

LANGUAGE AND CULTURAL ISSUES IN SURVEYS OF THE EUROPEAN UNION

A short description and an example of fundamental problems and practical solutions

H. Van Oyen¹, S. van Buuren², J. van den Berg³, J. Bonte³

1: Scientific Institute of Public Health, Brussels

2: TNO Prevention and Health, Leiden

3: Statistics on Health and Safety, Eurostat

1. Executive summary

At about fifty years ago the European Commission set up Eurostat, the statistical office responsible for the execution of the statistical programmes of the European Union (EU). The network of Eurostat and statistical authorities is called the European Statistical System (ESS). Within this framework arrangements and agreements are made on data collection, standards and instruments, analysis and reporting. It is a network of fruitful collaboration and mutual professional exchange and support.

When Eurostat was established (bearing another name) there were only six Member States (MS) using five different languages. With the enlargement of the EU -now there are 15 MS- Eurostat had to cope with increasing language difficulties and cultural differences. This became particularly important for social statistics, which in many cases are based on population surveys. Particularly during the last decade these statistics showed a great increase, both in domains covered and in the number of subjects per domain. The statistics are sometimes based on voluntary participation of MS, sometimes on a legal basis (compulsory). Especially when regulations (legal basis) are involved great care should be given to definitions, classifications, questionnaires, etc, as they should reflect in different languages the same underlying concepts.

In some cases this proved to be nearly impossible as even the equivalent words in different languages do not cover the same underlying concept. This leads unavoidably to different answers and statistical results for the same definitions and/or classifications. Cultural and language differences are reflected in the data outcomes. So practical solutions had to be found. In EU it is more and more said that it is not always possible to establish standard questions, which could then, after straightforward translations, be applied in every culture and language of Europe (or the world).

Gradually a conceptual approach leading to operational approaches was developed which is becoming more and more accepted. First of all an agreement is made on a conceptual framework (conceptual level), next on reference standard instruments (input level) and finally national operational standards (input level) are developed and finally conversion and other methods (output level) are needed for analysing the results, both at national level for trendanalysis and at international level for comparing the data of the MS.

An example of this conceptual and operational approach is the module on disability included in the Labor Force Survey 2002 (LFS 2002).

2. Introduction

In the EU national health surveys are conducted at regular intervals or have been conducted at irregular times in 14 of the 15 MS. Eurostat started collecting these national data aiming at EU data on perceived health and related topics. So far data were collected for 12 items:

- 1 chronic conditions (general question)
- 2 self perceived health

- 3 long-term physical disability (specific items)
- 4 activity limitations/temporary disability
- 5 height and weight
- 6 current smoking
- 7 former smoking
- 8 consumption of alcohol
- 9 physical activity
- 10 in patient care (hospitalisation)
- 11 out patient care (GP, dentist, out patient specialists)
- 12 use of medicines

In this context the items 1 to 4 are particularly relevant for language and cultural influences. Questions on the items 6 to 9 have similar problems but experience from other statistical domains can provide analogue solutions. The items 10 to 12 will also show differences not bound to the language and culture but due to the different organisation of the health care delivery systems in the MS.

In the ESS the European Community Household Panel (ECHP) also contains a small module on health. It is a voluntary survey covering a range of issues on living conditions, e.g. on educations, professional activities, household. The ECHP is a fully harmonised EU wide survey conducted in every MS using the same questionnaire. The English questionnaire is the standard reference and the questions are translated in the national languages. So here the differences in questionnaires can no longer be a reason for strange differences in outcomes. However cultural differences in combination with language remains the major confounding factors in the results.

An example is the results on perceived health (Figure 1a) from the ECHP. There are substantial differences between some MS that can hardly be understood. It is unlikely that the differences are so big as shown in the figures. Part of the difference can be traced by small differences in questions, e.g. a four points scale for perceived health instead of a recommended 5 points scale. However we are becoming also more and more aware of the substantial cultural differences leading to difference answers on the same questions or to pure language problems. For instance what to do if in a language 'health' is a pure positive notion and can not be used in a question about 'less good health'; in such a case a word for word translation leads to misunderstanding for the general public even if it well understood in technical scientific circles. Another example is given on "severe disability" (severely hampered in daily activities) (figure 1b).

