Original article

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Cancer prevalence in European registry areas

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Background: Information on cancer prevalence is of major importance for health planning and resource allocation. However, systematic information on cancer prevalence is largely unavailable.

Materials and methods: Thirty-eight population-based cancer registries from 17 European countries, participating in EUROPREVAL, provided data on almost 3 million cancer patients diagnosed from 1970 to 1992. Standardised data collection and validation procedures were used and the whole data set was analysed using proven methodology. The prevalence of stomach, colon, rectum, lung, breast, cervix uteri, corpus uteri and prostate cancer, as well as of melanoma of skin, Hodgkin's disease, leukaemia and all malignant neoplasms combined, were estimated for the end of 1992.

Results: There were large differences between countries in the prevalence of all cancers combined; estimates ranged from 1170 per 100000 in the Polish cancer registration areas to 3050 per 100000 in southern Sweden. For most cancers, the Swedish, Swiss, German and Italian areas had high prevalence, and the Polish, Estonian, Slovakian and Slovenian areas had low prevalence. Of the total prevalent cases, 61% were women and 57% were 65 years of age or older. Cases diagnosed within 2 years of the reference date formed 22% of all prevalent cases. Breast cancer accounted for 34% of all prevalent cancers in females and colorectal cancer for 15% in males. Prevalence tended to be high where cancer incidence was high, but the prevalence was highest in countries where survival was also high. Prevalence was low where general mortality was high (correlation between general mortality and the prevalence of all cancers = –0.64) and high where gross domestic product was high (correlation = +0.79). Thus, the richer areas of Europe had higher prevalence, suggesting that prevalence will increase with economic development.

Conclusions: EUROPREVAL is the largest project on prevalence conducted to date. It has provided complete and accurate estimates of cancer prevalence in Europe, constituting essential information for cancer management. The expected increases in prevalence with economic development will require more resources; allocation to primary prevention should therefore be prioritised.

Key words: cancer, cancer registry, Europe, prevalence

Introduction

Cancer is a major health problem in developed countries, in many of which it is the second most common cause of death for all ages combined [1]. In Europe, the number of new cancer cases diagnosed annually has been increasing steadily in recent decades [2–4], while the survival of cancer patients is also increasing [5]. The main reasons suggested for the increases in survival are earlier diagnosis and the development of new treatments, which have also improved cure rates for several types of malignancy [6]. Over the same period, general mortality has declined in most European countries and life expectancy at birth has risen dramatically, the principal exceptions being several countries in central and eastern Europe [7]. Improved prognosis for cancer and reduced risk of death from non-cancer causes have increased the time that cancer patients are under the care of health services, resulting in major changes in health service needs. The prevalence of a disease is the number of patients diagnosed with that disease, present in the population at a given time. A major reason for the interest in cancer prevalence is that it is an important determinant of the demand for health services. Several methods have been

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developed to obtain accurate prevalence data. For organisational reasons, most methods are based on the extraction or estimation of prevalence directly from available health statistics. Thus, in the USA and Europe, methods have been developed for estimating cancer prevalence from the population-based incidence and survival data collected by cancer registries (CRs) [8–14]. These direct methods provide prevalence for the areas covered by CRs. However, although some studies have been carried out by northern European CRs [10–12], Italian CRs (the ITAPREVAL project) [13] and the Office for National Statistics for England and Wales [14], systematic information on cancer prevalence is largely unavailable and comparisons of prevalence between European populations are non-existent.

This paper presents the main findings of the EUROPREVAL project, a European concerted action for studying cancer prevalence in order to reveal and evaluate differences in requirements for cancer-related health care. EUROPREVAL provides the first large-scale comparative overview of the prevalence of selected major cancers in Europe.

Materials and methods

Data

Data from 2 980 995 cancer patients, diagnosed from 1970 to 1992, in 38 population-based CRs in 17 European countries, were used in the analysis. Tables 1 and 2 give information on the participating CRs and the cases they contributed. In Table 1 the CRs are grouped into four broad areas: northern Europe, UK, central and southern Europe. Cancer prevalence data for each of these groups of countries will be presented in detail in separate papers. The participating CRs covered the entire populations of seven countries: Denmark, Estonia, Finland, Iceland, Slovakia and Slovenia. The Scottish CR, which covers the entire country, and several English CRs formed the UK group, which covers ~50% of the UK population. Sweden, Austria, the Netherlands, Poland, Switzerland, Italy and Spain had coverage in the range 5.7–17.5%, but coverage was very low for Germany (1.7%) and France (2.9%).

In this paper we present cancer prevalence by country, estimated from data provided by each country's CRs. Because national coverage varied markedly, the extent to which our results provide a representative picture of cancer prevalence in each country will also vary.

The rules for including cases in the analysis were those used by the EUROCARE study on the survival of European cancer patients [15]. An advantage of this is that the EUROPREVAL results are consistent with those of EUROCARE. The participating registries were asked to provide incidence and follow-up data for cancer cases diagnosed up to 31 December 1992. The Iceland, Saarland and Geneva CRs each had diagnosis periods of 23 years (1970 to 1992)—the longest observation period of all the CRs in this study—while the Tyrol and Warsaw CRs had the shortest included registration periods: 5 years each (1988 to 1992) (Table 2). The information provided on individual patients with cancer consisted of: gender; dates of birth, diagnosis and end of follow-up or death; life status at end of follow-up; tumour site (according to ICD-9 code) [16]; type of diagnosis (histological, cytological or other); and tumour histotype (according to ICD-O code) [17].

To protect confidentiality, only the month and year of dates of birth, diagnosis and end of follow-up or death were included in the data provided by the registries. All these events, except the end of follow-up (31 December 1992), were assumed to have occurred on the 15th day of the month in question.

Malignancies 204–208 of the ICD-9 classification were grouped as leukaemias. The category 'all malignant neoplasms' includes all malignancies (ICD-9 140–208) except non-melanoma skin cancer (ICD-9 173). The prevalence of all malignant neoplasms may be of little interest from the clinical point of view, but is of great public health interest because it provides an overall indication of the demand for cancer-related health care in a population.

Cases known to CRs by death certificate only (DCO) and those diagnosed at autopsy were not included in the analysis (Table 1 shows the overall percentages of DCO cases by CR). When more than one cancer was diagnosed in a patient, only that diagnosed first was considered. For cases of multiple synchronous tumours, only the most advanced or that causing death was considered. Bilateral synchronous tumours of symmetrical organs were considered as one cancer. The implication of these rules is that we considered the prevalence of *persons* with cancer and not the prevalence of *cancers*.

The percentage of patients lost to follow-up in each registry ranged from 0% (many CRs) to 10% (Somme) (Table 2). All case records were checked for errors and inconsistencies (unusual or inconsistent dates or cancer codes, unusual or inconsistent sex–site-morphology combinations) according to the EUROCARE protocol [15, 18]. Defective records were sent back to registries for correction or completion; considerable effort was made to complete and correct individual case records so that as many as possible could be included in the analysis, thereby reducing to a minimum the underestimation of prevalence.

Definition of terms

This study produced 'point' prevalence estimates pertaining to a specific reference day (31 December 1992).

- Total prevalence refers to all persons in a given population diagnosed in the past with cancer and alive on the reference day.
- Five year prevalence and 2 year prevalence refer to those parts of the total prevalence that were diagnosed in the 5 years and 2 years before the reference date, respectively. Other fractions of the total prevalence (e.g. 10 year prevalence, 15 year prevalence) may be interpreted in a similar way.
- The observed prevalence is the fraction of the total prevalence that is calculated directly from the data (i.e. cases diagnosed during the period the CR has been in operation, sometimes with correction for cases lost to follow-up).

Estimation of prevalence

When the population has been covered by cancer registration for a very long time then the prevalence can be calculated basically by counting directly from the CR data, since we may assume that no cases are surviving that were diagnosed before the CR began registering cases. As shown in Table 2, this was not the case in our study for any of the CRs, because either the registry has been established recently, or the full registry series is not included in the EUROCARE-2 database. Therefore, depending on the total time a CR has been providing cases (the observation period), there must be some additional surviving patients who were diagnosed before the date of available data. These cases must be estimated and their number added, as an adjustment, to the observed prevalence.

Table 1. Cancer registries participating in EUROPREVAL, populations covered and indices of reliability

Registry by country and broad geographic zone	Population covered, 1992[a] (1000s)			Indices of reliability			
	M+F	Percentage of national population	Percentage >65 years of age	DCO[b] (%)		Microscopic verification[c] (%)	
				M	F	M	F
Northern Europe							
Denmark	5170	100	15.6	1	1	92	93
Estonia	1544	100	12.2	NA	NA	80	84
Finland	5042	100	13.7	1	1	93	93
Iceland	261	100	10.8	0	0	97	97
Sweden, South	1417	17.5	18.4	NA	NA	97	97
UK							
England	25808	50.6	15.9	NA	NA	NA	NA
East Anglia	2089	4.0	17.0	NA	NA	NA	NA
Mersey	2412	4.7	15.5	3	4	70	71
Oxford	2582	4.8	13.1	1	0	74	77
South Thames	6756	12.9	16.6	20	18	63	64
Wessex	2993	5.8	17.6	8	8	77	79
West Midlands	5278	10.2	15.3	3	3	NA	NA
Yorkshire	3698	7.2	15.8	4	4	77	78
Scotland	5111	100	15.1	4	4	74	76
Central Europe							
Austria, Tyrol	641	7.8	12.4	8	9	87	86
Germany, Saarland	1055	1.7	14.9	9	9	84	85
Netherlands, Eindhoven	924	5.7	11.0	NA	NA	95	96
Poland	2338	6.1	13.2	NA	NA	NA	NA
Cracow	713	1.9	11.8	15	13	62	67
Warsaw	1625	4.3	13.8	9	9	61	66
Slovakia	5307	100	11.2	2	1	78	80
Slovenia	1996	100	11.2	4	5	87	87
Switzerland	820	12.2	15.0	NA	NA	NA	NA
Basel	433	6.3	16.3	0	0	99	99
Geneva	387	5.5	13.6	1	2	95	93
Southern Europe							
France	1674	2.9	13.7	NA	NA	NA	NA
Somme	549	1.0	13.9	NA	NA	95	94
Calvados	625	1.1	13.2	NA	NA	94	95
Côte d'Or	499	0.9	14.0	NA	NA	NA	NA
Italy	5810	10.1	17.9	NA	NA	NA	NA
Florence	1182	2.0	19.2	4	5	71	72
Genoa	679	1.3	21.2	4	5	76	78
Latina	479	0.8	12.1	12	11	80	82
Modena	606	0.5	18.3	3	3	78	82
Parma	392	0.7	21.6	3	4	82	83
Ragusa	291	0.5	14.9	1	1	66	77
Romagna	426	0.7	20.1	1	1	86	87
Turin	956	1.8	17.4	4	5	79	80
Varese	799	1.4	14.9	2	3	89	88

Table 1. (*Continued*)

Registry by country and broad geographic zone	Population covered, 1992[a] (1000s)			Indices of reliability			
	M+F	Percentage of national population	Percentage >65 years of age	DCO[b] (%)		Microscopic verification[c] (%)	
				M	F	M	F
Spain	3758	9.6	14.4	NA	NA	NA	NA
Basque Country	2097	5.5	13.5	8	10	82	81
Mallorca	586	1.5	14.9	4	5	88	87
Navarra	522	1.3	15.8	9	10	84	83
Tarragona	553	1.3	15.8	3	3	88	88

[a]From Survival of Cancer Patients in Europe: the EUROCARE-2 study [1].
[b]Percentage of cancer patients known to the registry by DCO; all cancers except non-melanoma skin cancers [4].
[c]Percentage microscopically verified (cytologically and histologically); all cancers except non-melanoma skin cancers [4].
DCO, death certificate only; F, female; M, male; NA, not available or not applicable.

Observed prevalence

The observed prevalence was calculated by the PREVAL counting method [13, 19]. PREVAL employs a matrix with three time dimensions where the unit is a year: calendar time; age; and years from diagnosis. Each cancer patient is defined at a given point in time (i.e. a specific day) by age at diagnosis, calendar year of diagnosis and years from diagnosis (which takes the value zero initially). The case is added to other cases with the same values forming a cohort. At each calendar year, the method verifies whether each patient is still alive, and for each age group counts the total number of patients remaining in the cohort. The prevalence on a certain day in a given calendar year is obtained by adding the results from all cohorts. The PREVAL method also incorporates an adjustment to take account of patient loss during follow-up. To implement this adjustment, the following formula is applied to each *i, j* cell of the matrix along the *k* axis (time since diagnosis):

$$E_k = A_k + \sum_{m=0}^{k} L_m \prod_{s=m}^{k} \frac{A_s}{A_s + D_s}$$

where A_k is the number of patients of initial age *i* and alive at the end of the calendar year *j*; D_s is the number of patients who died during that year; L_m is the number of patients lost to follow-up at a given *m* year since diagnosis; and A_s is the number of patients alive at the end of the year. Thus, the formula multiplies the number of lost to follow-up cases by the time interval survival probability $[A_s/(A_s + D_s)]$. E_k is therefore the expected number of patients diagnosed at age *i* and alive at the end of year *j*, taking into account the survival of those lost to follow-up. This adjustment assumes that the lost patients have the same probability (specific for sex and age at diagnosis in a given calendar year) of surviving as those not lost to follow-up.

