reports evidence on the relative size and income stability of occupations in the *occ1950* category system and the new classification. Appendix B lists the mapping between each *occ1950* occupation and occupation categories in each of the later years. The quality of this mapping is high. However, for certain research purposes, one might want to use a different occupation system. For example, a test of a particular hypothesis may require more detailed occupations for comparison, or larger subgroups in order to provide larger samples to generate reliable summary statistics for each group, such as the variance of earnings. Also, the researcher may wish to study a panel of occupations to see how technology changes in since 1970s have affected occupations in the U.S. Over time it becomes more difficult to match new occupations to the 1950-based classification.

Any choice of a category system makes some tradeoffs between different desirable attributes, such as consistency over time, length of the time series, accuracy, and precision of the occupational information. Ideally, a new system should also conform to categories used in other sources, such as the *Dictionary of Occupational Titles* or the Labor Department's new *O\*NET*. Since specialists in this area repeatedly face the

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<sup>2</sup> IPUMS stands for Integrated Public Use Micro Samples. The ongoing project is discussed at <http://www.ipums.umn.edu> cited as Ruggles and Sobek (2003), and King, Ruggles, and Sobek (2003).

problem of mapping a category system to earlier years, we state here our methods explicitly and provide supporting tables, code, and criteria reflecting our choices so others can use, adapt, and improve on them.

Our effort to develop a consistent occupation system was similar to the IPUMS but is centered on the 1990 Census occupation categories and is intended for somewhat different purposes. We do not attempt to apply our category system to data earlier than 1960, whereas IPUMS mapped the *occ1950* definitions onto Census data back to 1850. Appendix A lists our Census 1990-based occupational system, together with a mapping to relevant occupational categories back to the 1960, 1970, 1980 Census, and forward to the 2000 Census. We combined several detailed occupations into more general categories (making the occupation set more coarse) in order to provide a consistent time series for other Census years. When possible, we tried to map back to the 1960 Census, and forward to the 2000 Census. We have 389 occupation categories.<sup>3</sup> We tested these categories for consistency over time on the hypothesis that changes in levels and trends in income measures should be relatively stable, if the proposed occupations were defined consistently. Below we compare our proposed mapping to the IPUMS *occ1950* mapping, and show the least stable occupations in both systems, using changes from one Census year to another in three analytical variables: mean earned income, the coefficient of variation of earned income, and the fraction of the work force in each occupation.

## 2. Data sources and definitions

We obtained decennial Census of Population data for 1960-2000 from [www.ipums.umn.edu](http://www.ipums.umn.edu). All the analysis below was performed on the basis of this IPUMS data, using 1% samples from 1960, 1970, and 2000, and 5% samples for 1980 and 1990. The CPS has used Census of Population occupational categories since 1968.<sup>4</sup> The Census data offers large samples, but only every ten years, while the CPS has smaller samples of earnings and occupation data for every year.

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<sup>3</sup> This includes some special cases which exist only in the 1960 data, and other special cases such as “unknown” and “unemployed” which are counted like occupations in some years.

<sup>4</sup> The 1968-1970 March CPS used the 1960 Census occupation definitions, the 1971-1982 CPS data used the 1970 Census definitions, the 1983-1990 CPS apply the 1980 Census occupation categories, the 1991-2002

The IPUMS *occ1950* list of categories is shorter than the list of occupations in the 1990 and 2000 Census. Some 1950 occupation titles are not used any more. For example, there were eleven categories with the job title “apprentice” in 1950, a title not used in the later data. On the other hand, the 1950 list does not include distinguish recently emerging occupations such as computer programmer, and detailed information on those occupations is needed to examine to study the effect of technological change on occupational structure and on income variance.

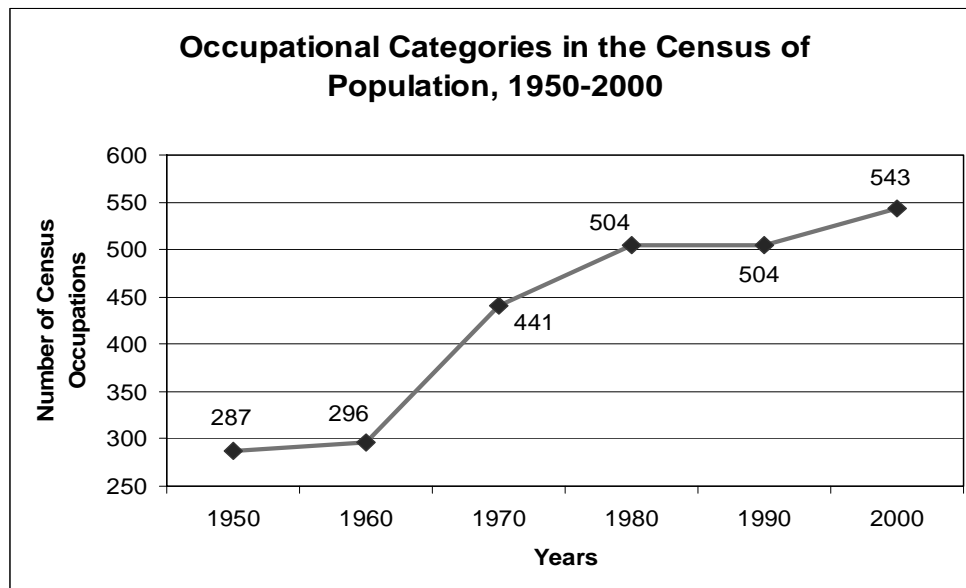


Chart 1. Counts of the Census occupational categories in years 1950-2000.

The Census defined 287 separate occupations in 1950, and more in later years, as illustrated in Chart 1. Analysis of categories show significant changes over time: some occupations disappeared, others emerged, and some were split into several categories. The title of apprentice disappeared by the year 2000. Electricians’ apprentices have been combined with electricians. Over the years, tile setters and roof repairers were sometimes presented separately and sometimes as one occupation. In our proposed classification, combining these occupations into one category reduces the level of detail in some Census years, but achieves consistency over time. Our proposed classification

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CPS data use the 1990 Census categories (with some tiny variations, documented on the IPUMS web site), and starting with the 2003 CPS the 2000 Census occupation definitions have been applied.

has 389 occupation categories. The list of occupations we propose is shorter and therefore coarser than the 1990 Census. On the other hand, it is more numerous and therefore finer than the 1950 set used by IPUMS.

A mapping between two category systems is called a *crosswalk*. Crosswalks between occupation categories in the Dictionary of Occupational Titles (DOT), the Census and the Standard Occupational Classification (SOC) are available at the National Crosswalk Service Center. The national crosswalk service center has a crosswalk between the DOT and the 2000 SOC. This Census web site has crosswalks between the 1990 census and the 2000 census, as well as the 2000 Census and the 2000 SOC. (See <http://www.census.gov/hhes/www/ioindex.html>.) Appendix C integrates our proposed classification with information on job attributes obtained from data provided in the Dictionary of Occupational Titles (required strength, working with people, quality of working conditions, and analytical tasks).

*Occupations* are distinguished from one another mainly by the kinds of tasks the workers perform. Sometimes they are defined based on the function the workers provide for others, or by the hierarchical relation between the worker and others (e.g. supervisors and apprentices). Also, technological innovation may change the level and number of tasks in a particular occupation without changing the occupation title, or it may lead to the creation of a new category. For example, the blacksmith occupational category existed in the Census classification until 1970, but not later. A category for computer scientists first appeared in the 1970 Census. These occupational titles refer to particular technologies. When occupations are organized by tasks, technical change can result in the decline or disappearance of one occupation, and the appearance of a new one.

When occupations are instead organized by function, i.e. the type of service provided to other people, technical change tends to occur within occupational categories without altering occupation classification. For example, technological change has greatly altered the work duties of nurses, but the occupation category “nurses” has remained consistently defined.

## 2.1 The 1950 Occupation set used by IPUMS

The IPUMS project studied how occupations in later Census years could be mapped to the earlier Census years. This project resulted in a crosswalk variable *occ1950* given in each IPUMS file from 1850 to the recent year 2000. In almost all cases, there is a crosswalk between a particular occupation in a particular year and an *occ1950* code.

The exception is the armed forces category. In most years, respondents could specify their occupation as “in the military”. In 1990, the U.S. Census collected detailed information on the job tasks the armed forces members were performing (e.g. cook, doctor), and recorded separately whether the employer was the armed forces. This resulted in a more precise data in 1990 than in other years. However, since the bulk of the data came from other years and did not have the same level of detail, we decided to use the same definition of the armed forces as the IPUMS *occ1950* variable. The armed forces are a separate occupation category. Individuals with distinctly military occupations and those who reported the armed forces as the last employer were placed into this category. Probably some civilian employees of the Dept of Defense, or reservists, are being counted in the armed forces, even though if we had more detailed information, we would count them in another occupation. (As per <http://www.ipums.umn.edu/usa/pwork/empstata.html> ) See appendix A, category 905, and appendix B, category 595, for the exact specification.

The *occ1950* classification cannot satisfy the needs of some research projects, for several reasons:

- 1) It does not provide detailed information on occupations that developed after 1950. For example, it does not separate computer programming and computer administrators from electrical engineers or mathematical scientists. A researcher might need to separate these categories to study technological change over time.<sup>5</sup>

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<sup>5</sup> For example, in Meyer (2001) and subsequent research, these occupations were examined for the effects of rapid technological change and related uncertainty and turbulence.

2) It contains occupations with a sizable fraction of workers in the 1950s, which warranted a separate category, but that fraction became thinner or completely disappeared in later Census years. For example, the 1950 Census distinguished eleven categories of apprentices (electricians, carpenters, masons, and so forth). All those categories were replaced by a single category (“helpers”) in the 2000 Census. The apprentice categories were small to begin with, and we do not know the reason of their disappearance from the list of occupational categories.

3) Some of the *occ1950* occupations are defined consistently over time and listed separately, but are too small to compute reliable large-sample aggregate statistics for the group. For example, only a few marine and naval architects and petroleum engineers have been ever reported. Here a researcher would face a problem of a small sample, rather than a problem of creating consistent time series.

By extending our proposed 1990-based category system back to the 1960s, we have the advantage of knowing how occupations changed over time, and can choose categories large enough and long lasting enough for a particular research project.

## **2.2 Definitions of key variables**

For the statistical analysis presented below, we restrict the sample to respondents between ages 16 and 75 who had a job (that is, the *empstatd* variable has the value 10, 12, 14, or 15). When we refer to fractions of the work force, we mean fractions of this restricted sample.

We define *earned income* as the sum of wage income and income from business or self-employment. For 1990 and 2000, IPUMS imputed the estimates of topcoded state-specific incomes based on Census estimates they had. We have not studied top-coding in other years.



### 3. Problems, issues, and opportunities in matching categories

#### 3.1 Choice among assignments in a split

The Census Bureau published several technical papers that include tables showing how many people were coded in each occupation in one Census year and how they would be coded using the classification from the a different Census year. This allows us to see the frequency of assigning a particular respondent record to particular occupations in consecutive Censuses, such as those in Scopp (2003).

**Table 1. Examples of occupational classification changes from 1970 to 1980**

1970 code	1970 occupation category	1980 code	1980 component categories and codes	Experienced Civilian Labor Force in 1980	Percent of 1970 Category
001	Accountants	007	Financial managers	9,810	1.31
		023	<b>Accountants and auditors</b>	640,112	85.67
		025	Other financial officers	50,930	6.82
		036	Inspectors and compliance officers, except construction	14,870	1.99
		337	Bookkeepers, accounting, and auditing clerks	31,467	4.21
002	Architects	043	<b>Architects</b>	52,454	88.20
		053	Civil engineers	4,096	6.89
		058	Marine engineers and naval architects	2,925	4.92
003	Computer programmers	064	Computer systems analysts and scientists	7,943	4.62
		229	<b>Computer programmers</b>	163,845	95.38
004	Computer systems analysts	064	Computer systems analysts and scientists	84,804	100.00
202	Bank officers and financial managers	007	<b>Financial managers</b>	153,488	47.37
		019	Managers and administrators, n.e.c.	40,151	12.39
		025	Other financial officers	109,575	33.82
		303	Supervisors, general office	8,643	2.67
		383	Bank tellers	12,154	3.75
231	Sales managers and department heads, retail trade	009	Purchasing managers	9,586	4.40
		013	<b>Managers, marketing, advertising and public relations</b>	124,506	57.10
		243	Supervisors and proprietors, sales occupations	83,968	38.51

IPUMS used these tables to assign the *occ1950* mapping. Trent Alexander of IPUMS kindly provided these tables to us. Table 1 provides one example of a mapping given in the IPUMS Excel spreadsheet.

For any of the 1970 categories it is clear which occupation is the closest match in 1980 (shown in bold), but choosing that single assignment introduces a mismatch for some of the individuals within it. The categories are not a one to one match since the Census has redefined the category system, often because of technological changes, or to conform to other systems such as the SOC, the Standard Occupational Classification.

### 3.2 Least-common-denominator occupational categories

In this section we discuss categories with “not elsewhere classified” in their titles, usually abbreviated as “n.e.c.” Our proposed standard system has more of these categories than the Census classification. Our “n.e.c.” categories can have different meanings depending on a year and particular occupation. For example, midwives and chiropractors used to be separate categories in 1960 and 1970, but were combined into one category later. We assigned them into an “Other health and therapy jobs” category in our proposed standard classification given in appendix A.

Another problematic example is presented in Table 2. It shows the difficulty of creating an occupational crosswalk over time. A plurality of workers (37%) coded in 284 in 1970 would be mapped to occupation 263 in 1980.

**Table 2. Sales workers category, an example where mapping is difficult**

1970 code	1970 occupation title	1980 code	1980 component categories and codes	Experienced Civilian Labor Force	Percent of 1970 Category
284	Sales workers, except clerks, retail trade	<b>263</b>	<b>Sales workers, motor vehicles and boats</b>	185,160	<b>37.06</b>
		266	Sales workers, furniture and home furnishings	98,941	19.80
		267	Sales workers; radio, television, hi fi, and appliances	76,674	15.35
		268	Sales workers, hardware and building supplies	81,668	16.35
		269	Sales workers, parts	39,120	7.83
		274	Sales workers, other commodities	16,008	3.20
		277	Street and door to door sales workers	2,082	0.42

However, the title of 1980 occupation 263 is specifically restricted to motor vehicles and boats, while the 1970 title is not. If we were to use the 1980 category name and apply it to 1970 data, we would have had a category that explicitly mislabeled most of its members. Instead, we combined the workers in category 284 in 1970 into the category called “Salespersons not elsewhere classified”. Because *occ1950* uses the predefined 1950 categories, no categories were renamed, or “n.e.c.” categories created or expanded, to extend consistency in definition across years.

To test the consistency of *occ1950* categories and our proposed standard set, for example, “Technicians, n.e.c.” and “Salespersons, n.e.c.”, we conduct statistical analysis of the subpopulations in these categories, as shown in Appendix D.

### **3.3 Reusable techniques**

Other researchers may wish to create a different occupational classification more suitable for their project. To make their job easier, we mean to make the tables, spreadsheets, code, and testing criteria public by describing them in this working paper and providing them on the Internet. Our methods and tools can then be applied in other circumstances. In principle, the industry variable in the Census could be standardized in a similar fashion.

### **4.0 Testing the categories**

We computed three statistics for each occupation in the proposed standard system in order to detect which job categories show sharp changes from one Census year to another. Sharp changes in them probably reflect changes in a category’s definition rather than a real-world change. Appendix D shows the three measures, and identifies occupations with the most pronounced changes from Census to Census. We applied the same criteria to the IPUMS standard *occ1950* system that was in the IPUMS data containing the 1960-2000 decennial Censuses. We restricted the sample to the employed respondents between 16 and 75 years old. The variable *empstatd* was used to restrict the employment status to respondents who had a job. All tables in this paper use Census person weights in their construction of averages.

Our first measure is the weighted mean earned income for each occupation in each Census year. Earned income was defined to be the person's annual wage or salary, plus business income. We compare this to the weighted mean earned income in the occupation in the previous decade. Second, we measure earnings inequality within the group by the coefficient of variation, and reported the greatest increase and lowest increase for both occupational category systems for each pair of consecutive Censuses. Third, we measure the fraction of the work force contained in each occupation, looking for sharp increases or declines in this proportion from Census to Census. Appendix D reports ratios measuring these changes. We found that the proposed new categories and the *occ1950* categories perform similarly by these criteria.

We do not use these measures as a tool to assign groups into an occupational category system. The measures serve only to verify that certain kinds of gross errors have been avoided. Many errors, avoidable and otherwise, could still be present in data which perform well by such criteria. Judgment of whether an occupation system is reasonable has to depend on the fundamental criteria by which the respondents were grouped, not on these rough measures of consistency.

## **5.0 Job content attributes**

The *Dictionary of Occupational Titles* has over 12,000 detailed occupations with a few attributes measured on the basis of observing workers, and a text description about each occupation. Among the attributes measured are the physical strength, language use, and mathematical reasoning required. These occupations have been mapped to 1990 Census definitions, so these attributes can be included in all years.

