

1 **Falls in older aged adults in 22 European countries: incidence, mortality and**  
2 **burden of disease from 1990 to 2017**

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12

13 **Abstract**

14 **Introduction:** Falls in older age adults are an important public health problem in the Western European  
15 region. Insight into differences in fall rates between countries can serve as important input for  
16 identifying and evaluating prevention strategies. The objectives of this study were to provide an  
17 overview of the Global Burden of Disease (GBD) 2017 figures on mortality, incidence, and DALYs due to  
18 falls in older adults of 22 countries of the Western European region, and to examine changes over a 27  
19 year-period.

20 **Methods:** We performed a secondary database descriptive study using the GBD 2017 results on falls in  
21 older adults aged 70 years and older in 22 countries from 1990 to 2017.

22 **Results:** In 2017 in the Western European region 1380 per 100,000 (uncertainty interval (UI) 11,837-  
23 16,113) older adults sought medical treatment for fall-related injury, ranging from 7,594 per 100,000 (UI  
24 6,326-9,032) in Greece to 19,796 per 100,000 (UI 15,536-24,233) in Norway. Since 1990, falls DALY rates  
25 showed little change for the whole region, but patterns varied widely between countries. Some  
26 countries (e.g. Belgium and Netherlands) have lost their favorable positions due to an increasing fall-  
27 related burden of disease since 1990.

28 **Conclusions:** From 1990 to 2017 there was considerable variation in falls incidence, mortality, DALY  
29 rates and its composites in the 22 countries of the Western European region. It may be useful to assess  
30 which falls prevention measures have been taken in countries that showed continuous low or  
31 decreasing incidence, death and DALY rates despite ageing of the population.

32

33 **Keywords:** Aging, Accidental falls, Global burden of disease, Population Health, Disability-adjusted Life  
34 Years (DALYs)

35 What is already known on this subject:

- 36 • Falls in older age adults are an important public health problem in the Western European region.
- 37 • The Western European region is one of the world regions with the highest falls incidence and  
38 mortality rates in older aged adults.
- 39 • Insight into differences in fall rates between countries can serve as important input for identifying  
40 and evaluating prevention strategies.

41 What this study adds:

- 42 • From 1990 to 2017 disability adjusted life years (DALY) rates due to falls showed little change for the  
43 whole Western European region, but patterns varied widely between countries
- 44 • Years of life lost (YLL) rates decreased significantly, whereas years lived with disability (YLD) rates  
45 showed little change over time, indicating a shift towards YLD as the primary driver of falls DALYs in  
46 older adults.
- 47 • The rate of the shift towards YLD as the primary driver of falls DALYs in older adults varied  
48 tremendously between countries.

49

50 **Introduction**

51 Falls are common and may lead to a large deterioration in health among older adults. The Western  
52 European region is one of the world regions with the highest falls incidence and mortality rates in older  
53 aged adults.(1)

54 Insight into differences in fall rates between countries can serve as important input for identifying  
55 effective prevention strategies. However, inter-country comparisons of fall rates are hampered because  
56 often different methodologies are used to assess fall rates.(2-5) Studies that did use a similar  
57 methodology focused on falls incidence or mortality.(6-9) A major shortcoming of this is that injuries  
58 resulting from falls show great variety in severity and duration and consequently using incidence or  
59 mortality rates only partially gives an indication of the population health impact of falls.

60 A measure that includes mortality and morbidity is the disability-adjusted life year (DALY). The DALY is a  
61 composite measure that aggregates pre-mature mortality and disability into a single metric, thus,  
62 providing a more comprehensive measure of the relative health impact of public health problems  
63 compared to mortality or incidence figures alone.(10)

64 A landmark study that used the DALY is the Global Burden of Disease and Injury (GBD) study. The GBD  
65 study annually quantifies mortality, incidence, prevalence and DALYs for over 300 diseases and causes of  
66 injury of 195 countries and territories using a standardized and systematic approach.(11-16) This  
67 strategy results in internally consistent and comparable estimates, both between populations and over  
68 time.

69 We present the GBD 2017 figures on mortality, incidence, DALYs and its components of falls in adults  
70 aged 70 years and older in 22 countries of the Western European region, and trends between 1990 and  
71 2017.

