



## EXPOFACTS

### Exposure Factors Sourcebook for Europe

#### DATA SOURCES AND QUALITY

6.7.2006

This document describes the data sources used in the ExpoFacts database. Background information describing the databases, surveys and research projects, have been collected from the original reports and methodology articles. The data quality information, also mostly provided by the original data producers, is presented for easy assessment of data comparability and other data quality issues. This document is a part of ExpoFacts, exposure factors sourcebook for Europe. ExpoFacts sourcebook is available at: <http://www.ktl.fi/expofacts>

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## 1 Countries

### 1.1 Total population and ground surface area

#### Sources

The total population of each country for the year 2002, and the ground surface area data, have been taken to the ExpoFacts from the World Health Organization (WHO) European Health for All Database (HFA-DB). (WHO, 2004)

#### Quality notes

Data in the HFA-DB are compiled from various sources, (the health statistics services of member states, WHO's own technical units and other), validated and processed in a uniform way in order to improve the international comparability of statistics. Nevertheless, WHO points out that since recording and handling systems and practices for health data vary between countries, so do the availability and accuracy of data reported to WHO. The comparability of data between countries can also be limited, owing to differences in definitions and and/or time periods, incomplete registration in some countries or other national specificities in data recording and processing. WHO recommends that international comparisons between countries and their interpretation should thus be made with caution. (WHO, 2004)

### 1.2 National economy

#### Sources

The indicators for national economy in the ExpoFacts database, come from the Trends in Europe and North America - Statistical Yearbook of the Economic Commission for Europe 2003. "Trends" is a compilation of basic socio-economic statistics for the member countries of the United Nations Economic Commission for Europe (UNECE), and it is published every two years. (UNECE, 2003)

#### Quality notes

The UNECE underlines that cross-country comparability is not always perfect and that the original sources with their more detailed statistics and descriptions of technical notes should be consulted to avoid dubious conclusions. Every effort has been made to harmonize the definitions and ensure international comparability.

UNECE uses the following definitions for the economic data:

Economic branch (sector): Using the International Standard Industry Classification (ISIC-Rev.3 1990), at the highest level the economy is divided into three branches: 1) agriculture covers agriculture, forestry and fishing (categories A+B); 2) industry comprises the production industries (including electricity, gas, and water), mining and quarrying, and construction (categories C-F); and 3) services comprise market services and non-market services (categories G-Q, X).

Gross Domestic Product (GDP, value added): The principal measure of total economic activity occurring within a country's geographical boundary. As an aggregate measure of production, the GDP of a country is equal to the sum of the gross value added of all resident institutional units engaged in production of goods and services (plus taxes and minus subsidies). Gross value added is the value of output minus intermediate inputs (that is, the value of goods and services consumed as inputs by process of production, excluding fixed assets which contribute to gross value added).

GDP in agriculture, industry, and services: Measures the value added in different economic branches. When the value added data were not available, the gross industrial output is used instead. Agriculture covers agriculture, forestry and fishing; Industry comprises the production industries (including electricity, gas, and water), mining and quarrying and construction; Services comprise market services and non-market services.

Purchasing power parities (PPPs): purchasing power of a country's currency, i.e. the rate of currency exchange that equalizes the cost of a fixed representative basket of goods and services in the home country using national currency and in the reference country (the United States) using the US dollar converted at the PPP rate (the number of units of national currency required to purchase the same representative basket of goods and services that one US dollar would buy in the United States). It can be recommended to use the PPPs instead of the exchange rate in economic comparisons to take into account the price level differences between countries. PPPs are expressed in national currency units per US dollar.

Real GDP: GDP at constant (fixed) prices measures the volume of output from domestic production. It is used to show the growth in a country's economy. (UNECE, 2003)

## 2. Population

### 2.1 Age

#### Sources

The age distributions are presented in the ExpoFacts database primarily in five-year age groups, using data extracted from WHO Life tables. WHO makes the life tables for all its member states. The life tables form the basis of all WHO's estimates about mortality patterns and levels worldwide.

Even though many of the official statistics do follow the same 5-year age groups as the WHO, many surveys and research projects report their results differently. One-year age distributions have been added from national sources, to give valid population data also for those age groups.

#### Quality notes

The year-by-year data, collected directly from national sources, have not been subject to similar data quality and comparability analysis as the WHO data. Therefore the two data sets are not fully comparable. Adding together the year-by-year data will not necessarily yield the WHO data for a particular age group, even if the reference year was the same.

### 2.2 Demography

#### 2.2.1 Birth and death rate

##### Sources

The birth and death rate data in the ExpoFacts database have been taken from the WHO European Health for All Database (HFA-DB). The HFA-DB compiles a wide range of health related statistics from the WHO European Region.

##### Quality notes

Data in the HFA-DB are compiled from various sources, (the health statistics services of member states, WHO's own technical units and other), validated and processed in a uniform way in order to improve the international comparability of statistics. Nevertheless, WHO points out that international comparisons between countries and their interpretation should be made with caution. Since recording

and handling systems and practices for health data vary between countries, so do the availability and accuracy of data reported to WHO. The comparability of data between countries is also limited, owing to differences in definitions and and/or time periods, incomplete registration in some countries or other national specificities in data recording and processing.

(WHO, 2004)

### 2.2.2 Life expectancy

#### Sources

The ExpoFacts life expectancy data come from the WHO Life Tables. WHO makes the life tables for all its member states. The life tables form the basis of all WHO's estimates about mortality patterns and levels worldwide. A key use of these life tables is in the construction of healthy life expectancy (HALE), which is the basic indicator of population health levels used by WHO and published each year in the World Health Report. Both the Life Expectancy and the Healthy Life Expectancy (HALE) are presented in ExpoFacts database, by gender and for different ages.

(WHO, 2000)

#### Quality notes

The construction of a life table requires reliable data on a populations mortality rates, by age and sex. In order to compute life tables for a given year (in this case 2000) for which vital registration of deaths is not yet available for administrative reasons, short-term projections are required from the latest available year. This will require an adequate time series of data, with at least 15-20 years of mortality statistics. All ExpoFacts countries have an over 95 percent coverage of the required data. Table 1 presents the data available for the Life Table calculations. The above-mentioned short-term projections have been made for those countries, which have not had data available for the year 2000.

*Table 1. Availability of vital registration data on mortality in the WHO database, (as of 15 September 2001) (Lopez et al., 2001; WHO, 2000)*

Country	98	99	00	Country	98	99	00
Austria	x	x	x	Latvia	x	x	
Belgium	x			Lithuania	x	x	
Bulgaria	x	x		Luxembourg	x	x	x
Cyprus	x	x		Malta	x	x	
Czech Republic	x	x	x	Netherlands	x	x	
Denmark	x			Norway	x		
Estonia	x	x		Poland	x	x	
Finland	x			Portugal	x	x	
France	x			Romania	x	x	
Germany	x	x		Slovakia	x	x	
Greece	x			Slovenia	x	x	
Hungary	x	x	x	Spain	x		
Iceland	x			Sweden	x		x
Ireland	x			Switzerland	x		
Italy	x			UK	x	x	

### 2.2.3 Giving birth

#### Sources

The data in the ExpoFacts database, related to giving birth, come from the Demographic Database of United Nations Economic Commission for Europe (UNECE). The data draw on both national and international sources, the former being almost exclusively National Statistical Offices and the latter some of the International Organizations active in the demographic field (United Nations, Eurostat, Council of Europe, and World Health Organization). (UNECE, 2004a)

#### Quality notes

The UNECE underlines that cross-country comparability is not always perfect and that the original sources with their more detailed statistics and descriptions of technical notes should be consulted to avoid dubious conclusions. Every effort has been made to harmonize the definitions and ensure international comparability.

UNECE uses the following definitions for the birth data:

Live birth: The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live-born, regardless of gestation age.

Mean age of women at the birth of the first child: is the weighted average of the age specific rates of first order births.  
(UNECE, 2003)

### 2.2.4 Foreign inhabitants

#### Sources

The data on foreign inhabitants come from the EU Population statistics published in 2004. The data for latest available year are presented in ExpoFacts, for those countries that have data in the publication. (European Commission, 2004c)

#### Quality notes

Data of foreign inhabitants are included to ExpoFacts database, to indicate the otherwise unnoticed cultural variations in the populations. Foreign populations are usually not included in national statistics, surveys or research populations. Therefore the possible differences in e.g. dietary habits or time use patterns will go unnoticed in the statistical data. The numbers and percentages of foreign populations will naturally not answer the question of these cultural variations and their influences but these data give some tool for possible speculations of the foreign influences in each country.

### 2.3 Urban population

#### Sources

The data on population of capital cities and cities of 100,000 and more inhabitants, presented in the ExpoFacts database, come from the United Nations (UN) Statistical division. It presents data on the population of the city proper according to its administrative boundaries and for some cities, also on the urban agglomeration (comprising the city proper plus its contiguous built-up areas). (United Nations (UN) Statistics Division, 2003b)

The estimates of urban and rural populations are made by the Population Division of the United Nations Secretariat. These estimates are based on national census or survey data. (United Nations (UN) Statistics Division, 2003a)

**Quality notes**

Although, UN Statistical Division makes an effort to somewhat reduce the sources of non-comparability, international comparability of data on city population is limited to a great extent by variations in national concepts. Since population census years differ among countries and areas, the reference years for the city populations vary. (United Nations (UN) Statistics Division, 2003b)

Urban-rural classification of population in internationally published statistics follows the national census definition, which differs from one country or area to another. National definitions are usually based on criteria that may include any of the following: size of population in a locality, population density, distance between built-up areas, predominant type of economic activity, legal or administrative boundaries and urban characteristics such as specific services and facilities. The inter-country comparisons regarding urban populations should therefore be done with particular caution. (United Nations (UN) Statistics Division, 2003a)

**2.4 Socio-economic data****2.4.1 Education level****Sources**

The education level data found in the national statistical publications are often presented according to the national education systems and are therefore not comparable. The education level data in the ExpoFacts database comes from the International Labour Organization (ILO) Yearbook of Labour Statistics, 2002. The data are available only for the economically active population.