Other researchers have defined useful attributes of occupations. England, Budig, and Folbre (2002) defined care work occupations as those which required specific attention to other individuals. Their research followed a tradition of measuring the degree to which women were paid less than men because of job attributes. Meyer (2001) defined a set of particular jobs which have been strongly affected by the pace of semiconductor improvements and technological uncertainty. Rosen (1981) posits that particular occupations are subject to a superstars effect, in which larger markets raise the inequality

of earnings. There are also long standing categories of clerical, managerial, professional, or technical occupations. Ideally, researchers could use occupation category systems in which category boundaries would match up with the substantive relevant to them.

The table in Appendix C of this paper shows how we map occupational attributes from other sources into the proposed classification system. We hope our effort will help researchers work around the limited definitions of skills that are sometimes used as independent variables in earnings regressions. Sometimes skills are measured crudely by the number of years of schooling, implying equal earnings for those with bachelor's degrees in electrical engineering, art history, and finance. Levels of education also reflect signaling, certification, and opportunity differences, entirely apart from skills. Including other available attributes of the job (see Appendix C) can provide better information about the skills, tasks, and functions of the worker.

Once we establish a common occupational category system, we can measure other attributes, such as the fraction of college graduates; the fraction of immigrants; the fraction working in urban areas; and the fraction working in the private sector. These are possible predictors about the way the occupation has evolved. We could test whether occupations requiring mathematics have become more numerous or better paid over time, holding all else constant. Perhaps occupations requiring government certification have been more stable than other occupations. Perhaps occupations with supervisory authority (such as managers) have evolved in different ways than other occupations. Perhaps new occupations tend to appear at the top of the income distribution, and then drift down; there could be a life cycle of occupations, in a way that is informative about technological change.

## **6.0 Potential improvement: splitting recorded occupations**

In almost every case, we have assigned each occupation mentioned in the Census to one proposed standard category. There is one set of exceptions in 1990, where the armed forces category was distinguished by a different field of information (*empstatd*) and members of the armed forces had a variety of occupations (e.g. cook or doctor). Our

classification assigns all members of the armed forces to a single armed forces occupation.

Using other information recorded in a Census, it may be possible in future work to split the members of an originally recorded occupation into groups that fit the proposed standard occupations better. The next sections provide examples of such recoding.

## **6.1 Using dual-coded data sets**

From 2000 to 2002, many CPS records were dual-coded into the 1990 Census category system as well as the 2000 Census system. Dual-coding makes it possible to look at some occupation categories that were stable in 1990, but were split into groups in 2000, and vice versa. We can use micro data on the individuals who were assigned in the different ways in the dual-coded data set, then apply the rules learned to the Census and CPS data at large. Using this detailed information, in later work it may be possible to define year-2000 occupation groups better than they are now classified in Appendix A, and possibly in a way that improves the test performance in appendix D.

## **6.2 Splitting 1960 Census occupations**

There were several cases in the 1960 data where it may be realistic to split a Census occupation group into several proposed standard groups. One case is the “Statisticians and actuaries” category in the 1960 classification. In the 1970 through 1990 Censuses, statisticians and actuaries were recorded as separate groups. In Appendix A we assigned all the “statisticians and actuaries” in 1960 to the statisticians group because it was much larger and therefore provides the closest match for most of them. But we can detect those who were likely to have been classified as actuaries in any later year, and move some of them into the actuaries category, which is empty for now. Several predictors are pretty strong, based on the 1970 evidence:

- 65% of actuaries worked in industry 717 (the insurance industry), whereas only 10% of statisticians did.
- 88% of actuaries worked in the private sector, whereas only 60% of statisticians did
- 10% of statisticians were foreign-born; only 4% of actuaries were
- About half of statisticians were female. Only a third of actuaries were.

- The mean salary of actuaries was 50% higher than the mean salary of statisticians
- Actuaries had much higher mean business income.

Using all this information in a regression, it should be possible to predict which of the “statisticians and actuaries” were most likely to be actuaries, and to reassign them. Furthermore, we could try to estimate how many were then reclassified correctly and how many reclassified incorrectly based on how such a rule would have worked in the 1970 Census and the 1971-1982 CPS. This would improve the accuracy of the data on statisticians, and make a longer time series on actuaries possible.

<b>Numbers of respondents: actuaries and statisticians in decennial Census</b>				
<b>(1% samples of the population in 1960 and 1970; 5% in 1980 and 1990)</b>				
	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>
<b>Actuaries</b>	260	50	526	899
<b>Statisticians</b>		268	1615	1555

A similar situation occurs in the “Lawyers and judges” category. Lawyers and judges were combined into a single category in the 1960 data. But in the 1970, 1980, and 1990 data, all judges worked in the public sector, and it may be possible to use information on the place of work (government versus other) to infer which of the respondents were mostly likely to be judges.

There are other examples. In one Census, some of the “athletes and kindred” category were physical education teachers. Possibly, teachers can be separated out because they worked in the public sector. There is also a large “Foremen, n.e.c.” category which existed in the 1960 Census, and we had to keep it in the proposed classification because there was no good category to match it to. This category can perhaps be split up by industry to align its members with the later categories which distinguished supervisors in extractive occupations from those in production occupations and several other categories.

## **7.0 Conclusion: Possible contribution of this project**

With an occupation category system lasting from 1960 to the present and large samples like those in the Census and CPS, researchers could build informative panels of occupations over time and test which attributes of an occupation predict other attributes of an occupation. For example, Meyer (2001) tested how an attribute of an occupation – the level of earnings dispersion within it -- evolved over time in particular types of occupations. The hypothesis was that high tech occupations and media-amplified occupations (called “superstars” occupations by Rosen (1981)) had rising inequality within them.

Another set of applications would treat attributes associated with occupations as predictors about individuals. For example, particular occupations have been identified as involving care work, very new technology, superstars’ properties, and government licensing requirements. England, Budig, and Folbre (2002) tested whether caring and nurturing occupations (a gendered attribute) predicted pay levels apart from whether the jobholder was male or female. There is also a literature on the economics of income inequality, which could use narrow occupational categories as measures of skills.

A third set of applications to the methods proposed in this paper is to construct analogous long-lasting category systems for the industry variable in the Census and CPS. This would make it easier to identify long run trends, such as technological change, in particular industries.



## Appendix A. Mapping of Census occupation codes to the proposed standard category system

Below is our proposed standardized list of Census occupations. The columns at right show one or several Census occupational codes that we assign into one "proposed standard" category. In most cases the proposed standard title is the same as the one in the 1990 Census. CPS used the 1960 definitions in 1968-1970; the 1970 definitions from 1971-1982; the 1980 definitions from 1983-1991; the 1990 definitions from 1992-2002; and the 2000 definitions starting in 2003. "N.e.c." stands for not elsewhere classified.

Occupation assignments in the table were overridden if the respondent was actively in the military, which would correspond to the values 14 and 15 in the variable *empstatd*. All such respondents were categorized into occupation 905. These rules match the IPUMS *occ1950* definition.

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Legislators	<b>3</b>			3	3	3
Chief executives and public administrators	<b>4</b>	270		4	4	1
Financial managers	<b>7</b>		202; 210	7	7	12
Human resources and labor relations managers	<b>8</b>			8	8	13
Managers and specialists in marketing, advertising, and public relations	<b>13</b>	163	192; 231; 233;	13; 197	13; 197	4; 5; 6; 282
Managers in education and related fields	<b>14</b>	30	235; 240	14	14	23
Managers of medicine and health occupations	<b>15</b>		212	15	15	35
Postmasters and mail superintendents	<b>16</b>	280	224	17	16	40
Managers of food-serving and lodging establishments	<b>17</b>		230		17	31; 34
Managers of properties and real estate	<b>18</b>	262	216	16	18	41
Funeral directors	<b>19</b>	104	211	18	19	32
Managers of service organizations, n.e.c.	<b>21</b>				21	33; 36; 42; 72
Managers and administrators, n.e.c.	<b>22</b>	275; 290	195; 196; 201; 220; 222; 223; 245; 246	5; 19	5; 22	2; 10; 11; 14; 22; 30; 43; 60; 430
Accountants and auditors	<b>23</b>	0	1	23	23	80; 93
Insurance underwriters	<b>24</b>			24	24	86
Other financial specialists	<b>25</b>	253		25	25	82; 83; 84; 85; 91; 94; 95
Management analysts	<b>26</b>			26	26	71
Personnel, HR, training, and labor relations specialists	<b>27</b>			27	27	62

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Purchasing agents and buyers, of farm products	<b>28</b>	251	203	28	28	51
Buyers, wholesale and retail trade	<b>29</b>	250	205	29	29	52
Purchasing managers, agents and buyers, n.e.c.	<b>33</b>	285	225	9; 33	9; 33	15; 53
Business and promotion agents	<b>34</b>			34	34	50
Construction inspectors	<b>35</b>		213	35	35	666
Inspectors and compliance officers, outside construction	<b>36</b>	260	215	36	36	56; 90
Management support occupations	<b>37</b>			37	37	73
Architects	<b>43</b>	13	2	43	43	130
Aerospace engineer	<b>44</b>	80	6	44	44	132
Metallurgical and materials engineers, variously phrased	<b>45</b>	90	15	45	45	145
Petroleum, mining, and geological engineers	<b>47</b>	91	21	47	47	152
Chemical engineers	<b>48</b>	81	10	48	48	135
Civil engineers	<b>53</b>	82	11	53	53	136
Electrical engineer	<b>55</b>	83	12	55	55	140; 141
Industrial engineers	<b>56</b>	84	13	56	56	143
Mechanical engineers	<b>57</b>	85	14	57	57	146
Engineers not elsewhere classified	<b>59</b>	93	20; 23	46; 49; 54; 58; 59	46; 49; 54; 58; 59	133; 134; 142; 144; 150; 151; 153
Computer systems analysts and computer scientists	<b>64</b>		4; 5	64	64	100; 104; 106; 110; 111
Operations and systems researchers and analysts	<b>65</b>		55	65	65	70; 122
Actuaries	<b>66</b>		34	66	66	120
Statisticians	<b>67</b>	174	36	67	67	123
Mathematicians and mathematical scientists	<b>68</b>	135	35	68	68	121; 124
Physicists and astronomers	<b>69</b>	140	53	69	69	170
Chemists	<b>73</b>	21	45	73	73	172
Atmospheric and space scientists	<b>74</b>		43	74	74	171
Geologists	<b>75</b>	134	51	75	75	174
Physical scientists, n.e.c.	<b>76</b>	145	54	76	76	176
Agricultural and food scientists	<b>77</b>	130	42	77	77	160
Biological scientists	<b>78</b>	131	44; 52	78	78	161
Foresters and conservation scientists	<b>79</b>	103	25	79	79	164
Medical scientists	<b>83</b>			83	83	165
Physicians	<b>84</b>	153; 162	65	84	84	306
Dentists	<b>85</b>	71	62	85	85	301
Veterinarians	<b>86</b>	194	72	86	86	325
Optometrists	<b>87</b>	152	63	87	87	304
Podiatrists	<b>88</b>		71	88	88	312
Other health and therapy	<b>89</b>	22; 840	61; 73; 924	89	89	300; 326

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Registered nurses	<b>95</b>	150	75; 923	95	95	313
Pharmacists	<b>96</b>	160	64	96	96	305
Dietitians and nutritionists	<b>97</b>	73	74	97	97	303
Respiratory therapists	<b>98</b>			98	98	322
Occupational therapists	<b>99</b>			99	99	315; 361
Physical therapists	<b>103</b>			103	103	316; 362
Speech therapists	<b>104</b>			104	104	314; 323
Therapists, n.e.c.	<b>105</b>	193	76; 84	105	105	320; 321; 324
Physicians' assistants	<b>106</b>			106	106	311
Earth, environmental, and marine science instructors	<b>113</b>	41	103	113	113	
Biological science instructors	<b>114</b>	32	104	114	114	
Chemistry instructors	<b>115</b>	34	105	115	115	
Physics instructors	<b>116</b>	45	110	116	116	
Psychology instructors	<b>118</b>	50	114	118	118	
Economics instructors	<b>119</b>	35	116	119	119	
History instructors	<b>123</b>		120	123	123	
Sociology instructors	<b>125</b>		121	125	125	
Engineering instructors	<b>127</b>	40	111	127	127	
Math instructors	<b>128</b>	42; 51	112	128	128	
Education instructors	<b>139</b>		125	139	139	
Law instructors	<b>145</b>		132	145	145	
Theology instructors	<b>147</b>		133	147	147	
Home economics instructors	<b>149</b>		131	149	149	
Humanities instructors, nec	<b>150</b>	54				
Subject instructors, college	<b>154</b>	31; 43; 52; 53; 60	102; 113; 115; 122; 123; 124; 126; 130; 134; 135; 140	117; 124; 126; 129; 133; 134; 135; 136; 137; 138; 143; 144; 146; 148; 153; 154	117; 124; 126; 129; 133; 134; 135; 136; 137; 138; 143; 144; 146; 148; 153; 154	220
Kindergarten and earlier school teachers	<b>155</b>		143	155	155	230
Primary school teachers	<b>156</b>	182	142	156	156	231
Secondary school teachers	<b>157</b>	183	144	157	157	232
Special education teachers	<b>158</b>			158	158	233
Teachers, n.e.c.	<b>159</b>	184	141; 145	159	159	234; 254; 255
Vocational and educational counselors	<b>163</b>		174	163	163	200
Librarians	<b>164</b>	111	32	164	164	243
Archivists and curators	<b>165</b>		33	165	165	240
Economists, market researchers, and survey researchers	<b>166</b>	172	91	166	166	180; 181
Psychologists	<b>167</b>	173	93	167	167	182
Sociologists	<b>168</b>		94	168	168	183
Social scientists, n.e.c.	<b>169</b>	102; 175	24; 26; 92;	169	169	186

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			96			
Urban and regional planners	<b>173</b>		95	173	173	184
Social workers	<b>174</b>	171	100	174	174	201
Recreation workers	<b>175</b>	165	101	175	175	462
Clergy and religious workers	<b>176</b>	23; 170	86; 90	176; 177	176; 177	204; 205; 206
Lawyers	<b>178</b>	105	31	178	178	210
Judges	<b>179</b>		30	179	179	211
Writers and authors	<b>183</b>	20	181	183	183	285
Technical writers	<b>184</b>			184	184	284
Designers	<b>185</b>	72	183; 425	185	185	263
Musician or composer	<b>186</b>	120	185	186	186	275
Actors, directors, producers	<b>187</b>	10	175	187	187	270; 271
Art makers: painters, sculptors, craft-artists, and print-makers	<b>188</b>	14	190	188	188	260
Photographers	<b>189</b>	161	191	189	189	291
Dancers	<b>193</b>	70	182	193	193	274
Art/entertainment performers and related	<b>194</b>	101	194	194	194	276; 286
Editors and reporters	<b>195</b>	75	184	195	195	281; 283; 292
Announcers	<b>198</b>		193	198	198	280
Athletes, sports instructors, and officials	<b>199</b>	15; 180	180	199	199	272; 752
Professionals, n.e.c.	<b>200</b>	195				
Clinical laboratory technologies and technicians	<b>203</b>	185	80	203	203	330
Dental hygienists	<b>204</b>		81	204	204	331
Health record tech specialists	<b>205</b>		82	205	205	351
Radiologic tech specialists	<b>206</b>		83	206	206	332
Licensed practical nurses	<b>207</b>	842	926	207	207	350
Health technologists and technicians, n.e.c.	<b>208</b>		85	208	208	340; 353; 354
Electrical and electronic (engineering) technicians	<b>213</b>	190	153	213	213	
Engineering technicians, n.e.c.	<b>214</b>		154; 162	214; 216	214; 216	155; 196
Mechanical engineering technicians	<b>215</b>		155	215	215	
Drafters	<b>217</b>	74	152	217	217	154
Surveyors, cartographers, mapping scientists and technicians	<b>218</b>	181; 642	161	63; 218; 867	63; 218; 867	131; 156
Biological technicians	<b>223</b>		150	223	223	190; 191
Chemical technicians	<b>224</b>		151	224	224	192
Other science technicians	<b>225</b>	191	156	225	225	193
Airplane pilots and navigators	<b>226</b>	12	163; 170	226	226	903
Air traffic controllers	<b>227</b>		164	227	227	904
Broadcast equipment operators	<b>228</b>	164	171	228	228	290; 296
Computer software developers	<b>229</b>		3	229	229	101; 102
Programmers of numerically controlled machine tools	<b>233</b>		172	233	233	790

