

# Home and leisure injuries-related deaths in an enlarged European Union

## OBJECTIVE

The objective of this monograph is to provide producers and users of death statistics with a practical tool to help study deaths related to **home and leisure injuries**.

## METHODS

Mortality data produced by health authorities of 33 European countries<sup>1</sup> and compiled yearly by Eurostat<sup>2</sup> were used. Depending on their availability, data were used to describe time trends, geographical distributions and demographical risks.

By reviewing the literature, the international forum for mortality specialists<sup>3</sup>, the revision and update process of the International Classification of Diseases (ICD) and the answers of a questionnaire filled in by death statistics producers of 36 European countries<sup>4</sup> in the framework of the ANAMORT project<sup>5</sup>, it has been possible to:

- describe the limits of the observed differences;
- elaborate recommendations for a better use of available data;
- elaborate recommendations for a better production of future data.

## Definition of deaths related to home and leisure injuries

Home and leisure injuries (HLI) are defined as unintentional injuries that are neither related to road traffic accidents nor occupational injuries. Death from home and leisure injuries was considered as any death reported to Eurostat with an underlying cause of death coded V90-V94, V96, V98, V99, W00-W23, W25-W29, W32-W41, W44-W45, W49-W87, X00-X29, X40-X50, X58-X59 (table 1) in the 10<sup>th</sup> revision of ICD (ICD-10). This pragmatic approach is, however, biased by the fact that the present mortality data do not contain enough information on place of occurrence or activity of the victim (see further below).

## Definition of indicators used

The number of deaths for each group of underlying causes of death (UCoD) was the one transmitted by countries' national authorities to Eurostat for a given year. Aggregation of the number of deaths for European Union (EU) was made by Eurostat, using last available data for a given year. Crude death rate (CDR) was obtained by dividing the number of deaths by the last estimate of the population available in Eurostat (for a given age group if age specific crude death rate was computed). Age-standardised death rate (SDR) was computed by direct standardisation, using the 1976 European population. The potential years of life lost before 75 years-old (PYLL75) due to a given cause were calculated for each age group by multiplying the number of deaths related to this cause by the difference between age 75 and the mean age at death in each age group. Potential years of life lost were the sum of the products obtained for each age group. Proportions of PYLL75 were calculated by dividing the PYLL75 due to a given cause by the total amount of PYLL75 due to all causes of death. Due to partial availability of detailed data, indicators were produced for variable groups of countries; estimation of a given indicator was calculated as an average of this indicator at country level weighed by the proportion of its population among the group.

## SITUATION REGARDING DEATHS FROM HOME AND LEISURE INJURIES IN EUROPE

The number of deaths from HLI was available in 26 European countries<sup>6</sup>. In these countries 78,248 deaths from HLI were observed in 2005, which represented 43.7% of deaths due to external causes. SDR for home and leisure injuries was 18.5 for 100,000 inhabitants in 2005, among these 26 countries. Variations between 11.0 and 62.3/100,000/year according to the countries were observed (Figure 1).

1. Included the 25 Member States of the European Union (EU) before 2007, Albania, Bulgaria, Croatia, Iceland, Macedonia (the former Yugoslav Republic of), Norway, Romania and Switzerland. EU15 comprised the following 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom. EU25 comprised EU15 and the following 10 countries: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, and Slovenia.

2. <http://epp.eurostat.ec.europa.eu>.

3. [www.nordclass.uu.se/index\\_e.htm](http://www.nordclass.uu.se/index_e.htm).

