

Cancer incidence and mortality in Europe, 1983–87

Fabio Levi^{1,2,*}, Carlo La Vecchia^{2,3}, Franca Lucchini², Peter Boyle⁴

¹ Registre vaudois des tumeurs, Institut universitaire de Médecine sociale et préventive, Centre Hospitalier Universitaire Vaudois, Lausanne

² Institut universitaire de médecine sociale et préventive, Lausanne

³ Istituto di Ricerche Farmacologiche “Mario Negri”, and Istituto di Biometria e Statistica Medica, Università di Milano, Milano

⁴ Division of Epidemiology and Biostatistics, European Institute of Oncology, Milano

* To whom requests for reprints should be addressed at Registre vaudois des tumeurs, Institut universitaire de médecine sociale et préventive, CHUV-Falaises 1, 1011 Lausanne, Switzerland.

There are several reasons to present an update publication on patterns of cancer incidence and mortality in Europe for the mid 1980's. First, the number of cancer registration areas producing data of sufficient reliability to be included in Cancer Incidence in Five Continents has increased noticeably, from 45 in the Fifth Volume¹ to 67 in the Sixth². These include, among others, several new registries from Eastern Europe, such as Belarus, Latvia and St Petersburg Russia, and several from Southern Europe (Italy, Spain, and France), i.e. from areas less extensively covered by cancer registration in the past. With reference to cancer mortality, a major addition is given by the availability of data from the former Soviet Union.

Second, the availability of incidence and mortality data for the period 1983–87 is not only interesting to provide the most updated available information, but allows also comparative inspection of changes in patterns with respect to previous calendar periods. This is particularly useful for Europe, since lifestyle patterns and exposure to other major recognized risk factors for cancer has considerably changed in various areas of the continent over the last few decades. Further, the availability of both incidence and mortality data for several European countries allows direct comparison of the correspondence and consistency of the two rates.

Therefore, with the major aim of providing summary description and documentation of the overall pattern of cancer incidence and mortality in Europe, and hence a general reference to epidemiologists, health statisticians and clinical oncologists, we present in this report, in graphical form, incidence rates for 30 cancer sites (plus a broadly heterogeneous group of “others and unspecified”) from 64 cancer registries, and mortality rates for 27 cancer sites in 25 European countries plus the former Soviet Union, for the five-year calendar period 1983–1987.

Material and methods

The Sixth Volume of Cancer Incidence in Five Continents² includes data from 69 registration areas from Europe. Of these, two (England and Wales, and Scotland) were summary estimates from several different cancer registries, and were therefore omitted. Also omitted were 3 registries (Portugal Vila Nova de Gaia, Spain Basque Country and Spain Zaragoza) whose presentation was followed by the following statement: “The high proportion of diagnoses based on a death certificate alone indicates that the data may be incomplete”². For other 11 registries, the following cautionary statement was used: “Some of these data may be incomplete as evidenced by the quality indicators or due to the conditions in which the registry operates. Alternatively, the editors consider that comparisons with data from earlier time periods may be misleading”²; these were included in the present report, preceded by an asterisk to indicate a potential limitation of the data. Thus, overall age-standardized (on the world standard population)³ incidence rates were presented for 64 European registries.

Official death certification numbers for 25 European countries plus the former Soviet Union (but excluding Albania and a few small countries, such as Andorra or Liechtenstein), and corresponding population estimates for the calendar period 1983–87 were derived from the World Health Organization (WHO) database.

From the matrices of certified deaths and resident populations, in five-year age groups, age-standardized rates were computed, on the basis of the world standard population³. Classification of cancer deaths was coded, for all calendar periods and countries, according to the Ninth Revision of the International Classification of Diseases (ICD-9) also for countries (e.g., Sweden or Switzerland) where the Eighth Revision was still in use. Table 1 gives the cancers or groups of cancers considered for

incidence and mortality statistics, together with the corresponding ICD codes under the Eighth and Ninth Revisions^{4,5}.

Basal and squamous cell carcinomas were not included in non-melanomatous skin cancer incidence rates from Finland, France Bas-Rhin, France Isère, German Democratic Republic, Iceland, Netherlands Eindhoven, Netherlands Maastricht, Norway and Switzerland Zurich, which therefore included only some rare histotypes, such as sarcomas, skin appendage tumors, etc., whereas basal cell carcinomas only were excluded in Sweden (as indicated by the symbol ¥ on the corresponding histogram). Bladder cancer incidence rates from Denmark, France Doubs, Iceland, Italy Parma, Torino and Varese, Norway, Poland Opole, Sweden, Switzerland Zurich, UK South Thames and UK West Scotland included non-invasive tumours (as indicated by the symbol ¥ on the corresponding histogram). Non-invasive tumours (benign or of unspecified malignancy) were also included in incidence data for brain and nerves from Denmark, France Doubs, German Democratic

Republic, Hungary Vas, Iceland, Italy Latina and Torino, Norway, Poland Warsaw City, Warsaw "Rural", Spain Tarragona, Sweden and UK South Thames (as indicated by the symbol ¥ on the corresponding histogram). Data were missing for selected cancer sites and countries (Table 2).

Presentation of results

For the sake of comparability, the same structure has been maintained as in the previous report⁶. In particular, for each cancer site, incidence and mortality rates are graphically presented in two pairs of histograms, including for each sex incidence and mortality rates respectively.

The same scale is always adopted for both sexes in the same cancer site, in order to offer immediate inter-sex comparison. Further, to provide, as far as possible, uniform interpretation for various cancer sites, a limited number of scales has been adopted (5, 10, 15, 20, 30, 50, 100, 350, 400/100,000 for incidence and 0.5, 5, 10, 15, 20, 25, 30, 50, 100, 200,

Tab. 1. Cancers or groups of cancers considered

Type of cancer	8 I.C.D.	9 I.C.D.	Abbreviation
Mouth or pharynx	140–149	140–149	MPHA
Oesophagus	150	150	OESO
Stomach	151	151	STOM
Colon ^a	153	153	COLO
Rectum ^a	154	154	RECT
Intestines, chiefly colon and rectum	152–154	152–154, 159 ^b	INTE
Liver	155	155.0	LIVE
Gallbladder and bile ducts	156	156	GALL
Pancreas	157	157	PANC
Larynx	161	161	LARY
Trachea, bronchus and lung	162	162	LUNG
Pleura	163.0	163	PLEU
Bone	170	170	BONE
Connective and soft tissue sarcomas	171	171	CONN
Melanoma of the skin ^a	172	172	MELA
Non-melanomatous skin neoplasms ^a	173	173	SKIN
Skin, including melanoma ^c	172–173	172–173	SKIT
Breast (females)	174	174	BREA
Cervix uteri ^a	180	180	CERV
Corpus uteri ^a	182	182	CORP
Uterus (cervix and corpus) ^c	180, 182	179, 180, 182	UTER
Ovary	183	183	OVAR
Prostate	185	185	PROS
Testis	186	186	TEST
Bladder	188	188	BLAD
Kidney and other urinary sites	189	189	KYDN
Eye	190	190	EYE
Brain and nerves, malignant	191–192	191–192	BRAI
Thyroid	193	193	THYR
Hodgkin's disease	201	201	HODG
All other lymphomas	200, 202, 208, 209	200, 202	NHOD
Multiple myeloma	203	203	MMYE
Leukaemias	204–207	204–208	LEUK
Unknown or uncertain primary site ^a	159, 163.9, 195–199	159, 165, 195–199	UNK
Total, all sites, all histologies ^d	140–209	140–208	TOTA

^a Incidence only; ^b Code 159 for mortality only, except USSR; ^c Mortality only; ^d As regards incidence, non-melanomatous skin cancers (ICD-9: 173) were excluded.

Tab. 2. Countries and cancer sites for which calendar periods different from 1983-87 were available for mortality data

COUNTRY	SITE*		LIVE	GALL	PANC	LARY	LUNG	PLEU	BONE	CONN	SKIT	BREA	UTER	OVAR	PROS	TEST	BLAD	KYDN	EYE	BRAI	THYR	HODG	NHOD	MMYE	SITE		COUNTRY
	MPHA	OESO																							STOM	INTE	
AUSTRIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AUSTRIA
BELGIUM	83, 84, 86	-	-	-	-	-	-	-	84, 86	83, 84, 86	84, 86	83, 84, 86	83, 84, 86	84, 86	83, 84, 86	-	-	-	-	83-86	83, 84, 86	-	-	-	-	-	BELGIUM
BULGARIA	-	-	-	84-87	-	-	84-87	-	84-87	-	84-87	84-87	-	N/A	-	-	-	-	84-87	84-87	-	84-87	84-87	-	-	-	BULGARIA
CZECHOSLOVAKIA	-	-	87	85-87	-	-	N/A	-	-	-	-	-	-	83, 87	-	-	-	-	-	-	-	-	-	-	-	-	CZECHOSLOVAKIA
DENMARK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DENMARK
FRG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FRG
FINLAND	-	-	-	-	-	-	-	83, 85-87	-	-	-	-	-	83-86	-	-	-	-	-	-	-	-	-	-	-	-	FINLAND
FRANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FRANCE
GDR	-	-	-	-	-	-	-	-	-	-	-	-	-	83-85	-	-	-	-	-	-	-	-	-	-	-	-	GDR
GREECE	-	-	-	-	-	-	83-85, 87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GREECE
HUNGARY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HUNGARY
ICELAND	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	ICELAND
IRELAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	IRELAND
ITALY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ITALY
LUXEMBOURG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LUXEMBOURG
MALTA	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	86-87	MALTA
NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NETHERLANDS
NORTHERN IRELAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NORTHERN IRELAND
NORWAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NORWAY
POLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A	-	-	-	-	-	-	-	-	-	-	-	-	POLAND
PORTUGAL	-	-	-	84-87	-	-	84-87	-	84-87	-	84-87	84-87	-	84-87	-	-	-	-	84-87	84-87	-	84-87	84-87	-	-	-	PORTUGAL
ROMANIA	83-84	-	-	N/A	83-84	-	N/A	83-84	83-84	N/A	83-84	83-84	-	N/A	83-84	83-84	-	-	N/A	N/A	N/A	83-84	N/A	N/A	83-84	83-84	ROMANIA
SCOTLAND	-	-	-	-	-	-	-	-	-	3-86	83-86	83-86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SCOTLAND
SPAIN	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	83-86	SPAIN
SWEDEN	-	-	-	-	-	-	-	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SWEDEN
SWITZERLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SWITZERLAND
UK, ENGLAND & WALES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UK, ENGLAND & WALES
USSR	86-87	86-87	86-87	N/A	N/A	N/A	86-87	N/A	N/A	N/A	N/A	N/A	86-87	N/A	86-87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	86-87	86-87	USSR

N/A = not available

* See text Table 1 for abbreviations of cancer sites.

Tab. 3. Annual population in European cancer registry regions (1983–87)*

Cancer registry region	Males	Females
BELARUS	4,625,257	5,289,505
CZECH., BOHEMIA & MORAVIA	5,018,448	5,320,630
CZECH., SLOVAKIA	2,530,333	2,629,157
DENMARK	2,521,241	2,596,193
ESTONIA	711,642	817,953
FINLAND (1982–86)*	2,366,560	2,522,880
FRG, SAARLAND	499,942	550,792
FRANCE, BAS-RHIN	453,717	477,570
FRANCE, CALVADOS	293,928	314,623
FRANCE, DOUBS	236,569	242,710
FRANCE, ISERE	479,747	491,722
FRANCE, SOMME (1983–84)	266,644	278,654
FRANCE, TARN	167,744	176,220
GERMAN DEMOCRATIC REPUBLIC	7,879,800	8,776,063
HUNGARY, SZABOLCS	300,373	309,649
HUNGARY, VAS	136,165	143,355
ICELAND	121,389	120,032
IRELAND, SOUTHERN (1983–86)	268,597	264,791
ITALY, FLORENCE (1985–87)	564,580	609,541
ITALY, GENOA (1986–87)	342,735	381,849
ITALY, LATINA (1983–85)	221,489	226,282
ITALY, PARMA	190,559	204,623
ITALY, RAGUSA	139,445	145,783
ITALY, ROMAGNA (1986–87)	209,339	223,115
ITALY, TORINO (1985–87)	495,418	538,499
ITALY, TRIESTE (1984–85)	128,848	148,711
ITALY, VARESE	380,765	410,622
LATVIA	1,209,764	1,401,343
NETHERLANDS, EINDHOVEN	428,037	421,524
NETHERLANDS, MAASTRICHT (1986–87)	415,087	422,239
NORWAY	2,058,324	2,104,017
POLAND, CRACOW CITY (1983–86)	351,202	388,673
POLAND, LOWER SILESIA (1984–87)	781,850	821,246
POLAND, NOWY SACZ (1983–86)	211,531	215,563
POLAND, OPOLE (1985–87)	496,275	522,570
POLAND, WARSAW CITY	754,826	871,228
POLAND, WARSAW "RURAL"	297,397	304,587
ROMANIA, COUNTY CLUJ	366,934	374,865
RUSSIA, ST PETERSBURG	2,157,602	2,686,920
SLOVENIA (1982–87)	949,768	1,007,585
SPAIN, GRANADA (1985–87)	376,331	391,415
SPAIN, MURCIA (1984–87)	492,961	508,389
SPAIN, NAVARRA (1983–86)	254,786	257,726
SPAIN, TARRAGONA (1984–87)	259,609	264,274
SWEDEN	4,130,780	4,234,606
SWITZERLAND, BASEL	204,045	219,830
SWITZERLAND, GENEVA	174,754	195,033
SWITZERLAND, NEUCHATEL	74,224	80,573
SWITZERLAND, ST GALL-APPENZEL	227,211	235,030
SWITZERLAND, VAUD	255,549	277,933
SWITZERLAND, ZURICH	547,626	581,046
UK, BIRMINGHAM (1983–86)	2,556,200	2,626,800
UK, MERSEY	1,173,200	1,250,200
UK, NORTH WESTERN	1,939,720	2,055,540
UK, OXFORD	1,212,200	1,225,100
UK, SOUTH THAMES	3,157,900	3,406,000
UK, SOUTH WESTERN	1,520,600	1,629,600
UK, TRENT	2,273,300	2,351,300
UK, EAST SCOTLAND	188,384	205,564
UK, NORTH SCOTLAND	112,938	117,130
UK, N.E. SCOTLAND	265,741	276,420
UK, S.E. SCOTLAND	572,622	616,972
UK, WEST SCOTLAND	1,339,237	1,438,125
UK, YORKSHIRE	1,752,014	1,818,269

* Calendar periods different from 1983–87 for which incidence data were available are given in parentheses.

Tab. 4. Average annual population ($\times 100$) in various European countries (1983–87)

Country	Males	Females
AUSTRIA	35 833	39 743
BELGIUM	48 122	50 467
BULGARIA	44 526	45 063
CZECHOSLOVAKIA	75 478	79 507
DENMARK	25 188	25 949
GERMANY, FRG	291 811	318 429
FINLAND	23 735	25 287
FRANCE	269 002	287 702
GERMANY, GDR	78 701	87 742
GREECE	48 869	50 474
HUNGARY	51 437	55 050
ICELAND	1 214	1 200
IRELAND	17 710	17 690
ITALY	277 662	293 753
LUXEMBOURG	1 780	1 881
MALTA	1 629	1 718
NETHERLANDS	71 671	73 246
NORWAY	20 533	20 993
POLAND	181 438	190 592
PORTUGAL	43 018	52 552
ROMANIA	112 143	115 105
SPAIN	189 113	195 935
SWEDEN	41 238	42 266
SWITZERLAND	31 528	33 175
UK, ENGLAND AND WALES	243 300	255 935
UK, NORTHERN IRELAND	7 633	7 945
UK, SCOTLAND	24 805	26 561
USSR	1 315 860	1 470 320

250/100,000 for mortality). A table of sex ratios for each registry or country, ranked from highest to lowest, is given. Finally, a brief comment for each cancer site is included.

A few introductory tables are given including separately:

1. List of sites, corresponding ICD codes in the 8th and 9th Revisions, and abbreviations used (Table 1).
2. List of countries for which information on specific cancer sites were missing in selected years (Table 2).
3. Total population for each registry (Table 3) or country (Table 4). This can be of some help to derive, in first approximation, standard errors of rates based on the Poisson distribution⁷.

General comment

This report has essentially a descriptive value, and is therefore not primarily intended to draw inferences or provide interpretations. A few general comments are nonetheless worth making for assisting data interpretation. First, problems related to random variability should be considered, and are clearly greater in relation to smaller populations and rarer cancers. Second, and more complex, there are problems of incidence registration and death certification reliability in various registries and

countries. For incidence data, a useful indication is given by the asterisk to indicate registries data which should be considered with particular caution. With reference to mortality, in general, for several common cancer sites including lung, stomach, colorectum and breast, death certification is sufficiently reliable and comparable to permit meaningful inference for most European countries. Greater caution is required for a few countries and cancer sites whose diagnosis and certification may be largely influenced by the availability of diagnostic techniques and the accuracy of registration^{8–10}. These cancers include, among others, liver, bone, prostate, brain, myeloma and other lymphohaemopoietic neoplasms.

With these background considerations and cautions in mind, a few main features of European cancer rates are worth discussion, including the general consistency between incidence and mortality rates for several areas, which give a *posteriori* indication of the acceptable validity and reliability of cancer statistics in Europe. Finally, with a few exceptions, the variation of cancer incidence and mortality rates across various European countries remain substantial, although the slope of the distribution is often different for different cancer sites. For some sites (such as intestines, lung or breast), in fact, this variation was approximately linear, whereas for others such as oral cavity, oesophagus, stomach, pleura or thyroid) there are a few outliers whose rates were exceedingly high.

Mouth or pharynx. Among males, the range of variation for incidence was over a factor 10, the highest rate (55.3/100,000) being in France Bas-Rhin, followed by Calvados (46.7/100,000) and other French registries, Slovenia and Switzerland Geneva, Slovakia, Hungary, and several Spanish registries. The lowest rates, around 5/100,000, were in Britain, followed by several Nordic countries. Incidence was much lower in females, and the geographical distribution was different: the highest rate was in North-East Scotland (6.6/100,000), followed by Hungary Vas, the French-speaking part of Switzerland and Genoa Italy. The lowest rates (i.e., between 1.1 and 2.0/100,000) were in Spain, Southern Italy and Eastern Europe. Thus, the sex ratio was between 10 and 18 in France and Spain, but only 2–2.5 in Britain.

The substantial excess in oral cancer rates in French males is observed also in mortality (age-standardized rate of 15.1/100,000), followed by Hungary (11.1/100,000). These two countries were outliers with respect to all others, starting from Czechoslovakia (7.2/100,000), Switzerland (6.8) and Italy (6.6). The lowest mortality rates for males were in Greece (1.8/100,000), Nordic countries, and the United Kingdom (from 2 to 3/100,000). As for incidence, the rates were much lower and the distribution was different for mortality in females, since all rates ranged between 1.5 and 0.6/100,000. The highest rate was not in France but in Ireland, followed by Hungary and Scotland. The lowest rate was again in Greece, but was preceded by some southern and eastern European countries.

Oesophagus. The highest incidence rates of oesophageal cancer in males, as for oral and pharyngeal cancer, were in France, with a value of 26.5/100,000 males in Calvados, followed by Somme and several other French registries. High rates were also reported from St Petersburg Russia and, in contrast with oral cancer, from Scotland. The lowest rates, between 1.6 and 3/100,000, were from Southern and Central Italy, Nordic countries and some central European registration areas.

For females, all high incidence areas were from Britain (plus St Petersburg), with rates between 3 and 4.9/100,000, followed by some Nordic countries, Switzerland and France. Most other cancer registration areas had rates below 1/100,000 females, the lowest rates being from Southern Italy, Spain and Central Europe. Thus, the sex ratios ranged between 15–20 in France and 1.1–2 in most British registries.

The highest oesophageal cancer mortality rate for males was in France (12.4/100,000), followed by Scotland (8.9) and the former Soviet Union (8.4). The lowest rates were in Bulgaria (1.4/100,000 males), Romania, Greece and Nordic countries. Among females, as for incidence, outliers with high

rates for oesophageal cancer mortality were the United Kingdom (mainly Scotland, with a rate of 4.0/100,000) and Ireland (3.7), followed by England and Wales (3.0), Northern Ireland (1.9), the former Soviet Union (2.3/100,000), Finland (1.9) and Iceland (1.7). France had an intermediate rate (1.0/100,000). The lowest mortality rates for females were in Bulgaria (0.4), Romania (0.4), Austria (0.5) and other central and eastern European countries. It is difficult to assess whether these low rates in Eastern Europe are real, or at least in part influenced by misclassification with cancers arising from the cardiac region of the stomach, since gastric cancer is very common in these areas.

Stomach. In both sexes, the highest incidence rates were from St Petersburg Russia (52.8/100,000 males; 25.3/100,000 females), and in other areas of the former Soviet Union (Belarus, Estonia, Latvia), but also in Central Italy (Florence, Parma and Romagna). Poland and other eastern European countries had also high rates in both sexes. The lowest rates (between 8 and 15/100,000 males and between 4 and 8/100,000 females) were in France, Switzerland, Nordic countries and the United Kingdom.

Mortality rates on a national level showed a gross excess in the former Soviet Union for both sexes, too (38.8/100,000 males; 16.5/100,000 females), followed by several eastern European countries, and Portugal. Italy had intermediate rates on a national level (due to low rates in the South of the country), while the lowest values (around 10/100,000 males and 5/100,000 females) were from Denmark, Sweden, France, Greece and Switzerland. The sex ratios, both for incidence and mortality, ranged between 1.6 and 3.5.

Intestines, chiefly colon and rectum. On account of greater reliability of cancer registration statistics, the distinction between colon and rectal cancer was maintained for incidence rates, but all intestinal sites, including colon, rectum, the small portion of intestines, and intestinal sites of origin unspecified, had to be grouped together for mortality¹¹. The highest incidence rates for colon cancer in males were in Trieste Italy (31.4/100,000), Bas-Rhin France, Geneva Switzerland, followed by registration areas in Scotland and The Netherlands. For females, a cluster of high registration areas was observed in Scotland, followed by other northern European countries. In both sexes, low rates (i.e. between 4 and 10/100,000) were registered in Poland, and other eastern and southern European registries. The range of variation was somewhat smaller for rectal cancer, with the highest rates (over 20/100,000 males and over 10/100,000 females) in Central Europe (Bohemia and Moravia, Hungary) and lowest ones (below 10/100,000 males, around

5/100,000 females) in Spain, Poland, Romania and Southern Italy.

When all colorectal cancer incidence was considered together, the highest rates for males were in Trieste Italy (52.1/100,000), Bas-Rhin France (48.3), Bohemia and Moravia (43.9), followed by several registration areas in Germany, The Netherlands, Switzerland, Scotland and Northern and Central Italy. The lowest rates for males (below 20/100,000) were in Poland, Latvia, Belarus, Southern Italy and Spain. Northern Scotland had the highest registration rate of all colorectal cancers for females (31.8/100,000), followed by Denmark (30.7), Saarland Germany (29.9), and other Scottish areas. The lowest rates, below 15/100,000, were in Poland and other areas mentioned for males.

There was some difference between males and females for mortality. In males, in fact, the highest mortality was in Czechoslovakia (29.4/100,000), followed by Hungary, Luxembourg and Ireland, while in females Ireland had the highest rate (18.7/100,000), followed by Hungary and Denmark. In both sexes, the lowest colorectal cancer mortality rates were in Romania, Greece, Finland, Spain, and Iceland, but also Poland. The low Polish rates in both sexes, as contrasted with the elevated ones in the nearby countries Czechoslovakia and Hungary, were noticeable, and may offer interesting clues for further investigation. The range of variation for mortality was over a factor 4 for males and 3 for females, and the sex ratios ranged between 1.2 and 2.1 for incidence, and between 1.1 and 1.7 for mortality.

Liver. Incidence and, even more, mortality rates from liver cancer should be interpreted with utmost caution, since this is one of the most common sites of secondaries⁸. It is difficult, therefore, to assess how much of the high incidence rates in Northern Italy, Geneva Switzerland, but also several cancer registration areas from France and Spain in males and Poland and Romania in females, are real, rather than due to problems or different accuracy in ascertainment and diagnosis of primary liver cancer.

These problems are also reflected in the high mortality rates in both sexes from Bulgaria, Hungary, Poland and Italy. Low incidence and mortality rates from liver cancer were registered for both sexes in Britain and other northern European countries, but also in Portugal and Greece. France tended to have high rates for males, but not for females. Alcohol consumption in males is high in France and Italy, and hepatitis B serum positivity is high in Italy, too¹². Thus, the pattern observed is, at least in part, in agreement with a role of main recognized risk factors for liver cancer (alcohol drinking and hepatitis B infection¹³) on incidence and mortality rates.

Gallbladder and bile ducts. Together with thyroid cancer, this is one of the two non sex-related

neoplasms whose rates are, in most areas, higher in females than in males¹⁴. Thus, most sex ratios for incidence and mortality were below unity. Both incidence and mortality rates were high in Central Europe (Hungary, Poland, Czechoslovakia, the former Eastern Germany and Austria), followed by Sweden, Finland, the Federal Republic of Germany, and Italy. Of particular interest were the low incidence and mortality rates in Britain, in both sexes, which are difficult to explain both in terms of cholecystectomy rates and of potential dietary correlates¹⁵. Certified mortality rates were also low in Sweden, Greece, Bulgaria and Portugal, although the reliability of some of these values may be open to discussion, since gallbladder neoplasms may pose difficulties in diagnosis and certification.

Pancreas. This is another neoplasm showing high incidence rates for males in several central and eastern European registration areas (Bohemia and Moravia, 11.7/100,000; Latvia, 11.2; St Petersburg Russia and Estonia, 10.2), and also in Trieste (10.4) and Parma (10.1), Northern Italy, and in Finland (10.1). Low rates for males, between 3 and 5/100,000, were in France, Spain and Southern Italy. While the same areas had also low rates for females (i.e., between 1.5 and 3/100,000), the highest rates for females (6–7/100,000) were in Scandinavian countries, besides Trieste, Northern Italy, Scotland, St Gall Switzerland, and Bohemia and Moravia.

This pattern is well reflected in mortality rates, with high values in Czechoslovakia (10.0) Hungary and Finland (9.8) for males, followed by Iceland (9.6), and in Nordic countries for females (Iceland, 7.8; Denmark, 6.9; Sweden, 6.6; Finland, 6.3), followed by Austria (5.9), Hungary (5.8), and Scotland (5.5). The lowest rates (around or under 3.0/100,000) for both sexes were in Spain, Portugal, Romania and Greece. Some of these geographical variations can be explained by tobacco, the main recognized risk factor for pancreatic cancer. A role of diet has also been suggested, but is still poorly defined¹⁶.

Larynx. This is the non sex-related site with the largest ratio between males and females¹⁴, which is, for most registration areas and countries, around a factor 10, possibly also reflecting anatomic differences of the larynx in the two sexes. The sex ratio for incidence was over 80 in two Spanish registries (Navarra and Granada) and, for mortality, reached 36 in Spain, and was over 20 in Czechoslovakia, France, the former German Democratic Republic, Soviet Union and Italy. Only in Britain and Iceland the sex ratios were below 8 for incidence and 6 for mortality. The highest incidence rates in males were in Navarra Spain (17.8/100,000), Somme France (17.5), followed by Granada Spain (16.2), Trieste Italy (15.9), and Lower Silesia Poland (15.3). Other high incidence areas were in Spain, Poland, Northern Italy, Hungary and France. The lowest in-

incidence areas (below 4/100,000 males) were in the UK, Norway, Iceland and Sweden. Rates were much lower in females, but the geographical distribution of incidence was different, since high values (around or over 1/100,000) were registered from Scotland and Poland, but several Spanish registries were in the lowest part of the distribution, together with Nordic and some eastern European countries. The highest mortality rate on a national level for males was in France (9.5/100,000), followed by Spain and Hungary (7.3), and Poland (7.0). The lowest (below 2/100,000) certified mortality in males was from Scandinavian countries, Britain and The Netherlands. Among females, Hungary had a rate of 0.6/100,000, followed by Poland and Ireland (0.5). France had intermediate rates (0.4/100,000), and Spain only 0.2/100,000. The lowest rates (0.1–0.2/100,000) were in Scandinavia and Germany.

Trachea, Bronchus and Lung. In both sexes, the highest incidence rate was in West Scotland (97.2/100,000 males; 33.6/100,000 females). Other high incidence rates for males were from Lower Silesia Poland (88.4), Eindhoven The Netherlands (87.2), and Trieste Italy (86.8). Incidence was high also in Bohemia and Moravia, other British, North Italian and Dutch registration areas, as well as in St Petersburg Russia. The lowest lung cancer incidence rate for males was in Sweden (25.2/100,000), followed by Norway (33.9), and Iceland (35.4). Southern Italy, Spain, France and Romania tended also to have low lung cancer incidence for males.

Among females, all the high incidence areas were in Britain (between 25 and 34/100,000), although Iceland (25.9) and Denmark (23.1) were in the upper part of the distribution, too. Registered incidence was low in Spain, Southern Italy and France.

With reference to mortality, the highest rate in males was in Belgium (79.0/100,000), followed by Scotland (78.5) and The Netherlands (76.3). Several eastern European countries, England and Wales and the former Soviet Union had also lung cancer mortality above 60/100,000. Intermediate mortality was observed in Germany, Switzerland, Austria and France. The lowest rates for males were in Portugal (23.5/100,000), Sweden (24.2) and Iceland (26.2). Among females, Scotland had by far the highest lung cancer mortality in Europe (26.3/100,000), followed by Denmark (20.7), England and Wales (19.3), and Iceland (19.2). Scandinavian countries had intermediate values (8–9/100,000), while the lowest cancer mortality in females (below 5/100,000) was observed in France, Portugal and Spain. The sex ratios, both for incidence and mortality, were highest in Spain, Belgium and France, and lowest in Britain and Scandinavia. These figures essentially reflect the different spreading of the tobacco-related lung cancer epidemic for

both sexes in various European countries, and the subsequent adoption of measures for tobacco control¹⁷.

Pleura. There are major problems in the certification of pleural mesothelioma, which may be frequently misclassified with the much more frequent lung cancer. Still, the pattern of certified incidence, with exceedingly high rates around the Italian harbours of Trieste (4.7/100,000 males) and Genoa (3.9/100,000), is consistent with the established epidemiology of the disease, which is strongly linked with exposure to asbestos¹⁸. The highest mortality for males was in The Netherlands (1.9/100,000), followed by Northern Ireland and France. Rates were much lower in females, and the pattern was therefore less clear. Nonetheless, a substantial excess incidence in Trieste and Genoa, Italy, was evident in females, too. With respect to mortality, the highest rates for females were in Italy, Germany and France.

Bone. This is another common site of secondaries, and hence its rates – particularly for mortality – are difficult to interpret⁸. Some of the high mortality rates (from Greece, Romania, Poland) may therefore simply reflect relatively unreliable cancer death certification in these countries. Low mortality areas were in Britain, Nordic countries, Switzerland and The Netherlands. The variation was relatively limited with reference to bone cancer incidence registration, except for a few outliers, such as Lower Silesia Poland, with high rates, or Trieste Italy, with very low values. Also bone cancer incidence rates, however, may, partly or largely, reflect different levels of accuracy in registration in various areas, including variations in autopsy rates.

Connective and soft tissue sarcomas. This is a rare group of neoplasms, which pose considerable problems of diagnosis and certification. Thus, due caution should be given to the interpretation of patterns of rates, particularly for death certification. The highest incidence rates were in Italy and Switzerland for males, Switzerland and some Nordic countries for females. The variation for incidence, however, was relatively limited, and the pattern was not totally consistent. For mortality, most countries had rates between 0.6 and 1.0/100,000 males and between 0.4 and 0.8/100,000 females. Outliers were Iceland (1.5/100,000 in both sexes, although based on small numbers), and the low rates in both sexes in Belgium, Bulgaria, Greece and Italy.

Skin (melanoma and non-melanomatous). For incidence, we decided, for the sake of completeness, to present both melanoma and non-melanomatous skin cancer. The latter, however, essentially reflects the different criteria (i.e., inclusion or exclusion of

basal cell cancers) and the accuracy of registration for non-melanomatous skin cancer, which only can explain a 30-fold difference between Geneva or Basel and Zurich, Switzerland. For melanoma, the highest incidence rates were in Norway for both sexes (10.5/100,000 males; 13.5/100,000 females), followed by several Swiss registries, Sweden, Denmark, Finland and Trieste Italy. The lowest ones were in Poland, other Eastern European countries, Southern Italy, Spain and some French registries. The overall range of variation approached a factor 10 in both sexes, and in most registries incidence rates were higher in females than in males (i.e., most sex ratios were below unity).

Mortality from all skin cancers, in contrast, was higher for males than for females in all countries (except Iceland and Malta), with a range of sex ratios between 0.9 and 2.1 (Spain). The highest rates for both sexes were in Norway and Switzerland (3.8/100,000 males, 2.3/100,000 females), followed by Denmark, Czechoslovakia and other Northern and Central European countries. The lowest rates were in Portugal for both sexes (1.0/100,000 males, 0.7/100,000 females), Greece, Belgium, France, Iceland and Bulgaria. Thus, within Europe, the phenotypic characteristics of the populations appear to be the main determinant of skin melanoma incidence and overall skin cancer mortality¹⁹, since high rates were generally observed in the North of the continent and low areas tended to be in Southern Europe.

Breast. The highest breast cancer incidence rates (between 68 and 73/100,000) were in French-speaking Switzerland, The Netherlands, UK, Iceland and Denmark. The rates of most European registries ranged between the relatively narrow range of 50 to 65/100,000, but some areas of Southern Italy, Spain and Eastern Europe had lower incidence rates, up to under 25/100,000 in Belarus and rural Poland.

Breast cancer mortality was highest in England and Wales (29.2/100,000), followed by Scotland (27.8), Malta (27.7) and Denmark (27.4), and rates were over 25/100,000 in Belgium, Ireland and Switzerland, too. Britain had indeed the highest certified breast cancer mortality in the world, even if registered incidence was systematically highest in North America²⁰. Germany, Austria, Hungary and Italy had breast cancer mortality between 20 and 25/100,000, while rates were lower in France, Norway, Sweden and Finland, as well as in Portugal, Spain, Poland and Greece (15 to 20/100,000). The lowest breast cancer rates (12.8 to 15/100,000) were in the former Soviet Union, Romania and Bulgaria. Thus, the overall range of variation in breast cancer mortality across European countries was over a factor 2.