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Legal assistants and paralegals	<b>234</b>			234	234	214; 215
Technicians, n.e.c.	<b>235</b>	192	165; 173	235	235	194
Sales supervisors and proprietors	<b>243</b>	254		243	243	470; 471
Insurance sales occupations	<b>253</b>	385	265	253	253	481
Real estate sales occupations	<b>254</b>	393	270; 363	254	254	81; 492
Financial services sales occupations	<b>255</b>	395	271	255	255	482
Advertising and related sales jobs	<b>256</b>	380	260	256	256	480
Sales engineers	<b>258</b>	92	22	258	258	493
Salespersons, n.e.c.	<b>274</b>	301; 381; 383; 394	261; 280; 281; 282; 284; 285; 296	257; 259; 263; 264; 265; 266; 267; 268; 269; 274; 284; 285	257; 259; 263; 264; 265; 266; 267; 268; 269; 274; 284; 285	474; 475; 484; 485; 494; 496
Retail sales clerks	<b>275</b>		283; 314	275	275	476
Cashiers	<b>276</b>	312	310	276	276	472; 513
Door-to-door sales, street sales, and news vendors	<b>277</b>	390	264; 266	277; 278	277; 278	495
Sales demonstrators / promoters / models	<b>283</b>	382	262	283	283	490
Office supervisors	<b>303</b>		312	303; 305	303; 305	500
Computer and peripheral equipment operators	<b>308</b>		343; 350	304; 308; 309	304; 308; 309	580
Secretaries	<b>313</b>	342	370; 371; 372	313	313	570
Stenographers	<b>314</b>	345	376	314	314	
Typists	<b>315</b>	360	391	315	315	582; 583
Interviewers, enumerators, and surveyors	<b>316</b>		320	316	316	523; 531; 534
Hotel clerks	<b>317</b>			317	317	530
Transportation ticket and reservation agents	<b>318</b>	354	390	318	318	483; 541
Receptionists	<b>319</b>	341	364	319	319	540
Information clerks, nec	<b>323</b>			323; 325	323; 325	
Correspondence and order clerks	<b>326</b>			326; 327	326; 327	521; 535
Human resources clerks, except payroll and timekeeping	<b>328</b>	154	56	328	328	536
Library assistants	<b>329</b>	302	330	329	329	244; 532
File clerks	<b>335</b>	320	325	335	335	526
Records clerks	<b>336</b>			336	336	520; 542
Bookkeepers and accounting and auditing clerks	<b>337</b>	310	305	337	337	512
Payroll and timekeeping clerks	<b>338</b>	333	360	338	338	514
Cost and rate clerks (financial records processing)	<b>343</b>			343	343	
Billing clerks and related financial records processing	<b>344</b>		303; 341; 342	339; 344	339; 344	511
Duplication machine operators / office machine operators	<b>345</b>		344	345	345	

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Mail and paper handlers	<b>346</b>		332	346	346	556
Office machine operators, n.e.c.	<b>347</b>	325	355	347	347	590
Telephone operators	<b>348</b>	353	385	306; 348	306; 348	501; 502
Other telecom operators	<b>349</b>	352	384	349; 353	349; 353	503
Postal clerks, excluding mail carriers	<b>354</b>	340	361	354	354	554
Mail carriers for postal service	<b>355</b>	323	331	355	355	555
Mail clerks, outside of post office	<b>356</b>	315		356	356	585
Messengers	<b>357</b>	324; 351	333; 383	357	357	551
Dispatchers	<b>359</b>	314	315	359	359	552
Inspectors, n.e.c.	<b>361</b>	450				
Shipping and receiving clerks	<b>364</b>	343	374	307; 364	307; 364	550; 561
Stock and inventory clerks	<b>365</b>	350	381	365	365	515; 562
Meter readers	<b>366</b>		334	366	366	553
Weighers, measurers, and checkers	<b>368</b>		392	368	368	563
Material recording, scheduling, production, planning, and expediting clerks	<b>373</b>		323	363; 373	363; 373	16; 560
Insurance adjusters, examiners, and investigators	<b>375</b>	321	326	375	375	54; 584
Customer service reps, investigators and adjusters, except insurance	<b>376</b>		321	376	376	524; 533
Eligibility clerks for government programs; social welfare	<b>377</b>			377	377	525
Bill and account collectors	<b>378</b>	313	313	378	378	510
General office clerks	<b>379</b>	370	395; 396	379	379	586
Bank tellers	<b>383</b>	305	301	383	383	516
Proofreaders	<b>384</b>		362	384	384	591
Data entry keyers	<b>385</b>		345	385	385	581
Statistical clerks	<b>386</b>		375	386	386	592
Teacher's aides	<b>387</b>		382	387	387; 467	
Administrative support jobs, n.e.c.	<b>389</b>		311; 394	369; 374; 389	369; 374; 389	522; 593
Housekeepers, maids, butlers, stewards, and lodging quarters cleaners	<b>405</b>	802; 821; 823; 824; 832	901; 902; 931; 940; 982	405; 449; 950	405; 449; 950	384; 423
Private household cleaners and servants	<b>407</b>		984	407	407	
Supervisors of guards	<b>415</b>			415	415	373
Fire fighting, prevention, and inspection	<b>417</b>	850	961	413; 416; 417	413; 416; 417	372; 374; 375
Police, detectives, and private investigators	<b>418</b>	852; 853	964	6; 414; 418	6; 414; 418	371; 382; 385; 386; 391
Other law enforcement: sheriffs, bailiffs, correctional institution officers	<b>423</b>	854	963; 965	423; 424	423; 424	370; 380; 383
Crossing guards and bridge tenders	<b>425</b>		960	425	425	394
Guards, watchmen, doorkeepers	<b>426</b>	851	962	426	426	392
Protective services, n.e.c.	<b>427</b>			427	427	390; 395
Bartenders	<b>434</b>	815	910	434	434	404
Waiter/waitress	<b>435</b>	875	915	435	435	411

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Cooks, variously defined	<b>436</b>	825	912; 981	404; 433; 436; 437	404; 433; 436; 437	400; 401; 402
Food counter and fountain workers	<b>438</b>	830	914	438	438	
Kitchen workers	<b>439</b>	835	913; 916	439	439	405
Waiter's assistant	<b>443</b>		911	443	443	406; 412; 413
Misc food prep workers	<b>444</b>			444	444	403; 414; 416
Dental assistants	<b>445</b>		921	445	445	364
Health aides, except nursing	<b>446</b>	303	922	446	446	365
Nursing aides, orderlies, and attendants	<b>447</b>	151; 810	925	447	447	360; 461
Supervisors of cleaning and building service	<b>448</b>			448	448	420
Janitors	<b>453</b>	834	903	453	453	422
Elevator operators	<b>454</b>	831	943	454	454	975
Pest control occupations	<b>455</b>			455	455	424
Supervisors of personal service jobs, n.e.c.	<b>456</b>			456	456	432
Barbers	<b>457</b>	814	935; 945	457	457	450
Hairdressers and cosmetologists	<b>458</b>	843	944	458	458	451; 452
Recreation facility attendants	<b>459</b>	813	932	459	459	440; 443
Guides	<b>461</b>			463	461	454
Ushers	<b>462</b>	874	953	464	462	442
Public transportation attendants and inspectors	<b>463</b>		704	465	463	455; 941
Baggage porters	<b>464</b>	304; 841	934	466	464	453
Welfare service aides	<b>465</b>		954	467	465	202
Child care workers	<b>468</b>	801	942; 952; 980	406; 468	406; 466; 468	460; 464
Personal service occupations, nec	<b>469</b>	420; 804; 812; 820; 890	933; 941; 950; 976; 986	469	469	363; 415; 446; 465
Farmers (owners and tenants)	<b>473</b>	200	801	473	473	21
Horticultural specialty farmers	<b>474</b>			474	474	
Farm managers, except for horticultural farms	<b>475</b>	222	802; 806; 821	475	475	20; 602
Managers of horticultural specialty farms	<b>476</b>			476	476	
Farm workers	<b>479</b>	901; 902; 903; 905	822 823; 824; 846	477; 479	477; 479	434; 605
Marine life cultivation workers	<b>483</b>			483	483	
Nursery farming workers	<b>484</b>			484	484	
Supervisors of agricultural occupations	<b>485</b>			485	485	421
Gardeners and groundskeepers	<b>486</b>	964	755	486	486	425
Animal caretakers except on farms	<b>487</b>		740	487	487	435
Graders and sorters of agricultural products	<b>488</b>	654		488	488	604
Inspectors of agricultural products	<b>489</b>			489	489	601

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Timber, logging, and forestry workers	<b>496</b>	444; 970	450; 761	494; 495; 496	494; 495; 496	600; 612; 613
Fishers, hunters, and kindred	<b>498</b>	962	752	498; 499	498; 499	610; 611
Supervisors of mechanics and repairers	<b>503</b>			503	503	700
Automobile mechanics	<b>505</b>	472; 601	473; 474	505; 506	505; 506	720
Bus, truck, and stationary engine mechanics	<b>507</b>			507	507	721
Aircraft mechanics	<b>508</b>	471	471	508; 515	508; 515	714
Small engine repairers	<b>509</b>			509	509	724
Auto body repairers	<b>514</b>		472	514	514	715; 716
Heavy equipment and farm equipment mechanics	<b>516</b>		480; 481	516; 517	516; 517	722; 726
Industrial machinery repairers	<b>518</b>			518	518	733
Machinery maintenance occupations	<b>519</b>	461; 692	483; 642	519	519	735
Repairers of industrial electrical equipment	<b>523</b>	474	485	523	523	710; 712
Repairers of data processing equipment	<b>525</b>		475	525	525	701
Repairers of household appliances and power tools	<b>526</b>		482	526	526	732
Telecom and line installers and repairers	<b>527</b>	453	552; 554	527; 529	527; 529	702; 742
Repairers of electrical equipment, n.e.c.	<b>533</b>			533	533	703; 705; 711
Heating, air conditioning, and refrigeration mechanics	<b>534</b>	470	470	534	534	731
Precision makers, repairers, and smiths	<b>535</b>	451; 504	453; 516	535; 647	535; 647	743; 875
Locksmiths and safe repairers	<b>536</b>			536	536	754
Office machine repairers and mechanics	<b>538</b>	473	484	538	538	
Repairers of mechanical controls and valves	<b>539</b>			539	539	730
Elevator installers and repairers	<b>543</b>			543	543	670
Millwrights	<b>544</b>	491	491; 502	544	544	736
Mechanics and repairers, n.e.c.	<b>549</b>	475; 480; 610; 620; 621	403; 486; 492; 495; 571; 572; 575; 586	547; 549; 864	547; 549	734; 755; 756; 762
Supervisors of construction work	<b>558</b>			553; 554; 555; 556; 557; 558	553; 554; 555; 556; 557; 558	620
Masons, tilers, and carpet installers	<b>563</b>	405; 602	410; 411; 420; 560	563; 564; 565; 566	563; 564; 565; 566	622; 624
Carpenters	<b>567</b>	411; 603; 960	415; 416	567; 569	567; 569	623
Drywall installers	<b>573</b>		615	573	573	633
Electricians	<b>575</b>	421; 604	430; 431	575; 576	575; 576	635; 713
Electric power installers and repairers	<b>577</b>		433	577	577	704; 741; 760
Painters, construction and maintenance	<b>579</b>	495	510; 511	579	579	642
Paperhangers	<b>583</b>	501	512	583	583	643
Plasterers	<b>584</b>	505	520; 521	584	584	646



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Plumbers, pipe fitters, and steamfitters	<b>585</b>	510; 612	522; 523	585; 587	585; 587	644
Concrete and cement workers	<b>588</b>	413	421	588	588	625
Glaziers	<b>589</b>	434	445	589	589	636
Insulation workers	<b>593</b>	630	601	593	593	640; 672
Paving, surfacing, and tamping equipment operators	<b>594</b>		412	594; 855	594; 855	630
Roofers and slaters	<b>595</b>	514	534	595	595	651
Sheet metal duct installers	<b>596</b>			596	596	652
Structural metal workers	<b>597</b>	523	550	597	597	650; 653; 774
Drillers of earth	<b>598</b>		614	598	598	682
Construction trades, n.e.c.	<b>599</b>	613	440	599	599	631; 671; 676
Drillers of oil wells	<b>614</b>			614	614	680; 692
Explosives workers	<b>615</b>	634	603	615	615	683
Miners	<b>616</b>	685	640	616	616	684
Other mining occupations	<b>617</b>			617	617	691; 694
Production supervisors or foremen	<b>628</b>	430	441	613; 628; 633; 863	613; 628; 633; 863	770
Tool and die makers and die setters	<b>634</b>	530	561; 562	634; 635; 655	634; 635; 655	813
Machinists	<b>637</b>	465; 605	461; 462	637; 639	637; 639	803
Boilermakers	<b>643</b>	403	404	643	643	621
Precision grinders and filers	<b>644</b>			644	644	821
Patternmakers and model makers	<b>645</b>	502	514	645; 656; 676	645; 656; 676	806; 844; 852
Lay-out workers	<b>646</b>		540	646	646	816
Engravers	<b>649</b>	424	435	649	649	891
Tinsmiths, coppersmiths, and sheet metal workers	<b>653</b>	525; 614	535; 536	653; 654	653; 654	
Cabinetmakers and bench carpenters	<b>657</b>	410	413	657	657	850
Furniture and wood finishers	<b>658</b>		443	658	658	851
Other precision woodworkers	<b>659</b>			659	659	
Dressmakers and seamstresses	<b>666</b>	651	613	666	666	835
Tailors	<b>667</b>	524	551	667	667	
Upholsterers	<b>668</b>	535	401; 563	668	668	845
Shoe repairers	<b>669</b>		542	669	669	833
Other precision apparel and fabric workers	<b>674</b>	432; 680; 705	444; 636	674	674	
Hand molders and shapers, except jewelers	<b>675</b>		546	675; 786; 787; 793; 794; 795	675; 786; 787; 793; 794; 795	892
Optical goods workers	<b>677</b>	494	506	677	677	352
Dental laboratory and medical appliance technicians	<b>678</b>		426	678	678	341; 876
Bookbinders	<b>679</b>	404	405	679	679	823
Other precision and craft workers	<b>684</b>	545		684	684	812
Butchers and meat cutters	<b>686</b>	675	631; 633	686	686	781
Bakers	<b>687</b>	401	402	687	687	780
Batch food makers	<b>688</b>			688	688	784

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Adjusters and calibrators	<b>693</b>			693	693	
Water and sewage treatment plant operators	<b>694</b>			694	694	862
Power plant operators	<b>695</b>	701	525	695	695	860
Plant and system operators, stationary engineers	<b>696</b>	520	545	696	696	861
Other plant and system operators	<b>699</b>			699	699	863
Lathe, milling, and turning machine operatives	<b>703</b>	452	454; 652; 653	703; 704; 705	703; 704; 705	801; 802
Punching and stamping press operatives	<b>706</b>		656	706	706	795
Rollers, roll hands, and finishers of metal	<b>707</b>	513	533	707	707	794
Drilling and boring machine operators	<b>708</b>		650	708	708	796
Grinding, abrading, buffing, and polishing workers	<b>709</b>	521; 653	621; 651	709	709	800
Forge and hammer operators	<b>713</b>	402; 431	442	713	713	793
Fabricating machine operators, n.e.c.	<b>717</b>		660	717	717	
Molders, and casting machine operators	<b>719</b>	492	503; 504	719	719	810
Metal platers	<b>723</b>		635	723	723	820
Heat treating equipment operators	<b>724</b>	435	446; 626	724	724	815
Wood lathe, routing, and planing machine operators	<b>726</b>			726	726	822
Sawing machine operators and sawyers	<b>727</b>	704	662	727	727	853
Shaping and joining machine operator (woodworking)	<b>728</b>			728	728	
Nail and tacking machine operators (woodworking)	<b>729</b>			729	729	854
Other woodworking machine operators	<b>733</b>			733	733	855
Printing machine operators, n.e.c.	<b>734</b>	512; 615	423; 434; 530; 531	734; 737	734; 737	824
Photoengravers and lithographers	<b>735</b>	423; 503	515	735	735	
Typesetters and compositors	<b>736</b>	414	422	736	736	825; 826
Winding and twisting textile/apparel operatives	<b>738</b>		672; 681	738	738	842
Knitters, loopers, and toppers textile operatives	<b>739</b>	673; 720	671; 673	739	739	841
Textile cutting machine operators	<b>743</b>			743	743	840
Textile sewing machine operators	<b>744</b>		663	744	744	832
Shoemaking machine operators	<b>745</b>	515	664	745	745	834
Pressing machine operators (clothing)	<b>747</b>			747	747	831
Laundry workers	<b>748</b>	674; 803	611; 630; 983	403; 748	403; 748	830
Misc textile machine operators	<b>749</b>	710	670; 674	749	749	836; 846
Cementing and gluing machine operators	<b>753</b>			753	753	885
Packers, fillers, and wrappers	<b>754</b>	693	604; 643	754	754	880
Extruding and forming machine operators	<b>755</b>			755; 758	755; 758	792; 843; 872
Mixing and blending machine operatives	<b>756</b>	652	620; 641	756	756	865

