Cancer in Ireland,
1994 to 1998

Incidence, Mortality, Treatment and Survival

Report of the National Cancer Registry

National Cancer Registry Ireland

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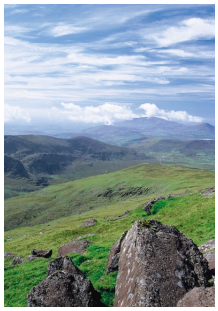

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Cork: National Cancer Registry Board, September 2001.

INDEX

Foreword

Foreword

1. Summary

What is this report?

This is the fifth report on cancer in Ireland from the National Cancer Registry. It describes new cancer cases and cancer deaths in Ireland from 1994 to 1998. We also report on

- time trends in cancer
- variation in cancer risk within Ireland
- variation in cancer risk between Ireland and its close neighbours
- cancer treatment
- cancer survival

Basic facts

- During the five years covered by this report, almost 20,000 new cases of cancer and 7,500 cancer deaths occurred every year. The commonest cancers were those of skin, large bowel, lung, breast (in women) and prostate (in men).
- Overall, men and women had similar risks of developing cancer, although men were more likely to die from it. Older people were much more likely to develop cancer, with the risk doubling in every successive decade of life. Most patients (60%) were aged over 65 at the time of diagnosis and the majority (72%) of cancer deaths also occurred in those over 65.
- One death in every four was due to cancer. However, in women under 65, almost half of all deaths (44%) were due to cancer.
- Between 1994 and 1998 there was no significant change in the risk of developing or dying from cancer. Although some cancers showed trends of increase or decrease with time, the overall pattern was of an unchanged risk.
- Cancer incidence in Ireland was quite similar to that in neighbouring countries. Overall, and for most common cancers, cancer rates here were lower than in Scotland, Wales and Northern Ireland, higher than in England and close to EU averages. Exceptions were breast cancer, where our risk was lower than that of the neighbouring countries, and lung cancer in women, for which our risk was well above EU average.
- The majority of patients had their cancer removed surgically; the percentage having surgery varied from 93% of patients with melanoma to 15% with cancer of the lung. There were no major differences between men and women in treatment, but older patients were much less likely to have cancer-specific treatment. Treatment also seemed to depend on the health board areas in which patients lived.
- Overall survival from cancer was 43% and was generally better for women. The best survival from the common cancers was for women with melanoma, 87% of who were alive after five years. The worst survival was for men with lung cancer, only 8% of whom were alive after five years.

Common cancers

The National Cancer Registry records all malignant cancers and some other early tumours which are potentially malignant. Table 1.1 and Figure 1.1 give totals for all cancers registered and also for malignant conditions only. The commonest cancer by far was non-melanoma cancer of the skin. However, this cancer accounted for fewer than half a percent of all cancer deaths. Apart from skin cancer the commonest cancer was cancer of the breast (1597 cases per year, 8% of the total). Cancers of skin, breast, colon (large bowel), lung and prostate between them accounted for two-thirds of all malignant cancers.

The largest number of deaths overall was due to lung cancer (1490 deaths per year, 20% of all cancer deaths) (Figure 1.2). Breast cancer, however, was the commonest cause of death in women (631 cases per year, 18% of the total).

Table 1.1 Number of cases and deaths for the twenty commonest cancers; 1994 – 1998 annual average

	NEW CANCER CASES				CANCER DEATHS			
	female		male		female		male	
	no. per year	% of total	no. per year	% of total	no. per year	% of total	no. per year	% of total
all registered cancers	9912	100%	9487	100%	3448	100%	4010	100%
all malignant cancers	8149	82%	8946	94%	3428	99%	3989	99%
non-melanoma skin	2375	24%	2792	29%	9	<1%	22	1%
breast	1584	16%	13	<1%	631	18%	5	<1%
lung	507	5%	972	10%	519	15%	971	24%
prostate			1150	12%			513	13%
colon	511	5%	572	6%	323	9%	370	9%
rectum and anus	237	2%	410	4%	87	3%	145	4%
lymphoma	222	2%	256	3%	104	3%	129	3%
stomach	174	2%	295	3%	156	5%	234	6%
bladder	128	1%	328	3%	54	2%	112	3%
melanoma skin	235	2%	140	1%	32	1%	28	1%
leukaemia	145	1%	199	2%	89	3%	121	3%
pancreas	163	2%	160	2%	174	5%	182	5%
ovary	312	3%			218	6%		
oesophagus	116	1%	173	2%	115	3%	187	5%
brain	103	1%	144	2%	94	3%	119	3%
kidney	87	1%	151	2%	48	1%	80	2%
corpus uteri	205	2%			44	1%		
cervix	177	2%			75	2%		
multiple myeloma	78	1%	99	1%	68	2%	76	2%
larynx	18	<1%	90	1%	11	0%	44	1%

Figure 1.1 Number of new cases for the twenty commonest cancers; 1994 – 1998 annual average

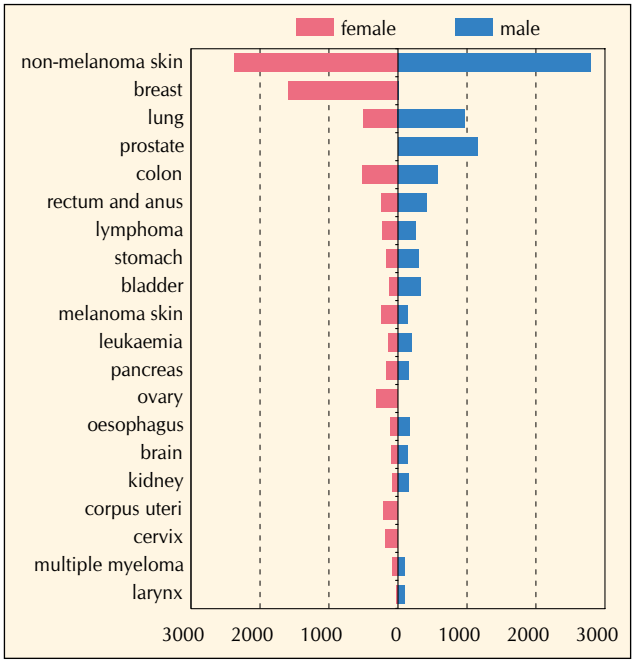
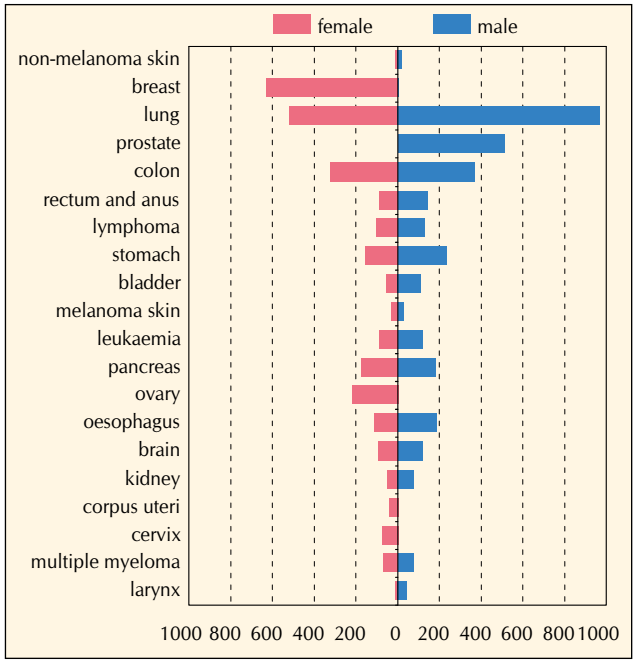


Figure 1.2 Number of deaths for the twenty commonest cancers; 1994 – 1998 annual average



Time trends

There was a slight upward trend in both the number of cancer cases and the number of deaths between 1994 and 1998 (Table 1.2, Figure 1.3). This seemed to have been due to population increase, as adjusting for the increase in population over the same period removed the trend (Figure 1.4). Overall, there was no significant change in cancer incidence or mortality between 1994 and 1998 for either sex.

Table 1.2 Number of cases and deaths per year, 1994 – 1998; all malignant cancers except skin

YEAR	CASES	DEATHS
1994	16964	7387
1995	16654	7498
1996	17132	7349
1997	17342	7433
1998	17383	7422

Figure 1.3 Trends in number of cancer cases and deaths,1994 to 1998

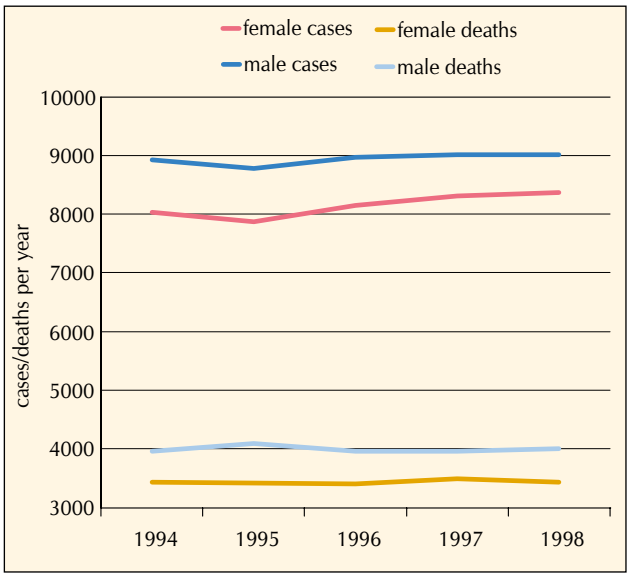
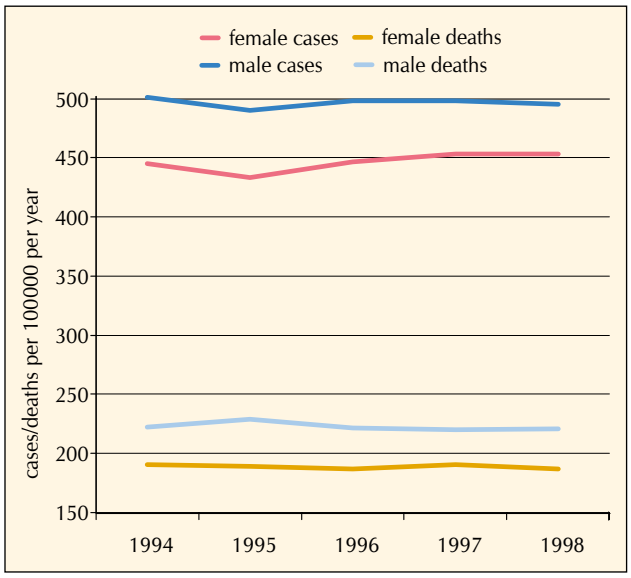


Figure 1.4 Trends in cancer rates, 1994 to 1998



For individual cancer sites, the largest change in incidence was in bladder cancer, which fell by 4% in men and 7% in women (Figure 1.5). The incidence of prostate cancer and lymphoma increased significantly in men, while lung cancer incidence decreased.

Cancer mortality showed similar trends, although with a fall in mortality from lung cancer in both sexes (Figure 1.6).

Figure 1.5 Annual percentage change in cancer incidence, 1994 to 1998

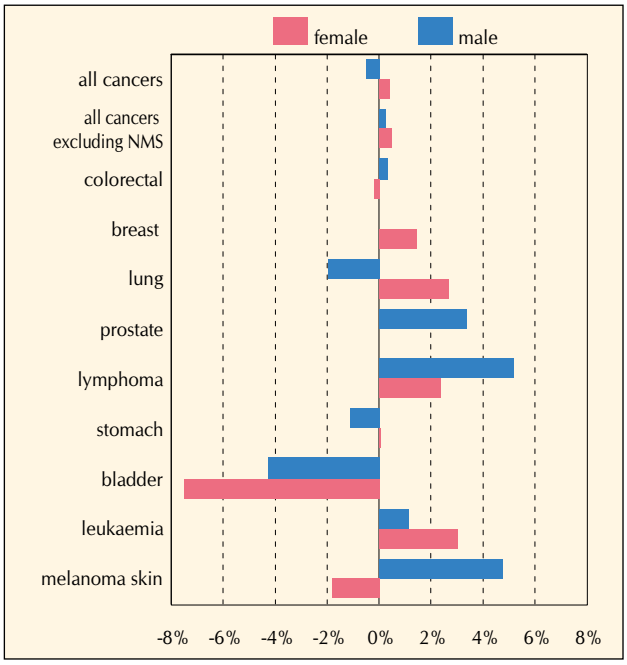
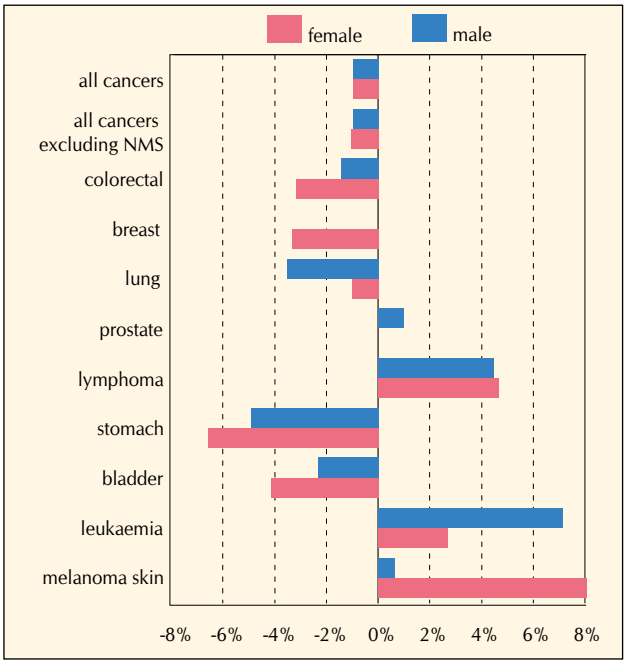


Figure 1.6 Annual percentage change in cancer mortality, 1994 to 1998



Geographical trends

International

Overall cancer incidence in Ireland was above the EU average for women and below this average for men (Table 1.3). Cancer incidence in Ireland was similar to that in England, but below that in Scotland, Wales or Northern Ireland (Figure 1.7). Most cancers had an incidence close to the European average (Figure 1.8). The exceptions were lung cancer in women (66% above EU average) and melanoma of the skin (53% above average for women and 19% above average for men). Lung cancer, stomach cancer and bladder cancer in men were all well below the average for the EU, consistent with the reduction in smoking by men here since the 1980s.

Table 1.3 Cancer incidence rates (per 100000 persons per year) in Ireland, Britain and EU; all malignant cancers except skin

	YEAR	INCIDENCE RATE PER 10000 PER YEAR	
		female	male
Ireland	1994 – 98	320	391
Northern Ireland	1997	339	415
England	1997	328	385
Wales	1997	355	430
Scotland	1997	370	456
EU average	1996	292	416

Figure 1.7 Cancer incidence in Ireland and Britain, 1996: all malignant cancers except skin

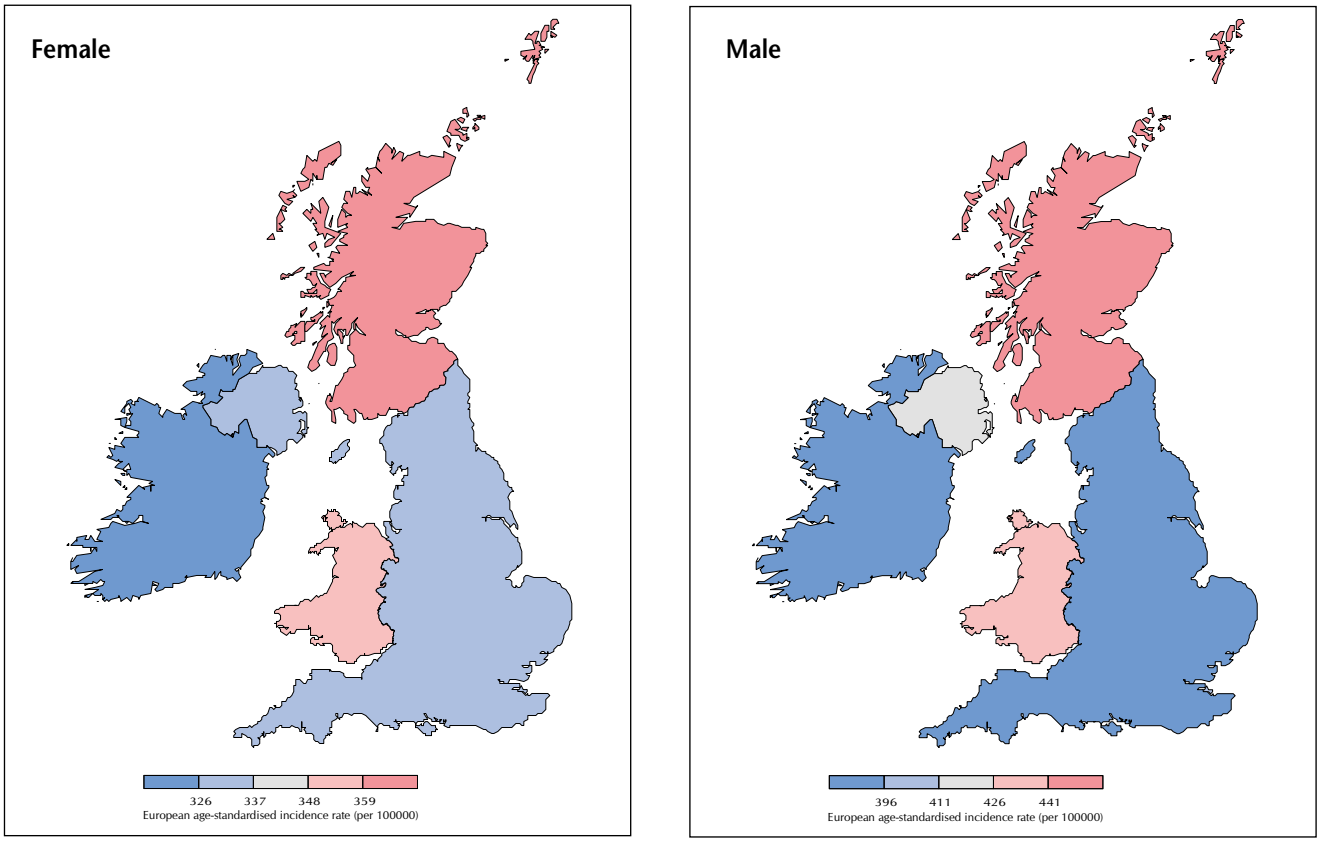


Figure 1.8 Cancer incidence in Ireland as percentage of EU 1996 average

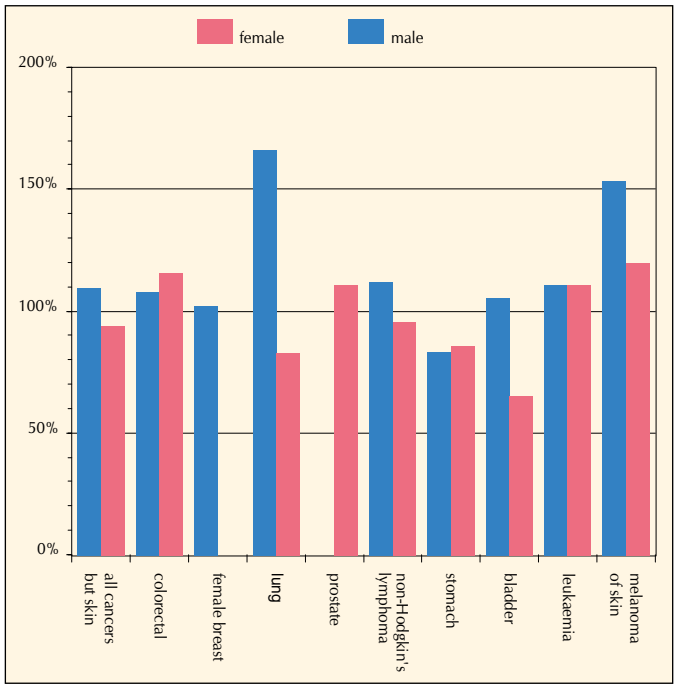
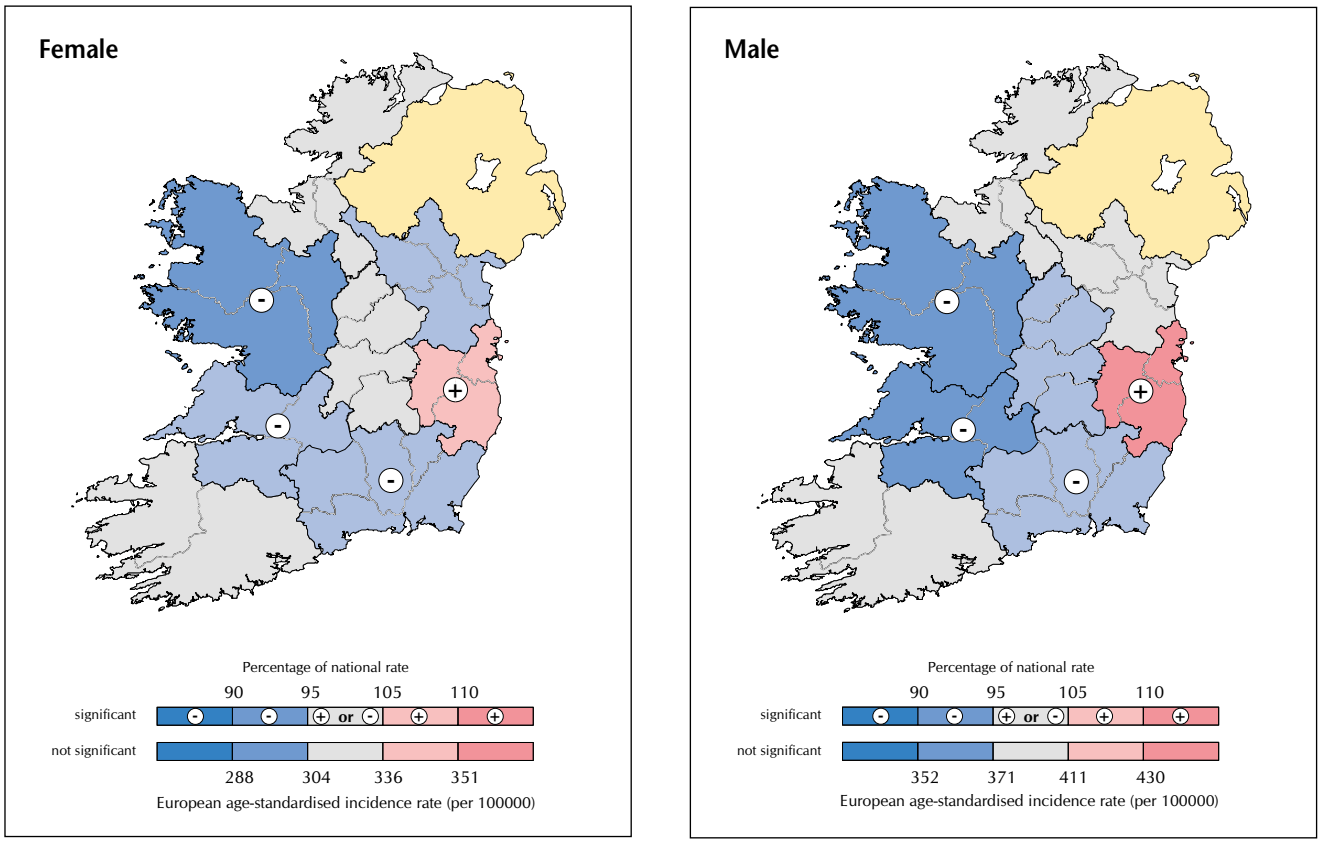


Table 1.4 Cancer incidence rates by health board; all malignant cancers except skin

% OF NATIONAL INCIDENCE RATE		
area	female	male
EHB	107	114
MHB	104	95
MWHB	93	89
NEHB	94	96
NWHB	98	97
SEHB	94	95
SHB	101	99
WHB	90	89

Figure 1.9 Variation in cancer incidence between health board areas: all malignant cancers except skin



National

Within Ireland, the highest overall incidence of cancer was found in the eastern area for both males and females, with the lowest rates in the West (Figure 1.9). For both women and men, the overall risk of cancer was significantly lower than average in the South Eastern, Mid Western and Western Health Board areas and above average in the Eastern area. The high population and high cancer rates in the Eastern area have a strong influence on national rates.

Treatment

Most patients had cancer-specific treatment. The percentage of patients having specific treatment ranged from 95% of breast cancer patients to 43% of leukaemia patients (Figure 1.10). Treatment rates were also low for stomach and lung cancers.

Surgery was the commonest form of treatment for most cancers (Table 1.5). For lymphoma and leukaemia chemotherapy was the most frequent treatment, and, for lung cancer, radiotherapy.

There seems to have been a small but steady increase in the utilization of non-surgical treatments for most of the major cancers discussed in this report. The most notable increases were in the use of hormones to treat prostate cancer and of radiotherapy to treat lung and colorectal cancer.

With the exception of skin melanoma, there were no statistically significant differences in patterns of treatment between men and women. In the case of skin melanoma, women were more likely to be treated surgically than men, even after adjusting for age and stage differences.

For all the cancer sites examined in this analysis, older patients were less likely to receive cancer-specific treatment and, when treated, they were less likely to receive surgery or combination therapy. Age differences persisted even after adjusting for stage, sex and health board of residence.

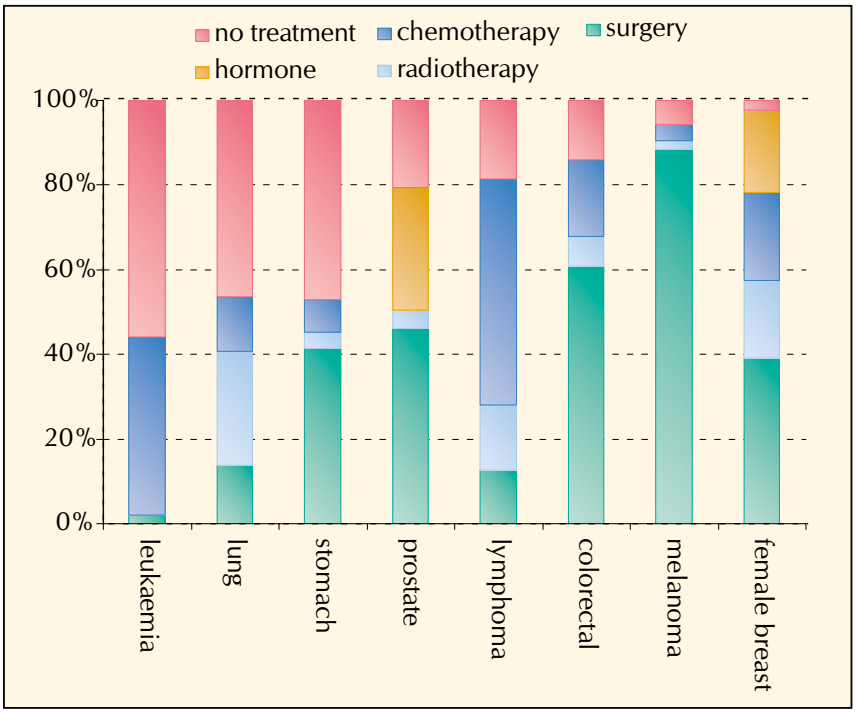
Patients with metastases (stage IV patients) were generally less likely to receive cancer-specific treatment. This was particularly true for stomach and lung cancers.

With one or two exceptions, differences in treatment patterns between the various health boards were not statistically significant (that is, they could have happened by chance). The most notable exception was the lower percentage of lung, breast and lymphoma patients receiving radiotherapy in the Western and Mid Western Health Boards.

Table 1.5 Percentage of cancer patients having treatment (numbers do not add to 100% as many patients had more than one treatment type)

	NO TREATMENT	SURGERY	RADIOTHERAPY	CHEMOTHERAPY	HORMONE
colorectal	18%	78%	9%	23%	
female breast	5%	83%	39%	44%	41%
lung	50%	15%	29%	14%	
prostate	24%	54%	5%		34%
lymphoma	22%	15%	18%	63%	
stomach	50%	44%	4%	8%	
leukaemia	57%	2%		43%	
melanoma	6%	93%	2%	4%	

Figure 1.10 Percentage of cancer patients having treatment



Survival

Overall cancer survival at five years after diagnosis was 43%. Melanoma had the best survival of the common cancers, with 85% of women and 68% of men surviving at least 5 years after diagnosis. The poorest prognosis was for lung cancer with only 10% of women and 8.5% of men surviving more than 5 years after diagnosis. The results for stomach cancer were somewhat better with a 5-year survival of 20% for men and 15% for women. Breast, prostate and bladder cancer, and lymphoma each had a reasonable prognosis, with a 5-year survival of at least 50%.

Women had significantly better survival for colorectal cancer, melanoma and lymphoma, and somewhat better survival (although not statistically significant) for stomach and lung cancer (Table 1.6). The exception was bladder cancer, where women had significantly worse survival than men. Age differences did not account for the observed survival differences in any of the cancers studied.

For all cancers, a younger age at diagnosis conferred a survival advantage for both men and women, although the magnitude of this advantage varied with the cancer type. The maximum age effects were observed for bladder cancer and lymphoma, with very small age effects being observed for melanoma, particularly in women.

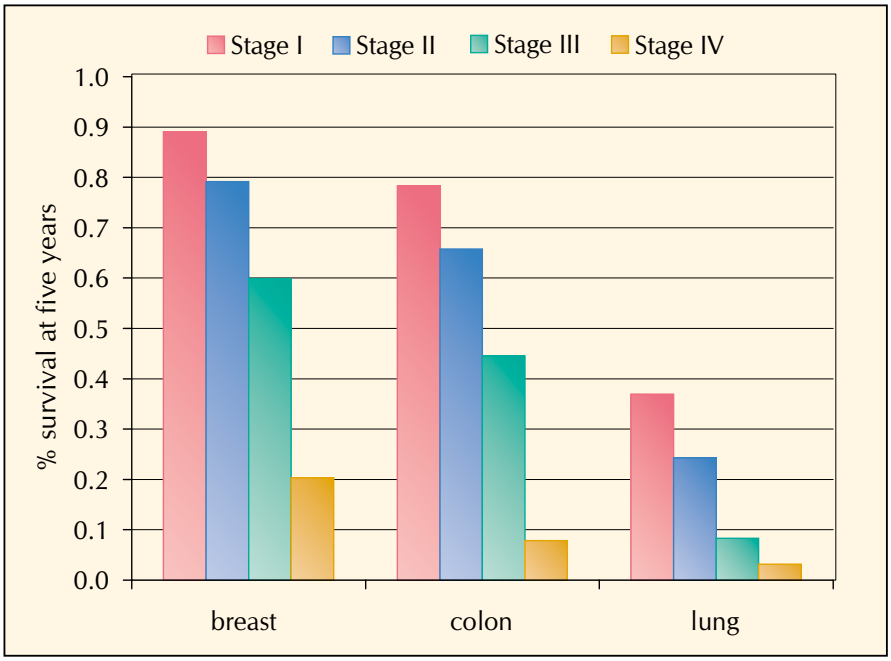
One of the most important factors influencing survival was the stage of the cancer — that is, how advanced the cancer was when detected.

For all cancers, stage IV carried a very poor prognosis. For the three commonest cancers, breast, bowel and lung, the probability of survival decreased considerably with stage. Survival from stage IV breast cancer was only one-quarter that for the earliest (stage I) cancers, while survival from advanced colorectal and lung cancer (stage IV) was only 10% that from stage I (Figure 1.11).

Table 1.6 Survival from some common cancers at five years after diagnosis

	FEMALE	MALE
all cancers except skin	49%	38%
colorectal	48%	43%
breast	71%	-
lung	10%	8.5%
prostate	-	56%
lymphoma	59%	54%
stomach	20%	15%
bladder	61%	64%
leukaemia	46%	44%
melanoma	85%	68%

Figure 1.11 Differences in cancer survival, by stage



Acknowledgments

The production of this report has been, as usual, a team effort by the Registry staff, all of whom contributed significantly. Overall administration of the Registry is the responsibility of Irene O'Driscoll. Data collection was carried out by our team of tumour registration officers (see Appendix 3), and by Eilish Manley and Vera McCarthy at the Central Statistics Office. The data was processed and checked by Mary Chambers, Fiona Dwane and Geraldine Finn. Data analysis was carried out by Harry Comber, Salah Mahmud, Piaras O Lorcain, Marie Reilly, Patricia Riordan and Paul Walsh, who also wrote the report. The Registry computer system, on which all data is collected and processed, was developed by Eleanor Crowley and Maureen Finucane, who, with Maria Kelly and Anne Griffin, provide our IT services.

Outside the Registry, we are indebted particularly to the pathology staff of the participating hospitals, without whom compiling this report would have been almost impossible. We have been helped by many others within hospitals – medical records staff, HIPE staff, management at all levels, consultants and nurses. We are grateful to the many GPs who took the trouble to notify us of cases and to answer our follow-up queries on death certificates.

Our close relationship with University College Cork has been of great help to the Registry, not only for the work of the University in processing our finances, but also for the many useful contacts, both administrative and academic, in particular with the Department of Epidemiology and Public Health, which this relationship has allowed. In the past few years, our research effort has been greatly helped by grants from the Health Research Board and more recently by the endowment of a cancer epidemiology fellowship by the HRB and the Northern Ireland R&D Office, with the support of the US National Cancer Institute.

Our colleagues in the Northern Ireland Cancer Registry have been a constant source of support and ideas to us, recently culminating in the production of the first all-Ireland cancer incidence and mortality report,[1] which we hope will be the first of many joint publications.

Finally, the functioning of the Registry is entirely dependent on funding provided by the Minister for Health and Children and his Department, who have been steady in their support of the Registry since its foundation.

To all of the above, and to all who have helped in establishing, maintaining and supporting the Registry, we hope that this report is in some part a justification for your efforts.

Harry Comber, Director

2. Introduction

2.1. Report for 1994 to 1998

Since 1996, the National Cancer Registry has produced an annual report, based on a single year's data. Reports on the years 1994 to 1997 have already appeared, as has a joint report on 1994 to 1996 with the Northern Ireland Cancer Registry.[1] This year, we have decided to use the completion of five years of data as an occasion to produce a summary report for 1994 to 1998. The intent and structure of this report is somewhat different from its predecessors. The range of cancer sites covered in detail has been reduced while the depth of analysis has been increased. In place of site-specific chapters, the current report has chapters devoted to specific topics – summary statistics, age distribution, time trends, geographical variation, treatment and survival. As in previous reports, extensive tables in the appendix provide information on cancer sites not covered in the main text.

The report also contains a brief summary, which is available as a separate document. Both report and summary are available in PDF format on our web site at www.ncri.ie. An extract of the dataset used in producing this report is also freely available at the same web address.

2.2. Structure of the report

2.2.1. Cancers included

Unlike previous reports, which have been based on annual data, this report presents aggregate data from 1994 to 1998. Because of the greater depth of analysis allowed by higher case numbers, the number of individual cancer sites reported on in detail has been reduced to ten:

1. Colon
2. Rectum/anus
3. Breast
4. Lung
5. Prostate
6. Stomach
7. Lymphoma
8. Bladder
9. Leukaemia
10. Melanoma of skin.

Data on “all cancer sites combined” and for “all cancer sites excluding non-melanoma skin” have been given for all age groups and also for children under 15.

The cancer sites chosen are those which had the largest average number of cases during the 1994 to 1998 period, and, in general, are presented in descending order of incidence in each chapter. Under the heading of colorectal cancer, separate data have been given in most cases on cancers of the colon and anorectum, and for lymphoma, separate figures have been given in some instances for non-Hodgkin's lymphoma.

2.2.2. Chapters

Data have been analysed under six headings

1. Summary statistics
2. Age distribution
3. Time trends
4. Geographical patterns
5. Treatment
6. Survival

Summary statistics

Annual numbers of cases, cases as percentages of all cancer cases, crude rates (annual number of cases divided by total Irish population), cumulative risks (average "lifetime" risks to age 74) and age-standardized rates (corrected to standard world and European age-structures) have been presented. Where appropriate, 95% confidence limits have been provided for rate estimates.

Age distribution

This chapter describes numbers of cases and deaths in each five year age band from 0 to 85+ for the cancers described in section 2.2.1. Age-specific incidence and mortality rates, median ages of incidence and death and the percentage of patients over and under 65 years of age are also presented.

Time trends

This chapter describes time trends in incidence and mortality from 1994 to 1998 for the cancers listed in section 2.2.1. Estimates of annual percentage change in rate, with confidence intervals, are also given for each cancer.

Geographical patterns

This chapter maps and compares cancer incidence in Ireland with that in Northern Ireland, England, Scotland and Wales, as well as with the 1996 estimated EU average. Some comparisons and maps are also provided showing cancer incidence within Ireland at health board level.

Treatment

The analysis of treatment consists of descriptive statistics (mainly cross tabulations) to identify current treatment patterns and trends across time and by health board of residence. Logistic regression analysis has been used to adjust for the potential effects of age at diagnosis, gender and stage on time and geographic trends of cancer treatment. Statistically significant odds ratios and their 95% confidence intervals are also presented.

Survival

This chapter presents a survival analysis of the major cancers. Two measures of survival are presented – crude survival, which describes the proportion of patients still alive at a specified time after diagnosis – and relative survival, a comparison of the survival of the selected patients with that of the general population. All analyses are presented separately for males and females, and consideration given to the stage of cancer at diagnosis and patient age.

2.3. Data used in the report

Cancer incidence figures for 1994 to 1998 are based on data collected by the Registry from January 1st, 1994 to March 31st, 2000. Mortality information has been extracted by the Registry from copies of death certificates made available to us by the Central Statistics Office (CSO) up to June 1st, 2001.

Census data for 1996 were also provided by the CSO.[2] Cancer incidence data for Scotland, England, Wales and Northern Ireland were extracted from recent published reports (see individual chapters for references). European data were taken from the EUCAN estimates of the European Network of Cancer Registries.[3] Other data used are acknowledged as appropriate in the text.

It will be noted that case numbers in this report are not always the same as those given in our series of previous annual reports. There are two main reasons for this:

1. Cancer registration is, of its nature, a dynamic process. Cases are added, and sometimes deleted, on the basis of new information which may not come to light for many years after the original diagnosis. Totals of cases for a particular year can never be regarded as final and definitive.

2. Some patients are diagnosed as having more than one cancer during a lifetime. The National Cancer Registry registers each cancer separately if it seems to us, on the basis of the evidence, that these are two distinct cancers. All previous reports have used this policy. However, the International Agency for Research of Cancer (IARC) has recommended[4] that multiple primary cancers in the same patient should only be reported as separate cancers in certain well-defined circumstances. In all other cases, one or other of the cancers should be disregarded in counts of cancer numbers. For this report, these IARC recommendations have been applied to the data, with the effect of reducing the apparent number of registered cancers by 5% (see section A2.2).

2.3.1. Case definitions

Summary statistics, age distribution, time trends and geographical patterns

The data presented in Chapters 5 to 8 are based on complete registration of invasive and in situ neoplasms, and tumours of uncertain behaviour, for persons normally resident in the Republic of Ireland. Benign tumours of intracranial or intraspinal tissues, but not other sites, are also registered by the National Cancer Registry and presented here, as appropriate (Table 2.1). The latter group are recorded by the National Cancer Registry as they have greater clinical significance (higher fatality rates) than other benign tumours. Tumours of uncertain behaviour are those for which benign or malignant status could not be confirmed.

Table 2.1 Behaviour of cancers

behaviour	number of cases	% of total
invasive	85475	88.1%
in situ	9259	9.5%
uncertain	1516	1.6%
benign	745	0.8%
all cases	96995	

The major emphasis in this report is on malignant (invasive) cancers, as these account for the vast majority of neoplasm-related deaths. Non-malignant conditions have been excluded from text, tables and figures, except where this has been specifically noted.

Both cases and deaths are classified according to the site of the primary cancer; sites of secondary tumours have not been considered. Where only a secondary site was known, the cancer was registered and reported as "primary site unknown".

The cancer sites/combinations used have been defined by the first three characters of the ICD 10 "site" codes, e.g. C50 represents all malignant cancers of breast (C50.0 to C50.9).[5] For deaths, mortality data presented here are based on cause of death as notified on death certificates. The codes used in this report have been derived by translation of the ICD 9 codes allocated by the Central Statistics Office to ICD 10, using (with minor modifications) a conversion program supplied by the International Agency for Research on Cancer.[6]

For incident cases, registry data were initially coded to sites defined by the second edition of the International Classification of Diseases for Oncology[7], before translation to ICD-10 codes, using the conversion program mentioned above.

Treatment

Data on nine cancer sites was used for treatment analysis. In the case of patients who had more than one cancer, the record with the earlier date of diagnosis was retained, leaving a total of 39681 cases. A further 311 patients were excluded for various reasons (see section A2.1.2 and task A2.3), leaving 39370 cases for analysis.

Survival

Of the 39370 incident cancers summarised in Table A2.3, all deaths prior to 31st Dec. 1999 were defined as deaths, while all patients dying since that date or whose death was not recorded were "censored" (i.e. considered as alive) on 31st Dec. 1999 (see Section A2.1.3). After exclusions, 38643 records were analysable.

3. Cancer registration in Ireland

3.1. The National Cancer Registry Board

The National Cancer Registry Board was established by the Minister for Health in 1991, by Statutory Instrument.[8] Its functions were laid down in its Establishment Order as follows:

1. to identify, collect, classify, record, store and analyse information relating to the incidence and prevalence of cancer and related tumours in Ireland;
2. to collect, classify, record and store information in relation to each newly diagnosed individual cancer patient and in relation to each tumour which occurs;
3. to promote and facilitate the use of the data thus collected in approved research and in the planning and management of services;
4. to publish an annual report based on the activities of the Registry;
5. to furnish advice, information and assistance in relation to any aspect of such service to the Minister.

The second National Cancer Registry Board was appointed by the Minister for Health in October 1996, to hold office until October 2001. The membership of the current Board is:

- Dr. Elizabeth Keane (Chairperson), Director of Public Health, Southern Health Board, Farm Centre, Dennehy's Cross, Cork; nominated by the Minister for Health and children
- Professor Alun Evans, Division of Epidemiology of The Queen's University of Belfast, Mulhouse Building, Grosvenor Road, Belfast, BT12 6BJ; nominated by the Faculty of Public Health Medicine of Ireland
- Professor James J. Fennelly, Consultant Oncologist, St. Vincent's Private Hospital, Herbert Avenue, Dublin 4; nominated by the Royal College of Physicians of Ireland
- Professor Bernadette Herity, Department of Epidemiology and Public Health, University College, Dublin, Belfield, Dublin 4; nominated by the Irish Cancer Society
- Professor Aine Hyland, Department of Education, University College, Cork; nominated by University College, Cork
- Dr. Tony Holohan, Deputy Chief Medical Officer, Department of Health, Hawkins House, Hawkins St., Dublin 2; appointed by the Minister for Health and children
- Professor Niall O'Higgins, Department of Surgery, St. Vincent's Hospital, Elm Park, Dublin 4; nominated by the Royal College of Surgeons in Ireland
- Dr. Martin Rouse, Medical Centre, Emmet House, Clonmel, Co. Tipperary; nominated by the Irish College of General Practitioners
- Dr. Kieran Sheahan, Consultant Pathologist, St. Vincent's Hospital, Elm Park, Dublin 4; nominated by the Faculty of Pathology of the Royal College of Physicians of Ireland
- Dr. Niall Tierney, Former Chief Medical Officer, Department of Health, Hawkins House, Hawkins St., Dublin 2; appointed by the Minister for Health and Children.

3.2. History

3.2.1. The Southern Tumour Registry

Population-based cancer registration began in Ireland in 1975 with the Southern Tumour Registry, which was set up in Cork and Kerry as the result of an initiative by local clinicians, pathologists and epidemiologists. Funding for the Registry was provided by the Irish Cancer Society, and its first full year of cancer incidence recording was in 1977. The Registry had a close association with University College, Cork from its beginning, through its clinical teaching departments and also through the Departments of Social Medicine and of Statistics. The Heads of the latter Departments, Professors JP Corridan and MA Moran, provided epidemiological and technical support to the Registry, and were both founder members of the Registry Committee. For 17 years, the Southern Tumour Registry collected and analysed cancer incidence data for Cork and Kerry, and was the only comprehensive, population-based cancer registry in Ireland, serving a population of over 500000. The establishment and success of the National Cancer Registry owes much to the pioneering work of those who set up, funded and administered the Southern Tumour Registry. The National Cancer Registry became responsible for data collection in Cork and Kerry late in 1991. An extensive review of the data collected by the Southern Tumour Registry up to 1990 has been published.[9] The data of the Southern Tumour Registry is held by the National Cancer Registry and is available to researchers.

3.2.2. The National Cancer Registry

The establishment of a National Cancer Registry was one of the main recommendations of an expert group set up by the Minister for Health in November 1984 to investigate a suspected excess of leukaemia deaths on the eastern seaboard.[10] A working group on a National Cancer Registry was appointed by the Minister in 1988 and, acting on the recommendations of this group, the Minister established the National Cancer Registry Board in 1991. The Board assumed responsibility for the work of the Southern Tumour Registry in November of that year. Plans for national cancer registration were produced by the Board in 1992, and full registration of all cancers in the country began on January 1st, 1994.

The aim of the Registry is to register all cancers incident since January 1st, 1994, in persons resident in the Republic of Ireland. It has also registered deaths due to cancer since that time, and records the deaths, from whatever cause, of patients diagnosed as having cancer since January 1st, 1994. There is no compulsion, either legal or administrative, on individuals or institutions to supply the Registry with data. The right of individuals or organisations to refuse to supply the Registry with data has posed a problem since our establishment, and is a serious threat to our ability to provide truly comprehensive national cancer statistics. To date, we have been able to work around isolated refusals, with no effect on the completeness of registration. However, the current situation is untenable in the long term.

3.3. Characteristics of the catchment area

3.3.1. Geography and climate

The catchment area of the Registry is the Republic of Ireland. A separate registry covers Northern Ireland and reports on cancer there.[11]

The Republic of Ireland is situated between 51°30' and 55°30' N and between 6°0' and 10°40' W. The total land area is 70282 km^2, with a long indented coastline of 3169 km. The highlands are mainly coastal, with a central limestone plain, and the country does not rise above 1040 m at any point. The climate is temperate and oceanic, with average winter temperatures between 4°C and 7°C, and summer temperatures between 14°C and 16°C. Yearly rainfall is highest on the mountains of the west and lowest in the east midlands.

3.3.2. Population

The population at the last census (1996) was 3626087 (see Section A2.7). The population profile is younger than the European average, with a high dependency ratio. The current rate of population increase is estimated at about 1.2% per annum.[12]

3.4. Data collection methods

3.4.1. Sources of data

Reporting to the Registry is voluntary, and data collection is mainly active. The only information received passively at present is on notification forms returned by general practitioners. However, pilot studies of electronic data capture from pathology departments have begun. All other information is actively gathered by eighteen nurses trained in cancer registration methods who are employed by the Registry with the title of Tumour Registration Officer (TRO). These TROs are based in hospitals around the country (see Appendix 3 for a list of TROs and contact numbers). Each is responsible for gathering cancer data from a group of hospitals, and from other sources within a designated geographical area. Within their catchment areas, they liase with hospital pathology and haematology laboratories, special clinics, hospital administrators and medical records staff, Hospital Inpatient Enquiry (HIPE) and casemix staff, and any other persons they consider to be a useful source of cancer registration data. They also maintain links with public health nurses, hospices and nursing homes in the community.

Hospital sources

Most cases (97%) were first recorded in hospital. This proportion has gone up very slightly between 1994 and 1998. The predominant source of notification of cases (81% of the total) was from reports provided by pathology departments within hospitals (Table 3.1).The Hospital Inpatient Enquiry (HIPE) has become a more important source of information, with the proportion of cases reported from this source increasing from 6% in 1994 to 11% in 1998.

Table 3.1 First source of notification of cases

	YEAR OF INCIDENCE									
	1994		1995		1996		1997		1998	
hospital sources	**cases**	**% of total**	**cases**	**% of total**	**cases**	**% of total**	**cases**	**% of total**	**cases**	**% of total**
pathology	15591	82%	15374	82%	15831	81%	15957	80%	15625	79%
HIPE	1080	6%	1500	8%	1676	9%	1958	10%	2230	11%
radiotherapy	232	1%	256	1%	221	1%	86	<1%	113	1%
other inpatient	786	4%	529	3%	746	4%	869	4%	938	5%
other outpatient	654	3%	414	2%	377	2%	426	2%	374	2%
all hospital sources	**18343**	**96%**	**18073**	**97%**	**18851**	**97%**	**19296**	**97%**	**19280**	**97%**
non-hospital sources										
death certificates	364	2%	369	2%	350	2%	198	1%	204	1%
GP	81	<1%	76	<1%	109	1%	115	1%	128	1%
other/unknown	276	1%	166	1%	221	1%	262	1%	233	1%
all cases	**19064**		**18684**		**19531**		**19871**		**19845**	

All Irish residents are entitled to free inpatient and outpatient hospital services. These services may be provided in publicly owned hospitals administered by the regional health boards, in independently owned and managed hospitals, known as voluntary hospitals, which are funded directly by the Department of Health, or in private hospitals. A substantial number of patients elect for private treatment, which is available in public and voluntary hospitals, as well as in private hospitals, which cater exclusively for private patients. Patients can be referred by their general practitioner to any hospital of their choice in the country. Cancers were registered at 115 hospitals in Ireland. The distribution of caseload varied widely between these centres (Table 3.2). Fewer than 10 cases per year per hospital were diagnosed in 9 hospitals; at the other end of the scale five hospitals saw more than 1000 new cases per year. Half of the national cancer workload was accounted for by 12 hospitals.

Table 3.2 Average number of new cancer cases diagnosed in acute hospitals, per hospital per year, 1994 – 1998

cases per hospital	number of hospitals
0 – 10	9
10 – 50	13
50 – 100	8
100 – 200	19
200 – 500	23
500 – 1000	3
>1000	5
total	80

14% of new cases were diagnosed in private hospitals, and 83% in public hospitals (Table 3.3). The remainder were not seen in hospital or were diagnosed abroad. The proportion of cancers diagnosed in private hospitals has gone from 13% in 1994 to 16% in 1998.

Table 3.3 Cancers diagnosed; by hospital type

hospital type	1994	1995	1996	1997	1998
private	13%	14%	14%	16%	16%
public	86%	85%	84%	83%	83%
other	2%	2%	2%	1%	1%

Table 3.4 shows the distribution of new cancer cases, by hospital of diagnosis, among the health board areas. Almost 50% of all new cancers were diagnosed in hospitals in the ERHA. This distribution did not vary significantly between 1994 and 1998.

Table 3.4 Cancers diagnosed per year; by location of hospital

health board of diagnosis	no. of cases	% of total
EHB/ERHA	9044	47%
MHB	658	3%
MWHB	979	5%
NEHB	941	5%
NWHB	918	5%
SEHB	1290	7%
SHB	3228	17%
WHB	1925	10%
non-hospital cases	415	2%
all cases	19399	

In most cases, patients were diagnosed in the health board in which they lived (Table 3.5). In total, 83% of patients were diagnosed in their health board of residence. However, in the Midland and North Eastern Health Boards, only 56% of patients were diagnosed within the health board; most of the remainder were diagnosed in the Eastern Regional Health Authority (ERHA).

Table 3.5 Cancers diagnosed: by area of residence and hospital of diagnosis

health board of residence	HEALTH BOARD OF DIAGNOSIS								all areas	% of patients diagnosed in HB of residence
	ERHA	MHB	MWHB	NEHB	NWHB	SEHB	SHB	WHB		
ERHA	35.4%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	36.1%	98.1%
MHB	1.9%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	5.7%	55.6%
MWHB	0.9%	0.0%	4.9%	0.0%	0.0%	0.2%	0.6%	0.6%	7.6%	64.2%
NEHB	3.2%	0.0%	0.0%	4.6%	0.0%	0.0%	0.0%	0.0%	8.1%	56.6%
NWHB	1.2%	0.0%	0.0%	0.1%	4.5%	0.0%	0.0%	0.2%	6.3%	72.5%
SEHB	2.5%	0.0%	0.1%	0.0%	0.0%	6.4%	0.8%	0.0%	10.1%	63.0%
SHB	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	15.1%	0.0%	16.2%	93.6%
WHB	1.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	8.6%	10.0%	85.8%
all areas	46.6%	3.4%	5.0%	4.9%	4.7%	6.7%	16.6%	9.9%		82.6%

Death certificates

Death certificates were the most important non-hospital source of cases (1.4%). However, the importance of death certificates as a primary source of case notification has been decreasing, from 1.8% of 1994 cases to 0.9% of 1998 cases. The Registry, at present, does not register a case based on death certification alone, but only after the diagnosis has been confirmed from another source. Our reason for doing this is that almost all cases which first come to our attention from death certificates have turned out to pertain to pre-1994 incident cases. On the basis that almost all current death certificate only (DCO) cases are likely to pre-date the establishment of the Registry, we have decided to exclude them for the present (see section A2.3). The sites of these cancers, and the number of cancers at each site, are shown in Table A2.10.

Accuracy of death certificates

The accuracy of death certificates as a source of notification of cancer is questionable. In matching death certificates with registered cases, we have noticed significant discrepancies between the cause of death as given on the death certificate and the cancer as registered by the National Cancer Registry. In all of these cases, we have gone back to the original medical record to attempt to confirm the diagnosis.

The effects of inaccurate death certification are discussed in section A2.4.

Other sources of registrations

General practitioners

Cancer cases are also notified to the Registry by general practitioners. The number of cases is quite small (Table 3.1) at 0.5% of the total, although this is increasing. However, notification by GPs is a valuable check on the completeness of registration from other sources, and is our only source of information on non-fatal cancer cases treated solely by GPs.

Cancer screening

From 1994 to 1998 no organised cancer screening programme existed in Ireland. However, informal screening for cervical, and to a lesser extent, breast and some other cancers, took place (Table 3.6). Most screen-detected cancers were carcinoma in situ of the cervix; however, when invasive cancers only are considered, almost equal numbers of cervical and breast cancers were detected by screening. Apart from in situ cervical cancer, screening accounted for a negligible fraction of the cancers diagnosed.

Table 3.6 Cancers detected by screening

	cases detected by screening	% of cancers at this site which were detected by screening	% of all screen-detached cancers
all cancers (including in situ)			
cervix	2607	89.7%	55.8%
breast	180	6.2%	2.1%
prostate	34	1.2%	0.6%
colon	17	0.6%	0.3%
lung	15	0.5%	0.2%
skin	15	0.5%	0.0%
other sites	39	1.3%	0.1%
all sites	2907	100%	3.0%
invasive cancers			
cervix	163	39.5%	18.3%
breast	143	34.6%	1.8%
prostate	34	8.2%	0.6%
colon	13	3.1%	0.2%
lung	15	3.6%	0.2%
skin	13	3.1%	0.0%
other sites	32	7.7%	0.1%
all sites	413	100%	0.5%

3.5. Data processing

3.5.1. Data entry

Data is entered directly onto laptop computers by the TROs. The TRO enters or updates data under three headings: patient, tumour and treatment information (Table 3.6). Some of this information comes from the pathology report or other source of initial notification, but most is extracted from the patient's records when these become available to us, usually some months after discharge. The date, cause and place of death are entered by linkage with death certificates and the ward/DED data by linkage of the address with a national address database.

With the introduction of a new Registry computer system, we plan to extend the dataset to include information on waiting times, tumour markers and extended treatment codes (see Appendix 4). We also hope to extend the scope of linkage to the HIPE system.

Table 3.7 Data collected

PATIENT	TUMOUR	TREATMENT
name–surname, first name, maiden name	source of notification	treatment type
address	method of presentation	treatment date
other address(es)	GP	hospital
ward/district electoral division of residence*	hospital	consultant
GMS number	consultant	
RSI number	medical record number	
date of birth	incidence date	
sex	age at incidence	
smoking status	topography	
marital status	morphology	
occupation	grade	
occupational status	behaviour	
alive or dead*	method of diagnosis	
date of death*	TNM stage	
cause of death*	basis of staging	
place of death*	residual disease	
	sites of metastases	
	histology date, lab, pathologist and reference number	

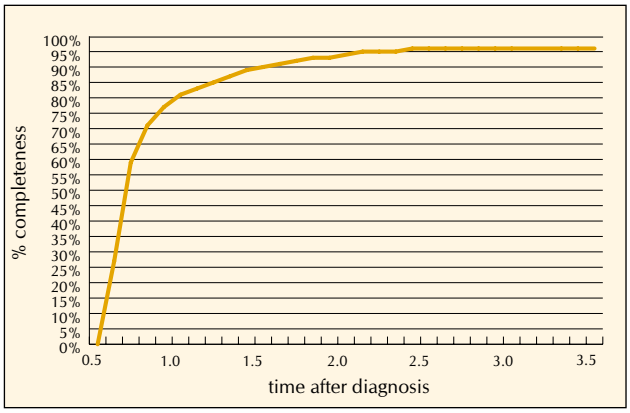
* added by data linkage

3.5.2. Quality control

The Registry carries out internal quality control checks on the data throughout collection and processing. Additional, more detailed, checks have been carried out during the past year for this report and as part of the process of preparing the data for an upgraded computer system.

Completeness of registration

Figure 3.1 Completeness of cancer registration up to three years after diagnosis



Many methods are available for checking the completeness of cancer registration, none of which can do more than give an indirect estimate of completeness. The most accurate method is comparison against a completely independent registration system, something which is not available in Ireland. The Registry approach to data collection is to use every possible source of notification. Two indirect methods, however, suggest a high level of completeness. A simple capture-re-capture method[4] (Table 3.8) suggests a completeness of around 96%. A more complex survival model[13] suggests that registration completeness has reached an asymptotic level of just over 96% at 2 years after diagnosis (Figure 3.1).

Table 3.8 Estimation of completeness using death certificate notifications

registered alive (a)	61344	
registered dead (b)	42848	
unregistered dead (c)	3241 (including DCO)	
completeness	$\frac{a+b+c}{a+b+c+\frac{ac}{b}}$	95.9%

Histological verification of diagnosis

Histological verification is a strong guarantee of the accuracy of the data. The level of verification in Ireland is quite high by international standards.[14]

Table 3.9 Basis of diagnosis

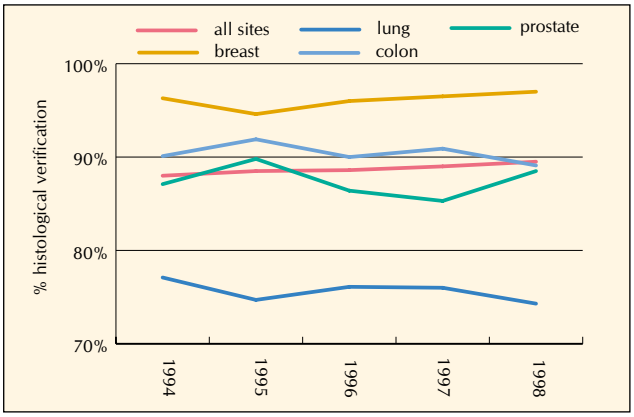
	NUMBER OF CASES						% of all registrations
	1994	1995	1996	1997	1998	1994 – 1998	
histology	15448	15034	15758	16079	16070	78389	80.8%
histology other	453	580	589	569	588	2779	2.9%
cytology	330	263	310	361	406	1670	1.7%
bone marrow	422	546	539	561	586	2654	2.7%
blood film	131	115	103	118	111	578	0.6%
imaging	924	993	1106	1159	1202	5384	5.6%
clinical	1180	1005	944	928	732	4789	4.9%
post-mortem	30	38	26	22	18	134	0.1%
other/not known	146	110	156	74	132	618	0.6%
all cases	19064	18684	19531	19871	19845	96995	100.0%

The overall level of histological verification has been increasing steadily since 1994, from 88.0% to 89.5% in 1998 (Table 3.9, Table 3.10). However, this trend has not been uniform for all sites (Table 3.10; Figure 3.2). As can be seen, the level of histological verification is quite low for some sites, such as lung cancer.

Table 3.10 Changes in level of histological verification, 1994 to 1998

	% HISTOLOGICAL VERIFICATION					
	1994	**1995**	**1996**	**1997**	**1998**	**1994 – 1998**
all sites	88.0%	88.5%	88.6%	89.0%	89.5%	88.7%
lung	77.1%	74.7%	76.1%	76.0%	74.3%	75.6%
breast	96.3%	94.6%	96.0%	96.5%	97.0%	96.1%
colon	90.1%	91.9%	90.0%	90.9%	89.1%	90.4%
prostate	87.1%	89.8%	86.4%	85.3%	88.5%	87.4%

Figure 3.2 Changes in level of histological verification, 1994 to 1998



Completeness of data items

Table 3.11. Percentage of "unknown" or "not specified" values

data item	percentage of "unknown" or "unspecified" cases
site (C80.9)	3.6%
morphology (M-8000/3)	8.9%
basis of diagnosis	0.6%
method of presentation	3.6%

Most tumour and patient variables were available to a high level of completeness (Table 3.11). One important exception, however, was staging information. The Registry attempts to collect staging information on all cancers to which the TNM system applies. The TNM system covers 59% of all registered cancers, the major exceptions being all non-invasive cancers, non-melanoma skin cancers and leukaemia.

For all stageable cancers, a T stage was recorded for 71.2%, an N stage for 49.1% and an M stage for 48.5% (Table 3.12). The level of staging varied for the common cancers, from breast cancer, with 91% of T stage, to prostate, which had only 46% of T stage recorded. The level of N stage was more variable, from 82% of breast cancers to only 13% of prostate. Recording of M stage was poorer overall, but with much less variation between sites.

As a consequence of missing TNM information, a summary stage (i.e. I, II, III, IV) could be derived for a relatively low percentage of cancers. Apart from lymphoma, where TNM staging does not apply, the highest level of summary stage was for colorectal cancer (59%). The absence of staging data for many cancers makes the interpretation of treatment and survival data much more difficult. From our experience of dealing with medical records over many years, we would strongly urge the introduction of a standard minimum dataset for cancer patients and the inclusion in all cancer medical records of a standard form for recording this information.

Table 3.12 Completeness of staging information for common cancers

	PERCENTAGE OF CASES WITH A KNOWN STAGE			
	T	N	M	summary stage
all stageable cancers	71.2%	49.1%	48.5%	
colorectal	83.4%	72.1%	63.0%	58.7%
breast	91.5%	82.5%	53.6%	50.3%
lung	55.1%	39.4%	42.5%	37.1%
prostate	46.3%	13.0%	45.3%	28.5%
lymphoma				80.7%
stomach	60.1%	49.3%	56.1%	49.9%
bladder	70.6%	25.8%	33.2%	23.2%
melanoma	80.9%	27.6%	25.1%	21.7%

3.6. Availability of Registry data

3.6.1. Reports and datasets

The Registry wishes to make its data as widely available as possible, within the restraints imposed by maintaining confidentiality. The material published here may be reproduced freely, but the Registry must be cited as the source, and any alterations, omissions and interpretations of the data must be identified as having been made by the author. A summary of this report, many of the data tables and the basic dataset from which the report has been written, are available on the Registry website at www.ncri.ie.

Subsets, or further analyses, of the data may be obtained by any interested person by applying in writing to the Registry. Data from the Southern Tumour Registry (Cork and Kerry) for the period 1977 to 1993 are available on the same basis. The data may be provided either as cross-tabulations or as individual data records, as appropriate. No information which could identify an individual patient, institution or health care worker will be released without their consent. This service is free to individuals or institutions who contribute data to the Registry; a charge will be payable by others for the time taken in producing the information. We would be particularly interested in hearing from individuals or institutions within the healthcare system who might wish to use Registry data routinely for performance review.

