

# Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations

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This paper provides operational procedures for coding internationally comparable measures of occupational status from the recently published International Standard Classification of Occupation 1988 (ISCO88) of the International Labor Office (ILO, 1990). We first discuss the nature of the ISCO88 classification and its relationship to national classifications used around the world and also to its predecessor, ISCO68 (ILO, 1969), which has been widely utilized in comparative research. We argue that comparative research would gain much from adopting ISCO88 as the standard tool of classification and provide guidance on how to do this. We then outline the procedures we have used to generate new standard recodes for three internationally comparable measures of occupational status: Treiman's Standard International Occupational Prestige Scale (SIOPS), Ganzeboom et al.'s International Socio-Economic Index of Occupational Status (ISEI), and Erikson and Goldthorpe's class categories (EGP). To update the SIOPS prestige scores we have directly matched the occupational titles in the SIOPS scale to the categories of the ISCO88 classification. For ISEI scores we have replicated the procedure used to create scores for the ISCO68 categories, employing the same data but using newly developed matches between the underlying national occupational classifications and ISCO88. To construct the EGP class codes we have mapped the ISCO88 occupation categories into a

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10-category classification developed by the CASMIN project for a 12-country analysis. To validate these scales, we estimated parameters of a basic status-attainment model from an independent source of data: the pooled file from the International Social Justice Project (a large international data file that combines data from sample surveys in 14 countries). Estimates based on occupational status scales derived from ISCO88 and ISCO68 are highly similar. © 1996 Academic Press, Inc.

The classification of occupations constitutes the backbone of much, if not most, stratification research. Ever since it was recognized that the division of labor is the kernel of social inequality and occupation therefore is the main dimension of social stratification, stratification researchers have developed ways to derive status measures<sup>1</sup> from information on occupations. Typically, this involves two steps. First, information about occupations is recorded in a detailed classification of several hundred categories, often census or other official classifications. In a second step, these detailed occupational classifications are recoded into measures of a more manageable size and sociological relevance, in line with the preferences and substantive questions of the researchers. There are many derived scales and broad classifications in circulation (Grusky and van Rompaey, 1992).

It comes as no surprise that the cross-national comparative measurement of occupational status has been hard to achieve. There are several reasons for this. First, detailed occupational classifications tend to differ both cross-nationally and, within societies, over time (national census bureaus typically upgrade their classifications for each new census). Classifications differ not only with respect to the level of detail and specific occupational titles included but also with respect to their logic. For instance, some detailed classifications distinguish employment statuses within the same occupations and others do not. Some classifications are heavily industry oriented and others are not. These differences partly reflect differences in the occupational structure of the respective societies and the institutions that have evolved around them (such as the 'statutory status' of occupations). However, in part the differences between national classifications simply must be attributed to idiosyncracies that have evolved for no other reason than the lack of coordination.

Second, there is wide disparity among stratification researchers with respect to the logic and contents of the derived scales applied in actual data analysis. Researchers have organized detailed occupational categories into broad groupings or continuous scales in many different ways. Here again, these differences in part reflect differences in theoretical interests, but in part they result simply from the lack of coordination of sociological research as an international enterprise.

Fortunately, some developments have occurred that counter this Babelic confusion of tongues. The International Labor Office (ILO) of the United Nations has produced a Standard Classification of Occupations (ISCO)—for the first time in 1958, but with revisions in 1968 and 1988. In order to generate a standard

<sup>1</sup> Note that we use 'occupational status' as a generic term in this paper, covering prestige, socioeconomic status, and class measures.

classification, ILO pooled occupational titles from national classifications and organized these in a hierarchical four-digit system,<sup>2</sup> together with a system of definitions and a mapping of various occupational titles into categories. One of the major aims of ISCO is to provide national census bureaus with a starting point to generate their national classifications. For instance, the 1971 Dutch census classification (CBS, 1971) was generated as a four-digit variety of the first three-digits of ISCO68, with only minor modifications. (Unfortunately, relatively few national agencies have adopted either the ISCO classification or its underlying principles as their standard, nor have many agencies provided correspondence tables mapping their categories into the ISCO categories.) Another valuable use of an international standard classification is as a framework to reconcile national classifications in comparative research, and this is the way we have used ISCO in some of our own research (e.g., Ganzeboom, Luijkx, and Treiman, 1989). Also, comparative researchers have occasionally used ISCO as the initial occupational coding scheme in all countries being compared, thereby achieving immediate cross-national comparability (e.g., the eight-nation Political Action study directed by Barnes and Kaase, 1979; and the six-nation study of Social Stratification in Eastern Europe after 1989 directed by Szelenyi and Treiman—see Treiman and Szelenyi, 1993). It is to be noted that ZUMA, the central research agency of German sociology, has adopted ISCO as its standard, and that the National Opinion Research Center (NORC) has begun to provide ISCO codes for its GSS data (Davis and Smith, 1992).

At the level of occupational status scales, significant developments toward international standardization also have occurred. Occupational status scales come in three main varieties: prestige measures, socioeconomic scales, and nominal class categories. Each of these has a different logic of construction.

Prestige measures are generated from the popular evaluation of occupational standing. They reflect the classical sociological hypothesis that occupational status constitutes the single most important dimension in social interaction. There are numerous national prestige scales available. These were integrated into the Standard International Occupational Prestige Scale (SIOPS) by Treiman (1977). The procedure followed by Treiman was to match occupational titles from national and local prestige studies conducted in 60 countries to the three-digit version of ISCO68. He then added a fourth digit to accommodate distinctions that were found cross-nationally in prestige scales but not in ISCO68. The SIOPS scale was generated by averaging the national prestige scores, appropriately rescaled to a common metric. This scale has been the uncontested candidate for use as a prestige scale in international research (Bornschiefer, 1986; Krymkowski, 1988), and often has been applied at the national level as well.

Although socioeconomic indexes (SEI) of occupational status initially were developed as a way to generalize prestige scores for all occupations (Duncan,

<sup>2</sup> In fact, ISCO58 and ISCO68 have five digits, but the fifth digit does not contain information pertinent to most sociological analysis and we have never seen a data file that actually uses it.

1961), the operations used to derive SEI scales in fact have little to do with prestige scores (Hodge, 1981; Ganzeboom, De Graaf, and Treiman, 1992). SEI scores are created by computing a weighted sum of socioeconomic characteristics of incumbents of each occupation, usually education and income, but occasionally other characteristics, e.g., father's socioeconomic characteristics and wealth (Duncan-Jones, 1972). Various procedures have been used to derive the weights, all with more or less the same result (education is modestly more important than income and other characteristics have little weight). SEI scales are now in existence for a number of countries, and tend to be more widely used by stratification researchers than are prestige scales because they capture the basic parameters of the process of stratification somewhat better (Featherman, Jones, and Hauser, 1975). In a previous paper (Ganzeboom et al., 1992) we constructed an International Socio-Economic Index of occupational status (ISEI) for ISCO68 by generating scores from the International Stratification and Mobility File (ISMF) (described below), which combines data on men from 16 countries. We matched detailed occupational titles from each survey to Treiman's (1977, Appendix A) four-digit expansion of the three-digit ISCO68 categories and then computed ISEI scores as weighted averages of standardized measures of the income and education of incumbents of each occupation. Although too recently published to have been used widely to date, we expect that the ISEI index will become a useful tool for comparative stratification research in the future.

Nominal class categories differ from prestige and socioeconomic status scales not only in their discrete nature. They often combine occupational information with information on employment status and are to be regarded as nominal (nonordered or partially ordered) typologies. Various schemes have been proposed. However, over the past decade one scheme has emerged as the most widely accepted international standard: the EGP class categories. The EGP distinctions were initially developed by Goldthorpe (1980) as a seven-category system for analysis of the 1972 Oxford Mobility Inquiry and at that point applied distinctions that were specifically British. A ten-category classification, with what have come to be the standard labels for international comparisons, was then established by Erikson, Goldthorpe, and Portocarero (1979) in their three-country comparison of Britain, France, and Sweden. Two additional distinctions were added by Erikson and Goldthorpe (1992) in their comparative work in the CASMIN project, but in most of their analysis they used only a seven-category version of the scheme. Stratification researchers from different quarters seem to agree at this point that the EGP categories are at least as good an international standard as anything else and have begun coding their data to mimic the EGP distinctions. Unfortunately, the original authors of the EGP scheme have been slow to document the exact procedures they used to arrive at their distinctions, and when a set of maps from the source occupational classifications (detailed national occupational classifications) into EGP categories finally was provided (Erikson, Goldthorpe, König, Lüttinger, and Müller, 1989), there was no clear prescription as to how to replicate these procedures in new data. Because of this, in earlier work (De Graaf,

Ganzeboom, and Kalmijn, 1989; Ganzeboom et al., 1989) we have generated a standard module to derive the EGP categories from ISCO68 (initially its close relative, the 1971 Netherlands census classification) and the appropriate employment status variables. The module was developed using the documentation on the initial British EGP predecessor and then repeatedly checked against new—British and German—data, for which both an “EGP-original” and our EGP version was available.

In sum, at present there are three internationally standardized scales of occupational status available to the comparative research community, all of which are derived from unit data that are coded in the (enhanced) 1968 version of the International Standard Classification of Occupations. Moreover, in the course of our work summarized above, we have generated mappings of various national classifications into ISCO68 and these are also available to comparative researchers.<sup>3</sup>

However, the International Labor Organization (ILO, 1990) recently has revised ISCO into a new classification (ISCO88), and this makes it necessary to update the sociologically meaningful occupational status scales discussed above, particularly since comparative researchers have begun to code recently collected data into this new international standard. The revision of ISCO, after 20 years, was a rather drastic one, with major changes in the logic of the classification. As a consequence, new scales cannot be derived simply by matching ISCO68 categories to ISCO88 categories. In the work presented here, we assign scores on the three occupational status scales we have just reviewed to the categories of ISCO88. Below we discuss the procedures we used to derive these scores and present evidence regarding their validity. First, however, we discuss the properties of the ISCO88 classification and the way it differs from its predecessor and from national classifications.

## THE 1988 INTERNATIONAL STANDARD CLASSIFICATION OF OCCUPATIONS

Like its predecessor and many national occupational classifications, ISCO88 is a nested classification of four levels. The first digit distinguishes nine major groups<sup>4</sup>; within these there are three further levels: 28 sub major groups, 116 minor groups and 390 unit groups. The number of four-digit categories is considerably smaller than in the previous ISCO version (1540). Thus, whereas in ISCO68 only three digits ordinarily were employed, we expect that all four digits routinely will be coded when the ISCO88 scheme is used. The nine major groups are:

1000	Legislators, Senior Officials and Managers
2000	Professionals

<sup>3</sup> Please write or send e-mail to the first author.

<sup>4</sup> In fact, ISCO88 includes an undifferentiated tenth major group for the armed forces. However, we have merged this group with the other nine, as discussed below.

3000	Technicians and Associate Professionals
4000	Clerks
5000	Service Workers and Shop and Market Sales Workers
6000	Skilled Agricultural and Fishery Workers
7000	Craft and Related Trades Workers
8000	Plant and Machine Operators and Assemblers
9000	Elementary Occupations

We adopt the convention that the level of the classification is designated by the number of trailing numbers different from zero. For example, 1000 refers to Legislators, Senior Officials & Managers, 1200 to Corporate Managers, 1210 to Production & Operations Department Managers, and 1219 to Production & Operations Department Managers Not Elsewhere Classified. (ISCO88 often reserves a trailing 9 at the four-digit level for “not elsewhere classified” [nec] categories.)