Total prevalence

The observed prevalence, corrected for lost cases as above, was adjusted by a prevalence completeness index determined by a previously published and validated method for estimating the unknown fractions of the total prevalence [20]. The prevalence completeness index (*R*) defined by the following formula:

$$R = N_O(m)/N_T^{(m)}$$

is an estimate of the proportion of the total prevalence expressed by the observed prevalence, where $N_O^{(m)}$ and $N_T^{(m)}$ are 'model estimates' of observed and total prevalence, respectively [20]. These quantities are derived from a mathematical expression relating prevalence to incidence and survival probabilities [20]. The completeness index varies between 1, when all prevalent cases are observed (i.e. the CR has been operating for a very long time), and (theoretically) 0, when no prevalent cases are observed by the CR. *R* depends on the length of the registration period, cancer-specific incidence rates by age class and cancer-specific survival rates by age class.

Values of *R* were estimated for each cancer site for each of the four broad European areas defined previously. We had difficulties in estimating past incidence and survival trends by age for cancer of the cervix uteri and for Hodgkin's disease [21]; consequently we had problems in estimating *R* values and hence the total prevalence for these two malignancies. However, in these two cases the method allowed us to produce an adjustment of the observed prevalence that furnished estimates of the 15 year prevalence.

Weighted European mean

In order to take into account that the extent of cancer registration varied between countries, when calculating the crude European mean prevalence we used a weighting factor, $w = (100 \times n)/c$, where *n* is the average annual number of patients with a given cancer registered by the CR or CRs representing a country, and *c* is the level of national coverage. In this study *c* ranged from 1.7 (Germany) to 100 (for those countries completely covered) (Table 1).

Presentation of results

The results for each cancer site or group of cancers are presented in separate figures (Figures 1–12). All figures have the same layout. The upper part shows a bar chart ranking the 'crude prevalence' in each country as a proportion of the population (for both sexes combined or one sex only, depending on the cancer) and by time from diagnosis (2, 5, 10, 15 years and total prevalence). To facilitate the interpretation of prevalence differences between countries, bar charts show world age-standardised incidence. Age-standardised 5-year relative survival and world age-standardised total prevalence are shown in the lower half of each figure. These world age-standardised figures are directly comparable

Table 2. Period of observation, cancer sites considered and cases lost to follow-up, by cancer registry for males and females combined

Registry	Period of observation	Stomach	Colon	Rectum	Lung	Melanoma of skin	Breast	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease	Leukaemia	Malignant neoplasms[b]	Lost to follow-up[c] (%)
Denmark	1978–1992	11520	27632	18660	43919	8925	40192	8561	9430	19950	1874	8896	306 016	0.0
Estonia	1978–1992	7783	3256	2808	8695	883	5594	2369	2102	2042	527	1844	55612	1.0
Finland	1978–1992	14885	11540	8580	29189	5671	28831	2245	6643	15905	1706	5792	205377	0.0
Iceland	1970–1992	1250	1006	395	1368	234	1782	310	355	1403	120	369	13 668	0.0
Sweden, South	1978–1992	3733	6734	4317	5924	3121	10763	1300	2028	9356	395	2083	80313	0.0
East Anglia	1979–1992	4976	8807	5602	16531	2052	14262	1939	2332	7540	699	2377	95451	5.0
Mersey	1985–1992	4286	6037	4024	15208	1014	10009	1961	1416	4164	413	1471	71560	0.0
Oxford	1979–1992	6071	10064	5795	20231	2361	17362	2307	2806	7488	944	2982	119304	0.0
Thames, South	1978–1992	15344	25409	15663	57732	5465	45652	5918	7085	19035	2364	7163	313481	0.5
Wessex	1979–1992	7365	15220	7873	24389	3830	22766	3286	3318	11277	1040	4433	163325	0.0
West Midlands	1978–1992	17355	22884	15574	49479	3957	37528	6340	5728	15110	1897	6431	272119	0.0
Yorkshire	1978–1992	11683	15576	11112	37435	2775	25257	5152	3487	11241	1377	4667	197615	0.0
Scotland	1978–1992	16769	26032	13341	63122	5575	37120	6191	4410	15432	2045	6660	302159	0.0
Tyrol	1988–1992	875	805	494	1143	534	1412	346	292	978	77	265	11027	0.0
Saarland	1970–1992	6150	7390	5581	10926	1384	11166	2824	3034	4757	562	1765	84618	0.0
Eindhoven	1978–1992	2244	3380	2018	6849	837	5829	516	879	2286	272	861	37738	1.8
Cracow	1976–1992	2030	1060	1023	4659	478	2864	1418	797	616	284	589	24784	4.7
Warsaw	1988–1992	1404	1511	1076	4490	370	2606	936	846	662	161	494	23941	9.0
Slovakia	1978–1992	16046	11477	12238	29355	3475	16366	7292	6991	7482	1570	5417	184706	0.1
Slovenia	1980–1992	4600	2898	3275	7596	1098	6041	1651	1851	2096	362	1443	51487	0.5
Basel	1981–1992	836	1513	1034	2300	719	2903	237	642	1727	109	582	17127	0.7
Geneva	1970–1992	1307	2303	1368	3663	860	4726	541	942	2018	213	845	29784	4.6
Somme	1982–1992	874	1505	1079	2410	234	2503	491	450	1632	163	598	20360	10.0
Calvados	1978–1992	1407	1969	1563	–	–	–	–	–	–	–	–	NC	4.7
Côte d'Or	1976–1992	1244	2392	1646	–	–	2430	378	448	–	159	966	NC	5.4
Florence	1985–1992	5149	4129	2389	5663	721	5511	501	1087	2249	319	992	44373	0.7
Genoa	1986–1992	1430	2292	1126	3760	363	3342	355	474	1134	174	519	24550	0.2
Latina	1983–1992	820	765	491	1811	156	1311	231	286	377	108	391	10878	0.5
Modena	1983–1992	1085	1468	852	2066	197	1812	149	342	734	83	321	14566	1.1
Parma	1978–1992	3502	2249	1313	3633	330	3392	386	718	1177	211	676	27262	0.3
Ragusa	1981–1992	669	593	409	985	114	1116	212	306	406	86	291	8338	0.2

Romagna	1986–1992	1984	1375	642	2199	265	1808	257	358	826	99	416	15 626	0.1
Turin	1985–1992	1874	2812	1494	4552	489	4542	553	784	1387	262	736	31 888	4.1
Varese	1976–1992	4167	3757	2062	6523	660	6811	665	1207	1843	430	1174	45 803	0.9
Basque Country	1985–1992	3412	2833	2097	4976	638	4711	567	1003	1839	375	1011	40 807	0.0
Mallorca	1988–1992	384	1321[a]	950[a]	1294	145	1040	242	248	539	66	231	10 426	1.5
Navarra	1985–1992	1113	939	636	1205	178	1604	127	328	882	109	294	12 522	0.0
Tarragona	1985–1992	681	1080	656	1307	182	1537	253	389	732	89	349	12 384	0.6
Total		188 307	244 013	161 256	486 587	60 290	394 501	69 007	75 842	178 322	21 744	76 394	2 980 995	0.6

[a] 1982 to 1992 period of observation.
[b] Excluding non-melanoma skin cancer (ICD-9 173).
[c] Lost to follow-up for all malignant neoplasms.
NC, not considered.

with those produced in the USA [9]. Note that the *x* axis scales on these charts vary with cancer site. The data in the bar charts, in the lower part of each figure, are given in rank order of the world age-standardised total prevalence. The incidence data are from *Cancer Incidence in Five Continents Volume VII* [4] and the survival rates are from EUROCARE-2 [22]. Appendices A and B show all the results used to compile the bar charts in Figures 1–12.

Results

Poland, Estonia, Slovakia and Slovenia had low prevalence for most cancer sites, while Sweden, Switzerland, Germany, Italy and Denmark generally had high prevalence (Figures 1–12). The ratio of the highest to the lowest crude prevalence for all malignancies combined was 2.6, ranging from ~3050 per 100 000 in southern Sweden down to 1170 per 100 000 in the Polish registry areas (Figure 12 and Appendix A). Ratios for individual sites ranged from 2.0 for Hodgkin's disease (Figure 10 and Appendix A) and 2.3 for lung cancer (Figure 4 and Appendix A) to 13.0 for prostate cancer (Figure 9 and Appendix A). The corresponding ratios of highest to lowest age-standardised prevalence were smaller: for all malignancies combined, the figure was 2.2, with the highest prevalence (1680 per 100 000) in the Austrian registry and the lowest (770 per 100 000) in the Polish registry areas (Figure 12 and Appendix B).

For stomach cancer, the Italian registries had the highest crude prevalence at every time point after diagnosis, but after adjusting for age the Italian registries ranked third, as neither incidence nor survival were the highest (Figure 1). The highest colon cancer prevalence was in the Germany registry area, also characterised by the highest incidence (Figure 2). For rectal cancer, crude prevalence figures were variable, but this variability reduced when the figures were age-adjusted, and in fact a large group of registry areas (Slovakia, the Dutch and French CRs, Denmark and the Swiss CR) had very similar values for the total age-adjusted prevalence as a result of the complex interplay of incidence and survival (Figure 3). For lung cancer, characterised by high incidence and low survival, between-registry variation in prevalence was low compared with the other cancer sites. For this malignancy, Slovakia was among the highest both for crude and age-adjusted prevalence because of high proportions of long-term and very long-term survivors (Figure 4). The Swedish and Austrian CR areas had the highest crude and age-adjusted prevalences for melanoma of the skin, the first considerably higher than the prevalence figures for this cancer in other European areas (Figure 5). For breast cancer the Swedish CR area ranked highest, followed by Swiss CRs, German CR and Italian CR areas. Low prevalence was found for Slovakia, Estonia, the Polish CR areas and Slovenia (Figure 6). The crude prevalence of cancer of the uterine cervix was particularly low in Finland and very high in the Austrian CR areas and Denmark (Figure 7). The crude prevalence of cancer of the corpus uteri was highest in the German CR area and lowest in Scotland; the French and

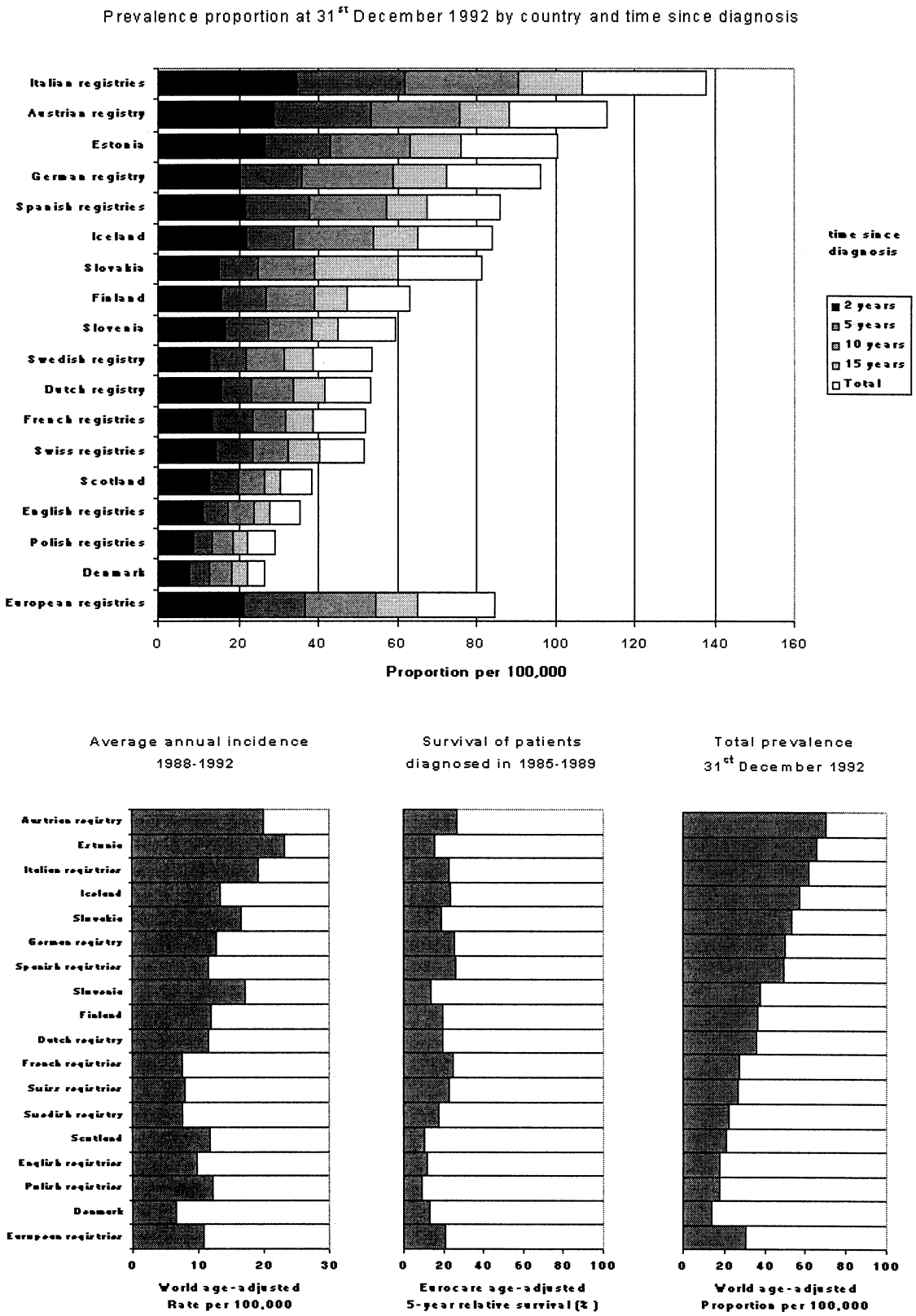

Figure 1. Stomach, men and women combined.