The data are presented in age groups, for the latest available year, using the standard classification (ISCED-97), which divides the national educational programs in to levels 0-6, according to their content. The level 5 data is presented in subcategories 5A and 5B. (ILO, 2002)

**Quality notes**

The data on education level of economically active population are collected by labour force surveys within each country. The notes related to the survey results, are presented in table 2.

Table 2. Notes regarding the education level data (ILO, 2002)

Country	Notes
Austria	Incl. armed forces, except conscripts not employed before their military service.
Cyprus	June.
Czech Rep.	No notes.
Denmark	No notes.
Estonia	Figures are rounded off independently, consequently the total differs from the sum of the groups.
Finland	Provisional data.
France	No notes.
Germany	Figures are rounded off independently, consequently the total differs from the sum of the groups. April of each year.
Greece	Excl. armed forces. Second quarter of each year.
Hungary	Excl. compulsory military service.
Iceland	Excl. armed forces. Data based on revised national educational classification. April and Nov. of each year.
Ireland	March-May.
Italy	Excl. compulsory military service.
Latvia	Nov.
Lithuania	Excl. armed forces.
Luxembourg	Excl. border workers and employees of international organizations.
Netherlands	Persons working or seeking work for less than 12 hours per week are no longer included. "De jure" population.
Poland	Excl. regular military living in barracks and conscripts.
Portugal	Excl. compulsory military service. "De jure" population; incl. the Azores and Madeira.
Romania	Provisional data.
Slovakia	Excl. armed forces. Fourth quarter of each year.
Slovenia	Second quarter.
Spain	Excl. compulsory military service.
Switzerland	No notes.
Sweden	No notes.
UK	Men aged 16 to 64 years; women aged 16-59 years. March-May each year.

#### 2.4.2 Employment and unemployment Sources

The employment and unemployment data are also available from the ILO Yearbook of Labour Statistics, 2002.

There are three tables with employment data. One has data divided by economic activity (standard ISIC-Rev.3), in categories like agriculture, fishing, construction, and education. One has data by occupation (standard ISCO-88) in categories like legislator, professional, and technician. The last one has data by status in employment (standard ICSE-93) dividing the data into categories like employee, employer, and family worker.

Unemployment is presented in four tables. They present the unemployment by age group, by education level (ISCED-97), by economic activity (ISIC-Rev.3) and by occupation (ISCO-88). (ILO, 2002)

#### Quality notes

Tables 3 and 4 summarize the data quality notes provided by ILO.



Table 3. Notes related to the employment data. (ILO, 2002)

	<b>Total employment by: economic activity</b>	<b>occupation</b>	<b>status in employment</b>
AUS	Persons aged 15 years and over.	same	same
BEL	Incl. professional army, excl. compulsory military service. Persons aged 15 and over.	Same and also: April of each year. ISCO68.	Same and also: June of each year.
BUL	7:excl. storage, 8:excl. veterinary services, radio and TV broadcasting, repair and installation services.	31st Dec each year.	No data.
CYP	Government controlled area. Persons aged 15 years and over. Second quarter of each year.	same	same
CZE	Persons aged 15 years and over.	same	same
DEN	Persons aged 15-66 years.	same	same
EST	Persons aged 15-74 years.	same	same
FIN	Persons aged 15-74 years.	same	same
GER	Persons aged 15 years and over. April of each year.	same	same
GRE	Incl. professional army, excl. compulsory military service. Persons aged 15 and over. Second quarter of each year.	Incl. professional army, excl. compulsory military service. Persons aged 15 and over.	Incl. professional army, excl. compulsory military service. Persons aged 15 and over. Second quarter of each year.
HUN	Persons aged 15-74 years.	same	same
ICL	Persons aged 16-74 years. Civilian labour force employed. April and Nov. of each year.	same	same
IRE	Persons aged 15 years and over. March-May of each year.	same	same
ITA	Incl. conscripts. Incl. permanent members of institutional households. Persons aged 15 years and over.	same	same
LAT	Excl. compulsory military service. Persons aged 15 years and over. Nov. of each year. Estimated based on the 2000 population census results.	same	same
LIT	Persons aged 15 years and over.	same	same
LUX	Incl. armed forces.	No data	No data
MAL	Persons aged 15 years and over. Dec. of each year.	No data	No data
NED	Persons aged 15-64 years.	same	same
NOR	Persons aged 16-74 years.	same	same
POL	Persons aged 15 years and over. Excl. regular military living in barracks and conscripts.	same	same
POR	Persons aged 15 years and over.	same	same
ROM	Persons aged 15 years and over.	same	same
SLV	Persons aged 15 years and over. Excl. conscripts. Excl. persons on child-care leave.	same	same
SLN	Persons aged 15 years and over. Second quarter of each year.	same	same
SPA	Excl. compulsory military service. Persons aged 16 years and over.	same	same
SWE	Persons aged 16-64 years.	Same and also: Incl. professional army; excl. compulsory military service.	same
SUI	Persons aged 15 years and over. Second quarter of each year. Civilian labour force employed excl. seasonal/border workers.	same	No data
UK	Persons aged 16 years and over. March-May each year.	same	same

'same' = see the notes in the cell to the left

Table 4. Notes related to the unemployment data.

	Total unemployment by: age groups	economic activity	occupation	education level
AUS	Persons aged 15 years and over.	same	same	Persons aged 15 years and over.
BEL	April of each year	Wholly unemployed receiving insurance benefits. 0:incl. persons seeking their first job	Wholly unemployed receiving insurance benefits. June of each year. ISCO68.	Persons aged 15 years and over. April of each year.
BUL	Persons aged 15 years and over. June of each year	same	same	June
CYP	Government controlled area. Persons aged 15 years and over. Second quarter of each year.	same	Government controlled area. Persons aged 15 years and over.	Government controlled area. Persons aged 14 years and over.
CZE	Persons aged 15 years and over.	same	same	same
DEN	Persons aged 15-66 years.	same	same	same
EST	Persons aged 15-74 years.	same	same	Figures are rounded off independently; consequently the total differs from the sum of the groups. Persons aged 15-74.
FIN	Persons aged 15-74 years.	same	same	same
FRA	Persons aged 15 years and over. March of each year.	no data	no data	no data
GER	Persons aged 15 years and over. April of each year.	same	same	same
GRE	Persons aged 15 and over. Second quarter of each year.	same	same	Persons aged 14 and over. Second quarter of each year.
HUN	Persons aged 15-74 years.	same	same	same
ICL	Persons aged 16-74 years. April and Nov. of each year.	same	same	same
IRE	Persons aged 15 years and over. March-May of each year.	same	same	same
ITA	Persons aged 15 years and over.	same	same	same
LAT	Persons aged 15 years and over. Nov. of each year.	Persons aged 15 years and over. Nov. of each year. Estimated based on the 2000 population census results.	same	Persons aged 15 years and over. Nov. of each year.
LIT	Persons aged 15 years and over.	same	same	31st of December each year.
LUX	No notes	No data	No data	Persons aged 16-64 years.
MAL	Persons aged 15 years and over. Dec. of each year.	same	same	Persons aged 16 and over.
NED	No notes	No data	No data	Persons aged 15-64 years. "De jure" population.
NOR	No notes	Persons aged 16-74 years.	same	same
POL	Persons aged 15 years and over.	same	same	same
POR	Persons aged 15 years and over.	same	same	Persons aged 15 years and over. Incl. the Azores and Madeira.
ROM	Persons aged 15 years and over.	same	same	Persons aged 14 years and over.
SLV	Persons aged 15 years and over. Excl. persons on child-care leave.	same	same	same
SLN	Persons aged 15 years and over. Second quarter of each year.	same	same	Persons aged 15 years and over. Second quarter of each year. Figures under 6000 are rough estimates.
SPA	No notes	Persons aged 16 years and over.	same	same
SWE	Persons aged 16-64 years.	same	same	same
SUI	Persons aged 15 years and over. Second quarter of each year.	No data	No data	Persons aged 15 years and over. Second quarter of each year.
UK	Men aged 16-64 years, women aged 16-59 years. March-May each year.	Persons aged 16 years and over. March-May each year.	same	Men aged 16-64 years, women aged 16-59 years. March-May each year.

'same' = see notes in the cell to the left

### 2.4.3 Marital status

#### Sources

The marital status data in the ExpoFacts database come from the Gender Statistics Database of United Nations Economic Commission for Europe (UNECE).

#### Quality notes

The marital status is defined by UNECE as the legal conjugal status of each individual in relation to the marriage laws (or customs) in the country (de jure status). The notes available at Gender Statistics Database have the following information.

IRE: "Divorced" includes separated.

SLN: Data refer to citizens with permanent residence. Data on foreigners etc. are in "Never Married"

UK: Data refer to England and Wales

The year of the data varies. Data for the latest year available are included to the database.

(UNECE, 2004b)

### 2.4.4 Households

#### Sources

The data on households are available from the 1996 wave of European Community Household Panel (ECHP) survey, published by Pyy-Martikainen et al. at Statistics Finland. More information about the ECHP survey is available under chapter 'Housing' of this same document. (Statistics Finland, 2002a)

#### Quality notes

Household data are available for only those countries that participated in the ECHP survey in 1996.

### 2.4.5 Ethnic groups and religions

#### Sources

The indicators for ethnic groups and religions are published yearly in the World Fact Book.

#### Quality notes

The World Fact Book gives the following definitions to the data sets:

Ethnic groups: A rank ordering of ethnic groups. Normally includes the percent of total population.