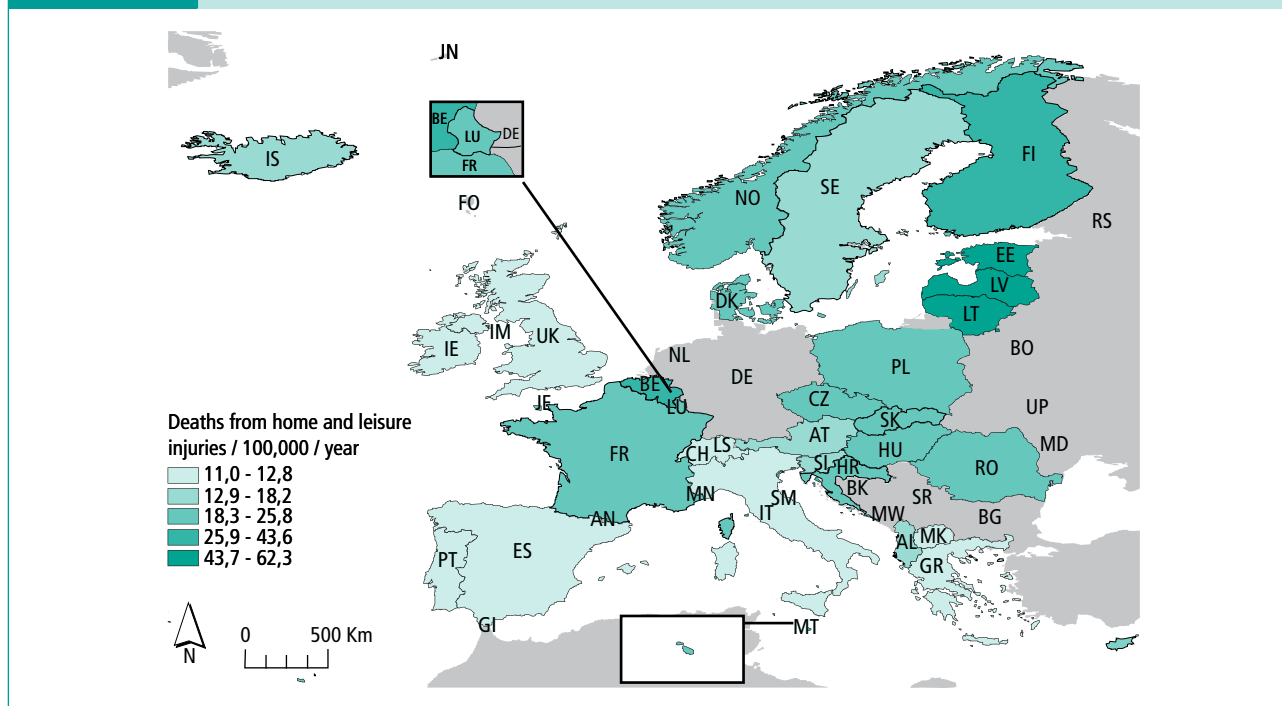
4. 33 above mentioned countries, Bosnia Herzegovina, Serbia and Turkey.

5. [www.invs.sante.fr/surveillance/anamort](http://www.invs.sante.fr/surveillance/anamort).

6. Albania\*; Austria; Croatia; Cyprus; Czech Republic; Estonia; Finland\*; France; Greece; Hungary; Iceland; Ireland; Latvia; Lithuania; Macedonia (the former Yugoslav Republic of); Malta; Norway\*; Poland; Portugal\*; Romania; Slovak Republic; Slovenia; Spain; Sweden; Switzerland; United Kingdom\* (\* data for 2004).

FIGURE 1

## AGE-STANDARDISED MORTALITY RATE BY HOME AND LEISURE INJURIES IN EUROPE IN 2005\*



\* Owing to missing data for 2005, the map included 2004 data for Albania, Finland, Norway, Portugal, United Kingdom, 2003 data for Italy, 2001 data for Denmark, 1999 data for Luxembourg and 1998 data for Belgium.

The eastern part of Europe experienced the highest SDRs by home and leisure injuries with a focus on the Baltic countries (Lithuania, Latvia and Estonia). Finland and Hungary also presented with high SDRs ( $> 25/100,000/\text{year}$ ).

Regardless of age, the CDRs by HLI for men were higher than for women. This tendency was present in all countries. The risk of death by home and leisure injuries was 1.5 times higher among men (average for the same 26 European countries in 2005). The risk of death by HLI increased with age in both genders (Figure 2). Victims were observed among the elderly (65 years-old and more) in 57% of the cases.

The SDR has decreased by 15% between 1994 and 2005 (from 21.0 to 17.8/100 000/year) in the 26 European countries (Figure 3).

Deaths from home and leisure injuries were responsible for 34% of the PYLL75 by external causes of death. The highest impact was among people between 20 and 54 years-old (Figure 4). The distribution by gender of potential years of life lost according to age groups showed two different trends. For the youngest and oldest age groups, women would gain more potential years of life lost than men. For the middle age groups, it would be the opposite.