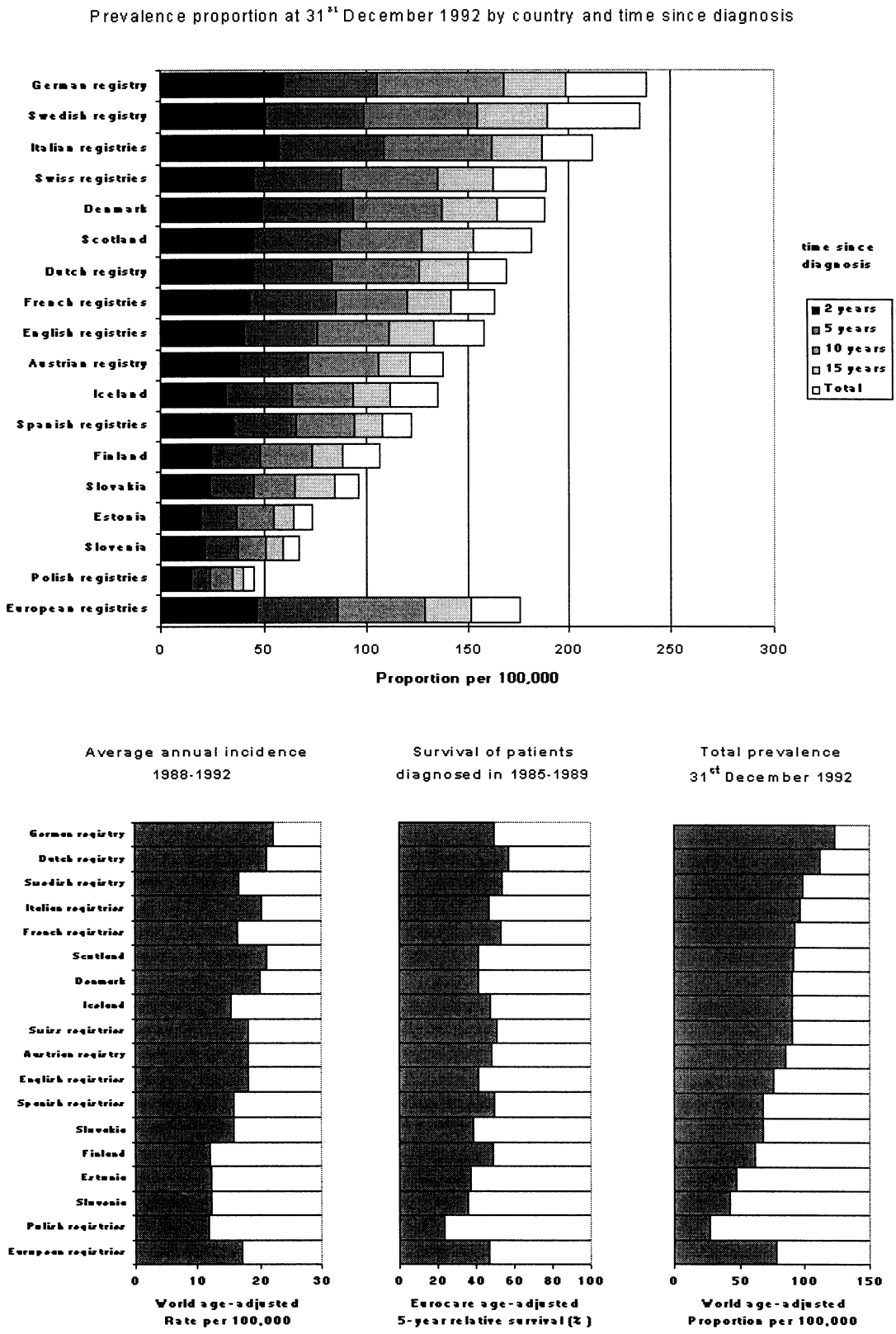

Figure 2. Colon, men and women combined.

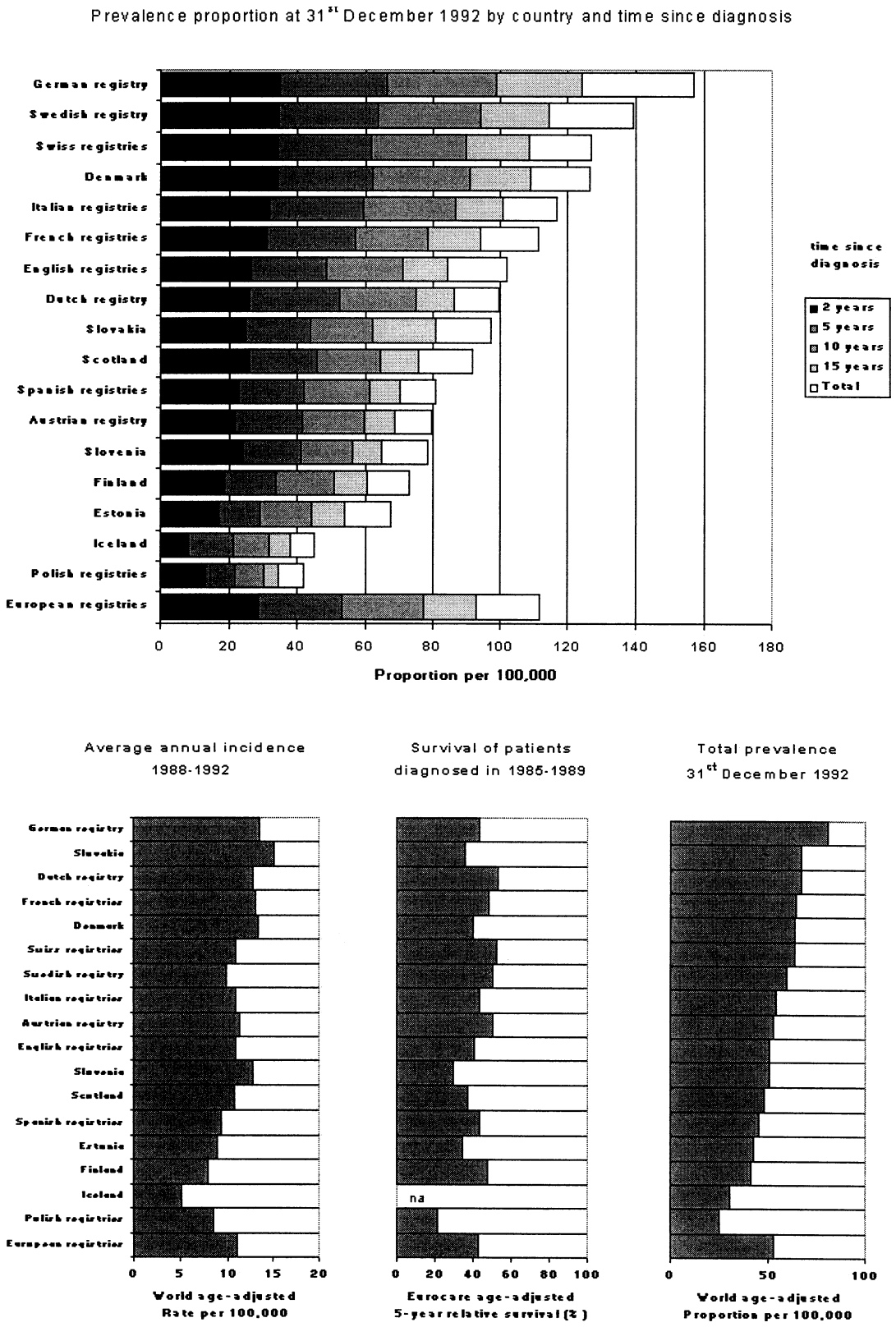

Figure 3. Rectum, men and women combined. na, age-adjusted data not available.

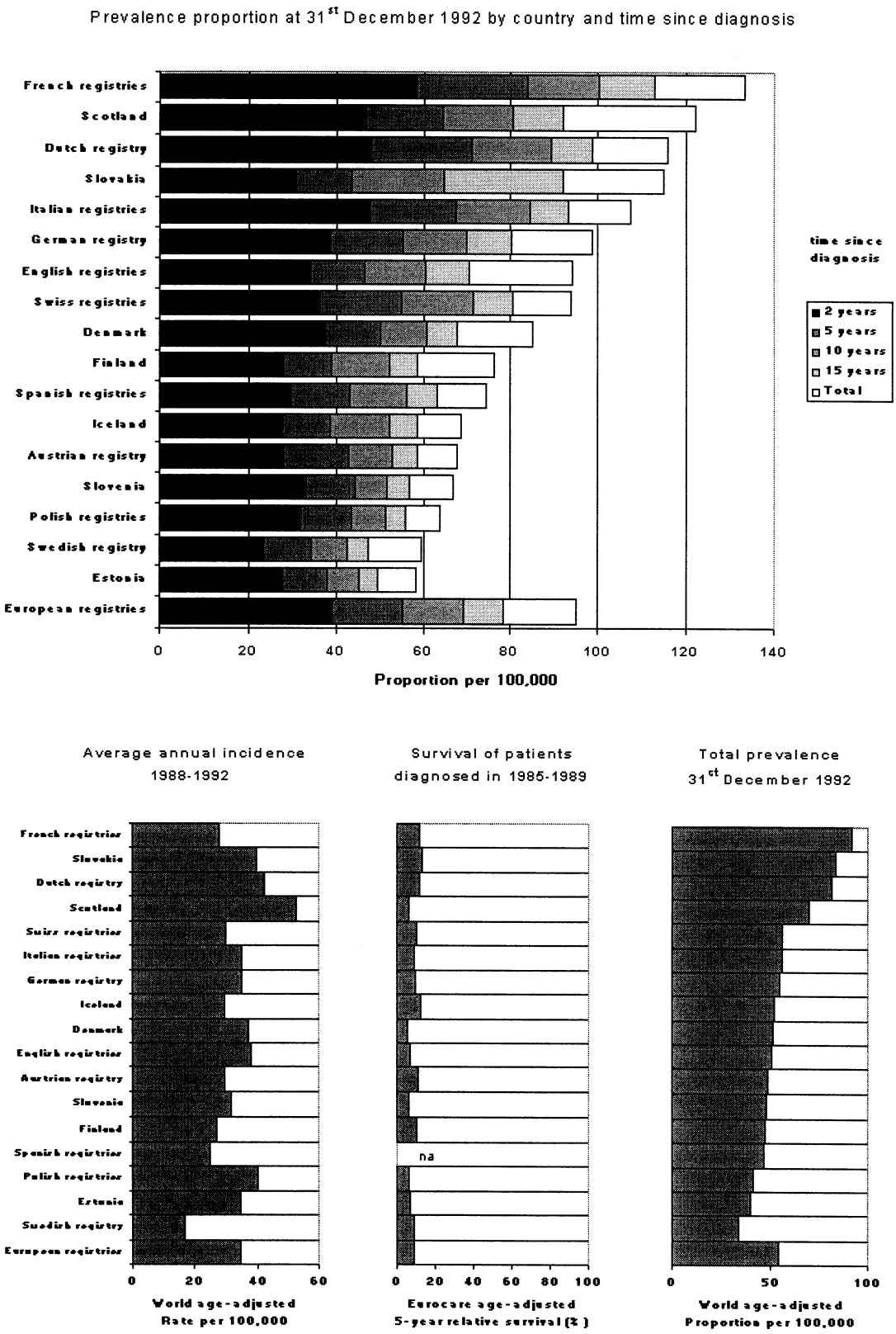

Figure 4. Lung, men and women combined. na, age-adjusted data not available.