Figure 1a – not available

Figure 1b – not available

3. The labour force survey (LFS) as an example

The labour force survey is another fully harmonised EU wide survey. It is mainly designed to monitor labour force developments and the related social factors in the MS of the EU. It is based on a regulation, which means that it is compulsory for MS. Each MS has to collect every year data complying with a minimum set of survey methods and according to a specific list of variables and applying well defined classes (codes). Every year there is a possibility to add to the survey a module for data collection in more detail on a specific subject. In 2002 the module is on disability.

The regulation concerning the LFS module on disability is in annex 1. This regulation is published in each official language of the EU. It shows the list of items and variables and the codes to be applied. The formulation of the questions is left to the MS. So here the *standard list of items and codes* (at input level) to be applied is defined (compulsory), but in the regulation there are no descriptions of the variables, no coding instructions and no standard questionnaire.

The next step was to make a description of the concepts for each item. The descriptions were agreed by all MS in the appropriate working groups: see annex 2, explanatory notes (main author: Howard Meltzer of ONS-UK). These explanatory notes include the structure of the module, the rationale of the variables (descriptions and/or concept) and coding instructions, which were also agreed by all MS. They also have been translated in all official national languages of the MS. So there exists also a *reference standard concept and coding instructions* (at input level) agreed by all MS.

The next step left open was the design of a reference standard questionnaire. Until now the design of the questionnaire, which means also the wording, was left entirely to the MS. For the module on disability it was proposed to provide MS with a *reference questionnaire* in English, which later was also translated in all official languages. The purpose was to ease the work of the colleagues in MS in charge of the LFS module and to avoid misunderstanding in translations and/or wording, and also to help interviewers in better understanding their work during the interview. The reference standard questionnaire is given in annex 3 and it was accepted as a reference by MS.

In addition it is accepted that at *national level the operational questionnaires* need some adaptations in order to reflect the real concept and meaning of the agreed international reference standard. This leads to the so-called national operational standard.

It should be noted that it is important to have not only translations from the standards, (concepts, classifications, coding instructions and questionnaires) which are usually in English, to the other languages, but also back from the national language to English. This allows for checking the correctness of the translations into the national languages, but taking into account that some 'deviations' may be reflecting to a large extent cultural backgrounds.

4. Conversion techniques (RC)

Conversion techniques are rather new and have great potential for overcoming problems in incomparability of outcomes of data based on different classifications and/or scalings (questions) many times reflecting cultural differences. This is even more valid for the next step of the conceptual framework as described in paragraph 3 above.

Response conversion (RC) is a novel statistical technique that assists in comparing data in several circumstances:

1. items on the same topic having different formulations;
2. new items replacing old ones, thereby causing a trend gap;
3. items with identical formulations but subject to cultural response biases.

RC was developed within the framework of the Health Monitoring Program (HMP) of the European Commission, and its introduction as a routine tool is currently being considered. The goal of the HMP is to provide relevant and timely information about the health in each Member State (MS). To avoid unnecessary duplication, the system has to be fed by *existing data* that are collected by the individual MS. Incomparability of information is a major

problem in this context. Each MS has its own tradition in collecting and processing data, and changing established ways of working is not so easy.

The potential of RC was demonstrated for walking and dressing disability. Van Buuren *et al.* (2001a) identified 81 different items for measuring walking disability, and 56 different items for measuring dressing disability. The items used different question formulations, used different response categories, and were posed in different languages. RC consists of two steps (Figure 2). The first step involves the construction of a conversion key. This is a relatively complex activity, but needs to be done only once. For walking and dressing disability, a conversion key could be constructed that included nearly all of the available items. In the second step, one uses the conversion key to convert prevalence information from individual MS into a common scale. This step is simple, and can be repeatedly done on a routine basis as new information arrives. In this way, estimates of walking and dressing disability in different MS could be derived on a common scale.

The reason why the technique works is that it systematically exploits any overlap in existing information through a statistical model based on well-established Item Response Theory. RC works in the majority of cases, except when the linking information is based on an internal frame of reference. An example is "perceived health", where the frame of reference is subjective and internal. Under these circumstances it is not possible to compare without the presence of an external calibration. However, most items as used in the field of disability have an external frame of reference, for example "distance" in walking disability. Subject to the normal constraints of validity, such items can be directly compared by the RC-approach. A project is currently on its way to identify what other forms of disability could benefit from the technique. The annex 4 provides more information about the technology (Van Buuren *et al.*, 2001b).