3.6.2. Confidentiality

While wishing to facilitate researchers and others, the Registry must place the highest priority on maintaining the confidentiality of all patients. Data collection and processing is subject to high levels of physical and electronic security and all staff must sign binding undertakings with regard to the absolute confidentiality of any material they encounter. No information is ever published or released by the Registry in a format which could identify a patient, except with that patient's consent or where the information has been requested by a doctor who is caring for the patient.

The full text of the Registry's policy on confidentiality is available by post from the Registry, or on our website at www.ncri.ie/confid.htm

3.7. Research Programme

The Registry has an active research programme, covering the aetiology, diagnosis, treatment and outcome of cancer, as well as methodological problems in cancer epidemiology. This programme is supported by direct funding from the Department of Health and Children, by project grants from the Health Research Board and the Northern Ireland R&D Office, and by support from the Ireland-Northern Ireland-National Cancer Institute Consortium. We also welcome proposals for collaborative research.

Some of our current projects are:

- National audit of waiting times of public patients with lymphoma, breast, colorectal, prostate and lung cancer
- The consistency, appropriateness and effectiveness of treatments for breast, colorectal, prostate and lung cancer
- The use of geographical tools to study variations in cancer incidence
- Circumstances prior to referral of patients with colorectal cancer to a specialist by their GP (collaboration with Department of General Practice, UCC)
- National study of geographical variation in skin cancer incidence (collaboration with Dr. John Bourke, South Infirmary/Victoria Hospital, Cork)
- Trend analysis and prediction of short-term trends in cancer mortality rates since 1950
- Cancer incidence in renal transplant patients (collaboration with the departments of renal medicine and dermatology, Beaumont Hospital)
- Differences in stage and survival from breast cancer between Ireland and Northern Ireland
- An atlas of cancer incidence and mortality in Ireland and Britain (collaboration with Office of National Statistics, UK)
- CONCORD project–cancer survival in Europe and North America (multi-centre collaboration)
- Development of name and address stabilisation algorithms for matching purposes
- Case-control study of adenocarcinoma of oesophagus (with NI Cancer Registry).

4. Patient data items

The information collected by the Registry mainly pertains to tumours and their treatment, but a limited set of patient data is also collected. As the Registry has no facilities for data linkage with other national datasets such as census or occupational registers, the patient data presented here is that which can be extracted from clinical medical records. As such, it is necessarily limited and sometimes of unproven validity. Because of these limitations, data on individual cancer sites for patient variables such as occupation and smoking have not been described.

The 96995 registered cancers were diagnosed in 92106 patients, 1.05 cancers per patient.

4.1. Occupational status

Table 4.1 Occupational status

occupational status	FEMALE		MALE	
	patients	%	patients	%
employed	3087	6%	4599	10%
self-employed	292	1%	1643	4%
housewife	18174	38%	29	<1%
religious	572	1%	554	1%
retired	12003	25%	23279	52%
student	404	1%	344	1%
unemployed	1058	2%	2093	5%
other/unknown	11922	25%	12053	27%
all patients	47512		44594	

The National Cancer Registry collects some information on occupational status from medical records. Inevitably, because of the priorities of medical record keeping and the fact that many of the patients are beyond retirement age, detailed occupational information is often missing.

Over half of the patients were described as either “retired” or “unknown”. Most men were recorded as “retired”, while most women were described as “housewife”, an occupation without a recognised retirement age.

These categories can be directly compared to those used for “principal economic status” in the 1996 census (Table 4.2). As expected the “retired” were over-represented among cancer patients and there was a significant number of "unknown".

Table 4.2 Observed and expected principal economic status

	FEMALE			MALE		
	observed	expected	SIR	observed	expected	SIR
at work	3951	9205	43%	6796	15619	44%
unemployed	1058	2129	50%	2093	4635	45%
student	404	406	99%	344	259	133%
home duties	18174	29637	61%	29	231	13%
retired	12003	9037	133%	23279	27167	86%
other/unknown	11922			12053		
all patients	47512	50415	94%	44594	47912	93%

4.2. Smoking status

This is recorded, if available, from the medical records. Information on smoking was available for 64% of patients (Table 4.3). Forty-five per cent of men and 28% of women were recorded as current or ex-smokers. No accurate age-specific national data are available for comparison.

Table 4.3 Smoking behaviour

	FEMALE		MALE	
	patients	% of total	patients	% of total
smoker	9643	20.3	12727	28.5
ex-smoker	3441	7.2	7170	16.1
non-smoker	18185	38.3	11831	26.5
unknown	16243	34.2	12866	28.9
all patients	47512		44594	

4.3. Marital status

Table 4.4 shows the marital status of patients with registered cancers. Information was available on 92% of patients. Fifty-eight percent of men and 44% of women were married. Far more women were widowed, due to their greater life expectancy.

Table 4.4 Marital status of patients

	FEMALE		MALE	
	patients	% of total	patients	% of total
married	21053	44.3	25818	57.9
widowed	12916	27.2	5220	11.7
single	8331	17.5	9326	20.9
divorced	104	0.2	91	0.2
separated	932	2.0	594	1.3
other/unknown	4176	8.8	3545	7.9
all patients	47512		44594	

4.4. Occupation (or parent's, or spouse's)

Table 4.5 Main occupational classes of registered patients

	FEMALE				MALE			
occupational class	patients	% of total	expected	SIR	patients	% of total	expected	SIR
all patients with known occupations	12974	100	10099	100	23087	100	17779	100
farming, fishing and forestry workers	2126	16	547	303	7390	32	5327	107
communication, warehouse and transport workers	558	4	115	377	2212	10	1418	120
building and construction workers	457	4	41	869	2190	9	1609	105
other gainful occupations (incl. not stated)	1069	8	876	95	1724	7	924	144
sales occupations	973	7	1210	63	1091	5	1426	59
personal service and childcare workers	1542	12	1376	87	977	4	914	82
other manufacturing workers	217	2	276	61	849	4	487	134
engineering and allied trades workers	265	2	38	541	746	3	814	71
health and related workers	1531	12	1059	113	637	3	335	146
scientific and technical occupations	182	1	88	160	574	2	317	139
managers and executives	265	2	372	55	521	2	820	49
central and local government workers	306	2	291	82	507	2	375	104
business and commerce occupations	305	2	227	104	470	2	408	89
clerical and office workers	1284	10	1799	56	445	2	392	87
teachers	816	6	878	72	440	2	414	82
religious occupations	275	2	94	228	425	2	289	113
food, drink and tobacco production workers	137	1	108	99	374	2	269	107
electrical trades workers	91	1	11	657	360	2	292	95
Garda Siochána	101	1	10	821	301	1	111	210
other professional workers	138	1	192	56	236	1	264	69
chemical, paper, wood, rubber, plastics, printing	61	<1	88	54	223	1	224	77
Army occupations	62	<1	3	1498	206	1	108	147
textile, clothing and leather workers	132	1	211	49	128	1	130	76
computer software occupations	38	<1	90	33	39	<1	81	37
social workers and related occupations	43	<1	99	34	22	<1	33	51

The patient's last occupation, as given in the medical records, was recorded. This information was recorded in fewer than 50% of cases for men and for only 25% of women (Table 4.5). The most frequent occupational category for both males and females was “farming, fishing and forestry workers” as it was in the 1996 census. The percentage of males with cancer describing themselves as farmers (32%) was slightly higher than would be expected from the census data for a group of the same age composition but this may be due to differential reporting of occupation by retired persons. In many cases the observed/expected ratio was very high, reflecting the general unreliability of this data.

Relating occupational data to cancer risk was some of the earliest work in cancer epidemiology. Without such links, new occupational risk factors are difficult to identify. It is unfortunate that no mechanism exists in Ireland to link data on occupation with cancer registration as can be done, for instance, in Denmark. With the wider use of the PPS number, there may be some opportunities for this type of linkage.

5. Summary statistics

This chapter presents summary statistics for all cancer sites combined (section 5.1), and in more detail for some of the more important malignant cancers – colorectal, breast, lung, prostate, stomach and bladder cancers, lymphoma, leukaemia and melanoma (sections 5.2 to 5.10). Section 5.11 presents data for childhood cancers similar but less detailed information for all other cancer sites is given in Table A5.1.

In line with international recommendations, the figures exclude "multiple" or "duplicate" primary tumours of the same site or morphology – thus each patient is only counted once for "similar" tumours, but some patients may have several "different" tumours.

5.1. All neoplasms *ICD - 10 C00 - C97, D00 - D48*

The main emphasis below is on invasive or malignant neoplasms (see section 5.1.2), but the first set of summary data (section 5.1.1) also includes in situ tumours and tumours of uncertain behaviour and benign intracranial tumours. Section 5.1.3 gives figures exclusive of non-melanoma skin cancers, which are rarely fatal and are not routinely registered in most countries.

5.1.1. All registered neoplasms (including benign intracranial and intraspinal)

ICD - 10 C00 - C97, D00 - D09, D32 - D33, D35 (intracranial only), D37 - D48

On average, 19399 neoplasms were registered annually, including benign intracranial tumours. Of the total, 51% were in females, 49% in males. The estimated "lifetime" (before age 75) risk of developing one of these neoplasms was about 1 in 3 for both men and women.

Table 5.1 Summary statistics, 1994 – 98: all registered neoplasms (including benign intracranial and intraspinal)

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	9912	9487	19399	3448	4010	7458
% of total registered neoplasms	100.0	100.0	100.0	100.0	100.0	100.0
cumulative risk (0 – 74 yrs)%	34.9	38.2		12.6	17.1	
crude rate*	542.9	527.0		188.9	222.7	
world age-standardized rate*	390.5 ±3.7	411.3 ±3.8		118.5 ±1.8	167.3 ±2.3	
European age-standardized rate*	540.1 ±4.9	610.5 ±5.5		177.0 ±2.6	258.6 ±3.6	
mortality/incidence ratio	0.35	0.42	0.38			

* Rates (per 100000 persons per year) include 95% confidence intervals for age-standardized rates.

5.1.2. All malignant cancers *ICD - 10 C00 - C97*

An average of 17095 cases was registered annually; 48% in females, 52% in males. The European age-standardized incidence rate (EASR) was about 30% higher in males than in females (95% confidence interval 28 – 32%). Mortality rates showed a more marked disparity, with the EASR about 46% (43 – 49%) higher in males.

Estimated lifetime risks of developing malignant cancer were about 1 in 3 for both men and women. The risk of dying from malignant cancer before age 75 was about 1 in 8 for women, but about 1 in 6 for men. Just over four cancer deaths were reported for every ten incident cases.

Table 5.2 Summary statistics, 1994 – 98: all malignant cancers

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	8149	8946	17095	3428	3989	7418
% of all registered neoplasms	82.2	94.3	88.1			
% of all malignant cancers	100.0	100.0	100.0	100.0	100.0	100.0
cumulative risk (0 – 74 yrs)%	29.9	36.5		12.5	17.0	
crude rate*	446.3	496.9		187.8	221.6	
world age-standardized rate*	312.2 ±3.3	387.2 ±3.7		117.9 ±1.9	166.4 ±2.4	
European age-standardized rate*	443.5 ±4.4	575.9 ±5.4		176.0 ±2.7	257.3 ±3.6	
mortality/incidence ratio	0.42	0.45	0.43			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

Figure 5.1 Invasive cancer cases and deaths, 1994 – 98, by ICD-10 code

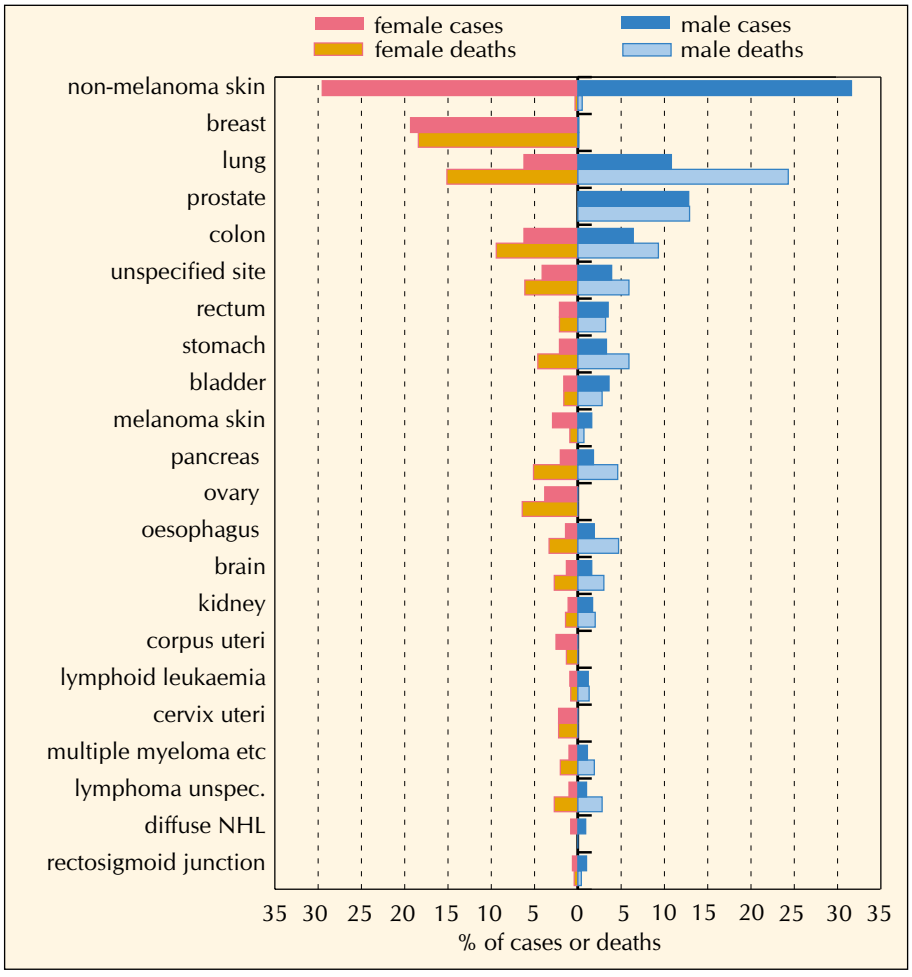


Figure 5.1 presents a summary of the most frequent malignant cancers (cases and deaths). Sites are ranked by proportion of all incident cases of invasive cancer (sexes combined), but proportions are shown separately for each sex. In incidence terms, the five most frequent malignant cancers were those of skin (non-melanoma), breast, lung, prostate and colon. (Note that colorectal cancers, in combination, would rank higher than colon alone.) Cancer deaths most frequently involved lung, colon, breast, prostate and stomach. Other important cancer sites included ovary (cases and deaths), bladder (male cases), pancreas (female deaths) and oesophagus (male deaths).

5.1.3. All malignant cancers, excluding non-melanoma skin cancer *ICD - 10: C00 - C43; C45 - C97*

An average of 11928 cases was registered annually; 48% in females, 52% in males. The European age-standardized incidence rate (EASR) was about 23% higher in males than in females (95% confidence interval 21 – 25%). As for all malignant cancers, mortality rates showed a more marked disparity, with EASR about 46% (43 – 49%) higher in males.

The estimated lifetime risk of developing one of these cancers was about 1 in 4 for both men and women. The risk of dying from malignant cancer before age 75 was about 1 in 8 for women, higher (about 1 in 6) for men – a finding unaffected by the exclusion of non-melanoma skin (NMS) cancers, which are rarely fatal. On average, about six cancer deaths were reported for every ten incident cases, a higher mortality/incidence ratio than is the case when NMS cancers are included.

Table 5.3 Summary statistics, 1994 – 98: all malignant cancers, excluding non-melanoma skin cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	5776	6153	11928	3419	3968	7387
% of all registered neoplasms	58.3	64.8	61.5			
% of all malignant cancers	70.9	68.8	69.8	99.7	99.5	99.6
cumulative risk (0 – 74 yrs)%	22.9	27.1		12.5	16.9	
crude rate*	316.2	341.8		187.3	220.4	
world age-standardized rate*	229.3 ±2.8	267.6 ±3.1		117.6 ±1.9	165.5 ±2.4	
European age-standardized rate*	320.3 ±3.8	394.6 ±4.4		175.5 ±2.7	255.9 ±3.6	
mortality/incidence ratio	0.59	0.64	0.62			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.2. Colorectal cancer

This combination of sites includes colon (ICD-10 code C18), rectosigmoid junction (C19), rectum (C20), anus and anal canal (C21). These cancer sites are often combined for analysis as mortality statistics for each site separately may not be reliable. Summary data are provided for all sites combined, and separately for colon (C18) and anorectal (C19-21) cancers.

5.2.1. All colorectal cancer *ICD - 10: C18 - 21*

Colorectal cancer as a whole was second only to non-melanoma skin cancer in terms of numbers of incident cases (both sexes combined). Among cancer deaths, only lung cancer was more frequent.

An average of 1730 cases was registered annually; 43% in females, 57% in males. The European age-standardized incidence rate (EASR) was about 62% higher in males than females (95% confidence interval 55 – 70%), for mortality about 68% (58 – 78%) higher in males.

Estimated lifetime risks of developing colorectal cancer were about 1 in 32 for women, 1 in 20 for men. The risk of dying from colorectal cancer before age 75 was about 1 in 73 for women, 1 in 41 for men. Mortality/incidence ratios were moderately high, representing just over five deaths for every ten incident cases.

Table 5.4 Summary statistics, 1994 – 98: colorectal cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	748	982	1730	410	515	925
% of all malignant cancers	9.2	11.0	10.1	12.0	12.9	12.5
cumulative risk (0 – 74 yrs)%	3.1	5.1		1.4	2.4	
crude rate*	40.9	54.6		22.5	28.6	
world age-standardized rate*	26.4 ±0.9	42.6 ±1.2		12.7 ±0.6	21.5 ±0.9	
European age-standardized rate*	39.3 ±1.3	63.8 ±1.8		19.8 ±0.9	33.3 ±1.3	
mortality/incidence ratio	0.55	0.52	0.53			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.2.2. Malignant cancer of the colon *ICD - 10: C18*

If this cancer is considered separately from colorectal cancer as a whole, it was the fifth most common cancer overall (third for women, fourth for men). More strikingly, it was the second most common cause of cancer death overall (third most common for each sex individually).

An average of 1083 cases was registered annually; 47% in females, 53% in males. The European age-standardized incidence rate (EASR) was about 38% higher in males (95% confidence interval 30 – 46%) than in females. For mortality, the EASR was 52% (42 – 64%) higher in males.

Estimated lifetime risks of developing colon cancer were about 1 in 48 for women, 1 in 34 for men. The risk of dying from colon cancer before age 75 was about 1 in 94 for women, 1 in 58 for men. The mortality/incidence ratio was just over six deaths for every ten incident cases, higher than for anorectal cancers (below).

Table 5.5 Summary statistics, 1994 – 98: colon cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	511	572	1083	323	370	693
% of all malignant cancers	6.3	6.4	6.3	9.4	9.3	9.3
cumulative risk (0 – 74 yrs)%	2.1	2.9		1.1	1.7	
crude rate*	28.0	31.8		17.7	20.5	
world age-standardized rate*	17.8 ±0.8	24.6 ±0.9		10.0 ±0.5	15.4 ±0.7	
European age-standardized rate*	26.6 ±1.1	37.0 ±1.4		15.7 ±0.8	23.9 ±1.1	
mortality/incidence ratio	0.63	0.65	0.64			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.2.3. Rectal, rectosigmoid junction and anal cancer *ICD - 10: C19 - C21*

Cancer of the rectum (the main site included here) was the 6th most common cancer overall (6th for men, 10th for women) and the 10th most common cause of cancer death (7th for men, 11th for women).

An average of 647 cases was registered annually; 37% in females, 63% in males. The European age-standardized incidence rate (EASR) was about twice as high in males as in females: about 111% higher (95% confidence interval 96 – 127%) for incidence, about 125% (99 – 155%) for mortality. Colon cancer, in comparison, showed a less marked disparity between male and female rates (see above).

Estimated lifetime risks of developing anorectal cancer were about 1 in 97 for women, 1 in 45 for men. The risk of dying from anorectal cancer before age 75 was about 1 in 340 for women, 1 in 140 for men. Mortality/incidence ratios were lower than for colon cancer, and represented three to four deaths for every ten incident cases.

Table 5.6 Summary statistics, 1994 – 98: rectal, rectosigmoid junction and anal cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	237	410	647	87	145	232
% of all malignant cancers	2.9	4.6	3.8	2.5	3.6	3.1
cumulative risk (0 – 74 yrs)%	1.0	2.2		0.3	0.7	
crude rate*	13.0	22.8		4.8	8.1	
world age-standardized rate*	8.6 ±0.5	18.1 ±0.8		2.7 ±0.3	6.1 ±0.5	
European age-standardized rate*	12.7 ±0.8	26.8 ±1.2		4.2 ±0.4	9.4 ±0.7	
mortality/incidence ratio	0.37	0.35	0.36			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.3. Breast cancer *ICD - 10: C50*

In women, this was the second most common cancer after non-melanoma skin cancer (NMS). Among both sexes combined (and despite the rarity of breast cancer in men), this was also the third most common cancer after NMS. Breast cancer was the single most common cause of cancer death in women, and the third most common cause of cancer death overall.

An average of 1597 cases was registered annually, over 99% in females. Women's estimated lifetime risk of developing malignant breast cancer was about 1 in 13, while their lifetime risk (to age 74) of dying from breast cancer was about 1 in 37. About two deaths from breast cancer were recorded for every five incident cases.

Table 5.7 Summary statistics, 1994 – 98: malignant cancer of the breast

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	1584	13	1597	631	5	637
% of total malignant cancers	19.3	0.1	9.3	18.4	0.1	8.6
cumulative risk (0 – 74 yrs)%	7.5	<0.1		2.7	<0.1	
crude rate*	86.8	0.71		34.6	0.30	
world age-standardized rate*	69.8 ±1.6	0.57 ±0.14		24.7 ±0.9	0.24 ±0.09	
European age-standardized rate*	95.2 ±2.2	0.84 ±0.21		35.5 ±1.3	0.36 ±0.14	
mortality/incidence ratio	0.40	0.42	0.40			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.4. Lung cancer *ICD - 10: C34*

Lung cancer was the third most common cancer overall (third for men, fourth for women). It was the most common cause of cancer death, both overall and for men (second most common for women, after breast cancer).

An average of 1479 cases was registered annually; 34% in females, 66% in males. The European age-standardized incidence rate (EASR) was more than twice as high in males as in females: about 135% higher (95% confidence interval 124 – 147%) for incidence, and exactly the same for mortality.

Estimated lifetime risks of developing lung cancer were about 1 in 43 for women, 1 in 19 for men. Risks of dying from lung cancer before age 75 were also about 1 in 45 for women, 1 in 20 for men. Mortality/incidence ratios were very high, with as many lung cancer deaths reported as there were new cases. This reflects very poor survival from this cancer (see section 10.3, Crude survival) and also some inaccurate coding of deaths to primary lung cancer (see A2.4, Accuracy of death certificates).

Table 5.8 Summary statistics, 1994 – 98: lung cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	507	972	1479	519	971	1489
% of malignant cancers	6.2	10.8	8.6	15.1	24.3	20.1
cumulative risk (0 – 74 yrs)%	2.3	5.3		2.2	5.0	
crude rate*	27.8	54.0		28.4	53.9	
world age-standardized rate*	18.0 ±0.8	42.0 ±1.2		17.6 ±0.7	40.9 ±1.2	
European age-standardized rate*	26.7 ±1.1	62.8 ±1.8		26.5 ±1.1	62.4 ±1.8	
mortality/incidence ratio	1.02	1.00	1.01			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.5. Prostate cancer *ICD - 10: C61*

Prostate cancer was the second most common cancer in men, and the fourth most common cancer overall, in both incidence and mortality terms.

An average of 1150 cases was registered annually. Men's estimated lifetime risk of developing prostate cancer was about 1 in 19. Their risk of dying from prostate cancer before age 75 was about 1 in 64. About four or five deaths from prostate cancer were recorded for every ten incident cases.

Table 5.9 Summary statistics, 1994 – 98: malignant cancer of the prostate

	INCIDENT CASES	DEATHS
cases or deaths per year	1150	513
% of all malignant cancers	12.8	12.9
cumulative risk (0 – 74 yrs)%	5.3	1.6
crude rate*	63.9	28.5
world age-standardized rate*	45.7 ±1.2	18.9 ±0.8
European age-standardized rate*	73.0 ±1.9	32.9 ±1.3
mortality/incidence ratio	0.45	

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.6. Stomach cancer *ICD - 10: C16*

This was the sixth most common cancer overall (seventh for men, ninth for women) and the fifth most common cause of cancer death (fourth for women, sixth for men).

An average of 469 cases was registered annually; 37% in females, 63% in males. The European age-standardized incidence rate (EASR) was about twice as high in males as in females: about 120% higher (95% confidence interval 102 – 140%) for incidence, 106% higher (87 – 126%) for mortality.

Estimated lifetime risks of developing stomach cancer were about 1 in 145 for women, 1 in 68 for men. Comparative risks of dying of stomach cancer were about 1 in 190 for women, 1 in 92 for men. Mortality/incidence ratios were high, representing eight or nine deaths for every ten incident cases. As with lung cancer this is due to a combination of poor survival and over-registration of stomach cancer as a cause of death.

Table 5.10 Summary statistics, 1994 – 98: malignant cancer of the stomach

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	174	295	469	156	234	390
% of total malignant cancers	2.1	3.3	2.7	4.6	5.9	5.3
cumulative risk (0 – 74 yrs)%	0.69	1.5		0.5	1.1	
crude rate*	9.5	16.4		8.5	13.0	
world age-standardized rate*	5.7 ±0.4	12.6 ±0.7		4.7 ±0.4	9.7 ±0.6	
European age-standardized rate*	8.6 ±0.6	19.1 ±1.0		7.4 ±0.5	15.2 ±0.9	
mortality/incidence ratio	0.90	0.79	0.83			

* Rates (per 100 000 persons per year) ±95% confidence intervals for age-standardized rates.

5.7. Lymphoma

Lymphomas are divided into Hodgkin's disease (ICD-10 code C81) and non-Hodgkin's lymphoma (NHL) (C82-C85); the latter is further divided by ICD 10 into follicular [nodular] non-Hodgkin's lymphoma (C82), diffuse NHL (C83), peripheral & cutaneous T-cell lymphomas (C84), and other/unspecified types of NHL (C85). A number of alternative classifications of lymphoma exist, but in this report we will present data on NHL as a single entity.

5.7.1. All lymphoma *ICD - 10: C81 - C85*

An average of 478 cases was registered annually; 46% in females, 54% in males. The European age-standardized incidence rate (EASR) was about 29% higher (95% confidence interval 19 – 41%) in males than females, mortality rates about 53% (35 – 72%) higher in males. Estimated lifetime risks of developing lymphoma were about 1 in 97 for women, 1 in 78 for men. The risk of dying from lymphoma before age 75 was about 1 in 240 for women, 1 in 160 for men. On average, about five deaths from lymphoma were recorded for every ten incident cases.

Table 5.11 Summary statistics, 1994 – 98: all lymphoma

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	222	256	478	104	129	233
% of total malignant cancers	2.7	2.9	2.8	3.0	3.2	3.1
cumulative risk (0 – 74 yrs)%	1.0	1.3		0.4	0.7	
crude rate*	12.2	14.2		5.7	7.2	
world age-standardized rate*	9.4 ±0.6	12.2 ±0.7		3.6 ±0.3	5.7 ±0.5	
European age-standardized rate*	12.3 ±0.7	16.0 ±0.9		5.4 ±0.5	8.2 ±0.6	
mortality/incidence ratio	0.47	0.50	0.49			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.7.2. Non-Hodgkin's lymphoma *ICD - 10: C82 - 85*

An average of 396 cases (i.e. excluding 84 cases of Hodgkin's disease annually) was registered annually; 47% in females, 53% in males – little different from lymphomas as a whole. The European age-standardized incidence rate (EASR) was about 30% higher (95% confidence interval 19 – 43%) in males than females, mortality rates about 47% (30 – 67%) higher in males. Estimated lifetime risks of developing NHL were about 1 in 115 for women, 1 in 91 for men. The risk of dying from NHL before age 75 was about 1 in 260 for women, 1 in 180 for men.

Table 5.12 Summary statistics, 1994 – 98: non-Hodgkin's lymphoma

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	185	211	396	95	113	208
% of total malignant cancers	2.3	2.4	2.3	2.8	2.8	2.8
cumulative risk (0 – 74 yrs)%	0.9	1.1		0.4	0.6	
crude rate*	10.1	11.7		5.2	6.3	
world age-standardized rate*	7.5 ±0.5	9.9 ±0.6		3.3 ±0.3	5.0 ±0.4	
European age-standardized rate*	10.3 ±0.7	13.5 ±0.8		4.9 ±0.5	7.2 ±0.6	
mortality/incidence ratio	0.52	0.53	0.53			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.8. Bladder cancer *ICD - 10: C67*

This was the 8th most common cancer overall (5th for men, 12th for women) and the 13th most common cause of cancer death (9th for men, 15th for women).

An average of 456 cases was registered annually; 28% in females, 72% in males. The European age-standardized incidence rate (EASR) was about three times as high in males as in females: about 218% higher (95% confidence interval 190 – 250%) for incidence, 194% higher (152 – 243%) for mortality.

Estimated lifetime risks of developing bladder cancer were about 1 in 180 for women, 1 in 64 for men. The risk of dying from bladder cancer before age 75 was about 1 in 630 for women, 1 in 270 for men. On average, there were three or four deaths from bladder cancer for every ten incident cases.

Table 5.13 Summary statistics, 1994 – 98: bladder cancer

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	128	328	456	54	112	166
% of all malignant cancers	1.6	3.6	2.7	1.6	2.8	2.2
cumulative risk (0 – 74 yrs)%	0.6	1.6		0.2	0.4	
crude rate*	7.0	18.2		3.0	6.2	
world age-standardized rate*	4.5 ±0.4	13.8 ±0.7		1.5 ±0.2	4.3 ±0.4	
European age-standardized rate*	6.6 ±0.5	21.2 ±1.0		2.4 ±0.3	7.2 ±0.6	
mortality/incidence ratio	0.43	0.34	0.36			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.9. Melanoma of skin *ICD - 10: C43*

This was the 9th most common cancer overall (6th for women, 12th for men), but relatively less important in mortality terms – about the 20th most common cause of cancer death for both sexes.

An average of 375 cases was registered annually; 63% in females, 37% in males. The European age-standardized incidence rate (EASR) for malignant melanoma was significantly higher in females than in males, by about 49% (95% confidence interval 35 – 64%). In contrast, age-standardized mortality rates did not differ significantly between the sexes.

Estimated lifetime risks of developing malignant melanoma were about 1 in 97 for women, 1 in 150 for men. The risk of dying from melanoma of the skin before age 75 was about 1 in 770 for women, 1 in 800 for men. One to two deaths were recorded for every ten incident cases. Note that, in comparison with incidence rates, numbers of deaths were disproportionately high among men, as average survival rates were lower than in women (see section 10.3.1).

Table 5.14 Summary statistics, 1994 – 98: melanoma of skin

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	235	140	375	32	28	60
% of all malignant cancers	2.9	1.6	2.2	0.9	0.7	0.8
cumulative risk (0 – 74 yrs)%	1.0	0.7		0.1	0.1	
crude rate*	12.9	7.8		1.8	1.6	
world age-standardized rate*	10.1 ±0.6	6.5 ±0.5		1.2 ±0.2	1.2 ±0.2	
European age-standardized rate*	13.3 ±0.8	8.9 ±0.7		1.7 ±0.3	1.8 ±0.3	
mortality/incidence ratio	0.14	0.20	0.16			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.10. Leukaemia *ICD - 10: C91 - 95*

An average of 344 cases was registered annually; 42% in females, 58% in males. The European age-standardized incidence rate (EASR) was about 61% higher (95% confidence interval 46 – 77%) in males than females, mortality rates about 77% (55 – 101%) higher in males.

Estimated lifetime risks of developing leukaemia were about 1 in 170 for women, 1 in 100 for men. The risk of dying from leukaemia before age 75 was about 1 in 320 for women, 1 in 180 for men. Mortality/incidence ratios were moderately high, representing about six deaths for every ten incident cases.

The largest category (50%) of incident cases was that of lymphoid leukaemia, mainly acute lymphoblastic leukaemia in children and chronic lymphocytic leukaemia in older patients.

Table 5.15 Summary statistics, 1994 – 98: leukaemia

	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	145	199	344	89	120	209
% of total malignant cancers	1.8	2.2	2.0	2.6	3.0	2.8
cumulative risk (0 – 74 yrs)%	0.6	1.0		0.3	0.5	
crude rate*	8.0	11.0		4.9	6.7	
world age-standardized rate*	6.2 ±0.5	9.4 ±0.6		3.1 ±0.3	5.2 ±0.4	
European age-standardized rate*	7.7 ±0.6	12.4 ±0.8		4.3 ±0.4	7.7 ±0.6	
mortality/incidence ratio	0.61	0.60	0.61			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

Table 5.16 Leukaemia cases, 1994 – 98, by major ICD - 10 code

ICD -10	LEUKAEMIA TYPE	FEMALE				MALE			
		0 – 14 yrs		all ages		0 – 14 yrs		all ages	
		cases	%	cases	%	cases	%	cases	%
	all leukaemias	82		727		88		994	
C91	lymphoid	65	79.3	361	49.7	72	81.8	532	53.5
C92	myeloid	14	17.1	235	32.3	15	17.0	293	29.5
C93	monocytic	1	1.2	8	1.1	0	0.0	10	1.0
C94	other specified	1	1.2	26	3.6	0	0.0	35	3.5
C95	unspecified	1	1.2	97	13.3	1	1.1	124	12.5

5.11. Childhood cancers

5.11.1. Malignant childhood cancers *ICD - 10: C00 - C97*

Summary data are presented for children below 15 years of age, by ICD-10 sites/categories (malignant neoplasms only).

An average of 109 malignant cancers was registered annually in children (Table 5.17); 46% in females, 54% in males. Age-standardized incidence rates (EASRs) were about 12% higher (95% confidence interval 8 – 17%) in males than females. Although mortality rates appeared to be higher in males than females, total numbers of deaths were small and the difference was not statistically significant.

Estimated risks of developing malignant cancer before age 15 were about 1 in 550 for females, 1 in 490 for males. The risks of dying from malignant cancer during childhood were about 1 in 3120 for females, 1 in 2160 for males. On average, there were only two deaths from childhood cancer for every ten cases diagnosed. This reflects the generally good prognosis for childhood cancers, related in part to improvements in treatment, compared to malignant cancers as a whole.

Leukaemias (mainly acute lymphoblastic leukaemia) and malignant tumours of the brain, were the most frequent diagnoses in children. Leukaemias averaged 34 cases per year, equivalent to 31% of malignant cancers in children and 30% of ICCC neoplasms. Malignant brain tumours averaged 26 cases per year (24% of all malignant cancers).

Table 5.17 Summary statistics, 1994 – 98: all malignant cancers in children (0 – 14 years).

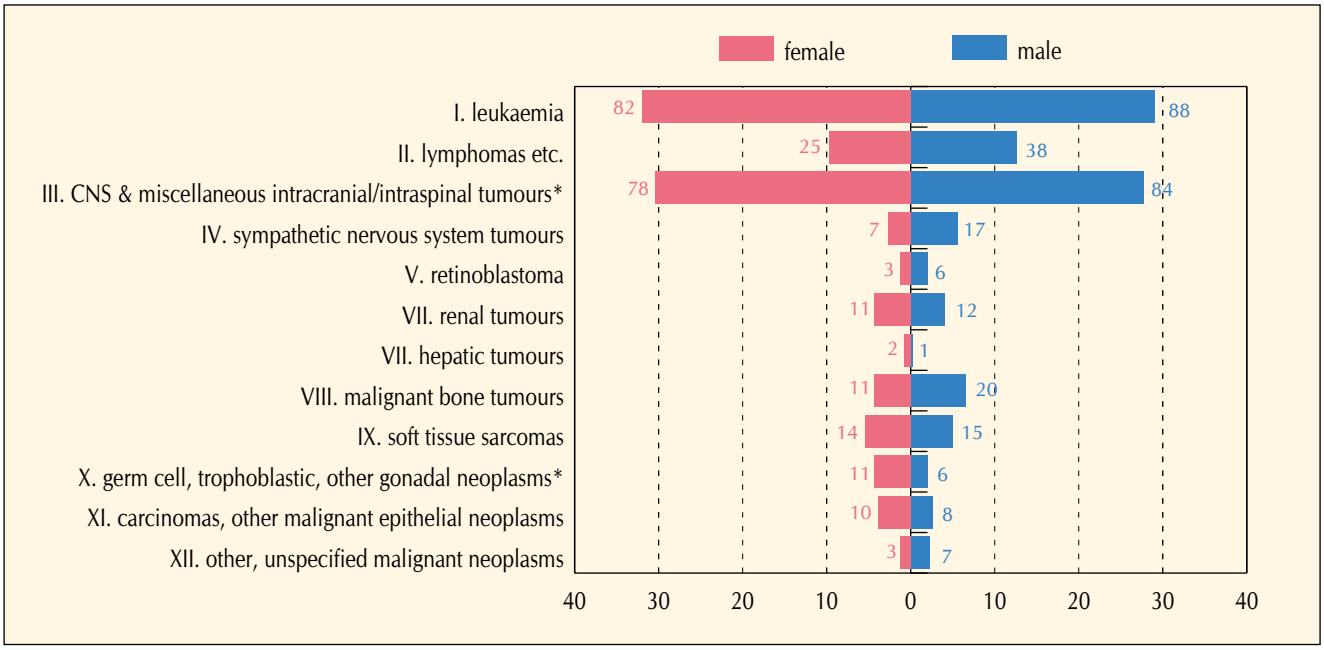
	INCIDENT CASES			DEATHS		
	female	male	total	female	male	total
cases or deaths per year	50	59	109	9	14	22
% of total malignant cancers	0.61	0.66	0.64	0.26	0.34	0.30
cumulative risk (0 – 74 yrs)%	0.18	0.21		0.03	0.05	
crude rate*	12.0	13.5		2.1	3.1	
world age-standardized rate*	12.6 ±1.6	14.1 ±1.6		2.2 ±0.7	3.1 ±0.8	
European age-standardized rate*	12.4 ±1.6	14.0 ±1.6		2.2 ±0.7	3.1 ±0.7	
mortality/incidence ratio	0.18	0.23	0.21			

* Rates (per 100000 persons per year) ±95% confidence intervals for age-standardized rates.

5.11.2. All neoplasms within ICCC classification *ICCC: I-XII*

In addition to malignant neoplasms, the ICCC classification also includes other intracranial and central nervous system tumours (benign and uncertain behaviour). Including non-invasive intracranial and CNS tumours increases the case total slightly, to 112 per year (ICCC classification, Figure 5.2). Total intracranial and CNS tumours averaged 32 cases per year (29% of ICCC neoplasms).

Figure 5.2 Childhood cancers (0 – 14 years), 1994 – 98: percentages and numbers of cases; by International Classification of Childhood Cancer (ICCC) groups.



*Note: groups III & X include some benign or unspecified intracranial or CNS tumours.

6. Age distribution of cases

6.1. All malignant cancers *ICD 10 C00 - C97*

Figure 6.1 Age distribution of new cases: all malignant cancers

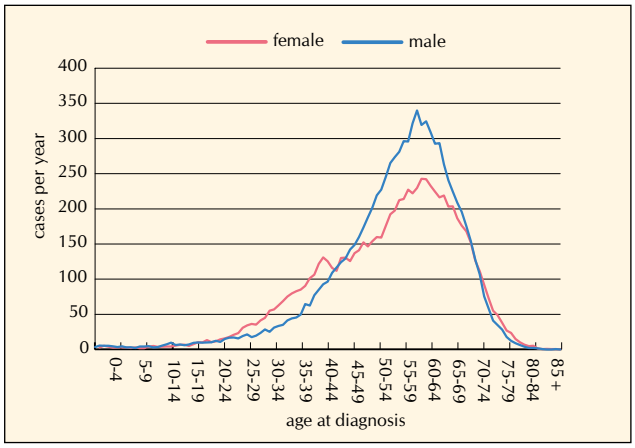
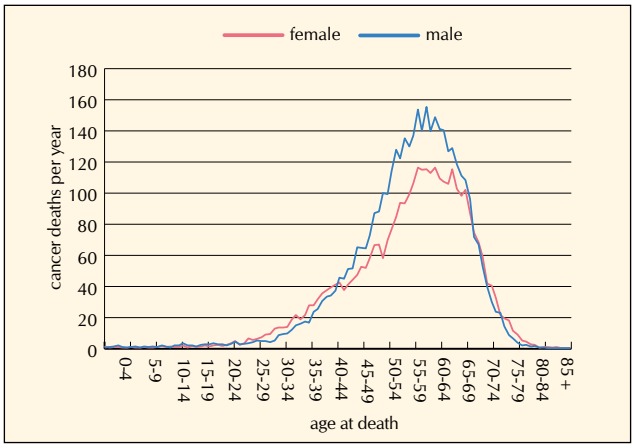


Figure 6.2 Age distribution of deaths: all malignant cancers



Cancer becomes more common with increasing age. Figure 6.1 and Figure 6.2 show the trend of cancer numbers and deaths for each year of age for all malignant cancers (ICD 10 C00-C97). The largest number of cases was in women aged 73 years of age and in men aged 72. The median age of diagnosis for women was 68, and for men, 69. The largest number of deaths was in women aged 72 and in men aged 74. The median age of death for both men and women was 71.

By age group, the largest number of cases for both sexes was in those aged 70 – 74 years (14.3% of the total for females, 17.9% for males) (Table 6.1). However, as the number of persons in each age group decreases with increasing age, a better measure of the risk at each age is given by the age-specific incidence rate (Table 6.2, Figure 6.3). The age-specific incidence rate increased throughout life, with its highest value (2.7 per 1000 in women and 5.0 per 1000 in men) in the oldest age group. The rate of increase in incidence rate was close to exponential from about age 20 onwards, with a doubling of risk for approximately every nine years of life.

Mortality from cancer also rose with age. The largest number of cancer deaths, as with cases, was in those aged 70 to 74 years. However, the age specific mortality rate rose more rapidly than that for incidence in the oldest age groups (Figure 6.4). The difference in age-dependence of incidence and mortality can be seen in Figure 6.5. Incidence rates begin to rise at a younger age than mortality, but the increasing incidence with age seems to plateau at age 80, while that for mortality continues to rise.

Table 6.1 Annual number of cases and deaths 1994 – 1998 (% of total): all malignant cancers

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	20 (0.2%)	24 (0.3%)	44 (0.3%)	3 (0.1%)	5 (0.1%)	8 (0.1%)
5 – 9	14 (0.2%)	16 (0.2%)	30 (0.2%)	2 (0.1%)	4 (0.1%)	6 (0.1%)
10 – 14	16 (0.2%)	19 (0.2%)	35 (0.2%)	3 (0.1%)	5 (0.1%)	9 (0.1%)
15 – 19	24 (0.3%)	36 (0.4%)	60 (0.4%)	5 (0.1%)	9 (0.2%)	13 (0.2%)
20 – 24	39 (0.5%)	42 (0.5%)	81 (0.5%)	6 (0.2%)	10 (0.3%)	16 (0.2%)
25 – 29	65 (0.8%)	58 (0.7%)	123 (0.7%)	10 (0.3%)	12 (0.3%)	22 (0.3%)
30 – 34	127 (1.6%)	90 (1.0%)	217 (1.3%)	21 (0.6%)	16 (0.4%)	38 (0.5%)
35 – 39	213 (2.6%)	114 (1.3%)	327 (1.9%)	43 (1.3%)	23 (0.6%)	66 (0.9%)
40 – 44	343 (4.2%)	185 (2.1%)	528 (3.1%)	80 (2.3%)	53 (1.3%)	134 (1.8%)
45 – 49	466 (5.7%)	299 (3.3%)	765 (4.5%)	126 (3.7%)	97 (2.4%)	223 (3.0%)
50 – 54	606 (7.4%)	500 (5.6%)	1105 (6.5%)	194 (5.6%)	179 (4.5%)	374 (5.0%)
55 – 59	665 (8.2%)	704 (7.9%)	1369 (8.0%)	221 (6.4%)	275 (6.9%)	497 (6.7%)
60 – 64	772 (9.5%)	1009 (11.3%)	1781 (10.4%)	299 (8.7%)	410 (10.2%)	710 (9.5%)
65 – 69	992 (12.2%)	1362 (15.2%)	2354 (13.8%)	416 (12.1%)	597 (14.9%)	1013 (13.6%)
70 – 74	1164 (14.3%)	1601 (17.9%)	2765 (16.2%)	550 (16.0%)	714 (17.8%)	1264 (17.0%)
75 – 79	1096 (13.4%)	1399 (15.6%)	2495 (14.6%)	550 (16.0%)	695 (17.3%)	1244 (16.7%)
80 – 84	886 (10.9%)	958 (10.7%)	1845 (10.8%)	503 (14.6%)	561 (14.0%)	1064 (14.3%)
85+	641 (7.9%)	528 (5.9%)	1169 (6.8%)	409 (11.9%)	344 (8.6%)	753 (10.1%)
all ages	8149 (100.0%)	8946 (100.0%)	17095 (100.0%)	3443 (100.0%)	4010 (100.0%)	7454 (100.0%)

Figure 6.3 Age-specific incidence rate (per 100000 per year): all malignant cancers

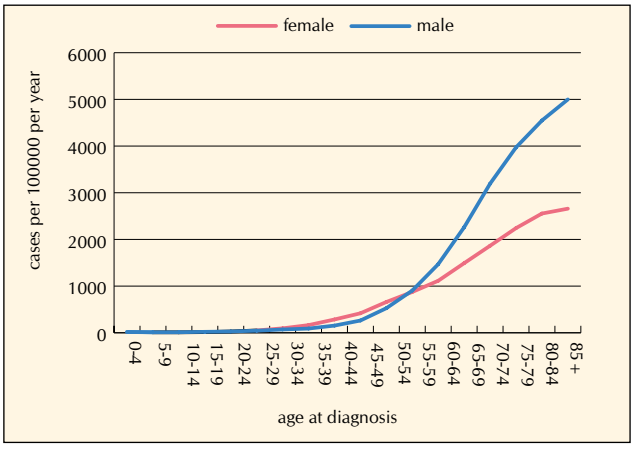


Figure 6.4 Age-specific mortality rate (per 100000 per year): all malignant cancers

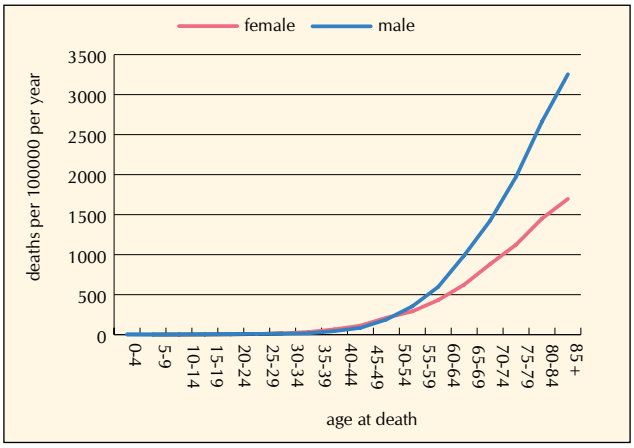
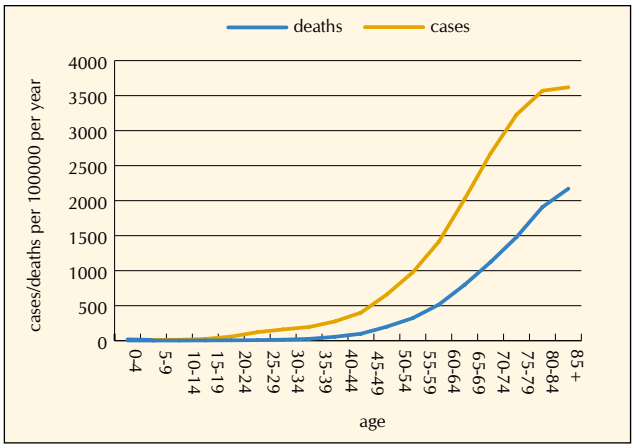


Table 6.2 Age-specific incidence and mortality rates (per 100000 per year): all malignant cancers

	CASES PER 100000 PER YEAR			DEATHS PER 100000 PER YEAR		
age	female	male	both sexes	female	male	both sexes
0 – 4	16.28	18.49	17.41	2.79	3.57	3.19
5 – 9	10.32	11.15	10.74	1.60	2.61	2.12
10 – 14	10.08	11.59	10.86	2.02	3.23	2.64
15 – 19	14.74	20.47	17.67	2.78	5.06	3.95
20 – 24	27.32	28.16	27.75	4.30	6.84	5.59
25 – 29	50.12	44.99	47.56	7.87	9.43	8.65
30 – 34	95.35	70.61	83.24	15.92	12.84	14.41
35 – 39	164.43	90.69	128.05	33.35	18.08	25.81
40 – 44	285.27	154.08	219.76	66.62	44.48	55.56
45 – 49	417.80	262.70	339.49	112.92	85.58	99.11
50 – 54	659.70	526.90	592.24	211.70	189.20	200.27
55 – 59	874.50	905.04	889.95	291.06	353.94	322.87
60 – 64	1114.13	1469.50	1291.08	432.31	597.47	514.55
65 – 69	1491.14	2260.36	1856.65	625.07	990.11	798.52
70 – 74	1864.53	3194.08	2456.68	881.48	1424.07	1123.14
75 – 79	2241.91	3971.27	2966.34	1124.64	1972.29	1479.72
80 – 84	2554.69	4547.78	3307.81	1450.85	2662.05	1908.52
85+	2658.86	4999.05	3372.47	1696.76	3254.49	2171.77
all ages	446.32	496.92	471.44	188.59	222.77	205.56

Figure 6.5 Age-specific incidence and mortality (per 100000 per year) for both sexes combined: all malignant cancers



6.2. Median age

A useful indicator of the distribution of cancer cases with age is the median age – the age before which half of the cancers are diagnosed. Figure 6.5 shows the median age of diagnosis for some common cancers. The median age for all cancers combined was 68 years for women and 69 for men, and a large number of cancers had a median age of around 70 for both men and women. Cancers affecting older patients were prostate (median age 74) and stomach (median age 73 for women and 69 for men), while cancer of the breast (median age 58 for women) and lymphoma (median age 61 for women and 56 for men) affected a younger age group than the majority of cancers.

Median ages at death were generally a few years greater than age at diagnosis, as would be expected (Figure 6.6).

Figure 6.5 Median age at diagnosis: common malignant cancers

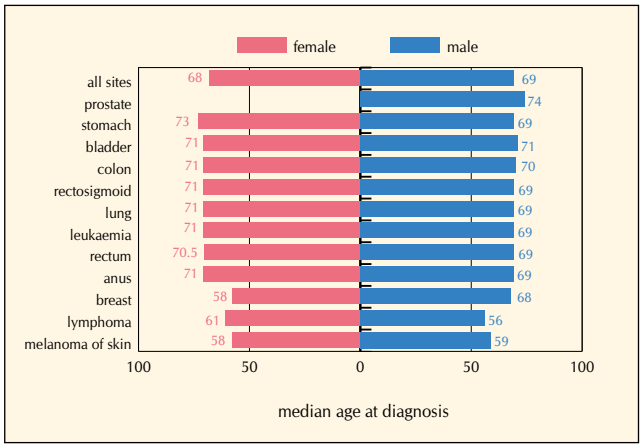
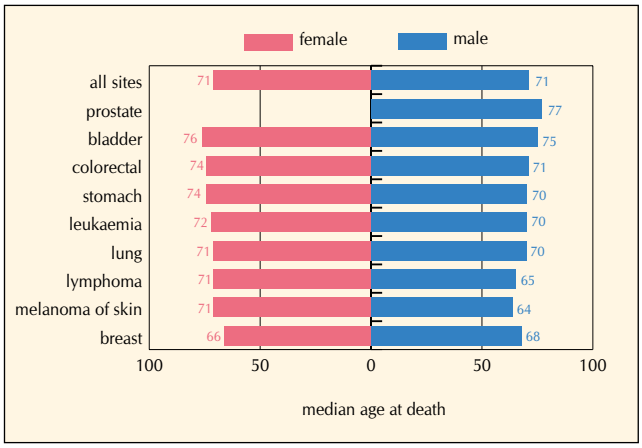


Figure 6.6 Median age at death: common malignant cancers



6.3. Percentage of patients aged under 65

Cancer is the largest single cause of death in the population under 65, and the main target of the National Cancer Strategy has been to reduce this premature cancer mortality by 15%.[15] Overall, 41% of cancers in women and 35% in men were diagnosed before age 65. As already noted, death from cancer affected a somewhat older population; 30% of cancer deaths in women and 27% in men were in those under 65. However, not all cancers affect the population under 65 equally (Figure 6.7).

The highest percentage of cancers diagnosed in the under 65s was for lymphoma (52% for women and 63% for men) and for breast cancer in women (62%), while the lowest percentages of younger patients were found for stomach and lung cancer, and particularly in prostate cancer (only 16% of patients were under 65).

The highest proportion of deaths in the under 65s was for melanoma; more significantly, however, almost half of the deaths from breast cancer, which was the commonest cause of death in women, occurred before 65 (Figure 6.8).

Figure 6.7 Percentage of cancers diagnosed in patients under 65: common malignant cancers

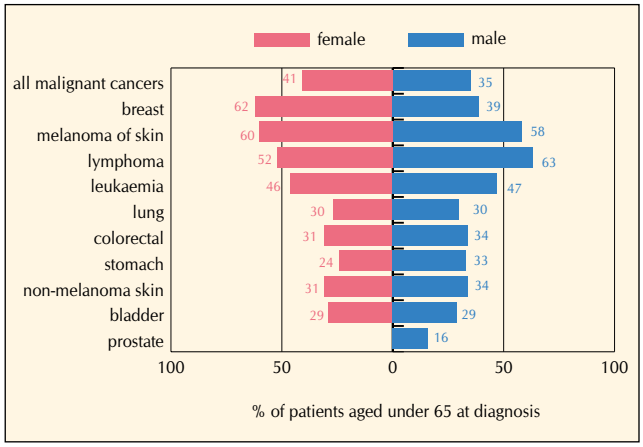
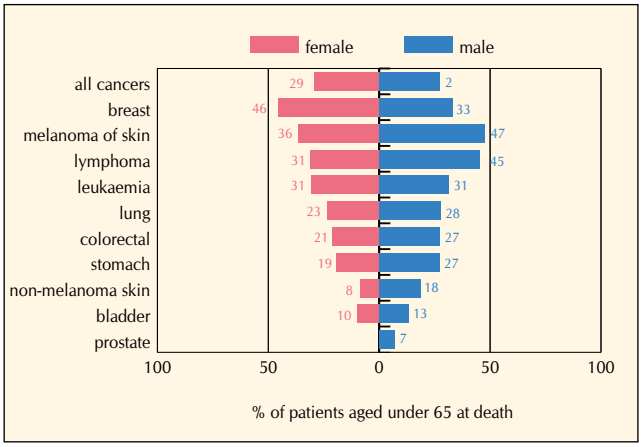


Figure 6.8 Percentage of patients dying before age 65: common malignant cancers



6.4. Colorectal cancer *ICD 10 C18 - C21*

Colorectal cancers were, after non-melanoma skin, the commonest cancers. The age-specific incidence rate rose smoothly with age for both sexes, with some decrease in older age groups. The largest number of cases for females was in the 75 – 79 year age group, while for males it was in the 70 – 74 year age group (Table 6.3, Figure 6.9, Figure 6.10).

Colorectal cancers made up a small proportion of all cancers up to age 40. In patients over 40 they made up about 10% of all cancers in men and 9% in women, with little change in this proportion with increasing age.

Table 6.3 Age distribution of cases and deaths: colorectal cancer

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
20 – 24	0 (0.0%)	0 (0.0%)	1 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
25 – 29	1 (0.2%)	2 (0.2%)	3 (0.2%)	0 (0.1%)	1 (0.2%)	1 (0.1%)
30 – 34	5 (0.6%)	5 (0.5%)	10 (0.6%)	2 (0.5%)	2 (0.4%)	4 (0.5%)
35 – 39	7 (0.9%)	7 (0.7%)	14 (0.8%)	2 (0.6%)	2 (0.3%)	4 (0.5%)
40 – 44	17 (2.3%)	16 (1.6%)	33 (1.9%)	7 (1.7%)	5 (1.0%)	12 (1.3%)
45 – 49	27 (3.6%)	37 (3.7%)	64 (3.7%)	8 (2.0%)	11 (2.2%)	20 (2.1%)
50 – 54	40 (5.3%)	55 (5.6%)	95 (5.5%)	16 (4.0%)	24 (4.6%)	40 (4.3%)
55 – 59	65 (8.6%)	87 (8.9%)	152 (8.8%)	21 (5.2%)	38 (7.3%)	59 (6.4%)
60 – 64	70 (9.4%)	127 (12.9%)	197 (11.4%)	29 (7.1%)	58 (11.2%)	87 (9.4%)
65 – 69	102 (13.7%)	168 (17.1%)	270 (15.6%)	43 (10.5%)	80 (15.4%)	123 (13.2%)
70 – 74	123 (16.4%)	177 (18.0%)	300 (17.3%)	66 (16.1%)	95 (18.4%)	162 (17.4%)
75 – 79	125 (16.7%)	156 (15.9%)	281 (16.2%)	68 (16.6%)	88 (17.0%)	156 (16.8%)
80 – 84	99 (13.2%)	97 (9.9%)	196 (11.3%)	77 (18.8%)	72 (13.8%)	149 (16.1%)
85+	67 (9.0%)	49 (5.0%)	116 (6.7%)	69 (16.9%)	41 (8.0%)	111 (11.9%)

Figure 6.9 Age-specific incidence rate (per 100000 per year): colorectal cancer

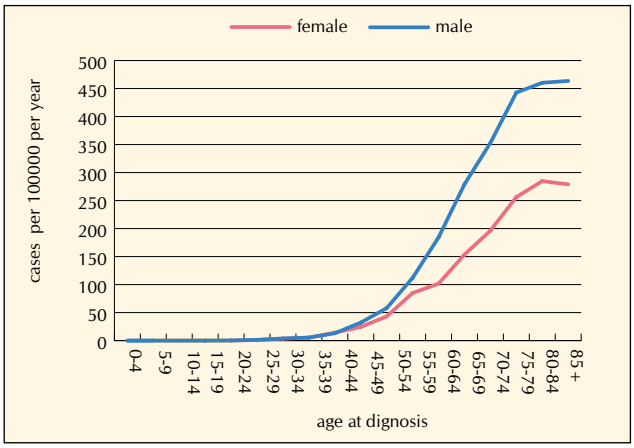
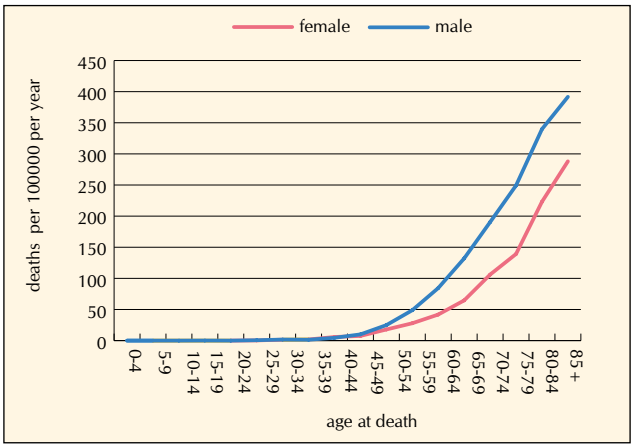


Figure 6.10 Age-specific mortality rate (per 100000 per year): colorectal cancer



6.5. Breast cancer *ICD 10 C50*

Breast cancers were, after non-melanoma skin, the commonest cancers in women. The largest number of cases for females was in the 50 – 54 year age group, and for males in the 70 – 74 year age group (Table 6.4). Breast cancers made up a high proportion of all cancers in younger women. One third of all cancers in women aged 45 to 49 were in the breast. After that age breast cancer incidence in women declined as a proportion of all cancers.

The age-specific incidence rate in women rose rapidly between age 30 and 59, and remained fairly constant at ages from 60 upwards with some decrease at the older age groups (Figure 6.11).

Breast cancer mortality had an age-dependence similar to that of incidence, with a fairly constant mortality rate between age 50 and 75. However, in contrast to incidence, mortality rose rapidly with age in patients of 75 years and over (Figure 6.12).

Table 6.4 Age distribution of cases and deaths: breast cancer

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
20 – 24	1 (0.1%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
25 – 29	8 (0.5%)	0 (0.0%)	8 (0.5%)	1 (0.1%)	0 (0.0%)	1 (0.1%)
30 – 34	27 (1.7%)	0 (0.0%)	27 (1.7%)	4 (0.6%)	0 (0.0%)	4 (0.6%)
35 – 39	71 (4.5%)	0 (1.6%)	71 (4.4%)	13 (2.0%)	0 (0.0%)	13 (2.0%)
40 – 44	134 (8.5%)	1 (6.3%)	135 (8.4%)	24 (3.8%)	0 (3.7%)	25 (3.8%)
45 – 49	179 (11.3%)	0 (3.1%)	179 (11.2%)	49 (7.7%)	0 (3.7%)	49 (7.7%)
50 – 54	201 (12.7%)	1 (6.3%)	202 (12.6%)	63 (10.0%)	0 (7.4%)	64 (10.0%)
55 – 59	188 (11.9%)	1 (10.9%)	190 (11.9%)	67 (10.6%)	0 (3.7%)	67 (10.5%)
60 – 64	169 (10.7%)	1 (10.9%)	171 (10.7%)	68 (10.8%)	1 (14.8%)	69 (10.8%)
65 – 69	168 (10.6%)	2 (15.6%)	170 (10.6%)	70 (11.1%)	1 (18.5%)	71 (11.2%)
70 – 74	155 (9.8%)	3 (21.9%)	158 (9.9%)	74 (11.7%)	1 (22.2%)	75 (11.8%)
75 – 79	133 (8.4%)	1 (10.9%)	135 (8.4%)	75 (11.8%)	0 (3.7%)	75 (11.7%)
80 – 84	90 (5.7%)	1 (6.3%)	91 (5.7%)	63 (10.0%)	1 (11.1%)	64 (10.0%)
85+	59 (3.7%)	1 (6.3%)	60 (3.7%)	62 (9.8%)	1 (11.1%)	63 (9.8%)
all ages	1584	13	1597	634	5	640

Figure 6.11 Age-specific incidence rate (per 100000 per year): breast cancer

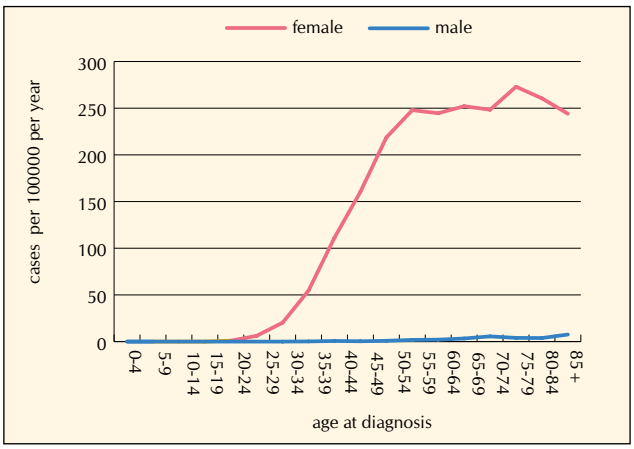
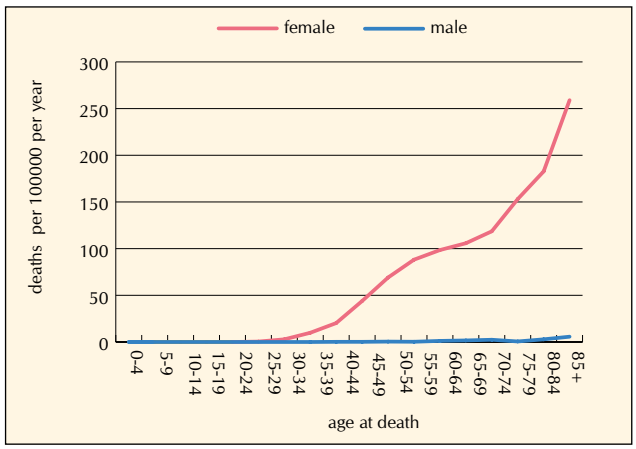


Figure 6.12 Age-specific mortality rate (per 100000 per year): breast cancer



6.6. Lung cancer *ICD10 C34*

Lung cancers were uncommon before age 40. The largest number of cases and deaths was in patients aged 70 to 74 years. Almost 20% of all lung cancer cases and deaths occurred in this five-year age group (Table 6.5)

The age-specific incidence and mortality rates had quite a narrow range of distribution compared to most other cancers (Figure 6.13, Figure 6.14), with a maximum value at age 75 to 79 (with the exception of death in men). Incidence and mortality in men in this age group was close to 5 per 1000 per year.