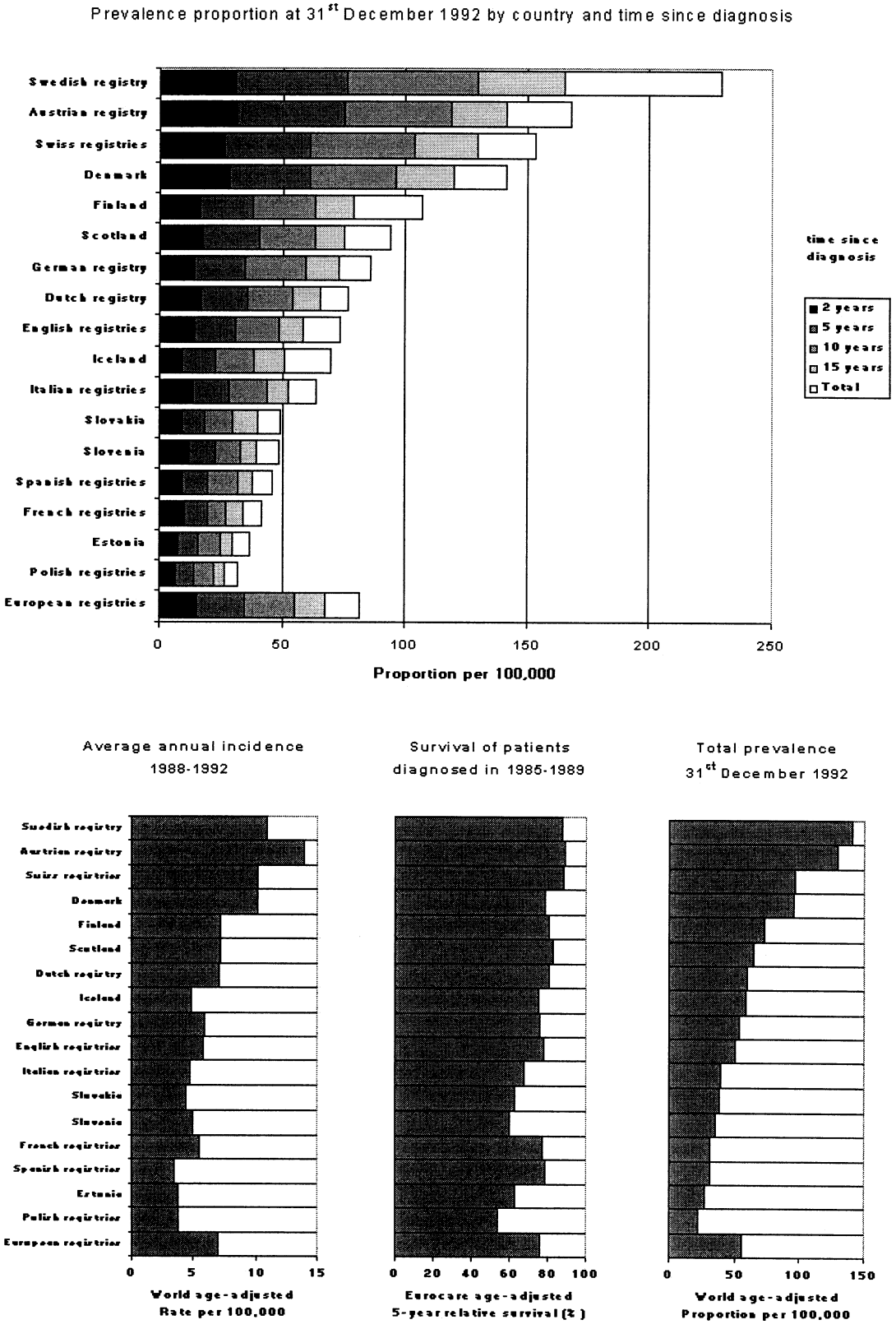

Figure 5. Melanoma of skin, men and women combined.

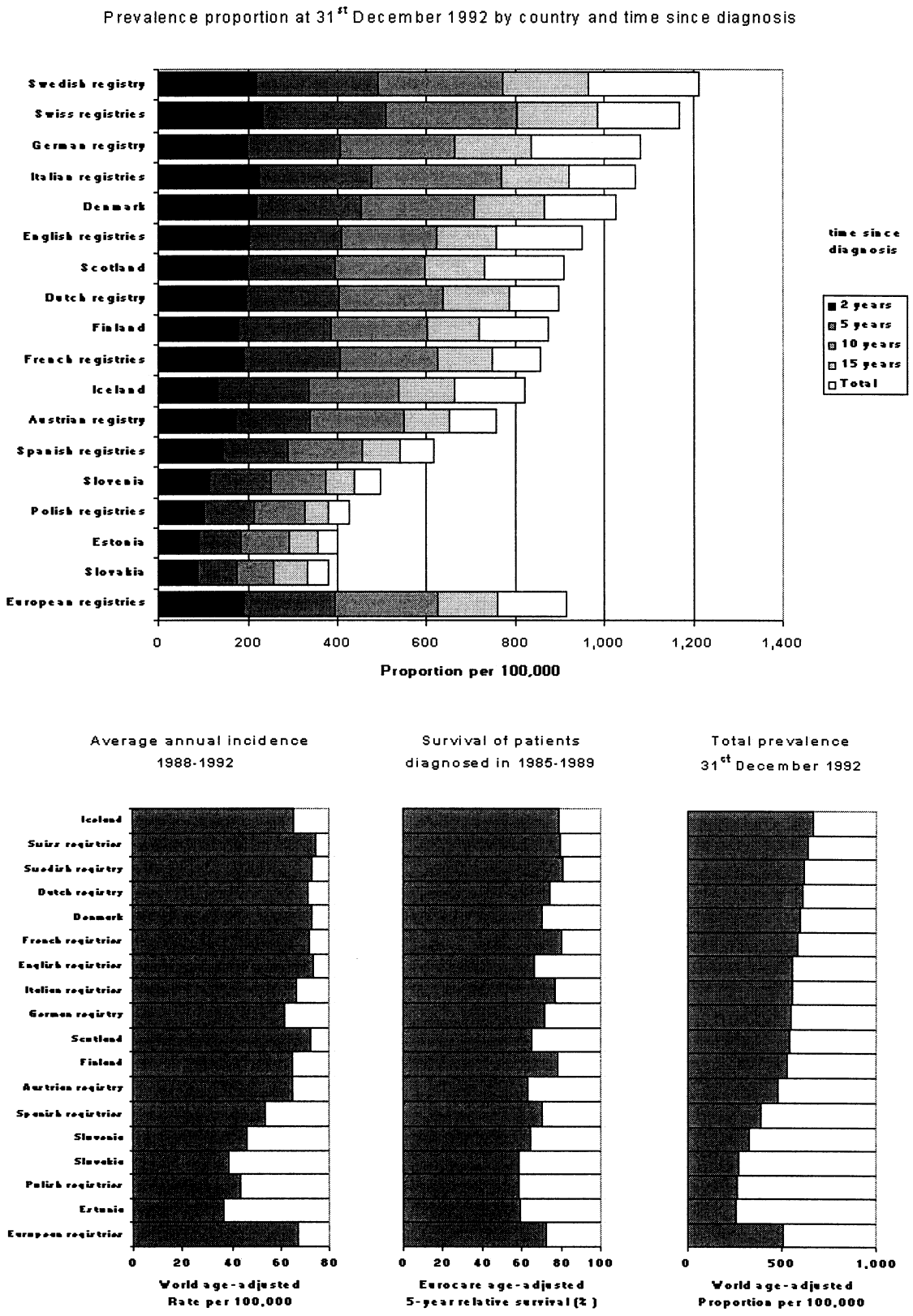

Figure 6. Breast.

English CR areas ranked very low (Figure 8). For cancer of the prostate, the 2 year prevalence was generally a high proportion of the total prevalence and very long-term survivors were an important fraction of total prevalence only in Germany (Figure 9). For Hodgkin's disease, the Italian CR areas had the highest prevalence and highest incidence, with levels noticeably greater than those of other areas (Figure 10). For leukaemias, the French CR areas had the highest prevalence combined with the highest level of relative survival and large numbers of long term and very long term survivors (as is evident from inspection of the prevalence bars at different times from diagnosis, top of Figure 11).

Other findings

Sex

For all cancer sites combined, prevalence in women was higher than in men in all countries. The proportion of prevalent cancer cases that were women ranged from 53% in Spain to 71% in Poland, with a weighted European mean of 61%.

Age

In all countries, the largest proportion of all prevalent cases were aged 65 years of age or over, and in most countries (the exceptions being Poland and Slovenia) such cases formed >50% of the prevalent population. The European weighted mean indicated that 57% of prevalent cases were 65 years of age or over.

Time from diagnosis

About 22% of all prevalent cases consisted of patients who had a cancer diagnosis within 2 years of the index date. This proportion did not vary greatly between countries, ranging from 19% in Slovakia to 25% in France.

Prevalence by site

Female breast cancer had the highest prevalence in all countries, and accounted for about 34% of the total prevalence in women in Europe. Colorectal cancer ranked second in females and first in males, accounting for 10% and 15% of the total female and male prevalence, respectively. In men, prostate cancer accounted for 12% and lung cancer for 10% of the total prevalence.

Incidence, prevalence and survival

Figure 13 shows the age-adjusted total prevalence for all malignancies grouped by country, plotted against the age-adjusted incidence for those registries. Each country group is represented on the plot by discs of diameter proportional to the estimated relative survival. The overall cancer prevalence correlated significantly with incidence when the CRs were grouped by country ($R = 0.73$, $P < 0.01$). Thus, high prevalence was associated with high incidence, and low prevalence with low incidence. A few countries, however, did not adhere to this general pattern; in particular, Sweden had one of the two highest prevalence figures, but a relatively low incidence, and Poland had lower prevalence than expected from its incidence data. Sweden had the highest level of survival (the largest circle in Figure 13), while Poland had the lowest level of survival (the smallest circle in Figure 13). Countries with high levels of survival (large circles in Figure 13) tended to have high levels of prevalence. The ratio of prevalence to incidence, whose weighted European mean value was 5.2, ranged from 3.5 in Polish CR areas to 7.1 in south Sweden CR, but 11 of the countries had values for this ratio in the range 4.8–5.8.

Prevalence and socioeconomic variables

Table 3 shows correlation coefficients between total cancer prevalence and several health and socioeconomic variables, as estimated at the national level. Prevalence was inversely and significantly associated with indicators of deprivation (high general and infant mortality), and positively and significantly associated with indicators of wealth and development (gross domestic product and total expenditure on health). Prevalence was inversely associated with unemployment (an indicator that is high in poor societies), significantly so for all cancers combined and for prostate cancer.

Discussion

The accuracy of the prevalence figures presented in this paper depends to a vital extent on the accuracy of the incidence and survival data from which they were derived. Both were extracted from the EUROCARE database [22]. Issues concerning the accuracy of diagnosis and the validity of vital status assessment in this database have been treated in depth in the EUROCARE monographs, from which it was concluded that in the vast majority of cases biases were small compared with the large between-country differences in survival [15, 18].

The percentage of cases lost to follow-up varied between registry areas, thus potentially affecting the comparability of the prevalence data. This bias was taken into account by assigning the same survival probability to the cases lost in each registry as that of the cases successfully followed. A more serious source of bias is that due to the different times that the registries have been operating. Registries cannot include cases diagnosed before they came into existence and recently established registries therefore have shorter series of incident cases contributing to the prevalence than long-standing registries. We corrected for this bias using completeness indices [20], which make it possible to estimate the unobserved part of the prevalence.

