MAPPING A NATIONAL CLASSIFICATION
OF OCCUPATIONS INTO ISCO-88
- OUTLINE OF A STRATEGY -

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INTRODUCTION

1.   The purpose of this paper is to outline a strategy for countries that wish to map a national occupational classification (NOC) into the revised International Standard Classification of Occupations (ISCO-88).

2.   The focus on the paper is on mapping the groups of a NOC into corresponding groups in ISCO-88. Other factors of importance for obtaining internationally comparable occupational information, such as data collection and coding strategies, will not be discussed here. Furthermore, the discussion is based on the assumption that the NOC is based on principles roughly consistent with those of ISCO-88, in particular, that the most detailed groups are defined in terms of type of work performed.

3.   The paper opens with a brief outline of why it may be useful and important to establish links between NOCs and ISCO-88. The next section outlines why and how mapping should always be carried out at the most detailed levels possible of the classifications. Then a short discussion follows of the procedure for establishing links at more aggregate levels and of the use of double coding. The last section outlines the role of the ILO in the establishment of links between NOCs and ISCO-88.

WHY MAP NATIONAL OCCUPATIONAL
CLASSIFICATIONS INTO ISCO-88?

4.   National occupational classifications should be mapped into ISCO-88 mainly because national users of occupational information want to:

  - make comparisons between national circumstances and circumstances of other countries;

  - communicate occupational information with persons or institutions in other countries.

An additional consideration, but less important, is that users in other countries - including international organisations - also want to make comparisons and communicate occupational information internationally.

5.   If only two countries are involved, the need for international comparable occupational information could be satisfied most
effectively by directly linking their national classifications. However, as soon as more than two

countries are involved, pairwise linking becomes impossible. Even if most comparisons are expected to be pairwise, it may be more efficient to use the indirect route of linking to a common reference classification in order to avoid having to establish many pairwise links. The obvious candidate for the role of a common reference classification is ISCO and, increasingly, its last version - ISCO-88.

6. It is important to remember when discussing international use of occupational information that this may involve both occupational statistics and information about the occupation of individuals, e.g. migrant workers. ISCO-88 is intended to facilitate international occupational communication for both client-oriented and statistical users, and tries to provide a basis for the different uses at the national level while taking into account the special considerations which must follow from its international nature.

WHAT LINKS SHOULD BE ESTABLISHED BETWEEN A NATIONAL OCCUPATIONAL CLASSIFICATION AND ISCO-88?

7. Internationally comparable <u>statistics</u> for occupational groups are used mainly to:

(a) compare the <u>distribution</u> of the employed population or some other variable (such as wages, hours of work, work accidents, income, consumption, reading habits) over occupational groups in two or more countries;

(b) compare data on broadly or narrowly defined <u>individual sets of</u> <u>occupations</u> in two or more countries, for example, to compare the average wages of computer programmers in country "A" with those in country "B", or the number of "industrial designers" in the two countries;

(c) merge data from different countries referring to comparable groups - in order, for example, to obtain enough observations to study the incidence of particular work-related accidents or diseases among workers believed to have similar exposure to particular working conditions or harmful substances.

Depending on the purpose of the study, "occupation" may be regarded as the main variable, or it may serve as a background variable in a statistical analysis. Used as a background variable, it sometimes serves as a proxy for other variables, such as "socio-economic groups" or "working conditions", or it is used in the construction of other variables. Experience shows that at the international level many users of occupational statistics need data mainly at the higher level of aggregation - usually for type (a) descriptions. Among the exceptions are international studies of wages and earnings, work hazards and injuries and other conditions of work. Such studies often require that detailed occupational groups are defined, sometimes in cross-classification with the "industry" and/or "status in employment" variables.

8. The main <u>client-oriented</u> applications for a standard international occupational classification are in the international recruitment of workers and in the administration of short- or long-term migration

of workers between countries. An internationally developed and agreed upon set of descriptions for detailed occupational categories which can serve as a common "language" for the countries and parties involved in such programmes may greatly increase the effectiveness of the communication necessary for their execution.

9. While the statistical use of type (a) above requires that the occupational classifications cover all jobs, the focus in other types of use - statistical or client-oriented - is on specific occupations or groups of occupations. Although the sum total of all users' interests in these types of use could conceivably also cover all occupations, in practice only some occupations are involved. The problem is to know which they are. Therefore the links have to be established for the whole range of occupations covered by the two classifications.

10. Because occupational information is needed at all levels of aggregation in international, as well as in national, applications, it follows that links between a NOC and ISCO-88 should also be established as far as possible at all levels of aggregation. In order to achieve this it is necessary, but not sufficient, to establish links at the most detailed level in the classifications. However, the links established at the detailed level will ease the establishment of links at more aggregate levels.

MAPPING AT THE MOST DETAILED LEVEL

11. Mapping one classification into another is equivalent to determining for each group in the first classification the most appropriate corresponding group in the other. This is in principle very similar to coding an occupational response on a questionnaire - an advantage being that in the case of mapping, one normally should have access not only to a title and very brief task information when assigning a code, but to a whole description of tasks and duties of jobs included in each occupational group in the NOC.