Table 6.5 Age distribution of cases and deaths: lung cancer

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.1%)	0 (0.0%)	1 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
20 – 24	1 (0.1%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
25 – 29	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
30 – 34	1 (0.2%)	1 (0.1%)	2 (0.1%)	1 (0.1%)	1 (0.1%)	1 (0.1%)
35 – 39	2 (0.4%)	4 (0.4%)	6 (0.4%)	2 (0.5%)	2 (0.2%)	5 (0.3%)
40 – 44	9 (1.8%)	10 (1.0%)	19 (1.3%)	8 (1.5%)	8 (0.8%)	15 (1.0%)
45 – 49	10 (2.0%)	20 (2.1%)	30 (2.1%)	11 (2.1%)	17 (1.7%)	28 (1.9%)
50 – 54	25 (4.8%)	58 (5.9%)	82 (5.6%)	23 (4.5%)	47 (4.8%)	70 (4.7%)
55 – 59	33 (6.5%)	79 (8.1%)	112 (7.6%)	29 (5.6%)	76 (7.8%)	105 (7.0%)
60 – 64	55 (10.8%)	124 (12.7%)	178 (12.0%)	48 (9.2%)	118 (12.1%)	166 (11.1%)
65 – 69	85 (16.7%)	194 (19.9%)	278 (18.8%)	82 (15.8%)	183 (18.7%)	265 (17.7%)
70 – 74	107 (21.1%)	199 (20.5%)	306 (20.7%)	108 (20.6%)	188 (19.3%)	296 (19.8%)
75 – 79	98 (19.4%)	157 (16.2%)	255 (17.3%)	103 (19.8%)	174 (17.8%)	277 (18.5%)
80 – 84	57 (11.3%)	91 (9.4%)	148 (10.0%)	71 (13.5%)	116 (11.8%)	186 (12.4%)
85+	24 (4.8%)	36 (3.7%)	60 (4.1%)	35 (6.8%)	47 (4.8%)	82 (5.5%)
All ages	507 (100.0%)	972 (100.0%)	1479 (100.0%)	521	976	1497

Figure 6.13 Age-specific incidence rate (per 100000 per year): lung cancer

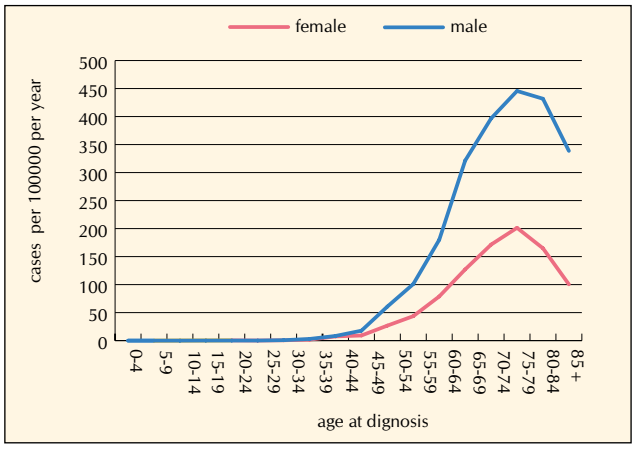
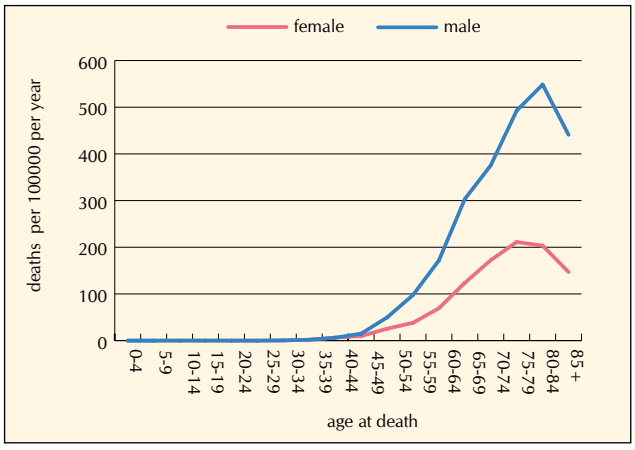


Figure 6.14 Age-specific mortality rate (per 100000 per year): lung cancer



6.7. Prostate cancer *ICD 10 C67*

Prostate cancer affected mainly older men. Cases were rare before age 50 and deaths rare before 60. The largest number of cases was in men aged 70 to 74 and the largest number of deaths in those aged 80 to 84 (Table 6.6). The difference in age distribution of cases and deaths (by comparison with, for instance lung cancer) suggests that, for the majority of men, there may be a long interval between diagnosis and death.

The age-specific incidence and mortality rates rose consistently and rapidly with age, with the highest rates for both in the oldest age group, where incidence rates were close to one per 100 per year (Figure 6.15, Figure 6.16).

Table 6.6 Age distribution of cases and deaths: prostate cancer

AGE	CASES	DEATHS
0 – 4	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.0%)	0 (0.0%)
20 – 24	0 (0.0%)	0 (0.0%)
25 – 29	0 (0.0%)	0 (0.0%)
30 – 34	0 (0.0%)	0 (0.0%)
35 – 39	0 (0.0%)	0 (0.0%)
40 – 44	1 (0.1%)	0 (0.0%)
45 – 49	5 (0.4%)	2 (0.4%)
50 – 54	23 (2.0%)	2 (0.5%)
55 – 59	46 (4.0%)	7 (1.4%)
60 – 64	108 (9.4%)	25 (4.9%)
65 – 69	186 (16.2%)	45 (8.8%)
70 – 74	266 (23.1%)	95 (18.5%)
75 – 79	245 (21.3%)	116 (22.5%)
80 – 84	175 (15.2%)	124 (24.2%)
85+	96 (8.4%)	96 (18.7%)
All ages	1150 (100.0%)	514

Figure 6.15 Age-specific incidence rate (per 100000 per year): prostate cancer

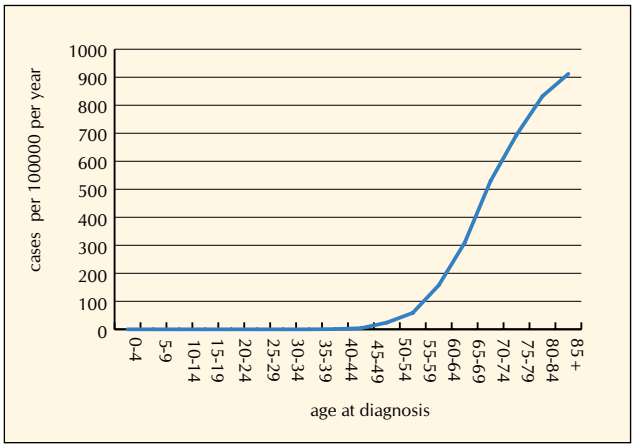
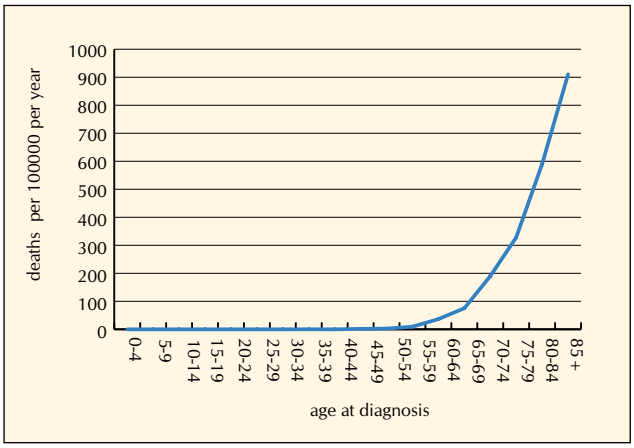


Figure 6.16 Age-specific mortality rate (per 100000 per year): prostate cancer



6.8. Lymphoma *ICD 10 C81-C85*

The age distribution of lymphoma was strikingly different from that of cancers in general, with some cases occurring at all ages and a gradual increase in risk throughout life, from the earliest age (Table 6.7). The largest number of cases in women was in the age group 70 to 74 and in men aged 65 to 69. However, cases numbers varied very little with age between 45 and 80 years.

The mortality figures were similar, although deaths were very uncommon in the first two decades of life.

The age-specific incidence rate rose with age throughout life, with the most rapid increase around age 45 to 50 (Figure 6.17). A similar increase in mortality can be seen in patients aged 55 to 59 (Figure 6.18).

Table 6.7 Age distribution of cases and deaths: lymphoma

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	1 (0.4%)	1 (0.4%)	2 (0.4%)	0 (0.0%)	0 (0.2%)	0 (0.1%)
5 – 9	1 (0.5%)	2 (0.9%)	3 (0.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	3 (1.2%)	4 (1.7%)	7 (1.5%)	0 (0.4%)	1 (0.5%)	1 (0.4%)
15 – 19	5 (2.3%)	9 (3.4%)	14 (2.9%)	0 (0.4%)	1 (1.1%)	2 (0.8%)
20 – 24	7 (3.0%)	7 (2.6%)	13 (2.8%)	0 (0.0%)	2 (1.7%)	2 (0.9%)
25 – 29	7 (3.1%)	7 (2.7%)	14 (2.9%)	1 (1.1%)	2 (1.2%)	3 (1.2%)
30 – 34	10 (4.3%)	12 (4.7%)	22 (4.5%)	2 (1.7%)	3 (2.2%)	5 (2.0%)
35 – 39	9 (3.9%)	13 (5.2%)	22 (4.6%)	1 (1.0%)	3 (2.3%)	4 (1.7%)
40 – 44	8 (3.5%)	15 (5.7%)	22 (4.7%)	3 (2.5%)	5 (4.0%)	8 (3.3%)
45 – 49	11 (5.0%)	19 (7.4%)	30 (6.3%)	3 (3.1%)	7 (5.4%)	10 (4.4%)
50 – 54	17 (7.6%)	23 (9.2%)	40 (8.5%)	7 (6.7%)	9 (7.0%)	16 (6.8%)
55 – 59	18 (8.1%)	24 (9.3%)	42 (8.7%)	7 (6.5%)	12 (9.6%)	19 (8.2%)
60 – 64	20 (9.2%)	24 (9.5%)	45 (9.3%)	8 (7.6%)	13 (10.4%)	21 (9.2%)
65 – 69	27 (12.0%)	31 (12.1%)	58 (12.1%)	13 (12.2%)	17 (13.3%)	30 (12.8%)
70 – 74	30 (13.7%)	24 (9.4%)	54 (11.4%)	18 (17.6%)	19 (14.7%)	37 (16.0%)
75 – 79	22 (10.0%)	22 (8.7%)	44 (9.3%)	17 (16.6%)	18 (13.6%)	35 (15.0%)
80 – 84	17 (7.7%)	14 (5.3%)	31 (6.4%)	14 (13.4%)	11 (8.8%)	25 (10.9%)
85+	10 (4.5%)	5 (2.0%)	15 (3.1%)	10 (9.2%)	5 (4.0%)	15 (6.3%)
All ages	222 (100.0%)	256 (100.0%)	478 (100.0%)	105 (100.0%)	129 (100.0%)	234 (100.0%)

Figure 6.17 Age-specific incidence rate (per 100000 per year): lymphoma

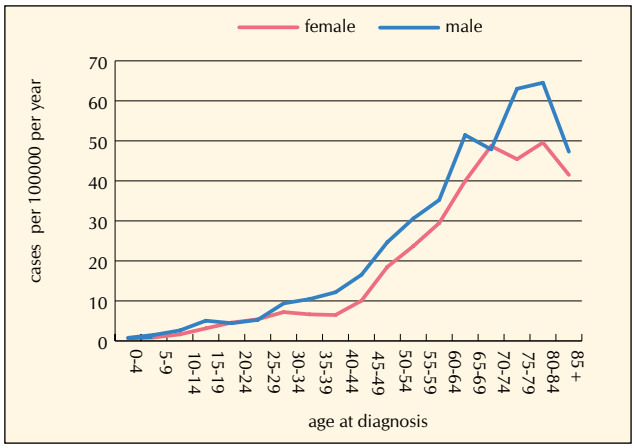
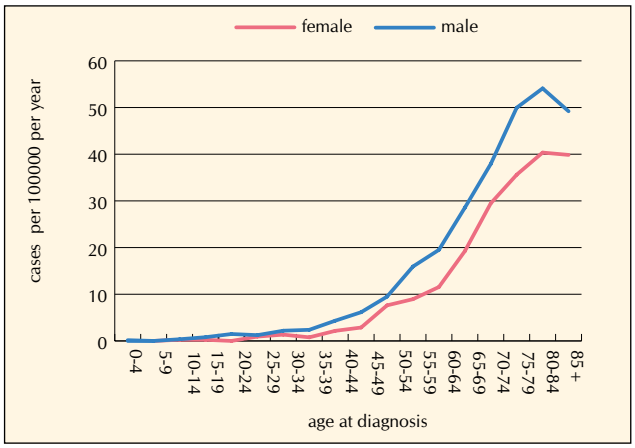


Figure 6.18 Age-specific mortality rate (per 100000 per year): lymphoma



6.9. Stomach cancer *ICD 10 C16*

Stomach cancer was predominantly a disease of the older patient, with the largest number of cases and deaths in the 70 to 74 year age group (Table 6.8).

The age-specific incidence rate was similar for men and women, rising rapidly after age 50, with some evidence of a flattening in the rate of increase in the oldest age groups (Figure 6.19). The pattern of mortality was similar, but with a continuing increase in age up to the oldest age group (Figure 6.20).

Table 6.8 Age distribution of cases and deaths: stomach cancer

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
20 – 24	0 (0.1%)	0 (0.1%)	0 (0.1%)	0 (0.1%)	0 (0.1%)	0 (0.1%)
25 – 29	0 (0.1%)	0 (0.1%)	0 (0.1%)	0 (0.0%)	0 (0.1%)	0 (0.1%)
30 – 34	1 (0.3%)	2 (0.7%)	3 (0.6%)	1 (0.5%)	1 (0.3%)	2 (0.4%)
35 – 39	3 (1.5%)	3 (0.9%)	5 (1.2%)	1 (0.9%)	2 (0.8%)	3 (0.9%)
40 – 44	4 (2.1%)	6 (1.9%)	9 (2.0%)	3 (1.8%)	3 (1.1%)	5 (1.4%)
45 – 49	5 (3.1%)	11 (3.6%)	16 (3.4%)	3 (1.9%)	5 (2.3%)	8 (2.1%)
50 – 54	6 (3.6%)	15 (5.2%)	22 (4.6%)	5 (3.1%)	10 (4.2%)	15 (3.7%)
55 – 59	8 (4.4%)	27 (9.1%)	34 (7.3%)	6 (4.1%)	19 (8.1%)	25 (6.5%)
60 – 64	15 (8.7%)	33 (11.1%)	48 (10.2%)	11 (7.0%)	25 (10.5%)	36 (9.1%)
65 – 69	23 (13.2%)	51 (17.3%)	74 (15.8%)	14 (9.2%)	38 (16.1%)	52 (13.3%)
70 – 74	34 (19.4%)	48 (16.3%)	82 (17.4%)	29 (18.5%)	39 (16.7%)	68 (17.4%)
75 – 79	24 (14.0%)	48 (16.4%)	73 (15.5%)	23 (14.9%)	39 (16.4%)	62 (15.8%)
80 – 84	30 (17.1%)	34 (11.5%)	64 (13.6%)	33 (21.1%)	35 (14.7%)	68 (17.3%)
85+	22 (12.4%)	17 (5.8%)	39 (8.3%)	27 (16.9%)	21 (8.8%)	47 (12.0%)
All ages	174 (100.0%)	295 (100.0%)	469 (100.0%)	157 (100.0%)	235 (100.0%)	392 (100.0%)

Figure 6.19 Age-specific incidence rate (per 100000 per year): stomach cancer

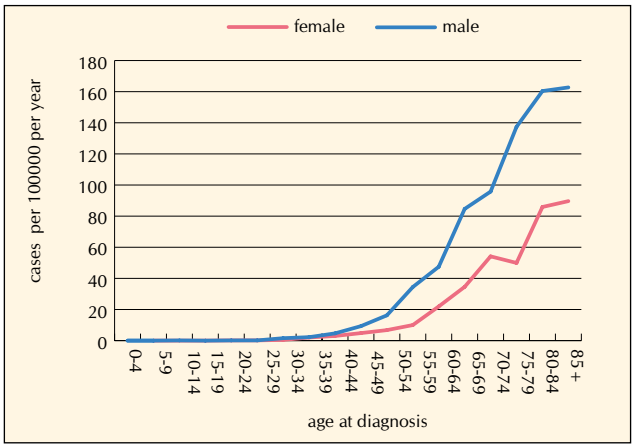
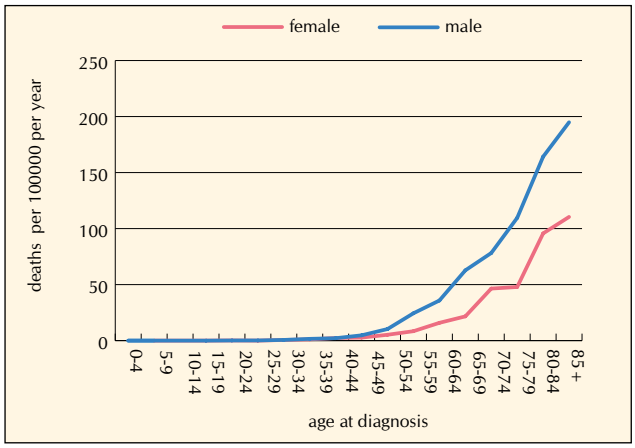


Figure 6.20 Age-specific mortality rate (per 100000 per year): stomach cancer



6.10. Bladder cancer *ICD10 C61*

The largest number of cases of bladder cancer was in patients aged 70 to 74, both male and female (Table 6.9). The largest number of deaths occurred in the next oldest age group (75 to 79).

The age-specific incidence and mortality patterns were similar in men and women, although at a lower rate for women, with a rapid increase in rate from age 50 up to the oldest age group (Figure 6.21, Figure 6.22).

Table 6.9 Age distribution of cases and deaths: bladder cancer

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	0 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
20 – 24	0 (0.0%)	1 (0.2%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
25 – 29	0 (0.0%)	1 (0.3%)	1 (0.2%)	0 (0.0%)	0 (0.4%)	0 (0.2%)
30 – 34	0 (0.2%)	2 (0.5%)	2 (0.4%)	0 (0.4%)	0 (0.0%)	0 (0.1%)
35 – 39	2 (1.6%)	4 (1.1%)	6 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
40 – 44	4 (2.8%)	3 (1.0%)	7 (1.5%)	1 (1.1%)	1 (0.7%)	1 (0.8%)
45 – 49	6 (4.4%)	9 (2.8%)	15 (3.2%)	1 (1.1%)	1 (1.1%)	2 (1.1%)
50 – 54	4 (3.1%)	19 (5.7%)	23 (5.0%)	0 (0.4%)	2 (2.0%)	2 (1.4%)
55 – 59	8 (6.6%)	27 (8.1%)	35 (7.7%)	2 (2.9%)	4 (3.4%)	5 (3.2%)
60 – 64	13 (10.0%)	31 (9.4%)	44 (9.6%)	2 (4.0%)	7 (6.0%)	9 (5.4%)
65 – 69	18 (14.1%)	48 (14.6%)	66 (14.4%)	6 (11.4%)	12 (11.0%)	19 (11.1%)
70 – 74	25 (19.5%)	61 (18.7%)	86 (19.0%)	10 (18.7%)	18 (16.1%)	28 (17.0%)
75 – 79	19 (14.8%)	61 (18.7%)	80 (17.6%)	11 (19.4%)	27 (24.1%)	38 (22.6%)
80 – 84	16 (12.8%)	37 (11.3%)	53 (11.7%)	11 (20.9%)	23 (20.2%)	34 (20.4%)
85 +	13 (10.0%)	25 (7.6%)	38 (8.2%)	11 (19.8%)	17 (15.1%)	28 (16.6%)
All ages	128 (100.0%)	328 (100.0%)	456 (100.0%)	55 (100.0%)	113 (100.0%)	167 (100.0%)

Figure 6.21 Age-specific incidence rate (per 100000 per year): bladder cancer

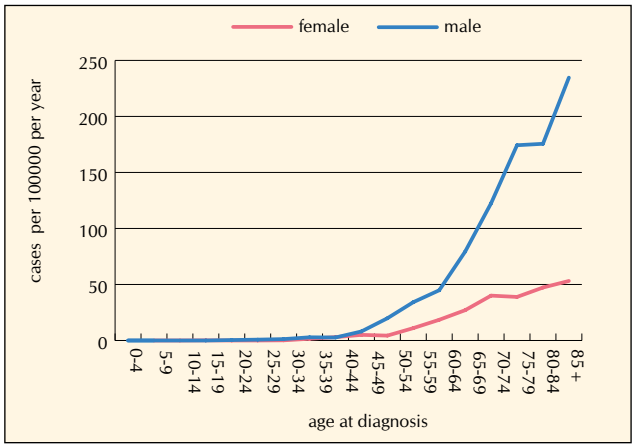
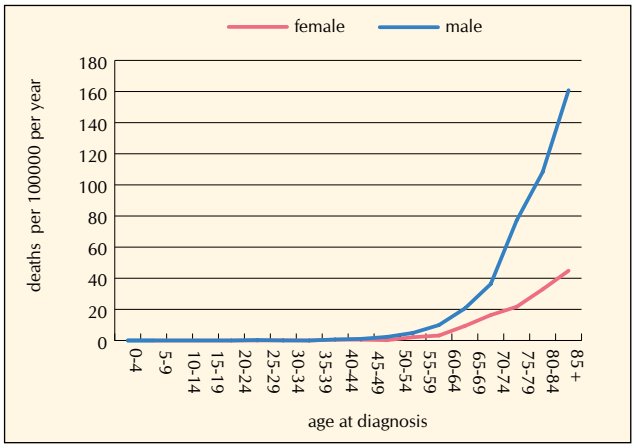


Figure 6.22 Age-specific mortality rate (per 100000 per year): bladder cancer



6.11. Leukaemia *ICD 10 C91 - C95*

The age distribution of leukaemia cases was unique (Table 6.10). There were a small number of cases in children, mainly in those aged under 5, and between 5 and 10 cases per year in each age group up to about age 54. The largest number of cases in women was in those aged 75 to 79 and for men in those aged 70 to 74. The age distribution of deaths was similar, but with proportionately fewer deaths in children.

The age-specific incidence (Figure 6.23) rates showed the same U-shaped curve, with higher incidence at the extreme of life. The mortality rates (Figure 6.24), on the other hand, showed a fairly typical exponential rise with age.

Table 6.10 Age distribution of cases and deaths: leukaemia

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	8 (5.6%)	10 (4.8%)	18 (5.2%)	1 (0.9%)	2 (1.3%)	2 (1.1%)
5 – 9	4 (3.0%)	4 (2.1%)	9 (2.5%)	0 (0.4%)	1 (1.0%)	2 (0.8%)
10 – 14	4 (2.6%)	4 (1.9%)	8 (2.2%)	1 (1.3%)	1 (1.0%)	2 (1.1%)
15 – 19	3 (2.3%)	5 (2.3%)	8 (2.3%)	2 (1.8%)	2 (1.5%)	3 (1.6%)
20 – 24	3 (2.2%)	3 (1.6%)	6 (1.9%)	2 (2.7%)	2 (1.8%)	5 (2.2%)
25 – 29	2 (1.5%)	3 (1.5%)	5 (1.5%)	1 (1.1%)	2 (1.8%)	3 (1.5%)
30 – 34	3 (1.8%)	4 (2.1%)	7 (2.0%)	2 (1.8%)	2 (1.5%)	3 (1.6%)
35 – 39	3 (2.3%)	4 (2.2%)	8 (2.3%)	2 (1.8%)	2 (1.5%)	3 (1.6%)
40 – 44	5 (3.3%)	7 (3.6%)	12 (3.5%)	2 (2.5%)	2 (1.3%)	4 (1.8%)
45 – 49	5 (3.7%)	6 (3.1%)	12 (3.4%)	3 (3.4%)	3 (2.3%)	6 (2.8%)
50 – 54	9 (6.1%)	9 (4.6%)	18 (5.2%)	4 (4.0%)	4 (3.2%)	7 (3.5%)
55 – 59	9 (6.1%)	11 (5.5%)	20 (5.8%)	3 (3.6%)	5 (4.3%)	8 (4.0%)
60 – 64	8 (5.6%)	23 (11.4%)	31 (8.9%)	5 (5.4%)	11 (8.8%)	15 (7.4%)
65 – 69	17 (11.4%)	23 (11.6%)	40 (11.5%)	9 (9.9%)	16 (13.3%)	25 (11.8%)
70 – 74	18 (12.7%)	31 (15.5%)	49 (14.3%)	14 (15.3%)	21 (17.8%)	35 (16.7%)
75 – 79	20 (13.5%)	22 (10.9%)	41 (12.0%)	14 (15.7%)	18 (14.6%)	32 (15.1%)
80–84	16 (10.7%)	20 (10.3%)	36 (10.5%)	14 (15.5%)	15 (12.3%)	29 (13.7%)
85 +	8 (5.5%)	10 (4.9%)	18 (5.2%)	11 (12.8%)	13 (10.6%)	24 (11.6%)
All ages	145 (100.0%)	199 (100.0%)	344 (100.0%)	89 (100.0%)	120 (100.0%)	209 (100.0%)

Figure 6.23 Age-specific incidence rate (per 100000 per year): leukaemia

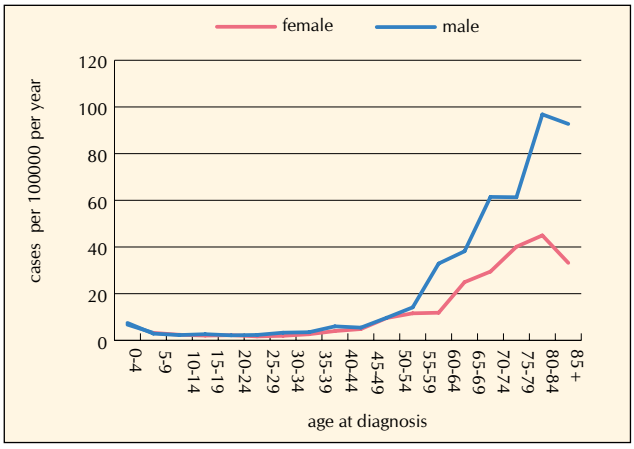
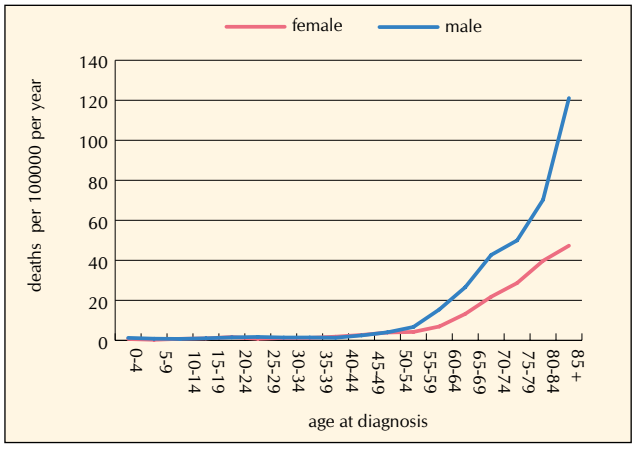


Figure 6.24 Age-specific mortality rate (per 100000 per year): leukaemia



6.12. Melanoma of skin *ICD10 C43*

Melanoma was rare in children but from early adulthood there were a significant number of cases in every age group, with only a slight increase in case numbers with increasing age (Table 6.11). Deaths were much less common and tended to be confined to the older age groups.

The age-specific incidence rate showed a gradual but steady increase from age 10 in girls and 15 in boys, with the rate in women remaining higher than that in men up to age 70 (Figure 6.25). Mortality was very low up to age 40, but unlike incidence, the rates for men and women were almost identical at all ages (Figure 6.26).

Table 6.11 Age distribution of cases and deaths: melanoma of skin

	CASES			DEATHS		
age	female	male	both sexes	female	male	both sexes
0 – 4	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
5 – 9	0 (0.1%)	0 (0.0%)	0 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10 – 14	1 (0.3%)	0 (0.3%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
15 – 19	3 (1.3%)	1 (0.9%)	4 (1.1%)	0 (0.0%)	0 (0.7%)	0 (0.3%)
20 – 24	7 (2.9%)	3 (2.3%)	10 (2.7%)	0 (0.0%)	0 (0.7%)	0 (0.3%)
25 – 29	11 (4.7%)	5 (3.9%)	16 (4.4%)	1 (1.9%)	1 (2.8%)	1 (2.3%)
30 – 34	12 (4.9%)	9 (6.3%)	20 (5.4%)	0 (0.6%)	1 (2.1%)	1 (1.3%)
35 – 39	14 (5.9%)	6 (4.0%)	19 (5.2%)	1 (3.1%)	1 (2.1%)	2 (2.6%)
40 – 44	16 (6.8%)	9 (6.3%)	25 (6.6%)	2 (4.9%)	2 (6.4%)	3 (5.6%)
45 – 49	17 (7.4%)	10 (7.3%)	28 (7.4%)	2 (5.6%)	2 (5.7%)	3 (5.6%)
50 – 54	22 (9.4%)	13 (9.0%)	35 (9.2%)	2 (6.8%)	3 (9.2%)	5 (7.9%)
55 – 59	17 (7.3%)	10 (7.4%)	28 (7.4%)	3 (8.0%)	3 (10.6%)	6 (9.2%)
60 – 64	22 (9.5%)	15 (10.7%)	37 (9.9%)	2 (5.6%)	2 (7.1%)	4 (6.3%)
65 – 69	20 (8.7%)	12 (8.4%)	32 (8.6%)	4 (11.1%)	4 (12.8%)	7 (11.9%)
70 – 74	21 (8.9%)	15 (10.8%)	36 (9.7%)	5 (15.4%)	3 (9.2%)	8 (12.5%)
75 – 79	23 (10.0%)	17 (11.8%)	40 (10.7%)	5 (16.0%)	4 (12.8%)	9 (14.5%)
80 – 84	17 (7.2%)	8 (5.7%)	25 (6.6%)	3 (9.9%)	3 (11.3%)	6 (10.6%)
85+	11 (4.9%)	7 (5.0%)	18 (4.9%)	4 (11.1%)	2 (6.4%)	5 (8.9%)
All ages	235 (100.0%)	140 (100.0%)	375 (100.0%)	32 (100.0%)	28 (100.0%)	61 (100.0%)

Figure 6.25 Age-specific incidence rate (per 100000 per year): melanoma of skin

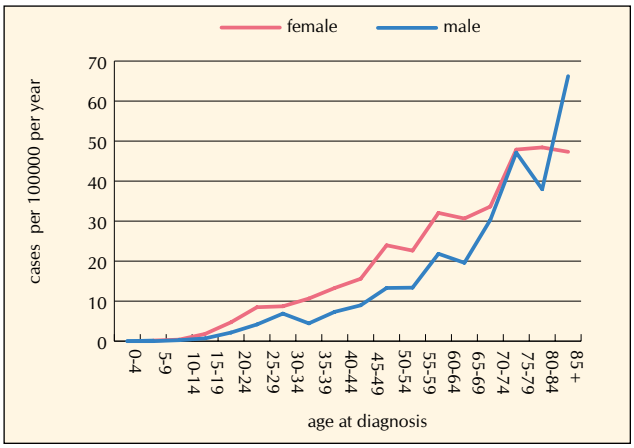
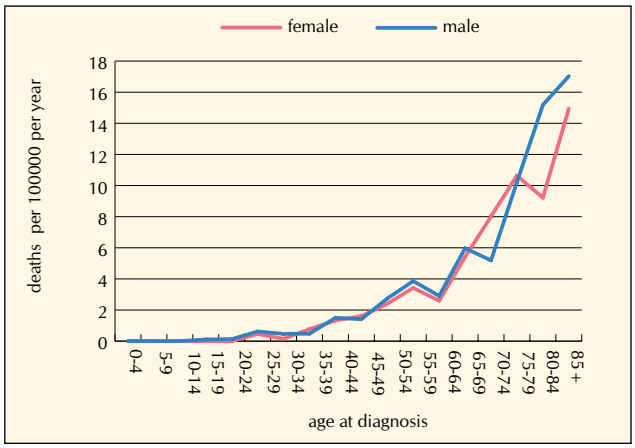


Figure 6.26 Age-specific mortality rate (per 100000 per year): melanoma of skin



7. Time trends in age-standardised incidence and mortality rates 1994–1998

7.1. Introduction

This chapter describes changes in incidence and mortality between 1994 and 1998 for all cancers combined and for a number of individual cancers. Information is given on case and death numbers, and age-standardised rates for each year from 1994 to 1998. Estimates of the annual percentage change in incidence and mortality over this five year period, with confidence limits for these estimates, are also given.

7.2. Summary

Summary details of the annual percentage changes in the European age-standardised incidence (EASIR) and mortality (EASMR) rates within three broad age categories (0 – 85+, 0 – 64, 65+) are presented below for specific sites. These are

- all cancers
- all cancers excluding non-melanoma skin cancer (NMS)
- colorectal cancer
- breast cancer
- lung cancer
- prostate cancer
- lymphoma
- stomach cancer
- bladder cancer
- leukaemia
- melanoma of skin.

7.2.1. Incidence

In men, the upward trends in lymphoma and prostate cancers in all age groups were statistically significant; the greater use of PSA testing may have influenced the latter result (Figure 7.1). These findings were also observed in men under 65 years, who also had a statistically significant increase in skin melanomas (Figure 7.2). A significant increase in prostate cancer rates was also recorded in men 65 and over, while stomach cancer rates had a significant downward trend in this group (Figure 7.3).

In women, breast cancer, as well as all cancers combined, increased significantly, while rates for melanoma of skin fell over the same period of time.

7.2.2. Mortality

Bladder cancer showed a statistically significant downward trend in men and, in women, breast and stomach cancer rates also fell significantly (Figure 7.4). By contrast, mortality from melanoma of the skin rose over the same period of time. However, when women were divided into those under (Figure 7.5) and over (Figure 7.6) 65 years of age, there were no statistically significant trends for any cancer site for either of these groups. In men under 65 years of age lymphoma mortality increased, while that for colorectal cancer and for all cancers decreased.

Figure 7.1 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: all age groups

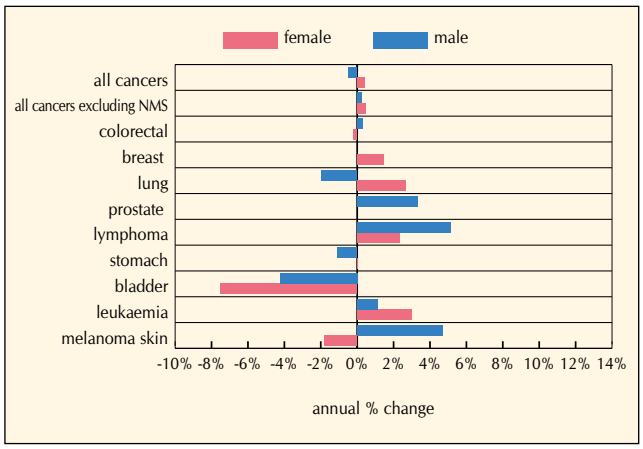


Figure 7.2 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: patients under 65

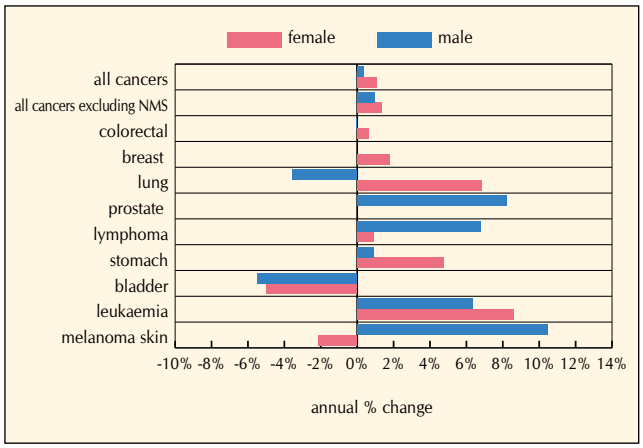


Figure 7.3 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: patients 65 and over

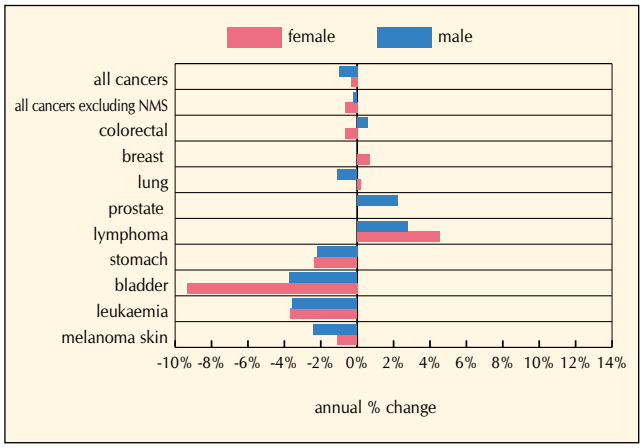


Figure 7.4 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: all age groups

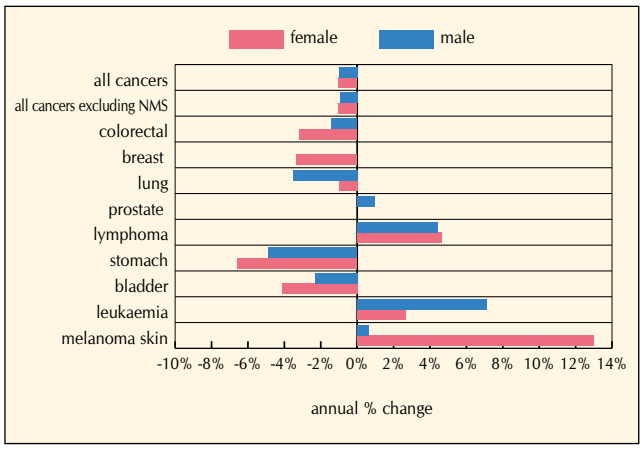


Figure 7.5 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: patients under 65

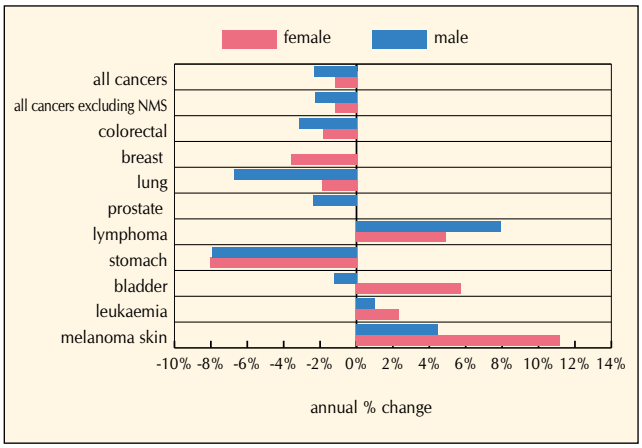
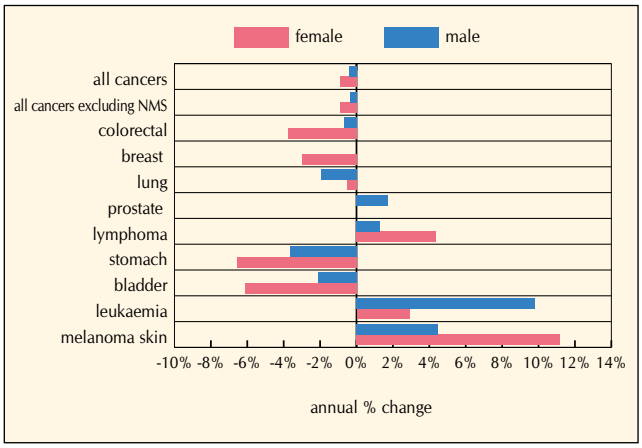


Figure 7.6 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: patients 65 and over



7.3. All malignant cancers *ICD - 10 C00 - C96*

The all-cancer annual rate of change in incidence between 1994 and 1998 was less than 1% for both men and women, and was not statistically significant (Table 7.1, Figure 7.7). Cancer death rates over this period fell by 1% but, again, the result was not statistically significant.

For patients under 65, the age-standardised incidence rates increased by about 1% (Figure 7.8). Mortality rates for both men and women in this age group fell by 2.3% and 1.2% respectively, the former being statistically significant.

In the population aged 65 and over (Figure 7.9), only small changes in cancer incidence and mortality rates were recorded, none of them statistically significant. The generally stable nature of incidence trends is mirrored in the mortality trends for both sexes, with a clear divide between incidence and mortality rates over time.

Table 7.1 Trends in incidence and mortality by age and sex 1994 – 98: all malignant cancers

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	8936	580.41	8028	443.64	3957	259.65	3430	181.23
1995	8780	563.44	7874	431.36	4085	265.34	3413	177.26
1996	8974	572.61	8158	442.69	3960	255.43	3389	172.27
1997	9023	569.73	8319	448.16	3953	253.87	3480	177.06
1998	9016	563.55	8367	443.99	3992	252.60	3430	172.35
annual % change 1994–1998		-0.5%		0.4%		-1.0%		-1.0%
95% confidence limits of trend		-1.6%;0.7%		-1.1%;1.9%		-2.4%;0.5%		-2.6%;0.6%
under 65 years								
1994	2976	240.54	3191	254.27	1115	91.54	1033	84.47
1995	2995	236.62	3233	253.44	1089	88.16	984	78.94
1996	3145	245.19	3408	261.84	1080	85.35	952	75.40
1997	3132	241.05	3490	265.62	1078	84.50	1042	81.11
1998	3237	242.90	3530	262.32	1081	83.24	1026	78.52
annual % change 1994–1998		0.4%		1.1%		-2.3%		-1.2%
95% confidence limits of trend		-1.0%;1.8%		-0.2%;2.4%		-3.4%;-1.2%*		-5.4%;3.2%
65 years and over								
1994	5960	3330.30	4837	1975.79	2842	1619.80	2397	964.09
1995	5785	3207.74	4641	1870.85	2996	1698.87	2429	972.80
1996	5829	3221.74	4750	1905.88	2880	1631.49	2437	955.99
1997	5891	3229.04	4829	1925.10	2875	1624.24	2438	953.44
1998	5779	3157.96	4837	1913.91	2911	1622.89	2404	931.48
annual % change 1994–1998		-1.0%		-0.4%		-0.4%		-0.9%
95% confidence limits of trend		-2.3%;0.3%		-2.5%;1.9%		-2.6%;1.8%		-1.8%;0.1%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.7 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, all age groups

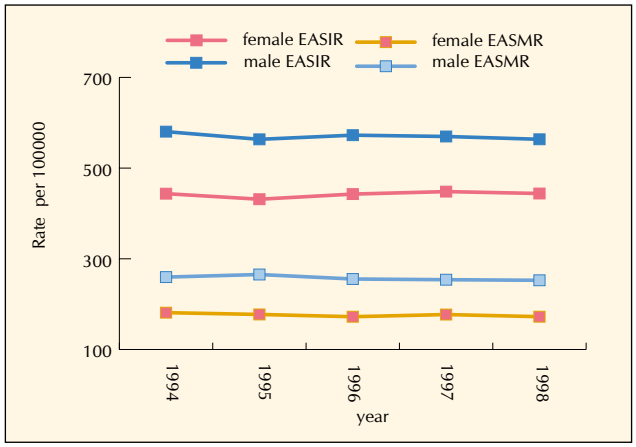


Figure 7.8 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, patients under 65

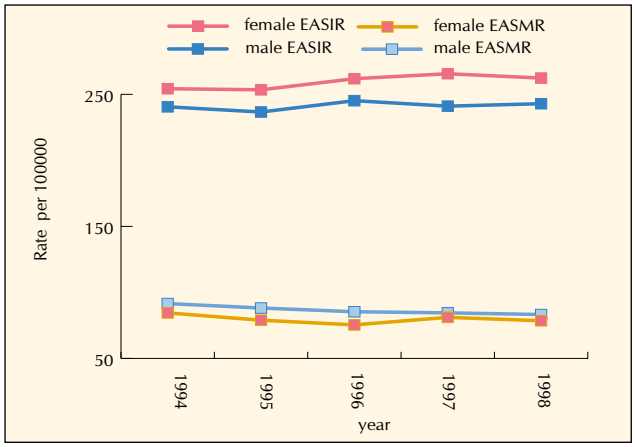
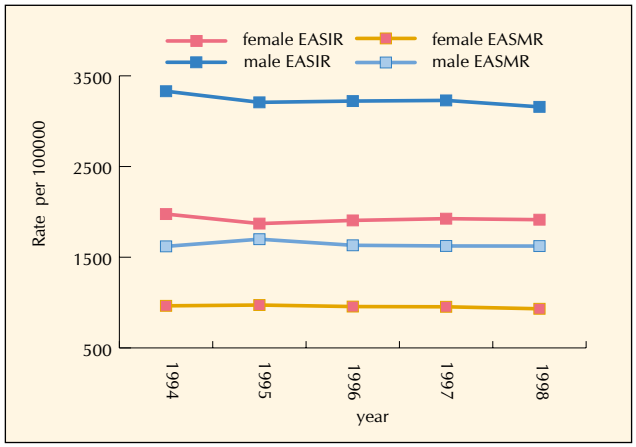


Figure 7.9 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, patients 65 and over



7.4. All malignant cancers excluding non-melanoma skin (NMS) *ICD10 C00 - C43, C45 - C96*

As mortality from non-melanoma skin is negligible, only information on incidence is given in this section.

The annual rate of increase in incidence for all cancer cases, excluding NMS, was about 0.3% between 1994 and 1998 and not statistically significant (Table 7.2, Figure 7.10). For patients under 65 years, incidence rates increased by just over 1%; this was statistically significant for females (Figure 7.11). In those 65 years and over trends in incidence rates were downward but not significantly so (Figure 7.12).

Table 7.2 Trends in incidence by age and sex 1994 – 98: all malignant cancers (excluding NMS)

	INCIDENCE			
	male		female	
	cases	EASR	cases	EASR
all age groups				
1994	6121	395.97	5713	322.44
1995	5981	382.05	5553	310.21
1996	6096	388.27	5754	317.95
1997	6226	392.81	5870	322.75
1998	6343	395.15	5981	323.60
annual % change 1994–1998		0.2%		0.5%
95% confidence limits of trend		-1.4%;1.9%		-1.4%;2.4%
under 65 years				
1994	2069	166.15	2489	197.79
1995	2065	161.56	2521	196.56
1996	2176	168.60	2638	201.19
1997	2179	166.40	2735	206.58
1998	2305	171.61	2796	206.57
annual % change 1994–1998		0.9%		1.4%
95% confidence limits of trend		-1.0%;2.9%		0.3%;2.5%*
65 years and over				
1994	4052	2255.46	3224	1330.98
1995	3916	2166.10	3032	1229.74
1996	3920	2165.67	3116	1262.65
1997	4047	2224.70	3135	1262.60
1998	4038	2203.79	3185	1270.48
annual % change 1994–1998		-0.2%		-0.7%
95% confidence limits of trend		-2.2%;1.8%		-3.7%;2.5%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.10 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, all age groups

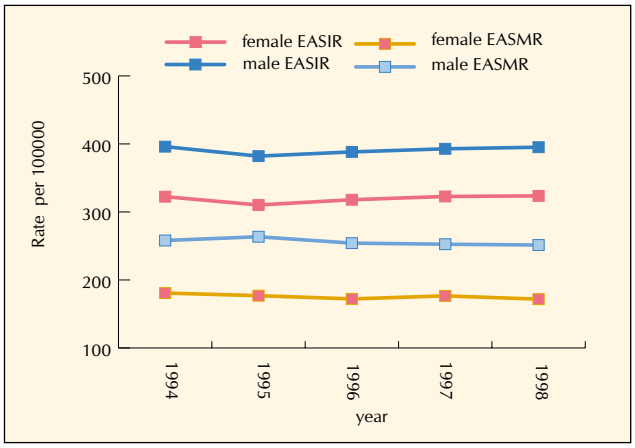


Figure 7.11 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, patients under 65

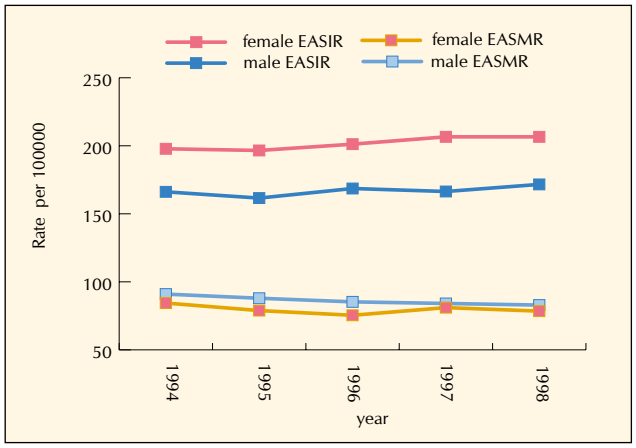
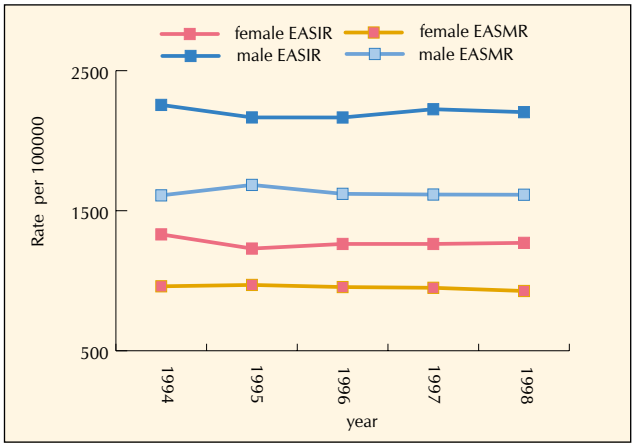


Figure 7.12 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, patients 65 and over



7.5. Colorectal cancer *ICD - 10 C18 - C21*

Age adjusted colorectal cancer incidence rates have remained relatively stable since 1994 with only slight upward or downward trends of 1% or less (Table 7.3, Figure 7.13). The incidence rate for women fluctuated considerably, with an obvious but unexplained fall in incidence in 1996. Mortality rates have declined in both men and women; this was statistically significant in men under 65 years old (Figure 7.14) but not in older age groups (Figure 7.15).

Table 7.3 Trends in incidence and mortality by age and sex 1994 – 98: colorectal cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	985	64.59	767	40.68	505	33.47	414	20.54
1995	926	60.48	736	39.55	548	35.51	425	21.03
1996	977	63.43	693	35.73	490	31.93	402	18.84
1997	1007	63.59	774	40.40	524	33.64	443	21.58
1998	1017	64.02	771	39.86	506	32.05	368	17.31
annual % change 1994–1998		0.3%		-0.2%		-1.4%		-3.2%
95% confidence limits of trend		-2.6%;3.3%		-6.1%;6.1%		-5.6%;2.9%		-11.3%;5.8%
under 65 years								
1994	330	27.48	214	18.16	141	11.80	84	7.00
1995	319	26.04	257	20.77	148	12.16	91	7.55
1996	341	27.40	198	15.59	140	11.39	76	6.18
1997	335	26.26	245	19.49	134	10.69	101	7.86
1998	351	27.30	247	19.33	138	10.75	81	6.25
annual % change 1994–1998		0.0%		0.6%		-3.1%		-1.9%
95% confidence limits of trend		-3.0%;3.0%		-11.3%;14.1%		-6.1%;-0.03%*		-13.1%;10.9%
65 years and over								
1994	655	364.81	553	222.89	364	208.82	330	130.11
1995	607	339.10	479	191.52	400	224.49	334	130.12
1996	636	354.90	495	198.62	350	198.16	326	121.29
1997	672	365.59	529	209.58	390	219.34	342	132.60
1998	666	361.11	524	205.95	368	204.39	287	106.82
annual % change 1994–1998		0.5%		-0.7%		-0.7%		-3.8%
95% confidence limits of trend		-2.9%;4.1%		-7.0%;6.0%		-6.3%;5.3%		-10.9%;4.1%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.13 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, all age groups

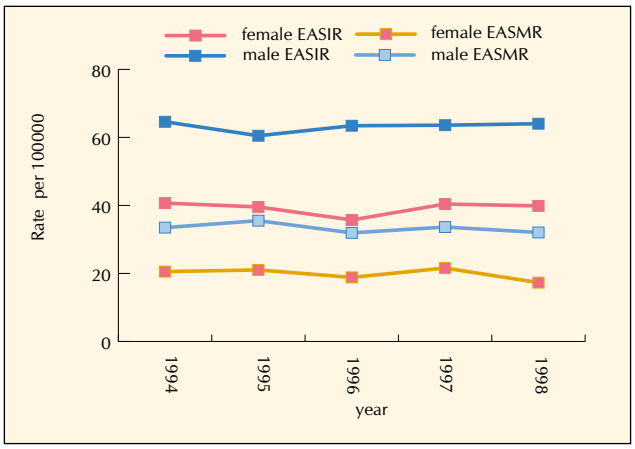


Figure 7.14 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, patients under 65

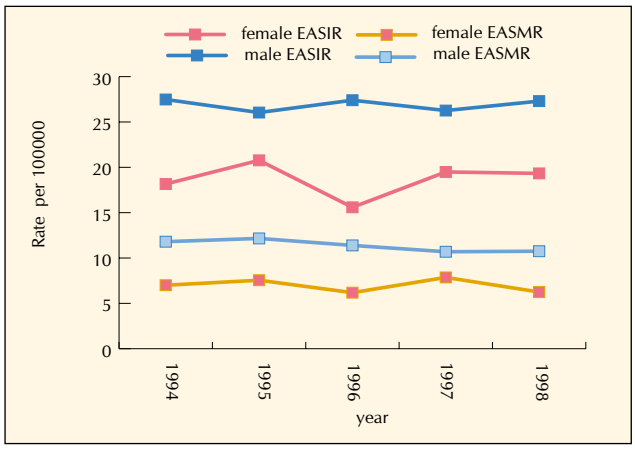
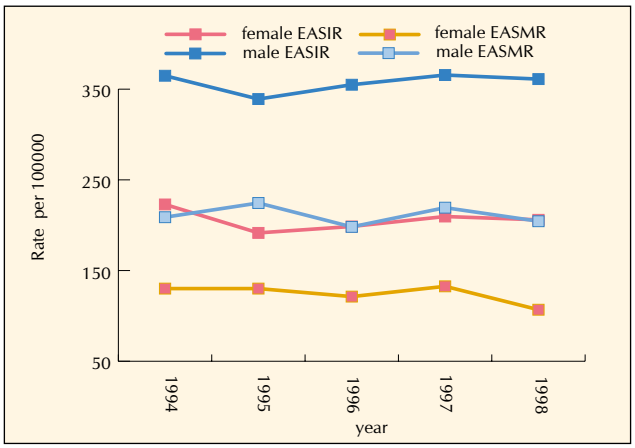


Figure 7.15 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, patients 65 and over



7.6. Colon cancer *ICD - 10 C18*

Although the incidence rate has fallen since 1994 in both men and women, this was not statistically significant. Mortality rates have also fallen in both sexes during this period but, again, not to a statistically significant extent (Table 7.4, Figure 7.16, Figure 7.17, Figure 7.18).

Table 7.4 Trends in incidence and mortality by age and sex 1994 – 98: colon cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	597	38.97	540	28.62	357	23.67	321	15.84
1995	552	35.82	521	27.57	395	25.30	332	16.42
1996	577	37.06	474	24.15	355	23.02	327	15.35
1997	566	35.42	518	26.92	381	24.57	342	16.77
1998	570	35.75	501	25.64	360	22.77	295	13.96
annual % change 1994–1998		-1.8%		-2.4%		-1.1%		-2.3%
95% confidence limits of trend		-4.8%;1.2%		-8.3%;3.9%		-5.7%;3.8%		-9.1%;5.0%
under 65 years								
1994	195	16.22	147	12.46	98	8.16	63	5.24
1995	182	14.76	171	13.88	102	8.35	71	5.89
1996	188	15.10	121	9.57	87	7.09	60	4.87
1997	186	14.47	163	12.97	98	7.87	84	6.51
1998	190	14.70	153	11.98	103	7.99	61	4.77
annual % change 1994–1998		-2.2%		-1.5%		-1.0%		-0.9%
95% confidence limits of trend		-5.4%;1.2%		-16.2%;15.8%		-7.8%;6.3%		-14.8%;15.4%
65 years and over								
1994	402	223.07	393	159.31	259	149.12	258	101.58
1995	370	206.21	350	138.31	293	162.47	261	101.65
1996	389	214.72	353	142.15	268	151.90	267	100.19
1997	380	204.85	355	139.84	283	159.75	258	99.80
1998	380	206.03	348	136.16	257	142.33	234	88.27
annual % change 1994–1998		-1.7%		-3.0%		-1.1%		-3.0%
95% confidence limits of trend		-4.5%;1.3%		-7.4%;1.7%		-6.7%;4.9%		-7.0%;1.3%

Figure 7.16 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, all age groups

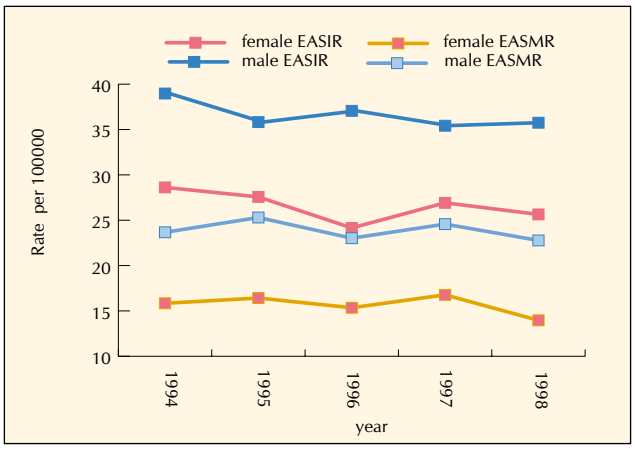


Figure 7.17 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, patients under 65

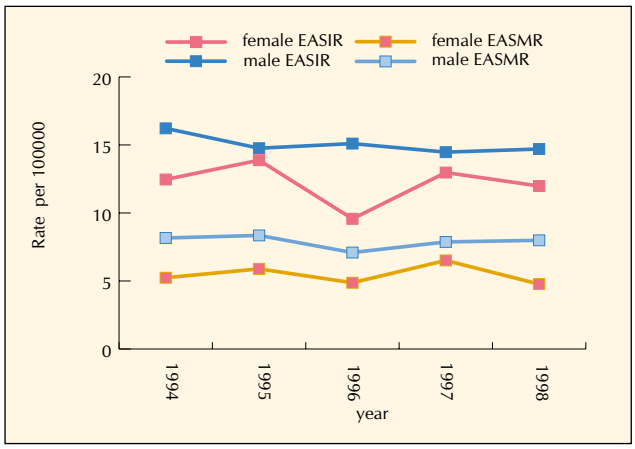
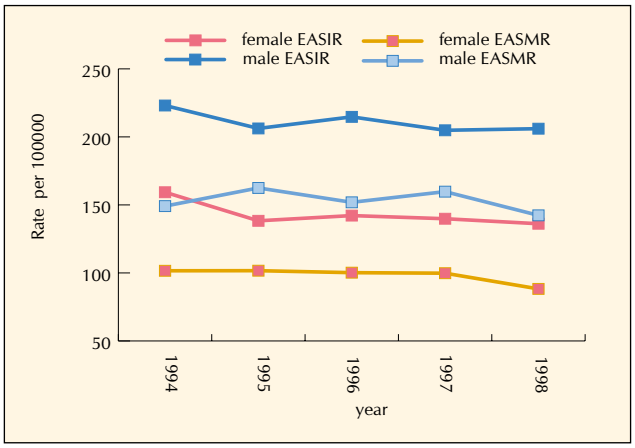


Figure 7.18 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, patients 65 and over



7.7. Anorectal cancer *ICD - 10 C19 - 21*

Incidence rates for anorectal cancer have risen in both sexes since 1994, but the trends were not significant (Table 7.5, Figure 7.19, Figure 7.20, Figure 7.21). Mortality rates in general fell during this period but, also, not significantly. The patterns observed in the incidence and mortality rates observed in colorectal cancer above are repeated here except with considerably more fluctuation. This is partly due to the fact that the number of anorectal cancer cases and deaths is smaller than that of colon cancer. Also, there is also the question of how accurately colon and anorectal cancers are distinguished from one another as the cause of death given on a death certificate. It would appear from the figures that mortality rates in men are consistently much higher than of women even though the difference in incidence rates between the sexes is considerably smaller.