This listing of major groups serves to introduce several points of difference between ISCO88 and its predecessor. First, the logic of the classification is mostly derived from skill requirements at the expense of industry distinctions. For example, whereas in ISCO68 all Textile Workers were organized in a single minor group, irrespective of their skill level (thereby precluding distinctions based on skill), textile workers are now spread out over three different minor groups, depending on whether they do elementary labor, operate machines, or perform craft work. This same change holds for many other manual occupations. Similarly, the new organization of major groups, specifically, the division of non-manual occupations into Professionals, Technicians & Associate Professionals, and Clerks, and the division of manual occupations into Craft Workers, Machine Operators, and Elementary Occupations may also be seen as an attempt to introduce more clear-cut skill distinctions into ISCO88. This is a departure from ISCO68, where these distinctions were not so clearly present. We interpret this set of changes as a move towards accommodation of sociological interests.<sup>5</sup>

However, it would be naive to assume that ISCO88 distinctions at the first digit reflect only skill differences.<sup>6</sup> In particular, although in general Craft Work (7000) requires higher skill than Machine Operating and Assembling (8000), it is easy to point to exceptions, and we think the distinction mainly reflects a division into traditional handcrafted production versus modern mechanized production. For example, in mining and construction, a craft worker may need extensive training, but the mechanized, machine-operating varieties of these trades may require equal technical skills and entail larger responsibility.

The second major departure from ISCO68 is that employment status is no

<sup>5</sup> Unfortunately, many national classifications do not (yet) incorporate the same skill distinctions, which makes the recoding of occupations into ISCO88 categories somewhat problematic (see below).

<sup>6</sup> Nor does ISCO88 claim so. Categories 4000, 5000, 6000, 7000, and 8000 are all associated with the same skill levels: the first and second stages of secondary education (ILO, 1990, p. 3). Since in most industrial societies the distinction between first- and second-stage secondary education is an important one, one may ask whether ISCO88 makes enough skill distinctions.

longer taken into account. Self-employment, ownership, and supervising status are not acknowledged, whereas they were a central basis of distinctions in ISCO68. The treatment of working proprietors (small shop owners), in particular, has changed: they are now classified with workers managing these establishments on someone else's behalf. ISCO68 also contained separate categories for clerical supervisors and manual foreman, but these are now coded with the persons they supervise.

The "Introduction" to the ISCO88 manual (ILO, 1990, p. 10) argues that information on employment status should be secured as separate variables, since virtually every occupation can be exercised as a self-employed as well as a salaried position and, equally, all occupations may entail some degree of supervisory responsibility. Although we have no principled dispute with the ISCO88 authors on this point, we fear that this move may diminish the applicability of ISCO88 for practical reasons. Securing additional information on employment status usually will require additional survey questions,<sup>7</sup> which often will be omitted by researchers for whom occupational status measurement is not a central concern. As a fearsome example we can point to the American National Election Surveys (ANES), which have asked for father's occupation since 1952. The 1940 and 1950 U.S. census classifications had separate codes for own-account workers and small tradesmen, but in 1960 these positions were classified as managers and information on employment status was to be secured as a separate variable. The ANES researchers did this, but only for respondents, not for fathers. In consequence, one cannot use the ANES data collected after 1966 for intergenerational mobility research based on the EGP or similar nominal class categories.

While employment status distinctions are important for all three status measures, they are of particular importance for constructing the EGP class categories. Researchers who want to use ISCO88 in their research and want to construct nominal class categories such as the EGP categories must ask separate questions regarding both self-employment (yes/no) and supervisory status (number of subordinates) for each job for which information is sought (e.g., respondent's current and past jobs, father's occupation, spouse's occupation, etc.). On a related note, we should point out that many national classifications continue to include information about supervisory and self-employment status, and that conversion of these into ISCO88 requires not only matching the titles but also securing this information in separate employment variables (which may or may not also include information obtained from separate questions on these characteristics).

Altogether, in this respect the ISCO88 classification has moved away from common sociological concerns. At some points, we have found it necessary to

<sup>7</sup> Of course, the additional information can also be secured in post processing, since self-employed persons and supervisors will often state their status without being prompted. However, this clearly is inferior to asking separate questions.

enhance the ISCO88 classification by bringing information about employment status back in (see below).

A third major change in ISCO88 relative to ISCO68 is that the classification has become much more elaborate with respect to managers, which is a welcome development. At the three-digit level it distinguishes three varieties of managers:

1210	[Large Enterprise] Directors and Chief Executives
1220	[Large Enterprise] Production and Operations Department Managers
1230	[Large Enterprise] Other Department Managers <sup>8</sup>
1310	[Small Enterprise] General Managers

Here we have added specifications in brackets, because we think that the official ISCO88 titles are likely to confuse many users. Category 1310 ([Small Enterprise] General Managers) is predominantly composed of persons previously classified as wholesale-retail owners, but one might not have guessed this from the title General Manager and might have assumed that these are somehow senior to others who are called Department Managers. The ISCO88 manual points out these differences in a footnote on the very first page of the classification (ILO, 1990, p. 13), but we think it would have been better to take this into account in the actual titles. To further increase the confusion, it turns out that the formal criterion for distinguishing between Department Managers and General Managers is the presence of more than two managers in the establishment (ILO, 1990, p. 23). Unfortunately, information on the number of managers in an establishment is rarely collected in surveys. For our own work, we have found it convenient to relabel General Managers as [Small Enterprise] General Managers and Department Managers as [Large Enterprise] Department Managers and we use the number of subordinates (or establishment size) as the criterion for distinguishing large from small enterprises: a "large enterprise" has more than ten employees, a "small enterprise" has 1–10 employees (in addition to the owner).

The four managerial categories then become diversified at the most detailed level, by industry for those who manage "productions and operations departments" and by department type for managers of "other departments." Here we meet another departure from the logic of ISCO68. One of the industries that subdivides [Large Enterprise] Department Managers (1210) and [Small Enterprise] General Managers (1310) is Agriculture, Hunting, Forestry and Fishing (with codes, respectively, 1211 and 1311). One might then assume that self-employed farmers are to be coded as 1311. Not so, because most of these are better classified in Major Group 6000 (Skilled Agricultural and Fishery Workers), where detailed distinctions within the agricultural sector occur at the three-digit

<sup>8</sup> The difference between 1220 and 1230 may not be self-explanatory. The managers in 1220 are distinguished by industry; those in 1230 are distinguished by (nonproduction, nonoperations) department but all industries are combined. For example, someone who manages a transportation department for a construction firm is coded 1235, whereas an operations manager in a transportation firm (when not the chief executive) is coded 1226.



level (gardening, animal production, forestry, fishing and hunting, etc.) and even finer distinctions are made at the four-digit level. To confuse matters even more, the major group, Skilled Agricultural Workers, also contains Subsistence Agricultural and Fishery Workers, whereas unskilled Farm Hands are classified in major group 9000, Elementary Occupations. It is only when a farmer employs at least one other person that s/he would be classified as an Agricultural, etc. Manager, that is, in 1311 or 1211, depending upon the number of managers (or, in our operationalization) the number of employees. Ironically, this is a case where supervisory status sneaks into the classification. We have made this explicit in our rendering of ISCO88.

Fourth, the new ISCO differs from its predecessor (and, in particular, from the enhancements of ISCO68 we have used) by its failure to accommodate broad categories such as "foreman" and "skilled worker." The authors of ISCO88 would argue rightly that such designations are too broad to classify properly and the survey researcher should seek additional information. But this is of little help to the comparative researcher, who encounters these broad occupational titles categories quite frequently, both in national classifications and, even more frequently, in responses to survey questionnaires. In order to accommodate this practical concern, we have enhanced ISCO88 with a few new entries (see below).

Fifth, in a few instances we have found it necessary to revise the classification to accommodate our own research needs—and, we suspect, those of other stratification researchers as well. To begin with, we have changed the logic by which military titles are represented. ISCO88 treats Members of the Armed Forces as an undifferentiated major group, 0000. While it is true that many national classifications do not take the armed forces into account, we do not see a good sociological reason for excluding such occupations. Therefore, we have distinguished several categories of armed forces personnel, integrating them with similar civilian occupations: we treat ordinary soldiers (5164) as a subspecies of the minor group Protective Services Workers (5160), subaltern officers (3452) as a subspecies of the minor group Police Inspectors and Detectives (3450), and higher officers (1250–1252) as subspecies of the submajor group Managers (1200). We have expanded the category Secondary Teacher (2320) to distinguish two subcategories that differ substantially in their status and that often are distinguished in national classifications: Academic Teachers (2321) and Vocational Teachers (2322). We have changed Traditional Chiefs and Heads of Villages (1130) to cover all local, as opposed to national, officials. We distinguish oilers and greasers from other mechanics and fitters, on the ground that "oilers and greasers" are much less skilled, by adding a category: Oilers and Greasers (7234). Other additions provide codes for very broad categories that sometimes appear in respondents' self-descriptions as well as in the cruder national classifications. These are: (1240) Office Managers, (7510) Nonfarm Manual Foremen and Supervisors (nfs), (7520) Skilled Workers/artisans (nfs), (7530) Apprentices (nfs), (8400) Semi-skilled Workers (nfs). Finally, we have made a few minor interpreta-

tive changes in the titles. We show all changes and enhancements in square brackets in Appendix A.

### Coding Conventions

The ISCO88 manual not only provides the 1988 classification but also gives full coverage of the 1968 version and lists each classification within the framework of the other. Since the relationship of the two classifications is a many-to-many mapping, these indexes propose ways to reclassify either into the other, without, however, providing a many-to-one relationship between the two in either direction. We have found it convenient to produce such many-to-one mappings for our own work, in order to take advantage of the mapping of national occupational classifications into ISCO68, produced earlier. In producing these maps we have followed the guidelines in the "Introduction" to the ISCO88 manual. Our adaptations of these guidelines as mapping rules are, in order of priority:

- a. Numerical dominance rule: in a one-to-many mapping, the more numerous group prevails.
- b. Skill level rule: if (about) equally large, the highest skill level prevails.
- c. Production rule: if (about) equally large and of the same skill level, production occupations prevail over sales and managerial occupations.

In the past, some agencies and researchers have used a truncated version of the ISCO68 classification—that is, only the first one or two digits, on the assumption that this cuts coding costs and that the fine distinctions do not matter much for most purposes. We think this was ill-advised with respect to ISCO68 and would be equally ill-advised with respect to ISCO88. We strongly urge use of the full four-digit classification of 390 categories. Much would be missed by using a cruder classification. More error would be introduced, and it is not even clear that much coding effort would be saved. The major group (one-digit) classification produces categories that are extremely heterogeneous in terms of status, responsibilities, and working conditions. Moreover, the number of categories at the two-digit level is not unduly large (28), and hence there is little economy in staying at the one-digit level. Many sociologically relevant distinctions would be indeed preserved at the two-digit level, but many other important distinctions would be lost: e.g., between 1210 Directors and Chief Executives and 1220 Department Managers, between 2230 Nurses and 2220 Physicians, between 2310 University Professors and 2330 Primary Teachers, between 2420 Lawyers and 2440 Social Scientists, etc. In sum, relying on the two-digit categories would seem to be ill-advised. The three-digit level (116 categories) is somewhat more precise, but this level of classification would still make it impossible to distinguish between 1314 Shop Owners and 1313 [Small Enterprise] General Managers in Construction, between 2141 Architects and 2147 Mining Engineers, between 2221 Medical Doctors and 2223 Veterinarians, between 2411 Accountants and 2419 Public Relations Officers, between 2451 Journalists and 2452 Sculptors and

Painters, to mention only a few (the titles are rendered here in a more colloquial version than they are in ISCO88).