Religions: A rank ordering of religions by adherents. For some countries includes the percent of total population.

(Central Intelligence Agency, 2003)

## 2.5 Income distribution

#### Sources

Data on wages, in the ExpoFacts database, come from the ILO Laborsta Internet.

The indicators for population below poverty line, and the consumption distribution within the countries, are published yearly in the World Fact Book.

**Quality notes**

When using the ILO data, it should be borne in mind that figures of wages do not reflect workers' disposable or net earnings, since they generally represent the gross wages, before deductions such as those for taxes or social security contributions. International comparisons should take into account differences between countries in the prices of goods and services, and the effects of different currencies and their exchange rates. (ILO, 2004)

The World Fact Book gives the following definitions to the used terminology:

Population below poverty line: National estimates of the percentage of the population lying below the poverty line are based on surveys of sub-groups, with the results weighted by the number of people in each group. Definitions of poverty vary considerably among nations. For example, rich nations generally employ more generous standards of poverty than poor nations.

Household income or consumption by percentage share: Data on household income or consumption come from household surveys, the results adjusted for household size. Nations use different standards and procedures in collecting and adjusting the data. Surveys based on income will normally show a more unequal distribution than surveys based on consumption. The quality of surveys is improving with time, yet caution is still necessary in making inter-country comparisons.

(Central Intelligence Agency, 2003)

**3 Physiology****3.1 Height and weight****Sources**

The height and weight statistics in the ExpoFacts database come from national sources. Statistics for children up to two years of age are presented in separate tables, with the ages in months. Data regarding children older than two years and adults are presented in the other tables. For ages 2-19 years old the data are presented in half a year intervals and adult data in one year intervals, if such data have been available. For references and other details, see Quality notes.

**Quality notes**

The original height and weight data have been collected for various purposes, at various times and by using various methods. The main background information, which should be taken into consideration before using the data, is presented in table 5.

Table 5. Summary of data quality features for height and weight data. The ages presented in parenthesis are reported in the reference but not quoted in the database.

	Age group	Year	Method	Purpose	Nationally representative	Reference
BUL	20-70 years	1989-92		National anthropological investigation of the Bulgarian population	Yes	Slanchev S., et al., 1992
	10-19 years 4-9(19) years	2003		National survey on nutrition and nutritional status of schoolchildren in Bulgaria	Yes	Vatralova, et al., (in press)
			National reference values	National anthropological investigation	Yes	Slanchev, et al., 1992
	0-3 years			Basic Indices of Growth in Bulgarian Children	Yes	Dundova, et al., 1991
CZE	(15) 24-75+ years	2002	Self reported	HIS CR 2002 - Sample Survey of the Health Status of the Czech Population	Yes	Institute of Health Information and Statistics of the Czech Republic, 2004
	3-18 years	1990		Czech and Slovak reference data	Yes (for Czekoslovakia)	Bláha, et al., 1995
DEN	0-12 months	1985-88	Measured	Longitudinal study of Danish infants	No, Copenhagen only	Michaelsen, et al., 1994
EST	15-64 years	2000	Self reported	Health Behaviour Among Estonian Adult Population study	Yes	FinBalt Health Monitor 2002
FIN	15-64 years	2002	Self reported	Health Behaviour Among Finnish Adult Population study	Yes	FinBalt Health Monitor 2002
	0-20 years	1970's-80's	National reference values	Pediatric - Finnish Growth Surveillance Program for Pediatrics	Yes	Tilator Oy Ltd, 1999
FRA	0-17+ years					IRSN/ADEME, 2003
GER	0-79 years	1998		Bundes Gesundheitssurvey 1998	Yes	Bergmann, 1999
HUN	(15) 19-75+ years	1985-1988		Hungarian nutrition survey	Yes	Biró (ed.), 1993
	3-18 years	1982-85	Measured	Hungarian National Growth Study	Yes	Eiben, et al., 1991
ICL	0-12 months		Measured	Study to evaluate the need for new energy intake and growth charts	Yes	Atladdottir, et al., 2000
IRE	18-64 years	1997-1999	Measured	North/South Ireland Food consumption Survey 2000	Yes	Irish Universities Nutritional Alliance, 2000
ITA	(0)3-95+ years	1999-2000	Self reported	Conditions of health and use of the health services Survey		ISTAT, 2003
	0-2 (3) years	1973-1981	Growth standard	Update of longitudinal growth standards		Cortinovis, et al., 1993
LAT	15-64 years	2002	Self reported	Health Behaviour Among Latvian Adult Population study	Yes	FinBalt Health Monitor 2002
LIT	20-64 years	2002	Self reported	Health Behaviour Among Lithuanian Adult Population study	Yes	FinBalt Health Monitor 2002
	0-18 years	1987-1990	Growth standard	Study of growth and development of Lithuanian children		Tutkuvieni, 1995
NED	2 wks-21 yrs	1997	Measured	Nationwide growth study	Yes	Fredriks, 2000
SLV	3-18 years	1990		Czech and Slovak reference data	Yes (for Czekoslovakia)	Bláha, et al., 1995
SUI	15-65+ years	1992/93	Self reported	Swiss National Health Survey 1992/93	Yes	Eichholzer, et al., 1999
SWE	16-84 years	1998-2000		The living Conditions Survey (ULF) 1998-2000	Yes	Statistics Sweden
	6-16 years girls 6-16 (19) years boys	1967-86	Growth standard	Measurements aimed at creating the standard	Yes	Lindgren, et al. 1995
	0-19,5 months	1979-1982	Measured	Infant Feeding and Growth Study	No	Persson, 1985
UK	16+ years	1994-96		Health Survey for England 1996	Yes, for England	UK Department of Health
	2-15 years	1998	Measured	Health Survey for England 1998	Yes, for England	UK Department of Health

(Atladdottir and Thorsdottir, 2000; Bergmann and Mensink, 1999; Biró, 1993; Bláha et al., 1995; Cortinovis et al., 1993; Dundova et al., 1991; Eiben et al., 1991; Eichholzer et al., 1999; Finbalt Health Monitor 2002, 2004; Fredriks et al., 2000; Institute of Health Information and Statistics of the Czech Republic, 2004; Irish Universities Nutrition Alliance (IUNA), 2001; IRSN and ADEME, 2003; Lindgren et al., 1995; Michaelsen et al., 1994; National Institute of Statistics

(ISTAT), 2003; Persson, 1985; Slanchev et al., 1992; Statistics Sweden, 2000; Tilator Oy Ltd, 1999; Tutkuvieni, 1995; Vatrlova et al., 2003)

## **3.2 Inhalation**

### **3.2.1 Respiratory rate**

#### **Sources**

An Italian Study, reported by Rusconi et al., has collected information on respiratory rate (RR) in breaths per minute, distributions of children aged from 15 days to 3 years old. The RR was measured by using a stethoscope and by observation. The subjects RR was measured both when they were asleep and when they were awake. When used together with respiratory volume data, the respiratory rate information can be used to generate inhalation rate distributions.

There are no data available to our knowledge about the respiratory volume distributions within European populations. The available international data sources are listed in the Database References.

#### **Quality notes**

The study population for the Italian respiratory rate study was large, 618 infants. The measurement repeatability was good. The subjects were healthy since the data are intended to be used as reference values, when comparing with children with suspected respiratory problems. (Rusconi et al., 1994; Zaleski and Gephart, 2000)

### **3.2.2 Respiratory volume**

#### **Sources**

There are no data available to our knowledge about the respiratory volume distributions within European populations. The available international data sources are listed in the Additional Exposure Factor References.

## **3.3 Energy consumption**

#### **Sources**

German Cardiovascular Prevention Study has published nationally representative data for levels of activity in kcal/kg/week. (Mensink et al., 1996)

Reilly et al. have published results of a longitudinal study regarding energy expenditure of young children in Glasgow. The results report the energy measures of 'Total Energy Expenditure' (TEE) and 'Resting Energy Expenditure' (REE). (Reilly et al., 2004)

Belgian Health Interview Survey has assessed the energy expenditure of adult (15+years) population by using the new International Physical Activity Questionnaire (IPAQ). The new questionnaire is a tool of intermediary precision, between the WHO recommended rather general two-questions method, and surveys with actual measurements of energy expenditure. The results are reported as Metabolic Equivalent Units per minute (METS/min) per week. (Gisle et al., 2002)

#### **Quality notes**

The German Levels of Activity Indices data have been generated by questionnaires where the study subjects have reported for the previous 3 months their activities with an 18 category list of options. Together with the information on the time spent in those activities, hours spent sleeping and occupational postures, it has been possible to calculate the physical activity indices. (Mensink et al., 1996)

The energy expenditure data for young Scottish children was representative for children from Glasgow, UK at the age of 3 years. The data for 5-year olds is from a follow-up study with the same children. (Reilly et al., 2004)

Belgian Health Interview Survey is a nationally representative survey. In addition to the medians, also the 95% Confidence Intervals are reported. (Gisle et al., 2002)

### 3.4 Other data sources

Strictly European physiology data are very poorly available at the moment. The available data sources with physiological data are mostly based on North American surveys. The U.S.EPA Exposure Factors Handbook, the U.S.EPA Child-Specific Exposure Factors Handbook and ICRP Basic Anatomical and Physiological Data for Use in Radiological Protection all contain considerable amounts of physiological data, which should be applicable to European populations. (ICRP, 2002; U.S.Environmental Protection Agency (EPA), 1997; U.S.Environmental Protection Agency (EPA), 2002)

## 4. Dietary ingestion

### 4.1 FAO Food Balance Sheets

#### Sources

The Food and Agriculture Organization (FAO) of the United Nations compiles information and data on various aspects of food and agriculture from all countries. Food consumption statistics are obtained through food balance sheets. They provide estimates of quantities available for human consumption in a country during a specified period.