The most important asset of RC is that it allows the expression of *existing* information onto a common scale. The values on the common scale can subsequently be used to compare and monitor health indicators of different countries. RC thus allows setting up a health monitoring system without the need to drastically change established ways of working.

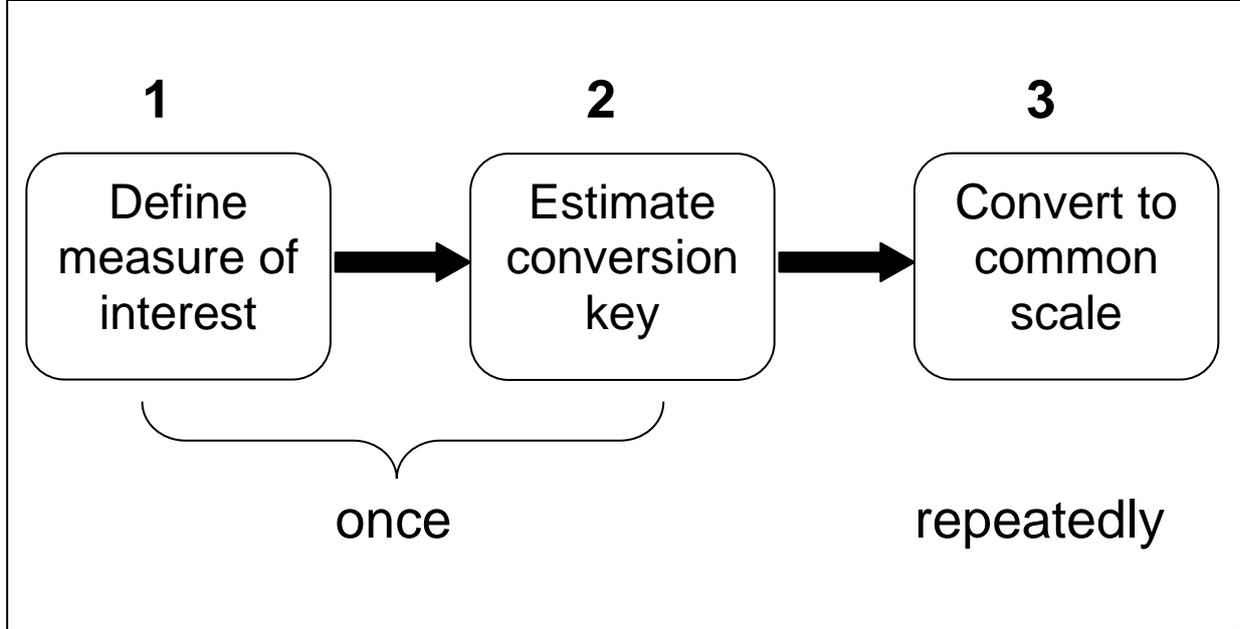


Figure 2. Steps in Response Conversion

5. Conclusions

The EU has gained over the last decade, through the ESS and in close collaboration with its MS, a substantial experience in language and cultural issues related to the health domains in surveys. The make-up of the EU, currently 15 MS, implies different language and cultures. This forced the ESS to search for creative and practical solutions to deal with the language and cultural related bias on the inference of the data collected. The results of the different EU-wide organised surveys have important policy implications. Therefore confounding due to language and culture should be understood and minimised.

The experience of the ESS over time indicates that the problem of language and cultural bias has to be dealt with both at the data production (the input-side) and at the data manipulation (the output-side) as they are complementary.

At the input side there is the stepwise process based on 3 pillars and linking the conceptual and operational approach. The important conclusion is that the primary focus has to be given in the first step to the consensus on the 'concept'. The linguistic concordance and cultural agreement have to be developed after the conceptual framework. Once the consensus is reached on the concept, the concept is translated into a reference instrument. When agreed upon, the reference instrument is adapted to language and culture and leads to the construction of operational instruments at the level of MS.