## DATA

The data used to construct the new comparative status scales are from the International Stratification and Mobility File (ISMF) (Ganzeboom and Treiman, 1989), and are identical to those used by Ganzeboom et al. (1992). The ISMF consists of extracts of data files from many nations, constructed in the course of our ongoing work to standardize stratification and mobility data from studies conducted around the world. The ISMF recodes education and occupation variables to a common international standard and puts these as well as a set of basic demographic background variables into a common format. The version of the file used in this paper combines data for gainfully employed adult males from 31 surveys conducted in 16 nations. The variables used in this analysis include respondent's education, occupation, age and income; the total number of cases for the pooled file is 73,901. Further details can be found in Ganzeboom et al. (1992).

## DERIVING THE NEW STATUS SCALES

Appendix A reports scores for each ISCO88 title on each of the three scales, together with a description of the occupational title. These titles are illustrated (within square brackets) by occupations included in each unit group, drawn from the index to the ISCO88 manual and the national classifications that we have mapped into ISCO88. Scores are presented for all levels of ISCO88: major, submajor, and minor groups, as well as the slightly modified list of unit groups described above. Prestige and ISEI scores for each level above unit groups are computed as the weighted average of the scores for the lower-level titles contained in the category, where the weights are proportional to the number of men in each category in the ISMF.

### *The Standard International Occupational Prestige Scale (SIOPS)*

The new SIOPS scores were generated in three steps. First, for unit groups for which there was a one-to-one correspondence in ISCO68 and ISCO88, the 1968 scores were simply assigned to the 1988 categories. Second, for the remaining ISCO88 categories the occupational titles reported by Treiman (1977, Appendix A) were matched to the ISCO88 unit groups, in the same way that Treiman had initially matched them to ISCO68 unit groups. The scores for all occupation titles matching each ISCO88 unit group were then averaged to obtain a score for the unit group (usually the simple average was taken, but where occupational titles referred to rarely held jobs, weighted averages were taken—again, in a manner analogous to the procedures used by Treiman in constructing unit group scores for ISCO68). Third, where no occupational titles matched an ISCO88 unit group, scores were borrowed from similar unit groups for which we had scores.

*The International Socio-Economic Index of Occupational Status (ISEI)*

In order to construct a new version of the ISEI index we used the same computational procedures used in Ganzeboom et al. (1992; see pp. 10–19 and Appendix C for a full description). We conceive of the ISEI as measuring the attributes of occupations that convert a person's education into income. Accordingly, the ISEI index is generated by the optimal scaling of occupation unit groups to maximize the indirect effect of education on income through occupation and to minimize the direct effect of education on income, net of occupation (with both effects net of age). The crucial coefficients are those relating occupational status to education, and occupational status to income.<sup>9</sup> The coefficients estimated for ISCO88, respectively .582 and .465, are virtually identical to those found for ISCO68. As in many national studies, education outweighs income, which can be interpreted as meaning that occupations are somewhat more homogeneous with respect to education than with respect to income. The estimated coefficients were used as weights to produce a score for each ISCO88 unit group. The resulting set of scores was rescaled to a range of 16–90, with Judges gaining the highest score. The lowest score is jointly held by two unit groups: 9211 Farm-hands and Laborers and 9132 Helpers and Cleaners in Offices, Hotels and Other Establishments. The implied metric is virtually indistinguishable from the one obtained from ISCO68: the means and standard deviations in the ISMF are nearly identical. This has the considerable advantage that results obtained with the old ISEI scale can be directly compared with results obtained from the new ISEI scale.

The main difference from the earlier procedure is the way the detailed occupational groups are organized. As before, we applied the rule that no occupational group should be estimated for occupation groups with fewer than 20 incumbents, and combined neighboring or otherwise similar titles into broader categories as necessary to achieve the minimum of 20. However, the classification of the underlying national job titles into ISCO88, and the change in the logic of ISCO between the 1968 and 1988 editions, resulted in some differences in detailed occupational groups. Some distinctions could be made that were not available in ISCO68, while other distinctions are no longer available in ISCO88 and are therefore dropped. For example, whereas the highest group is identical to the one found in the previous scale construction, this is not so for the lowest group; the bottom anchor points used in the previous scale (Kitchen Hand and Agricultural Laborer nec) are no longer part of ISCO88 as independent categories but constitute part of the two bottom anchoring points.<sup>10</sup>

The number of independent unit groups (209) for which we derived an ISCO88 score is somewhat smaller than the number for which we created ISCO68 scores (271), which reflects the higher degree of aggregation in the new ISCO. Nevertheless, some new distinctions are made. Among these, the most important are in the managerial categories. It turns out that Managers in Wholesale and Retail Trade,

<sup>9</sup> These are, in the nomenclature of Ganzeboom et al. (1992), respectively  $\beta_{43}$  and  $\beta_{32}$ .

<sup>10</sup> This is the reason why the minimum of the scale is no longer at 10, but at 16.

Other Managers, and Sales Managers have lower socioeconomic status than do other managers, while Finance Managers have considerably higher status. The skill-level distinctions embedded in the logic of ISCO88 are reflected in the ISEI scale: associate professionals average 16 points lower than professionals and five points higher than clerical workers. The manual/nonmanual divide (between clerical and skilled-crafts occupations) is 11 points, with some highly skilled manual occupations obtaining scores as high as the average clerical occupation, and sales and service workers falling in between. In the manual ranks, craft workers are only three points higher than machine operators, which lead elementary occupations by 11 points. For most of the categories these results are identical with the earlier scale.

The single most important difference from the ISEI scale for ISCO68 is in the scaling of farmers, since these are now differently organized in the classification. Self-employed farmers without employees (and also skilled farm-workers) are scored 23, only seven points above unskilled farm laborers. Self-employed farmers with employees (classified as farm managers) are scored 43 or, if they have more than 10 employees, 67.

### *The Enhanced EGP Class Categories*

Table 1 provides the 10 categories of the EGP class schema we utilize.<sup>11</sup> We list the categories by the Roman numeral that Erikson and Goldthorpe (1992) apply and by a shortened title. Note that the ordering of categories is not identical to that of Erikson et al. (1989) and Erikson and Goldthorpe (1992); we prefer to list all agricultural categories together, at the extreme end of the scale, since this gives us a more orderly set of categories for the purpose of studying intergenerational occupational mobility (cf. Ganzeboom et al., 1989). In order to remind ourselves and others that we have moved Farmers and Farm Managers relative to Erikson and Goldthorpe's ordering, we do not use code 6. Thus, in our version the EGP categories are represented by codes 1–5 and 7–11 (see Appendix A).

We have devised our new EGP recode, taking into account the CASMIN documentation by Erikson et al. (1989). However, we should point out that the CASMIN documentation does not provide a generic way of producing the 10 EGP categories from unit data, since the recoding procedures differ between countries and use differently defined source information, not only with respect to

<sup>11</sup> This is the scheme devised by Erikson and Goldthorpe (1992, pp. 35–47) except that we collapse their categories IIIa and IIIb (routine nonmanual, higher and lower grade) into a single category since the two cannot be distinguished in some data sets. The CASMIN data (Erikson et al., 1989) also distinguish between large and small farmers in some countries, but this distinction is never used in their analysis. Erikson and Goldthorpe (1992, p. 52, note 26) claim that, although to facilitate the analysis of individual countries their data are coded into a 12-category classification, for comparative purposes only a seven-category classification is legitimate. We accept the logic of this argument, given the way Erikson and Goldthorpe allocate persons to EGP categories; however, we avoid the difficulties they have in producing truly comparable assignments for more than seven categories by standardizing our procedures at each step (see the discussion below).

TABLE 1  
The EGP Class Categories

			Mean ISEI
1	I	Higher service Includes mostly professionals, large enterprise employers and higher managers (>10 subordinates)	68
2	II	Lower service Includes mostly associate professionals, lower managers (1–10 subordinates), higher sales	58
3	III	Routine clerical/sales Includes routine clerical and sales workers	45
4	IVa	Small employers Includes small entrepreneurs (1–10 subordinates)	48
5	IVb	Independent Own account workers, no employees	42
7	V	Manual foremen Manual workers with supervisory status (>1 subordinate)	40
8	VI	Skilled manual Mostly craft workers, some skilled service, and skilled machine operators	36
9	VIIa	Semi-Unskilled manual Mostly machine operators, elementary laborers, elementary sales and services	31
10	VIIb	Farm workers Employed farm workers, irrespective of skill level; also family farm workers	18
11	IVc	Farmers/Farm managers Self-employed and supervisory farm workers, irrespective of skill level	26

*Note:* Roman numerals refer to Erikson and Goldthorpe (1992, pp. 28–39).

detailed occupation codes but also with respect to the important employment status codes.

In order to map the ISCO88 categories into EGP10, we have mimicked the mappings by Erikson et al. (1989) as closely as possible. However, in some cases it is hard to decide how an ISCO88 title should be mapped. Two kinds of occupations present particular difficulties: service occupations, many of which cannot be unambiguously classified as nonmanual vs manual; and occupations that similarly cannot be unambiguously classified as skilled vs semi- or unskilled (among manual jobs) or as professional vs semi- (“associate”) professional (among nonmanual jobs). In addition to taking the CASMIN documentation into account, we have occasionally consulted the 1970 U.S. Census occupational classification (U.S. Bureau of the Census, 1971a, 1971b) and the Dictionary of Occupational Titles (U.S. Department of Labor, 1977) to determine the typical skill level of an occupation.

Our recoding procedure differs from the CASMIN procedures in several ways. First, we start with the detailed occupational titles as primary information and use employment status as a correction step. The CASMIN procedures give priority to

information on employment status—with respect to which there are large between-country differences—and use detailed occupation codes as a second-step correction to the initial classification of workers into class categories on the basis of employment status. Second, we use a simple and cross-nationally standardized scheme for employment status, which combines a dichotomous variable on self-employment (yes or no) with a three-category variable on supervisory status (for managers, number of subordinates; for owners, number of employees): 0 (none); 1–10 (small); 11+ (large)). The CASMIN employment status variables tend to have more categories and sometimes include additional distinctions between manual and nonmanual jobs and between public- and private-sector jobs. More generally, we attempt to standardize our variables at each step—first, by converting each occupation in each source file into ISCO categories, and, second, by converting all information on self-employment and supervisory status into standard variables. By contrast, the CASMIN tried to exploit whatever distinctions were found in each source file. This difference in strategies reflects a more general difference: the aim of the CASMIN group was to best represent the similarities and differences among 12 data sets, for 12 nations. Our aim is to develop a procedure that can be applied to any data set containing the necessary variables. The differences between our procedures and the CASMIN procedures may lead to different results in boundary cases. For example, in the CASMIN procedure incumbents of a single detailed (four-digit) ISCO category from different countries may be coded as either manual or nonmanual workers, depending on how the occupation is treated in each source file. By contrast, our procedures initially map each ISCO occupation (and therefore all of its incumbents) into a single EGP category (and only change the class category to take account of self-employment and supervisory responsibility). But such differences tend to be few in number and unimportant in their consequences, as we will show below. We would argue that the method we provide here is preferable because of its conceptual clarity, simplicity, and relative ease of application to new data sets.

The EGP mapping in Appendix A (third column) gives the “root” EGP class for each occupation before employment status or supervisory status is taken into account. This constitutes the first step of the recoding module given in Appendix B. The second part of the module reclassifies each occupation on the basis of its self-employment and/or supervisory status into its final category.