12. The first step when establishing links should always be to give to the most detailed groups of the NOC the code of the most detailed appropriate group in ISCO-88. Assuming that the most detailed level in the NOC is more detailed that the unit group level in ISCO-88, we will have the following cases:

(a) The NOC group belongs unambiguously to one of the ISCO-88 unit groups. This is of course the simplest situation and, if the NOC was developed on the basis of ISCO-68 or ISCO-88, this is likely to be the most usual case;

(b) The range of tasks and duties of the jobs belonging to an NOC group is partly outside those described for the most relevant ISCO-88 unit group, but falls within the same ISCO-88 minor group. In this case the group should be coded according to the numerical dominance priority rule outlined below, or, if this is not applicable, to the appropriate minor group;

(c) The range of tasks and duties of the jobs belonging to an NOC group is partly outside those described for the most relevant ISCO-88 unit group and they also fall partly outside the corresponding ISCO-88 minor group. In this case, the group should be coded to the

ISCO-88 unit group determined by following the priority rules outlined below, invoked in the same order as they are described. If no unit group can be determined, then the same exercise should be carried out to determine the most appropriate ISCO-88 minor group, sub-major group or, as a last resort, major group.

13. The <u>numerical dominance</u> priority rule would say that in the case of a detailed NOC group not fitting into any ISCO-88 unit exactly, the group should be coded to the ISCO-88 unit group to which a large majority of the jobs, (e.g. around 80 per cent) in the national group belongs. If there is no such ISCO-88 unit group, then one should try to use the <u>skill level</u> priority rule.

14. The <u>skill level</u> priority rule would say that the national group should be coded to the ISCO-88 unit group which includes those of the tasks and duties of the national group which correspond to the highest ISCO-88 skill level. If no difference in skill level is involved in the different tasks and duties, then one should try to use the <u>production</u> priority rule.

15. The <u>production</u> priority rule would say that priority, when deciding to which ISCO-88 unit group to code, should be given to those tasks and duties which are directly related to the production of goods or services rather than to associated tasks and duties related to the sale and marketing of the same goods, their transportation or the management of the production process (unless these tasks and duties predominates among the workers in the NOC group). For example, when the tasks are baking bread and pastries and also selling them, the priority should be given to baking, not to selling; if the tasks are operating a particular type of machinery and also instructing new workers in how to operate the machine, then priority should be given to the machine operation; if the tasks are driving a taxi and also keeping the accounts, then priority should be given to driving.

16. The result from this coding exercise would be a list of detailed NOC occupational groups mostly given ISCO-88 unit group codes or the codes of even more detailed ISCO groups in areas where such groups may have been defined. This means that, when needed, the NOC groups can subsequently be aggregated to most of the relevant aggregate groups which have been defined in terms of ISCO-88 unit groups.

MAPPING AT THE AGGREGATE LEVELS

17. Unfortunately data very often are not available for groups defined at the most detailed level in the NOC, because the census or survey returns have been coded at a higher level in the NOC. This makes it necessary also to establish links directly between the aggregate NOC groups and the most detailed relevant aggregate ISCO-88 groups. The first step in this process should be to look at the structure of the aggregate NOC groups for which data are available in terms of their component ISCO-88 unit groups, i.e. at the results of the exercise described in the previous paragraphs. Using the same priority rules as those outlined above, one should determine how one or the sum of several NOC aggregate groups can be used as a reasonably close approximation to an ISCO-88 unit group, minor group or sub-major group. In terms of closeness of approximation, this procedure evidently will give results which are much less satisfactory than those resulting from aggregating data

using more detailed national groups. This is one reason why it is recommended to always code to the most detailed level of the national classification, given the information in each census or survey response.

THE USE OF DOUBLE CODING

18. The most precise "mapping" will be obtained by coding the original records simultaneously to both NOC and ISCO-88. This can be done by having a coding index, in machine readable form, where each index entry has been given both the NOC and the ISCO-88 code. Coding will then be done by recording the number of the index entry, rather than the code(s) and let the computer link the correct NOC code or ISCO-88 code, as needed, during the tabulation stage. This strategy is easier to implement when using a computer assisted coding system (CAC) than when coding manually, but the most resource demanding part is the work to assign codes to the coding index, and that has to be done both for the CAC and the manual procedures.

19. In many cases coding to the NOC has already been completed by the time mapping to ISCO-88 is being considered. The procedure then used by some countries has been to code a random sample of responses from a population census or survey to both NOC and ISCO-88. The results from cross tabulation between NOC and ISCO-88 has then been used to establish the distribution of ISCO-88 codes for each of the NOC codes, and this distribution has then been used to distribute the numbers for each NOC group, from a whole census or labour force survey, among the relevant ISCO-88 groups. However, the costs of this type of double coding may also be significant, especially if it has to be carried out frequently or for different types of populations in order to satisfy the assumptions making valid use of the conversions based on the results.

20. It should be noted that even though the results from double coding as described in paragraph 19 usually will be the best source of information for determining whether the numerical dominance priority rule can be applied, other sources and more unstructured general knowledge about the labour market and the population being coded may supplement or replace the results of double coding.

THE ROLE OF THE ILO

21. Mapping a NOC into ISCO-88 requires a good understanding of the national labour market and occupational structure, of the NOC itself and its principles, and of ISCO-88. Those who are responsible for the NOC and who have experience with its use are therefore best suited to establish the links between NOC and ISCO-88. However, because the exercise involves both classifications, it would be an advantage if those responsible for ISCO-88 could be given the opportunity to comment upon a first draft of links between the two classifications, based on their knowledge of ISCO-88 and their experience with the difficulties of other countries and the way these have been resolved. Contacts should therefore be taken with the ILO Bureau of Statistics before finalising the links between the NOC and ISCO-88.

22. For work on NOCs which were originally developed on the basis of ISCO-68 - or, to a lesser extent, ISCO-58 - the links established between ISCO-68 and ISCO-88 at the detailed level may prove useful. This material can be made available to countries both on paper and in machine-readable form.

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