Ovary. With reference to ovarian cancer, the highest incidence rates were in a few Swiss registries (St Gall

17.0/100,000; Geneva 12.9/100,000), Nordic countries and Britain, but also Estonia, Latvia and some French registries had rates above 12/100,000. The lowest incidence rates, between 4.3 and 8/100,000, were in Southern Italy, Spain, Hungary, Romania, but also Tarn France. With reference to mortality, the highest rate (9.8/100,000) was in Denmark, but also Norway, England and Wales, Iceland, Scotland, Sweden, Ireland and Austria had ovarian cancer death rates above 8/100,000. The lowest rates, around or under 3/100,000, were in Spain, Greece, Portugal and Czechoslovakia, but also Italy and France had relatively low rates. Reproductive habits, oral contraceptive use, diagnostic and therapeutic advancements, changes in case ascertainment and certification and, possibly, ovariectomy, and dietary habits, may have influenced these geographical variations²¹.

Uterus, cervix and corpus. The causes and hence the descriptive epidemiology of cancers of the cervix and corpus uteri are largely different, but a reliable distinction between the two sites was possible only on incidence registration, while death certification often include a substantial misclassification or a large proportion of "uterus, site of origin unspecified".

Cervix uteri incidence rates were high in Poland and other Eastern European areas, starting from rates of 23.8/100,000 in Lower Silesia and of 22.5 in the former German Democratic Republic, but also some British and French registries as well as Denmark had rates above 15/100,000. The lowest rate (4.4/100,000) was in Finland, but also several northern Italian registries, Geneva and Basel Switzerland, Eindhoven and Maastricht The Netherlands, Murcia and Granada Spain, and Tarn France had rates below 8/100,000.

The highest rate for corpus uteri (endometrial) cancer was 17.6/100,000 in Bohemia and Moravia, followed by several registries in Switzerland, Denmark, Hungary and France. The lowest rates were in County Cluj Romania (5.4/100,000), and Nowy Sacz Poland (5.9/100,000). It is of interest, moreover, the low endometrial cancer incidence in several UK registries, since the epidemiology of endometrial cancer has several aspects in common with that of breast cancer^{20,22}, which shows however very high rates in the same areas.

The weight of cervical cancer is probably greater than that of endometrial cancer in overall uterine cancer mortality, which was highest in Romania (14.6/100,000), followed by Hungary, Poland, Czechoslovakia and the former German Democratic Republic, all over 10/100,000. The UK, as well as Greece, France and Italy, had intermediate values, whereas the lowest mortality rates from all uterine cancers (i.e. around or below 5/100,000) were in Finland, Greece, The Netherlands and Sweden. With the possible exception of Greece, this under-

lines the importance of rational screening for the control of cervical cancer²³.

Prostate. The highest prostatic cancer rates, both for incidence and mortality, were in Switzerland (over 40/100,000 incidence; 21.7/100,000 mortality), followed by Nordic countries. France, Germany and the UK had intermediate values (i.e., incidence between 20 and 30/100,000 and mortality around 15/100,000), while Spain, Italy and Eastern Europe had lower rates. The lowest incidence was in Belarus (9.0/100,000) and the lowest mortality rate was in the former USSR (5.8/100,000). Thus, the range of variation was almost a factor 6 for incidence and a factor 4 for mortality. The remarkable consistency between incidence and mortality across various European geographic areas is a strong support for a satisfactory reliability of prostatic cancer statistics in various countries.

Testis. During the last two decades, cisplatinum-based chemotherapy has led to a very high cure rate for testicular cancer^{24,25}. Not surprisingly, therefore, the pattern of incidence is largely heterogeneous from that of mortality. The highest incidence rates (8/100,000 males or over) were observed in Swiss registries and Denmark, and testicular cancer incidence was also relatively high in Germany, Norway and the UK. The lowest rates (i.e., between 0.5 and 3.0/100,000) were from Spain, Italy, but also several Eastern European registration areas. In contrast, the highest mortality rate was registered in the former German Democratic Republic (1.7/100,000), followed by Hungary, Bulgaria and Czechoslovakia, with rates of 1/100,000 or over. This reflects the inadequate availability of newer chemotherapy treatments in Eastern Europe^{24,25}. Germany, Switzerland, UK, France and several other western European countries had rates between 0.4 and 0.8/100,000. The lowest testicular cancer death rates (0.2 to 0.3/100,000) were in Belgium, Iceland, Spain, Finland, Greece, and Portugal.

Bladder. For males, the highest bladder cancer incidence rates (between 30 and 34/100,000) were in Northern and Central Italy, followed by Denmark and some Spanish and French registration areas. The lowest ones were in Poland (Warsaw, rural, 8.1/100,000), Belarus and some other eastern European registries, plus Ireland, St Gall Switzerland and Maastricht The Netherlands, around 10/100,000. For females, the highest bladder cancer incidence rates (around or over 7/100,000) were in Scotland, followed by some Italian and English registries. The lowest ones, between 1 and 2/100,000 were again in Poland, other eastern European registries, but also Southern Italy and some French registries. Caution is however required in interpreting these patterns, since bladder cancer incidence

registration may be largely influenced by the inclusion of papillomas or *in situ* carcinomas^{26,27}. This was explicitly mentioned for Denmark, France Doubs, Iceland, Italy Parma, Torino and Varese, Norway, Poland Opole, Sweden, Switzerland Zurich, UK South Thames and West Scotland, but it is likely that the same problem is common to several other registration areas.

For both sexes, the highest bladder cancer mortality was in Denmark (9.7/100,000 males; 2.5/100,000 females). For males, high rates were observed also in Italy (9.1), Belgium (8.4), Spain (7.7), England and Wales (7.5), and Scotland (7.4). The lowest rates, between 4 and 5/100,000 were in Iceland, Sweden, Bulgaria, Finland and Ireland. For females, after Denmark, high rates were registered in Scotland (2.4) and England and Wales (2.2). The lowest ones were in Finland, Bulgaria and Poland (1/100,000 or less).

Kidney and other urinary sites. For males, the highest incidence rate was in Trieste Italy (15.5/100,000), followed by Bas-Rhin France (15.2), Bohemia and Moravia, and Iceland. Other northern European registries tended to have high rates (10 to 12/100,000) as well as Sweden, several Swiss and German registration areas, Finland and Denmark. The lowest rates (between 3.5 and 5.0/100,000) were in Spain, eastern European countries and Southern Italy. Kidney cancer incidence was also relatively low in most British cancer registries. Low incidence areas were similar for females, with rates between 1.2/100,000 in Spain Granada and 2.5/100,000 in Slovenia. For females, however, the highest incidence rates were in Iceland (7.8/100,000), Denmark (6.8), Sweden (6.6), followed by Bohemia and Moravia, St Gall and Basel Switzerland (6.1).

The pattern of mortality was similar in females, the highest rates being observed in Iceland (4.2/100,000), followed by Denmark (3.8), Sweden (3.4), and Czechoslovakia (3.3), and the lowest one (1.0/100,000) in Portugal, Bulgaria, Greece and Spain. For males, however, a clear outlier mortality was Czechoslovakia (7.9/100,000), followed by Germany (6.1), Sweden (5.7), and Denmark (5.6). Italy had a relatively low kidney cancer mortality at a national level (3.9/100,000), similar to England and Wales (3.7). The lowest mortality rates (around or below 2.0/100,000) were in Bulgaria, Portugal, Spain and Greece. It is difficult to interpret this geographical variation in the light of the limited knowledge of the epidemiology of kidney cancer, which is however known to be related to tobacco and probably to overweight²⁸.

Eye. Incidence and mortality rates from eye cancer were extremely low (i.e., between 0.1 and 1/100,000 for incidence; between 0.1 and 0.3 for mortality). Thus, the apparent geographical differences are

largely attributable to random variation, particularly for incidence.

Brain and nerves. There are major problems in diagnosis and certification of brain neoplasms, whose ascertainment is largely influenced by availability of computerized transaxial tomography and other modern diagnostic techniques⁸. Further, a definition of malignant versus benign or unspecified brain neoplasms is often uncertain, both on death certification and incidence registration. In particular, some cancer registries (Denmark, France Doubs, German Democratic Republic, Hungary Vas, Iceland, Italy Latina and Torino, Norway, Poland Warsaw City and Rural, Spain Tarragona, Sweden and UK South Thames) included all brain neoplasms, malignant, benign and unspecified. With this caution in mind, the highest incidences were registered in Sweden (10.7/100,000 males; 10.6/100,000 females), followed by Norway and Denmark, Spain Navarra, several northern Italian registries, and UK South Thames. The lowest incidence rates (between 3 and 5/100,000 males, and between 2 and 4/100,000 females) were in Belarus, St Petersburg Russia, and a few other eastern European registries, but also in France Calvados and Isere, The Netherlands and Spain Murcia.

With reference to mortality, the highest rates for males were in Greece and Belgium (6.5/100,000), followed by Denmark, Hungary and Ireland. These same countries had high rates for females (between 4 and 4.2/100,000). Sweden and Italy had intermediate brain cancer mortality rates for both sexes, while the lowest rates (between 3.4 and 3.9/100,000 males and between 2.2 and 2.7/100,000 females) were in France, Germany and Austria.

Thyroid. This is, together with gallbladder cancer, the other non sex-related neoplasm whose rates are higher in females than in males¹⁴. The sex ratios were all below unity for incidence (between 0.7 in Iceland and 0.1 in Spain Navarra), and ranged for mortality between 1.0 in Iceland and 0.5 in Spain (0.1 in Malta was based on very small numbers). A clear outlier, both for incidence and mortality, was Iceland (incidence rate 6.2/100,000 males and 8.3/100,000 females; mortality 1.3/100,000 for both sexes). Northern Italy and Switzerland followed with incidence rates between 2.0 and 2.7/100,000 males and 4 and 7/100,000 females. In females, also Finland and Norway had relatively high incidence rates. The lowest incidence was in Eastern Europe, Southern Italy and the UK for both sexes, with rates around 0.6–0.7/100,000 in males and between 1.0 and 2.0/100,000 females.

With reference to mortality, after Iceland, high rates were observed in Switzerland, Hungary, Austria and Germany (0.6–0.7/100,000 males; 0.8–1.0/100,000 females). The lowest rates in both sexes were in Spain, Greece, Portugal and the UK (0.2–

0.3/100,000 males; 0.4/100,000 females). Dietary factors, and particularly imbalances in iodine intake, have a major role in this geographical variation²⁹.

Hodgkin's disease. Together with testicular cancer, this is the neoplasm whose prognosis has improved most noticeably following the introduction of newer radio- and chemotherapy regimens^{24,30}. Northern Italy has long had the highest Hodgkin's disease rates in Europe, and, still, several cancer registration areas from Northern Italy are in the upper part of the distribution with values between 4 and 4.5/100,000 males and 2.5 and 4.0/100,000 females. Other high incidence areas were in Switzerland, Scotland, Bohemia and Moravia. The lowest rates (between 1.3 and 2.0/100,000 males, and between 0.6 and 1.5/100,000 females) were in Romania and other eastern European registries, Southern Italy, Spain Granada and Murcia, and Maastricht The Netherlands.

The pattern was, however, different for mortality since, at least for males, the highest rates were in Poland and Czechoslovakia (1.5/100,000). Among females, the highest rate (0.8/100,000) was observed in the former German Democratic Republic, Czechoslovakia, and also Switzerland and Austria. The lowest rates for both sexes were in Nordic countries, Portugal and France. Thus, besides differences in incidence, this pattern likely reflects the different availability of efficacious treatments of the disease^{24,30}.

Non Hodgkin's lymphomas. There are problems of diagnosis and classification, particularly between lymphomas and chronic leukaemias in the elderly. The highest incidence areas for both sexes were in Switzerland, Northern Italy and Scotland, with rates between 9 and 12.7/100,000 in males, and 6 and 8.9/100,000 in females. Low incidence rates were common to both sexes in eastern European countries, with rates between 2.4 and 4/100,000 males, and 1.1 and 2.5/100,000 females.

The pattern of incidence is reasonably well reflected in mortality, since Swiss rates were the highest for males (5.7/100,000), and the second highest (3.3/100,000) after Finland (3.4/100,000), for females. Also Scotland had high lymphoma mortality in both sexes. Finland, however, as well as Denmark, while showing high mortality, did not have particularly elevated incidence rates. The lowest rates, both for males (between 1.9 and 3/100,000) and females (between 1 and 1.5/100,000) were in Bulgaria, Greece, Spain and Portugal.

Multiple myeloma. This is another neoplasm whose diagnosis and certification has substantially changed over recent decades, following the introduction of serum electrophoresis and other diagnostic procedures³¹. Further, incidence registration is

influenced by the cut-off point (generally fixed at 15%) for the proportion of abnormal and multinucleated plasma cells in bone marrow aspirate and biopsy which is required to confirm the diagnosis³². Thus, incidence registration and, mostly, death certification may reflect variable attention to diagnosis and ascertainment of this disease⁸. With these cautions in mind, an outlier registry was Bas-Rhin France (6.8/100,000 males; 4.3/100,000 females). High incidence areas (between 3.5 and 4.1/100,000 males and between 2.5 and 3.7/100,000 females) were also Norway, Sweden, Iceland and several Swiss, British and Italian registration areas. The lowest rates (below 1/100,000 for both sexes) were registered in Romania, Poland, Hungary and St Petersburg, plus Latina Italy for males, and Tarn France for females.

The pattern of incidence is well reflected in national mortality rates, since the highest values were in Scandinavia and other northern European countries (2.5–3.5/100,000 males; 1.5–2.5/100,000 females), and the lowest ones (below 1.5/100,000 in both sexes) in southern and, mostly, eastern Europe, up to the values of 0.5/100,000 males and 0.3/100,000 females in Bulgaria.

Leukaemias. In both sexes, the highest incidence was in Romagna Italy (11.7/100,000 males, 8.4/100,000 females). High rates (between 9 and 11/100,000 males and 6 and 7/100,000 females) were also observed in several Swiss and other North Italian registries, France Doubs, Denmark, Bohemia and Moravia, and Estonia. The lowest rates, around 5/100,000 males and 3/100,000 females, were in Romania, Poland, Hungary, Russia St Petersburg, but also in Tarn France.

With reference to mortality, the highest rates for both sexes were in Hungary (7.4/100,000 males; 4.5/100,000 females) and Denmark (7.2/100,000 males; 4.5/100,000 females). Luxembourg and Malta had also high rates in males, which, however, are partly explainable in terms of random variation. France and Italy were also in the upper part of the distribution for both sexes. The lowest rates (between 4.4 and 5/100,000 males and between 3.2 and 3.5/100,000 females) were in Romania, Bulgaria, and Scotland. The geographical variation of leukaemia rates within Europe was relatively limited, particularly for mortality with ratios between highest and lowest rates below 2 in both sexes (excluding Luxembourg males).

Unknown or uncertain primary sites. Only incidence data were available for this heterogeneous category of neoplasms, which showed a substantial variation for both sexes, i.e. between 2.0 (Latvia) and 17.2 (France, Somme)/100,000 males and between 1.3 (Belarus) and 12.9 (UK, Yorkshire)/100,000 females. At least two different biases may influence in the opposite direction these rates: either a low

level of accuracy of histological confirmation, which may increase the proportion of this poorly defined category, or the frequency of purely clinical or death certification alone (DCO) cases, which may decrease it. Not surprisingly, therefore, several registries which had the cautionary statement "The high proportion of diagnoses based on a death certificate alone indicates that the data may be incomplete", and are indicated with an asterisk in the histograms, are in the lower part of the distribution. Nonetheless, it is difficult to understand and interpret this variation in terms of various measures of quality of registration, on account of heterogeneity of data sources and pathological categories.

Total, all sites. This category excludes non-melanomatous skin cancer for incidence. The overall range of variation between various European registries in total cancer incidence was over a factor 2 in both sexes, i.e., between 380/100,000 males in Italy Trieste and France Bas-Rhin, and 173/100,000 males in Romania County Cluj, and between 258/100,000 females in Denmark and 125/100,000 females in Poland Rural Warsaw. In the upper part of the distribution of incidence in males there were several North Italian registries, Somme France, Bohemia and Moravia, Geneva Switzerland, West Scotland UK, and Saarland Germany. Low incidence rates were registered in Southern Italy, Poland, Spain, Belarus and other eastern European registries. For females, after Denmark, the highest incidence rates were for Scotland and Iceland (between 235 and 250/100,000), followed by Italy Romagna and Florence, Sweden and Switzerland Geneva. As for males, the lowest rates were in Eastern Europe, Spain, Southern Italy and France Tarn.

With reference to mortality, the highest total cancer rate for males was in Hungary (227/100,000), followed by Czechoslovakia (223), Luxembourg and Belgium (around 210), France (204) and Scotland (201). The lowest cancer death certification rates were in Romania (126), Sweden (130), Bulgaria and Iceland (136). Thus, the range of variation for cancer mortality was 1.8 in males. The variation was only slightly lower (1.7) in females, i.e. between 138 in Denmark and 79 in Greece. High rates for females were also observed in Britain, Hungary and Czechoslovakia, while overall cancer mortality was low, besides Greece, in Spain, Romania, Portugal, Bulgaria and France. Thus, there is a substantial agreement between registered incidence and certified cancer mortality in Europe, which provides further reassurance on the general reliability of cancer statistics in Europe.

The sex ratios, for both incidence and mortality, were highest in France (1.8–2.2) and lowest in Britain and Scandinavia (1.1–1.5). This variation in cancer incidence and mortality in Europe mainly reflects different stages of tobacco-related lung

cancer epidemic in Europe¹⁷ as well as, among other factors, the impact of colorectal and also stomach cancer in both sexes, and of breast cancer in females, and prostate in males.

Total, all sites, minus lung cancer. When lung cancer, besides non melanomatous skin cancers, was excluded the two outlier registries in males were Bas-Rhin France (313/100,000) and Trieste Italy (295/100,000). Other North Italian, French and Swiss registries were in the upper part of the distribution, while Poland, Romania, several other eastern European registries, Southern Italy and Spain had low rates, i.e. between 130 and 175/100,000.

The highest incidence for females was in Denmark (235/100,000), Sweden, Italy Romagna, UK North and South East Scotland (220/100,000). Other Nordic countries, Northern and Central Italy, several Swiss registries, Bas-Rhin France and Bohemia and Moravia has also high incidence rates, i.e., above 200/100,000 or over. As for males, the lowest rates (i.e., 117–160/100,000) were in eastern European registries, Spain and Southern Italy.

With reference to mortality from all neoplasms excluding lung cancer, the highest rates for males were in France and Hungary (158/100,000), followed by Czechoslovakia (150/100,000). The lowest rates, as for incidence, were in Romania, Bulgaria, and also in Greece and Sweden, with rates between 92 and 105/100,000. For females, the highest rate was in Denmark (117/100,000), followed by Hungary (116), Scotland (110) and, again, the lowest ones were in Greece (73), Romania, Spain (77), Bulgaria (78) and Portugal (80).

Even after excluding lung cancer, the sex ratios were high in France (1.5–1.8), and lowest in Britain and Scandinavia (0.9–1.2 both for incidence and mortality).

References

- Muir CS, Waterhouse JAH, Mack T, Powell J, Whelan S. Cancer Incidence in Five Continents, Vol. V. IARC Scientific Publication No. 88. Lyon, International Agency for Research on Cancer, 1987.
- Parkin DM, Muir CS, Whelan SL, Gao YT, Ferlay J, Powell J (eds). Cancer Incidence in Five Continents, Vol. VI. IARC Scientific Publication No. 120. Lyon, International Agency for Research on Cancer, 1992.
- Doll R, Smith PG. Comparison between registries: age-standardized rates. In: Waterhouse JAH, Muir CS, Shanmugaratnam K, et al., eds. Cancer Incidence in Five Continents, Vol. IV. IARC Scientific Publication No. 42. Lyon, International Agency for Research on Cancer, 1982, 671–675.
- World Health Organization. *International Classification of Diseases*. 8th Revision. Geneva, World Health Organization, 1967.
- World Health Organization. *International Classification of Diseases*. 9th Revision. Geneva, World Health Organization, 1977.
- Levi F, Maisonneuve P, Filiberti R, La Vecchia C, Boyle P. Cancer incidence and mortality in Europe. *Soz. Praeventivmed* 1989, 34 (Suppl 2), S1–S83.
- Armitage P, Berry M. *Statistical methods in medical research*. 2nd Ed, Oxford, Blackwell Scientific Publications, 1987.
- Doll R, Peto R. The causes of cancer: quantitative estimates of avoidable risk of cancer in the United States today. *JNCI* 1981, 66, 1191–1308.
- Percy C, Staneck E, Gloeckler L. Accuracy of cancer death certification and its effects on mortality statistics. *Am J Public Health* 1981, 71: 242–250.
- Boyle P. Relative value of incidence and mortality data in cancer research. *Recent Results in Cancer Research* 1989, 114: 41–63.
- Doll R. General epidemiologic considerations in etiology of colorectal cancer. In: Winawer S, Schottenfeld D, Scherlock P, eds. *Colorectal cancer. Prevention, Epidemiology and Screening*. Progress in Cancer Research and Therapy, Vol 3, New York, Raven Press, 1980, 3–12.
- Pasquini P, Kahn HA, Pileggi D, Panà A, Terzi J, Guzzanti E. Prevalence of hepatitis B markers in Italy. *Am J Epidemiol* 1983; 118: 699–709.
- La Vecchia C, Negri E, Decarli A, D'Avanzo B, Franceschi S. Risk factors for hepatocellular carcinoma in Northern Italy. *Int J Cancer* 1988; 42: 872–876.
- Levi F, La Vecchia C, Lucchini F, Negri E. Trends in mortality sex ratios in Europe. *Wld Hlth Statist Quart* 1992; 45: 117–164.
- Zatonski W, La Vecchia C, Levi F, Negri E, Lucchini F. Descriptive epidemiology of gall-bladder cancer in Europe. *J Cancer Res Clin Oncol* 1993; 119: 165–171.
- Boyle P, Hsieh CC, Maisonneuve P, La Vecchia C, MacFarlane GJ, Walker AM, Trichopoulos D. Epidemiology of pancreatic cancer (1988). *Int J Pancreatol* 1989; 5: 327–346.
- La Vecchia C, Boyle P, Franceschi S, Levi F, Maisonneuve P, Negri E, Lucchini F, Smans M. Smoking and cancer with emphasis on Europe. *Eur J Cancer* 1991; 27: 94–104.
- Doll R, Peto R. *Effects on health of exposures to asbestos*. London, Her Majesty's Stationery Office, 1985 (Health and Safety Commission).
- Franceschi S, La Vecchia C, Lucchini F, Cristofolini M. The epidemiology of cutaneous malignant melanoma: aetiology and European data. *Eur J Cancer Prev* 1991; 1: 9–22.
- Boyle P. Epidemiology of breast cancer. *Baillière's Clin Oncol* 1988; 2: 1–57.
- La Vecchia C, Levi F, Lucchini F, Negri E, Franceschi S. Descriptive epidemiology of ovarian cancer in Europe. *Gynecol Oncol* 1992; 46: 208–215.
- Parazzini F, La Vecchia C, Bocciolone L, Franceschi S. The epidemiology of endometrial cancer. *Gynecol Oncol* 1991; 41: 1–16.
- Läärä E, Day NE, Hakama M. Trends in mortality from cervical cancer in the Nordic countries; association with organized screening programmes. *Lancet* 1987, i, 1247–1249.
- La Vecchia C, Levi F, Lucchini F, Garattini S. Progress of anticancer drugs in reducing mortality from selected cancers in Europe: an assessment. *Anti-Cancer Drugs* 1991; 2: 215–221.
- Boyle P, Maisonneuve P, Kaye SB. Therapy for testicular cancer in Central and Eastern Europe. *Lancet* 1990, 335, 1033.
- Matanoski GM, Elliott EA. Bladder cancer epidemiology. *Epidemiol Rev* 1981, 202–229.
- Saxén E. Histopathology in cancer epidemiology. *Pathol Annu* 1979; 14: 203–217. (The Maude Abbott Lecture).
- La Vecchia C, Levi F, Lucchini F, Negri E. Descriptive epidemiology of kidney cancer in Europe. *J Nephrol* 1992; 5: 37–43.
- Franceschi S, Boyle P, Maisonneuve P, La Vecchia C, Burt AD, Kerr DJ, MacFarlane GJ. The epidemiology of

thyroid carcinoma. *Critical Reviews in Oncogenesis* 1993; 4: 25–52.

- 30 *La Vecchia C, Levi F, Lucchini F, Boyle P, Kaye SB.* Hodgkin's disease mortality in Europe. *Br J Cancer* 1991; 64: 723–734.
- 31 *Riccardi A, Gobbi PG, Ucci G, Bertolini D, Luoni R, Rutigliano L, Ascari E.* Changing clinical presentation of multiple myeloma. *Eur J Cancer* 1991; 27: 1401–1405.
- 32 *Blattner WA.* Multiple myeloma and macroglobulinemia. In: Schottenfeld D, Fraumeni J (eds). *Cancer epidemiology and prevention*. Philadelphia, WB Saunders, 1982, pp. 795–813.

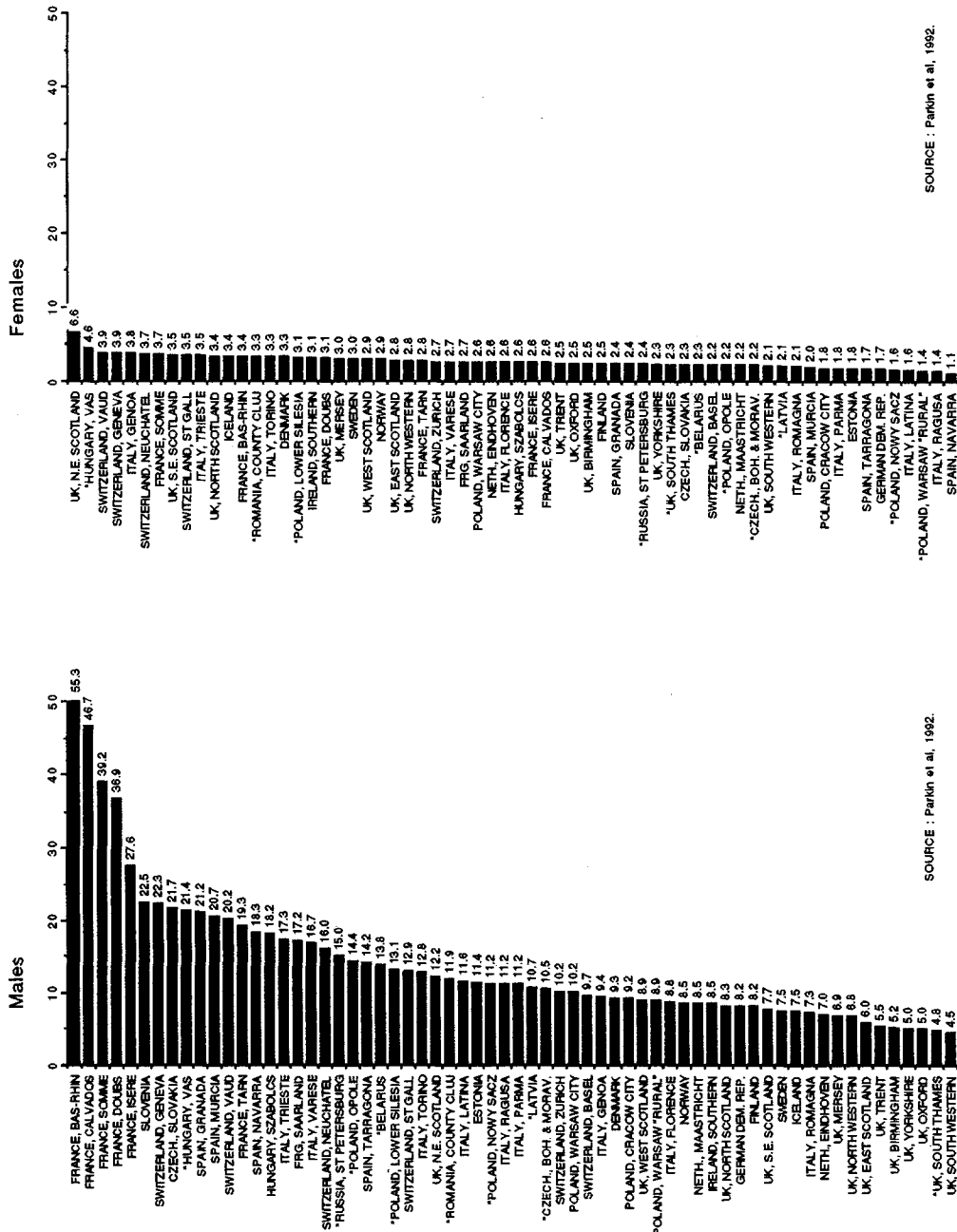
Acknowledgements

This study has been made possible by a core grant of the Swiss League against cancer. This study was conducted within the framework of the CNR (Italian National Research Council) Applied Project "Clinical Applications of Oncological Research" (Contract No 92.02384. PF 39) and of the "Europe Against Cancer" Programme of the Commission of the European Communities and with a grant-in-aid by the Italian Association for Cancer Research.

Incidence and Mortality Tables and Figures

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Mouth or pharynx (ICD-9 : 140-9)



SOURCE : Parkin et al, 1992.

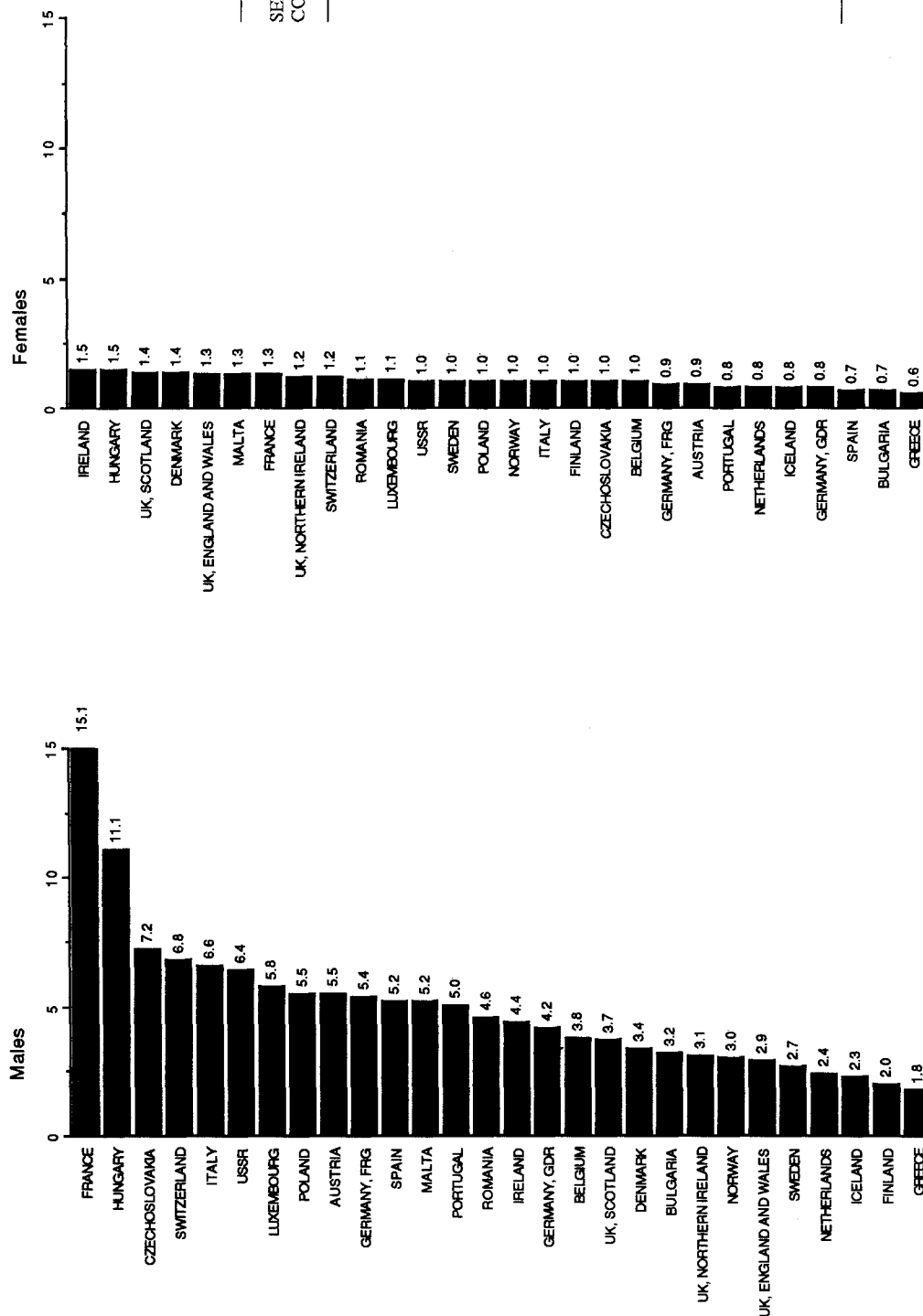
SOURCE : Parkin et al, 1992.

