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Inspection générale de la sécurité sociale

INSTEAD
CEPS

Age and gender-specific functional health accounts

A pilot study of the application of age and gender-specific functional health accounts in the European Union

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LIST OF ABBREVIATIONS

ATC	Anatomic and Therapeutic Classification
Be	Belgium
CEPS	Centre for Population, Poverty and Public Policy Studies
Ch	Switzerland
DDD	Daily Defined Dose
De	Germany
Dk	Denmark
DRG	Diagnostic Related Group
EEA	European Economic Area
EFTA	European Free Trade Association
EU	European Union
Fi	Finland
Fr	France
GKV	Gesetzliche Krankenversicherung (Statutory health insurance)
GUV	Gesetzliche Unfallversicherung (Statutory accident insurance)
ICHA-HC.(.)	Function of health care
ICHA-HF.(.)	Source of funding of health care
ICHA-HP.(.)	Provider of health care
IGSS	General Inspection of Social Security
Is	Iceland
It	Italy
LUH	Landspitali University Hospital
Lu	Luxembourg
MS	Member States
Nl	Netherlands
No	Norway
OECD	Organisation for Economic Cooperation and Development
OTC	Over-the-counter
PKV	Private Krankenversicherung (Private health insurance)
SHA	System of Health Accounts
SII	Social Insurance Institution
Sp	Spain
SSI	Social Security Institute
UK	United Kingdom

PREFACE

This work was funded by a Eurostat grant[1] awarded jointly to the Centre for Population, Poverty and Public Policy Studies (CEPS) in Luxembourg and the Inspection Générale de la Sécurité Sociale (IGSS) of the Luxembourg Ministry of Social Security. It was carried out by a project team based in Luxembourg, and a working group consisting of representatives from national statistical offices, Ministries of Health and Social Security, a university and a teaching hospital, in European Union Member States (EU MS) and in Iceland, Norway and Switzerland. The expertise and time of the working group members and their colleagues is gratefully acknowledged. Without their input this project would not have been possible. The members of these groups are listed below.

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1 EXECUTIVE SUMMARY

1.1 Purpose of the study

This project is part of a European programme to develop financial data on health care. Better data on expenditure by age and gender is needed to inform three areas of current major concern in Europe. These are:

- the sustainability of health and social care systems;
- ageing;
- financing health care.

Eurostat's Leadership Group on Health held a seminar in September 2000 to discuss the potential benefits of a more detailed breakdown of the functional dimension of the System of Health Accounts (SHA) in European countries. There it was agreed that Eurostat would fund an exploratory study to investigate this further, before engaging in routine collection of SHA data by age and gender. On the basis of the study it would decide whether to recommend routine collection or collation and presentation of data on health care expenditure by function, age and gender in the SHA of European countries.

1.2 How the study was done

The study was carried out in three phases between December 2001 and March 2003:

- Phase 1 Questionnaire on sources;
- Phase 2 Expenditure data collection;
- Phase 3 Data analysis and assessment of feasibility of routine data collection.

A questionnaire on potential sources of data on health expenditure by age and gender was sent to European Member States (MS) and European Free Trade Association (EFTA) countries. Information returned in these questionnaires enabled the identification of countries and SHA functions for which it would be feasible to collect such data. These represented respectively the range of health care financing and provider models extant in Europe, and a large proportion of health care expenditure.

1.3 Results

Expenditure data classified by function, age and gender for 1999 (or 1999 and 2000) were provided by: Denmark, Finland, France, Germany and Iceland (for pharmaceutical expenditure); and by Finland, Italy, Luxembourg, Norway, Spain and Switzerland (for inpatient curative care). Belgium supplied expenditure data classified by age and gender but not by function. These data were analysed for quality, consistency and international comparability. This represents the first systematic attempt to arrive at a further breakdown of the functional dimension of the SHA, in a form which will enable international comparisons. This was a pilot study. Hence the data presented in this report should not be regarded as a definitive statement of health care expenditure in the countries which have supplied data. Nor have they been analysed in detail – the aim of this study was to assess availability and quality of data, not to produce a detailed description and interpretation of patterns of age- and gender-related health care expenditure.

1.4 Recommendations

Short term: Routine collation and analysis of data classified by function, age and gender for inpatient curative care and pharmaceutical expenditure should start immediately, within the context of countries' ongoing SHA development. This report specifies the proposed format for supply of this data, including a detailed discussion of issues arising with regard to each variable.

Medium-term: The approach used in this project should be repeated for other functions and other EU/EFTA countries, with a view to improving the quality of the data obtained so far and developing a more complete picture of the relationship between age and expenditure in European health systems. How to do this will depend on other relevant ongoing and planned work within the Core Group CARE programme, and in a wider context (e.g. OECD initiatives), as well as countries' own work to implement the SHA.

2 INTRODUCTION

2.1 International comparisons of health spending

In European Union (EU) and European Free Trade Association (EFTA) countries, health expenditure as a percentage of gross domestic product has grown from an average of 4.9% to 8.0 % between 1970 and 2000.1 This growth in resources used for health care, together with the increasing complexity of health care systems and the rapid evolution of medical technology, has created a demand for improved information on health care expenditure to inform the development of national health policy. While there may be general agreement on the need for international comparisons of expenditure on health to inform policy development, there is debate about what specific purposes it should serve, and about how it should be done.

International comparisons of health spending may serve the following purposes:

- measuring the relationship between health care expenditure and health outcomes at a fixed point in time or over time;
- comparative analysis of health system performance, by comparing inputs (expenditure) and outputs or outcomes[2;3];
- developing indicators to monitor and measure the performance of health systems[4] ;
- assessing the resources needed to care for ageing populations by comparing countries' levels of spending on this care[5].

Some would question whether international comparisons of this nature are valid. For example, examining the linear relationship between expenditure and outcome and proposing hypotheses to explain countries' varying distance from the line, begs questions about the relationship between investment in health care and health outcomes in individual countries, and about the process changes being made within those countries to change that relationship. However it is not the purpose of this study to review that debate. Rather it is to look at the nature and quality of health care expenditure data available to inform research in this area, and to contribute to improving that data.

The data available to make international comparisons are limited. For example, the European Observatory on Health Care Systems was asked to compare health care systems for selected countries other than the UK for the Wanless review of technology, demographic

and medical trends in the UK over the next twenty years.[6] The Observatory report states that "Due to the limitations of internationally available data, (and) differences in definitions, terminology and reporting practices, we have not presented extensive quantitative information on the health care systems of different countries."[7] (p.1)

OECD has taken an important initiative to improve internationally comparable information on health expenditure. In 2000 it published a manual to guide the process of preparing national health accounts, called *A System of Health Accounts.*[8] Its purpose is to "provide a conceptual framework and estimation rules for health accounting… (It) proposes a three-dimensional International Classification for Health Accounts (ICHA) (with) breakdowns of health care by functions of care, provider industries and sources of funding. (It is) intended for use as a model to set up national health accounts, for revising and amending existing national health accounts or as a model to map detailed national health accounts to System of Health Accounts (SHA) standard tables for purposes of international comparisons."[9] (p. 3)

The SHA is currently being implemented across the OECD and countries are at different stages in this process. The process of implementation contributes to the development of the framework. As OECD state: " For several important types of health policy analysis, it (will) be essential to establish national surveys or micro-data sets which – integrated in comprehensive health information systems – should be sufficiently detailed to allow reporting according to (certain breakdowns in addition to the three main dimensions of functions, providers and sources of funding)."[8] (p. 45). One of these proposed additional breakdowns is expenditure by age and gender for major functional categories of health care (p. 46*).* Examining the age-related distribution of health expenditure can inform the health policy-making process by helping to:

- assess to what extent age explains variation in health care costs;[10-12]
- predict future long-term care costs of ageing populations and examine responsibility for financing this care;[13-16]
- monitor age-related rationing of health care.[17-19]

2.2 Health statistics and implementation of the SHA in Europe

Health statistics were established as a separate subject area in the five-year statistical programme of the European Union (EU) soon after the Maastricht Treaty of 1992 (which entrusted social affairs to the European Commission). Following this the first meeting of the Working Group on Public Health took place in early 1996. This meeting recommended that three Task Forces be established for the purpose of building a durable and coherent system

of public health statistics within the EU. Member States and Eurostat agreed to work together to do this. Hence the European Union's Statistical Programme Committee created a health statistics system with three main components:

- cause of death;
- health surveys and morbidity;
- health care statistics.

Within health care statistics, Eurostat, the statistical information service of the European Union, has prioritised work on health accounts. Eurostat is assisting and monitoring the process of implementation of the SHA in European countries. Planning for pilot implementation of the SHA manual in Europe was discussed at a workshop convened by Eurostat and OECD in Luxembourg in May 1999. Two more workshops followed in 2000 to review progress. The second of these was a seminar to discuss the development of functional accounts, organised by Eurostat's Leadership Group on Health at Clervaux in Luxembourg in September 2000.[20]

The Leadership Group agreed at that workshop that a breakdown of functional health accounts by age and gender would be useful, particularly for national resource planning and predictions of future health care needs in ageing populations. The group did not know whether data sources of acceptable quality were available for this task. Data registers from health care providers would be likely sources of good quality data, but entail the problem of lack of international comparability of provider boundaries. (For example, long-term nursing care may be provided in acute hospitals, geriatric hospitals or nursing homes). It considered that the feasibility of doing this should be assessed for areas of health care representing large proportions of total health expenditure in the first instance, and that careful consideration should be given to the appropriate frequency for reporting expenditure by age and gender and the age groups which should be used. However it felt that the routine inclusion of such data should be justified in terms of the relative costs and benefits, and that a strong case would need to be made for the comparability of the data. The group also flagged the problem of inappropriate use of data on expenditure by age and gender. One example given was that of insurance premium surcharges for population groups with higher shares of expenditure.

Experience to date in preparing national health accounts according to the System of Health Accounts, and discussions such as those held by Eurostat's Leadership Group on Health, have highlighted the criteria which need to be met by data used in international comparisons of health expenditure by age and gender. They may be summarised as follows.

The methods used to compile the data should be explicitly described. For example, to arrive at a classification of expenditure by age it may be necessary to combine sources containing more than one kind of data. The description of how this is done should enable anyone outside the country to understand the method used to combine the sources.

The functional definitions used should be compared with those used in the OECD SHA manual. This means that the process by which the local data are allocated to the relevant SHA function, in cases where the national operational definition differs slightly from the definition in the OECD manual, should be described.

The quality of the data should be demonstrated, in terms of: the completeness of population coverage; the representativeness of samples for data sources based on surveys; and data reliability (for example, if Diagnostic Related Groups are used to allocate data on health care activity such as hospital episodes to functional categories, the reliability of the diagnostic classifications should be assessed).

2.3 System of Health Accounts – Age and Gender

The Leadership Group on Health workshop held at Clervaux concluded that Eurostat should fund a project to investigate the availability in Europe of expenditure data which meet the criteria outlined above. Hence Terms of Reference for a fifteen-month project to investigate the feasibility of including expenditure by function, age and gender in the System of Health Accounts were issued by Eurostat in June 2001. Two organisations in Luxembourg bid jointly for and won funding for the work. These were the Centre for Research on Populations, Poverty and Socio-Economic Policy (CEPS), and the General Inspectorate of Social Security of the Luxembourg Ministry of Health and Social Security (IGSS). The project began in December 2001.

3 PROJECT OBJECTIVES

These are described in Box 1 below.

Box 1 Project objectives

The aims of the project were to:

i) assess the current availability, quality and comparability of data on health care expenditure by function, age and gender in EU/EFTA countries;

ii) make recommendations concerning the inclusion of such data in the System of Health Accounts.

The project was carried out in three phases:

Phase 1

i) Select personal health functions

ii) Collect information by questionnaire on data sources and studies of expenditure by age and gender

iii) Draw broad conclusions about data availability

iv) Identify pilot projects for Phase 2.

Scheduled to end April 2002

Phase 2

i) Select two functional areas for pilot studies

ii) Collect expenditure data from countries participating in pilots

iii) Describe in detail the data sources and the methodology for compiling expenditure data by function, age and gender from these sources

Scheduled to end October 2002

Phase 3

i) Assess data quality

ii) International comparative analysis of expenditure by function, age and gender

iii) Make recommendations concerning the inclusion of such data in the System of Health Accounts in future, and further work to improve this data.

Scheduled to end April 2003

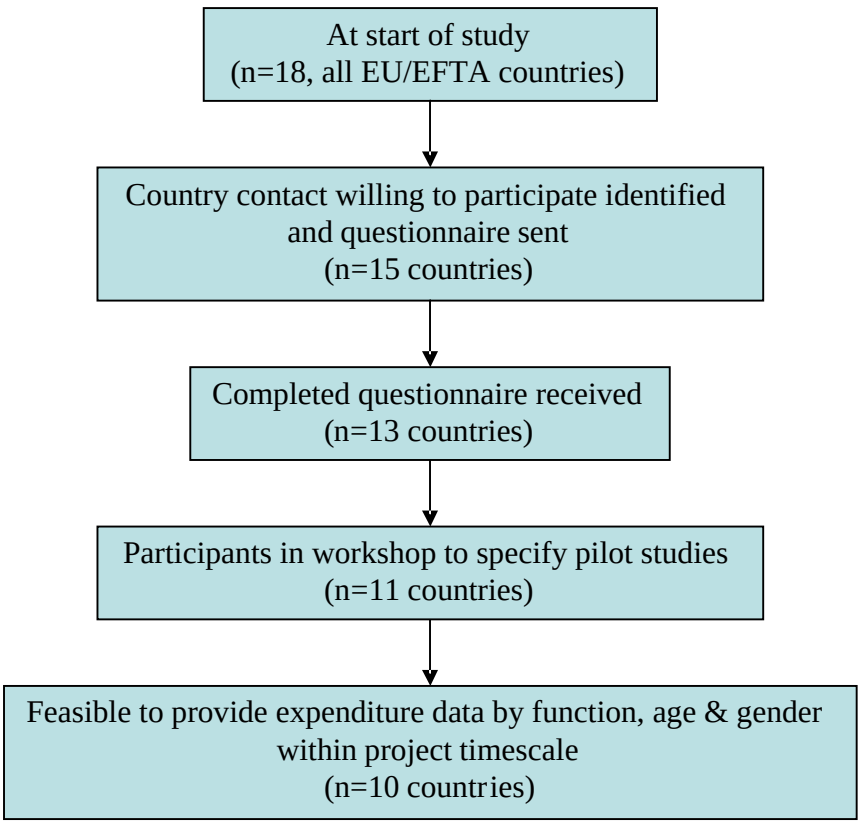
4 METHODOLOGY

4.1 Recruitment of project participants, participant flow and follow-up

The Terms of Reference from Eurostat stated that this was a pilot study designed to make an initial assessment of data availability. Hence the study would not be invalidated by failure to include all countries in the survey. However it is important to review the flow of countries through the study in order to assess the general applicability of its findings.

The eligible population for the study comprised the fifteen countries within the EU, and the three belonging to EFTA[b]. Figure 1 below shows the flow of countries through the study from this point.

Figure 1: Flow chart of study participants



[b] The three member states of the European Free Trade Association are Iceland, Norway and Switzerland.

Using our personal contacts and those known to Eurostat through previous and ongoing work, we attempted to identify, in each country, persons working in the area of health accounting, who were both interested in and able to give priority to the project. These persons would typically be working on national health accounts in Ministries of Health or National Offices of Statistics; or, in one case, an academic working in the field of health accounts with good knowledge of and access to the relevant sources. In view of the resources available to the project we tried to identify contacts at the national level only, relying on our contacts at the national level to go to the regional level where necessary. In the UK, for example, we went to the Office for National Statistics, which is taking responsibility for developing the SHA in the UK. We did not go to the health administrations of England, Scotland, Wales and Ireland. Similarly, in Spain and Italy we relied on our contacts at national level to go to regional health administrations, where they considered this would be necessary in order to identify important sources of age and gender data.

Project participants were contacted by email, with a description of the project objectives and timescale, and then by telephone, to ascertain their interest, and availability for participation, in the study. We were able to identify someone in a position to participate in fifteen of the eighteen eligible countries.

We were unable to identify a contact in the time available in three countries. Given more time it may have been possible to identify someone in a position to participate. Two of the three countries have relatively high proportions of private expenditure within total health expenditure - 44.5% and 28.7% in 2000. Data on private health expenditure is less likely to be comprehensive and classified by age and gender, because it is more likely to come from population sample surveys of private household consumption or expenditure on health care. To date the third country has not participated actively in work by Eurostat or OECD to develop health accounts within the SHA framework, which may explain our difficulty in locating a contact.

A self-completion questionnaire (see below for description of questionnaire development and content) was sent to the contact person in each of the fifteen countries, with a request to complete it in six weeks. Respondents were notified at this point of a workshop scheduled three weeks after this deadline, whose purpose would be to present an initial assessment of the data in the completed questionnaires, and to agree in detail the work to be carried out in the second phase of the project. Two weeks before the deadline, respondents were contacted by phone or email to check the need for clarification or assistance in questionnaire completion, and to encourage prompt return of questionnaires.

Thirteen completed questionnaires were received. Of these, respondents in eleven countries attended the workshop. Ten of the eleven countries represented at this meeting were able to commit to providing data on health care expenditure by function, age and gender in the second phase of the project.

4.2 Self-completion questionnaire survey to assess sources

A questionnaire was developed to collect information on actual or potential sources of data on health expenditure by function, age and gender. The main purpose of the questionnaire was to collect information about health expenditure data sources for those functions of care which are termed personal health care in the SHA.[c] The objective in reviewing the information contained in the questionnaires would be to identify those functions for which a sufficiently high number of countries would be in a position to supply health care expenditure data in the second phase of the project. In other words, on the basis of this initial review of the sources, for which functions, in a sufficiently wide group of countries, would we be likely to be able to obtain comprehensive and high quality expenditure data classified by function, age and gender in Phase 2 of the project?

More specifically the questionnaire was designed to obtain the information described below.

a) What data sources are available within each country for analysing health care expenditure by function, age and gender?

b) For each source, what is the origin and nature of the data (for example, administrative data from health care providers, data from social security systems, panel or survey data), the functional and provider classification used and the age grouping used?

c) For each source, how complete are the data in terms of the proportion of the population included and its geographical coverage; how timely and compatible is it with the SHA manual, in terms of the functional and provider definitions used in each country?

The questionnaire is reproduced in Appendix 1. It was assessed for ease of understanding and compatibility with local terminology by our contacts in the Netherlands and Finland, and by our contact in Eurostat. It was also completed with data for Luxembourg where the

[c] Personal health services comprise health care services provided directly to individual persons (as opposed to collective health care services covering the traditional tasks of public health). They include services of curative care, rehabilitative care, long-term nursing care, ancillary services to health care and medical goods dispensed to outpatients with or without a prescription.

project manager is based. Some amendments were subsequently made to terminology and layout to improve clarity and understanding. It was then sent to our contacts in each EU and EFTA country which had agreed to participate in the study, as described in section 4.1 above.

4.3 Country-specific studies of expenditure by age and gender

Respondents were asked to identify any analyses done in their own countries on expenditure by age and gender, and to comment on the relevance of these studies to this project. This question was included in the questionnaire to help respondents to identify relevant data sources, and to assess the nature and quality of data in those sources.

5 RESULTS

The purpose of this study was to assess the suitability of the data available from existing sources, for comprehensive and ongoing analysis of health care expenditure by function, age and gender in European countries. If the study is extended beyond its pilot phase it will be possible to carry out this wider analysis.

5.1 Potential sources of data on expenditure by age and gender

5.1.1 Questionnaire response rate

The response rate to the Phase I questionnaire was high. 13 out of the 15 countries where contacts had been identified returned completed questionnaires (Table 1). One country gave lack of readily accessible expenditure data sources containing age and gender information, as a reason for not returning the questionnaire. The possibility of compiling this data for this country from sources which vary in terms of their geographical coverage and data type could be investigated further if the project goes beyond the pilot phase. The other country which did not complete a questionnaire was not able to give sufficient priority to the work.

Table 1: Countries completing questionnaires

Country	By 15/4	By 28/6	Questionnaire not completed
Belgium		Yes	
Denmark	Yes		
Finland	Yes		
France	Yes		
Germany	Yes		
Iceland	Yes		
Ireland			*
Italy	Yes		
Luxembourg	Yes		
Netherlands	Yes		
Norway	Yes		
Spain	Yes		
Sweden			*
Switzerland	Yes		
UK	Yes		

5.1.2 Description of data sources identified by participating countries

Table A2 (a, b and c) reproduced in Appendix 2 summarises information in the completed questionnaires returned by participating countries, for three of the five functional categories included under 'personal health care' in the SHA. (See Appendix 3 for a complete list of functions). These categories are: curative care (HC.1), long-term nursing care (HC.3), and pharmaceuticals and other medical non-durables (HC.5). These categories account for most personal health care expenditure. The information is as follows. Firstly there is a verbal description of the nature of the data sources. Secondly, each source is classified by whether it provides information on health service activity (e.g. number of hospital episodes or number of outpatient consultations) or expenditure (e.g. administrative data collected by a social insurance system for billing and information purposes). In sources classified as expenditure sources each episode of activity recorded in the database also contains cost information. Thirdly, the proportion of the national population covered by each source is indicated. Finally, the ICHA functional categories represented by each source are shown, in separate tables for curative care (Table 2a, Appendix 2), services of long-term nursing care (Table 2b, Appendix 2), and medical goods dispensed to outpatients (Table 2c, Appendix 2). The information presented in Tables 2 to 7 below is based on this descriptive analysis.

5.1.3 Geographical coverage and type of source

The majority of data sources identified in the questionnaires are national sources (Table 2). Only in Italy is the number of regional sources greater than the number of national sources. The project participant in Italy sent the questionnaire to all twenty-one Italian health regions, and received responses from three (Lazio, Tuscany and Umbria).

The majority of sources identified by participants are of an administrative nature. For example the data comes from hospital discharge data bases, or is generated by the reimbursement process in the case of systems funded by social insurance schemes (Table 2).

Table 2: Geographical coverage and type of source

Country	Number of sources	Geographical coverage		Type of source		
		National	Regional	Admin[a)]	Survey[b)]	Other[c)]
Belgium	1	1		1		
Denmark	3	3		2		1
Finland	4	4		3		1
France	3	3			3	
Germany	7	7		5	2	
Iceland	2	1	1	1		
Italy	11	4	7	9	2	
Luxembourg	2	2		2		
Netherlands[d)]	1					
Norway	9	9		7	2	
Spain	6	6		4	2	
Switzerland	5	5		5		
UK	4	4		3	1	

a) For example, data on health care services and goods provided, collected for information and billing purposes.
b) For example, household budget survey, health and living conditions survey
c) For example, benchmarking project, pilot implementation of the SHA
d) Source is Polder 2001 'Cost of Illness in the Netherlands' 21 which is based on sources not analysed in the completed questionnaire.

5.1.4 Age groups

The majority of sources identified will enable any age grouping to be specified (Table 3), because they contain information on date of birth of patients. There are two exceptions. One is Spain, for which two out of six sources contain age data. The other Spanish sources are to be used in combination with other sources to derive information on expenditure by age and gender. In the case of Switzerland, four of the five data sources identified by our contact in the Swiss Federal Office of Statistics are available from the country's health insurance scheme. This scheme produces data already classified by age groups, for use by organisations outside the insurance scheme such as the Federal Office of Statistics. "It is not technically possible to get data for other age classes or single years." (Personal communication, Raymond Rossel, 2002)

Table 3: Age groups

Country	Total number of sources	Any age grouping possible	Age grouping defined in source	No age data in source[c)]
Belgium	1	1		
Denmark	3	3		
Finland	4	4		
France	3	3		
Germany	7	6		1
Iceland	1	1		
Italy	11	10	1	
Luxembourg	2	2		
Netherlands	1[a)]	a)	a)	
Norway	9	7	2	
Spain	6	2		4
Switzerland	5		5	
UK	4	b)	b)	

a) Source is Polder 2001 'Cost of Illness in the Netherlands'[21], which is based on sources not analysed in the completed questionnaire.
b) Information not provided in completed questionnaire.
c) Source to be used in combination with other sources to estimate age and gender.

5.1.5 Representation of health care providers in sources

Information on providers (ICHA-HP in the SHA) was requested in the questionnaire. See Appendix 3 for a list of ICHA providers. This was to prompt respondents to verify that no major provider categories (relevant to personal health care) had been omitted in countries' review of potential sources of age and gender data.

Table 4 shows which provider categories are represented by countries' data sources for four provider categories (hospitals, nursing/residential care, ambulatory care, retail sale/other providers of medical goods). For most countries all four categories are represented. In the case of Finland, data by function is available for long-term nursing care. For Denmark, data on long-term nursing care must be obtained at municipality level.

Table 4: Representation of health service providers in data sources

Country	Total number of sources	ICHC providers represented by at least one source			
		HP 1: Hospitals	HP2: Nursing/ residential care	HP3: Ambulatory care	HP4: Retail sale/ other providers medical goods
Denmark	3	Yes	No	Yes	Yes
Finland	4	Yes	b)	Yes	Yes
France	3	Yes	Yes	Yes	Yes
Germany	7	Yes	Yes	Yes	Yes
Iceland	1	Yes	Yes	Yes	Yes
Italy	11	Yes	Yes	Yes	Yes
Luxembourg	2	Yes	Yes	Yes	Yes
Netherlands	1a)	?	?	?	?
Norway	9	Yes	Yes	Yes	Yes
Spain	1	Yes	No	Yes	Yes
Switzerland	5	Yes	Yes	Yes	Yes
UK	4	Yes	Yes	Yes	Yes

a) Source is Polder 2001 "Cost of Illness in the Netherlands"[21], which uses a range of sources not analysed in the completed questionnaire.

b) Long-term nursing care is represented as a function (Appendix 2, Table 2 b, Finland, Source 1)

5.1.6 Availability of sources by functional category

From a "long-list" of four functional categories (those shown in Table 5) it was decided that two functions should be selected for further analysis in Phase 2. This reflects the Terms of Reference and hence the resources available for the project. Neither participating countries nor the project board had the capacity to carry out detailed work on other functional categories during this project.

Tables 5 and 6 represent our initial attempt to identify the functional categories with most potential for routine data collection, as measured by suitability and accessibility of their data sources. A data source of possible interest in Phase 2 must fulfil several criteria, namely:

- importance;
- accessibility;
- coverage;
- quality.

In terms of *importance*, the functions identified in Table 5 account for most expenditure on personal health care. The two SHA categories missing from this list are HC.4 (Ancillary services to health care – clinical laboratory, diagnostic imaging and patient transport and emergency rescue); and HC.5.2 (Therapeutic appliances and other medical durables).

Accessibility is partly a function of the way in which data is organised. Here we may think of a hierarchy of accessibility. The most accessible data is that contained in a database used for billing, containing data on expenditure by episode. Slightly less accessible, in that it requires more work to classify it by function, age and gender, is data in patient registers which must be combined with cost per case data to obtain expenditure by age and gender. Survey data is the least accessible in the sense used here. Results are presented for pre-defined age groups and must be extrapolated to the whole population and combined with cost per case data to obtain expenditure by age and gender. Accessibility may also be constrained by data protection considerations. Or it may be affected by political considerations which determine access to or exchange of information between organisations. For example, in countries where the organisations preparing health accounts for the SHA or satellite health accounts, or analysing health expenditure to inform health policy, are different from those financing health care, it may not be straightforward for the former to gain access to detailed health expenditure data from the financing organisations. Or they may have to be content with it in the form in which the financing organisation provides it.

The *coverage* of data sources relates to proportion of the population covered and the geographical coverage of the sources. The most useful sources in this respect are registers where every episode of care is recorded in the data source. Survey data is less useful but it is usually necessary to use this to obtain information on private expenditure. The representativeness and size of the sample must be assessed for these sources. Some of the identified sources are household surveys from which information on expenditure by age and gender for individuals can only be obtained indirectly.

The fourth criterion we used to assess data sources relates to *quality*. A high quality source is reliable, comprehensive, timely and not prone to random variation. At this point in the Eurostat project, we have relied on participants from each country to assess the quality of their data sources. A more detailed assessment of this aspect will be possible when we analyse expenditure data from each country and make some international comparisons in Phases 2 and 3 of the project.

Thus, Table 5 shows which countries have a source of activity or expenditure data available with *national* coverage for each function. Note that the activity or expenditure data are not necessarily present in the same source. Where activity and expenditure data are not present

in the same source, then at least the activity data source contains information on age and gender.

Table 5: Activity or expenditure sources available by function

Function[a)]	**Countries for which a national activity or expenditure source is available**[b)]
HC1.1 or HC1.1 & HC1.2 Inpatient/day case curative care	Dk, Fi, Fr, Is, It, Lu, No, De, Ch, Sp[c)]
HC 1.3 or 1.3.1 Outpatient curative care/basic medical & diagnostic services	Dk, Fi, Fr, Is, Lu, No, Sp, De
HC3.1, HC3.2, HC3.3 Long-term nursing care	Ch, Fi, Fr, Ch, Is, It, Lu, No
HC5.1 or HC5.1.1 Pharmaceuticals & other medical non-durables/prescribed medicines	Ch, Dk, Fi, Fr, Is, Lu, No, De

a) A complete list of ICHA-HC categories is given in Appendix 3.
b) For Be, Nl and the UK, information provided in the questionnaires did not enable an assessment of data availability at or below the second digit level of ICHA-HC.
c) See country abbreviations on p. 4.

Table 6 extends this analysis by showing, for each function, which countries have data sources which contain information on expenditure by function, as well as age and gender, in the same source. By definition these sources are more accessible to this project, because less effort is required to produce expenditure profiles by age and gender. If it is necessary to combine non-expenditure or activity data sources with expenditure data sources, greater analytical resources are required.

