How to Measure Employment Status and Occupation in Analyses of Survey Data?

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This article presents issues relevant for including employment status and occupational position in analyses of survey data. It describes the employment statuses distinguished by International Labour Organization (ILO) and discusses their internal heterogeneity and possible overlaps. Further, it presents the International Standard Classification of Occupations (ISCO) and discusses its usefulness for social research. It finishes with the presentation of scales (prestige and socio-economic status) and classifications (EGP and ESeC). The discussion is illustrated by examples of questions and data from large international surveys, such as the European Social Survey, the European Values Study, and the International Social Survey Program.

Keywords: employment status, occupational position, ISCO, prestige, prestige scale, socio-economic position.

Jak mierzyć status zatrudnienia i pozycję zawodową w analizach danych sondażowych?

Artykuł przedstawia zagadnienia związane z uwzględnianiem statusu zatrudnienia i pozycji zawodowej w analizach danych sondażowych. Tekst prezentuje kategorie statusu zatrudnienia według Międzynarodowej Organizacji Pracy (ILO) oraz omawia ich wewnętrzne zróżnicowanie i ewentualne nakładanie się kategorii. Ponadto artykuł przedstawia Międzynarodową Standardową Klasyfikację Zawodów (ISCO) oraz komentuje przydatność tej klasyfikacji w badaniach społecznych. Wreszcie – tekst prezentuje skale (prestiżu i społeczno-ekonomiczną) oraz klasyfikacje (EGP oraz ESeC). Zagadnienia poruszone w tekście są zilustrowane przykładami pytań i danych z dużych międzynarodowych sondaży, takich jak Europejski Sondaż Społeczny (ESS), European Values Study oraz Międzynarodowy Program Sondaży Społecznych (ISSP).

Słowa kluczowe: status zatrudnienia, pozycja zawodowa, ISCO, prestiż, skala prestiżu, pozycja społeczno-ekonomiczna.

JEL: J21, J24, J64, J82

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1. Introduction

Employment status and occupation of a respondent are often important factors to be considered in an analysis of survey data. Research showed that employment status and occupation determine various aspects of human life (e.g. incomes, health, happiness, etc., see: Eakman & Eklund, 2012; Fujishiro et al., 2010; Schoen et al., 2002; Virtanen et al., 2005). On the other hand, employment status and occupation are also treated as outcome variables, for example in studies of social stratification and mobility (e.g. Anderson & Sahpiro, 1996; Breen & Jonsson, 2005; Lin & Dumin, 1986).

How employment status and occupation should be accounted for in an analysis depends on the problem at hand. This article reviews the ways to include employment status and occupation in an analysis. We give an overview of the classifications used in the literature, provide examples from widely used data sets, and discuss other issues which are relevant for analyses.

2. Employment status

The International Labour Organization (ILO) distinguishes three main employment statuses: (1) employed, (2) unemployed, and (3) inactive (ILO 2004a, 2004b). The subsequent sections comment shortly on each of them.

2.1. Employed

Although it seems straightforward at the first sight, establishing if a person is employed or not is a rather complex task; employment takes various forms, people work different hours, and they are sometimes temporary absent from work.

The category of employed includes employees, i.e. people working for a wage, but also self-employed (including employers and own-account workers), as well as unpaid family workers. Note that usually only employees have determined work time and wages. Employers and own-account workers rely on the income of their enterprise and their working time is often flexible. Unpaid family workers normally receive no wage and their activities are either temporary (e.g. helping in family business during an unemployment period) or permanent.

Working time not only characterizes employed people, but is also used to classify people as employed or not. The ILO (2004a) classifies as employed people who devote to work at least one hour weekly. This definition does not always fit the needs of a specific study. Sometimes it is justified to set a higher threshold for classifying someone as employed: e.g. 15 hours weekly.

Time spent at work is also used to classify people as employed full- or part-time (Thurman & Trah, 1990). However, the link between hours worked and full- or part-time employment is not always straightforward. In some cases, part-time employment is directly determined on the basis of working hours. In that case people working under 30 or under 35 hours are usually classified as employed part-time. However, the regulatory full-time working time differs across countries (Messenger et al., 2007). For instance, in 2014 it was 40 hours weekly in Poland, but only 35 hours weekly in France. The statutory working time may also differ across occupations. These differences make it difficult to use the same threshold in various countries to classify people as full- or part-time employed. In other cases respondents are asked directly if they work full- or part-time; then the classification into full- or part-time employment depends on the type of the contract and is not always consistent with the classification based on working time.