72

73

74 **Methods**

75 We analyzed levels and trends of incidence, mortality, and DALY and its components years of life lost  
76 (YLL), and years lived with disability (YLD) of falls injury in adults aged 70 years and older in the Western  
77 European region of the GBD 2017 study.(16) The overall GBD 2017 study provided global and regional  
78 estimates for 359 diseases and injuries for 23 age groups, both sexes, and 195 countries and territories  
79 from 1990 to 2017.(16) Detailed descriptions of the methodology and approach of the GBD study and  
80 supplemental information on methods that were used to arrive at the incidence, mortality, YLL, YLD and  
81 DALY estimates have been published elsewhere.(16-18) For the present study, we used the GBD 2017  
82 interactive data visualization tool ‘GBD Compare’ to retrieve the estimates for falls incidence, mortality,  
83 YLLs, YLDs, and DALYs of older adults (GBD 2017 Results. Seattle, United States: Institute for Health  
84 Metrics and Evaluation (IHME), 2017; <http://vizhub.healthdata.org/gbd-compare/>). We used final fits for  
85 each year in the period 1990 to 2017. We compared both total numbers and rates of falls incidence,  
86 mortality, YLD, YLL and DALY by age category (70-74, 75-80, 80-84, 85-90, 90-94 and 95+), by sex, by  
87 country and over time. The 70+ rates by country and by year were age standardized within the 70+ age  
88 group.

89

90 *Western European region - countries*

91 In GBD 2017 Europe is divided into three regions: the Central European region (13 countries), the  
92 Eastern European region (7 countries), and the Western European region (22 countries). The following  
93 countries were included in the Western European region of the GBD: Andorra, Austria, Belgium, Cyprus,  
94 Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, the  
95 Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

96

97

98 *GBD falls injury classification*

99 Injury incidence and mortality data coded according to the International Classification of Diseases, Ninth  
100 Revision (ICD-9), and The International Statistical Classification of Diseases and Related Health Problems,  
101 Tenth Revision (ICD-10) were categorized into mutually exclusive and collectively exhaustive GBD  
102 nature-of-injury categories.(1, 16) The detailed list of ICD-9 and ICD-10 codes was provided  
103 elsewhere.(16-18) Fall injury incidence and death were defined as in ICD-9 codes E880-888 and E929.3  
104 and ICD-10 codes W100-W19. Morbidity analysis was restricted to cases warranting some form of health  
105 care. This includes injury cases of sufficient severity to require inpatient care if there are no restrictions  
106 in access to health care and injury cases of sufficient severity to require health care attention but not  
107 hospitalization.(1) This latter category includes Emergency Department and GP visits.

108

109 *Uncertainty*

110 The GBD estimates have varying degrees of uncertainty in the input data, the data adjustments and the  
111 statistical models used to estimate values for all countries over time. Standard GBD methodology is that  
112 for each component (incidence, mortality, YLD, YLL and DALY), uncertainty from each source is  
113 propagated at the level of 1,000 draws, i.e. all estimates are calculated 1,000 times each time drawing  
114 from distributions.

115

116 **Results**

117 *Mortality and incidence*

118 In 2017 in the Western European region among older adults aged 70+ years the incidence of sustaining  
119 an injury that warranted some form of health care was 11.7 million (uncertainty interval (UI) 10.3-13.2  
120 million), of which 8.4 million (71.9%; UI 7.2-9.8 million) were due to falls. In 2017 54,504 (UI 52,385-  
121 56,650) older adults died due to falls. The incidence rate of falls increased substantially by age, with an

122 incidence rate of 5,667 (UI 3,999-7,625) per 100,000 in age category 70-74 to 47,239 (UI 33,684-63,127)  
123 per 100,000 in age category 95+. For death due to falls this increase was even more pronounced with  
124 death rates ranging from 18 (UI 17-19) per 100,000 in age category 70-74 to 705 (UI 666-748) per  
125 100,000 in age category 95+. The incidence rate of falls was higher in females than in males (females:  
126 16,958 (UI 14,487-19,772) vs. males: 9,596 (UI 8,127-11,311)); however, death rates in older adults were  
127 slightly, but not significantly, higher in males (females: 89 (UI 84-94) vs. males: 91 (UI 86-96)).

128  
129 Incidence rates of falls in older adults varied widely by country, with lowest incidence rates in Greece  
130 (7,594 per 100,000 (UI 6,326-9,032)) and Portugal (8,086 per 100,000 (UI 6,790-9,659)) and highest  
131 incidence rates in Belgium (19,634 per 100,000 (UI 16,497-23,644)) and Norway (19,796 per 100,000 (UI  
132 15,536-24,233)). Death rates were also lowest in Greece (29 per 100,000 (UI 27-31)) and Portugal (36  
133 per 100,000 (UI 33-39)) and highest in Norway (153 per 100,000 (UI 147-159)) and Switzerland (153 per  
134 100,000 (UI 141-166)). The case fatality rate (the death rate/incidence rate) was highest in the  
135 Netherlands (1.1%) and Switzerland (0.8%); twice as high compared to the countries with lowest case  
136 fatality rates (Portugal (0.4%) and Greece (0.4%)). Table 1 shows the incidence and death rates of falls in  
137 older adults by country.