Table 6: Availability of sources combining activity and expenditure data, by function

Function	Countries for which a national source(s) combining activity and expenditure data is available
HC1.1 or HC1.1 & HC1.2 Inpatient/day case curative care	Fi, Fr, Is, Lu, De, Ch, No
HC 1.3 or 1.3.1 Outpatient curative care/basic medical & diagnostic services	Dk, Fi (partial), Is, Lu, No, De, Fr
HC3.1, HC3.2, HC3.3 Long-term nursing care	Ch, Fi, Fr, Is, It, Lu, No
HC5.1 or HC5.1.1 Pharmaceuticals & other medical non-durables/prescribed medicines	Ch, Dk, Fi, Fr, Is, Lu, No, De

5.1.7 Country-specific studies of expenditure by age and gender

Details of country-specific studies of expenditure by age and gender identified by project particpants are presented in Appendix 5 and referenced in the bibliography. These studies are essentially of four types. The most numerous group of studies are descriptive retrospective studies of expenditure by age and gender for specific time periods (Belgium, Finland, France, Germany and Norway).[22-30] The second group of studies are those which forecast expenditure based on current age- and gender-related distributions of expenditure (Italy and Spain).[31-35] The third type is work carried out as part of a pilot implementation of the SHA (Denmark).[36] Finally there is one example of a cost of illness study. This was carried out in the Netherlands and looked at, among other things, age-specific costs of illness.[21]

5.2 Identifying expenditure data to be collected in Phase 2

5.2.1 Selection of health care functions

Discussion of the information presented in Tables 2 to 6 focussed on accessibility, quality and national interest or relevance. A matrix was developed to classify countries' data sources by varying degrees of accessibility. This is shown in Table 7 below. In order to classify their sources participants had to consider issues of practical and political access.

It was agreed that any sources which were available immediately, or would require some effort but may nevertheless be available within 3 months of any decision to use them, would be of potential interest to this project.

Table 7: Availability of sources by function and degree of accessibility

Function	**Degree of accessibility of sources**			
	Immediate	**Some effort (Within 3 months)**	**Data exist but have problems**	**Additional data collection necessary**
Curative care – Inpatients (HC.1.1, HC.1.2)	De	Fi, It, Lu, Is, Ch, Sp, No, Fr		Dk, UK, Sp, Be
Curative care – Outpatients (HC.1.3)	De	Lu, Is, Sp, Fr	It	Fi, Ch, Dk, No, UK, Sp, Be
Long-term nursing care (HC.3.1, 3.2, 3.3)	(It)	Fi, Is, (Lu), No, Ch	De	Dk, UK, Sp, Fr, Be
Pharmaceuticals (HC.5.1.1,HC.5.1.2)	De, Dk	Fr, Lu, Is	Fi, It	UK, Sp, No, Be, Ch

On the basis of the classification in Table 7, countries volunteered to supply expenditure data by age and gender for one of two functional categories: inpatient curative care and pharmaceuticals, as shown in Table 8 below. It was agreed at the workshop that it would be worthwhile extending the classification in Table 7 to all functions of personal health care (HC.1 to HC.5), for the data sources identified in the Phase 1 questionnaire. Participants were asked to do this during the second phase of the project.

Table 8: Countries agreeing to supply expenditure data by function[a)]

	Inpatients (HC.1.1, HC.1.2)	Pharmaceuticals (HC.5.1.1,HC.5.1.2)
Country	Fi, It, Lu, Ch, No, Sp	De, Dk, Fr, Is

a) Finland decided at a later stage in the project to provide data on pharmaceutical expenditure. Belgium supplied expenditure data classified by age and gender but not by function.

5.2.2 Variables to be included in expenditure data

The precise format in which expenditure data by age and gender should be prepared was specified in the form of an Excel workbook which was sent to all project participants and is reproduced in Appendix 4. Project participants were asked to supply data for the variables shown in Table 9 below.

Table 9: Variables to be included in Phase 2 expenditure data

Variable	Description
Year	Data should be supplied for 1999, and, where possible, 2000.
ICHA-HC code	Two positions e.g. HC.1.1
Age	This should be for single years up to age 99, then > 99
Gender	
Number of cases or episodes	For pharmaceutical data use Defined Daily Dose as the unit of measurement for volume
Total expenditure	General Government and Private Sector. In Euros using the annual average conversion rate for the relevant year
Total expenditure – General Government	(HF1) (Table 11.1, p. 153, OECD 'A System of Health Accounts',)
Total expenditure – Private Sector	(HF2) Table 11.1, as above. Where it is possible to make a reasonable estimate of private expenditure by age group this should be done, and a description of the estimation methodology provided. (For example, where the age distribution for public expenditure has been applied to a total for private expenditure, this should be stated.) Data on private co-payments should be included where possible, and public expenditure on private sector services, with a clear indication that this is included.
Population	For one year age classes, male and female
Year	Give the reference date e.g. mid-year.
Age	As above.
Gender	
Number of persons	This data should refer to the population covered, if the data source is a social insurance source; or to the resident population if the data source is, for example, a provider source, where eligibility for use of services is determined by geographical residence.

5.3 Expenditure on curative care and pharmaceuticals in eleven EU/EFTA countries

5.3.1 Overview of data received in Phase 2

All countries which undertook to supply this data during Phase 2 did so. Thus Germany, Iceland, France, Denmark and Finland provided data on pharmaceutical expenditure. Luxembourg, Italy, Spain, Belgium, Finland, Norway and Switzerland supplied data on inpatient curative care. (Finland also provided partial data on outpatient curative care expenditure. The Belgian data is not classified by function). A summarised description of the data supplied by each country is presented in Table 10 below.

Table 10: Basic characteristics of Phase 2 expenditure data

Country	Data type	Data sources[a] expend data direct or indirect	Year	Population	HC Code	Age	Gender	Cases	Total	Public	Private	Format as specified
									Expenditures			
Germany	Pharma	6 sources incl. RSA baseline data set – risk profiles of the Federal Office for Supervision of Sickness funds, private health insurance data, statutory accident ins. data, OTC medicines survey. – Direct expenditure data for RSA/ GKV – this used to allocate total expenditure from German SHA to age groups.	1999; 2000	Mid-year	HC.5.1.1+ HC.5.1.3; HC.5.1.2	1 year classes up to age 90 for RSA data – population age distribution used to refine distribution of expend by age for 90+.	Yes	Prescriptions & DDDs	Yes	Yes	Yes	Yes
Iceland	Pharma	State Social Security Institute & Landspitali University Hospital Direct expenditure data	2000	1.12.2000	HC.5.1.1	5 year classes to 84, then 85+	Yes	Prescriptions & DDDs	Yes	Yes	Yes	Yes
France	Pharma	EPAS (assurance maladie) & SPS (CREDES) Indirect expenditure data	2000	Total in sample by age class	No	1 year classes	No	No	Yes **	No	No	No
Denmark	Pharma	Register of Medicinal Product Statistics Direct expenditure data	1999; 2000	Population register on 1 July	HC.5.1.1	1 year classes	Yes	DDD	Yes	Yes	Yes	Yes
Finland	Pharma	Statistics on national health insurance refund of medical expenses	1999; 2000	Arithmetic mean on January 1 for two consecutive years	HC.5.1.1	1 year classes	Yes	Prescriptions	Yes	Yes	Yes	No

Country	Data type	Data sources[a] expend data direct or indirect	Year	Population	HC Code	Age	Gender	Cases	Expenditures			Format as specified
									Total	Public	Private	
Luxembourg	Curative care	National health insurance fund Direct expenditure data	1999; 2000	Persons protected by health insurance fund living in Lux	HC1.1; HC.1.2	1 year classes	Yes	Yes	Yes	Yes	Yes	Yes
Italy	Curative care	Italian archive on hospital discharges SDO, DRG fee schedule, Italian Household Budget Survey, OECD Health Database. Indirect expenditure data	1999; 2000	Mean of sum of resident population, 1/11/99 & 1/1/2000	HC.1.1; HC1.2	1 year classes	Yes	Yes	Yes	Yes	Yes	Yes
Spain	Curative care	EGSP-Statistics of Public Health Care Expenditure; ESSRI-Hospital Statistics; 1991 Census population projections; CMBD-GRD-Hospital Discharge Registry and DRG stats for the National Health System. – Indirect expenditure data	1999	Projections based on 1991 census. Revised figures by reference date, age, sex & year, Dec 1999	HC.1.1 (to clarify)	1 year classes	Yes	Yes (public hosps only)	Yes	Yes	No	Yes
Belgium	All expenditure; extract of printed report	Alliance Nationale des Mutualités Chrétiennes; Committee for financial responsibility of insurance companies; voluntary insurance – small risks of the self-employed	2000	Yes	HC.1 to HC.5	1 year classes	No	No	Yes	No	No	No

Country	Data type	Data sources[a] expend data direct or indirect	Year	Population	HC Code	Age	Gender	Cases	Total	Public	Private	Format as specified
									Expenditures			
Finland	Curative care	Benchmarking hospital data STAKES Indirect	1999; 2000	Arithmetic mean on I January for two consecutive years	HC.1.1+ HC1.2; HC1.3	1 year classes	Yes	No. of visits – outpatients (hospitals only); No. of bed days & no. of episodes – inpatients	Yes	No	No	No
Norway	Curative care	Norwegian Patient Register, DRG cost weights. Indirect expenditure data	1999; 2000	Total population, end 1999, end 2000	HC.1.1	1 year classes for general hospitals; other age classes for psych. institutions	Yes	Yes	Yes	Yes	No	Yes for gen hosps; no for psych institutions
Switzerland	Curative care	Sickness insurance: LAMal, Loi sur l'Assurance Maladie	2000	Average resident population on 1 January for 2 consecutive years for nationals; arithmetic mean of monthly estimates for non-nationals	HC.1.1+ HC2.1; HC3.1	1year classes (total for 5 year group evenly distributed)	Yes	No	Yes	Yes	Yes	Yes

a) "Sources" means all sources of data and information e.g. DRG fee schedule, used to compute the expenditure distribution by age and gender i.e. not only data on individual patient events.

b) Average expenditure per head in French francs & Euros

5.3.2 Description of data provided by each country

At the second meeting of project participants, held at Clervaux in November 2002, each participant described the methodology used to classify expenditure by age and gender. The methodological notes accompanying the Excel workbook provided by each country and any presentation slides used by participants to describe their approach are provided in Appendix 6 (Methodological notes by country).The approach used to prepare data is summarised briefly here, and the key characteristics of each country's data summarised in Table 11 (a) to (l). Where specific recommendations about how to collect or present this data, in any future regular compilation of age and gender data within the SHA, arise from consideration of the characteristics of countries' data, these are indicated in this section.

5.3.2.1 Pharmaceuticals and other non-medical durables

Germany

The approach to compiling the German pharmaceutical data is described in Table 11 (a) below. Note the explanation given of how the age distribution was estimated or calculated for expenditure coming from different sources. It was suggested that each country estimate the potential for bias resulting from estimations - would these result in over or under-estimates for different segments of the age range, or different insured populations?

Recommendation: Where data is estimated the possibility of under- or over-estimates should be stated.

Table 11 (a): Description of Phase 2 expenditure data – Germany, pharmaceuticals

Data characteristic	**Data description**
Data type	Pharmaceuticals and other non-medical durables
Data sources	6 sources incl. RSA baseline data set (risk profiles of the Federal Office for Supervision of Sickness funds), private health insurance data, statutory accident insurance data, OTC medicines survey, GKV-Arzneimittelindex.
Direct/indirect expenditure data	Direct expenditure data for RSA/GKV which covers 87% of the German population – this used to allocate total expenditure from German SHA (for HC.5.1.1 & 5.1.3) to age groups. For public budgets age/gender distribution of GKV expenditure multiplied by total expenditure of public budgets from German SHA. Info also provided in the methodological notes on how age-related expenditure distribution was computed for populations insured by the work-related accident funds (GUV), private health insurers and private households & non-profit organisations
Year	1999; 2000
HC Code	HC.5.1.1+HC.5.1.3; HC.5.1.2

Data characteristic	Data description
Age	I year classes up to age 90 for RSA data – population age distribution used to refine distribution of expend. by age for 90+.
Population	Mid-year. 1 year age groups to age 95 from StBA. I year age groups from 95 + from Eurostat for 1995, 1996, 1997. Estimate for 1998, 1999, 2000 by linear regression.
Gender	Yes
Cases	Prescriptions and Defined Daily Doses - both "established" in long-term German sample survey (GKV Arzneimittelindex) of all prescription forms completed by office-based physicians for population insured by GKV. Because the Arzneimittelindex uses 5 year age groups, it was necessary to multiply the values of prescriptions/insured and DDD/insured respectively with the number of insured found in the RSA Baseline Dataset within these age groups to produce the absolute numbers of prescriptions and DDS within these age groups. The group intern distribution was found then by transferring the corresponding group-intern distribution of expenditure of GKV.
Expenditure: Total	Yes
Expenditure: Public	Yes – includes expenditure from public budgets, statutory sickness funds (GKV), statutory accident insurance (GUV) and public employers
Expenditure: Private	Yes. Includes expenditure by private insurance companies and private households & non-profit organisations. (OTC medicines included in the latter). Made up of co-payments of insured of GKV and PKV plus spend on OTC. Separate worksheet with OTC medicines.
Format as specified	Yes

France

The French data is described in the table below. Because it relates to a very small sample (8064 individuals), there is no data on gender – the numbers would be too small and therefore the standard error for each one year age/gender class would be too big. Daily Defined Dose data is not available for this sample. DREES (within the French Ministry of Health) will have access to a bigger sample from the Caisse Nationale d'Assurance Maladie – between 20000 and 25000 persons in early 2003. DREES has requested data on Daily Defined Doses for this bigger sample but does not know whether this will be made available.

The possibility of smoothing data to deal with small numbers was discussed. This could be done by combining data from different years, or using bigger age classes – e.g. 5 years, or by using a smoothing algorithm.

Recommendation: Data should be smoothed by grouping years (this is preferable), or age classes, but this is best done centrally.

Table 11 (b): Description of Phase 2 expenditure data – France, pharmaceuticals

Data characteristic	**Data description**
Data type	Pharmaceuticals and other non-medical durables
Data sources	Matched data files from EPAS (Échantillon Permanent des Assurés Sociaux – Assurance Maladie – 1/600th of 95% of national population) and the SPS (Santé, Soins et Protection Sociale) survey (CREDES). Small sample size – 8064 individuals. By end 2002/2003 DREES will have EPAS data – between 20000 & 25000 persons.
Direct/indirect expenditure data	Indirect
Year	2000
HC Code	No
Age	I year classes. (2000 minus date of birth)
Population	Total in sample by age class.
Gender	No
Cases	No. Request for data on DDD passed to Caisse Nationale d'Assurance Maladie by DR (7/2002). This may be in the EPAS data available end 2002/early 2003.
Expenditure: Total	Average expenditure per member of sample in Euros. Standard error given (small sample size)
Expenditure: Public	No
Expenditure: Private	No
Format as specified	No

Iceland

Particular points to note with regard to the Icelandic data are as follows:

- the population data are comprehensive and based on a point estimate;
- 90% of prescribed medicine costs are met by the Social Security Institute (SSI), 10% by the Lanspitali University Hospital (LUH);
- Data is available for 5 year age classes for SSI, and 1 year classes for LUH. The restriction to 5 year classes is for reasons of data protection. The small population means that it would be possible to identify exceptionally high expenditure on individual patients if one year age groups were used.

Recommendation: Decision concerning age classes must be compatible with data protection requirements.

Table 11 (c): Description of Phase 2 expenditure data – Iceland, pharmaceuticals

Data characteristic	**Data description**
Data type	Pharmaceuticals and other non-medical durables
Data sources	State Social Security Institute & Landspitali University Hospital (LUH)
Direct/indirect expenditure data	Direct
Year	2000
HC Code	HC.5.1.1
Age	5 year classes (0-4 to 80-84, 85+) & 1 year classes for LUH
Population	Whole Icelandic population at 1.7.2000 & 1.12.2000
Gender	Yes
Cases	Daily Defined Doses
Expenditure: Total	Yes
Expenditure: Public	Yes
Expenditure: Private	Yes
Format as specified	Yes

Denmark

The size of co-payments varies a lot by type of drug and by type of beneficiary (from 0% to 50.2%). Two aspects of the age-related distribution of expenditure should be noted. The steep rise in the ratio of private to public expenditure for women after age 14 is explained by a rise in expenditure on drugs from ATC group G 'Prescribed medicinal products for the genitourinary system and sex hormones'. The peak in private expenditure per person for 79 year olds in 1999 and 80 year olds in 1990 is explained by large reductions in the number of 79 year olds and 80 year olds in 1999 and 2000 respectively. The Danish data is summarised below.

Recommendation: A detailed description of how private expenditure is calculated or estimated should be provided.

Table 11 (d): Description of Phase 2 expenditure data – Denmark; pharmaceuticals

Data characteristic	**Data description**
Data type	Pharmaceuticals and other non-medical durables
Data sources	Register of Medicinal Product Statistics
Direct/indirect expenditure data	Direct expenditure data
Year	1999; 2000
HC Code	HC.5.1.1
Age	I year classes.
Population	Yes. Population register on 1 July.

Data characteristic	Data description
Gender	Yes
Cases	Defined Daily Doses – age and gender allocation not possible for 1.259.839 DDD in 1999 and 1.622.511 in 2000
Expenditure: Total	Yes. Age and gender allocation not possible for prescribed medicine for 1.645 Euros in 1999 and 1.682 Euros in 2000.
Expenditure: Public	Yes. OTC medicine given in prescription is not included.
Expenditure: Private	Yes
Format as specified	Yes

Finland

Finland supplied pharmaceutical expenditure data following the second meeting of project participants. It is summarised briefly below.

Table 11 (e): Description of Phase 2 expenditure data – Finland; pharmaceuticals

Data characteristic	Data description
Data type	Pharmaceuticals and other non-medical durables
Data sources	Social Insurance Institution
Direct/indirect expenditure data	Direct expenditure data
Year	1999; 2000
HC Code	HC.5.1.1
Age	I year classes.
Population	Yes
Gender	Yes
Cases	Prescriptions
Expenditure: Total	Yes
Expenditure: Public	Yes
Expenditure: Private	Yes
Format as specified	Yes

5.3.2.2 Curative care

Luxembourg

Direct expenditure data is available for inpatients and day cases. (It is possible to separate these categories). The data analysed for this study relate only to persons resident in Luxembourg and covered by the Luxembourg health insurance fund. The expenditure includes all expenditure known to the health insurance fund including co-payments. Whether this includes "hotel costs" needs to be clarified.

Recommendations: Explicit guidance needed on which combination of residents/non-residents/treated in the country/treated outside the country should be provided. Population data and expenditure data should be consistent in this respect.

Table 11 (f): Description of Phase 2 expenditure data – Luxembourg; curative care

Data characteristic	**Data description**
Data type	Curative care
Data sources	National health insurance fund plus industrial accidents
Year	1999; 2000
HC Code	HC.1.1; HC.1.2
Age	1 year classes
Population	Persons protected by health insurance fund and living in Luxembourg
Gender	Yes
Cases	Completed episodes. Total days
Direct/indirect expenditure data	Direct
Expenditure: Total	Yes
Expenditure: Public	Yes
Expenditure: Private	Yes
Format as specified	Yes

Italy

Inpatient and day case data are presented separately for Italy. The population data is for resident Italians, resident foreigners and non-resident foreigners. For the classification of expenditure by age and gender, only residents (i.e. Italian residents and non-Italian residents) have been included. In order to allocate expenditure to age/gender groups, cases are costed using a nationally approved DRG schedule. Regions can establish a regional fee list but fees should not exceed the national levels. The summary table and methodological notes explain how DRG fees are then used to allocate expenditure by function, age and gender.

Recommendation: Where DRGs are used to allocate expenditure by age and gender the process for doing this should be explicitly described.

Table 11 (g): Description of Phase 2 expenditure data – Italy; curative care

Data characteristic	**Data description**
Data type	Curative care
Data sources	OECD Health database – inpatient expenditure. Italian archive on hospital discharges (SDO) – 100% sample. DRG fee schedule. Italian household budget survey.
Direct/indirect expenditure data	Indirect expenditure data. Start with total spending for HC1.1 and HC.1.2 from OECD Health database. Separate into public and private using data from Local Health Units and Household Budget Survey. Use data from SDO to exclude discharges for patients not resident in Italy. Apply DRG fees to DRG codes available for all admissions. Hence estimate percentage distribution of public and private expenditure by type of admission (inpatient, day care), function (acute, rehab, long-term), gender and age (0-100+). Apply this percentage distribution to total expenditure as reported to OECD.
Year	1999
HC Code	HC.1.1;HC.1.2
Age	1 year classes
Population	Mean of sum of resident population 1/1/1999 and 1/1/2000
Gender	Yes
Cases	Yes. Hospital admissions.
Expenditure: Total	Yes
Expenditure: Public	Yes – data from Local Health Units.
Expenditure: Private	Yes – estimated using Italian Household Budget Survey
Format as specified	Yes

Spain

Data is presented for public inpatient expenditure (HC.1.1). DRG reference costs are used to estimate the proportion of total public hospital expenditure attributable to the HC.1.1 function, as defined in the SHA manual. Thus day case curative care, specialised diagnostic services, services of curative home care were excluded. However postgraduate resident training costs were included, which is not in line with the SHA manual. Rehabilitative care is included if it is provided in acute care hospitals. Public inpatient expenditure data by function, age and gender is readily accessible and of good quality. The best source for classifying private expenditure by age and gender will be the "Encuesta Nacional de Salud de España 2001" the results of which are not yet available. The sample is wider than the equivalent 1997 survey. This is also a potential source for estimating the age/gender distribution of ambulatory care expenditure.

Recommendation: Need detailed description of how care episodes have been allocated to SHA functions to enable international comparisons.

Table 11 (h): Description of Phase 2 expenditure data – Spain; curative care

Data characteristic	**Data description**
Data type	Curative care.
Data sources	Statistics of Public Health Care Expenditure (referred to as EGSP) Cuentas satélite gasto sanitario público 1995-1999. Ministerio de Sanidad y Consumo. Hospital statistics. (referred to as ESSRI) Estadística de establecimientos sanitarios en régimen de internado. Ministerio de Sanidad y Consumo.1997. Population projections from Census 1991. Revised figures by sex, age and year. December 1999. National Institute of Statistics. 4. Statistics on Hospital Discharge Registry and Diagnosis Related Groups for the National Health system. (CMBD-GRD). Ministerio de Sanidad y Consumo National Health System Reference Costs. Ministerio de Sanidad y Consumo National Accounts. INE
Year	1999
HC Code	HC.1.1
Age	Yes
Population	Projections based on 1991 census. Revised figures by reference date, age, sex and year, December 1999
Gender	Yes
Cases	Yes
Direct/indirect expenditure data	By comparing activities excluded from inpatient care in the approach used to derive DRG cost weights, with activities excluded from SHA HC.1.1 category, it is possible to separate inpatient expenditure within the total of acute hospital expenditure.
Expenditure: Total	Yes
Expenditure: Public	Yes
Expenditure: Private	No. “Encuesta Nacional de Salud de España 2001” not yet available. Bigger sample than 1997 survey and includes info about nature and conditions of health service use which will enable direct allocation of expenditure by age and gender.
Format as specified	Yes

Belgium

There are no routinely produced administrative data enabling expenditure to be classified by function, age and gender for Belgium. The data provided for this project are based on a study by the Alliance Nationale des Mutualités Chrétiennes, and data from the “Commission d’accompagnement pour la responsabilité financière des organismes assureurs”. The Belgian data are not classified by function.

Table 11 (i): Description of Phase 2 expenditure data – Belgium; curative care

Data characteristic	**Data description**
Data type	Curative care.
Data sources	Alliance Nationale des Mutualités Chrétiennes (ANMC) – study report; Committee for financial responsibility of insurance companies; voluntary insurance – small risks of the self-employed
Year	2000 (and 1990 for comparison)
HC Code	No. Total expenditure of the ANMC
Age	One year classes
Population	Yes
Gender	Yes
Cases	Number of members of ANMC in the general scheme (which includes +/- 90% of the Belgian population)
Direct/indirect expenditure data	Direct, from a one-off study
Expenditure: Total	Yes
Expenditure: Public	No
Expenditure: Private	No
Format as specified	No

Finland

The Finnish data on curative care is presented as two separate data files, one containing data on HC.1.1 and HC.1.2. Inpatients and day cases are not separated. Data on outpatient curative care covers ambulatory care provided at hospitals, not health centres. The data source is STAKES benchmarking data which covers all hospital districts in Finland, including university and general hospitals; and the Care Register for functional data. Psychiatric care is not included. Volume data for inpatients is presented as total number of days and number of episodes.

Recommendation: It is difficult to make a firm recommendation about the most appropriate measure for volume. Total days may be the least distorting measure.

Table 11 (j): Description of Phase 2 expenditure data – Finland; curative care

Data characteristic	**Data description**
Data type	Curative care.
Data sources	Benchmarking hospital data, STAKES.
Year	1999; 2000
HC Code	HC.1.1+ HC.1.2; HC.1.3 (hospital visits only – not health centres)
Age	Yes
Population	Arithmetic mean on January 1 for two consecutive years

Data characteristic	Data description
Gender	Yes
Cases	Yes. All hospital districts in Finland including university & general hospitals. Inpatient curative care (HC.1.1 inpatient curative care includes HC.1.2, day cases of curative care.) Expenditure on psychiatric care not included.
Direct/indirect expenditure data	Indirect
Expenditure: Total	Yes
Expenditure: Public	No
Expenditure: Private	No
Format as specified	No

Norway

The Norwegian data is described in the summary table below and in the methodological notes in Appendix 6.

Table 11 (k): Description of Phase 2 expenditure data – Norway; curative care

Data characteristic	Data description
Data type	Curative care
Data sources	Norwegian Patient Register. DRG cost weights. Cases financed by DRG represent approx 95% of all hospitalisations.
Year	1999; 2000
HC Code	HC.1.1
Age	1 year classes for general hospitals; other age classes for psychiatric institutions (for children & adolescents: 0-6, 7-12, 13-17, 18+); (for adults: 0-12, 13-17,18-29,30-39,40-49,50-59,60-69,70-79,80+)
Population	Whole population, end 1999, end 2000
Gender	Yes
Cases	Yes. Outpatients not included. Patients discharged same day are counted as 24 hour stay, if that was the intention at admission. For general hospitals only patients with valid municipality of residence in Norway are included.
Direct/indirect expenditure data	Indirect expenditure data. Total cost for inpatient care is estimated (see below) – not directly measured. Data on outpatient costs not directly available. This was therefore estimated using data on reimbursement from the state & counties, & patients' own payments. Inpatient costs were then adjusted for this.
Expenditure: Total	Yes (in 1000 Euros). Estimated cost of inpatient care in general hospitals distributed by age & gender using DRG cost weights available for each patient in the Norwegian Register. 1999 DRG cost weights based on 1996 data. Accuracy of cost estimates depends on adequacy of DRG cost weights which have been questioned re treatment of the elderly, and chronic and complex diagnoses.
Expenditure: Public	Yes
Expenditure: Private	No. Reporting private expenditure will be dealt with as part of SHA implementation
Format as specified	Yes for general hospitals; no for psychiatric institutions

Switzerland

The Swiss data characteristics are summarised below.

Table 11 (l): Description of Phase 2 expenditure data – Switzerland; curative care

Data characteristic	Data description
Data type	Curative care.
Data sources	Sickness insurance. (LAMal, Loi sur l'Assurance Maladie)
Year	2000
HC Code	HC.1.1+ HC.2.1; HC.3.1 The sickness insurance data do not enable separation of curative & rehabilitative care.
Age	Total for 5 year groups evenly distributed to one year classes.
Population	Average resident population i.e. mean of 1 Jan pop in 2 consectutive years for nationals; for non-nationals arithmetic mean of monthly estimates.
Gender	Yes
Cases	Data on number of cases is not available from this source. The insured population is in principle the resident population, but this administrative source shows higher figures (Risikobestände, insured risks) than the resident population.
Direct/indirect expenditure data	Direct
Expenditure: Total	Total expenditure extrapolated from health accounting, funding data. Same age distribution hypothesis acceptable ,although private funding (mostly private insurance) is more important for middle age and older patients than for children and younger adults.
Expenditure: Public	Public expenditure extrapolated from health accounting funding data. Same age distribution hypothesis fully acceptable.
Expenditure: Private	Yes – extrapolated from health accounting funding data.
Format as specified	Yes

5.4 Inter-country comparability of data

5.4.1. Proportion of population and expenditure included in country data

Pharmaceutical expenditure

Table 12 (a to e) summarises the coverage of the pharmaceutical data supplied by countries in terms of the proportion of population and expenditure analysed in each country data set, and hence classified by function, age and gender.

The approach taken by Denmark and Finland – Table 12 a) and b) – is very similar. Both countries have presented data from one source covering all persons resident in each country. Data is presented on expenditure on prescribed medicine (HC.5.1.1) reimbursed by health/social insurance and on co-payments by private households and sickness funds. Ex-

penditure is reported as presented in the source, not by allocating expenditure as reported in the SHA to the population age distribution. The data are not re-worked to produce different age groups, or to extend the distribution to segments of the population for which pharmaceutical expenditure data are unavailable.

Iceland (Table 12 c) uses two sources to classify its pharmaceutical expenditure (HC.5.1.1). One is data from the Social Security Institute, the other is data from the country's university hospital (LUH). Both sources cover the whole residential population i.e. all residents are eligible for prescribed medicines financed by the State Social Security Institute or the LUH. Exact cost data are available for all prescribed medicine disbursed through the LUH. For medicines disbursed through pharmacies, exact cost data is available for 56.5% of total expenditure reported in the electronic data system. (Not all pharmacies are linked to this – hence the partial coverage.) The age/gender distribution for the LUH and SSI expenditure was then applied to total expenditure.

Germany (Table 12 d) has used data from seven sources to allocate expenditure for pharmaceuticals and other medical non-durables (HC.5.1). Thus the German data has been produced for an age/gender distribution for a wider functional grouping than Finland, Iceland, Denmark or France – it includes over the counter medicines and other medical non-durables as well as prescribed medicines. The expenditure total, classified by function, provider and financing institution, was taken from the German SHA. Expenditure for the relevant functional categories was then allocated to the 202 categories formed by age and gender (101 age groups for males and females), using data from 5 different sources. Because data on pharmaceutical expenditure financed by the statutory sickness funds, covering 87% of the German residential population, is available for the finest subdivision of age, this was used as a reference distribution to allocate expenditure by other financing agencies. Thus data on exact expenditure by one year age classes is presented for 66% of total expenditure on HC.5.1, for which 87% of the population is eligible (Table 12 d).

Pharmaceutical expenditure data for France is for a small sample (less than .06 of 95% of the population), and does not contain information on the gender distribution of expenditure because the sample size is too small (Table 12 e).

Table 12: Proportions of population and expenditure included in country data

Table 12 (a): Denmark: HC. 5.1.1 Prescribed medicine

Source*	**Expenditure**				**Proportion of population included**	**Definition of population included**	**Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)**
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total**	912 032	992 344	100	100	100	Persons resident in Denmark	Expenditure as reported in the source
Register of Medicinal Product Statistics (Source 2)	912 032	992 344	100	100	100		

* Source name and number as in Phase 1 questionnaire.