Finally, a temporary absence from work further complicates establishing people's employment status. If a survey question refers to activities performed over the previous 7 days, some of the employed people are either on sickness leave, on holidays, or on maternity or parental leave (Mikucka & Valentova, 2013). A long leave is sometimes a reason to classify a person as economically inactive rather than employed. For example, in some countries women on maternity or parental leave declare that they are housewives and are not employed, although the leave is temporary and they sustain the formal link with the employer. In other countries, women on parental leaves tend to declare themselves as employed. Such inconsistencies introduce a bias that may be negligible in the overall population, but affects the results for particular groups, such as mothers of young children. Not only respondents themselves, but also institutions producing official statistics decide that in some cases (depending on the length of a leave and remuneration received) a person on a leave should be classified as employed or inactive (Mikucka & Valentova, 2013).

2.2. Unemployed

The ILO (2004a) classifies as unemployed people who do not work, want to work, are available to start work, and are actively seeking employment. However, some data collecting agencies and some surveys set this definition differently.

First, it is possible to include among unemployed all people who declare that they are unemployed, without setting a condition of their efforts to find work, willingness to work or availability to enter employment. Such a definition includes among unemployed also the so-called "discouraged workers", i.e. people who – usually after a period of unsuccessful search for employment – do not search for work although they need a job and do not have one. Typically, the reasons for discouragement would be lack

of qualifications, labor market discrimination, or high local unemployment rate (Benati, 2001; Van Ham et al., 2001).

Second, some surveys use a more formal criterion of being registered as unemployed in an unemployment office, or receiving an unemployment benefit. However, this criterion leaves out the unemployed people who have no right to an unemployment benefit and those who have no incentive to register as unemployed (Füllsack, 2001; Solinger, 2001).

2.3. Inactive

The inactive category consists of people who are neither employed nor unemployed, and comprises various subcategories. Typically, the largest subcategory comprises retired people; other subcategories include full-time students, homemakers, and permanently disabled people.

Sometimes, research should make distinctions even *within* these groups. For example, homemakers are typically either relatively young women who interrupt employment to take care of their small children, or women in late middle age who can afford to interrupt employment already before retirement age. Another group which is sometimes divided into subcategories are the retired: younger pensioners are often still socially active (sometimes also employed), whereas older pensioners more often suffer from health problems and are dependent on their families and welfare systems.

Note that whereas the distinction between the employed and the unemployed is usually clear-cut, it is relatively easy to think of an overlap between the inactive and the employed. For example, many retired people (Kolev & Pascal, 2002) and many students are also employed (Lundberg, 2004), either full-time or part-time. The ILO (2004a) rules classify such people as employed; however, in some research settings, and especially if they work short hours, classifying such people as inactive may be more justified.

There are also a **functional overlap between the inactive and unemployed.** For example, homemaking is a reasonable option for people (mostly women) who lose a job and cannot find another one. Early retirement schemes play a similar role. Similarly, in some countries prolonged stay in the educational system is a response to high youth unemployment.

2.4. Employment status in large social surveys

Let's look at questions and categories used to code employment status in some commonly used international surveys. Questions used to code employment status in the European Social Survey Round 4 (European Social Survey 2008) include the following:
- *F8a CARD 69 Using this card, which of these descriptions applies to what you have been doing for the last 7 days? Select all that apply. PROMPT Which others? CODE ALL THAT APPLY*

(01) in paid work (or away temporarily) (employee, self-employed, working for your family business); (02) in education, (not paid for by employer) even if on vacation; (03) unemployed and actively looking for a job; (04) unemployed, wanting a job but not actively looking for a job; (05) permanently sick or disabled; (06) retired; (07) in community or military service; (08) doing housework, looking after children or other persons; (09) (other); (88) (don't know)

- *F8c <IF MORE THAN ONE CODE> STILL CARD 69 And which of these descriptions best describes your situation (in the last seven days)? Please select only one. CODE ONE ANSWER ONLY*

These questions point to two interesting categories. First, the European Social Survey includes the category "in community or military service", which typically comprises a small share of population, but it may be relevant for specific segments of population, such as young men. Second, the European Social Survey distinguishes between the unemployed looking for a job and not looking for a job, which is not a standard solution in social surveys, despite the importance of this distinction.