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Separating, filtering, and clarifying machine operators	<b>757</b>			757	757	864
Painting machine operators	<b>759</b>	694	644	759	759	881
Roasting and baking machine operators (food)	<b>763</b>			763	763	783
Washing, cleaning, and pickling machine operators	<b>764</b>			764	764	886
Paper folding machine operators	<b>765</b>			765	765	893
Furnace, kiln, and oven operators, apart from food	<b>766</b>	670; 672; 712	622; 666	766	766	804; 873
Crushing and grinding machine operators	<b>768</b>	490	501	768	768	
Slicing and cutting machine operators	<b>769</b>		612	769	769	785; 871
Motion picture projectionists	<b>773</b>	493	505	773	773	441
Photographic process workers	<b>774</b>	695	645	774	774	883
Machine operators, n.e.c.	<b>779</b>	775	690; 692; 694; 695; 696	673; 714; 715; 725; 777; 779; 798	673; 714; 715; 725; 777; 779; 798	884; 890; 894; 896
Welders and metal cutters	<b>783</b>	721	680	783	783	814
Solderers	<b>784</b>		665	784	784	
Assemblers of electrical equipment	<b>785</b>	631	602	636; 683; 785	636; 683; 785	771; 772; 773; 775
Hand painting, coating, and decorating occupations	<b>789</b>		543	789	789	
Production checkers and inspectors	<b>796</b>	643	452; 610	689; 796; 797	689; 796; 797	
Graders and sorters in manufacturing	<b>799</b>	671	624; 625	799	799	874
Supervisors of motor vehicle transportation	<b>803</b>			803	803; 864	900
Truck, delivery, and tractor drivers	<b>804</b>	650; 715; 971; 972	705; 706; 715; 763	804; 805; 806; 856	804; 805; 806; 856	751; 913; 960
Bus drivers	<b>808</b>	641	703	808	808	912
Taxi cab drivers and chauffeurs	<b>809</b>	714	714	809; 814	809; 814	911; 914; 915
Parking lot attendants	<b>813</b>		711	813	813	935
Railroad conductors and yardmasters	<b>823</b>	252; 645	226	823	823	924
Locomotive operators (engineers and firemen)	<b>824</b>	454; 460; 691	455; 456; 710	824; 826	824; 826	920; 926
Railroad brake, coupler, and switch operators	<b>825</b>	640; 713	712; 713	825	825	923
Ship crews and marine engineers	<b>829</b>	265; 703	221; 661; 701	497; 828; 829; 833	497; 828; 829; 833	930; 931; 933
Water transport infrastructure tenders and crossing guards	<b>834</b>	635; 860		834	834	934
Operating engineers of construction equipment	<b>844</b>		436	844	844	632
Crane, derrick, winch, and hoist operators	<b>848</b>	415	424	848; 849	848; 849	951; 956
Excavating and loading machine operators	<b>853</b>	425		853	853	952

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Census 1960 codes</b>	<b>Census 1970 codes</b>	<b>Census 1980 codes</b>	<b>Census 1990 codes</b>	<b>Census 2000 codes</b>
Misc material moving occupations	<b>859</b>	690	726	843; 859	843; 859	965; 973
Helpers, constructions	<b>865</b>			865	865	761
Helpers, surveyors	<b>866</b>		605	866	866	660
Construction laborers	<b>869</b>		750; 751	869	869	626; 673; 693
Production helpers	<b>873</b>			873	873	895
Garbage and recyclable material collectors	<b>875</b>		754	875	875	972
Materials movers: stevedores and longshore workers	<b>876</b>	965	760	845; 876	845; 876	950; 974
Stock handlers	<b>877</b>		762	877	877	
Machine feeders and offbearers	<b>878</b>			878	878	963
Freight, stock, and materials handlers	<b>883</b>	973	753	883	883	942
Garage and service station related occupations	<b>885</b>	632	623	885	885	936
Vehicle washers and equipment cleaners	<b>887</b>	963	764	887	887	961
Packers and packagers by hand	<b>888</b>		634	888	888	964
Laborers outside construction	<b>889</b>	985	770; 780; 785; 796	889	868; 874; 889	674; 675; 962
Military	<b>905</b>	555 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	580 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	905 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	903; 904; 905; or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	980; 981; 982; 983 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)
Unemployed	<b>991</b>		991			992
Unknown	<b>999</b>	990; 995; 999	0; 995	909	909	0

## Appendix B. Mappings of Census occupation codes to the IPUMS standard *occ1950*

These are the 1950 Census occupation categories. IPUMS researcher Matt Sobek mapped all later Census-defined occupation categories to these in the publicly available Census and CPS data available from [www.ipums.org](http://www.ipums.org). Below we show how these assignments were made, based on the the IPUMS data available as of Nov 1, 2004. In the columns at right are the source categories which were assigned to the *occ1950* code at the left. "N.e.c." stands for not elsewhere classified.

For 1960 and 1990, the occupation assignments implied by the table can be overridden by the *empstatd* variable, which has the value 14 or 15 if the respondent were actively in the military, regardless of the precise occupation. These respondents are all categorized into occupation 595.

<b>1950 occ</b>	<b>Description</b>	<b>Census 1960 occ</b>	<b>Census 1970 occ</b>	<b>Census 1980 occ</b>	<b>Census 1990 occ</b>	<b>Census 2000 occ</b>
0	Accountants and auditors	0	1	23	23	80, 94
1	Actors and actresses	10	175			270
2	Airplane pilots and navigators	12	163	226	226	903
3	Architects	13	2	43	43	130
4	Artists and art teachers	14	190	188	188	260
5	Athletes	15				272
6	Authors	20	181	183	183	285
7	Chemists	21	45	73	73	172
8	Chiropractors	22	61	89	89	300
9	Clergymen	23	86	176	176	204
10	College presidents and deans	30	235			
12	Agricultural sciences- Professors and instructors	31	102	136	136	
13	Biological sciences- Professors and instructors	32	104	114	114	
14	Chemistry-Professors and instructors	34	105	115	115	
15	Economics-Professors and instructors	35	116	119	119	
16	Engineering-Professors and instructors	40	111	127	127	
17	Geology and geophysics- Professors and instructors	41				

18	Mathematics professors and instructors	42	112	128, 129	128, 129	
19	Medical science professors and instructors	43	113	133, 134	133, 134	
23	Physics-Professors and instructors	45	110	116	116	
24	Psychology-Professors and instructors	50	114	118	118	
25	Statistics-Professors and instructors	51				
26	Natural science (nec)-Professors and instructors	52	103	113	113	
27	Social sciences (nec)-Professors and instructors	53	120, 121, 122	123, 124, 125, 126, 146	123, 124, 125, 126, 146	
28	Nonscientific subjects-Professors and instructors	54	115	135	135	
28	Nonscientific subjects-Professors and instructors	54	125	139	139	
28	Nonscientific subjects-Professors and instructors	54	126	143	143	
28	Nonscientific subjects-Professors and instructors	54	130	144	144	
28	Nonscientific subjects-Professors and instructors	54	131, 132, 133, 134	145, 148, 149	145, 148, 149	
29	Subject not specified-Professors and instructors	60	135, 140	117, 147, 153, 154	117, 147, 153, 154	220
31	Dancers and dancing teachers	70	182	193	193	274
32	Dentists	71	62	85	85	301
33	Designers	72	183	185	185	263
34	Dieticians and nutritionists	73	74	97	97	303
35	Draftsmen	74	152	217	217	154
36	Editors and reporters	75, 163	184, 192	195, 197	195, 197	281, 282, 283
41	Aeronautical-Engineers	80	6	44	44	132
42	Chemical-Engineers	81	10	48	48	135
43	Civil-Engineers	82	11	53	53	136
44	Electrical-Engineers	83	12	55	55	141
45	Industrial-Engineers	84	13	26, 56	26, 56	143
46	Mechanical-Engineers	85	14	57, 58	57, 58	146
47	Metallurgical, metallurgists-Engineers	90	15	45	45	145
48	Mining-Engineers	91	20, 21	46, 47	46	150, 152

49	Engineers (nec)	92, 93	22, 23	54, 59, 258, 833	54, 59, 258, 833	133, 134, 140, 142, 153, 493
51	Entertainers (nec)	101	194	184, 194	184, 194	276
52	Farm and home management advisors	102	24, 26			
53	Foresters and conservationists	103	25	79, 416	79, 416	164
54	Funeral directors and embalmers	104	165, 211	18	19	32
55	Lawyers and judges	105	30, 31	178, 179	178, 179	210, 211
56	Librarians	111	32, 82	164, 205	164, 205	240, 243
57	Musicians and music teachers	120	123, 145, 185	137, 158, 159, 186	137, 158, 159, 186	275
58	Nurses, professional	150	75, 212	15, 95, 106	15, 95, 106	313
59	Nurses, student professional	151	923			
61	Agricultural scientists	130	42	77	77	160
62	Biological scientists	131	44	78, 83	78, 83	161, 165
63	Geologists and geophysicists	134	51, 52	75	75	
67	Mathematicians	135	35	68	68	121, 124
68	Physicists	140	53	49, 69	49, 69	151, 170
69	Misc. natural scientists	145	54	76	76	171, 174, 176
70	Optometrists	152	63	87	87	304
71	Osteopaths	153				
72	Personnel and labor relations workers	154	56	8, 27	8, 27	62
73	Pharmacists	160	64	96	96	305
74	Photographers	161	191	189	189	291
75	Physicians and surgeons	162	65	84	84	306
76	Radio operators	164	164, 171	227, 228	227, 228	290, 296, 904
77	Recreation and group workers	165	101	175	175	462
78	Religious workers	170	90	177	177	205, 206
79	Social and welfare workers, except group	171	100	174	174	201, 202
81	Economists	172	91	166	166	180
82	Psychologists	173	93	167	167	182
83	Statisticians and actuaries	174	34, 36	66, 67	66, 67	120, 123
84	Misc social scientists	175	33, 92, 94, 96	165, 168, 169	165, 168, 169	183, 186

91	Sports instructors and officials	180	124, 180	138, 199	138	
92	Surveyors	181	161	63, 218	63, 218	131, 156
93	Teachers (n.e.c.)	182, 183, 184	141, 142, 143, 144, 240	14, 155, 156, 157	14, 155, 156, 157	23, 230, 231, 232, 233, 234
94	Medical and dental-technicians	185	80, 81, 83, 84, 85, 426	203, 204, 206, 208, 678	203, 204, 206, 208, 678	314, 330, 331, 332, 340, 341, 351, 352, 353, 876
95	Testing-technicians	191, 192	43, 150, 151, 155, 156, 162, 172, 173	74, 215, 216, 223, 224, 225, 233, 235	74, 215, 216, 223, 224, 225, 233, 235	155, 190, 191, 192, 193, 194, 196
96	Technicians (nec)	190	153	213	213	244
97	Therapists and healers (nec)	193	71, 76	88, 98, 99, 103, 104, 105	88, 98, 99, 103, 104, 105	312, 315, 316, 320, 321, 322, 323, 324, 361, 362, 363
98	Veterinarians	194	72	86	86	325
99	Professional, technical & kindred workers (nec)	195	3, 4, 5, 55, 73, 95, 154, 174, 193, 195, 196, 382	64, 65, 163, 173, 198, 214, 229, 387	64, 65, 163, 173, 198, 214, 229, 387	60, 70, 71, 72, 73, 82, 83, 84, 85, 90, 91, 95, 100, 101, 102, 104, 106, 110, 111, 122, 181, 184, 200, 254, 255, 280, 284, 286, 326, 354
100	Farmers (owners and tenants)	200	801, 806	473, 474	473, 474	21
123	Farm managers	222	802	475	475	20
200	Buyers and dept heads, store	250	205, 231, 233	13, 29	13, 29	4, 5, 6, 52
201	Buyers and shippers, farm products	251	203	28	28	51
203	Conductors, railroad	252	226	823	823	924
204	Credit men	253	210			
205	Floormen and floor managers, store	254				
210	Inspectors, public administration	260	213, 215	36	36	56



230	Managers & superintendents, building	262	216	16	18	41
240	Officers, pilots, pursers and engineers, ship	265	221	497, 828	497, 828	931
250	Officials & administratators (nec), public administration	270	201, 222	3, 4, 5, 37	3, 4, 5, 37	3, 93
260	Officials, lodge, society, union, etc.	275	223			
270	Postmasters	280	224	17	16	40
280	Purchasing agents and buyers (nec)	285	225	9, 33	9, 33	15, 53
290	Managers, officials, and proprietors (nec)	290	202, 220, 230, 245, 246	7, 19, 25, 34, 187, 243, 476, 494, 558	7, 17, 21, 22, 25, 34, 187, 243, 476, 494, 558	1, 2, 10, 11, 12, 13, 14, 16, 22, 30, 31, 33, 34, 35, 36, 42, 43, 50, 271, 470, 471, 600
300	Agents (nec)	301	363			550
301	Attendants and assistants, library	302	330	329	329	532
302	Attendants, physicians and dentists office	303	921, 922	445, 446	445, 446	311, 364
304	Baggagemen, transportation	304				
305	Bank tellers	305	301	383	383	516
310	Bookkeepers	310	305	337	337	512
320	Cashiers	312	310	276	276	472
321	Collectors, bill and account	313	313	378	378	510
322	Dispatchers and starters, vehicle	314	315	359	359	552
325	Express messengers and railway mail clerks	315				
335	Mail carriers	323	331	355	355	555
340	Messengers and office boys	324	333	357	357	551
341	Office machine operators	325	341, 342, 343, 344, 345, 350, 355	304, 308, 309, 344, 345, 346, 347, 385	304, 308, 309, 344, 345, 346, 347, 385	511, 580, 581, 590
342	Shipping and receiving clerks	343	374	307, 364	307, 364	561
350	Stenographers, typists, and secretaries	342, 345, 360	370, 371, 372, 376, 391	313, 314, 315	313, 314, 315	570, 582
360	Telegraph messengers	351	383			
365	Telegraph operators	352	384	349		
370	Telephone operators	353	385	306, 348	306, 348	502

380	Ticket, station, and express agents	354	390	318	318	541
390	Clerical and kindred workers (n.e.c.)	320, 333, 340, 341, 350, 370	303, 311, 312, 314, 320, 321, 323, 325, 332, 334, 360, 361, 362, 364, 375, 381, 392, 394, 395, 396	234, 275, 303, 305, 316, 317, 319, 323, 325, 326, 327, 328, 335, 336, 338, 339, 343, 353, 354, 356, 363, 365, 366, 368, 369, 373, 374, 376, 377, 379, 384, 386, 389	234, 275, 303, 305, 316, 317, 319, 323, 325, 326, 327, 328, 335, 336, 338, 339, 343, 353, 354, 356, 363, 365, 366, 368, 373, 374, 376, 377, 379, 384, 386, 389	214, 215, 365, 500, 501, 503, 513, 514, 515, 520, 521, 522, 523, 524, 252, 256, 530, 531, 533, 534, 535, 536, 540, 542, 553, 554, 556, 560, 562, 563, 584, 585, 586, 591, 592, 593
400	Advertising agents and salesmen	380	260	256	256	480
410	Auctioneers	381	261	284	284	
420	Demonstrators	382	262	283	283	490
430	Hucksters and peddlers	383	264	277	277	495
450	Insurance agents and brokers	321, 385	265, 326	24, 253, 375	24, 253, 375	54, 86, 481
460	Newsboys	390	266	278	278	
470	Real estate agents and brokers	393	270	254	254	81, 492
480	Stock and bond salesmen	395	271	255	255	482
490	Salesmen and sales clerks (nec)	394	281, 282, 283, 284, 285, 296	257, 259, 263, 264, 265, 266, 267, 268, 269, 274, 285	257, 259, 263, 264, 265, 266, 267, 268, 269, 274, 285	474, 475, 476, 484, 485, 494, 496
500	Bakers	401	402	687, 763	687, 763	780, 783
501	Blacksmiths	402	401, 403			
502	Bookbinders	404	405	679	679	823
503	Boilermakers	403	404	643	643	621
504	Brickmasons, stonemasons, and tile setters	405	410, 560	553, 563, 565	553, 563, 565	622
505	Cabinetmakers	410	413	657	657	850
510	Carpenters	411	415	554, 567	554, 567	623
511	Cement and concrete finishers	413	421	588	588	625
512	Compositors and typesetters	414	422	736	736	824

513	Cranemen, derrickmen, and hoistmen	415	424	848, 849	848, 849	951, 956
514	Decorators and window dressers	420	425			
515	Electricians	421	430	555, 575	555, 575	635
520	Electrotypers and stereotypers	423	434			
521	Engravers, except photoengravers	424	435	649	649	891
522	Excavating, grading, and road machinery operators	425	412, 436	594, 814, 844, 853, 855	594, 814, 844, 853, 855	630, 631, 952
523	Foremen (nec)	430	441	485, 503, 613, 633, 803, 843, 863	485, 503, 613, 628, 803, 843, 864	620, 700, 770, 900
524	Forgemen and hammermen	431	442	713	713	793
525	Furriers	432	444	674	674	
530	Glaziers	434	445	589	589	636
531	Heat treaters, annealers, temperers	435	446	724	724	815
532	Inspectors, scalers, and graders log and lumber	444	450			
533	Inspectors (nec)	450	452	35, 489	35, 489	601, 666, 941
534	Jewelers, watchmakers, goldsmiths, and silversmiths	451	453	535, 647	535, 647	875
535	Job setters, metal	452	454	703	703	
540	Linemen and servicemen, telegraph, telephone, & p	453	433, 552, 554	527, 529, 577	527, 529, 577	741, 742
541	Locomotive engineers	454	455	824	824	920
542	Locomotive firemen	460	456			
543	Loom fixers	461	483			
544	Machinists	465	461	637	637	803
545	Airplane-mechanics and repairmen	471	170, 471	508, 515	508, 515	703, 714
550	Automobile-mechanics and repairmen	472	472, 473	505, 507, 514	505, 507, 514	715, 716, 720, 721
551	Office machine-mechanics and repairmen	473	475, 484	525, 538	525, 538	701
552	Radio and television-mechanics and repairmen	474	485	523	523	702