Table 7.5 Trends in incidence and mortality by age and sex 1994 – 98: anorectal cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	388	25.61	227	12.06	148	9.80	93	4.70
1995	374	24.66	215	11.98	153	10.21	93	4.61
1996	400	26.37	219	11.57	135	8.91	75	3.49
1997	441	28.17	256	13.48	143	9.06	101	4.81
1998	447	28.27	270	14.22	146	9.28	73	3.35
annual % change 1994–1998		3.3%		4.5%		-2.3%		-6.3%
95% confidence limits of trend		-0.04%;6.9%		-1.6%;11.1%		-7.1%;2.8%		-20.7%;11.1%
under 65 years								
1994	135	11.26	67	5.70	43	3.63	21	1.76
1995	137	11.28	86	6.89	46	3.81	20	1.66
1996	153	12.30	77	6.03	53	4.29	16	1.31
1997	149	11.79	82	6.52	36	2.82	17	1.35
1998	161	12.60	94	7.35	35	2.76	20	1.48
annual % change 1994–1998		2.7%		4.5%		-8.5%		-5.6%
95% confidence limits of trend		-0.5%;6.1%		-3.8%;13.8%		-21.9%;8.0%		-15.1%;5.4%
65 years and over								
1994	253	141.75	160	63.58	105	59.69	72	28.53
1995	237	132.90	129	53.21	107	62.01	73	28.47
1996	247	140.18	142	56.47	82	46.26	59	21.11
1997	292	160.74	174	69.74	107	59.59	84	32.79
1998	286	155.08	176	69.79	111	62.05	53	18.55
annual % change 1994–1998		3.7%		4.6%		0.4%		-7.2%
95% confidence limits of trend		-2.2%;10.2%		-6.8%;17.5%		-13.1%;15.9%		-26.9%;18.5%

Figure 7.19 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, all age groups

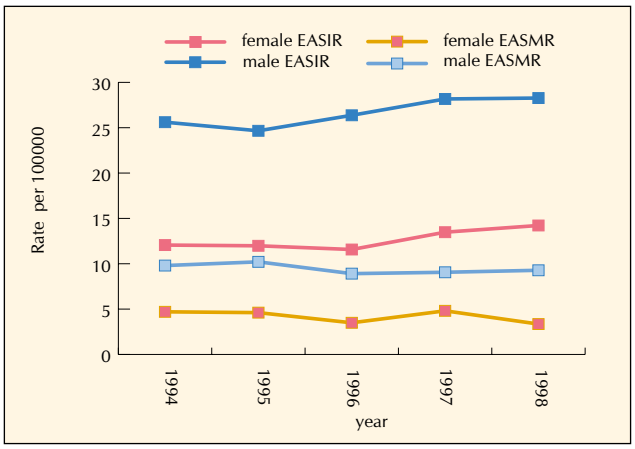


Figure 7.20 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, patients under 65

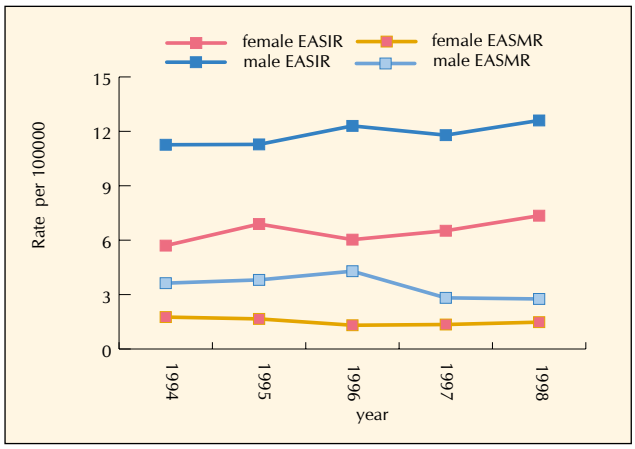
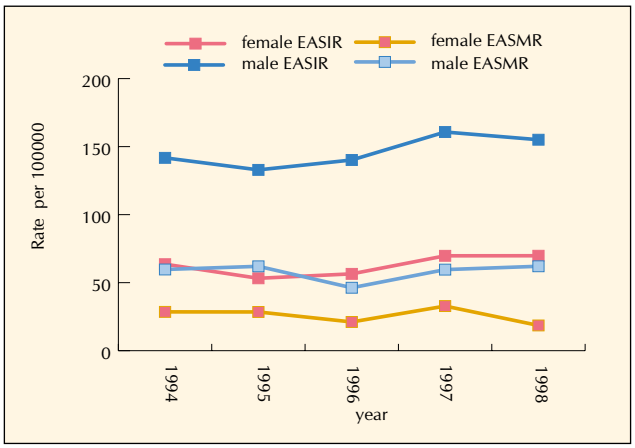


Figure 7.21 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, patients 65 and over



7.8. Breast cancer *ICD - 10 C50*

There was evidence of a divergence between female incidence and mortality rates (Table 7.6), with a statistically significant upward trend in breast cancer incidence in women under 65 years (Figure 7.23) and downward trends in mortality rates in all age groups combined (Figure 7.22). These findings may be the result of improvements in treatment and/or increased screening. There were no significant trends in incidence or mortality for women 65 and over (Figure 7.24).Trends for male breast cancer were not statistically significant.

The clear margin between the incidence and mortality trends reflect the fact that survival from breast cancer is good. Also, the figures reveal that a divergence in the incidence and mortality trends seems to have started in 1995 (but beginning a year later in the 65 and over population). It should be noted that no nation-wide screening programme was operational during this period of time. This divergence in the trends is expected to continue as a result of continuing improvements in treatments and also as a result of the recently launched national "BreastCheck" screening programme.

Table 7.6 Trends in incidence and mortality by age and sex 1994 – 98: breast cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	13	0.82	1505	93.74	4	0.25	647	37.41
1995	8	0.49	1525	92.03	7	0.46	651	37.11
1996	17	1.15	1588	95.07	6	0.49	633	35.57
1997	16	1.06	1614	95.98	3	0.16	631	35.35
1998	10	0.70	1689	98.67	7	0.45	594	32.44
annual % change 1994–1998		4.4%		1.4%		1.2%		–3.3%
95% confidence limits of trend		-29.4%;54.7%		-0.02%;3.0%		-42.3%;77.5%		-5.6%;-0.9%*
under 65 years								
1994	4	0.34	910	73.40	1	0.08	296	24.58
1995	2	0.17	926	72.60	3	0.26	292	23.55
1996	7	0.52	995	76.59	3	0.23	278	22.20
1997	6	0.47	1018	77.15	0	0.00	299	23.19
1998	6	0.46	1045	77.74	2	0.15	269	20.71
annual % change 1994–1998		16.2%		1.8%		n/a		-3.6%
95% confidence limits of trend		-23.1%;80.0%		0.1%;3.4%*		n/a		-7.0%;0.1%
65 years and over								
1994	9	4.72	595	258.32	3	1.60	351	141.24
1995	6	3.03	599	249.26	4	2.13	359	146.80
1996	10	6.28	593	244.54	3	2.58	355	143.79
1997	10	5.83	596	248.34	3	1.48	332	133.74
1998	4	2.56	644	267.99	5	2.90	325	127.38
annual % change 1994–1998		-5.7%		0.7%		8.3%		-3.0%
95% confidence limits of trend		-39.8%;48.2%		-3.3%;4.9%		-19.8%;47.1%		-6.6%;0.9%

n/a data not possible to calculate

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.22 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, all age groups

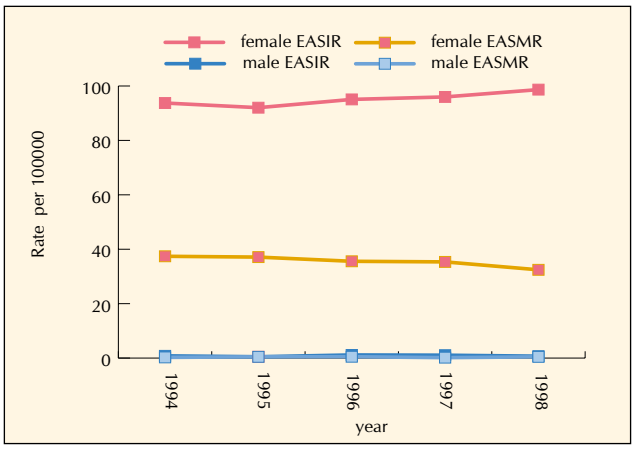


Figure 7.23 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, patients under 65

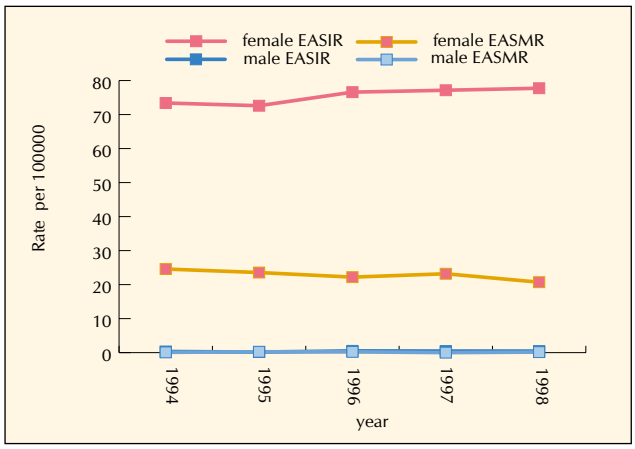
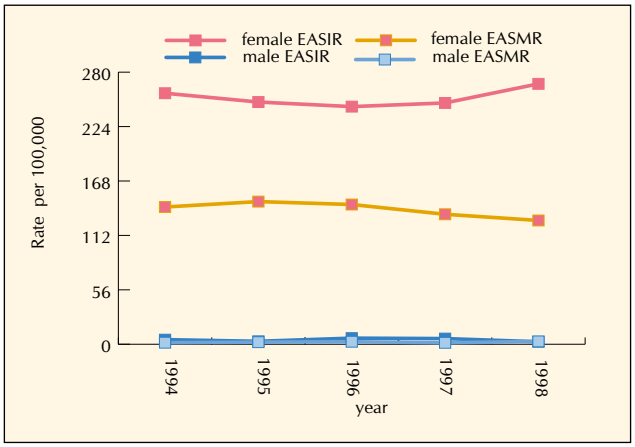


Figure 7.24 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, patients 65 and over



7.9. Lung cancer *ICD - 10 C34*

Incidence rates have risen in women since 1994 (Table 7.7, Figure 7.25) – particularly the 6.8% increase in women under 65 years (Figure 7.26) – but have fallen in men (Figure 7.27). None of the trends were statistically significant.

Mortality rates have fallen by a much greater degree in men than in women but not to a statistically significant degree. The consistently overlapping incidence and mortality trends in both men and women reflect the poor prognosis associated with this disease. There also appears to be evidence of a convergence of male and female rates, particularly in the under 65 year population, suggesting that at some time in the future, female mortality rates will exceed those of males if present trends continue.

Table 7.7 Trends in incidence and mortality by age and sex 1994 – 98: lung cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	1039	68.25	492	26.35	1024	67.25	517	27.54
1995	940	60.71	480	24.93	1028	66.19	534	27.59
1996	958	61.23	497	25.93	953	61.20	505	25.24
1997	919	58.68	523	27.14	882	56.59	494	24.57
1998	1002	62.98	545	28.84	966	60.96	544	27.75
annual % change 1994–1998		-1.9%		2.7%		-3.5%		-1.0%
95% confidence limits of trend		-7.2%;3.7%		-1.4%;6.9%		-8.1%;1.4%		-7.2%;5.6%
under 65 years								
1994	335	28.34	126	10.51	318	26.74	132	11.05
1995	274	22.76	111	9.11	273	22.82	121	9.99
1996	281	22.86	134	10.87	239	19.66	106	8.59
1997	285	22.89	141	11.34	236	18.95	107	8.65
1998	302	23.67	168	13.26	265	20.94	137	10.80
annual % change 1994–1998		-3.5%		6.8%		-6.8%		-1.9%
95% confidence limits of trend		-11.6%;5.3%		-2.6%;17.7%		-15.5%;3.4%		-14.2%;12.3%
65 years and over								
1994	704	391.16	366	154.49	706	394.95	385	160.95
1995	666	367.81	369	152.95	755	417.06	413	170.01
1996	677	371.64	363	147.78	714	397.30	399	159.96
1997	634	348.31	382	154.97	646	361.12	387	153.38
1998	700	381.04	377	154.95	701	384.79	407	164.91
annual % change 1994–1998		-1.1%		0.2%		-2.0%		-0.5%
95% confidence limits of trend		-5.6%;3.6%		-2.1%;2.5%		-6.7%;3.0%		-4.7%;3.9%

Figure 7.25 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, all age groups

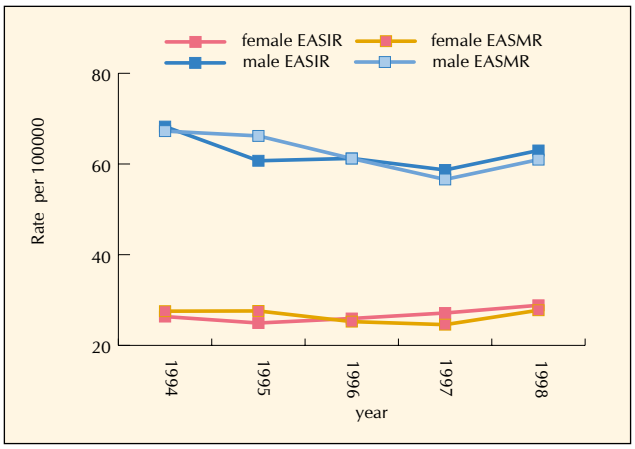


Figure 7.26 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, patients under 65

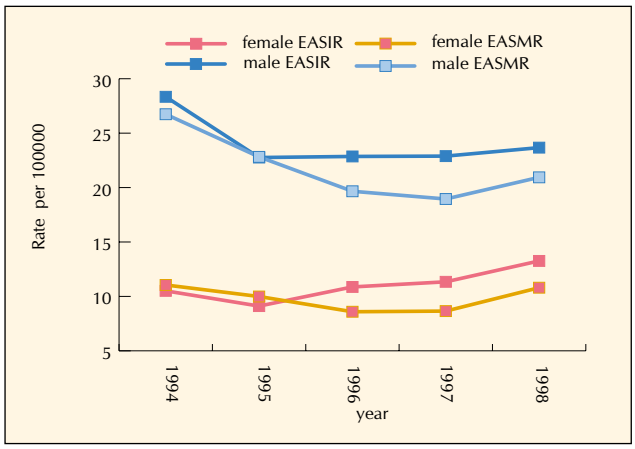
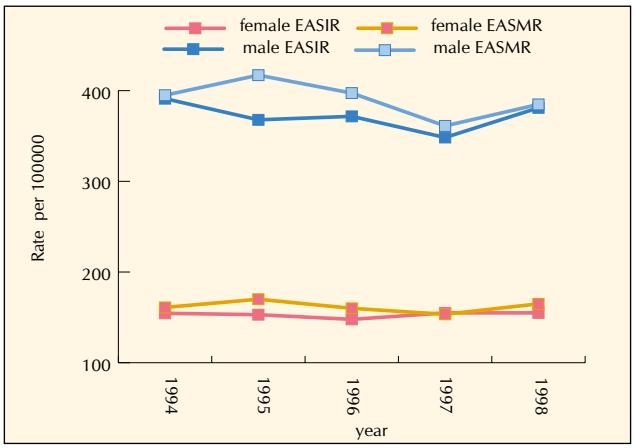


Figure 7.27 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, patients 65 and over



7.10. Prostate cancer *ICD - 10 C61*

Incidence rates in men in all age groups (Figure 7.28), 0 – 64 (Figure 7.29) and 65 and over (Figure 7.30) showed statistically significant increases. Incidence rates in men under 65 years old increased by 8.2% (Table 7.8). Mortality rates showed no evidence of an upward or downward time trend. The evidence of a divergence between incidence and mortality rates may be due to better case-finding, more incidental diagnoses or a genuine increase in survival. The sharp increase in incidence rates in men under 65 years of age appears to be a recent phenomenon and may be attributable to more PSA testing but it is notable how little mortality rates have changed over this same period of time. It is unclear from the figures if mortality trends will change much in the future but it is not unlikely that incidence rates will continue their steady climb.

Table 7.8 Trends in incidence and mortality by age 1994 – 98: prostate cancer

	INCIDENCE		MORTALITY	
	male		male	
	cases	EASR	deaths	EASR
all age groups				
1994	1068	67.53	475	29.03
1995	1113	69.33	521	31.71
1996	1147	71.33	520	31.29
1997	1180	73.46	534	31.86
1998	1244	77.50	514	30.38
annual % change 1994–1998		3.3%		1.0%
95% confidence limits of trend		2.4%;4.4%*		-3.1%;5.2%
under 65 years				
1994	158	13.45	78	6.64
1995	150	12.55	90	7.50
1996	182	15.08	87	7.15
1997	199	16.29	75	6.13
1998	222	17.83	81	6.51
annual % change 1994–1998		8.2%		-2.4%
95% confidence limits of trend		1.8%;15.8%*		-10.0%;5.9%
65 years and over				
1994	910	505.04	397	210.21
1995	963	528.67	431	227.55
1996	965	526.41	433	226.56
1997	981	536.02	459	240.01
1998	1022	560.26	433	223.46
annual % change 1994–1998		2.2%		1.8%
95% confidence limits of trend		0.7%;3.8%*		-2.7%;6.4%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.28 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, all age groups

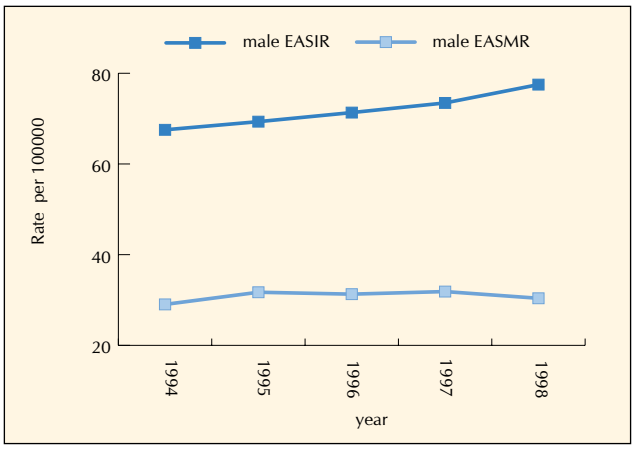


Figure 7.29 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, patients under 65

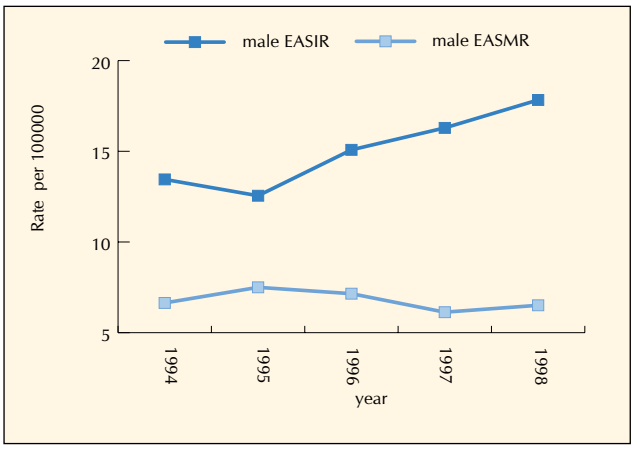
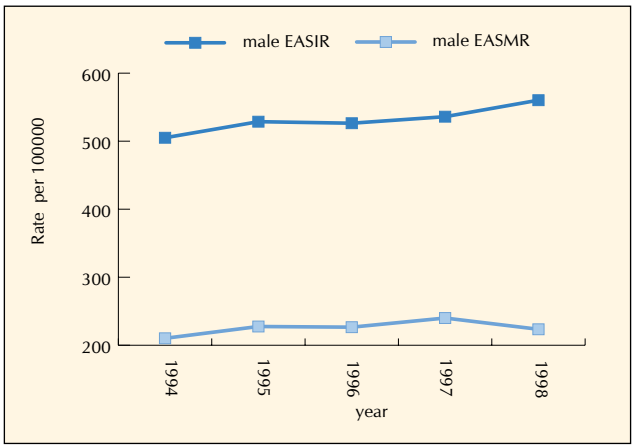


Figure 7.30 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, patients 65 and over



7.11. Lymphoma

Since 1994 the incidence rate for men has risen significantly, overall by 5.2% (Table 7.9, Figure 7.31), and in those under 65 years by 6.8% (Figure 7.32). For women the rise has not been as marked, and was not statistically significant. Mortality rates have also risen in both men and women during this time (Figure 7.33) but, except in men under 65, not to a statistically significant extent. The rates for men consistently exceeded those for women but some overlap is apparent.

Table 7.9 Trends in incidence and mortality by age and sex 1994 – 98: lymphoma

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	239	14.91	220	12.44	115	7.52	107	5.61
1995	226	14.32	196	11.14	126	8.18	94	4.78
1996	251	15.69	214	12.06	130	8.14	89	4.66
1997	266	16.43	238	12.88	116	7.26	99	5.14
1998	296	18.01	244	13.01	157	9.95	131	6.75
annual % change 1994–1998		5.2%		2.4%		4.4%		4.6%
95% confidence limits of trend		1.0%;9.8%*		-3.4%;8.5%		-7.0%;17.4%		-10.4%;21.9%
under 65 years								
1994	135	9.56	109	8.12	47	3.66	33	2.63
1995	146	10.78	110	8.11	54	4.07	24	1.92
1996	168	11.89	119	8.76	62	4.64	29	2.23
1997	161	11.27	124	8.70	59	4.34	37	2.87
1998	189	13.12	118	8.21	71	5.26	37	2.83
annual % change 1994–1998		6.8%		0.9%		7.9%		4.9%
95% confidence limits of trend		1.3%;13.1%*		-3.1%;5.2%		1.6%;15.4%*		-11.2%;25.6%
65 years and over								
1994	104	58.20	111	47.35	68	38.74	74	29.68
1995	80	42.96	86	35.64	72	41.46	70	27.91
1996	83	46.40	95	38.70	68	36.44	60	24.33
1997	105	58.19	114	46.67	57	30.86	62	23.51
1998	107	57.52	126	51.86	86	47.88	94	38.41
annual % change 1994–1998		2.8%		4.5%		1.3%		4.3%
95% confidence limits of trend		-12.5%;20.8%		-10.9%;22.8%		-16.0%;22.1%		-16.8%;28.8%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.31 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, all age groups

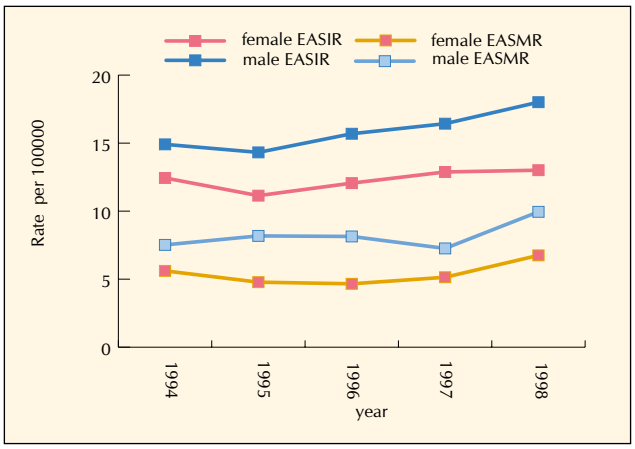


Figure 7.32 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, patients under 65

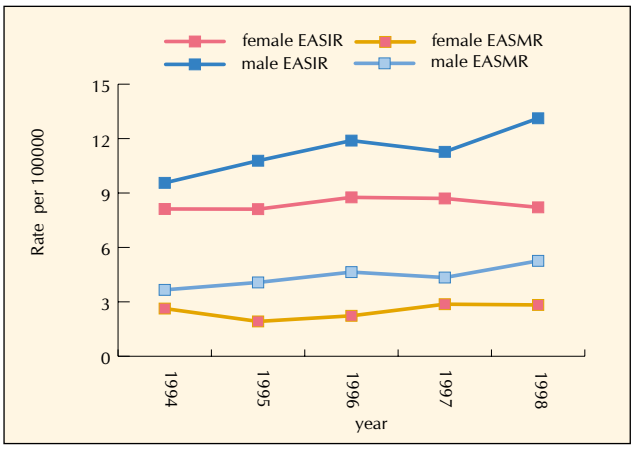
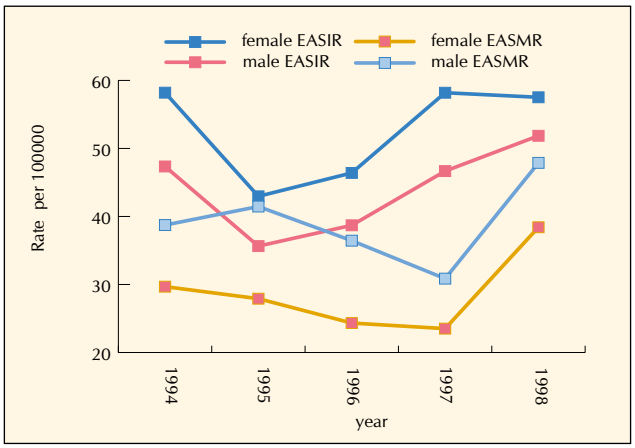


Figure 7.33 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, patients 65 and over



7.12. Non-Hodgkin's lymphoma *ICD - 10 C82 - C85*

Rates for non-Hodgkin's lymphoma (NHL) have increased generally in both men and women and in all age categories generally, particularly in men (Table 7.10, Figure 7.34). The increase in the incidence rate in men in all age groups (5.6%) was statistically significant as was the rise in the mortality rate in those under 65 years old (9.3%) (Figure 7.35).The increase in incidence and mortality for the older age group was smaller and not significant (Figure 7.36).

Table 7.10 Trends in incidence and mortality by age and sex 1994 – 98: non-Hodgkin's lymphoma

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	191	12.29	183	10.48	100	6.52	95	5.00
1995	189	12.21	164	9.34	109	7.11	87	4.39
1996	207	13.13	185	10.56	110	6.96	85	4.43
1997	223	14.02	194	10.56	102	6.43	88	4.56
1998	244	15.16	198	10.60	142	9.08	121	6.19
annual % change 1994–1998		5.6%		1.5%		5.6%		4.6%
95% confidence limits of trend		2.7%;8.9%*		-4.2%;7.5%		-6.6%;19.9%		-9.2%;20.9%
Under 65 years								
1994	92	6.97	81	6.41	39	3.11	29	2.35
1995	116	8.87	83	6.37	44	3.33	20	1.61
1996	128	9.29	93	7.24	49	3.77	27	2.08
1997	123	8.88	87	6.45	51	3.76	31	2.44
1998	144	10.39	84	6.10	62	4.66	32	2.44
annual % change 1994–1998		8.0%		-0.9%		9.3%		4.9%
95% confidence limits of trend		-0.5%;17.9%		-7.8%;6.6%		4.1%;15.8%*		-12.6%;26.1%
65 years and over								
1994	99	55.35	102	43.39	61	34.10	66	26.43
1995	73	39.18	81	33.39	65	37.69	67	26.83
1996	79	44.16	92	37.46	61	32.71	58	23.45
1997	100	55.59	107	43.82	51	27.99	57	21.71
1998	100	53.75	114	46.98	80	44.87	89	36.50
annual % change 1994-1998		2.9%		4.3%		2.5%		4.3%
95% confidence limits of trend		–13.7%;22.8%		–9.2%;20.0%		–15.9%;25.0%		–15.9%;29.6%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.34 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, all age groups

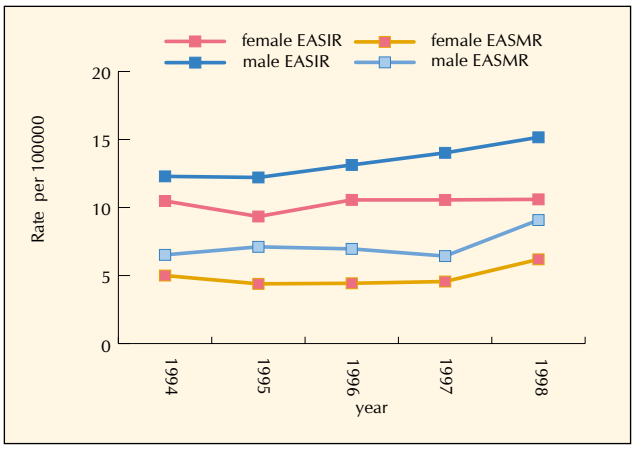


Figure 7.35 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, patients under 65

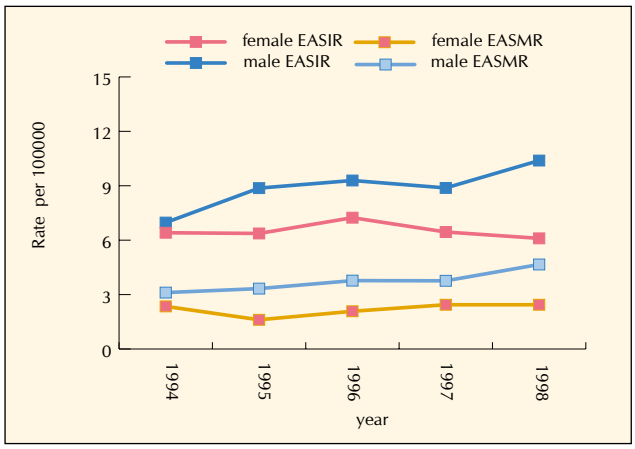
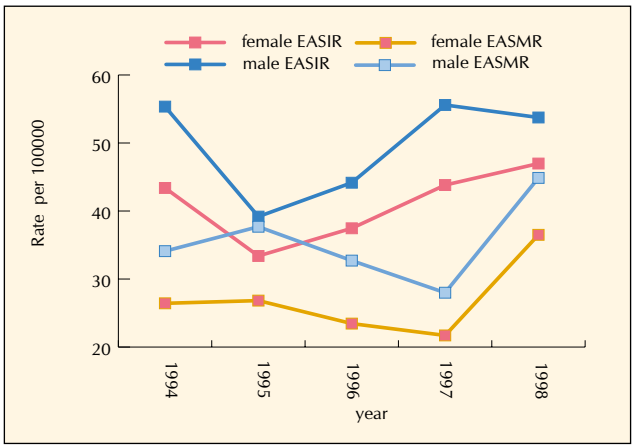


Figure 7.36 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, patients 65 and over



7.13. Stomach cancer *ICD - 10 C16*

No overall time trends in the standardised incidence rate were apparent in either sex since 1994 (Figure 7.37). Mortality rates declined significantly in men 65 and over (3.7%) (Table 7.11, Figure 7.39). The mortality rates in women declined in all age categories; the trend was statistically significant (Figure 7.38).

In general, mortality trends for women appear to be in steeper decline than those for men, especially in those under 65 years of age. In the 65 and over population, the relatively narrow margins between incidence and mortality rates in both sexes reflect a poorer prognosis.

Table 7.11 Trends in incidence and mortality by age and sex 1994 – 98: stomach cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	300	19.41	171	8.59	240	15.67	178	8.56
1995	288	18.64	179	8.54	259	17.14	152	7.38
1996	303	19.37	173	8.81	233	15.01	162	7.73
1997	299	19.11	172	8.50	230	14.86	139	6.82
1998	284	18.14	176	8.63	206	13.18	149	6.41
annual % change 1994–1998		-1.1%		0.1%		-4.9%		-6.6%
95% confidence limits of trend		-3.7%;1.6%		-1.6%;1.7%		-10.7%;1.6%		-10.8%;-1.7%*
under 65 years								
1994	95	7.80	37	2.99	63	5.22	32	2.54
1995	87	7.03	36	2.91	77	6.36	29	2.35
1996	101	8.05	43	3.38	65	5.17	33	2.64
1997	99	7.85	48	3.67	66	5.27	36	2.84
1998	100	7.71	44	3.38	49	3.86	20	1.55
annual % change 1994–1998		0.9%		4.8%		-7.9%		-8.0%
95% confidence limits of trend		-4.8%;6.9%		-2.1%;12.3%		-20.3%;7.2%		-27.1%;16.8%
65 years and over								
1994	205	113.31	134	53.89	177	100.15	146	57.31
1995	201	112.59	143	54.12	182	104.35	123	48.02
1996	202	110.95	130	52.81	168	94.60	129	48.90
1997	200	110.25	124	47.59	164	92.44	103	39.09
1998	184	102.55	132	51.14	157	88.60	129	45.74
annual % change 1994–1998		-2.2%		-2.3%		-3.7%		-6.6%
95% confidence limits of trend		-4.4%;0.1%		-6.5%;2.1%		-6.8%;-0.3%*		-15.7%;4.0%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.37 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, all age groups

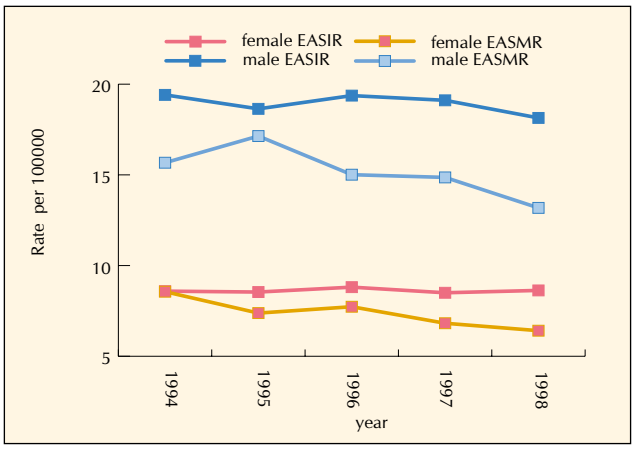


Figure 7.38 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, patients under 65

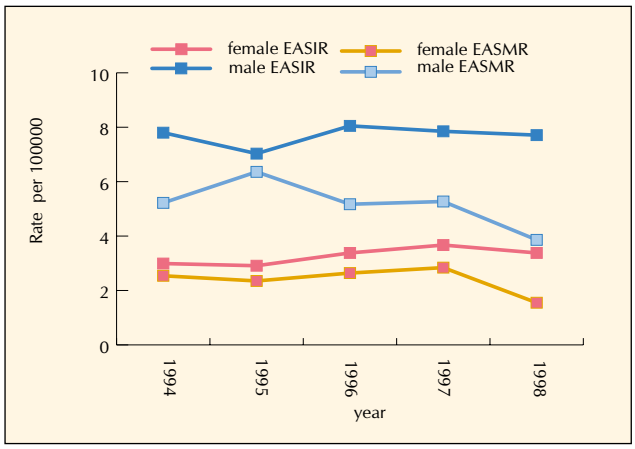
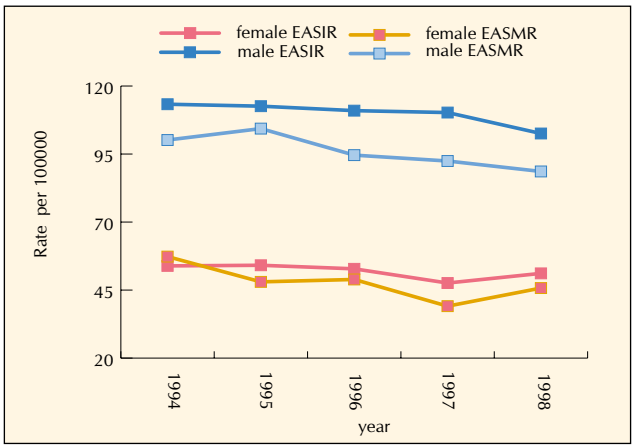


Figure 7.39 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, patients 65 and over



7.14. Bladder cancer *ICD - 10 C67*

Apart from an increase in mortality rate in women under 65 years (Table 7.12, Figure 7.41), decreases in incidence and mortality rates in both sexes and in all age categories were recorded between 1994 and 1998 (Figure 7.40, Figure 7.42). None of the trends were statistically significant except for the decline in male mortality rates in all age groups.

A downward trend in male incidence can be seen. The margins between male incidence and mortality rates are consistently wider than the female equivalents. Some of these differences may be partly to do with differences in coding and classification of bladder cancers.

Table 7.12 Trends in incidence and mortality by age and sex 1994 – 98: bladder cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	341	22.23	171	8.93	115	7.40	70	3.08
1995	335	21.71	106	5.50	115	7.44	46	2.11
1996	341	21.59	130	6.61	113	7.22	49	2.16
1997	334	21.54	121	6.27	113	7.16	60	2.73
1998	288	18.04	112	5.75	105	6.72	47	2.20
annual % change 1994–1998		-4.3%		-7.5%		-2.3%		-4.1%
95% confidence limits of trend		-9.8%;1.8%		-22.0%;10.3%		-4.3%;-0.3%*		-19.9%;15.0%
under 65 years								
1994	93	7.74	51	4.19	19	1.58	6	0.49
1995	101	8.20	27	2.25	9	0.72	4	0.32
1996	106	8.45	30	2.38	17	1.36	3	0.24
1997	99	7.92	36	2.75	14	1.15	8	0.61
1998	78	6.00	40	2.95	15	1.17	6	0.48
annual % change 1994–1998		-5.5%		-5.0%		-1.3%		5.7%
95% confidence limits of trend		-16.3%;7.1%		-27.3%;24.5%		-29.8%;38.8%		-30.3%;61.0%
65 years and over								
1994	248	139.47	120	47.29	96	54.49	64	24.03
1995	234	131.02	79	31.82	106	61.77	42	16.55
1996	235	127.89	100	40.90	96	54.68	46	17.65
1997	235	131.82	85	34.77	99	55.78	52	19.84
1998	210	115.52	72	28.35	90	51.55	41	16.17
annual % change 1994–1998		-3.7%		-9.4%		-2.1%		-6.1%
95% confidence limits of trend		-7.6%;0.5%		-22.5%;7.0%		-8.4%;4.6%		-19.2%;9.5%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.40 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, all age groups

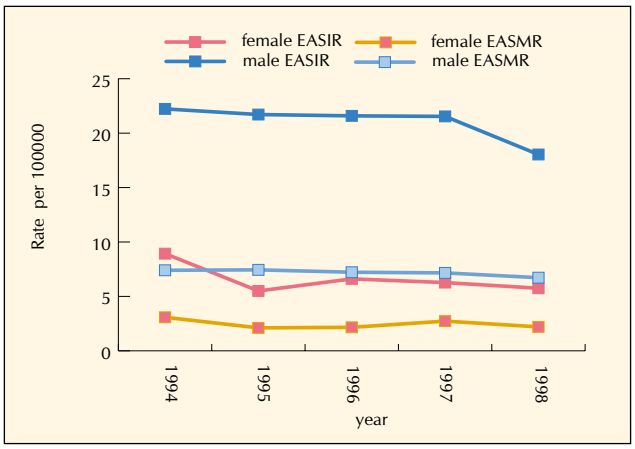


Figure 7.41 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, patients under 65

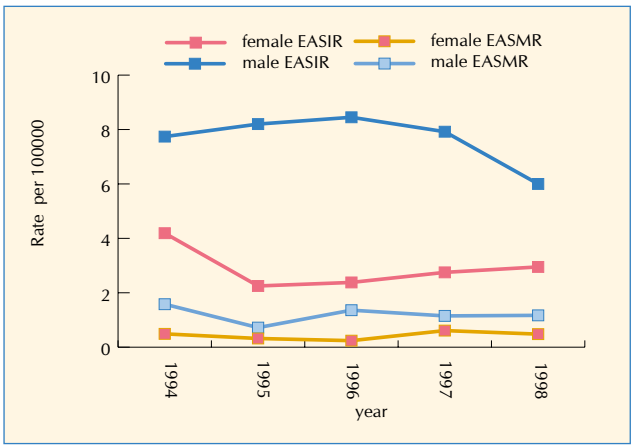
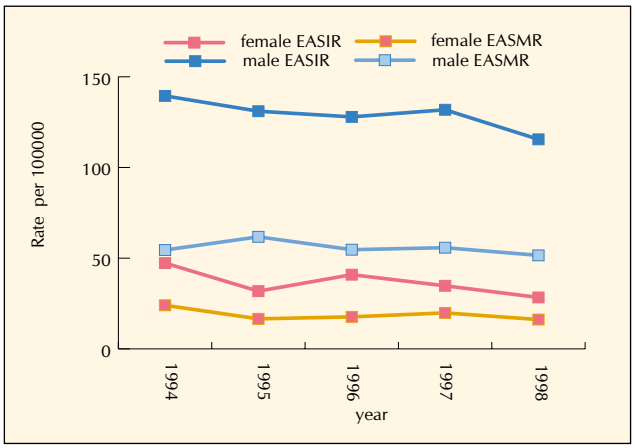


Figure 7.42 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, patients 65 and over



7.15. Leukaemia *ICD - 10 C91 - C95*

There was a decrease in incidence in those 65 and over – for males 3.5%, for females 3.7% – but otherwise all incidence and mortality rates have risen since 1994 (Figure 7.45). This was most marked for those under 65 (Figure 7.44) (males 6.3% and females 8.6%). Mortality rates increased in all age categories (Table 7.13, Figure 7.43), especially in men but no trend was statistically significant.

Table 7.13 Trends in incidence and mortality by age and sex 1994 – 98: leukaemia

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	185	11.53	157	8.42	109	7.12	86	4.29
1995	208	13.00	115	6.00	101	6.49	80	3.98
1996	192	12.04	141	7.59	120	7.47	90	4.41
1997	204	12.44	152	7.92	125	8.10	90	4.33
1998	205	12.46	162	8.51	146	9.10	98	4.70
annual % change 1994–1998		1.1%		3.0%		7.1%		2.7%
95% confidence limits of trend		-3.6%;6.1%		-11.8%;20.4%		-0.1%;15.4%		-2.2%;7.9%
under 65 years								
1994	72	5.28	64	4.79	37	2.74	26	1.82
1995	98	6.98	43	3.13	32	2.35	27	1.95
1996	95	6.84	73	5.11	46	3.18	27	2.00
1997	93	6.51	72	5.02	36	2.57	25	1.72
1998	108	7.51	84	5.81	38	2.76	31	2.17
annual % change 1994–1998		6.3%		8.6%		1.0%		2.3%
95% confidence limits of trend		-3.7%;17.9%		-12.9%;36.2%		-11.1%;14.8%		-6.8%;12.3%
65 years and over								
1994	113	62.06	93	37.77	72	42.55	60	24.31
1995	110	61.69	72	29.19	69	40.01	53	20.44
1996	97	54.15	68	27.65	74	42.14	63	23.92
1997	111	60.39	80	31.42	89	52.82	65	25.42
1998	97	52.52	78	30.34	108	60.46	67	25.22
annual % change 1994–1998		-3.5%		-3.7%		9.8%		2.9%
95% confidence limits of trend		-9.4%;2.9%		-14.5%;8.8%		-0.03%;21.7%		-5.7%;12.4%

Figure 7.43 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, all age groups

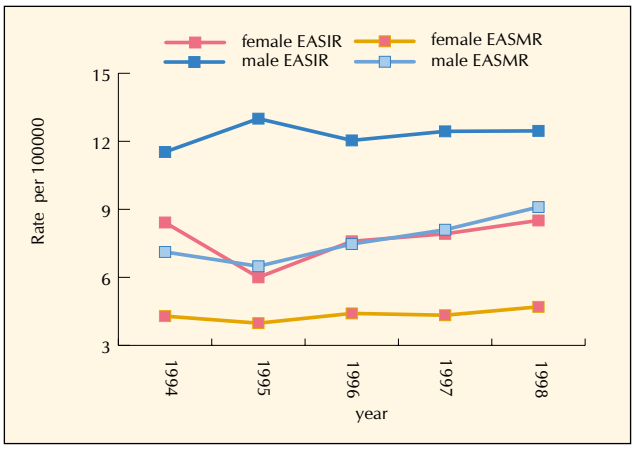


Figure 7.44 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, patients under 65

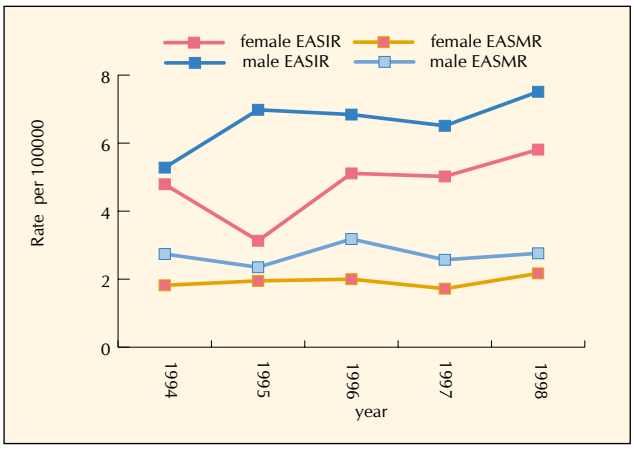
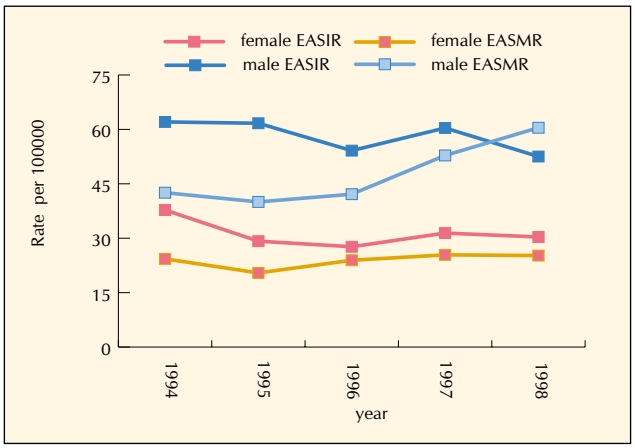


Figure 7.45 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, patients 65 and over



7.16. Melanoma of skin *ICD - 10 C43*

In the population under 65, incidence rates changed significantly in both men and women (Figure 7.47). Rates rose by 10.4% per annum in men whilst rates fell by 2.1% in women within this age group. Other statistically significant results included the 13% increase in female mortality rates in all age groups (Figure 7.46, Table 7.14). Incidence fell in both men and women 65 and over, but this was not significant (Figure 7.48).

Table 7.14 Trends in incidence and mortality by age and sex 1994 – 98: melanoma of skin

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	134	8.67	240	13.75	22	1.40	25	1.39
1995	121	7.74	233	13.41	33	2.17	26	1.34
1996	127	7.91	230	13.06	27	1.79	33	1.68
1997	167	10.49	236	13.35	35	2.24	32	1.73
1998	152	9.43	235	12.60	23	1.42	45	2.35
annual % change 1994–1998		4.7%		-1.8%		0.6%		13.0%
95% confidence limits of trend		-6.8%;18.0%		-3.7%;0.1%		-22.5%;30.7%		2.9%;26.0%*
under 65 years								
1994	61	4.60	145	10.77	8	0.66	12	0.89
1995	75	5.50	139	10.27	17	1.28	8	0.61
1996	75	5.44	144	10.29	13	0.98	9	0.71
1997	100	7.02	139	10.09	16	1.19	13	1.00
1998	97	6.86	142	9.77	12	0.85	16	1.21
annual % change 1994–1998		10.4%		-2.1%		4.5%		11.2%
95% confidence limits of trend		3.0%;19.6%*		-3.4%;-0.8%*		-22.7%;41.4%		-12.5%;42.9%
65 years and over								
1994	73	41.59	95	37.90	14	7.38	13	5.46
1995	46	25.87	94	38.81	16	9.39	18	7.24
1996	52	27.89	86	35.39	14	8.35	24	9.53
1997	67	38.55	97	39.72	19	10.72	19	7.65
1998	55	30.21	93	35.48	11	6.03	29	11.51
annual % change 1994–1998		-2.4%		-1.1%		-2.7%		15.5%
95% confidence limits of trend		-22.9%;23.6%		-6.6%;4.8%		-24.4%;25.3%		-1.1%;37.8%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.46 Trends in incidence and mortality rates, 1994 – 1998 by sex: : melanoma of skin, all age groups

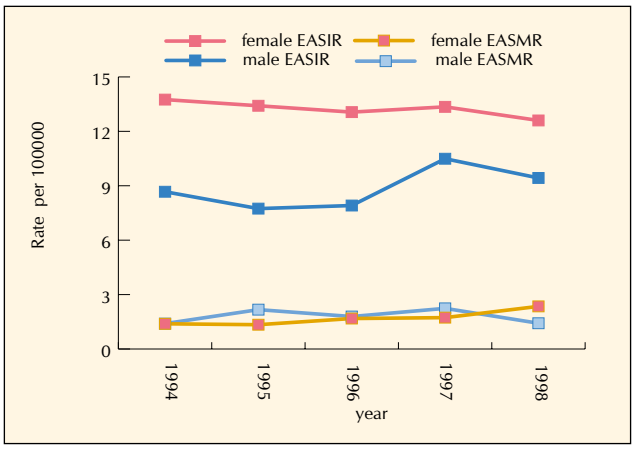


Figure 7.47 Trends in incidence and mortality rates, 1994 – 1998 by sex: melanoma of skin, patients under 65

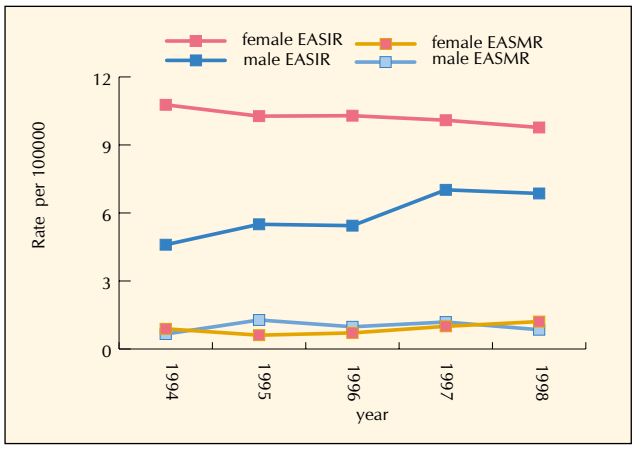
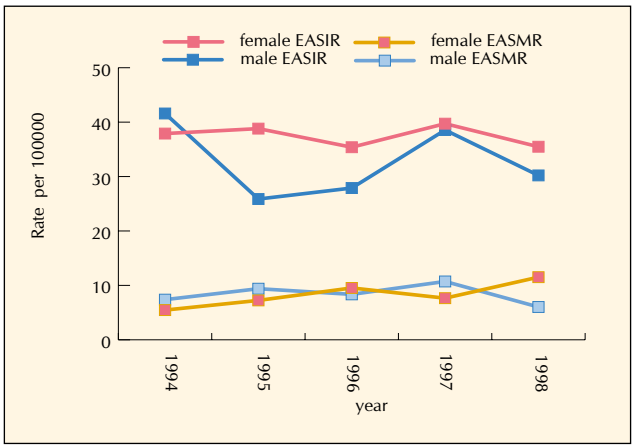


Figure 7.48 Trends in incidence and mortality rates, 1994 – 1998 by sex: : melanoma of skin, patients 65 and over



7.17. Comments

Many trends in cancer incidence and mortality have been described in this chapter, even with the short period of observation available to us. The overall pattern is of no significant change in overall cancer incidence, with a fall in mortality in the male population under 65. Incidence and mortality trends do not go in parallel for many reasons. For cancers with good survival, such as breast cancer, those dying in a particular year may have been diagnosed and treated many years previously. Survival may improve, causing improvement in mortality without any change in incidence. Screening tends to increase incidence in the short term, but mortality in the long term.

Incidence and survival trends from the National Cancer Registry data provide additional insights into the complex problems of cancer control. None of these indicators is perfect, and none is adequate on its own. This has made incidence data increasingly more important for early monitoring of trends, and for assessment of major public health interventions such as breast and cervical screening. Unfortunately, incidence data is only available from 1994 onwards. Changes in observed incidence and mortality are most commonly due to real changes in the underlying rates in the population. However, in a small number of instances, apparent changes in rate may be artefactual and due to changes in case ascertainment.

Variation in registration practice – under or over-registration of cases in different years – may give a false impression of change in incidence with time. In the data presented here, incidence rates in 1994 were consistently a little higher than those in 1996, suggesting that, in the first year of operation of the registry, some cases not truly incident in 1994 were registered for that year. This is a well-recognised problem with new registries and difficult to eliminate entirely. The major consequence of this is to cause us to over-estimate downward trends in incidence and to under-estimate increases.

Changes in the practice of diagnosis may also have an effect on incidence that may extend over a number of years. This may be the introduction of new diagnostic procedures such as PSA testing, or the introduction of organised screening; these are likely to influence the reported incidence of cancers such as breast, prostate and cervical cancer.

Mortality data can be affected by most of the factors mentioned above. In addition, however, the underlying cause of death is not always correctly certified so that changes in certification practice by doctors may lead to bias. The patterns in cancer mortality reflect the care seeking behaviour of the population in the way it locates and operates its health services, the practices of its health care workers, the patterns of cancer treatment, the methods of death registration and the patterns of internal migration. Consideration of these issues is required when interpreting the “historical” cancer morality data.

8. Geographical patterns

8.1. Introduction

This chapter looks at the geographical distribution of incidence for the major cancer sites (see Section 2.2.1) for malignant cancers other than leukaemia. Leukaemia has been omitted from the analysis as the number of cases was not adequate for any type of geographical comparison.

The incidence of cancer in Ireland is compared with Northern Ireland[11,16], England[17], Scotland[18], Wales[19], and an estimated European Union average[3], and, within Ireland, incidence is shown for each health board area. Incidence is not shown at the county level as, for many cancers, numbers were relatively small. Observed differences at county level are largely due to chance, which makes meaningful interpretation difficult.

For Britain and Ireland maps are used to illustrate European age-standardised incidence rates (EASR) for each area. Within Ireland, the maps show both the EASR for each area and, also, this EASR as a percentage of the national figure (the directly standardised rate ratio – DSRR). Health boards with incidence rates which were significantly different ($p < .05$) from the national rate have been indicated (see Appendix A2.6.11). Male and females rates are shown separately. Male rates tend to be higher than female for most sites, as can be seen from the map legends.

Unless otherwise indicated "Ireland" refers to the Republic of Ireland. "Eastern Health Board" has been retained as the description of the area now covered by the Eastern Regional Health Authority (ERHA), as that was the designation of the area in question in 1994 – 1998.

8.2. Data analysed

The cases described in this chapter were all malignant (invasive) cancers of the sites listed in section 2.2.1.
Inclusions and exclusions have also described in section 2.2.1.

8.3. All cancers excluding non melanoma skin cancer *ICD 10 C00 - C96*

8.3.1. Incidence in Ireland, Britain and Europe

Ireland had the lowest incidence of invasive cancer, excluding non-melanoma skin cancer (NMSC), in Britain and Ireland. The highest incidence of cancer was in Scotland, followed by Wales – this was true for both sexes. The incidence of cancer in females was above the European average throughout Britain and Ireland. However, the incidence of cancer in males was below the European average in Ireland and England.

Table 8.1 European age-standardised incidence rates within Ireland and Britain: all cancers excluding NMSC

	EASR	
	female	male
Ireland 1994 – 98	319.5	390.9
Northern Ireland 1997	338.9	414.6
England 1997	328.2	385.2
Wales 1997	355.4	429.7
Scotland 1997	369.5	455.6
European Union average 1996	292.2	416.4

Figure 8.1 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, all cancers excluding non-melanoma skin

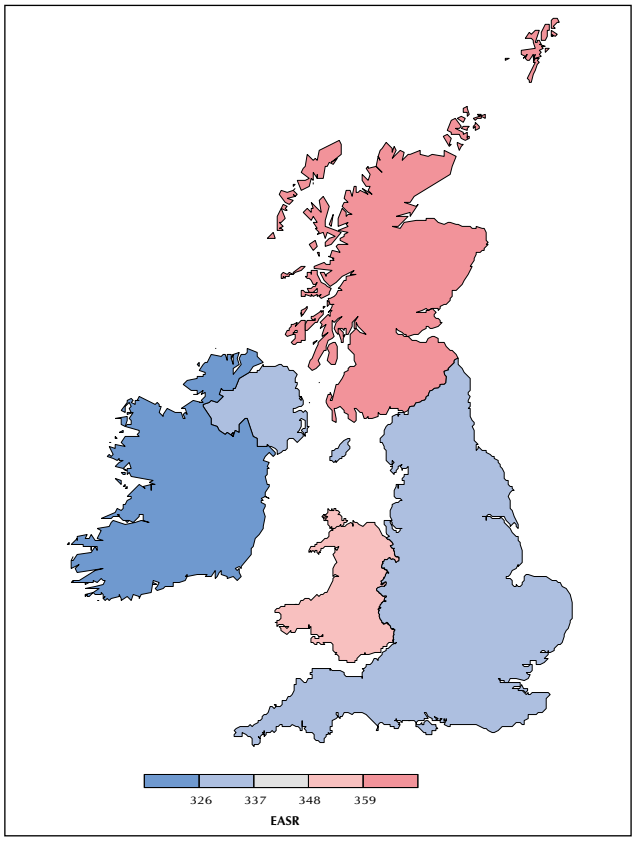
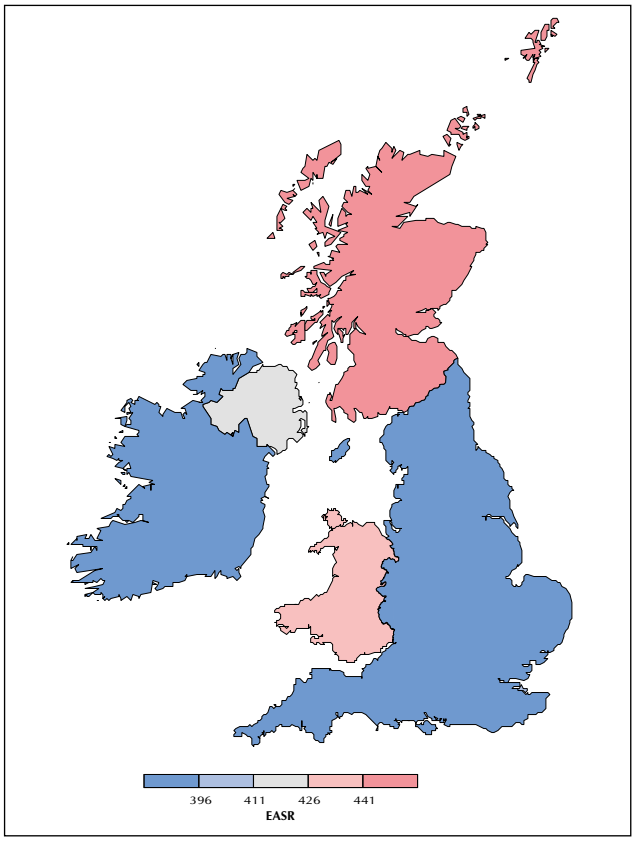


Figure 8.2 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, all cancers excluding non-melanoma skin



8.3.2. Incidence within Ireland

The Eastern Health Board had the highest overall cancer incidence. This was true for both sexes and was statistically significant. It was notable that the incidence of invasive cancer in males was particularly high in comparison with rates in the rest of Ireland. Conversely, the incidence of invasive cancer was significantly lower for both sexes in the Western Health Board, Mid Western Health Board and the South Eastern Health Board.

Figure 8.3 Age-standardised incidence rate (per 100000) by health board: females, all cancers excluding non-melanoma skin

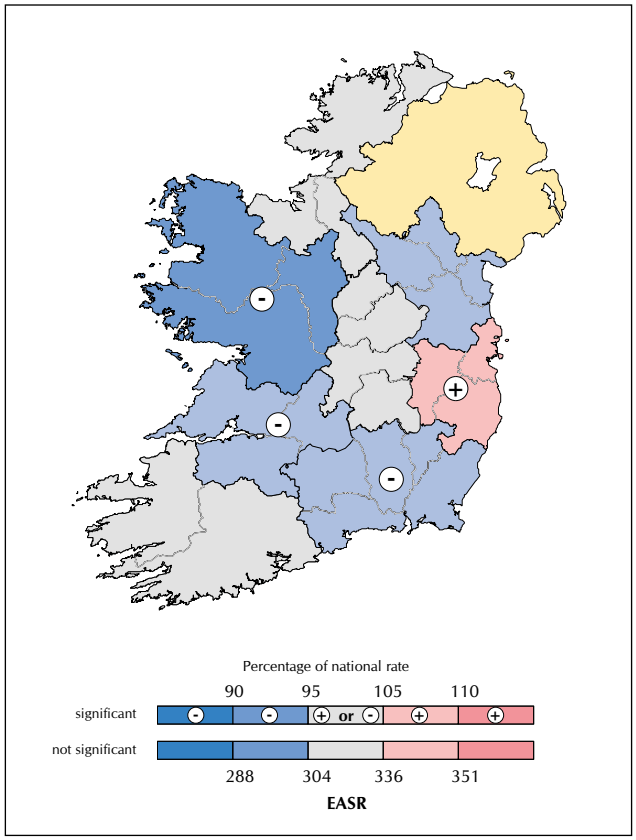
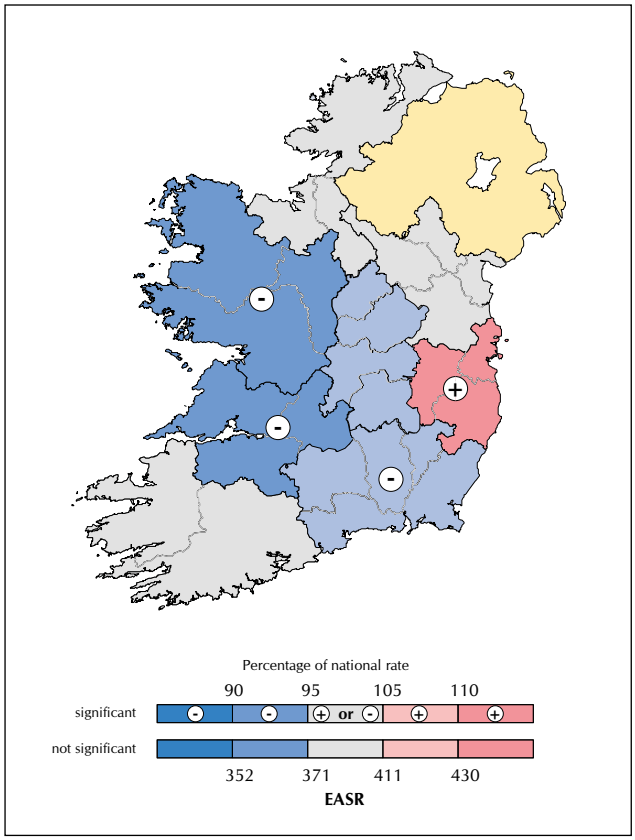


Figure 8.4 Age-standardised incidence rate (per 100000) by health board: males, all cancers excluding non-melanoma skin



8.4. Colorectal cancer *ICD 10 C18 - C21*

8.4.1 Incidence in Ireland, Britain and Europe

Ireland had the third highest incidence of colorectal cancer for both females and males in Ireland and Britain. This incidence was, in turn, higher than the European average, particularly so for males. Scotland, followed by Northern Ireland, had the highest incidence.