** This refers to total expenditure for HC codes represented in the table.

Table 12 (b): Finland: HC. 5.1.1 Prescribed medicine

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	1 001 946	1 098 259	100	100	100	Persons resident in Finland	As reported in source e
SII*	1 001 946	1 098 259	100	100	100		

* Statistics on national health insurance refunds of medicine expenses, Social Insurance Institution (SII)

Table 12 (c): Iceland: HC.5.1.1 Prescribed medicine

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	*	96 295	*	100	100	Persons resident in Iceland	As reported in source e
SSI (Source 1)		55 508		58	100		
LUH (Source 2)		10 117		11	100		
Private Households		30 609		32	100		

* Data not provided for 1999

Table 12 (d): Germany: Pharmaceuticals and other non-medical durables
HC.5.1.1 plus HC.5.1.2 delivered by providers HP.4.1 or HP.4.9
+ HC.5.1.3 delivered by provider HP.4.1

Source	**Expenditure**				**Proportion of population included**	**Definition of population included**
	1999	2000	1999	2000		
	Mio €	Mio €	in %	in %	in %	
Total	28 941	29 813	100	100		
Public budgets	272	280	1	1	Unknown	
Statutory sickness funds (GKV)	19 194	20 110	66	67	87	
Statutory accidents insurance (GUV)	363	380	1	1	97	
Private insurance companies (PKV)	1 493	1 6,8	5	5	10	
(Public) employers	1 010	1 005	3	3	Unknown	
Private households and non-profit organizations	6 608	6 401	23	21	100	

	1999	2000	1999	2000	
	Mio €	Mio €	in %	in %	in %
Private households and non-profit organizations	6 608	6 401	100	100	
Co-payments GKV	1 943	1 790	29	28	
Co-Payments PKV	502	471	8	7	
OTC-medicines	4 164	4 140	63	65	

Table 12 (e): France: HC. 5.1.1 Prescribed medicine

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	*	**	*	**	95	Persons resident in France	As reported in source e
EPAS (Source 1)							
SPS(Source 2)							

* Data not provided for 1999

** Data provided give average expenditure by I year age class for the population sampled

Curative care expenditure

Table 12 (f to k) summarises the coverage of the curative care data supplied by countries in terms of the proportion of population and expenditure analysed in each country data set, and hence classified by function, age and gender.

Two countries have supplied data for HC.1.1 – inpatient curative care – only: Spain and Norway. Neither country has direct expenditure data i.e. expenditure and age data in one source. The Norwegian approach (Table 12 g) involves using data from two sources, then applying DRG cost weights to allocate 100% of public expenditure on HC.1.1 to age/gender classes. This covers 100% of persons resident in Norway. Spain (Table 12 f) uses data from three sources to allocate expenditure by age on HC.1.1 for 100% of the resident population. Inpatient expenditure was separated from total curative care hospital expenditure to arrive at HC.1.1. DRG costs were then applied to DRG codes to produce expenditure by age and gender. Private expenditure is estimated at 10% of this total. Until the 2001 National Health Survey becomes available, which will enable distribution of private expenditure by age and gender, the private expenditure was distributed as for public expenditure.

As for Spain and Norway, Italy (Table 12 h) does not have direct expenditure data. It distributes total expenditure on HC.1.1 and HC.1.2, as presented in the SHA, using data from the Italian archive on hospital discharges. It also uses DRG costs to distribute expenditure by age and gender, for 100% of the residential population. Italy's source for private expenditure is information from the archive on hospital discharges about type of payment (0.3% of total expenditure on HC.1.1) . Thus for public expenditure on HC.1.1, Italy, Spain and Norway have produced comparable data. Private expenditure is less comparable.

Switzerland (Table 12 i) has provided data for HC.1.1 and HC.1.2 combined – it cannot separate cases of inpatient rehabilitative care from inpatient curative care. It has distributed expenditure as presented in the SHA. It also has data on HC.2.1 – long-term nursing care. Five of the six data sources used cover the whole residential population. One source relates only to the salaried economically active population (50%). The data is direct expenditure data The combination of rehabilitative and curative care data reduces comparability with other countries in the sample.

Luxembourg (Table 12 j) has direct expenditure data for both inpatient and day cases of curative care, for all persons, nationals and non-nationals, covered by the health insurance fund, living in and treated in Luxembourg. It is presented as reported in the source, not as an

SHA total distributed by age and gender. It presents an accurate picture of the age-related distribution of expenditure in the country.

Finland's data on curative care is for the whole residential population, for inpatient and day cases, which are not separated. It also has data for ambulatory care. Information on the proportion of expenditure covered by the data has not been provided. Finally, the Belgian case (Table 12 k) differs from the other countries examined in this pilot study in that expenditure has not been allocated to SHA functions. The data supplied is described in this report, but further work is needed to investigate the possibility of allocation to functions.

Table 12 (f): Spain: HC.1.1 Inpatient curative care

Source*	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total		**					
1. CMBD-GRD							
2. RC							
3. EGSP	10 085 380			90	100	Population projections from Census 1991. Resident population	Expenditure has been distributed from a total: Hospital services, including out patients.
4. ENS							
5. ESSRI and CN	1 098 340			10	100		

* Only EGSP, ESSRI and National Accounts have been used for expenditure figures. The other sources were used to distribute and allocate the expenditure data on SHA terms.

** Data not provided for 2000

Table 12 (g): Norway: HC.1.1 Inpatient curative care

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	4 213 927	4 556 205	100	100	100	Patients with valid municipality of residence in Norway	Estimate based on adjustment of gross current expenses of general hospitals and psychiatric institutions. These costs distributed by age and gender using data from Norwegian patient register, statistics on specialist health services and DRG cost weights i.e. distributed from a total.
NPR (5)*	3 337 416	3 626 574	79	79	100		
SSHS (4)**:							
Child/adolescent. psych. institution	96 582	107 985	2	2	100		
Adult psychological. institution	779 929	831 736	19	19	100		

* Norwegian Patient Register
** Statistics on specialist health service

Table 12 (h): Italy: HC.1.1 and HC.1.2 inpatients and day cases of curative care

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total				100	100	Resident population (Italians and foreigners)	Distributed from a total using figures provided to OECD for its health data-base. Figures provided are not defined according to SHA but according to National Accounts
SDO-1	33 784 185	*	100	*			

* Data not provided for 2000

Table 12 (i): Switzerland: HC.1.1 Inpatient curative care, HC.2.1 Inpatient rehabilitative care

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	*	8 504 232	*	100	100	Average res. population	Distributed from SHA figures
Source 2		2 534 200		30	100	Average res. population	
Source 3				2	100	Average res. population	
Source 4				0			
Source 5				4	50	Economically active population (salaried)	
Other public				38	100	Average res. population	
Other private				27	100	Average res. population	

* Data not provided

Table 12 (j): Luxembourg: HC1.1 and HC1.2 Inpatient and day cases of curative care, delivered by providers HP.1.1, 1.2, 1.3

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total (e.g. as presented in the SHA)
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total	328 139	339 262	100	100	100	Nationals and non-nationals protected by health insurance fund living in Luxembourg and treated in Luxembourg	As reported in the source
National health insurance fund (PEN 2):							
HC.1.1	303 300	310 029	100	100			
HC.1.2	25 839	29 233	100	100			

Table 12 (k): Belgium: HC.1 - HC.5

Source	Expenditure				Proportion of population included	Definition of population included	Expenditure as reported in the source, or distributed from a total
	1999	2000	1999	2000			
	1 000 €	1 000 €	in %	in %	in %		
Total				100	100		
Source 1: "Alliance Nationale des Mutualités Chrétiennes"	5 170 276	5 555 511	43	43	44	The denominator is the (legal) population of Belgium (10 239 085 habitants on 1.1. 2000). On 30.6.2000 10 095 306 people covered by the legal sickness insurance scheme (general scheme or scheme for the self-employed). Among them were 4 497 787 members of the A.N.M.C.	The expenditure in the source is not quite the same as the administrative data. In fact the total of the source is 1.4% higher.
Source 2: "Committee for the financial responsibility of insurance companies"	483 818 (data for 1998)	*			100	1 in 20, representative sample, (Year 1998). Population: the people covered by the legal sickness insurance (see Source 1). Outpatient pharmaceuticals are not included.	Verification on expenditure: 20 x 483 818 000 = € 9 676 360 000. Total expenditure of sickness insurance scheme in 1998: € 11 294 624 000 (A) Outpatient pharmaceuticals, not included in the sample: € 1 492 956 000 (B) (A) - (B) = € 9 801 668 000
Source 3: "Voluntary insurance – small risks – of the self-employed	254 469	247 962			70	Population in the denominator: self-employed workers and self-financed individuals. (In 1999: 1 032 769; in 2000: 1 028 439).	As presented in the source

* Data not available

5.4.2 Age and gender-related distribution of expenditure

Graphs of expenditure by function, age and gender have been produced for each year and for each function for which data is available. One purpose of presenting the data in this format is to review the quality and accuracy of the data provided.

Tables 13 and 14 below show the variables for which graphs have been produced. The graphs are available as Word documents in a Windows zip file. It may be possible to make these available for consultation via Eurostat. This is being investigated.

Table 13: Graphs by variable for pharmaceutical expenditure

Graphs	**Germany**	**Denmark**	**Finland**	**Iceland**	**France**
	1999, 2000	1999, 2000	1999, 2000	2000	2000
	HC.5.1 *(HC.5.1.1+HC.5.1.2+HC.5.1.3)*	HC.5.1.1	HC.5.1.1	HC.5.1.1	HC.5.1.1
Population by age and gender	X	X	X	X	X
Total Defined Daily Doses (DDD) by age and gender	X	X	X[1]	X	
Average Defined Daily Doses (DDD) by person by age and gender	X	X	X[1]	X	
Total (public and private) expenditure by age and gender	X	X	X	X	X[2]
Total public expenditure by age and gender	X	X	X	X	
Total private expenditure by age and gender	X	X	X	X	
Average total (public and private) expenditure by person by age and gender	X	X	X	X	
Average public expenditure by person by age and gender	X	X	X	X	
Average private expenditure by person by age and gender	X	X	X	X	
Average total (public and private) expenditure by 1000 DDD by age and gender	X	X	X[1]	X	
Average public expenditure by 1000 DDD by age and gender	X	X	X[1]	X	
Average private expenditure by 1000 DDD by age and gender	X	X	X[1]	X	

[1] prescriptions [2] by age only

Table 14: Graphs by variable for curative care expenditure

Graphs	Luxembourg		Italy		Spain	Norway	Switzerland		Finland	
	1999 2000	1999 2000	1999	1999	1999	1999 2000	2000	2000	1999 2000	1999
	HC.1.1	HC.1.2	HC.1.1	HC.1.2	HC.1.1	HC.1.1	HC.1.1 + HC1.2	HC.1.1	HC.1.3	HC.1.1 + HC1.2
Population by age and gender	X	X	X	X	X	X	X	X	X	X
Total inpatient days by age and gender	X			X[1]	X				X[2]	X[1]
Average inpatient days by age and gender	X			X[1]					X[2]	X[1]
Total inpatient episodes by age and gender	X	X	X							X
Average inpatient episodes by age and gender	X	X	X							X
Total patients by age and gender	X	X								
Average patients by person by age and gender	X	X								
Average inpatient days by inpatient episodes by age and gender	X									X[1]
Average inpatient days by patient by age and gender	X									
Average inpatient episodes by patient by age and gender	X	X								
Total (public and private) expenditure by age and gender	X	X	X	X	X		X	X	X	X
Public expenditure by age and gender	X	X	X	X	X	X	X	X		
Private expenditure by age and gender	X	X	X	X	X		X	X		
Average total (public and private) expenditure by person by age and gender	X	X	X	X	X	X	X	X	X	X
Average public expenditure by person by age and gender	X	X	X	X	X		X	X		
Average private expenditure by person by age and gender	X	X	X	X	X		X	X		
Average total (public and private) expenditure by inpatient day by age and gender	X			X[1]					X[2]	X[1]
Average public expenditure by inpatient day by age and gender	X			X[1]						
Average private expenditure by inpatient day by age and gender	X			X[1]						
Average total (public and private) expenditure by inpatient episode by age and gender	X	X	X		X	X				X
Average public expenditure by inpatient episode by age and gender	X	X	X		X					
Average private expenditure by inpatient episode by age and gender	X	X	X		X					
Average total (public and private) expenditure by patient day by age and gender	X	X								
Average public expenditure by patient day by age and gender	X	X								
Average private expenditure by patient day by age and gender	X	X								

[1] day cases [2] visits

5.4.3 Selected data on expenditure by function, age and gender

A selection of graphs showing the distribution of expenditure by age and gender for pharmaceutical and curative care for each country are reproduced below. The descriptions of sources and methodology given above for each country should be referred to when interpreting these graphs. It must be emphasised that these data would require further verification before being used to reach robust conclusions about inter-country differences in the relationship between expenditure and age and gender. *They should not be regarded as final statements of expenditure, rather as estimates prepared for this pilot study.* Some brief comments are made below on the distribution of expenditure revealed by these graphs. However this study did not set out to produce a detailed description and analysis of age and gender-related patterns of health care expenditure, but instead to investigate the feasibility of doing this, given the nature of existing data. Data for 2000 is presented for pharmaceutical care expenditure (this year having the most complete coverage). For inpatient curative care, 1999 has the most complete coverage (with the exception of Switzerland where data is for 2000).

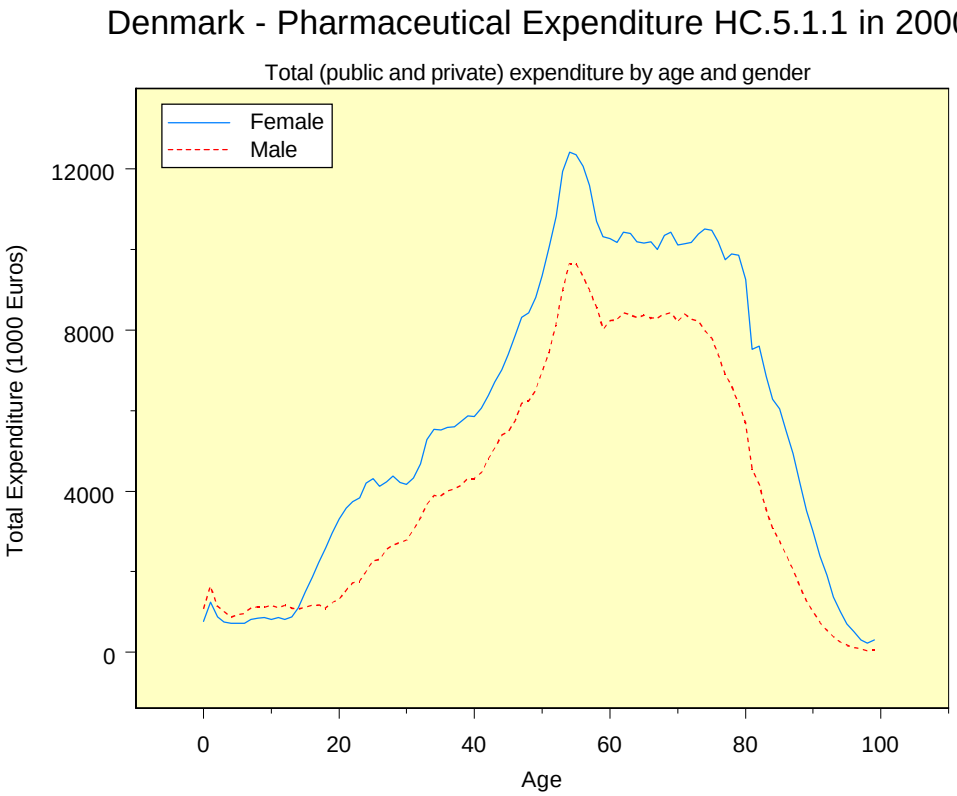
5.4.3.1 Distribution of pharmaceutical expenditure

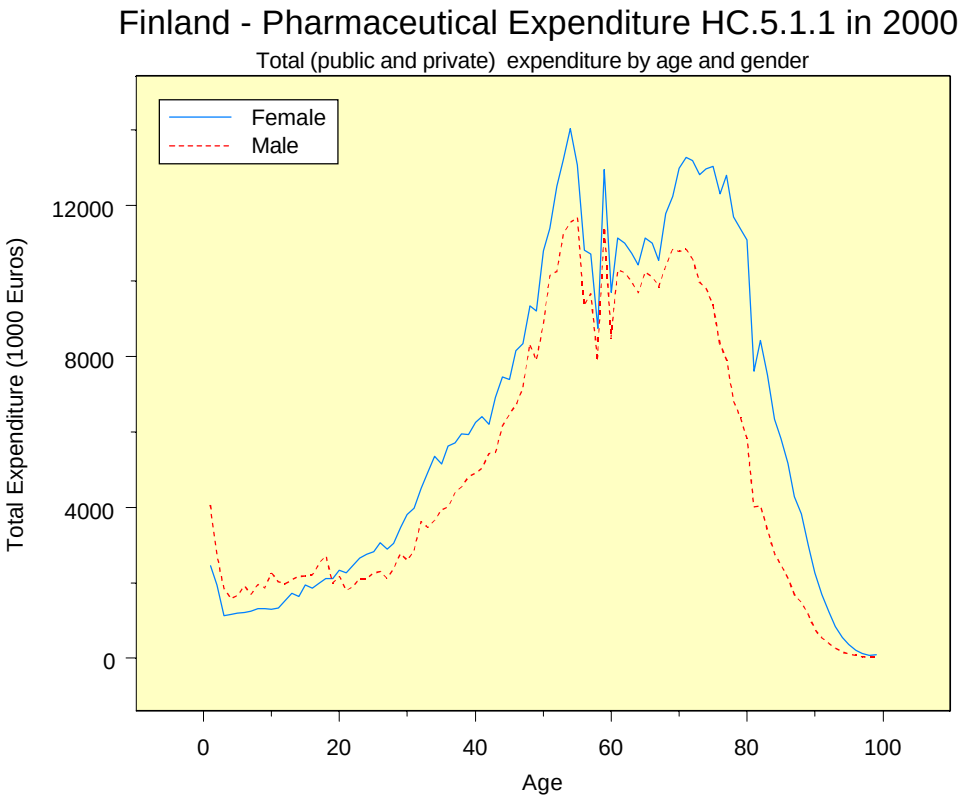
Graphs of pharmaceutical expenditure (HC.5.1) are presented below for:

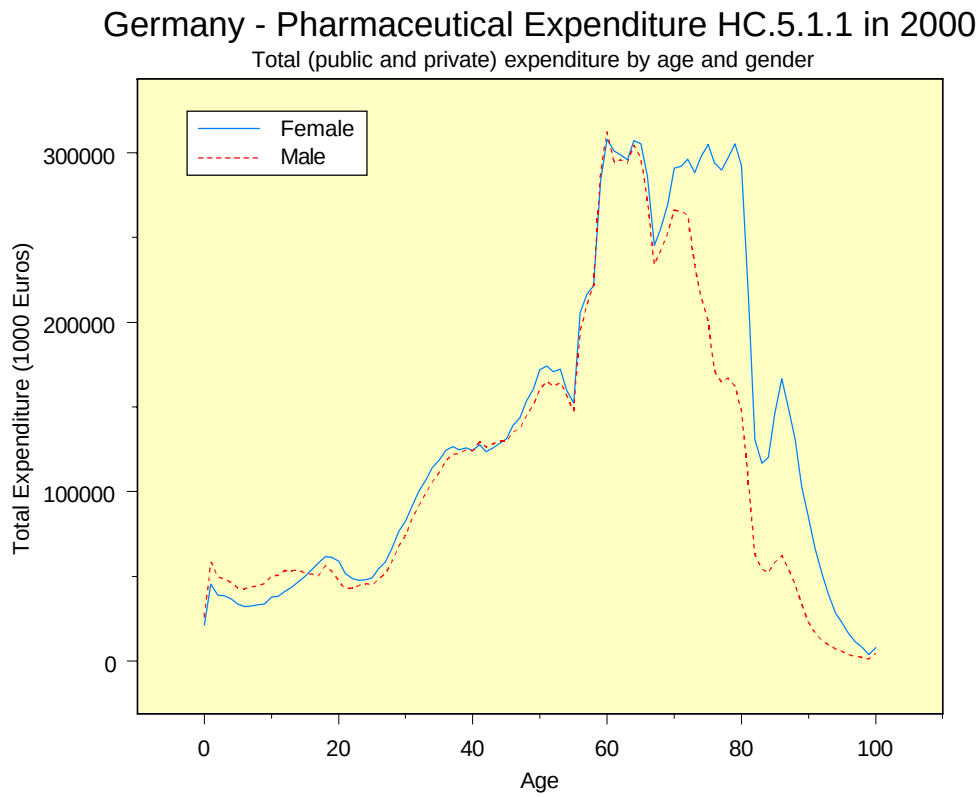
- total expenditure (public and private) by age and gender;
- average total (public and private) expenditure per person;

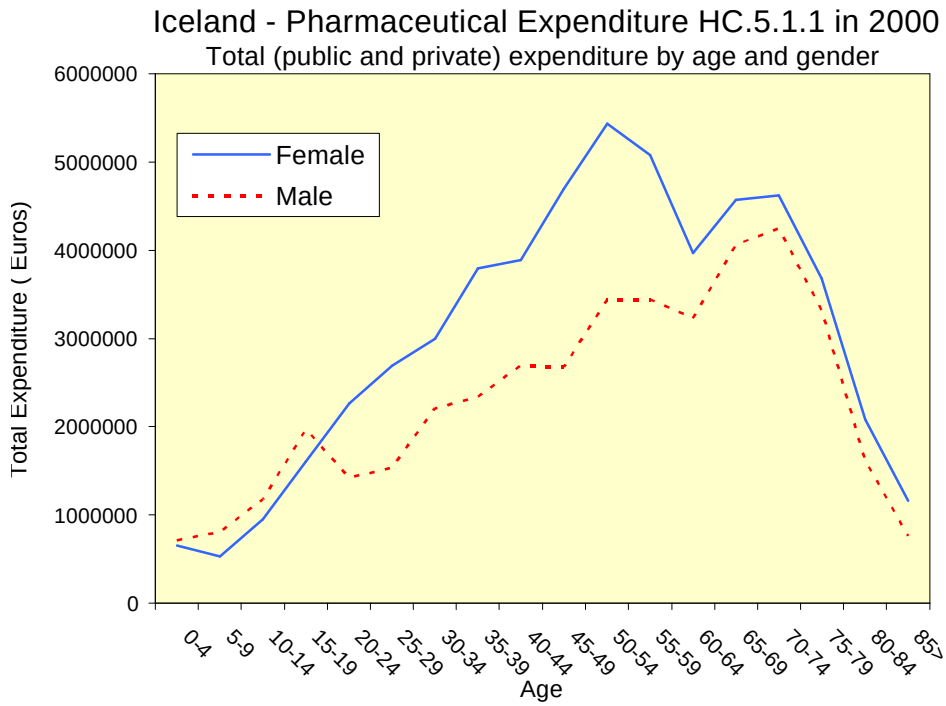
Bearing in mind that these are *estimates* of expenditure only, some initial conclusions may be drawn concerning the distribution of expenditure by age and gender. First it should be stated that the French data as presented here is not comparable with the other four countries because it relates to a small sample of the population (8064 individuals). Total expenditure is greater for females than males from the mid- to late-teens onwards for each of Denmark, Finland, Germany and Iceland (note that the Icelandic data is presented for five year age classes), although in the case of Germany, this is only the case to any substantial degree from the mid-sixties onwards. The overall shape of the distributions is similar between the countries, although of course there are differences in magnitude of expenditure related to population size. Average expenditure per person is similar in Denmark and Finland, ranging from around 50 Euros per year for children under 15 to between 600 and 700 Euros per year for persons aged around 80. Average expenditure in Germany and Iceland is higher, ranging from between 50 and 200 Euros for under 15 year olds; to over 1000 Euros for the highest spending 70 to 75 year old males in Iceland and around 1200 Euros for 80 year old males in Germany.

Figure 2: Pharmaceutical expenditure HC.5.1.1 – Total by age and gender






Germany - Pharmaceutical Expenditure HC.5.1.1 in 2000
Total (public and private) expenditure by age and gender
Female
Male
Total Expenditure (1000 Euros)
300000
200000
100000
0
0
20
40
60
80
100
Age


Iceland - Pharmaceutical Expenditure HC.5.1.1 in 2000
Total (public and private) expenditure by age and gender
Female
Male
Total Expenditure (Euros)
6000000
5000000
4000000
3000000
2000000
1000000
0
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85?
Age