A food balance sheet shows for each food item - i.e., each primary commodity and a number of processed commodities potentially available for human consumption - the sources of supply and its utilization. The total quantity of foodstuffs produced in a country added to the total quantity imported and adjusted for any change in stocks that may have occurred since the beginning of the reference period, gives the supply available during that period. On the utilization side, a distinction is made between the quantities exported, fed to livestock, used for seed, put to manufacture for food use and non-food uses, lost during storage and transportation, and available as food for human consumption at the retail level. The per capita supply of each such food item available for human consumption is then obtained by dividing its respective quantity by the related data on the population actually partaking of it. Data on per capita food supplies are expressed in terms of quantity and also in terms of caloric value, protein and fat content.

(Food and Agriculture Organization of the United Nations, 2004)

Food balance sheets are a tool to recognize changes and trends in a particular country's food availability and eating habits. Therefore the ExpoFacts database includes data for each of the five latest years available, 1996-2001.

#### Quality notes

Food balance sheets provide data on the national average of food supplies, which are suitable for estimating the overall shortages or surpluses in the food supply of a country. They provide no indication of the food consumption levels of people living in different geographic areas of the country, or in different occupations, or at different income levels.

The accuracy of food balance sheets, which are in essence derived statistics, depends on the reliability of the underlying statistics of supply and utilization of

food and of population. Data from food balance sheets are not directly comparable with data collected by other techniques, like from household consumption surveys.

It is important to note that the quantities of food available for human consumption, as estimated in the food balance sheets, relate simply to the quantities reaching the consumer in private households, as well as in the non-household sector, i.e., catering establishments, boarding schools, hospitals, prisons, armed forces' bases and other communities. The amount of food actually consumed may be lower than the quantity shown in the food balance sheet. The difference reflects waste occurring between the retail level and the kitchen and losses of edible food and nutrients in the household, e.g., during storage, in preparation and cooking, as plate-waste, or as quantities fed to domestic animals and pets, or that thrown away.

(Food and Agriculture Organization of the United Nations, 2004)

## **4.2 DAFNE**

### **Sources**

DATA Food NETworking (DAFNE) initiative, refers to an ongoing EU-funded joint effort of European countries to compare the food habits of their populations and monitor overtime trends in food availability.

DAFNE project has created a cost effective way of generating food availability data at household level, based on data received in the Household Budget Surveys (HBS). The HBS are periodically conducted by the National Statistical Offices of most European countries, in country-representative samples of households. This approach allows regular data update and a tool for following changes in food availability over the years.

To present the food availability data, together with socio-economic and demographic data, DAFNE has created a pan-European, regularly updated food databank, which is freely available on the Internet.

Four socio-demographic characteristics with important public health implications are used for within and between countries comparisons: the degree of urbanization of the area where the household is situated, the household composition, the education and the occupation of household head.

(Naska et al., 2001; Trichopoulou et al., 2003)

### **Quality notes**

The DAFNE food availability data provide an average estimate of the populations' food habits and enables international comparisons. The results are, however, not directly comparable with neither food balance sheet information nor individual nutritional surveys. (Trichopoulou et al., 2003)

## **4.3 National dietary surveys**

### **Sources**

Personal level food consumption data are generated in individual dietary surveys. These surveys have been carried out in many European countries, at a national level, for usage in the national nutrition policy and nutritional surveillance.

### **Quality notes**

At the moment none of the national surveys are directly comparable and therefore the methodology of each survey has to be reviewed carefully before using the data.



Great attention should be paid to:

- the population participating (age group, whole population)
- the age of the survey
- the way of data collection: food frequency questionnaire, recall or record
- the duration of the survey
- the food classification system

(Verger et al., 2002)

The main characteristics of each study are summarized in table 6.

The surveys in Finland and Hungary are not nationally representative.

Also it is important to remember, that most of these surveys have not been carried out in English and translations made from different linguistic and dietary backgrounds, may create additional incomparability.

Table 6. Summary of characteristics of the national food consumption studies included to ExpoFacts database

	Year	Survey	Population		Dietary method	Season	Reference
			Age (years)	N			
Belgium	2001	Enquête de Santé par Interview Belgique 2001	0-75+	12111	FFQ	All	Gisle et al., 2001
Bulgaria	1998-99	Dietary and nutritional status of Bulgarian children survey	7-19	7108	24-hour recall + FFQ		Petrova et al., 2003
Bulgaria	1998	National Survey of the Dietary and Nutritional Status of the Population of Bulgaria	1-75+	2757	24-hour recall		Petrova et al., 2000
Denmark	2000-2001	Danskernes Kostvaner	4-75	4-14y: 207 15-75y: 869	7-day diary	All	Fagt et al., 2002
Estonia	1997	Baltic Nutrition and Health Survey	19-64	2108	24-hour recall	Summer	Pommerlau et al., 1999
Finland	2002	FINDIET	25-64	2007	48-hour recall	Spring	Männistö et al., 2003
France	1998-99	INCA	3+	3003	7-day record	All	Volatier, 2000
Germany	1997-1999	German Nutrition Survey (GeNuS)	18-79	4030	4-week recall	All	Mensink et al., 2002
Hungary	1992-94	Nutritional Survey of a group of Hungarian Population	18-60+	2559	3x24-hour recall + FFQ		Biró et al., 1996
Iceland	2002	Diet of Icelanders	15-80	1366	24-hour recall	No summer	Steingrimsdóttir et al., 2002
Ireland	1997-99	North/South Ireland Food Consumption Survey	18-64	1379	7-day record	All	IUNA, 2001
Italy	1994-96	INN-CA	1-64+	1978	7-day record	All	Turrini et al., 2001
Latvia	1997	Baltic Nutrition and Health Survey	19-64	2108	24-hour recall	Summer	Pommerlau et al., 1999
the Netherlands	1997-98	Voedselconsumptiepeiling 1997-98	1-65+	5958	48-hour diary	All	Voedingscentrum, 1998
the Netherlands	2002	Voedingstoffen Inname Onderzoek 2002	9-18 months	941	48-hour diary	Jan-Jun	Voedingscentrum, 2002
Lithuania	1997	Baltic Nutrition and Health Survey	20-65	2108	24-hour recall	Summer	Pommerlau et al., 1999
Sweden	1997-98	Riksmaten 1997-98	18-74	1215	7-day record		Becker et al.
UK	1992-1993	NDNS children aged 1 1/2 to 4 1/2 years	1 1/2-4 1/2	1859	4-day record	all	Gregory et al., 1995
UK	1997	NDNS young people 4-18 years	4-18	1701	7-day record		Gregory et al., 2000
UK	2000-01	NDNS: adults aged 19 to 64 years	19-64	1724	7-day record	All	Henderson et al., 2002

(Becker and Pearson, 1999; Biró, 1996; Fagt et al., 2002; Gisle et al., 2002; Gregory et al., 2000; Gregory et al., 1995; Henderson et al., 2002; Irish Universities Nutrition Alliance (IUNA), 2001; Männistö et al., 2003; Mensink et al., 2002; Petrova et al., 2000; Petrova et al., 2003; Steingrimsdóttir et al.,

2003; Turrini et al., 2001; Voedingscentrum, 1998; Voedingscentrum, 2002; Volatier, 2000; WHO Regional Office for Europe and European Centre on Health of Societies in transition, 1999)

#### **4.4 NorBaGreen**

##### **Sources**

NorBaGreen project collected in 2002 nationally representative food frequency data from the Nordic and Baltic countries. Data were collected for vegetables, potatoes, fruit and berries, bread and fish. More detailed categories were set for the fruit, berries and vegetables. (Similä et al., 2003)

##### **Quality notes**

The NorBaGreen data are comparable from country to country. The study procedure was otherwise the same in all the countries, except that the data were collected from the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) by Computer Assisted Telephone Interviews (CATI), and from the Baltic countries (Estonia, Latvia, and Lithuania) by Paper Assisted Personal Interviews (PAPI). (Similä et al., 2003)

#### **4.5 CESAR**

##### **Sources**

The Central European Study on Air Pollution and Respiratory Health (CESAR) has gathered food frequency data from 20 271 children aged 7-11 years in six countries. These data were collected through questionnaires filled in by the parents. The consumption frequencies have been reported for fresh fruit and vegetables, separately for summer and wintertime, and for fish. (Antova et al., 2003)

##### **Quality notes**

The study population consisted of children in towns of about 100 000 inhabitants, and therefore the results are not representative at a national level. The response rate for the study was 65,8 %, with 61,3 % of the results being accepted for the data analysis. The authors point out that in the CESAR study, the questionnaire was a "blunt instrument", not giving any detailed information on what kind of fruit, vegetables or fish were consumed, nor information on the consumed amounts. (Antova et al., 2003)

#### **4.6 Infant feeding**

##### **Sources**

The infant feeding data regarding breastfeeding prevalence at 3 and 6 months of age come from the WHO European Health for All Database (HFA-DB). The data concerns children who are breastfed at least partially. Data are presented for the latest available year for each country. (WHO, 2004)

Infants' dietary intake of various foodstuffs has been studied in Denmark, Germany, Iceland and UK. Euro-Growth Survey has assessed these issues locally, in 22 study centres in 12 European countries.