Table 8.2 European age-standardised incidence rates within Ireland and Britain: colorectal cancer

	EASR	
	female	male
Ireland 1994 – 98	39.2	63.2
Northern Ireland 1997	45.2	67.0
England 1997	34.6	51.2
Wales 1997	37.3	58.4
Scotland 1997	45.9	70.3
European Union average 1996	36.4	54.9

Figure 8.5 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, colorectal cancer

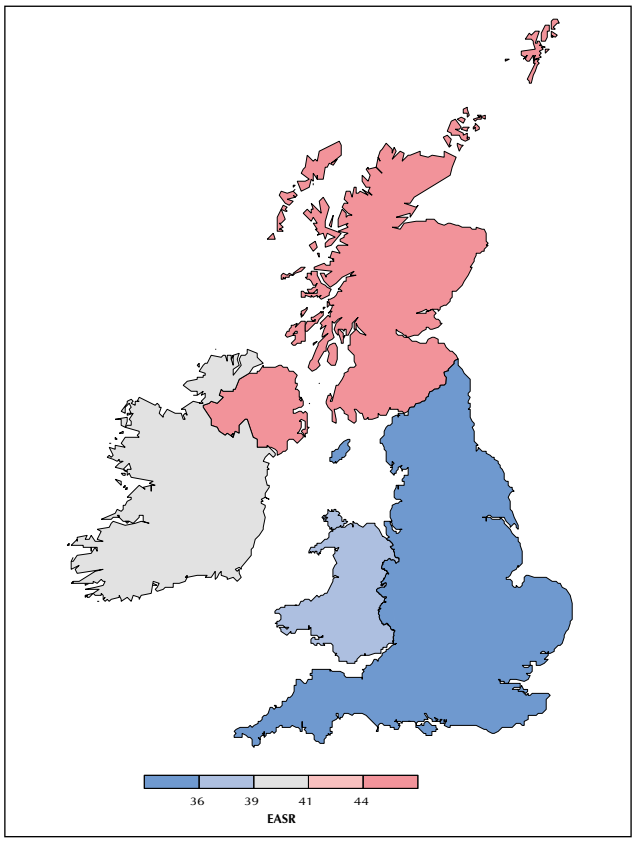
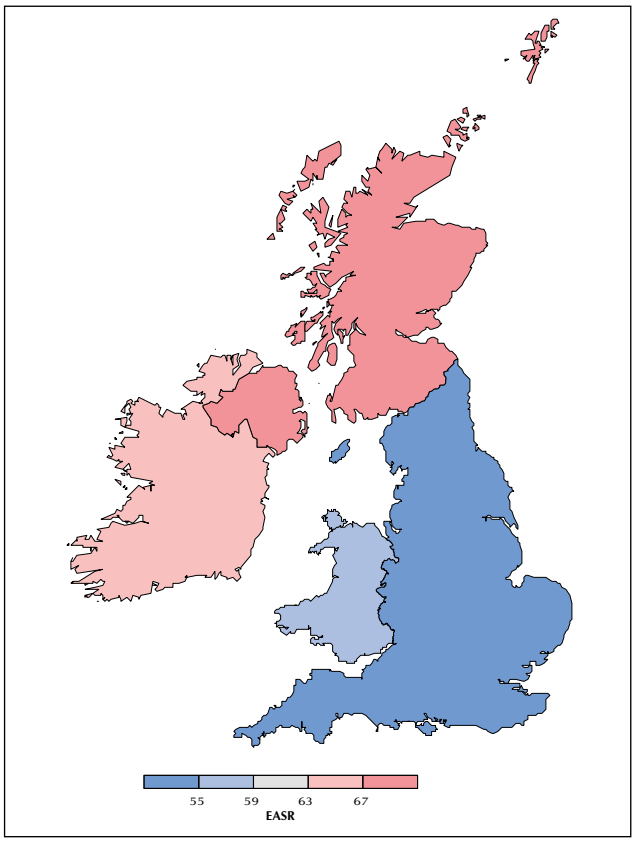


Figure 8.6 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, colorectal cancer



8.4.2. Incidence within Ireland

For females, the highest incidence was in the Southern Health Board and the lowest in the Mid Western Health Board; both were statistically significant. For men the highest incidence was in the Eastern Health Board, which was statistically significant and 10% higher than the national average.

Figure 8.7 Age-standardised incidence rate (per 100000) by health board: females, colorectal cancer

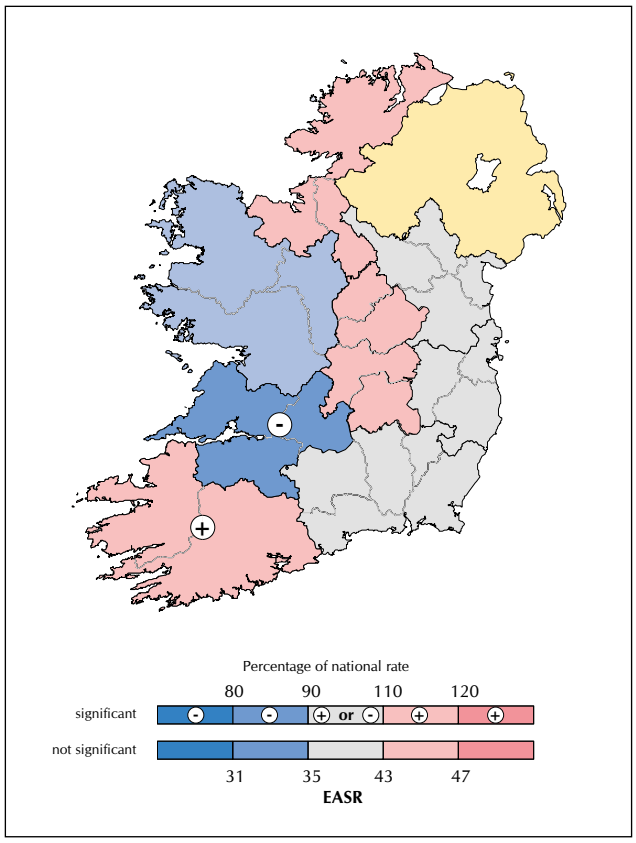
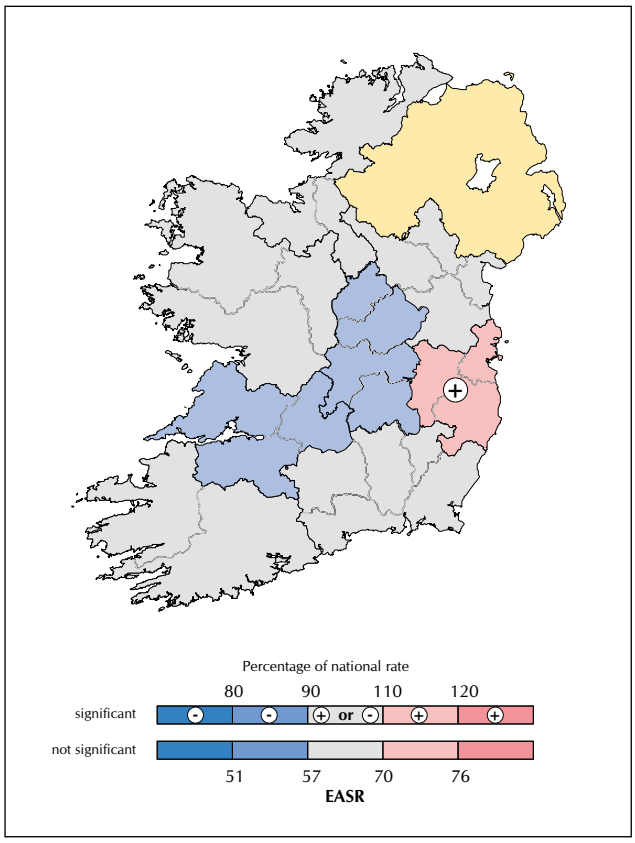


Figure 8.8 Age-standardised incidence rate (per 100000) by health board: males, colorectal cancer



8.4.3 Comment

There is little doubt that there is a relationship between diet and colorectal cancer. However, international studies remain inconclusive as to the exact nature of this relationship. Nevertheless, a diet that is rich in fresh fruit and vegetables and low in fats makes all round health sense.

International studies indicate that screening for colorectal cancer can have a substantial impact on reducing the mortality from invasive disease. However, the cost effectiveness of introducing such a programme on a population basis needs to be carefully evaluated outside of the context of clinical trials for screening, where much of the research has taken place.

8.5. Female breast cancer *ICD 10 C50*

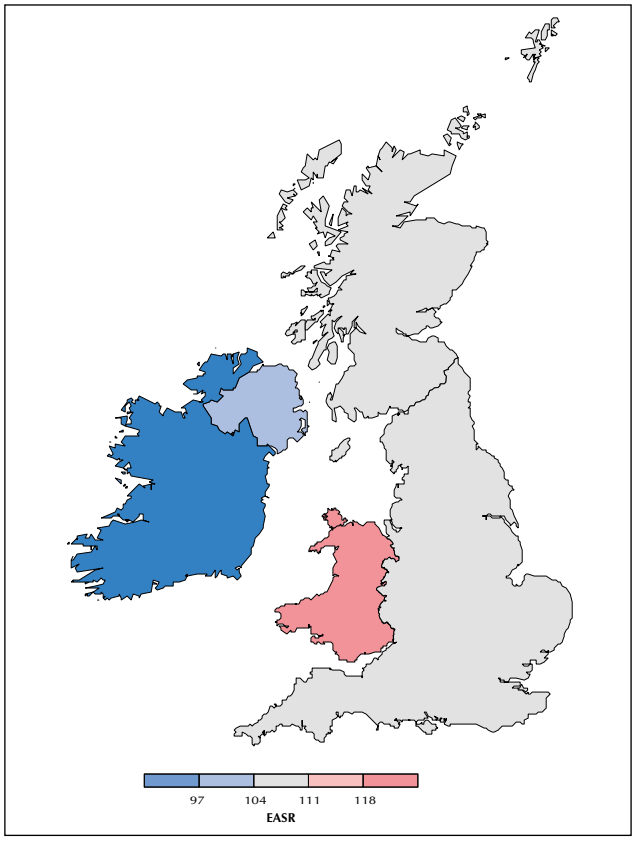
8.5.1 Incidence in Ireland, Britain and Europe

Ireland had the lowest incidence of breast cancer within Ireland and Britain, close to the average incidence for the European Union as a whole. The incidence rate in Wales was much higher than elsewhere in Britain and Ireland.

Table 8.3 European age-standardised incidence rates within Ireland and Britain: female breast cancer

	EASR
Ireland 1994 – 98	95.2
Northern Ireland 1997	103.3
England 1997	105.9
Wales 1997	124.6
Scotland 1997	106.9
European Union average 1996	93.4

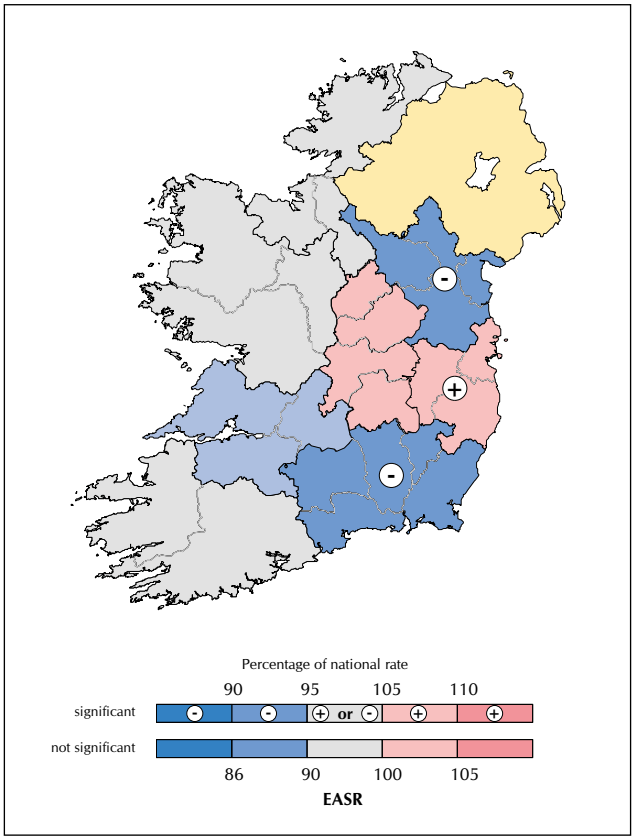
Figure 8.9 Age-standardised incidence rate (per 100000) in Ireland and Britain: female breast cancer



8.5.2 Incidence within Ireland

Two health boards had incidence rates higher than the national average – the Eastern and Midland Health Boards. Of these, the incidence in the Eastern Health Board was significantly higher than the national rate. The remaining Health Boards all had rates below the Irish average, significantly so in the South Eastern and North Eastern Health Board.

Figure 8.10 Age-standardised incidence rate (per 100000) by health board: female breast cancer



8.5.3. Comment

Care must be taken in interpreting breast cancer incidence statistics. It is known that incidence rates tend to increase during the first years of breast cancer screening. Although there was no formal breast screening programme in Ireland during 1994 to 1998 it is known that opportunistic screening took place during these years (see *Cancer screening* section 3.4.1). The observed differences may, in part, reflect differential uptake of breast screening by women in different parts of the country and the low level of screening in Ireland compared to Britain and Northern Ireland.

8.6. Lung cancer *ICD 10 C34*

8.6.1 Incidence in Ireland, Britain and Europe

Ireland had the lowest incidence of lung cancer for both males and females within Ireland and Britain. Scotland had by far the highest incidence. The incidence of lung cancer in Irish males was below the European Union average but that for females was above the European average.

Table 8.4 European age-standardised incidence rates within Ireland and Britain: lung cancer

	EASR	
	female	male
Ireland 1994 – 98	26.7	62.3
Northern Ireland 1997	32.5	74.7
England 1997	33.6	71.6
Wales 1997	35.2	78.0
Scotland 1997	56.1	107.1
European Union average 1996	16.1	75.5

Figure 8.11 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, lung cancer

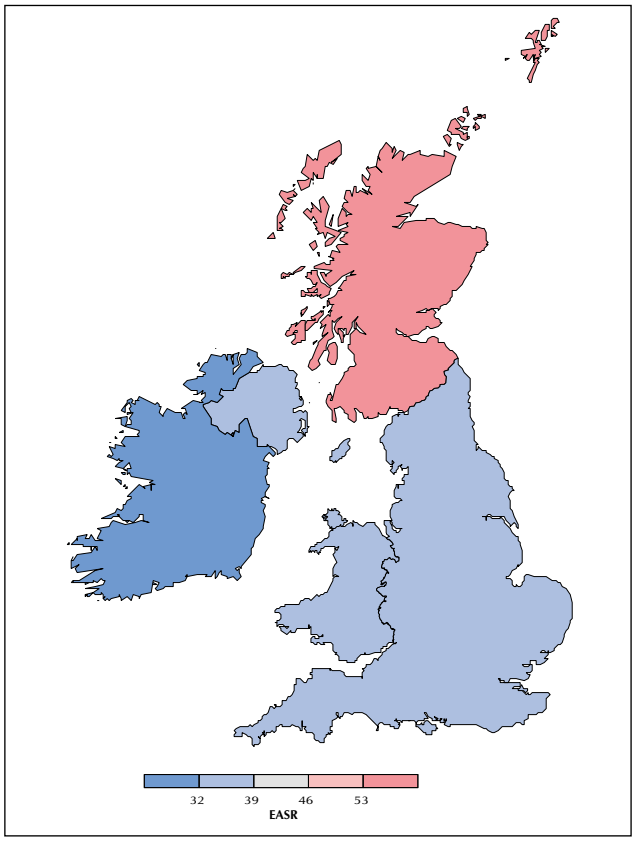
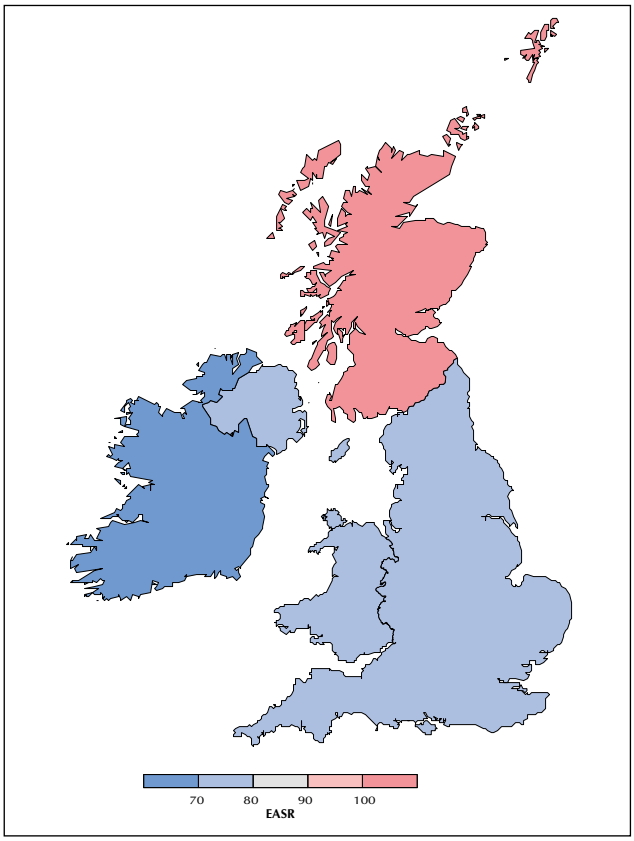


Figure 8.12 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, lung cancer



8.6.2. Incidence within Ireland

For both males and females the incidence of lung cancer was highest in the Eastern Health Board. The rate for females was 36% above the national average and the rate for males 34% above. Both of these figures were statistically significant. All of the other Health Boards had incidence rates which were below the national average, significantly so in most cases. However this, in part, is due to the influence of the high EHB rates on the national average.

Figure 8.13 Age-standardised incidence rate (per 100000) by health board: females, lung cancer

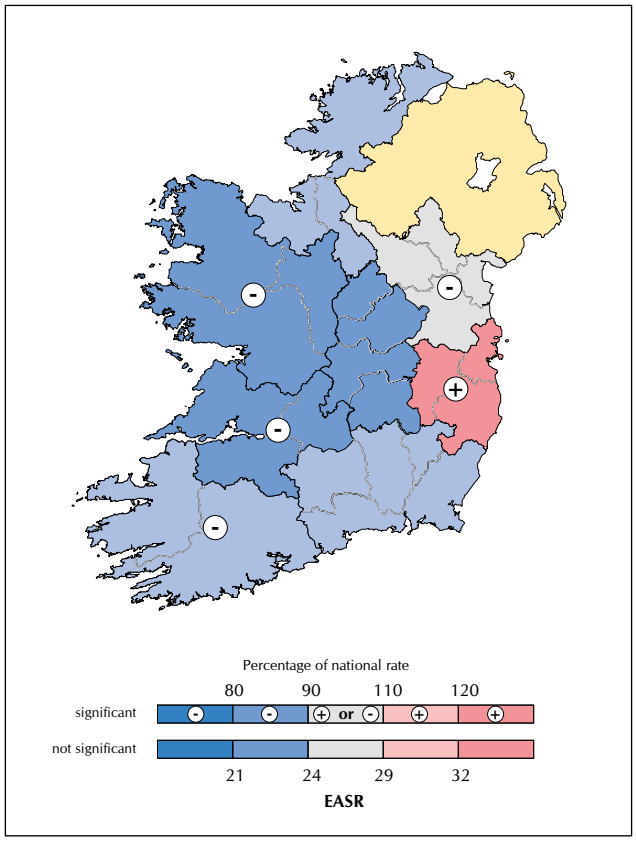
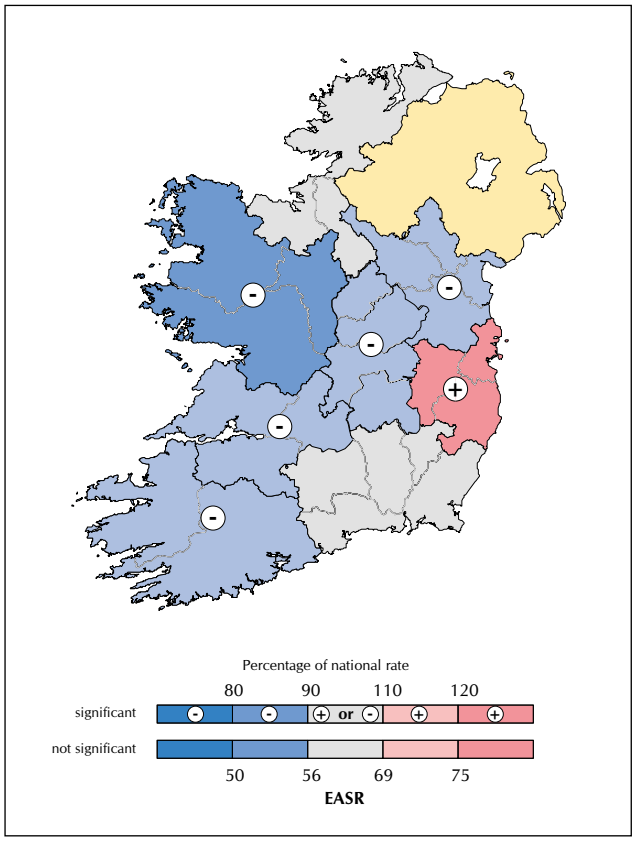


Figure 8.14 Age-standardised incidence rate (per 100000) by health board: males, lung cancer



8.6.3. Comment

The incidence of lung cancer is directly related to the prevalence of smoking. Survival is extremely poor and incidence rates are reflected closely in the mortality rates. There is an inverse relationship between smoking and socio-economic status: recent surveys have indicated that more young people, and particularly young females, are smoking.[20] As there is, as yet, no satisfactory screening test for lung cancer and as the disease presents late, with associated poor treatment outcomes, the highest priority must be given to smoking prevention and effective smoking cessation programmes.

8.7. Prostate cancer *ICD 10 C61*

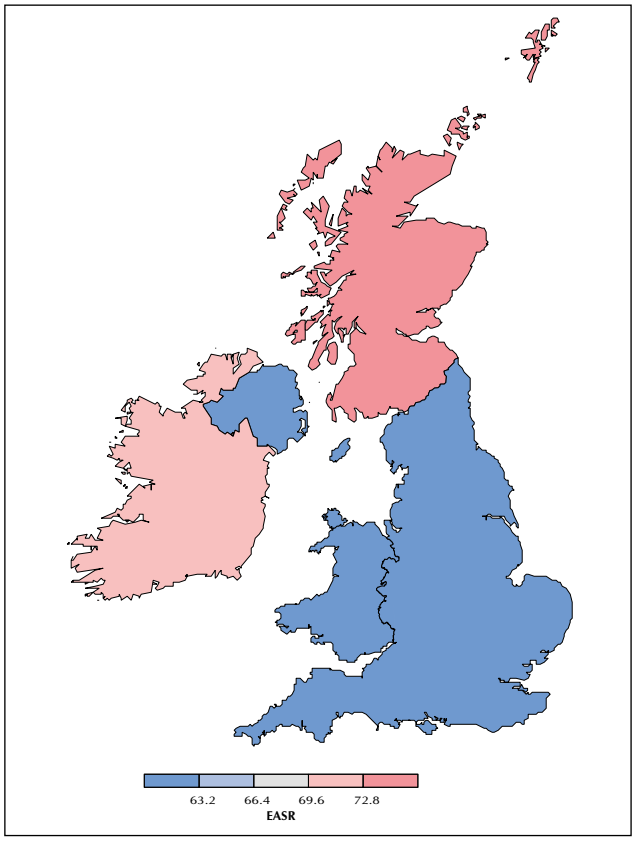
8.7.1 Incidence in Ireland, Britain and Europe

Scotland had the highest incidence of prostate cancer, followed by Ireland. These incidence rates were above the average for the European Union. Northern Ireland, England and Wales all had rates which were below the European average.

Table 8.5 European age-standardised incidence rates within Ireland and Britain: prostate cancer

	EASR
Ireland 1994 – 98	71.9
Northern Ireland 1997	61.2
England 1997	60.7
Wales 1997	61.5
Scotland 1997	75.3
European Union average 1996	65.2

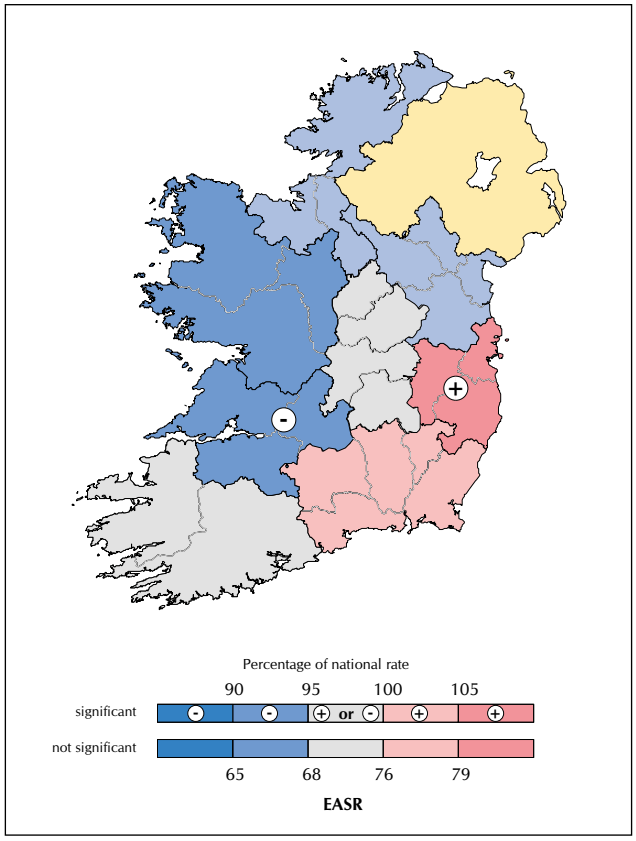
Figure 8.15 Age-standardised incidence rate (per 100000) in Ireland and Britain: prostate cancer



8.7.2 Incidence within Ireland

Two health boards had incidence rates significantly different from the national average. The highest rate was in the Eastern Health Board, 10% higher than the national average. In most other health boards the incidence of prostate cancer was below the national average. The lowest rate was in the Mid Western Health Board which was 13% below the national average.

Figure 8.16 Age-standardised incidence rate (per 100000) by health board: prostate cancer



8.7.3 Comment

As with breast cancer, care must be taken in interpreting this information, as screening activity may have an impact on incidence rates. There is no national screening programme for prostate cancer in Ireland; however, there is no doubt that screening does take place. The differential pattern of prostate cancer incidence which was evident from the map may be, to some extent, a reflection of differential uptake of screening within health board areas. Prostate cancer is frequently a disease that people die with, rather than of, and increases in recorded incidence may not be translated into increased mortality from the disease.

8.8. Bladder cancer *ICD 10 C67*

8.8.1. Incidence in Ireland, Britain and Europe

Within Ireland and Britain, Scotland had the highest incidence while Ireland had the lowest rates. Irish rates for females were close to the EU average and lower than those in the UK. For males, the rates were also lower than elsewhere, but close to those in N. Ireland.

However, care needs to be taken in making comparisons of bladder cancer between countries as a result of inconsistencies in the definition of malignant bladder disease.

Table 8.6 European age-standardised incidence rates within Ireland and Britain: bladder cancer

	EASR	
	female	male
Ireland 1994 – 98	6.6	21.0
Northern Ireland 1997	8.6	24.7
England 1997	8.6	29.0
Wales 1997	9.9	31.5
Scotland 1997	11.9	35.7
European Union average 1996	6.3	32.2

Figure 8.17 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, bladder cancer

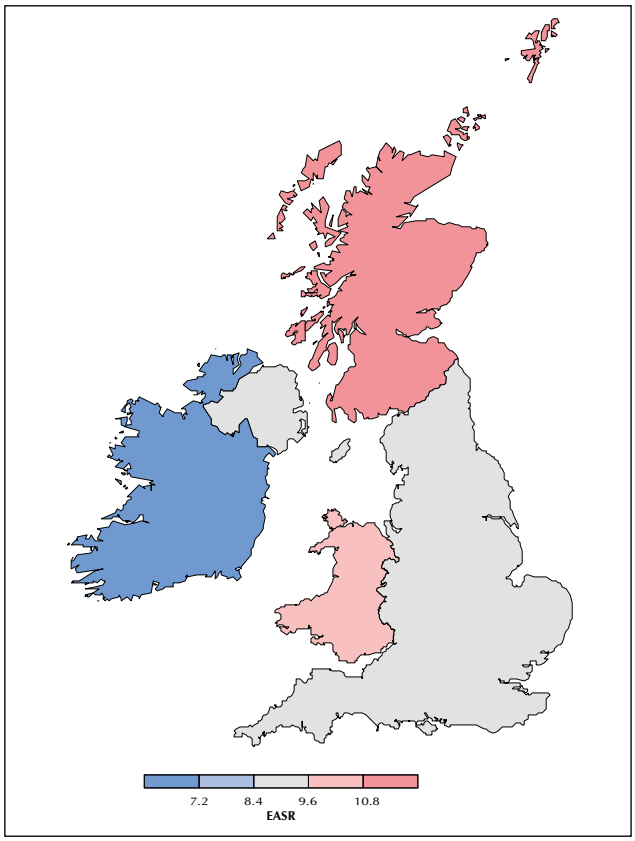
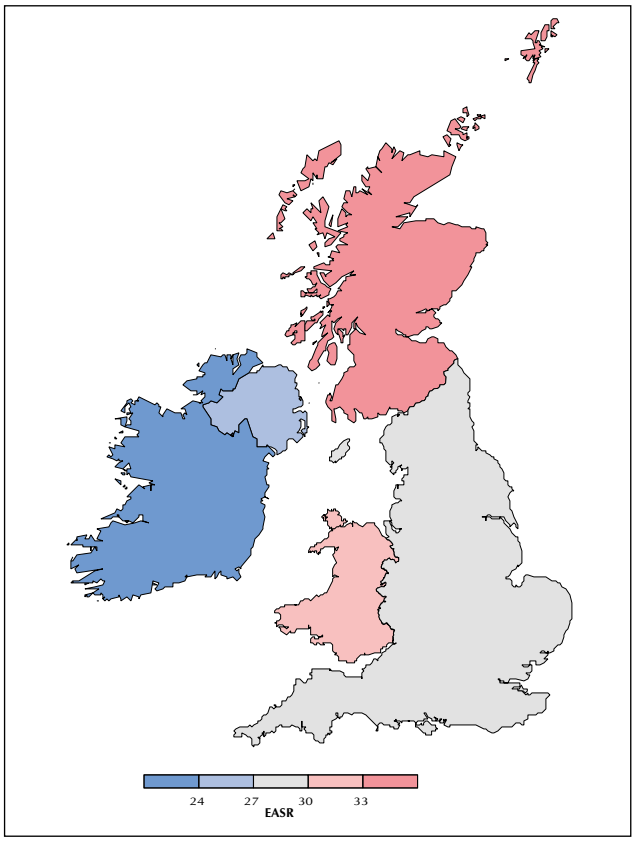


Figure 8.18 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, bladder cancer



8.8.2. Incidence within Ireland

For women the number of cases diagnosed within each of the health boards was relatively small, the highest incidence occurring in the Eastern Health Board. Similarly, for men the highest incidence of bladder cancer was in the Eastern Health Board – this was 20% greater than the national average and statistically significant. In the Western Health Board the incidence in both sexes was significantly below the national average.

Figure 8.19 Age-standardised incidence rate (per 100000) by health board: females, bladder cancer

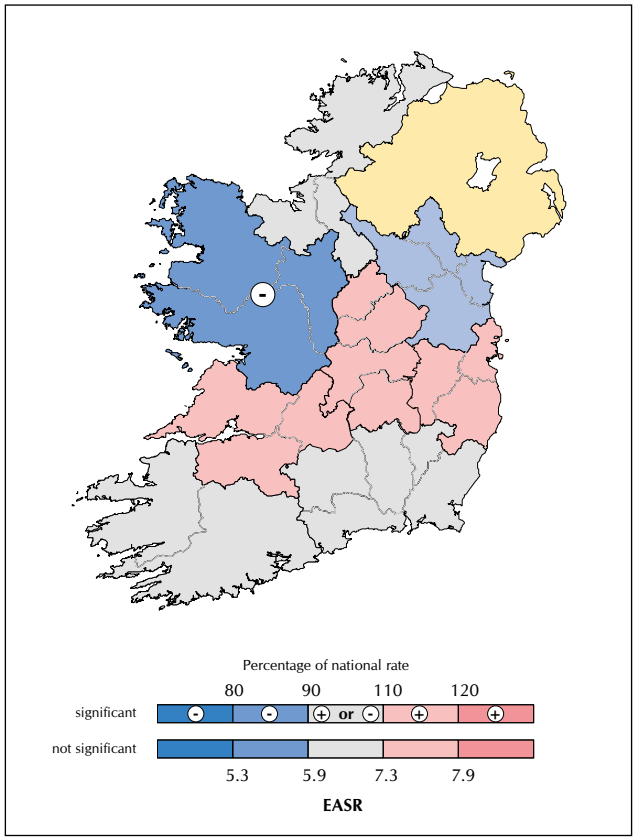
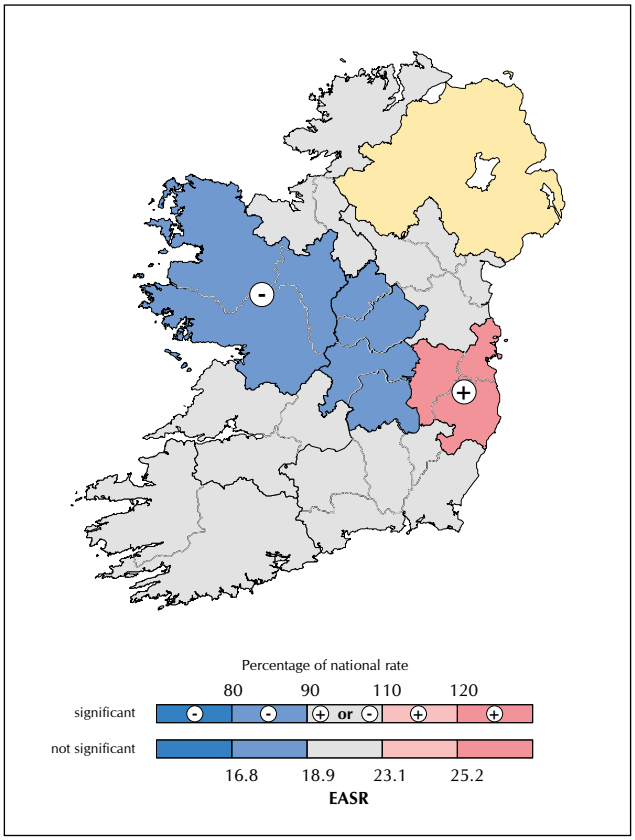


Figure 8.20 Age-standardised incidence rate (per 100000) by health board: males, bladder cancer



8.8.3. Comment

The risk of bladder cancer is increased through exposure to certain chemicals and dyes, sometimes as a result of occupational exposure. We also know that smokers have an increased risk of bladder cancer.

8.9. Stomach cancer *ICD 10 C16*

8.9.1 Incidence in Ireland, Britain and Europe

Ireland had the lowest incidence of stomach cancer for males in Ireland and Britain and only England had a lower incidence for females. Within the European Union Ireland compares favourably, as the incidence of stomach cancer was below the European average for both males and females.

Table 8.7 European age-standardised incidence rates within Ireland and Britain: stomach cancer

	EASR	
	female	male
Ireland	8.6	18.9
Northern Ireland	10.5	22.4
England	7.4	19.6
Wales	10.4	27.7
Scotland	10.1	22.0
European Union average	10.3	22.1

Figure 8.21 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, stomach cancer

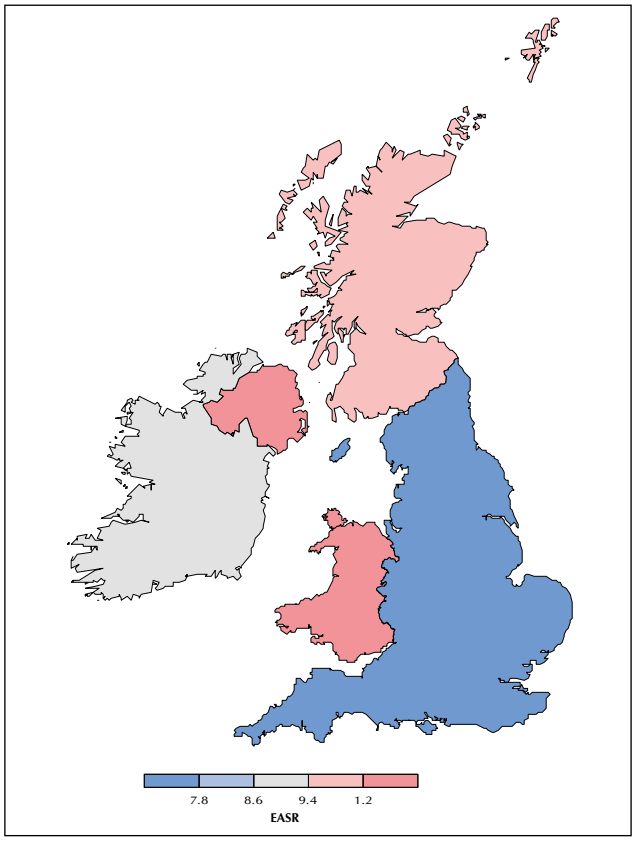
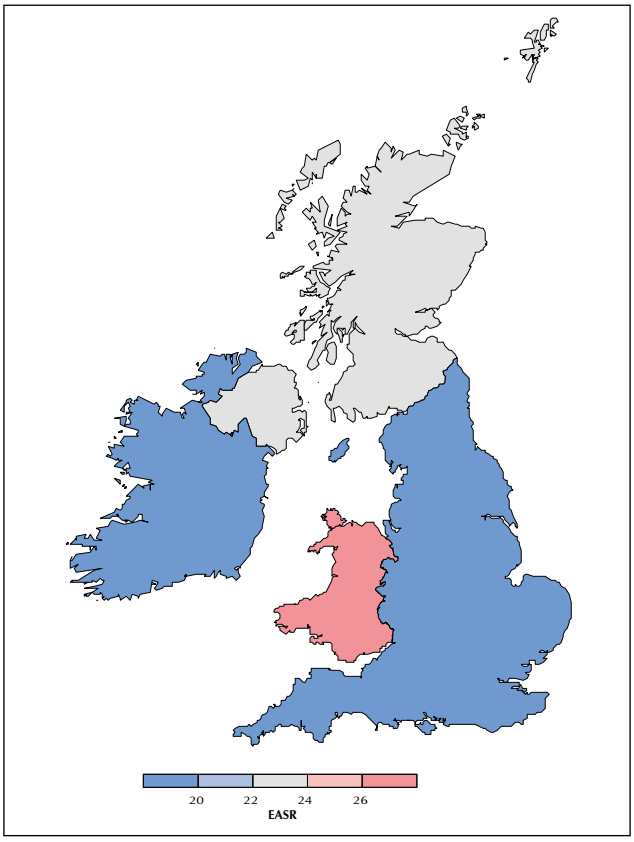


Figure 8.22 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, stomach cancer



8.9.2 Incidence within Ireland

For females the highest rate, 38% above the national average, was in the North Eastern Health Board: this was statistically significant. Care must be taken in interpreting this figure as the number of cases was small, with an average of only 20 cases being diagnosed per year. For males the highest incidence was in the Eastern Health Board, which had a rate 24% above the national average: this, also, was statistically significant. Both the Mid Western Health Board and the Southern Health Board had rates for males which were significantly below the national average.

Figure 8.23 Age-standardised incidence rate (per 100000) by health board: females, stomach cancer

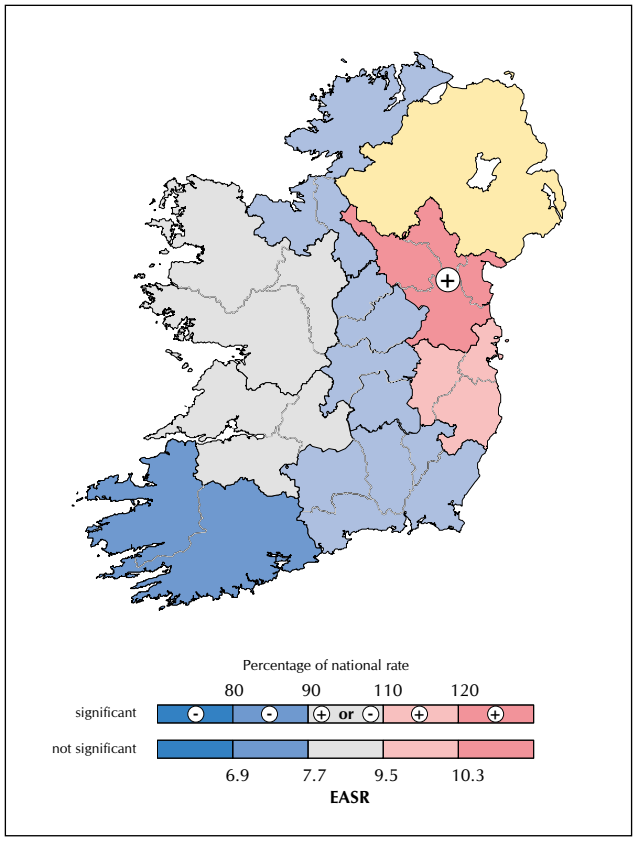
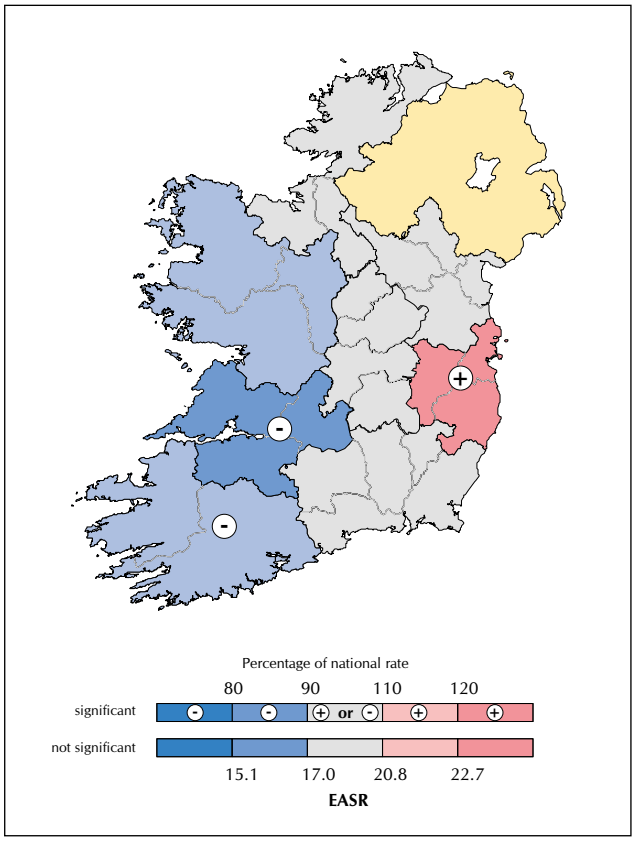


Figure 8.24 Age-standardised incidence rate (per 100000) by health board: males, stomach cancer



8.9.3 Comment

Internationally, and more particularly in the developed world, the incidence and mortality of stomach cancer is declining. International studies support a relationship between diet and stomach cancer, particularly in relation to a high salt intake and the consumption of certain processed meats. There is also a relationship between the prevalence of the bacterium Helicobacter Pylori and the risk of stomach cancer. There is no effective screening mechanism for stomach cancer.

8.10 Non-Hodgkin's Lymphoma *ICD 10 C82 - C85*

8.10.1 Incidence in Ireland, Britain and Europe

Non-Hodgkin's lymphoma was analysed separately from Hodgkin's disease as data were not readily available for Hodgkin's disease for the individual areas within the United Kingdom. Ireland had the lowest incidence in males within Britain and Ireland. For females the incidence in Ireland was at about the mid point of the range of rates. Notably, the incidence in Northern Ireland was the highest in Britain and Ireland for both males and females.

Table 8.8 European age-standardised incidence rates within Ireland and Britain: non-Hodgkin's lymphoma

	EASR	
	female	male
Ireland	10.3	13.4
Northern Ireland	13.8	16.7
England	9.7	14.3
Wales	10.0	14.5
Scotland	12.3	16.5
European Union average	9.2	14.0

Figure 8.25 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, non-Hodgkin's lymphoma

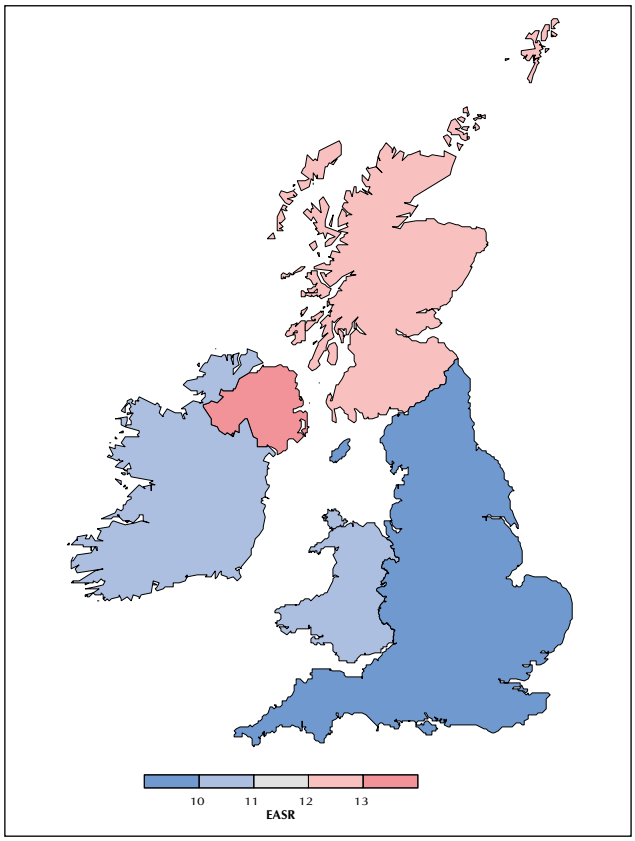
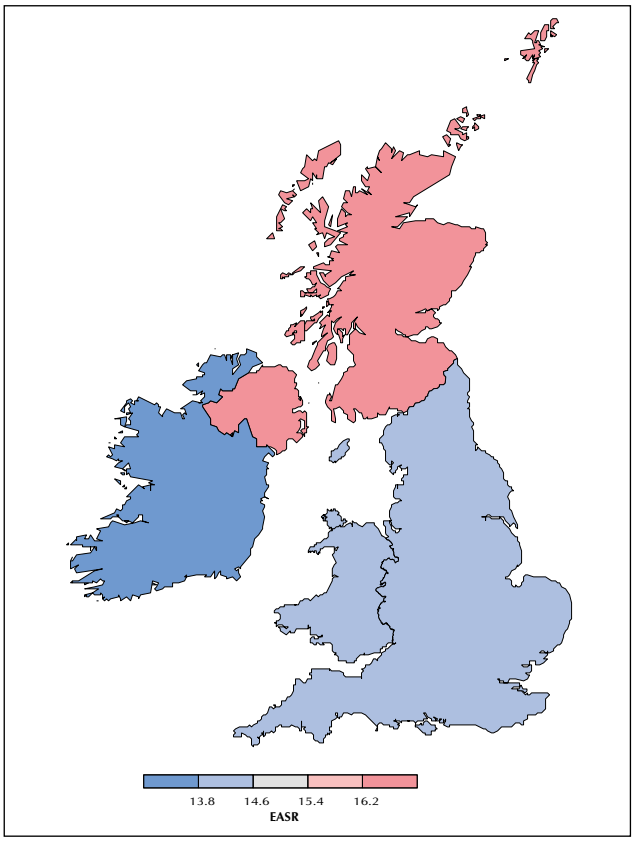


Figure 8.26 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, non-Hodgkin's lymphoma



8.10.2 Incidence within Ireland

Within the health boards there was no obvious pattern of incidence. No health board had an incidence rate which was significantly different from that of Ireland as a whole and any observed differences could have occurred by chance.

Figure 8.27 Age-standardised incidence rate (per 100000) by health board: females, non-Hodgkin's lymphoma

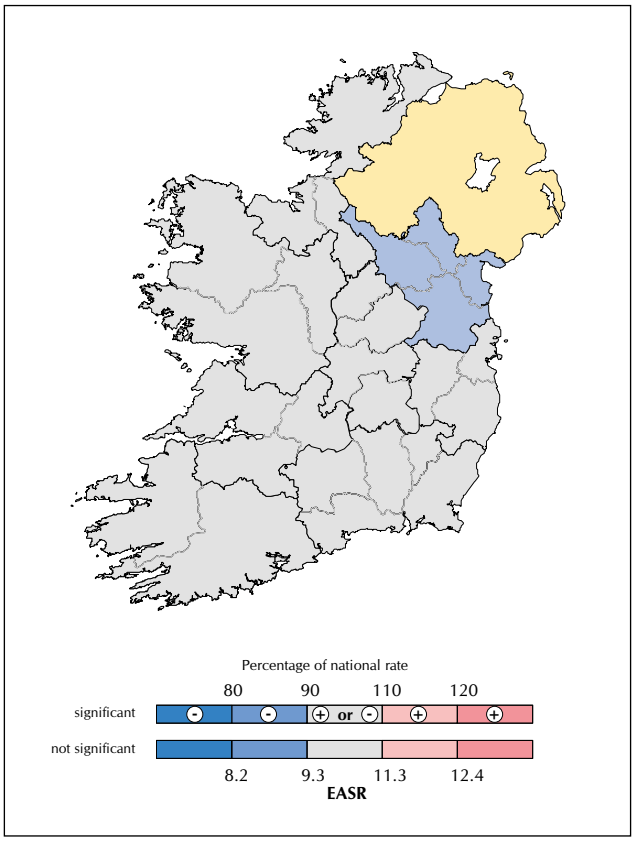
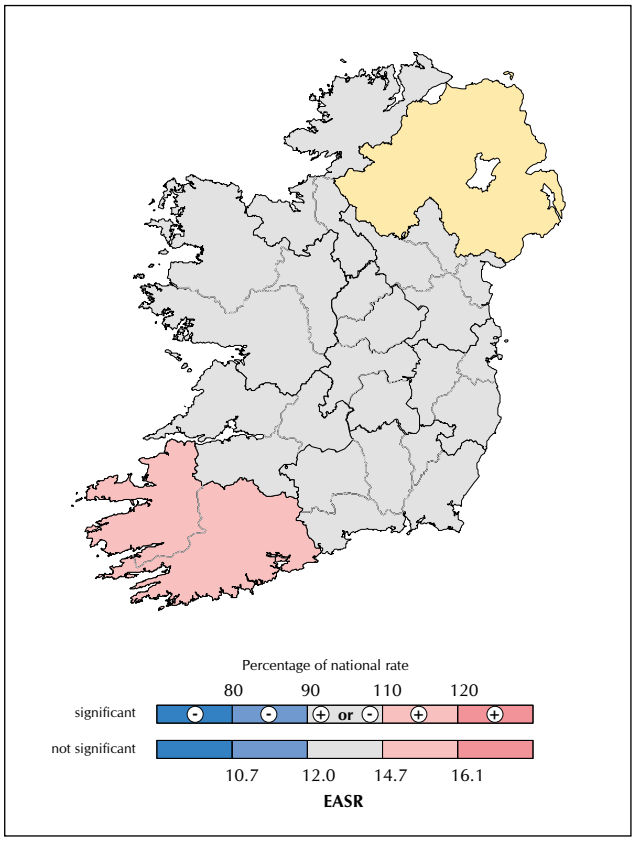


Figure 8.28 Age-standardised incidence rate (per 100000) by health board: males, non-Hodgkin's lymphoma



8.10.3 Comment

The incidence of lymphoma has been increasing internationally at the rate of 3% – 4% per year. The aetiology of non Hodgkin's lymphoma remains largely unknown although studies point to the role of the Epstein-Barr virus, the use of certain agricultural pesticides, immuno-suppression and the effect of aggressive chemotherapy regimens for other cancers in increasing the risk of a later non Hodgkin's lymphoma.

8.11 Melanoma of skin *ICD 10 C43*

8.11.1 Incidence in Ireland, Britain and Europe

Ireland and Scotland had the highest incidence of melanoma of skin in both sexes. In both cases, rates were higher than the European Union average.

Table 8.9 European age-standardised incidence rates within Ireland and Britain: melanoma of skin

	EASR	
	female	male
Ireland	13.2	8.9
Northern Ireland	12.7	9.7
England	8.9	7.5
Wales	8.1	7.3
Scotland	13.3	10.8
European Union average	8.6	7.4

Figure 8.29 Age-standardised incidence rate (per 100000) in Ireland and Britain: females, melanoma of skin

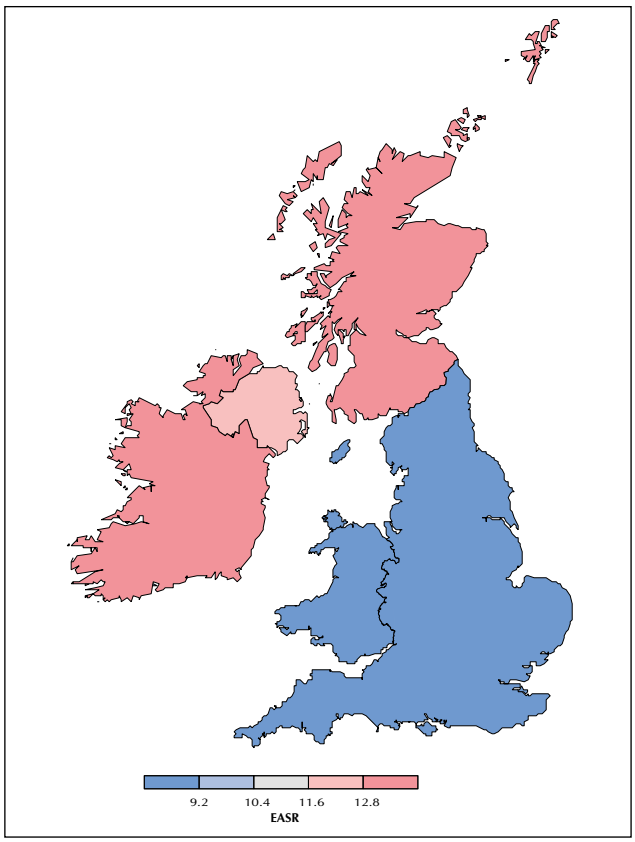
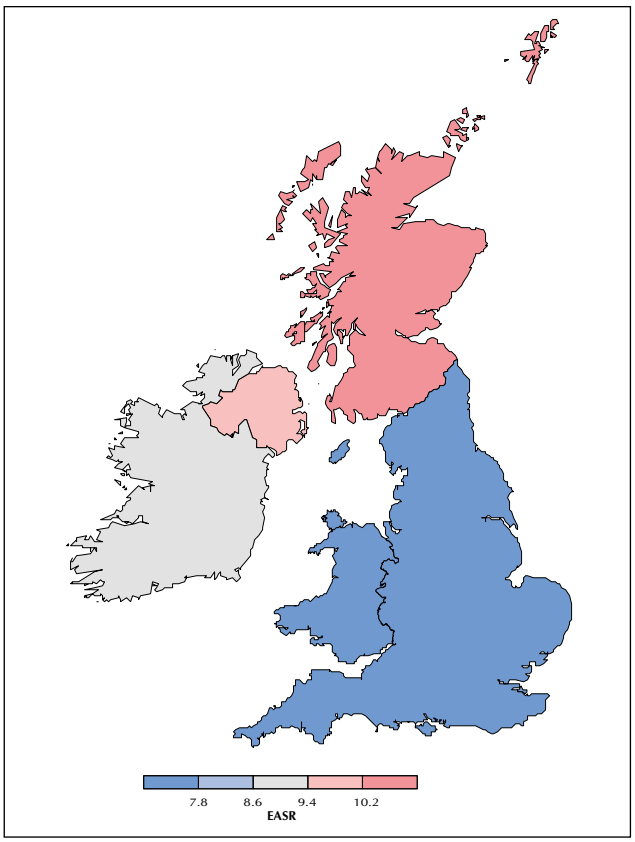


Figure 8.30 Age-standardised incidence rate (per 100000) in Ireland and Britain: males, melanoma of skin



8.11.2 Incidence within Ireland

This was one of the few cancers for which the incidence was higher in females than in males. For females the South Eastern, Southern, Eastern and North Eastern Health Boards all had rates higher than the national average, although none reached statistical significance. For males the highest incidence was in the Eastern Health Board, with higher than average rates also being recorded in the Southern, Midland and the Mid Western Health Boards. However, none of these rates was significantly different from the national average.

Figure 8.31 Age-standardised incidence rate (per 100000) by health board: females, melanoma of skin

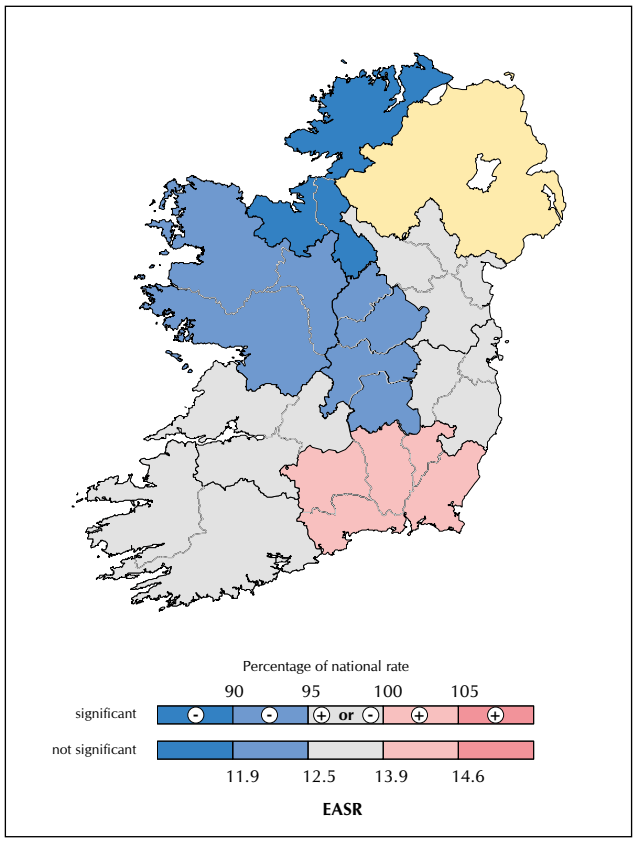
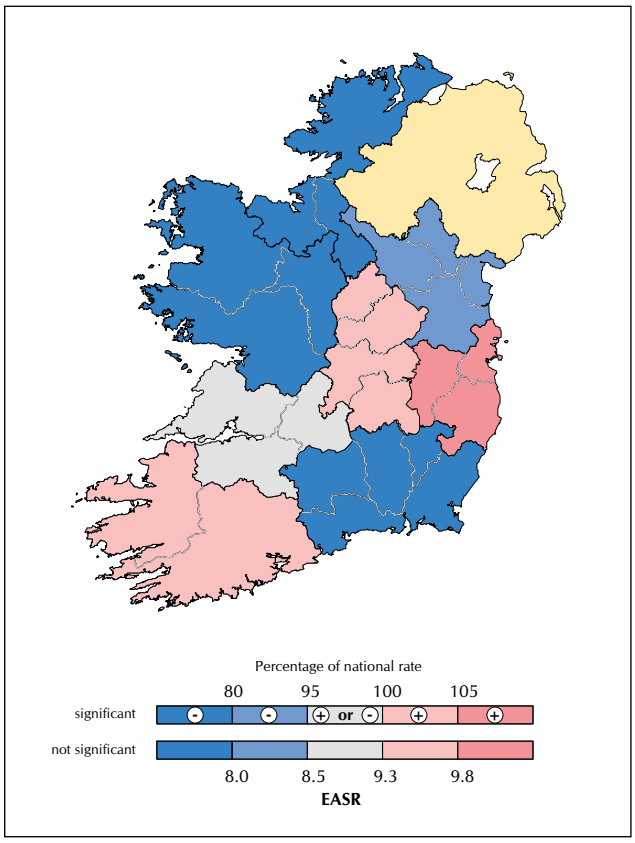


Figure 8.32 Age-standardised incidence rate (per 100000) by health board: males, melanoma of skin



8.11.3 Comment

The incidence of malignant melanoma has been rising exponentially internationally and is directly related to sun exposure. Incidence is higher among those of higher socio-economic status, although case fatality, and to a lesser extent mortality, is greatest in those of low socio-economic status, principally due to late presentation of advanced lesions. Health promotion has a potentially powerful role to play in promoting safe sun exposure and also in the role of increasing the awareness of moles and suspicious skin lesions both in the general public and among health professionals.

8.12 Key facts

- Ireland had the lowest overall cancer incidence in Britain and Ireland. The Eastern Health Board had the highest overall cancer incidence in Ireland – this was true for both sexes and was statistically significant.
- Ireland had the lowest incidence of breast cancer within Britain and Ireland; the incidence was close to the EU average. The incidence of breast cancer was significantly higher than the national average in the Eastern Health Board.
- The incidence of prostate cancer in Ireland was higher than the European average and was second highest after Scotland in Britain and Ireland. It was significantly above the national average in the Eastern Health Board.
- Ireland had the lowest incidence of bladder cancer in Britain and Ireland. For males, the incidence of bladder cancer was significantly raised in the Eastern Health Board.
- Ireland had the lowest incidence of lung cancer for both males and females within Britain and Ireland. The incidence was below the European average for males but above the European average for females. For both males and females the incidence of lung cancer was significantly higher than the national average in the Eastern Health Board.
- The incidence of colorectal cancer was higher in Ireland than the European average for both males and females. Among the health boards, the incidence of colorectal cancer was significantly higher than the national average in the Southern Health Board in females and the Eastern Health Board in males.
- Ireland had the second lowest incidence of stomach cancer in Britain and Ireland, below the European average. The North Eastern Health Board had a significantly higher incidence of stomach cancer in females, while the incidence in the Eastern Health Board was significantly higher in males.
- Ireland had one of the highest rates of melanoma in Britain and Ireland, second only to Scotland for females and Northern Ireland for males. The incidence was higher than the European Union average.

9. Treatment

9.1. Methods

The cases selected for this analysis were patients with primary malignant tumours of the sites listed in section 2.2.1 and in Table 9.1 below who were diagnosed in the Republic of Ireland during the five-year period from 1994 to 1998. In the case of patients who had more than one cancer, the record with the earlier date of diagnosis was retained. A total of 39681 cases satisfied these criteria. A total of 248 patients were excluded because they were aged under 15 or over 100 years at the time of diagnosis (n = 244) or because their address could not be assigned to a health board area (n = 4). A further 63 male breast cancer cases were also excluded from this analysis, leaving a total of 39370 patients (Table 9.1).

"Eastern Health Board" has been retained as the description of the area now covered by the Eastern Regional Health Authority (ERHA), as that was the designation of the area in question in 1994 – 1998.

Table 9.1 Cancer patients included in treatment analysis; by site and sex.

SITE	SEX		
	female	male	both sexes
stomach	853	1441	2294
colorectal	3669	4788	8457
lung	2504	4773	7277
skin melanoma	1155	683	1838
breast (female)	7856	0	7856
prostate		5618	5618
bladder*	625	1588	2213
lymphomas	1078	1222	2300
leukaemia	632	885	1517
total	18372	20998	39370

*As a preliminary analysis of bladder cancer suggested inconsistencies over time in the recording of removal of bladder tumours by coagulation, the section on treatment of bladder cancer has been omitted.

Cases were staged using a combined TNM staging system.[21] When possible, pathological staging was used, supplemented by clinical staging when pathological staging was not available. This TNM stage was then translated into a "summary stage" (I to IV).

Treatments included all cancer-directed therapy (surgery, radiotherapy, hormonal and chemotherapy) performed within six months of diagnosis. In the absence of any explicit information on treatment intent in the majority of cases, all treatment during this six-month period was taken to be part of the primary course of care. Treatment given for recurrence, for failure to respond to initial therapy or for metastasis not present at the time of initial diagnosis is not registered and is not reported on here.

Surgical and other treatments were coded using the Registry's Treatment and Procedures Coding Manual (a simplified version of the relevant chapters of the ICD-9-CM).[22] Patients were deemed to have had surgery if they underwent open excisional biopsy or partial, total or radical removal of the affected organ. Closed biopsy and procedures not directed at reducing tumour mass (e.g. palliative or reconstructive operations) were not considered as cancer-directed surgery and patients who received only this type of treatment were included in the "no treatment" category. Chemotherapy was defined as the oral administration, injection or infusion of a non-hormonal chemotherapeutic substance. Hormonal therapy did not include endocrine surgery and has only been analysed for cases of breast and prostate cancer. Patients for whom no surgery, radiotherapy or chemo/hormonal therapies were reported were classified in the "no treatment" group.

The analysis consisted of descriptive statistics (mainly cross tabulations) to identify current treatment patterns and trends across time and by health board of residence. For each site, the first table presents the percentages of patients receiving individual modalities of care (i.e. surgery, radiology, chemotherapy and hormonal therapy) while the percentages receiving various combinations of these therapies are described in the second table. In interpreting these tables, it is important to note that these percentages are not adjusted for potential confounding by age, sex or stage. The subsequent sections present the results of multivariate logistic regression which was used, mainly, to adjust for the potential effects of age at diagnosis, gender and stage on time and geographic trends of cancer treatment. For ease of interpretation, only odds ratios (ORs) whose 95% confidence intervals (95% C.I.) did not include 1 (no difference) are presented. In that sense, all logistic regression results reported were significant at $P < 0.05$.