553	Railroad and car shop-mechanics and repairmen	475	486			722
554	Mechanics and repairmen, nec	470, 480	470, 480, 481, 482, 492, 495	509, 516, 517, 518, 526, 533, 534, 536, 539, 543, 547, 549	509, 516, 517, 518, 526, 533, 534, 536, 539, 543, 547, 549	670, 704, 705, 710, 711, 712, 713, 724, 726, 730, 731, 732, 733, 734, 743, 751, 752, 754, 760, 762
555	Millers, grain, flour, feed, etc	490	501			
560	Millwrights	491	502	544	544	736
561	Molders, metal	492	503	675	675	
562	Motion picture projectionists	493	505	773	773	441
563	Opticians and lens grinders and polishers	494	506	677	677	
564	Painters, construction and maintenance	495	510, 512, 543	556, 579, 583, 789	556, 579, 583, 789	642
565	Paperhangers	501				643
570	Pattern and model makers, except paper	502	514	645, 656, 676	645, 656, 676	806
571	Photoengravers & lithographers	503	515	735	735	
572	Piano and organ tuners and repairmen	504	516			
573	Plasterers	505	520	584	584	646
574	Plumbers and pipe fitters	510	522	557, 585	557, 585	644
575	Pressmen and plate printers, printing	512	530	734	734	
580	Rollers and roll hands, metal	513	533	707	707	794
581	Roofers and slaters	514	534	595	595	651
582	Shoemakers and repairers, except factory	515	420, 542	566, 669	566, 669	833
583	Stationary engineers	520	545	694, 696	694, 696	861, 862
584	Stone cutters and stone carvers	521	546			
585	Structural metal workers	523	540, 550	597, 646	597, 646	653, 774, 816
590	Tailors and tailoresses	524	551	667	667	835
591	Tinsmiths, coppersmiths, and sheet metal workers	525	535	596, 653	596, 653	652

592	Tool makers, and die makers and setters	530	561	634	634	813
593	Upholsterers	535	563	668	668	845
594	Craftsmen and kindred workers (nec)	545	575, 586			624, 632, 755, 756, 852, 855
595	Members of the armed services	555 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	580 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	905 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	903; 904;905; or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)	980, 981, 982, 983 or ( <i>empstatd</i> = 14 or <i>empstatd</i> = 15)
600	Auto mechanics apprentice	601	474	506	506	
601	Bricklayers and masons apprentice	602	411	564	564	
602	Carpenters apprentice	603	416	569	569	
603	Electricians apprentice	604	431	576	576	
604	Machinists and toolmakers apprentice	605	462, 562	635, 639	635, 639	
605	Mechanics, except auto apprentice	610	491			
610	Plumbers and pipe fitters apprentice	612	523	587	587	
611	Apprentices, building trades (nec)	613	511, 521			
612	Apprentices, metalworking trades (nec)	614	504, 536	654	654	
613	Apprentices, printing trades	615	423, 531			
614	Apprentices, other specified trades	620	571, 945	659	659	
615	Apprentices, trade not specified	621	572			
620	Asbestos and insulation workers	630	601	593	593	640
621	Attendants, auto service and parking	632	623, 711	813, 885	813, 885	935, 936
622	Blasters and powdermen	634	603	615	615	683
623	Boatmen, canalmen, and lock keepers	635	701			
624	Brakemen, railroad	640	712	825	825	923
625	Bus drivers	641	703	808	808	912
630	Chainmen, rodmen, and axmen, surveying	642	605	866	867	
631	Conductors, bus & street railway	645	704			

632	Deliverymen and routemen	650	705	805, 806	806	
633	Dressmakers and seamstresses except factory	651	613	666	666	
634	Dyers	652	620			836
635	Filers, grinders, and polishers, metal	653	621, 651	644, 709	644, 709	800, 821
640	Fruit, nut, and vegetable graders, and packers, e	654	625			604
641	Furnacemen, smeltermen and pourers	670	622			804
642	Heaters, metal	672	626			
643	Laundry and dry cleaning operatives	674	611, 630	747, 748	747, 748	830, 831
644	Meat cutters, except slaughter and packing house	675	631	686	686	781
645	Milliners	680	636			
650	Mine operatives and laborers	685	614, 640	598, 614, 616, 617, 699, 867	598, 614, 616, 617, 699, 868	682, 684
660	Motormen, mine, factory, logging camp, etc	690	710			
661	Motormen, street, subway, and elevated railway	691				926
662	Oilers and greaser, except auto	692	642	519	519	735
670	Painters, except construction or maintenance	694	443, 644	658, 759	658, 759	851, 881
671	Photographic process workers	695	645	774	774	883
672	Power station operators	701	525	695	695	860
673	Sailors and deck hands	703	661	829	829	930, 933
674	Sawyers	704	662	727	727	853
675	Spinners, textile	710				
680	Stationary firemen	712	666	766	766	873
681	Switchmen, railroad	713	713	826	826	
682	Taxicab drivers and chauffeurs	714	714	809	809	914
683	Truck and tractor drivers	715	715	804	804	913
684	Weavers, textile	720	673	739	739	841
685	Welders and flame cutters	721	680	783	783	814

690	Operative and kindred workers (nec)	631, 643, 671, 673, 693, 705, 775	440, 602, 604, 610, 612, 615, 624, 633, 634, 635, 641, 643, 650, 652, 653, 656, 660, 663, 664, 665, 670, 671, 672, 674, 681, 690, 692, 694, 695, 696, 706, 726, 740	455, 487, 573, 636, 673, 683, 684, 688, 689, 693, 704, 705, 706, 708, 714, 715, 717, 719, 723, 725, 726, 728, 729, 733, 737, 738, 743, 744, 745, 749, 753, 754, 755, 756, 757, 758, 764, 765, 768, 769, 777, 779, 784, 785, 786, 787, 793, 794, 795, 796, 797, 798, 799, 856, 864, 873	455, 487, 573, 636, 683, 684, 688, 689, 693, 704, 705, 706, 708, 714, 715, 717, 719, 723, 725, 726, 728, 729, 733, 738, 743, 744, 745, 749, 753, 754, 755, 756, 757, 758, 764, 765, 768, 769, 777, 784, 785, 786, 787, 793, 795, 796, 796, 797, 798, 799, 856, 874, 888	292, 424, 434, 435, 633, 650, 671, 672, 673, 674, 675, 676, 680, 691, 692, 693, 694, 761, 771, 772, 773, 775, 784, 785, 790, 792, 795, 796, 801, 802, 810, 812, 820, 822, 825, 826, 832, 834, 840, 842, 843, 844, 846, 854, 863, 864, 865, 871, 872, 874, 880, 884, 885, 886, 890, 892, 893, 894, 895, 896, 911, 915, 942, 960, 964, 973
700	Housekeepers, private household	802	982	405	405	
710	Laundresses, private household	803	983	403	403	
720	Private household workers (nec)	801, 804	980, 981, 984, 986	404, 406, 407	404, 406, 407	423
730	Attendants, hospital and other institution	810	925	447	447	360
731	Attendants, professional and personal service (nec)	812	933, 942, 952	463, 468, 469	461, 466, 467, 468, 469	454, 455, 460, 465
732	Attendants, recreation and amusement	813	932	427, 456, 459	427, 456, 459	443
740	Barbers, beauticians, and manicurists	814, 843	935, 944	457, 458	457, 458	450, 451
750	Bartenders	815	910	434	434	404
751	Bootblacks	820	941			
752	Boarding and lodging house keepers	821	940			
753	Charwomen and cleaners	824	902	449	449	

754	Cooks, except private household	825	912	433, 436, 437	433, 436	400, 401, 402
760	Counter and fountain workers	830	914	438	438	406
761	Elevator operators	831	943	454	454	
762	Firemen, fire protection	850	961	413, 417	413, 417	372, 374, 375
763	Guards, watchmen, and doorkeepers	851	962	415, 424, 426	415, 424, 426	370, 392
764	Housekeepers and stewards, except private household	832	931, 950	465	463	
770	Janitors and sextons	834	903	448, 453	448, 453	420, 422
771	Marshals and constables	852	963			
772	Midwives	840	924			
773	Policemen and detectives	853	964	6, 414, 418	6, 414, 418	371, 382, 385, 386, 391
780	Porters	841	934	466	464	453
781	Practical nurses	842	926	207	207	350
782	Sheriffs and bailiffs	854	965	423	423	380
783	Ushers, recreation and amusement	874	953	464	462	442
784	Waiters and waitresses	875	915	435	435	411
785	Watchmen (crossing) and bridge tenders	860	960	425, 834	425, 834	394, 934
790	Service workers, except private household (nec)	823, 835, 890	901, 911, 913, 913, 954, 976	439, 443, 444, 467	439, 443, 444, 465	373, 383, 384, 390, 395, 403, 405, 412, 413, 414, 415, 416, 430, 432, 440, 446, 452, 461, 464, 965
810	Farm foremen	901	821	477	477	
820	Farm laborers, wage workers	902	822, 846	479, 483, 484, 488	479, 483, 484, 488	602, 605
830	Farm laborers, unpaid family workers	903	823			
840	Farm service laborers, self-employed	905	824			
910	Fishermen and oystermen	962	752	498, 499	498, 499	610, 611
920	Garage laborers and car washers and greasers	963				
930	Gardeners, except farm, and groundskeepers	964	755	486	486	421, 425



940	Longshoremen and stevedores	965	760	845, 876	845, 876	
950	Lumbermen, raftsmen, and woodchoppers	970	761	496	496	613
960	Teamsters	971	763			
970	Laborers (nec)	960, 972, 973, 985	750, 751, 753, 754, 762, 764, 770, 780, 785, 796	495, 599, 859, 865, 869, 875, 877, 878, 883, 887, 889	495, 599, 859, 866, 869, 875, 877, 878, 883, 887, 889	612, 626, 660, 950, 961, 962, 963, 972, 974, 975
997	Occupation missing/unknown	995				
999	N/A (blank)	990,	0, 991	909	909	0, 992

## Appendix C. Attributes of occupations

These attributes have been measured or imputed by researchers or by the Department of Labor’s Employment and Training Administration’s *Dictionary of Occupational Titles* (DOT) in 1991.

For the occupations where many DOT occupations map to just one in the standard system, an average of the values of the relevant DOT occupations is shown. Also, an average length of special vocational training can be imputed for research purposes. Consult the sources in appendix E or the authors for the source data. The cells are blank in cases when there is no direct match between the proposed categories and the DOT data.

**Reas** stands for Reasoning Development, (1-6) from the DOT.

**Math** stands for Mathematical Development, (1-6) from the DOT.

**Lang** stands for Language Use, (1-6) from the DOT.

**SVP** stands for Specialized Vocational Training (1-9), measured by the following definition, taken from the DOT, volume 2, page 1009:

Level	Time
1	Short demonstration only
2	More than short demonstration, up to one month
3	More than one month, up to three months
4	More than three months, up to six months
5	More than six months, up to twelve months
6	1-2 years
7	2-4 years
8	4-10 years
9	More than 10 years

**Str** stands for use of physical Strength (1-5), from the DOT, coded from the categories Sedentary Work (1), Light Work (2), Medium Work (3), Heavy Work (4), to Very Heavy Work (5).

**Care** stands for care work, as coded by England, Budig, and Folbre (2002), by 0 or 1. The criterion for this indicator is whether the job involves face to face attention to other people in a way that improves the recipient’s capabilities.

Proposed standard job title	Proposed standard code	Reason	Math	Lang	SVP	Str	Care
Legislators	3						0
Chief executives and public administrators	4	5.00	4.00	5.00	8.00	1.00	0
Financial managers	7	4.88	4.63	4.63	8.25	1.13	0
Human resources and labor relations managers	8	5.00	4.00	4.83	7.33	1.33	0
Managers and specialists in marketing, advertising, and public relations	13	4.95	3.55	4.45	7.50	1.41	0
Managers in education and related fields	14	5.09	3.55	4.94	8.00	1.18	0

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Managers of medicine and health occupations	<b>15</b>	5.22	4.33	5.11	7.89	1.33	0
Postmasters and mail superintendents	<b>16</b>	4.50	3.50	4.00	7.50	1.00	0
Managers of food-serving and lodging establishments	<b>17</b>	4.38	3.88	3.88	6.88	1.94	0
Managers of properties and real estate	<b>18</b>	4.53	3.89	4.32	7.21	1.79	0
Funeral directors	<b>19</b>	4.00	4.00	4.00	7.00	2.00	0
Managers of service organizations, n.e.c.	<b>21</b>	4.48	3.61	4.16	6.97	1.68	0
Managers and administrators, n.e.c.	<b>22</b>	4.82	4.08	4.44	7.68	1.39	0
Accountants and auditors	<b>23</b>	5.00	4.92	5.00	7.62	1.15	0
Insurance underwriters	<b>24</b>	5.00	4.00	5.00	7.00	1.00	0
Other financial specialists	<b>25</b>	4.84	3.95	4.47	7.26	1.11	0
Management analysts	<b>26</b>	4.60	3.80	4.10	7.40	1.10	0
Personnel, HR, training, and labor relations specialists	<b>27</b>	4.72	3.56	4.40	6.84	1.40	0
Purchasing agents and buyers, of farm products	<b>28</b>	4.80	3.60	4.40	7.20	1.60	0
Buyers, wholesale and retail trade	<b>29</b>	4.00	3.00	3.50	6.00	2.00	0
Purchasing managers, agents and buyers, n.e.c.	<b>33</b>	4.58	3.83	4.42	7.17	1.42	0
Business and promotion agents	<b>34</b>	4.44	3.67	4.33	6.67	1.33	0
Construction inspectors	<b>35</b>	4.30	3.60	3.70	6.60	2.00	0
Inspectors and compliance officers, outside construction	<b>36</b>	4.39	3.44	4.17	6.58	1.88	0
Management support occupations	<b>37</b>	4.63	3.37	4.37	7.32	1.16	0
Architects	<b>43</b>	5.33	5.33	5.33	7.33	1.67	0
Aerospace engineer	<b>44</b>	5.56	5.44	5.56	8.11	1.67	0
Metallurgical and materials engineers	<b>45</b>	5.18	5.09	5.09	7.82	1.91	0
Petroleum, mining, and geological engineers	<b>47</b>	5.60	5.60	5.60	8.40	1.20	0
Chemical engineers	<b>48</b>	5.50	5.50	5.33	8.00	1.67	0
Civil engineers	<b>53</b>	5.08	5.08	4.85	7.92	1.85	0
Electrical engineer	<b>55</b>	5.13	5.13	5.13	7.93	1.67	0
Industrial engineers	<b>56</b>	5.22	5.04	5.04	7.74	1.57	0
Mechanical engineers	<b>57</b>	5.00	4.93	4.86	7.64	1.57	0
Engineers not elsewhere classified	<b>59</b>	5.33	5.06	4.97	7.94	1.78	0
Computer systems analysts and computer scientists	<b>64</b>	4.62	3.85	4.62	7.08	1.38	0
Operations and systems researchers and analysts	<b>65</b>	6.00	6.00	6.00	7.00	1.00	0

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Actuaries	<b>66</b>	5.00	5.00	5.00	8.00	1.00	0
Statisticians	<b>67</b>	5.33	5.33	5.00	7.67	1.00	0
Mathematicians and mathematical scientists	<b>68</b>	5.33	5.33	5.33	7.67	1.67	0
Physicists and astronomers	<b>69</b>	6.00	5.83	5.83	8.00	1.67	0
Chemists	<b>73</b>	5.40	5.00	4.80	7.20	2.20	0
Atmospheric and space scientists	<b>74</b>	5.00	5.00	5.00	7.00	2.00	0
Geologists	<b>75</b>	6.00	5.85	5.69	8.00	2.00	0
Physical scientists, n.e.c.	<b>76</b>	6.00	6.00	5.75	7.25	1.75	0
Agricultural and food scientists	<b>77</b>	6.00	5.91	5.82	7.91	2.18	0
Biological scientists	<b>78</b>	6.00	6.00	5.87	8.00	1.93	0
Foresters and conservation scientists	<b>79</b>	5.33	4.89	5.11	7.44	2.11	0
Medical scientists	<b>83</b>	6.00	5.83	6.00	8.00	1.83	0
Physicians	<b>84</b>	6.00	5.00	6.00	8.21	2.08	1
Dentists	<b>85</b>	6.00	5.00	5.00	8.00	1.90	1
Veterinarians	<b>86</b>	5.29	4.21	4.93	7.86	2.36	0
Optometrists	<b>87</b>	5.00	4.00	5.00	7.00	2.00	1
Podiatrists	<b>88</b>	5.00	4.00	5.00	7.00	2.00	1
Other health and therapy	<b>89</b>	4.80	3.60	4.60	6.60	2.20	1
Registered nurses	<b>95</b>	5.00	4.12	4.88	7.18	2.24	1
Pharmacists	<b>96</b>	5.67	5.33	5.33	7.33	2.00	0
Dietitians and nutritionists	<b>97</b>	5.14	4.14	5.00	7.71	1.86	0
Respiratory therapists	<b>98</b>	4.00	3.00	3.00	6.00	3.00	1
Occupational therapists	<b>99</b>	5.00	4.50	5.00	7.00	2.50	1
Physical therapists	<b>103</b>	4.00	2.75	3.75	6.75	2.50	1
Speech therapists	<b>104</b>	5.00	4.67	5.00	7.33	2.00	1
Therapists, n.e.c.	<b>105</b>	4.89	3.78	4.89	7.00	2.00	1
Physicians' assistants	<b>106</b>	5.00	4.00	5.00	7.00	2.00	1
Earth, environmental, and marine science instructors	<b>113</b>						1
Biological science instructors	<b>114</b>						1
Chemistry instructors	<b>115</b>						1
Physics instructors	<b>116</b>						1
Psychology instructors	<b>118</b>						1
Economics instructors	<b>119</b>						1
History instructors	<b>123</b>						1
Sociology instructors	<b>125</b>						1
Engineering instructors	<b>127</b>						1
Math instructors	<b>128</b>						1