The Euro-Growth survey reports the results for fully and partially breastfed children. 'Full breast-feeding' is defined as taking solid food but no other milk than breast milk. 'Partial breast-feeding' is defined as taking milk in addition to breast milk, with or without inclusion of solid foods. (Freeman et al., 2000)

The Icelandic survey reports data for breast-fed and not breast-fed children. The infant was classified as being breast-fed if it was breast-fed at least once a day, including the days preceding and the day of registration. (Atladottir and Thorsdottir, 2000)

The UK survey defines the 'prevalence of breastfeeding' as the proportion of sampled babies who were wholly or partially breastfed at different ages, even if they are also receiving infant formula or solid food. (Hamlyn et al., 2002)

The quantity of breast milk intake has been studied in Copenhagen Cohort Study in 1987-88. This fairly old data has been included in lack of newer European data. It can be speculated that the quantities eaten by babies while they are breastfed has not changed very much over the years, even though the proportion of children being breastfed has considerably risen over the years in many countries. The results are reported between those who are exclusively and partially breast-fed. The definition of 'exclusive breastfeeding' allowed giving the child supplements of water or camomile tea, with no added sugar or milk, vitamins, and rare meals of formula or solids. 'Partial breastfeeding' required breastfeeding at least once a day. (Michaelsen, 1997)

### **Quality notes**

The same quality notes apply to breastfeeding data as to other HFA-DB data. International comparisons between countries and their interpretation should be made with caution. Since recording and handling systems and practices for health data vary between countries, so do the availability and accuracy of data reported to WHO. The comparability of data between countries is also limited, owing to differences in definitions and and/or time periods, incomplete registration in some countries or other national specificities in data recording and processing. (WHO, 2004)

The surveys on infants' diet have all been conducted with very different methodologies. The main features of these surveys are summarized in table 7. Information about the Copenhagen Cohort Study, reporting breast milk intake has been included in the same table.

Table 7. Summary of surveys on infant diet and quantity of breast milk intake.

	Year	Population N	Dietary method	Representativeness	Reference
Euro-Growth	1990-1993	2245	22 study centres in 12 countries. Interviews and semi-quantitative dietary recall at <30days, 1, 2, 3, 4, 5, 6, 9, 12, 18, 24, 30 and 36 months.	Representative at the study centre level for length and weight of mothers, urban residency, and gender and birth weight of infants. Participating mothers were on average 1 year older and had higher educational level than non-participants.	Feeman, V., et al. 2000
Denmark	1991	339	Semi-quantitative food frequency questionnaire	Random selection of children born in Denmark the first week of December 1990.	Nielsen, G.A., et al. 1998
Germany	1990-1996	293	Weighed diet records from 3 consecutive days at 3, 6, 9, and 12 months of age.	Yearly new volunteer cohort of 30-40 infants. Parents mostly from upper economic class and with higher education than average population.	Kersting, M. et al., 1998
Iceland		180	Once-a-month 24-hour consumption record at 1,3,5,7,8,10 and 11 months of age. Once a month 48-hour consumption record at 2,4,6,9, and 12 months of age by weighing all food and weighing the child before and after breastfeeding. Control group only participated at 9 months.	Random selection of children born in four different maternity wards.	Atladottir, H., et al. 2000
UK	2000-2001	at 4-10 weeks: 9492, at 4-5 months: 8299, at 8-9 months: 7267	Questionnaires	Initial sample was nationally representative for UK. Questionnaires were sent in three stages, always from those who had replied to the previous stage. Data was weighted to correct for non-response bias.	Hamlyn, B., et al. 2002
Denmark	1987-1988	87	Weighing with electronic balance on 2 days at 2 months, 2 days at 4 months and 5 days at 9 months of age.	Representative of children born in the main hospital (Hvidovre) of Copenhagen municipality.	Michaelsen, K.F., 1997

(Atladottir and Thorsdottir, 2000; Freeman et al., 2000; Hamlyn et al., 2002; Kersting et al., 1998; Michaelsen, 1997; Nielsen et al., 1998)

#### 4.7 Wild and home grown foods

##### Sources

Data on wild foods are available for Czech Republic and Finland. Both datasets were collected in order to assess the population dietary exposure to radiocaesium (<sup>137</sup>Cs).

The Czech data are presented for the population in general and the Critical group. The Critical group includes huntsmen and foresters together with their families, and people who frequent restaurants that serve game. The Finnish data are divided to those of hunter households and other population. (Markkula and Rantavaara, 1996; Švadlenková et al., 1996)

The Baltic Nutrition and Health Surveys have assessed the dependence on home-grown or raised foods and the frequency of use of home-grown vegetables.

##### Quality notes

The consumption amounts in Czech Republic are estimates, based on average annual consumption of food products and annual volumes of game hunted,

extracted from the Statistical Yearbook of Czech Republic 1992. The consumption figures of the Critical group were estimated based on discussions with foresters and on the knowledge of habits in the region, where a new nuclear power plant was being constructed (Temelin, Southern Bohemia). (Švadlenková et al., 1996)

The Finnish data were collected from a nationally representative population sample with a mailed questionnaire. However, the response rate was lower (55%) in the Helsinki metropolitan area than in other parts of the country (57-61%), and the number of household members (2,59 for non-hunters and 3,17 for hunters) was somewhat higher in the respondents, than nationally (2,41). The data are not corrected for these differences. Also, the proportion of hunting households was significantly higher in the responses, than in the general population. That is why the data are reported separately for hunters and non-hunters. The reported consumption amounts are retrospectively recalled amounts. This can also somewhat affect the results. (Markkula and Rantavaara, 1996)

#### **4.8 Water consumption Sources**

Most national dietary surveys have reported also the consumption of beverages, including water. Some reports and articles, however, do exist with more detailed information about the types of water consumed.

The ExpoFacts database includes data from the Baltic Nutrition and Health Survey (WHO Regional Office for Europe and European Centre on Health of Societies in transition, 1999), the French INCA Study (Beaudeau et al., 2003) and the German Donald Study (Hilbig et al., 2002).

#### **Quality notes**

All the three reported datasets of water consumption, have been collected from a different perspective, to answer different questions, and are therefore not comparable.

The Baltic data present percentages of the type of water usually used by adults for drinking; tap water, well water, boiled water, filtered water, or bottled water. (WHO Regional Office for Europe and European Centre on Health of Societies in transition, 1999)

The French data present the amounts of heated and unheated tap water used by population of 4 years old or older. (Beaudeau et al., 2003)

The German data present in detail the tap water consumption of infants. The results are reported in relation to whether the children are breastfed, formula fed or having a mixed diet. (Hilbig et al., 2002)

#### **4.9 Food preparation methods and soy product use Sources**

European Prospective Investigation into Cancer and Nutrition (EPIC) is an ongoing cohort study. EPIC aims at clarifying the role of diet in cancer etiology as well as in the etiology of other chronic diseases and it has collected data from ten European countries: Denmark, France, Germany, Greece, Italy, Netherlands, Norway, Spain, Sweden and the United Kingdom. (Slimani et al., 2002)

### Quality notes

The EPIC study populations were not chosen to provide representative samples. This is why ExpoFacts does not include actual dietary data from EPIC. ExpoFacts database includes however the unique, EPIC meat and fish preparation method data. Even though these data are not necessarily representative for the populations in general, it gives indications on the differences in preparation methods from country to country. (Slimani et al., 2002)

### 4.10 Dietary supplements and other non-prescription drugs Sources

There is no common method for studying dietary supplement or non-prescription drug data. The available information has been collected to ExpoFacts from dietary survey reports, national health survey reports, and sales statistics.

### Quality notes

The data on dietary supplement and other non-prescription medicine use in ExpoFacts are not comparable between data sources. Table 7 includes the basic descriptions of data collection methodologies used.

*Table 6. Summary of characteristics of the data sources for dietary supplement and non-prescription drug data in the ExpoFacts database*

	Year	Data source	Population		Method	Reference
			Age (years)	N		
Bulgaria	2001	National census, housing fund and agricultural properties in 2001	All	9396	Census questionnaire: use of non-prescribed drugs during the two weeks prior to the census	Baev, et al., 2002
Czech Republic	2002	Sample Survey of the Health Status of the Czech Population, HIS CR 2002	15-75+	2476	Face-to-face interview: Use of non-prescribed medicines in the previous 2 weeks	Institute of Health Information and Statistics of the Czech Republic, 2004
Estonia	1997	Baltic Nutrition and Health Survey	19-64	2018	Questionnaire: Frequency of consumption of vitamin/mineral supplements	WHO, 1999
Finland	2001	OTC Medicine sales in outpatient care		-	National sales statistics for OTC medicines	National Agency for Medicines, Finland, 2002
Iceland	2002	Diet of Icelanders	15-80	1366	Phone interview: Frequency of consumption	Steingrimsdóttir et al., 2002
Latvia	1997	Baltic Nutrition and Health Survey	19-64	2303	Questionnaire: Frequency of consumption of vitamin/mineral supplements	WHO, 1999
Lithuania	1997	Baltic Nutrition and Health Survey	20-65	2133	Questionnaire: Frequency of consumption of vitamin/mineral supplements	WHO, 1999
the Netherlands	1997-98	Voedselconsumptiepeiling 1997-98	1-65+	5958	48-hour diary	Voedingscentrum, 1998
UK	1992-1993	NDNS children aged 1 1/2 to 4 1/2 years	1 1/2- 4 1/2	1859	Interview of parents: Dietary supplement use and frequency	Gregory et al., 1995

(Baev et al., 2002; Gregory et al., 1995; Institute of Health Information and Statistics of the Czech Republic, 2004; National Agency for Medicines Finland, 2002; Steingrimsdóttir et al., 2003; Voedingscentrum, 1998)

## 5. Non-Dietary Ingestion

### 5.1 Mouthing

#### Sources

The mouthing data under this category are available from the Netherlands and the UK. The Dutch study has been made by the Agricultural University Wageningen for the purpose of evaluating 3-36 –month old children's' exposure to phthalate through ingestion. The UK study is made for more general consumer safety evaluation purposes, and therefore it reports e.g. the mouthed objects in more detail.

More mouthing related data are available under Child specific time use in chapter 6.