Among the 26 countries studied, the most frequent categories of HLI were accidental falls (36.4%), accidental poisoning (13.0%), accidental suffocation (11.2%) and accidental drowning (7.9%).

FIGURE 2

## CRUDE RATES OF MORTALITY BY HOME AND LEISURE INJURIES BY GENDER AND AGE GROUP IN 26 EUROPEAN COUNTRIES IN 2005 – LOGARITHMIC SCALE

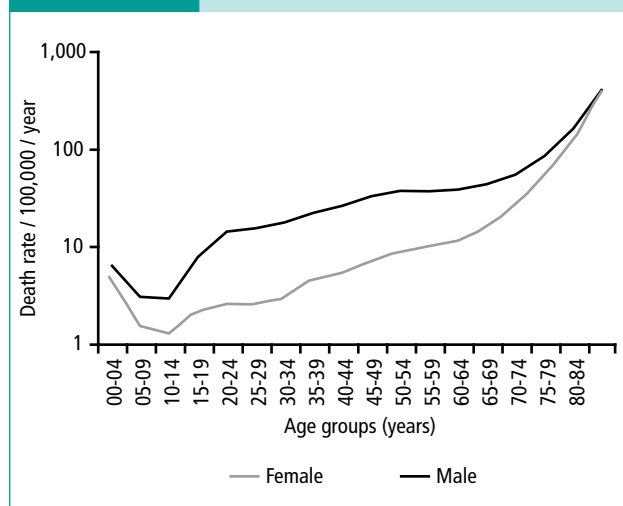
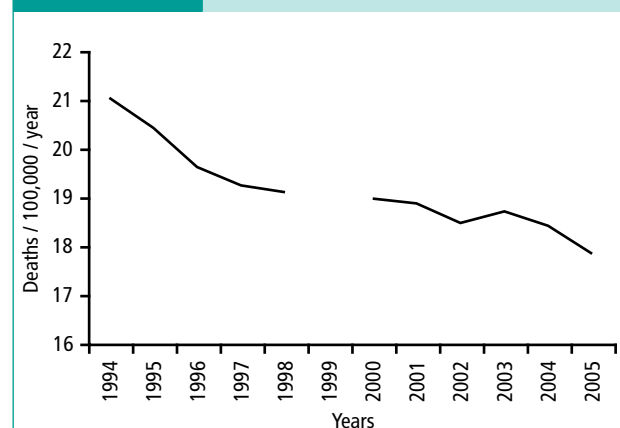


FIGURE 3

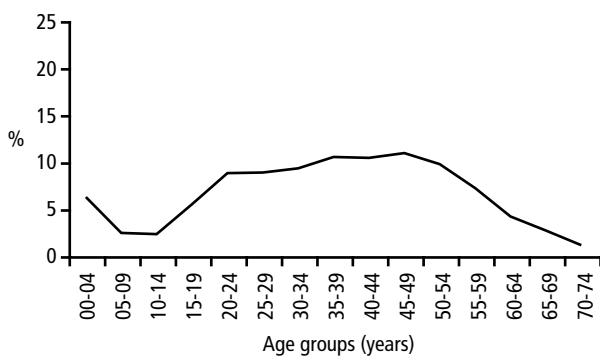
## TRENDS IN AGE STANDARDISED DEATHS BY HOME AND LEISURE INJURIES IN 26 EUROPEAN COUNTRIES



Data missing for 1999

FIGURE 4

#### DISTRIBUTION OF POTENTIAL YEARS OF LIFE LOST BY HOME AND LEISURE INJURIES IN THE 26 EUROPEAN COUNTRIES BY AGE GROUP



### INTERPRETATION AND LIMITS OF OBSERVED DIFFERENCES IN DEATHS BY HOME AND LEISURE INJURIES IN EUROPE

Home and leisure injuries represent a public health priority because it concerns a wide range of injuries where prevention measures are efficient. The categories of UCoDs proposed is the best estimate to be done with mortality data, when there is no information on "place of occurrence" or "activity" of the victim. The most important bias should be due to the inclusion of accidents, which occurred at work. In addition, it is important to note that the category used included accidents related to sports, which are considered not to be included in such category in some countries, in particular when sport is practiced in an association or at professional level.