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Education instructors	<b>139</b>						1
Law instructors	<b>145</b>						1
Theology instructors	<b>147</b>						1
Home economics instructors	<b>149</b>						1
Humanities instructors, nec	<b>150</b>	5.20	3.60	4.80	8.00	1.80	1
Subject instructors (HS/college)	<b>154</b>	4.50	2.00	3.50	7.00	2.00	1
Kindergarten and earlier school teachers	<b>155</b>	5.00	4.00	5.00	7.00	2.00	1
Primary school teachers	<b>156</b>	5.00	4.00	5.00	7.00	2.00	1
Secondary school teachers	<b>157</b>	5.00	3.82	5.00	7.00	2.00	1
Special education teachers	<b>158</b>	4.52	3.15	4.27	6.83	1.90	1
Teachers , n.e.c.	<b>159</b>	5.00	3.89	5.00	7.44	1.11	1
Vocational and educational counselors	<b>163</b>	4.65	2.95	4.45	6.75	1.80	1
Librarians	<b>164</b>	4.94	4.00	4.76	6.65	1.88	1
Archivists and curators	<b>165</b>	5.00	5.00	5.00	7.50	1.00	0
Economists, market researchers, and survey researchers	<b>166</b>	5.91	5.55	5.27	7.82	1.36	0
Psychologists	<b>167</b>	5.67	4.67	5.00	6.67	1.00	0
Sociologists	<b>168</b>	5.16	3.68	4.79	7.16	1.42	0
Social scientists, n.e.c.	<b>169</b>	5.00	4.50	5.00	7.50	1.50	0
Urban and regional planners	<b>173</b>	4.68	3.08	4.64	6.72	1.48	0
Social workers	<b>174</b>	4.33	2.83	4.17	5.83	1.83	1
Recreation workers	<b>175</b>	4.89	2.67	4.44	7.00	1.56	1
Clergy and religious workers	<b>176</b>	6.00	4.00	6.00	8.00	1.08	1
Lawyers	<b>178</b>	5.71	3.86	5.43	8.29	1.00	0
Judges	<b>179</b>	5.55	2.18	5.55	7.09	1.09	0
Writers and authors	<b>183</b>	5.00	3.00	5.00	8.00	1.00	0
Technical writers	<b>184</b>	4.71	3.04	4.07	7.25	1.50	0
Designers	<b>185</b>	5.18	3.45	4.55	8.18	1.64	0
Musician or composer	<b>186</b>	4.70	3.17	4.52	6.87	1.74	0
Actors, directors, producers	<b>187</b>	4.81	2.69	3.81	7.13	1.50	0
Art makers: painters, sculptors, craft-artists, and print-makers	<b>188</b>	4.00	2.85	3.54	6.46	2.08	0
Photographers	<b>189</b>	4.50	2.50	4.50	7.50	1.00	0
Dancers	<b>193</b>	3.84	2.49	3.27	5.62	1.78	0
Art/entertainment performers and related	<b>194</b>	5.30	2.63	5.26	7.63	1.22	0
Editors and reporters	<b>195</b>	4.75	2.75	4.50	5.75	1.75	0
Announcers	<b>198</b>	3.69	2.66	3.10	5.52	1.83	0
Athletes, sports instructors, and officials	<b>199</b>	4.80	3.90	4.70	6.40	1.70	0

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Professionals, n.e.c.	<b>200</b>	4.00	3.00	4.00	6.00	2.00	0
Clinical laboratory technologies and technicians	<b>203</b>	4.50	3.50	4.50	6.50	1.50	0
Dental hygienists	<b>204</b>	5.00	4.00	5.00	7.33	2.44	1
Health record tech specialists	<b>205</b>	3.67	2.67	3.67	5.33	3.00	0
Radiologic tech specialists	<b>206</b>	4.14	3.58	3.89	6.25	2.17	0
Licensed practical nurses	<b>207</b>	4.40	4.40	3.70	6.90	2.10	1
Health technologists and technicians, n.e.c.	<b>208</b>	4.16	3.90	3.84	6.71	1.94	0
Electrical and electronic (engineering) technicians	<b>213</b>	4.86	4.29	4.14	7.29	1.71	0
Engineering technicians, n.e.c.	<b>214</b>	4.59	4.51	4.12	7.02	1.22	0
Mechanical engineering technicians	<b>215</b>	4.57	4.29	3.90	6.67	1.81	0
Drafters	<b>217</b>	3.87	3.27	3.27	5.53	2.33	0
Surveyors, cartographers, mapping scientists and technicians	<b>218</b>	4.67	4.25	3.92	6.50	2.00	0
Biological technicians	<b>223</b>	4.32	4.02	3.95	6.17	2.02	0
Chemical technicians	<b>224</b>	4.79	4.21	4.36	7.43	1.93	0
Other science technicians	<b>225</b>	4.40	3.40	4.00	7.80	1.60	0
Airplane pilots and navigators	<b>226</b>	4.19	3.43	3.81	7.00	1.38	0
Air traffic controllers	<b>227</b>	4.75	4.25	4.75	7.25	1.25	0
Broadcast equipment operators	<b>228</b>	4.00	3.50	3.50	6.00	1.00	0
Computer software developers	<b>229</b>	4.73	2.82	4.64	6.82	1.18	0
Programmers of numerically controlled machine tools	<b>233</b>	4.05	2.97	3.58	6.18	1.92	0
Legal assistants, paralegals, legal support, etc	<b>234</b>	4.14	3.41	3.73	6.50	1.91	0
Technicians, n.e.c.	<b>235</b>	4.00	3.00	4.00	5.50	1.50	0
Supervisors and proprietors of sales jobs	<b>243</b>	4.40	3.20	4.20	5.80	2.00	0
Insurance sales occupations	<b>253</b>	4.67	3.33	4.33	6.67	1.50	0
Real estate sales occupations	<b>254</b>	4.00	2.71	3.71	5.43	2.00	0
Financial services sales occupations	<b>255</b>	5.00	5.00	5.00	8.00	2.00	0
Advertising and related sales jobs	<b>256</b>	3.90	2.92	3.71	4.99	1.96	0
Sales engineers	<b>258</b>	3.00	2.45	2.70	3.15	2.05	0
Salespersons, n.e.c.	<b>274</b>	3.00	2.29	2.10	3.05	1.71	0
Retail sales clerks	<b>275</b>	2.38	2.13	2.25	2.63	2.25	0
Cashiers	<b>276</b>	3.25	2.25	2.94	3.44	1.81	0

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Door-to-door sales, street sales, and news vendors	<b>277</b>	4.04	3.00	3.75	6.56	1.45	0
Sales demonstrators / promoters / models	<b>283</b>	3.75	2.75	3.00	5.50	1.75	0
Office supervisors	<b>303</b>	4.00	2.63	3.88	5.75	1.25	0
Computer and peripheral equipment operators	<b>308</b>	3.33	1.83	3.33	5.67	1.00	0
Secretaries	<b>313</b>	3.00	1.80	3.00	4.40	1.00	0
Stenographers	<b>314</b>	3.10	2.20	2.90	3.30	1.40	0
Typists	<b>315</b>	3.00	3.00	3.00	4.00	2.00	0
Interviewers, enumerators, and surveyors	<b>316</b>	3.44	2.89	3.11	4.56	1.22	0
Hotel clerks	<b>317</b>	3.40	2.20	3.20	3.80	1.40	0
Transportation ticket and reservation agents	<b>318</b>	3.55	2.36	3.36	4.27	1.18	0
Receptionists	<b>319</b>	3.31	2.23	3.08	4.46	1.38	0
Information clerks, nec	<b>323</b>	3.56	2.00	3.33	4.22	1.00	0
Correspondence and order clerks	<b>326</b>	2.83	1.50	2.67	3.50	2.00	0
Human resources clerks, except payroll and timekeeping	<b>328</b>	3.33	1.83	2.67	3.67	1.67	0
Library assistants	<b>329</b>	3.20	2.35	2.85	4.05	1.28	0
File clerks	<b>335</b>	3.63	3.20	2.80	4.70	1.10	0
Records clerks	<b>336</b>	3.67	2.67	3.00	4.00	1.00	0
Bookkeepers and accounting and auditing clerks	<b>337</b>	3.50	2.89	2.94	4.44	1.11	0
Payroll and timekeeping clerks	<b>338</b>	3.22	2.72	2.61	4.00	1.06	0
Cost and rate clerks (financial records processing)	<b>343</b>	2.50	1.50	1.33	3.17	2.33	0
Billing clerks and related financial records processing	<b>344</b>	2.50	1.50	1.83	2.83	2.17	0
Duplication machine operators / office machine operators	<b>345</b>	2.71	1.43	1.86	3.00	1.86	0
Mail and paper handlers	<b>346</b>	3.38	2.08	3.23	4.69	1.38	0
Office machine operators, n.e.c.	<b>347</b>	3.38	2.25	3.13	4.25	1.13	0
Telephone operators	<b>348</b>	3.33	2.33	3.00	4.33	1.67	0
Other telecom operators	<b>349</b>	3.00	2.50	2.50	3.00	3.00	0
Postal clerks, excluding mail carriers	<b>354</b>	2.78	1.78	2.33	3.22	1.78	0
Mail carriers for postal service	<b>355</b>	2.25	1.63	2.25	2.13	1.75	0
Mail clerks, outside of post office	<b>356</b>	3.48	2.55	3.07	5.14	1.21	0
Messengers	<b>357</b>	3.59	2.61	3.05	5.44	1.79	0
Dispatchers	<b>359</b>	2.88	2.18	2.23	3.75	1.95	0

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Inspectors, n.e.c.	<b>361</b>	3.00	2.00	2.00	3.00	2.00	0
Shipping and receiving clerks	<b>364</b>	2.75	2.14	2.18	3.11	2.14	0
Stock and inventory clerks	<b>365</b>	3.30	2.59	3.02	4.52	1.62	0
Meter readers	<b>366</b>	4.00	2.80	3.80	5.60	1.40	0
Weighers, measurers, and checkers	<b>368</b>	3.71	2.93	3.43	4.21	1.36	0
Material recording, scheduling, production, planning, and expediting clerks	<b>373</b>	4.00	3.00	4.00	5.50	1.50	0
Insurance adjusters, examiners, and investigators	<b>375</b>	3.33	2.67	3.00	4.00	2.00	0
Customer service reps, investigators and adjusters, except insurance	<b>376</b>	3.47	2.53	3.00	4.13	1.40	0
Eligibility clerks for government programs; social welfare	<b>377</b>	4.00	3.25	3.50	4.75	1.75	0
Bill and account collectors	<b>378</b>	3.75	1.25	3.75	4.50	1.25	0
General office clerks	<b>379</b>	3.30	1.90	3.00	4.60	1.10	0
Bank tellers	<b>383</b>	3.25	2.75	2.63	4.00	1.25	0
Proofreaders	<b>384</b>	3.33	2.67	3.00	3.00	1.33	0
Data entry keyers	<b>385</b>	3.11	2.13	2.80	3.97	1.48	0
Statistical clerks	<b>386</b>	2.22	1.33	1.78	3.11	2.11	0
Teacher's aides	<b>387</b>	2.50	1.67	2.00	2.50	2.50	1
Administrative support jobs, n.e.c.	<b>389</b>	3.80	2.40	3.60	6.80	1.80	0
Housekeepers, maids, butlers, stewards, and lodging quarters cleaners	<b>405</b>	3.78	2.67	3.17	6.06	1.61	0
Private household cleaners and servants	<b>407</b>	4.20	2.89	3.73	6.93	1.98	0
Supervisors of guards	<b>415</b>	3.11	2.00	2.83	4.89	2.06	0
Fire fighting, prevention, and inspection	<b>417</b>	2.00	1.33	2.00	2.33	2.00	0
Police, detectives, and private investigators	<b>418</b>	3.13	2.04	2.79	4.25	1.96	0
Other law enforcement: sheriffs, bailiffs, correctional institution officers	<b>423</b>	3.10	1.70	2.60	4.70	1.60	0
Crossing guards and bridge tenders	<b>425</b>	2.33	1.67	2.00	2.33	2.00	0
Guards, watchmen, doorkeepers	<b>426</b>	2.70	1.80	2.00	3.40	2.20	0
Protective services, n.e.c.	<b>427</b>	3.57	2.50	2.74	6.41	2.37	0
Bartenders	<b>434</b>	2.22	1.78	2.00	2.44	2.11	0
Waiter/waitress	<b>435</b>	2.44	1.67	1.67	3.00	2.22	0
Cooks, variously defined	<b>436</b>	2.00	1.00	1.00	2.00	2.75	0
Food counter and fountain workers	<b>438</b>	2.10	1.40	1.30	2.30	2.50	0
Kitchen workers	<b>439</b>	4.00	3.00	4.00	6.00	2.00	0



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Waiter's assistant	<b>443</b>	3.22	2.44	3.00	4.61	2.22	0
Misc food prep workers	<b>444</b>	3.00	1.83	2.33	3.67	2.33	0
Dental assistants	<b>445</b>	3.40	2.40	2.90	6.30	2.40	1
Health aides, except nursing	<b>446</b>	1.69	1.13	1.38	2.31	2.56	1
Nursing aides, orderlies, and attendants	<b>447</b>	2.00	1.00	1.50	2.00	1.00	0
Supervisors of cleaning and building service	<b>448</b>	2.50	1.83	1.83	4.17	1.33	0
Janitors	<b>453</b>	3.67	2.87	3.27	6.07	2.13	0
Elevator operators	<b>454</b>	3.00	2.00	3.00	6.00	2.00	0
Pest control occupations	<b>455</b>	3.18	2.18	2.55	5.18	1.91	0
Supervisors of personal service jobs, n.e.c.	<b>456</b>	2.67	1.88	2.21	2.75	2.04	0
Barbers	<b>457</b>	3.22	2.00	3.00	4.11	1.56	0
Hairdressers and cosmetologists	<b>458</b>	2.00	1.00	1.60	2.00	2.00	0
Recreation facility attendants	<b>459</b>	2.90	1.80	2.70	2.90	2.20	0
Guides	<b>461</b>	2.25	1.75	2.25	2.25	2.25	0
Ushers	<b>462</b>	3.50	2.00	3.00	4.00	2.00	0
Public transportation attendants and inspectors	<b>463</b>	3.00	1.67	2.67	3.00	2.67	0
Baggage porters	<b>464</b>	2.43	1.66	2.19	2.77	2.17	0
Welfare service aides	<b>465</b>	4.00	3.10	3.30	6.55	1.85	0
Child care workers	<b>468</b>	4.00	3.25	3.50	6.75	2.75	1
Personal service occupations, nec	<b>469</b>	4.60	3.40	3.80	7.40	2.00	0
Farmers (owners and tenants)	<b>473</b>	5.00	3.67	4.67	7.67	2.00	0
Horticultural specialty farmers	<b>474</b>	2.66	1.84	2.17	4.01	2.23	0
Farm managers, except for horticultural farms	<b>475</b>	2.25	1.00	1.25	3.50	1.50	0
Managers of horticultural specialty farms	<b>476</b>	2.25	1.38	2.00	2.50	1.75	0
Farm workers	<b>479</b>	3.92	3.08	3.42	6.00	2.17	0
Marine life cultivation workers	<b>483</b>	2.70	1.90	2.40	3.70	1.50	0
Nursery farming workers	<b>484</b>	2.75	1.75	2.00	3.75	2.38	0
Supervisors of agricultural occupations	<b>485</b>	2.56	1.78	2.11	3.78	2.00	0
Gardeners and groundskeepers	<b>486</b>	2.80	2.20	2.60	4.00	2.40	0
Animal caretakers except on farms	<b>487</b>	2.23	1.41	1.46	3.46	1.28	0
Graders and sorters of agricultural products	<b>488</b>	2.46	1.38	1.54	3.62	0.81	0
Inspectors of agricultural products	<b>489</b>	3.98	3.47	3.50	7.43	2.12	0
Timber, logging, and forestry workers	<b>496</b>	3.14	2.32	2.73	5.68	2.41	0
Fishers, hunters, and kindred	<b>498</b>	4.00	3.00	3.00	7.00	2.14	0