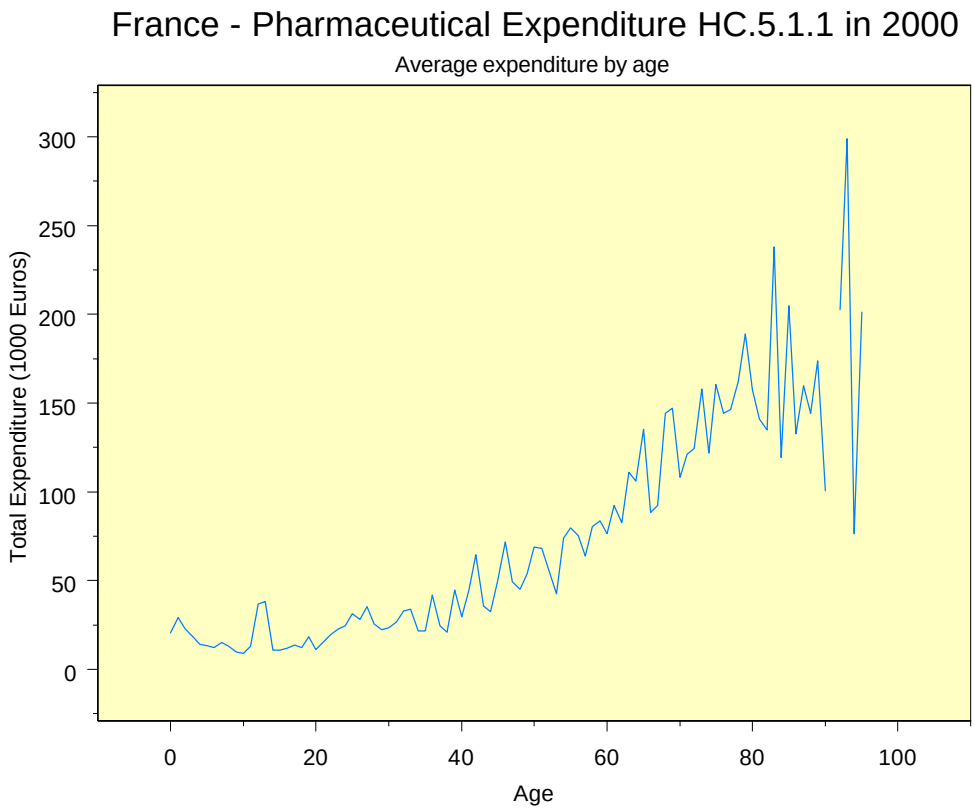
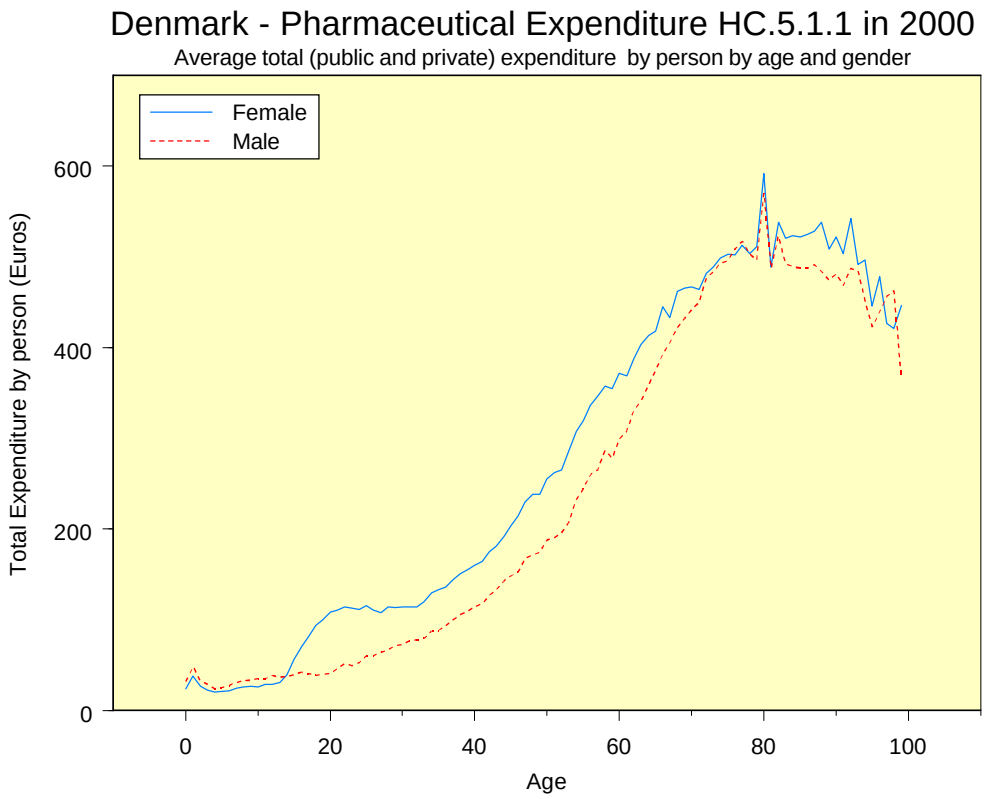
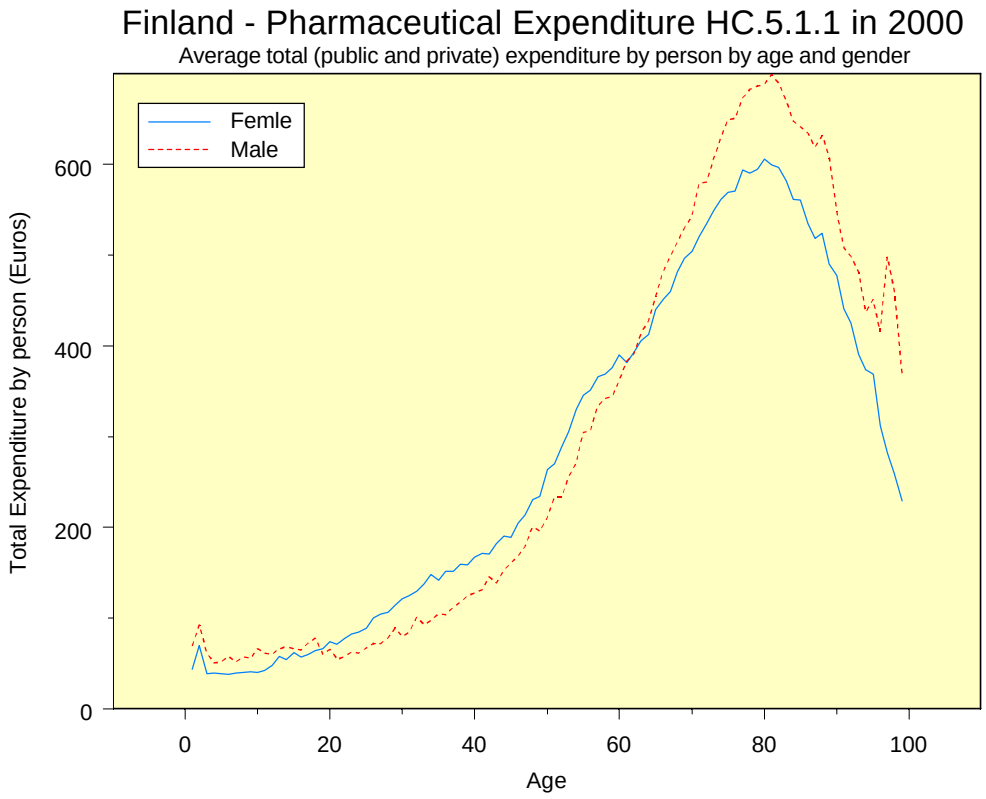
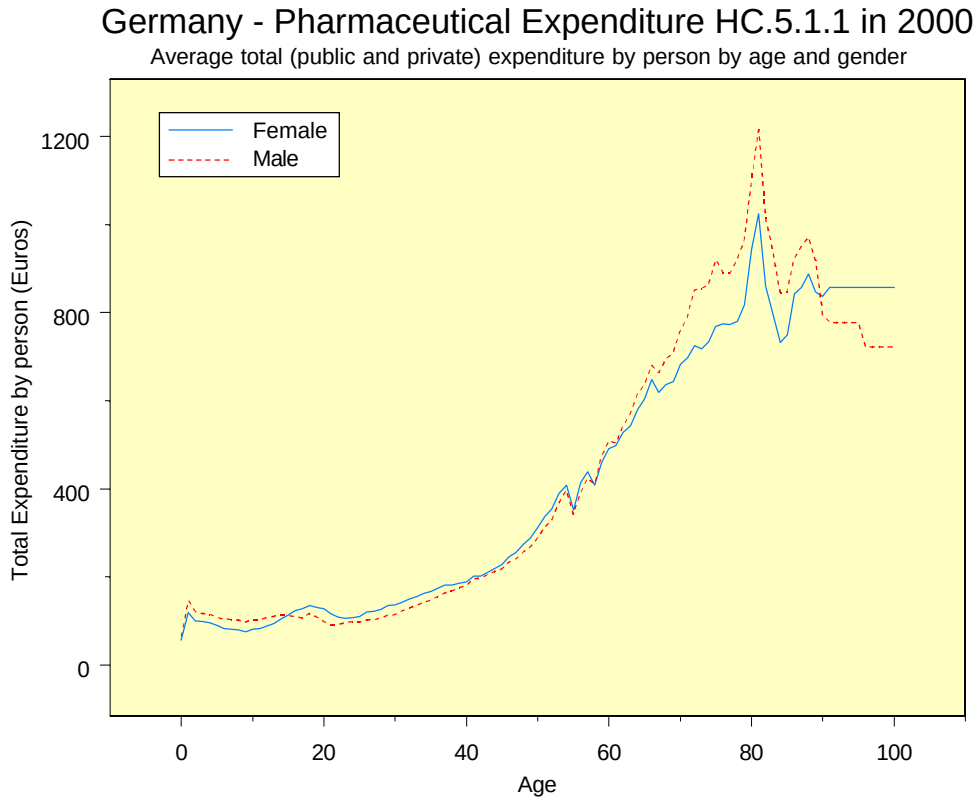
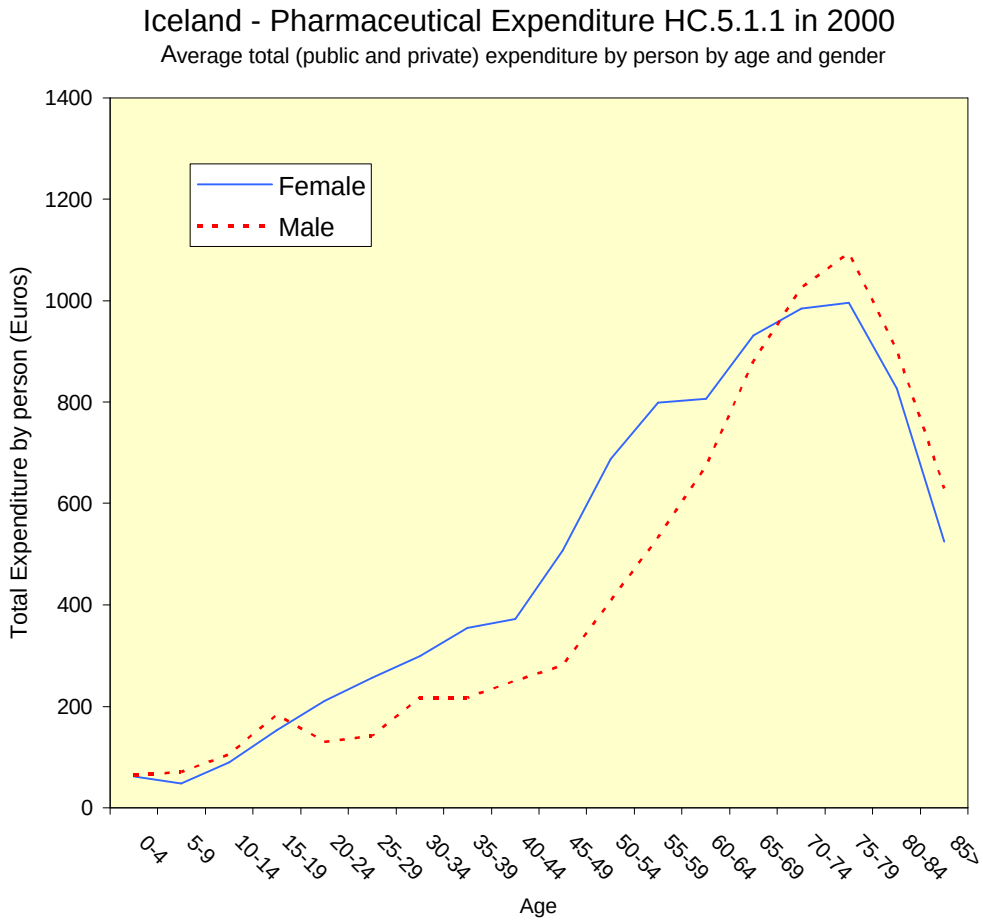

France - Pharmaceutical Expenditure HC.5.1.1 in 2000
Average expenditure by age
Total Expenditure (1000 Euros)
300
250
200
150
100
50
0
0
20
40
60
80
100
Age

Figure 3: Pharmaceutical expenditure HC.5.1.1 – average by person, age and gender






Germany - Pharmaceutical Expenditure HC.5.1.1 in 2000
Average total (public and private) expenditure by person by age and gender
Female
Male
Total Expenditure by person (Euros)
0
400
800
1200
0
20
40
60
80
100
Age


Iceland - Pharmaceutical Expenditure HC.5.1.1 in 2000
Average total (public and private) expenditure by person by age and gender
Female
Male
Total Expenditure by person (Euros)
0
200
400
600
800
1000
1200
1400
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85?
Age

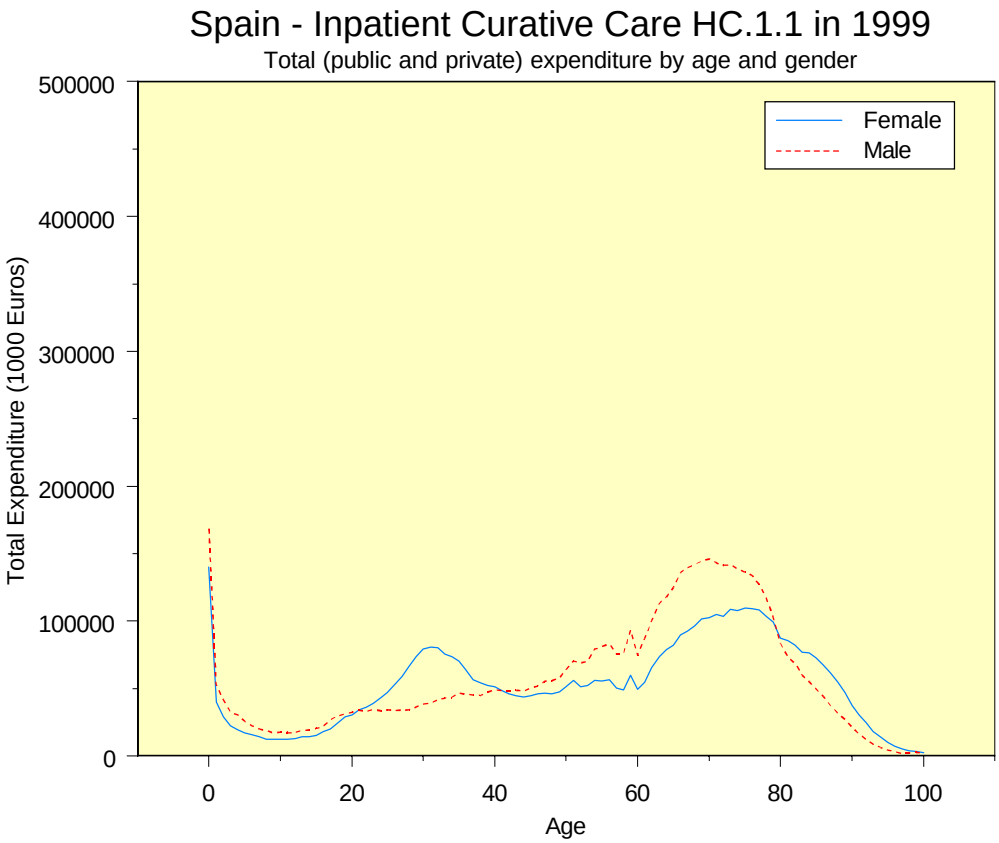
5.4.3.2 Distribution of curative care expenditure

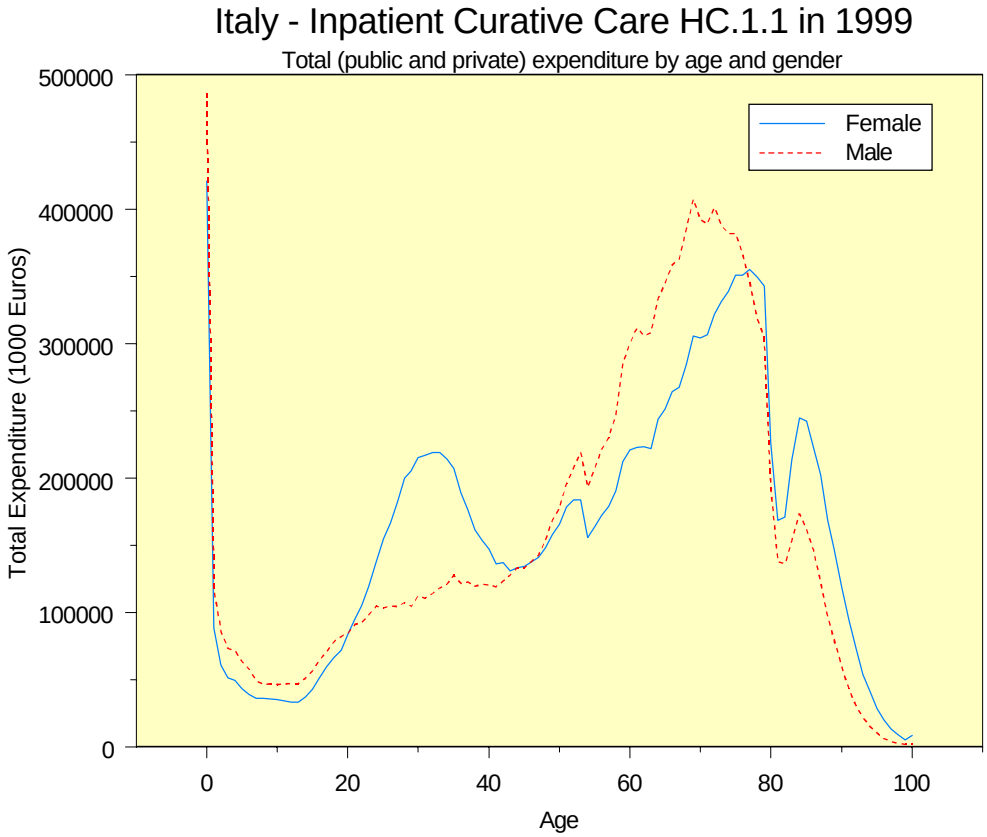
Graphs of curative care expenditure are presented below for:

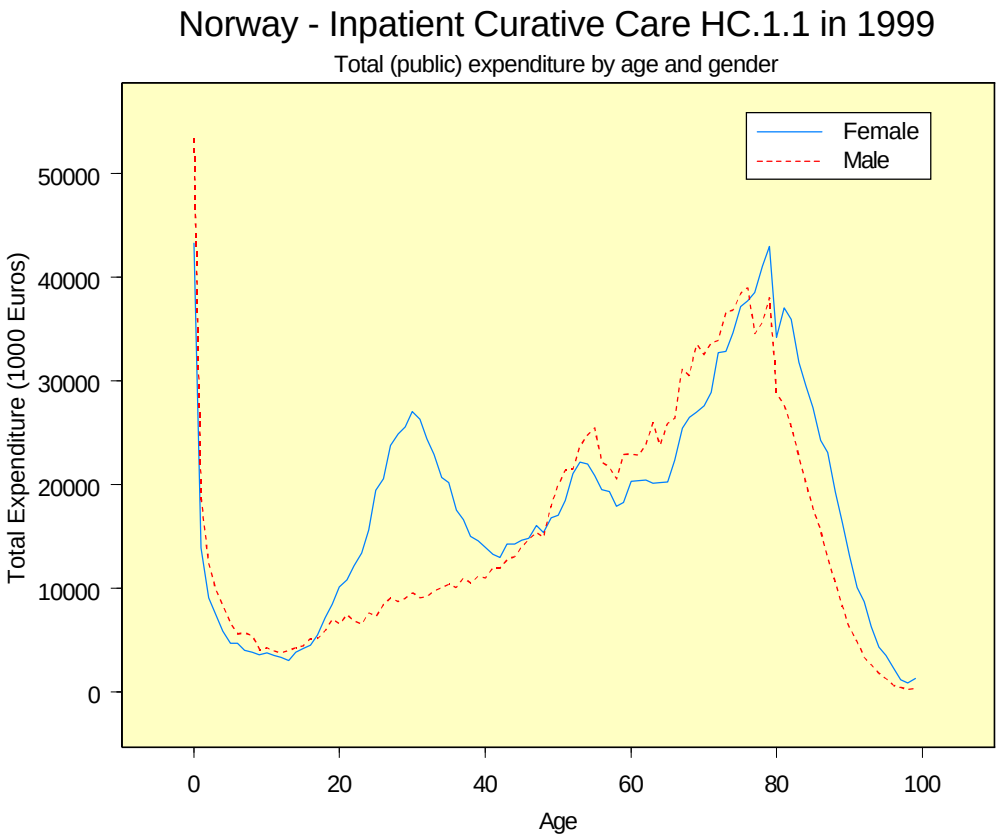
- total expenditure (public and private) by age and gender;
- average total (public and private) expenditure by age and gender.

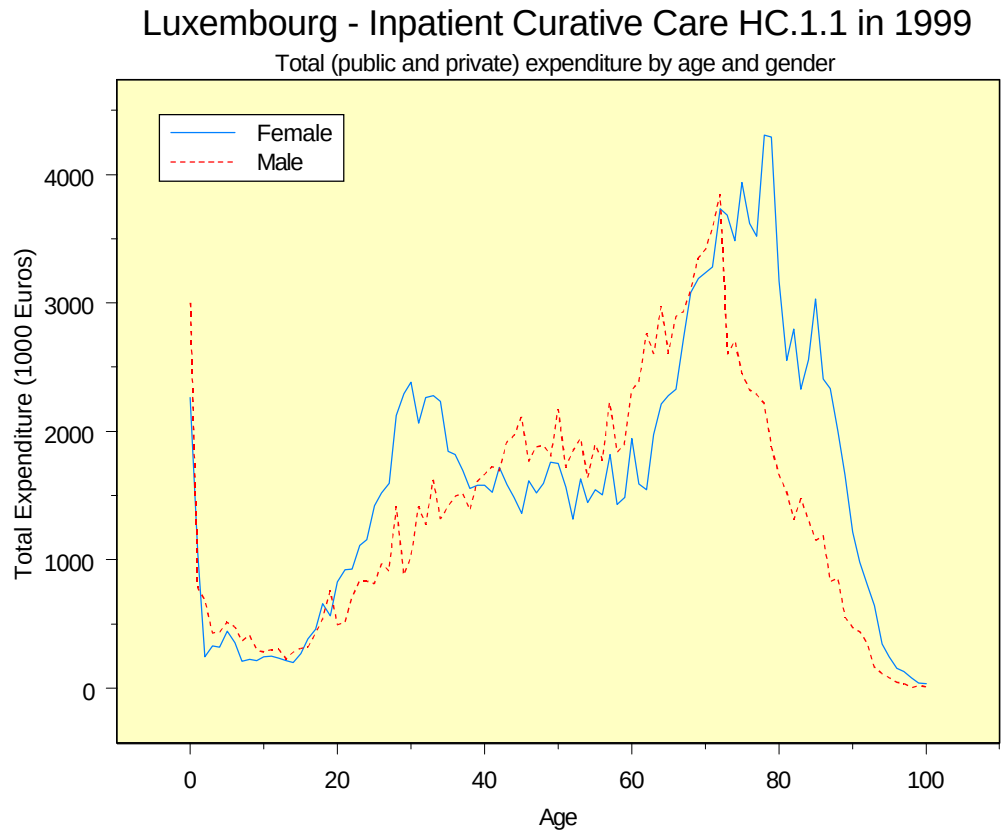
First it should be noted that the data for Switzerland include expenditure on inpatient rehabilitative care (HC.2.1) – it is not possible to separately classify this expenditure in the data supplied by the sickness insurance scheme. This explains why the average expenditure per person is so much higher for Switzerland than for the other five countries for which curative care data is presented. For Luxembourg average expenditure for some age classes above eighty is very high – above 7000 Euros for some cases. However, the total number of cases in these age groups is small (1623 males and 3555 females). With these exceptions the general shape of the distribution of expenditure by age is similar for the five comparable countries.

Figure 4: Inpatient curative care expenditure HC.1.1 Total by age and gender

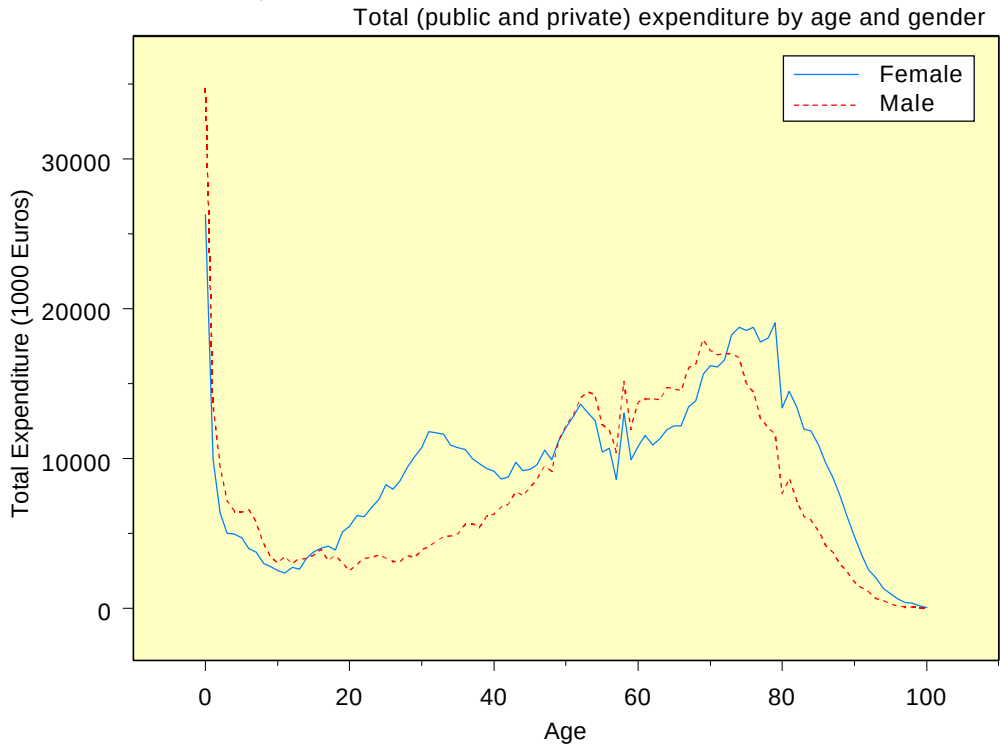





Norway - Inpatient Curative Care HC.1.1 in 1999
Total (public) expenditure by age and gender
Female
Male
Total Expenditure (1000 Euros)
50000
40000
30000
20000
10000
0
0
20
40
60
80
100
Age


Luxembourg - Inpatient Curative Care HC.1.1 in 1999
Total (public and private) expenditure by age and gender
Female
Male
Total Expenditure (1000 Euros)
4000
3000
2000
1000
0
0
20
40
60
80
100
Age

Finland - Inpatient Curative Care HC.1.1 and Day Cases of Curative Care HC.1.2 in 1999



Switzerland - Inpatient Curative Care HC.1.1 and Inpatient Rehabilitive Care HC.2.1 in 2000

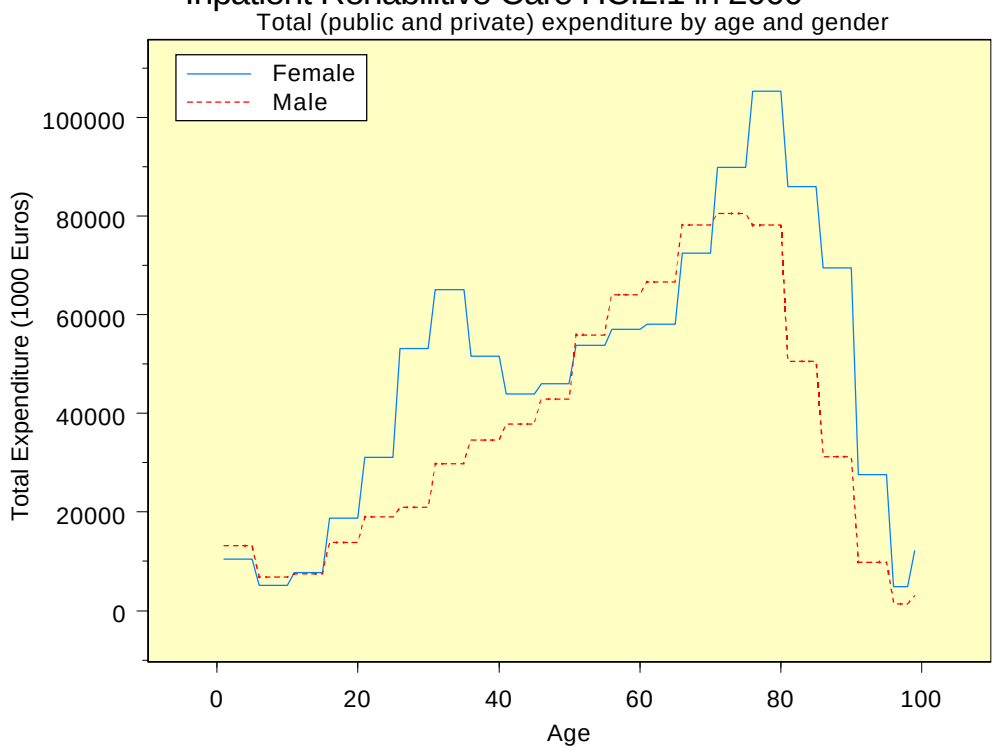
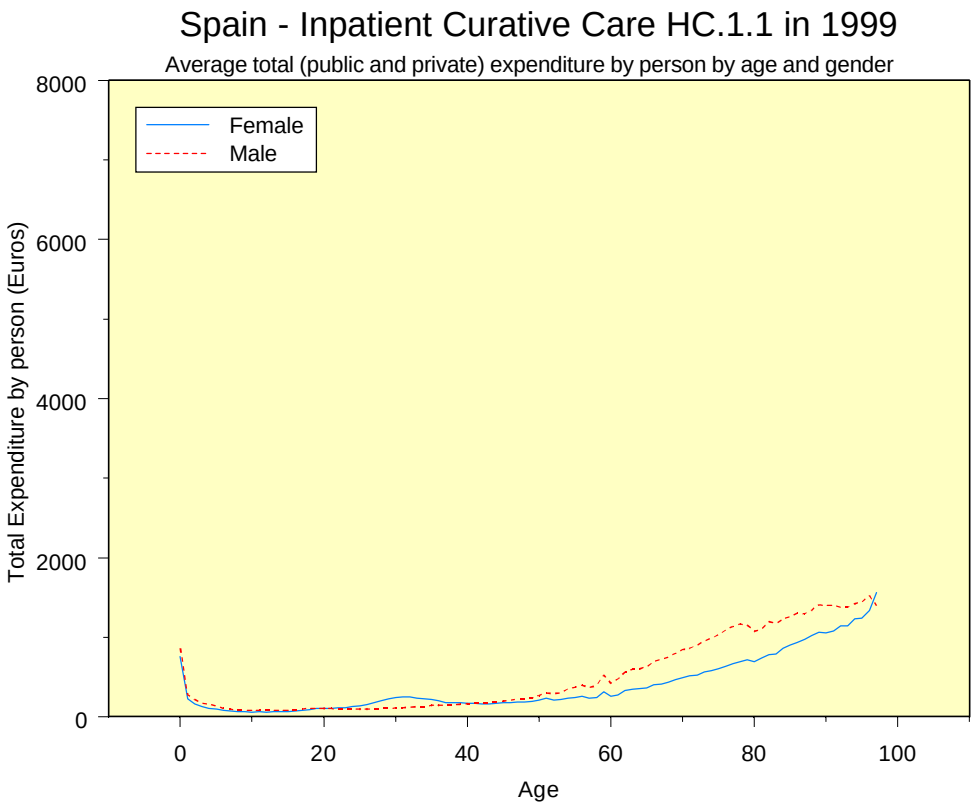
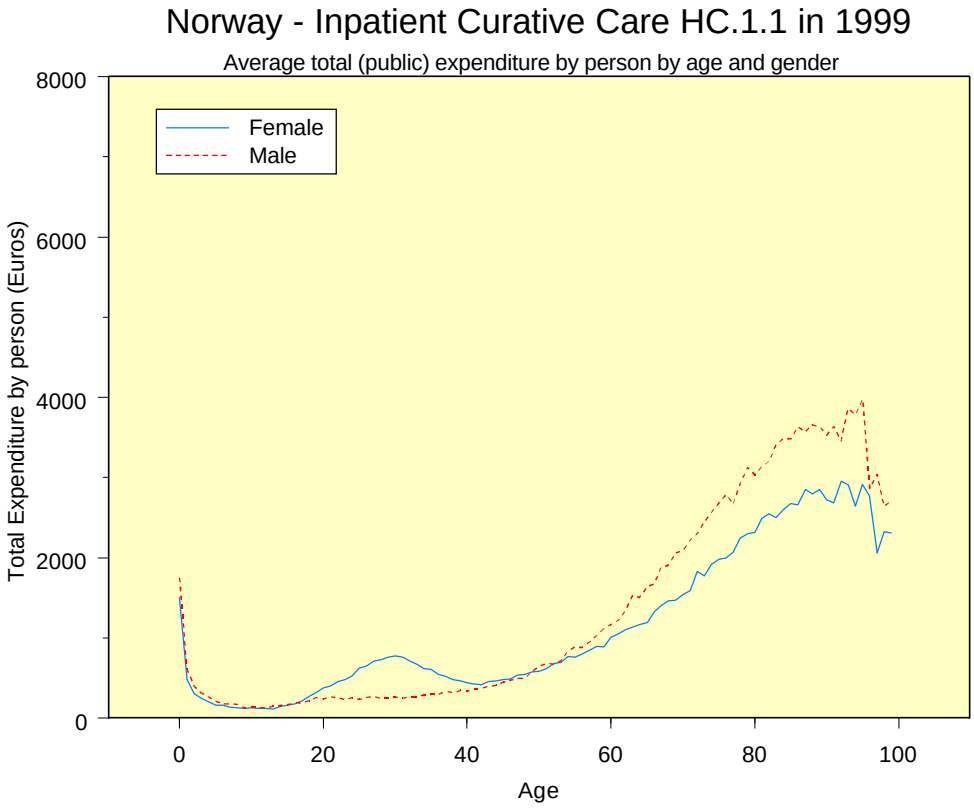
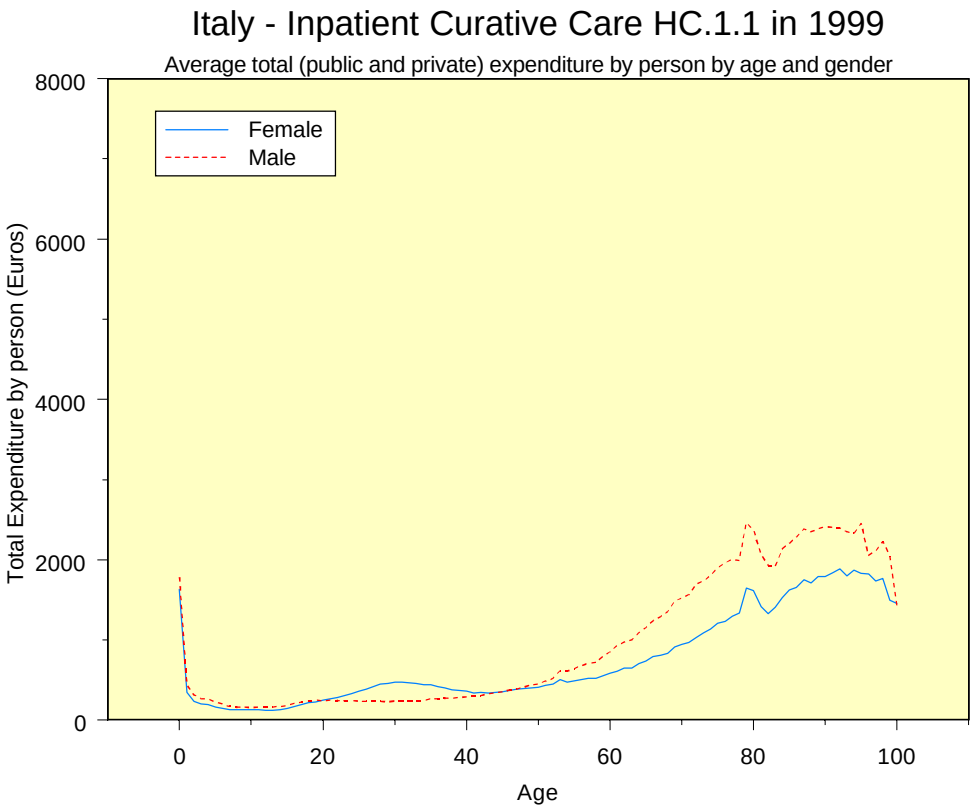
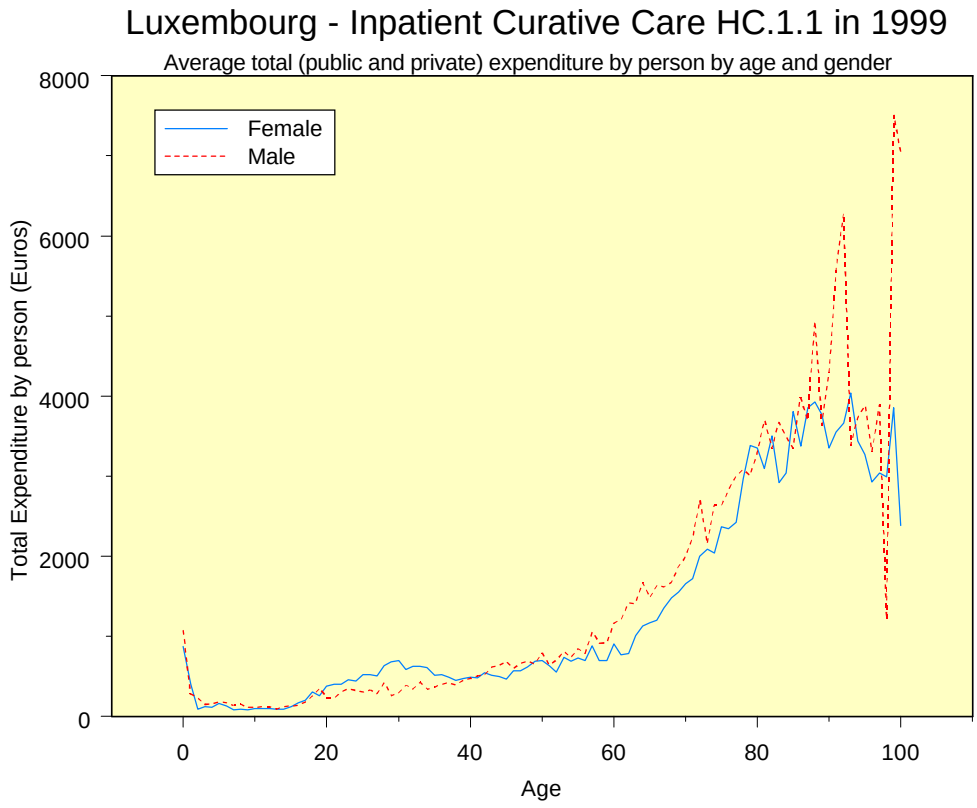