## VALIDATION

In order to validate the three occupational status measures we have constructed for the ISCO88 categories, we estimate an elementary status attainment model using data from the International Social Justice Project 1991 (ISJP Working Group, 1991). Like the International Stratification and Mobility File (ISMF), the ISJP91 file includes data from many countries (14 in total), but the pooled file is somewhat smaller ( $N = 17,386$ ). There are two important advantages of the ISJP data as a vehicle for assessing the adequacy of our ISCO88-based scales. First, none of the ISJP data sets was used in the construction of the scales. Second, all

were coded with either or both the ISCO68 and ISCO88 classifications by the project investigators (five countries were coded with both schemes, eight countries were coded with ISCO68 codes, and one with ISCO88 codes), so there is no possibility of coding decisions being inadvertently influenced by desired outcomes—we have here the equivalent of a double-blind design. These features make the ISJP an optimal database to test whether the new scales constructed for the ISCO88 codes perform in the same way as the scales constructed for the ISCO68 codes. Given this purpose, we are not concerned here with cross-national differences in research procedures or in underlying stratification regimes, but simply treat the sample as a whole. Using the many-to-one mappings mentioned above, we created ISCO88 categories for all the data initially coded into ISCO68 categories and ISCO68 categories for all the data initially coded into ISCO88 categories. Thus, both classifications are available for all data. Education (already provided in standardized categories) was converted to a metric of years of schooling and the earnings variable was cross-nationally standardized by dividing it by the within-country mean and then taking logs.

Table 2 provides equations estimating educational attainment, occupational attainment, and income attainment, with the occupation variables in each equation based on one of our three status measures. The EGP categories are presented in two versions: as a continuous variable scaled by their ISEI means, and as a set of dummy variables.<sup>12</sup> The coefficients derived from equations using each occupational status measure are shown in columns across the table, the first four columns reporting the coefficients for the scales developed for ISCO68 and the last four columns reporting the coefficients for the scales developed for ISCO88. Comparing corresponding columns, we see that, for each scale, the coefficients estimated from scores based on the ISCO68 and ISCO88 classifications are virtually indistinguishable. This is a finding of great importance, since it implies that researchers are justified in comparing results based on the ISCO68 and ISCO88 versions of these scales. While on balance we think it desirable to switch from ISCO68 to ISCO88 as a basis for coding newly collected data, we see no strong reason for converting ISCO68 codes to ISCO88 codes. Rather, standardization should be achieved by applying the three scales to whichever version of ISCO is available. It is also encouraging that although the new scores were created from fewer unit groups, their explanatory power is in general at least as good as that of the old scores.

The differences in results between the three status measures in Table 2 are also not very large, which implies that they are all valid measures of the role of

<sup>12</sup> While the latter procedure is in line with the intentions of the EGP authors, we believe that the first procedure, which maps a limited number of classes into a metric scaling, is a useful way to represent and use occupational information in a statistically parsimonious way. As in the earlier article (Ganzeboom et al., 1992), the results suggest that not much information is lost by aggregating several hundred job titles into as few as ten occupational classes.



TABLE 2

Standardized Regression Coefficients for Simple Status Attainment Models Involving Occupational Classifications Based on ISCO68 and ISCO88

	ISCO68				ISCO88			
	SIOPS	ISEI	EGP	EGPx	SIOPS	ISEI	EGP	EGPx
A. Education ( <i>N</i> = 11,790)								
SEX	-.057	-.058	-.058	-.058	-.055	-.057	-.058	-.058
AGE	-.162	-.131	-.141	-.139	-.160	-.136	-.141	-.140
FOCC	.308	.352	.327	*	.302	.345	.325	*
Adj R2	.131	.159	.143	.145	.128	.154	.141	.145
B. Occupation ( <i>N</i> = 11,228)								
SEX	-.005	.072	.100	.100	-.006	.050	.064	.036
AGE	.094	.089	.090	.101	.092	.092	.089	.105
EDUCYR	.536	.550	.527	.527	.549	.557	.521	.518
FOCC	.104	.150	.143	*	.113	.152	.143	*
Adj R2	.323	.376	.346	.349	.342	.382	.333	.326
C. Earnings ( <i>N</i> = 7,567)								
SEX	-.328	-.341	-.346	-.342	-.329	-.339	-.343	-.343
AGE	.067	.068	.064	.066	.066	.066	.064	.065
EDUCYR	.196	.178	.177	.179	.186	.166	.176	.182
OCC	.153	.174	.186	*	.166	.191	.193	*
Adj R2	.200	.203	.207	.211	.203	.208	.210	.213

*Source:* Data from International Social Justice Project 1991. Our calculations.

Selection: A: all respondents (age 21–64) with valid data; B: all respondents with current or previous jobs; C: all full-time working respondents with valid earnings data. SEX: (0) men (1) women; AGE: age 21–64; EDUC: education in years; OCC: occupation. FOCC: father's occupation. SIOPS: occupations measured in Standard International Occupational Prestige Scale. ISEI: occupations measured in International Socio-Economic Index of occupational status. EGP: occupation measured by EGP categories scaled by their ISEI means (68, 58, 45, 48, 42, 40, 36, 31, 18, 26, respectively). EGPx: occupation measured by EGP categories treated as dummy variables. \* = effects not shown.

occupation in the status attainment process.<sup>13</sup> Still, the differences are fairly systematic and provide an occasion to repeat some of the observations of Ganzeboom et al. (1992), which are strengthened because they are derived from data not used in the construction of the scales. First, the three measures are about equal in their ability to explain income attainment. Second, ISEI is systematically

<sup>13</sup> The strong similarity between the measures with respect to their performance in status attainment models does not imply that the measures are nearly perfectly correlated. Depending upon the data used, the correlation between SIOPS scores and, respectively, ISEI and EGP scores, is only on the order of .8, whereas the correlation between ISEI and EGP is on the order of .9. This finding suggests that multiple measurement models could be of use in representing occupational status.

superior to both SIOPS and EGP (taking the additional degrees of freedom consumed into account, as the adjusted  $R^2$  does) in explaining educational attainment and, particularly, occupational attainment. It is striking that the superiority of the ISEI is most evident with respect to the measurement of intergenerational occupational status transmission, given that the ISEI measure was constructed from different principles—specifically, to maximize the role of occupation as the intervening mechanism linking education and income.

As before, the ISEI scale is constructed from male data only. This implies that the status scores refer to male incumbents of the occupations, even when these are primarily occupied by women (e.g., nurses, (pre)primary teachers, etc.). Although it could be argued that the scale scores for these occupations are somewhat unreliable, since we have very few incumbents in our data (and, in fact, have found it necessary to combine some of the occupations), we do not think that use of the scale should be restricted to male samples. In fact, constructing the scale on the basis of male characteristics provides conceptual clarity that otherwise would not occur. A scale constructed using data for both men and women would be strongly affected by the systematically lower incomes of women than of men throughout the world (see the first line of the third panel of Table 2), but in unknown ways given that the gender distribution across occupations differs from country to country. Conceptually, what we have done is to treat the relationships between education, occupation, and income for men as specifying the scale on which the status attainment of both men and women can be measured. Observe in particular that the income equations in Table 2 document the wide earnings difference between men and women quite clearly, even though the analysis is restricted to full-time workers, with age, education and occupation controlled.

In order to further validate our procedures for constructing the EGP typology, Tables 3 and 4 report comparisons between tables provided by the CASMIN project (Erikson et al., 1989) and our derivation from the same (unit) data. We limit the comparison to seven of the 12 CASMIN data sets because three of the CASMIN files (Sweden, France, and Scotland) currently are not available to us, and for two of the remaining countries (Australia and the United States) the CASMIN authors utilized a seven-category version of EGP on the ground that the additional distinctions were not valid, given the nature of the source occupational classifications they recoded to EGP. Given the complexity of the CASMIN recodes, we cannot compare the two derivations on a case-by-case basis but must restrict the analysis to a comparison of the resulting distributions. In Table 3 we compare the marginal distributions for both father's and son's occupational class in pooled tables formed by giving each of the seven component tables equal weight and adding the counts in the corresponding cells. The marginal distributions are essentially the same for the version of the table derived from our recodes and the version based on the recodes assigned by the CASMIN authors; the Index of Dissimilarity reveals that fewer than six percent of the respondents and fewer than four percent of the fathers would have to be shifted among categories to make the distributions identical. When the seven tables are compared one-by-one

TABLE 3  
Percentage Distributions of Fathers and Sons over EGP Categories for Two Versions of EGP Recodes (Pooled Data from Seven CASMIN Data Sets)

EGP code	Father's occupation		Respondent's occupation	
	CASMIN EGP recodes	Our EGP recodes	CASMIN EGP recodes	Our EGP recodes
1 (I)	4.7	5.2	9.0	10.4
2 (II)	5.3	5.7	11.3	11.0
3 (III)	5.4	4.6	8.3	7.1
4 (IVa)	5.2	4.0	3.6	2.6
5 (IVb)	5.5	4.9	3.6	3.2
7 (V)	4.7	3.5	6.8	3.9
8 (VI)	16.6	17.7	21.4	22.2
9 (VIIa)	17.3	19.1	21.2	24.0
10 (VIIb)	6.8	6.7	4.6	4.7
11 (IVc)	28.6	28.7	10.2	11.0
Total	100.1	100.1	100.0	100.1
$\Delta$ : Index of Diss.	3.9		5.8	

*Note:* All tables are standardized to an identical size, so each table contributes equally to the pooled distribution.

$\Delta = \sum |p_i - q_i|/2$ , where  $p_i$  and  $q_i$  are the percentage of cases in the  $i$ th category of each of two percentage distributions. In the present case, we may regard  $p$  as the percentage in each category of the CASMIN distribution and  $q$  as the percentage in each category of the distribution created from our recodes.

TABLE 4  
Intergenerational Association Parameters for Two Versions of EGP Recodes (Pooled Data from Seven CASMIN Data Sets and Separate Parameters for Each Data Set)

	CASMIN recodes	Our recodes
Pooled data	.597	.578
England/Wales 1972	.608	.523
Germany 1976–1980	.644	.562
Hungary 1973	.597	.571
Ireland 1973–1974	.638	.641
Japan 1975	.410	.384
N. Ireland 1973–1974	.532	.478
Poland 1972	.525	.555

Countries are equally weighted for pooling.

<sup>a</sup> These parameters are log odds ratios, conditional on equal row and column scalings with mean 0 and variance = 10 (the number of categories).

(not shown here due to lack of space), there also is little difference in the marginals across pairs of tables.

In Table 4 we report a one-degree-of-freedom comparison of the association structure of pairs of tables, employing Goodman's (1979a, 1979b) equal row and column (RC) scaled association model II (cf. Ganzeboom et al., 1989).<sup>14</sup> This model fixes the category scores across all tables and the diagonal parameters across pairs of tables and uses the RC parameter to assess the similarity across pairs of tables with respect to the degree of association between father's and son's occupational status.<sup>15</sup> The comparison of RC coefficients is provided for each of the seven countries separately, as well as for the pooled table, in which each of the countries is equally weighted.<sup>16</sup>

The RC coefficients may be interpreted as indicating the strength of association between father's and son's occupational position, and their metric is constructed to have a range roughly equivalent to that of a product moment correlation. Note that the differences across rows within columns are large relative to the differences across columns within rows. That is, country differences in the strength of the association between father's and son's occupation are large relative to differences resulting from the use of different coding procedures within each country. The ordering of countries by the size of the RC coefficient is substantially the same regardless of which procedure is used to derive the tables—the correlation between the coefficients reported in column (a) and column (b) is .94. The difference between the RC coefficient for the pooled CASMIN table and our pooled table is a meagre  $-.019$  (3%). Thus, it again appears that both coding procedures yield similar results.

## CONCLUSION

In this article we have provided the comparative researcher with three cross-nationally standardized measures of occupational status, recoded from the new International Standard Classification of Occupations (ISCO88). While the choice between the three measures should be guided by theoretical concerns, it is important to note that our validation results on independent data show that each of the new measures performs at least as well as its counterpart derived from the older ISCO68. We encourage researchers to apply ISCO88 and the occupational status measures presented here in their future research.