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Supervisors of mechanics and repairers	<b>503</b>	3.57	2.71	3.29	5.86	2.71	0
Automobile mechanics	<b>505</b>	3.58	2.92	2.92	6.25	2.17	0
Bus, truck, and stationary engine mechanics	<b>507</b>	2.92	2.08	2.00	5.23	2.23	0
Aircraft mechanics	<b>508</b>	3.65	2.65	2.88	6.47	1.71	0
Small engine repairers	<b>509</b>	3.55	2.76	2.91	6.11	2.09	0
Auto body repairers	<b>514</b>	2.30	1.27	1.64	3.39	1.98	0
Heavy equipment and farm equipment mechanics	<b>516</b>	3.80	3.20	3.02	6.59	2.37	0
Industrial machinery repairers	<b>518</b>	3.50	3.00	2.50	6.00	2.00	0
Machinery maintenance occupations	<b>519</b>	3.63	2.63	2.75	6.13	2.00	0
Repairers of industrial electrical equipment	<b>523</b>	4.00	3.40	3.00	7.00	1.60	0
Repairers of data processing equipment	<b>525</b>	3.52	2.58	2.61	6.06	2.32	0
Repairers of household appliances and power tools	<b>526</b>	3.55	2.64	2.91	6.64	1.91	0
Telecom and line installers and repairers	<b>527</b>	3.51	2.41	2.57	6.51	2.01	0
Repairers of electrical equipment, n.e.c.	<b>533</b>	3.67	3.00	3.00	6.33	1.33	0
Heating, air conditioning, and refrigeration mechanics	<b>534</b>	3.75	2.75	2.88	6.38	2.38	0
Precision makers, repairers, and smiths	<b>535</b>	3.24	2.67	2.67	5.71	2.33	0
Locksmiths and safe repairers	<b>536</b>	4.00	3.00	3.00	7.25	2.00	0
Office machine repairers and mechanics	<b>538</b>	4.00	3.50	3.50	7.33	1.00	0
Repairers of mechanical controls and valves	<b>539</b>	2.93	1.86	2.02	4.60	1.88	0
Elevator installers and repairers	<b>543</b>	3.98	3.06	3.04	7.45	2.23	0
Millwrights	<b>544</b>	3.33	2.21	2.38	6.17	2.00	0
Mechanics and repairers, n.e.c.	<b>549</b>	3.48	2.61	2.39	5.82	2.36	0
Supervisors of construction work	<b>558</b>	2.67	2.00	2.00	5.50	2.50	0
Masons, tilers, and carpet installers	<b>563</b>	3.69	2.92	2.77	6.62	2.85	0
Carpenters	<b>567</b>	3.67	3.17	2.83	6.50	1.42	0
Drywall installers	<b>573</b>	2.83	1.83	1.83	6.67	2.67	0
Electricians	<b>575</b>	3.00	1.50	1.50	4.50	2.50	0
Electric power installers and repairers	<b>577</b>	3.50	2.25	2.50	7.00	3.00	0
Painters, construction and maintenance	<b>579</b>	3.67	2.44	2.78	6.50	1.33	0
Paperhangers	<b>583</b>	3.50	2.33	2.33	6.67	2.00	0
Plasterers	<b>584</b>	3.00	2.00	2.00	6.67	2.00	0

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Plumbers, pipe fitters, and steamfitters	<b>585</b>	2.83	1.67	2.17	6.00	2.67	0
Concrete and cement workers	<b>588</b>	2.78	1.22	1.22	4.17	2.13	0
Glaziers	<b>589</b>	3.00	1.67	2.00	6.67	2.67	0
Insulation workers	<b>593</b>						0
Paving, surfacing, and tamping equipment operators	<b>594</b>	3.20	1.80	2.20	6.60	1.20	0
Roofers and slaters	<b>595</b>	3.14	1.86	1.86	5.29	1.86	0
Sheet metal duct installers	<b>596</b>	2.80	1.75	1.92	4.46	1.54	0
Structural metal workers	<b>597</b>	3.00	2.33	2.00	5.67	3.00	0
Drillers of earth	<b>598</b>	3.25	2.50	2.13	5.75	1.75	0
Construction trades, n.e.c.	<b>599</b>	2.91	1.82	1.64	4.82	2.27	0
Drillers of oil wells	<b>614</b>	2.76	1.59	1.47	4.41	1.06	0
Explosives workers	<b>615</b>	3.94	2.86	3.09	6.99	2.13	0
Miners	<b>616</b>	3.74	3.14	2.94	6.80	2.60	0
Other mining occupations	<b>617</b>	4.00	3.82	3.27	7.18	2.64	0
Production supervisors or foremen	<b>628</b>	3.80	3.20	2.60	7.00	1.20	0
Tool and die makers and die setters	<b>634</b>	3.47	2.80	2.60	6.47	2.67	0
Machinists	<b>637</b>	3.93	3.36	3.20	6.98	2.55	0
Boilermakers	<b>643</b>	3.71	3.14	2.57	7.14	1.86	0
Precision grinders and filers	<b>644</b>	3.64	2.18	2.45	6.64	1.91	0
Patternmakers and model makers	<b>645</b>	4.00	4.00	3.00	7.00	3.00	0
Lay-out workers	<b>646</b>	3.50	3.50	3.00	6.00	3.00	0
Engravers	<b>649</b>	4.00	2.33	2.67	6.67	2.00	0
Tinsmiths, coppersmiths, and sheet metal workers	<b>653</b>	3.67	3.08	2.75	6.67	2.17	0
Cabinetmakers and bench carpenters	<b>657</b>	3.33	2.44	2.56	6.00	2.00	0
Furniture and wood finishers	<b>658</b>	4.00	3.00	3.00	7.00	2.00	0
Other precision woodworkers	<b>659</b>	3.22	2.22	2.78	6.11	2.89	0
Dressmakers and seamstresses	<b>666</b>	3.18	2.18	2.55	6.27	2.18	0
Tailors	<b>667</b>	3.02	1.98	2.13	5.35	2.17	0
Upholsterers	<b>668</b>	2.33	1.39	1.58	3.46	2.05	0
Shoe repairers	<b>669</b>	3.17	2.46	2.71	5.54	1.92	0
Other precision apparel and fabric workers	<b>674</b>	3.75	2.88	3.63	6.50	1.50	0
Hand molders and shapers, except jewelers	<b>675</b>	3.00	2.00	2.00	7.00	3.00	0
Optical goods workers	<b>677</b>	3.54	2.79	2.85	5.92	2.18	0
Dental laboratory and medical appliance technicians	<b>678</b>	3.00	2.00	2.29	5.86	0.86	0

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Bookbinders	<b>679</b>	3.00	2.00	2.00	6.67	0.67	0
Other precision and craft workers	<b>684</b>	3.67	2.44	2.89	6.56	2.44	0
Butchers and meat cutters	<b>686</b>	3.29	2.12	2.18	5.76	1.88	0
Bakers	<b>687</b>	3.43	2.86	2.86	5.14	2.29	0
Batch food makers	<b>688</b>	3.75	3.00	2.94	6.94	2.38	0
Adjusters and calibrators	<b>693</b>	3.10	2.60	2.50	5.50	2.70	0
Water and sewage treatment plant operators	<b>694</b>	3.26	2.65	2.61	5.32	2.29	0
Power plant operators	<b>695</b>	2.89	2.19	2.19	4.53	2.42	0
Plant and system operators, stationary engineers	<b>696</b>	2.60	1.82	1.88	3.84	1.90	0
Other plant and system operators	<b>699</b>	3.00	2.19	1.97	4.97	2.52	0
Lathe, milling, and turning machine operatives	<b>703</b>	2.75	2.18	2.00	3.82	2.46	0
Punching and stamping press operatives	<b>706</b>	2.61	1.76	1.89	3.99	2.26	0
Rollers, roll hands, and finishers of metal	<b>707</b>	2.94	2.06	1.94	4.82	1.65	0
Drilling and boring machine operators	<b>708</b>	2.60	1.76	1.84	3.93	2.35	0
Grinding, abrading, buffing, and polishing workers	<b>709</b>	2.55	1.69	1.75	3.74	2.09	0
Forge and hammer operators	<b>713</b>	2.53	1.92	1.90	3.63	2.24	0
Fabricating machine operators, n.e.c.	<b>717</b>	2.96	2.25	2.07	4.43	2.25	0
Molders, and casting machine operators	<b>719</b>	2.68	1.68	1.48	3.78	2.58	0
Metal platers	<b>723</b>	2.62	1.46	1.27	3.85	2.31	0
Heat treating equipment operators	<b>724</b>	2.17	1.33	1.21	3.00	2.25	0
Wood lathe, routing, and planing machine operators	<b>726</b>	2.00	1.20	1.20	2.00	2.20	0
Sawing machine operators and sawyers	<b>727</b>	2.37	1.50	1.50	3.23	2.49	0
Shaping and joining machine operator (woodworking)	<b>728</b>	2.85	1.65	1.89	4.67	2.27	0
Nail and tacking machine operators (woodworking)	<b>729</b>	3.53	2.14	2.31	6.35	1.94	0
Other woodworking machine operators	<b>733</b>	3.50	1.64	2.57	6.14	2.21	0
Printing machine operators, n.e.c.	<b>734</b>	2.08	1.06	1.31	2.86	2.17	0
Photoengravers and lithographers	<b>735</b>	3.03	1.55	1.95	4.87	2.24	0
Typesetters and compositors	<b>736</b>	2.25	1.11	1.75	2.81	2.11	0
Winding and twisting textile/apparel operatives	<b>738</b>	2.27	1.07	1.24	3.05	2.02	0

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Knitters, loopers, and toppers textile operatives	<b>739</b>	2.80	1.60	1.80	3.40	2.00	0
Textile cutting machine operators	<b>743</b>	2.07	1.11	1.22	2.48	2.19	0
Textile sewing machine operators	<b>744</b>	2.44	1.44	1.67	3.59	2.41	0
Shoemaking machine operators	<b>745</b>	2.13	1.19	1.65	2.81	2.32	0
Pressing machine operators (clothing)	<b>747</b>	2.04	1.24	1.33	2.80	2.15	0
Laundry workers	<b>748</b>	2.17	1.25	1.52	2.71	2.05	0
Misc textile machine operators	<b>749</b>	2.28	1.38	1.46	3.10	2.21	0
Cementing and gluing maching operators	<b>753</b>	2.47	1.64	1.67	3.46	1.66	0
Packers, fillers, and wrappers	<b>754</b>	2.54	1.62	1.70	3.57	2.15	0
Extruding and forming machine operators	<b>755</b>	2.37	1.45	1.65	3.28	2.34	0
Mixing and blending machine operatives	<b>756</b>	2.37	1.59	1.68	3.41	1.93	0
Separating, filtering, and clarifying machine operators	<b>757</b>	2.21	1.40	1.49	2.72	2.16	0
Painting machine operators	<b>759</b>	2.37	1.53	1.53	3.16	2.37	0
Roasting and baking machine operators (food)	<b>763</b>	2.52	1.59	1.59	3.47	2.17	0
Washing, cleaning, and pickling machine operators	<b>764</b>	2.33	1.33	1.36	3.34	2.05	0
Paper folding machine operators	<b>765</b>	2.22	1.36	1.46	2.89	2.10	0
Furnace, kiln, and oven operators, apart from food	<b>766</b>	4.00	2.00	2.00	6.00	2.00	0
Crushing and grinding machine operators	<b>768</b>	3.21	2.00	2.19	5.20	1.70	0
Slicing and cutting machine operators	<b>769</b>	2.45	1.63	1.77	3.40	2.18	0
Motion picture projectionists	<b>773</b>	3.18	2.72	2.49	4.85	2.33	0
Photographic process workers	<b>774</b>	2.56	2.11	2.22	3.50	2.22	0
Machine operators, n.e.c.	<b>779</b>	2.24	1.41	1.52	3.03	2.06	0
Welders and metal cutters	<b>783</b>	2.13	1.20	1.28	3.05	2.06	0
Solderers	<b>784</b>	2.81	2.00	2.20	4.17	2.03	0
Assemblers of electrical equipment	<b>785</b>	2.15	1.33	1.61	2.90	2.04	0
Hand painting, coating, and decorating occupations	<b>789</b>	3.73	2.67	3.07	6.13	2.13	0
Production checkers and inspectors	<b>796</b>	2.64	1.42	1.78	3.08	2.67	0
Graders and sorters in manufacturing	<b>799</b>	3.00	2.00	2.00	3.33	2.67	0

<b>Proposed standard job title</b>	<b>Proposed standard code</b>	<b>Reason</b>	<b>Math</b>	<b>Lang</b>	<b>SVP</b>	<b>Str</b>	<b>Care</b>
Supervisors of motor vehicle transportation	<b>803</b>	2.25	1.38	1.63	2.88	1.88	0
Truck, delivery, and tractor drivers	<b>804</b>	2.33	1.33	1.67	2.33	2.00	0
Bus drivers	<b>808</b>	3.88	2.88	3.50	7.00	1.75	0
Taxi cab drivers and chauffeurs	<b>809</b>	3.07	1.79	2.29	4.43	2.07	1
Parking lot attendants	<b>813</b>	2.50	1.67	2.17	3.33	2.67	1
Railroad conductors and yardmasters	<b>823</b>	3.53	3.03	2.93	6.13	2.07	0
Locomotive operators (engineers and firemen)	<b>824</b>	3.25	2.00	2.25	5.00	2.25	0
Railroad brake, coupler, and switch operators	<b>825</b>	3.00	1.00	2.00	6.00	3.00	0
Ship crews and marine engineers	<b>829</b>	2.65	1.21	1.59	4.12	1.85	0
Water transport infrastructure tenders and crossing guards	<b>834</b>	2.91	1.45	1.45	4.45	2.64	0
Operating engineers of construction equipment	<b>844</b>	2.53	1.70	1.78	3.94	2.21	0
Crane, derrick, winch, and hoist operators	<b>848</b>	2.29	1.54	1.81	3.46	1.56	0
Excavating and loading machine operators	<b>853</b>	2.13	1.35	1.48	3.22	1.04	0
Misc material moving occupations	<b>859</b>	2.00	1.17	1.33	2.67	1.33	0
Helpers, constructions	<b>865</b>						0
Helpers, surveyors	<b>866</b>	1.00	1.00	1.00	1.00	0.00	0
Construction laborers	<b>869</b>	2.50	1.50	1.50	3.50	1.50	0
Production helpers	<b>873</b>	1.67	1.00	1.00	2.00	2.00	0
Garbage and recyclable material collectors	<b>875</b>	1.49	1.02	1.04	1.91	1.87	0
Materials movers: stevedores and longshore workers	<b>876</b>	1.76	1.11	1.15	2.33	1.13	0
Stock handlers	<b>877</b>	2.40	1.40	1.40	3.00	2.80	0
Machine feeders and offbearers	<b>878</b>	1.77	1.06	1.08	2.06	2.15	0
Freight, stock, and materials handlers	<b>883</b>	1.63	1.06	1.19	1.94	1.97	0
Garage and service station related occupations	<b>885</b>	1.63	1.09	1.13	2.13	1.87	0
Vehicle washers and equipment cleaners	<b>887</b>	2.85	2.39	2.33	4.70	0.91	0
Packers and packagers by hand	<b>888</b>						0
Laborers outside construction	<b>889</b>	5.00	4.00	5.00	8.00	1.00	0
Military	<b>905</b>	4.88	4.63	4.63	8.25	1.13	0
Unemployed	<b>991</b>						
Unknown / not matched	<b>999</b>	3.40	3.00	3.00	5.40	1.00	0

## Appendix D. Tests of consistency of occupation definitions

The tables which follow compare the most pronounced changes by different criteria in the IPUMS assignment of Census 1950 occupations (in the variable named *occ1950*) and in the proposed classification (in appendix A). We apply the same consistency criteria to both classifications in order to study which categories seem to be inconsistent, and whether one classification is doing much less well than the other. Overall they perform similarly on these criteria.

### Appendix D1. Occupation categories with the greatest and smallest increases in mean earned income within the occupation category

Occupations which were not measured at all in one of the years are left out of the table. The measure of income is nominal, so a change of 1.0 is actually a decline in real income.