Figure 5: Inpatient curative care expenditure HC.1.1 Average by person by age and gender

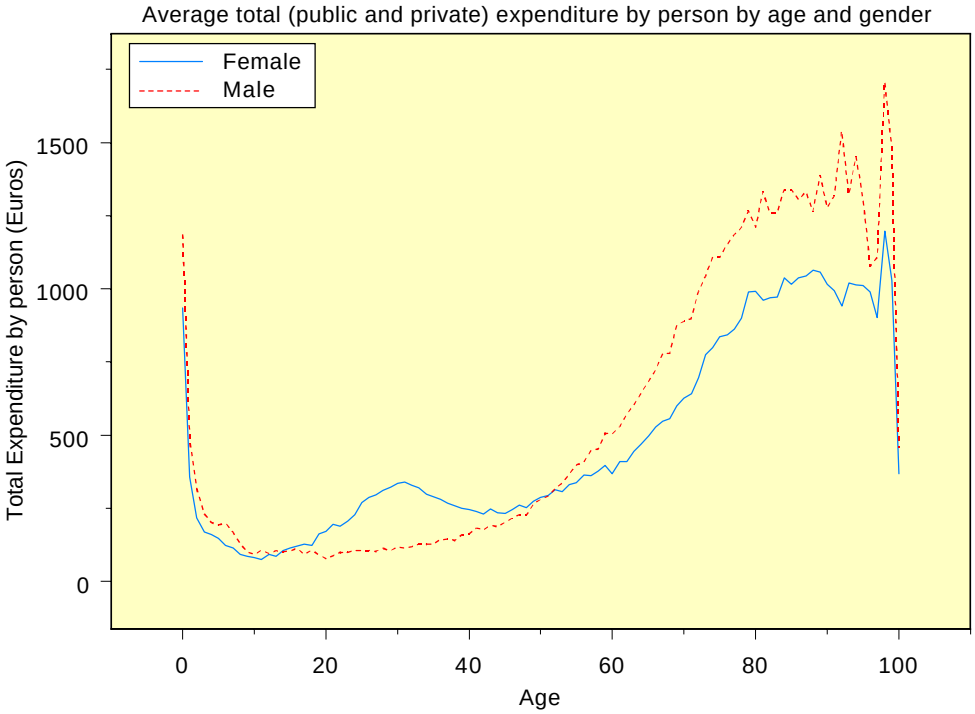




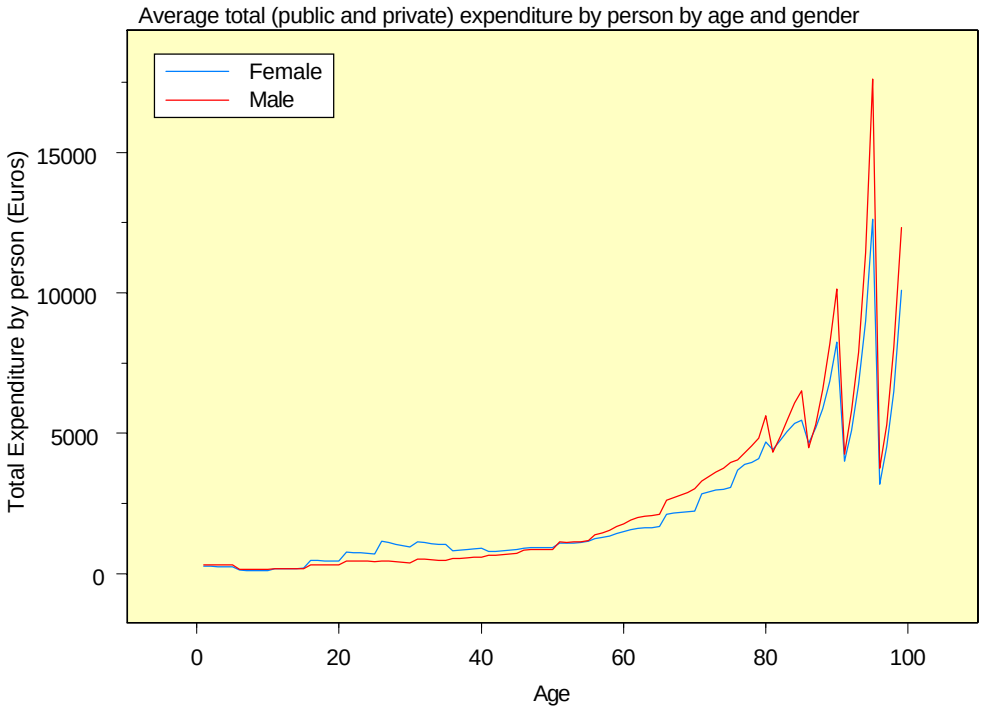

Italy - Inpatient Curative Care HC.1.1 in 1999
Average total (public and private) expenditure by person by age and gender
Female
Male
Total Expenditure by person (Euros)
8000
6000
4000
2000
0
0
20
40
60
80
100
Age


Luxembourg - Inpatient Curative Care HC.1.1 in 1999
Average total (public and private) expenditure by person by age and gender
Female
Male
Total Expenditure by person (Euros)
8000
6000
4000
2000
0
0
20
40
60
80
100
Age

Finland - Inpatient Curative Care HC.1.1 and Day Cases of Curative Care HC.1.2 in 1999



Switzerland - Inpatient Curative Care HC.1.1 and Inpatient Rehabilitive Care HC.2.1 in 2000



6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study has identified the SHA functions of personal health care for which health care expenditure data may be classified by age and gender, for ten EU/EFTA countries, using existing data collection systems, or supplemented by some additional data collection. This information is presented in Table 7 (p.31). On the basis of this survey of data sources, five countries agreed to and subsequently supplied expenditure data for pharmaceutical care (HC.5.1): Germany, Denmark, France, Iceland and Finland. Six countries agreed to do so for curative care (HC.1.1): Finland, Italy, Luxembourg, Norway, Spain and Switzerland (Table 8, p.32). Data was supplied using a format specified in an Excel workbook.

For these countries and functions, the sources and methodology for arriving at a classification of expenditure by age and gender have been described according to a standard format (Tables 10, 11 and 12, pp 35 – 65). Broadly speaking two approaches were taken. Countries where the SHA is implemented or well under way used total expenditure by function as reported in the SHA, and allocated it to age and gender categories using other sources, in a "top-down"-approach. Other countries used a "bottom-up"-approach, in some cases because the SHA has not yet been implemented; in others because it was more straightforward to work directly from the data sources.

Expenditure data is presented in the form of graphs of expenditure by age and gender produced in S-Plus. The variables for which graphs are presented are listed in Tables 13 and 14 (pp.67-68). A selection of these graphs is shown on pages 71-82. The remit of this pilot study was to investigate data availability for purposes of international comparisons of expenditure. The data gathered for this purpose is now in a form suitable for further analysis and we may conclude that this pilot project has been successful in terms of its aim of collecting information on health care expenditure by function, age and gender for a sub-set of SHA functions, and a subset of EU/EFTA countries.

6.2 Recommendations

The recommendations made on the basis of the conclusions drawn from this pilot study are organised in three sections. The first section contains methodological guidance concerning how expenditure data by age and gender should be identified and collected in future, for

curative care and pharmaceutical expenditure, the two areas examined in detail in this study. The second makes proposals for future work on age and gender-related analyses of health expenditure, which Eurostat may wish to consider funding. The third deals with the dissemination of the findings of this study and how to ensure that the results of this work are fed into other ongoing and proposed initiatives in the area of health accounting.

6.2.1 Approach to use to collect and present data on expenditure classified by function, age and gender

We are now in a position to propose guidelines on data sources and the methodology to use to compile data on expenditure by function, age and gender, for inpatient curative care and pharmaceutical expenditure. These are given below and are compatible with the SHA framework. Page numbers refer to the discussion in the foregoing text which supports the recommendations.

Identifying data sources

Potential sources of data for classifying expenditure according to the dimensions of function, age and gender should be identified using a questionnaire similar to that used in this study. (See Appendix 1)

Expenditure

Data relating to expenditure on prescribed medicines/medical non-durables and curative care should be presented in an Excel workbook of the form presented in Appendix 4. This study has shown that Excel is a flexible tool for this purpose, but that this flexibility may carry a cost in terms of failure to conform to the specified data format, which complicates data processing at the centre.

For countries reporting expenditure in the format prescribed in the SHA, total expenditure as reported in the SHA should be used, and distributed to function, age and gender categories using a top-down approach. Where expenditure is not reported in this form, it should be reported as in the source, using a bottom-up approach. The methodology used to derive age-related expenditure should be described in detail, including a statement of whether age and expenditure data are contained in the same source(s).

Public expenditure should be defined as in OECD, 2000[8] (p.153) as follows: Total expenditure – General Government (HF1). This includes expenditure by central government, state/

provincial governments, local/municipal governments and social security funds. Separate calculations may be necessary for each of these public expenditure categories.

Private expenditure should be defined as in OECD (ibid) as follows: Total expenditure – Private Sector (HF2). This includes expenditure by private social insurance, private insurance enterprises and private household out-of-pocket expenditure. It is essential to specify for which of these categories data has been supplied. Private expenditure data is less likely to be routinely available and comes from a wider variety of sources such as ad hoc surveys. Nevertheless where it is possible to make a reasonable estimate of private expenditure by age and gender, this should be done, and a description of the estimation methodology should be provided. This is essential for correct interpretation of the data. For example, where the age distribution for public expenditure has been applied to a total for private expenditure, this should be stated.

Coverage and quality of data sources

The proportion of the population and the proportion of the total expenditure (relating to the HC codes for which data is being presented) included in the data should be stated in the methodological notes accompanying the data. (See Table 12) Because user charges and reimbursement mechanisms vary between countries, and affect both the quality of the data and how it should be interpreted, these two aspects of country health systems should also be described in the methodological notes.

Population

Ideally the population used to estimate expenditure per head should be the population at risk of needing pharmaceutical treatment or being hospitalised in a given year. The question then is which measure of population best represents this. The possibilities include a count of the mid-year population from a mid-year census, or an average of the population at the beginning or end of two consecutive years, or an average of the population in each of the twelve months of the year. The method used in each of the EU/EFTA countries as reported by Eurostat is summarised in Appendix 7.[4] This study has not looked at whether the choice of population measure affects the age-related distribution of expenditure. However, it would clearly be desirable for this to be as consistent as possible between countries. The choice of measure will have a (probably small) effect on some measures of age-related expenditure. For example, the proportion of the population receiving prescribed medicine, or hospitalised, may be greater than 100% if the mid-year population is used, because some individuals

[4] For details of how population data was calculated for this study, the methodological notes for each country should be referred to (Appendix 7). See in particular Germany.

will die in the second half of the year. This is more likely to happen at the upper end of the age range where every individual could be hospitalised or receive prescribed medicine at least once a year. An average of the year-end population for two consecutive years, this being the most commonly available measure, is recommended here.

Residents/non-residents/nationals/non-nationals

SHA guidelines should be followed. These are to include expenditure on all health care consumed within the borders of a given country, whether by nationals or non-nationals (p 44).

Age groups

Unsmoothed expenditure data for one year age classes, presented separately for males and females, should be provided where possible, to ensure maximum flexibility with regard to data needed for policy-making (p 40*).* Where numbers are small, (either because data relates to a small sample or because the country population is small), data should be smoothed by combining data for different years (e.g. age 0-<1 for five consecutive years) rather than combining data for different age classes (p 40). Ideally, the data smoothing should be done centrally, but data protection considerations may prevent this.

Measures of volume/activity

For pharmaceutical expenditure, international comparability will be enhanced if data on number of prescriptions and on Daily Defined Doses (DDDs) are supplied, although for many countries this will not be possible at present. This would enable absolute differences in expenditure by age and gender to be identified; and show the extent to which these differences are a function of differences in relative price. For data on inpatient curative care the available measures of activity (amenable to classification by SHA function, age and gender) are completed episodes, persons treated or total days. It is suggested here that total number of days is the least distorting measure, and the most useful in this context for purposes of international comparison.

SHA functional codes

Pharmaceuticals

Within the functional group HC.5.1 (pharmaceuticals and other medical non-durables) the category for which countries are most likely to be able to supply good quality data is HC.5.1.1 (prescribed medicines). Therefore data which enables expenditure on HC.5.1.1 to

be identified separately should be supplied. If possible data should also be provided for HC.5.1.2 (over-the-counter medicines), and HC.5.1.3 (other medical non-durables), also separately identifiable.

Curative care

Inpatients (HC.1.1) should be separately identifiable in any data supplied, this being the category for which countries are most likely to be able to supply good quality comparable data. Where data on day cases (HC.1.2.) is available this should be supplied, given the growing importance of this mode of production of care, and the desirability of maintaining a time series of data to track this.

6.2.2 Future work on health care expenditure analysed by function, age and gender

a) Better data on expenditure by age and gender is needed to inform three areas of current major concern to MS: sustainability of health/social care systems; ageing; financing health/social care. Because these issues are high on the political agenda at present the political will to invest resources in work in this area exists and should be capitalised upon. The routine collation and presentation of age/gender expenditure data for these functions should be implemented in as many European countries as soon as possible.

b) Any decision to produce age and gender expenditure data routinely will have resource implications. It would be difficult to cost this precisely. Nevertheless the need to do this must be emphasised by clearly stating the benefits of improved data in this area.

c) Given that MS are currently investing in the development of the SHA, they should be encouraged to produce classifications of expenditure by age and gender from this point on, as part of their work on SHA implementation, and in order to benefit from synergies between the different SHA teams working around Europe.

d) We now know that it is possible to collect age and gender expenditure data of reasonable quality for some European countries, but we cannot generalise this to the whole EU or all SHA functions. In order to generalise the findings of this study more widely, further work in this area could investigate inpatient curative care and pharmaceutical care further, and/or repeat the method developed in this study for other functions/countries. Promising functions for further work are ambulatory care and long-term nursing care. Depending on the short and medium term work programme agreed by the Core Group CARE, and related resource availability, both approaches could be pursued.

e) Cooperation between MS, EFTA and accession countries to improve data in this area is fruitful, and should be encouraged and facilitated. The Core Group on CARE is the best mechanism for doing this. The momentum established by this project for work in this area should be maintained.

f) The whole European Statistical System should be examined more systematically in seeking ways to improve data on expenditure by age and gender.

6.2.3 Dissemination of study findings and links with other projects

a) Other Eurostat-funded projects in the domain of public health statistics which may benefit directly from the findings of this project and future work on expenditure by age and gender include:
"Statistical analysis and reporting of data on health accounts"
"Support package for applying the manual of health accounts in the EU"
"System of Health Accounts in the EU: Definition of a Minimum Data Set and of additional information needed to analyse and evaluate the SHA"
"Development of a methodology for collection and analysis of data on efficiency and effectiveness in health care provision"

The needs of these projects should be considered in deciding how best to analyse and otherwise use data from this project.

b) A brief account of the methodology and findings of this study should be prepared for wide circulation. Vehicles for doing this should be explored.

c) The data collected and analysed for this study, together with the methodological notes, should be made available for use by other organisations and individuals working in the area of health accounting.

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APPENDICES

A 1: Phase 1 questionnaire

A 2: Description of data sources identified in Phase 1

A 3: International Classification of Health Care Accounts – Function and Provider Categories

A 4: Format for supply of Phase II data

A 4: Country-specific studies of expenditure by age and gender

A 5: Methodological notes by country

A 6: Methods for estimating population data in EU/EFTA countries

A 1: Phase 1 questionnaire

Dear Colleague,

EUROSTAT PROJECT
SHA – AGE AND GENDER

EU/EEA countries have agreed to work to improve the international comparability of national health accounts, working within the framework proposed in the System of Health Accounts (SHA) (OECD, 2000). Eurostat's Task Force on Health Care Statistics helped to develop the SHA; and proposed to use the SHA as a basis for revising and developing National Health Accounts, and at the European level. The aim was for this to be operational in 2002.

A workshop to explore further development of *functional* health accounts was organised by Eurostat's Leadership Group on Health (LEG Health) in Clervaux, Luxembourg, in September 2000. There it was agreed to explore the feasibility of including age and gender as dimensions of expenditure in National Health Accounts. That it may be *feasible* to do this is indicated by the fact that national health information systems in a growing number of European and OECD countries are beginning to produce data on personal health care expenditure by age and gender (OECD, 2001). That it may be *useful* and therefore *desirable* to classify expenditure in this way is indicated by the potential policy uses of age-related expenditure data. For example, it can help to:

- estimate future resource requirements for health care;
- assess to what extent age explains variation in health care costs (as opposed to, for example, proximity to death);
- predict future long-term care costs of ageing populations and examine responsibility for financing this care;
- monitor age-related rationing of health care.

In this context, Eurostat are funding a project to examine the feasibility of routinely producing data on health care expenditure by function, age and gender in EU/EEA countries. This is part of a broader programme of work funded by Eurostat within the domain of health accounts, ranging from analysis of health accounting data to the development of a manual of practical guidance for applying the Manual of Health Accounts. The project is being carried out by Luxembourg's Centre for Research on Population, Poverty and Public Policy Studies

(CEPS) in collaboration with Luxembourg's General Inspectorate of Social Security (IGSS), and supported by members of Eurostat's Task Force on Health. The purpose of this letter is to ask whether you and your colleagues would be interested in participating in this project.

The project is taking place in three phases over a period of 15 months:

Phase 1: Collect information by questionnaire on quantitative work carried out to date in EU/EEA countries on health expenditure by function, age and gender; and on the data sources and methods used for this work. On the basis of this information identify, in agreement with participating countries, several exploratory studies to be carried out in Phase 2, in which expenditure data by age and gender will be collected for a subset of functions and countries/regions. The identification of areas of health care policy, which may benefit from better data on expenditure by age and gender, will help to inform the selection of subjects for exploratory study. (Completion end March '02)

Phase 2: For the areas to be examined in the exploratory studies, collect expenditure data classified by function, age and gender. Prepare a report on the data sources, and methods used for compiling data. A key aspect of this phase is to assess the international comparability of the data collected from each country. (Completion end September '02)

Phase 3: For each exploratory study, analyse expenditure data by function, age and gender, and analyse it for quality, completeness, periodicity, ease of collection, reproducibility and timeliness. Prepare final report, including recommendations for further work to improve data on health expenditure by function, age and gender, within the framework of the SHA. (Completion end February, '03)

Selecting health care functions

As you know, the SHA uses three dimensions for classifying health expenditure: by financing unit, by provider and by function. The brief of this project is to examine the feasibility of classifying health expenditure by function, age and gender. However we recognise that it will be necessary to start from the perspective of providers or financing units in our initial broad brush assessment of potential sources of data on expenditure by age and gender in the first phase of the project, given the present state of development of National Health Accounts in EU/EEA countries. In the second phase of the project, for those areas selected for exploratory studies, it will be necessary to supply expenditure data classified by function. This project is restricted to personal health care services provided directly to individual persons, as opposed to collective health care services covering the traditional tasks of public health. (This distinction is made in OECD, 2000, p.42).

Information requested in Phase 1

The information we are now requesting from you, or colleagues who are working in this area, relates to Phase 1 of the project. It is set out in the attached questionnaire. The information you provide in response to it will enable us to form an overview of the feasibility of classifying health care expenditure data by function, age and gender in the EU/EEA region, and on how this information is organised.

We hope that you will agree to participate in the project, and look forward to working with you.

Yours sincerely,

Raymond Wagener and Marian Craig

References

OECD (2000) *A System of Health Accounts* Paris: OECD

OECD (2001) *Health Data 2001 – A Comparative Analysis of 30 countries*, Paris: OECD

EUROSTAT PROJECT
SHA – AGE AND GENDER

Questionnaire

(Please return completed questionnaire to marian.craig@igss.etat.lu by March 22, 2002.)

Eurostat project: SHA – Age and Gender

This questionnaire requests information in connection with a Eurostat-funded project. The project is assessing the feasibility, for EU/EEA countries, of including information on health care expenditure data classified by function, age and gender in the System of Health Accounts. The work is taking place in 2 main stages: in the first (Phase 1) we are attempting to form an overview of possible sources of information on health care expenditure classified by function, age and gender. On the basis of this review of data sources we will then identify, in agreement with participating countries, several exploratory studies in which expenditure data by age and gender will be collected for a subset of functions and countries/regions. In the second (Phases 2 and 3) we will collect expenditure data in the areas defined in the exploratory studies and review it for quality, completeness, periodicity, ease of collection, reproducibility, timeliness and international comparability. On the basis of this, recommendations will be made for further work to improve data on health expenditure classified by function, age and gender.

The aim of this project is to assess the feasibility of routinely classifying expenditure data by function, age and gender. However you may find it easier to approach this initially from the perspective of organisations which collect data on health care. Hence this questionnaire begins by asking for a list of possible data sources, grouped in threee broad categories of health care organisations which may collect data (Question 1, Table Q1). We then ask you to describe these sources in more detail (Question 2, Table Q2). Question 3 (Table Q3) asks you for information about any studies or analyses of health care expenditure by age and gender in your country of which you may be aware. Appendix I lists studies of health expenditure by age already known to us.

Please list any data sources from which may be derived information on health care expenditure by age and gender (including those sources which include data on age only). These

sources may include data pertaining to a single region(s), or to a sub-population(s) such as members of a particular sickness fund.

Table Q1: Possible sources for health care expenditure data by function, age and gender- list of sources

Country:				
Source number	Abbreviated name for data source	Type of organisation collecting the data *Indicate "yes" in one column*		
		Providers of health care	Providers of medical goods	General health administration & insurance agents
	Please insert additional rows where necessary			

2. Please describe the data sources identified in Table Q1 in the attached Excel spreadsheet (sourcequest_*.xls), *Table Q2 Possible sources for health care expenditure data by function, age and gender – description of sources.* Please use a separate sheet for each source. These are included in the spreadsheet. A completed example is attached for Luxembourg's main data source (sourcequest_luxembourg.xls).

3. Please describe in Table Q3 below any studies/analyses of health care expenditure by age and gender carried out for your country or for regions within your country, which have used either routinely collected or ad hoc data. The studies of which we are already aware are listed in Appendix I of this questionnaire.

Table Q3: Studies/analyses of health care expenditure by age and gender carried out for your country

Country:					
Authors and title *Please give full reference*	Date of study	Period covered	Population covered	Geographical coverage	Relevance of study to this project
Please insert additional rows where necessary					

Questionnaire Appendix I. Studies/analyses of health care expenditure by age, of possible relevance to this project

The studies referred to below are not restricted to any particular disease category or subsector of the population.

Netherlands
Polder, J 2001 *Cost of illness in the Netherlands* Erasmus University, Rotterdam. Chapter V Age-specific increases in health care costs

Scotland
Normand and Graham, 2002 *Age v proximity to death as explanatory variables for health care costs* (www.show.scot.nhs.uk/isd/NHSiS_resource/costs/costs.htm)

France
Mizrahi/Mizrahi 1993 *Influence de l'âge et du grand âge sur les dépenses médicales*, CREDES, Biblio. No. 953, Paris: CREDES

A 2: Description of data sources identified in Phase 1

Phase I Questionnaire: Description of sources		HC.1 Services of Curative Care													
Country/Source		Activity	Expenditure	Proportion of population	HC.1	HC.1.1	HC.1.2	HC.1.3	HC.1.3.1	HC.1.3.2	HC.1.3.3	HC.1.3.9	HC.1.4	Notes
	Description of source													
Belgium														
1.	Data on health care services and goods collected for info & billing		Yes	90%	■									
Denmark														
1.	Cost-weighted DRGs	Yes		100%		■	■	■						
2.	Individual register, prescribed medicine purchases		Yes	100%										
3.	Individual register of visits to GPs		Yes	100%				■						
Finland														
1.	Care register, inpatient and day care episodes		Yes	100%		■								
2.	Benchmarking project		Yes	100%		■	■	■						HC1.3 in hospitals
3.	Prescription register		Yes	100%										
4.	Statistics on national health insurance refunds of medical expenses		Yes	100%					■	■		■		
France														
1.	Permanent sample of socially insured individuals		Yes	1/600 of 95% of population		■	■	■					■	Rule for conversion to expenditure to be clarified
2.	Individual health care consumption during 1 month period	Yes		1/4 of source 1	■									No provider or functional classification given for this source.
3.	Survey of health care consumption during 3 month period	Yes		Excl. individuals in long-term nursing care	■									No provider or functional classification given for this source.
Germany														
1.	Risk profiles for statutory risk equalisation scheme, whole country		Yes	87%	■									Definitions do not fit functional classification precisely
2.	Private health insurance data on health care services/goods collected for info/billing		Yes	100%	■									Definitions do not fit functional classification precisely
3.	Statutory accident insurance data on services/goods, for info/billing	Yes		100%	■									Definitions do not fit functional classification precisely
4.	Statutory questionnaire on nursing/community care facilities	Yes		100%										
5.	Survey of consumption of OTC medicines	Yes		Representative of whole population										

Phase I Questionnaire: Description of sources		HC.1 Services of Curative Care												
Country/Source		Activity	Expenditure	Proportion of population	HC.1	HC.1.1	HC.1.2	HC.1.3	HC.1.3.1	HC.1.3.2	HC.1.3.3	HC.1.3.9	HC.1.4	Notes
	Description of source													
6.	Federal Statistical Office Health Accounts		Yes	100%	■	■	■	■	■	■	■	■	■	No age and gender data
7.	Survey of prescriptions for pop. insured by statutory sickness funds		Yes	0.4% regionally stratified sample of 87% population										
Iceland														
1.	Hospital information system		Yes	62%		■	■		■		■	■	■	
Italy														
1.	Hospital discharge schedule	Yes		100%		■	■							
2.	Household budget survey		Yes	Representative of whole population		■	■		■	■	■	■		Cannot disaggregate HC.1.1+HC.1.2; and HC.1.3.*; data are for households
3.	Sample survey private household expenditure		Yes	Representative of whole population					■	■				
4.	Outpatient care information system		Yes	Lazio region 100%				■						
5.	Emergency rescue information system	Yes		Lazio region 100%					■					Cannot disaggregate from HC4.3
6.	Outpatient care info system/schedule		Yes	Tuscany region 100%				■						
7.	Schedule of rehabilitation services		Yes	Tuscany region 100%										
8.	Schedule of spa services		Yes	Tuscany region 100%								■		
9.	Schedule of pharmaceuticals prescribed by GPs		Yes	Tuscany region 100%										
10.	Organisational data collected by Italian Statistical Agency	Yes		100%	■	■	■	■	■	■	■	■	■	
11.	Schedule of pharmaceuticals prescribed by GPs		Yes	Umbria region 100%										
Luxembourg														
1.	Data on h.care services/goods collected for info/billing purposes		Yes	95%		■	■	■		■			■	Cannot disaggregate HC1.1+HC1.2
2.	Hospital discharge database	Yes		95%		■	■							Cannot disaggregate HC1.1+HC1.2
Netherlands														
1.	Polder 2001. See notes	?	?		*									* Refers to combination of sources listed in Polder. Ref. Polder does not use functional classification.