The European Social Survey contains also other questions which are useful in describing the respondent's work experience, although they refer to the past and not to the current employment status. These include questions on the duration and timing of unemployment:

- *F27 Have you ever been unemployed and seeking work for a period of more than three months?*
  (1) Yes -> ASK F28; (2) No; (8) (Don't know)
- *F28 Have any of these periods lasted for 12 months or more?*
  (1) Yes; (2) No; (8) (Don't know)
- *F29 Have any of these periods been within the past 5 years? (NOTE TO INTERVIEWER: these periods refer to the periods of more than 3 months at F27.)*
  (1) Yes; (2) No; (8) (Don't know)

Finally, the ESS4 allows the respondent to choose multiple employment statuses. How important in practice is the possibility to choose multiple statuses? If we add up all the occupational statuses declared by the respondents, we learn that 85% of respondents declared only one employment status, 13% of respondents declared two statuses, and the remaining 2% of respondents declared either more than one or none. Thus, the problem of multiple statuses refers to a relatively small part of population, although it may be relevant for a specific research question or to specific subpopulations.

Who are the people declaring multiple statuses? This information for the European Social Survey data is presented in Table 1. The most common combinations are: paid work combined with housework, and retirement combined with housework. This does not come as a surprise, as in almost each household there is someone who does some housework.

Combination of statuses	N	% among people declaring multiple statuses
Paid work + Housework	3,108	42.78
Retired + Housework	1,226	16.88
Paid work + In education	686	9.44
Paid work + Retired	443	6.10
Disabled + Retired	233	3.21
Paid work + In education + Housework	228	3.14
Unemployed looking for a job + Housework	213	2.93
Other	1,128	15.53

Note: 100% – people who declared more than one employment status.

Tab. 1. Combinations of employment statuses in the European Social Survey round 4. Source: European Social Survey Round 4, all countries.

The information on employment statuses has been collected in a different way in the European Values Study (EVS 2011). The question from year 2008 is presented below.

- **Q111** *Are you yourself gainfully employed at the moment or not? Please select from the card the employment status that applies to you. INTERVIEWER INSTRUCTION: IF MORE THAN ONE JOB: ONLY FOR THE MAIN JOB*

  Paid employment
  01 – 30 hours a week or more --------------------------------> GO TO Q112
  02 – Less than 30 hours a week ------------------------------> GO TO Q112
  03 – Self-employed ---> GO TO Q112
  No paid employment
  04 – Military Service --> GO TO Q111A
  05 – Retired/pensioned ---------------------------------------> GO TO Q111A
  06 – Housewife not otherwise employed --------------------> GO TO Q111A
  07 – Student --> GO TO Q111A
  08 – Unemployed --> GO TO Q111A
  09 – Disabled --> GO TO Q111A
  INTERVIEWER INSTRUCTION: ONLY IF RESPONDENT DOES NOT WORK BECAUSE OF DISABILITY!
  10 – Other, please specify (WRITE IN): ………….. -----> GO TO Q111A
  88 – Don't know ---> GO TO Q111A
  99 – No answer (spontaneous) -------------------------------> GO TO Q111A
- **Q111A** *In your LAST job were you employed (either full time or part time) or were you self-employed?*
  1 – employed
  2 – self-employed
  8 – don't know

9 – no answer (spontaneous)

7 – never had a paid job --------------------------------------> GO TO Q115

This question differs from the one in the European Social Survey in several ways. First, it forces a respondent to choose a single answer; in other words it does not allow multiple employment statuses. Second, it gives priority to classifying respondents as employed: a respondent can be classified as e.g. a housewife or a retired person only if they do not work at the same time. This is consistent with the ILO classification, but reduces our information about working life of a respondent. Third, it does not distinguish between the unemployed searching and not searching for a job. Fourth, it directly classifies the employed into working full-time, part-time, and self-employed. Additionally, for the respondents who do not work at the time of the survey, question *Q111A* collects information on their past employment, again distinguishing between the full-time, part-time, and self-employment.

Table 2 compares the distribution of employment status in Poland recorded by the European Social Survey and by the European Values Study in 2008. Overall, the differences are small and discrepancies occur only for some groups. For example, the European Social Survey recorded a larger share of students and housewives, and a lower share of the unemployed than did the European Values Study.