At the same time a substantial effort was done within the ESS to develop statistical techniques to solve the problem of linguistic and cultural bias within existing data. Tools such as the described Response Conversion were developed to take into account and to do a final adjustment to possible left-over language and cultural confounding.

Reference

Van Buuren S, Eyres S, Tennant A, Hopman (2001a). *Response conversion: A new technology for comparing existing health information*. TNO report 2001.097. TNO Prevention and Health, Leiden
(http://www.iph.fgov.be/epidemiology/disab/EDM2002_08.pdf).

Van Buuren S, Hopman-Rock M (2001b). Revision of the ICDH Severity of Disabilities Scale by data linking and item response theory. *Statistics in Medicine*, 20, 1061-1076.

Annex 1

COMMISSION REGULATION (EC) No 1566/2001

of 12 July 2001

implementing Council Regulation N°577/98 on the organisation of a labour force sample survey in the Community concerning the specification of the 2002 *ad hoc* module on employment of disabled people.

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,
Having regard to Council Regulation n° 577/98 on the organization of a labour force sample survey in the Community¹, and in particular Article 4(2) thereof,
Whereas:

Commission Regulation (EC) n° 1626/2000² has drawn up a programme of *ad hoc* modules to the labour force survey covering years 2001 to 2004, which includes an *ad hoc* module on employment of disabled people.

In accordance with Article 4(2) of Regulation (EC) n° 577/98 the detailed list of information to be collected in an *ad hoc* module shall be drawn at least 12 months before the beginning of the reference period for that module.

There is a need for a comprehensive and comparable dataset on the labour market situation of people with disabilities, as referred to in the Council Resolution of 17 June 1999 on equal opportunities for people with disabilities³, which calls upon the Commission to work together with the Member States, in particular within the framework of the European Employment Guidelines and in accordance with the mainstreaming principle, to monitor and analyse the development of the employment of people with disabilities on the basis of comparable data.

The measures provided for in this Regulation are in accordance with the opinion delivered by the Statistical Programme Committee established by Council Decision 89/382/EEC, Euratom⁴,

¹ OJ No. L 77, 14.3.1998, p. 3

² OJ No. L 187, 26.7.2000, p. 5

³ OJ No. C 186, 2.7.1999, p. 3

⁴ OJ No. L 181, 28.6.1989, p. 47

HAS ADOPTED THIS REGULATION:

Article 1

The detailed list of information to be collected in the year 2002 by the *ad hoc* module on employment of disabled people is laid down in the Annex to the present Regulation.

Article 2

This Regulation shall enter into force on the seventh day following its publication in the *Official Journal of the European Communities*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, [...]

For the Commission
Pedro SOLBES MIRA
Member of the Commission

ANNEX
Labour Force Survey
Specification of the 2002 ad hoc module
on employment of disabled people

1. Member States and regions concerned: all
2. The variables will be coded as follows:

Column	Code	Description	Filter, remarks
220		<i>Existence of a longstanding health problem or disability</i>	Every body aged 16 to 64
	1	Yes	
	2	No	
	9	Not applicable (person aged less than 16 or more than 64)	
	Blank	No answer	
221/222		<i>Type of health problem or disability (Code main type)</i> <i>Optional for Germany</i>	Col. 220 = 1
	01	Problems with arms or hands (which includes arthritis or rheumatism)	
	02	Problems with legs or feet (which includes arthritis or rheumatism)	
	03	Problems with back or neck (which includes arthritis or rheumatism)	
	04	Difficulty in seeing (with glasses or contact lenses if worn)	
	05	Difficulties in hearing (with hearing aids or grommets, if used)	
	06	Speech impediment	
	07	Skin conditions, including severe disfigurement, allergies	
	08	Chest or breathing problems, includes asthma and bronchitis	
	09	Heart, blood pressure or circulation problems	
	10	Stomach, liver, kidney or digestive problems	
	11	Diabetes	
	12	Epilepsy (include fits)	
	13	Mental, nervous or emotional problems	
	14	Other progressive illnesses (which include cancers NOS, MS, HIV, Parkinson's disease)	
	15	Other longstanding health problems	
	99	Not applicable (col. 220≠1)	
	Blank	No answer	
223		<i>Time since onset of health problem or disability</i>	Col. 220 = 1
	1	Less than 6 months	
	2	At least 6 months but less than a year	
	3	At least a year but less than 2 years	
	4	At least 2 years but less than 3 years	
	5	At least 3 years but less than 5 years	
	6	At least 5 years but less than 10 years	
	7	10 years or more	
	8	Don't know	
	9	Not applicable (col. 220≠1)	
	Blank	No answer	