Phase I Questionnaire: Description of sources		HC.1 Services of Curative Care													
Country/Source		Activity	Expenditure	Proportion of population	HC.1	HC.1.1	HC.1.2	HC.1.3	HC.1.3.1	HC.1.3.2	HC.1.3.3	HC.1.3.9	HC.1.4	Notes
	Description of source													
Norway														
1.	Nursing stats collected by quest from municipalities/ institutions	Yes		100%										
2.	Registration of users/recipients of nursing and care services	Yes		1999 – 30 municipalities										
3.	Local government accounts		Yes	100%	■									
4.	Specialist health service statistics	Yes			■									
5.	Patient data register - general hospitals	Yes		100%	■	■								
6.	National accounts (from govt accounts & household surveys)		Yes	100%										
7.	Health and living conditions survey	Yes		10000 persons aged 16+				■						
8.	Household budget survey		Yes	2200 households					■	■				
9.	Central government accounts incl. social security		Yes	100%										
Spain														
1.	Hospital discharge data classified by DRG	Yes		100%		■								
2.	National Health System reference costs		Yes	Sample of 18 hospitals rep of whole population		■								
3.	Health expenditure satellite accounts		Yes	100%		■								
4.	National Health Survey	Yes		Representative of whole pop	?									Provider/functional classification not indicated in completed questionnaire
5.	Hospital statistics		Yes	100%	■									
6.	National Accounts		Yes	100%		■		■						Definitions do not match SHA functional classification precisely.
Switzerland														
1.	Nursing home & other long-term inpatient statistics	Yes		100%										
2.	Sickness insurance - full registration of bills reimbursed		Yes	100% except accidents of employees		■								Cannot disaggregate HC1.1 and HC2.1 – curative and rehabilitative inpatient care. HC 1.1 incl. day cases.
3.	Disability insurance		Yes	Residents 0-65										

Phase I Questionnaire: Description of sources		HC.1 Services of Curative Care												
Country/Source		Activity	Expenditure	Proportion of population	HC.1	HC.1.1	HC.1.2	HC.1.3	HC.1.3.1	HC.1.3.2	HC.1.3.3	HC.1.3.9	HC.1.4	Notes
	Description of source													
4.	Old age insurance		Yes	100%										
5.	Accident insurance		Yes	Economically active population										Cannot disaggregate HC1.1 and HC 2.1- curative and rehabilitative inpatient care. HC 1.1 incl. day cases.
U.K.														
1.	National accounts		Yes	100%										All functions incl., but not separately identified
2.	Office of National Statistics sample of charities in CARITAS survey		Yes	All charities	*									* Only suitable for analysis as part of experimental total UK health spend data
3.	Non-NHS expenditure on nursing care in nursing homes		Yes	100%										
4.	English Reference Costs, Northern Irish Reference Costs, Scottish Health Service Costs, hospitals only		Yes	100%										An increasing proportion of these reference costs can be allocated to functions but this information not supplied in the questionnaire

Phase I Questionnaire: Description of sources		HC.5 Medical goods dispensed to outpatients														
Country/Source		Activity	Expenditure	Proportion of population	HC.5	HC.5.1	HC.5.1.1	HC.5.1.2	HC.5.1.3	HC.5.2	HC.5.2.1	HC.5.2.2	HC.5.2.3	HC.5.2.4	HC.5.2.9	Notes
	Description of source															
Belgium																
1.	Data on health care services and goods collected for info and billing		Yes	90%	■											
Denmark																
1.	Cost-weighted DRGs	Yes		100%												
2.	Individual register, prescribed medicine purchases		Yes	100%			■	■								Age & gender available for 5.1.1 & part of 5.1.2
3.	Individual register of visits to GPs		Yes	100%												
Finland																
1.	Care register, inpatient and day care episodes		Yes	100%												
2.	Benchmarking project		Yes	100%												
3.	Prescription register		Yes	100%			■									
4.	Statistics on national health insurance refunds of medical expenses		Yes	100%												
France																
1.	Permanent sample of socially insured individuals		Yes	1/600th of 95% of population		■				■						Rule for conversion to expenditure to be clarified
2.	Individual health care consumption during 1 month period	Yes		1/4 of source 1												No provider or functional classification given for this source.
3.	Survey of health care consumption during 3 month period	Yes		Excl. individuals in long-term nursing care												No provider or functional classification given for this source.
Germany																
1.	Risk profiles for statutory risk equalisation scheme, whole country		Yes	87%	■											Definitions do not fit functional classification precisely
2.	Private health insurance data on health care services/goods collected for info/billing		Yes	100%	■											Definitions do not fit functional classification precisely
3.	Statutory accident insurance data on services/goods, for info/billing	Yes		100%	■											Definitions do not fit functional classification precisely
4.	Statutory questionnaire on nursing/community care facilities	Yes		100%												
5.	Survey of consumption of OTC medicines	Yes		Representative of whole population				■								

Phase I Questionnaire: Description of sources		HC.5 Medical goods dispensed to outpatients														
Country/Source		Activity	Expenditure	Proportion of population	HC.5	HC.5.1	HC.5.1.1	HC.5.1.2	HC.5.1.3	HC.5.2	HC.5.2.1	HC.5.2.2	HC.5.2.3	HC.5.2.4	HC.5.2.9	Notes
	Description of source															
6.	Federal Statistical Office Health Accounts		Yes	100%	■	■	■	■	■	■	■	■	■	■	■	No age and gender data
7.	Survey of prescriptions for pop. insured by statutory sickness funds		Yes	0.4% regionally stratified sample of 87% population			■									
Iceland																
1.	Hospital information system		Yes	62%		■										
Italy																
1.	Hospital discharge schedule	Yes		100%												
2.	Household budget survey		Yes	Representative of whole population		■				■						Data is for households, i.e. not possible to directly allocate to age and gender
3.	Sample survey private household expenditure		Yes	Representative of whole population												
4.	Outpatient care information system		Yes	Lazio region 100%												
5.	Emergency rescue information system	Yes		Lazio region 100%												
6.	Outpatient care info system/schedule		Yes	Tuscany region 100%												
7.	Schedule of rehabilitation services		Yes	Tuscany region 100%												
8.	Schedule of spa services		Yes	Tuscany region 100%												
9.	Schedule of pharmaceuticals prescribed by GP		Yes	Tuscany region 100%			■									
10.	Organisational data collected by Italian Statistical Agency	Yes		100%												
11.	Schedule of pharmaceuticals prescribed by GP		Yes	Umbria region 100%			■									
Luxembourg																
1.	Data on health care services/goods collected for info/billing purposes		Yes	95%		■	■		■	■						Data available for HC5.1.3 & HC5.2 if prescribed
2.	Hospital discharge database	Yes		95%												
Netherlands																
1.	Polder 2001. See notes	?	?		*											* Refers to combination of sources listed in Polder. Ref. Polder does not use functional classification.

Phase I Questionnaire: Description of sources		HC.5 Medical goods dispensed to outpatients														
Country/Source		Activity	Expenditure	Proportion of population	HC.5	HC.5.1	HC.5.1.1	HC.5.1.2	HC.5.1.3	HC.5.2	HC.5.2.1	HC.5.2.2	HC.5.2.3	HC.5.2.4	HC.5.2.9	Notes
	Description of source															
Norway																
1.	Nursing stats collected by quest from municipalities/ institutions	Yes		100%												
2.	Registration of users/recipients of nursing and care services	Yes		1999 – 30 municipalities												
3.	Local government accounts		Yes	100%												
4.	Specialist health service statistics	Yes														
5.	Patient data register - general hospitals	Yes		100%												
6.	National accounts (from govt accounts & household surveys)		Yes	100%		■				■						Not clear whether data available by age and gender for 5.1 and 5.2 or just 5.1
7.	Health and living conditions survey	Yes		10000 persons aged 16+												
8.	Household budget survey		Yes	2200 households												
9.	Central government accounts incl. social security		Yes	100%		■				■						May not be possible to split 5.1 and 5.2
Spain																
1.	Hospital discharge data classified by DRG	Yes		100%												
2.	National Health System reference costs		Yes	Sample of 18 hospitals rep of whole population												
3.	Health expenditure satellite accounts		Yes	100%												
4.	National Health Survey	Yes		Representative of whole pop												Provider/functional classification not indicated in completed questionnaire
5.	Hospital statistics		Yes	100%												
6.	National Accounts		Yes	100%												Definitions do not match SHA functional classification precisely.
Switzerland																
1.	Nursing home and other long-term inpatient statistics	Yes		100%												
2.	Sickness insurance – full registration of bills reimbursed		Yes	100% except accidents of employees			■									
3.	Disability insurance		Yes	Residents 0-65						■						

Phase I Questionnaire: Description of sources		HC.5 Medical goods dispensed to outpatients														
Country/Source		Activity	Expenditure	Proportion of population	HC.5	HC.5.1	HC.5.1.1	HC.5.1.2	HC.5.1.3	HC.5.2	HC.5.2.1	HC.5.2.2	HC.5.2.3	HC.5.2.4	HC.5.2.9	Notes
	Description of source															
4.	Old age insurance		Yes	100%									■			
5.	Accident insurance		Yes	Economically active population			■									
U.K.																
1.	National accounts		Yes	100%		■	■	■	■	■	■	■	■	■	■	All functions included but not separately identified
2.	Office of National Statistics sample of charities in CARITAS survey		Yes	All charities	*											*Only suitable for analysis as part of experimental total UK health spend data
3.	Non-NHS expenditure on nursing care in nursing homes		Yes	100%												
4.	English Reference Costs, Northern Irish Reference Costs, Scottish Health Service Costs, hospitals only		Yes	100%		■	■	■	■	■	■	■	■	■	■	An increasing proportion of these reference costs can be allocated to functions but this information not supplied in the questionnaire

Phase I Questionnaire: Description of sources		HC.3 Services of long-term nursing care							
Country/Source	Description of source	Activity	Expenditure	Proportion of population	HC.3	HC.3.1	HC.3.2	HC.3.3	Notes
Belgium									
1.	Data on health care services and goods collected for info and billing		Yes	90%					
Denmark									
1.	Cost-weighted DRGs	Yes		100%					
2.	Individual register, prescribed medicine purchases		Yes	100%					
3.	Individual register of visits to GPs		Yes	100%					
Finland									
1.	Care register, inpatient and day care episodes		Yes	100%					
2.	Benchmarking project		Yes	100%					
3.	Prescription register		Yes	100%					
4.	Statistics on national health insurance refunds of medical expenses		Yes	100%					
France									
1.	Permanent sample of socially insured individuals		Yes	1/600th of 95% of population					Rule for conversion to expenditure to be clarified
2.	Individual health care consumption during 1 month period	Yes		1/4 of source 1					No provider or functional classification given for this source
3.	Survey of health care consumption during 3 month period	Yes		Excl. individuals in long-term nursing care					No provider or functional classification given for this source
Germany									
1.	Risk profiles for statutory risk equalisation scheme, whole country		Yes	87%					
2.	Private health insurance data on health care services/goods collected for info/billing		Yes	100%					
3.	Statutory accident insurance data on services/goods, for info/billing	Yes		100%					
4.	Statutory questionnaire on nursing/community care facilities	Yes		100%					
5.	Survey of consumption of OTC medicines	Yes		Representative of whole population					

Phase I Questionnaire: Description of sources		HC.3 Services of long-term nursing care							
Country/Source	Description of source	Activity	Expenditure	Proportion of population	HC.3	HC.3.1	HC.3.2	HC.3.3	Notes
6.	Federal Statistical Office Health Accounts		Yes	100%					
7.	Survey of prescriptions for pop. insured by statutory sickness funds		Yes	0.4% regionally stratified sample of 87% population					
Iceland									
1.	Hospital information system		Yes	62%					
Italy									
1.	Hospital discharge schedule	Yes		100%					
2.	Household budget survey		Yes	Representative of whole population					Data is for households, i.e. not possible to directly allocate to age and gender
3.	Sample survey private household expenditure		Yes	Representative of whole population					
4.	Outpatient care information system		Yes	Lazio region 100%					
5.	Emergency rescue information system	Yes		Lazio region 100%					
6.	Outpatient care info system/schedule		Yes	Tuscany region 100%					
7.	Schedule of rehabilitation services		Yes	Tuscany region 100%					
8.	Schedule of spa services		Yes	Tuscany region 100%					
9.	Schedule of pharmaceuticals prescribed by GP		Yes	Tuscany region 100%					
10.	Organisational data collected by Italian Statistical Agency	Yes		100%					
11.	Schedule of pharmaceuticals prescribed by GP		Yes	Umbria region 100%					
Luxembourg									
1.	Data on health care services/goods collected for info/billing purposes		Yes	95%					Cannot disaggregate 3.1 AND 3.2
2.	Hospital discharge database	Yes		95%					
Netherlands									
1.	Polder 2001. See notes	?	?		*				* Refers to combination of sources listed in Polder. Ref. Polder does not use functional classification.

Phase I Questionnaire: Description of sources		HC.3 Services of long-term nursing care							
Country/Source		Activity	Expenditure	Proportion of population	HC.3	HC.3.1	HC.3.2	HC.3.3	Notes
	Description of source								
Norway									
1.	Nursing stats collected by quest from municipalities/ institutions	Yes		100%					
2.	Registration of users/recipients of nursing and care services	Yes		1999 – 30 municipalities					
3.	Local government accounts		Yes	100%					
4.	Specialist health service statistics	Yes							
5.	Patient data register - general hospitals	Yes		100%					
6.	National accounts (from govt accounts & household surveys)		Yes	100%					
7.	Health and living conditions survey	Yes		10000 persons aged 16+					
8.	Household budget survey		Yes	2200 households					
9.	Central government accounts incl. social security		Yes	100%					
Spain									
1.	Hospital discharge data classified by DRG	Yes		100%					
2.	National Health System reference costs		Yes	Sample of 18 hospitals rep of whole population					
3.	Health expenditure satellite accounts		Yes	100%					
4.	National Health Survey	Yes		Representative of whole pop					Provider/functional classification not indicated in completed questionnaire
5.	Hospital statistics		Yes	100%					
6.	National Accounts		Yes	100%					Definitions do not match SHA functional classification precisely.
Switzerland									
1.	Nursing home and other long-term inpatient statistics	Yes		100%					
2.	Sickness insurance – full registration of bills reimbursed		Yes	100% except accidents of employees					
3.	Disability insurance		Yes	Residents 0-65					

Phase I Questionnaire: Description of sources		HC.3 Services of long-term nursing care							
Country/Source		Activity	Expenditure	Proportion of population	HC.3	HC.3.1	HC.3.2	HC.3.3	Notes
	Description of source								
4.	Old age insurance		Yes	100%					
5.	Accident insurance		Yes	Economically active population					
U.K.									
1.	National accounts		Yes	100%					All functions included but not separately identified
2.	Office of National Statistics sample of charities in CARITAS survey		Yes	All charities	*				*Only suitable for analysis as part of experimental total UK health spend data
3.	Non-NHS expenditure on nursing care in nursing homes		Yes	100%					
4.	English Reference Costs, Northern Irish Reference Costs, Scottish Health Service Costs, hospitals only		Yes	100%					An increasing proportion of these reference costs can be allocated to functions but this information not supplied in the questionnaire

A 3: International Classification of Health Care Accounts – Function and Provider Categories[8]

ICHA-HC classification of functions of health care: three-digit level

ICHA code			Functions of health care
HC.1			Services of curative care
	HC.1.1		In-patient curative care
	HC.1.2		Day cases of curative care
	HC.1.3		Out-patient curative care
		HC.1.3.1	Basic medical and diagnostic services
		HC.1.3.2	Out-patient dental care
		HC.1.3.3	All other specialised health care
		HC.1.3.9	All other out-patient curative care
	HC.1.4		Services of curative home care
HC.2			Services of rehabilitative care
	HC.2.1		In-patient rehabilitative care
	HC.2.2		Day cases of rehabilitative care
	HC.2.3		Out-patient rehabilitative care
	HC.2.4		Services of rehabilitative home care
HC.3			Services of long-term nursing care
	HC.3.1		In-patient long-term nursing care
	HC.3.2		Day cases of long-term nursing care
	HC.3.3		Long-term nursing care: home care
HC.4			Ancillary services to health care
	HC.4.1		Clinical laboratory
	HC.4.2		Diagnostic imaging
	HC.4.3		Patient transport and emergency rescue
	HC.4.9		All other miscellaneous ancillary services
HC.5			Medical goods dispensed to out-patients
	HC.5.1		Pharmaceuticals and other medical non-durables
		HC.5.1.1	Prescribed medicines
		HC.5.1.2	Over-the-counter medicines
		HC.5.1.3	Other medical non-durables
	HC.5.1		Therapeutic appliances and other medical durables
		HC.5.2.1	Glasses and other vision products
		HC.5.2.2	Orthopedic appliances and other prosthetics
		HC.5.2.3	Hearing aids
		HC.5.2.4	Medico-technical devices, including wheelchairs
		HC.5.2.9	All other miscellaneous medical durables

ICHA-HP classification of providers of health care: three-digit level

ICHA code			Health care provider industry
HP.1			Hospitals
	HP.1.1		General hospitals
	HP.1.2		Mental health and substance abuse hospitals
	HP.1.3		Speciality (other than mental health and substance abuse) hospitals
HP.2			Nursing and residential care facilities
	HP.2.1		Nursing care facilities
	HP.2.2		Residential mental retardation, mental health and substance abuse facilities
	HP.2.3		Community care facilities for the elderly
	HP.2.9		All other residential care facilities
HP.3			Providers of ambulatory health care
	HP.3.1		Offices of physicians
	HP.3.2		Offices of dentists
	HP.3.3		Offices of other health practitioners
	HP.3.4		Out-patient care centres
		HP.3.4.1	Family planning centres
		HP.3.4.2	Out-patient mental health and substance abuse centres
		HP.3.4.3	Free-standing ambulatory surgery centres
		HP.3.4.4	Dialysis care centres
		HP.3.4.5	All other out-patient multi-speciality and co-operative service centres
		HP.3.4.9	All other out-patient community and other integrated care centres
	HP.3.5		Medical and diagnostic laboratories
	HP.3.6		Providers of home health care services
	HP.3.9		Other providers of ambulatory health care
		HP.3.9.1	Ambulance services
		HP.3.9.2	Blood and organ banks
		HP.3.9.9	Providers of all other ambulatory health care services
HP.4			Retail sale and other providers of medical goods
	HP.4.1		Dispensing chemists
	HP.4.2		Retail sale and other suppliers of optical glasses and other vision products
	HP.4.3		Retail sale and other suppliers of hearing aids
	HP.4.4		Retail sale and other suppliers of medical appliances (other than optical glasses and hearing aids)
	HP.4.9		All other miscellaneous sale and other suppliers of pharma-ceuticals and medical goods
HP.5			Provision and administration of public health programmes

ICHA code			Health care provider industry
HP.6			General health administration and insurance
	HP.6.1		Government administration of health
	HP.6.2		Social security funds
	HP.6.3		Other social insurance
	HP.6.4		Other (private) insurance
	HP.6.9		All other providers of health administration
HP.7			Other industries (rest of the economy)
	HP.7.1		Establishments as providers of occupational health care services
	HP.7.1		Private households as providers of home care
	HP.7.1		All other industries as secondary producers of health care
HP.9			Rest of the world

A 4: Format for supply of Phase 2 data

Project SHA Age & Gender

Please fill in the yellow cells:

Country	
Name of person completing Excel workbook	
Email of person completing workbook	
Date of completion of workbook	
Data source(s) as defined in Ph 1 quest	
Year(s)	

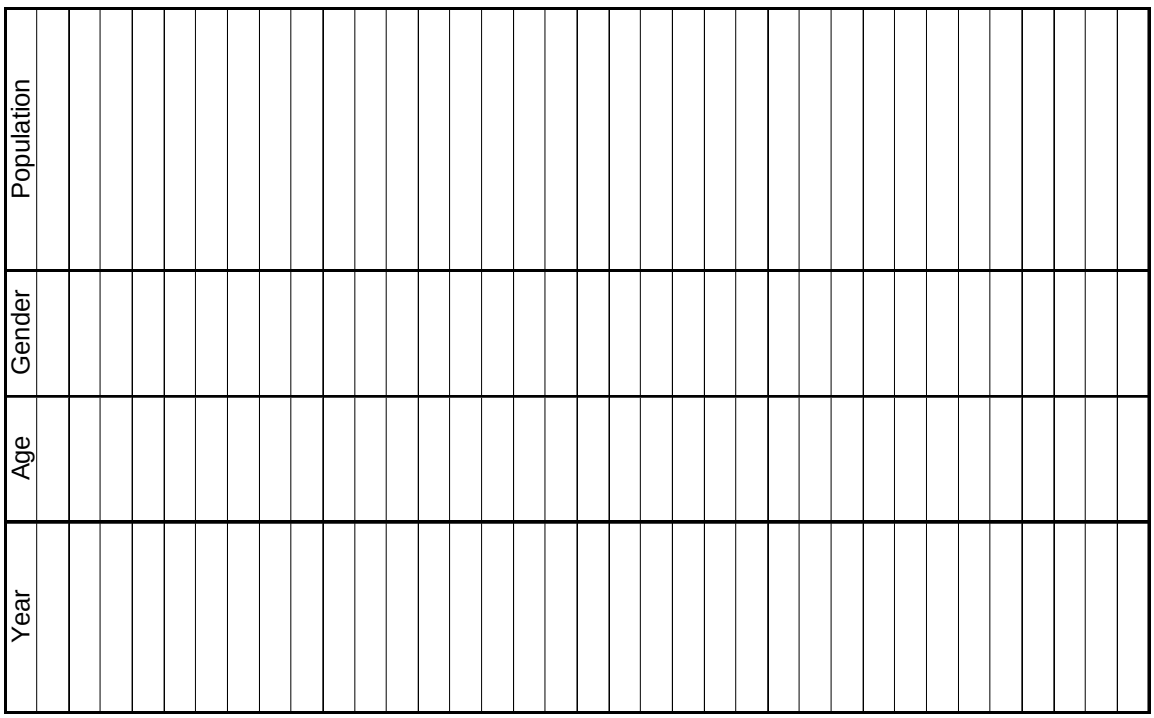
Notes on variables:

1. Data should be supplied for 1999, and, where possible, 2000
2. **HC_Code**: ICHA HC code. Two positions e.g. HC.1.1
3. **Age**. This should be for single years up to 99, then > 99. Use numbers only: 0,1,2……99,100. 100 = 99 and above.
4. **Gender**. Use codes m (male), f (female)
5. **Cases**. Number of cases or episodes
6. **Expenditure**: in 1000' Euros
7. **Total:** Total expenditure
8. **Public:** Total expenditure – General Government. (HF1) (Table 11.1, p. 153, OECD 'A System of Health Accounts', 2000)
9. **Private:** Total expenditure – Private Sector. (HF2) Table 11.1, as above. Where it is possible to make a reasonable estimate of private expenditure by age group please do so, and provide a description of the estimation methodology. (For example, where the age distribution for public expenditure has been applied to a total for private expenditure, state this.) If possible include data on private co-payments, and public expenditure on private sector services, indicating clearly that this is included.
10. **Population:** should refer to the population covered, if the data source is a social insurance source; or to the resident population if the data source is, for example, a provider source, where eligibility for use of services is determined by geographical residence.
11. **Year**. Please give the reference year. Concerning year in population sheet, give the definition used e.g. mid-year, year average

Country specific notes:

(Indicate hereafter all information needed for understanding and analysing the data. See p. 14 of the draft 18 -19/4 meeting report for guidance as to what to include.)

Year	HC_Code	Age	Gender	Cases	Total	Public	Private


Population
Gender
Age
Year

A 5: Country-specific studies of expenditure by age and gender

Country	Authors and title	Date of study	Period covered	Population Covered	Geographical coverage	Description of study
Belgium	Alliance Nationale des Mutualités Chrétiennes *Evolution of medical expenditure between 1990 and 2000*[22]	2001	1990–2000	+/- 90%	Belgium	Average expenditure by age of populations covered by ANMC
Denmark	Danish Ministry of the Interior and Health *Pilot implementation of the System of Health Accounts*[36]	2001	1997–1999	All Denmark	Denmark	Denmark prepared health accounts on a pilot basis using the SHA framework. Where it was possible expenditure was identified for individuals, using patient care registers.
Finland	Niemelä J et al *Costs of municipal health care by sex and age in 1997* (Kunnallisen terveydenhuollon kustannukset ikä- ja sukupuoliryhmittäin vuonna 1997)[23]	1999	1997	All Finland	Finland	Estimates derived for the total population from different data sources, including Care Register and Benchmarking data administered by STAKES. Estimates of costs of inpatient and outpatient care.
France	Auvray L et al *Health care and social protection in 2000* (Santé, soins et protection sociale en 2000)[24]	2002	2000	Population affiliated to CNAMTS, CANAM MSA (i.e. the 3 main social insurance organisations – 95% of the population)	France	Data on health consumption (not expenditure) for one month by age and gender
	Aligon A et al *Consumption of medical care in 1997 by characteristics of individuals* (La consommation médicale en 1997 selon les caractéristiques individuelles)[37]	2001	1997	See above	France	1997 annual health expenditure by age and gender.
	Raynaud D *Determinants of personal health expenditure* (Les déterminants individuels des dépenses de santé)[25]	2002	1992 – 1997	CNAMTS	France	Analysis “all other things being equal” of the influence of age and gender on individual health expenditure.

Country	Authors and title	Date of study	Period covered	Population Covered	Geographical coverage	Description of study
France	Merlière J *Who consumes what?* (Qui consomme quoi?)[38]	1992	1992	CNAMTS	France	1992 annual health expenditure by age and gender.
Germany	Jacobs K et al *Compulsory health insurance: Expenditure by age and gender* (Ausgabenprofile nach Alter und Geschlecht in der gesetzlichen Krankenversicherung)[26]	1993	1991	All Germany	Germany	See title
	May, U. *Self-medication in Germany: An economic and health policy analysis* (Selbstmedikation in Deutschland – eine ökonomische und gesundheitspolitische Analyse)[27]	2001	1996–1990	All Germany	Germany	See title
	I+G Infratest and GFK Gesundheits- und Pharmaforschung *Self-medication in Germany* (Selbstmedikation in der Bundesrepublik Deutschland)[28]	1994	1986, 1990	All Germany	Germany	See title
Iceland	Hall A H and Herbertsson T T *A forecast of health expenditure*[39]	2001	2000–2050	Iceland	Iceland	Analysis of influence of age on forecast health expenditure
Italy	Ministry for the Economy and Finance – General Inspectorate of Social Expenditure *Medium and long-term trends in the pension and health system* (Le tendenze di medio-lungo periodo del sistema pensionistico e sanitario)[31]	2001	1999–2050	100%	Italy	Estimates health expenditure by type of service, gender and age. Main aim is to estimate the impact of demographic and economic changes on social expenditure (pensions and health).
	Economic Policy Committee *Budgetary challenges posed by ageing populations. Working Group on Ageing (EPC-WGA) Final report*[32]	2001	2000–2050	100%	Italy	The study estimates health expenditure (long term and acute care) by age. Main aim is to estimate the impact of demographic and economic changes on social expenditure (pensions and health) for the 15 MS of the EU.

Country	Authors and title	Date of study	Period covered	Population Covered	Geographical coverage	Description of study
Italy	IRES-IRPET-ISTAT *Regional social expenditure: the MARSS model* (La previsione della spesa sociale regionale: il modello MARSS)[33]	2000-2001	1985–2050	100%	Italy	The study estimates health expenditure by age for inpatient care, outpatient care, medicines prescribed by doctors, general practitioners. Main aim is to estimate the impact of demographic and economic changes on social expenditure at regional level.
Netherlands	Polder J *Cost of illness in the Netherlands: Description, comparison, projection*[21]	2001	1988, 1994, 2050	100%	Netherlands	Explanation of construction, application and interpretation of cost of illness studies using health expenditure data from the Netherlands
Norway	Brathaug A L, Brunborg H et al *The development of health, nursing and care expenditure related to age groups* (Utviklingen av aldersrelateres helse-, pleie- og omsorgsutgifter)[29]	February 2001	1992–1998	All Norway	Norway	This project specified expenditure on nursing and care, expenditure in general hospitals and mental health hospitals, and expenditure on medicine on age and gender
	Holmøy A, Høstmark M *A survey of expenditure on health and social services. Documentation and tables* (Undersøkelse om omfanget av utgifter til helse og sosialtjenester)[30]	May 2000	1999	Sample	Whole country	Survey of individual expenditure on health and social services. Groups with high expenditure on these services (such as the disabled and chronically ill) were of special interest.
Spain	Pellisé L, Truyol I et al *Health financing and the transfer process* (Financiación Sanitaria y Proceso Transferencial)[34]	1999	1993	100%	Spain	Estimated health expenditure by age for inpatients and outpatients in the public sector. The aim of this estimation was to project total public health care.
	Urbanos R *Projection for Spanish Health Care Expenditure. EPC Working Group on the Implications of Ageing*[35]	2001	1998	100%	Spain	Analysis of implications of ageing on public expenditure Estimated health cost by function, age group and gender. Public sector.
Switzerland	Zweifel P, Felder S. *An economic analysis of the ageing process* (Eine ökonomische Analyse des Alterungsprozesses)[40]	1996	1992	100%	Switzerland	See title

Country	Authors and title	Date of study	Period covered	Population Covered	Geographical coverage	Description of study
Switzerland	Rossel R *Demographic ageing and health system costs* (Vieillissement démographique et coûts du système de santé)[41]	1995	1970–1991	100%	Switzerland	See title

A 6: Country-specific studies of expenditure by age and gender

Notes:

Germany

Iceland

Italy

Spain

Belgium

Norway

Slides:

Germany

Iceland

Italy

Spain

METHODOLOGICAL NOTES – GERMANY

This workbook contains the pharmaceutical expenditure for the whole German population for the years 1999 and 2000. According to the ICHA-Classification pharmaceuticals are defined by HC.5.1.1 plus HC.5.1.2 delivered by providers HP.4.1 or HP.4.9 and HC.5.1.3 delivered by provider HP.4.1.