ESS, Round 4 Employment status	N	%	Weighted %	EVS 2008 Employment status	N	%	Weighted %
Paid work	760	46.94	46.77	30h a week or more	638	42.25	41.77
				Less than 30h a week	45	2.98	2.77
				Self employed	84	5.56	5.73
Education	196	12.11	12.13	Student	136	9.01	8.49
Unemployed, looking for job	52	3.21	3.13	Unemployed	113	7.48	7.32
Unemployed, not looking for job	23	1.42	1.51				
Permanently sick or disabled	15	0.93	0.94	Disabled	1	0.07	<0.01
Retired	431	26.62	26.94	Retired/pensioned	402	26.62	28.51
Housework, looking after children, other persons	124	7.66	7.82	Housewife not otherwise employed	87	5.76	5.27
				Military service	1	0.07	<0.01
Other	13	0.80	0.75				
DK	2	0.12		DK	2	0.13	
Refusal	3	0.19		Refusal	1	0.07	

Tab. 2. Distribution of employment statuses in Poland in 2008 as captured by the European Social Survey and the European Values Study. Source: European Social Survey Round 4 and European Values Study 2008.

For comparison, let us look at the categories distinguished by the International Social Survey Program, wave 2007 (ISSP Research Group 2009). The case of this survey is specific, because the collection of demographic variables, i.e. also employment status, was not centrally coordinated. In other words, each country agency collected the data according to its own standard, and subsequently harmonized them with the centrally proposed categories.

Unfortunately, this means that sometimes different countries employ different definitions and classifications, and the comparability of the information across countries is problematic.

The distribution of employment statuses for Poland is shown in Table 3. Note that it is not clear if the classification gives priority to employment (as in the European Values Study) or relies on respondents' self-classification (like in the European Social Survey).

Employment status	N	%
Employed-full time	531	41.07
Employed-part time	93	7.19
Unemployed	93	7.19
Student, school, vocational training	91	7.04
Retired	436	33.72
Housewife,-man, home duties	49	3.79
Total	1,293	100.00

Tab. 3. Distribution of employment status in Poland in 2007 as captured by the data of the International Social Survey Program. Source: International Social Survey Program, 2007.

The International Social Survey Program 2007 collected also data on the place of work and on working hours. This information may be used to better characterize the employment status of the respondent. Table 4 shows how these two pieces of information differ across employment statuses.

Note that the place of work is recorded also for respondents who are classified as inactive, but have worked in the past. This is why over 90% of students' answers are missing, but only 7% of retirees' answers.

The information on working hours is available only for those respondents who are currently employed, either full-time or part-time. In Poland, the median weekly hours for full-time are 40 hours, and for part-time – 35 hours. However, some people employed full-time declared 10 or fewer hours of work weekly, and some of the employed part-time declared working 60 hours weekly or more.

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R: Current employment status	R: Working for private, public sector, self-employment.						
	Work for government	**Public company**	**Private firm**	**Self employed**	**Missing**	**DK**	**Total**
Employed-full time	93	77	244	110	2	5	531
%	*17.51*	*14.50*	*45.95*	*20.72*	*0.38*	*0.94*	*100.00*
Employed-part time	15	14	52	1	8	3	93
%	*16.13*	*15.05*	*55.91*	*1.08*	*8.60*	*3.23*	*100.00*
Unemployed	6	15	41	7	23	1	93
%	*6.45*	*16.13*	*44.09*	*7.53*	*24.73*	*1.08*	*100.00*
Student, school, vocational training	0	0	4	0	86	1	91
%	*0.00*	*0.00*	*4.40*	*0.00*	*94.51*	*1.10*	*100.00*
Retired	68	203	71	57	30	7	436
%	*15.60*	*46.56*	*16.28*	*13.07*	*6.88*	*1.61*	*100.00*
Housewife,-man, home duties	4	10	14	3	17	1	49
%	*8.16*	*20.41*	*28.57*	*6.12*	*34.69*	*2.04*	*100.00*
Total	186	319	426	178	166	18	1,293
%	*14.39*	*24.67*	*32.95*	*13.77*	*12.84*	*1.39*	*100.00*

Tab. 4. Distribution of employment status in Poland in 2007 and place of work. Source: International Social Survey Program, 2007.

3. Occupation

An occupation, or a profession, is a characteristic which describes the position of a person in a society, mainly because is it a good synthetic proxy of peoples' qualifications, resources, and life chances (Eakman & Eklund, 2012; Law et al., 1998; Lin & Dumin, 1986).

Researchers use information on occupation not only to describe the currently employed people, but also people who are not working at the time of data collection but have been employed in the past. Such information is missing only for people who have never worked. However, among people to whom we can, in principle, ascribe an occupation, this information describes their life situation (i.e. their resources, chances, etc.) to varying degrees. In particular, for people who frequently changed their jobs, or who have not been employed for a long time (due to retirement, disability, or other reason), occupation is a relatively poor proxy of their resources and chances, although it delivers information on this person's lifestyle or potential.