138

### 139 *Burden of disease*

140 In 2017 the total burden of disease due to injuries in older adults in the Western European region was  
141 2.5 million DALYs (UI 2.0-3.0 million), of which 1.4 million DALYs (54.5%; UI 1.1-1.7 million) were due to  
142 falls. YLLs were responsible for 33.5% of falls DALYs (453,213 YLLs (UI 433,949-471,961)) and YLDs for  
143 66.5% of falls DALYs (897,968 YLDs (UI 632,890-1,221,547)). The DALY, YLL and YLD rates increased with  
144 age.

145 Table 2 shows the DALY, YLL and YLD rates per country. DALY rates of falls in older adults were lowest in  
146 Portugal (1,335 DALYs per 100,000 (UI 1,042-1,694) and Greece (1,356 DALYs per 100,000 (UI 1,025-  
147 1,757)) and highest in Norway (3,126 DALYs per 100,000 (UI 2,555-3,796)) and Finland (3,133 per  
148 100,000 (UI 2,533-3,812). The relative contribution of falls DALYs to the total DALYs of all causes in the  
149 population aged 70 and older was highest in Norway (4.1%), Finland (4.1%), France (4.1%) and  
150 Switzerland (4.5%).

151

### 152 *Changes in burden of disease, 1990-2017*

153 The number of DALYs due to falls in older adults increased by 54%, from 837,679 DALYs (UI 693,158-  
154 1,023,106) in 1990 to 1,351,181 DALYs (UI 1,086,838-1,667,340) in 2017. However, the rate of DALYs  
155 due to falls showed little change over time from 2,245 DALYs per 100,000 (UI 1,857-2,741) in 1990 to  
156 2,227 DALYs per 100,000 (UI 1,791-2,568) in 2017. Trends in DALY rates of falls in older adults over the  
157 period from 1990 to 2017 varied widely, from large decreases in Denmark (-42.9%), Switzerland (-24.7%)  
158 and Austria (-21.0%) to large increases in the UK (29.0%), the Netherlands (32.8%) and Belgium (34.0%).  
159 This resulted in countries losing their favorable positions compared to other countries in the Western  
160 European region. Finland stands out because DALY rates of falls in older adults rapidly increased from  
161 1990 to 2005, followed by a decline. A similar, but less pronounced, pattern is seen in Belgium. Denmark  
162 also stands out because fall DALY rates slightly increase between 1990 and 1997, followed by a rapid  
163 decline between 1999 and 2017. Figure 1 shows the DALY rate per country from 1990 to 2017. Table 3  
164 shows the 1990 falls DALY rates and percent of change.

165



166 *Changes in YLD and YLL, 1990-2017*

167 Between 1990 and 2017 falls YLL rates declined significantly by 16.7%, respectively, whereas falls YLD  
168 rates showed a slight increase (not significantly increased by 9.8%), indicating a shift towards YLD as the  
169 primary driver of falls DALYs in older adults. This shift was apparent for most countries, but not at the  
170 same rate. Largest increases in YLD/DALY ratio were found in Ireland (1990: 61% ; 2017: 72%), Italy  
171 (1990: 60%; 2017: 71%) and Denmark (1990: 46%; 2017: 64%). Smallest increases in YLD/DALY ratio  
172 were found in United Kingdom (1990: 67%; 2017: 67%), Spain (1990: 74%; 2017: 74%) and Luxembourg  
173 (1990: 63%; 2017: 64%). In the Netherlands YLD/DALY ratio decreased from 59% in 1990 to 52% in  
174 2017.

175

176 **Discussion**

177 Incidence, mortality and DALY rates of falls in the older adults varied widely by Western European  
178 country. There was a fivefold difference in death rates due to falls between the countries with lowest  
179 and highest falls death rates. For incidence and DALY rates the difference between countries with  
180 highest and lowest rates was twofold.