<b>Occupations with the greatest and least increases in mean nominal income, 1960 to 1970, <i>occ1950</i> classification</b>		
<i>occ1950</i>	Job title from 1950 Census	Mean 1970 earned income divided by mean 1960 earned income
752	Boarding and lodging house keepers	3.22
360	Telegraph messengers	3.12
59	Nurses, student professional	2.89
78	Religious workers	2.76
772	Midwives	2.63
	....	
731	Attendants, professional and personal service (nec)	1.18
521	Engravers, except engravers	1.18
611	Apprentices, building trades (nec)	1.15
645	Milliners	0.92
100	Farmers (owners and tenants)	0.39

<b>1960 to 1970, proposed standard classification</b>		
Proposed code	Proposed job title	Mean 1970 earned income divided by mean 1960 earned income
468	Child care workers	3.32
469	Personal service occupations, nec	2.98
283	Sales demonstrators / promoters / models	2.61
599	Construction trades, n.e.c.	2.48
89	Other health and therapy	2.41
	...	
199	Athletes, sports instructors, and officials	1.17
185	Designers	1.16
228	Broadcast equipment operators	1.11
475	Farm managers, except for horticultural farms	1.00
473	Farmers (owners and tenants)	0.36

<b>Occupation categories with the greatest and least increases in mean nominal earned income, 1970 to 1980</b>		
<b>IPUMS occ1950</b>	<b>Job title from 1950 Census</b>	<b>Mean 1980 earned income divided by mean 1970 earned income</b>
710	Laundresses, private household	4.46
764	Housekeepers and stewards, except private household	3.11
370	Telephone operators	2.74
600	Auto mechanics apprentice	2.57
614	Apprentices, other specified trades	2.41
	....	
77	Recreation and group workers	1.32
790	Service workers, except private household (nec)	1.32
6	Authors	1.30
33	Designers	1.23
525	Furriers	1.09

<b>1970 to 1980, proposed standard classification</b>		
<b>Proposed code</b>	<b>Proposed job title</b>	<b>Mean 1980 earned income divided by mean 1970 earned income</b>
475	Farm managers, except for horticultural farms	2.95
348	Telephone operators	2.74
468	Child care workers	2.62
616	Miners	2.46
717	Fabricating machine operators, n.e.c.	2.44
	...	
274	Salespersons, n.e.c.	1.30
183	Writers and authors	1.30
425	Crossing guards and bridge tenders	1.29
194	Art/entertainment performers and related	1.22
328	Human resources clerks, except payroll and timekeeping	0.89



**Occupation categories with the greatest and least increases in mean nominal earned income, 1980 to 1990**

<b>1980 to 1990, <i>occ1950</i> classification</b>		
<i>occ1950</i>	<b>Job title from 1950 Census</b>	<b>Mean 1990 earned income divided by mean 1980 earned income</b>
430	Hucksters and peddlers	2.60
230	Managers & superintendants, building	2.24
340	Messengers and office boys	2.23
720	Private household workers (nec)	2.22
55	Lawyers and judges	2.20
	....	
710	Laundresses, private household	1.36
601	Bricklayers and masons apprentice	1.34
380	Ticket, station, and express agents	1.34
614	Apprentices, other specified trades	1.22
612	Apprentices, metalworking trades (nec)	1.16

<b>1980 to 1990, proposed standard classification</b>		
<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Mean 1990 earned income divided by mean 1980 earned income</b>
149	Home economics instructors	2.57
277	Door-to-door sales, street sales, and news vendors	2.42
125	Sociology instructors	2.36
88	Podiatrists	2.35
693	Adjusters and calibrators	2.32
	....	
456	Supervisors of personal service jobs, n.e.c.	1.30
37	Management support occupations	1.29
866	Helpers, surveyors	1.27
659	Other precision woodworkers	1.22
474	Horticultural specialty farmers	0.75

**Occupation categories with the greatest and least increases mean nominal earned income from 1990 to 2000**

<i>occ1950</i> (IPUMS)	<b>Job title from 1950 Census</b>	<b>Mean 2000 earned income divided by mean 1990 earned income</b>
100	Farmers (owners and tenants)	7.51
790	Service workers, except private household (nec)	2.00
720	Private household workers (nec)	1.98
302	Attendants, physicians and dentists office	1.94
783	Ushers, recreation and amusement	1.93
	....	
622	Blasters and powdermen	0.97
51	Entertainers (nec)	0.96
562	Motion picture projectionists	0.95
732	Attendants, recreation and amusement	0.93
96	Technicians (nec)	0.41

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Mean 2000 earned income divided by mean 1990 earned income</b>
473	Farmers (owners and tenants)	7.38
4	Chief executives and public administrators	3.77
465	Welfare service aides	2.52
799	Graders and sorters in manufacturing	2.43
346	Mail and paper handlers	2.37
	....	
233	Programmers of numerically controlled machine tools	1.06
773	Motion picture projectionists	0.95
678	Dental laboratory and medical appliance technicians	0.92
159	Teachers , n.e.c.	0.88
876	Materials movers: stevedores and longshore workers	0.72

## Appendix D2. The fraction of the work force in each occupation

We measured the changes in the fraction of the work force in each *occ1950* category and proposed standard occupation to detect which job categories experienced sharp change in the number of workers. The work force was defined by the respondent's employment status (*empstatd* value in the set {10,12,14,15}) and age (between 16 and 75). Here are the occupational categories which expanded or shrank rapidly from one decade to the next, first given for *occ1950*, then for the proposed classification.

<b>Occupation categories which grew or shrank the most in size as a fraction of the work force from 1960 to 1970</b>		
<b><i>occ1950</i> (IPUMS)</b>	<b>Job title from 1950 Census</b>	<b>Fraction of workforce in 1970 divided by fraction of workforce in 1960</b>
26	Natural science (nec)-Professors and instructors	10.70
594	Craftsmen and kindred workers (nec)	5.44
51	Entertainers (nec)	5.18
10	College presidents and deans	5.10
24	Psychology-Professors and instructors	3.71
	...	
59	Nurses, student professional	0.24
710	Laundresses, private household	0.23
752	Boarding and lodging house keepers	0.21
780	Porters	0.12
300	Agents (nec)	0.11

<b>Proposed Code</b>	<b>Proposed job title</b>	<b>Fraction of workforce in 1970 divided by fraction of workforce in 1960</b>
14	Managers in education and related fields	25.41
13	Managers and specialists in marketing, advertising, and public relations	14.18
859	Misc material moving occupations	12.47
599	Construction trades, n.e.c.	6.98
703	Lathe, milling, and turning machine operatives	6.41
	....	
193	Dancers	0.24
464	Baggage porters	0.12
347	Office machine operators, n.e.c.	0.10
674	Other precision apparel and fabric workers	0.01
225	Other science technicians	0.00

<b>Occupation categories which grew or shrank the most in size as a fraction of the work force from 1970 to 1980</b>		
<b>1950 occupation category (IPUMS)</b>	<b>Job title from 1950 Census</b>	<b>Fraction of workforce in 1980 divided by fraction of workforce in 1970</b>
69	Misc. natural scientists	7.71
731	Attendants, professional and personal service (nec)	2.86
525	Furriers	2.60
82	Psychologists	2.50
33	Designers	2.24
	....	
27	Social sciences (nec)-Professors and instructors	0.30
420	Demonstrators	0.23
681	Switchmen, railroad	0.14
710	Laundresses, private household	0.12
612	Apprentices, metalworking trades (nec)	0.10

<b>Proposed standard code</b>	<b>Proposed job title</b>	<b>Fraction of workforce in 1980 divided by fraction of workforce in 1970</b>
225	Other science technicians	109.92
675	Hand molders and shapers, except jewelers	11.03
888	Packers and packagers by hand	10.47
76	Physical scientists, n.e.c.	7.71
235	Technicians, n.e.c.	5.75
	...	
439	Kitchen workers	0.16
754	Packers, fillers, and wrappers	0.14
469	Personal service occupations, nec	0.13
346	Mail and paper handlers	0.05
275	Retail sales clerks	0.03

<b>Occupation categories which grew or shrank the most in size as a fraction of the workforce from 1980 to 1990</b>		
<b><i>Occ1950</i></b> <b>(IPUMS)</b>	<b>Job title from 1950 Census</b>	<b>Fraction of workforce in 1990 divided by fraction of workforce in 1980</b>
420	Demonstrators	2.93
380	Ticket, station, and express agents	2.21
250	Officials & administrators (nec), public	2.05
6	Authors	1.98
480	Stock and bond salesmen	1.86
	....	
624	Brakemen, railroad	0.35
601	Bricklayers and masons apprentice	0.27
12	Agricultural sciences-Professors and instructors	0.24
604	Machinists and toolmakers apprentice	0.23
632	Deliverymen and routemen	0.17

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Fraction of workforce in 1990 divided by fraction of workforce in 1980</b>
37	Management support occupations	10.19
866	Helpers, surveyors	6.26
24	Insurance underwriters	3.13
205	Health record tech specialists	3.10
283	Sales demonstrators / promoters / models	2.93
	....	
825	Railroad brake, coupler, and switch operators	0.35
703	Lathe, milling, and turning machine operatives	0.31
708	Drilling and boring machine operators	0.27
149	Home economics instructors	0.20
865	Helpers, constructions	0.16

<b>Occupation categories which grew or shrank the most in size as a fraction of the workforce from 1990 to 2000</b>		
<b><i>Occ1950</i></b> <b>(IPUMS)</b>	<b>Job title from 1950 Census</b>	<b>Fraction of workforce in 2000 divided by fraction of workforce in 1990</b>
69	Misc. natural scientists	12.04
77	Recreation and group workers	4.70
99	Professional, technical & kindred workers (nec)	3.11
782	Sheriffs and bailiffs	2.83
622	Blasters and powdermen	2.19
	...	
522	Excavating, grading, and road machinery operators	0.17
81	Economists	0.15
96	Technicians (nec)	0.12
582	Shoemakers and repairers, except factory	0.11
250	Officials & administrators (nec), public	0.08

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Fraction of workforce in 2000 divided by fraction of workforce in 1990</b>
726	Wood lathe, routing, and planing machine operators	69.26
4	Chief executives and public administrators	52.23
346	Mail and paper handlers	19.05
275	Retail sales clerks	15.62
729	Nail and tacking machine operators (woodworking)	13.49
	...	
594	Paving, surfacing, and tamping equipment operators	0.19
225	Other science technicians	0.13
684	Other precision and craft workers	0.11
883	Freight, stock, and materials handlers	0.03
235	Technicians, n.e.c.	0.01

### Appendix D3. Measures of the dispersion of earned income

Our third criterion of occupational stability was earning inequality. Earnings inequality was measured by the coefficient of variation, or the sample's standard deviation for each occupation divided by its mean.

<b>Occupation categories with the greatest and least increases in coefficient of variation of income, 1960 to 1970</b>		
<i>occ1950</i> (IPUMS)	<b>Job title from 1950 Census</b>	<b>Ratio of 1970 coefficient of variation to 1960 coefficient of variation</b>
100	Farmers (owners and tenants)	2.87
771	Marshals and constables	1.87
700	Housekeepers, private household	1.78
69	Misc. natural scientists	1.76
611	Apprentices, building trades (nec)	1.72
	...	
201	Buyers and shippers, farm products	0.73
15	Economics-Professors and instructors	0.71
645	Milliners	0.67
660	Motormen, mine, factory, logging camp, etc	0.65
59	Nurses, student professional	0.63

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Ratio of 1970 coefficient of variation to 1960 coefficient of variation</b>
473	Farmers (owners and tenants)	2.95
76	Physical scientists, n.e.c.	1.76
199	Athletes, sports instructors, and officials	1.70
883	Freight, stock, and materials handlers	1.64
703	Lathe, milling, and turning machine operatives	1.54
	...	
584	Plasterers	0.76
28	Purchasing agents and buyers, of farm products	0.73
745	Shoemaking machine operators	0.73
119	Economics instructors	0.71
583	Paperhangers	0.63

**Occupation categories with the greatest and smallest increases in coefficient of variation of income, 1970 to 1980**

<i>occ1950</i> (IPUMS)	Job title from 1950 Census	Ratio of 1980 coefficient of variation to 1970 coefficient of variation
525	Furriers	0.74
573	Plasterers	0.74
630	Chainmen, rodmen, and axmen, surveying	0.65
612	Apprentices, metalworking trades (nec)	0.62
201	Buyers and shippers, farm products	0.62
	...	
31	Dancers and dancing teachers	0.36
78	Religious workers	0.36
710	Laundresses, private household	0.30
764	Housekeepers and stewards, except private household	0.29
700	Housekeepers, private household	0.24
31	Dancers and dancing teachers	0.36

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Ratio of 1980 coefficient of variation to 1970 coefficient of variation</b>
349	Other telecom operators	0.79
225	Other science technicians	0.76
658	Furniture and wood finishers	0.75
584	Plasterers	0.74
139	Education instructors	0.71
	...	
105	Therapists, n.e.c.	0.35
168	Sociologists	0.34
475	Farm managers, except for horticultural farms	0.33
205	Health record tech specialists	0.29
316	Interviewers, enumerators, and surveyors	0.28



<b>Occupation categories with the greatest and smallest increases in coefficient of variation, 1980 to 1990</b>		
<i>occ1950</i> (IPUMS)	<b>Job title from 1950 Census</b>	<b>Ratio of 1990 coefficient of variation to 1980 coefficient of variation</b>
610	Plumbers and pipe fitters apprentice	1.80
24	Psychology-Professors and instructors	1.53
380	Ticket, station, and express agents	1.49
45	Industrial-Engineers	1.44
47	Metallurgical, metallurgists-Engineers	1.40
	...	
270	Postmasters	0.87
700	Housekeepers, private household	0.85
460	Newsboys	0.82
600	Auto mechanics apprentice	0.80
12	Aricultural sciences-Professors and instructors	0.70

<b>Proposed Standard Code</b>	<b>Proposed job title</b>	<b>Ratio of 1990 coefficient of variation to 1980 coefficient of variation</b>
729	Nail and tacking machine operators (woodworking)	1.70
34	Business and promotion agents	1.56
118	Psychology instructors	1.53
485	Supervisors of agricultural occupations	1.51
318	Transportation ticket and reservation agents	1.49
	...	
139	Education instructors	0.84
149	Home economics instructors	0.81
483	Marine life cultivation workers	0.78
726	Wood lathe, routing, and planing machine operators	0.76
693	Adjusters and calibrators	0.47

<b>Occupation categories with the greatest and smallest increases in coefficient of variation, 1990 to 2000</b>		
<i>occ1950</i> <b>(IPUMS)</b>	<b>Job title from 1950 Census</b>	<b>Ratio of 1990 coefficient of variation to 1980 coefficient of variation</b>
96	Technicians (nec)	4.27
513	Cranemen,derrickmen, and hoistmen	3.83
680	Stationary firemen	3.74
570	Pattern and model makers, except paper	3.58
34	Dieticians and nutritionists	3.47
	...	
84	Misc social scientists	1.84
760	Counter and fountain workers	1.83
783	Ushers, recreation and amusement	1.53
45	Industrial-Engineers	1.40
100	Farmers (owners and tenants)	0.81

<b>Proposed standard code</b>	<b>Proposed job title</b>	<b>Ratio of 1990 coefficient of variation to 1980 coefficient of variation</b>
594	Paving, surfacing, and tamping equipment operators	5.00
106	Physicians' assistants	4.07
764	Washing, cleaning, and pickling machine operators	4.04
848	Crane, derrick, winch, and hoist operators	3.83
539	Repairers of mechanical controls and valves	3.81
	....	
225	Other science technicians	1.33
168	Sociologists	1.28
346	Mail and paper handlers	1.18
489	Inspectors of agricultural products	0.99
473	Farmers (owners and tenants)	0.82

## Appendix E. Data and code available from the authors

DOT stands for *Dictionary of Occupational Titles* (1991).

### Spreadsheets with the DOT values in appendix C.

**DOTsum.xls** – drawn principally from the DOT attributes summary at the National Crosswalk Center, accessible at <http://webdata.xwalkcenter.org/ftp/DOWNLOAD/occnames/dot91ac.zip>

### Stata code to assign job codes and labels

**Remapjob.do** – given variable *year* for the Census or CPS, *empstatd* with the respondent's employment status, and variable *ocsrc* with the occupation code given that year, it assigns the proposed code to variable *ocdest*.

**Labels.do** – creates text labels with the proposed occupation category names for the *ocdest* variable.

### SAS code - We have five SAS programs:

**Freq\_Census.sas** - This program investigates how IPUMS assigned *occ1950* codes to OCC codes in each Census year, and creates a time series of occupational codes and their descriptions.

**occmapping\_analysis.sas** - This program checks the input file with mappings between occupational categories in each Census year and proposed standard codes for inconsistencies, and then automatically creates Excel tables of problem codes.

**occ1950.sas** - computes the statistics shown in Appendix D based on the *occ1950* classification for the Census 1960-2000.

**proposed.sas** - computes the Appendix D statistics for the proposed classification.

**DOTcomparison.sas** - Based on a mapping from the National Crosswalk Center of the 12741 DOT occupations to the 1990 Census occupations, this program computes averages of several DOT-measured attributes for the proposed-standard categories. The attributes computed are those listed in appendix C.

### Contact Information:

Peter B. Meyer: [Meyer.Peter@bls.gov](mailto:Meyer.Peter@bls.gov) 202-691-5678

Anastasiya Osborne: [Osborne.Anastasiya@bls.gov](mailto:Osborne.Anastasiya@bls.gov) 202-691-5633

Office of Productivity and Technology, Room 2180

Bureau of Labor Statistics, Department of Labor

2 Massachusetts Ave N.E., Washington DC, 20212-0001

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