3.1. International Standard Classification of Occupations (ISCO)

The ILO uses a detailed classification of occupations **ISCO-08** (the previous version of which was ISCO-88, see: Elias, 1997; Ganzeboom & Treiman, 1996; Wolf, 1997). It is very detailed, which sometimes makes it difficult to use in research work. The broad categories of ISCO-08 include:

(1) Managers
(2) Professionals
(3) Technicians and associate professionals
(4) Clerical support workers
(5) Service and sales workers
(6) Skilled agricultural, forestry and fishery workers
(7) Craft and related trades workers
(8) Plant and machine operators, and assemblers
(9) Elementary occupations
(0) Armed forces occupations

These broad categories of ISCO are usually of little use for social scientists, because the ISCO was created for administrative purposes, and sometimes classifies into separate groups people who occupy similar positions and have comparable life chances, and merges into a single category people with different social positions. For example, the broad subcategory "0" in ISCO groups all military occupations, including all spectrum from low qualified positions to positions which require long training, bring privileges, and are considered prestigious.

The ISCO is a four-level classification. The highest level constitute the 10 major groups listed above. They are divided into 43 sub-major groups (2-digit codes), 130 minor groups (3-digit codes), and 436 unit groups (4-digit codes). An overview of the detailed codes (minor groups and unit groups)

for a selected category of teaching professionals (which is a sub-major group) is presented in Table 5.

Major group	Sub-major group	Minor groups	Unit groups
2. Professionals	23 Teaching professionals	231 University and higher education teachers	2310 University and higher education teachers
		232 Vocational education teachers	2320 Vocational education teachers
		233 Secondary education teachers	2330 Secondary education teachers
		234 Primary school and early childhood teachers	2341 Primary school teachers 2342 Early childhood educators
		235 Other teaching professionals	2351 Education methods specialists 2352 Special needs teachers 2353 Other language teachers 2354 Other music teachers 2355 Other arts teachers 2356 Information technology trainers 2359 Teaching professionals not elsewhere classified

Tab. 5. ISCO coding of the group of teaching professionals

3.2. Coding of occupations in large surveys

Overall, surveys collect information on the occupation of respondents in various ways. In particular, some surveys ask respondents to describe their jobs (the kind of tasks performed, the place of work, etc.) and subsequently code this information into a scale of occupations. Such a process of coding is usually long and expensive, and some surveys resort to asking respondents to classify themselves into listed occupational groups. Such a strategy usually delivers a lower quality of information, primarily because respondents often simply do not know where to classify their job.

The European Social Survey Round 4 collects the following information to code the occupation of the respondent:

- **F24** *What is/was the name or title of your main job? WRITE IN*

- **F25** *In your main job, what kind of work do/did you do most of the time? WRITE IN*

- **F25a** *What training or qualifications are/were needed for the job? WRITE IN*

The information collected with these questions in the European Social Survey is subsequently coded into the 4-digit ISCO-88 categories. (ISCO-88

is an older version of ISCO-08. The use of an older classification allows easier monitoring of the changes over time.) Table 6 gives an overview of some of the largest and some of the smallest categories in the Polish sample.

ISCO-88 category	N	Percent
Crop and animal producers	131	8.09
Shop, stall, market salespersons, demonstrators	98	6.05
Helper, cleaner in office, hotel, other establishment	43	2.66
Managers in manufacturing	33	2.04
Manufacturing laborers	33	2.04
Bookkeepers	31	1.91
Technical and commercial sales rep	30	1.85
Heavy truck and lorry drivers	28	1.73
Finance and administration managers	25	1.54
Other office clerks	25	1.54
Primary education teaching professional	20	1.24
…	…	…
Locomotive engine drivers	1	0.06
Ships' deck crews and related workers	1	0.06
Building caretakers	1	0.06
Sweepers and related laborers	1	0.06
Missing	193	11.92
TOTAL	1,619	100.00

Tab. 6. Distribution of largest and smallest occupational categories (ISCO-88) in Poland. Source: European Social Survey, Round 4.

The categories are small, and usually they are not very useful in analysis without additional coding. However, if specific occupations are of interest for a specific study, such recoding can be done. Sometimes the literature offers information on which detailed categories should be grouped together to arrive at categories useful for analysis.