The effects of migration and DCO cases on the prevalence figures were also examined and it was concluded that in no case could these explain more than an insubstantial fraction of the large geographical differences found in prevalence [21]. CRs were asked to check that our prevalence estimates were

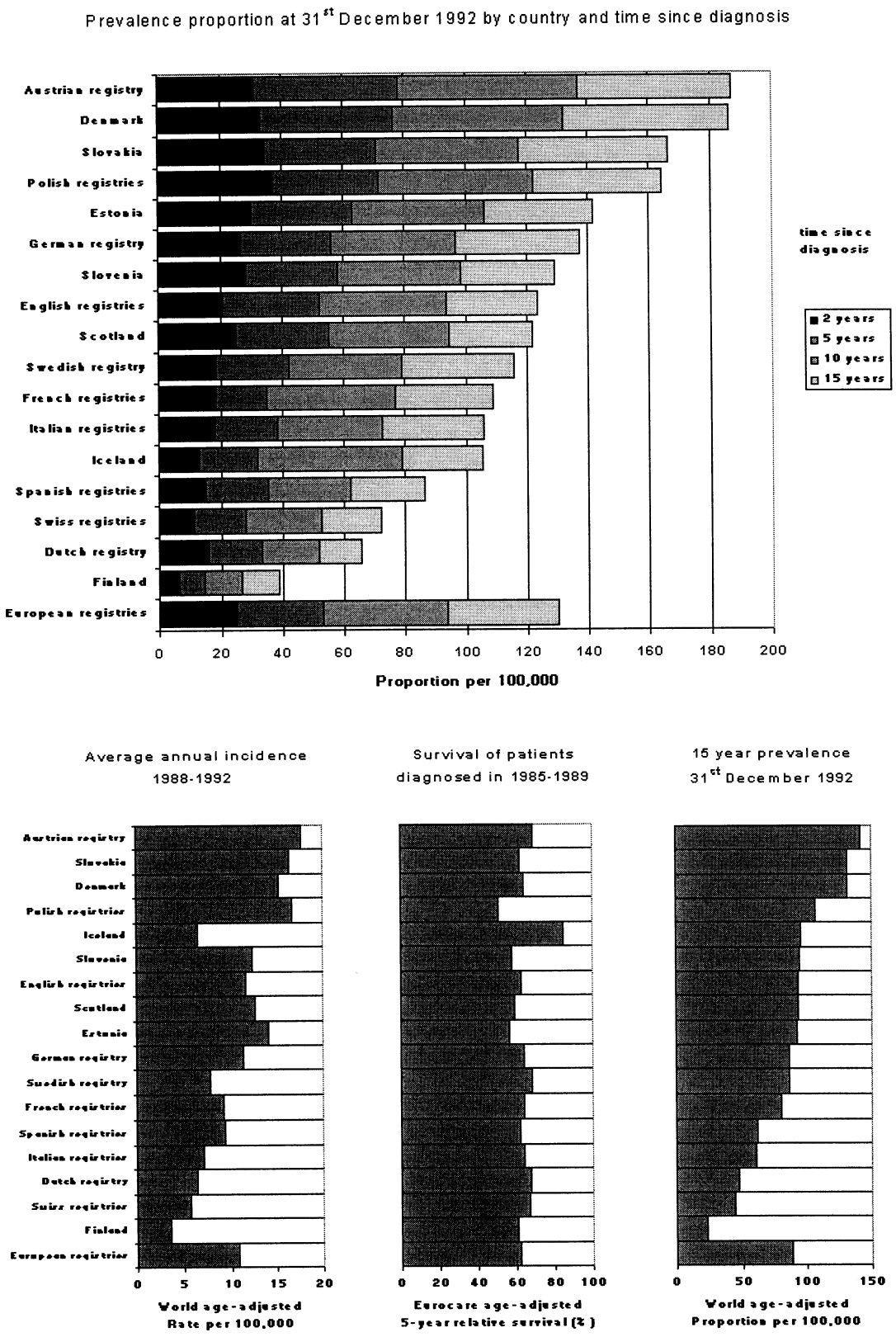

Figure 7. Cervix uteri. It was not possible to estimate total prevalence.

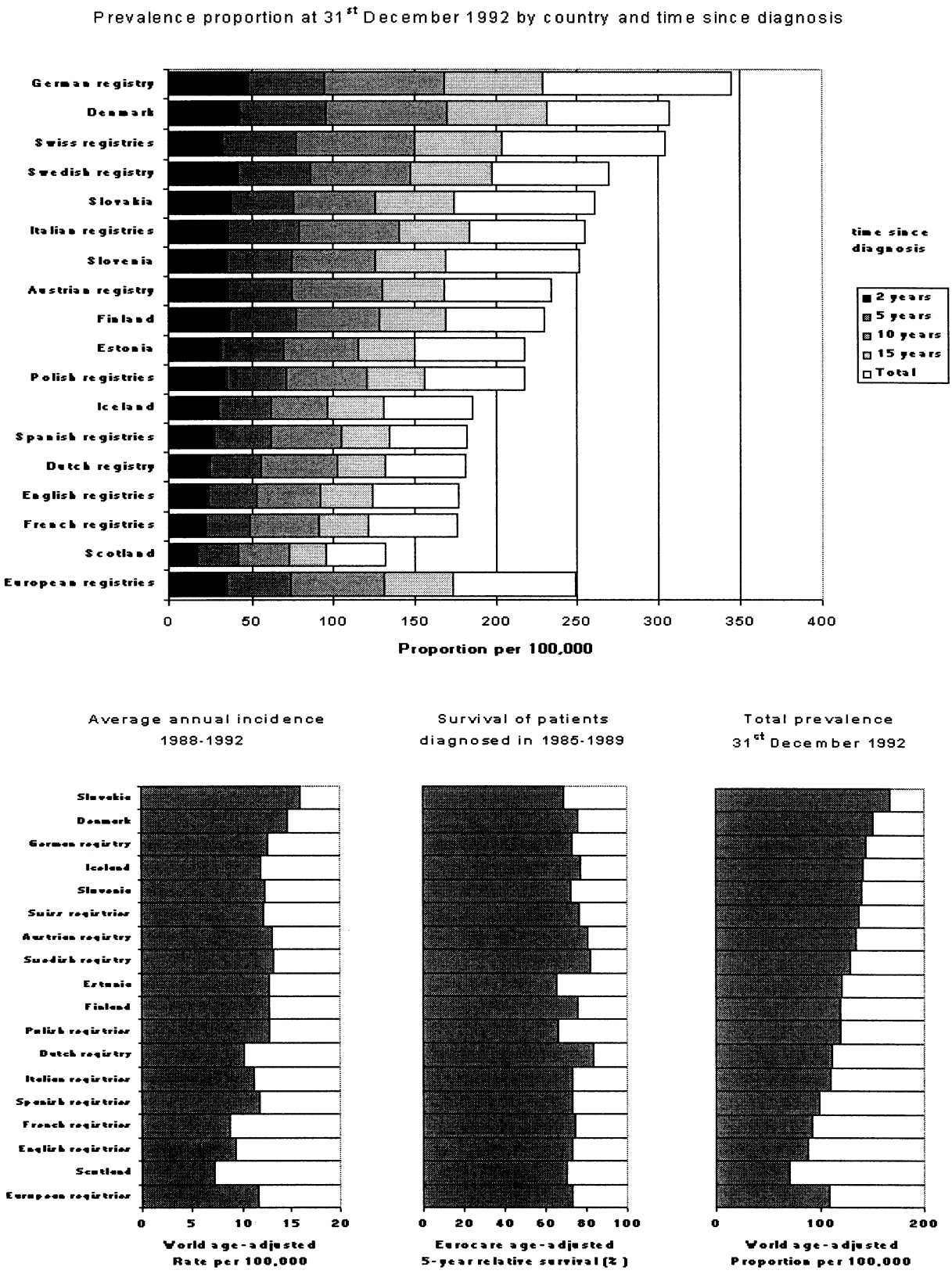

Figure 8. Corpus uteri.

Table 3. Correlations between estimated national total cancer prevalence and health and socio-economic variables in 14 European countries[a]

Socio-economic variable[b]	Cancer site			
	Breast	Prostate	Colon (M+F)	All cancers (M+F)
General mortality, 1991 (per 100 000 population)	–0.843[c]	–0.598[d]	–0.652[d]	–0.637[d]
Infant mortality, 1991 (per 1000 live births)	–0.780[c]	–0.680[c]	–0.721[c]	–0.734[c]
Total expenditure on health 1991 (PPP per capita, $)	0.899[c]	0.702[c]	0.766[c]	0.733[c]
Gross Domestic Product 1991 (PPP per capita, $)	0.897[c]	0.702[c]	0.760[c]	0.787[c]
Total unemployment, 1991 (% of labour force)	–0.558[d]	–0.833[c]	–0.338	–0.585[d]

[a]Austria, Denmark, the Netherlands, England, Finland, France, Germany, Iceland, Italy, Poland, Slovakia, Spain, Sweden and Switzerland.
[b]Data extracted from the OECD data bank [23].
[c]$P \leq 0.01$ (2-tailed).
[d]$P \leq 0.05$ (2-tailed).
PPP, parity purchasing power.

consistent with their expectations and all their suggestions were considered in order to reduce errors and inconsistencies to a minimum.

Screening and early diagnoses have a variable impact on prevalence. Breast cancer screening anticipates diagnosis: a rise in incidence therefore follows the onset of screening, even in the absence of a time trend, but this lasts only for a few years, after which incidence (except in the youngest women being screened) returns to pre-screening levels, provided no over-diagnoses are introduced. Although breast cancer screening was adopted earlier in some northern European countries and the UK, it was widely implemented in Europe only during the 1990s and mainly after the index date of the present study (31 December 1992). Thus, the expected modest increase in breast cancer prevalence due to screening is not evident in our data.

The widespread use of endoscopy to detect colorectal cancer may be expected, eventually, to lower both the incidence and prevalence of this cancer as it leads to the removal of pre-cancerous lesions. A similar phenomenon was observed following the widespread adoption of cervical screening.

In general, only a small proportion of incident cases is detected by screening, even in areas where screening is well established. This is changing dramatically, however, as the prostate-specific antigen (PSA) assay for the early diagnosis of prostate cancer is being adopted. A notable fraction of new cases detected by PSA are cancers that would never have become clinically symptomatic. This inflates the incidence and consequently the prevalence of prostate cancer. The very large variation in the prevalence of prostate cancer found in this study—a 13-fold difference between the highest and the lowest—can be interpreted as due to the differential spread of PSA testing across European countries.

It is important to break down cancer prevalence figures according to time since diagnosis, thereby providing more precise indications of health care needs for specific sections of the population. Cases diagnosed in the 2 years before the reference date are likely to be still undergoing primary treatment for their cancer or suffering from its side effects. The group of prevalent patients diagnosed 2–5 years prior to the reference date is at high risk for recurrence and should be followed closely. The 5–10 year prevalence group consists of patients who can be considered cured of their disease (particularly for cancers of colon, rectum and stomach) and in whom the probability of recurrence is low. However, for patients diagnosed 5–10 years previously, continuing but less intense follow-up is sometimes recommended. Lastly, prevalent patients diagnosed ≥10 years previously can be considered cured and will make minor cancer-related demands on health care services.

A possible future development would be to classify prevalent cases into four groups: recently diagnosed patients who are receiving primary treatment; those who can be considered cured of their cancer; those in the terminal phase of their illness; and the remainder of intermediate status, also referred to as those in the ‘continuing phase’ [24]. The definition of these groups requires the availability of population-based information on cancer stage at diagnosis and clinical follow-up. Such groups are much more homogeneous in terms of predictable health needs than those defined solely by time since diagnosis.

We found that high cancer prevalence was associated with low general and infant mortality and with high gross domestic product and high total expenditure on health. These associations suggest that cancer prevalence will rise as the level of economic development rises. In countries with well-developed economies, general mortality is falling, life expectancy is increasing and the age distribution of the population is shifting towards the elderly. Because the incidence of almost all cancers rises steeply with age, the number of cancer cases is increasing, while major investment in early detection and treatment contributes to the longer survival of cancer patients [5]. All these factors result in higher cancer prevalence.

Thus cancer prevalence is an indicator of both the positive and negative aspects of economic development: increasing life expectancy and survival from cancer on the one hand, and

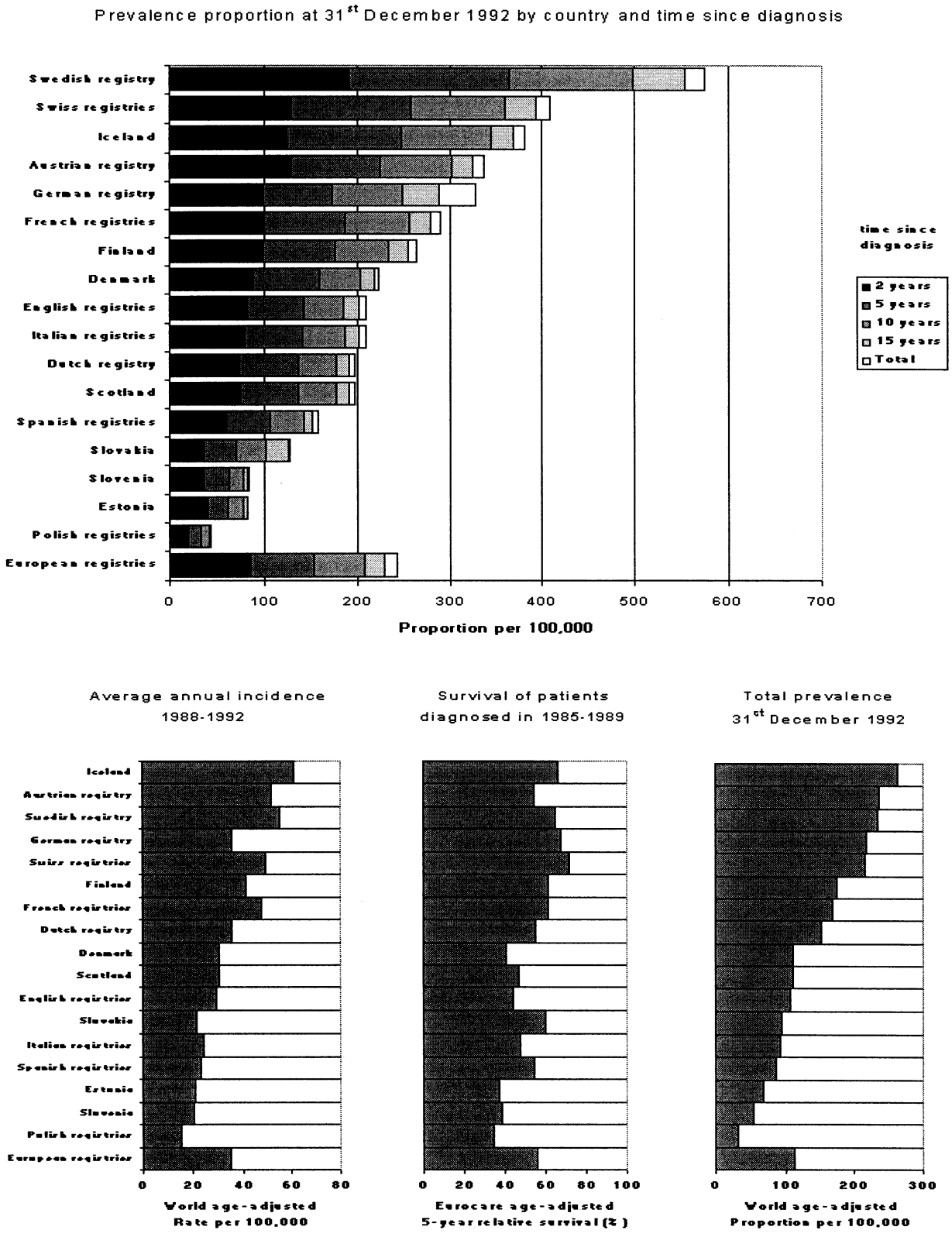

Figure 9. Prostate.