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

1	FRANCE, CALVADOS	18.0
2	SPAIN, NAVARRA	16.6
3	FRANCE, BAS-RHIN	16.3
4	FRANCE, DOUBS	11.9
5	FRANCE, ISERE	10.6
5	FRANCE, SOMME	10.6
7	SPAIN, MURCIA	10.3
8	CZECH, SLOVAKIA	9.4
8	SLOVENIA	9.4
10	SPAIN, GRANADA	8.8
11	SPAIN, TARRAGONA	8.4
12	ITALY, RAGUSA	8.0
13	ITALY, LATINA	7.3
14	HUNGARY, SZABOLCS	7.0
14	*POLAND, NOWY SĄCZ	7.0
16	FRANCE, TARN	6.9
17	*POLAND, OPOLE	6.5
18	FRG, SAARLAND	6.4
18	*POLAND, WARSAW "RURAL"	6.4
20	*RUSSIA, ST PETERSBURG	6.3
20	ESTONIA	6.3
22	ITALY, VARESE	6.2
22	ITALY, VARESE	6.2
24	ITALY, VARESE	6.0
25	SWITZERLAND, GENEVA	5.7
26	SWITZERLAND, VAUD	5.2
27	*LATVIA	5.1
27	POLAND, CRACOW CITY	5.1
28	ITALY, TRIESTE	4.9
29	*CZECH, BOH. & MORAV.	4.8
30	GERMANY DEM. REP.	4.8
30	HUNGARY, VAS	4.7
33	SWITZERLAND, BASEL	4.4
34	SWITZERLAND, NEUCHÂTEL	4.3
35	*POLAND, LOWER SILESIA	4.2
36	ITALY, TORINO	3.9
36	NETH, MAASTRICHT	3.9
36	POLAND, WARSAW CITY	3.9
39	SWITZERLAND, ZÜRICH	3.8
40	SWITZERLAND, ST GALL	3.7
41	*ROMANIA, COUNTY CLUJ	3.6
42	ITALY, ROMAGNA	3.5
43	ITALY, FLORENCE	3.4
44	FINLAND	3.3
44	UK, WEST SCOTLAND	3.1
45	NORWAY	2.9
46	DENMARK	2.8
47	IRELAND, SOUTHERN	2.7
48	NETH, ENDOHOVEN	2.7
48	ITALY, GENOVA	2.5
50	ITALY, GENOVA	2.5
50	SWEDEN	2.5
52	UK, NORTH WESTERN	2.4
52	UK, NORTH SCOTLAND	2.4
54	UK, MERSEY	2.3
55	ICELAND	2.2
55	UK, TRENT	2.2
55	UK, YORKSHIRE	2.2
55	UK, S.E. SCOTLAND	2.2
59	UK, BIRMINGHAM	2.1
59	*UK, SOUTH THAMES	2.1
59	UK, SOUTH WESTERN	2.1
59	UK, EAST SCOTLAND	2.1
63	UK, OXFORD	2.0
64	UK, N.E. SCOTLAND	1.8

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100 000 IN EUROPEAN COUNTRIES, 1983-87**

Mouth or pharynx (ICD-9 : 140-9)

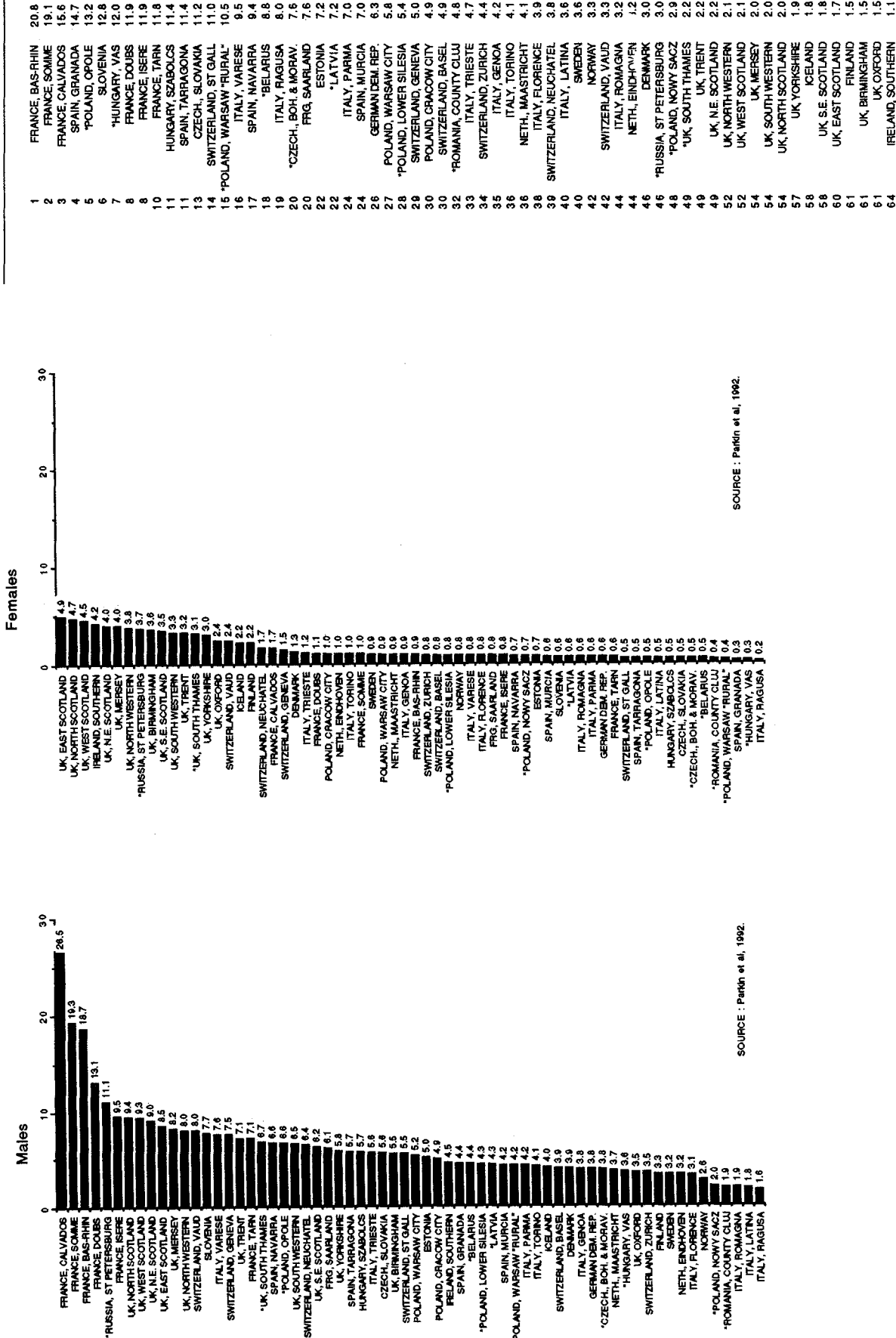


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Oesophagus (ICD-9 : 150)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

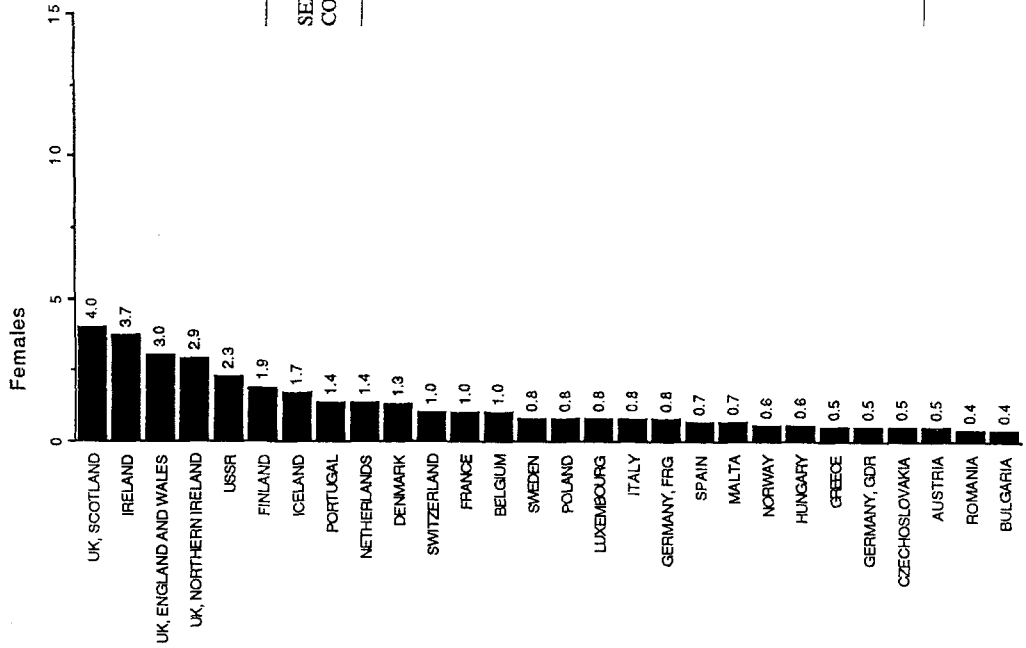
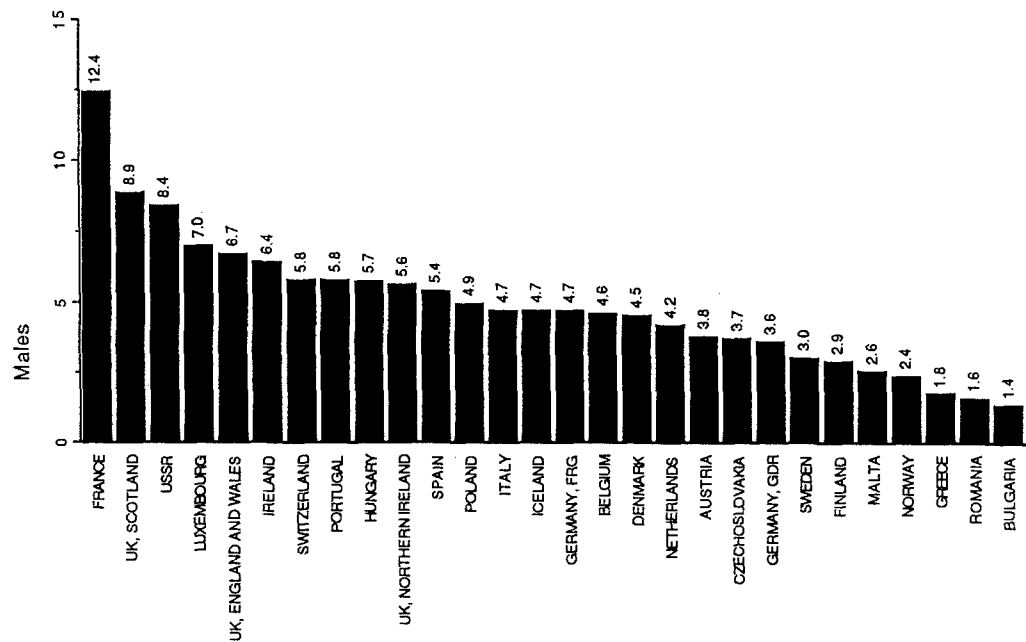


SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

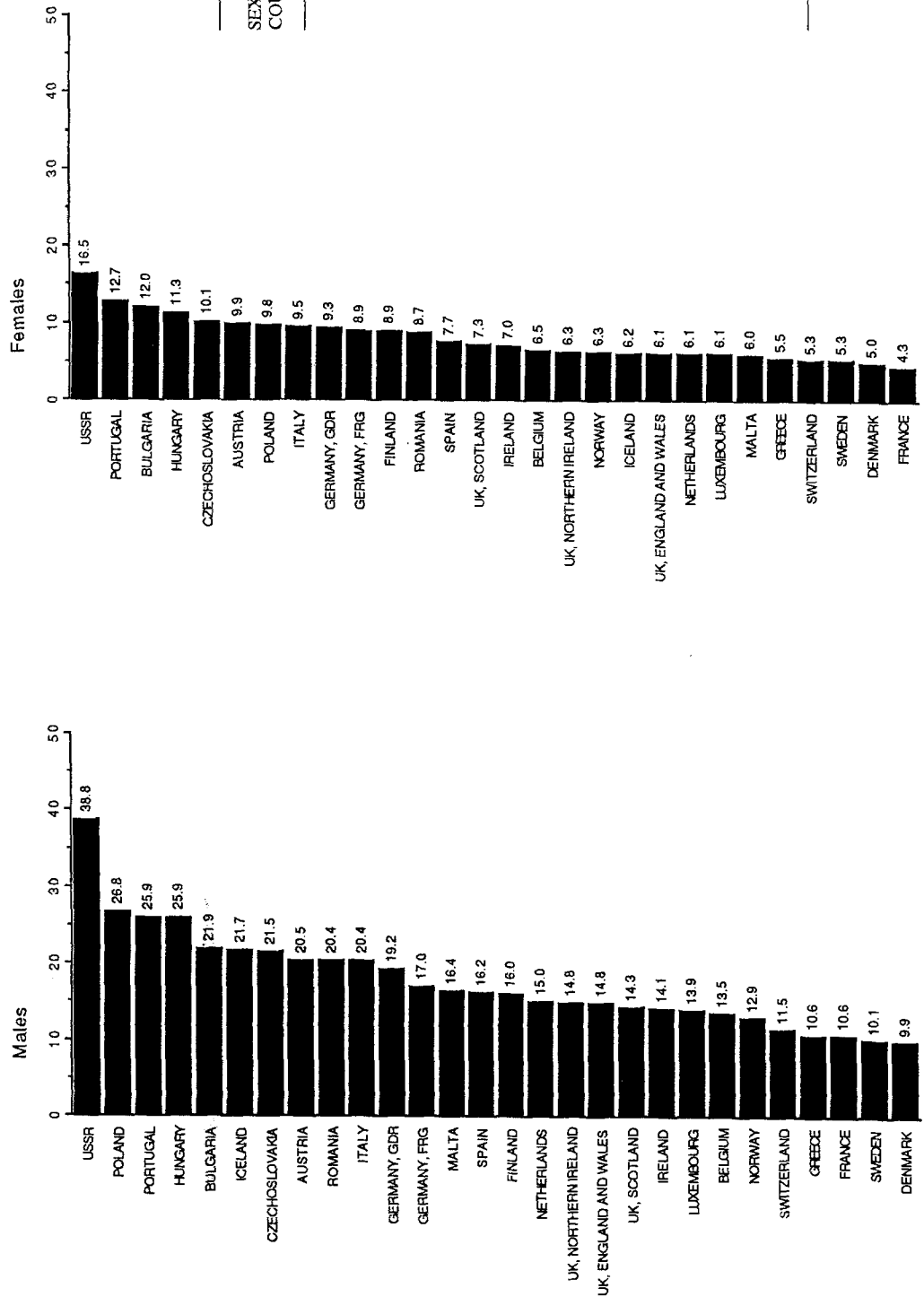
Oesophagus (ICD-9 : 150)



SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	FRANCE	12.4
2	HUNGARY	9.5
3	LUXEMBOURG	8.8
4	SPAIN	7.7
5	AUSTRIA	7.6
6	CZECHOSLOVAKIA	7.4
7	GERMANY, GDR	7.2
8	POLAND	6.1
9	GERMANY, FRG	5.9
10	ITALY	5.9
11	SWITZERLAND	5.8
12	BELGIUM	4.6
13	PORTUGAL	4.1
14	NORWAY	4.0
15	ROMANIA	4.0
16	SWEDEN	3.8
17	MALTA	3.7
18	USSR	3.7
19	GREECE	3.6
20	BULGARIA	3.5
21	DENMARK	3.5
22	NETHERLANDS	3.0
23	ICELAND	2.8
24	UK, ENGLAND AND WALES	2.2
25	UK, SCOTLAND	2.2
26	UK, NORTHERN IRELAND	1.9
27	IRELAND	1.7
28	FINLAND	1.5

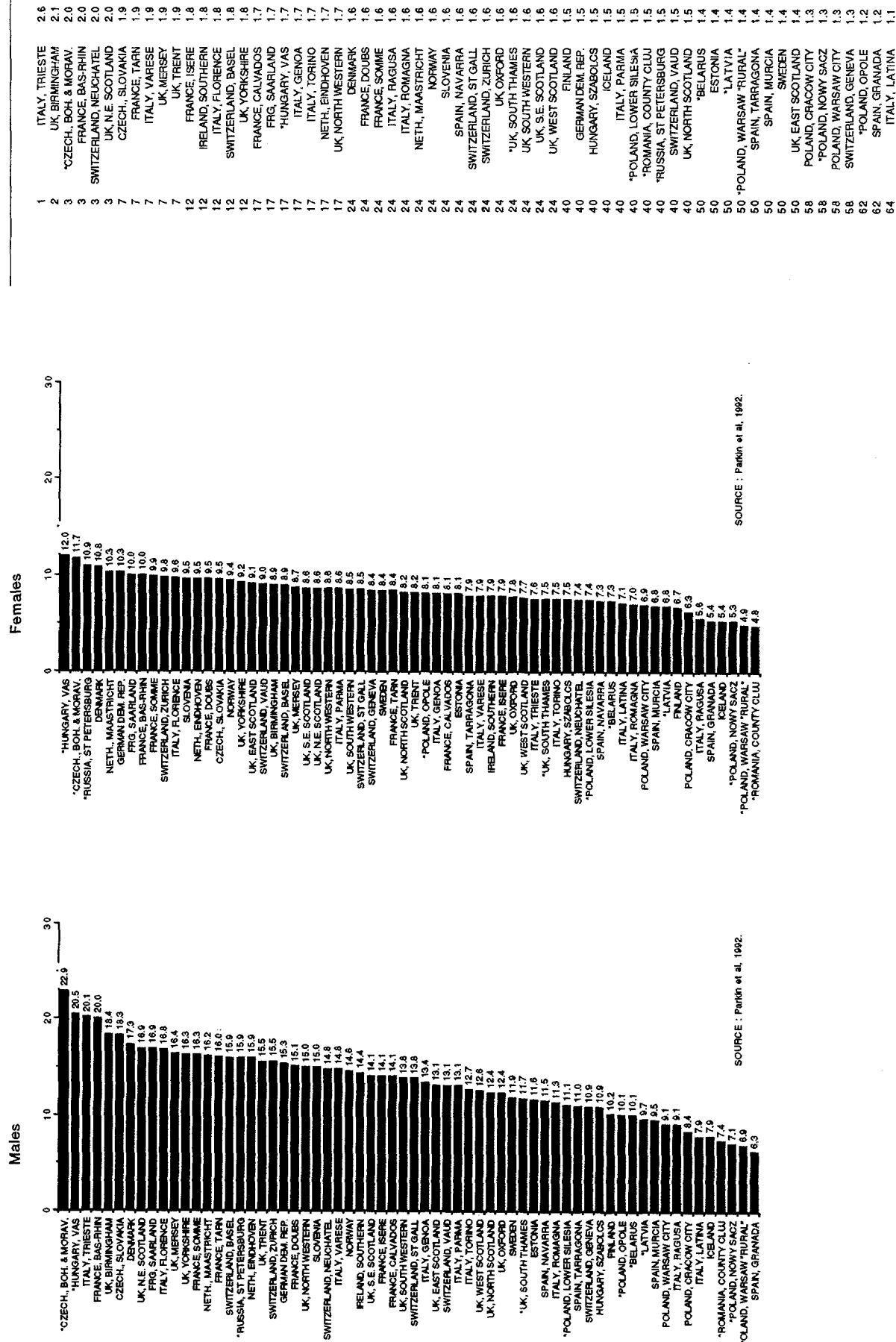
AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87
Stomach (ICD-9 : 151)



AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Rectum (ICD-9 : 154)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN
CANCER REGISTRY REGIONS, 1983-87 (RANKED)



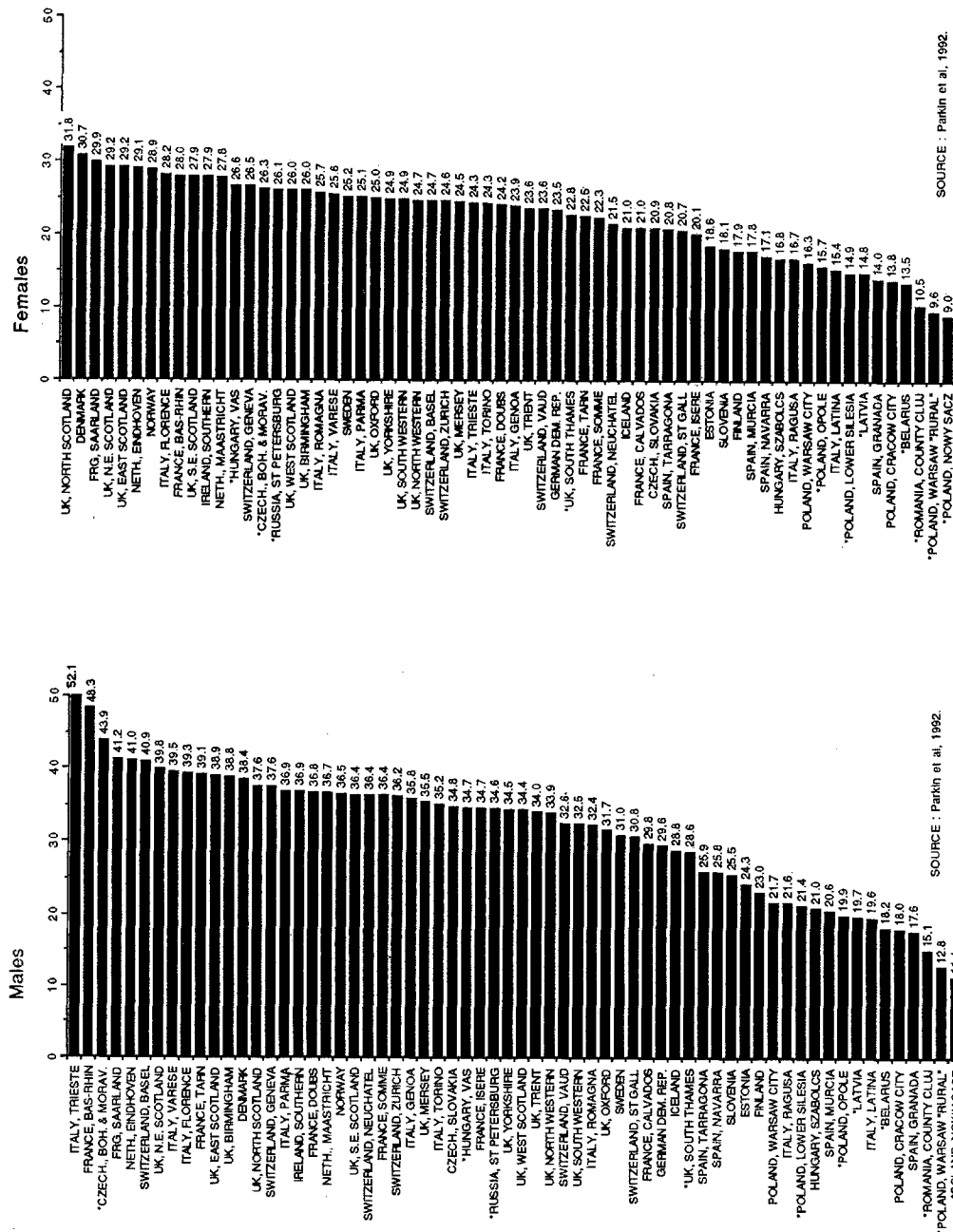
SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Intestines, chiefly colon and rectum (ICD-9 : 152-4)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

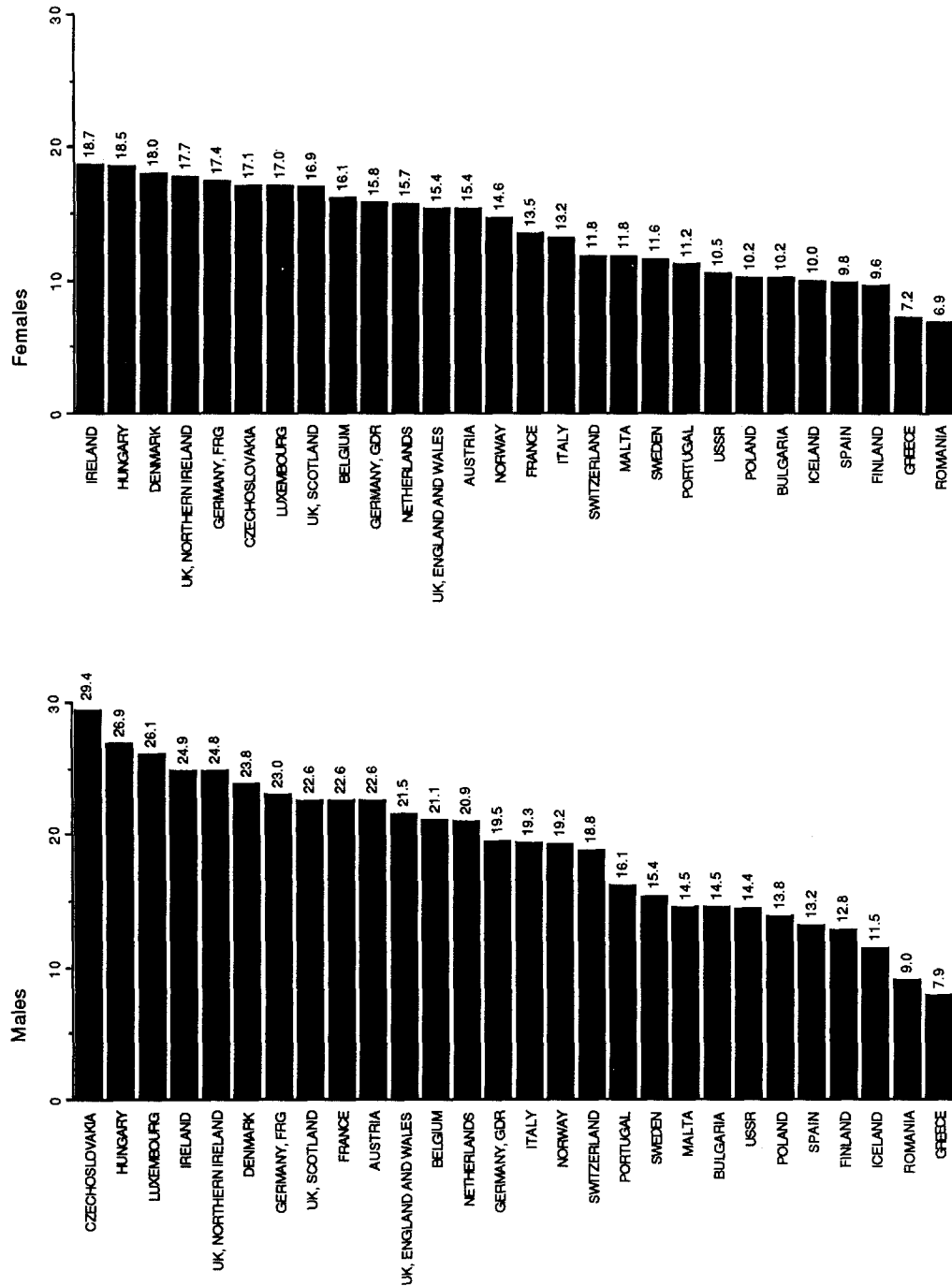


SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

Intestines, chiefly colon and rectum (ICD-9 : 152-4,159)

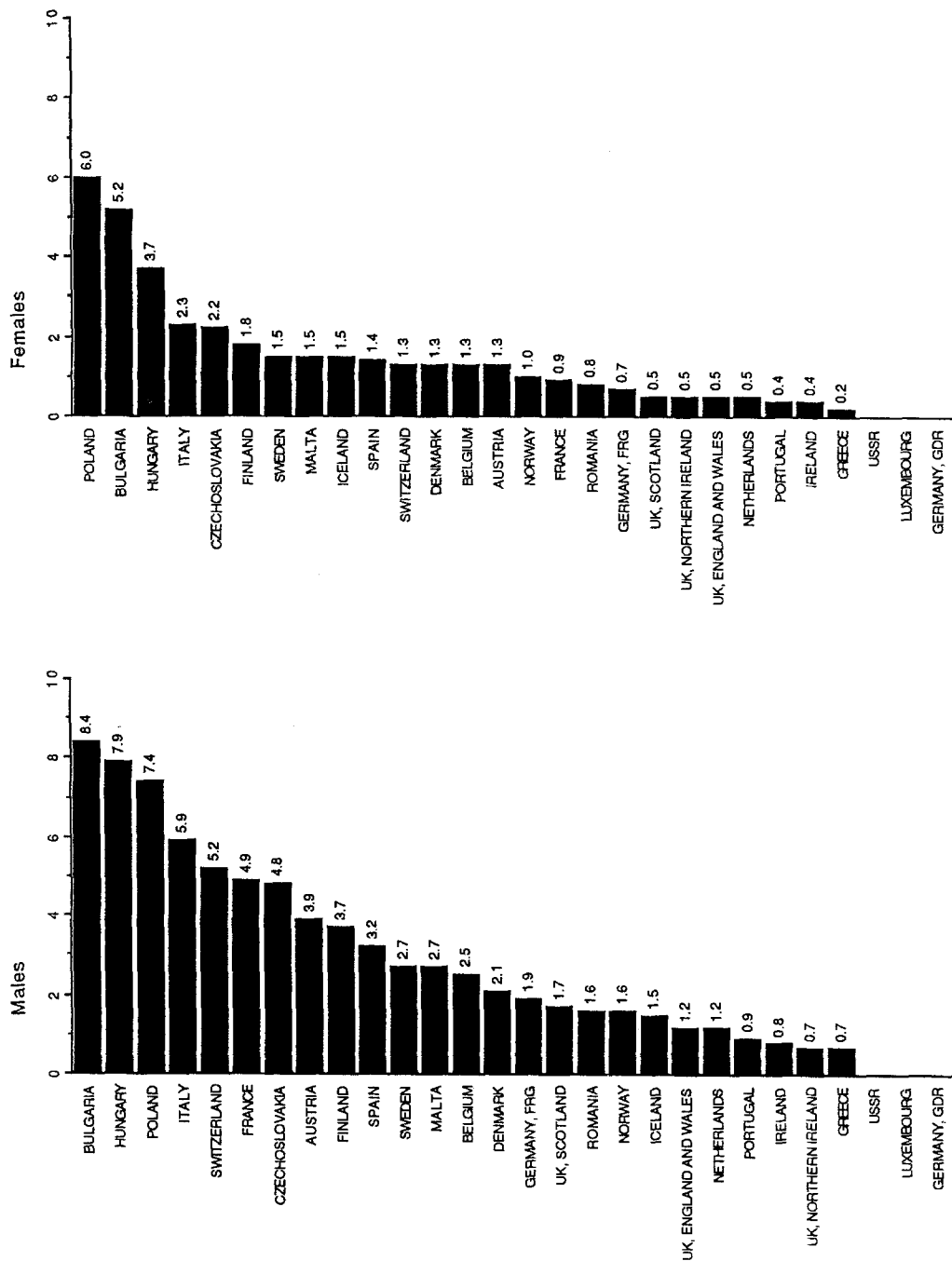


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	CZECHOSLOVAKIA	1.7
1	FRANCE	1.7
3	SWITZERLAND	1.6
4	AUSTRIA	1.5
4	HUNGARY	1.5
4	ITALY	1.5
4	LUXEMBOURG	1.5
8	BULGARIA	1.4
8	POLAND	1.4
8	PORTUGAL	1.4
8	USSR	1.4
8	UK, ENGLAND AND WALES	1.4
8	UK, NORTHERN IRELAND	1.4
14	BELGIUM	1.3
14	DENMARK	1.3
14	FINLAND	1.3
14	GERMANY, FRG	1.3
14	IRELAND	1.3
14	NETHERLANDS	1.3
14	NORWAY	1.3
14	ROMANIA	1.3
14	SPAIN	1.3
14	SWEDEN	1.3
14	UK, SCOTLAND	1.3
25	GERMANY, GDR	1.2
26	ICELAND	1.2
26	MALTA	1.2
28	GREECE	1.1

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Liver (ICD-9 : 155.0)

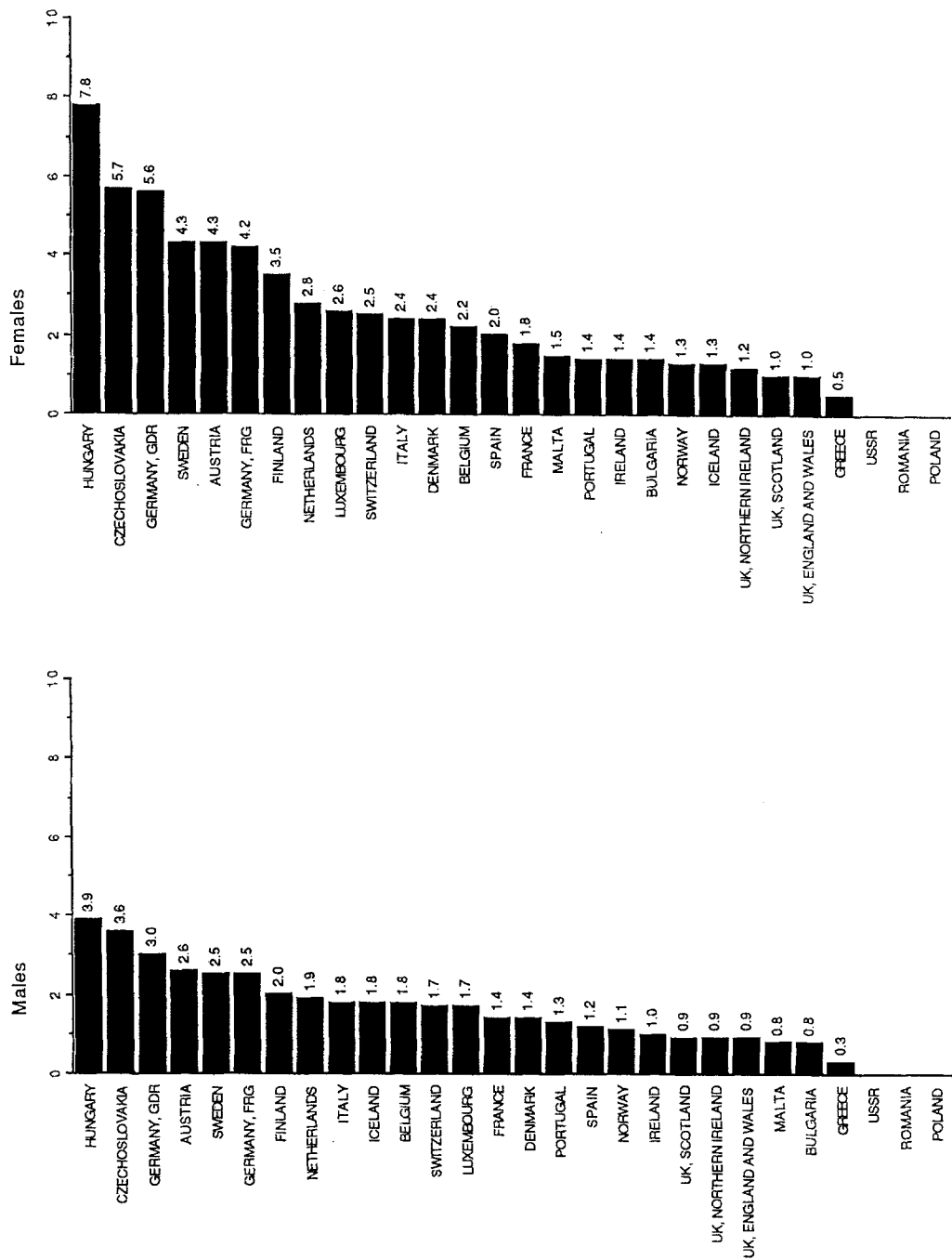


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	FRANCE	5.4
2	SWITZERLAND	4.0
3	GREECE	3.5
4	UK, SCOTLAND	3.4
5	AUSTRIA	3.0
6	GERMANY, FRG	2.7
7	ITALY	2.6
8	NETHERLANDS	2.4
8	UK, ENGLAND AND WALES	2.4
10	PORTUGAL	2.3
10	SPAIN	2.3
12	CZECHOSLOVAKIA	2.2
13	FINLAND	2.1
13	HUNGARY	2.1
15	IRELAND	2.0
15	ROMANIA	2.0
17	BELGIUM	1.9
18	MALTA	1.8
18	SWEDEN	1.8
20	BULGARIA	1.6
20	DENMARK	1.6
20	NORWAY	1.6
23	UK, NORTHERN IRELAND	1.4
24	POLAND	1.2
24	ICELAND	1.2
25	GERMANY, GDR	1.0
25	LUXEMBOURG	1.0
25	USSR	1.0