The questions used in the European Values Study to classify the occupations of respondents are quite similar to the question used by the European Social Survey.

- *Q112 What is/was the name or title of your main job? WRITE IN AS DETAILED AS POSSIBLE*
- *Q112a In your main job, what kind of work do/did you do most of the time? WRITE IN AS DETAILED AS POSSIBLE*

Table 7 lists some of the largest and smallest categories of ISCO-88 recorded for Poland in the European Values Study 2008 data.

ISCO-88 category	N	Percent
shop salespersons & demonstrators	143	9.47
market gardeners & crop growers	79	5.23
Bookkeepers	38	2.52
administrative associate professionals	37	2.45
teaching professionals	27	1.79
craft etc. trades workers	27	1.79
motor-vehicle drivers	27	1.79
accountants	26	1.72
tailors dressmakers & hatters	21	1.39
…	…	…
forestry laborers	1	0.07
laborers in mining, construction, manufacturing	1	0.07
building construction laborers	1	0.07
manufacturing laborers	1	0.07
freight handlers	1	0.07
not applicable	222	14.70
no answer	39	2.58
Total	1,510	100.00

Tab. 7. Distribution of largest and smallest occupational categories (ISCO-88) in Poland. Source: European Values Study, 2008.

ISCO-88 category	N	Percent
MARKET-ORIENTED CROP AND ANIMAL PRODUCE	71	6.32
SHOP SALESPERSONS AND DEMONSTRATORS	53	4.72
Helpers and cleaners in offices, hotels	45	4.01
Heavy-truck and lorry drivers	40	3.56
Bookkeepers	33	2.94
…	…	…
Street vendors, non-food products	1	0.09
Building caretakers	1	0.09
Messengers, package and luggage porters	1	0.09
Garbage collectors	1	0.09
DK	4	0.31
Missing	166	12.84
Total	1,293	100.00

Tab. 8. Distribution of largest and smallest occupational categories (ISCO-88) in Poland. Source: International Social Survey Program, 2007.

Also the International Social Survey Program collected information on respondents' occupations coded in ISCO-88. The largest and smallest categories are shown in Table 8.

3.3. National classifications of occupations

Note that the ISCO is a standard, an international scale. As other international classifications, its validity in national contexts is sometimes limited (Wolf, 1997). It is usually desired that a classification groups together cases similar on some relevant criteria, and separates cases that are different. International scales attempt to do this for various countries. Thus, we sometimes pay the price of somewhat lower precision for the possibility to conduct cross-national comparisons.

In country-specific analyses this problem is solved by referring to national classifications of occupations. The scale developed for Poland is called Polish Sociological Classification of Occupations (PSKZ, see: Domański et al., 2009). It has been used for coding occupational data in the Polish General Social Survey (PGSS) and in the POL-PAN Panel data (Domański & Słomczyński, 2014).

The version of PSKZ from 1994 consists of 14 broad categories, which are divided into more detailed occupational groups. This classification is relatively detailed at the highest level, and is often useful in social analyses. The PSKZ-94 replaced the previous version designed in 1987, adjusting it to the situation after the system transformation. A further version of PSKZ comes from 2009, and is already used by some data sets (e.g. the POL-PAN).

3.4. Occupational scales: prestige (SIOPS) and socio-economic status (ISEI)

The differences between occupational groups are multidimensional. For this reason, the literature proposed scales which order occupational categories from lowest to highest in a specified dimension. The two most commonly used scales are the scales of prestige and of socio-economic status (Nakao & Treas, 1994).

The Standard International Occupational Prestige Scale (SIOPS) assigns to occupations their prestige (Inkeles & Rossi, 1956; Treiman, 2013), which has been derived from respondents' evaluations collected by survey studies. To put it simply, the prestige scale assumes that some occupations are systematically more respected than others, and attempts to express these differences in numbers. This scale is often referred to as Treiman's prestige scale (Treiman, 1970, 1977). In the 1970s, Donald Treiman, a professor of the University of California, matched occupational categories of ISCO with the results of prestige studies from over 60 countries. In these studies respondents, who were either general populations, experts, or students, evaluated how much respected particular occupations

were. Such evaluations were performed typically with a battery of question having the following structure: *"Think about occupation X. Do people in this occupation have on average very high prestige, rather high prestige, rather low prestige or very low prestige?"* The resulting SIOPS scale assigns to occupational codes of ISCO the values of prestige averaged across countries.

