

Annex 1 Member States of the WHO European mortality subregions

The 191 WHO Member States have been classified into five mortality strata on the basis of their levels of child mortality (under 5 years of age) and adult mortality (males 15–59 years old), using population estimates for 1999 (UNPD, 1999). Quintiles of the distribution of child mortality (both sexes combined) were used to define a very low child mortality group (1st quintile), a low child mortality group (2nd and 3rd quintiles), and a high child mortality group (4th and 5th quintiles). Adult mortality was regressed on child mortality, and the regression line used to divide countries with high child mortality into high adult mortality (stratum D) and very high adult mortality (stratum E) (WHO-CHOICE, 2003). According to this division, there are three subregions in Europe: EUR A, with very low child, very low adult mortality; EUR B, with low child, low adult mortality; and EUR C, with low child, high adult mortality. Member States included in each subregion are listed in Table A1.1 and shown on a world map (Figure A1.1). The population sizes and mortality rates for infants and children in the Member States are shown in Table A1.2.

Table A1.1 Member States of the three EUR subregions¹

EUR A (very low child, very low adult mortality)	EUR B (low child, low adult mortality)	EUR C (low child, high adult mortality)
ANDORRA	ALBANIA	BELARUS
AUSTRIA	ARMENIA	ESTONIA
BELGIUM	AZERBAIJAN	HUNGARY
CROATIA	BOSNIA AND HERZEGOVINA	KAZAKHSTAN
CZECH REPUBLIC	BULGARIA	LATVIA
DENMARK	GEORGIA	LITHUANIA
FINLAND	KYRGYZSTAN	REPUBLIC OF MOLDOVA
FRANCE	POLAND	RUSSIAN FEDERATION
GERMANY	ROMANIA	UKRAINE
GREECE	SERBIA AND MONTENEGRO	
ICELAND	SLOVAKIA	
IRELAND	TAJIKISTAN	
ISRAEL	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	
ITALY	TURKEY	
LUXEMBOURG	TURKMENISTAN	
MALTA	UZBEKISTAN	
MONACO		
NETHERLANDS		
NORWAY		
PORTUGAL		
SAN MARINO		
SLOVENIA		
SPAIN		
SWEDEN		
SWITZERLAND		
UNITED KINGDOM		

¹ At the time the study was carried out Cyprus was not part of the WHO European Region. For this reason, data from this country was not included in this analysis. World health assembly: (2003): 18-28 May 2003 A56/37 Reassignment of Cyprus from the Eastern Mediterranean Region to the European Region: http://www.who.int/gb/ebwha/pdf_files/WHA56/ea5637.pdf