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

Gallbladder and bile ducts (ICD-9 : 156)



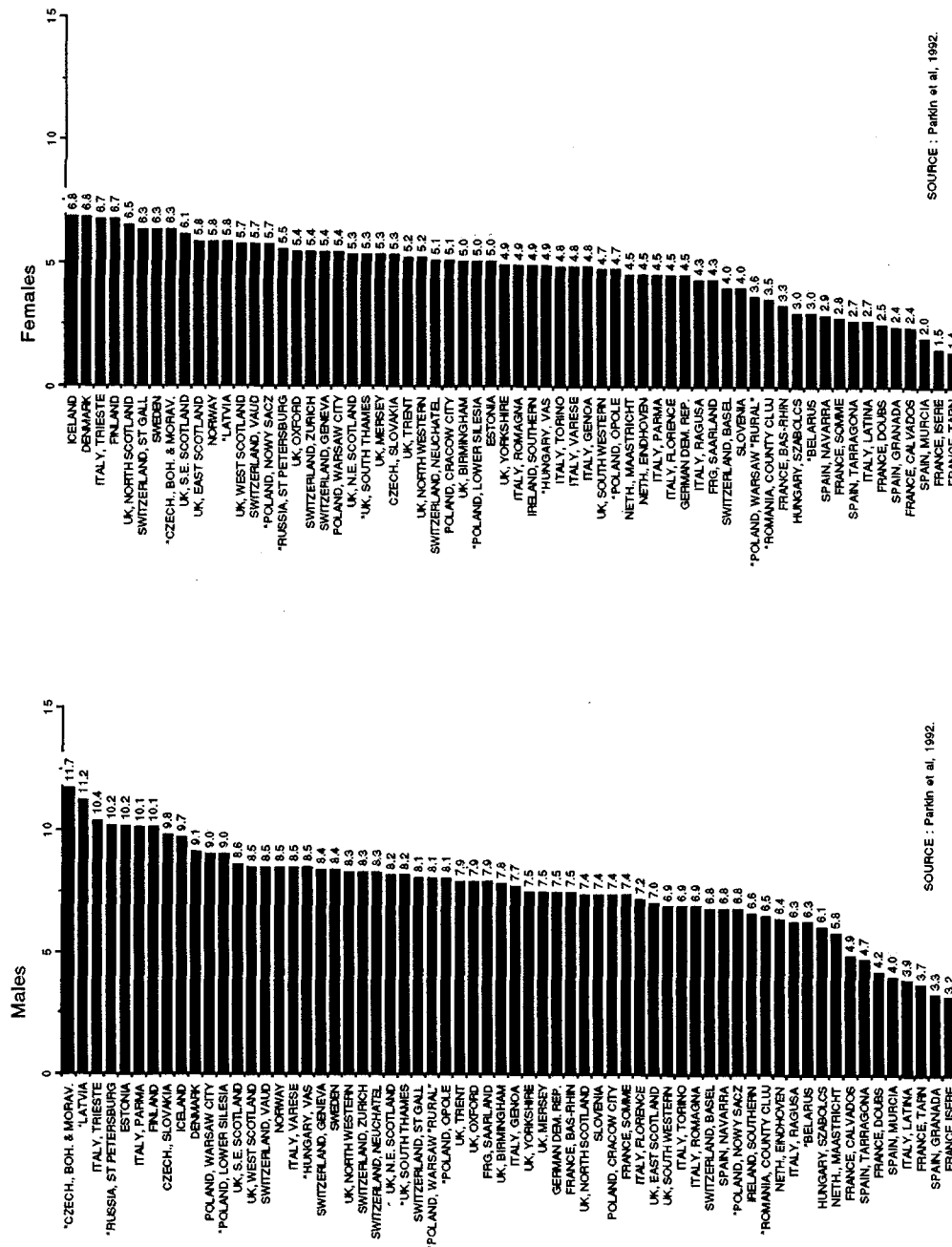
SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	ICELAND	1.4
2	PORTUGAL	0.9
2	UK, ENGLAND AND WALES	0.9
2	UK, SCOTLAND	0.9
5	BELGIUM	0.8
5	FRANCE	0.8
5	ITALY	0.8
5	NORWAY	0.8
5	UK, NORTHERN IRELAND	0.8
10	IRELAND	0.7
10	LUXEMBOURG	0.7
10	NETHERLANDS	0.7
10	SWITZERLAND	0.7
14	AUSTRIA	0.6
14	BULGARIA	0.6
14	CZECHOSLOVAKIA	0.6
14	DENMARK	0.6
18	FINLAND	0.6
18	GERMANY, FRG	0.6
18	GREECE	0.6
18	SPAIN	0.6
18	SWEDEN	0.6
23	GERMANY, GDR	0.5
23	HUNGARY	0.5
23	MALTA	0.5
	POLAND	
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Pancreas (ICD-9 : 157)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

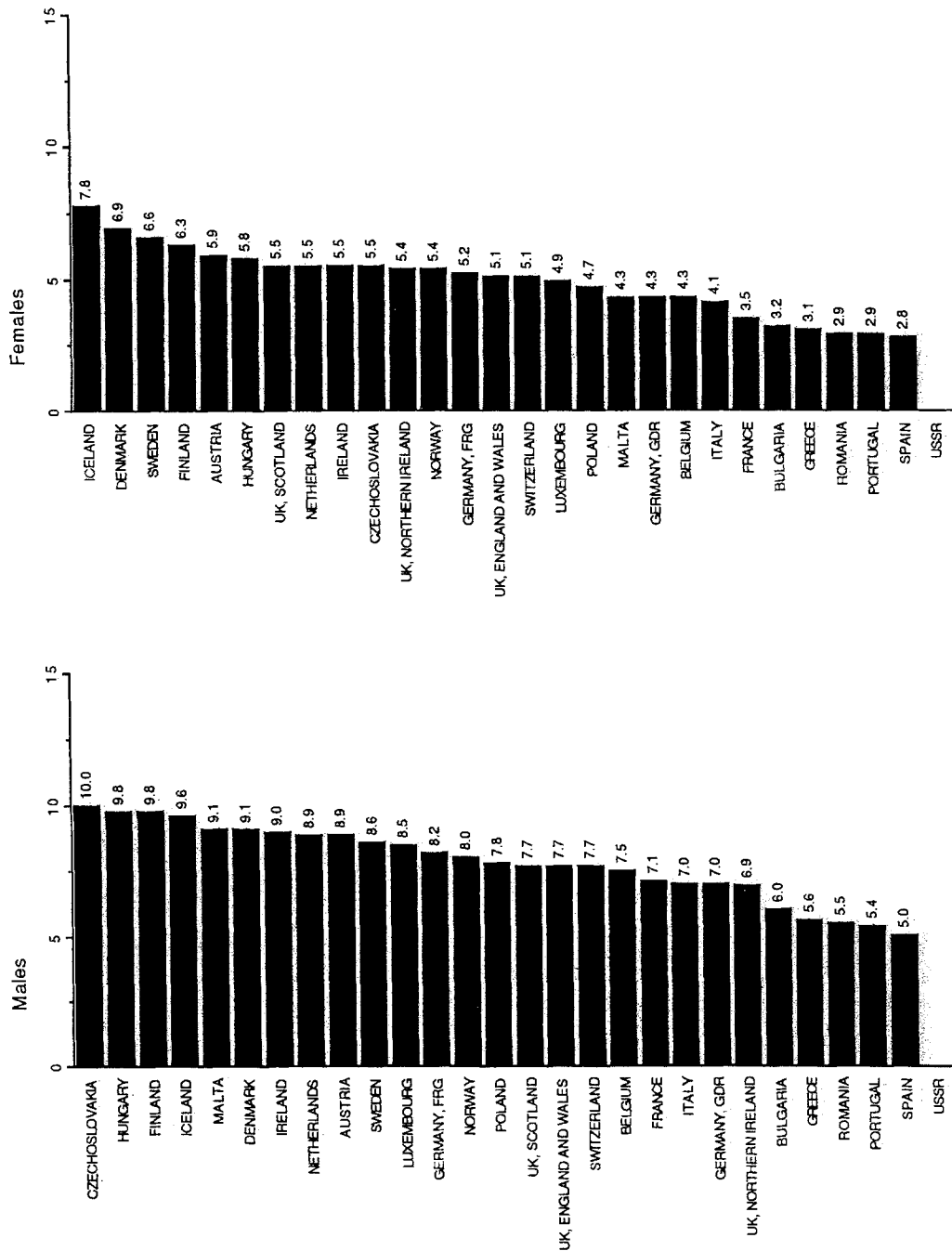


SOURCE : Parkin et al, 1982.

SOURCE : Parkin et al, 1982.

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Pancreas (ICD-9 : 157)



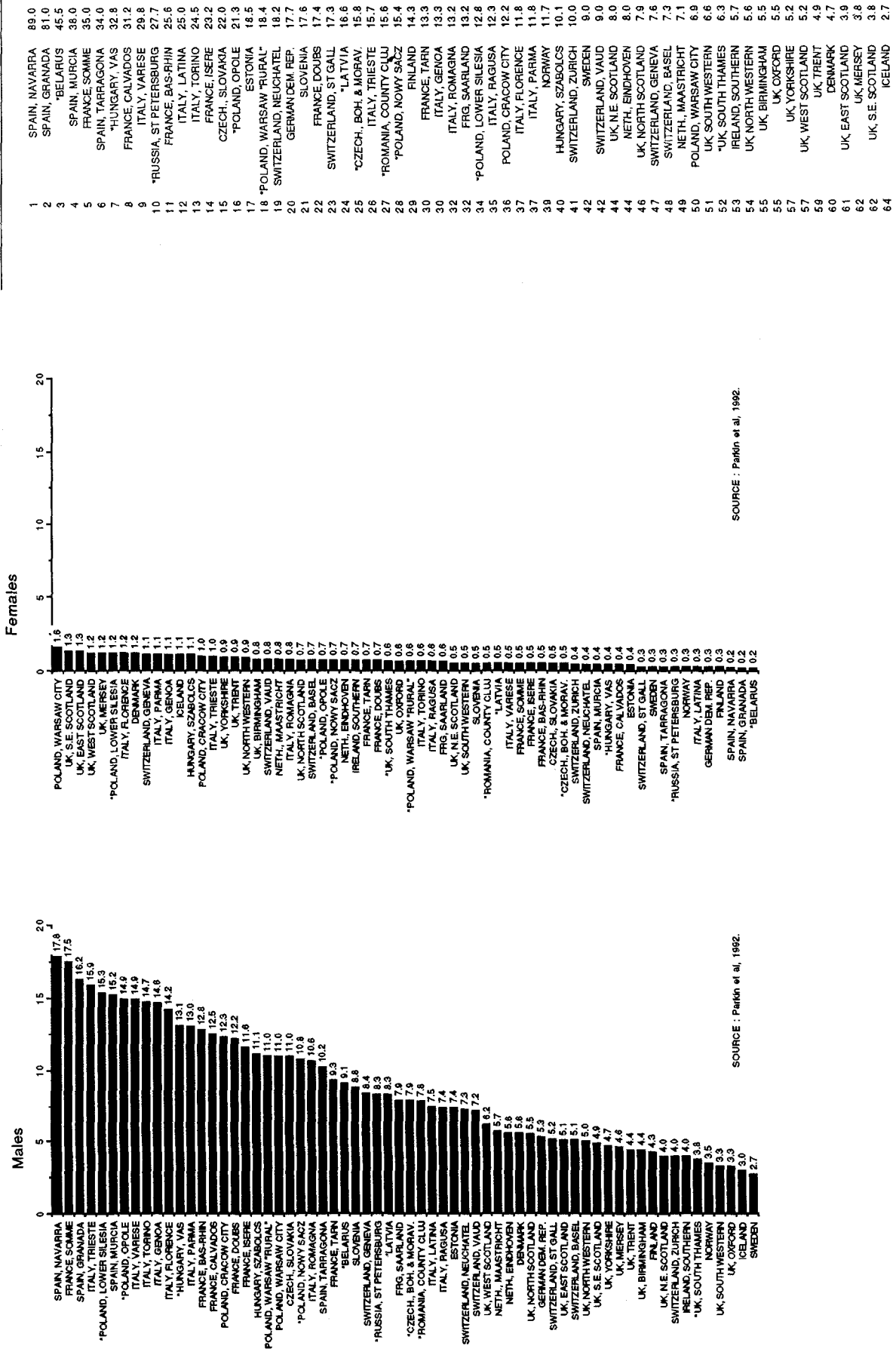
SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	MALTA	2.1
2	FRANCE	2.0
3	BULGARIA	1.9
3	PORTUGAL	1.9
3	ROMANIA	1.9
6	CZECHOSLOVAKIA	1.8
6	GREECE	1.8
6	SPAIN	1.8
9	BELGIUM	1.7
9	HUNGARY	1.7
9	ITALY	1.7
9	LUXEMBOURG	1.7
9	POLAND	1.7
14	FINLAND	1.6
14	GERMANY, GDR	1.6
14	GERMANY, FRG	1.6
14	IRELAND	1.6
14	NETHERLANDS	1.6
19	AUSTRIA	1.5
19	NORWAY	1.5
19	SWITZERLAND	1.5
19	UK, ENGLAND AND WALES	1.5
23	UK, SCOTLAND	1.4
24	DENMARK	1.3
24	SWEDEN	1.3
24	UK, NORTHERN IRELAND	1.3
27	ICELAND	1.2
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Larynx (ICD-9 : 161)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

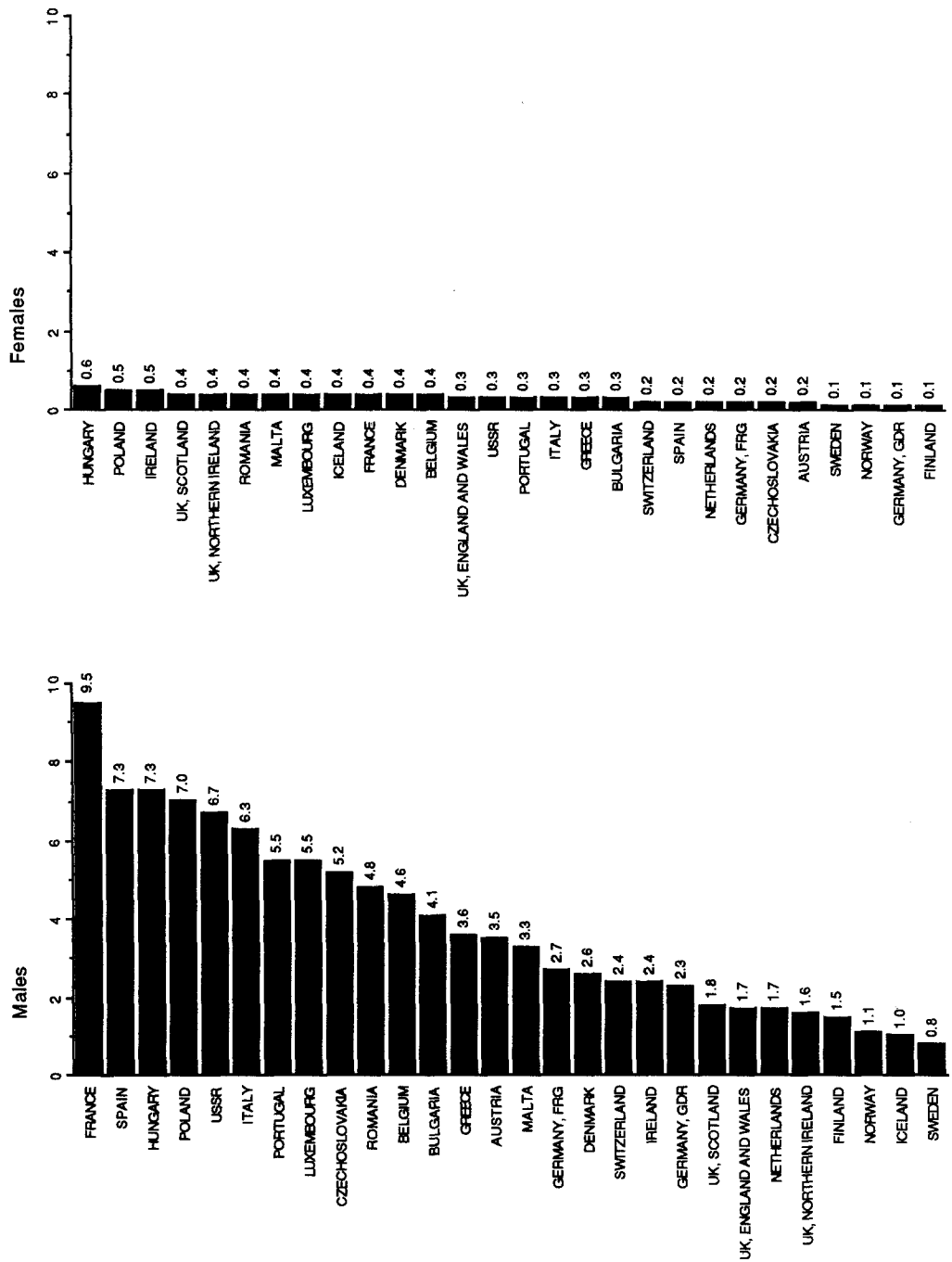


SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Larynx (ICD-9 : 161)



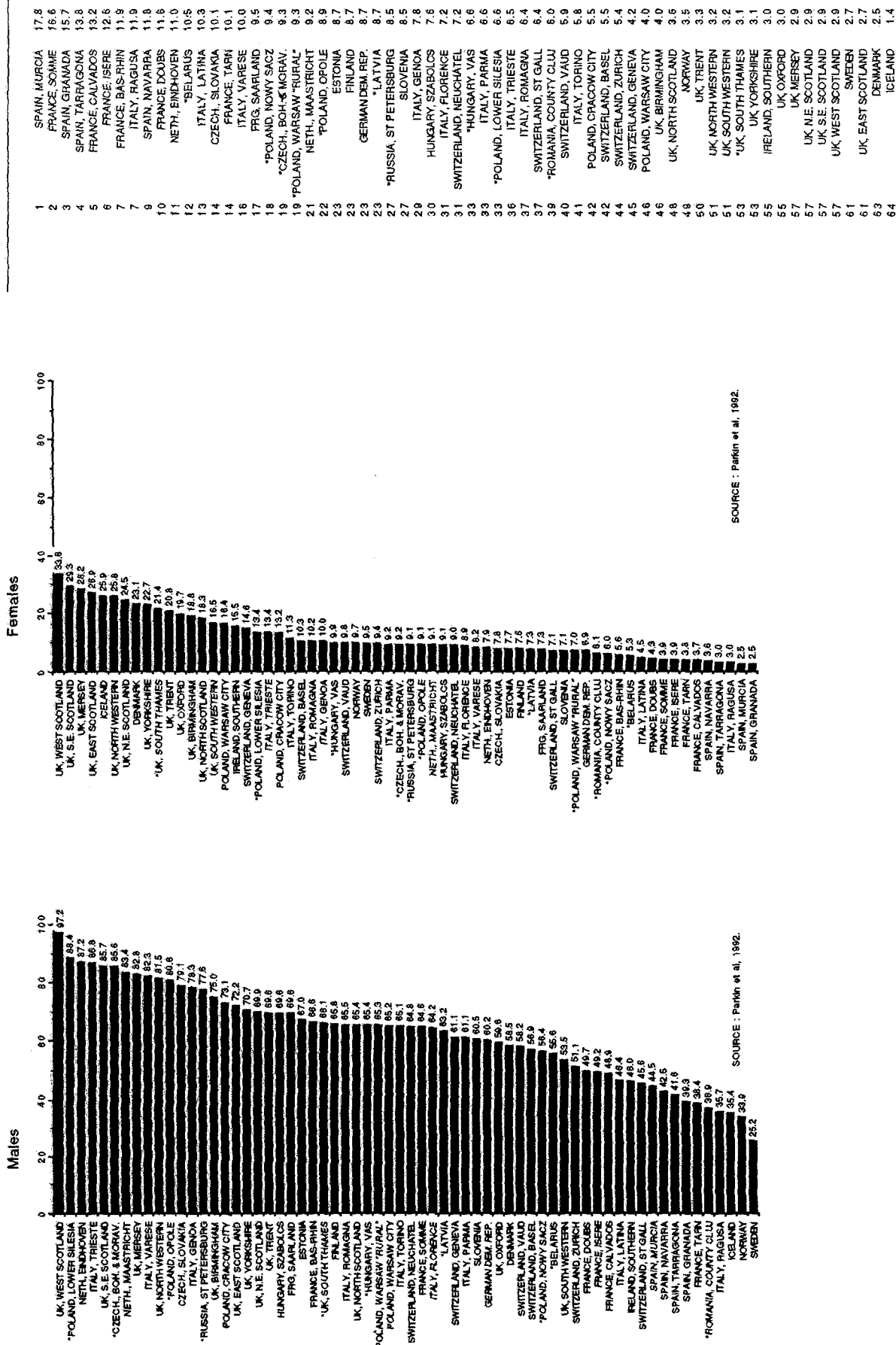
SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	SPAIN	36.5
2	CZECHOSLOVAKIA	26.0
3	FRANCE	23.8
4	GERMANY, GDR	23.0
5	USSR	22.3
6	ITALY	21.0
7	PORTUGAL	18.3
8	AUSTRIA	17.5
9	FINLAND	15.0
10	POLAND	14.0
11	LUXEMBOURG	13.8
12	BULGARIA	13.7
13	GERMANY, FRG	13.5
14	HUNGARY	12.2
15	GREECE	12.0
15	ROMANIA	12.0
15	SWITZERLAND	12.0
18	BELGIUM	11.5
19	NORWAY	11.0
20	NETHERLANDS	8.5
21	MALTA	8.3
22	SWEDEN	8.0
23	DENMARK	6.5
24	UK, ENGLAND AND WALES	5.7
25	IRELAND	4.8
26	UK, SCOTLAND	4.5
27	UK, NORTHERN IRELAND	4.0
28	ICELAND	2.5

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Trachea, bronchus and lung (ICD-9 : 162)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

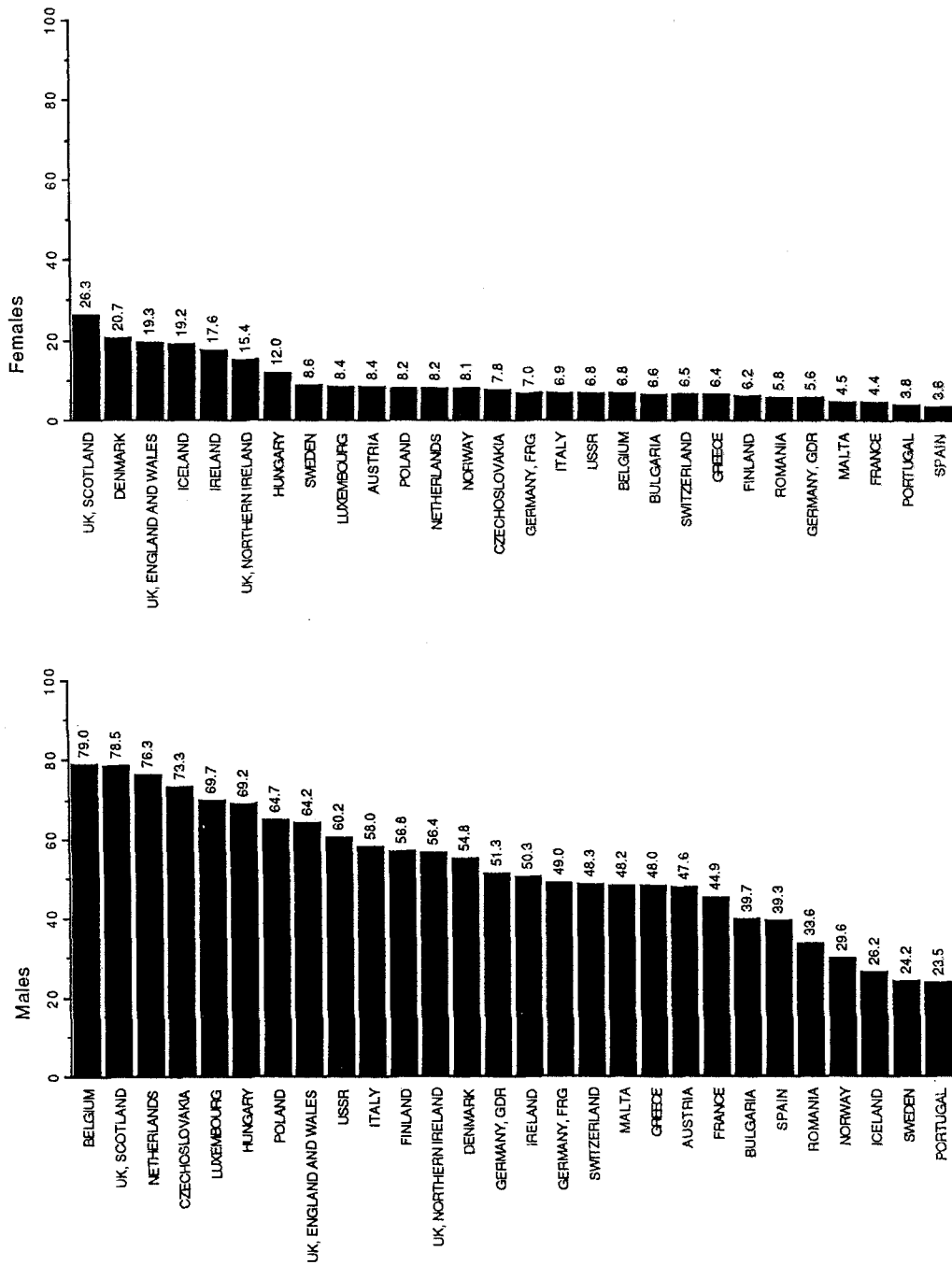


SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

Trachea, bronchus and lung (ICD-9 : 162)

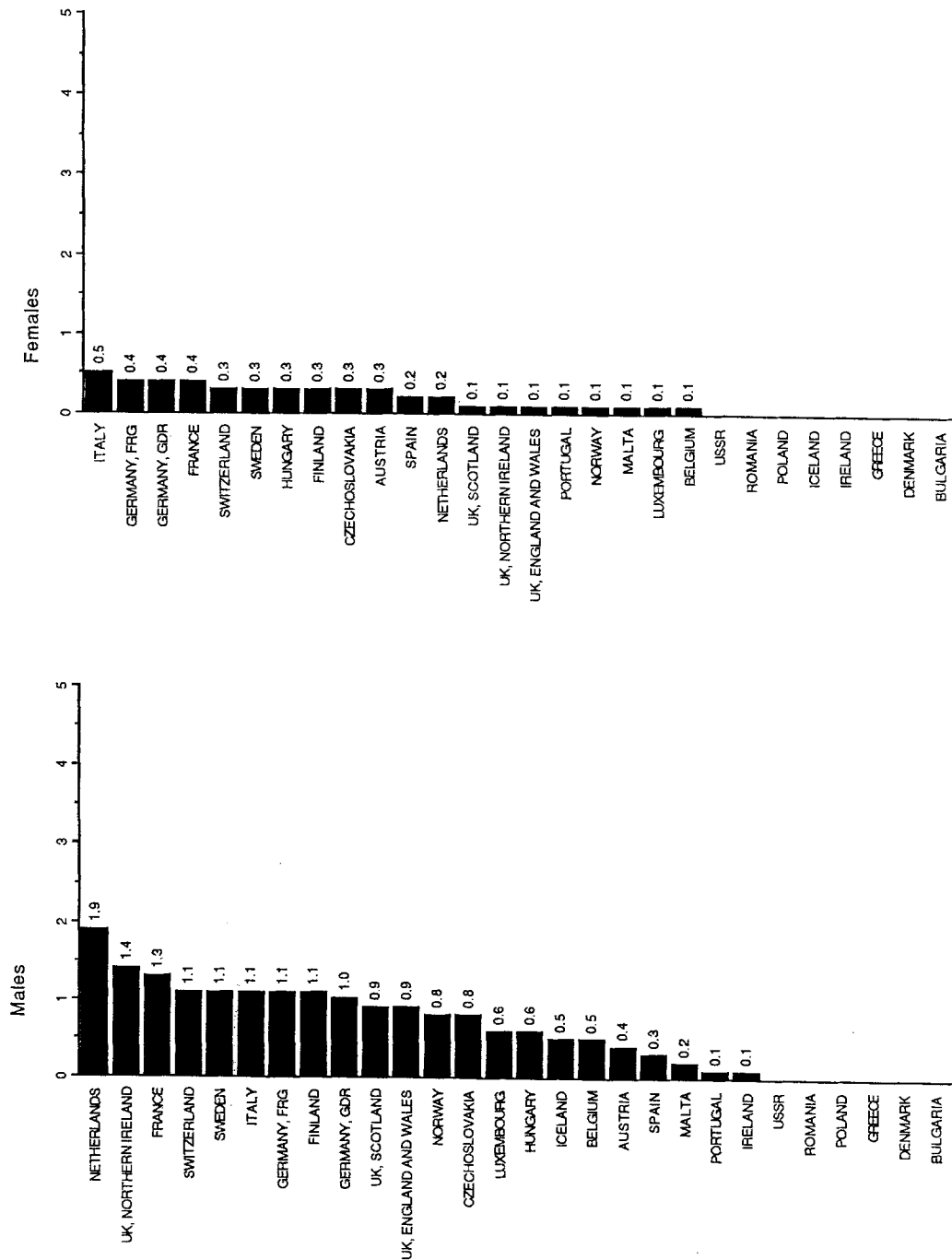


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	BELGIUM	11.6
2	SPAIN	10.9
3	MALTA	10.7
4	FRANCE	10.2
5	CZECHOSLOVAKIA	9.4
6	NETHERLANDS	9.3
7	FINLAND	9.2
8	GERMANY, GDR	9.2
9	USSR	8.9
10	ITALY	8.4
11	LUXEMBOURG	8.3
12	POLAND	7.9
13	GREECE	7.5
14	SWITZERLAND	7.4
15	GERMANY, FRG	7.0
16	PORTUGAL	6.2
17	BULGARIA	6.0
18	HUNGARY	5.8
19	ROMANIA	5.8
20	AUSTRIA	5.7
21	NORWAY	3.7
22	UK, NORTHERN IRELAND	3.7
23	UK, ENGLAND AND WALES	3.3
24	UK, SCOTLAND	3.0
25	IRELAND	2.9
26	SWEDEN	2.8
27	DENMARK	2.8
28	ICELAND	1.4

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Pleura (ICD-9 : 163)



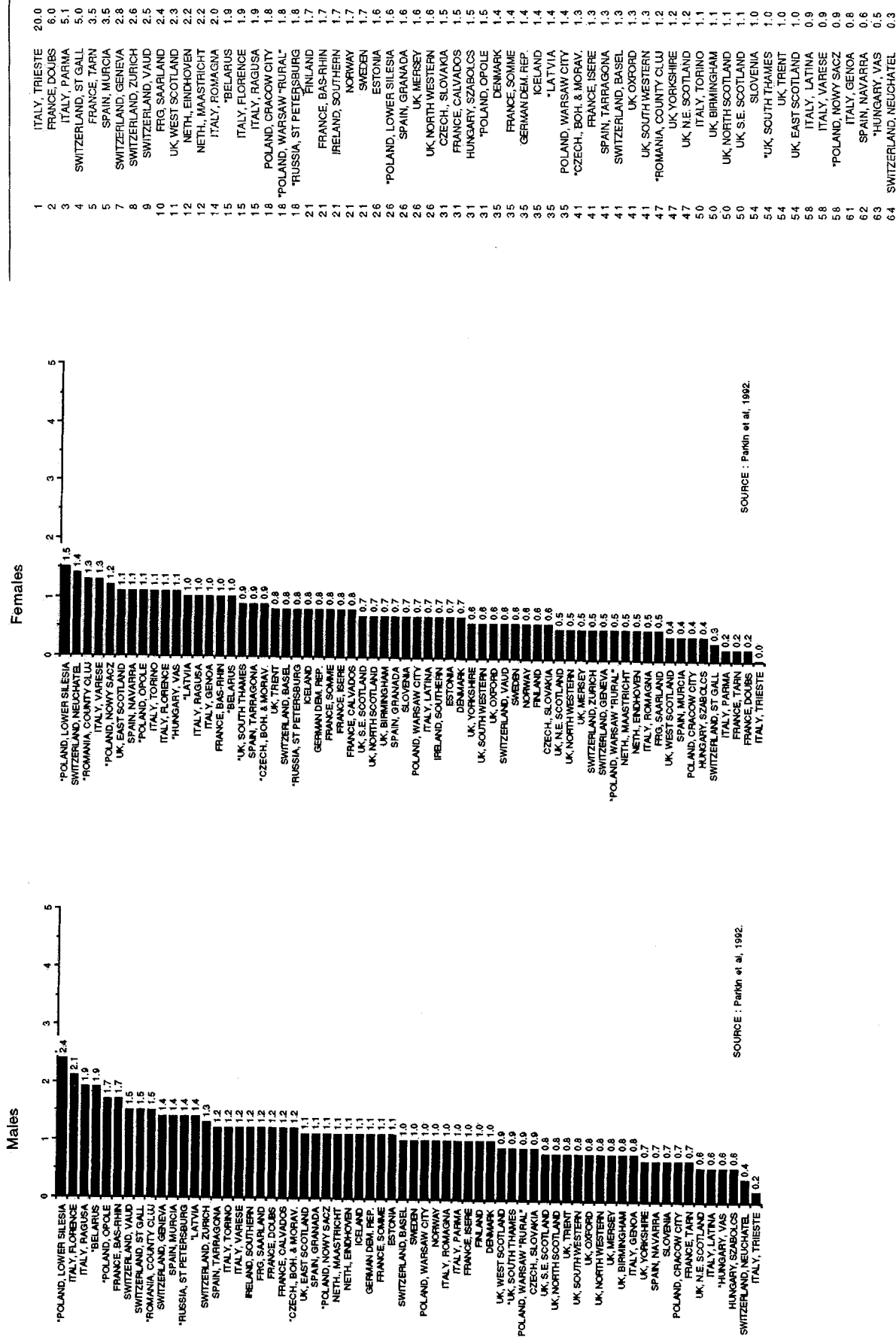
SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	UK, NORTHERN IRELAND	14.0
2	NETHERLANDS	9.5
3	UK, ENGLAND AND WALES	9.0
3	UK, SCOTLAND	9.0
5	NORWAY	8.0
6	LUXEMBOURG	6.0
7	BELGIUM	5.0
8	FINLAND	3.7
8	SWEDEN	3.7
8	SWITZERLAND	3.7
11	FRANCE	3.3
12	GERMANY, FRG	2.8
13	CZECHOSLOVAKIA	2.7
14	GERMANY, GDR	2.5
15	ITALY	2.2
16	HUNGARY	2.0
16	MALTA	2.0
18	SPAIN	1.5
19	AUSTRIA	1.3
20	BELGIUM	1.0