Socio-economic indexes order occupations according to a different rule: they pay more attention to economic factors. Initially, socio-economic indexes were designed as an alternative measure of prestige and they were constructed as a weighted sum of the average income and education in an occupation, with the weights chosen in a way which maximized the correlation between this scale and the scale of prestige. However, later on researchers recognized that socio-economic scales were not just measures of prestige, but were useful as measures of socio-economic position. The literature also proposed more elaborated methods of calculating the scale (Batista-Foguet et al., 2004; Ganzeboom et al., 1992).

The International Socio-Economic Index of Occupational Status (ISEI) was developed by two Dutch researchers, Ganzeboom and de Graaf, together with Donald Treiman (Ganzeboom et al., 1992). The stratification theory considers the occupational position as the main link between inputs (skills, effort, education) and rewards (incomes). For this reason, the ISEI scale attempts to capture the indirect effect of education on earnings. Technically, it has been done with a set of regression models.

Interestingly, the original version of the ISEI scale was based on information for 16 countries, covered the period 1968–1982, and used only information for men. Note that also the SIOPS scale rests on rather old information, given that the original research was published in 1977. However, subsequent research attempted to replicate the results and showed that the scales remain valid tools. This is interpreted as a sign of stability of social structure and of the placement of occupations within it.

The European Values Study is one of the surveys which supplement the data on occupations of respondents with the values of SIOPS and ISEI scales. The values of prestige scale, SIOPS, range from 6 (lowest prestige) to 78. The values of ISEI range from 16 (lowest prestige) to 80.

For illustration, occupations with lowest and highest prestige scores are listed in Table 9. Of course, a similar table for ISEI scales would look differently, although overall occupations tend to be placed similarly on both scales. The correlation between the values of occupational prestige and socio-economic status is high: Pearson's rho = 0.86 (calculated with occupational categories treated as a unit of the analysis).

ISCO-88 Occupational Category	Prestige score (SIOPS)
hunters & trappers	6
street services elementary occupations	12
garbage collectors etc. laborers garbage collectors sweepers etc. laborers	13
pawnbrokers & money-lenders construction & maintenance laborers building construction laborers	15
mining & construction laborers	16
…	…
[high military officers] health professionals (except nursing) health professionals except nursing legal professionals lawyers	73
physicists & astronomers	75
Judges	76
medical doctors higher education teaching professionals	78

Tab. 9. Occupations with lowest and highest prestige (SIOPS) scores. Source: European Values Study, 2008.

3.5. Social classes (EGP and ESeC)

Social scales (or indexes) presented above simplify the information on occupations by ordering occupations on a specific scale. However, it is also possible to simplify the information on occupations by grouping them together into larger groups: large enough to perform statistical analyses, while capturing important similarities and differences between groups of occupations.

One of such scales is the Erikson-Goldthorpe-Portocarero (EGP) Schema (Erikson et al., 1979), which is internationally accepted and has been validated by the literature. The initial version of the EGP schema with seven categories was developed in early 1970s by John Goldthorpe for the study of social mobility in England and Wales. The categories comprised:
1. Higher Controllers
2. Lower Controllers
3. Routine Non-manual
4. Self-employed
5. Manual Supervisors

6. Skilled Workers
7. Unskilled Workers

Subsequently, in the course of comparative research of social structure and mobility which included countries whose occupational structure differed from the British one, the classification was revised. In particular, routine non-manual employees were subdivided into clerical (higher) and lower sales and service; the self-employed were divided into those with and without employees, and self-employed farmers; finally agricultural workers were distinguished from other unskilled workers.

As an example, Table 10 shows the distribution of the EGP categories in Poland in the European Values Study 2008 data. Note that the most numerous category are skilled workers; the large size of this group is usually considered the heritage of the communist system.

EGP category	N	%
I: Higher Controllers	120	7.95
II: Lower Controllers	193	12.78
IIIa: Routine Non-manual	128	8.48
IIIb: Lower Sales-Service	177	11.72
IVa: Self-employed with employees	18	1.19
IVb: Self-employed no employees	40	2.65
V: Manual Supervisors	29	1.92
VI: Skilled Worker	253	16.75
VIIa: Unskilled Worker	173	11.46
VIIb: Farm Labor	37	2.45
IVc: Self-employed Farmer	66	4.37
No answer	39	2.58
Not applicable	222	14.70
Don't know	15	0.99
Total	1,510	100.00

Tab. 10. Distribution of EGP schema in Poland, 2008. Source: European Values Study, 2008.