181 The falls death and incidence rates in older adults from the GBD 2017 study are higher compared to  
182 those reported by previously published studies (2, 3, 8, 19-22). These differences in incidence and  
183 mortality rates may be explained by broader age ranges included in the previously published studies.  
184 Typically, incidence and mortality rates of falls in older adults increases with age and we have restricted  
185 our study to the age category 70 years and older rather than 60 or 65 years and older, which may have  
186 led to higher incidence and mortality rates.

187 A second explanation for the difference in incidence rates may be that a different case definition was  
188 applied. Often studies reported incidence rates of cases admitted to hospital, whereas the GBD analysis  
189 covers cases warranting some form of health care in a system. This includes patients who visited the

190 Emergency Department due to falls. A Belgian study that assessed the incidence of falls in older adults  
191 and that included primary care visits and emergency department reported falls injury incidence rates  
192 similar to the GBD (23).

193 Third, the GBD corrects for ill-defined and unknown causes of death in cause-of-deaths registries (24).  
194 Ill-defined deaths can be subdivided into two categories: general ill-defined and unknown cause death  
195 (e.g. R99 Ill-defined and unknown cause of mortality) and injury ill-defined cause of death (e.g. X59  
196 Exposure to unspecified factor). Both types of ill-defined and unknown causes of death were  
197 proportionally redistributed on all injury codes, including falls (24). For specific nature of injury codes  
198 such as falls redistribution of general ill-defined and unknown deaths leads to a small number of  
199 redistributed deaths and subsequently a small increase in death rates. The second category of ill-defined  
200 and unknown deaths will be redistributed within injury causes only, hence redistribution of this category  
201 of ill-defined and unknown deaths will proportionally lead to a higher increase in fall death rates. The  
202 total increase of fall death rates (and other nature of injury categories) depends on the total percentage  
203 of ill-defined and unknown deaths in cause of death registries and this percentage varies by country and  
204 by year.

205

206 An important finding of this study is that since 1990 DALY rates due to falls showed little change for the  
207 whole region, but patterns varied widely between countries. In Denmark, Switzerland and Austria the  
208 burden of falls injury in older adults decreased substantially, whereas other countries (e.g. the  
209 Netherlands and Belgium) have lost their favorable positions due to an increasing fall-related burden of  
210 disease since 1990. Researchers have identified several main risk factors for falls in the older adults and  
211 the combination of each of these risk factors may vary by country and over time, making it difficult to  
212 unravel which prevention measures have yielded the largest effect (6, 25). Nevertheless, it may be  
213 useful to assess which falls prevention measures have been taken in countries that showed continuous

214 low or decreasing incidence, death and DALY rates despite ageing of the population. If rates of falls in  
215 the elderly can be lowered to those of countries with lowest levels in 2017, potentially 892 DALYs per  
216 100,000 could be averted in the Western European region.

217 A second important finding is that the YLL rates decreased significantly, whereas YLD rates showed little  
218 change over time, indicating a shift towards YLD as the primary driver of falls DALYs in older adults. The  
219 rate of this shift varied tremendously between countries. The shift towards YLD may be the result of  
220 improved access to better quality care after sustaining an injury or by fall prevention measures that  
221 resulted in a reduction of the severity of injury sustained due to a fall. Another explanation may be that  
222 frailty, a major risk factor of falls in older adults, and chronic disease and disabilities occur at higher ages  
223 compared to 1990, resulting in a shift off falls incidence and mortality towards the very old ages (12, 25).

224

#### 225 *Limitations*

226 The death rate estimates in Western European countries were based on complete vital registration  
227 systems; however, nationally representative incidence data on falls were available for five countries only  
228 (Belgium, Finland, the Netherlands, Portugal and Switzerland). Incidence estimates for every Western  
229 European country were made by using statistical models that borrow strength over time and geography,  
230 but these estimates are inherently less precise for countries without national representative incidence  
231 data (26).

232 The European Hospital Morbidity Database was an important data source for the five countries for  
233 which nationally representative injury incidence data was available. However, these data were available  
234 only in tabular form and oftentimes the European Hospital Morbidity Database registered nature of  
235 injury categories as underlying cause of injury, making it impossible to derive incidence by the actual  
236 cause of injury (e.g. falls). The GBD estimates for injuries would be greatly strengthened if hospital data  
237 were made available in microdata form and with multiple diagnosis fields.

238 The Netherlands was the only country that provided Emergency Department data on injuries, but this  
239 information is most probably available for many Western European countries as well. Availability of  
240 cause and nature of injury coded Emergency Department data for other countries will also improve the  
241 GBD injury estimates greatly.