<sup>14</sup> This is Model E in Ganzeboom et al. (1989). We have also made tests using Ganzeboom et al.'s Model D, which includes a general (diagonal) inheritance parameter to accommodate differences between tables. Since the association parameter and the inheritance parameter behave in much the same way, we report only the more stringent test.

<sup>15</sup> Since the pairs of tables derive from the same observations, standard tests of significance are not appropriate.

<sup>16</sup> This is necessary since the English and Polish files have much larger numbers of cases than the remaining files. We were able to closely reproduce the frequencies reported by the CASMIN authors with one exception. For the German file, they report a valid N of 3,890 (out of a total of 8,555 men in the file), but we found 5,891 men. Erikson et al. (1989, p. A3) refer, without elaboration, to a "special weighting" procedure; we suspect that the application of weights by Erikson et al. but not by us explains the difference in the resulting frequencies.

## APPENDIX A

## Scale Scores for Three Measures of Occupational Status, ISCO-88

SIOPS

ISEI

EGP

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51	55	1	1000	LEGISLATORS, SENIOR OFFICIALS & MANAGERS
67	70	1	1100	LEGISLATORS & SENIOR OFFICIALS
64	77	1	1110	LEGISLATORS
				[incl. Member of Parliament, Member of Local Council]
71	77	1	1120	SENIOR [NATIONAL] GOVERNMENT OFFICIALS
				[incl. Minister, Ambassador]
63	66	2	1130	[SENIOR LOCAL GOVERNMENT OFFICIALS]
				[incl. Local Government Senior Officials, Mayor]
63	58	2	1140	SENIOR OFFICIALS SPECIAL-INTEREST ORGANIZATIONS
63	58	2	1141	Senior officials political-party organizations
				[incl. Politician]
63	58	2	1142	Senior officials economic-interest organizations
				[incl. Union Leader, Director Employers' Organization]
63	58	2	1143	Senior officials special-interest organizations
				[incl. Lodge Official, Official Red Cross]
60	68	1	1200	CORPORATE MANAGERS [LARGE ENTERPRISES]
70	70	1	1210	[LARGE ENTERPRISES] DIRECTORS & CHIEF EXECUTIVES
				[incl. CEO, Large Business Owner 25+ employees]
63	67	1	1220	[LARGE ENTERPRISE OPERATION] DEPARTMENT MANAGERS
				[incl. Manager in establishment with 25+ employees]
60	67	11	1221	Production department managers agriculture & fishing
60	67	1	1222	Production department managers manufacturing
				[incl. Factory Manager nfs]
60	67	1	1223	Production department managers construction
60	59	1	1224	Production department managers wholesale & retail trade
				[incl. Floor Manager]
60	59	1	1225	Production department managers restaurants & hotels
60	59	1	1226	Production department managers transportation, storage & communications
				[incl. Postmaster, Stationmaster]
60	87	1	1227	Production department managers business services
				[incl. Banker, Bank Manager]
60	59	1	1228	Production department managers personal care, cleaning, etc.
60	67	1	1229	Production department managers nec
				[incl. Impresario, Film Producer, College Dean, School Principal]
60	61	1	1230	[LARGE ENTERPRISES] OTHER DEPARTMENT MANAGERS
60	69	1	1231	Finance & administration department managers
				[incl. Company Secretary]
60	69	1	1232	Personnel & industrial relations department managers
60	56	1	1233	Sales & marketing department managers
60	69	1	1234	Advertising & public relations department managers
60	69	1	1235	Supply & distribution department managers
60	69	1	1236	Computing services department managers
60	69	1	1237	Research & development department managers
60	69	1	1239	Other department managers nec

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## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP		
55	58	2					1240 OFFICE MANAGERS [incl. Clerical Supervisor]
65	64	1					1250 MILITARY OFFICERS
73	70	1					1251 Higher military officers [Captain and above]
63	60	2					1252 Lower-grade commissioned officers [incl. Army Lieutenant]
50	51	2	1300				[SMALL ENTERPRISE] GENERAL MANAGERS
50	51	2	1310				[SMALL ENTERPRISE] GENERAL MANAGERS [incl. Businessman, Trader, Manager nfs]
47	43	11					1311 [Small enterprise] General managers agriculture, forestry & fishing [incl. Farm Manager, Self-employed Farmer with personnel]
52	56	2					1312 [Small enterprise] General managers manufacturing
52	51	2					1313 [Small enterprise] General managers construction [incl. Building Contractor]
46	49	2					1314 [Small enterprise] General managers wholesale & retail trade [incl. Shop Owner/Manager, Retail Owner/Manager, Merchant]
38	44	2					1315 [Small enterprise] General managers restaurants & hotels [incl. Manager Camping Site, Bar Owner/Manager, Restaurateur]
52	51	2					1316 [Small enterprise] General managers transp., storage & communica- tions [incl. Owner Small Transport Company]
52	51	2					1317 [Small enterprise] General managers business services [incl. Manager Insurance Agency]
52	51	2					1318 [Small enterprise] General managers personal care, cleaning, etc. services [incl. Owner Laundry]
52	51	2					1319 [Small enterprise] General managers nec [incl. Manager Travel Agency, Manager Fitness Center, Garage Owner]
62	70	1	2000				PROFESSIONALS
63	69	1	2100				PHYSICAL, MATHEMATICAL & ENGINEERING SCIENCE PROFES- SIONALS
69	74	1	2110				PHYSICISTS, CHEMISTS & RELATED PROFESSIONALS
75	74	1					2111 Physicists & astronomers
72	74	1					2112 Meteorologists
69	74	1					2113 Chemists
67	74	1					2114 Geologists & geophysicists [incl. Geodesist]
56	71	1	2120				MATHEMATICIANS, STATISTICIANS, ETC. PROFESSIONALS
69	71	1					2121 Mathematicians, etc. professionals
55	71	1					2122 Statisticians [incl. Actuary]
51	71	1	2130				COMPUTING PROFESSIONALS
51	71	1					2131 Computer systems designers & analysts [incl. Software Engineer]
51	71	2					2132 Computer programmers

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS				
ISEI				
EGP				
51	71	2	2139	Computing professionals nec
63	73	1	2140	ARCHITECTS, ENGINEERS, ETC. PROFESSIONALS
72	69	1	2141	Architects town & traffic planners [incl. Landscape Architect]
70	69	1	2142	Civil engineers [incl. Construction Engineer]
65	68	1	2143	Electrical engineers
65	68	1	2144	Electronics & telecommunications engineers
66	67	1	2145	Mechanical engineers
66	71	1	2146	Chemical engineers
61	67	1	2147	Mining engineers, metallurgists, etc. professionals
58	56	2	2148	Cartographers & surveyors
56	69	1	2149	Architects, engineers, etc. professionals nec [incl. Consultant]
70	80	1	2200	LIFE SCIENCE & HEALTH PROFESSIONALS
62	78	1	2210	LIFE SCIENCE PROFESSIONALS
69	77	1	2211	Biologists, botanists, zoologists, etc. professionals
68	77	1	2212	Pharmacologists, pathologists, etc. professionals [incl. Biochemist]
56	79	1	2213	Agronomists, etc. professionals
73	85	1	2220	HEALTH PROFESSIONALS (EXCEPT NURSING)
78	88	1	2221	Medical doctors
70	85	1	2222	Dentists
61	83	1	2223	Veterinarians
64	74	1	2224	Pharmacists
73	85	1	2229	Health professionals except nursing nec
54	43	2	2230	NURSING & MIDWIFERY PROFESSIONALS [incl. Registered Nurses, Registered Midwives, Nurse nfs]
61	69	2	2300	TEACHING PROFESSIONALS
78	77	1	2310	HIGHER EDUCATION TEACHING PROFESSIONALS [incl. University Professor]
60	69	2	2320	SECONDARY EDUCATION TEACHING PROFESSIONALS
60	70	2	2321	[Secondary teachers, academic track] [incl. Middle-School Teacher]
57	66	2	2322	[Secondary teachers, vocational track] [incl. Vocational Instructor]
57	66	2	2330	PRIMARY & PRE-PRIMARY EDUCATION TEACHING PROFESSIONALS
57	66	2	2331	Primary education teaching professionals
49	43	2	2332	Pre-primary education teaching professionals [incl. Kindergarten Teacher]
62	66	2	2340	SPECIAL EDUCATION TEACHING PROFESSIONALS [incl. Remedial Teacher, Teacher of the Blind]
62	66	1	2350	OTHER TEACHING PROFESSIONALS
68	70	1	2351	Education methods specialists [incl. Curricula Developer]

APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS  
ISEI  
EGP

68	70	1	2352	School inspectors
62	65	2	2359	Other teaching professionals nec
60	68	1	2400	OTHER PROFESSIONALS
				[incl. Professional nfs, Administrative Professional]
57	69	2	2410	BUSINESS PROFESSIONALS
62	69	1	2411	Accountants
				[incl. Auditor]
56	69	2	2412	Personnel & careers professionals
				[incl. Job Analyst, Student Counselor]
57	69	2	2419	Business professionals nec
				[incl. Publicity Agent, Patent Agent, Home Economist, Market Researcher]
73	85	1	2420	LEGAL PROFESSIONALS
73	85	1	2421	Lawyers
76	90	1	2422	Judges
71	82	1	2429	Legal professionals nec
				[incl. Notary, Notary Public]
54	65	2	2430	ARCHIVISTS, LIBRARIANS, ETC. INFORMATION PROFESSIONALS
54	65	2	2431	Archivists & curators
54	65	2	2432	Librarians, etc. information professionals
				[incl. Documentalist, Health Records Technician]
58	65	1	2440	SOCIAL SCIENCE, ETC. PROFESSIONALS
60	78	1	2441	Economists
67	71	1	2442	Sociologists, anthropologists, etc. professionals
67	71	1	2443	Philosophers, historians & political scientists
62	65	2	2444	Philologists, translators & interpreters
67	71	1	2445	Psychologists
52	51	2	2446	Social work professionals
				[incl. Welfare Worker]
57	61	2	2450	WRITERS & CREATIVE OR PERFORMING ARTISTS
58	65	2	2451	Authors, journalists & other writers
				[incl. Editor, Technical Writer]
57	54	2	2452	Sculptors, painters, etc. artists
45	64	2	2453	Composers, musicians & singers
40	64	2	2454	Choreographers & dancers
57	64	2	2455	Film, stage, etc. actors & directors
60	53	2	2460	RELIGIOUS PROFESSIONALS
				[incl. Priest, Chaplain, Theologian, Professional Nun]
48	54	2	3000	TECHNICIANS AND ASSOCIATE PROFESSIONALS
48	50	2	3100	PHYSICAL & ENGINEERING SCIENCE ASSOCIATE PROFESSIONALS
47	49	2	3110	PHYSICAL & ENGINEERING SCIENCE TECHNICIANS
46	45	2	3111	Chemical & physical science technicians
39	45	2	3112	Civil engineering technicians
46	46	2	3113	Electrical engineering technicians



## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS					
ISEI					
EGP					
46	46	2	3114	Electronics & telecommunications engineering technicians	
46	54	2	3115	Mechanical engineering technicians	
46	54	2	3116	Chemical engineering technicians	
53	54	2	3117	Mining & metallurgical technicians	
55	51	2	3118	Draftspersons	
				[incl. Technical Illustrator]	
46	53	2	3119	Physical & engineering science technicians nec	
				[incl. Quantity Surveyor]	
53	52	2	3120	COMPUTER ASSOCIATE PROFESSIONALS	
53	52	2	3121	Computer assistants	
				[incl. Assistant Users' Services]	
53	52	2	3122	Computer equipment operators	
				[incl. Computer Printer Equipment Operator]	
53	52	2	3123	Industrial robot controllers	
46	52	2	3130	OPTICAL & ELECTRONIC EQUIPMENT OPERATORS	
46	48	2	3131	Photographers & electronic equipment operators	
				[incl. Cameraman, Sound Mixer]	
49	57	2	3132	Broadcasting & telecommunications equipment operators	
58	57	2	3133	Medical equipment operators	
				[incl. X-ray Technician]	
44	52	2	3139	Optical & electronic equipment operators nec	
				[incl. Cinema Projectionist, Telegrapher]	
57	57	2	3140	SHIP & AIRCRAFT CONTROLLERS & TECHNICIANS	
60	52	2	3141	Ships engineers	
55	52	2	3142	Ships deck officers & pilots	
				[incl. River Boat Captain]	
60	69	1	3143	Aircraft pilots, etc. associate professionals	
50	69	1	3144	Air traffic controllers	
46	50	2	3145	Air traffic safety technicians	
54	50	2	3150	SAFETY & QUALITY INSPECTORS	
54	50	2	3151	Building & fire inspectors	
54	50	2	3152	Safety, health & quality inspectors	
				[incl. Occupational Safety Inspector, Inspector nfs]	
51	48	2	3200	LIFE SCIENCE & HEALTH ASSOCIATE PROFESSIONALS	
52	50	2	3210	LIFE SCIENCE TECHNICIANS, ETC. ASSOCIATE PROFESSIONALS	
52	50	2	3211	Life science technicians	
				[incl. Medical Laboratory Assistant, Medical Technician nfs, Physical and Life Science Technician, Technician nfs, Taxidermist]	
47	50	2	3212	Agronomy & forestry technicians	
55	50	2	3213	Farming & forestry advisers	
51	55	2	3220	MODERN HEALTH ASSOCIATE PROFESSIONALS EXCEPT NURSING	
53	51	2	3221	Medical assistants	
48	51	2	3222	Sanitarians	
52	51	2	3223	Dieticians & nutritionists	

APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS				
ISEI				
EGP				
60	60	2	3224	Optometrists & opticians [incl. Dispensing Optician]
44	51	2	3225	Dental assistants [incl. Oral Hygienist]
51	60	2	3226	Physiotherapsits, etc. associate professionals [incl. Chiropractor, Masseur, Osteopath]
48	51	2	3227	Veterinary assistants [incl. Veterinarian Vaccinator]
44	51	2	3228	Pharmaceutical assistants
45	51	2	3229	Modern health associate professionals except nursing nec [incl. Homeopath, Speech Therapist, Occupational Therapist]
44	38	3	3230	NURSING & MIDWIFERY ASSOCIATE PROFESSIONALS
44	38	3	3231	Nursing associate professionals [incl. Trainee Nurses]
44	38	3	3232	Midwifery associate professionals [incl. Trainee Midwife]
29	49	2	3240	TRADITIONAL MEDICINE PRACTITIONERS & FAITH HEALERS
29	51	2	3241	Traditional medicine practitioners [incl. Herbalist]
22	38	2	3242	Faith healers
50	38	3	3300	TEACHING ASSOCIATE PROFESSIONALS
50	38	3	3310	PRIMARY EDUCATION TEACHING ASSOCIATE PROFES- SIONALS [incl. Teacher's Aid]
50	38	3	3320	PRE-PRIMARY EDUCATION TEACHING ASSOCIATE PROFES- SIONALS [incl. Kindergarten Teacher's Aid]
50	38	3	3330	SPECIAL EDUCATION TEACHING ASSOCIATE PROFES- SIONALS
50	38	3	3340	OTHER TEACHING ASSOCIATE PROFESSIONALS
48	55	2	3400	OTHER ASSOCIATE PROFESSIONALS
47	55	2	3410	FINANCE & SALES ASSOCIATE PROFESSIONALS
50	61	2	3411	Securities & finance dealers & brokers
44	54	2	3412	Insurance representative [incl. Insurance Agent, Underwriter]
49	59	2	3413	[Real] estate agents [incl. Real Estate Broker]
43	56	2	3414	Travel consultants & organizers
46	56	2	3415	Technical & commercial sales representatives [incl. Traveling Salesman, Technical Salesman]
49	50	2	3416	Buyers
46	56	2	3417	Appraisers, valuers & auctioneers [incl. Claims Adjuster]
46	55	2	3419	Finance & sales associate professionals nec
42	55	2	3420	BUSINESS SERVICES AGENTS AND TRADE BROKERS
55	55	2	3421	Trade brokers

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP			
50	55	2	3422	Clearing & forwarding agents				
49	55	2	3423	Employment agents & labor contractors				
42	55	2	3429	Business services agents & trade brokers nec				
				[incl. Literary Agent, Sports Promoter, Salesman Advertisements]				
49	54	3	3430	ADMINISTRATIVE ASSOCIATE PROFESSIONALS				
53	54	2	3431	Administrative secretaries, etc. associate professionals				
49	59	2	3432	Legal, etc. business associate professionals				
				[incl. Bailiff, Law Clerk]				
49	51	3	3433	Bookkeepers				
51	61	2	3434	Statistical, mathematical, etc. associate professionals				
53	54	3	3439	Administrative associate professionals nec				
				[incl. Management Assistant]				
52	56	2	3440	CUSTOMS, TAX, ETC. GOVERNMENT ASSOCIATE PROFESSIONALS				
				[incl. Administrative Associate Professional, Executive Civil Servants, Public Administrator]				
44	56	2	3441	Customs & border inspectors				
52	57	2	3442	Government tax & excise officials				
55	56	2	3443	Government social benefits officials				
54	46	2	3444	Government licensing officials				
55	56	2	3449	Customs tax, etc. government associate professionals nec				
				[incl. Price Inspector, Electoral Official, Middle-Rank Civil Servant]				
45	56	2	3450	POLICE INSPECTORS & DETECTIVES/[ARMY]				
60	55	2	3451	Police inspectors & detectives				
				[incl. Police Investigator, Private Detective]				
44	56	7	3452	[Armed forces non commissioned officers]				
				[incl. Sergeant]				
49	43	3	3460	SOCIAL WORK ASSOCIATE PROFESSIONALS				
45	52	2	3470	ARTISTIC, ENTERTAINMENT & SPORTS ASSOCIATE PROFESSIONALS				
49	53	2	3471	Decorators & commercial designers				
				[incl. Window Dresser, Interior Decorator, Furniture Designer, Book Illustrator, Tattooist]				
50	64	2	3472	Radio, television & other announcers				
32	50	2	3473	Street nightclub, etc. musicians, singers & dancers				
				[incl. Band Leader, Chorus Dancer, Nightclub Singer]				
33	50	2	3474	Clowns, magicians, acrobats, etc. associate professionals				
				[incl. Striptease Artist, Juggler]				
49	54	2	3475	Athletes, sports persons, etc. associate professionals				
				[incl. Trainer, Umpire]				
50	38	3	3480	RELIGIOUS ASSOCIATE PROFESSIONALS				
				[incl. Evangelist, Lay Preacher, Salvationist]				
37	45	3	4000	CLERKS				
37	45	3	4100	OFFICE CLERKS				
				[incl. Clerk nfs, Government Office Clerk nfs]				
45	51	3	4110	SECRETARIES & KEYBOARD-OPERATING CLERKS				

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS					
ISEI					
EGP					
42	51	3	4111	Stenographers & typists	
42	50	3	4112	Word-processor, etc. operators [incl. Teletypist]	
45	50	3	4113	Data-entry operators [incl. Key Puncher]	
45	51	3	4114	Calculating-machine operators [incl. Bookkeeping Machine Operator]	
53	53	3	4115	Secretaries	
44	51	3	4120	NUMERICAL CLERKS	
45	51	3	4121	Accounting & bookkeeping clerks [incl. Payroll Clerk]	
36	51	3	4122	Statistical & finance clerks [incl. Credit Clerk]	
32	36	3	4130	MATERIAL-RECORDING & TRANSPORT CLERKS	
30	32	3	4131	Stock clerks [incl. Weighing Clerk, Storehouse Clerk]	
44	43	3	4132	Production clerks [incl. Planning Clerks]	
37	45	3	4133	Transport clerks [incl. Dispatcher, Expeditor]	
37	39	3	4140	LIBRARY, MAIL, ETC. CLERKS	
36	39	3	4141	Library & filing clerks	
33	39	9	4142	Mail carriers & sorting clerks	
41	39	3	4143	Coding proofreading, etc. clerks	
37	39	3	4144	Scribes, etc. workers [incl. Form Filling Assistance Clerk]	
37	39	3	4190	OTHER OFFICE CLERKS [incl. Address Clerk, Timekeeper, Office Boy, Photocopy Machine Operator]	
39	49	3	4200	CUSTOMER SERVICES CLERKS [incl. Customer Service Clerks]	
37	48	3	4210	CASHIERS, TELLERS, ETC. CLERKS	
34	53	3	4211	Cashiers & ticket clerks [incl. Bank Cashier, Store Cashier, Toll Collector]	
42	46	3	4212	Tellers & other counter clerks [incl. Bank Teller, Post Office Clerk]	
34	40	3	4213	Bookmakers & croupiers	
15	40	3	4214	Pawnbrokers & money-lenders	
27	40	3	4215	Debt-collectors, etc. workers	
38	52	3	4220	CLIENT INFORMATION CLERKS	
38	52	3	4221	Travel agency, etc. clerks	
38	52	3	4222	Receptionists & information clerks [incl. Medical Receptionist]	
38	52	3	4223	Telephone switchboard operators [incl. Telephone Operator]	
32	40	3	5000	SERVICE WORKERS & SHOP & MARKET SALES WORKERS	

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS					
ISEI					
EGP					
32	38	3	5100	PERSONAL & PROTECTIVE SERVICES WORKERS	
32	34	3	5110	TRAVEL ATTENDANTS, ETC.	
50	34	3	5111	Travel attendants & travel stewards [incl. Airplane Steward, Airplane Purser]	
32	34	3	5112	Transport conductors [incl. Train Conductor]	
29	34	3	5113	Travel, museum guides	
26	32	3	5120	HOUSEKEEPING & RESTAURANT SERVICES WORKERS	
37	30	2	5121	Housekeepers, etc. workers [incl. Butler, Matron, Dormitory Warden, Estate Manager, Property Manager, Building Superintendent, Apartment Manager]	
31	30	8	5122	Cooks	
21	34	9	5123	Waiters, waitresses & bartenders	
27	25	9	5130	PERSONAL CARE, ETC. WORK	
23	25	3	5131	Child-care workers [incl. Nursemaid, Governess]	
42	25	9	5132	Institution-based personal care workers [incl. Ambulance Man, Hospital Orderly]	
17	25	3	5133	Home-based personal care workers [incl. Attendant]	
29	25	9	5139	[Other] care, etc. workers nec [incl. Animal Feeder]	
29	30	8	5140	OTHER PERSONAL SERVICES WORKERS	
32	29	8	5141	Hairdressers, barbers, beauticians, etc. workers	
17	19	9	5142	Companions & valets [incl. Personal Maid]	
34	54	8	5143	Undertakers & embalmers [incl. Funeral Director]	
29	19	9	5149	Other personal services workers nec [incl. Escort, Dancing Partner, Prostitute]	
37	43	2	5150	ASTROLOGERS, FORTUNE-TELLERS, ETC. WORKERS	
37	43	2	5151	Astrologers, etc. workers	
37	43	2	5152	Fortune-tellers, palmists, etc. workers	
37	47	9	5160	PROTECTIVE SERVICES WORKERS	
35	42	8	5161	Firefighters	
40	50	8	5162	Police officers [incl. Policeman, Constable, Marshal]	
39	40	9	5163	Prison guards	
39	40	8	5164	[Armed forces, soldiers] [incl. Enlisted Man]	
30	40	9	5169	Protective services workers nec [incl. Night Guard, Bodyguard, Coast Guard]	
31	43	3	5200	[SALESPERSONS, MODELS & DEMONSTRATORS]	
28	43	3	5210	FASHION & OTHER MODELS [incl. Mannequin, Artist's Model]	