#### Quality notes

During the Dutch study the parents observed their child's mouthing behaviour ten times 15 minutes per day, evenly distributed over the day, on two days, excluding the times when the child was sleeping or eating. The parents were local volunteers. Observations were completed for 42 children. (Groot et al., 1998)

In the UK it was also the parents who observed the children. The observation times were distributed evenly, according to instructions, over the time when the child was awake, and between weekdays and weekends. Total of 5 hours observation time was collected per child. Altogether 236 children, between 1 month and 5 years of age, were observed. The UK study also included a validation study, where 25 children were observed both by the parent and a trained researcher. (Consumer and Competition Policy Directorate (DTI), 2002)

## 6. Time Activity

### 6.1 Time at work

#### Sources

The ILO Yearbook of Labour Statistics 2002 presents labour figures for the years 1992-2001. These figures have been collected by ILO Bureau of Statistics from the national statistical services, or taken from official publications. Not all countries have been in the position to provide statistics for the whole ten-year period of Yearbook of Labour Statistics. ExpoFacts database includes the latest figures available in this book. (ILO, 2002)

The weekend work statistics have been collected as part of the EU Labour Force Survey. Most data are from the 2000 survey but the data for Germany and Ireland are from 1997, and the data for Spain and Luxemburg are from 1998. (Franco and Winqvist, 2002)

Data on time use at work are also available in the ExpoFacts database through national time use surveys, under the title 'Time Activity'.

#### Quality notes

ILO has not adjusted the working hours data to conform to the international recommendations on labour statistics but has, instead, requested the reporting agencies to supply information conforming as closely as possible to these recommendations.



*Table 7. Summary of the main characteristics that may cause incomparability between Working Hours datasets from different countries*

	Indicator	Survey method	Notes
Austria	a	BA	-
Belgium	a	DA	-
Cyprus	b	DA	Adults. October of each year.
Czech Rep.	a	DA	Enterprises with 20 or more employees.
Estonia	a	DA	-
Finland	a	BA	-
France	a	BA	Full time employees. Usual hours.
Germany	b	DA	Class A: permanent workers; per month
Greece	a	BA	-
Hungary	a	DA	Full-time workers. Enterprises with 5 or more employees. Per month.
Iceland	a	BA	April and Nov. of each year.
Ireland	a	BA	Usual hours.
Italy	a	BA	-
Latvia	a	BA	On the main job. Nov. of each year.
Lithuania	b	BA	-
Malta	a	BA	December of each year.
Netherlands	b	DA	Full-time employees only. Usual hours excluding overtime. Dec. of each year.
Norway	a	BA	-
Poland	a	BA	-
Portugal	b	DA	-
Romania	a	BA	Provisional data.
Slovakia	a	CA	Excl. enterprises with less than 20 employees. Per month.
Slovenia	a	BA	-
Spain	a	BA	Persons ages 16 years and over.
Switzerland	a	BA	-
Sweden	a	BA	-
UK	b	DA	April; excl. Northern Ireland. Full-time employees on adult rate of pay. Incl. overtime.

a: Hours actually worked, b: hours paid for

BA: Labour force survey, CA: Labour-related establishment census, DA: Labour related establishment survey

The Eurostat data regarding weekend work hours are confined to employees (i.e. the self-employed and unpaid family workers are excluded) of all ages. Saturday and Sunday working are defined in terms of formal working arrangements, so that those who work on their own initiative either day or take work home to do at the weekend, should in principle be excluded. (Franco and Winqvist, 2002)

## 6.2 Time at school Sources

United Nations Educational, Scientific and Cultural Organization (UNESCO) World data on education (WDE) focuses on basic descriptions of the main characteristics of the organization and functioning of national education systems. For the seven European countries, which have a six-year primary education system, the statistics show the number of school hours for each of those six years. For the countries with a longer primary education program, data are available for the first four years of school. (UNESCO, 2000)

Eurostat has compiled data from administrative sources, regarding the attendance at different levels of education system during the school year

2000/2001. The education levels are recorded according to International Standard Classification of Education, 1997 revision (ISCED –97). (Dunne, 2003)

Please, see also 'Time Activity' for children's time use in more detail.

### Quality notes

The UNESCO data concern intended teaching hours and do not take into account any absenteeism (sick leaves etc.) or children's extracurricular activities. Therefore the real distribution of time at school is wider than shown.

*Table8. Points to consider when using the Eurostat Education Level Attendance data (Dunne, 2003)*

Data set	Comments
Number of pupils and students, ISCED levels 0-6	GER, ROM, SLN: Data exclude level 6
	LUX: Luxembourg does not have a complete university system (most students study abroad)
	POR, CYP: ISCED level 4 is not applicable
Number of pupils and students (1000)	GER, FRA, SWE: Some students cannot be allocated by level
	LUX: Luxembourg does not have a complete university system (most students study abroad)
	UK: ISCED level 3 includes ISCED level 4
	IRE: There is no official provision of ISCED level 0 education
Students in vocational programmes at ISCED level 3 as % of all ISCED-3 students	CYP: Most students in ISCED levels 5-6 study abroad
	UK: ISCED level 3 vocational programs include ISCED level 4 HUN: ISCED level 3 vocational programs include ISCED level 2
Participation rates in pre-primary education	UK: data only refer to children enrolled in school establishments
Participation rates of 18 year olds in ISCED levels 1-6	LUX, CYP: most tertiary students study abroad
Participation rates of 15-24 year olds in ISCED levels 1-6	GER, ITA, ROM, SLN: Data exclude ISCED level 6
	LUX: Luxembourg does not have a complete university system (most students study abroad)
	CYP: most tertiary students study abroad
Participation rates of 20, 22, and 24 year olds in tertiary education	GER, ITA, ROM, SLN: Data exclude ISCED level 6
	CYP: Data exclude students studying abroad

## 6.3 Expolis

### Sources

The EU-funded Expolis Study was launched in 1996 in order to gather population based information on personal urban exposures to air pollution in Europe. Subjects of the exposure measurement campaign were asked to fill in a Time Microenvironment Activity Diary (TMAD), recording their location in 15-minute intervals. Another sub sample of people, not taking part in the exposure measurements, also filled in the TMAD. The diary specified 11 microenvironment categories: walk/bike, motorcycle, car/taxi, bus/tram, metro/train, home in, home out, work in, work out, and other in and out. TMAD data were gathered from 808 persons in seven European cities: Athens, Basel, Grenoble, Helsinki, Milan, Oxford, and Prague. (Hänninen et al., 2004; Rotko et al., 2000)

### Quality notes

The Expolis time use dataset is the largest multinational European time use data set, which has been gathered specifically for exposure assessment purposes. It does however give data only for the adult population (25-55 yrs) in the seven participating urban areas.

Table 9. Expolis sample population features, which can affect the TMAD data. (Oglesby et al., 2000; Rotko et al., 2000)

	Base sample	Respondents	Diaries filled by	Notes regarding diaries
Helsinki	Random (N=2523)	response rate 74% (N=1871)	random from Respondents (N=435)	Women over represented Older (45-55 yrs) overrepresented Single family house residents over represented Married over represented Finnish speakers only
Athens	Random (N=6968)	contacted until target was reached (29%) (N=2000)	random from Respondents (N=100)	Unrepresentative samples
Basel	Random (N=3000)	response rate 49 % (N=1458)	random from Respondents (N=332)	Women over represented Older age groups over represented Swiss nationals over represented Non-smokers over represented
Grenoble	No base sample	volunteers, 20-60 years old, half asthmatics, half controls (N=65)	volunteers (N=65)	Women over represented Older (45-55 yrs) over represented
Milan	Random (N=3009)	response rate 25% (N=764)	1) random from Respondents (N=250) 2) outside Base sample, selected 15 to 55 yr old office workers (N=50)	Higher educated over represented Office worker sample unrepresentative of population in general
Prague	Random from a limited area in the city center N=2867	response rate 5% (N=141)	random from Respondents, those willing to participate (N=86)	Women over represented Younger (25-34 yrs) over represented Higher educated over represented

## 6.4 National time use surveys

### Sources

National time use surveys have been carried out in most European countries. Their methodology has become more and more uniform along the years, and since September 2000, a Harmonized European Time Use Survey (HETUS) method has been available.

Most of the countries from which ExpoFacts has data available, have been participating in developing the HETUS concept. The only country outside the HETUS group is the Netherlands, which has its own time use survey (TBO). The TBO has been carried out since 1975 every 5 years since then. Therefore the TBO is a unique longitudinal European dataset.

### Quality notes

From environmental exposure research point of view there are a number of positive and negative sides to the national time use studies:

- + nationally representative population samples
- + large N's
- + in the future, a large number of studies will follow the same methodology and provide comparable data
- + high quality data handling and statistical analysis
- + includes data on activities interesting to exposure studies, like time spent in traffic, preparing food and gardening
- + available for a large number of countries
  
- the surveys are made for use in sociological studies and therefore the questions do not include information on e.g. whether the person is indoors or outdoors while performing certain activity

- the national reports are similarly generated to answer sociological questions, and gathered data that would be valuable for exposure analysis, is often not reported
- the HETUS methodology came out late (2000) for the latest wave of time use studies, which started in 1998, and therefore the first surveys are not coherent to the method
- the HETUS methodology does not include reporting: data in the reports are not necessarily comparable from country to country

Table 10. Main characteristics of the latest national time use surveys included in the ExpoFacts database

	Year	Season	Population		Publications
			N	age	
EST	1999-2000	All	6234	10-75+	Statistikaamet, 2001
BEL	1998-2000	All	8382	12-75+	Institut national de statistique, 2002
FIN	1999-2000	All	10561	10-65+	Statistics Finland, 2002
FRA	1998-1999	All	15441	15-65+	Dumontier et al. 2000
HUN	1999	Fall	7663	15-74	Hungarian Central Statistical Office 2000
POR	1999	Fall	11226	15+	Instituto Nacional de Estatística Portugal, 1999
NED	2000	Fall	1813	12+	Social and Cultural Planning Office of the Netherlands (SCP), 2002
NOR	2000-2001	All	6470	9-79	Vaage, 2002
SLN*	2000-2001	All	2364	10+	Inglič, 2002
SWE	2000-2001	All	2293	20-64	Statistics Sweden, 2003

(Dumontier and Pan Ké Shon, 2000; Hungarian Central Statistical Office, 2000; INFOLINE database, 2004; Inglic et al., 2002; Institut National de Statistique (INS) Belgium, 2002; Social and Cultural Planning Office of the Netherlands, 2002; Statistical Office of Estonia, 2001; Statistics Finland, 2002b; Statistics Sweden, 2003; Vaage, 2002)

The data in ExpoFacts is mostly from the national reports, which are not comparable. That data is included for maximum level of available details when looking at national time use. The national datasets also give data for the younger people, and even children, if they have been included in the national surveys.