Figure A1.1 WHO European subregions

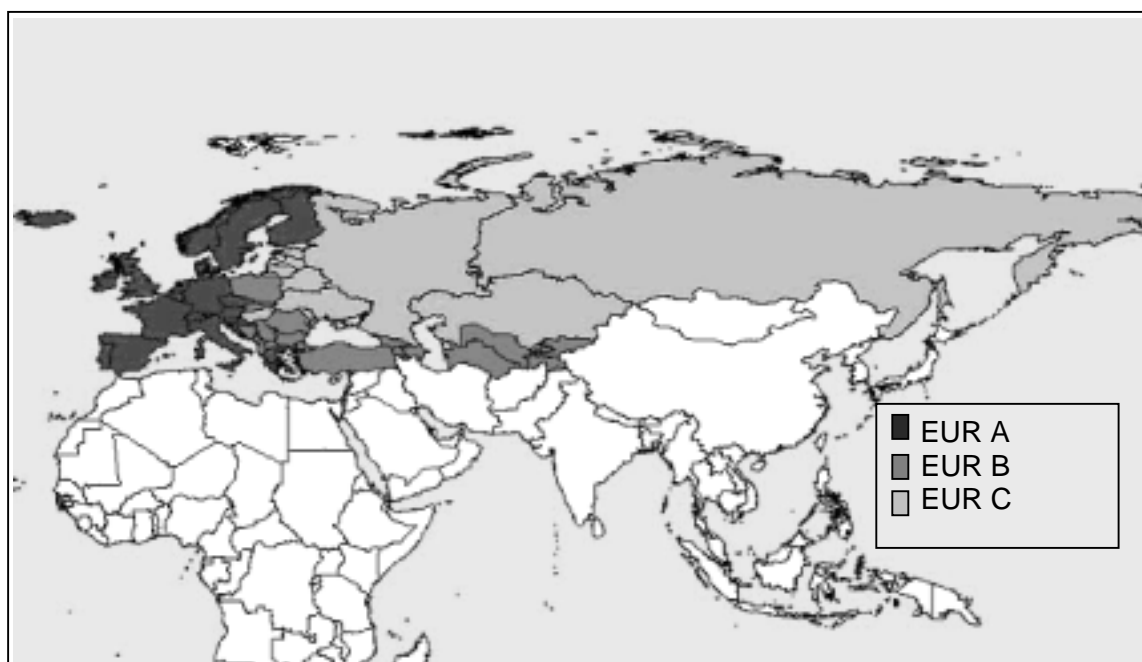


Table A1.2 Population size and mortality rates in infants and children for Member States of the WHO European subregions^a

Country	Population 0–4 years old (thousands)	Population 0–19 years old (thousands)	Infant mortality (Per 1 000 births)	Mortality in children younger than 5 years (per 1 000 births)
EUR A				
Andorra	N/A ^b	N/A	N/A	N/A
Austria	409	1 833	4.7	6
Belgium	568	2 396	4.2	6
Croatia	239	1 069	8.1	9
Czech Republic	452	2 379	5.6	6
Denmark	330	1 249	5.0	6
Finland	295	1 269	4.0	5
France	3 692	1 5067	5.0	6
Germany	3 930	17 529	4.5	6
Greece	516	2 355	6.4	8
Iceland	21	87	3.4	4
Ireland	263	1 164	5.8	7
Israel	615	2 232	5.9	9
Italy	2 627	11 276	5.4	7
Luxembourg	28	107	5.4	7
Malta	24	107	7.1	8
Monaco	N/A	N/A	N/A	N/A
Netherlands	971	3 851	4.5	6
Norway	293	1 149	4.5	6
Portugal	561	2 334	6.1	8
San Marino	N/A	N/A	N/A	N/A
Slovenia	91	457	5.5	7
Spain	1 927	8 565	5.1	7
Sweden	454	2 125	3.4	4
Switzerland	368	1 589	4.8	6
United Kingdom	3 544	14 812	5.4	7
EUR B				
Albania	288	1 199	25.0	34
Armenia	167	1 041	17.3	20
Azerbaijan	714	3 366	29.3	40
Bosnia Herzeg.	205	1 064	13.5	16
Bulgaria	323	1 834	15.2	19
Georgia	299	1 497	17.6	22
Kyrgyzstan	542	2 181	37.0	46
Poland	2 026	10 798	9.1	11
Romania	1 142	5 762	20.0	25
Serbia Monten.	642	2 931	13.0	15
Slovakia	288	1 499	8.0	10
Tajikistan	775	3 064	50.0	73
Macedonia	144	624	16.0	18
Turkey	7 132	28 561	39.5	49
Turkmenistan	508	2 182	48.6	68
Uzbekistan	2 793	11 762	36.7	52
EUR C				
Belarus	436	2 689	11.3	15
Estonia	60	350	9.4	11
Hungary	495	2 345	8.8	11
Kazakhstan	1 193	5 774	51.7	58
Latvia	97	605	14.2	18
Lithuania	186	966	8.7	11
Moldova	250	1 383	18.1	24
Russian Fed.	6 445	38 110	15.9	22
Ukraine	2 186	12 625	13.8	18

^a Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2002 Revision and World Urbanization Prospects: The 2001 Revision. Available at: <http://esa.un.org/unpp>. Accessed 5 September 2003.

^b N/A: data not available.