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP		
32	43	3					5220 SHOP SALESPERSONS & DEMONSTRATORS [incl. Shop Assistant, Gas Station Attendant, Retail Assistant]
24	37	3					5230 STALL & MARKET SALESPERSONS
37	23	10	6000				SKILLED AGRICULTURAL & FISHERY WORKERS
38	23	10	6100				MARKET-ORIENTED SKILLED AGRICULTURAL & FISHERY WORKERS [This category includes skilled farm workers and self-employed small farmers who have no employees.]
40	23	10					6110 MARKET GARDENERS & CROP GROWERS
40	23	10					6111 Field crop & vegetable growers [incl. Specialized Crop Farmers, Specialized Crop Farm Workers]
40	23	10					6112 Tree & shrub crop growers [incl. Skilled Rubber Worker, Coffee Farmer, Tea Grower, Fruit Tree Pruner]
40	23	10					6113 Gardeners, horticultural & nursery growers [incl. Bulb Grower, Market Gardener]
40	23	10					6114 Mixed-crop growers [incl. Share Cropper]
40	23	10					6120 MARKET-ORIENTED ANIMAL PRODUCERS, ETC. WORKERS
40	23	10					6121 Dairy & livestock producers [incl. Cattle Breeder, Dairy Farmer, Grazier, Shepherd]
40	23	10					6122 Poultry producers [incl. Chicken Farmer, Skilled Hatchery Worker]
40	23	10					6123 Apiarists & sericulturists [incl. Beekeeper, Silkworm Raiser]
40	23	10					6124 Mixed-animal producers
40	23	10					6129 Market-oriented animal producers, etc. workers nec [incl. Bird Breeder, Gamekeeper, Kennel Keeper, Dog Trainer, Animal Caretaker]
38	23	10					6130 MARKET-ORIENTED CROP & ANIMAL PRODUCERS
40	23	11					6131 [Mixed farmers]
41	27	11					6132 [Farm foremen/supervisor]
40	28	11					6133 [Farmers nfs]
30	23	10					6134 [Skilled farm workers nfs]
24	22	10					6140 FORESTRY, ETC. WORKERS
24	22	10					6141 Forestry workers & loggers [incl. Forestry, Raft, Timber Cruiser]
16	22	10					6142 Charcoal burners, etc. workers
28	28	10					6150 FISHERY WORKERS, HUNTERS & TRAPPERS
23	28	10					6151 Aquatic-life cultivation workers [incl. Oyster Farmer, Pearl Cultivator, Fish Hatcher]
23	28	10					6152 Inland & coastal waters fishery workers [incl. Sponge Diver, Fisherman]
28	28	10					6153 Deep-sea fishery workers [incl. Fisherman nfs, Trawler Crewman]

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

## SIOPS

## ISEI

## EGP

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6	28	10	6154	Hunters & trappers [incl. Whaler]
38	16	11	6200	SUBSISTENCE AGRICULTURAL & FISHERY WORKERS
38	16	11	6210	SUBSISTENCE AGRICULTURAL & FISHERY WORKERS
38	34	8	7000	CRAFT, ETC. TRADES WORKERS
34	31	9	7100	EXTRACTION & BUILDING TRADES WORKERS
34	30	9	7110	MINERS, SHOTFIRERS, STONE CUTTERS & CARVERS
34	30	9	7111	Miners & quarry workers [incl. Miner nfs]
36	30	9	7112	Shotfirers & blasters
34	27	9	7113	Stone splitters, cutters & carvers [incl. Tombstone Carver]
34	30	8	7120	BUILDING FRAME, ETC. TRADES WORKERS
36	29	9	7121	Builders traditional materials
34	29	9	7122	Bricklayers & stonemasons [incl. Pavior]
34	26	9	7123	Concrete placers, concrete finishers, etc. workers [incl. Terrazzo Worker]
37	29	8	7124	Carpenters & joiners
28	30	8	7129	Building frame, etc. trades workers nec [incl. Construction Worker nfs, Billboard Erector, Demolition Worker, Scaffolder]
37	34	8	7130	BUILDING FINISHERS, ETC. TRADES WORKERS
31	19	9	7131	Roofers
31	30	8	7132	Floor layers & tile setters [incl. Parquetry Worker]
31	31	8	7133	Plasterers [incl. Stucco Mason]
28	34	8	7134	Insulation workers
26	26	9	7135	Glaziers
34	33	8	7136	Plumbers & pipe fitters [incl. Well Digger]
44	37	8	7137	Building, etc. electricians
31	29	8	7140	PAINTERS, BUILDING STRUCTURE CLEANERS, ETC. TRADES WORKERS
31	29	8	7141	Painters, etc. workers [incl. Construction Painter, Paperhanger]
29	32	9	7142	Varnishers, etc. painters [incl. Automobile Painter]
20	29	9	7143	Building structure cleaners [incl. Chimney Sweep, Sandblaster, Boiler Engine Cleaner]
40	34	8	7200	METAL, MACHINERY, ETC. TRADES WORKERS
38	31	8	7210	METAL MOLDERS, WELDERS, SHEETMETAL WORKERS STRUCTURAL METAL
38	29	8	7211	Metal molders & coremakers

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## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP		
39	30	8					7212 Welders & flamecutters [incl. Brazier, Solderer]
34	33	8					7213 Sheet-metal workers [incl. Panel Beater, Coppersmith, Tinsmith]
44	30	8					7214 Structural-metal preparers & erectors [incl. Ship Plater, Riveter, Shipwright]
32	30	8					7215 Riggers & cable splicers
26	30	8					7216 Underwater workers [incl. Frogman]
37	35	8					7220 BLACKSMITHS, TOOL-MAKERS, ETC. TRADES WORKERS
35	33	8					7221 Blacksmiths, hammer-smiths & forging press workers [incl. Toolsmith]
40	40	8					7222 Tool-makers, etc. workers [incl. Locksmith]
38	34	8					7223 Machine-tool setters & setter-operators [incl. Metal driller, Turner]
27	24	8					7224 Metal wheel-grinders, polishers & tool sharpeners
43	34	8					7230 MACHINERY MECHANICS & FITTERS
43	34	8					7231 Motor vehicle mechanics & fitters [incl. Bicycle Repairman]
50	42	8					7232 Aircraft engine mechanics & fitters
42	33	8					7233 [Industrial & agricultural] machinery mechanics & fitters [incl. Mechanic Heavy Equipment, Millwright]
20	23	9					7234 [Unskilled garage worker] [incl. Oiler-Greaser]
38	40	8					7240 ELECTRICAL & ELECTRONIC EQUIPMENT MECHANICS & FITTERS
38	40	8					7241 Electrical mechanics & fitters [incl. Office Machine Repairman]
48	39	8					7242 Electronics fitters
42	41	8					7243 Electronics mechanics & servicers
35	40	8					7244 Telegraph & telephone installers & servicers
36	38	8					7245 Electrical line installers, repairers & cable joiners
39	34	8					7300 PRECISION, HANDICRAFT, PRINTING, ETC. TRADES WORKERS
45	38	8					7310 PRECISION WORKERS IN METAL, ETC. MATERIALS
47	38	8					7311 Precision-instrument makers & repairers [incl. Dental Mechanic, Watch Maker]
33	38	8					7312 Musical-instrument makers & tuners
43	38	8					7313 Jewelry & precious-metal workers [incl. Diamond Cutter, Goldsmith]
28	28	9					7320 POTTERS, GLASS-MAKERS, ETC. TRADES WORKERS
25	27	9					7321 Abrasive wheel formers, potters, etc. workers
37	29	9					7322 Glass-makers, cutters, grinders & finishers
31	29	8					7323 Glass engravers & etchers
31	29	8					7324 Glass ceramics, etc. decorative painters [incl. Decorative Painter, Signpainter]



## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS					
ISEI					
EGP					
31	29	9	7330	HANDICRAFT WORKERS IN WOOD, TEXTILE, LEATHER, ETC.	
31	29	9	7331	Handicraft workers in wood, etc. materials [incl. Candle Maker, Straw-Hat Maker]	
31	29	9	7332	Handicraft workers in textile, leather, etc. materials [incl. Carpet Weaver]	
42	40	8	7340	PRINTING, ETC. TRADES WORKERS	
42	40	8	7341	Compositors, typesetters, etc. workers [incl. Phototypesetter, Linotypist]	
41	40	8	7342	Stereotypers & electrotypers	
41	42	8	7343	Printing engravers & etchers	
42	40	8	7344	Photographic, etc. workers [incl. Darkroom worker]	
32	37	8	7345	Bookbinders, etc. workers	
52	38	8	7346	Silkscreen, block & textile printers	
33	33	8	7400	OTHER CRAFT, ETC. TRADES WORKERS	
28	30	8	7410	FOOD PROCESSING, ETC. TRADES WORKERS	
24	30	8	7411	Butchers, fishmongers, etc. food preparers	
33	31	8	7412	Bakers, pastry-cooks & confectionery makers	
34	30	8	7413	Dairy-products makers	
35	30	8	7414	Fruit, vegetable, etc. preservers	
34	30	8	7415	Food & beverage tasters & graders	
34	30	8	7416	Tobacco preparers & tobacco products makers	
29	33	8	7420	WOOD TREATERS, CABINET-MAKERS, ETC. TRADES WORKERS	
29	33	9	7421	Wood treaters [incl. Wood Grader, Wood Impregnator]	
40	33	8	7422	Cabinet-makers, etc. workers [incl. Cartwright, Cooper]	
36	33	8	7423	Woodworking-machine setters & setter-operators [incl. Wood-Turner]	
21	33	9	7424	Basketry weavers, brush makers, etc. workers [incl. Broom Maker]	
34	36	8	7430	TEXTILE, GARMENT, ETC. TRADES WORKERS	
29	29	9	7431	Fiber preparers	
32	29	9	7432	Weavers, knitters, etc. workers	
40	45	8	7433	Tailors, dressmakers & hatters [incl. Milliner]	
35	36	8	7434	Furriers, etc. workers	
40	36	8	7435	Textile, leather, etc. pattern-makers & cutters	
26	33	8	7436	Sewers, embroiderers, etc. workers	
31	28	8	7437	Upholsterers, etc. workers	
27	31	8	7440	PELT, LEATHER & SHOEMAKING TRADES WORKERS	
22	31	8	7441	Pelt dressers, tanners & fellmongers	
27	31	8	7442	Shoe-makers, etc. workers	
48	42	8	7500	[SKILLED WORKERS NFS]	
46	42	7	7510	[MANUAL FOREMEN NFS—NON-FARM]	