242 Another limitation of this study is that the DALY estimates were based on prevalence based data.  
243 DisMod-MR is used to estimate prevalence from incidence and this process assumes a steady state  
244 where rates are not changing over time. This steady state assumption may lead to inaccurate estimates  
245 of prevalence of long-term disability if there are large trends in incidence rates or mortality.

246

#### 247 *Conclusions and implications for policy*

248 In conclusion, there is considerable variation in incidence, mortality and DALY rates of falls in older  
249 adults in the 22 countries of the Western European region. Since 1990, the burden of disease of falls  
250 showed little change in the whole region, but patterns vary between countries. It may be useful to  
251 assess which falls prevention measures have been taken in countries that showed continuous low or  
252 decreasing incidence, death and DALY rates despite ageing of the population.

253

254 **Conflict of interest:** None declared

255

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258 2017 data. We did not receive funding for this sub-analysis.

259

260

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333

334



## 335 TABLES

336 Table 1. Incidence and death rates of falls in older adults (70+) per 100,000 by country with 95%  
 337 uncertainty intervals, 2017.

Country	Incidence rate (per 100,000)	Rank number incidence rate <sup>&amp;</sup>	Death rate (per 100,000)	Rank number death rate <sup>&amp;</sup>	Percent of total deaths <sup>§</sup>
Andorra	15,556 (12,964-18,709)	7	88.6 (71.8-107.8)	12	1.7%
Austria	14,863 (12,617-17,445)	9	96.8 (89.0-105.1)	10	1.8%
Belgium	19,634 (16,498-23,644)	2	118.4 (108.3-128.9)	6	2.1%
Cyprus	9,964 (8,260-12,017)	19	54.9 (47.3-62.8)	17	1.2%
Denmark	13,620 (11,496-16,188)	13	97.2 (89.7-106.1)	9	1.8%
Finland	18,808 (15,864-22,068)	4	132.5 (123.2-142.6)	5	2.5%
France	17,682 (14,941-20,963)	6	133.5 (122.1-145.4)	4	2.7%
Germany	14,962 (12,556-17,604)	8	95.3 (85.8-105.9)	11	1.6%
Greece	7,594 (6,326-9,032)	22	29.0 (26.7-(31.5))	22	0.5%
Iceland	13,312 (11,266-15,555)	14	87.6 (80.8-95.0)	13	1.7%
Ireland	10,489 (8,826-12,502)	17	54.2 (49.6-59.6)	18	1.1%
Israel	8,811 (7,438-10,453)	20	44.4 (40.5-48.7)	20	0.9%
Italy	12,850 (10,899-15,215)	15	69.0 (63.3-75.2)	16	1.3%
Luxembourg	17,713 (14,791-21,045)	5	113.6 (101.1-127.7)	7	2.0%
Malta	13,654	11	77.2	15	1.5%

	(11,630-16,059)		(70.8-85.0)		
Netherlands	13,623 (11,756-15,894)	12	145.5 (133.8-157.8)	3	2.7%
Norway	19,796 (15,536-24,233)	1	152.6 (146.6-158.8)	2	2.8%
Portugal	8,086 (6,790-9,659)	21	35.9 (32.8-38.9)	21	0.6%
Spain	10,161 (8,571-12,003)	18	50.1 (46.1-54.6)	19	1.0%
Sweden	14,835 (11,751-18,249)	10	103.1 (95.8-110.5)	8	2.0%
Switzerland	19,431 (17,099-22,400)	3	153.2 (141.3-165.9)	1	3.3%
United Kingdom	12,099 (9,814-14,585)	16	78.6 (77.0-80.4)	14	1.4%

338 & Rank numbers based on values from highest (1) to lowest (22)

339 § Percent of total deaths is the relative contribution of falls deaths to the total DALYs of all causes in the  
340 population aged 70 and older.

341

342 Table 2. DALY, YLD and YLL rates of falls in older adults (70+) per 100,000 by country with 95%  
 343 uncertainty intervals, 2017.