224		<i>Cause of health problem or disability</i> <i>Optional for Germany</i>	Col. 220 = 1
	1	Born with it or birth injury	
	2	Work-related accident or injury including traffic accidents at work	
	3	Traffic accident or injury (not work related)	
	4	Household, leisure and sports accident or injury (non-work related)	
	5	Work-related diseases	
	6	Non-work related diseases	
	7	Don't know	
	9	Not applicable (col. 220≠1)	
	Blank	No answer	
225		<i>Whether works in sheltered or supported employment</i> <i>Optional for Germany</i>	Col. 220 = 1 and col. 24 = 1,2
	1	Yes	
	2	No	
	3	Don't know	
	9	Not applicable (col. 220≠1 or col.24 ≠ 1, 2)	
	Blank	No answer	
226		<i>Whether health problem restricts kind of work that can be done</i>	Col. 220 = 1
	1	Yes, considerably	
	2	Yes, to some extent	
	3	No	
	4	Don't know	
	9	Not applicable (col. 220≠1)	
	Blank	No answer	
227		<i>Whether health problem restricts amount of work that can be done</i>	Col. 220 = 1
	1	Yes, considerably	
	2	Yes, to some extent	
	3	No	
	4	Don't know	
	9	Not applicable (col. 220≠1)	
	Blank	No answer	
228		<i>Whether health problem restricts mobility to and from work that can be done</i> <i>Optional for Germany</i>	Col. 220 = 1
	1	Yes, considerably	
	2	Yes, to some extent	
	3	No	
	4	Don't know	
	9	Not applicable (col. 220≠1)	
	Blank	No answer	
229		<i>Whether some form of assistance is provided to work</i>	Col. 220 = 1 and col. 24 =1,2 and (col. 226 or 227 or 228 =1,2)
	1	Yes	
	2	No	
	3	Don't know	
	9	Not applicable (col. 220≠1 or col.24 ≠ 1, 2 or (col. 226 and 227 and 228 ≠1,2)	
	Blank	No answer	
230		<i>Whether some form of assistance is needed to work</i>	Col. 220 = 1 and col. 24 = 3-5 and (col. 226, or 227 or 228 =1,2)
	1	Yes	
	2	No	

231	3	Don't know	Col. 229 =1 or col. 230=1
	9	Not applicable (col. 220≠1 or col.24 ≠ 3-5 or col. (226 and 227 and 228 ≠1,2))	
	Blank	No answer <i>Type of assistance provided/needed to work (Code main type)</i> <i>Optional for Germany</i>	
	1	Assistance with kind of work	
	2	Assistance with amount of work	
	3	Assistance with mobility to get to and from work	
	4	Assistance with mobility at work	
	5	Support and understanding by superiors and colleagues	
	6	Other	
	7	Don't know	
232/237	9	Not applicable (col. 229≠1 and col.230≠1)	
	Blank	No answer	
	0000-9999	Weighting factor for disabled population (optional)	
	00-99	Columns 232 to 235 contain whole numbers Columns 236 to 237 contain decimal places	

Annex 2

Content and structure of the Labour Force Survey 'ad hoc module on the employment of disabled people'

Example of 'explanatory notes' (only for variable 1 – the complete file with explanatory notes is available from the authors at request)

The constraint of a maximum of eleven variables means that the chosen topics must be of a general nature to cover the large range of working practices, types of disability, and person/environment interactions. The structure of the module is shown in the flow chart below. A fuller description of each variable, its coding, rationale and applicability, along with the interviewing instructions are shown in Section 4

4. Description of variables

Variable 1

Existence of a longstanding health problem or disability

1 Yes

2 No

Applicability

All

Rationale

The first variable introduces the topic of a health problem and it is this variable along with its impact which are used as the statistic for setting clear goals and targets for the employment of disabled people. Thus one can look at the distribution of disabled people according to their economic activity by age, sex and, where appropriate, type of employment.