Annex 2 Strength of evidence for the association between solid-fuel use and health outcomes

The health outcomes assessed in this study were selected on the basis of the strength of the evidence associating SFU with outcome (Smith et al., 2003). Evidence from the epidemiological literature was ranked as strong, moderate, or insufficient, according to the Hill Criteria (Desai, Mehta & Smith, 2003):

- *Strong evidence* indicates that developing country household studies reveal a consistent, sizeable, plausible, and coherent relationship with supporting evidence from studies of outdoor air pollution, active and passive smoking, and laboratory animals.
- *Moderate evidence* indicates a relatively small number of suggestive findings from developing country household studies, and some evidence from studies on outdoor air pollution, smoking, and laboratory animals. Additional studies are needed to strengthen the evidence. Moderate evidence can be further subdivided into:
 - *Moderate-I*, when the evidence associating SFU with a health endpoint is strong for a specific age group or sex.
 - *Moderate-II*, when there is no strong evidence associating SFU with a health endpoint
- *Insufficient evidence* indicates that the evidence for an association between SFU and the health endpoint does not meet the criteria to be included in the Strong or Moderate categories. For example, the evidence for adverse pregnancy as a health outcome falls into this category.

For diseases that affect children, the only health outcomes with Strong or Moderate evidence were ALRI in children younger than 5 years of age (strong evidence), and asthma in children 5–14 years of age (Moderate-II evidence).

Annex 3 Exposure data for household use of solid fuels

Household SFU estimates¹ for countries in the WHO European Region are shown in Table A3.1. Countries listed in normal font indicate that the country estimates are based on extrapolations from fuel use surveys. For these countries, low and high estimates are based on an arbitrary +/- 5% uncertainty range. Countries listed in bold font indicate the estimates are based on the statistical model used in the Global Burden of Disease study. For these countries, low and high estimates are the 95% confidence intervals generated by the model.

Table A3.1 Household solid-fuel use for countries in the WHO European Region

Subregion	Country	Household SFU (%)	Ventilation coefficient ^a	Accounting for ventilation		
				Central estimate (%)	Low estimate (%)	High estimate (%)
EUR A	Croatia	15	0.2	3	0	8
EUR A	Israel	0	1.0	0	0	30
EUR A	Austria	0	1.0	0	0	0
EUR A	Belgium	0	1.0	0	0	0
EUR A	Czech Republic	0	0.2	0	0	0
EUR A	Denmark	0	1.0	0	0	0
EUR A	Finland	0	1.0	0	0	0
EUR A	France (inc. Monaco)	0	1.0	0	0	0
EUR A	Germany	0	1.0	0	0	0
EUR A	Greece	0	1.0	0	0	0
EUR A	Ireland	0	1.0	0	0	0
EUR A	Italy (inc. San Marino)	0	1.0	0	0	0
EUR A	Netherlands	0	1.0	0	0	0
EUR A	Norway	0	1.0	0	0	0
EUR A	Portugal	0	1.0	0	0	0
EUR A	Slovenia	0	0.2	0	0	0
EUR A	Spain	0	1.0	0	0	0
EUR A	Sweden	0	1.0	0	0	0
EUR A	Switzerland (inc. Liecht.)	0	1.0	0	0	0
EUR A	United Kingdom	0	1.0	0	0	0
EUR B	Albania	76	0.2	15	14	17
EUR B	Bosnia and Herzegovina	74	0.2	15	14	16
EUR B	Bulgaria	31	0.2	6	3	9
EUR B	Armenia	66	1.0	66	49	83
EUR B	Azerbaijan	37	1.0	37	15	59
EUR B	Georgia	71	1.0	71	58	84
EUR B	Kyrgyzstan	96	1.0	96	87	100
EUR B	Macedonia	58	0.2	12	9	14
EUR B	Poland	37	0.2	7	5	10
EUR B	Romania	45	0.2	9	7	11

¹ WHO Department of Protection of the Human Environment. Information presented at the *Workshop on Environmental Burden of Disease: Expert network and methods*. Geneva, 17–19 March 2003.