Country	YLD rate (per 100,000)	YLL rate (per 100,000)	DALY rate (per 100,000)	Rank number DALY rate <sup>&amp;</sup>	Percent of total DALYs <sup>§</sup>
Andorra	1654 (1167-2237)	710 (575-875)	2363 (1843-2921)	11	3.2%
Austria	1585 (1114-2173)	866 (793-946)	2451 (1971-3038)	9	3.2%
Belgium	2017 (1416-2746)	1006 (918-1095)	3024 (2431-3744)	4	3.7%
Cyprus	1219 (852-1676)	524 (451-603)	1744 (1359-2202)	18	2.3%
Denmark	1381 (983-1889)	782 (715-853)	2162 (1764-2655)	14	2.7%
Finland	1945 (1365-2637)	1189 (1097-1284)	3133 (2533-3812)	1	4.1%
France	1806 (1274-2452)	1006 (915-1098)	2812 (2271-3449)	5	4.1%
Germany	1536 (1073-2091)	850 (761-950)	2386 (1939-2928)	10	2.9%
Greece	1079 (758-1485)	277 (255-302)	1356 (1025-1757)	21	1.7%
Iceland	1457 (1030-1989)	722 (663-785)	2179 (1732-2707)	13	2.9%
Ireland	1260 (892-1721)	492 (445-544)	1752 (1375-2210)	17	2.3%
Israel	1142 (807-1563)	360 (327-395)	1503 (1166-1912)	20	2.1%
Italy	1356 (952-1851)	561 (518-615)	1917 (1514-2392)	16	2.6%
Luxembourg	1709 (1206-2326)	972 (853-1096)	2681 (2171-3277)	6	3.3%

Malta	1511 (1065-2067)	723 (658-794)	2234 (1762-2782)	12	2.8%
Netherlands	1299 (918-1761)	1188 (1097-1282)	2487 (2094-2966)	8	3.1%
Norway	1944 (1369-2608)	1182 (1133-1236)	3126 (2555-3796)	2	4.1%
Portugal	997 (698-1363)	339 (306-369)	1335 (1042-1694)	22	1.7%
Spain	1246 (878-1701)	429 (393-467)	1675 (1303-2127)	19	2.3%
Sweden	1672 (1178-2235)	833 (775-897)	2505 (2004-3071)	7	3.4%
Switzerland	1884 (1331-2535)	1198 (1101-1302)	3082 (2508-3744)	3	4.5%
United Kingdom	1369 (966-1861)	671 (656-688)	2041 (1633-2527)	15	2.5%

344 & Rank numbers based on values from highest (1) to lowest (22)

345 § Percent of total DALYs is the relative contribution of falls DALYs to the total DALYs of all causes in the  
346 population aged 70 and older.

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348

349

350 Table 3. DALY rates and percent of change<sup>§</sup> of falls in the elderly (70+) per 100,000 by country

Country	DALY rate per 100,000 in 1990	Rank number DALY rate 1990 <sup>&amp;</sup>	Percent of change <sup>§</sup> (1990-2017)
Andorra	1,950 (1,511-2,441)	15	21.2%
Austria	3,103 (2,601-3,734)	4	-21.0%
Belgium	2,257 (1,824-2,807)	9	34.0%
Cyprus	1,959 (1,554-2,425)	14	-11.0%
Denmark	3,785 (3,260-4,438)	2	-42.9%
Finland	2,848 (2,364-3,456)	6	10.0%
France	3,326 (2774-4006)	3	-15.5%
Germany	2,328 (1,910-2,848)	8	2.5%
Greece	1,535 (1,205-1,937)	20	-11.7%
Iceland	1,965 (1,584-2,434)	13	10.9%
Ireland	1,755 (1,424-2,170)	17	-0.2%
Israel	1,396 (1,123-1,738)	21	7.6%
Italy	2,183 (1,800-2,668)	10	-12.2%
Luxembourg	2,412 (1,961-2,960)	7	11.1%
Malta	2,119 (1,730-2,568)	11	5.4%

Netherlands	1,872 (1,537-2,274)	16	32.8%
Norway	3,088 (2,566-3,710)	5	1.2%
Portugal	1,578 (1,275-1,958)	19	-15.4%
Spain	1,372 (1,068-1,749)	22	22.1%
Sweden	2,110 (1,724-2,584)	12	18.7%
Switzerland	4,095 (3,451-4,853)	1	-24.7%
United Kingdom	1,582 (1,260-1,979)	18	29.0%

351 & Rank numbers based on values from highest (1) to lowest (22)

352 § The percent of change is the percentage *change* in DALY rate in the period from 1990 to 2017. A  
353 positive percentage of change indicates an increase; a negative annualized percentage of change  
354 indicates a decrease.

355

356 **FIGURES**

357 Figure 1. DALY rate of falls in older adults per 100,000 per country in the period from 1990 to 2017.

358 A: Countries with a decrease of DALY rate between 1990 and 2017

359 B: Countries with an increase of DALY rate between 1990 and 2017