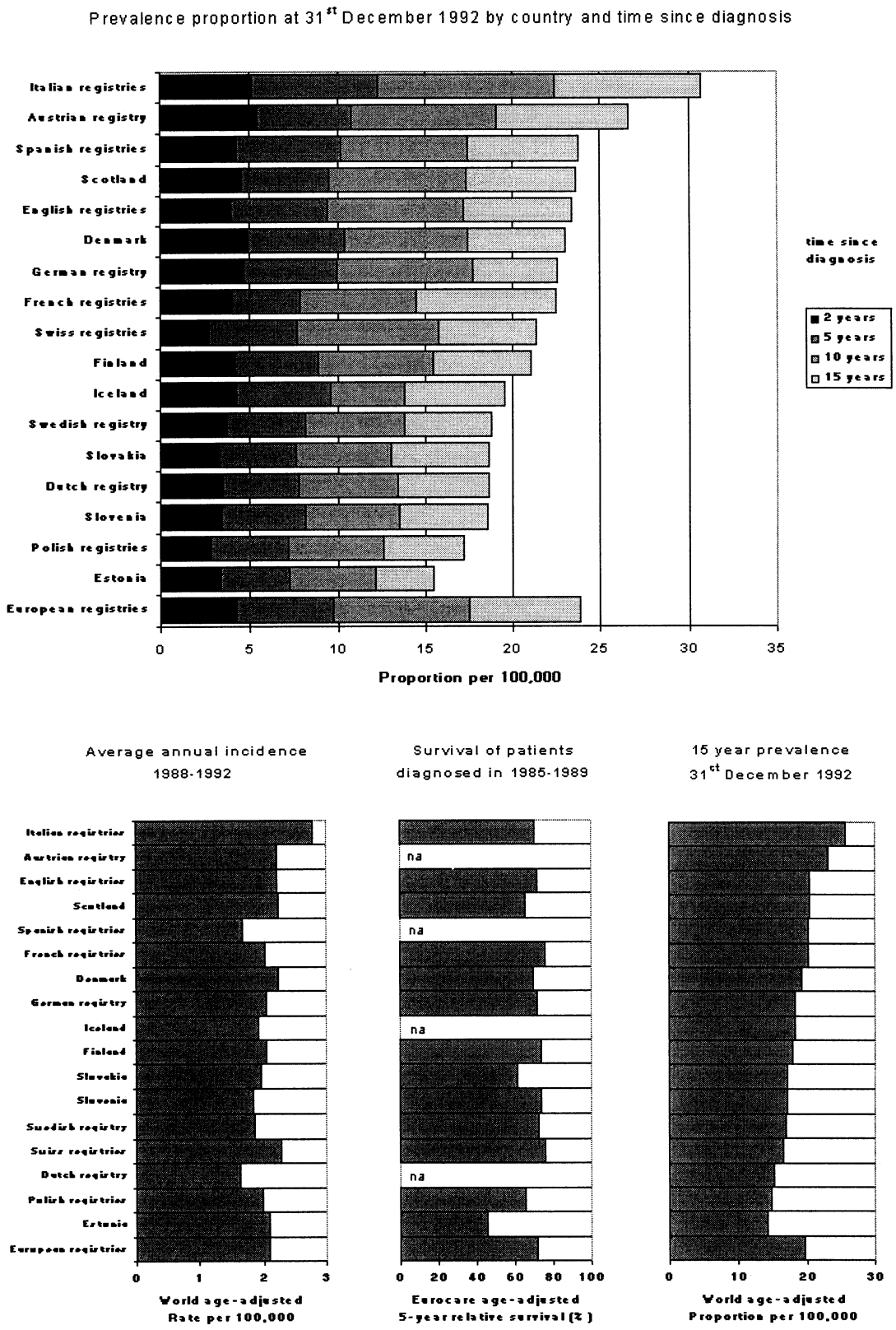

Figure 10. Hodgkin's disease, men and women combined. It was not possible to estimate total prevalence. na, age-adjusted data not available.

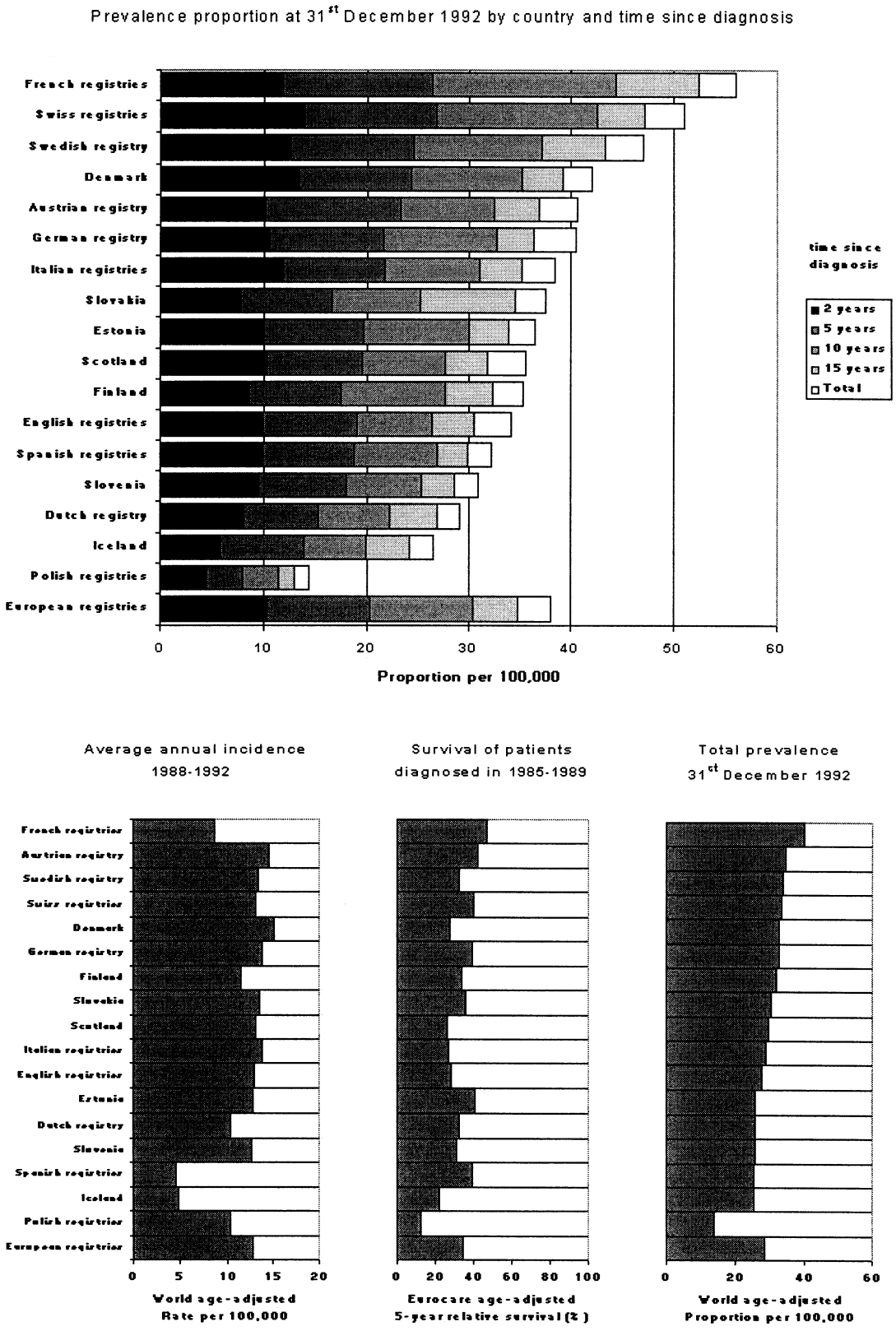

Figure 11. Leukaemia, men and women combined.

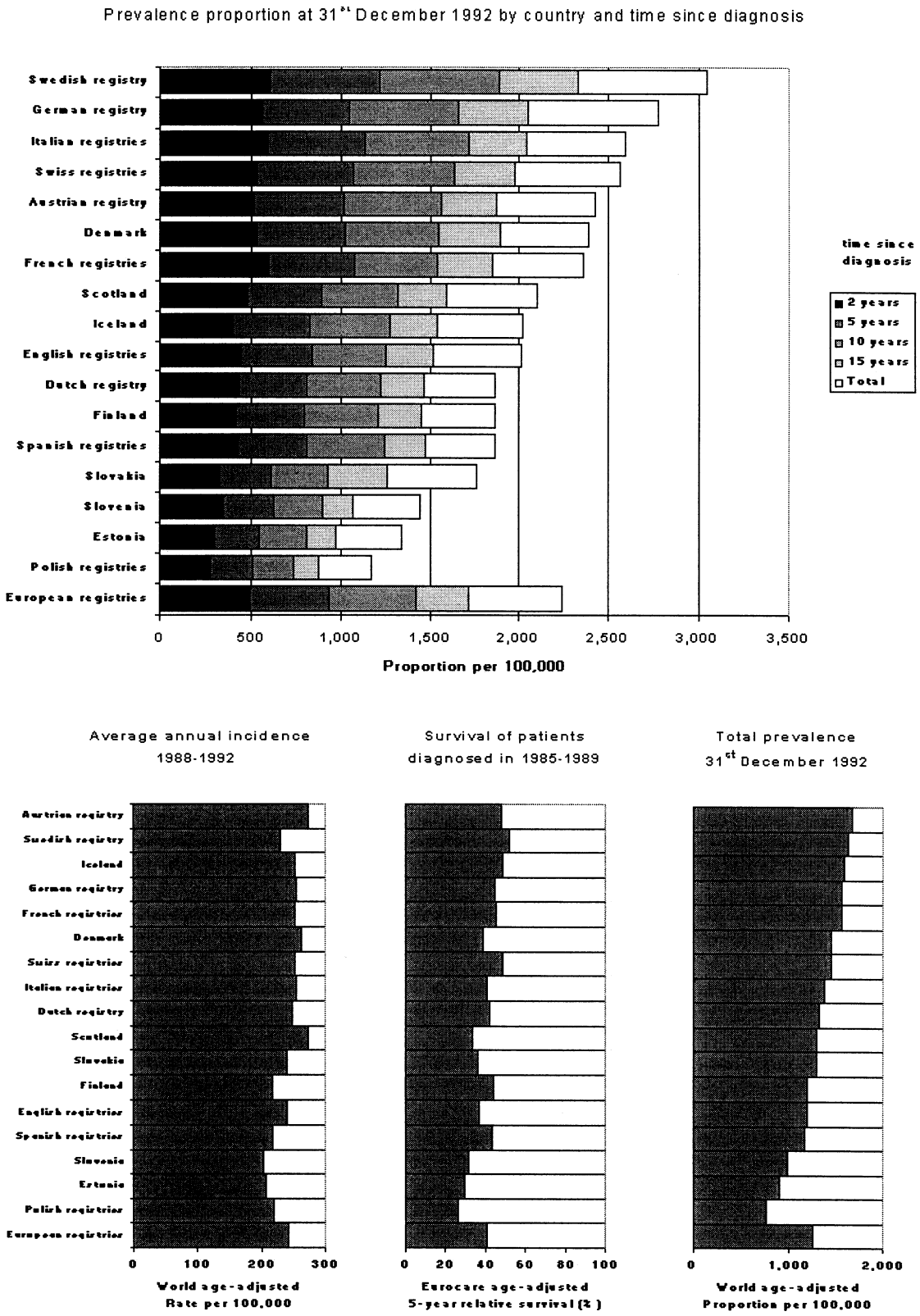

Figure 12. All malignant neoplasms, men and women combined.