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Bone (ICD-9 : 170)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

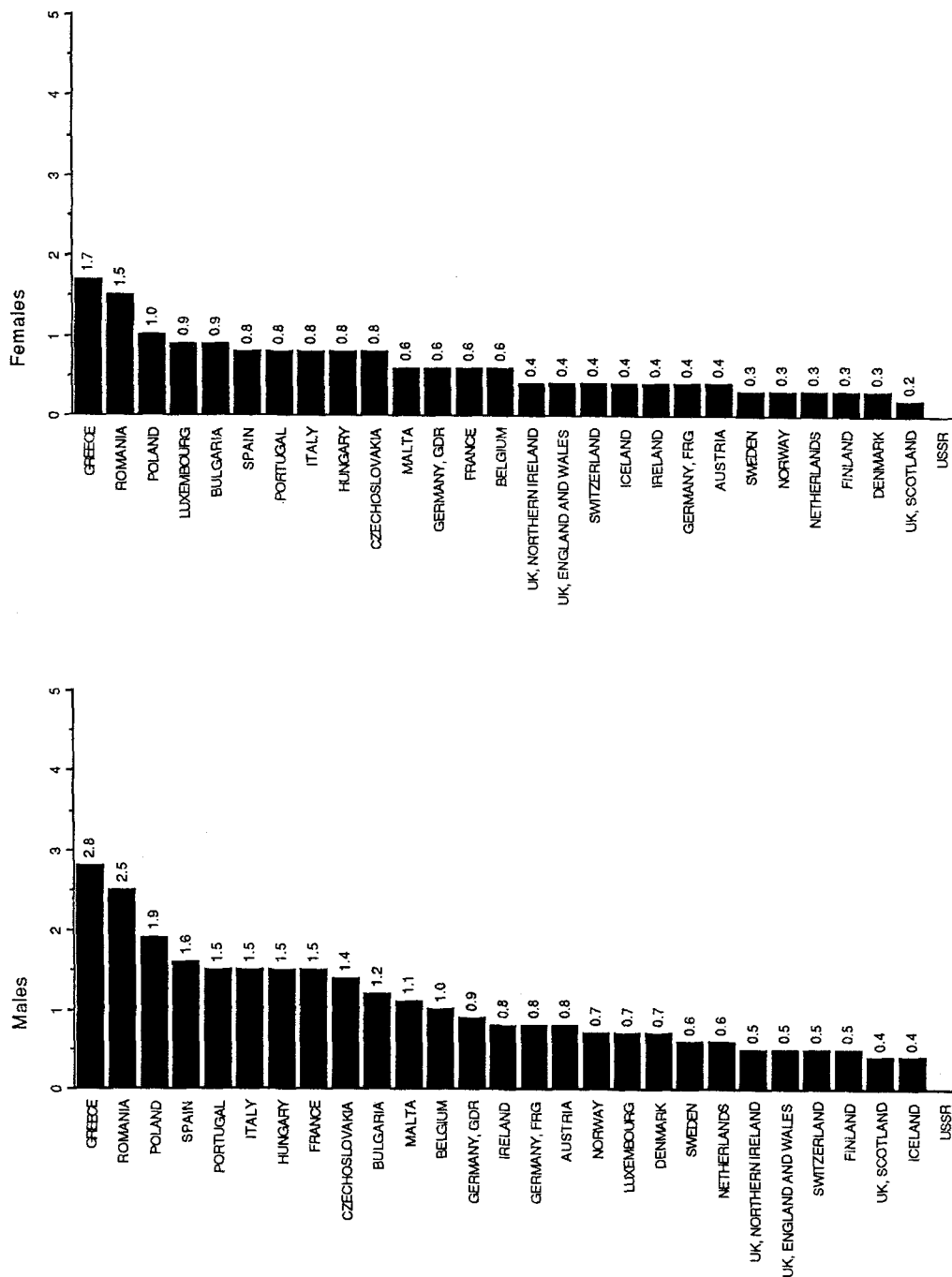


SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Bone (ICD-9 : 170)



SIX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	FRANCE	2.5
2	DENMARK	2.3
3	NORWAY	2.0
4	AUSTRIA	2.0
4	GERMANY, FRG	2.0
4	IRELAND	2.0
4	NETHERLANDS	2.0
4	SPAIN	2.0
4	SWEDEN	2.0
4	UK, SCOTLAND	2.0
11	HUNGARY	1.9
11	ITALY	1.9
11	POLAND	1.9
11	PORTUGAL	1.9
15	CZECHOSLOVAKIA	1.8
15	MALTA	1.8
17	BELGIUM	1.7
17	FINLAND	1.7
17	ROMANIA	1.7
20	GREECE	1.6
21	GERMANY, GDR	1.5
22	BULGARIA	1.3
22	SWITZERLAND	1.3
22	UK, ENGLAND AND WALES	1.3
22	UK, NORTHERN IRELAND	1.3
26	ICELAND	1.0
27	LUXEMBOURG	0.8
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Connective and soft tissue sarcomas (ICD-9 : 171)

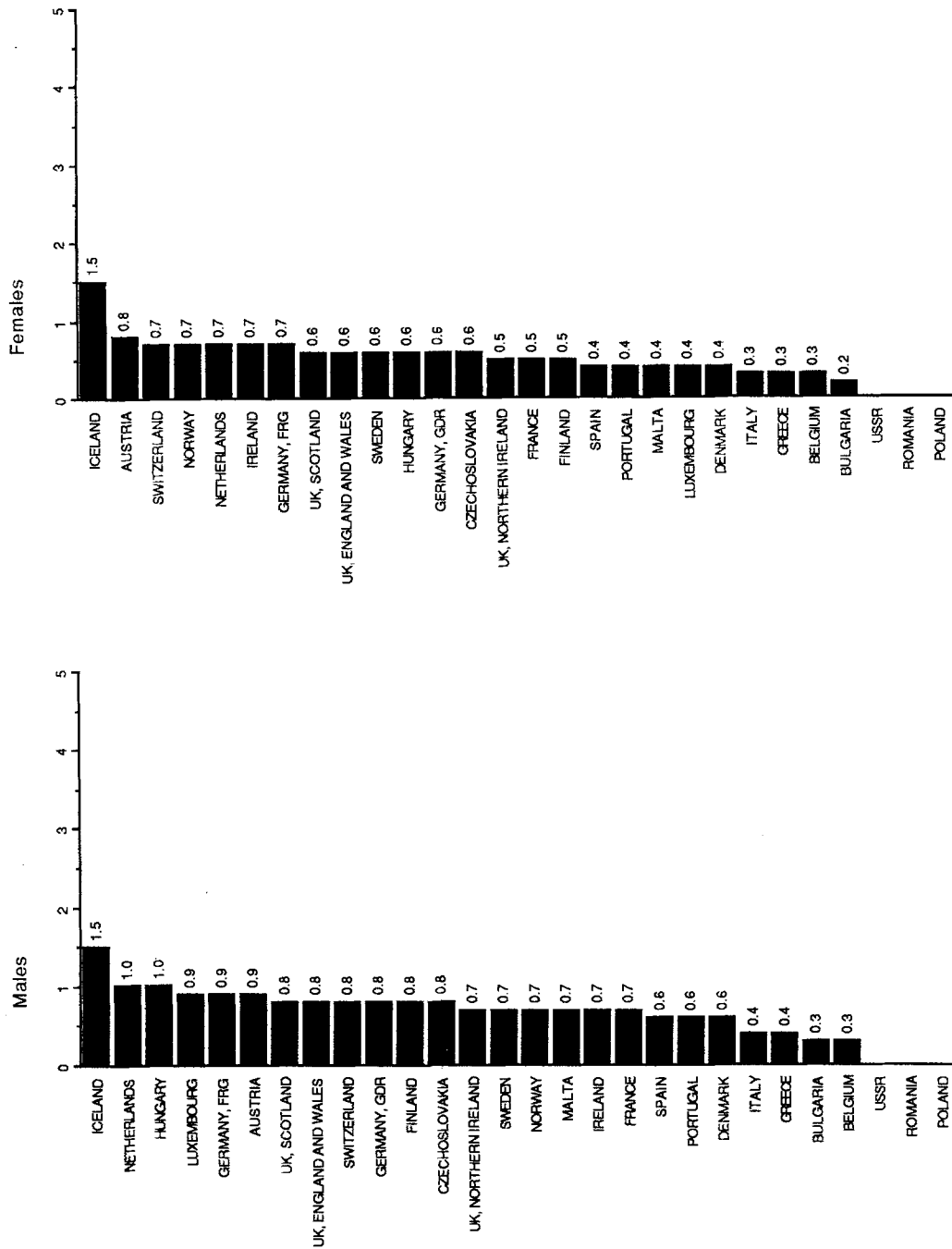
SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)



SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**
Connective and soft tissue sarcomas (ICD-9 : 171)

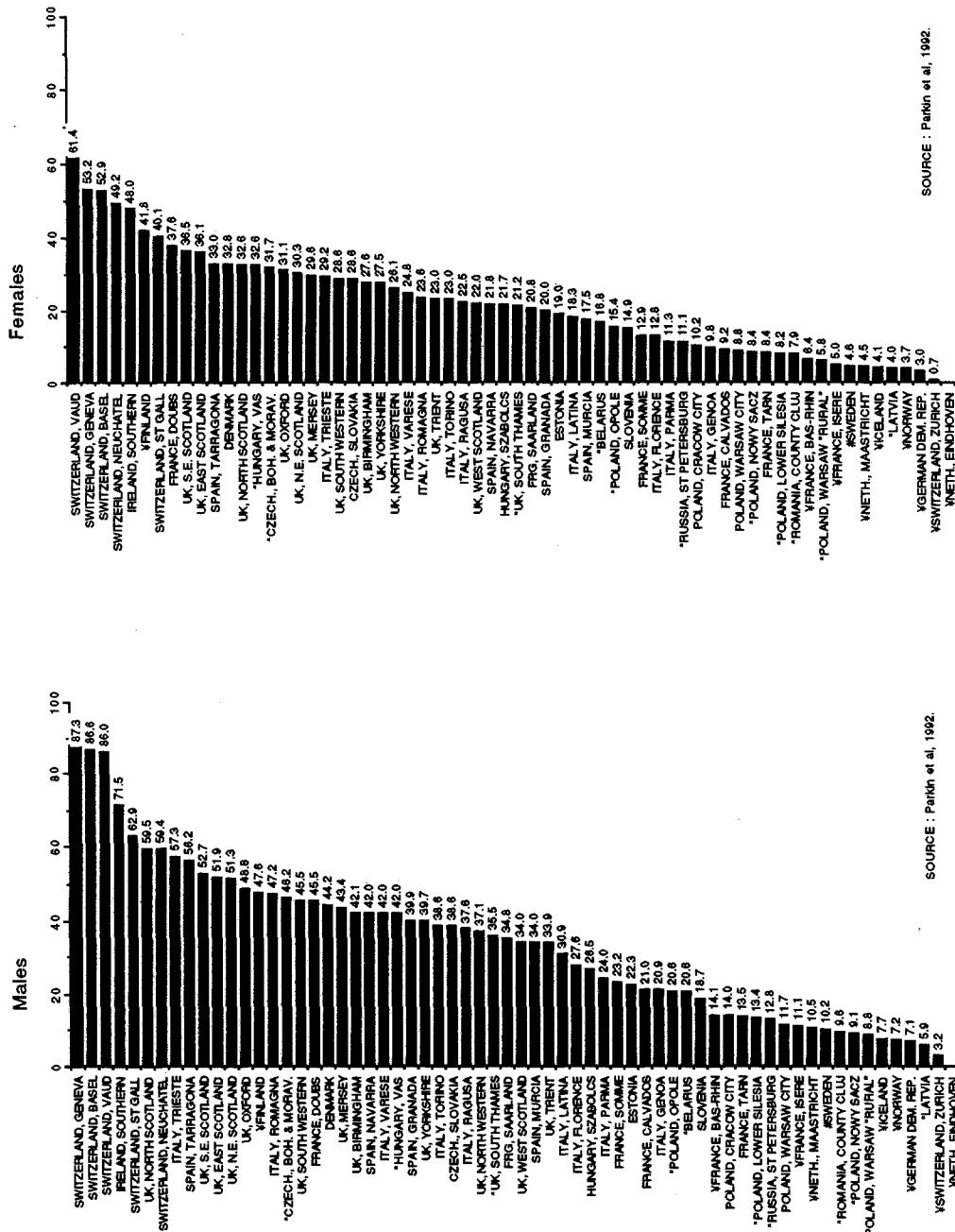


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	LUXEMBOURG	2.3
2	MALTA	1.8
3	HUNGARY	1.7
4	FINLAND	1.6
5	BULGARIA	1.5
5	DENMARK	1.5
5	PORTUGAL	1.5
5	SPAIN	1.5
9	FRANCE	1.4
9	NETHERLANDS	1.4
9	UK, NORTHERN IRELAND	1.4
12	CZECHOSLOVAKIA	1.3
12	GERMANY, GDR	1.3
12	GERMANY, FRG	1.3
12	GREECE	1.3
12	ITALY	1.3
12	UK, ENGLAND AND WALES	1.3
12	UK, SCOTLAND	1.3
19	SWEDEN	1.2
20	AUSTRIA	1.1
20	SWITZERLAND	1.1
22	BELGIUM	1.0
22	IRELAND	1.0
22	KELAND	1.0
22	NORWAY	1.0
22	POLAND	1.0
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Skin, excluding melanoma (ICD-9 : 173)

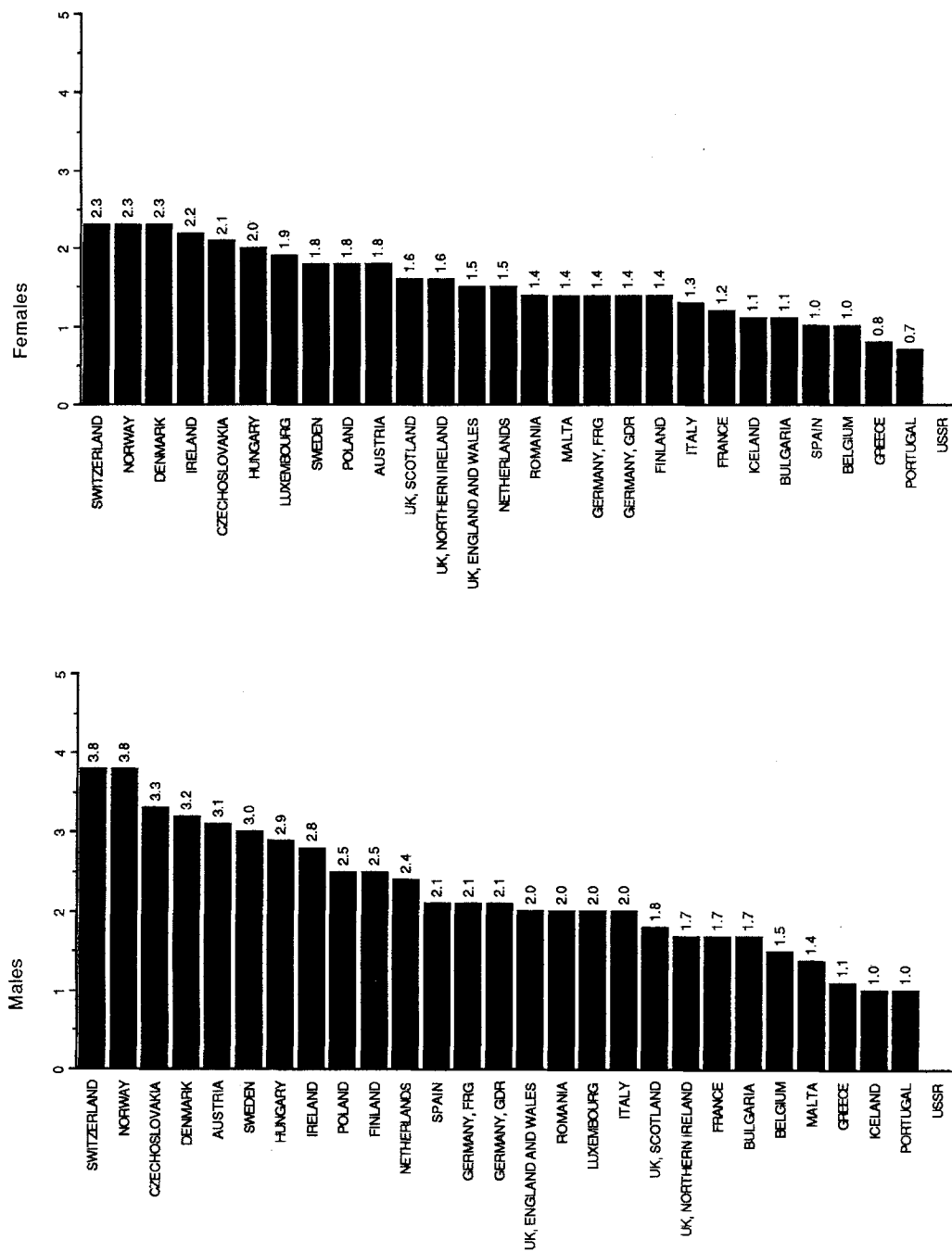


SIX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

1	SWITZERLAND, ZURICH	4.6
2	GERMAN DEM. REP.	2.4
3	FRANCE, CALVADOS	2.3
4	NETH., MAESTRICH	2.3
5	FRANCE, BASH-RHIN	2.2
6	FRANCE, ISERE	2.2
7	ITALY, FLORENCE	2.2
8	SWEDEN	2.2
9	ITALY, GENOA	2.1
10	ITALY, PARMA	2.1
11	ITALY, ROMAGNA	2.0
12	ITALY, TRIESTE	2.0
13	SPAIN, GRANADA	2.0
14	ICELAND	1.9
15	NORWAY	1.9
16	SPAIN, MURCIA	1.9
17	SPAIN, NAVARRA	1.9
18	FRANCE, SOMME	1.8
19	UK, NORTH SCOTLAND	1.8
20	FRG, SAARLAND	1.7
21	ITALY, VARESE	1.7
22	ITALY, LATINA	1.7
23		

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Skin, including melanoma (ICD-9 : 172-3)

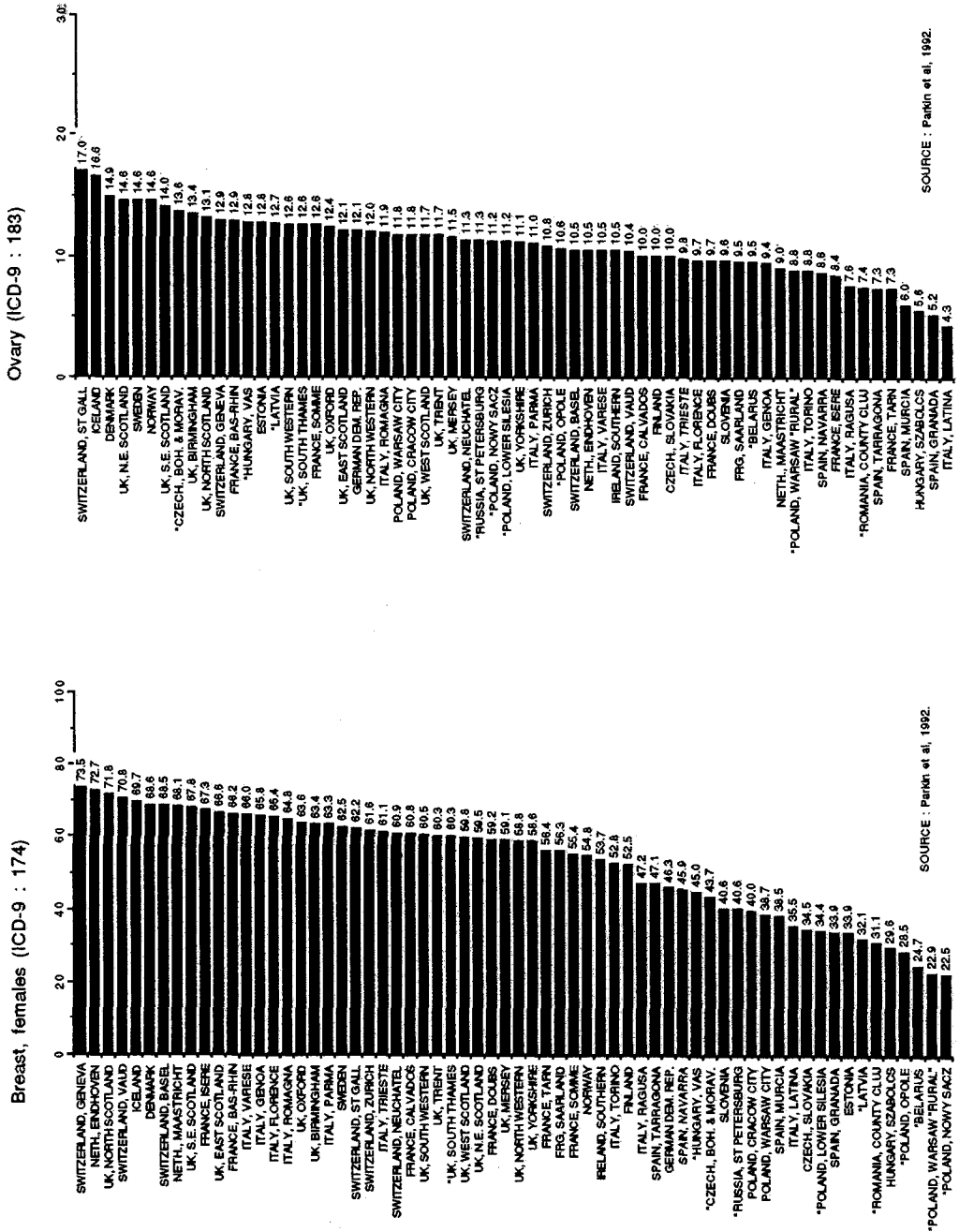


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

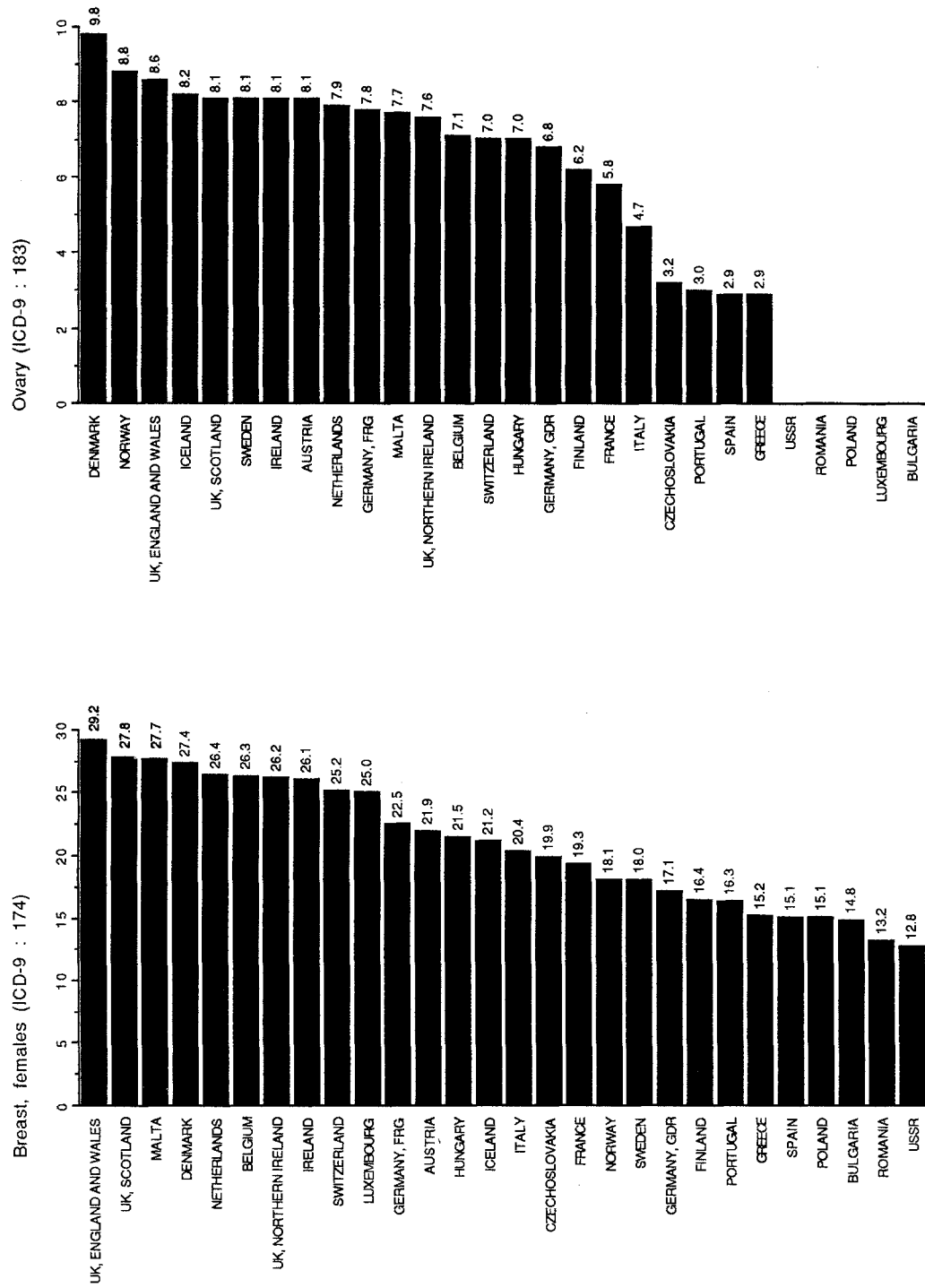
1	SPAIN	2.1
2	FINLAND	1.8
3	AUSTRIA	1.7
3	NORWAY	1.7
3	SWEDEN	1.7
3	SWITZERLAND	1.7
7	CZECHOSLOVAKIA	1.6
7	NETHERLANDS	1.6
8	BELGIUM	1.5
9	BULGARIA	1.5
9	GERMANY, GDR	1.5
9	GERMANY, FRG	1.5
9	HUNGARY	1.5
9	ITALY	1.5
15	DENMARK	1.4
15	FRANCE	1.4
15	GREECE	1.4
15	POLAND	1.4
15	PORTUGAL	1.4
15	ROMANIA	1.4
21	IRELAND	1.3
21	UK, ENGLAND AND WALES	1.3
23	LUXEMBOURG	1.1
24	UK, NORTHERN IRELAND	1.1
24	UK, SCOTLAND	1.1
26	MALTA	1.0
27	ICELAND	0.9
	USSR	0.9

The histograms of mortality from non-melanomatous skin cancer are not produced, on account of major problems in cancer certification reliability. These are reflected in incidence rates as well, since most of the variation is clearly due to differences in case ascertainment and certification. The histograms of incidence are nonetheless presented to illustrate and quantify the extent of this variation.

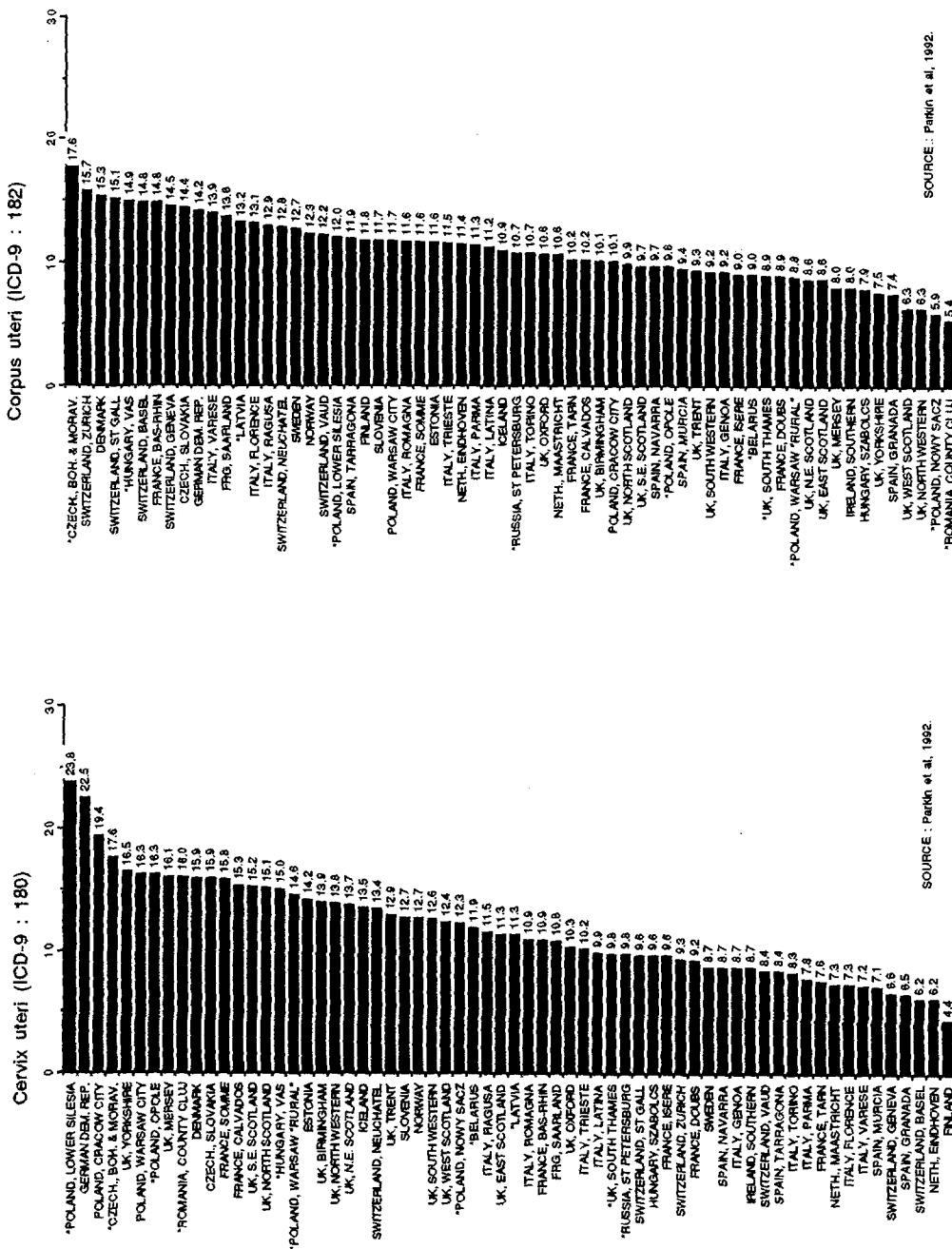
AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87



**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**



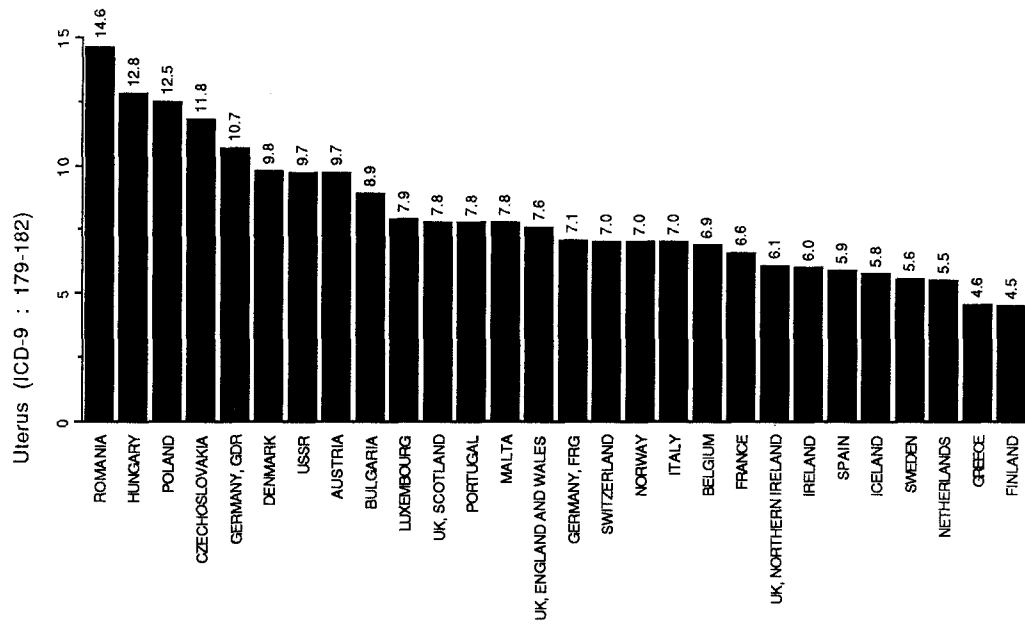
AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87



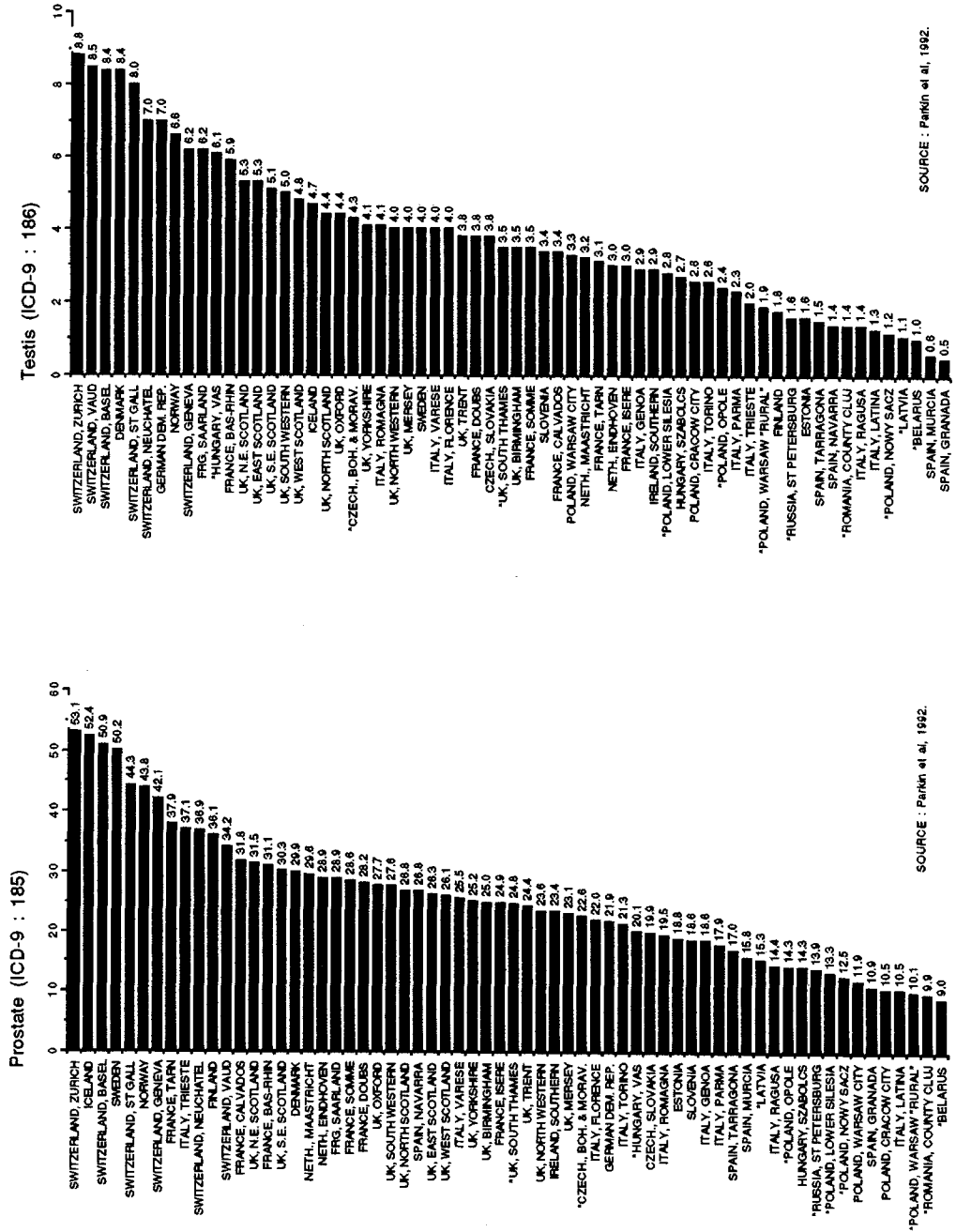
SOURCE : Parkin et al, 1992.