Interviewing Instructions

Longstanding

The key word is longstanding as it is important to distinguish between long term and short term health problems. As a general rule, longstanding should refer to 6 months or more. The two scenarios which are acceptable are (a) at the time of interview the problem had already existed for 6 months or more, and (b) at the time of interview the problem had been present for less than 6 months but is likely to continue for a time such that it is expected to have a least a 6 month duration.

The six month period should be seen as a guide to understanding the term longstanding, rather than defining an absolute period of time. The purpose of using the term, longstanding, is to distinguish between chronic conditions such as diabetes, epilepsy, schizophrenia and acute conditions such as a sprained ankle, a broken leg, appendicitis or a respiratory tract infection.

Coverage of health problems

Many people think of health problems as referring solely to physical health problems whereas they cover sensory problems as well, i.e. sight and hearing problems, and mental health problems. Therefore, the list of conditions listed for Variable 2 should be used as an aide memoire at this variable..

Coding instructions

Single event, continuous health problems

Health problems arising from a single event which are continuous in nature should be straightforward to code.

Recurrent or episodic conditions

Some conditions are recurrent (e.g. back pain), where there is an acute period followed by remission; other conditions are episodic in nature (e.g. epilepsy). Both of these examples should be coded, "Yes", as they are continual or continuous problems.

Terminal illness or outcome dependent on treatment

If the respondent is suffering from a terminal illness or if the length of the illness is dependent on the outcome of treatment (e.g. a course of chemotherapy), code "Yes".

Don't know/not sure

If the respondent does not know how long their health problem is going to last, the interviewer must not make the decision; respondents should be encouraged to estimate how long they think their problem will last for taking account of any information given by doctors or other health professionals.

Annex 3.

Reference questionnaire for 2002 LFS module on employment of disabled people.

Introductory text to be read out by interviewer:

'The following few questions are about your health in relation to work.

What people can do at work is often dependent on their health. Some people may have physical health problems or disabilities such as heart problems, respiratory problems, or difficulties in walking; others may have sight or hearing problems even wearing glasses or hearing aids, whereas others may have psychological or emotional problems. Health problems also include such illnesses as diabetes, dyslexia, epilepsy, problems with digestion as well as skin complaints'.

Variable 1, Column 220.

Do you have any longstanding health problem or disability?

Interviewer: by longstanding we mean anything that has affected R over the past 6 months, or that is likely to affect R for at least 6 months.

(If no: end module)

Variable 2, Column 221/222.

What type of health problem or disability do you have?

Interviewer: Probe for more than one problem. If more than one, establish the main problem and code only this one. Question to find out main problem: Which of these limits your work capacity the most?

Variable 3, Column 223.

(note: text between [...] to be replaced by name of main health problem/disability)

How long have you had [health problem or disability]?

Interviewer: if time of onset uncertain: take the moment R first sought medical help for this problem, or when the problem first had an effect on R's day to day life

Variable 4, Column 224.

What was the cause of [health problem or disability]?

Interviewer: if answer does not fit into given codes, probe to establish the correct code

Variable 5, Column 225.

(only ask if R is working)

May I just check, do you work in sheltered or supported employment?

Interviewer: those working in the schemes will know; consult your copy of the descriptions of your national 'schemes' in case you are asked what they are

Variable 6, Column 226.

Does your [health problem or disability] restrict the type of work you can do, for example, needing to do light work, or to sit down or to work indoors?

Interviewer: if answer is yes, probe for extent of restriction

Variable 7, Column 227.

Does your [health problem or disability] restrict the amount of work you can do, for example, the number of hours or days you can work or when you can work?

Interviewer: if answer is yes, probe for extent of restriction

Variable 8, Column 228.

Does your [health problem or disability] restrict your ability to get to and from a place of work?

Interviewer: if answer is yes, probe for extent of restriction

Variable 9, Column 229.

(only ask if R is working and at least one 'yes' in variable 6, 7 or 8)

Do you have any personal help, or get any other type of assistance, for example special equipment or work arrangements to do your work? *(if no: end module)*

Variable 10, Column 230.

(only ask if R is not working and at least one 'yes' in variable 6, 7 or 8)

Would you need any personal help or other type of assistance, for example special equipment or work arrangements in order to work? *(if no: end module)*

Variable 11, Column 231.