For each year two more sheets are presented than necessary:

- The first one contains data on expenditure for pharmaceuticals financed by the statutory sickness funds (GKV, “Statutory Sickness Funds”), which covers 87% of German population. These data show the most detailed subdivision of age and serve partly as a reference distribution. They are therefore used for breaking down expenditure financed by other agencies. The system of GKV is of particular importance for Germany’s health policy and together with the "cases" (which we find only here) they build up a consistent and unified whole. Nevertheless the GKV-System is only a part of the public sector.
- The second one contains data on over-the-counter medicines (OTC; HC.5.1.2)

Scale of variables

Expenditure (Total, Public, Private): Thousand Euros

Population (mid-year): absolute numbers

Insured (year-average): absolute numbers

Prescriptions in Thousands

Defined Daily Doses (DDDs) in Millions

Summary of procedure

The total expenditure, broken down by function, provider and financing institution, was taken from the German System of Health Accounts which is coordinated with the OECD system (source 6 as defined in the Phase I questionnaire). The total is complete and contains private sector expenditure (including OTC medicines and co-payments). The total for pharmaceuticals is defined by the HC- and HP-Categories of the SHA system.

Furthermore, the total expenditure is broken down by several categories of financing agencies:

1. Public budgets
2. Statutory health insurance (GKV)
3. Statutory accident insurance (GUV)
4. Private health insurance (PKV)
5. (Public) employers
6. Private households and non-profit organizations

The first three and the fifth constitute the public sector, the fourth and the sixth the private sector. OTC medicines and co-payments are included in the last category.

The distributions of these totals to the 202 age and gender categories were derived from sources 1 to 3 and 5 as defined in the Phase 1 questionnaire. The final step consisted of adding expenditure in each age and gender category across the six categories of financing agencies.

The variable "cases" was realized in the form of two variables: "Prescriptions" (in 1000') and "Defined Daily Doses" (in 1000000'), both established in a long-running German sample survey of all prescription forms completed by office-based physicians for GKV-insured beneficiaries ("GKV-Arzneimittelindex", source 7).

1) Public budgets

The health care costs of war-disabled persons, war widows and orphans as well as very poor people who are on welfare are financed from public budgets. The age and gender distribution of expenditure of the GKV-System was used and multiplied by the total expenditure of public budgets displayed in the German SHA.

2) GKV

The distribution of total expenditure to the requested categories by age and gender is straightforward to derive from the RSA Baseline Dataset (source 1). Only a small problem has to be resolved: beneficiaries receiving a pension on account of reduction of earning capacity and being younger than 35, are summed up in the age group 35 (cumulative). These were distributed across the age groups 19,20,….35 on a diminishing scale.

As the oldest age group in source 1 is "90+" the population distribution of this group across the groups 90, 91, …, 100+ is used to refine the age classification of expenditure. By multiplying the proportions of the age groups with the total expenditure of the German SHA

(which differs slightly from the total expenditure found in the RSA Baseline Dataset) absolute expenditure broken down by one year age and gender was derived.

The number of prescriptions and of DDDs (both are "cases") are computed by using the GKV-Arzneimittelindex (source 7). The presentation of the results of this survey uses an age classification 0-4, 5-9, …, 85-89, 90+ (separately for men and women). Multiplying the values of prescriptions/insured and DDDs/insured respectively, with the number of insured found in the RSA Baseline Dataset within these age groups, produces the absolute numbers of prescriptions and DDDs within these age groups. The group-intern distribution is found by transferring the corresponding group-intern distribution of expenditure of GKV.

3) GUV

There are no statistics of health related expenditure connected with work accidents by age and gender, but the non-fatal accidents themselves are separately broken down by "branch of industry" and gender and by "branch of industry" and age (European statistics on work accidents). By using both, a distribution of accidents across all categories by age and gender may be derived, but the age classification of these statistics is not detailed: 0-17, 18-24, 25-34, …, 55-64, 65+. Expenditure in the groups 0, 1, 2, and 80, 81, 82 etc. are fixed at 0, because of structural considerations (work accidents, including pupils and children in kindergarten). The further group-intern-distribution is found by transferring the corresponding group-intern-distribution of population. The resulting distribution of accidents across all wanted categories by age and gender is multiplied by the GUV total expenditure displayed in the German SHA.

4) PKV

From the statistics of the Association of Private Health Insurers (http://www.pkv.de/) it is straightforward to derive the expenditure of pharmaceuticals broken down by age and gender. An age and gender profile (expenditure by person) is procured. By multiplying this profile by the number of beneficiaries the desired total expenditure in each group is obtained. As the exact number of PKV-insured is unknown, the number of insured with an obligatory private nursing insurance are used as a proxy.

The PKV uses the following age-classification: 0-16, 16-20, 21-25, … , 91-95, 96+. The group-intern-distribution is found by transferring the corresponding group-internal distribution of GKV expenditure. The resulting distribution of expenditure across all one year age and gender categories is multiplied by PKV total expenditure as given in the German SHA.

5) (Public) employers

The health care costs of civil servants and public employees are paid by their employers. The age and gender distribution of PKV expenditure is used and multiplied by the total expenditure of public employers as in the German-SHA.

6) Private households and non-profit organizations

The expenditure of this category includes the co-payments of GKV-insured, the co-payments of PKV-insured (vs. partial refund of the premium) and OTC medicines. It is supposed that each component has a different age and gender-distribution, as described below.

The first one is assumed to correspond to the GKV distribution of expenditure and the second one to the PKV distribution.

Concerning the OTC medicines, the so called age structure coefficient a_k (the proportion of people who buy OTC medicines in age group k related to all people who buy OTC medicines compared – by ratio – with the proportion of the age group k in the general population) was found in a survey (source 5) to be a linear function of age (a_k = 0,341+0,148*k, k= 15, 1, 2, , 99, cp May 2001). This linear function is used with the global proportion of OTC users and the average expenditure for OTC medicines in order to derive the age and gender distribution.

The total expenditure of co-payments of GKV-insured is found in a publication on the results of GKV-Arzneimittelindex (Schwabe and Paffrath 2000 and 2001). The total expenditure of OTC is published by the Federal Association of Medicine Manufactures (Bundesfachverband der Arzneimittel-Hersteller e.V. – BAH, http://www.bah-bonn.de/arzneimittel/-index.html). The total expenditure of co-payments of PKV-insured was computed as the difference between SHA-total for private households and non-profit organizations and the sum of OTC-total and the total of co-payments of GKV-insured.

Population

The German population of actual years is available from StBA at the end of the year (Dec 31) for men and women broken down in one year age groups from 0 to 95+. Eurostat delivered numbers for “90+” and for the groups 91, 92, 92, 94, 95, 96, 97, 98 for the end of 1997, of 1996 and of 1995.

Using these data it was easy to estimate the numbers for the groups 95, 96, 97, 98 at the end of the years 1998, 1999 and 2000 by means of simple linear regression. The proportions of the unknown groups of the years 1998, 1999 and 2000 were regressed on the proportions of corresponding groups in the year 1995, which produced the best fit over all. The proportion of the age group 99 was found by a trend estimation using 96, 97, and 98. Multiplying the proportions with the total of the group "90+" provided the absolute population numbers for 95, 96, 97, 98 and 99. The population for "100+" was found as the rest of the total. The whole analysis was done separately for men and women. Finally the mid-year population was computed.

References

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METHODOLOGICAL NOTES – ICELAND

Data set: Pharmaceutical (prescribed medicines) expenditure for Iceland

General comments

This work has been done as a part of the EU funded project which is exploring the feasibility of classifying expenditure by age and gender within the framework of SHA. The "System of Health Accounts" (SHA) framework is not yet implemented in Iceland but the decision process has begun and the SHA system will be implemented in a few years.

The results of this exercise should not be taken as final statistics, but be regarded more as illustrative examples. The attached workbook presents the result of distributing costs of pharmaceutical expenditure (HC.5.1.1) by age and gender for outpatients.
Figures are reported for the year 2000, in 1000 EUROS by using a median exchange rate of 1EURO = 72,83ISK.

The data are available for five year age groups only.

The dataset

1) *The data sources:* The data sources are "The Social Security Institute" (SSI) and Landspítali – "University Hospital" (LUH).
2) *The data layout:* The data on pharmaceutical expenditure of Iceland contains six worksheets:
   a) Two worksheets show the distribution of the whole Icelandic population by age and gender covered by the expenditure data.
      i) Population 1.7.2000.
      ii) Population 1.12.2000.
   b) Four worksheets present the distribution of pharmaceutical expenditure (prescribed).
      i) "ICE-Total" shows the distribution of pharmaceutical expenditure for the whole country. This dataset corresponds to the accumulated data of SSI and LHU.
      ii) "SSI" gives some information about the pharmaceutical expenditure of SSI where the data are for five year age groups.
      iii) "LUH-5-period" illustrates the data of LUH pharmaceutical expenditure, put into five year age groups.
      iv) In "LUH-1-period" the pharmaceutical expenditure data of LUH are classified in one year age groups.

Comments

1) The total expenditure data covers most pharmaceutical expenditure.

2) The *SSI data:*
   a) The data base is built on the EDI-system (electronic connection). In the year 2000 only 56, 5% of the total pharmaceutical expenditure is within the EDI system, because not all retail pharmacists use this system.
   b) The distribution of expenditure is applied to total expenditure.
   c) Because of this extension is it right to extend the cases and DDDs i.e. cost and count is not the same thing?
   d) The extension of the distribution was compared with the year 2001and the result was similar to 2000.
   e) The proportion of pharmacists in the Reykjavik area using the EDI system is higher than for the rest of the country.
   f) The total pharmaceutical expenditure includes all prescribed medicine paid partly by the state and fully by individuals.
   g) In Iceland the price system for prescribed medicine is based on maximum price:
      i) The total amount for state contribution is the actual amount.
      ii) The total amount for the private part is estimated. Discount prices are very common at pharmacies for the private part of the payment.

3) The *LUH data*
   a) The data show the exact cost for the public and private sector.
   b) The peaks in costs can be explained by very expensive medicines (factor 8 and so on)

It is concluded that the data gives an acceptable picture of the distribution of pharmaceutical expenditure by age and gender for Iceland.

METHODOLOGICAL NOTES – ITALY

Population

In Italy the population covered by the health system includes resident Italians, non-resident Italians present for different reasons (job, tourism, etc.) and resident foreigners. Foreigners constitute the most significant part of the non-resident population – only regular foreigners can access health services.

Resident population data are only obtainable by population census (the last one was carried out in October 2001 and data are not yet available).

The data on Italian foreigners give some information about their number, but not about the proportion of resident and non-resident foreigners. A recent study at regional level (for Lombardy) estimated that only 10% of total regular foreigners are non-resident. Thus, this information does not allow the estimation of the proportion of non-resident foreign population by age and gender. For this reason only data on the resident population are used in this project.

Data refer to the mean population of 1999 and are calculated by dividing the sum of the resident population of 1st January 1999 and 1st January 2000 by two.

Expenditure data

Expenditure data are obtained indirectly.

In the last updated version of OECD's "Health database", Italy provided data on Part 4 concerning "expenditure on inpatient health care" . These official data are used as a starting point for the estimation of inpatient curative care (HC.1.1) and day cases of curative care (HC.1.2) by gender and age. There is no information available at national level for outpatient curative care (HC.1.3).

Expenditure on inpatient care includes all hospital expenditure (inpatient care and day cases) and refers to all types of admission (acute care, rehabilitative care and long term care).

Moreover these data are available for public and private expenditure. Public expenditure is obtained by using data from Local Health Units (the local administrative units of the Na-

tional Health System) of all Italian regions. Private expenditure is estimated with data from the Italian household budget survey.

Hence the starting point is an amount of 34,033,993 thousand euros for public expenditure on inpatient care and 2,169,635 thousand euros for private expenditure.

The source of information used for the estimation of data for the project is the Italian archive on hospital discharges (SDO) for 1999 (This is a total survey).

First of all, in order to ensure coherence with population data, only discharges concerning resident Italian patients are selected. Therefore 84,372 records out of a total of 12,676,917 (0.7%) are excluded from the analysis.

Cases selected have been divided into two sub-groups: to estimate public expenditure one group includes only cases paid by NHS (12,442,347 records, 98.8%); the other group, used to estimate private expenditure, includes cases (112,340 records, 0.9%) for which the admission has been paid by the citizen (out-of pocket expenditure)[5]. For only 37,858 cases (0.3%) the type of payment is not reported.

For each sub-group, expenditure is estimated by applying DRG fees to DRG codes[6] available for every case. The calculation is carried out separately for inpatient care and for hospital day cases. These two aggregates do not coincide with functions HC.1.1 and HC.1.2 because they include rehabilitation and, for inpatient care, long term care. Another distinction is made between acute care cases, rehabilitation cases and long term cases.

By applying DRG fees an estimation of public and private expenditure by type of admission (inpatient care, day care), function (acute care, rehabilitative care, long term care), gender (males, females) and age (0-100+) is obtained. This estimation is used to calculate the percentage distribution that is the percentage of all cells in the total of the two matrixes (one for public expenditure and one for private expenditure). This distribution is applied to the total expenditure in order to obtain the "real" figures for each cell of the matrixes. From these matrixes only acute care cases and expenditure (corresponding to HC.1.1 and HC.1.2) are extracted by gender and age. Total expenditure is obtained by summing public and private expenditure.

5 This is a variable concerning source of payment of the admission. One value is for out-of pocket payment. The other three values relate to different types of payment, all covered by the NHS.

6 The DRG classification adopted by Italy is version X of the American classification. The Italian Ministry of Health established a national fee list, a reference for the whole Italian territory. Regions may establish a regional fee list which cannot exceed the national one.

Notes

Preliminary analysis of the data suggests:

For HC.1.1: Despite same variability the distribution of private expenditure by age and gender is very similar to public expenditure: costs are higher for women than for men in the reproductive age and after age 80.

F*or HC.1.2:* the distribution of private expenditure by age and gender presents a very high variability. There are two possible reasons for this. On one hand is the problem of small numbers (this function is almost totally provided by public services); on the other quality of data for private for-profit hospitals is questionable. While public hospitals and private hospitals, providing care inside the NHS, receive reimbursement for services based on the information collected in the archive of hospital discharges, private hospitals outside the NHS do not receive any state reimbursement, even if they have to provide information about discharges. Therefore the quality of data may be affected by the fact that inaccurate data has no financial consequences

METHODOLOGICAL NOTES – SPAIN

Comments

The direct distribution of inpatient expenditure by age and gender has only been possible for public expenditure, for which there is reliable information. The corresponding source for private expenditure will be the "Encuesta Nacional de Salud de España 2001" (National Health Survey) but it is not yet available. The 2001 Survey has a wider sample that the 1997 one and will give information about the nature and conditions of health services which will allow us to distribute private expenditure directly by age and gender.

Because the classification used in the Health Satellite Accounts –the basic source of expenditure figures- does not match the SHA classification, and the Spanish SHA implementation is ongoing but not yet implemented, we need to analyse hospital expenditure (inpatient, outpatient..) to reach the HC.1.1 function.

The main difficulty in identifying modes of production lies in the fact that specialized units (Specialties Centres) are attached financially to hospitals. These units act as intermediaries between primary and hospital services, but hospital budgets - the main EGSP information source - do not account separately for their expenditure. Furthermore it is not possible to identify external (outpatient) consultations in hospitals.

The sources that have been used are:

1) Statistics of Public Health Care Expenditure (referred to as EGSP) Cuentas satélite gasto sanitario público 1995-1999. Ministerio de Sanidad y Consumo.
1) Hospital statistics (referred to as ESSRI) Estadística de establecimientos sanitarios en régimen de internado. Ministerio de Sanidad y Consumo.1997.
2) Population projections from Census 1991. Revised figures by sex, age and year. December 1999. National Institute of Statistics.
3) Statistics of the Hospital Discharge Registry and Diagnosis Related Groups for the National Health system. (CMBD-GRD). Ministerio de Sanidad y Consumo
4) National Health System Reference Costs. Ministerio de Sanidad y Consumo
5) National Accounts. INE

Estimation of inpatient public expenditure

Public hospital expenditure is extracted from source nº 1: EGSP = 16.555,62 € and includes:

- Hospital (both inpatient and outpatient), specialised services and MIR (postgraduate training) expenditure
- Both acute care hospitals and long term care hospitals
- Not only public hospitals, but also private ones that have been contracted by the health administration to give inpatient and specialised services.

Separation into curative and long term care expenditure is possible with reference to source nº 2: ESSRI, which supplies the hospital expenditure structure.

Using this information we estimated:

- Acute care hospital expenditure = 15.751,02 millions €
- Long term care hospital expenditure (including psychiatric hospitals) = 804,60 millions €

Then, we need to allocate acute care expenditure into inpatients, day care, outpatients etc. to arrive at the HC.1.1 function. The National Health System Reference Costs (source nº 5) give cost information for a sample of 18 public hospitals in order to identify inpatient activity costs and allocate them to different hospital DRG's. In this process activities excluded from hospital costs are almost the same as those excluded from inpatient curative care in the SHA: day cases, curative care (ambulatory surgery, dialysis, oncological day care), diagnostic specialised services, services of curative home care etc.. Only postgraduate resident training was treated differently, since we have included these costs in inpatient expenditure.

Hence, we estimated that 64.03 % of the cost of acute care hospitals refer to inpatient activity, and 35.97 % to outpatient hospital activities, giving:

- HC.1.1 Public inpatient curative care = 10.085.38 millions €

Source 4 records, by age, gender and DRG, discharges from all the public hospitals (activity), and the national health system reference cost estimate the DRG costs (expenditure). This gives us the expenditure structure by age and gender of public hospital inpatient activity.

This expenditure structure is applied to the total inpatient expenditure estimated above, to arrive at inpatient public expenditure by age and gender.

Estimation of inpatient private expenditure

An estimate of private expenditure is presented by the Ministry of Health and Consumer Affairs. It is based on National Accounts prepared by the National Statistical Institute (INE) : 1.795,19 millions €

According to the expenditure structure of ESSRI (acute and long term care) we estimate:

- Acute care expenditure = 1.715,35 millions €
- Long term care expenditure (include psychiatric hospitals) = 79, 84 millions €.

Similarly to public hospitals we have estimated that 64.03 % of the cost of acute care hospitals refers to inpatient activity and 35.97 % to outpatient hospital activities:

- HC.1.1 Private inpatient curative care = 1.098,34 millions €

Estimation of total inpatient expenditure

Total inpatient expenditure is obtained by adding public and private expenditure:

- HC.1.1 Total inpatient curative care = 11.183,72 millions €

Public hospital expenditure represents 90% of total hospital expenditure. Therefore the age and gender distribution for inpatient public expenditure has been applied to total expenditure.

METHODOLOGICAL NOTES – BELGIUM

In Belgium, no systematic analysis of administrative data on medical care expenditure classified by age and gender has been published. However, data from a study of the "Alliance Nationale des Mutualités Chrétiennes" (ANMC) (2002) and from the "Commission d'accompagnement pour la responsabilité financière des organismes assureurs" are available.

These data are presented in Belgian francs, and, have been converted to Euros at 1 € = 40,3399 BFR.

The ANMC Data

A brief description of these data of potential relevance to attempts to classify expenditure by function, age and gender is provided below [1].These data concern the expenditure of the sickness-disability insurance scheme for 2000 (general scheme of salaried workers, including civil servants and the self-employed).

Average expenditure of men and women, by age classes is presented. It is classified by eligibility for receipt of the "Additional Intervention" (B.I.M.) Medical care expenditure is reimbursed up to 100 % for those eligible for B.I.M., and up to 75 % for other persons).

Data are also presented grouped by the following age classes [0-19], [20-59] and 60+ (see table 22, ANMC, 2002)

An estimation of the growth of medical care expenditure, as a result of (long term) change in the structure of the population is shown in table 23.

Average expenditure in 2000, classified by age, is presented in table 24, together with information on the budget impact of growing old. On the basis of the average expenditure by age of the ANMC, expenditure for the whole population has been calculated (by extrapolation) for 2000 and 1990. The population data come from the "Institut National de la Statistique" (INS). Comparing the total expenditure of 2000 and 1990 (the latter in real prices and costs for 2000), the ageing of the population has led to a real increase in expenditure by 8% over ten years, i.e. an annual average growth of 0,77% (cf. appendix I).

1 The data tables are not presented in this report.

The data are not classified by gender and relate only to the ANMC, whose age structure differs from the whole population. The ANMC is over-represented by old persons and under-represented by young persons.

The data of the "Commission d'accompagnement pour la responsabilité financière des organismes assureurs" (*Committee for the financial responsibility of insurance companies*)

This Committee, created within the "Institut National d'Assurance Maladie-Invalidité" (INAMI), supports the university teams (K.U.Leuven and U.L.Bruxelles), which are responsible for determining the correction terms for the normative distribution basis of medical care insurance expenditure. In 2001, 30% of the resources intended for medical care insurance were distributed to the mutual insurance funds according to this normative basis. The rest (70%) was distributed according to real expenditure. The difference forms the subject of the procedure for the financial responsibility or the insuring institutions, created by law. The variables for which the mutual insurance funds can be held responsible (in theory) are gender, age group, unemployment, mortality, beneficiaries of the additional intervention (based on income), etc.

Within the framework of this study to determine the correction terms, Carin Van de Voorde (K.U.Leuven) analysed a 5% sample of medical care expenditure for 1998. This sample is representative of all national unions of the mutual insurance funds. However pharmaceutical expenditure is not included (cf. appendix II).

The results of the correction terms for the voluntary insurance "small risks" of self-employed persons

Obligatory sickness – disability insurance covers the self-employed persons for the so-called "big risks" (hospitalisation). A self-employed person who also wants to be insured for "small risks" (consultations, pharmaceutical products) may take out additional insurance cover voluntarily.

For this voluntary insurance of "small risks", a model to determine the correction terms, similar to that for obligatory insurance, was created. Here the purpose is not to determine a normative distribution basis, but to grant the State subsidy fairly, which represents about 20% of the expenditure of this voluntary insurance. In addition to variables for age and gender two other variables are included: "maintenance days in hospital" and this same variable squared (cf. appendix III).

Appendix I (data ANMC, in BFR – year 2000)

Age	Average expenditure	Age	Average expenditure	Age	Average expenditure
0	30.364	34	27.581	68	86.691
1	59.386	35	27.023	69	88.130
2	20.616	36	27.211	70	95.172
3	18.848	37	27.223	71	99.589
4	17.768	38	27.160	72	106.561
5	16.889	39	27.033	73	112.483
6	18.890	40	28.086	74	120.380
7	18.217	41	29.281	75	127.209
8	17.825	42	29.968	76	135.502
9	17.862	43	30.975	77	141.210
10	16.966	44	31.996	78	148.246
11	15.520	45	33.721	79	159.863
12	15.475	46	34.770	80	169.229
13	16.140	47	37.059	81	181.759
14	16.262	48	36.379	82	200.669
15	17.561	49	38.626	83	210.006
16	17.418	50	40.927	84	226.533
17	19.501	51	43.000	85	239.544
18	18.826	52	44.871	86	247.707
19	18.629	53	46.297	87	263.510
20	18.295	54	49.739	88	289.032
21	19.518	55	51.252	89	301.835
22	20.291	56	53.940	90	319.970
23	21.524	57	55.401	91	327.856
24	23.315	58	57.864	92	348.536
25	24.722	59	63.534	93	360.137
26	27.057	60	62.909	94	383.136
27	27.256	61	68.606	95	392.750
28	28.907	62	68.388	96	393.770
29	29.946	63	72.151	97	414.997
30	29.341	64	71.196	98	433.863
31	29.059	65	79.093	99	447.599
32	28.291	66	82.585	100+	443.631
33	27.830	67	86.691	Ø	50.529

Appendix II (a)

Age	Sex	Average expenditure	Age	Sex	Average expenditure	Age	Sex	Average expenditure
0	m	43.074	34	m	20.177	68	m	73.159
1	m	31.000	35	m	17.008	69	m	78.950
2	m	17.528	36	m	17.991	70	m	81.467
3	m	16.323	37	m	19.906	71	m	82.109
4	m	15.124	38	m	20.038	72	m	88.946
5	m	14.606	39	m	16.933	73	m	97.010
6	m	15.626	40	m	20.117	74	m	104.192
7	m	16.017	41	m	20.903	75	m	103.717
8	m	15.332	42	m	22.070	76	m	116.955
9	m	15.805	43	m	22.301	77	m	117.501
10	m	14.348	44	m	28.512	78	m	124.424
11	m	14.140	45	m	25.967	79	m	121.201
12	m	12.630	46	m	28.212	80	m	104.450
13	m	14.283	47	m	26.827	81	m	116.756
14	m	14.500	48	m	27.588	82	m	123.363
15	m	16.936	49	m	36.543	83	m	137.795
16	m	13.363	50	m	34.370	84	m	149.231
17	m	11.625	51	m	35.225	85	m	126.921
18	m	15.404	52	m	35.933	86	m	177.460
19	m	12.777	53	m	32.955	87	m	157.455
20	m	12.608	54	m	33.052	88	m	199.139
21	m	12.093	55	m	40.000	89	m	169.471
22	m	14.630	56	m	39.566	90	m	189.036
23	m	12.967	57	m	43.681	91	m	205.000
24	m	15.408	58	m	44.368	92	m	217.353
25	m	17.322	59	m	42.901	93	m	224.051
26	m	15.128	60	m	53.410	94	m	269.019
27	m	14.215	61	m	48.378	95	m	279.700
28	m	14.843	62	m	51.983	96	m	240.503
29	m	15.877	63	m	53.688	97	m	183.161
30	m	16.066	64	m	61.449	98	m	241.713
31	m	17.336	65	m	59.628	99	m	267.860
32	m	16.886	66	m	66.268	100+	m	227.794
33	m	18.445	67	m	72.847	Ø	m	34.040

Appendix II (b)

Age	Sex	Average expenditure	Age	Sex	Average expenditure	Age	Sex	Average expenditure
0	f	30.807	34	f	25.077	68	f	67.358
1	f	25.622	35	f	25.015	69	f	66.583
2	f	12.245	36	f	25.368	70	f	70.467
3	f	14.542	37	f	25.902	71	f	72.359
4	f	13.531	38	f	23.952	72	f	83.559
5	f	11.199	39	f	26.694	73	f	81.931
6	f	13.573	40	f	27.000	74	f	96.467
7	f	12.841	41	f	26.027	75	f	96.016
8	f	12.156	42	f	27.358	76	f	105.967
9	f	12.835	43	f	28.004	77	f	114.763
10	f	11.320	44	f	29.257	78	f	121.835
11	f	11.952	45	f	29.879	79	f	129.115
12	f	12.163	46	f	30.903	80	f	133.926
13	f	12.376	47	f	31.571	81	f	159.589
14	f	12.602	48	f	30.534	82	f	161.538
15	f	17.443	49	f	35.028	83	f	158.684
16	f	14.613	50	f	29.029	84	f	166.052
17	f	15.678	51	f	35.112	85	f	195.662
18	f	15.211	52	f	36.535	86	f	198.529
19	f	15.052	53	f	35.456	87	f	206.226
20	f	16.550	54	f	36.039	88	f	235.321
21	f	18.469	55	f	37.301	89	f	228.307
22	f	19.255	56	f	41.280	90	f	223.755
23	f	23.101	57	f	39.268	91	f	239.386
24	f	22.371	58	f	42.448	92	f	255.918
25	f	23.310	59	f	42.753	93	f	273.838
26	f	25.836	60	f	44.691	94	f	263.337
27	f	29.271	61	f	46.373	95	f	300.552
28	f	28.919	62	f	44.235	96	f	272.758
29	f	31.838	63	f	51.398	97	f	244.180
30	f	28.993	64	f	52.119	98	f	286.227
31	f	26.690	65	f	55.390	99	f	248.591
32	f	29.654	66	f	54.584	100+	f	253.949
33	f	28.636	67	f	60.483	Ø	f	43.297

Appendix III Distribution by age classes and gender in 1998

Age class and gender	Gender	Coefficient in BFR	Standard error
0-55 and 0-25 (f) reference class	m	4.540	133
55-65	m	5.730	387
65-70	m	7.142	753
70-75	m	9.406	814
75-80	m	13.945	987
80-85	m	25.881	1.429
85+	m	38.760	1.577
25-50	f	6.033	237
50-65	f	7.709	320
65-70	f	10.254	755
70-75	f	15.615	847
75-80	f	20.983	924
85+	f	34.010	1.155
	f	69.288	1.047
Hospital days		1.042	25
(Hospital days)2		-3.582	0.143

METHODOLOGICAL NOTES – NORWAY

This work has been done as a part of the EU funded project aiming at exploring the feasibility of classifying expenditure by age and gender within the framework of SHA. The SHA framework has not yet been implemented in Norway. Work has started but potential sources need to be investigated further and methods established. The results of this exercise should therefore not be taken as final statistics, but be regarded more as illustrative examples. The attached Excel workbook illustrates the results of distributing costs of inpatient curative care (HC.1.1) by age and gender, provided at the most detailed level currently available.

Figures are reported for the year 1999 and 2000, in NOK1000 and converted in to 1000 EUROS at an exchange rate of 1EURO = 8,3 NOK in 1999, and 1EURO = 8,1NOK in 2000.

The age and gender data are for the whole Norwegian population and reflect the number and distribution at the end of 1999 and 2000.

The starting point for distributing costs is the gross current expenditure of general hospitals and psychiatric institutions for adults, and psychiatric institutions for children and adolescents. The statistics are based on a total count of all general and psychiatric institutions embraced by the counties' health plans. Also included are all state and private hospitals. Gross current expenditure includes expenditure on wages and social benefits, on equipment and maintenance, other current and transfer expenditure. Interest, principal repayment, financing transactions such as funds, charging of accounting losses/profits as expenditure and coverage of previous years' losses, are not included. However the costs associated with outpatient activity performed by these institutions are. Data on outpatient cost are not directly available. As an approximation the gross current expenditure is corrected for income relating to outpatient treatment, which consists of reimbursement from the state and counties and patients' own payments. Gross current expenditure is also adjusted for reimbursement of paid sick leave.

Hence, it is important to emphasize that the total cost for inpatient curative care is an estimated figure and not directly measured.