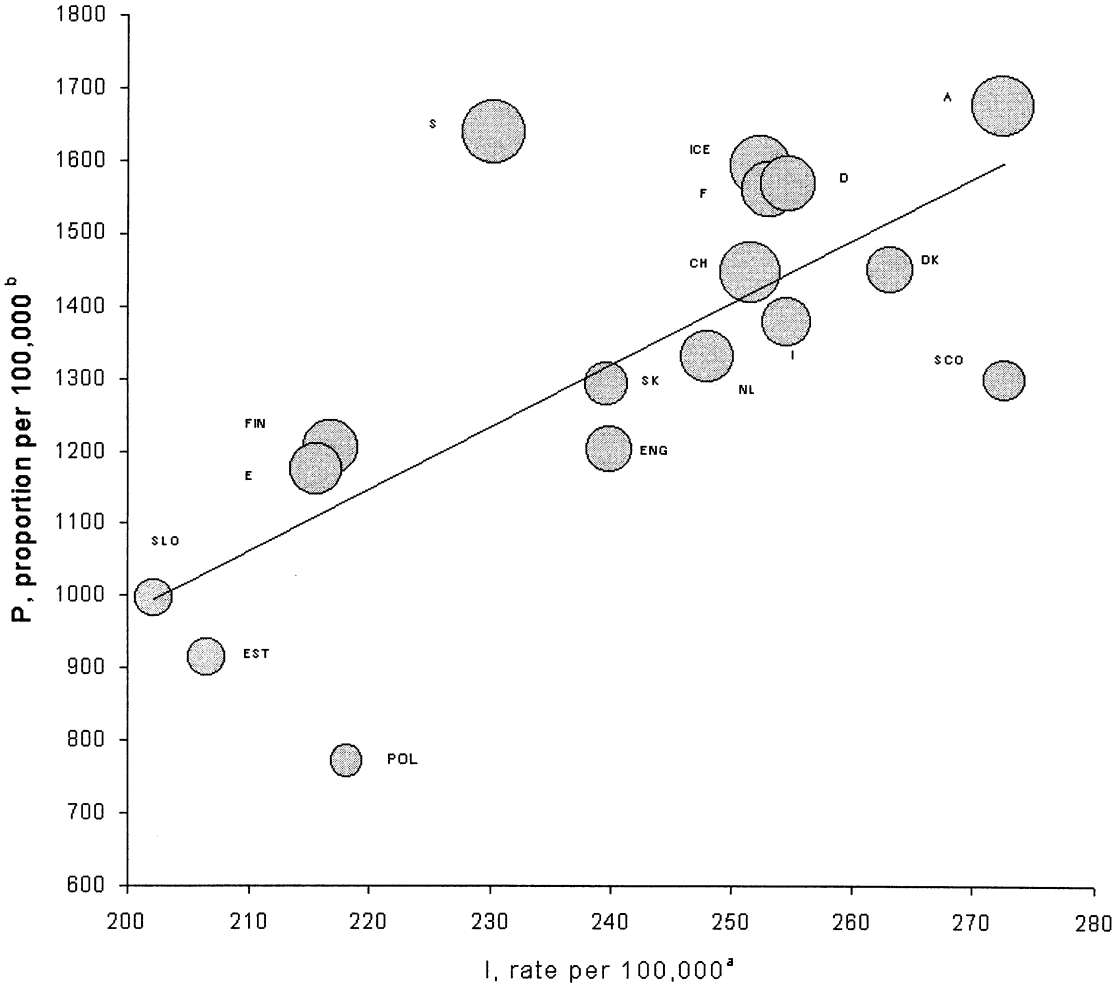

Figure 13. Relation between prevalence (P), incidence (I) and relative survival for all malignant neoplasms in 17 European countries, 1992. The diameter of the disk is proportional to the relative survival in the country. [a]World standard age-adjusted, 1988–1992 [4]. [b]World standard age-adjusted, 1992. A, Austria; CH, Switzerland; D, Germany; DK, Denmark; E, Spain; ENG, England; EST, Estonia; FIN, Finland; F, France; I, Italy; ICE, Iceland; NL, Netherlands; S, Sweden; SCO, Scotland; SLO, Slovenia; SK, Slovakia.

increasing cancer incidence on the other. This in turn suggests that, although notable results have been achieved, the campaign against cancer in Europe has not concentrated sufficient energy or resources on primary prevention. Perhaps primary prevention should now take a much more prominent role in the battle against cancer.

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Appendix A. Cancer prevalence per 100 000 at 31 December 1992, by area and time since diagnosis (countries are ordered as in Table 1).

Registry	Time since diagnosis (years)	Stomach M+F	Colon M+F	Rectum M+F	Lung M+F	Melanoma of skin M+F	Breast F	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease M+F	Leukaemia M+F	All malignant neoplasms[b] M+F
Denmark	2	7.9	49.1	33.9	37.4	27.5	218.3	33.2	42.3	88.2	4.9	13.3	533.9
	5	12.8	93.7	62.1	50.0	60.6	453.2	76.4	95.3	159.5	10.4	24.4	1027.6
	10	18.3	137.4	90.8	60.7	96.1	707.3	132.3	169.8	203.0	17.4	35.2	1549.6
	15	22.0	164.4	109.1	67.7	119.8	867.3	186.1	231.6	218.0	23.0	39.2	1890.9
	Total	26.4	187.9	126.4	84.9	141.5	1027.6	–[a]	307.6	222.8	–[a]	42.0	2388.5
Estonia	2	26.3	19.6	16.6	27.5	7.7	90.1	29.8	32.0	41.0	3.3	9.9	303.7
	5	43.1	36.5	29.0	38.1	15.7	182.3	62.8	69.8	61.2	7.3	19.7	548.7
	10	63.3	54.5	44.2	45.4	24.4	289.5	106.3	115.3	77.3	12.2	30.0	812.0
	15	76.0	64.7	54.1	49.5	29.1	353.7	141.8	150.3	82.0	15.5	33.9	971.2
	Total	100.4	73.5	67.5	58.2	36.6	399.7	–[a]	218.0	82.7	–[a]	36.5	1339.1
Finland	2	15.5	24.8	18.2	27.8	16.5	177.5	6.6	36.5	98.2	4.1	8.5	411.1
	5	26.8	48.3	33.6	39.0	37.3	385.2	14.7	77.0	175.5	8.9	17.5	796.8
	10	39.0	73.6	50.7	52.3	63.0	602.3	26.4	128.4	233.8	15.5	27.7	1210.2
	15	47.3	88.5	60.4	58.6	78.6	720.2	38.5	169.4	254.9	21.0	32.3	1452.0
	Total	63.3	107.0	73.1	76.2	106.8	873.7	–[a]	229.7	264.3	–[a]	35.3	1867.0
Iceland	2	21.8	31.4	8.0	27.6	9.2	128.3	13.1	30.0	125.2	4.2	5.7	398.3
	5	33.7	63.6	21.1	38.7	22.2	335.7	31.5	61.5	248.2	9.6	13.8	823.4
	10	54.0	93.8	31.8	52.1	37.9	537.0	79.1	96.0	345.2	13.8	19.9	1271.1
	15	65.1	111.8	37.9	58.6	50.6	663.8	105.3	131.4	369.6	19.5	24.1	1539.2
	Total	84.0	135.0	44.9	68.5	69.6	820.7	–[a]	186.1	381.7	–[a]	26.5	2018.4
Swedish registry	2	12.9	50.5	34.4	23.4	30.3	216.1	18.1	41.4	191.6	3.7	12.5	601.7
	5	21.8	98.7	63.8	34.4	76.0	491.4	42.0	86.0	364.2	8.1	24.6	1218.3
	10	31.5	154.6	94.1	42.6	129.4	771.3	78.9	147.7	498.7	13.8	37.1	1888.3
	15	38.6	189.6	114.5	47.4	165.3	966.0	115.6	197.9	553.5	18.8	43.3	2330.4
	Total	53.6	234.7	139.3	59.5	229.3	1212.6	–[a]	269.9	574.8	–[a]	47.1	3046.6
English registries	2	11.2	40.3	26.2	33.9	13.9	199.6	20.6	24.0	82.7	3.9	9.8	440.9
	5	17.3	76.1	48.5	46.5	30.6	408.1	52.0	53.1	142.2	9.4	19.1	837.0
	10	23.8	111.5	70.9	60.3	48.1	623.1	93.9	92.3	184.9	17.2	26.3	1251.9
	15	27.8	133.2	84.2	70.4	58.2	758.6	123.6	124.1	202.0	23.4	30.5	1518.0
	Total	35.3	158.2	101.8	94.1	73.0	950.2	–[a]	177.4	209.3	–[a]	34.1	2011.6
Scotland	2	13.0	44.8	25.7	46.7	17.4	196.3	24.9	17.2	73.8	4.5	10.3	476.6
	5	20.0	87.0	45.6	64.5	40.0	392.1	55.3	41.5	136.7	9.5	19.5	893.4
	10	26.6	127.2	64.3	80.5	63.0	596.9	94.5	72.8	177.5	17.4	27.6	1321.7
	15	30.4	153.1	75.6	92.1	75.0	732.0	122.0	95.8	191.0	23.6	31.8	1592.8
	Total	38.4	181.8	91.6	122.2	93.7	910.7	–[a]	132.2	197.6	–[a]	35.5	2097.9
Austrian registry	2	28.9	37.9	21.4	27.9	31.1	169.3	30.7	35.3	129.1	5.5	10.1	514.0
	5	53.1	71.8	41.2	42.9	74.9	337.9	77.9	74.3	224.2	10.8	23.3	1019.8
	10	75.7	105.9	59.6	52.8	118.8	548.8	136.9	130.1	302.9	19.1	32.5	1565.0
	15	88.3	121.6	68.7	58.8	141.8	652.3	187.0	168.4	324.8	26.7	36.8	1872.3
	Total	113.0	137.8	79.6	67.6	168.3	755.9	–[a]	234.7	336.4	–[a]	40.6	2427.1
German registry	2	20.3	59.2	34.6	38.6	14.2	195.7	26.6	47.5	99.2	4.6	10.4	556.6
	5	35.5	105.7	66.4	55.2	34.3	406.1	56.0	94.5	172.4	10.0	21.6	1045.0
	10	59.0	168.1	98.9	69.9	59.2	661.9	96.9	168.8	249.1	17.7	32.7	1655.6
	15	72.5	198.6	124.3	80.3	72.9	835.9	137.5	229.2	288.4	22.6	36.3	2045.6
	Total	96.2	238.2	157.0	98.8	85.9	1081.7	–[a]	344.3	327.6	–[a]	40.5	2777.8

Appendix A. (*Continued*).