Which type or types of assistance do you get/need?

Interviewer: if more than one, code the main type. Question to find out main type: Which one is (would be) most helpful?

ANNEX 4

Example of Response Conversion for walking disability

Table 1 provides an overview of walking disability items that are currently being using in ten different European countries. All items measure the ability to walk, but do this in different ways. Variations occur in the formulations of both the question and the response categories. The most important differences relate to the concepts behind the item. For example, some items ask how difficult it is to walk a *fixed distance* (often 400 metres), other concentrate on *how far* you can walk, or *how long* or *how fast* you can walk without difficulty. Items can sometimes be traced back to a common ancestor. For example, fixed distance items derive from the OECD long-term disability questionnaire ("Can you walk 400 metres without resting?"). Items that use 'how far' in the question are variations on the WHO-Europe long-term disability questionnaire ("What is the furthest you can walk on your own without stopping and without severe discomfort?").

State	Item	Description	Response categories
UK	far2	How far can you walk without stopping/experiencing severe discomfort, on your own, with aid if normally used?	0 200yds or more 1 more than a few steps but less than 200yds 2 a few steps only 3 can't walk
CH	far11	How far can you walk without stopping/experiencing severe discomfort on your own?	0 200 m or more 1 More than a few steps but less than 200m 2 A few steps only 3 cannot walk unaided
N	far4	How far can you walk without stopping/experiencing severe discomfort on your own?	0 200 m or more 1 More than a few steps but less than 200m 2 A few steps only
B	far1	How far can you walk without stopping/experiencing severe discomfort?	0 200 m or more 1 More than a few steps but less than 200m 2 A few steps only
F	far3	How far can you walk without stopping/experiencing severe discomfort?	0 200 m or more 1 More than a few steps but less than 200m 2 A few steps only in meters
NL	w400c	Can you walk 400 metres without resting (with walking stick if necessary)?	0 yes no difficulty 1 yes minor difficulty 2 yes major difficulty 3 no
DK	w400b	Can you walk 400metres without resting?	0 yes no difficulty 1 yes minor difficulty 2 yes major difficulty 3 no
FIN	w400d	Can you walk without any aids a distance of 400 metres without difficulty ?	0 yes no difficulty 1 yes minor difficulty 2 yes major difficulty 3 no
S	brisk	Can you take a short walk, say five minutes,	0 yes

A	dwelling	at a fairly brisk pace? Walking up & down in the dwelling?	1 no 0 yes possible w/o help, 1 yes possible with help, 2 not possible
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Table 1: Items for measuring walking disability in different European health surveys.

Figure 1 displays the results for females after the responses were converted to the common scale by response conversion. As not all items were sampled at all ages, the lengths of the curves vary. As expected, disability generally increases with age. In general, the curves of Belgium, Denmark, Italy, Netherlands, and the U.K. follow similar patterns. The Norwegian curve is very irregular as a result of small samples. The Austrian line is peculiar in the sense that it is high and shows little age trend. An explanation for this is that the conversion key does not account for the Austrian item very well. Swiss walking disability is extremely low across all ages, which is also already apparent from raw data that show suspiciously few scores in the categories indicating more disabilities. The Danish and Dutch curves appear somewhat higher than average. As both studies are based on "400 meters" item, this could raise suspicion about any systematic bias in the conversion key with respect to "400 meters" item. Observe however that the low position of the SENECA study, which posed a "400 meters" question to a mix of European countries, does not support this. The results for the men were similar, but because of smaller samples in the upper ages show slightly more variability.

To summarise, different European countries use different items to measure walking disabilities. Figure 1 shows, for the first time, walking disability for these countries on a common scale. More details about the methodology and the example can be found in Van Buuren et al. (2001a/b).

Van Buuren S, Eyres S, Tennant A, Hopman (2001a). *Response conversion: A new technology for comparing existing health information*. TNO report 2001.097. TNO Prevention and Health, Leiden (http://www.iph.fgov.be/epidemiology/disab/EDM2002_08.pdf).

Van Buuren S, Hopman-Rock M (2001b). Revision of the ICIDH Severity of Disabilities Scale by data linking and item response theory. *Statistics in Medicine*, 20, 1061-1076.