Most hospitals in Norway are non-profit institutions. They are either directly owned by the government or privately owned but financed by the government. In the latter case, private hospitals are subject to governmental plans and supervision. Private hospitals operating as market producers are quite insignificant in Norway. The data have therefore all been re-

ported as public. In Norway patients are not required in general to pay for inpatient care. However some private payments occur for treatment not covered by the public health plans (e.g. cosmetic surgery). It has not been possible to calculate these costs as a part of this project, but this will be dealt with during the implementation of the SHA.

Figures are reported separately for general hospitals, psychiatric institutions for adults and psychiatric institutions for children and adolescents, because information on age and gender of psychiatric patients are not available in one year age groups. Data are therefore reported at the most detailed level available.

General hospitals

Information from the Norwegian Patient Register (NPR) is used to distribute costs on age and gender. The NPR contains information on discharges and bed-days and also on the patient's gender, age, primary and secondary diagnoses, operation codes, DRG points etc.

The estimated costs of inpatient curative care in general hospitals have been distributed by age and gender by using information on DRG points from the NPR. The relative DRG weight for each year group and for both genders is then applied to total costs.

The DRG system is a system of classifying general and specialised hospitals stays into groups that are medically meaningful and as homogeneous as possible regarding resources used. Based on medical and administrative information about the discharges, each hospital stay will be placed in one and only one DRG. Diagnosis related group (DRG) classification is used in Norwegian hospitals, and the system is used as one method of financing general hospitals. The classification and financing system is currently limited to general hospitals and does not apply to psychiatric hospitals/departments or nursing homes.

In 1999, 55 of approximately 75 Norwegian hospitals are classified as DRG hospitals, but the number of DRG hospitals is increasing. The DRG hospitals cover approximately 95% of all hospitalisation.

Each DRG is related to a cost weight. The cost weight defines the average cost of the specific DRG relative to average cost at the national level (for the average patient). The cost weights are estimated on the basis of costs related to the specific DRGs. The specific DRGs are made up of four different components: costs related to average length of stay, x-ray costs, laboratory costs and operation costs. So far, only inpatient treatments are included in the calculation of cost weights. On average the costs related to the average length of stay contribute to 67% cent of the DRG’s cost weight.

The Norwegian cost weights used until 1998 are derived from 1992 and based on information from 9 hospitals. In connection with the introduction of the HCFA, 12 new cost weights were estimated. The new weights are derived from information on costs and inpatient data in 9 Norwegian hospitals for the year 1996. The 1st January 1999 the new weights were implemented in the system.

Hospital's DRG points are calculated as the sum of the DRG weights (cost weights) for all hospital stays (discharges). The classification of diagnosis used in Norwegian hospitals is the Norwegian edition of ICD-10 (International Classification of Diseases), and the classification of procedures used is a Norwegian edition of the "NOMESCO Classification of Surgical Procedures" with the addition of preliminary codes for non-surgical procedures. It is possible to register a large number of diagnoses in connection with each discharge in the Norwegian registration system. The patient data allow three diagnoses: one main diagnosis and two subsidiary diagnoses. The Norwegian Patient Register (NPR) allocates department stays classified by ICD-10 to DRG groups and enabling each inpatient episode to be classified in DRG group. In addition subsidiary diagnoses and certain procedures are used to place the patients into complicated DRG groups.

It has been argued that the elderly part of the population is over represented in the more expensive part within each DRG group. If this is the case the DRG weights will underestimate the cost of the elderly. The DRG system has also been criticised for not measuring adequately the cost associated with chronic cases and complex diagnoses. It is sometimes stated that the elderly are over represented in these categories. Here also the DRG system will underestimate the cost of the elderly. However, we do not have information with which to confirm this.

The report also includes information on discharges from general hospitals, distributed by age and gender. This includes all discharges of patients throughout the calendar year. Persons who are discharged two or more times during the year are counted per discharge. Transfers between departments/wards at the same institution count as a single stay. Patients who are admitted during the year, but not discharged by the end of the year are not counted. Outpatients are not counted. Patients in psychiatric wards in general hospitals are not included in the figures of general hospitals, but are classified under psychiatry. At general hospitals, a person is counted as a patient in 24-hour care even if admitted and discharged the same day, if the intention of the admission was for the patient to stay the night. For general hospitals, only patients with a valid municipality of residence in Norway are included. Statistics on hospital stays in general hospitals do not include all hospitals. A few small hospitals are not included. However these account for few inpatient episodes.

Psychiatric institutions

Information on patients in psychiatric institutions is not available at the same detailed level as for general hospitals. Information on age and gender is available in terms of the number of patients at the end of the calendar year. More detailed information may be available in the future, as information on psychiatric patients will be incorporated in the Norwegian Patient Register.

Data are currently available for gender and for the following age groups:

Institutions for adults: 0-12, 13-17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+

Institutions for children and adolescents: 0-6, 7-12, 13-17, 18+

Costs by age and gender are estimated separately for institutions for adults, and institutions for children and adolescents, in order to provide as much detailed information as possible.

The distribution of patients by age and gender at 31.12 is used to distribute the costs. This method assumes that the distribution at the end of the year is representative for the age and gender distribution throughout the year. Some groups may demand more resources and thereby be more expensive than other groups but it has not been possible, to allow for this. Hence the results implicitly assume that all groups are equally demanding. The variation between groups will thus only reflect variation in the number of patients.

Information on total number of discharges and number of bed-days is also included. These data are not available by age and gender. The number of bed-days during the course of the calendar year is calculated by totalling the difference between the discharge date and the admission date for all hospital stays. For psychiatric institutions and general somatic institutions, excluding general hospitals, 1st January is counted as the admission date for patients in hospital from the year before. As for general hospitals, the number of bed days for patients admitted the year before are counted, provided that, the number of bed days for the entire stay do not exceed 365. Admission and discharge on the same day count as 0 bed days.

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

- Population by age and gender
- The definition of „pharmaceuticals“
- The totals come from German SHA
- Public budgets
- Statutary sickness funds (GKV)
- Statutary accidents insurance (GUV)
- Private insurance companies (PKV)
- (Public) Employers
- Private Households and non-profit organisations
- Some pictures to illustrate the results

Thomas Schäfer, Fachhochschule Gelsenkirchen, University of Applied Sciences, Bocholt Site

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting)

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Population by age and gender

- Actual subdivision by StBA : 0, 1, 2,....,95+ (male and female)
- Eurostat-data for 1995, 1996, 1997: age groups 91,92,...98 and 90+ (male and female)
- Estimates of the numbers of 95,...,98 (m,f): Simple linear regression
- Numbers of the age group 99 (male and female): Trend estimation based on the age groups 96, 97, 98
- Numbers of the age group 100+ (male and female): Rest of the total
- Regression and trend Analysis was applied to proportions

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 1

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

The definition of pharmaceuticals with reference to ICHA-Classification:

- HC.5.1.1 plus HC.5.1.2 delivered by providers HP.4.1 or HP.4.9

  plus
- HC.5.1.3 delivered by provider HP.4.1
- The cross classification with respect to function **and** provider was necessary to exclude optical goods and hearing aids which are included in „other medical durables“ when using the German SHA-Classification System

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 2

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

The totals come from the German SHA (StBA), subdivisions:

- Public budgets
- Statutary sickness funds (GKV)
- Statutary accidents insurance (GUV)
- Private insurance companies (PKV)
- (Public) employers
- Private households and non-profit organizations

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 3

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Public budgets

- Recepients are war-disabled persons, war widows and orphants and very poor people on welfare.
- For subdivison of the total the age x gender-distribution of total expenditure of GKV therefore was used.

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 4

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Statutory sickness funds (GKV)

- The RSA Baseline Dataset delivers the distribution of the total with respect to age x gender.
- But this source ends up with the age group 90+ .
- The population distribution across the groups 90,91,.....,100+ was used to refine the classification.
- „Prescriptions“ and „definded daily doses (DDD)“were used as „cases“ and were taken from a second source of data (GKV-Arzneimittelindex based on a 0,4%-sample of prescription-forms)

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 5

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Statutory accident insurance (GUV)

- The number of non-mortal accidents is broken down by „branch of industry“ x gender and by „branch of industry“ x age (European statistic on work-accidents).
- Using both we can estimate the distribution with respect to age x gender and the age groups 0-17, 18-24, 25-34, ...55-64, 65+.
- Expenditure in age groups 0,1,2 and 80, 81 etc. were fixed as 0 (work accidents including pupils and kids in kindergarden).
- For the further group-intern distribution the age distribution of the general population was used.

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 6

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Private insurance companies (PKV)

- The number of insured and the expenditure for pharmaceuticals per person broken down to age x gender were derived by statistics of the Association of Private Health Inssurances.
- By this we can derive the expenditure distribution on age x gender-groups. But the age-classification ends up with 95+.
- The refinement of the age-classification was found in using the group-intern GKV-distribution of expenditure.

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 7

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

Public employers

- The expenditures are grants for the civil cervants and public employees.
- Therefore the age x gender-distribution of PKV was used

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 8

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt

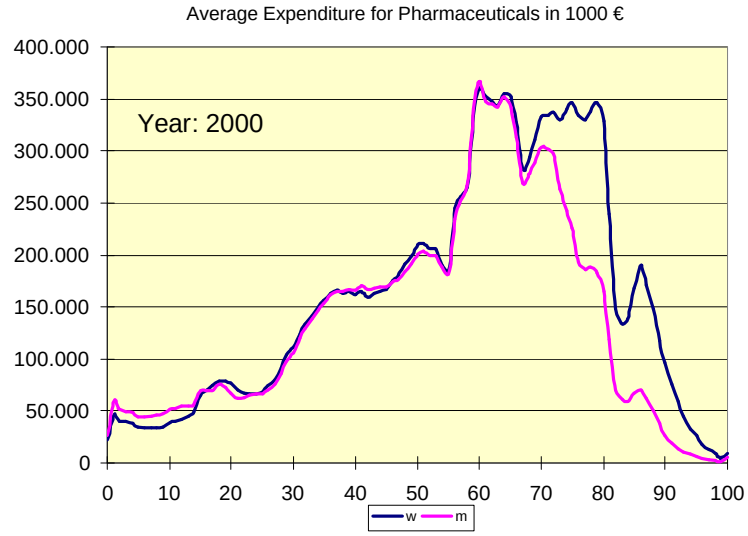
Private households and non-profit organisations

- These category is made up by
  - Co-payments of GKV-insured,
  - Co-payments of PKV-insured (refunding of premium) and
  - OTC medicines.
- Each component was assumed to have a different age x gender-distribution: GKV-distribution for the first and PKV-distribution for the second subcategory. For OTC medicines we used survey based age structure coefficients.
- The total of GKV-co-payments was taken from GKV-Arzneimittelindex, the total of OTC-expenditure is published by a federal association, the total of PKV-co-payments was computed as the rest of the SHA-total.

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2 .Meeting) 9

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
Abteilung Bocholt



SHA - Age and Gender: Clervaux 15/16th of November 2002 (2. Meeting) 10

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
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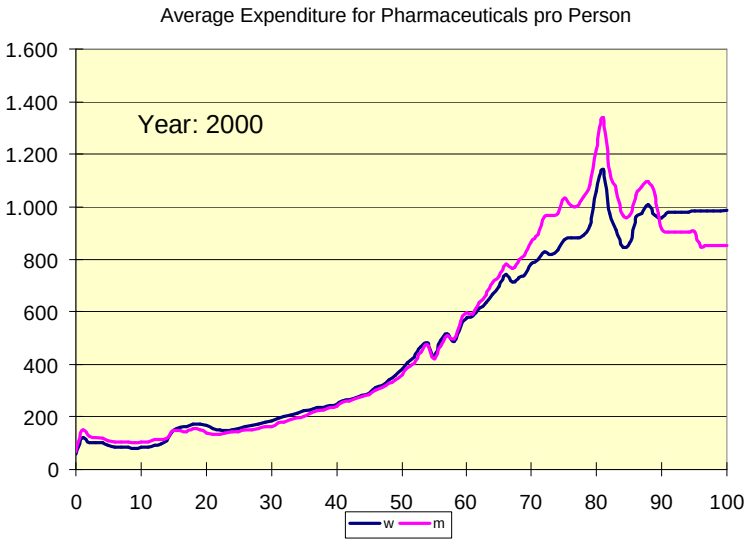

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2. Meeting) 11

Expenditure for Pharmaceuticals in Germany by Age and Gender

Fachhochschule Gelsenkirchen
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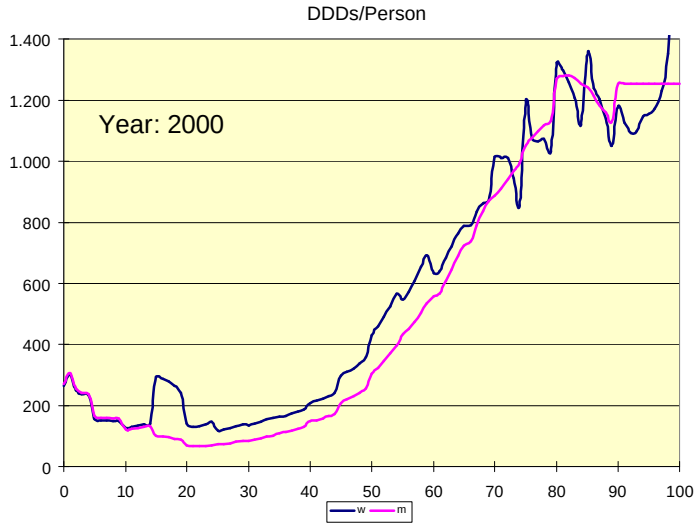

SHA - Age and Gender: Clervaux 15/16th of November 2002 (2. Meeting) 12

Eurostat Project SHA – Age and Gender

Gudmundur Berghtorsson

15. november 2002

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Population Data

- Two worksheets show the distribution of population by age and gender that the expenditure data cover, i.e. whole Icelandic population.
  - Population 1.7.2000.
  - Population 1.12.2000. Sector of Pharmacetuals

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Source of the Data

- Sources of Information:
  - The Social Security Institute (SSI)
  - Landspítali – University Hospital (LHU)

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Source of the Data - SSI

- SSI show the distribution of pharmaceutical expenditure for SSI where the data is put in five years age period for the distribution of age.
- The data base is build on the EDI -system (electronical-connection). The EDI connection to the pharmacies decide the fraction of expenditure that is included. In the year 2000 was 56,5% of the total pharmaceutical expenditure within the EDI system so the distribution of expenditure is extended according til i.
  - Pharmacies in Reykjavík area used EDI-system on relatively higher fraction than the countryside ones.

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Source of the Data – SSI (cont.)

- The total pharmaceutical expenditure include all prescribed medicine both what the public (state) pays partly an what individuals pay s fully.
- Because of the extension is it right to extend the cases and DDD (?) i.e. cost and count is not the same thing.
- The extension of the distribution was compared with the year 200 1, the result was similar.
- The price system in Iceland for prescribed medicine is based on maximum price:
  - The total amount for the public part is real amount.
  - The total amount for the private part is estimated. Discount prices are very common at pharmacies for the private part of the payment

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Source of the Data - LHU

- The data show exact cost for public and private.
- The peaks in cost are explained by very expensive medicine (factor 8 and so on).

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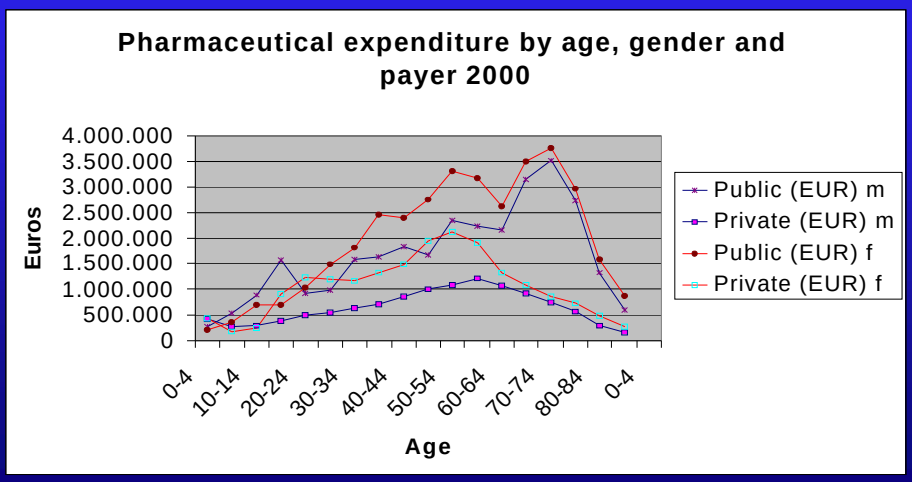
The Result?



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Summary

- The Size of the Society and a Privacy matters (Institution of Personal Privacy).
- The Change 2001 S Drugs.
- Antibioatic Medicine for the Infants.
- The War Generation.

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Italian methodology to estimate HC1.1 and HC1.2 expenditure by gender and age

Alessandra Burgio
ISTAT - ITALY

Eurostat Project "SHA – Age and Gender
15-16 November 2002

ISTAT

Data delivered

- Reference time: 1999
- HC_CODE: HC1.1 and HC1.2
- Age: single age (0-100+)
- Gender: males and females
- Cases: by gender and age
- Expenditure: total, public and private
- Population: by gender and age

ISTAT

Population data

- Population covered: present population (resident and non resident)
- Non resident: registered foreigners

Available data:

- Present population à Census (not yet available)
- We don't know how many registered foreigners are also resident

ISTAT

Population data

Population covered: Italians resident + Foreigners resident + Foreigners non resident

No distinction of the last two variables

Data used for the project:

Only resident population

57.6 million

ISTAT

Expenditure data

CALCULATED INDIRECTLY

Starting point: OECD figures provided for Health Database 2002

Part 4: expenditure on in-patient care and day care

Including: all hospital expenditure (in-patient care and day-care, acute-rehabilitation-long term care)

ISTAT

Expenditure data for inpatient care and day care

Total expenditure: 36,203,628 thousand euros

Public expenditure: 34,033,993 thousand euros (94%)

Calculated by Local Health Units balance-sheets

Private expenditure: 2,169,635 thousand euros (6%)

Estimated by Italian household budget survey

ISTAT

Italian methodology to estimate HC1.1 and HC1.2 expenditure by gender and age

Alessandra Burgio
ISTAT - ITALY

Eurostat Project "SHA – Age and Gender
15-16 November 2002

ISTAT

Method for HC1.1 and HC1.2 data

Application of DRG fees to DRG codes separately for NHS and Out of pocket cases

2 MATRIXES, each with following variables:

- Inpatient-care: acute, rehabilitation, long term care
- Day-care: acute, rehabilitation care
- Age: 0-100+
- Gender: males and females

ISTAT

Method for HC1.1 and HC1.2 data

Matrix of costs estimated by DRG fees by type of admission, gender, type of care and age

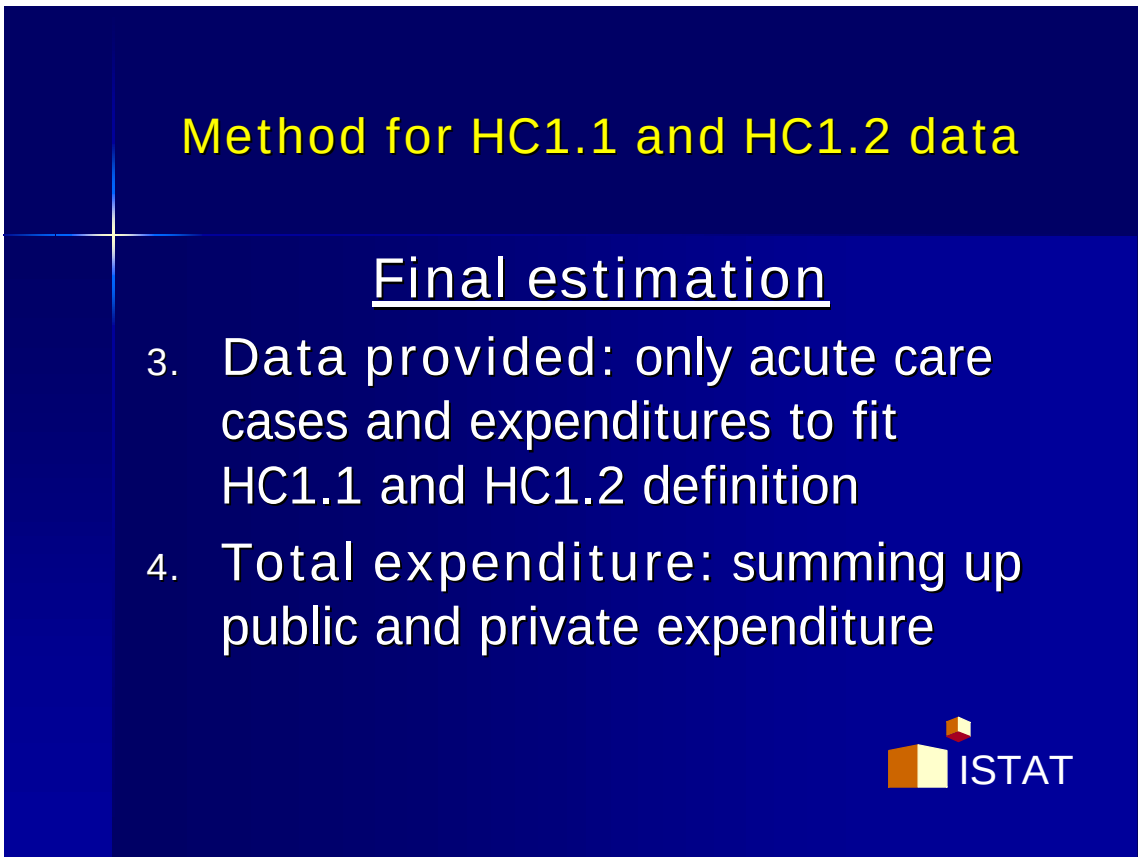
	Inpatient care						Day care			
	Males			Females			Males		Females	
Age	Acute care	Rehabilitation care	Long term care	Acute care	Rehabilitation care	Long term care	Acute care	Rehabilitation care	Acute care	Rehabilitation care
0										
1										
.										
.										
.										
99										
100+										

Method for HC1.1 and HC1.2 data

Final estimation

1. Percentage distribution: percentage of all cells out of the total of the matrix
2. Redistribution of expenditure: application of percentages to the amount of expenditure provided to OECD (public and private)

ISTAT


Method for HC1.1 and HC1.2 data
Final estimation
3. Data provided: only acute care cases and expenditures to fit HC1.1 and HC1.2 definition
4. Total expenditure: summing up public and private expenditure
ISTAT

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Estimated distribution of in-patient curative care expenditure by age and gender.

Description of methodology

SPAIN

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Target :

- To classify **in-patient curative care** expenditure by age and gender

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PRELIMINARY REMARKS:

- **The implementation of SHA in Spain is an ongoing project.**
- The MSC and the 17 AACC are intending to implement SHA in partnership .
- A working Group on Health Expenditure has been established with the purpose of implementing SHA in Spain
  - convert existing EGSP into SHA language and concepts
  - Extend the boundaries to include all other public sectors (long term care provided by non-health care institutions and occupational care)
  - Incorporate the private sector expenditure.

Therefore , until the end of this project , those estimates can not be considered as final results, but a first step based on global figures and sources, that the SHA final implementation will refine.

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Two ways of funding (Private - Public) : Two levels of data availability .

- **Public :**
  - Hospital total public expenditure : EGSP
  - In-patient activity distribution by age and gender in GRD terms from the Hospital discharge data (CMBD)
  - National Health System Reference Costs to evaluate the expenditure in GRD terms
- **Private :**
  - Hospital private expenditure : ESSRI (Hospital statistics) and National Accounts
  - Neither activity nor costs data in age and gender terms

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1. To split up the total hospital expenditure into curative a nd long term care

- Data from ESSRI (Hospital Statistics) shows that :
  - Public founded acute care hospitals represent a 95,14 % of the total hospital public expenditure, therefore
    - 15.751,02 million € curative care
    - 804,60 million € long term care
  - Private founded acute care hospitals represent a 95,35 % of the total hospital private expenditure, therefore :
    - 1.715,35 million € curative care
    - 79,84 million € long term care

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2. To isolate in-patient expenditure from the total curative hospital expenditure, to get HC11: In patient curative care (1)

- The national Health System Reference Cost (HSRC) provides cost information of a sample of 18 public hospitals.
- The main aim is to assign costs to the different GRD in order to calculate the final cost of each GRD.
- The methodology identifies in-patient activity cost from the total hospital expenditure.

HSRC Project	SHA Project
Quantify in-patient activity costs:	Reach the expenditure functional classification
Total hospital costs:	Total hospital expenditure:
In patient →	HC11: In-patient curative care
Excluded activities →	HC**: Other SHA functions

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2. To isolate in-patient expenditure from the total curative hospital expenditure, to get HC11: In patient curative care (2)

Excluded activities (HSRC)

External consultations in hospital and specialised units financially attached to hospitals

Day case curative care:

- ambulatory surgery
- dialysis
- oncological day care..

Out patients diagnostic specialised services

Service of curative home care : respiratory therapy

Special out patient prescriptions (AIDS)

Emergencies

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2. To isolate in-patient expenditure from the total curative hospital expenditure, to get HC11: In patient curative care (3)

HSRC RESULTS :

- the weight of the in-patient activity cost is 64,03 % of the total cost of the acute care public hospitals
- the weight of excluded activities is 35,97 %

SHA CONSECUENCES:

We apply the same weights to public and private sector

- Public in-patient curative care :

  64,03 % (15.751.02) = 10.085,38 millions €

- Private in-patient curative care :

- 64,03 % (1.715,35) = 1.098,34 millions €

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3. To estimate the cost structure by age and gender from the hospit al discharges (CMBD) and GRD costs.

Public in-patient curative care expenditure

- The Statistics on Hospital Discharge Registry (CMBD) records t he discharges from all public hospitals by age, gender and GRD
- The Health System Reference Cost provides the cost of every GR D.
- Therefore, we have an structure of the in-patient curative costs from the public hospitals.

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4. To apply this structure by age and gender to the in-patient curative care estimated via EGSP (1)

Public in-patient curative care expenditure.

- This structure, applied to the in-patient public expenditure produce an estimate of the HC11 : In-patient curative care expenditure by age and gender (Public)

Private in-patient curative care expenditure

- There is not reliable information to distribute private expendi ture by age and gender
- La Encuesta Nacional de Salud (National Health Survey) is the main source to know the nature and conditions of use of the health services by the population.
- The 2001 Survey (with a wider sample that 1997 one) will allow s us to distribute private expenditure by age and gender, but is not yet available.

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A 7: Methods used for estimating population data in EU/EFTA countries

Table: Methods used for estimating Population figures

Country	Reference Date	Base	Measurement method	Post-census re-evaluation	Average Population
B	1 January	PC 1991	Population Register	no	Arithmetic mean on 1 January for two consecutive years
DK	1 January	:	Population Register	:	Population Register on 1 July
D	31 December	PC 1987	Component Method	yes	Arithmetic mean of monthly total population estimates
EL	1 January	PC 1991	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
E	1 January	PC 1991	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
F	1 January	PC 1990	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
IRL	15 April	PC 1996	Component Method	yes	15 April estimate
I	1 January	PC 1991	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
L	31 December	PC 1991	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
NL	1 January	:	Population Register	:	Population Register on 1 July
A	1 January	PC 1991	Component Method	yes	Arithmetic mean of five quarterly estimates
P	1 January	PC 1991	Component Method	yes	Arithmetic mean on 1 January for two consecutive years
FIN	31 December	:	Population Register	:	Arithmetic mean on 1 January for two consecutive years
S	31 December	:	Population Register	no	Arithmetic mean on 1 January for two consecutive years
UK	30 June	PC 1991	Component Method	yes	30 June estimate
IS	1 January	:	Population Register	:	Arithmetic weighted mean on 1 December for two consecutive years till 1996: population on 1 July from 19997 onwards
LI	31 December	:	Population Register	:	Arithmetic mean on 1 January for two consecutive years
NO	1 January	:	Population Register	no	Arithmetic mean on 1 January for two consecutive years
CH	31 December	PC 1990	Component Method	yes	Arithmetic mean on 1 January for two consecutive years

PC: Population Census

Annual estimates of population are based either on the most recent census round of 1990/1991, applying the component method, or on the data extracted from a population register (Table 2).

Ireland traditionally estimates its population in mid-April and the United Kingdom at 30 June. These estimates then serve as a mean population. Iceland estimates its population at 1 December.

The remaining countries principal estimates are made either at 1 January or at 31 December.

The estimation method varies according to the observation method:

- Belgium, Denmark, the Netherlands, Finland, Sweden, Iceland and Norway rely on the state of the population register at a given date.
- Austria, Germany, Luxembourg and Italy use the register to obtain a figure of net migration which, added to the natural balance, gives the total population increase. Switzerland calculates its national population by the same process, but its non-national population is obtained from the register of foreign nationals.
- Greece, Ireland, Portugal and France compile net migration from various sources, while the United Kingdom estimates it from a specific survey at the frontier (the International Passenger Survey).
- Spain estimates annual population figures by projections based on the latest available census by using the component method.

Average mean population is, in general, the arithmetical mean of the population at 1 January of two consecutive years, except in:

- Germany and Switzerland (non-nationals only), where the arithmetical mean is that of each of the twelve months.
- Austria, where the arithmetical mean is that of five quarterly estimates.
- Denmark, the Netherlands and Iceland (from 1997 onwards), who take the population register total at 30 June or 1 July. Ireland and the United Kingdom apply the population estimated on 15 April and 30 June respectively.

As indicated in Table 2, a number of countries make *post facto* amendments to their estimates following a census. The countries which have already transmitted corrected data for their latest inter-census years are Greece, Spain, France, Ireland, Italy, Austria, Portugal, the United Kingdom and Switzerland. In Luxembourg, no *post facto* amendments were made to the population figures following the latest census, because there was very little difference

between the results of the 1991 general census and STATEC's estimates. Furthermore, for the main demographic variables by age and citizenship, the census results are not more reliable than STATEC's estimates.

Eurostat produces the corrected net migration figures by taking the difference between total and natural population increases. This assumes that any movement of population not attributable to natural change (births and deaths) is attributable to migration. Corrections due to population censuses, register counts, etc. which cannot be classified as births, deaths or migrations are also taken into account in the corrected net migration figures.

(Source: Eurostat)