SOURCE : Parkin et al, 1992.

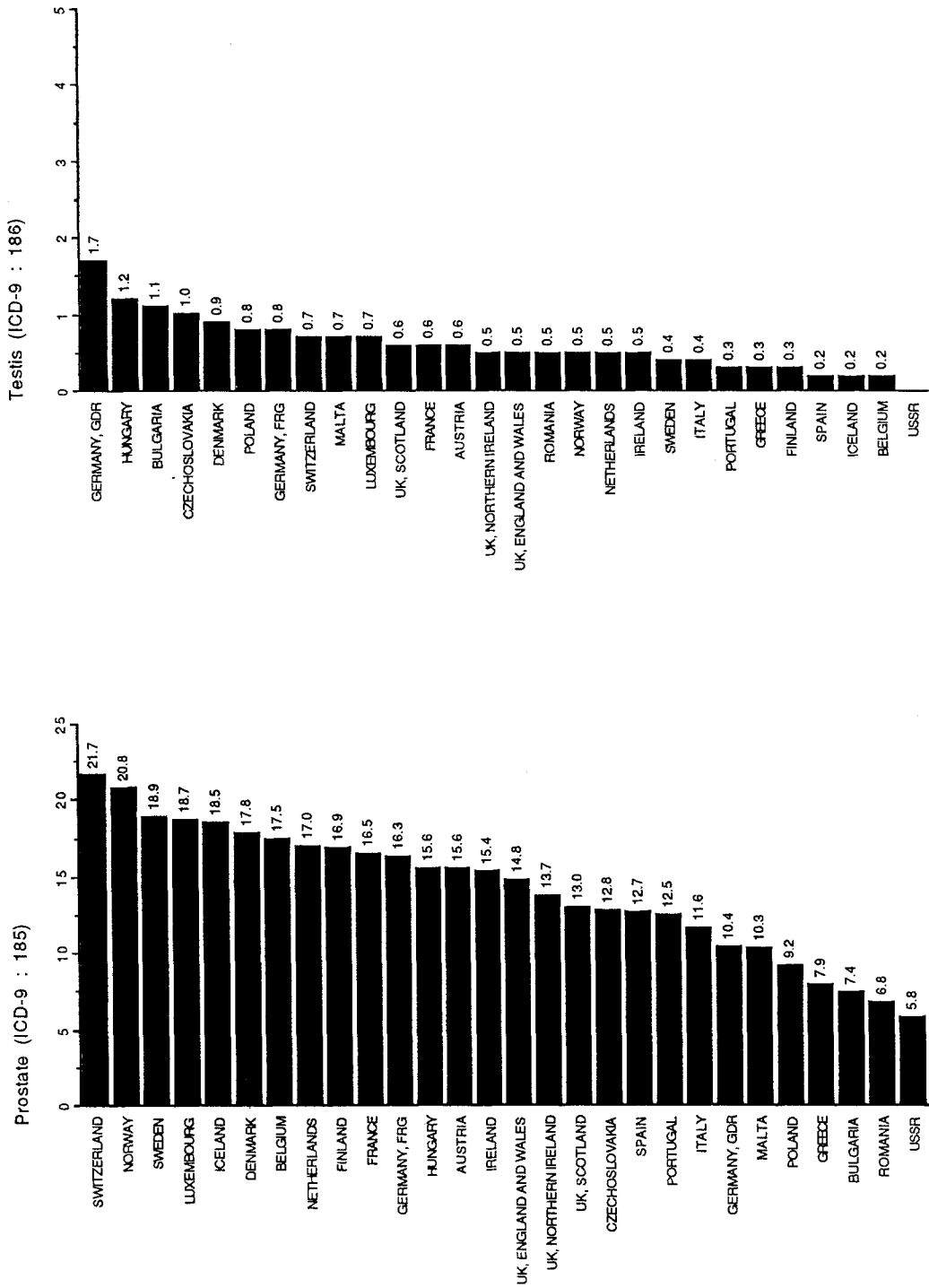
**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**



AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87



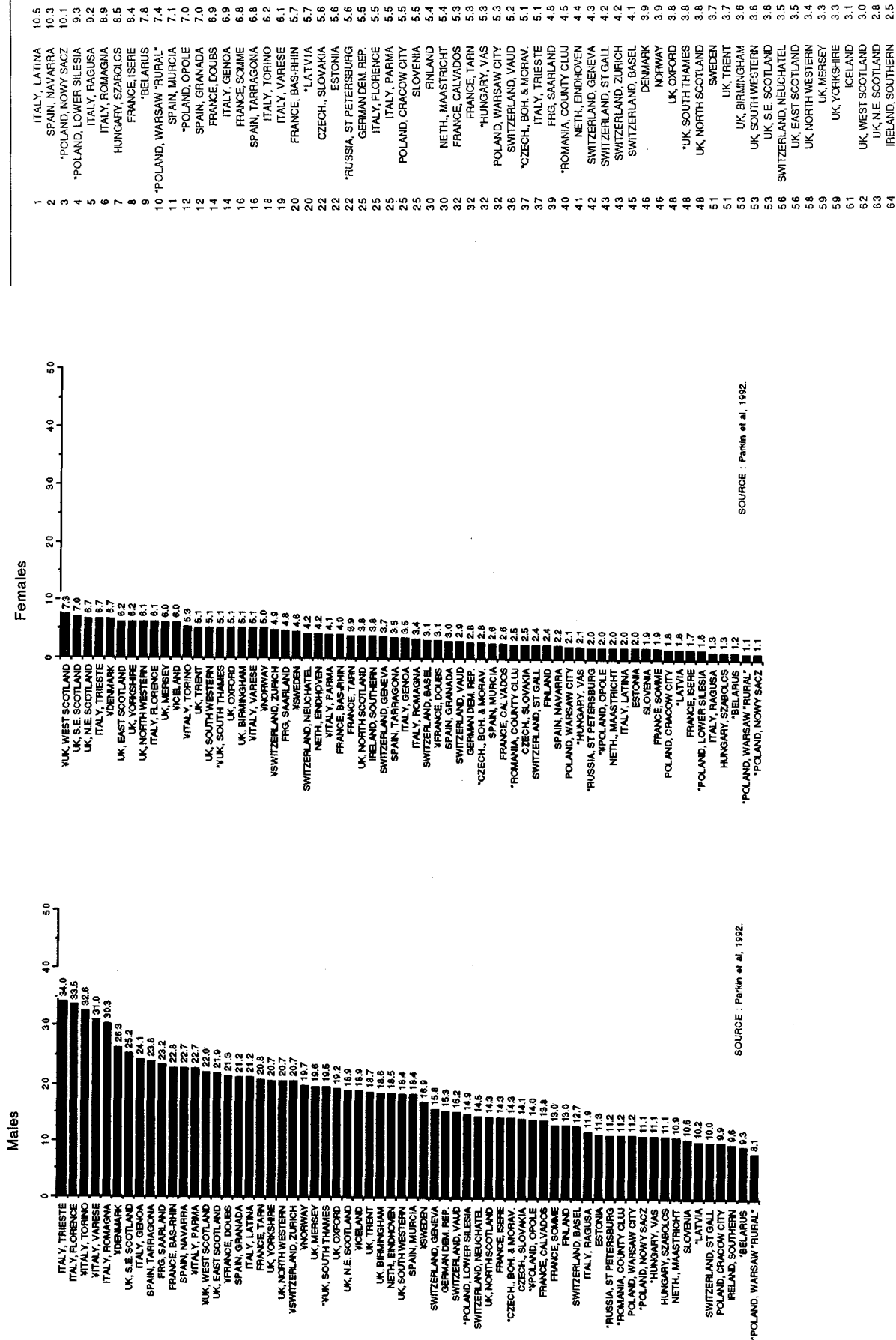
**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**



AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

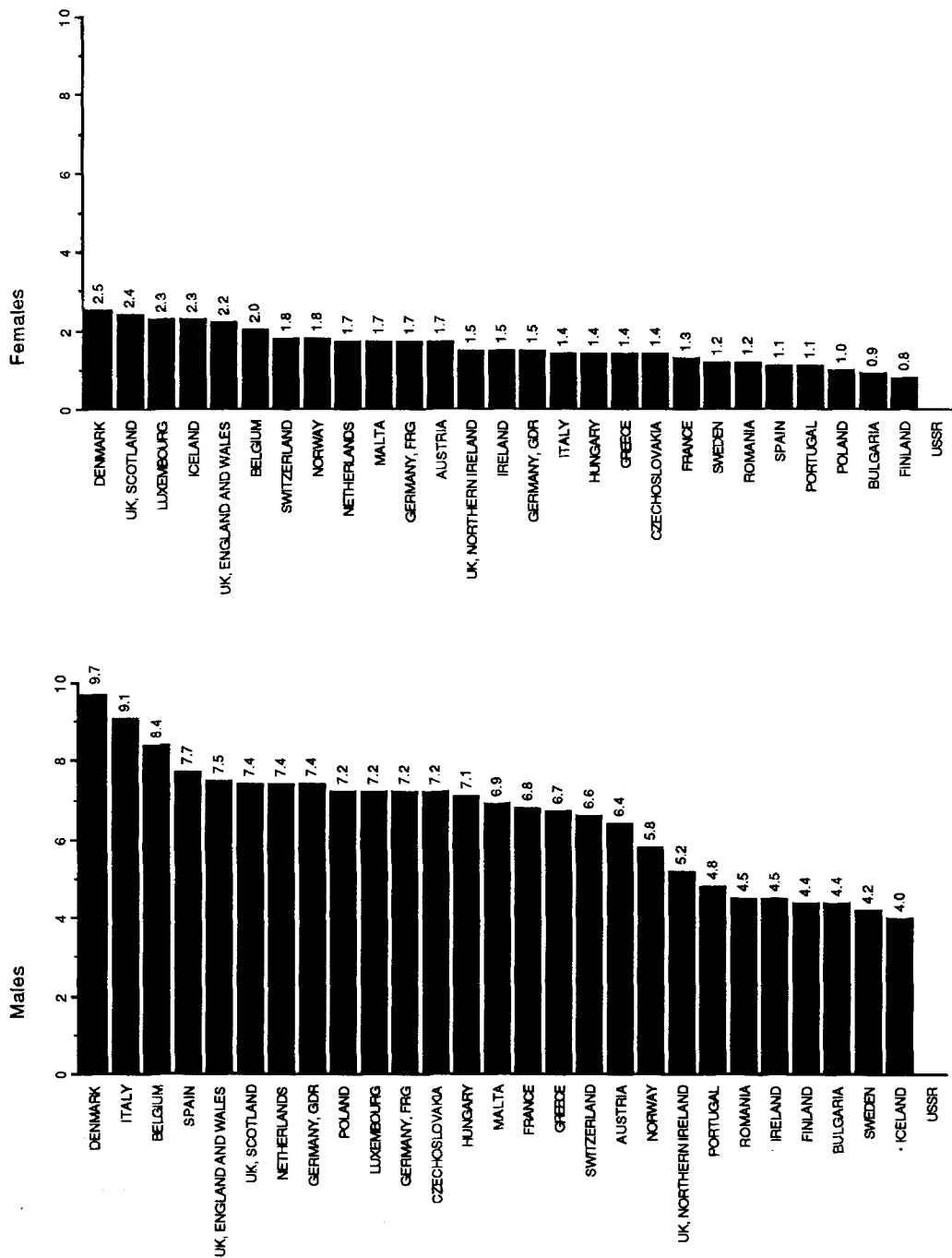
Bladder (ICD-9 : 188)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)



AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Bladder (ICD-9 : 188)



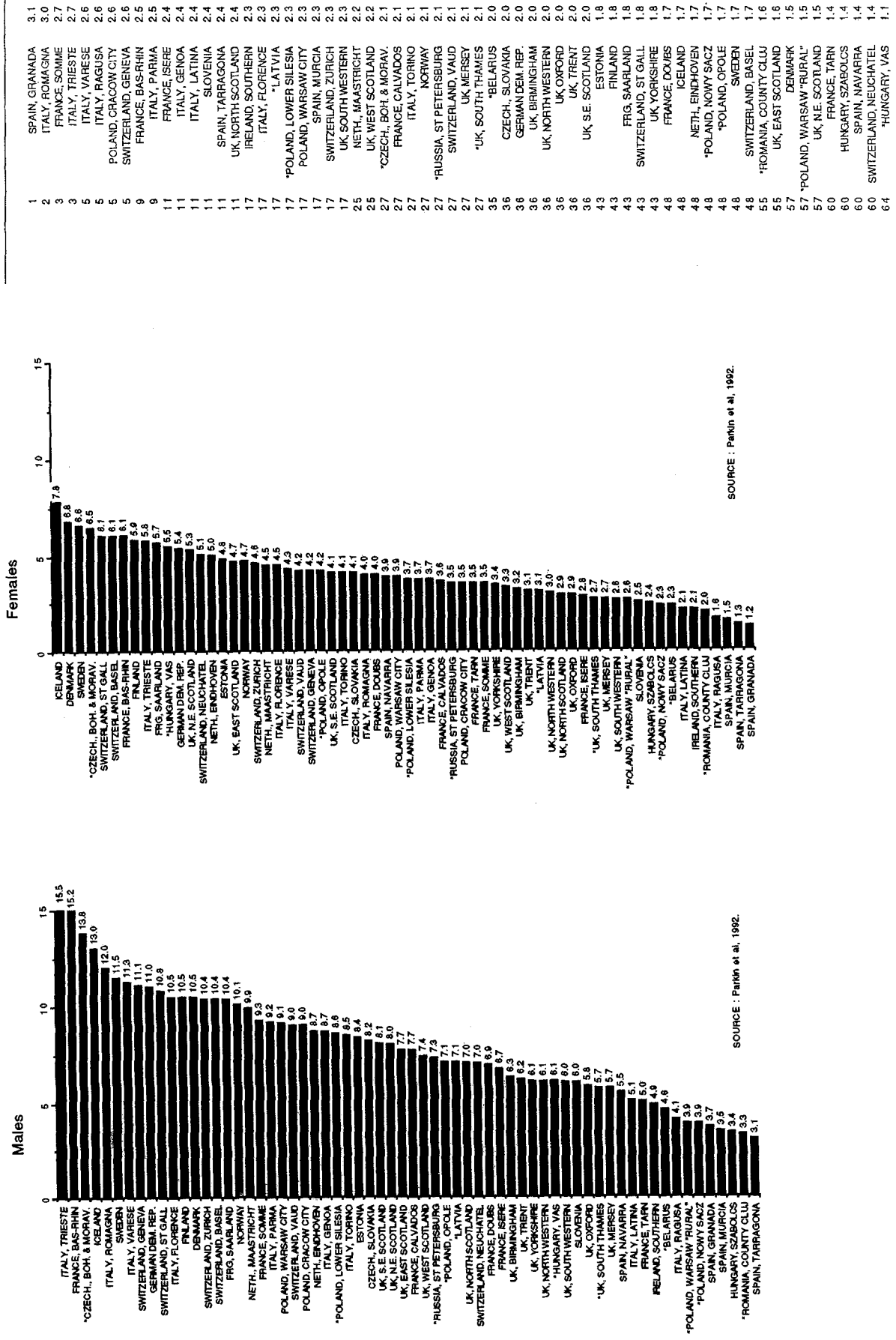
SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	POLAND	7.2
2	SPAIN	7.0
3	ITALY	6.5
4	FINLAND	5.5
5	FRANCE	5.2
6	CZECHOSLOVAKIA	5.1
7	HUNGARY	5.1
8	BULGARIA	4.9
9	GERMANY, GDR	4.9
10	GREECE	4.8
11	NETHERLANDS	4.4
12	PORTUGAL	4.4
13	BELGIUM	4.4
14	GERMANY, FRG	4.2
15	MALTA	4.1
16	DENMARK	3.9
17	AUSTRIA	3.8
18	ROMANIA	3.8
19	SWITZERLAND	3.7
20	SWEDEN	3.5
21	UK, NORTHERN IRELAND	3.5
22	UK, ENGLAND AND WALES	3.4
23	NORWAY	3.2
24	LUXEMBOURG	3.1
25	UK, SCOTLAND	3.1
26	IRELAND	3.0
27	ICELAND	1.7
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Kidney and other urinary sites (ICD-9 : 189)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

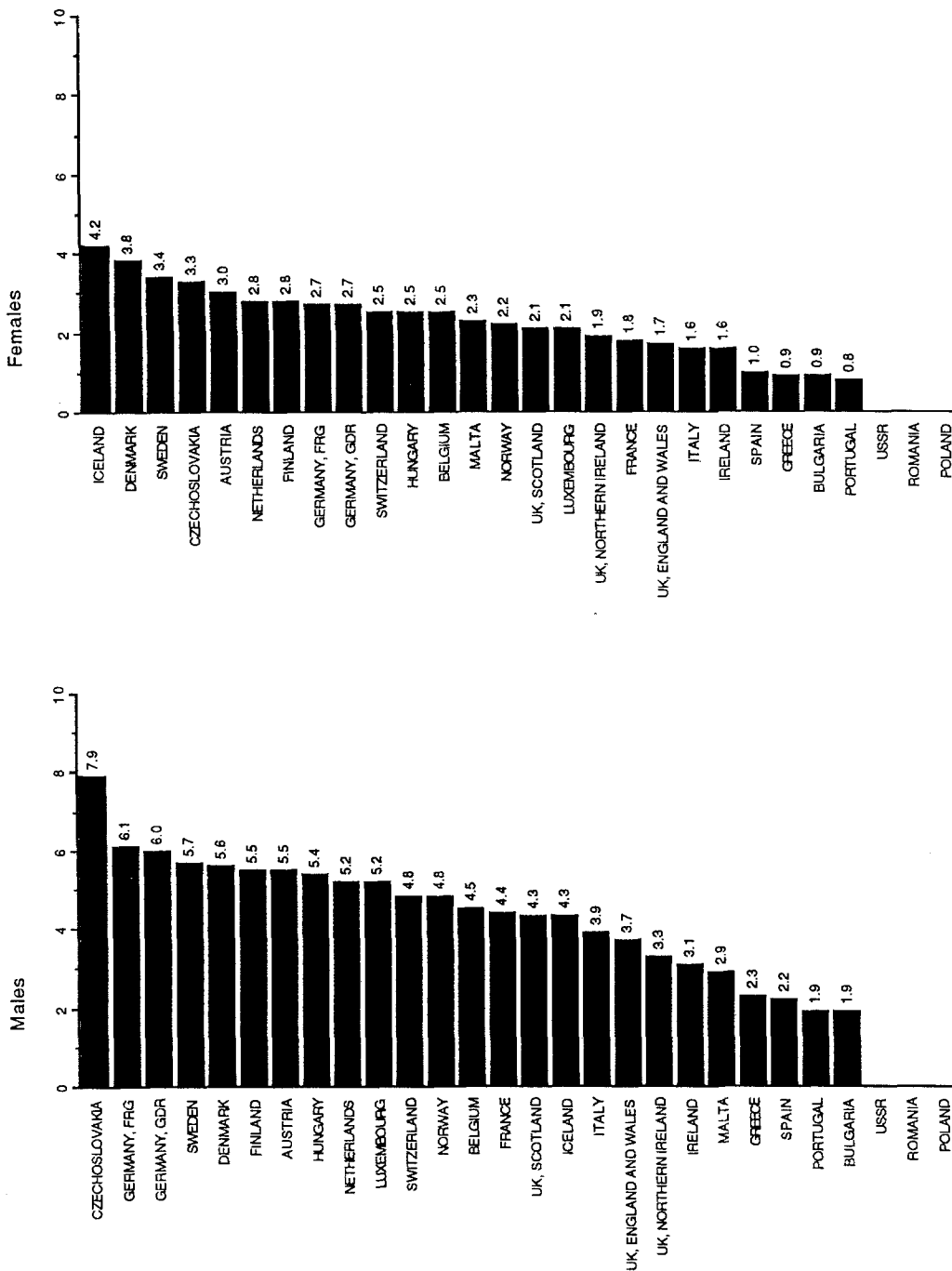


SOURCE : Parkin et al. 1992.

SOURCE : Parkin et al. 1992.

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

Kidney and other urinary sites (ICD-9 : 189)

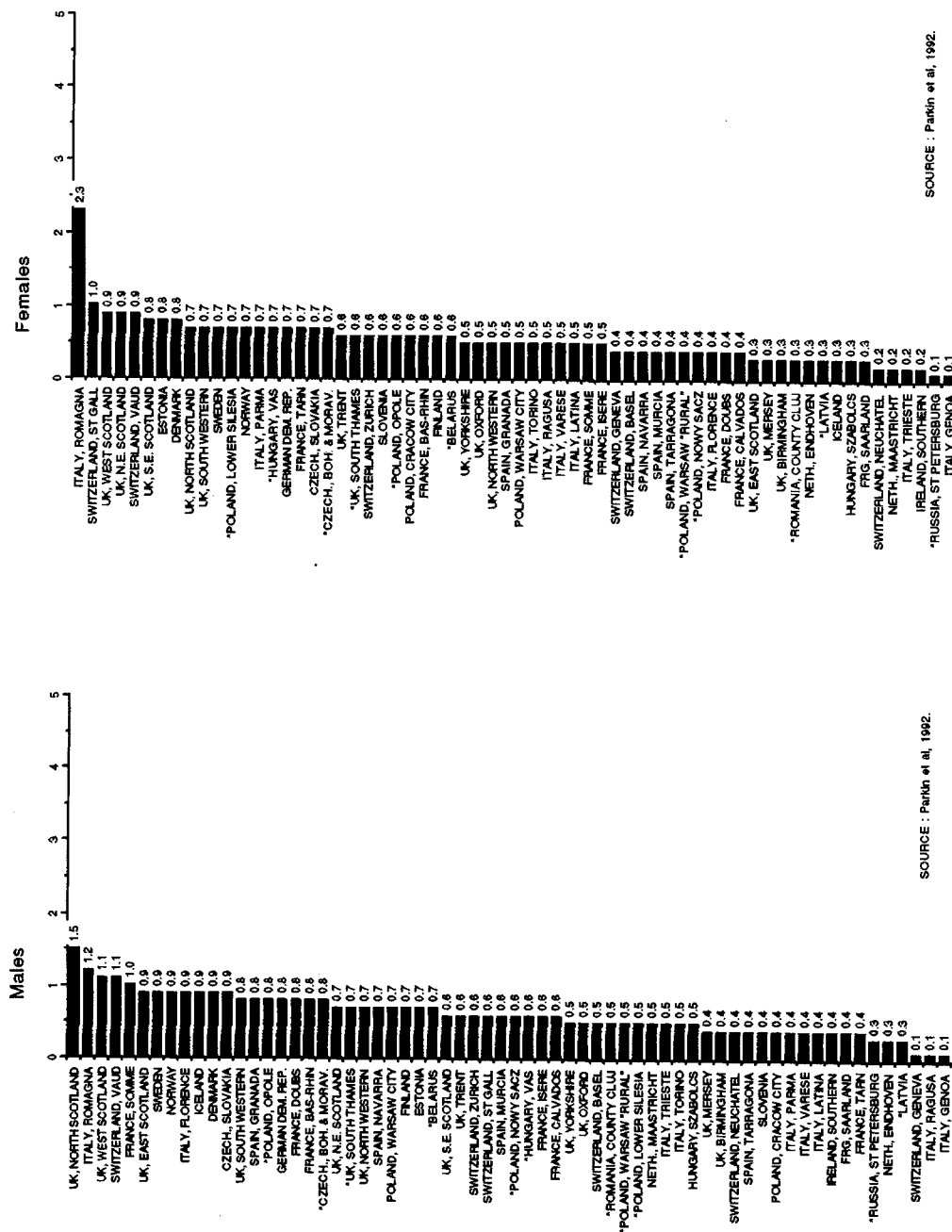


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	GREECE	2.6
2	LUXEMBOURG	2.5
3	CZECHOSLOVAKIA	2.4
3	FRANCE	2.4
3	ITALY	2.4
3	PORTUGAL	2.4
7	GERMANY, FRG	2.3
7	GERMANY, GDR	2.3
8	HUNGARY	2.2
8	NORWAY	2.2
8	SPAIN	2.2
8	UK, ENGLAND AND WALES	2.2
13	BULGARIA	2.1
14	FINLAND	2.0
14	UK, SCOTLAND	2.0
16	IRELAND	1.9
16	NETHERLANDS	1.9
16	SWITZERLAND	1.9
19	AUSTRIA	1.8
19	BELGIUM	1.8
21	UK, NORTHERN IRELAND	1.7
21	SWEDEN	1.7
23	DENMARK	1.5
24	MALTA	1.3
25	ICELAND	1.3
	POLAND	1.0
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Eye (ICD-9 : 190)



SOURCE : Parkin et al, 1992.

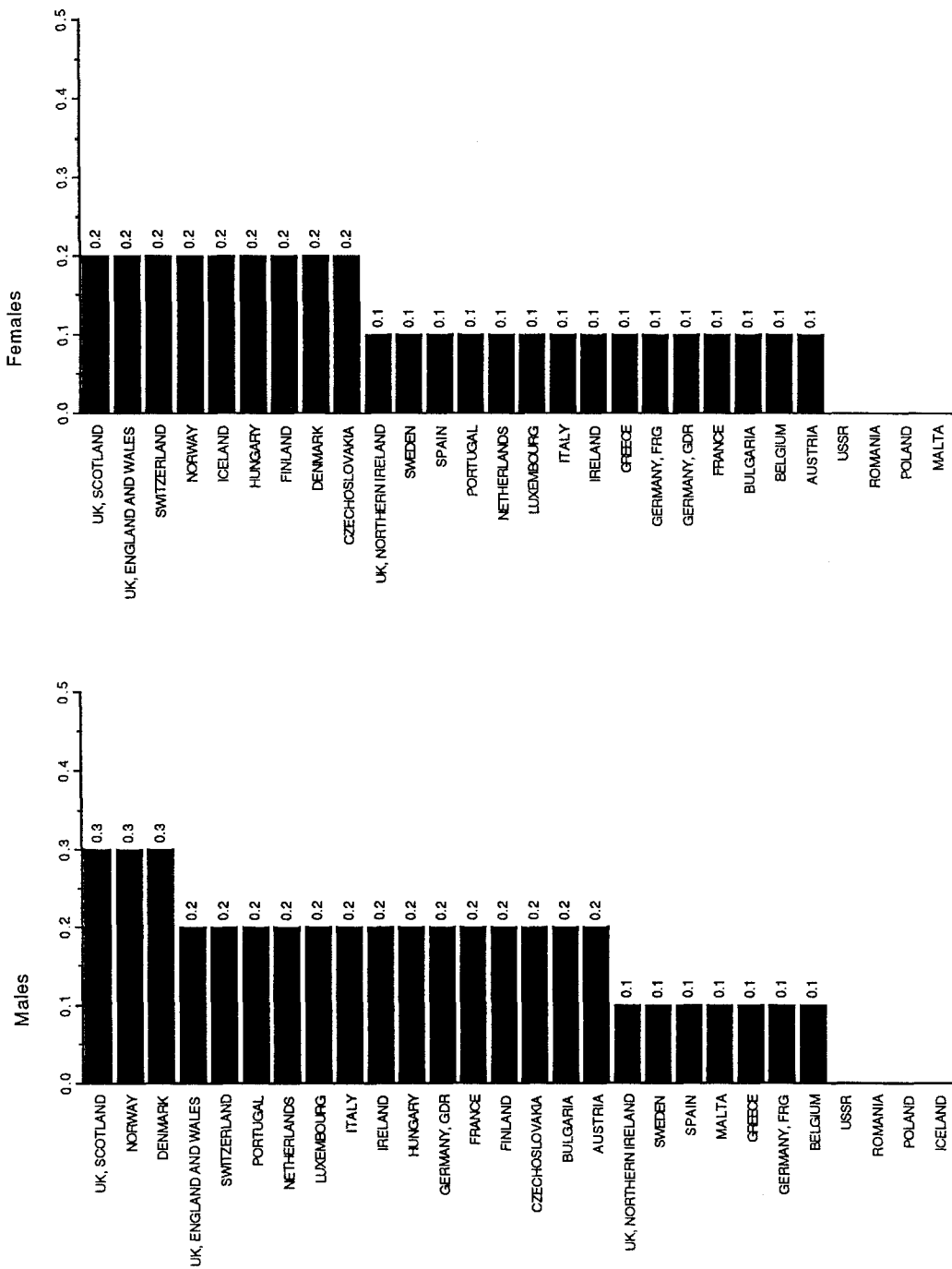
SOURCE : Parkin et al, 1992.