Registry	Time since diagnosis (years)	Stomach M+F	Colon M+F	Rectum M+F	Lung M+F	Melanoma of skin M+F	Breast F	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease M+F	Leukaemia M+F	All malignant neoplasms[b] M+F
Dutch registry	2	15.5	44.9	25.9	48.1	16.9	193.5	15.9	25.1	73.4	3.5	8.0	431.3
	5	23.1	83.2	52.4	71.0	35.1	401.4	33.0	55.2	136.1	7.8	15.3	813.4
	10	33.8	126.2	75.0	89.4	53.5	637.9	51.8	102.4	177.5	13.4	22.3	1223.2
	15	41.6	150.0	86.4	98.7	64.9	787.2	65.5	131.5	191.4	18.6	26.8	1465.3
	Total	53.3	169.1	99.5	116.0	76.5	898.1	–[a]	181.4	197.7	–[a]	29.1	1867.2
Polish registries	2	8.9	14.9	13.4	32.0	6.6	103.8	36.8	34.6	20.0	2.9	4.5	282.8
	5	13.5	24.2	21.4	43.3	14.0	211.8	71.4	71.5	33.4	7.2	7.8	506.2
	10	18.7	34.4	29.9	51.4	21.7	325.8	122.3	120.6	41.9	12.6	11.4	737.5
	15	22.2	39.6	34.3	55.8	25.9	378.2	164.6	155.8	43.9	17.2	12.9	880.1
	Total	29.0	45.1	41.6	63.9	31.2	425.6	–[a]	217.9	44.1	–[a]	14.4	1168.7
Slovakia	2	15.0	24.2	24.4	30.6	9.2	88.5	34.1	37.7	36.0	3.3	7.6	327.3
	5	24.9	44.7	43.8	43.4	18.6	171.9	70.9	75.9	70.3	7.6	16.6	608.8
	10	38.9	65.4	62.1	64.7	29.5	256.7	117.8	125.4	101.6	13.0	25.2	929.3
	15	60.1	84.6	80.7	91.9	39.7	331.3	166.5	174.3	125.4	18.6	34.5	1257.7
	Total	81.4	96.4	97.4	115.1	48.8	377.7	–[a]	260.8	126.9	–[a]	37.5	1759.0
Slovenia	2	16.7	21.7	23.8	33.1	11.7	113.9	28.4	35.0	36.6	3.4	9.5	342.8
	5	27.6	37.2	40.9	44.4	22.5	248.7	58.2	74.8	62.6	8.1	18.0	624.5
	10	38.4	51.1	56.2	51.8	32.7	371.7	98.3	125.5	78.2	13.5	25.4	898.1
	15	45.0	58.9	64.7	56.6	39.1	437.9	129.3	169.4	82.0	18.6	28.6	1071.4
	Total	59.4	66.9	78.6	66.9	48.1	497.1	–[a]	251.9	82.9	–[a]	30.9	1442.1
Swiss registries	2	14.4	45.0	33.9	36.1	25.7	230.7	11.5	33.1	128.3	2.7	13.9	530.2
	5	23.4	88.2	61.6	54.9	61.0	508.5	27.7	77.1	257.9	7.7	26.7	1066.1
	10	32.3	135.6	89.7	71.3	103.8	804.4	52.5	150.3	359.5	15.7	42.6	1632.1
	15	40.4	162.9	108.7	80.6	129.6	986.0	72.2	204.0	393.4	21.3	47.2	1975.5
	Total	51.7	188.5	126.8	93.9	153.6	1170.6	–[a]	304.3	408.4	–[a]	50.9	2565.3
French registries	2	13.6	43.2	30.7	58.3	10.6	188.7	18.4	22.3	100.7	4.0	11.8	598.0
	5	23.4	85.3	56.9	83.8	19.3	403.8	34.8	48.6	186.4	7.8	26.3	1075.9
	10	31.8	120.2	78.5	100.1	26.8	623.7	76.7	91.2	256.1	14.5	44.3	1540.8
	15	38.7	142.0	94.1	113.0	33.5	748.8	109.1	121.7	279.1	22.5	52.4	1846.4
	Total	51.9	163.4	111.5	133.3	41.1	857.8	–[a]	176.4	289.4	–[a]	55.9	2356.3
Italian registries	2	34.5	57.0	31.5	47.8	13.7	221.8	17.7	35.7	78.6	5.1	11.7	588.3
	5	61.7	108.4	59.2	67.5	27.6	475.0	38.0	79.2	140.9	12.3	21.8	1131.1
	10	90.5	161.7	86.7	84.4	43.4	768.1	72.5	140.9	187.5	22.4	31.0	1718.0
	15	106.7	186.7	100.6	93.1	52.3	922.9	105.9	183.5	201.6	30.7	35.2	2042.9
	Total	137.8	211.6	116.8	107.4	63.6	1070.7	–[a]	254.9	209.1	–[a]	38.4	2597.2
Spanish registries	2	21.3	35.3	22.7	29.9	9.3	139.8	15.4	27.6	59.1	4.2	9.8	427.0
	5	37.5	65.8	42.0	43.0	19.8	288.3	35.3	61.9	106.1	10.2	18.8	814.2
	10	57.3	94.5	61.3	56.2	31.4	453.9	61.9	105.3	142.1	17.5	26.9	1243.5
	15	67.4	108.1	70.3	63.2	37.6	539.0	86.5	134.4	152.2	23.7	29.9	1473.4
	Total	85.9	122.1	81.0	74.4	45.4	617.3	–[a]	182.3	157.9	–[a]	32.3	1862.5
European registries	2	21.1	46.0	28.5	39.1	15.3	188.1	24.7	35.0	85.8	4.3	10.3	492.9
	5	36.5	86.2	53.3	55.1	34.1	393.8	52.8	74.0	153.2	9.8	20.4	933.0
	10	54.5	128.9	77.4	69.3	55.0	623.9	93.9	130.7	208.3	17.5	30.4	1419.2
	15	65.2	151.4	92.8	78.4	67.0	760.0	130.0	173.5	229.6	23.9	34.8	1713.7
	Total	84.8	176.0	111.6	95.2	81.2	915.5	–[a]	249.0	243.7	–[a]	38.0	2238.9

These figures are used in the bar charts in the upper parts of Figures 1–12.

[a]Total prevalence not possible to estimate.

[b]All malignant neoplasms excluding non-melanoma skin cancer.

Appendix B. Annual incidence, survival and total prevalence

Incidence

Registry	Stomach	Colon	Rectum	Lung	Melanoma of skin	Breast	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease	Leukaemia	All malignant neoplasms[a]
Denmark	6.6	20.1	13.3	37.1	10.2	73.3	15.2	14.7	31.0	2.2	15.1	263.2
Estonia	23.3	12.3	8.9	34.5	3.8	36.5	14.1	12.9	21.6	2.1	12.8	206.5
Finland	12.1	12.0	8.1	26.9	7.1	65.0	3.6	12.9	41.3	2.1	11.5	216.8
Iceland	13.4	15.4	5.2	29.2	4.9	65.5	6.6	12.0	61.0	1.9	4.9	252.4
Swedish registry	7.7	16.6	10.0	16.8	10.9	72.9	8.0	13.2	55.3	1.9	13.4	230.2
English registries	9.9	18.1	11.0	37.9	5.9	73.7	11.7	9.3	30.0	2.2	13.0	240.0
Scotland	11.8	21.1	10.8	52.9	7.1	72.7	12.7	7.4	31.2	2.2	13.1	272.7
Austrian registry	20.0	18.2	11.4	29.5	14.0	64.9	17.7	13.0	51.6	2.2	14.5	272.5
German registry	12.9	22.2	13.5	35.0	5.9	61.5	11.4	12.7	35.9	2.1	13.8	254.7
Dutch registry	11.6	21.2	12.8	42.4	7.0	71.6	6.4	10.3	35.6	1.6	10.4	248.0
Polish registries	12.2	11.8	8.5	40.2	3.8	43.6	16.7	12.8	15.4	2.0	10.4	218.1
Slovakia	16.4	15.8	15.1	39.7	4.4	38.6	16.4	16.0	22.0	2.0	13.5	239.7
Slovenia	17.2	12.3	12.8	31.5	5.0	46.2	12.4	12.4	20.7	1.8	12.6	202.2
Swiss registries	8.0	18.1	10.9	29.6	10.1	74.8	5.7	12.2	49.7	2.3	13.1	251.5
French registries	7.7	16.4	13.0	27.8	5.5	72.1	9.2	8.8	47.6	2.0	8.6	253.1
Italian registries	19.2	20.3	10.9	35.0	4.8	66.7	7.2	11.2	24.5	2.8	13.9	254.6
Spanish registries	11.6	15.8	9.4	25.2	3.5	53.8	9.4	11.7	23.8	1.7	4.7	215.7
European registries	10.9	17.1	11.1	34.7	6.9	66.9	10.8	11.6	35.0	2.1	12.8	241.0

These figures are used in the three bar charts in the lower part of Figures 1–12.
Data taken from *Cancer Incidence in Five Continents Vol. VII* [4], world standard age-adjusted rate per 100 000, 1988 to 1992 incidence period.[a]Excluding non-melanoma skin cancer.

Survival

Registry	Stomach	Colon	Rectum	Lung	Melanoma of skin	Breast	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease	Leukaemia	All malignant neoplasms[a]
Denmark	13.3	41.2	39.7	5.7	78.5	70.6	64.2	75.6	41.0	69.6	27.6	38.6
Estonia	15.7	37.4	34.8	6.7	62.8	59.5	56.8	65.4	37.4	45.2	40.6	29.9
Finland	19.7	49.0	47.7	10.2	80.6	78.4	60.4	75.9	61.6	73.8	33.6	44.1
Iceland	23.5	47.6	NA	12.2	75.4	79.2	84.7	76.9	66.2	NA	21.8	48.9
Swedish registry	17.4	53.6	50.4	9.0	87.6	80.6	68.0	82.2	64.7	72.3	32.7	52.1
English registries	11.8	41.2	40.5	7.0	78.2	66.7	62.6	72.9	44.3	71.7	28.5	37.0
Scotland	10.7	41.1	37.4	6.2	82.5	65.0	59.0	70.2	47.2	65.8	26.1	33.7
Austrian registry	26.9	48.5	50.6	11.0	89.3	63.2	68.7	80.7	54.4	NA	42.0	48.3
German registry	25.5	49.8	43.5	9.4	76.1	71.7	64.1	73.0	67.6	72.0	39.0	44.7
Dutch registry	19.3	57.1	53.0	11.6	80.5	74.4	67.8	83.7	55.3	NA	32.5	42.2
Polish registries	9.0	23.6	21.6	6.5	53.5	58.5	51.0	66.0	34.7	65.4	12.1	26.4
Slovakia	18.8	38.6	35.9	12.8	62.6	58.3	62.0	69.3	59.9	61.6	35.7	36.0
Slovenia	13.6	35.7	29.9	6.3	59.8	64.2	57.9	72.7	38.6	74.1	31.2	31.5
Swiss registries	22.8	50.8	52.1	10.3	88.6	79.6	67.2	76.6	71.4	75.9	40.3	48.5
French registries	24.8	52.9	48.4	11.9	77.4	80.3	64.1	74.7	61.7	75.9	47.2	45.2
Italian registries	23.2	47.0	43.5	8.8	67.7	76.7	64.0	72.9	47.4	70.6	26.6	41.0
Spanish registries	26.4	49.5	43.2	NA	78.8	70.4	61.8	73.0	54.5	NA	39.4	43.4
European registries	21.1	46.7	42.7	9.1	76.0	72.5	61.8	73.2	55.7	71.7	34.3	41.0

These figures are used in the three bar charts in the lower part of Figures 1–12.
Date from EUROCARE-2 study [21], EUROCARE age-adjusted 5-year relative survival (%), 1988 to 1992 incidence period.
[a]Excluding non-melanoma skin cancer.
NA, not available.

Appendix B. (*Continued*)

Prevalence

	Stomach	Colon	Rectum	Lung	Melanoma of skin	Breast	Cervix uteri	Corpus uteri	Prostate	Hodgkin's disease	Leukaemia	All malignant neoplasms[a]
Denmark	13.9	90.6	64.0	51.0	95.9	599.1	131.8	151.2	111.5	19.3	32.9	1452.5
Estonia	65.6	46.8	42.3	39.5	26.5	257.1	92.9	120.4	68.1	14.3	25.9	914.2
Finland	36.7	61.7	41.0	47.3	72.7	529.4	22.6	119.8	174.8	17.8	31.8	1204.9
Iceland	57.4	90.4	30.3	52.3	58.3	666.8	95.6	141.5	263.9	18.2	25.4	1593.3
Swedish registry	22.1	98.4	59.6	33.4	140.8	620.0	85.9	129.2	233.9	16.9	33.9	1638.4
English registries	17.7	76.3	50.8	50.8	50.4	554.4	93.7	87.9	106.0	20.5	27.6	1202.2
Scotland	20.6	91.4	47.9	70.0	64.6	539.9	93.3	69.7	111.0	20.4	29.7	1299.0
Austrian registry	70.0	85.1	52.5	49.0	129.7	478.2	141.3	134.1	235.3	23.2	34.8	1676.7
German registry	50.3	123.2	80.6	54.8	53.6	547.3	86.3	144.2	217.4	18.3	32.6	1568.5
Dutch registry	35.5	112.2	67.4	81.8	59.6	612.6	47.1	110.9	151.8	15.3	25.9	1331.8
Polish registries	17.6	26.7	24.7	40.9	21.5	260.6	106.7	118.7	30.6	14.8	13.6	771.4
Slovakia	53.2	67.6	67.4	83.3	38.3	268.6	131.8	167.7	93.9	17.2	30.4	1294.0
Slovenia	37.8	42.5	50.4	48.2	35.4	324.3	94.8	139.4	53.9	17.1	25.6	996.4
Swiss registries	26.8	90.0	63.8	56.5	96.2	636.9	44.3	137.4	215.4	16.5	33.5	1447.9
French registries	27.5	92.9	64.4	91.9	30.8	585.1	80.4	91.4	168.2	20.2	40.1	1560.5
Italian registries	61.7	96.5	54.3	56.1	39.2	553.6	60.4	109.9	93.3	25.7	28.8	1379.2
Spanish registries	49.4	67.8	45.4	46.4	30.7	385.9	61.7	98.0	87.1	20.3	25.5	1175.4
European registries	30.5	78.1	52.4	54.4	55.0	503.9	88.2	108.3	113.6	19.8	28.4	1252.8

These figures are used in the three bar charts in the lower part of Figures 1–12.
Total prevalence at 31 December 1992, world standard age-adjusted, proportion per 100000.
[a]Excluding non-melanoma skin cancer.