Another classification, which actually has been developed on the basis of EGP schema, is the European Socio-economic Classification (ESeC), proposed recently by Eric Harrison from the University of Essex (Harrison & Rose, 2006; Rose & Harrison, 2007). ESeC attempts to classify occupational positions according to the type of "employment relations" (see Table 11). In particular, it distinguishes employers, the self-employed, employees, and people involuntarily excluded from the labor.

ESeC Class	Common Term	Employment regulation
Large employers, higher grade professional, administrative and managerial occupations	Higher salariat	Service Relationship
Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	Lower salariat	Service Relationship (modified)
Intermediate occupations	Higher grade white collar workers	Mixed
Small employer and self employed occupations (excluding agriculture etc.)	Petit bourgeoisie or independents	–
Self-employed occupations (agriculture etc)	Petit bourgeoisie or independents	–
Lower supervisory and lower technician occupations	Higher grade blue collar workers	Mixed
Lower services, sales and clerical occupations	Lower grade white collar workers	Labour Contract (modified)
Lower technical occupations	Skilled workers	Labour Contract (modified)
Routine occupations	Semi- and nonskilled workers	Labour Contract
Never worked and long-term unemployed	Unemployed	–

Tab. 11. The European Socio-economic Classification. Source: Harrison & Rose (2006).

Employees comprise several subcategories, depending on the nature of their contract. "Service relationship" assures to the employee both the salary and long-term benefits (such as pay raises, opportunities for promotion, and security of employment), whereas "labor contract" assures the wage (which depends on the amount of work) and little security or career prospects. Mixed employment forms combine some elements of both.

The European Values Study 2008 provides information on belonging to ESeC categories. Table 12 shows the distribution of the categories. Note that the category "never worked and long-time unemployed" is not explicitly included, and could be added by using information on (lack of) previous employment experiences and the duration of unemployment.

Note that – even though the categories of both EGP and ESeC are numbered – it is not possible to establish a one-dimensional hierarchy between the occupational classes. Typically, the highest class scores highest on several dimensions, and the lowest class scores lowest; however, the order of the intermediate classes and the distances between classes sometimes do not correspond to the assigned numbers. The ordering of social classes

would also depend on the criterion we would consider as relevant. For instance, lower technical occupations (i.e. skilled workers) have typically higher incomes than occupational groups dominated by women, such as intermediate occupations. The same group of lower technical occupations, characterized by relatively low education, has higher average education than the self-employed in agriculture in some countries.

ESeC category	N	%
Large employers, higher managers/professionals	114	7.55
Lower managers /professionals, higher supervisors	172	11.39
Intermediate occupations	124	8.21
Small employers and self-employed (non-agricultural)	33	2.19
Small employers and self-employed (agricultural)	64	4.24
Lower supervisors and technicians	67	4.44
Lower sales and service	204	13.51
Lower technical	273	18.08
Routine	183	12.12
No answer	39	2.58
Not applicable	222	14.70
Don't know	15	0.99
Total	1,510	100.00

Tab. 12. Distribution of EseC categories in Poland. Source: European Values Study, 2008.

In other words, categories of the EGP and the ESeC classifications should be treated as nominal (that is categorical) variables. In contrast to that, occupational scales and indexes (SIOPS and ISEI) should be regarded as interval scales.

4. Summary

Researchers often need to account for the employment status or occupation of respondents, either as the main dependent or independent factor or as a control variable which affects the analyzed relationships. Both employment and occupation are related to multiple aspects of human lives, including the standard of living and health, but also values, preferences, and patterns of behavior, thus accounting for them in an analysis may be of interest for researchers working on multitude of topics.

This article tackled some basic issues related to accounting for employment status and occupational position in social research. It touched upon

employment status as defined by the International Labour Office and official statistics, and illustrated how various large comparative surveys deal with measurement of employment status. It mentioned the internal heterogeneity of employment categories and briefly addressed the fact that people often have multiple employment statuses, thus the decision how to classify such people should be motivated by a specific research question.

Furthermore, it shortly described the ISCO classification of occupations and suggested its limited usefulness for social research. It also mentioned national classifications of occupations, which may be better suited for studies limited to single countries. Finally, it presented occupational scales of prestige and socio-economic status, which offer a possibility of quantitative accounting for the occupational status of respondents. It finished with a brief presentation of classifications of occupations (EGP and ESeC), which group respondents into relatively broad categories on the basis of their occupation.

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