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN
CANCER REGISTRY REGIONS, 1983-87 (RANKED)

1	*RUSSIA, ST PETERSBURG	3.0
1	UK, EAST SCOTLAND	3.0
4	ITALY, TRIESTE	2.5
4	NETH., MAASTRICHT	2.5
6	ITALY, FLORENCE	2.3
7	UK, NORTH SCOTLAND	2.1
8	FRANCE, DOUBS	2.0
8	FRANCE, SOMME	2.0
8	IRELAND, SOUTHERN	2.0
8	SWITZERLAND, NEUCHÂTEL	2.0
12	SPAIN, NAVARRA	1.8
13	HUNGARY, SZABOLCS	1.7
13	*ROMANIA, COUNTY CLUJ	1.7
15	SPAIN, GRANADA	1.6
16	FRANCE, CALVADOS	1.5
16	*POLAND, NOWY SACZ	1.5
16	SPAIN, MURCIA	1.5
19	POLAND, WARSAW CITY	1.4
19	UK, NORTH WESTERN	1.4
21	CZECH., SLOVAKIA	1.3
22	FRANCE, BAS-RHIN	1.3
22	FRG, SAARLAND	1.3
22	NORWAY	1.3
22	*POLAND, OPOLE	1.3
22	*POLAND, WARSAW "RURAL"	1.3
22	SWEDEN	1.3
22	SWITZERLAND, BASEL	1.3
22	UK, BIRMINGHAM	1.3
22	UK, MERSEY	1.3
31	*BELARUS	1.2
31	FINLAND	1.2
31	FRANCE, ISERE	1.2
31	FRANCE, SEINE	1.2
31	SWITZERLAND, VAUD	1.2
31	*UK, SOUTH THAMES	1.2
31	UK, WEST SCOTLAND	1.2
37	*CZECH., BOH. & MORAV.	1.1
37	DENMARK	1.1
37	GERMAN DEM. REP.	1.1
37	UK, SOUTH WESTERN	1.1
41	ITALY, GENOA	1.0
41	ITALY, TORINO	1.0
41	*LATVIA	1.0
41	NETH., ENDHOVEN	1.0
41	SPAIN, TARRAGONA	1.0
41	SWITZERLAND, ZURICH	1.0
41	UK, OXFORD	1.0
41	UK, TRENT	1.0
41	UK, YORKSHIRE	1.0
50	ESTONIA	0.9
50	*HUNGARY, VAS	0.9
52	ITALY, LATINA	0.8
52	ITALY, VARESE	0.8
52	UK, N.E. SCOTLAND	0.8
52	UK, S.E. SCOTLAND	0.8
56	POLAND, CRACOW CITY	0.7
56	*POLAND, LOWER SILESIA	0.7
56	SLOVENIA	0.7
59	FRANCE, TARN	0.6
59	ITALY, PARMA	0.6
59	SWITZERLAND, ST GALL	0.6
62	ITALY, ROMAGNA	0.5
63	SWITZERLAND, GENEVA	0.3
64	ITALY, RAGUSA	0.2

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Eye (ICD-9 : 190)

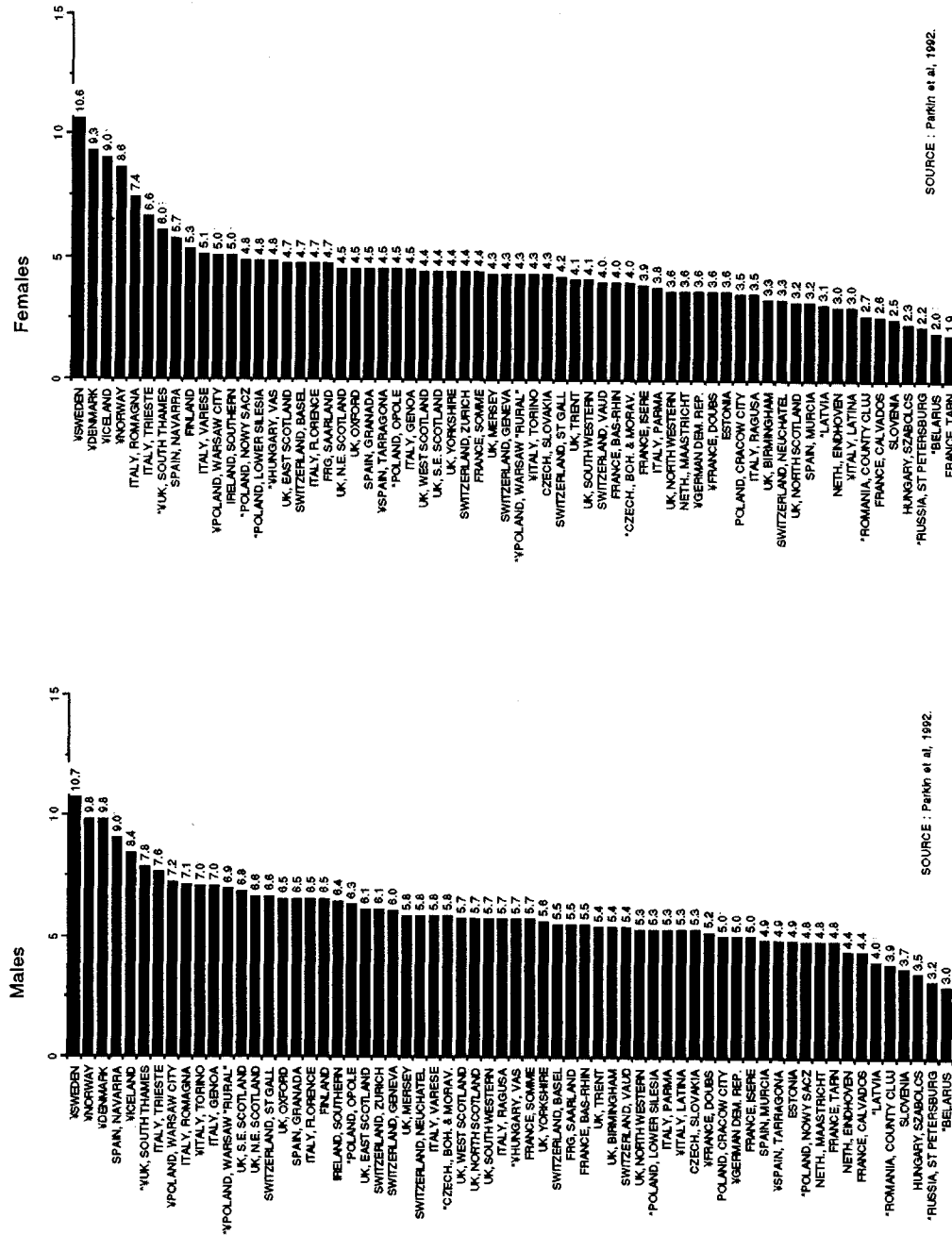


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	AUSTRIA	2.0
1	BULGARIA	2.0
1	FRANCE	2.0
1	GERMANY, GDR	2.0
1	IRELAND	2.0
1	ITALY	2.0
1	LUXEMBOURG	2.0
1	NETHERLANDS	2.0
1	PORTUGAL	2.0
10	DENMARK	1.5
10	NORWAY	1.5
10	UK, SCOTLAND	1.5
13	BELGIUM	1.0
13	CZECHOSLOVAKIA	1.0
13	FINLAND	1.0
13	GERMANY, FRG	1.0
13	GREECE	1.0
13	HUNGARY	1.0
13	SPAIN	1.0
13	SWEDEN	1.0
13	SWITZERLAND	1.0
13	UK, ENGLAND AND WALES	1.0
13	UK, NORTHERN IRELAND	1.0
	ICELAND	
	MALTA	
	POLAND	
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Brain or nerves, malignant (ICD-9 : 191-2)



SOURCE : Parkin et al, 1992.

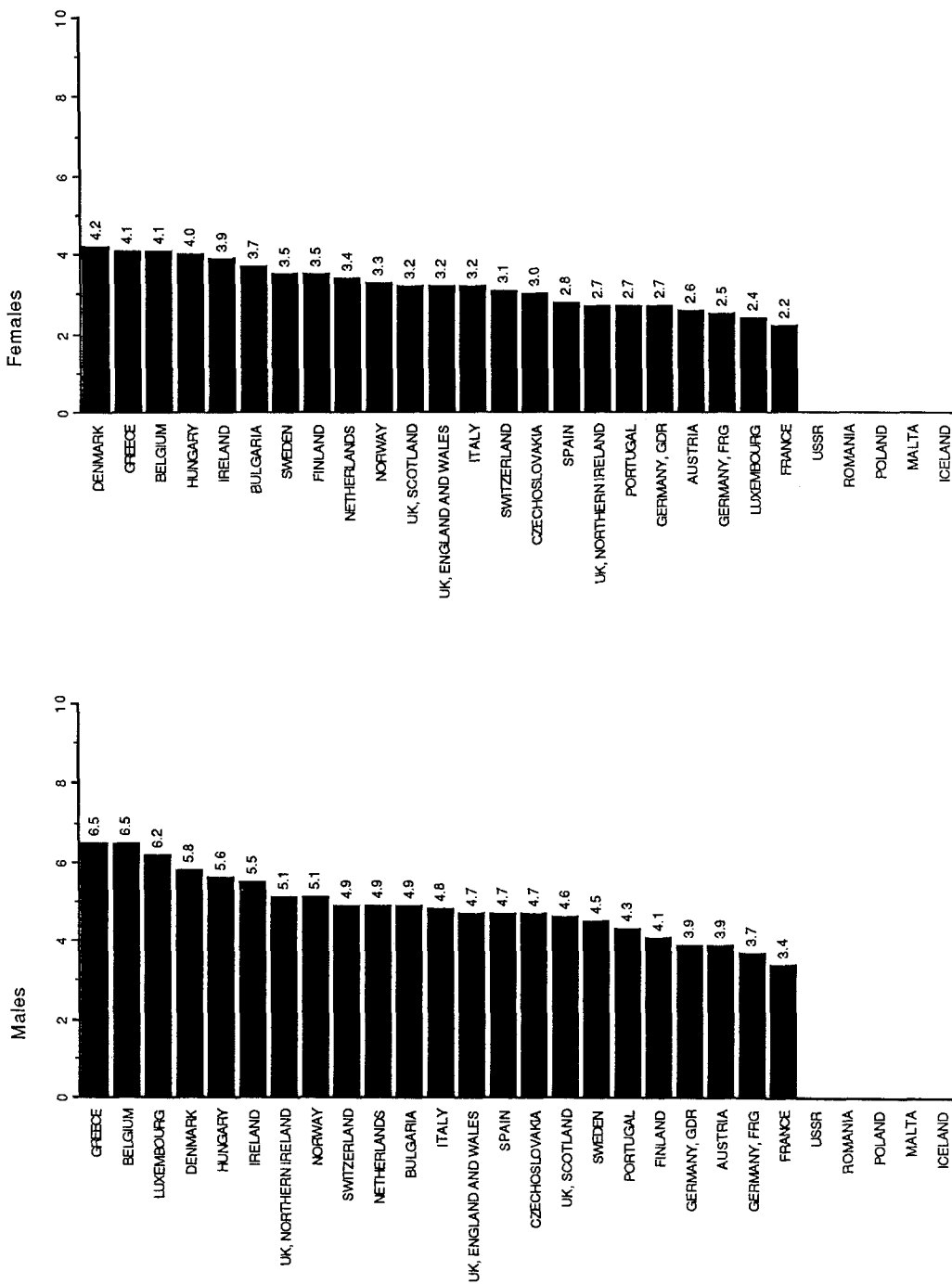
SOURCE : Parkin et al, 1992.

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

1	FRANCE, TARN	2.5
2	ITALY, LATINA	1.8
2	SWITZERLAND, NEUCHÂTEL	1.8
2	UK, NORTH SCOTLAND	1.8
5	FRANCE, CALVADOS	1.7
6	ITALY, GENOVA	1.6
6	ITALY, RAGUSA	1.6
6	ITALY, TORINO	1.6
6	*POLAND, WARSAW RURAL	1.6
6	SPAIN, NAVARRA	1.6
6	SWITZERLAND, ST GALL	1.6
6	UK, BIRMINGHAM	1.6
13	*POLAND, OPOLE	1.5
13	HUNGARY, SZABOLCS	1.5
13	*BELARUS	1.5
13	NETH., ENDHOVEN	1.5
13	*RUSSIA, ST PETERSBURG	1.5
13	SLOVENIA	1.5
13	SPAIN, MURCIA	1.5
13	UK, NORTH WESTERN	1.5
13	UK, N.E. SCOTLAND	1.5
13	UK, S.E. SCOTLAND	1.5
22	*CZECH, BOH & MORAV	1.4
22	ESTONIA	1.4
22	FRANCE, BAS-RHIN	1.4
22	FRANCE, DOUBS	1.4
22	GERMANY, DEM. REP.	1.4
22	ITALY, FLORENCE	1.4
22	ITALY, PARMA	1.4
22	POLAND, CRACOW CITY	1.4
22	*POLAND, OPOLE	1.4
22	POLAND, WARSAW CITY	1.4
22	ROMANIA, COUNTY CLUJ	1.4
22	SPAIN, GRANADA	1.4
22	SWITZERLAND, GENEVA	1.4
22	SWITZERLAND, ZÜRICH	1.4
22	UK, OXFORD	1.4
22	UK, SOUTH WESTERN	1.4
38	FRANCE, ISERE	1.3
38	FRANCE, SOMME	1.3
38	IRELAND, SOUTHERN	1.3
38	*LATVIA	1.3
38	NETH., MAASTRICHT	1.3
38	SWITZERLAND, VAUD	1.3
38	UK, MERSEY	1.3
38	*UK, SOUTH THAMES	1.3
38	UK, TRENT	1.3
38	UK, YORKSHIRE	1.3
38	UK, EAST SCOTLAND	1.3
38	UK, WEST SCOTLAND	1.3
50	CZECH, SLOVAKIA	1.2
50	FINLAND	1.2
50	FRG, SAARLAND	1.2
50	*HUNGARY, VAS	1.2
50	ITALY, TRIESTE	1.2
56	SWITZERLAND, BASEL	1.2
56	DENMARK	1.1
56	ITALY, VARESE	1.1
56	NORWAY	1.1
56	*POLAND, LOWER SILESIA	1.1
56	SPAIN, TARRAGONA	1.1
61	ITALY, ROMAGNA	1.0
61	*POLAND, NOWY SĄCZ	1.0
61	SWEDEN	1.0
64	ICELAND	0.9

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

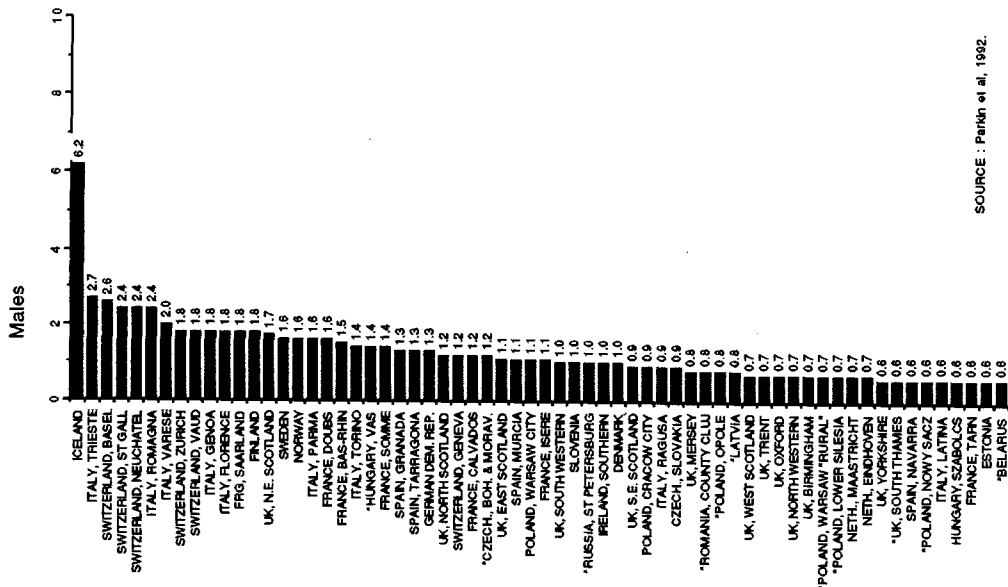
Brain and nerves, malignant (ICD-9 : 191-2)



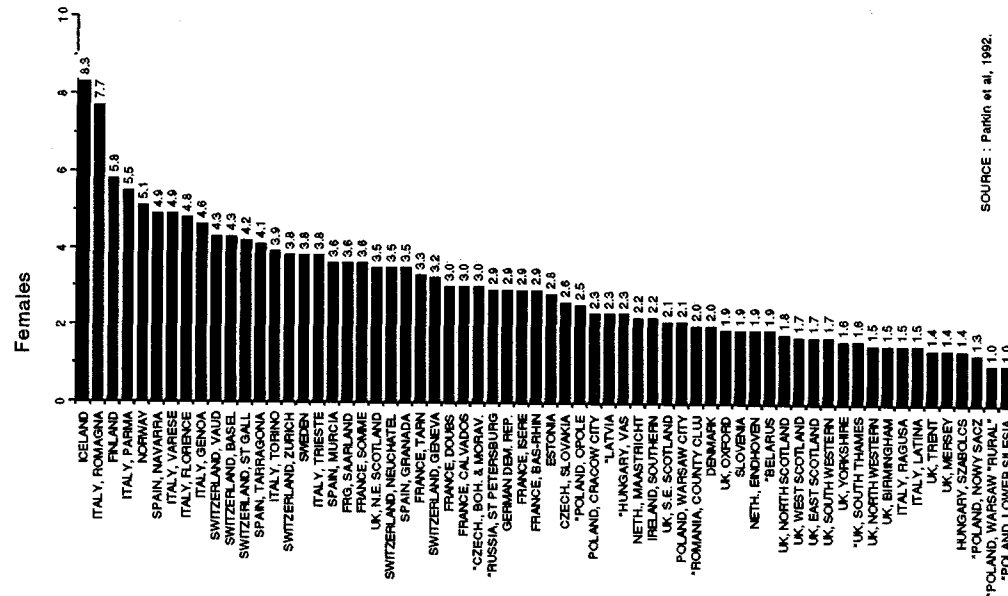
AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Thyroid (ICD-9 : 193)

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN
CANCER REGISTRY REGIONS, 1983-87 (RANKED)



SOURCE : Parkin et al, 1992.

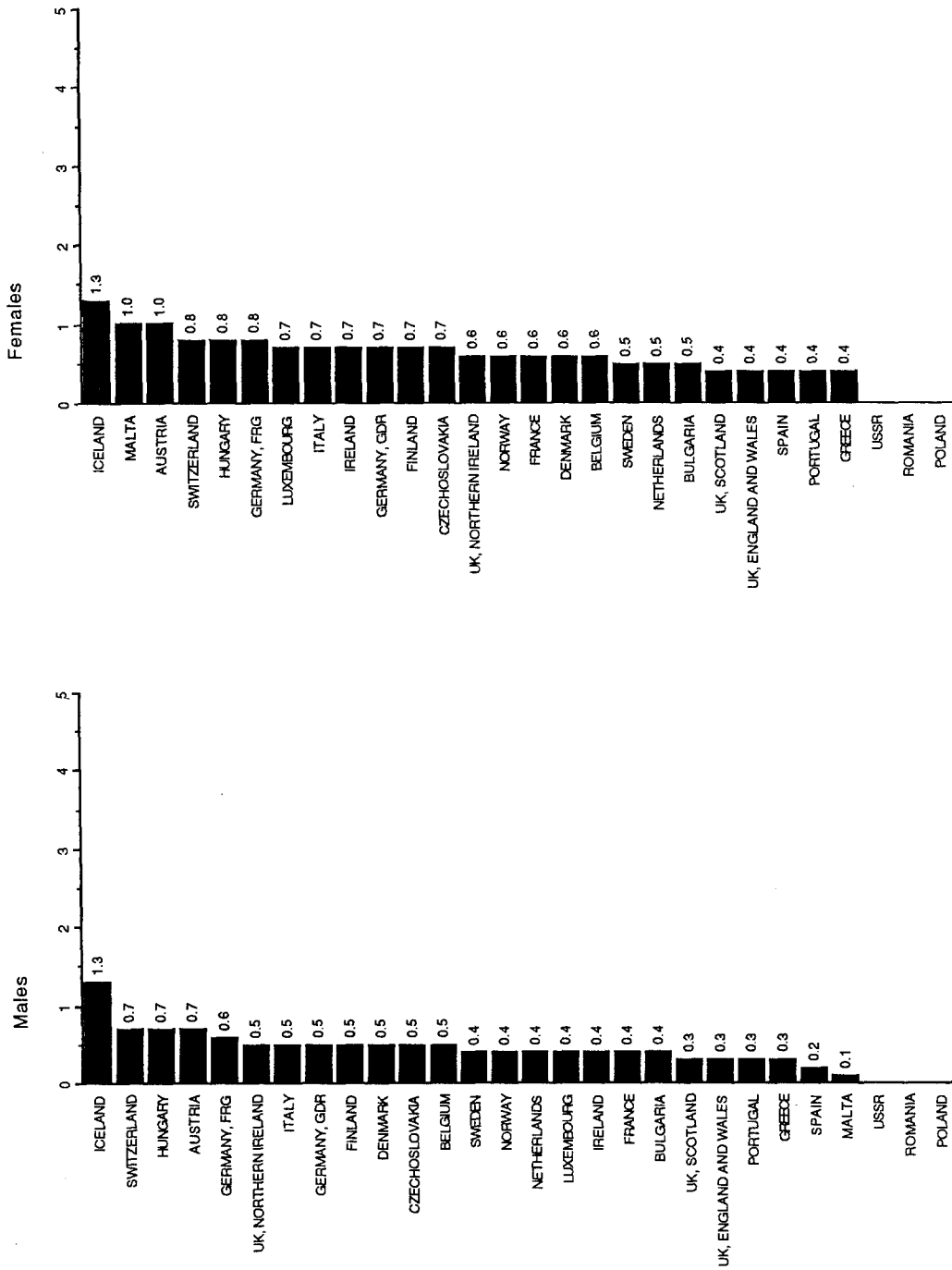


SOURCE : Parkin et al, 1992.

1	1	ICELAND	0.7
1	1	ITALY, TRIESTE	0.7
1	1	*POLAND, LOWER SILESIA	0.7
1	1	*POLAND, WARSAW "RURAL"	0.7
1	1	SWITZERLAND, NEUCHÂTEL	0.7
1	1	UK, NORTH SCOTLAND	0.7
7	7	*HUNGARY, VAS	0.6
7	7	ITALY, RAGUSA	0.6
9	9	SWITZERLAND, BASEL	0.6
7	7	SWITZERLAND, ST GALL	0.6
7	7	UK, MERSEY	0.6
7	7	UK, WESTERN	0.6
7	7	UK, EAST SCOTLAND	0.6
14	14	DENMARK	0.5
14	14	FRANCE, BAS-RHIN	0.5
14	14	FRANCE, DOUBS	0.5
14	14	FRG, SAARLAND	0.5
14	14	FRG, SAARLAND	0.5
14	14	IRELAND, SOUTHERN	0.5
14	14	*POLAND, NOWY SĄCZ	0.5
14	14	POLAND, WARSAW CITY	0.5
14	14	SLOVENIA	0.5
14	14	SWITZERLAND, ZÜRICH	0.5
14	14	UK, BIRMINGHAM	0.5
14	14	UK, NORTH WESTERN	0.5
14	14	UK, TRENT	0.5
27	27	UK, N.E. SCOTLAND	0.4
27	27	*CZECH, BOH. & MORAV.	0.4
27	27	FRANCE, CALVADOS	0.4
27	27	FRANCE, ISERE	0.4
27	27	FRANCE, SOMME	0.4
27	27	FRANCE, SOMME	0.4
27	27	GERMANY, WESTERN	0.4
27	27	HUNGARY, SZABOLCS	0.4
27	27	HUNGARY, SZABOLCS	0.4
27	27	ITALY, FLORENCE	0.4
27	27	ITALY, GENOVA	0.4
27	27	ITALY, LATINA	0.4
27	27	ITALY, VARESE	0.4
27	27	ITALY, TORINO	0.4
27	27	NETH., ENDHOVEN	0.4
27	27	POLAND, CRACOW CITY	0.4
27	27	*ROMANIA, COUNTY CLUJ	0.4
27	27	SPAIN, GRANADA	0.4
27	27	SWEDEN	0.4
27	27	SWITZERLAND, GENEVA	0.4
27	27	SWITZERLAND, VAUD	0.4
27	27	UK, OXFORD	0.4
27	27	*UK, SOUTH THAMES	0.4
27	27	UK, YORKSHIRE	0.4
27	27	UK, S.E. SCOTLAND	0.4
27	27	UK, WEST SCOTLAND	0.4
50	50	*BELARUS	0.3
50	50	CZECH, SLOVAKIA	0.3
50	50	FINLAND	0.3
50	50	ITALY, PARMIA	0.3
50	50	ITALY, ROMAGNA	0.3
50	50	*LATVIA	0.3
50	50	NETH., MAASTRICHT	0.3
50	50	NORWAY	0.3
50	50	*POLAND, OPOLÉ	0.3
50	50	*RUSSIA, ST PETERSBURG	0.3
50	50	SPAIN, TARRAGONA	0.3
50	50	SPAIN, MURCIA	0.3
62	62	ESTONIA	0.2
62	62	FRANCE, TARN	0.2
64	64	SPAIN, NAVARRA	0.1

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

Thyroid (ICD-9 : 193)

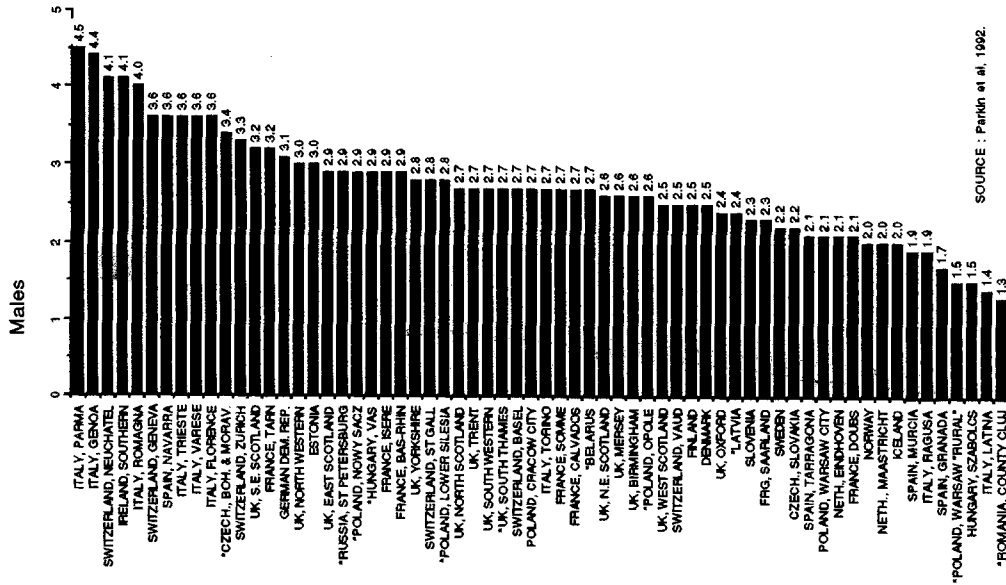


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

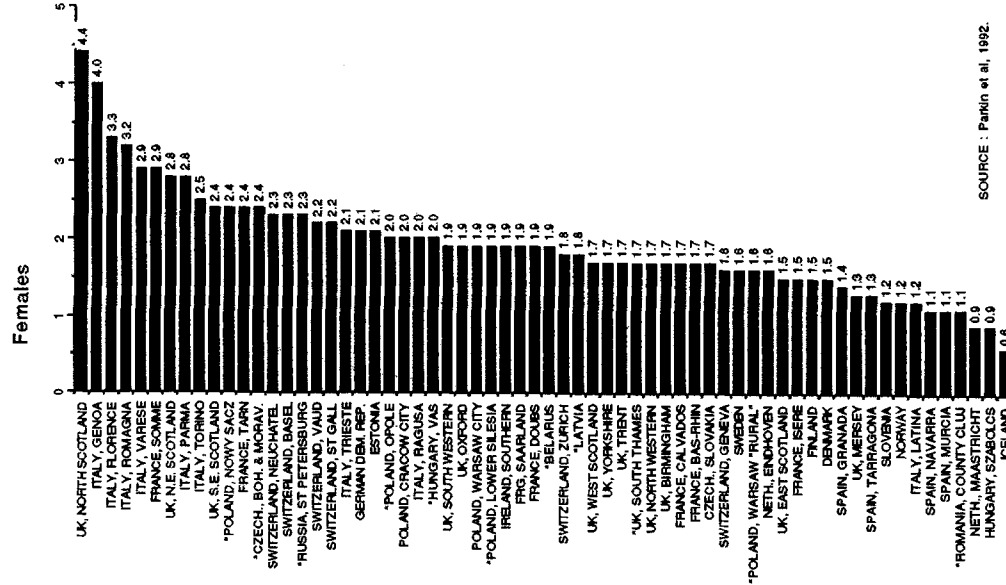
1	ICELAND	1.0
2	HUNGARY	0.9
2	SWITZERLAND	0.9
4	BELGIUM	0.8
4	BULGARIA	0.8
4	DENMARK	0.8
4	GERMANY, FRG	0.8
4	GREECE	0.8
4	NETHERLANDS	0.8
4	PORTUGAL	0.8
4	SWEDEN	0.8
4	UK, ENGLAND AND WALES	0.8
4	UK, NORTHERN IRELAND	0.8
4	UK, SCOTLAND	0.8
15	AUSTRIA	0.7
15	CZECHOSLOVAKIA	0.7
15	FINLAND	0.7
15	FRANCE	0.7
15	GERMANY, GDR	0.7
15	ITALY	0.7
15	NORWAY	0.7
22	IRELAND	0.6
22	LUXEMBOURG	0.6
24	SPAIN	0.5
25	MALTA	0.1
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

Hodgkin's disease (ICD-9 : 201)



SOURCE : Parkin et al, 1992.



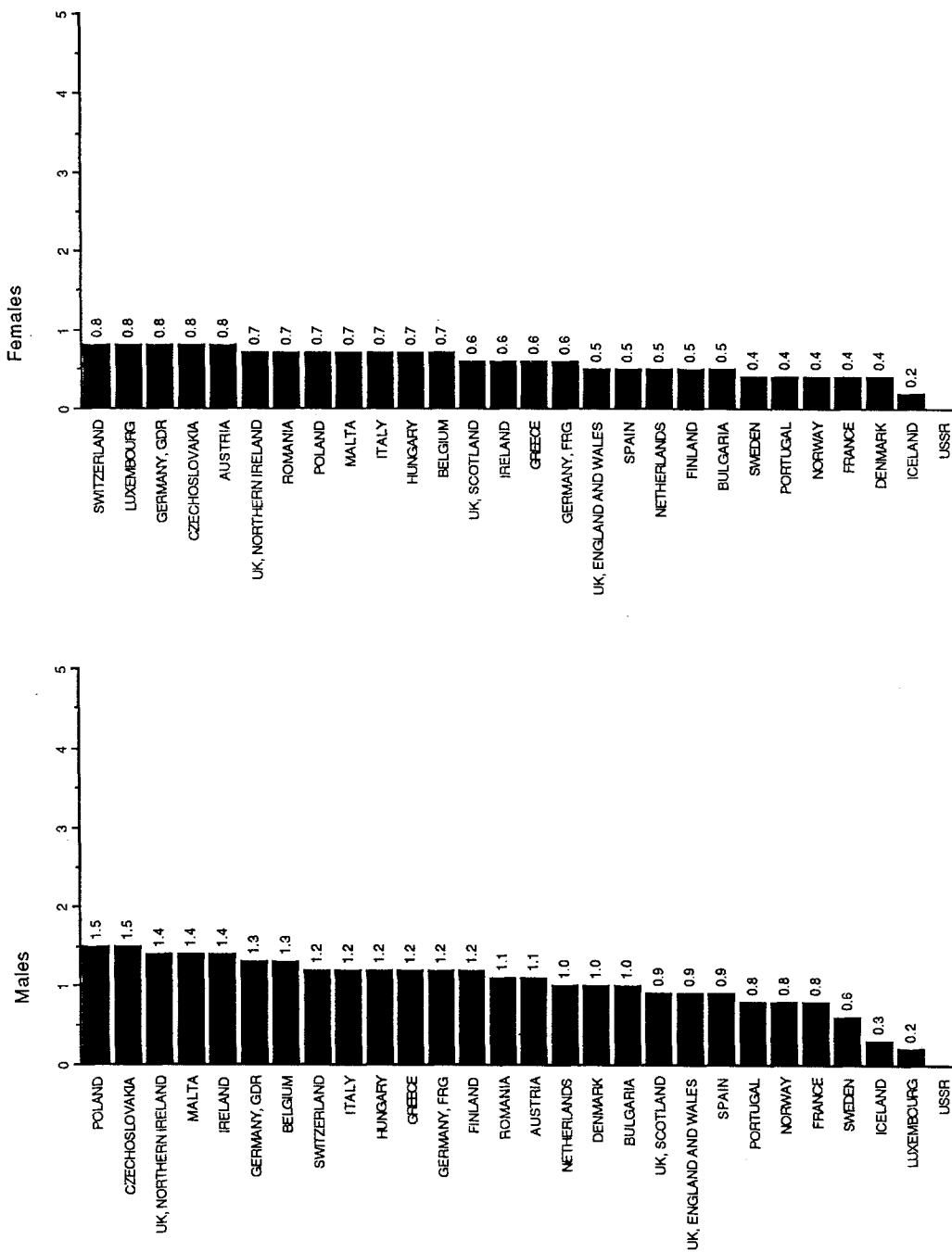
SOURCE : Parkin et al, 1992.

SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

Rank	Region	Sex Ratio (M/F)
1	ICELAND	3.4
2	SPAIN, NAVARRA	3.3
3	SWITZERLAND, GENEVA	2.3
4	IRELAND, SOUTHERN	2.2
5	NETH., MAASTRICHT	2.2
6	UK, MERTSEY	2.0
7	FRANCE, ISERE	1.9
8	SLOVENIA	1.9
9	UK, EAST SCOTLAND	1.9
10	SWITZERLAND, NEUCHÂTEL	1.8
11	SWITZERLAND, ZÜRICH	1.8
12	UK, NORTH WESTERN	1.8
13	DENMARK	1.7
14	FINLAND	1.7
15	FRANCE, BAS-RHIN	1.7
16	HUNGARY, SZABOLCS	1.7
17	ITALY, TRIESTE	1.7
18	NORWAY	1.7
19	SPAIN, MURCIA	1.7
20	FRANCE, CALVADOS	1.6
21	ITALY, PARMA	1.6
22	SPAIN, TARRAGONA	1.6
23	*UK, SOUTH THAMES	1.6
24	UK, TRENT	1.6
25	UK, YORKSHIRE	1.6
26	GERMAN DEM. REP.	1.5
27	*POLAND, LOWER SILESIA	1.5
28	UK, BIRMINGHAM	1.5
29	UK, WEST SCOTLAND	1.5
30	*BELARUS	1.4
31	*CZECH., BOH. & MORAV.	1.4
32	ESTONIA	1.4
33	*HUNGARY, VAS	1.4
34	SWEDEN	1.4
35	UK, SOUTH WESTERN	1.4
36	CZECH., SLOVAKIA	1.3
37	FRANCE, TARN	1.3
38	ITALY, ROMAGNA	1.3
39	*LATVIA	1.3
40	NETH., EINDHOVEN	1.3
41	POLAND, CRACOW CITY	1.3
42	*POLAND, OPOLÉ	1.3
43	*RUSSIA, ST PETERSBURG	1.3
44	SWITZERLAND, ST GALL	1.3
45	UK, OXFORD	1.3
46	UK, S.E. SCOTLAND	1.3
47	FRG, SAARLAND	1.2
48	ITALY, LATINA	1.2
49	ITALY, VARESE	1.2
50	*POLAND, NOWY SĄCZ	1.2
51	SPAIN, GRANADA	1.2
52	SWITZERLAND, BASEL	1.2
53	FRANCE, DOLES	1.1
54	ITALY, FLORENCE	1.1
55	ITALY, GENOVA	1.1
56	ITALY, TORINO	1.1
57	POLAND, WARSAW CITY	1.1
58	SWITZERLAND, VAUD	1.1
59	FRANCE, SOMME	0.9
60	ITALY, RAGUSA	0.9
61	*POLAND, WARSAW "RURAL"	0.9
62	UK, N.E. SCOTLAND	0.9
63	UK, N.E. SCOTLAND	0.9
64	UK, NORTH SCOTLAND	0.6

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

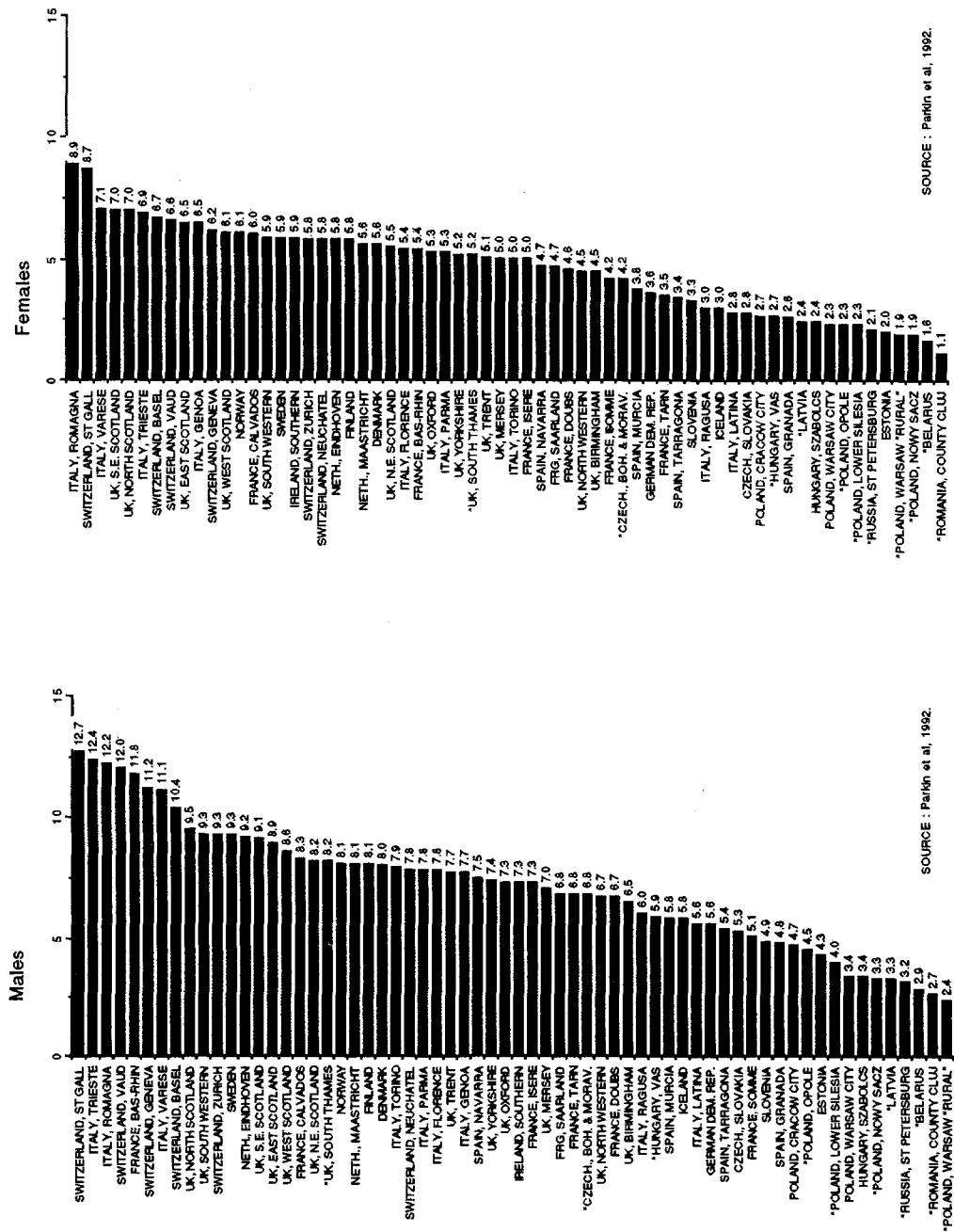
Hodgkin's disease (ICD-9 : 201)



SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	DENMARK	2.5
2	FINLAND	2.4
3	IRELAND	2.3
4	POLAND	2.1
5	BULGARIA	2.0
5	FRANCE	2.0
5	GERMANY, FRG	2.0
5	GREECE	2.0
5	MALTA	2.0
5	NETHERLANDS	2.0
5	NORWAY	2.0
5	PORTUGAL	2.0
5	UK, NORTHERN IRELAND	2.0
14	BELGIUM	1.9
14	CZECHOSLOVAKIA	1.9
16	SPAIN	1.8
16	UK, ENGLAND AND WALES	1.8
18	HUNGARY	1.7
18	ITALY	1.7
20	GERMANY, GDR	1.6
20	ROMANIA	1.6
22	ICELAND	1.5
22	SWEDEN	1.5
22	SWITZERLAND	1.5
22	UK, SCOTLAND	1.5
26	AUSTRIA	1.4
27	LUXEMBOURG	0.3
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES
PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87
Non-Hodgkin's lymphomas and other reticuloses (ICD-9 : 200,202)

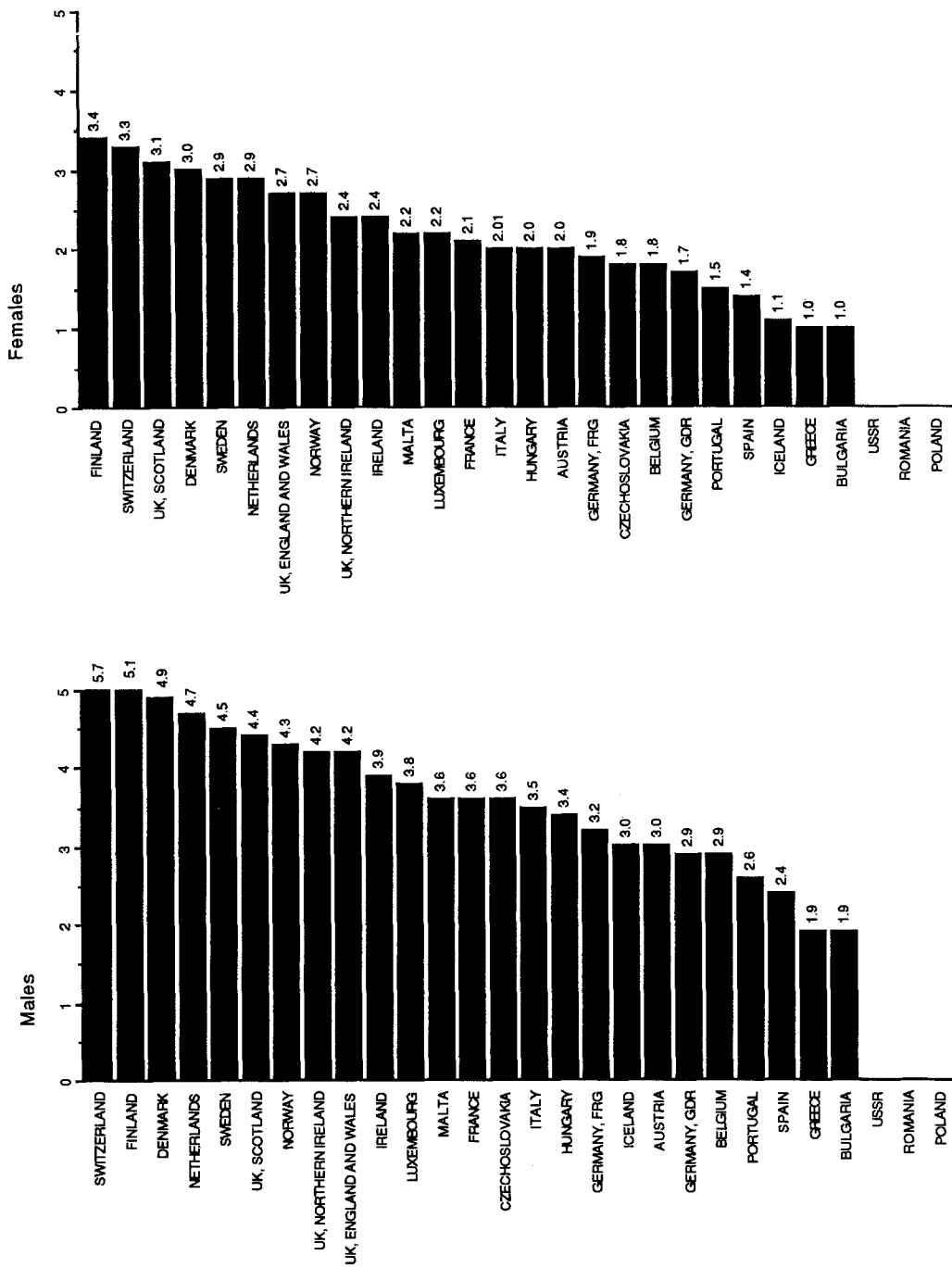


SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)

1	*ROMANIA, COUNTY CLUJ	2.5
2	FRANCE, BAS-RHIN	2.2
3	HUNGARY, VAS	2.2
4	ESTONIA	2.1
5	ITALY, LATINA	2.0
5	ITALY, RAGUSA	2.0
7	*POLAND, OPOLE	2.0
8	CZECH., SLOVAKIA	1.9
8	FRANCE, TARN	1.9
8	ICELAND	1.9
11	*BELARUS	1.8
11	ITALY, TRIESTE	1.8
11	SPAIN, GRANADA	1.8
11	SWITZERLAND, GENEVA	1.8
11	SWITZERLAND, VAUD	1.8
16	POLAND, CRACOW CITY	1.7
16	POLAND, LOWER SILESIA	1.7
16	*POLAND, NOWY SĄCZ	1.7
19	*CZECH., BOH. & MORAV	1.6
19	GERMAN DEM. REP.	1.6
19	ITALY, VARESE	1.6
19	ITALY, TORINO	1.6
19	NETH., EINDHOVEN	1.6
19	SPAIN, TARRAGONA	1.6
19	SPAIN, NAVARRA	1.6
19	SWEDEN	1.6
19	SWITZERLAND, BASEL	1.6
19	SWITZERLAND, ZURICH	1.6
19	*UK, SOUTH THAMES	1.6
19	UK, SOUTH WESTERN	1.6
31	FRANCE, DOUBS	1.5
31	FRANCE, ISERE	1.5
31	ITALY, PARMA	1.5
31	ITALY, WARSAW CITY	1.5
31	*POLAND, WARSAW CITY	1.5
31	*RUSSIA, ST PETERSBURG	1.5
31	SLOVENIA	1.5
31	SPAIN, MURCIA	1.5
31	SWITZERLAND, ST GALL	1.5
31	UK, NORTH WESTERN	1.5
31	UK, TRENK	1.5
31	UK, N.E. SCOTLAND	1.5
42	FRANCE, CALVADOS	1.4
42	FRG, SAARLAND	1.4
42	HUNGARY, SZABOLCS	1.4
42	HUNGARY, FLORENCE	1.4
42	ITALY, ROMAGNA	1.4
42	*LATVIA	1.4
42	NETH., MAASTRICHT	1.4
42	UK, BIRMINGHAM	1.4
42	UK, MERSEY	1.4
42	UK, OXFORD	1.4
42	UK, YORKSHIRE	1.4
42	UK, EAST SCOTLAND	1.4
42	UK, NORTH SCOTLAND	1.4
42	UK, WEST SCOTLAND	1.4
58	NORWAY	1.3
58	*POLAND, WARSAW 'RURAL'	1.3
58	SWITZERLAND, NEUCHÂTEL	1.3
58	UK, S.E. SCOTLAND	1.3
62	FRANCE, SOMME	1.2
62	IRELAND, SOUTHERN	1.2
62	ITALY, GENOVA	1.2

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Non-Hodgkin's lymphomas and other reticuloses (ICD-9 : 200,202)

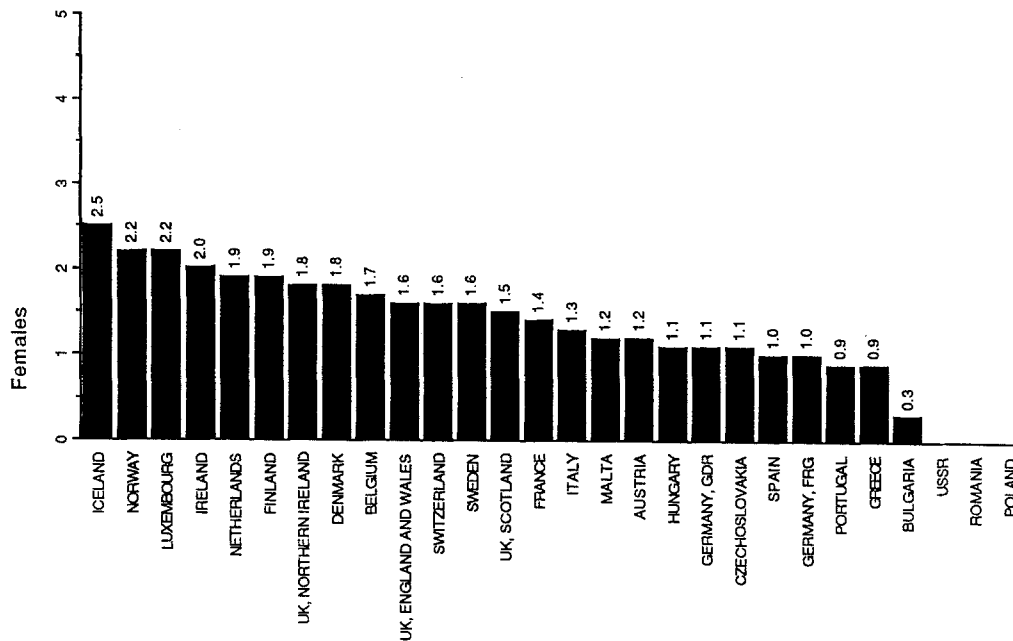
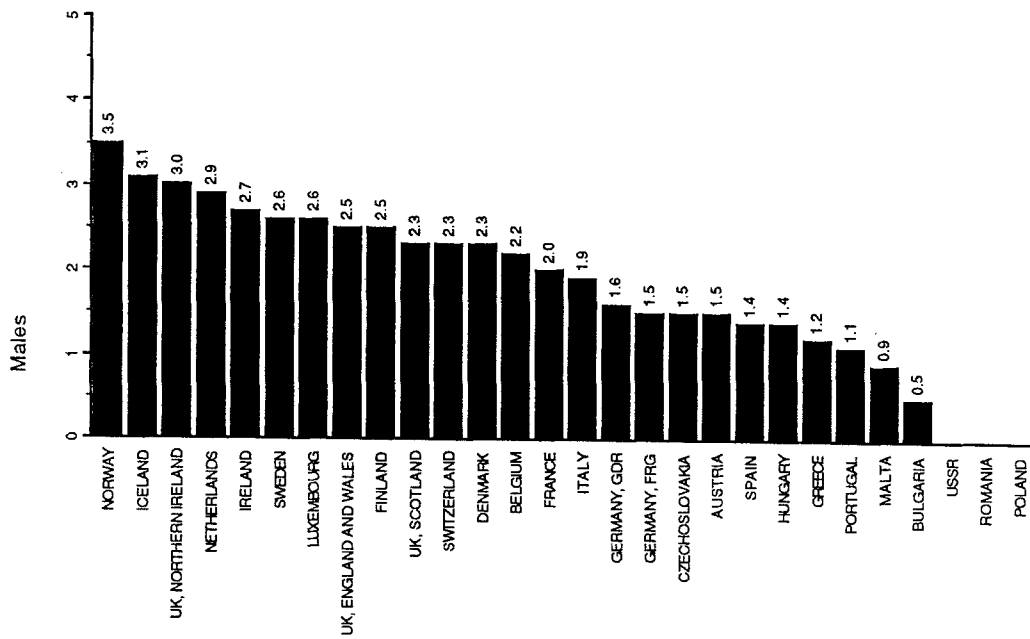


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	ICELAND	2.7
2	CZECHOSLOVAKIA	2.0
3	BULGARIA	1.9
3	GREECE	1.9
5	ITALY	1.8
5	UK, NORTHERN IRELAND	1.8
7	FRANCE	1.7
7	GERMANY, GDR	1.7
7	GERMANY, FRG	1.7
7	HUNGARY	1.7
7	LUXEMBOURG	1.7
7	PORTUGAL	1.7
7	SPAIN	1.7
7	SWITZERLAND	1.7
15	BELGIUM	1.6
15	DENMARK	1.6
15	IRELAND	1.6
15	MALTA	1.6
15	NETHERLANDS	1.6
15	NORWAY	1.6
15	SWEDEN	1.6
15	UK, ENGLAND AND WALES	1.6
23	AUSTRIA	1.5
23	FINLAND	1.5
25	UK, SCOTLAND	1.4
	POLAND	
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Multiple myeloma (ICD-9 : 203)

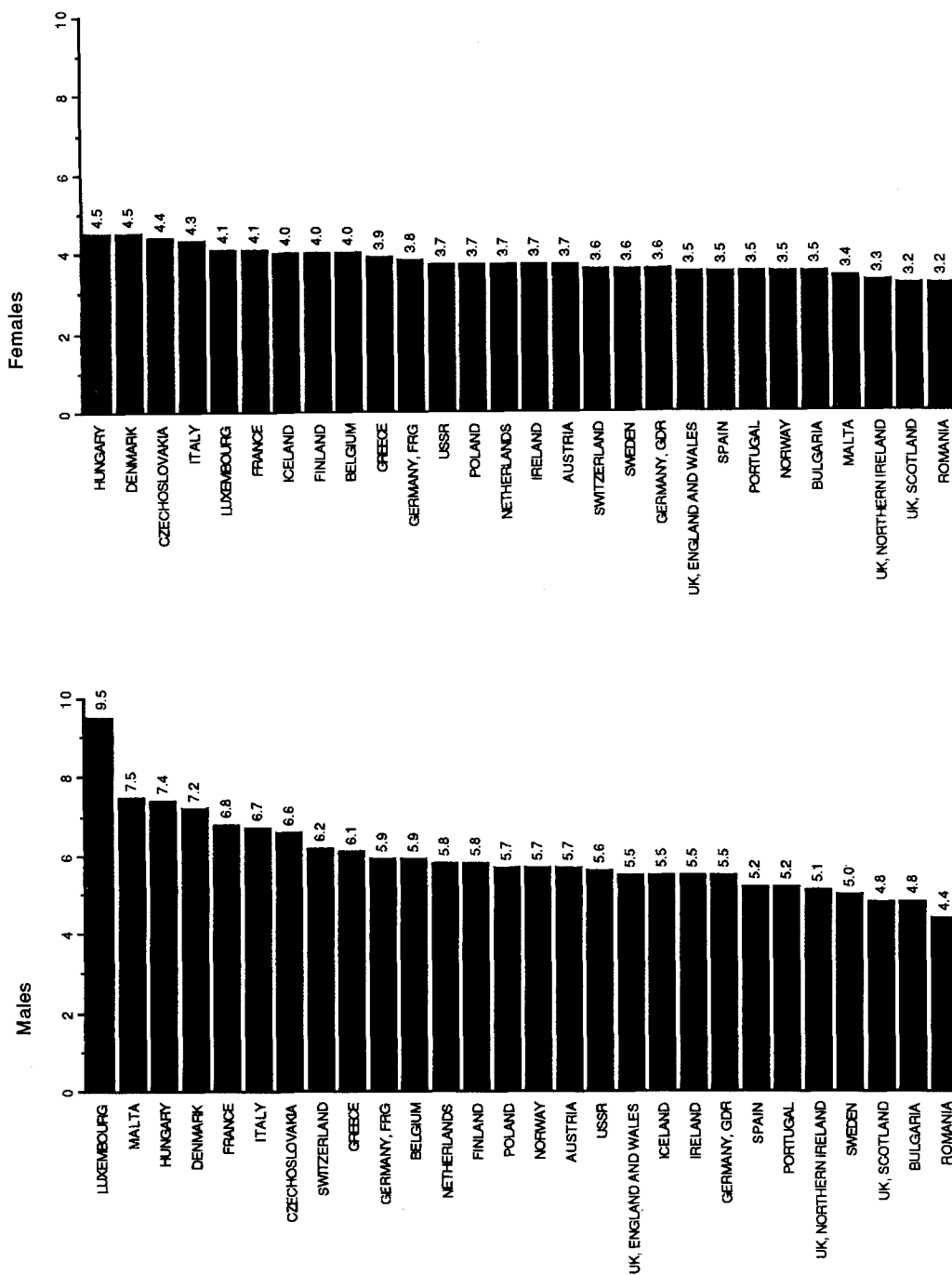


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	UK, NORTHERN IRELAND	1.7
1	BULGARIA	1.7
3	NORWAY	1.6
3	SWEDEN	1.6
3	UK, ENGLAND AND WALES	1.6
6	GERMANY, GDR	1.5
6	GERMANY, FRG	1.5
6	ITALY	1.5
6	NETHERLANDS	1.5
6	UK, SCOTLAND	1.5
11	UK, SCOTLAND	1.4
11	CZECHOSLOVAKIA	1.4
11	FRANCE	1.4
11	IRELAND	1.4
11	SPAIN	1.4
11	SWITZERLAND	1.4
16	AUSTRIA	1.3
16	BELGIUM	1.3
16	DENMARK	1.3
16	FINLAND	1.3
16	GREECE	1.3
16	HUNGARY	1.3
22	ICELAND	1.2
22	LUXEMBOURG	1.2
22	PORTUGAL	1.2
25	MALTA	0.8
	POLAND	
	ROMANIA	
	USSR	

AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87

Leukaemias (ICD-9 : 204-8)



SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

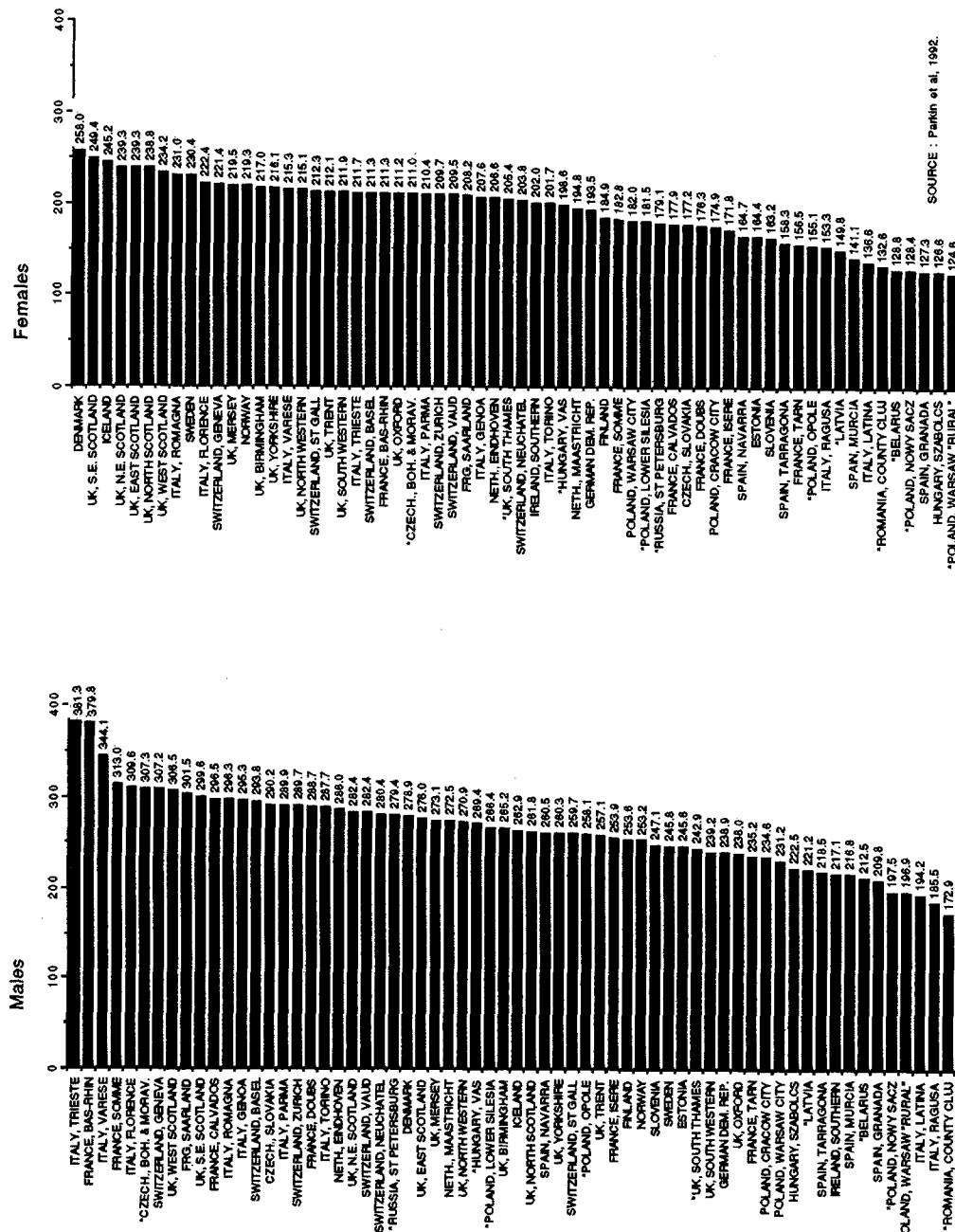
1	LUXEMBOURG	2.3
2	MALTA	2.2
3	FRANCE	1.7
3	SWITZERLAND	1.7
5	DENMARK	1.6
5	GERMANY, FRG	1.6
5	GREECE	1.6
5	HUNGARY	1.6
5	ITALY	1.6
5	NETHERLANDS	1.6
5	NORWAY	1.6
5	UK, ENGLAND AND WALES	1.6
13	AUSTRIA	1.5
13	BELGIUM	1.5
13	CZECHOSLOVAKIA	1.5
13	FINLAND	1.5
13	GERMANY, GDR	1.5
13	IRELAND	1.5
13	POLAND	1.5
13	PORTUGAL	1.5
13	SPAIN	1.5
13	USSR	1.5
13	UK, NORTHERN IRELAND	1.5
13	UK, SCOTLAND	1.5
25	BULGARIA	1.4
25	ICELAND	1.4
25	ROMANIA	1.4
25	SWEDEN	1.4

Only incidence data were derived for this group of neoplasms due to major difficulties and uncertainties in interpreting mortality rates for this poorly defined category.

AVERAGE AGE-STANDARDIZED (WORLD) INCIDENCE RATES PER 100,000 IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87

All sites, excluding non-melanomatous skin cancers

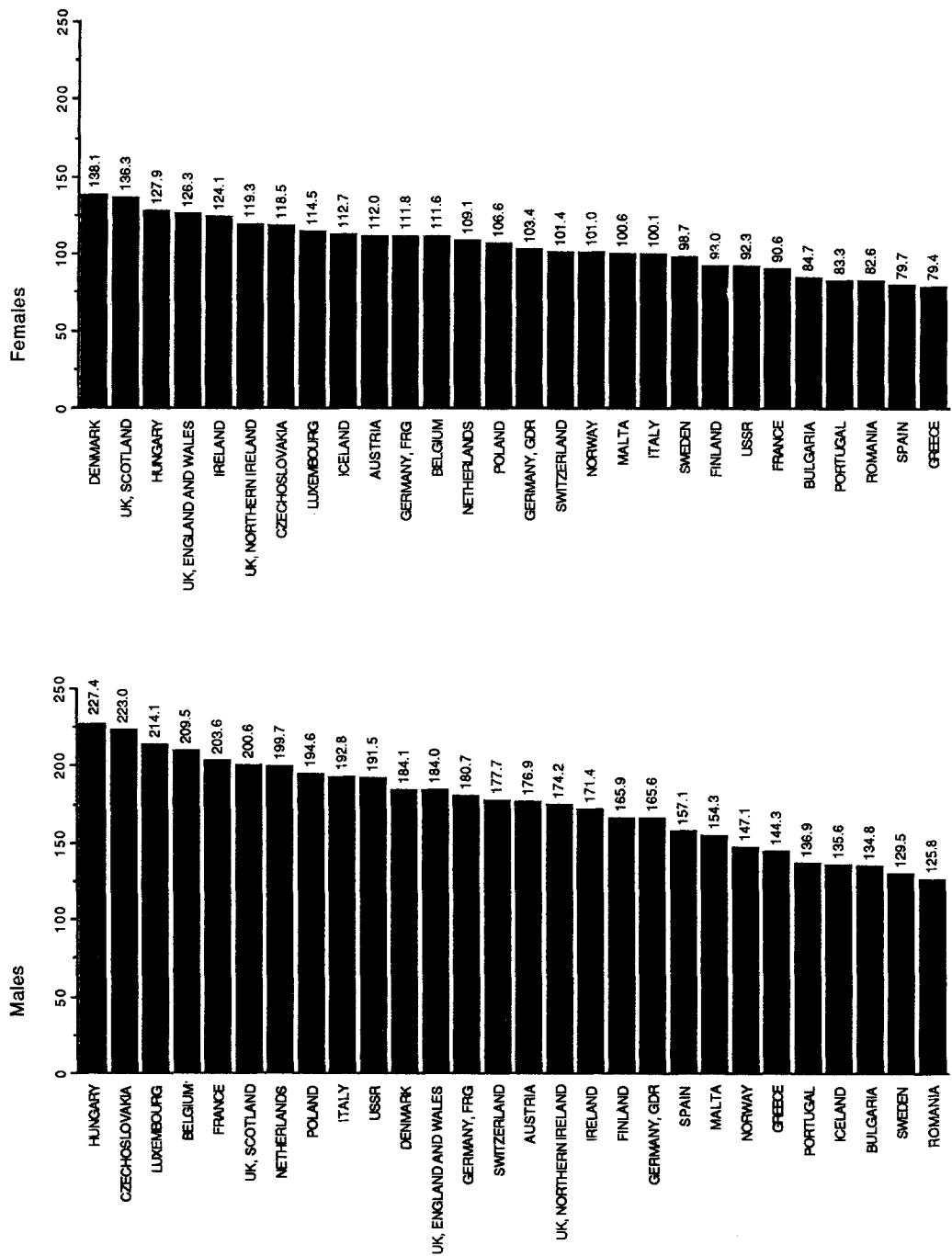
SEX RATIOS (M/F) FOR INCIDENCE IN EUROPEAN CANCER REGISTRY REGIONS, 1983-87 (RANKED)



SOURCE : Parkin et al, 1992.

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

All sites (ICD-9 : 140-208)

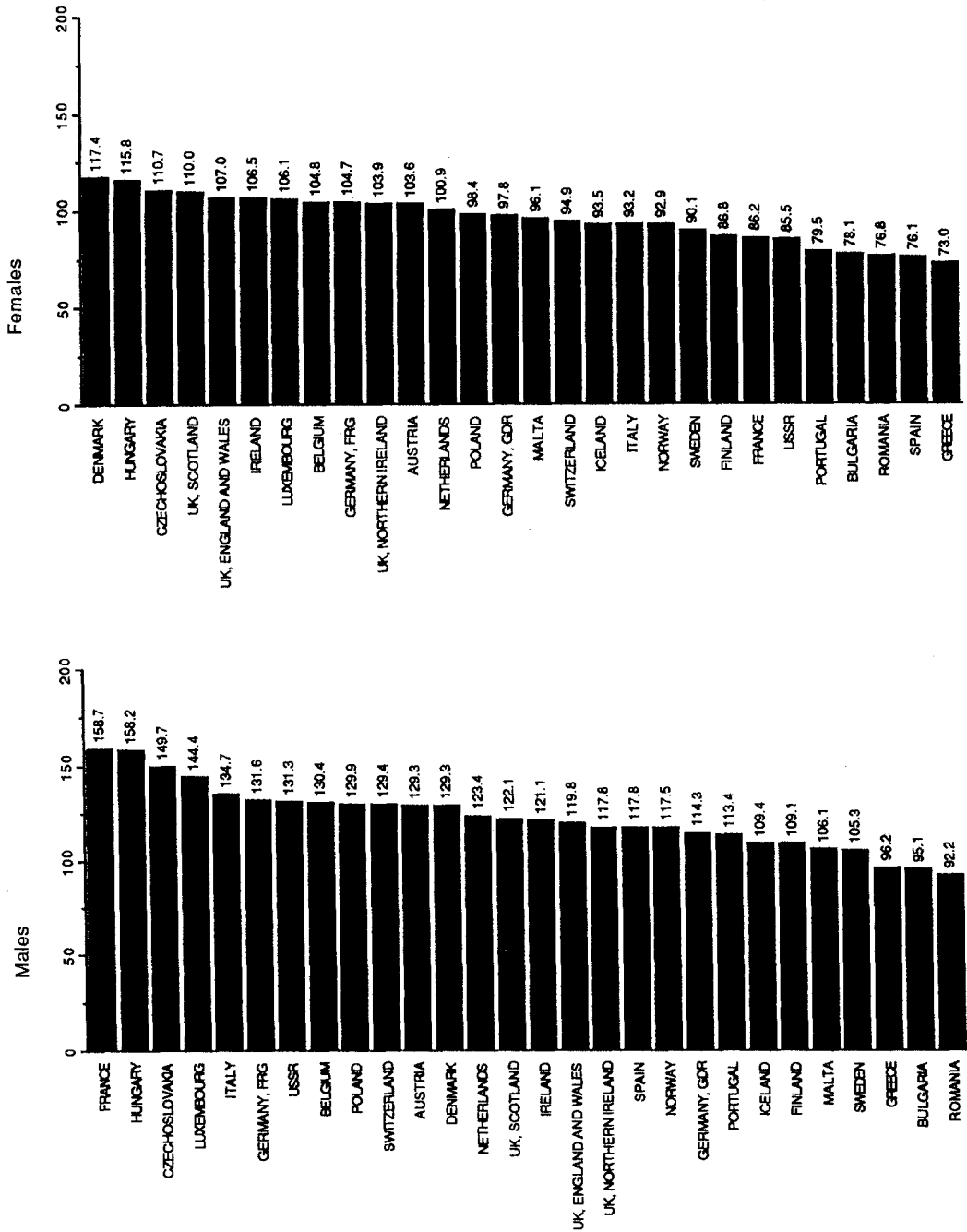


SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	FRANCE	2.2
2	USSR	2.1
3	SPAIN	2.0
4	BELGIUM	1.9
4	CZECHOSLOVAKIA	1.9
4	ITALY	1.9
4	LUXEMBOURG	1.9
8	FINLAND	1.8
8	GREECE	1.8
8	HUNGARY	1.8
8	NETHERLANDS	1.8
8	POLAND	1.8
8	SWITZERLAND	1.8
14	AUSTRIA	1.6
14	BULGARIA	1.6
14	GERMANY, GDR	1.6
14	GERMANY, FRG	1.6
14	PORTUGAL	1.6
19	MALTA	1.5
19	NORWAY	1.5
19	ROMANIA	1.5
19	UK, ENGLAND AND WALES	1.5
19	UK, NORTHERN IRELAND	1.5
19	UK, SCOTLAND	1.5
25	IRELAND	1.4
26	DENMARK	1.3
26	SWEDEN	1.3
28	ICELAND	1.2

**AVERAGE AGE-STANDARDIZED (WORLD) MORTALITY RATES
PER 100,000 IN EUROPEAN COUNTRIES, 1983-87**

All sites, excluding lung cancers



SEX RATIOS (M/F) FOR MORTALITY IN EUROPEAN COUNTRIES, 1983-87 (RANKED)

1	FRANCE	1.8
2	SPAIN	1.5
2	USSR	1.5
4	CZECHOSLOVAKIA	1.4
4	HUNGARY	1.4
4	ITALY	1.4
4	LUXEMBOURG	1.4
4	PORTUGAL	1.4
4	SWITZERLAND	1.4
10	FINLAND	1.3
10	GERMANY, FRG	1.3
10	GREECE	1.3
10	NORWAY	1.3
10	POLAND	1.3
15	AUSTRIA	1.2
15	BELGIUM	1.2
15	BULGARIA	1.2
15	GERMANY, GDR	1.2
15	ICELAND	1.2
15	NETHERLANDS	1.2
15	ROMANIA	1.2
15	SWEDEN	1.2
23	DENMARK	1.1
23	IRELAND	1.1
23	MALTA	1.1
23	UK, ENGLAND AND WALES	1.1
23	UK, NORTHERN IRELAND	1.1
23	UK, SCOTLAND	1.1