A project of HETUS survey post-harmonization was organized in 2003-2004 and a Eurostat publication is available with comparable data from most of the European surveys. Data from that publication is also available in the ExpoFacts database. Even though the age group is limited to adults and the level of detail is not as great as in national reports, these data tables provide a valuable collection of nationally representative, comparable time activity data. (European Commission, 2004b)

### 6.5 Time Use in Traffic Sources

Ireland, Luxembourg and Switzerland have included questions about daily travel in their census questionnaires. Those data are included to the ExpoFacts database.

For more detailed Swiss travel data from Basel, please see the Expolis data.

#### Quality notes

The census data for time use in traffic are not directly comparable from country to country. The data from Luxembourg are for commuting only, the Irish data are reported separately for school, study and work travel, and the Swiss data are for all daily travel but only for working population. (Central Statistics Office, 2004; STATEC, 2004; Swiss Federal Statistical Office, 2004)

## 6.6 Leisure time physical activity

### Sources

European Commission has published a Pan-EU Survey of Consumer Attitudes to Physical Activity, Body-weight and Health. The survey statistics cover e.g. the participation to various forms of exercise and the daily time spent in sedentary activities. The data are from 1998, and covers the 15 countries that were EU member states at that time. The survey was for people of 15 years or older. (European Commission, 1999)

Health Behaviour in School-aged Children (HBSC) study has published a report Young People's Health in Context. The data regarding 11, 13, and 15-year olds physical activity and sedentary behaviour have been included in ExpoFacts database. (WHO Regional Office for Europe, 2004)

The physical activity levels in the Baltic countries have been studied as part of the Baltic Nutrition and Health Survey in 1997. The results are reported as participation rates to low, moderate, high and very high levels of physical activity at work and at leisure time. (WHO Regional Office for Europe and European Centre on Health of Societies in transition, 1999)

Maltese data are available from the First National Health Interview Survey conducted in 2003. The statistics tell how many times people have done vigorous and moderate activities or walked during the week preceding the survey, and the usual time spent in that activity. (Asciak et al., 2003)

For data on energy expenditure during physical activity, see database category 'Physiology'.

### Quality notes

The physical activity datasets are not comparable between surveys.

## 6.7 Child specific time use data

### Sources

University of Wageningen and the National Institute of Public Health and the Environment (RIVM) have conducted a study on infant time use and behaviour called 'Look Who's Kidding'. The study is unique because it not only includes mouthing data but also information regarding general time use data about the locations in which infants spend their time, and their contacts with various surfaces. (Rodewijk, 2003)

Bulgaria has published a unique survey on child labour. The data describe the share of children from 5 to 17 years of age engaged in domestic activities, and various economic activities. (Todorova et al., 2001)

The Pollution Effects on Asthmatic Children in Europe (PEACE) study assessed 6-12 year old children's exposure to air pollutants in 10 countries. As part of the study, the parents recorded the time their children spent outdoors. The data cover wintertime 1993-94, and children of selected schools in 12 centres in eight countries around Europe (the Netherlands and Hungary did not report time spent outdoors). The data collected in the PEACE study are included in the ExpoFacts database despite its fairly old age and non-representative study population, because it is the only available dataset in Europe reporting multinational, and comparable data on children's time use indoors and outdoors. (Brunekreef, 1998)

**Quality notes**

The Dutch Look Who's Kidding study was conducted with a voluntary, fairly small population (18 girls and 22 boys) from Wageningen and surrounding areas. The results are therefore not representative for any population but give interesting indications on infant behaviour. The children were surveyed by their parents on two days when the child was home. The general time use was registered for the entire time the child was awake from morning until evening. Night times were not included. The motile movements were observed for two 15-minute periods, once in the morning and once in the afternoon, on two different days, and the results were then averaged over the time the child was awake. (Rodewijk, 2003)

The Bulgarian data on child labour are nationally representative. The data have been collected in 2000 by using a questionnaire in a personal interview. Altogether 1876 children and 1179 parents were interviewed. (Todorova et al., 2001)

The children were selected in the PEACE study on the basis of having experienced chronic respiratory symptoms in the year preceding the study and are therefore not necessarily representative of general child population. (Brunekreef, 1998)

**7. Housing****7.1 UNECE****Sources**

UNECE Environment and Human Settlements Division publishes housing data in two formats on the UNECE Internet pages: the Human Settlements Database, and the Housing and Building Statistics. (UNECE, 2004c; UNECE, 2004d)

The data in the Human Settlements database are collected for the ECE Bulletin of Housing and Building Statistics and through the Country Profiles on the Housing Sector from a number of both national and international sources. The dataset descriptions by the UNECE are described below. The country specific exceptions are listed in table 11.

Predecessor of the Housing and Building Statistics on the Internet was the publication Bulletin of Housing and Building Statistics for Europe and North America. The bulletin included data about households by number of persons and m<sup>2</sup> of floor space. Those data have been included to ExpoFacts database, from the last Bulletin, published in year 2000. (UNECE, 2000)

Dwelling stock, total: The dwelling stock includes only conventional (permanent) dwellings, whether occupied or not.

Dwelling stock per 1000 inhabitants: Includes only conventional (permanent) dwellings, whether occupied or not

Dwelling stock with piped water inside the dwelling: Piped water is laid on inside the dwelling and it may be provided either from a community scheme or from a private installation.

Dwelling stock with fixed bath or shower inside the dwelling: Dwelling is counted as equipped with fixed bath or shower if at least one of these types of equipment is installed inside the dwelling.

Dwelling stock connected to a sewerage system: Dwelling having septic tank or connected to a system of collectors, pipelines, conduits and pumps to evacuate

any wastewater to either a municipal sewage treatment plant or to a point where wastewater is discharged into surface water.

Dwelling stock with flush toilet within the dwelling: Dwelling is counted as equipped with flush toilet if at least one of this equipment is installed inside the dwelling.

Dwelling stock equipped with central heating: Dwelling is considered as centrally heated if heating is provided either from a community heating centre or from an installation built in the building or in the dwelling, established for heating purposes, without regard to the source of energy.

Dwellings with a kitchen: A kitchen is defined as a room or part of a room of at least 4 square metres or 2 metres wide that has been designed and equipped for the preparation of the principal meals and is used for that purpose.

Dwelling stock period of construction: Dwellings classified by the period in which the construction of the building containing them was completed.

The Housing and Building Statistics are based on recent statistics received from national statistical offices of ECE member countries through questionnaires. The data definitions used by the UNECE are listed below. The notes provided by UNECE, regarding the country specific exceptions, are listed in table 12.

Households: There are two concepts of household. One is based on the housekeeping unit concept and another on the household dwelling concept.

The housekeeping unit concept specifies a private household as either:  
 a one-person household, i.e. a person who lives alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit but does not join with any of the other occupants of the housing unit to form part of a multi-person household  
 a multi-person household, i.e. a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. The group may pool their income to a greater or lesser extent. The group may be composed of related persons only or unrelated persons or of a combination of both, including boarders and excluding lodgers.

In the household-dwelling concept the private household is equated with the housing unit. It does not provide direct information on the number of housekeeping units sharing house-units.

A dwelling is a room or suite of rooms and its accessories in a permanent building or structurally separated part thereof, which by the way it has been built, rebuilt, converted etc. is intended for private habitation. It should have a separate access to a street (direct or via garden or grounds) or to a common space within the building (staircase, passage, gallery, etc.). Detached rooms for habitation, which are clearly built, rebuilt, converted etc., to be used as a part of the dwelling should be counted as part of the dwelling. (A dwelling may thus be constituted of separate buildings within the same enclosure, provided they are clearly intended for habitation by the same private household, e.g. a room or rooms above a detached garage, occupied by servants or other members of the household.)

A room is defined as a space in dwelling, enclosed by walls, reaching from the floor to the ceiling or roof covering, and of a size large enough to hold a bed for an adult (4 m<sup>2</sup> at least) and at least 2 metres high over the major area of the ceiling. In this category should fall normal bedrooms, dining rooms, living rooms,



habitable attics, servants' rooms and other separate spaces intended for dwelling purposes. Kitchenettes, corridors, verandas, lobbies, etc., as well as bathrooms and toilets, should not be counted as rooms.

Two concepts of floor space of a dwelling are used:

Useful floor space is the floor space of dwelling measured inside the outer walls, excluding cellars, non-habitable attics and, in multi-dwelling houses, common spaces.

Living floor space is the total area of rooms falling under the concept of "room" defined above.