Misclassifications of deaths from home and leisure injuries due to inappropriate selection of underlying causes of death were described by most of the 36 countries questioned during the Anamort project. As this category gathers various causes of death, it is uneasy to assess the combined effect of these misclassifications. Indeed, there were some underestimation problems due to misclassifications of deaths due to home and leisure injuries in the undetermined intent and unknown causes of death category. But at the opposite, there were some overestimation issues as occupational injuries could be included in the home and leisure injury category, and also, misclassifications of deaths due to suicides in the accidental poisoning category were frequently reported.

As accidental falls, accidental threats to breathing or accidental drowning and submersion represent an important part of home and leisure injuries, some issues have been identified with implementations of new ICD versions, updates and automated coding systems which can lead to misclassifications within the external causes of death chapter.

It was not possible to study the death from HLI in countries which do not transmit their data in ICD codes to Eurostat, even though such analysis could be performed at national level.

### ANALYTICAL RECOMMENDATION TO IMPROVE COMPARABILITY OF TIME TRENDS (FOR STATISTICS USERS)

Transmission of national data to Eurostat should be done in ICD code in order to give the opportunity to ease research on specific topics not included in the Eurostat short list of CoD.

Comparisons with independent data sources other than those based on death certificates, such as insurance companies, road traffic accident, work accident registries or hospital databases could help to get a better coverage of HLI. Systematic investigations and specific studies regarding undetermined, unknown and ill-defined causes of deaths could help measuring the proportion of misclassifications between categories.

### RECOMMENDATIONS TO IMPROVE COMPARABILITY OF FUTURE DATA COLLECTED (FOR DATA PRODUCERS)

Accurate information on the activity of the victim and the place of occurrence at the time of accident should be more systematically collected in the death certificates. This would, in particular, ease the identification of occupational deaths.

It would be useful to include a place for free-text to describe circumstances of the accident in the death certificate.

Guidelines should be available for certifiers with specific emphasis on home and leisure injuries due to the impact on absolute numbers of deaths. The objectives of the guidelines are to:

- identify occupational accidents;
- define place of occurrence;
- describe circumstances, intention, and date of the accident;
- avoid misclassifications (e.g. suicides classified as accidental poisonings).

Additional and more detailed recommendations may be found on [www.invs.sante.fr/surveillance/anamort](http://www.invs.sante.fr/surveillance/anamort).

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TABLE 1		CORRESPONDENCE TABLE DEFINING THE GROUP OF HOME AND LEISURE INJURIES ACCORDING TO REVISION NUMBER OF THE INTERNATIONAL CLASSIFICATION OF DISEASES (ICD)	
ICD-10	Label	ICD-9	ICD-8
V90-V94	Water transport accidents	E830-E838 [.0,.1,.3,.4,.5,.9]	E830-E838 [.0,.1,.3,.4,.5,.9]
V96	Accident to non powered aircraft causing injury to occupant	E842	E842
V98-V99	Other and unspecified transport accidents	E847, E848	///////
W00-W19	Accidental falls	E880-E888	E880-E887
W65-W74	Accidental drowning and submersion	E910	E910
W75-W84	Other accidental threats to breathing	E911-E913	E911-E913
X00-X09	Exposure to smoke, fire and flames	E890-E899	E890-E899
X40-X49	Accidental poisoning by and exposure to noxious substances	E850-E869	E850-E877
X58-X59	Accidental exposure to other and unspecified factors	E928	E928
W00-W19 W65-W74 W75-W84 X00-X09 X40-X49 X58-X59	Accidental falls Accidental drowning and submersion Other accidental threats to breathing Exposure to smoke, fire and flames Accidental poisoning by and exposure to noxious substances Accidental exposure to other and unspecified factors	E880-E888 E910 E911-E913 E890-E899 E850-E869 E928	E880-E887 E910 E911-E913 E890-E899 E850-E877 E928
W20-W23, W25-W29, W32-W41, W44-W45, W49	Selected cases of Exposure to inanimate mechanical forces	E914-E918, E920-E925, E927	E914-E918, E920-E925, E927
W50-W64	Exposure to animate mechanical forces		
W85-W87	Exposure to electric transmission lines or other specified or unspecified electric current		
X10-X19 X20-X29 X50	Contact with heat and hot substances Contact with venomous animals and plants Overexertion and strenuous or repetitive movements		

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