9.2. Colorectal Cancer *ICD - 10 C18 - C21*

Table 9.2 and Figure 9.1 summarize treatment patterns for colorectal cancer cases diagnosed in the period 1994 to 1998. Overall, 18% of these patients received no cancer-specific treatment. This proportion ranged from 3% among stage I cases to 37% among those with stage IV disease and increased from 7% among the youngest age group (<55 years) to 37% among those aged 80 or more. This later figure is substantially higher than the corresponding US figure, which was 13% in 1993.[23] Some of the differences observed could be explained by earlier stage at presentation in the US, where the ratio of early (stage I and II) to late disease (stage III and IV) is 1.2 compared to 0.76 in Ireland.

Surgery was the most commonly used treatment modality. Seventy eight percent of patients were treated by surgery, with or without adjuvant therapy. Surgery was more frequently performed on young patients (85% among the under – 55s) and in the North Eastern Health Board. Chemotherapy was used, with or without, surgery in 23% of the cases. Younger patients were more likely to receive chemotherapy (51% in the under – 55 year olds compared to 2% in the over 80 age group). Anal and rectal tumours were more likely to be treated with radiotherapy than colon cancers.

Over the time frame of this report, the proportion of patients treated with radiotherapy and chemotherapy has steadily increased (Figure 9.2) while the proportion of patients treated surgically has remained the same. The proportion of patients who received no cancer-specific treatment declined from 20% in 1994 to 17% in 1998.

Multiple logistic regression analysis indicated that patients were less likely to receive tumour-specific treatment if they were older or if they had stage IV disease. Compared to the Eastern Health Board, patients residing in the North Eastern Health Board catchment area were more likely to be treated (OR=1.6, 95% CI 1.2 - 2.0) while those residing in the South Eastern Health Board were less likely to receive tumour-directed treatment (OR=0.6, 95% CI 0.5 - 0.7).

Table 9.3 shows the various combinations of cancer-specific treatment modalities used to treat colorectal cancer. Patients were mostly treated with surgery only (55%) or with surgery and chemotherapy (16%). Use of adjuvant chemotherapy for stage III is recommended. Forty three percent of stage III patients received adjuvant chemotherapy, substantially higher than the 1993 US figure (22%).

Figure 9.1 Percentage of cases receiving treatment, 1994 – 1998: colorectal cancer*

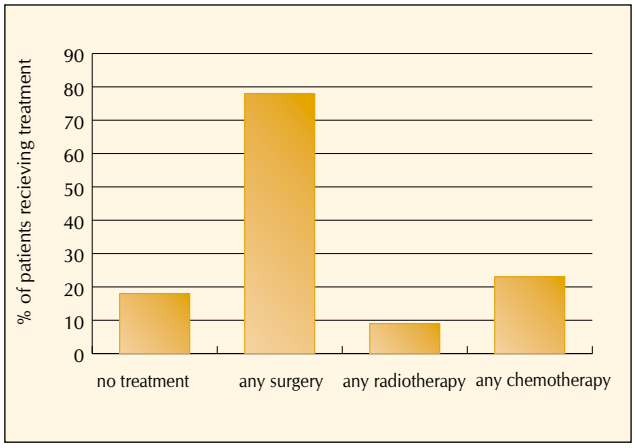
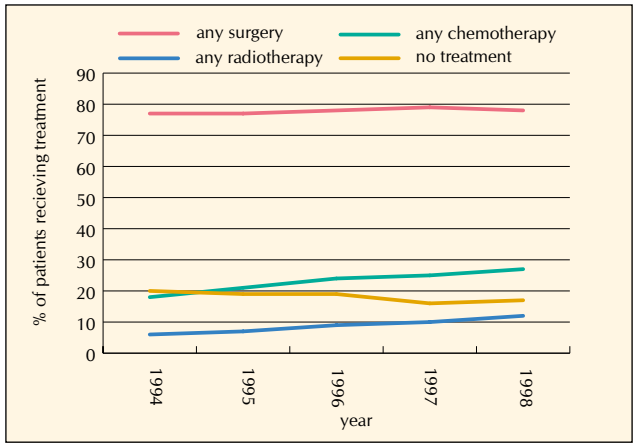


Figure 9.2 Percentage of cases receiving treatment by year of incidence: colorectal cancer



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.2 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: colorectal cancer**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	TOTAL
all	1534 (18%)	6585 (78%)	752 (9%)	1969 (23%)	8457
age group					
15 – 54	76 (7%)	917 (85%)	179 (17%)	551 (51%)	1076
55 – 64	169 (10%)	1457 (85%)	225 (13%)	659 (38%)	1712
65 – 69	168 (13%)	1079 (82%)	136 (10%)	369 (28%)	1315
70 – 74	269 (18%)	1145 (78%)	131 (9%)	237 (16%)	1467
75 – 79	293 (21%)	1043 (76%)	51 (4%)	127 (9%)	1368
80+	559 (37%)	944 (62%)	30 (2%)	26 (2%)	1519
sex					
female	698 (19%)	2854 (78%)	262 (7%)	805 (22%)	3669
male	836 (17%)	3731 (78%)	490 (10%)	1164 (24%)	4788
site					
colon	988 (19%)	4187 (79%)	162 (3%)	1245 (23%)	5310
recto-sigmoid junction	111 (16%)	539 (80%)	78 (12%)	163 (24%)	673
rectum	416 (18%)	1795 (76%)	470 (20%)	528 (22%)	2367
anus	19 (18%)	64 (60%)	42 (39%)	33 (31%)	107
stage					
I	20 (3%)	726 (97%)	22 (3%)	58 (8%)	748
II	33 (2%)	1350 (97%)	105 (8%)	311 (22%)	1392
III	21 (2%)	1014 (97%)	140 (13%)	451 (43%)	1048
IV	658 (37%)	916 (52%)	136 (8%)	526 (30%)	1777
unknown	802 (23%)	2579 (74%)	349 (10%)	623 (18%)	3492
health board					
Eastern	460 (16%)	2210 (79%)	332 (12%)	711 (25%)	2797
Midland	95 (19%)	384 (78%)	36 (7%)	118 (24%)	493
Mid Western	99 (16%)	519 (82%)	32 (5%)	132 (21%)	631
North Eastern	95 (14%)	584 (84%)	45 (6%)	158 (23%)	694
North Western	124 (20%)	445 (73%)	61 (10%)	191 (31%)	609
Southern	300 (21%)	1071 (75%)	93 (7%)	217 (15%)	1423
South Eastern	199 (22%)	659 (74%)	76 (8%)	249 (28%)	896
Western	162 (18%)	713 (78%)	77 (8%)	193 (21%)	914

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.3. Percentage of cases receiving combination therapies, by age group; 1994 – 1998: colorectal cancer

AGE	SURGERY ONLY	RADIO ONLY	CHEMO ONLY	SURGERY & RADIO	SURGERY & CHEMO	RADIO & CHEMO	SURGERY, RADIO & CHEMO	NO TREATMENT	ALL CASES
all	4657 (55%)	93 (1%)	163 (2%)	204 (2%)	1351 (16%)	82 (1%)	373 (4%)	1534 (18%)	8457
<70	1946 (47%)	44 (1%)	128 (3%)	121 (3%)	1076 (26%)	65 (2%)	310 (8%)	413 (10%)	4103
70+	2711 (62%)	49 (1%)	35 (1%)	83 (2%)	275 (6%)	17 (0%)	63 (1%)	1121(26%)	4354

9.3. Female Breast Cancer *ICD - 10 C50*

Figure 9.3 and Table 9.4 summarize treatment patterns for female breast cancer cases diagnosed in the period 1994 to 1998. Only a small percentage (5%) of these patients received no cancer-specific treatment. This figure was only 3% among women in the under - 80 age group but it substantially increased to 16% in the 80 or above age group. Similarly, the percentage of untreated women increased to 18% among those with stage IV disease from only 1% among those with no distant metastases. In the US, only 2.4% of women received no treatment in 1995, a figure that increased to 8.6% for stage IV cases.[24]

Surgery was the most commonly used treatment modality. Eighty-three percent of patients were treated surgically. The corresponding figure in the US 1995 data was 95%. Except for hormonal therapy, all treatment modalities were more frequently directed towards younger patients. The proportion of women treated with hormones increased from 22% in the youngest age group (<40 years) to 57% among women 80 years or older. Patients residing in the Western, North Western and Mid Western Health Boards were less likely to receive radiotherapy than those residing in areas served by the other health boards.

Multiple logistic regression analysis indicates that the proportion of patients treated with radiotherapy has steadily increased from 35% in 1994 to 42% in 1998 (Figure 9.4) while the proportion of patients treated surgically has remained constant. The former trend was statistically significant and could not be explained by changes in age or stage composition of the group. The proportion of patients who received no cancer-specific treatment remained the same.

Table 9.5 shows the various combinations of cancer-specific treatment modalities used to treat female breast cancer. Combination therapy was very widely used. Nearly 80% of the patients had at least two treatment modalities as part of their primary course of care. The most commonly employed combinations were surgery and chemotherapy (17%), surgery and hormonal (15%) and surgery, radiotherapy and chemotherapy (13%). Younger women were more likely to receive combination therapy. Women over 80 were more likely to be treated with a single modality, most commonly hormonal therapy (26%).

Figure 9.3 Percentage of cases receiving treatment, 1994 – 1998: female breast cancer*

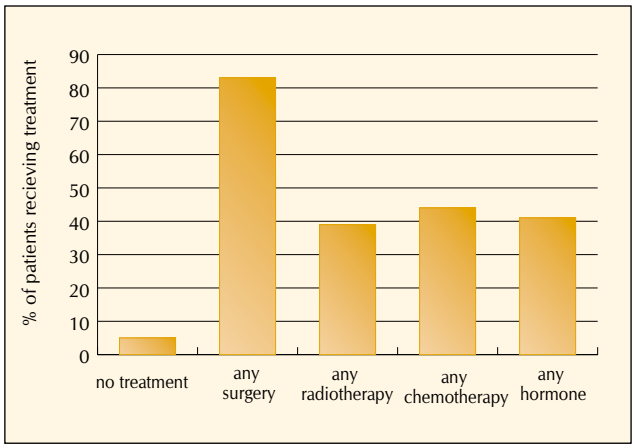
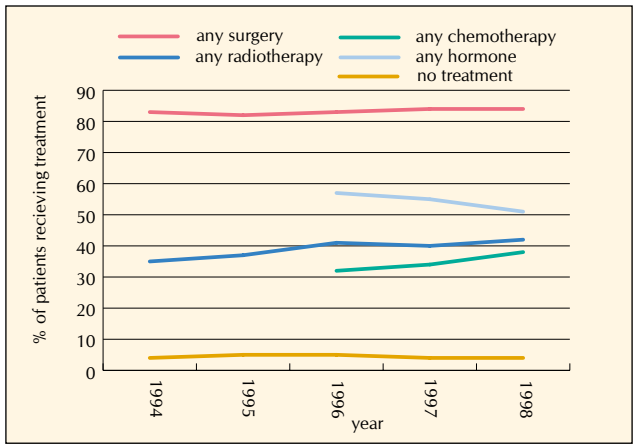


Figure 9.4 Percentage of cases receiving treatment by year of incidence: female breast cancer



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.4 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: female breast cancer**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	ANY HORMONE	ALL CASES
all	354 (5%)	6549 (83%)	3075 (39%)	3431 (44%)	3250 (41%)	7856
age group						
15 – 39	7 (1%)	497 (93%)	273 (51%)	387 (73%)	116 (22%)	533
40 – 49	41 (3%)	1431 (92%)	727 (47%)	1015 (65%)	408 (26%)	1558
50 – 59	53 (3%)	1756 (91%)	887 (46%)	998 (52%)	753 (39%)	1936
60 – 69	54 (3%)	1463 (88%)	685 (41%)	585 (35%)	795 (48%)	1664
70 – 79	84 (6%)	1065 (75%)	408 (29%)	339 (24%)	754 (53%)	1427
80+	115 (16%)	337 (46%)	95 (13%)	107 (14%)	424 (57%)	738
stage						
I	5 (1%)	816 (97%)	376 (45%)	293 (35%)	341 (41%)	841
IIA	10 (1%)	1117 (96%)	491 (42%)	589 (51%)	485 (42%)	1163
IIB	7 (1%)	830 (95%)	370 (42%)	588 (67%)	343 (39%)	874
IIIA	0 (0%)	261 (94%)	131 (47%)	195 (70%)	89 (32%)	278
IIIB	6 (3%)	150 (73%)	83 (40%)	123 (60%)	75 (36%)	206
IV	105 (18%)	205 (35%)	189 (32%)	258 (44%)	236 (40%)	591
unknown	221 (6%)	3170 (81%)	1435 (37%)	1385 (35%)	1681 (43%)	3903
health board						
Eastern	154 (5%)	2448 (83%)	1226 (42%)	1225 (42%)	946 (32%)	2936
Midland	22 (5%)	405 (85%)	195 (41%)	221 (46%)	179 (38%)	476
Mid Western	26 (4%)	541 (84%)	206 (32%)	255 (40%)	266 (41%)	642
North Eastern	26 (5%)	492 (86%)	225 (39%)	240 (42%)	237 (41%)	574
North Western	20 (4%)	388 (81%)	151 (32%)	228 (48%)	203 (42%)	478
Southern	51 (4%)	1005 (81%)	528 (42%)	570 (46%)	665 (53%)	1243
South Eastern	25 (3%)	644 (83%)	371 (48%)	331 (43%)	413 (53%)	776
Western	30 (4%)	626 (86%)	173 (24%)	361 (49%)	341 (47%)	731

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.5 Percentage of cases receiving combination therapies, by age group, 1994 – 1998: female breast cancer

AGE	SURGERY ONLY	HORMONE ONLY	SURGERY & CHEMO	SURGERY & HORMONE	SURGERY, RADIO & CHEMO	HORMONE & RADIO	SURGERY, HORMONE RADIO & CHEMO	OTHER COMBO	NO TREATMENT	ALL CASES
all	883 (11%)	416 (5%)	1352 (17%)	1243 (15%)	1058 (13%)	796 (10%)	353 (4%)	1401 (17%)	354 (4%)	7856
<80	817 (11%)	220 (3%)	1300 (18%)	1074 (15%)	1053 (14%)	767 (10%)	352 (4%)	1296 (18%)	239 (3%)	7118
80+	66 (8%)	196 (26%)	52 (7%)	169 (22%)	5 (0%)	29 (3%)	1 (0%)	105 (14%)	115 (16%)	738

9.4. Lung Cancer *ICD - 10 C34*

Table 9.6 and Figure 9.5 summarize treatment patterns for lung cancer cases diagnosed in the period 1994 to 1998. Overall, half of these patients received no cancer-specific treatment. This figure increased from 26% among the youngest age group (<55 years) to 83% among those aged 80 or more. A larger proportion of non-small cell carcinoma patients received no treatment (53% compared to 32% for small cell carcinoma). The corresponding figures from US 1992 data were 20% and 15% respectively.[25]

For non-small cell carcinoma, radiotherapy was the most commonly used treatment modality (29%) followed by surgery (17%). Chemotherapy was the main therapeutic modality for small cell lung cancer (59%), followed by radiotherapy (24%). All treatment modalities were more frequently directed towards young patients.

Over the time frame of this report, the proportion of patients treated with radiotherapy has increased from 27% in 1994 to 33% in 1998 (Figure 9.6). This trend was statistically significant and persisted after controlling for age, gender and stage composition of the group. On the other hand, the proportion of patients treated surgically declined significantly. The proportion of patients who received no cancer-specific treatment remained the same.

Multiple logistic regression analysis indicated that patients were less likely to receive tumour-specific treatment if they were older (e.g. a patient aged 75 to 79 years was five times less likely to receive treatment than one under 55 of the same sex, stage and health board). Patients with stage IV disease were also less likely to be treated (OR = 3.6, 95% CI 2.7 - 4.8). Patients residing in the Eastern and Southern Health Boards were more likely to receive radiotherapy than those residing in areas served by the other health boards. Patients were least likely to receive radiotherapy if they resided in the Mid Western (OR relative to EHB = 2.0, 95% CI = 1.6 - 2.4) or in the Western Health Board (OR relative to EHB = 1.9, 95% CI = 1.5 - 2.3). Radiotherapy facilities are concentrated in the Eastern and Southern Health Boards and differences in ease of accessibility to these services might explain some of the observed patterns.

Table 9.7 shows the various combinations of cancer-specific treatment modalities used to treat lung cancer. Few patients (7%) received combination therapy. Most treated patients received radiotherapy only or surgery only.

Figure 9.5 Percentage of cases receiving treatment, 1994 – 1998: lung cancer*

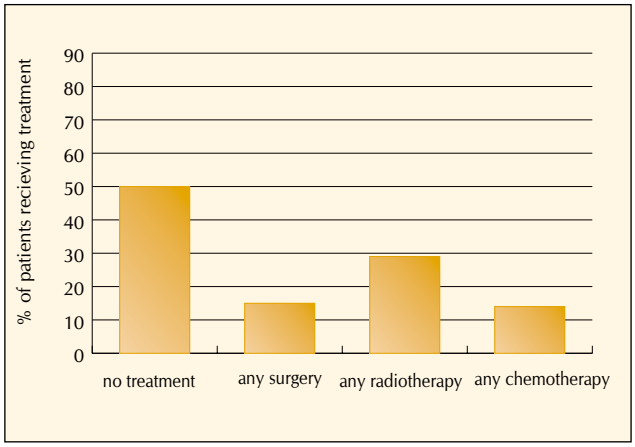
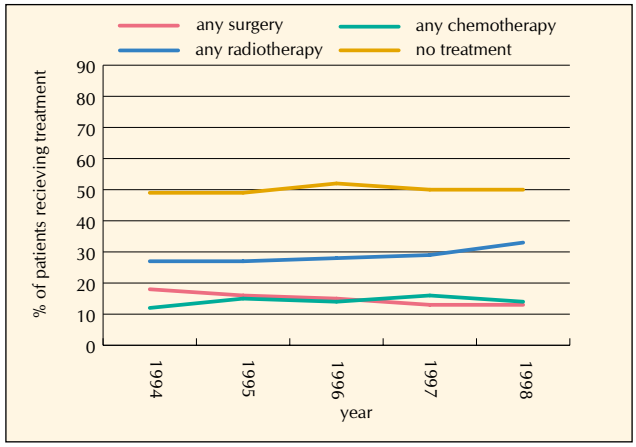


Figure 9.6 Percentage of cases receiving treatment by year of incidence: lung cancer



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.6 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: lung cancer**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	TOTAL
all	3632 (50%)	1093 (15%)	2091 (29%)	1035 (14%)	7277
age group					
15 – 54	181 (26%)	171 (25%)	270 (39%)	220 (32%)	697
55 – 64	467 (33%)	289 (20%)	545 (38%)	324 (23%)	1428
65 – 69	576 (42%)	259 (19%)	435 (32%)	228 (17%)	1376
70 – 74	757 (51%)	248 (17%)	402 (27%)	166 (11%)	1495
75 – 79	803 (64%)	106 (8%)	305 (24%)	76 (6%)	1261
80+	848 (83%)	20 (2%)	134 (13%)	21 (2%)	1020
sex					
female	1298 (52%)	335 (13%)	664 (27%)	405 (16%)	2504
male	2334 (49%)	758 (16%)	1427 (30%)	630 (13%)	4773
category					
small cell	319 (32%)	34 (3%)	244 (24%)	596 (59%)	1012
non-small cell	3313 (53%)	1059 (17%)	1847 (29%)	439 (7%)	6265
stage					
I	74 (24%)	187 (60%)	54 (17%)	21 (7%)	313
II	25 (19%)	74 (57%)	34 (26%)	16 (12%)	129
III	105 (26%)	94 (24%)	187 (47%)	97 (24%)	400
IV	991 (53%)	66 (4%)	625 (34%)	314 (17%)	1856
unknown	2437 (53%)	672 (15%)	1191 (26%)	587 (13%)	4579
health board					
Eastern	1285 (43%)	543 (18%)	969 (32%)	460 (15%)	3000
Midland	194 (52%)	55 (15%)	112 (30%)	36 (10%)	371
Mid Western	349 (64%)	58 (11%)	112 (21%)	57 (10%)	543
North Eastern	296 (55%)	79 (15%)	126 (24%)	63 (12%)	535
North Western	264 (56%)	49 (10%)	130 (27%)	61 (13%)	475
Southern	447 (44%)	155 (15%)	344 (34%)	144 (14%)	1008
South Eastern	438 (59%)	104 (14%)	175 (24%)	85 (11%)	740
Western	359 (59%)	50 (8%)	123 (20%)	129 (21%)	605

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.7. Percentage of cases receiving combination therapies, by age group, 1994 – 1998: lung cancer

AGE	SURGERY ONLY	RADIO ONLY	CHEMO ONLY	SURGERY & RADIO	SURGERY & CHEMO	RADIO & CHEMO	SURGERY, RADIO & CHEMO	NO TREATMENT	ALL CASES
all	860 (12%)	1565 (22%)	635 (9%)	155 (2%)	29 (<1%)	352 (5%)	19 (<1%)	3632 (50%)	7277
<70	552 (16%)	828 (24%)	451 (13%)	125 (4%)	24 (1%)	279 (8%)	18 (1%)	1224 (35%)	3501
70+	338 (9%)	737 (20%)	184 (5%)	30 (1%)	5 (0%)	73 (2%)	1 (0%)	2408 (64%)	3776

9.5. Prostate Cancer *ICD – 10 C61*

Table 9.8 and Figure 9.7 summarize treatment patterns for prostate cancer cases diagnosed in the period 1994 to 1998. Overall, nearly a quarter (24%) of these patients received no cancer-specific treatment. This is the same figure reported for the US in 1996.[26] In Ireland, the proportion of untreated patients increased from 13% among the youngest age group (<60 years) to 32% among those aged 85 or more.

Surgery was the most commonly used treatment modality. Fifty-four percent of patients were treated surgically. Younger men were more likely to be treated with surgery and / or radiotherapy (Table 9.8). Older men were more likely to receive hormonal therapy. Hormonal therapy was also the most commonly used treatment for men with distant metastases (58% compared to 21% in stage I cases). Patients residing in the North Western and Western Health Boards were more likely to receive hormonal therapy, and those residing in the North and Mid Western Health Boards were less likely to undergo surgery, than those residing in counties served by the other health boards.

Over the time frame of this report, the proportion of patients treated with hormonal therapy has steadily increased from 23% in 1994 to 41% in 1998 (Figure 9.8). This trend was statistically significant and persisted after adjusting for age and stage composition of the group, but could be partly due to improved recording of hormonal treatment information in recent years. The proportion of patients who received radiotherapy remained the same.

Table 9.9 shows the various combinations of cancer-specific treatment modalities used to treat prostate cancer. Few patients (15%) received combination therapy. Most treated patients received surgery only (39%) or hormonal therapy only (19%). Surgery and hormonal treatment were the most commonly employed combination regime (13%).

Figure 9.7 Percentage of cases receiving treatment, 1994 – 1998: prostate cancer*

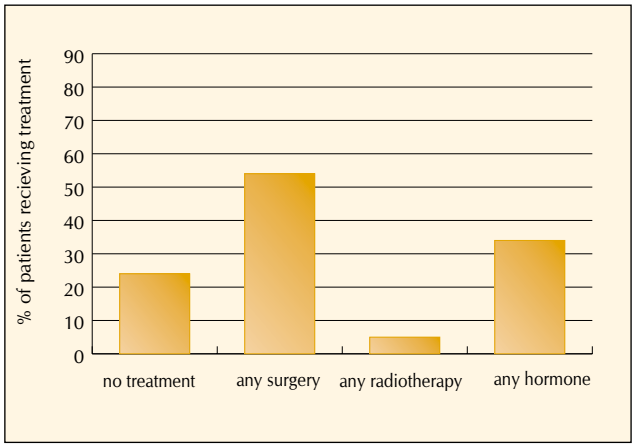
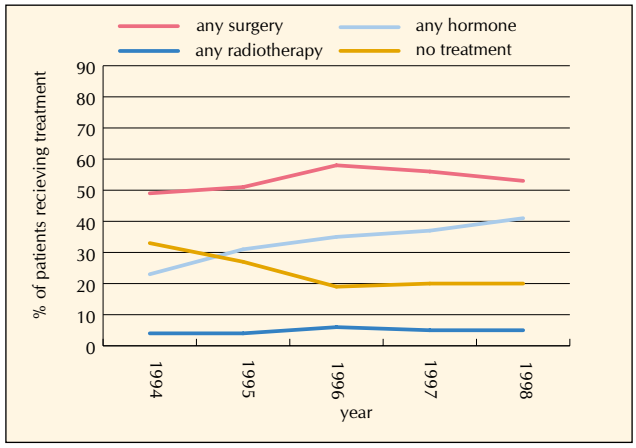


Figure 9.8 Percentage of cases receiving treatment by year of incidence: prostate cancer



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.8 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: prostate cancer**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY HORMONE	TOTAL
all	1330 (24%)	3006 (54%)	288 (5%)	1904 (34%)	5618
age group					
15 – 59	47 (13%)	237 (65%)	45 (12%)	106 (29%)	363
60 – 64	94 (18%)	322 (61%)	52 (10%)	156 (29%)	529
65 – 69	174 (19%)	540 (59%)	84 (9%)	281 (31%)	917
70 – 74	303 (24%)	691 (54%)	61 (5%)	478 (37%)	1286
75 – 79	311 (26%)	628 (53%)	28 (2%)	413 (35%)	1196
80 – 84	251 (29%)	392 (46%)	15 (2%)	296 (35%)	851
85+	150 (32%)	196 (41%)	3 (1%)	174 (37%)	476
stage					
I	19 (17%)	81 (74%)	4 (4%)	23 (21%)	110
II	18 (10%)	149 (80%)	7 (4%)	28 (15%)	186
III	7 (12%)	52 (87%)	2 (3%)	7 (12%)	60
IV	278 (22%)	444 (35%)	108 (9%)	722 (58%)	1252
unknown	1008 (25%)	2280 (57%)	167 (4%)	1124 (28%)	4010
health board					
Eastern	409 (24%)	1059 (62%)	95 (6%)	365 (21%)	1704
Midland	104 (29%)	193 (55%)	11 (3%)	107 (30%)	353
Mid Western	78 (17%)	268 (60%)	29 (6%)	145 (32%)	448
North Eastern	129 (28%)	258 (57%)	10 (2%)	132 (29%)	454
North Western	55 (14%)	148 (37%)	10 (3%)	284 (72%)	396
Southern	206 (23%)	450 (50%)	66 (7%)	341 (38%)	907
South Eastern	161 (23%)	418 (59%)	24 (3%)	204 (29%)	705
Western	188 (29%)	212 (33%)	43 (7%)	326 (50%)	651

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.9 Percentage of cases receiving combination therapies, by age group, 1994 – 1998: prostate cancer

AGE	SURGERY ONLY	RADIO ONLY	HORMONE ONLY	SURGERY & RADIO	SURGERY & HORMONE	HORMONE & RADIO	SURGERY, HORMONE & RADIO	NO TREATMENT	ALL CASES
all	2190 (39%)	124 (2%)	1087 (19%)	70 (1%)	723 (13%)	71 (1%)	23 (0%)	1330 (24%)	5618
<75	1294 (42%)	102 (3%)	526 (17%)	60 (2%)	415 (13%)	59 (2%)	21 (1%)	618 (20%)	3095
75+	896 (36%)	22 (1%)	561 (22%)	10 (0%)	308 (12%)	12 (0%)	2 (0%)	712 (28%)	2523

9.6. Stomach Cancer *ICD - 10 C16*

Table 9.10 and Figure 9.9 summarize treatment patterns for stomach cancer cases diagnosed in the period 1994 to 1998. Overall, half of these patients received no cancer-specific treatment. The proportion of those not treated increased from 23% among the youngest age group (<50 years) to 78% among those aged 80 or more at diagnosis and ranged from 46% in the North Eastern Health Board to 56% in the South Eastern Health Board. It was also higher among those with advanced stage cancer at diagnosis (66% in stage IV patients). These figures were generally substantially higher than 1993 US figures (e.g. in the US, only 36% of stage IV patients received no treatment).[27]

Surgery was the most commonly used treatment modality. Forty four percent of patients were treated surgically with or without adjuvant therapy. Surgery was more frequently performed in young patients (62% among <50) and in the North Eastern Health Board.

Over the time frame of this report, the proportion of patients treated with radiotherapy and chemotherapy has gradually increased (Figure 9.10). This trend, however, was not statistically significant

Multiple logistic regression analysis indicated that patients were less likely to receive tumour-specific treatment if they were older (Odds Ratio OR=3.3, 95% CI 2.6 - 4.2 for those older than 59 years) or if they had stage IV disease (OR=10.7, 95% CI 6.2 - 18.5). Patients residing in the North Eastern Health Board catchment area were more likely to be treated (OR=1.6, 95% CI 1.2 - 2.3). The differences between the other health boards were not statistically significant.

Table 9.11 shows the various combinations of cancer-specific treatment modalities used to treat stomach cancer. Most treated patients received surgery alone. Four percent of the patients were treated with chemotherapy alone and a further two percent received both surgery and chemotherapy.

Figure 9.9 Percentage of cases receiving treatment, 1994 – 1998: stomach cancer*

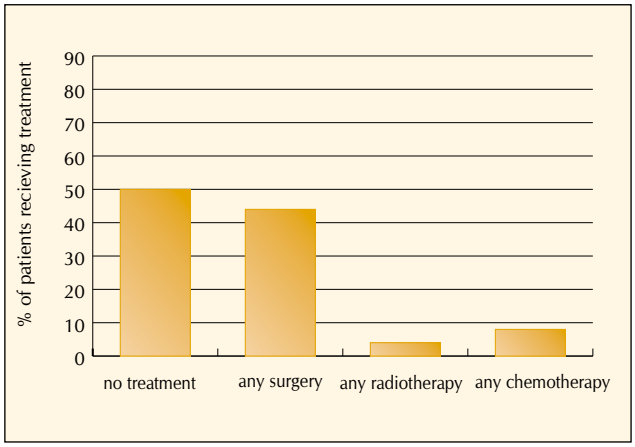
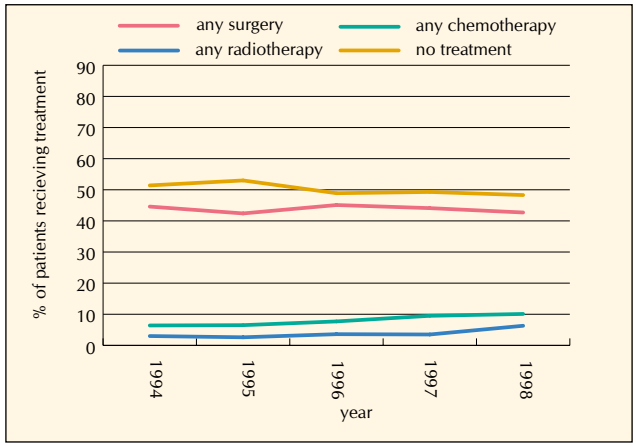


Figure 9.10 Percentage of cases receiving treatment by year of incidence: stomach cancer



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.10 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: stomach cancer**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	TOTAL
all	1152 (50%)	1004 (44%)	87 (4%)	184 (8%)	2294
age group					
15 – 49	38 (23%)	104 (62%)	8 (5%)	50 (30%)	168
50 – 59	91 (33%)	149 (54%)	21 (8%)	50 (18%)	276
60 – 69	254 (43%)	307 (51%)	28 (5%)	51 (9%)	598
70 – 79	376 (50%)	339 (45%)	23 (3%)	32 (4%)	747
80+	393 (78%)	105 (21%)	7 (1%)	1 (0%)	505
sex					
female	447 (52%)	365 (43%)	21 (3%)	51 (6%)	853
male	705 (49%)	639 (44%)	66 (5%)	133 (9%)	1441
stage					
I	18 (15%)	102 (84%)	4 (3%)	6 (5%)	122
II	6 (5%)	104 (94%)	2 (2%)	7 (6%)	111
III	28 (12%)	198 (85%)	7 (3%)	22 (9%)	233
IV	446 (66%)	152 (23%)	22 (3%)	80 (12%)	672
unknown	654 (57%)	448 (39%)	52 (5%)	69 (6%)	1156
health board					
Eastern	435 (51%)	365 (42%)	47 (6%)	70 (8%)	861
Midland	62 (47%)	63 (48%)	4 (3%)	9 (7%)	132
Mid Western	80 (49%)	77 (47%)	6 (4%)	11 (7%)	165
North Eastern	109 (46%)	124 (52%)	5 (2%)	17 (7%)	237
North Western	71 (49%)	69 (48%)	4 (3%)	6 (4%)	145
Southern	151 (51%)	119 (40%)	8 (3%)	34 (11%)	298
South Eastern	126 (56%)	85 (38%)	6 (3%)	23 (10%)	226
Western	118 (51%)	102 (44%)	7 (3%)	14 (6%)	230

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.11 Percentage of cases receiving combination therapies, by age group, 1994 – 1998: stomach cancer

AGE	SURGERY	RADIO	CHEMO	SURGERY & RADIO	SURGERY & CHEMO	RADIO & CHEMO	SURGERY, RADIO & CHEMO	NO TREATMENT	ALL CASES
all	913 (40%)	32 (1%)	86 (4%)	13 (1%)	56 (2%)	20 (1%)	22 (1%)	1152 (50%)	2294
<70	483 (46%)	14 (1%)	72 (7%)	11 (1%)	47 (5%)	13 (1%)	19 (2%)	383 (37%)	1042
70+	430 (34%)	18 (1%)	14 (1%)	2 (0%)	9 (1%)	7 (1%)	3 (0%)	769 (61%)	1252

9.7. Lymphomas *ICD - 10 C81 - C85*

Table 9.12 and Figure 9.11 summarize treatment patterns for lymphoma cases diagnosed in the period 1994 to 1998. Overall, 22% of these patients received no cancer-specific treatment. This proportion increased from 11% among the youngest age group (<30 years) to 40% among those aged 80 or more and was higher in the Midland and North Western Health Boards (28% and 26% respectively).

Chemotherapy was the most commonly used treatment modality. Sixty three percent of patients were treated with chemotherapy. This proportion was higher among Hodgkin's disease sufferers and those diagnosed with stage II and III disease, and declined from 80% among the under - 30 to 40% among the oldest age group (80 years or older). Radiotherapy was more widely used in the treatment of Hodgkin's disease (22%), stage I cases (31%) and residents of the Southern Health Board (29%) while surgery was more frequently performed for non-Hodgkin's cases (17%). Out of the 335 patients treated surgically, 260 (78%) had non-Hodgkin's lymphomas affecting organs other the lymph nodes (e.g. the intestines, stomach and skin).

Over the time frame of this report, the proportion of patients treated surgically has increased significantly, from 11% in 1994 to 20% in 1998 (Figure 9.12) while the proportion of patients treated with chemotherapy and radiotherapy has remained the same.

Table 9.13 shows the various combinations of cancer-specific treatment modalities used to treat lymphomas. Few patients (16%) received combination therapy. Most treated patients received chemotherapy only (48%) or radiotherapy only (8%).

Figure 9.11 Percentage of cases receiving treatment, 1994 – 1998: lymphoma*

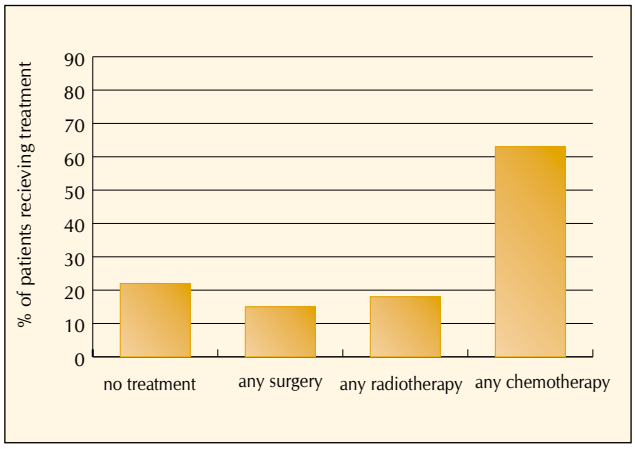
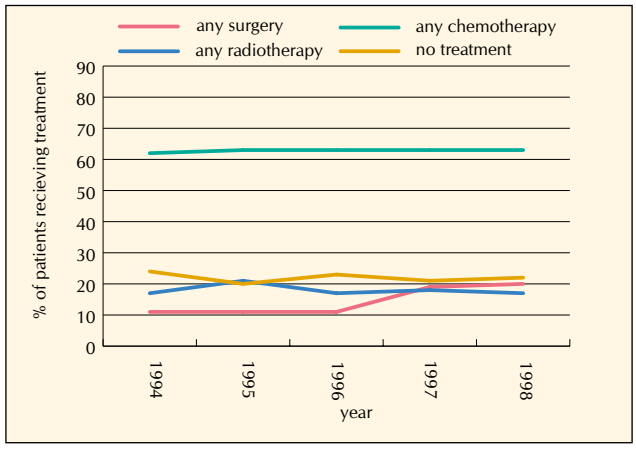


Figure 9.12 Percentage of cases receiving treatment by year of incidence: lymphoma



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.12 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: lymphoma**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	TOTAL
all	507 (22%)	335 (15%)	410 (18%)	1450 (63%)	2300
age group					
15 – 29	22 (11%)	9 (4%)	39 (19%)	165 (80%)	205
30 – 39	31 (14%)	21 (10%)	43 (20%)	165 (76%)	217
40 – 49	43 (17%)	53 (20%)	50 (19%)	178 (68%)	260
50 – 59	78 (19%)	70 (17%)	73 (18%)	268 (66%)	405
60 – 69	108 (21%)	82 (16%)	83 (16%)	323 (64%)	505
70 – 79	134 (28%)	79 (16%)	81 (17%)	261 (54%)	483
80+	91 (40%)	21 (9%)	41 (18%)	90 (40%)	225
sex					
female	238 (22%)	165 (15%)	205 (19%)	662 (61%)	1078
male	269 (22%)	170 (14%)	205 (17%)	788 (64%)	1222
category					
non-Hodgkin's	465 (24%)	318 (17%)	327 (17%)	1166 (61%)	1916
Hodgkin's	42 (11%)	17 (4%)	83 (22%)	284 (74%)	384
stage					
I	115 (19%)	109 (18%)	186 (31%)	350 (58%)	606
II	54 (12%)	69 (15%)	75 (16%)	358 (76%)	468
III	58 (15%)	32 (8%)	27 (7%)	305 (80%)	382
IV	87 (23%)	59 (16%)	53 (14%)	248 (66%)	377
unknown	193 (41%)	66 (14%)	69 (15%)	189 (40%)	467
health board					
Eastern	194 (24%)	83 (10%)	138 (17%)	520 (64%)	816
Midland	37 (28%)	15 (11%)	22 (17%)	81 (62%)	131
Mid Western	47 (23%)	45 (22%)	37 (18%)	116 (58%)	201
North Eastern	32 (18%)	35 (20%)	22 (13%)	120 (69%)	175
North Western	38 (26%)	21 (15%)	18 (13%)	91 (63%)	144
Southern	61 (16%)	55 (15%)	106 (29%)	229 (62%)	371
South Eastern	49 (20%)	53 (22%)	40 (16%)	154 (63%)	243
Western	49 (22%)	28 (13%)	27 (12%)	139 (63%)	219

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.13 Percentage of cases receiving combination therapies, by age group, 1994 – 1998: lymphoma

LYMPHOMA TYPE	SURGERY ONLY	RADIO ONLY	CHEMO ONLY	SURGERY & RADIO	SURGERY & CHEMO	RADIO & CHEMO	SURGERY, RADIO & CHEMO	NO TREATMENT	ALL CASES
all	121 (5%)	188 (8%)	1101 (48%)	34 (1%)	161 (7%)	169 (7%)	19 (1%)	507 (22%)	2300
non-Hodgkin's	117 (6%)	139 (7%)	853 (45%)	29 (2%)	154 (8%)	141 (7%)	18 (1%)	465 (24%)	1916
Hodgkin's	4 (1%)	49 (13%)	248 (65%)	5 (1%)	7 (2%)	28 (7%)	1 (0%)	42 (11%)	384

9.8. Leukaemia *ICD - 10 C91 - C95*

Table 9.14 and Figure 9.13 summarize treatment patterns for adult leukaemia cases (aged 15 and over) diagnosed in the period 1994 to 1998. Overall, 57% of these patients received no cancer-specific treatment. This proportion increased from 9% among the youngest age group (15 – 29 years) to 84% among those aged 80 or more and was higher in the North Eastern and North Western Health Boards (67% and 64% respectively).

Most of treated patients were treated with chemotherapy (43%). This proportion was higher among myeloid leukaemia cases and declined from 90% among the 15 – 29 age group to 15% among the oldest age group (80 years or older). Patients were more likely to receive chemotherapy if they resided in the Southern and Eastern Health Boards (49% and 46% respectively).

Over the time frame of this report, the proportion of patients treated with chemotherapy has increased from 42% in 1994 to 45% in 1998 (Figure 9.14) but the trend was not statistically significant.

Multiple logistic regression analysis indicated that the likelihood of receiving tumour-specific treatment decreases with age by 0.07 (95% CI 0.06 - 0.08) per year. The health board differences mentioned earlier were not statistically significant after adjustment for other factors.

Figure 9.13 Percentage of cases receiving treatment, 1994 – 1998: leukaemia*

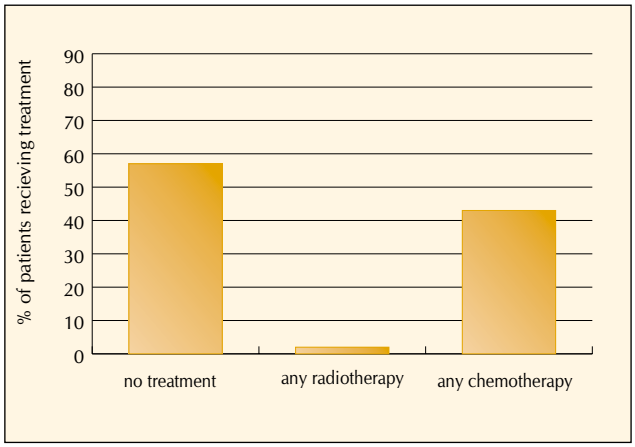
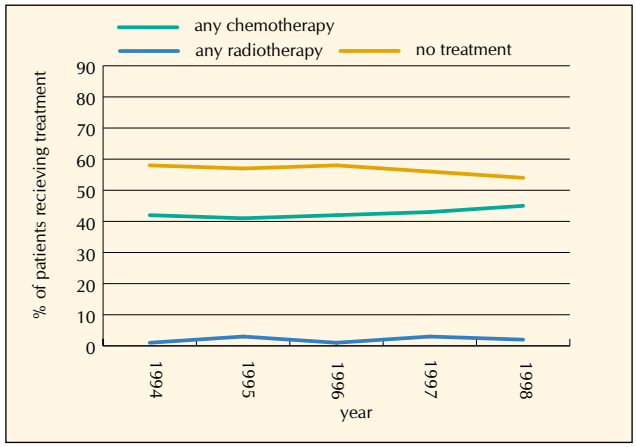


Figure 9.14 Percentage of cases receiving treatment by year of incidence: leukaemia



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.14 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: leukaemia**

	NO TREATMENT	ANY RADIO	ANY CHEMO	TOTAL
all	862 (57%)	32 (2%)	648 (43%)	1517
category				
lymphoid	488 (66%)	19 (3%)	247 (34%)	737
myeloid	177 (36%)	5 (1%)	314 (64%)	492
other	197 (68%)	8 (3%)	87 (30%)	288
age group				
15 – 29	9 (9%)	9 (9%)	88 (90%)	98
30 – 39	12 (17%)	4 (6%)	60 (83%)	72
40 – 49	35 (30%)	3 (3%)	83 (70%)	118
50 – 59	73 (39%)	3 (2%)	115 (61%)	189
60 – 69	201 (58%)	10 (3%)	141 (41%)	344
70 – 79	313 (72%)	1 (0%)	122 (28%)	436
80+	219 (84%)	2 (1%)	39 (15%)	260
sex				
female	364 (58%)	16 (3%)	263 (42%)	632
male	498 (56%)	16 (2%)	385 (44%)	885
health board				
Eastern	243 (53%)	11 (2%)	210 (46%)	455
Midland	52 (58%)	1 (1%)	38 (42%)	90
Mid Western	81 (62%)	2 (2%)	48 (37%)	130
North Eastern	88 (67%)	5 (4%)	42 (32%)	131
North Western	67 (64%)	1 (1%)	38 (36%)	105
Southern	152 (50%)	7 (2%)	146 (49%)	301
South Eastern	87 (55%)	2 (1%)	71 (45%)	158
Western	92 (63%)	3 (2%)	55 (37%)	147

**Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

9.9. Melanoma of the Skin *ICD - 10 C43*

Table 9.15 and Figure 9.15 summarize treatment patterns for skin melanoma cases diagnosed in the period 1994 to 1998. Only a small minority (6%) of these patients received no cancer-specific treatment. This proportion increased from 2% among the youngest age group (<40 years) to 8% among those in the 60 – 79 age group and ranged from 1% among stage I cases to 33% among those with stage IV disease. These figures were comparable with US figures where 3% of the patients received no treatment.[28]

Surgery was the most commonly used treatment modality. Ninety-three percent of patients were treated surgically with or without adjuvant therapy. The proportion of patients treated surgically was higher for younger patients and for women. Patients residing in the Southern Health Board were more likely to be treated with surgery than those residing in areas served by the other health boards.

The proportion of patients treated with surgery increased from 91% in 1994 to 96% in 1997 (Figure 9.16) and dropped to 93% in 1998. These changes in incidence rate were statistically significant and could not be explained by changes in age, gender or stage composition of the group.

Multiple logistic regression analysis indicated that patients were less likely to receive tumour-specific treatment if they were older. Younger patients were twice as likely to receive treatment as patients aged sixty years or over, even after controlling for sex, stage and health board of residence. Multivariate analysis also confirmed that women were more likely to be treated surgically (OR=1.8, 95%CI 1.2 – 2.6) after controlling for age, stage and health board. The reasons behind this pattern are not clear but it could be related to the well-known gender differences in the distribution of the anatomic site of skin melanoma. Inadequate adjustment for stage (nearly 79% of cases lacked stage information) is another possibility.

Table 9.16 shows the various combinations of cancer-specific treatment modalities used to treat skin melanoma. Few patients (4%) received combination therapy. Most treated patients received surgery only.

Figure 9.15 Percentage of cases receiving treatment, 1994 – 1998: melanoma of skin*

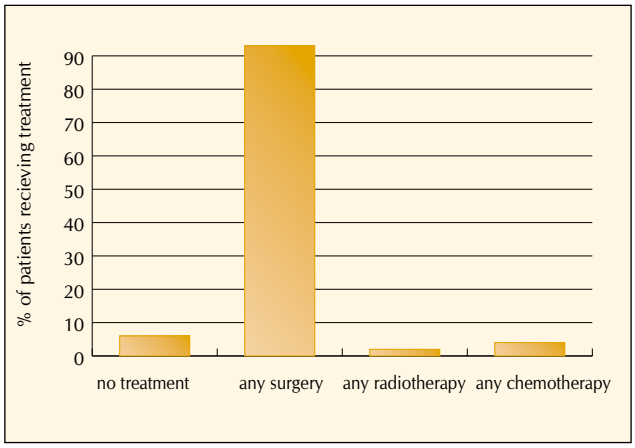
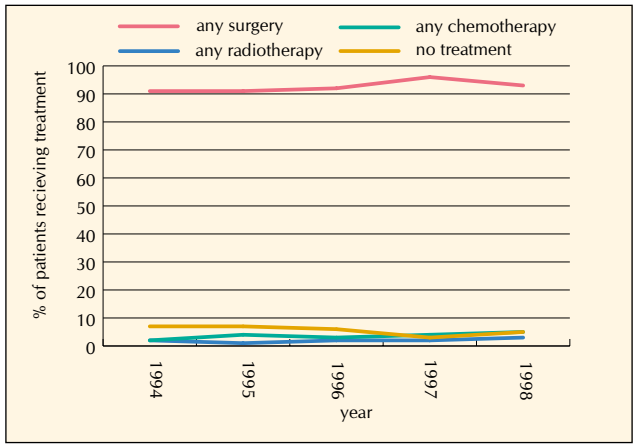


Figure 9.16 Percentage of cases receiving treatment by year of incidence: melanoma of skin



** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

*Table 9.15 Percentage of cases receiving treatment modality by selected patient and tumour characteristics, 1994 – 1998: melanoma of skin**

	NO TREATMENT	ANY SURGERY	ANY RADIO	ANY CHEMO	TOTAL
all	103 (6%)	1701 (93%)	40 (2%)	71 (4%)	1838
age group					
15 – 39	8 (2%)	333 (95%)	7 (2%)	18 (5%)	349
40 – 49	8 (3%)	248 (95%)	1 (0%)	17 (7%)	261
50 – 59	15 (5%)	286 (93%)	4 (1%)	15 (5%)	306
60 – 69	29 (8%)	305 (89%)	15 (4%)	14 (4%)	343
70 – 79	29 (8%)	335 (91%)	5 (1%)	5 (1%)	369
80+	14 (7%)	194 (92%)	8 (4%)	2 (1%)	210
sex					
female	52 (5%)	1092 (95%)	15 (1%)	29 (3%)	1155
male	51 (7%)	609 (89%)	25 (4%)	42 (6%)	683
stage					
I	1 (1%)	182 (99%)	1 (1%)	2 (1%)	183
II	7 (6%)	119 (94%)	0 (0%)	6 (5%)	126
III	0 (0%)	18 (95%)	1 (5%)	5 (26%)	19
IV	22 (33%)	38 (57%)	7 (10%)	15 (22%)	67
unknown	73 (5%)	1344 (93%)	31 (2%)	43 (3%)	1443
health board					
Eastern	44 (7%)	621 (92%)	14 (2%)	21 (3%)	676
Midland	7 (7%)	91 (88%)	4 (4%)	8 (8%)	104
Mid Western	8 (5%)	145 (92%)	4 (3%)	2 (1%)	157
North Eastern	9 (6%)	145 (92%)	4 (3%)	5 (3%)	157
North Western	5 (6%)	82 (91%)	2 (2%)	4 (4%)	90
Southern	6 (2%)	289 (97%)	3 (1%)	15 (5%)	297
South Eastern	14 (7%)	185 (92%)	5 (2%)	6 (3%)	201
Western	10 (6%)	143 (92%)	4 (3%)	10 (6%)	156

** Because treatment groups are not mutually exclusive, percentages do not total to 100%.*

Table 9.16 Percentage of cases receiving combination therapies, by age group, 1994 – 1998: melanoma of skin

SURGERY ONLY	RADIO ONLY	CHEMO ONLY	SURGERY & RADIO	SURGERY & CHEMO	RADIO & CHEMO	SURGERY, RADIO & CHEMO	NO TREATMENT	ALL CASES
1631 (89%)	16 (1%)	16 (1%)	17 (1%)	48 (3%)	2 (0%)	5 (0%)	103 (6%)	1838

9.10. Comments

9.10.1. Introduction

The purpose of this analysis was to examine trends in the patterns of care for a number of major cancers and to describe differences in case management according to certain patient and tumour characteristics. As the National Cancer Registry is population-based and the data collected are nationally representative, the data provide a perspective on cancer treatment in Ireland not available from any other source.

9.10.2. Tumour Stage

As expected, treatment choices were strongly associated with tumour stage. Patients with metastases (stage IV patients) were generally less likely to receive cancer-specific treatment. This was particularly true for stomach and lung cancers. Although the same pattern is shown by US hospital data from the 1993 – 1995 period, the latter showed higher levels of tumour-specific treatment for most of the cancer sites analysed in this report, even for advanced disease. Caution is required in the interpretation of these findings. The analysis was limited by incompleteness of the stage information and by lack of data on comorbidity (see below). Furthermore, comparisons were not adjusted for age and sex differences. Treatment differences should be always viewed in the context of survival. The extent, if any, to which relative under-treatment of stage IV patients in Ireland is affecting their chances of survival cannot be judged at this point.

9.10.3. Sex

With the exception of skin melanoma, there were no statistically significant differences in patterns of treatment between men and women. In the case of skin melanoma, women were more likely to be treated surgically than men even after adjusting for age and stage differences. However, the difference was quite small and had little practical significance. Gender differences in the distribution of the anatomic site of skin melanomas and inadequate adjustment for stage may be responsible for the observed differences.

9.10.4. Age at diagnosis

For all the cancer sites examined in this analysis, older patients were less likely to receive cancer-specific treatment and when treated they were less likely to receive surgery or combination therapy. Age differences persisted even after adjusting for stage, sex and health board of residence. However, these results should be interpreted with caution. It is possible that higher levels of intercurrent illnesses and reduced physiological capacity associated with old age are discouraging clinicians from recommending aggressive treatment regimes to elderly patients. It is also possible that some patients might decide not to have certain treatment because of concerns about side effects or perceived lack of benefit. In this analysis, data were not available to assess the relative contribution of these factors. Similar findings have been reported from studies undertaken elsewhere in Europe and the US.[29] In some of those studies, the age differential could not be completely explained by comorbidity or compromised functional status.[30] It was suggested that age differentials reflect age-based referral and treatment policies that are implicitly followed in primary and secondary care.[31] In Ireland, there is evidence that elderly patients are more likely to be treated in smaller facilities and by less experienced doctors.[32] Differences in referral patterns mean that older patients are more likely to be treated in centres that are incapable of providing all the required services.

Relative under-treatment of older patients might be a consequence of rationing e.g. when health resources are diverted to younger patients because they are expected to live longer and respond better. A lack of clinical guidelines and practical knowledge on cancer treatment in the elderly (who are often systematically excluded from major clinical trials) might also be involved.

Ethically, treatment decisions should not be based solely on socio-demographic factors like age, sex, social class or race. Old age is associated with impaired physiological capacity, but wide individual variations exist. Treatment decision therefore should be taken only after detailed assessment of individual risk.[33] A growing body of evidence indicates that older patients benefit from “aggressive” treatment just as well as younger patients do.[34, 35, 36] There is also evidence to suggest that older patients are as likely as their younger counterparts to agree to those treatments.[37, 38]

To improve the quality of care for elderly patients, a better understanding of mechanisms underlying clinical decision-making with regard to cancer treatment is required. Information on stage, comorbidity and reasons behind treatment decisions should be recorded more systematically. Clinical guidelines and treatment protocols targeting elderly cancer patients should be developed and updated regularly.

9.10.5. Time trends

The analyses performed using 1994 – 1998 data suggest a small but steady increase in the utilization of non-surgical treatments for most of the major cancers discussed in this report. The most notable increases were in use of hormones to treat prostate cancer and use of radiotherapy to treat lung and colorectal cancer.

It is very likely that some of the observed trends were due to improvements in the Registry's data collection and coding procedures. This, plus the relatively short period covered by the data, makes it difficult to assess the practical significance of those trends.

9.10.6. Health board differences

With one or two exceptions, differences in treatment patterns between the various health boards were not statistically significant (i.e. they could have happened by chance). The most notable exception is the lower percentage of lung, breast and lymphoma patients receiving radiotherapy in the Western and Mid Western Health Boards. The reasons for this are not clear at this point. Further investigation is required to confirm this pattern and to clarify its underlying causes.

10. Survival

10.1. Introduction

It is commonly accepted that different types of cancer can have very different prognoses and that the outlook for any patient is influenced by a number of factors, most notably the stage of the cancer at diagnosis and the sex and age of the patient.[39] In this chapter, we will present a survival analysis of each of the nine major cancers listed in Section 2.2.1 Overall survival – that is, survival for all cancers combined – depends on the relative incidence of each cancer, is not meaningful and will not be described here.

Two measures of survival are presented

- cancer survival, which describes the proportion of patients still alive, or have died from causes other than cancer, at a specified time after diagnosis;
- relative survival, a comparison of the survival of the selected patients with that of the general population (see A2.1.3 for more detailed information).

All analyses will be presented separately for males and females, and consideration given to the stage of cancer at diagnosis and patient age.

10.2. Data

The cases analysed were all patients in Ireland diagnosed as having malignant cancer between 1 January 1994 and 31 December 1998, with a censoring date of 31 December 1999 (Table 10.1). Details of methods, and inclusion and exclusion criteria, are to be found in section A2.1.3.

Table 10.1 Cancers diagnosed in 1994 – 1998 and included in survival analysis.

	1994	1995	1996	1997	1998	RECORDS DROPPED	RECORDS ANALYSED
colorectal	1701	1595	1592	1701	1701	1	8290
breast	1498	1509	1564	1588	1658	12	7817
lung	1477	1346	1365	1383	1446	8	7017
prostate	1042	1080	1111	1114	1196	87	5543
lymphoma	438	393	445	472	500	11	2248
stomach	457	449	452	443	429	157	2230
bladder	496	422	454	438	375	28	2185
melanoma	371	354	345	396	375	40	1832
leukaemia	308	276	284	312	301	36	1481
all above sites	7788	7415	7612	7847	7981	380	38643

10.3. Cancer survival

10.3.1. Cancer survival by sex

The Kaplan-Meier survival curves, stratified by sex, are presented in Figure 10.1. These plots represent the probability of a patient surviving up to 5 years after diagnosis. The data for these survival curves are summarised in Table 10.2 which shows survival from each cancer at five years after diagnosis. Confidence intervals (C.I.) for each survival estimate are also given, at the 95% level. The "p-value" indicates whether there was a statistically significant difference between the survival for males and females, with $p \leq .05$ indicating a significant difference and $p \leq .01$ a highly significant difference.

Melanoma had the best survival with 85% (95% confidence interval 82% – 87%) of women and 68% (C.I. 62% – 72%) of men surviving at least 5 years after diagnosis. The poorest prognosis was for lung cancer with only 10% (C.I. 9% – 12%) of women and 8.5% (C.I. 7.5% – 9.5%) of men surviving more than 5 years after diagnosis, while the results for stomach cancer were somewhat better with a 5 - year survival of 20% (C.I. 17% – 24%) for men and 15% (C.I. 13% – 18%) for women. Breast, prostate and bladder cancer, and lymphoma each have a reasonable prognosis with a 5 - year survival of at least 50% (Table 10.2), with the prognosis for colorectal cancer and leukaemia being slightly worse (43% and 44% for males; 48% and 46% for females).

As can be seen from Table 10.2 and Figure 10.1, the prognosis was different for men and women for most of the cancers considered, with the notable exception of leukaemia. Women had significantly better survival for colorectal cancer, melanoma and lymphoma, and somewhat better survival (although not statistically significant) for stomach and lung cancer. The exception was bladder cancer, where women had significantly worse survival than men.

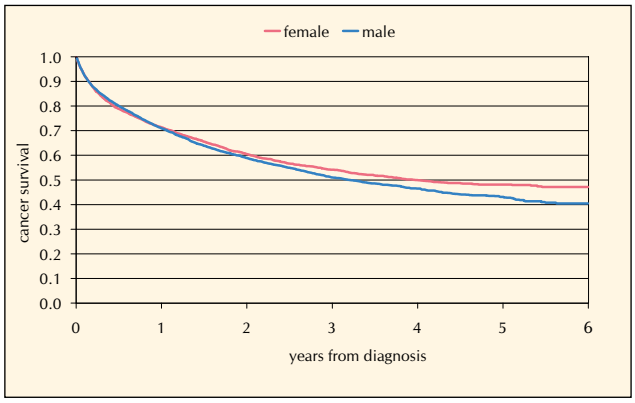
To test whether these observed male-female differences might be due in part to age at diagnosis, we performed a Cox regression. Age differences did not account for the observed survival differences in any of the cancers studied. For lymphoma, the age-adjusted survival advantage for women was even greater, with a hazard ratio of 1.33 (95% C.I. 1.17-1.53, $p < .001$) compared to the crude hazard ratio of 1.17 (95% C.I. 1.03-1.34, $p = .02$).

Table 10.2 Five-year cancer survival by cancer type and sex with 95% confidence intervals.