## Quality notes

Table 11. Data quality notes provided in the Human Settlements Database (UNECE, 2004d)

	Table in ExpoFacts db	Notes
AUS	Total dwellings	Occupied dwellings in main residence only
	Dwellings equipment	Occupied dwellings in main residence only
	Dwellings age	Occupied dwellings in main residence only
BUL	Dwellings equipment	Dwellings connected to public or own sewage conduit
CYP	Total dwellings	Data revised following the completion of the 2001 Census of Population
	Dwellings equipment	Data revised following the completion of the 2001 Census of Population
	Dwellings age	Data revised following the completion of the 2001 Census of Population. '1919-1945' is before 1946.
CZE	Dwellings equipment	From sample survey
DEN	Dwellings age	Before 1920; 1920-1939; 1940-1959; 1960-1969; 1970-1979; 1980-1984; 1985-1989
EST	Total dwellings	Data are recalculated based on Population of Housing and Census 2000. The recalculations are preliminary. As at beginning of the year.
	Dwellings equipment	Data are recalculated based on Population of Housing and Census 2000. The recalculations are preliminary. As at beginning of the year.
	Dwellings age	Data are recalculated based on Population of Housing and Census 2000. The recalculations are preliminary. As at beginning of the year.
FRA	Dwellings age	Built periods: Before 1915, 1915-1948, 1949-1967, 1968-1974, 1975-1981, 1982-1989, 1990 and after
GER	Total dwellings	Excluding residential homes. Dwelling units in buildings with housing space.
	Dwellings equipment	Excluding residential homes. Dwelling units in buildings with housing space. All dwellings are equipped with a kitchen or a kitchenette
	Dwellings age	Before 1919; 1919-1948; 1949-1986; 1987 and later
IRE	Dwellings age	Up to 1991: refers to 1919-1960
LAT	Total dwellings	Based on Population and Housing Census 2000 data
	Dwellings equipment	Based on Population and Housing Census 2000 data
	Dwellings age	Based on Population and Housing Census 2000 data
LUX	Total dwellings	Data refer to occupied dwellings only
NED	Dwellings age	Before 1920, 1920-1944, 1945-1959, 1960-1969, 1970-1979, 1980-1984, 1985-1989
NOR	Dwellings age	1919 is before 1929, 1919-1945 is 1920-1945
POL	Total dwellings	Occupied dwellings only
	Dwellings equipment	Occupied dwellings only
	Dwellings age	Occupied dwellings only
ROM	Dwellings equipment	Sewerage system: 3389.86 from a public sewerage disposal plant and 492.22 from a private sewerage disposal
SLN	Dwellings age	1981-1985 is 1981-1990
SPA	Dwellings equipment	Only main dwellings
	Dwellings age	Only main dwellings
UK	Total dwellings	England and Wales: data as at 1st April; Scotland and Northern Ireland: based on 31st December of previous year
	Dwellings age	England and Wales: data as at 1st April; Scotland and Northern Ireland: based on 31st December of previous year

Table 12 lists the data quality notes connected with particular data in the UNECE Housing and Building Statistics. In addition to these, it is stated that there are two concepts of defining a household (the housekeeping unit concept and the household-dwelling concept). Information on the used concept is for most countries not available.

*Table 12. Data quality notes provided in the Housing and Building Statistics (UNECE, 2004c)*

	Table in ExpoFacts db	Notes
BEL	Number of household members by dwelling tenure	Data refer to dwellings and not households
DEN	Househ. by numb. of persons and numb. of rooms	End of the year data
	Number of household members by dwelling tenure	End of the year data
	Floor space of dwellings by number of rooms	Area refer to living floor space
FRA	Househ. by numb. of persons and numb. of rooms	Rooms include only kitchens that are more than 12 m2
GER	Househ. by numb. of persons and numb. of rooms	Data as at 01 Jan 1998
	Number of household members by dwelling tenure	Data as at 01 Jan 1998
IRE	Househ. by numb. of persons and numb. of rooms	Housekeeping unit concept
	Number of household members by dwelling tenure	Housekeeping unit concept
POR	Floor space of dwellings by number of rooms	Area refer to living floor space
ROM	Househ. by numb. of persons and numb. of rooms	'5 rooms' is 5 rooms and more
SLN	Househ. by numb. of persons and numb. of rooms	Data refer to households in conventional dwellings only. The kitchen is not counted as a room.
	Number of household members by dwelling tenure	Data refer to households in conventional dwellings only.
SLV	Househ. by numb. of persons and numb. of rooms	Household-dwelling unit concept
	Number of household members by dwelling tenure	Household-dwelling unit concept. Number of household members: 5 is 5 and more.
UK	Househ. by numb. of persons and numb. of rooms	Data refer to number of persons
	Number of household members by dwelling tenure	Data refer to number of persons

*Table 13. Data quality notes provided in the Bulletin of Housing and Building Statistics for Europe and North America (UNECE, 2000)*

	Table in ExpoFacts db	Notes
AUT	Households by number of persons and m2 of useful floor space	Data refer to the household-dwelling unit concept and main residences only.
CZE	Households by number of persons and m2 of useful floor space	Data refer to the household-dwelling unit concept.
GER	Households by number of persons and m2 of useful floor space	1-1-1998 data
NOR	Households by number of persons and m2 of useful floor space	Data refer to the household-dwelling unit concept.

## 7.2 ECHP

### Sources

The European Community Household Panel (ECHP) is a survey based on a standardised questionnaire that involves annual interviewing of a representative panel of households and individuals in each country, covering a wide range of topics: income, health, education, housing, demographics and employment characteristic, etc. The total duration of the ECHP was 8 years, running from 1994 to 2001. In the first wave, i.e. in 1994, a sample of some 60,500 nationally represented households - i.e. approximately 130,000 adults aged 16 years and over - were interviewed in the then 12 Member States (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal Spain, United Kingdom). Austria (1995) and Finland (1996) joined the project since then. Data for Sweden are available as of 1997, and has been derived from the Swedish Living Conditions Survey and transformed into ECHP format.

Microdata from the ECHP surveys in all Member States of the European Union are stored in a databank of Eurostat, the Statistical Office of the European Communities (EC). The ECHP data are unfortunately not available for public reproduction, like for ExpoFacts. However, Eurostat policies seem to be changing and maybe in even near future the data will be publicly available.

Two publications that are published nationally in the Member States are available with public data from the 1995 and 1996 ECHP waves, published by Pyy-Martikainen M. et al. at Statistics Finland and by Giorgi L. et al at Interdisciplinary Centre for Comparative Research (ICCR), Austria. Housing data from those publications are included in ExpoFacts. (Giorgi et al., 2001; Statistics Finland, 2002a)

### Quality Notes

EC comments on the data quality as follows. "Comparability is achieved through a standardised design and common technical and implementation procedures, with centralized support and co-ordination of the national surveys by Eurostat. The ECHP design has a number of features introduced to enhance cross-national comparability.

- A common survey structure and procedures, in this case annual interviewing of a representative panel using specified follow-up rules etc.
- Common standards, and where possible common arrangements as well, for data processing and statistical analysis, including editing, variable construction, weighting, data adjustment, variance computation etc.
- Common sampling requirements and standards (concerning sample size, probability selection procedures, respondent and call-back rules etc.), coupled with flexibility in the actual designs to suit national conditions.
- A central feature of the project is the use of a common 'blue-print' questionnaire which is to serve as the point of departure for all national surveys."

(European Commission, 2004a)

## 7.3 Ventilation

### Sources

The building ventilation data in ExpoFacts are available from a number of individual studies. The studies cover dwellings, offices, schools, kindergartens and hospitals.

### Quality notes

The Building ventilation studies presented in ExpoFacts database, are not nationally representative and they have been carried out with varying

methodologies and techniques. The Table 14 summarizes some main features of these studies. The original publications should be consulted before using the data and especially before comparing data sets.

*Table 14. A summary of building ventilation studies with data in ExpoFacts database*

Publication	Building type	Building N	Area	Season	Notes
Bluyssen et al., 1995	Offices	56	9 countries, 6-8 buildings per country	Oct-May	Countries used different measurement techniques.
Bremmer, 2000	Dwellings		The Netherlands	All	This is a RIVM summary of available Dutch data. Data for different rooms separately.
Bremmer, 2000	Dwellings		The Netherlands		RIVM set default values for use in the CONSEXPO exposure assessment tool
Nordström et al., 1995	Hospitals	8	Malmöhus county, Sweden	Dec-Feb	Geriatric units of a hospital district.
Ruotsalainen et al. 1992	Dwellings	242	Helsinki Metropolitan area, Finland.	Nov-April	
Sundell et al., 1994	Offices	160	Northern Sweden	Jan-Apr	Sick Building Syndrome study
Swedish Council for Building Research, 1993	Dwellings	110	Representative of all "Temperature zones" (climates) in Sweden		
Teijonsalo et al., 1996	Offices	33	Helsinki Metropolitan area, Finland.		Buildings with mechanical ventilation only
Wålinder et al., 1997	Schools	39	Uppsala county, Sweden	March-May 1993, Jan-March 1995	A study to evaluate the usefulness of acoustic rhinometry to measure human nasal reactions to the indoor environment
Øie et al., 1998	Dwellings	344	Oslo, Norway	Spring, fall, winter	Homes of children with respiratory symptoms.

(Bluyssen et al., 1995; Bremmer and Van Veen, 2000; Nordström et al., 1995; Øie et al., 1998; Ruotsalainen et al., 1992; Sundell et al., 1994; Teijonsalo et al., 1996; The Swedish Council for Building Research, 1993; Wålinder et al., 1997)

## 7.4 Gas cookers

### Sources

The European Community Respiratory Health Survey (ECRHS) has studied, among other things, the association of respiratory symptoms and cooking with gas. For this, they have asked for gas cooker information from their 11 590 study subjects living in 20 centres in 9 European countries. ExpoFacts includes the data regarding the proportion of study population using gas cookers, and the proportion of gas cookers being equipped with an outside venting extractor fan above the stove. (Jarvis et al., 1998)

### Quality notes

The ECRHS study population is, when possible, randomly selected by each study centre from the 20-44 year-old adult populations. The study populations are not nationally representative. (Jarvis et al., 1998)

## 7.5 Other data sources

References and, when available, links to national housing surveys are available in the 'Additional exposure factor references', which can be found in the ExpoFacts Web pages main menu.