Subregion	Country	Household SFU (%)	Ventilation coefficient ^a	Accounting for ventilation		
				Central estimate (%)	Low estimate (%)	High estimate (%)
EUR B	Slovakia	24	0.2	5	1	8
EUR B	Tajikistan	100	1.0	100	93	100
EUR B	Turkey	11	1.0	11	6	16
EUR B	Turkmenistan	50	1.0	50	33	68
EUR B	Uzbekistan	79	1.0	79	72	85
EUR B	Yugoslavia	69	0.2	14	12	15
EUR C	Belarus	10	0.2	2	0	6
EUR C	Estonia	39	0.2	8	5	11
EUR C	Hungary	26	0.2	5	2	8
EUR C	Kazakhstan	51	1.0	51	42	59
EUR C	Latvia	19	0.2	4	0	7
EUR C	Lithuania	42	0.2	8	6	11
EUR C	Moldova	72	0.2	14	13	16
EUR C	Russian Federation	7	0.2	1	0	6
EUR C	Ukraine	56	0.2	11	9	14

^a The ventilation coefficient accounts for the ventilation in households and should be based on expert opinion. For example, SFU outdoors results in complete ventilation and has a ventilation coefficient of 0; an improved stove programme could result in ventilation coefficient of 0.25; and a poorly ventilated household would have a coefficient of 1.0.

Annex 4 Definition of scenarios and relative risks for water, sanitation and hygiene

Table A4.1 Definition of scenarios for improved water, sanitation and hygiene services^a

Scenario	Definition
VI	No improved water supply and no basic sanitation in a country that is not extensively covered by such services, and where water supply is not routinely controlled.
Vb	Improved water supply and no basic sanitation in a country that is not extensively covered by such services, and where water supply is not routinely controlled.
Va	Basic sanitation, but no improved water supply in a country that is not extensively covered by such services, and where water supply is not routinely controlled.
IV	Improved water supply and basic sanitation in a country that is not extensively covered by such services, and where water supply is not routinely controlled.
IIIc	IV and improved access/quality to drinking-water (generally piped to household).
IIIb	IV and improved personal hygiene.
IIIa	IV and drinking-water disinfected at point of use.
II	Regulated water supply and full sanitation coverage, with partial treatment for sewage, corresponding to a situation typically occurring in developed countries.
I	Ideal situation, no transmission of diarrhoeal disease through water, sanitation or hygiene.

^a Source: Prüss et al. (2002).

Table A4.2 Relative risks for water, sanitation and hygiene scenarios^a

	I	II	IV	Va	Vb	VI
Low estimate	1	2.5	3.85	3.85	4.85	6.1
Best estimate	1	2.5	6.9	6.9	8.7	11.0
High estimate	1	2.5	15.5	15.5	19.5	24.8

^a Source: Tools and information. Presented at the *Workshop on Environmental Burden of Disease: Expert network and methods*. Geneva, 17-19 March 2003.

Annex 5 Discounting and age weighting

Discounting and age weighting account for choices in social values when estimating the burden of disease. Time discounting accounts for the social preference to discount health in the future (i.e. one healthy year of life in the present is valued more than one healthy year of life in the future). In the Global Burden of Disease study (Murray & Lopez, 1996), a 3% time discount rate to years of life lost in the future was used to estimate the present net value of years of life lost. The Global Burden of Disease study also weighted a year of healthy life lived at young ages and older ages lower than for other ages. This choice is based again on the social preference to value a year lived by a young adult more than a year lived by an infant or older person. The need to account for such social preference led to the incorporation of age weighting when calculating DALYs.

Global Burden of Disease 2001 estimates of non-age-weighted DALYs, with and without discounting, are available at the WHO web site:

http://www3.who.int/whosis/menu.cfm?path=whosis_burden_burden_estimates_burden_estimates_2001_burden_estimates_2001_region&language=english.

However, discounted and age-weighted DALYs are the WHO standard. For more information on DALYs and social value choices see Murray & Acharya (1997).