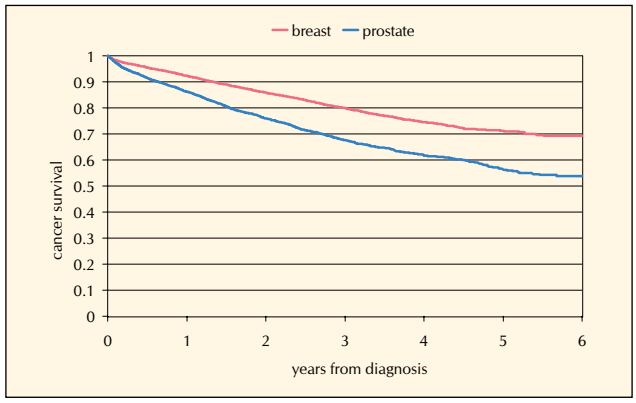
TYPE	FEMALE	MALE	*P-VALUE
stomach	20% (17% – 24%)	15% (13% – 18%)	.14
colorectal	48% (46% – 50%)	43% (41% – 45%)	.02
lung	10% (9% – 12%)	8.5% (7.5% – 9.5%)	.16
melanoma	85% (82% – 87%)	68% (62% – 72%)	<.0001
breast	71% (70% – 72%)		
prostate		56% (54% – 58%)	
bladder	61% (56% – 66%)	64% (61% – 67%)	.01
lymphoma	59% (55% – 62%)	54% (50% – 57%)	.03
leukaemia	46% (41% – 52%)	44% (39% – 49%)	.94

Figure 10.1 Cancer survival: by site and sex

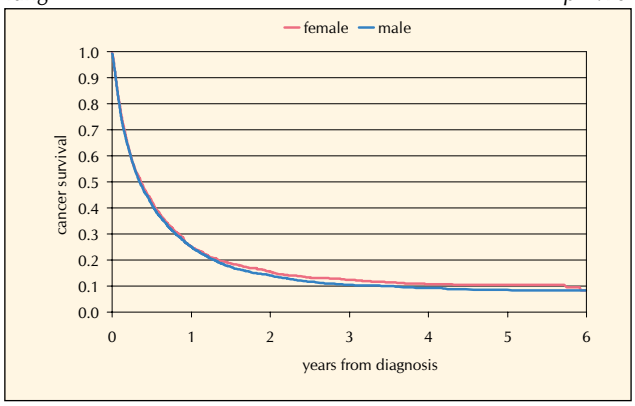
colorectal *p=.02*



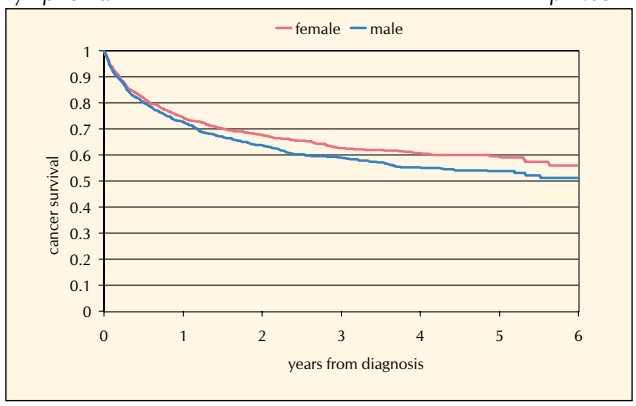
breast/prostate



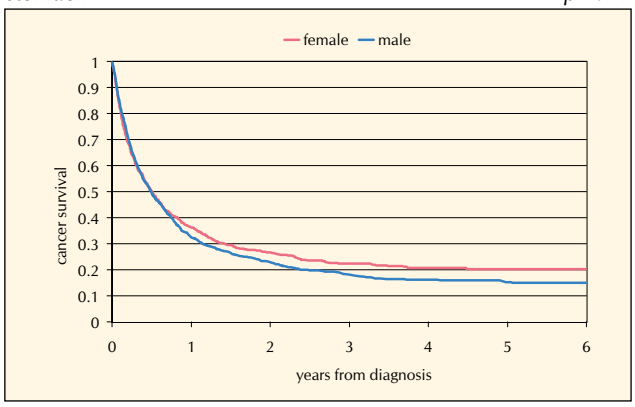
lung *p=.16*



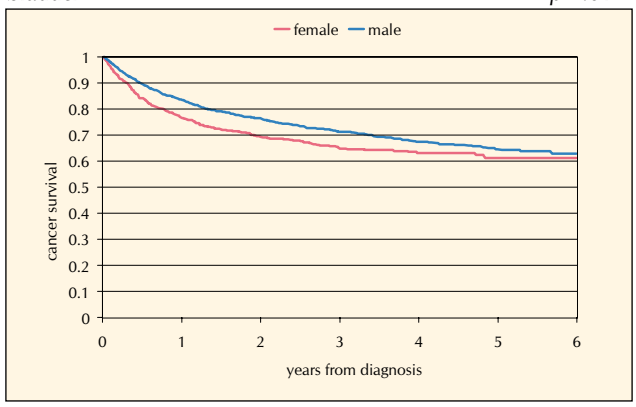
lymphoma *p=.03*



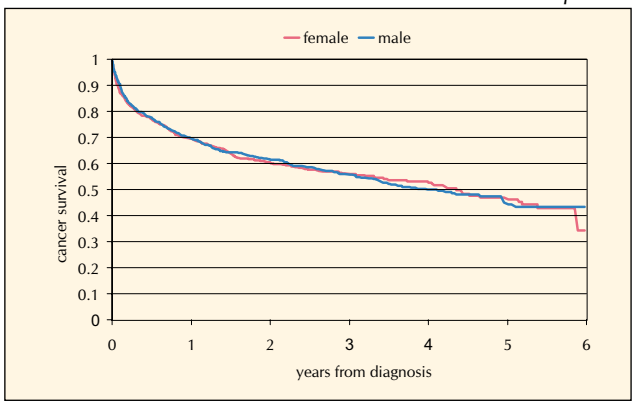
stomach *p=.14*



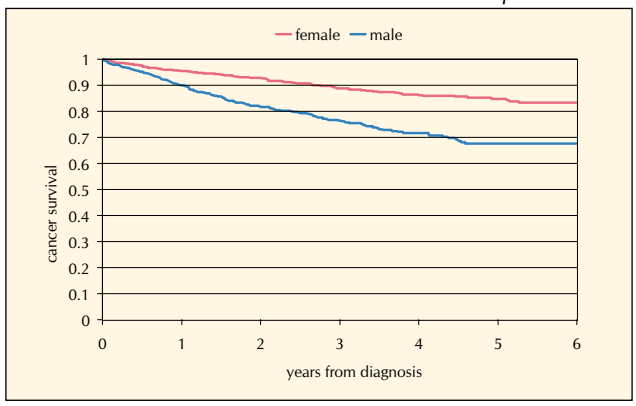
bladder *p=.01*



leukaemia *p=.94*



melanoma *p=<.0001*



10.3.2. Cancer survival by age

Kaplan-Meier survival plots stratified by age are presented in Figure 10.2. For each cancer, patients were aggregated into age groups which had reasonable numbers of cases; neighbouring age groups were further aggregated if their survival curves were similar. In this way we assigned patients to four age categories for most cancers, five for prostate and leukaemia, and six for lymphoma.

For all cancers, a younger age at diagnosis conferred a survival advantage for both men and women, although the magnitude of this advantage varied with the cancer type. The maximum age effects were observed for bladder cancer and lymphoma, with very small age effects being observed for melanoma, particularly in women. The one-year and five-year survival probabilities are displayed in Table 10.3 for each cancer for four age groups.

- For colorectal cancer, women of all ages had a higher 5-year survival than men, and women aged less than 80 had a higher one-year survival, in keeping with the significant survival advantage noted for women overall in Figure 10.1.
- For breast and prostate cancer, the effect of age was more pronounced on five-year survival than on one-year survival. This same pattern was exhibited by bladder cancer, with men aged 80 or over having marginally better survival than women.
- For lung cancer, the 5-year survival dropped by 50% for patients older than 50 (both men and woman).
- For stomach cancer this dramatic drop in survival was observed only for males over 80 years, with women in this age group and all other age groups having better survival than their male counterparts.
- Women diagnosed with melanoma up to the age of 70 have a very good one-year and five-year survival (≥87%) which was never less than 75% even in the oldest women. In contrast, the five-year survival for men dropped from 87% to 67% after age 40 and was only 53% in the oldest age group (80+).
- For lymphoma, the effects of age on one-year and five-year survival was similar in men and women, although women aged 80 and over had somewhat better survival. In contrast the one-year and five-year survival did not vary much with age for either men or women.

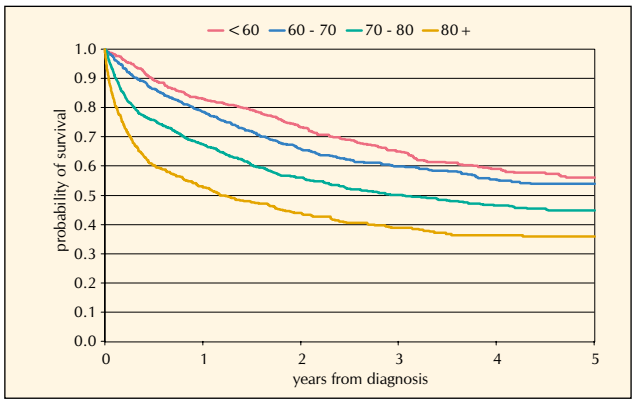
Table 10.3 One-year (five-year) survival for four age groups for each cancer, stratified by sex*

CANCER SITE	SEX	AGE GROUPS*			
		<60	**60 – 70**	**70 – 80**	**80 +**
colorectal	male	.79 (.47)	.75 (.48)	.67 (.39)	.55 (.33)
	female	.83 (.56)	.79 (.54)	.67 (.45)	.53 (.36)
breast	female	.96 (.76)	.92 (.69)	.87 (.66)	.80 (.54)
bladder	male	.94 (.83)	.87 (.72)	.80 (.56)	.69 (.38)
	female	.91 (.83)	.86 (.67)	.74 (.55)	.54 (.39)
		<60	**60 – 70**	**80 – 85**	**85 +**
prostate	male	.95 (.69)	.92 (.65)	.76 (.44)	.71 (.36)
		<50	**50 – 70**	**70 – 80**	**80 +**
lung	male	.39 (.19)	.27 (.09)	.23 (.07)	.16 (.05)
	female	.41 (.23)	.29 (.12)	.21 (.08)	.15 (.04)
stomach	male	.49 (.26)	.35 (.19)	.32 (.12)	.20 (.06)
	female	.55 (.23)	.44 (.24)	.33 (.18)	.28 (.17)
		<40	**40 – 70**	**70 – 80**	**80 +**
melanoma	male	.96 (.87)	.89 (.67)	.88 (.59)	.87 (.53)
	female	.97 (.90)	.95 (.87)	.94 (.78)	.97 (.75)
		<40	**40 – 50**	**70 – 80**	**80 +**
lymphoma	male	.88 (.74)	.82 (.69)	.57 (.36)	.46 (.20)
	female	.97 (.93)	.89 (.71)	.62 (.41)	.40 (.28)
		<40	**40 – 60**	**70 – 80**	**80 +**
leukaemia	male	.72 (.46)	.77 (.55)	.65 (.42)	.52 (.33)
	female	.78 (.58)	.76 (.56)	.60 (.41)	.64 (.37)

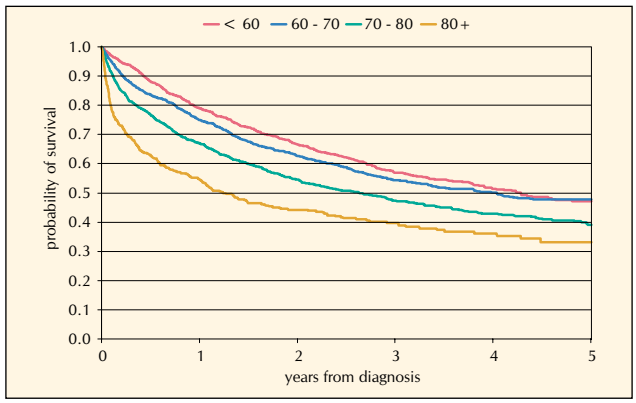
**For cancers where more than four age groups were used in the graphical analysis of Figure 10.2, the two youngest and two eldest age groups are included.*

Figure 10.2 Crude survival by age group

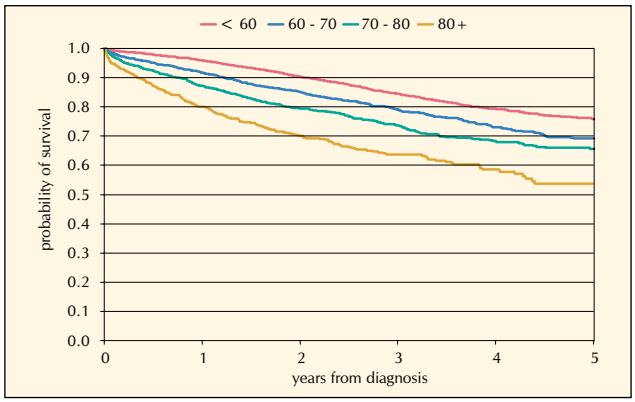
colorectal female



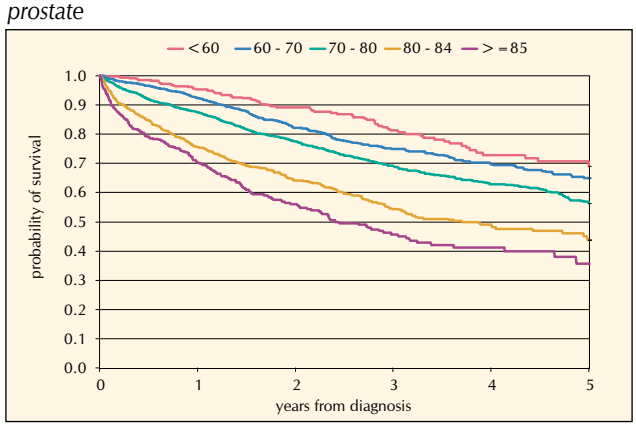
colorectal male



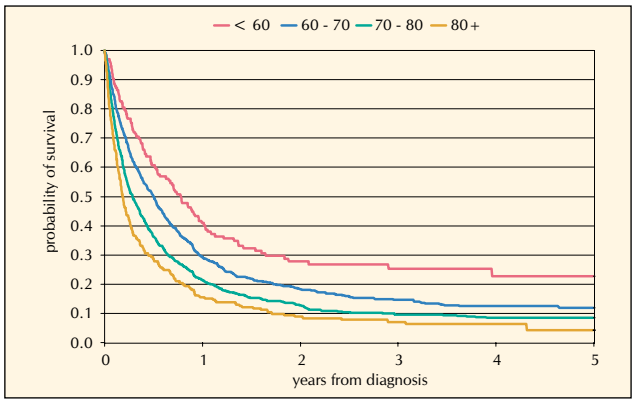
breast



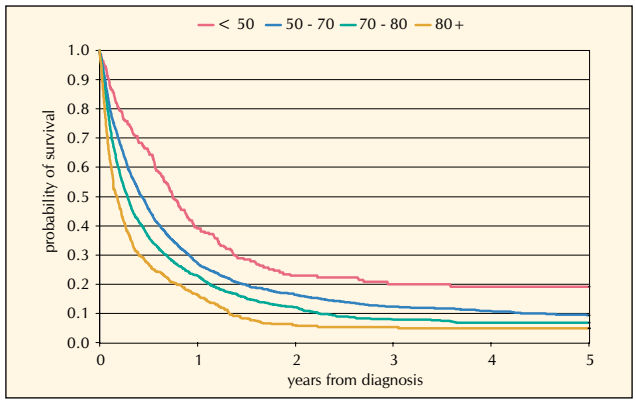
prostate



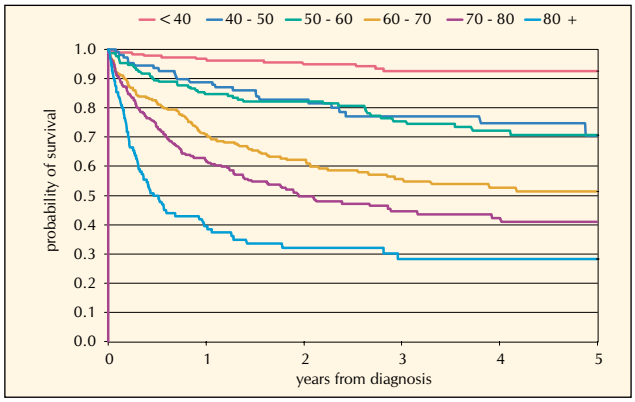
lung female



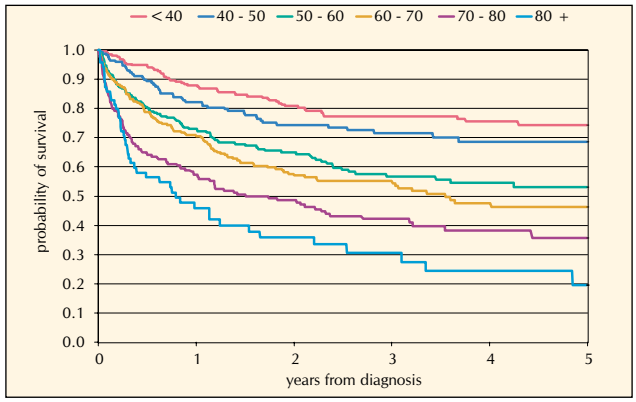
lung male



lymphoma female

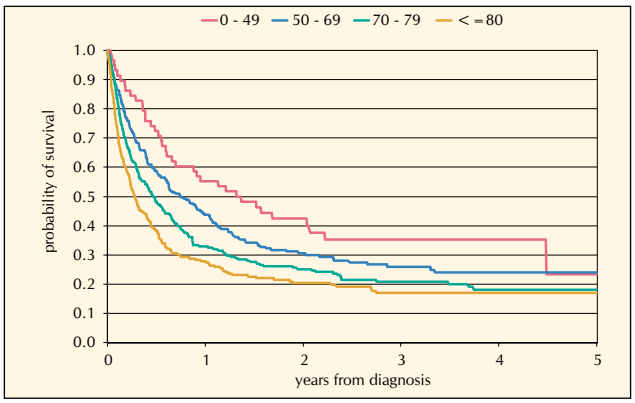


lymphoma male

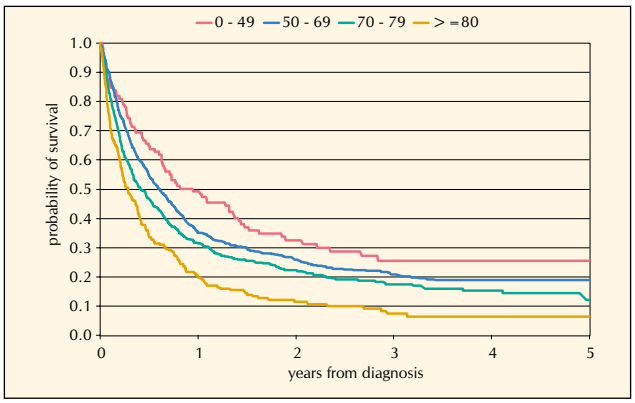


CONTINUED *Figure 10.2 Crude survival by age group*

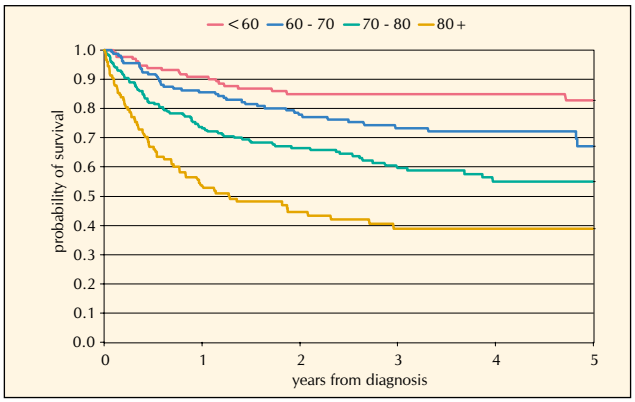
stomach female



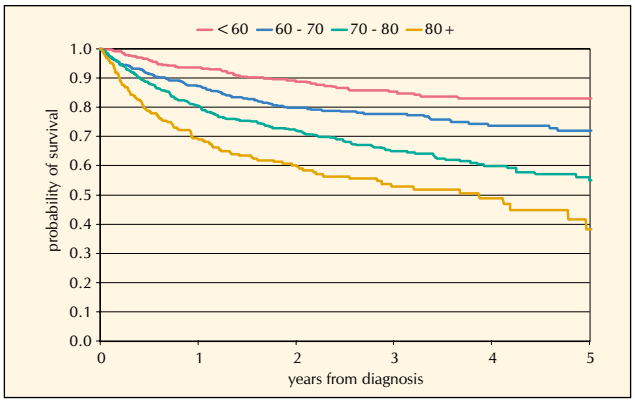
stomach male



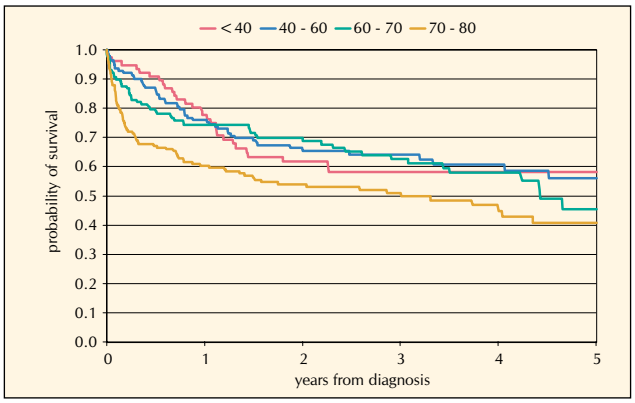
bladder female



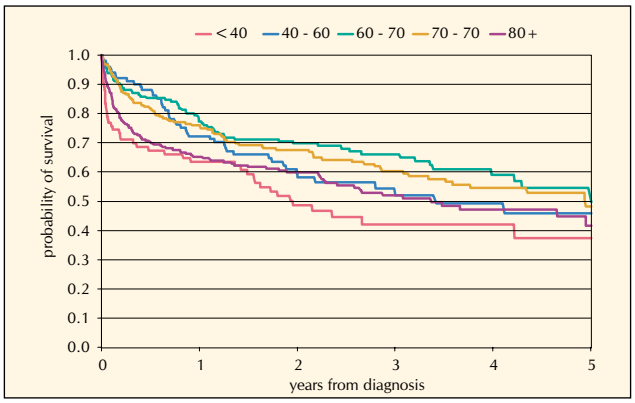
bladder male



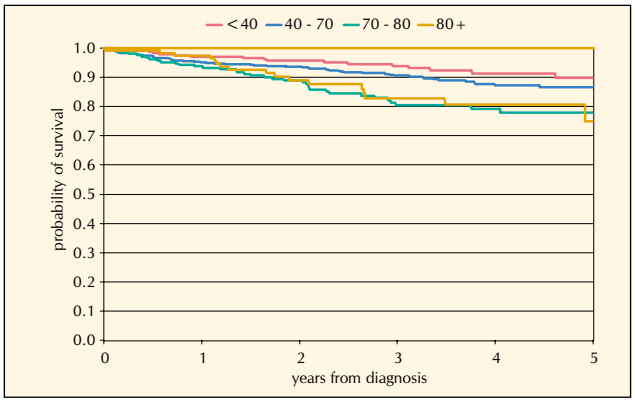
leukaemia female



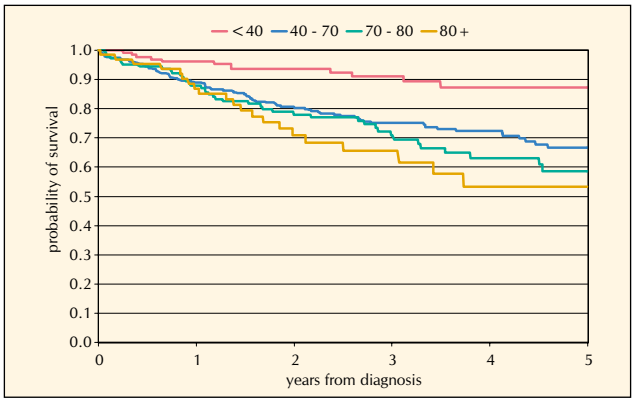
leukaemia male



melanoma female



melanoma male



10.3.3. Cancer survival by stage

The survival plots presented in Figure 10.1 and Figure 10.2 are useful indicators of the impact of cancer on population survival. However, for a given patient, an important prognostic factor is the stage of disease at diagnosis. Hence it is important to consider stage in order to obtain estimates of prognosis that are clinically useful. In this section, we will investigate the stage-specific survival. For prostate cancer we will use grade and, for leukaemia, cell type (lymphoid, myeloid, other) instead of stage, as these are more useful prognostic factors.

The stratified Kaplan-Meier survival plots are presented in Figure 10.3. For all cancers, stage IV carries a very poor prognosis, as is well known.

- For melanoma, lung cancer and bladder cancer in females the prognosis for stage III was not much better than stage IV, and this pattern was also seen for grade III and IV prostate cancer.
- For colorectal cancer, breast cancer and lymphoma (particularly lymphoma in males) stages I, II and III have gradually deteriorating survival, but are clearly better than stage IV, while for stomach cancer the four stages yield approximately equally spaced survival curves.
- Bladder cancer was an interesting exception, with stage III carrying a poor prognosis for women (similar to stage IV) but a reasonably good prognosis for men (similar to stage II).
- Lymphoid leukaemia has the best prognosis, and myeloid the worst, with other leukaemia types having intermediate survival, although closer to that of myeloid.

To adjust for sex differences, and the age differences already presented in Figure 10.2, we used Cox regression to estimate the adjusted hazard ratio for stage 2, 3 and 4 cancer relative to stage 1 and the results of this analysis are presented in Table 10.4 and 1.5.

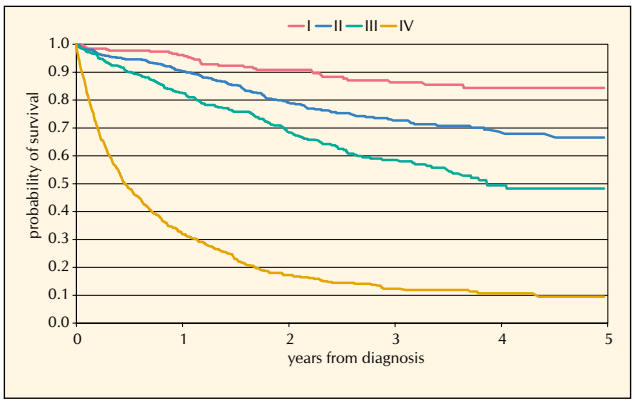
Table 10.4 Hazard ratios (95% confidence intervals) for cancer stage, adjusted for age and sex effects

CANCER TYPE	Hazard Ratios (95% C.I.) relative to stage I		
	Stage II	**Stage III**	**Stage IV**
colorectal	1.9 (1.5, 2.5)	3.7 (2.9, 4.7)	17.6 (14.0, 22.0)
lung	1.4 (1.0, 1.9)	2.4 (2.0, 3.0)	5.2 (4.3, 6.2)
breast	1.9 (1.3, 2.6)	4.9 (3.4, 7.1)	20.7 (15.0, 28.0)
stomach	2.2 (1.4, 3.4)	3.6 (2.4, 5.4)	9.7 (6.7, 14.1)
bladder	2.7 (1.5, 4.7)	7.5 (3.7, 15.5)	15.8 (9.6, 25.9)
melanoma	1.7 (0.8, 3.5)	12.3 (5.1, 29.5)	25.2 (13.1, 48.7)
lymphoma	1.3 (1.0, 1.6)	1.7 (1.3, 2.2)	2.7 (2.2, 3.4)
	Hazard Ratios (95% C.I.) relative to grade 1		
	Grade 2	**Grade 3**	**Grade 4**
prostate	1.8 (1.5,2.2)	3.8 (3.2,4.6)	5.5 (3.8,8.0)
	Hazard Ratios (95% C.I.) relative to lymphoid leukaemia		
	Myeloid	**Others**	
leukaemia	6.4 (3.4,11.9)	3.4 (2.8,4.0)	

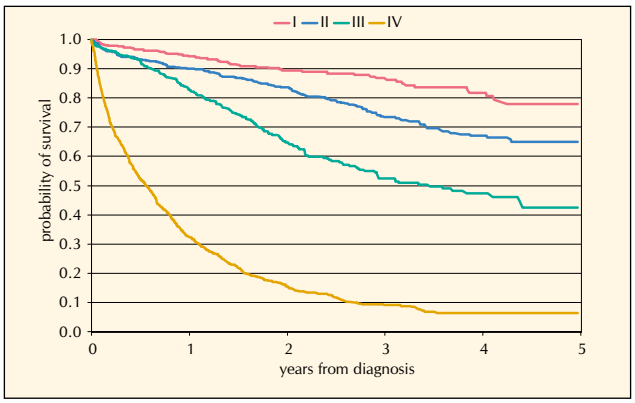
Note: All effects are statistically significant ($p \leq .001$) except stage II melanoma ($p = .17$) and stage II lymphoma ($p = .07$).

Figure 10.3 Crude survival: by site and stage

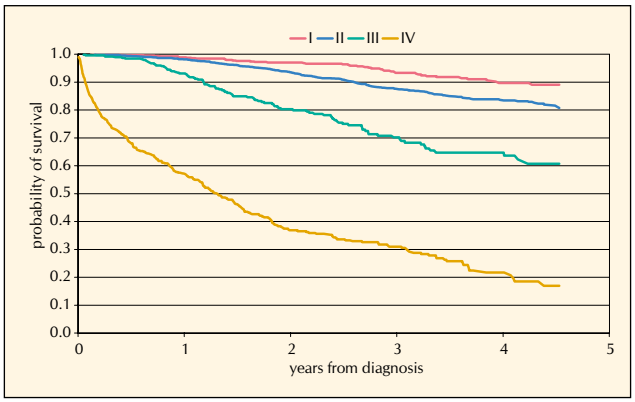
colorectal female



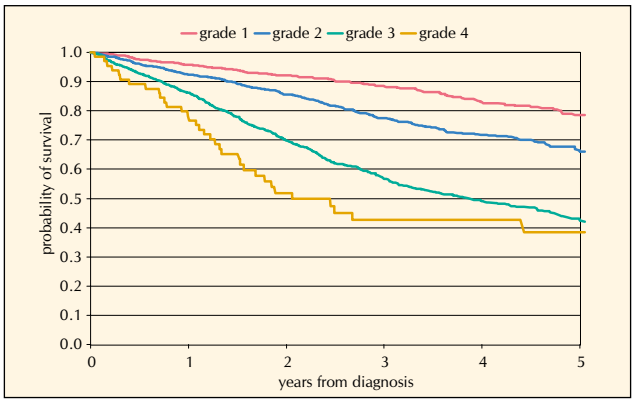
colorectal male



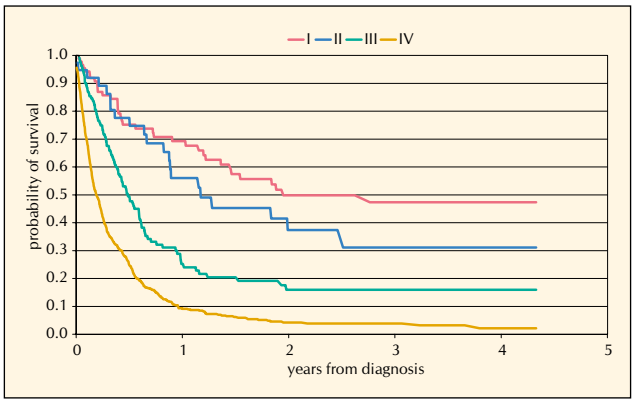
breast



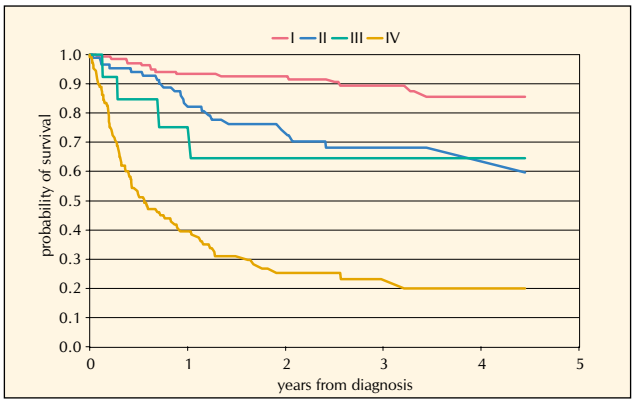
prostate



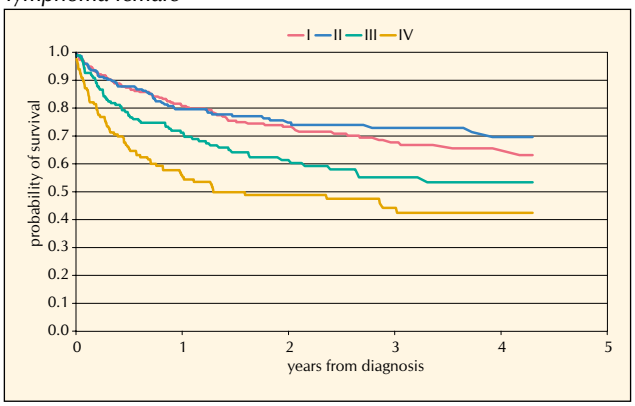
lung female



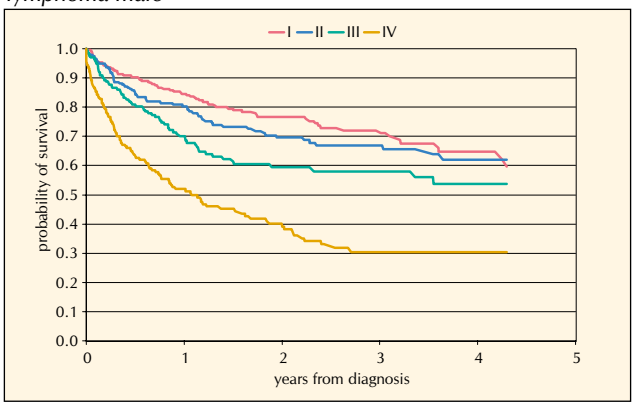
lung male



lymphoma female

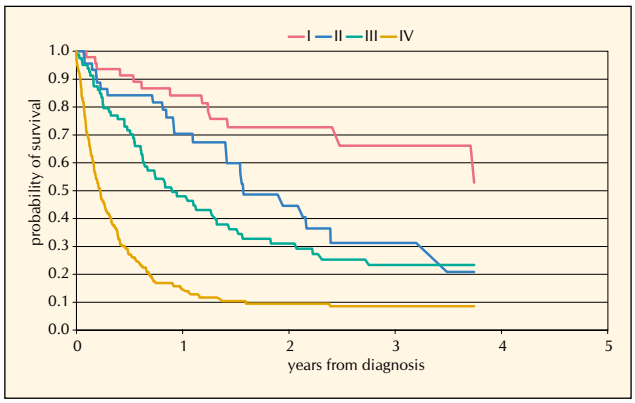


lymphoma male

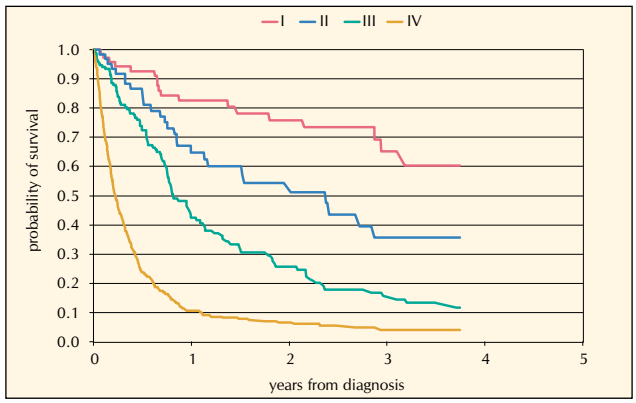


CONTINUED *Figure 10.3 Crude survival: by site and stage*

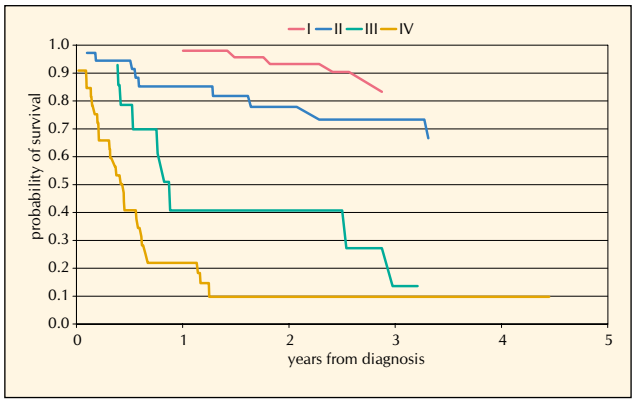
stomach female



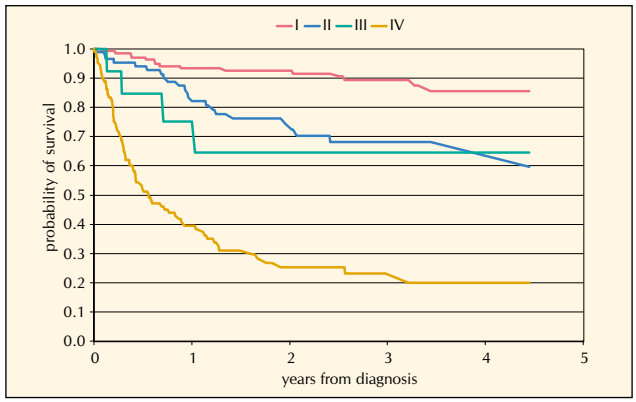
stomach male



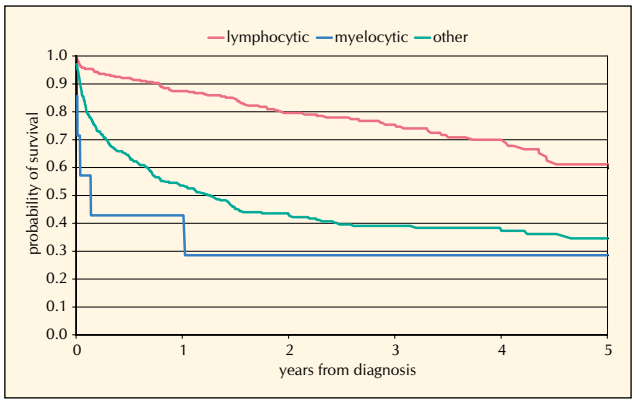
bladder female



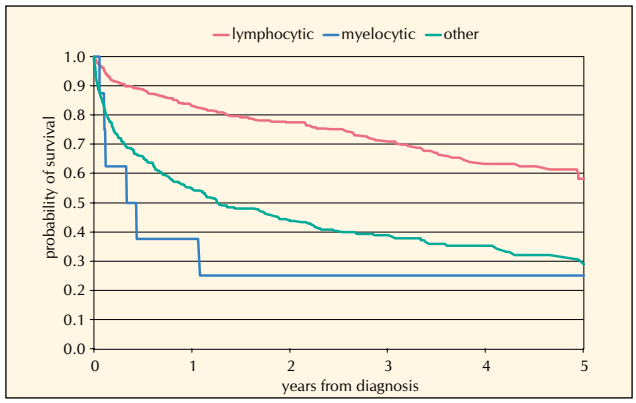
bladder male



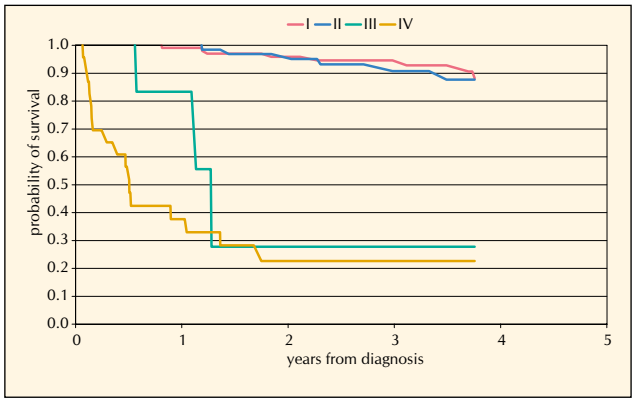
leukaemia female



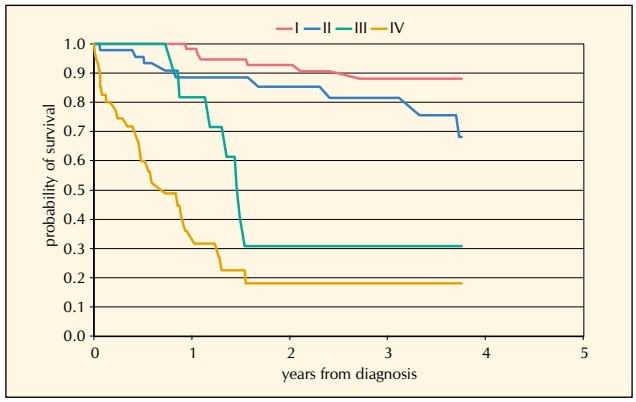
leukaemia male



melanoma female



melanoma male



10.4. Relative Survival

It is of interest to compare the survival of cancer patients to the overall survival of the Irish population. Such a comparison is made by the use of "relative survival" methods. In computing relative survival, we consider all – cause mortality in the cancer patients and in the general population. This contrasts with the Kaplan-Meier and Cox regression survival analyses presented earlier in this chapter where cancer mortality was studied and deaths due to other causes were "censored". Thus relative survival offers a very useful tool for the study of the impact of cancer on mortality in situations where cause-of-death information is incomplete or unreliable. At the National Cancer Registry the cause-of-death information is effectively complete, but it is nonetheless useful and interesting to study relative survival, both for the context it provides for the impact of cancer in Ireland, and for the potential to compare with relative survival in other countries. The relative survival can be understood as the reduction in survival that is attributable to cancer. For example, a 5-year relative survival of 74% for breast cancer patients indicates that the probability of a woman diagnosed with breast cancer surviving 5 years is 74% of the 5-year survival probability for women without cancer (see section A2.6.11).

Of the 38643 records used in the previous sections, 133 had no known date of birth, and had to be excluded from relative survival calculations (see section A2.1.3) so the final data set for relative survival analysis had 38510 records (Table 10.5).

Table 10.5 Records used in relative survival analysis

CANCER TYPE	SEX		
	female	male	both sexes
number of records	18006	20504	38510
number of deaths	7619	12094	19713

The relative survival estimates, stratified by sex, for the various cancers are presented in Table 10.6 and Figure 10.4. The pattern observed in the relative survival was similar to that seen for cancer survival in Figure 10.1.

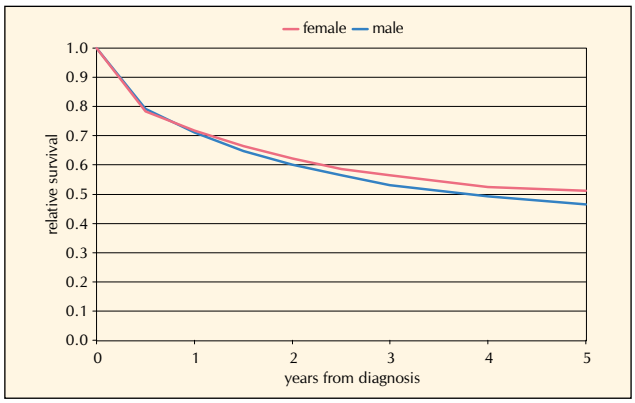
- Lung cancer had the poorest relative survival with stomach cancer being marginally better (5-year relative survival approx. 10% and 20% respectively), with most of the mortality occurring in the first 1 – 2 years after diagnosis.
- In contrast, prostate cancer, breast cancer, bladder and lymphoma had much more gradual and uniform mortality with relative survival at 5-years being 60% – 70%.
- Colorectal cancer and leukaemia had slightly worse relative survival (approx. 50% and 40% at five years respectively) with much of this mortality occurring in the first two years.
- Women had a small relative survival advantage for all cancers except bladder, although this difference was negligible for lung cancer, stomach cancer and leukaemia. For bladder cancer, women had slightly worse relative survival, consistent with the results from the cancer survival analysis presented earlier.

Table 10.6 One year (five year) relative survival by sex

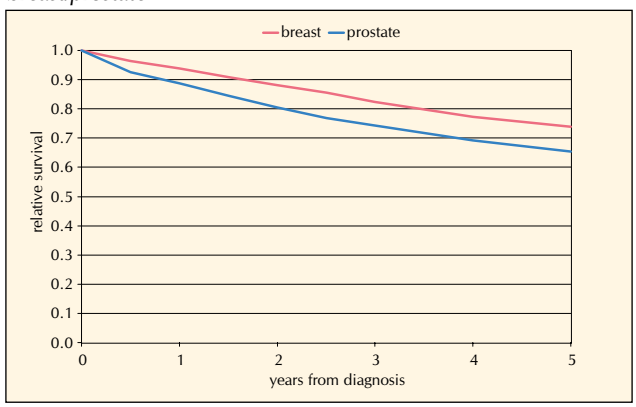
	FEMALE	MALE
colorectal	76.6 (53.9)	75.9 (48.2)
breast	95.2 (74.2)	
lung	27.9 (11.0)	27.7 (8.7)
prostate		91.2 (65.9)
lymphoma	77.7 (63.5)	75.0 (56.3)
stomach	38.2 (22.5)	35.6 (17.0)
bladder	81.5 (70.2)	86.6 (74.1)
leukaemia	73.4 (48.3)	73.2 (45.1)
melanoma	96.6 (89.7)	93.4 (75.7)

Figure 10.4. Relative survival, by sex and site

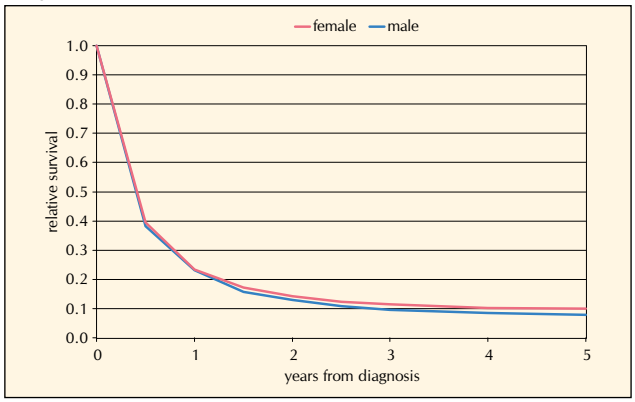
colorectal



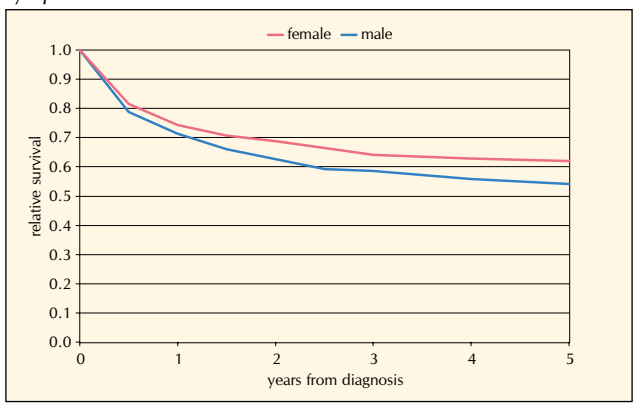
breast/prostate



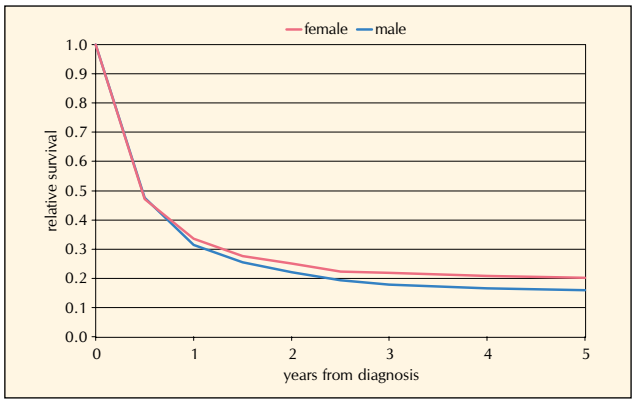
lung



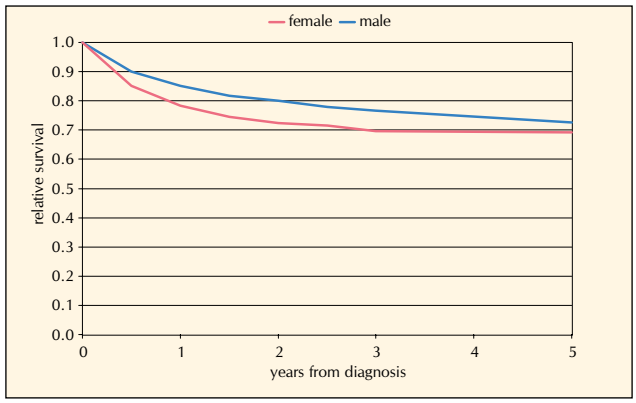
lymphoma



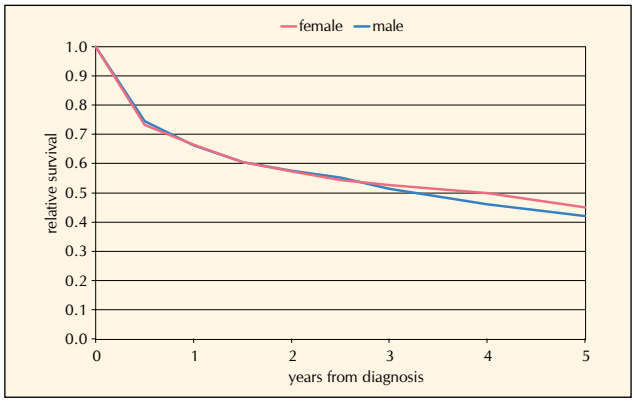
stomach



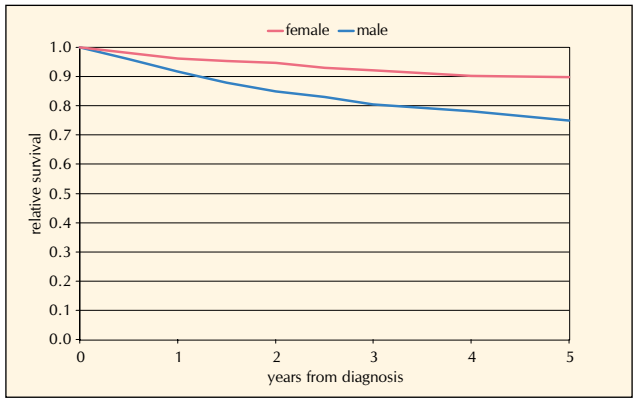
bladder



leukaemia



melanoma



10.4.1. Relative survival by stage

Relative survival curves, stratified by stage, are presented in Figure 10.5 for all of the cancers except melanoma, where the data were too sparse to provide meaningful estimates of stage-specific estimates. The data in these curves are summarized in Table 10.7, which shows five-year survival figures by site, sex and stage.

In keeping with the stage-specific survival presented earlier (Figure 10.2), stage IV cancers had poor relative survival for all cancers.

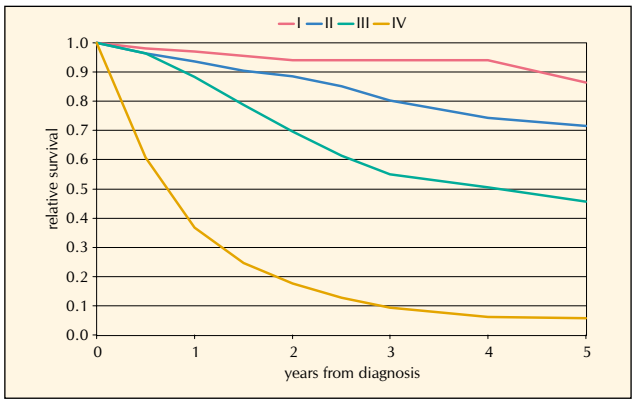
- For male lung cancer and female bladder cancer, stage 3 does not offer much improvement in relative survival over stage IV, and a similar pattern holds for grade 3 and 4 prostate cancer.
- For colon cancer, breast cancer, lymphoma and male bladder cancer, stages I to III have clearly better prognosis than stage IV with the drop in relative survival between stages II and III being somewhat worse than between stages I and II.
- For stomach cancer, the relative survival curves for the four stages are approximately equally spaced, with the exception of stage II cancer for females which has a relative survival that drops sharply after 1 – 2 years to become similar to that for stage III cancer.
- As before, we see the different survival pattern for males and females with bladder cancer, with females with stage III cancer having very poor prognosis.

Table 10.7 Relative survival: by site, stage and sex

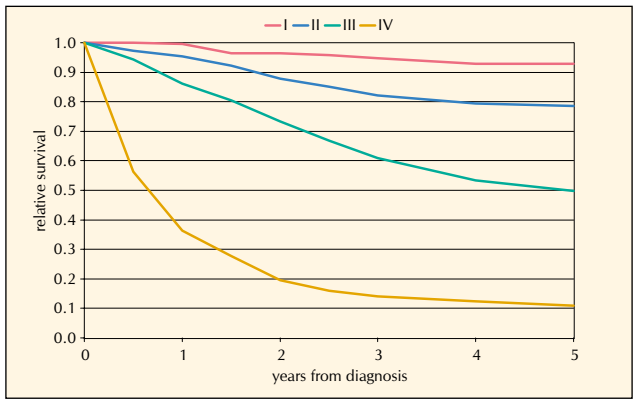
	FEMALE				MALE			
	I	II	III	IV	I	II	III	IV
colorectal	92.8%	78.5%	49.9%	10.9%	86.4%	71.7%	45.7%	5.8%
breast	90.9%	81.2%	60.9%	20.1%				
lung	49.0%	22.9%	11.5%	2.4%	34.4%	21.8%	4.9%	2.6%
lymphoma	49.0%	22.9%	11.5%	2.4%	34.4%	21.8%	4.9%	2.6%
stomach	66.3%	13.5%	22.1%	7.2%	62.9%	43.3%	13.4%	2.1%
bladder	98.1%	61.4%	11.6%	10.6%	93.8%	72.8%	45.2%	15.8%
	lymphoid	myeloid	other		lymphoid	myeloid	other	
leukaemia	65.0%	32.0%	38.6%		61.3%	24.5%	33.8%	
					GRADE 1	GRADE 2	GRADE 3	GRADE 4
prostate					89.3%	77.0%	49.2%	51.2%

Figure 10.5 Relative survival; by site and stage

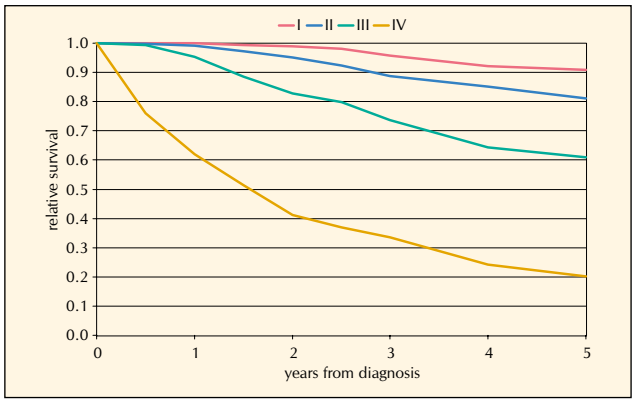
colorectal female



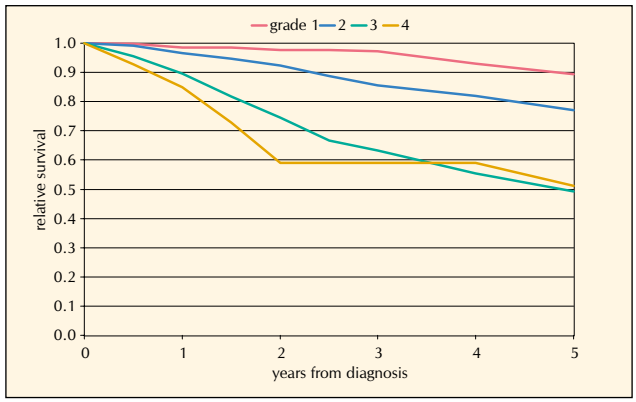
colorectal male



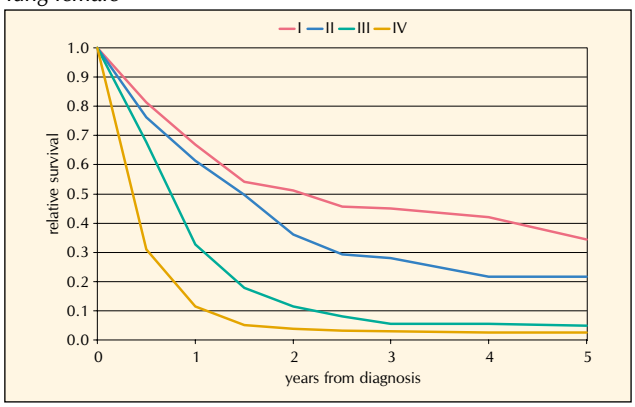
breast



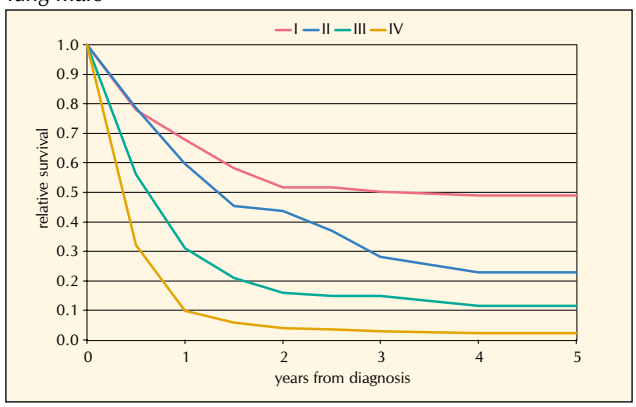
prostate



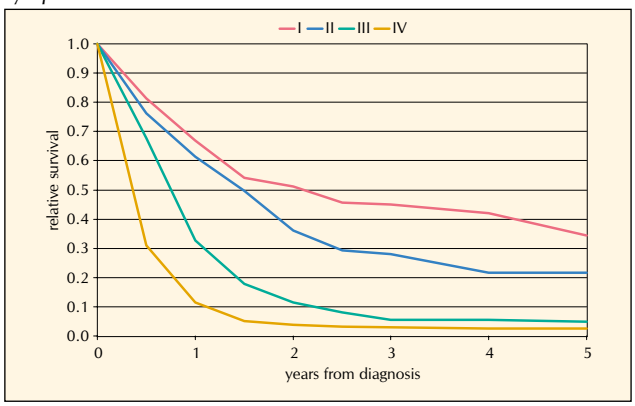
lung female



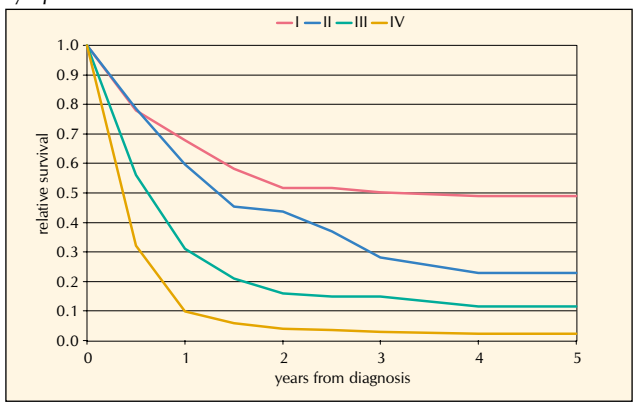
lung male



lymphoma female

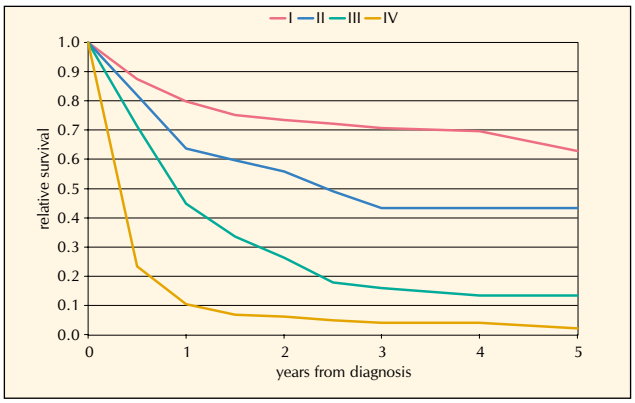


lymphoma male

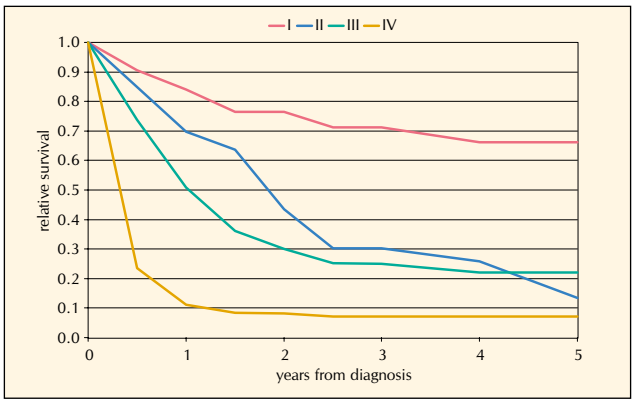


CONTINUED *Figure 10.5 Relative survival; by site and stage*

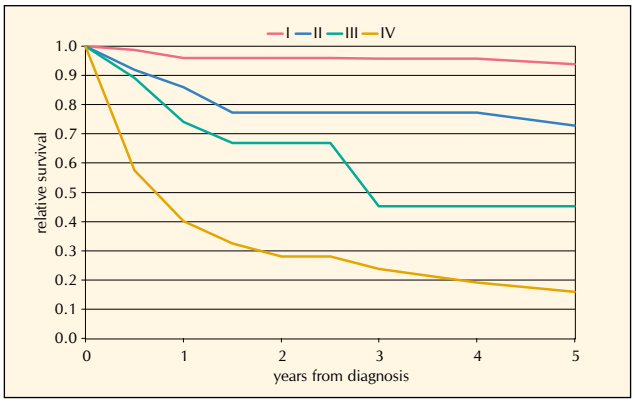
stomach female



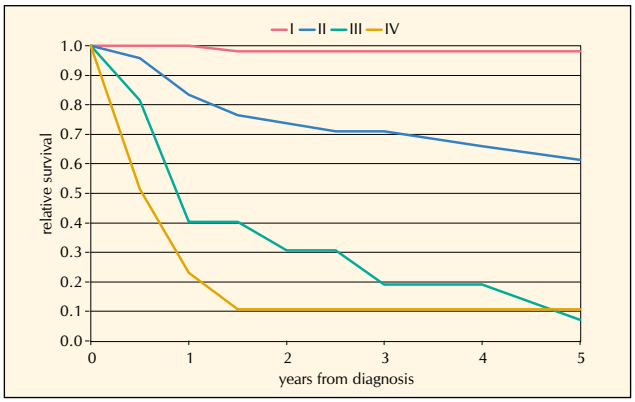
stomach male



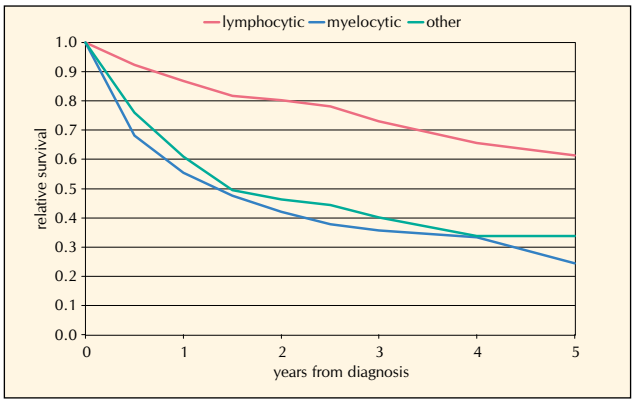
bladder female



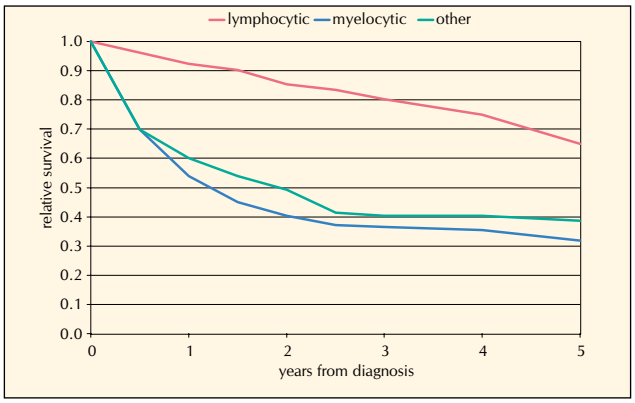
bladder male



leukaemia female



leukaemia male



10.4.2. Changes in relative survival over time

To examine whether relative survival was improving over time, we compared the stage-specific one-year and two-year relative survival for cancers diagnosed in 1994 – 1995 with those diagnosed in 1996 – 1997. The results of this analysis for the more common cancers are presented in Table 10.8, and suggest a trend of improvement in relative survival between the periods 1994 – 95 and 1996 – 97 for male colorectal cancer (but not for females) and in one-year relative survival for male and female stage I lung cancer.

Further analysis by age (data not shown) revealed a small improvement in the one-year relative survival as year of incidence went from 1994 to 1997

- for males aged under 70 with colorectal cancer,
- for prostate cancer
- for lung cancer in females under 70.

These observations suggest that male colorectal cancer may have been more successfully treated in recent years, and that some small improvement in treatment of stage I lung cancer may be conferring a small increase in relative survival.

However, these results are only tentative as the Registry has only five years of complete data, which is a very short time span for studies of time trends in prognosis. Furthermore, the numbers of cancers and deaths for a specific stratum (cancer site, calendar year of diagnosis, and stage) are small, so that there is insufficient power to ascertain with confidence if observed trends are real. Further analysis of this nature will become more meaningful as data accrues over the coming years and it is reasonable to expect that a 10 – year analysis should show improvements in prognosis over time. A 10 – year interval not only provides more data for analysis but it is a meaningful time span in terms of advancements in cancer treatment.

Table 10.8 Comparison of one-year and two-year relative survival for cancers diagnosed in 1994 – 1995 and 1996 – 1997.