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP		
46	38	8					7520 [SKILLED WORKERS NFS] [incl. Craftsman, Artisan, Tradesman]
37	26	9					7530 [APPRENTICE SKILLED WORK NFS]
34	31	9	8000				PLANT & MACHINE OPERATORS & ASSEMBLERS
36	30	9	8100				STATIONARY-PLANT, ETC. OPERATORS
31	35	9					8110 MINING- & MINERAL-PROCESSING PLANT OPERATORS
34	35	9					8111 Mining-plant operators
32	35	9					8112 Mineral-ore- & stone-processing plant operators
31	35	9					8113 Well-drillers & borers, etc. workers
40	30	9					8120 METAL-PROCESSING PLANT OPERATORS
45	31	9					8121 Ore & metal furnace operators
36	30	9					8122 Metal melters, casters & rolling-mill operators
38	28	9					8123 Metal heat-treating plant operators
28	30	9					8124 Metal drawers & extruders
31	22	9					8130 GLASS, CERAMICS, ETC. PLANT OPERATORS
31	22	9					8131 Glass & ceramics kiln, etc. machine operators
31	22	9					8139 Glass, ceramics, etc. plant operators nec
28	27	9					8140 WOOD-PROCESSING & PAPERMAKING PLANT OPERATORS
29	27	9					8141 Wood-processing plant operators [incl. Sawyer]
28	27	9					8142 Paper-pulp plant operators
28	27	9					8143 Papermaking plant operators
42	35	8					8150 CHEMICAL-PROCESSING PLANT OPERATORS
43	35	8					8151 Crushing grinding & chemical-mixing machinery operators
43	35	8					8152 Chemical heat-treating plant operators
43	35	8					8153 Chemical-filtering & separating-equipment operators
43	35	8					8154 Chemical-still & reactor operators
37	35	8					8155 Petroleum & natural-gas refining plant operators
43	35	8					8159 Chemical-processing plant operators nec
38	32	8					8160 POWER-PRODUCTION, ETC. PLANT OPERATORS
42	33	8					8161 Power-production plant operators
35	27	8					8162 Steam-engine & boiler operators [incl. Stoker, Ship Engine Room Ratings]
34	33	8					8163 Incinerator water-treatment, etc. plant operators [incl. Sewage Plant Operator]
30	26	8					8170 AUTOMATED ASSEMBLY-LINE & INDUSTRIAL-ROBOT OPER- TORS
30	26	8					8171 Automated assembly-line operators
30	26	8					8172 Industrial-robot operators
34	32	9	8200				MACHINE OPERATORS & ASSEMBLERS
37	36	9					8210 METAL- & MINERAL-PRODUCTS MACHINE OPERATORS
38	36	9					8211 Machine-tool operators [incl. Machine Operator nfs]
30	30	9					8212 Cement & other mineral products machine operators
43	30	9					8220 CHEMICAL-PRODUCTS MACHINE OPERATORS
43	30	9					8221 Pharmaceutical & toiletry products machine operators

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP		
43	30	9					8222 Ammunition & explosive-products machine operators
28	30	9					8223 Metal-finishing, -plating, & -coating machine operators [incl. Electroplater, Fettler]
43	30	9					8224 Photographic-products machine operators
43	30	9					8229 Chemical-products machine operators nec
30	30	9					8230 RUBBER- & PLASTIC-PRODUCTS MACHINE OPERATORS
30	30	9					8231 Rubber-products machine operators
30	30	9					8232 Plastic-products machine operators
31	29	9					8240 WOOD-PRODUCTS MACHINE OPERATORS
41	38	9					8250 PRINTING, BINDING & PAPER-PRODUCTS MACHINE OPERA- TORS
41	38	9					8251 Printing-machine operators
32	38	9					8252 Bookbinding-machine operators
28	38	9					8253 Paper-products machine operators
28	30	9					8260 TEXTILE, FUR & LEATHER-PRODUCTS MACHINE OPERATORS
29	29	9					8261 Fiber-preparing, spinning & winding machine operators
29	29	9					8262 Weaving- & knitting-machine operators
25	32	9					8263 Sewing-machine operators
25	24	9					8264 Bleaching-, dyeing- & cleaning-machine operators [incl. Launderer]
26	32	9					8265 Fur- & leather-preparing-maching operators
28	32	9					8266 Shoemaking-, etc. machine operators
26	32	9					8269 Textile, fur & leather-products machine operators nec
33	29	9					8270 FOOD, ETC. PRODUCTS MACHINE OPERATORS
31	29	9					8271 Meat- & fish-processing machine operators
34	29	9					8272 Dairy-products machine operators
33	29	9					8273 Grain- & spice-milling machine operators
33	29	9					8274 Baked-goods cereal & chocolate products machine operators
35	29	9					8275 Fruit-, vegetable- & nut-processing machine operators
45	29	9					8276 Sugar-production machine operators
34	29	9					8277 Tea-, coffee- & cocoa-processing machine operators
34	29	9					8278 Brewers-, wine & other beverage machine operators
39	29	9					8279 Tobacco-production machine operators
33	31	9					8280 ASSEMBLERS
30	30	9					8281 Mechanical-machinery assemblers [incl. Car Assembly-Line Worker]
48	34	9					8282 Electrical-equipment assemblers
48	34	9					8283 Electronic-equipment assemblers
30	30	9					8284 Metal, rubber & plastic products assemblers
31	30	9					8285 Wood, etc. products assemblers
28	30	9					8286 Paperboard, textile, etc. products assemblers
33	26	9					8290 OTHER MACHINE OPERATORS & ASSEMBLERS
33	32	9					8300 DRIVERS & MOBILE-PLANT OPERATORS
36	36	9					8310 LOCOMOTIVE-ENGINE DRIVERS, ETC. WORKERS
43	41	8					8311 Locomotive-engine drivers
29	32	9					8312 Railway brakers signalers & shunters

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS			ISEI		EGP	
32	34	9	8320	MOTOR-VEHICLE DRIVERS		
				[incl. Driver nfs]		
31	30	9	8321	Motorcycle drivers		
31	30	9	8322	Car, taxi & van drivers		
				[incl. Taxi Owner nfs]		
32	30	9	8323	Bus & tram drivers		
33	34	9	8324	Heavy truck & lorry drivers		
32	26	9	8330	AGRICULTURAL & OTHER MOBILE PLANT OPERATORS		
31	26	10	8331	Motorized farm & forestry plant operators		
				[incl. Tractor Driver, Combine Harvester Operator]		
32	26	8	8332	Earth-moving, etc. plant operators		
				[incl. Bulldozer Driver, Dredge Operator, Road-Roller Driver]		
33	28	8	8333	Crane, hoist, etc. plant operators		
28	28	9	8334	Lifting-truck operators		
29	32	9	8340	SHIPS DECK CREWS, ETC. WORKERS		
				[incl. Boatman, Deck Hand, Sailor, Ship Deck Ratings]		
33	24	9	8400	SEMISKILLED WORKERS NFS		
				[incl. Production Process Worker nfs, Factory Worker nfs]		
21	20	9	9000	ELEMENTARY OCCUPATIONS		
23	25	3	9100	SALES & SERVICES ELEMENTARY OCCUPATIONS		
25	29	3	9110	STREET VENDORS, ETC. WORKERS		
24	29	3	9111	Street food vendors		
24	28	3	9112	Street vendors nonfood products		
				[incl. Hawker, Peddler, Newsvendor, Rag Picker, Scavenger]		
26	29	3	9113	Door-to-door & telephone salespersons		
				[incl. Solicitor, Canvasser]		
12	28	9	9120	STREET SERVICES ELEMENTARY OCCUPATIONS		
				[incl. Billposter, Shoeshiner, Car Window Washer]		
21	16	9	9130	DOMESTIC, ETC. HELPERS, CLEANERS & LAUNDERERS		
22	16	9	9131	Domestic helpers & cleaners		
				[incl. Housemaid, Housekeeper nfs]		
21	16	9	9132	Helpers & cleaners in establishments		
				[Kitchen Hand, Chambermaid]		
22	16	9	9133	Hand-laundrerers & pressers		
23	23	9	9140	BUILDING CARETAKERS, WINDOW, ETC. CLEANERS		
25	23	9	9141	Building caretakers		
				[incl. Janitor, Sexton, Verger]		
19	23	9	9142	Vehicle, window, etc. cleaners		
20	27	9	9150	MESSENGERS, PORTERS, DOORKEEPERS, ETC. WORKERS		
22	25	9	9151	Messengers, package & luggage porters & deliverers		
				[incl. Elevator Attendant, Bellboy, Messenger]		
20	27	9	9152	Doorkeepers, watchpersons, etc. workers		
				[incl. Amusement Park Attendant, Ticket Collector, Usher, Watchman nfs, Park Attendant]		
21	27	9	9153	Vending-maching money collectors, meter readers, etc. workers		
13	23	9	9160	GARBAGE COLLECTORS, ETC. LABORERS		

## APPENDIX A

Scale Scores for Three Measures of Occupational Status, ISCO-88—*Continued*

SIOPS

ISEI

EGP

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13	23	9	9161	Garbage collectors [incl. Dustman]
13	23	9	9162	Sweepers, etc. laborers [incl. Odd-Job Worker]
23	16	9	9200	AGRICULTURAL, FISHERY, ETC. LABORERS
23	16	10	9210	AGRICULTURAL, FISHERY, ETC. LABORERS
23	16	10	9211	Farm-hands & laborers [incl. Cow Herd, Farm Helper, Fruit Picker]
18	16	10	9212	Forestry laborers
23	16	10	9213	Fishery, hunting & trapping laborers
18	23	9	9300	LABORERS IN MINING, CONSTRUCTION, MANUFACTURING & TRANSPORT [incl. Unskilled Worker nfs]
16	21	9	9310	MINING & CONSTRUCTION LABORERS
18	21	9	9311	Mining & quarrying laborers
15	21	9	9312	Construction & maintenance laborers: roads, dams, etc. [incl. Navvy, Shoveller, Railway Trackworker]
15	21	9	9313	Building construction laborers [incl. Handyman, Hod Carrier]
19	20	9	9320	MANUFACTURING LABORERS
18	20	9	9321	Assembling laborers [incl. Sorter, Bottle Sorter, Winder, Checker nfs, Grader nfs]
22	24	9	9322	Handpackers & other manufacturing laborers [incl. Crater, Labeler]
20	29	9	9330	TRANSPORT LABORERS & FREIGHT HANDLERS
17	22	9	9331	Hand or pedal vehicle drivers [incl. Rickshaw Driver]
22	22	9	9332	Drivers of animal-drawn vehicles & machinery
20	30	9	9333	Freight handlers [incl. Docker, Loader, Longshoreman, Remover, Stevedore]

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## APPENDIX B

The EGP Algorithm—Second Part

\* The module accommodates an indeterminate number of variables.

\* You need to define in your file the following macro variables:

\* @isko

\* @egp10

\* @semp1

\* @supvis

do repeat i=@isko / e=@egp10

compute e=i

end repeat

APPENDIX B  
The EGP Algorithm—Second Part—*Continued*

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```

include file= '../Incl/iskoroot.inc' /* see Appendix A

do repeat      e= @egp10 / is= @isko / sv= @supvis / s= @sempl
comment       #p codes promotability of certain occupations
compute       #p= is
recode        #p (1000 thru 9299=1)(else=0)
compute       #d= is
comment       #d codes degradability of certain occupations
recode        #d (1300 thru 1319 3400 thru 3439 4000 thru 5230=1) (else=0)
if            ((e=3) and (sv ge 1)) e=2
if            ((e eq 3 or e eq 2) and (s eq 2) and (#d=1)) e=4
if            ((e ge 7 and e le 9) and (s=2) and (#p=1)) e=5
if            ((e=8) and (sv ge 1)) e=7
if            ((e=10) and (s=2)) e=11
if            ((e=4) and (sv lt 1)) e=5
if            ((e=5) and (sv ge 1)) e=4
if            ((e=2 or e=3 or e=4) and (sv ge 10)) e=1
end repeat

value labels   @egp10 (1) high service (2) low service
               (3) routine nonmanual (4) sempl with empl
               (5) sempl no empl (7) manual supervis
               (8) skilled manual (9) semi-unsklld manual
               (10) farm labor (11) selfempl farm

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