			STAGE I	STAGE II	STAGE III	STAGE IV
colorectal	male					
	1 – year	94 – 95	.95	.95	.83	.37
		96 – 97	.98	.95	.93	.36
	2 – year	94 – 95	.89	.89	.62	.16
		96 – 97	.97	.88	.77	.16
	female					
	1 – year	94 – 95	1.00	.95	.87	.34
		96 – 97	.95	.95	.85	.32
	2 – year	94 – 95	.98	.84	.72	.17
		96 – 97	.92	.87	.69	.19
lung	male					
	1 – year	94 – 95	.60	.59	.36	.09
		96 – 97	.74	.58	.34	.12
	2 – year	94 – 95	.46	.37	.16	.04
		96 – 97	.52	.18	.11	.02
	female					
	1 – year	94 – 95	.69	.62	.28	.09
		96 – 97	.74	.58	.28	.11
	2 – year	94 – 95	.60	.56	.17	.03
		96 – 97	.46	.33	.15	.05
breast	female					
	1 – year	94 – 95	1.00	.99	.95	.62
		96 – 97	1.00	.99	.95	.59
	2 – year	94 – 95	.98	.95	.77	.44
		96 – 97	.99	.94	.84	.34
prostate			GRADE 1	GRADE 2	GRADE 3	GRADE 4
	1 – year	94 – 95	.99	.96	.90	.79
		96 – 97	.98	.97	.88	.86
	2 – year	94 – 95	.98	.89	.72	.52
		96 – 97	.96	.93	.72	.55

Appendix 1: Glossary and abbreviations

A brief glossary of terms used is given below. More detailed descriptions of statistical terms and methods can be found in Appendix 2.

Table A1.1. Glossary of terms

Age-specific rate	The annual rate (incidence or mortality) within a specific five-year age-class (e.g. 55 – 59 years); usually expressed per 100000 individuals.
Age-standardised rate (see also Direct age-standardisation)	The incidence or mortality rate within a specific population, corrected for age-structure in order to allow comparison with populations of different age-structure.
Benign tumour	Usually a slow-growing tumour, that may displace but does not invade or infiltrate surrounding tissue; a tumour considered not to have malignant or invasive potential.
Cancer	Sometimes used as a synonym of "malignant neoplasm" but includes any tumour or neoplasm with malignant potential – including in situ tumours that have not (yet) invaded surrounding tissue but may have the potential to do so. Excludes benign tumours.
CIN III	Abbreviation for "cervical intraepithelial neoplasia, grade III", considered an in situ tumour of the uterine cervix (the most frequent tumour type detected by cervical screening).
Confidence interval/limits	A range of values surrounding the estimate which has a specified probability of including the true population value. The 95% confidence interval is most widely used: this is the range of values within which we are said to be 95% confident that the true value of a measurement or estimate (e.g. incidence rate) lies. For example, a mean rate expressed as 5.0 $\pm$ 0.4 (95% confidence limits) means that we are 95% confident that the rate lies between 4.6 and 5.4, based on the data available.
Cox regression	A statistical method of calculating overall differences in survival between groups of patients.
Crude rate	The overall incidence or mortality rate (number of cases divided by total population) without any correction for age-structure of the population. Crude rates of cancer will generally be higher in a population with a higher proportion of older people, and are thus not directly comparable with populations having a younger age-profile.
Crude survival	The probability of surviving for a specified time after a diagnosis of cancer.
Cumulative rate	The sum of age-specific rates up to, and including, a particular age (typically 74).
Cumulative risk	An overall estimate of the likelihood of a person developing a particular cancer up to, and including, a particular age (typically 74), derived from the cumulative rate.
Cutaneous	Of skin.
Direct age-standardisation	Age-standardisation of a rate by applying the age-specific rates for a study population to a standard (e.g. World or European) population's age-structure.
Hazard ratio	The ratio of the risk of death (hazard) for an individual from a particular group, relative to the base group.
ICD-10	The tenth revision of the International Statistical Classification of Diseases and Related Health Problems (WHO 1992).
ICD-9	The ninth revision of the International Statistical Classification of Diseases and Related Health Problems (WHO 1977).
ICD-O.1	First edition of the International Classification of Diseases for Oncology (WHO 1976).
ICD-O.2	Second edition of the International Classification of Diseases for Oncology (Percy et al. 1990).
In situ tumour	Cancer with malignant potential which has remained confined to the tissue in which it originated.
Incidence rate	The number of cases diagnosed within a defined period (usually a year) divided by the population at risk; generally expressed as cases per 100000 persons per year.
Intracranial	Within the skull (cranium).
Invasive tumour	A tumour that is not (or is no longer) confined to the tissue in which it originated (see in situ tumour).
Kaplan-Meier	A precise method of calculation of survival.

Leukaemia	A malignant disease of the blood and blood-forming organs characterised by uncontrolled proliferation of leukocytes (white blood cells).
Lifetime risk	The risk of developing, or dying of, cancer over an average lifetime.
Lymphoma	A solid malignant tumour originating in lymphoid tissue, generally in lymph nodes.
Lymphoreticular	Related to the blood or immune system.
Malignant tumour	Used in this report (and in ICD-10) as a synonym of "invasive tumour" or "invasive cancer", but sometimes used more loosely to include in situ cancers (of malignant or invasive potential).
Median	The value of an observation having equal numbers of observations above and below that value (e.g. a disease with a median age at diagnosis of 45 years would have approximately equal numbers of cases diagnosed in patients younger than and older than 45).
Metastasis	The distant spread of a cancer from its original (primary) site to other parts of the body.
Mortality/incidence ratio	The ratio between numbers of deaths from a particular cancer (as recorded on death certificates) and the number of incident cases within the same period.
Neoplasms	A new growth or tumour; for diseases of the blood any uncontrolled proliferation of blood cells.
Non-melanoma skin cancer (NMS)	Skin cancers other than melanomas. These are primarily basal cell and squamous cell carcinomas among invasive skin cancers.
Prevalence / prevalence rate	The total, current number of cases or rate of a disease within a population, including cases diagnosed in earlier years.
Primary tumour	A tumour that originated in the tissue, or in the part of the body, where it has been diagnosed.
Prognosis	An estimation of the future course of a disease.
P-value	The probability of a particular event.
Relative survival	The ratio between the survival of the group under study and the survival of an equivalent group in the general population.
Secondary tumour	A tumour originating in one tissue, or one part of the body, but which has become established (through metastatic spread from the primary tumour) in a different location.
Statistical significance	An estimate of the likelihood of a finding (e.g. of difference between two sets of values) having occurred due to chance alone. Data are said to have reached conventional levels of statistical significance ($P < .05$) if the probability that a result could have arisen by chance is less than 0.05 (5%).
Statistically significant	A finding whose statistical significance is less than a specified value (in this report usually .05); unlikely to have occurred by chance.
Stratified	Divided into groups with a common characteristic (e.g. age, sex) for the purposes opf analysis.
Survival	The probability of living for a specified period after a cancer diagnosis.
Tumour	An abnormal tissue growth characterised by abnormal and excessive division of cells; may be benign or may have malignant potential.
Uncertain behaviour	A cancer which, at the time of diagnosis, cannot be classified as either benign or malignant.

Table A1.2. Abbreviations

CIN	cervical intra-epithelial neoplasia
CSO	Central Statistics Office
EASR	European age-standardized rate
EASIR	European age-standardized incidence rate
EASMR	European age-standardized mortality rate
HIPE	Hospital Inpatient Enquiry
IARC	International Agency for Research on Cancer
ICD	International Classification of Disease
ICD O	International Classification of Disease for Oncology
NMS	non-melanoma skin (cancer)
TRO	tumour registration officer
WASR	World age-standardized incidence rate

Appendix 2: Methodology

A2.1. Case definitions

A2.1.1. Summary statistics, age distribution, time trends and geographical patterns

The data presented here are based on complete registration of invasive and in situ neoplasms, and tumours of uncertain behaviour, for persons normally resident in the Republic of Ireland. Benign tumours of intracranial or intraspinal tissues, but not other sites, are also registered by the National Cancer Registry and presented here, as appropriate. The latter group are recorded by the Registry as they have greater clinical significance (higher fatality rates) than other benign tumours. Tumours of uncertain behaviour are those for which benign or malignant status could not be confirmed.

The major emphasis in this report is on malignant (invasive) cancers, as these account for the vast majority of neoplasm-related deaths. Non-malignant conditions have been excluded from text, tables or figures, except where this has been specifically noted.

Both cases and deaths are classified according to the site of the primary cancer; sites of secondary tumours have not been considered. Where only a secondary site was known, the cancer was registered and reported as "primary site unknown".

The cancer sites/combinations used have been defined by the first three characters of the ICD 10 "site" codes, e.g. C50 represents all malignant cancers of breast (C50.0 to C50.9).[5] For deaths, mortality data presented here are based on cause of death as notified on death certificates. The codes used in this report have been derived by translation of the ICD 9 codes allocated by the Central Statistics Office to ICD 10, using (with minor modifications) a conversion program supplied by the International Agency for Research on Cancer.[6]

For incident cases, registry data were initially coded to sites defined by the second edition of the International Classification of Diseases for Oncology[7], before translation to ICD-10 codes, using the conversion program mentioned above.

A summary of the cases and deaths analysed in the report is given in Table A2.1.

Table A2.1 Cases analysed in this report

	FEMALE		MALE		BOTH SEXES	
	cases	%	cases	%	cases	%
all registered cancers	49562	100%	47433	100%	96995	100%
all malignant	40746	82%	44729	94%	85475	88%
in situ	7570	15%	1689	4%	9259	10%
benign	462	1%	283	1%	745	1%
uncertain behaviour	784	2%	732	2%	1516	2%
specific sites (malignant cases only)						
colon	2554	5%	2862	6%	5416	6%
rectosigmoid	265	1%	429	1%	694	1%
rectum	864	2%	1569	3%	2433	3%
anus	58	0%	52	0%	110	0%
breast	7921	16%	64	0%	7985	8%
lung	2537	5%	4858	10%	7395	8%
prostate	0	0%	5752	12%	5752	6%
lymphoma	1112	2%	1278	3%	2390	2%
stomach	871	2%	1474	3%	2345	2%
bladder	640	1%	1639	3%	2279	2%
melanoma skin	1174	2%	701	1%	1875	2%
leukaemia	727	1%	994	2%	1721	2%
all cancers at sites listed above	18723	38%	21672	46%	40395	42%

A2.1.2. Treatment

Data on nine cancer sites was used for treatment analysis (Table A2.3). The cases selected for this analysis were patients with primary invasive tumours affecting these sites who were diagnosed in the Republic during the five-year period from 1994 to 1998. As shown in Table A2.1, 40395 cases satisfied these criteria. In the case of patients who had more than one cancer, the record with the earlier date of diagnosis was retained, leaving a total of 39681 cases. A further 248 patients were excluded because they were under 15 or above 100 years of age at the time of diagnosis (n = 244) or had no known addresses (n = 4). A further 63 male breast cancer cases were also excluded from analysis, leaving a total of 39370 patients (Table A2.2).

Table A2.2 Case definition for treatment analysis

DESCRIPTION	CASES EXCLUDED	CASES REMAINING
all cancers from nine sites listed		40395
first cancers, where patients had more than one	714	39681
patients > = 15 and < = 100	244	39437
known addresses	4	39433
exclude male breast cancers	63	39370

Table A2.3 Cases used in treatment analysis

SITE	FEMALE	MALE	BOTH SEXES
all cases analysed	18372	20998	39370
stomach	853	1441	2294
colorectal	3669	4788	8457
lung	2504	4773	7277
skin melanoma	1155	683	1838
breast (female)	7856		7856
prostate		5618	5618
bladder	625	1588	2213
lymphomas	1078	1222	2300
leukaemia	632	885	1517

A2.1.3. Survival

Survival was calculated for the sites listed in Table A2.5. Cases used in the treatment analysis were used for survival calculations, but with a number of further exclusions.

Of the 39370 incident cancers summarised in Table A2.3, 87 cases were flagged as having died but with no date of death available, and were excluded from survival analysis. For the remaining 39283 cases, we defined the vital status as of 31st Dec. 1999, as death certificate data at the National Cancer Registry is effectively complete up to that date. Hence all deaths prior to 31st Dec. 1999 were defined as deaths, while all patients dying since that date or whose death was not recorded were "censored" (i.e. considered as alive) on 31st Dec. 1999.

For all defined deaths, a cause of death was necessary in order to examine cancer survival (as opposed to crude survival). However, 260 deaths were recorded on dates prior to 31st Dec. 1999 with no cause of death, so these records were also dropped from analysis. A further 380 deaths were recorded as having occurred on the date of incidence, giving a zero follow-up time which cannot be included in survival analysis. This left a total of 38643 analysable records, as summarised in Table A2.5.

Of the 38643 records that were used in the cancer survival section (Chapter 10), as shown in Table A2.4, 133 records with missing date of birth were dropped for relative survival analysis, leaving the final data set for analysis as shown in Table A2.5

Table A2.4 Case definition for survival analysis

DESCRIPTION	CASES EXCLUDED	CASES REMAINING
all cancers in treatment analysis		39370
no date of death	87	39283
no cause of death	260	39023
death on date of incidence	380	38643
no date of birth	133	38510

Table A2.5 Cancers diagnosed in 1994 – 1998 and included in survival analysis.

	1994	1995	1996	1997	1998	TOTAL
all cases analysed	7788	7415	7612	7847	7981	38643
colorectal	1701	1595	1592	1701	1701	8290
breast	1498	1509	1564	1588	1658	7817
lung	1477	1346	1365	1383	1446	7017
prostate	1042	1080	1111	1114	1196	5543
lymphoma	438	393	445	472	500	2248
stomach	457	449	452	443	429	2230
bladder	496	422	454	438	375	2185
melanoma	371	354	345	396	375	1832
leukaemia	308	276	284	312	301	1481

A2.2. Duplicate registrations

All registrations are checked for duplication at the time of entry and as part of the quality control programme during processing at the Registry. The Registry has an extensive set of rules to determine if a second cancer in an already registered patient is a new primary or a recurrence of an already registered cancer. These rules determine if a cancer is registered. Once a decision has been made to exclude a cancer this is essentially irreversible, so the rules tend to be inclusive and, in case of doubt, a new registration is made. However, for the purposes of analysis and presentation simpler and more exclusive rules, as proposed by the International Agency for Research on Cancer (IARC)[4], are applied to the data.

Most patients had only one tumour registered between 1994 and 1998. However, 8143 (8.8%) of patients had more than one primary tumour (Table A2.6) and 5644 (6.1%) had more than one primary tumour at the same anatomical site. As can be seen, most multiple primary cancers were in the skin. Some patients had large numbers of non-melanoma skin cancers, up to 30 in a few cases.

All of these duplicate tumours were identified and, where appropriate, deleted, using the rules suggested by Parkin et al.[4] These rules apply to malignant cancers only, so in processing our data, we extended the rules to all neoplasms, with the further qualification that, where a malignant cancer and a non-malignant neoplasm of the same morphological type arose in the same organ, the malignant cancer was retained and the non-malignant deleted from the data. The outcome of this de-duplication process is shown in Table A2.9.

For the 104192 cancers on the Registry database 92106 patients were registered, 1.13 tumours per person. 91182 invasive tumours were registered in 85475 patients, 1.12 per person. The multiple primary tumours were identical at the most specific measure of primary site (3rd digit of ICD10) in 4715 cases, and at the less specific site (2nd digit of ICD10) in 9126 cases. Application of the IARC rules[4] reduced the number of unique primary tumours to 96995, 1.05 per patient. Broadly similar results were found for invasive tumours alone.

Table A2.6 Multiple primary tumours affecting the same person

NUMBER OF TUMOURS PER PERSON	NUMBER OF PATIENTS	% OF TOTAL	NUMBER OF TUMOURS	% OF TOTAL
1	83963	91.2%	83963	80.6%
2	6130	6.7%	12260	11.8%
3	1213	1.3%	3639	3.5%
4	412	0.4%	1648	1.6%
5	157	0.2%	785	0.8%
6	91	0.1%	546	0.5%
7	48	0.1%	336	0.3%
8	30	0.0%	240	0.2%
9	17	0.0%	153	0.1%
10	9	0.0%	90	0.1%
>10	36	0.0%	532	0.5%
total	92106		104192	

Table A2.7 Multiple primary cancers at the same anatomical site

SITE	NUMBER OF CANCERS					
	TWO	THREE	FOUR	FIVE	>FIVE	ALL PATIENTS
skin	3701	985	361	132	219	5398
colon	106	7	0	0	0	113
breast	78	4	0	0	0	82
lung	28		0	0	0	28
rectum	8	0	0	0	1	9
stomach	2	0	0	0	0	2
rectosigmoid	2	0	0	0	0	2
cervix	2	0	0	0	0	2
corpus uteri	2	0	0	0	0	2
bladder	2	0	0	0	0	2
connective tissues	1	0	0	0	0	1
ovary	1	0	0	0	0	1
testis	1	0	0	0	0	1
kidney	1	0	0	0	0	1
all sites	3935	996	361	132	220	5644

Table A2.8 Number of non-melanoma skin cancers per person

NUMBER OF CANCERS PER PATIENT	NUMBER OF PATIENTS	NUMBER OF CANCERS
1	25102	25102
2	3701	7402
3	985	2955
4	361	1444
5	132	660
6	87	522
7	47	329
8	26	208
9	14	126
10	10	100
11	8	88
12	8	96
13	5	65
14	2	28
15	3	45
16	1	16
17	2	34
18	1	18
19	1	19
20	1	20
21	1	21
32	1	32
33	1	33
all patients	30500	39363

Table A2.9 De-duplication of tumour data

	ALL CANCERS	ALL INVASIVE CANCERS
all tumours	104192	91182
tumours with same 3 digit site	99477	87677
number of "unique" tumours by IARC rules	96995	85475
tumours with same 2 digit site	95066	84211
number of patients	92106	81717

A2.3. Death certificate only (DCO) cases

Death certificates were the most important non-hospital source of cases (1.4%). However, the importance of death certificates as a primary source of case notification has been decreasing, from 1.8% of 1994 cases to 0.9% of 1998 cases. The Registry, at present, does not register a case based on death certification alone, but only after the diagnosis has been confirmed from another source. Our reason for doing this is that almost all cases which first come to our attention from death certificates have turned out to pertain to pre-1994 incident cases. On the basis that almost all current death certificate only (DCO) cases are likely to pre-date the establishment of the Registry, we have decided to exclude them for the present. The number and sites of these cancers are shown in Table A2.10.

Table A2.10 Death certificate only cases

	NUMBER OF CASES					
	1994	1995	1996	1997	1994 – 1998	% OF ALL REGISTRATIONS FOR THE SITE
lip	0	1	0	1	2	0.9%
base of tongue	0	0	1	0	1	1.1%
other tongue	1	2	0	0	3	1.4%
gum	0	0	1	0	1	3.0%
floor of mouth	0	1	0	0	1	0.7%
palate	2	0	0	1	3	4.6%
other mouth	2	0	1	0	3	3.0%
parotid	1	0	0	1	2	1.5%
other salivary	0	0	0	0	0	0.0%
tonsil	0	1	0	1	2	1.5%
pyriform	0	0	0	0	0	0.0%
hypopharynx	0	1	0	0	1	1.6%
other mouth/pharynx	0	0	0	1	1	1.5%
oesophagus	8	8	5	13	34	2.3%
stomach	12	24	18	24	78	3.1%
small intestine	1	0	0	1	2	0.7%
colon	24	38	47	52	161	2.8%
rectosigmoid	1	1	1	1	4	0.6%
rectum	6	8	8	7	29	1.1%
anus	0	0	0	0	0	0.0%
liver	0	2	2	3	7	2.2%
gallbladder	1	0	0	1	2	1.1%
other biliary	0	2	4	4	10	3.1%
pancreas	11	16	24	15	66	4.1%
other digestive	4	22	15	20	61	42.7%
nasal cavity/middle ear	0	0	0	0	0	0.0%
sinuses	1	0	0	0	1	1.4%
larynx	1	1	2	1	5	0.8%
trachea	0	0	0	1	1	4.6%
lung	51	69	64	83	267	3.6%
thymus	1	0	1	0	2	11.1%
mediastinum	0	1	2	1	4	2.7%
other chest	1	0	0	1	2	50.0%
bones, joints head & trunk	0	0	1	6	7	7.0%
haematopoieitic & reticulendothelial	23	21	21	33	98	2.8%

skin	3	4	2	3	12	0.0%
peripheral nerves	0	1	1	1	3	5.3%
peritoneum	0	0	0	0	0	0.0%
connective tissues	0	0	2	0	2	0.5%
breast	14	25	17	30	86	1.0%
vulva	0	0	0	0	0	0.0%
cervix	2	2	6	7	17	0.4%
corpus uteri	1	6	1	5	13	1.2%
uterus NOS	2	0	1	1	4	4.2%
ovary	2	6	7	14	29	1.8%
other female genital	0	0	0	0	0	0.0%
penis	1	1	0	0	2	1.7%
prostate	17	27	31	34	109	1.9%
testis	0	0	0	0	0	0.0%
kidney	8	5	7	10	30	2.5%
bladder	6	4	7	9	26	1.1%
other urinary	0	0	0	2	2	6.7%
eye	0	0	1	1	2	0.9%
meninges	1	2	1	0	4	1.2%
brain	5	7	11	14	37	2.8%
spinal cord	1	1	0	1	3	1.2%
thyroid	1	1	1	2	5	1.5%
adrenal	0	0	0	1	1	2.0%
other endocrine	0	0	1	0	1	0.3%
ill-defined site	3	1	3	3	10	4.2%
lymph nodes	4	6	8	5	23	1.4%
unknown primary site	15	28	37	42	122	3.5%

A2.4. Accuracy of death certificates

The accuracy of death certificates as a source of notification of cancer is questionable. In matching death certificates with registered cases, we have noticed significant discrepancies between the cause of death as given on the death certificate and the cancer as registered by the National Cancer Registry. In all of these cases, we have gone back to the original medical record to attempt to confirm the diagnosis.

An example of this process is shown below for deaths from lung cancer in 1996 (Table A2.11). In 1996, 1446 deaths were registered as due to lung cancer. Of these, the National Cancer Registry failed to find any trace of the patient in 55 (4%) cases; in 38 cases we are still attempting to find a matching patient. In 89 (6%) cases the patient was identified, but death was due to a cancer incident before January 1st, 1994. In 57 cases (4%), investigation of the medical record showed that there was no record of cancer being present at the time of death. In total, 1202 (83%) of the death certificates matched with a registered cancer.

The majority of cancers confirmed in these 1202 patients were lung cancer (1084; 90%). However, in the other 118 (10%) a cancer other than lung cancer was confirmed, and no record of lung cancer was found in the medical record. In most of these cases, the lung cancer was judged to be secondary and the site of the primary unknown (66 cases; 5%).

Conservatively, therefore, we can estimate lung cancer to have been wrongly registered as a cause of death in the 57 cases in which no cancer was present, and in the 118 cases in which the cancer was not a primary lung cancer. As a consequence, in 12% of all "lung cancer" deaths there was no evidence that the patient had lung cancer, which has been over-registered as a cause of death by at least this amount.

Table A2.11 Matching of cancer death certificates with registered cancers: lung cancer

	NUMBER OF DEATHS	% OF TOTAL
all death certificates	1446	100%
death certificate only	55	4%
unresolved	38	3%
pre-1994 incident case	89	6%
not cancer	57	4%
cancer confirmed	1202	83%
site of registered cancer		
lung	1084	90%
unknown primary site	66	5%
mediastinum	4	<1%
non-melanoma skin	8	1%
breast	7	1%
prostate	2	<1%
mesothelioma	3	<1%
other	28	2%

A2.5. Histology

A precise histological classification was possible for 90% of all invasive cancers (Table A2.12). The most common cell types were adenocarcinoma, basal cell carcinoma and squamous carcinoma.

In situ cancers are registered only if histologically verified (Table A2.13). The commonest types of in situ cancer were CIN III and Bowen's disease (squamous carcinoma in situ of skin).

In some cases, histological examination cannot verify if a tumour is of benign or malignant behaviour. All neoplasms of this type are registered, if histologically verified (Table A2.14). Most of these were haematological conditions. The commonest histological types were myelodysplastic syndrome and villous adenoma.

Tumours of the central nervous system, intracranial and intraspinal tumour are registered, regardless of behaviour (with the exception of congenital malformations). The commonest types were pituitary adenoma, neurilemmoma (almost all acoustic neuromas) and meningioma (Table A2.15).

Table A2.12 The twenty most common histological types of invasive tumour

adenocarcinoma NOS*	M-8140/3	16359	19.1%
basal cell carcinoma, NOS	M-8090/3	15478	18.1%
squamous cell carcinoma NOS	M-8070/3	12462	14.6%
neoplasm malignant	M-8000/3	8588	10.0%
infiltrating duct carcinoma	M-8500/3	4913	5.7%
carcinoma NOS	M-8010/3	2306	2.7%
squamous cell carcinoma large cell, keratinizing	M-8071/3	1600	1.9%
papillary transitional cell carcinoma	M-8130/3	1120	1.3%
multicentric basal cell carcinoma	M-8091/3	1085	1.3%
transitional cell carcinoma NOS	M-8120/3	1023	1.2%
malignant melanoma NOS	M-8720/3	910	1.1%
multiple myeloma	M-9732/3	824	1.0%
lobular carcinoma NOS	M-8520/3	789	0.9%
mucous adenocarcinoma	M-8480/3	757	0.9%
small cell carcinoma NOS	M-8041/3	717	0.8%
renal cell carcinoma	M-8312/3	640	0.7%
mucin-secreting adenocarcinoma	M-8481/3	625	0.7%
chronic lymphoid leukaemia	M-9823/3	605	0.7%
signet ring cell carcinoma	M-8490/3	491	0.6%
superficial spreading melanoma	M-8743/3	461	0.5%

** NOS - not otherwise specified*

Table A2.13 The ten most common histological types of in situ cancer

cervical intraepithelial neoplasia, grade111	M-8077/2	3666	39.6%
Bowen's disease	M-8081/2	2269	24.5%
squamous cell carcinoma in situ, NOS	M-8070/2	1369	14.8%
Hutchinson's melanotic freckle, NOS	M-8742/2	601	6.5%
carcinoma in situ, NOS	M-8010/2	534	5.8%
intraductal carcinoma, noninfiltrating, NOS	M-8500/2	252	2.7%
melanoma in situ	M-8720/2	188	2.0%
adenocarcinoma in situ in adenomatous polyp	M-8210/2	70	0.8%
adenocarcinoma in situ, NOS	M-8140/2	63	0.7%
lobular carcinoma in situ	M-8520/2	55	0.6%

Table A2.14 The ten most common histological types of neoplasm of uncertain behaviour

myelodysplastic syndrome, NOS	M-9989/1	267	17.6%
villous adenoma, NOS	M-8261/1	207	13.7%
polycythaemia vera	M-9950/1	155	10.2%
carcinoid tumour, NOS, of appendix	M-8240/1	130	8.6%
chronic myeloproliferative disease	M-9960/1	121	8.0%
idiopathic thrombocythemia	M-9962/1	115	7.6%
monoclonal gammopathy	M-9765/1	37	2.4%
lymphoproliferative disease NOS	M-9970/1	37	2.4%
refractory anaemia with sideroblasts	M-9982/1	29	1.9%
craniopharyngioma	M-9350/1	28	1.8%

Table A2.15 The ten most common types of benign tumour

adenoma NOS	M-8140/0	210	28.2%
neurilemmoma, NOS	M-9560/0	167	22.4%
meningioma NOS	M-9530/0	140	18.8%
transitional meningioma	M-9537/0	103	13.8%
meningotheliomatous meningioma	M-9531/0	52	7.0%
fibrous meningioma	M-9532/0	21	2.8%
neoplasm benign	M-8000/0	7	0.9%
neurofibroma NOS	M-9540/0	7	0.9%
psammomatous meningioma	M-9533/0	6	0.8%
lipoma NOS	M-8850/0	5	0.7%

** NOS - not otherwise specified*

A2.6. Definitions

A2.6.1. Incident cases (malignant cancers)

Any invasive or malignant case first diagnosed in a resident of the Republic of Ireland during the calendar years 1994 – 1998. The procedures used to deal with multiple primary cancers in the same individual are described in section A2.2. Cases notified by death certificate only and not confirmed from other sources ("DCOs") were excluded from incidence figures (see section A2.3).

A2.6.2. Deaths

All deaths registered by the Central Statistics Office for Ireland (CSO) where the main cause of death was given as cancer (ICD9 140.0 to 239.9) were considered "cancer deaths" and are analysed here. Some of these were, in our view, not deaths from cancer, or were due to a cancer other than that given on the death certificate (see section A2.4). However, the cause of death as officially registered has been used for analysis in all cases. As death registration for 1998 was not closed at the time of analysis, there may be minor discrepancies between the data published here and that in the annual "Reports on Vital Statistics" published by the CSO.

A2.6.3. Population at risk

Official Central Statistics Office census figures[2] were used for the 1996 population at national and health-board level (Table A2.16). As there are no reliable intercensal population estimates, the denominator population for 1994 to 1998 was taken to be that in 1996. For the time trends analysis, interpolated and extrapolated estimates (Table A2.17) were used.

A2.6.4. Crude rate

The number of incident cases or deaths divided by the population at risk; usually expressed per 100000 persons per year.

A2.6.5. Age-specific rate

The number of cases per person in a specific age-class, usually for five-year age-classes up to age 85+, generally expressed per 100000 persons per year.

A2.6.6. European (EASR) and World (WASR) age-standardised rate (incidence and mortality)

The incidence rate that would have been found if the population being studied had the same age-composition (proportion of total population in each five-year age-class) as a hypothetical European or World population. The rates are calculated by applying the age-specific rates for Ireland (or any subdivision thereof) to a theoretical European or World standard population; usually expressed per 100000 persons per year:

$$ASR = \frac{\sum_{i=1}^{15} a_i . w_i}{\sum_{i=1}^{15} w_i}$$

where: a_i *= age -specific rate for the* i^{th} *age group;* w_i *= standard "World" or "European" weights*

Directly standardised rate ratio (DSRR)

This is the ratio between two directly age-standardised rates (e.g. EASRs). The numerical value of the DSRR is similar to to a standardised incidence ratio (SIR) but is calculated quite differently. The DSRR is generally expressed as a percentage of a reference (e.g. national) value.

A.2.6.7. Cumulative rate

The total accumulated cancer incidence or mortality rate up to a given age, i.e. the sum of the annual incidence or mortality rates (per 100000 per year). For childhood cancers, ages 0 – 14 are used; for overall lifespan, ages 0 – 74 are generally used. Cumulative rate to age 74 is calculated as:

$$cumulative\ rate = \sum_{i=1}^{15} a_i * 5$$

where: a_i = age specific rate for the i^{th} age-class; 5 = number of years included in each of the 15 age-classes used (0 – 4 to 70 – 74 years).

A.2.6.8. Cumulative risk to age 74

The risk to an "average" individual, given current cancer rates, of developing a cancer before his or her 75th birthday (assuming survival to that date); usually expressed as a percentage. Cumulative risk is derived from cumulative rate as follows:

$$cumulative\ risk = 1 - (1 - e^{-cumulative\ rate})$$

Note that cumulative risk takes no account of differences in risk factors between individuals or of possible future changes in incidence, but is based on the average Irish male or female, and the most recent (1994 – 96) estimates of incidence rates for the Irish population. Note also that that substantial numbers of cancer cases occur in individuals aged 75 years or more. As the normal life expectancy in Ireland is close to 75 years, the cumulative risk to age 74 is a good approximation to the "lifetime risk" of developing cancer.

A.2.6.9. Mortality/incidence (M/I) ratio

The number of deaths for a period (usually a year) divided by the number of incident cases of the same condition for the same period. This ratio is primarily intended for monitoring data quality, as major variation in the ratio, e.g. between cancer registries, countries or years, may indicate variation in case ascertainment (proportion of incident cases registered). However, it can also provide a crude indication of cause-specific survival rate (cancers with poorer average survival rates usually having a higher M/I ratio). For a few cancers, more deaths than incident cases are recorded annually at present. This may reflect methodological factors (e.g. differences in diagnostic criteria applied to deaths and incident cases), poor average survival rates, and/or different time-trends in incidence and mortality rates.

A.2.6.10. Annual percentage change (APC) in the European age-standardised rate

The APC values were calculated for each site by fitting a model that assumed a constant rate of change in the European age standardised incidence and mortality rates, that is a linear model applied to these rates after logarithmic transformation. The estimated slope resulting from the fit was then transformed back to represent a percentage increase or decrease. The actual calculations themselves are performed by first fitting a regression line to the natural logarithm of the rates (r) using calendar year (x) as a regressor variable. If $\ln(r) = ax + b$ is the resulting regression equation (with slope m) and n is the number of years, then

$$\frac{n * \sum [x * \ln(r)] - (\sum x) * (\sum \ln(r))}{n * \sum [x^2 - (\sum x)^2}$$

and APC = $100(e^a - 1)$

where e = 2.71826 is the base of natural logarithms. The calculations were performed using the Microsoft Excel spreadsheet package.

Testing the hypothesis that the actual mean annual percentage change is 0 is equivalent to testing the hypothesis that the theoretical slope estimated by the slope m of the line representing the equation $\boldsymbol{ln(r) - ax + b = 0}$. The latter hypothesis is tested using the 0.25% F distribution of $\boldsymbol{a/SE_m}$ with n-1 numerator degrees of freedom. For five observations, representing each incident year between 1994 to 1998, a critical value of 3.715 was used to calculate the 95% confidence level. The standard error of m, SE_m is obtained from the fit of the regression. This calculation assumes that the rate increased/decreased at a constant rate over the entire calendar year interval; the validity of this assumption was not assessed. In those few instances where at least one of the rates was 0, the linear regression was not calculated.

A2.6.11. Geographical patterns: comparison of rates between populations or years

Comparative incidence data presented in this report are calculated as directly age-standardised rates (based on a notional standard European population: see above). Where rates are expressed as "% of expected", or % greater or less than another rate, this is based on directly age-standardised rate ratios (DSRRs), rather than indirectly age-standardised ratios (SIRs). Where multiple comparisons are made among populations or years (for a given cancer and sex), a statistical correction is made to minimise the number of "chance" differences that would otherwise be highlighted as statistically significant.

A2.6.12. Relative survival

For our relative survival analysis, we used Irish population life tables for the period 1995 – 1997, which provide mortality figures for every one-year age group from 0 – 1 to 99 – 100. For patients aged 100 at diagnosis, we assume the population mortality for 100 – 101 is the same as that for 99 – 100. As recent official life tables were not available, the life tables were constructed by the Registry from the 1996 census population data and 1995 to 1997 mortality data.

For this analysis, we used the STREL program which runs in the Stata package. This program actually requires date of birth (rather than age at diagnosis) and uses this together with date of diagnosis and date of death to determine age and follow-up time. The program also requires the user to specify an "exit date" (i.e. the date patients can be assumed alive if there is no date of death recorded) which we have set to be 31st Dec 1999 as discussed earlier.

A2.7. Populations

Table A2.16 Census and estimated intercensal populations, 1991 to 1998, as used in this report

	FEMALE								MALE							
	1991	1992	1993	1994	1995	1996	1997	1998	1991	1992	1993	1994	1995	1996	1997	1998
all ages	1772301	1783012	1793723	1804433	1815144	1825855	1836565	1847277	1753418	1762781	1772144	1781506	1790869	1800232	1809595	1818958
0 – 4	133179	130874	128569	126264	123959	121654	119349	117044	140564	138199	135834	133470	131105	128740	126375	124010
5 – 9	155157	151647	148137	144628	141118	137608	134098	130588	163346	159744	156142	152539	148937	145335	141733	138131
10 – 14	169400	167262	165124	162986	160848	158710	156572	154434	178928	176618	174308	171997	169687	167377	165067	162757
15 – 19	163618	164012	164405	164799	165192	165586	165980	166373	171408	171916	172425	172933	173442	173950	174458	174967
20 – 24	130093	132917	135740	138564	141387	144211	147035	149858	136479	139012	141545	144077	146610	149143	151676	154209
25 – 29	125661	126465	127269	128074	128878	129682	130486	131290	120660	122401	124141	125882	127622	129363	131104	132844
30 – 34	125903	127361	128819	130278	131736	133194	134652	136110	123168	124081	124995	125908	126822	127735	128648	129562
35 – 39	119165	121239	123313	125388	127462	129536	131610	133684	118724	120207	121690	123174	124657	126140	127623	129106
40 – 44	111827	113537	115247	116957	118667	120377	122087	123797	113856	115098	116339	117581	118822	120064	121306	122547
45 – 49	92319	96172	100025	103878	107731	111584	115437	119290	95443	99118	102792	106467	110141	113816	117491	121165
50 – 54	76945	79922	82899	85875	88852	91829	94806	97783	79861	82852	85844	88835	91827	94818	97809	100801
55 – 59	70884	71907	72930	73952	74975	75998	77021	78044	71665	72894	74123	75351	76580	77809	79038	80267
60 – 64	68975	69031	69087	69144	69200	69256	69312	69368	65591	66211	66831	67450	68070	68690	69310	69930
65 – 69	69796	69147	68499	67850	67202	66553	65904	65256	60956	60816	60676	60536	60396	60256	60116	59976
70 – 74	60142	60597	61052	61508	61963	62418	62873	63328	49183	49371	49559	49748	49936	50124	50312	50500
75 – 79	48369	48469	48569	48669	48769	48869	48969	49069	35713	35616	35519	35422	35325	35228	35131	35034
80 – 84	30336	31208	32080	32953	33825	34697	35569	36441	18965	19387	19809	20230	20652	21074	21496	21918
85+	20532	21244	21956	22669	23381	24093	24805	25517	8908	9240	9573	9905	10238	10570	10902	11235

Table A2.17 Health board populations, 1996 census

	FEMALE								MALE							
age	EHB	MHB	MWHB	NEHB	NWHB	SEHB	SHB	WHB	EHB	MHB	MWHB	NEHB	NWHB	SEHB	SHB	WHB
0 – 4	43664	7193	10603	10494	7025	13323	18032	11320	46806	7429	11106	11212	7472	13929	18918	11868
5 – 9	47138	8213	11961	12631	8422	15446	20271	13526	49404	8702	12822	13156	8910	16287	21692	14362
10 – 14	51888	9959	14379	14690	9759	17816	24096	16123	55151	10402	15009	15493	10366	18792	24997	17167
15 – 19	58017	9618	14889	14143	9790	17967	24824	16338	59996	10490	15724	15222	10151	19292	26032	17043
20 – 24	61772	6640	12053	10144	7045	13107	20721	12729	58907	7590	13304	11601	7589	14883	22019	13250
25 – 29	55929	6316	10043	9678	6271	12734	18370	10341	52389	6778	10575	10177	6492	13196	18856	10900
30 – 34	53790	6942	10786	10652	6707	13754	19406	11157	49251	7117	10615	10439	6467	13637	19401	10808
35 – 39	48739	7093	10778	10976	6976	13657	19130	12187	45654	7264	11066	10835	6809	13600	19071	11841
40 – 44	44416	6701	10430	10107	6703	12623	17867	11530	41396	6981	10757	10653	6834	13203	18290	11950
45 – 49	40737	6002	9896	9530	6435	11751	16797	10436	38947	6339	10339	10004	6799	12473	17549	11366
50 – 54	33421	4954	8198	7628	5079	10088	13967	8494	32177	5254	8576	8282	5844	10606	14631	9448
55 – 59	28051	4074	6491	5989	4468	8207	11724	6994	26292	4363	6998	6414	4784	8864	12190	7904
60 – 64	24528	3953	5897	5544	3962	7796	10830	6746	22208	4156	6294	5649	4318	7896	10832	7337
65 – 69	22643	3887	5886	5363	4079	7257	10469	6969	18242	3700	5549	5062	4102	7164	9614	6823
70 – 74	19894	3744	5614	5265	4125	7143	9807	6826	14129	3359	4643	4457	3659	5940	7875	6062
75 – 79	15031	2921	4337	4168	3421	5330	7863	5798	9105	2343	3254	3150	2827	4096	5799	4654
80 – 84	10586	1898	3038	2880	2542	3666	5653	4434	5083	1329	1996	1785	1907	2276	3574	3124
85+	7899	1204	2165	1853	1751	2576	3835	2810	2659	634	998	829	982	1142	1638	1688
all ages	668143	101312	157444	151735	104560	194241	273662	174758	627796	104230	159625	154420	106312	197276	272978	177595

Appendix 3: Registry staff

TRO base hospitals and contact phone numbers

	NAME	ADDRESS	DIRECT LINE	HOSPITALS	EMAIL
EHB	Liz Behan	Computer Centre, Beaumont Hospital, Dublin 9	01 - 8571746	Beaumont Hospital Bons Secours, Glasnevin St Joseph's, Raheny St Francis' Hospice St Ita's Hospital	l.behan@ncri.ie
	Katherine Leonard	Medical Records, Mater Public Hospital, Eccles Street, Dublin 7	01 - 8034750	Mater Misercordiae Hospital, Temple St Children's Hospital, Rotunda Hospital St Mary's Hospital, Phoenix Park St Mary's Orthopaedic Hospital	k.leonard@ncri.ie
	Mairead Casey	Tallaght Hospital, Tallaght, Dublin 24	01 - 4143549	Tallaght Hospital Naas General Hospital Clane General Hospital	d.smith@ncri.ie
	Denise Smith	Mater Private Hospital Eccles Street, Dublin 7	01 - 8858553	Mater Private Hospital James Connolly Memorial	m.cawley@ncri.ie
	Eve Horan	St. Lukes Hospital, Highfield Road, Rathgar, Dublin 6	01 - 4970892	St Luke's Hospital Royal Victoria Eye & Ear Hospital National Maternity Hospital	e.horan@ncri.ie
	Ursula Cullen	New Hospital Building, St. James' Hospital, Dublin 8	01 - 4549883	St James' Hospital, Dublin 8 Coombe Hospital, Dolphin's Barn Dental Hospital Peamount Hospital Charlemont Clinic	u.cullen@ncri.ie
	Martina McCarthy	Near Liver Unit, St. Vincent's Hospital, Elm Park, Dublin 4	01 - 2601684	St Vincent's Hospital Blackrock Clinic Wicklow Hospital Rathdrum Hospital, Co Wicklow Baltinglass Hospital, Co Wicklow	m.mccarthy@ncri.ie
	Terry Stapleton	Tallaght Hospital, Tallaght, Dublin 24	01 - 4143549	St. Vincent's Private Hospital City of Dublin Skin & Cancer Mount Carmel Hospital Our Lady's Hospital, Crumlin St. Colmcille's Hospital Our Lady's Hospice St. Michael's Public	t.stapleton@ncri.ie
MHB	Michelle McClintock	Tullamore General Hospital, Arden Road, Tullamore, Co Offaly	0506 - 52586	Tullamore General Hospital Mullingar General Hospital Portlaoise General Hospital St. Frances' Medical Centre, Mullingar	m.mcclintock@ncri.ie

	NAME	ADDRESS	DIRECT LINE	HOSPITALS	EMAIL
MWHB	Mary Geoghegan	Limerick Regional Hospital, Dooradoyle Limerick	061 - 304067	Limerick Regional Hospital Ennis General Hospital Nenagh General Hospital Regional Maternity Hospital, Limerick Regional Orthopaedic Hospital, Croom St. John's Hospital, Limerick Milford Hospice St. John of God Hospital, Cahercalla Barrington's Medical Centre	m.geoghegan@ncri.ie
NEHB	Sharon Glynne	Our Lady's Hospital, Navan Co Meath	046 - 71277	Our Lady's Hospital, Navan Cavan General Hospital Louth County Hospital Monaghan General Hospital Our Lady of Lourdes Hospital, Drogheda St. Brigid's, Ardee	s.glynn@ncri.ie
NWHB	Eileen Menarry	Level 4, Sligo General Hospital, Sligo	071 - 46063	Sligo General Hospital Letterkenny General Hospital Garden Hill Private Hospital, Sligo Our Lady's Hospital, Manorhamilton Sheil Hospital, Ballyshannon	e.menarry@ncri.ie
SHB	Kate Burke	Elm Court, Boreenmanna Road, Cork	021 - 4318014	Mercy Hospital, Cork South Infirmary / Victoria, Cork Tralee General Hospital Bons Secours, Tralee Bons Secours, Cork	k.burke@ncri.ie
	Maria Duane	Elm Court, Boreenmanna Road, Cork	021 - 4318014	Cork University Hospital Bantry Hospital Erinville, Cork Mallow Hospital St. Finbarr's Hospital, Douglas Road St. Mary's Orthopaedic Hospital Marymount Hospice Cork Dental Hospital	m.duane@ncri.ie
SEHB	Nuala Kirwan	Waterford Regional Hospital, Ardkeen Waterford	051 - 850779	Waterford Regional Hospital Our Lady's Hospital, Cashel St. Joseph's Hospital, Clonmel Waterford Maternity Hospital Wexford General Hospital St. John of God, Ely House Aut Even Kilkenny Orthopaedic Hospital	n.kirwan@ncri.ie
WHB	Margaret Cawley	University College Hospital, Galway	091 - 523900	University College Hospital, Galway Mayo General Hospital, Castlebar Portiuncula Hospital, Ballinasloe Bons Secours, Tuam	m.cawley@ncri.ie
	Bettie Delaney	University College Hospital, Galway	091 - 523900	University College Hospital, Galway Roscommon County Hospital Merlin Park Regional Hospital Galvia Private Hospital	b.delaney@ncri.ie
	Celine O 'Keeffe	University College Hospital, Galway	091 - 523900	University College Hospital, Galway Mayo General Hospital, Castlebar Portiuncula Hospital, Ballinasloe Bons Secours, Tuam	c.okeeffe@ncri.ie

1.1 Central Registry staff

NAME	POSITION	EMAIL
Mary Chambers*	Data Manager / Supervisor	m.chambers@ncri.ie
Harry Comber	Director	h.comber@ncri.ie
Eleanor Crowley*	Systems Manager	e.crowley@ncri.ie
Fiona Dwane	Data Manager	f.dwane@ncri.ie
Geraldine Finn	Data Quality Officer	g.finn@ncri.ie
Maureen Finucane*	Programmer	m.finucane@ncri.ie
Anne Griffin	IT Administrator	a.griffin@ncri.ie
Maria Kelly*	Systems Analyst/Programmer	m.kelly@ncri.ie
Salaheddin M. Mahmud	Programmer/Analyst	s.mahmud@ncri.ie
Eilish Manley	CSO Clerk	e.manley@ncri.ie
Vera McCarthy	CSO Clerk	v.mccarthy@ncri.ie
Irene O'Driscoll	Administrator	i.odriscoll@ncri.ie
Piaras O'Lorcain	Data Analyst	p.olorcain@ncri.ie
Marie Reilly*	Statistician	m.reilly@ncri.ie
Pat Riordan	Epidemiologist/Specialist in Public Health	p.riordan@ncri.ie
Paul Walsh	Cancer epidemiology fellow	p.walsh@ncri.ie

** part-time or job-sharing*

Appendix 4: Registry data set

The Registry dataset has been continually extended since 1994, in responses to the changing needs of our data users. With the introduction of a new computer system late this year, we have added a number of new data items. Most of the data we intend to collect is listed below. We would be interested to hear from any data users with comments on the usefulness or definitions of the items below, or with suggestions for new data items.

Patient data

This table contains patient specific data. All identifiable information is stored here.

VARIABLE NAME	DESCRIPTION
registration number	Uniquely identifies a registration
year	The year the registration was made
first name	First name of patient being registered
second name	Second name of patient
surname	Surname of patient
soundex	'Sounds like surname' code. Automatically generated by system
maiden name	Maiden name of patient
date of birth	Date of birth
year of birth	In the absence of an exact date of birth, the year of birth may be known
sex	Male / female
GMS number	GMS number
PPS number	PRSI number
occupation code	Standard occupational classification code
occupation status	Retired / student / self-employed / employed / housewife / religious / other / unknown
whose occupation	Person whose occupation is described: own / husband / wife / partner / father / mother / parent / unknown
marital status	Single / married / divorced / widowed / separated / unknown/other
smoker	Yes / no / ex-smoker / unknown
dead	Yes / no
date of death	May be entered by TRO or updated automatically by system when processing death certificates
year of death	If exact date of death is not known, this data item stores the year of death
cause of death	ICD-9 code
death certificate number	Uniquely identifies a death certificate
patient address	Uniquely identifies this address for this patient
main address	This is set to 1 if the main address, 0 otherwise
house number	House number
house name	House name
address 1	First line of address
address 2	Second line of address
address 3	Third line of address
address 4	Fourth line of address
county id	County code, which is validated against the county lookup table
DED	District electoral division of residence
screening status	Screening unspecified / organised / opportunistic

Tumour data

This table contains all information specific to each tumour. A patient may have multiple tumour records.

VARIABLE	DESCRIPTION
registration number	Patient registration number, which is linked to the patient table
tumour id	The unique identifier for this tumour which is system generated
progression	For tumours that have progressed this indicates the progression level. For analysis the tumour with the highest progression number will be included, previous records of the tumour will not
practice	The code of the general practice that the patient attends
GP id	The GP code
date of incidence	Date of diagnosis
age at incidence	The age of the patient at diagnosis date
topography code	Site of primary tumour; ICD-o-2 code
topography id	Uniquely defines the description of the ICD-o-2 topography code selected
morphology code	Histological type of tumour; ICD-o-2 code
method of diagnosis	Histology of primary /histology of other site /cytology /marrow /blood film /tumour marker /clinical-visualisation /clinical-no visualisation /clinical-unknown /radiology /post mortem /other /unknown
side	Right /left /both /midline /unknown
grade	Histological grade
method of presentation	Symptoms /incidental /screening-unspecified /screening- organised /screening-opportunistic /autopsy /unknown
histology lab number	Histology lab number
histology date	Date of histology
pathologist id	Name of pathologist table
pathology lab	Lab providing report
clinical stage T	Clinical TNM stage
clinical stage N	Clinical TNM stage
clinical stage M	Clinical TNM stage
pathological stage T	Pathological TNM stage
pathological stage N	Pathological TNM stage
pathological stage M	Pathological TNM stage
TNM-summary	Calculated from the entries given on the TNM stage data-items above
confidence T	Most reliable basis of T stage
confidence N	Most reliable basis of N stage
confidence M	Most reliable basis of M stage
residual	Residual disease. Valid values are none /microscopic /macroscopic /not applicable /cannot be assessed
extent of disease	Local /regional /distant
occurrence	The number of occurrences of this tumour. Specific to skin (C44) cancers
tumour size	Size of the tumour (mm)
tumour marker	Marker type and value
GP referral date	Date on which GP requested a hospital appointment
first appointment date	Date of first hospital appointment /attendance
first recurrence date	Date of first recurrence (if any)
source of notification	Source of information: valid values are pathology /death cert /GP /radiotherapy /other outpatient /other inpatient /central sources /HIPE /unknown
date of notification	Date this source was accessed
hospital id	Hospital of diagnosis
metastasis id	Unique metastasis id for this tumour
topography code	Valid ICD-o-2 code for metastasis
date of metastasis	Date of metastasis

Management

This table describes each significant recorded contact between the patient and the medical services. Initially only primary treatment episodes are being recorded.

VARIABLE	DESCRIPTION
admission type	Elective inpatient/emergency inpatient/outpatient visit/day admission
type of procedure	Primary treatment/recurrence/metastasis/palliative/other
consultant id	Consultant caring for the patient
MRN	Medical record number
topography code	Site of procedure
treatment code	ICD-9-CM code
date field	Date of treatment

Appendix 5: Detailed data tables

Table A5.1 Summary table: all incident cases 1994 – 1998

		BOTH SEXES				FEMALE				
cancer site	IDC 10 code	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	EASR (per 100000 per year)
malignant cancers										
lip	C00	213	43	0.2%	2.33	17	3	0.0%	0.19	0.16
base of tongue	C01	85	17	0.1%	0.93	14	3	0.0%	0.15	0.14
other tongue	C02	200	40	0.2%	2.19	64	13	0.1%	0.70	0.69
gum	C03	28	6	0.0%	0.31	12	2	0.0%	0.13	0.12
floor of mouth	C04	143	29	0.1%	1.57	34	7	0.1%	0.37	0.38
palate	C05	53	11	0.1%	0.58	16	3	0.0%	0.18	0.18
other mouth	C06	98	20	0.1%	1.07	42	8	0.1%	0.46	0.44
parotid	C07	111	22	0.1%	1.22	37	7	0.1%	0.41	0.38
other salivary	C08	45	9	0.0%	0.49	22	4	0.0%	0.24	0.24
tonsil	C09	89	18	0.1%	0.97	19	4	0.0%	0.21	0.23
oropharynx	C10	47	9	0.0%	0.51	10	2	0.0%	0.11	0.12
nasopharynx	C11	62	12	0.1%	0.68	8	2	0.0%	0.09	0.07
pyriform	C12	124	25	0.1%	1.36	28	6	0.1%	0.31	0.32
hypopharynx	C13	63	13	0.1%	0.69	31	6	0.1%	0.34	0.32
other mouth/pharynx	C14	63	13	0.1%	0.69	13	3	0.0%	0.14	0.13
oesophagus	C15	1446	289	1.5%	15.84	581	116	1.2%	6.36	5.70
stomach	C16	2345	469	2.4%	25.69	871	174	1.8%	9.54	8.67
small intestine	C17	182	36	0.2%	1.99	78	16	0.2%	0.85	0.84
colon	C18	5416	1083	5.6%	59.33	2554	511	5.2%	27.98	26.68
rectosigmoid	C19	694	139	0.7%	7.60	265	53	0.5%	2.90	2.83
rectum	C20	2433	487	2.5%	26.65	864	173	1.7%	9.46	9.28
anus	C21	110	22	0.1%	1.20	58	12	0.1%	0.64	0.61
liver	C22	313	63	0.3%	3.43	108	22	0.2%	1.18	1.12
gallbladder	C23	187	37	0.2%	2.05	131	26	0.3%	1.43	1.38
other biliary	C24	310	62	0.3%	3.40	149	30	0.3%	1.63	1.48
pancreas	C25	1614	323	1.7%	17.68	816	163	1.6%	8.94	8.08
other digestive	C26	140	28	0.1%	1.53	67	13	0.1%	0.73	0.64
nasal cavity/middle ear	C30	46	9	0.0%	0.50	20	4	0.0%	0.22	0.23
sinuses	C31	57	11	0.1%	0.62	17	3	0.0%	0.19	0.16
larynx	C32	540	108	0.6%	5.92	88	18	0.2%	0.96	1.06
trachea	C33	20	4	0.0%	0.22	8	2	0.0%	0.09	0.09
lung	C34	7395	1479	7.6%	81.00	2537	507	5.1%	27.79	26.74
thymus	C37	18	4	0.0%	0.20	6	1	0.0%	0.07	0.07
mediastinum	C38	60	12	0.1%	0.66	21	4	0.0%	0.23	0.20
other chest	C39	4	1	0.0%	0.04	1	0	0.0%	0.01	0.01
bones, joints of limbs	C40	103	21	0.1%	1.13	47	9	0.1%	0.51	0.48
bones, joints head and trunk	C41	74	15	0.1%	0.81	25	5	0.1%	0.27	0.27
melanoma skin	C43	1875	375	1.9%	20.54	1174	235	2.4%	12.86	13.25
non-melanoma skin	C44	25837	5167	26.6%	283.01	11875	2375	24.0%	130.08	123.20
mesothelioma	C45	77	15	0.1%	0.84	8	2	0.0%	0.09	0.11
Kaposi's sarcoma	C46	26	5	0.0%	0.28	2	0	0.0%	0.02	0.03
peripheral nerves	C47	35	7	0.0%	0.38	16	3	0.0%	0.18	0.18
peritoneum	C48	61	12	0.1%	0.67	37	7	0.1%	0.41	0.38
connective tissues	C49	374	75	0.4%	4.10	158	32	0.3%	1.73	1.69
breast	C50	7985	1597	8.2%	87.47	7921	1584	16.0%	86.76	95.22
vulva	C51	161	32	0.2%	1.76	161	32	0.3%	1.76	1.59
vagina	C52	46	9	0.0%	0.50	46	9	0.1%	0.50	0.52
cervix	C53	885	177	0.9%	9.69	885	177	1.8%	9.69	10.52
corpus uteri	C54	1026	205	1.1%	11.24	1026	205	2.1%	11.24	12.48
uterus nos	C55	88	18	0.1%	0.96	88	18	0.2%	0.96	1.00
ovary	C56	1562	312	1.6%	17.11	1562	312	3.2%	17.11	18.19
other female genital	C57	29	6	0.0%	0.32	29	6	0.1%	0.32	0.33
placenta	C58	2	0	0.0%	0.02	2	0	0.0%	0.02	0.02
penis	C60	96	19	0.1%	1.05	0	0	0.0%	0.00	0.00
prostate	C61	5752	1150	5.9%	63.01	0	0	0.0%	0.00	0.00
testis	C62	446	89	0.5%	4.89	0	0	0.0%	0.00	0.00
other male genital	C63	14	3	0.0%	0.15	0	0	0.0%	0.00	0.00
kidney	C64	1189	238	1.2%	13.02	433	87	0.9%	4.74	4.88
renal pelvis	C65	48	10	0.0%	0.53	17	3	0.0%	0.19	0.17
ureter	C66	51	10	0.1%	0.56	22	4	0.0%	0.24	0.22
bladder	C67	2279	456	2.3%	24.96	640	128	1.3%	7.01	6.64

MALE									
WASR (per 100000 per year)	cumulative risk to age 75	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	EASR (per 100000 per year)	WASR (per 100000 per year)	cumulative risk to age 75	
									malignant cancers
0.11	0.01%	196	39	0.4%	2.18	2.53	1.68	0.21%	lip
0.10	0.01%	71	14	0.1%	0.79	0.93	0.67	0.09%	base of tongue
0.50	0.06%	136	27	0.3%	1.51	1.83	1.29	0.15%	other tongue
0.08	0.01%	16	3	0.0%	0.18	0.20	0.13	0.01%	gum
0.26	0.03%	109	22	0.2%	1.21	1.44	1.01	0.12%	floor of mouth
0.14	0.02%	37	7	0.1%	0.41	0.49	0.35	0.04%	palate
0.30	0.03%	56	11	0.1%	0.62	0.74	0.50	0.06%	other mouth
0.28	0.03%	74	15	0.2%	0.82	0.96	0.63	0.07%	parotid
0.16	0.02%	23	5	0.0%	0.26	0.29	0.21	0.03%	other salivary
0.17	0.02%	70	14	0.1%	0.78	0.95	0.70	0.09%	tonsil
0.08	0.01%	37	7	0.1%	0.41	0.48	0.34	0.04%	oropharynx
0.06	0.00%	54	11	0.1%	0.60	0.68	0.55	0.06%	nasopharynx
0.22	0.03%	96	19	0.2%	1.07	1.28	0.90	0.11%	nasopharynx
0.21	0.03%	32	6	0.1%	0.36	0.43	0.29	0.04%	hypopharynx
0.08	0.01%	50	10	0.1%	0.56	0.65	0.45	0.05%	other mouth/pharynx
3.68	0.40%	865	173	1.8%	9.61	11.37	7.56	0.92%	oesophagus
5.75	0.69%	1474	295	3.1%	16.38	19.09	12.63	1.47%	stomach
0.57	0.07%	104	21	0.2%	1.16	1.36	0.95	0.11%	small intestine
17.84	2.08%	2862	572	6.0%	31.80	36.97	24.59	2.92%	colon
1.90	0.23%	429	86	0.9%	4.77	5.65	3.78	0.47%	rectosigmoid
6.33	0.76%	1569	314	3.3%	17.43	20.48	13.82	1.72%	rectum
0.42	0.04%	52	10	0.1%	0.58	0.69	0.46	0.05%	anus
0.78	0.10%	205	41	0.4%	2.28	2.62	1.81	0.23%	liver
0.91	0.11%	56	11	0.1%	0.62	0.73	0.47	0.05%	gallbladder
0.95	0.11%	161	32	0.3%	1.79	2.13	1.38	0.16%	other biliary
5.25	0.59%	798	160	1.7%	8.87	10.34	6.73	0.78%	pancreas
0.39	0.04%	73	15	0.2%	0.81	0.96	0.60	0.06%	other digestive
0.16	0.02%	26	5	0.1%	0.29	0.34	0.25	0.02%	nasal cavity/middle ear
0.11	0.01%	40	8	0.1%	0.44	0.54	0.37	0.05%	sinuses
0.74	0.09%	452	90	1.0%	5.02	6.00	4.15	0.52%	larynx
0.05	0.01%	12	2	0.0%	0.13	0.15	0.11	0.01%	trachea
18.04	2.31%	4858	972	10.2%	53.97	62.80	41.98	5.30%	lung
0.06	0.01%	12	2	0.0%	0.13	0.15	0.12	0.01%	thymus
0.14	0.02%	39	8	0.1%	0.43	0.49	0.36	0.04%	mediastinum
0.00	0.00%	3	1	0.0%	0.03	0.04	0.03	0.00%	other chest
0.47	0.04%	56	11	0.1%	0.62	0.58	0.60	0.05%	bones, joints of limbs
0.22	0.02%	49	10	0.1%	0.54	0.57	0.49	0.04%	bones, joints head and trunk
10.10	1.03%	701	140	1.5%	7.79	8.94	6.51	0.66%	melanoma skin
82.98	9.05%	13962	2792	29.4%	155.11	181.25	119.59	12.89%	non-melanoma skin
0.09	0.01%	69	14	0.1%	0.77	0.92	0.64	0.08%	mesothelioma
0.02	0.00%	24	5	0.1%	0.27	0.30	0.24	0.02%	Kaposi's sarcoma
0.20	0.01%	19	4	0.0%	0.21	0.22	0.22	0.02%	peripheral nerves
0.27	0.03%	24	5	0.1%	0.27	0.31	0.23	0.03%	peritoneum
1.35	0.13%	216	43	0.5%	2.40	2.69	2.05	0.21%	connective tissues
69.79	7.53%	64	13	0.1%	0.71	0.84	0.57	0.07%	breast
1.08	0.12%	0	0	0.0%	0.00	0.00	0.00	0.00%	vulva
0.36	0.04%	0	0	0.0%	0.00	0.00	0.00	0.00%	vagina
8.38	0.81%	0	0	0.0%	0.00	0.00	0.00	0.00%	cervix
8.90	1.11%	0	0	0.0%	0.00	0.00	0.00	0.00%	corpus uteri
0.71	0.08%	0	0	0.0%	0.00	0.00	0.00	0.00%	uterus nos
13.39	1.50%	0	0	0.0%	0.00	0.00	0.00	0.00%	ovary
0.23	0.03%	0	0	0.0%	0.00	0.00	0.00	0.00%	other female genital
0.02	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	placenta
0.00	0.00%	96	19	0.2%	1.07	1.26	0.87	0.10%	penis
0.00	0.00%	5752	1150	12.1%	63.90	73.00	45.67	5.28%	prostate
0.00	0.00%	446	89	0.9%	4.95	4.84	4.63	0.35%	testis
0.00	0.00%	14	3	0.0%	0.16	0.17	0.12	0.01%	other male genital
3.53	0.39%	756	151	1.6%	8.40	9.94	7.05	0.84%	kidney
0.11	0.01%	31	6	0.1%	0.34	0.40	0.25	0.02%	renal pelvis
0.15	0.02%	29	6	0.1%	0.32	0.39	0.27	0.03%	ureter
4.50	0.55%	1639	328	3.5%	18.21	21.24	13.76	1.57%	bladder

CONTINUED *Table A5.1 Summary table: all incident cases 1994 – 1998*

		BOTH SEXES				FEMALE				
cancer site	IDC 10 code	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	EASR (per 100000 per year)
other urinary	C68	29	6	0.0%	0.32	8	2	0.0%	0.09	0.08
eye	C69	199	40	0.2%	2.18	102	20	0.2%	1.12	1.17
meninges	C70	19	4	0.0%	0.21	12	2	0.0%	0.13	0.12
brain	C71	1236	247	1.3%	13.54	516	103	1.0%	5.65	5.83
spinal cord	C72	46	9	0.0%	0.50	20	4	0.0%	0.22	0.21
thyroid	C73	307	61	0.3%	3.36	212	42	0.4%	2.32	2.35
adrenal	C74	48	10	0.0%	0.53	19	4	0.0%	0.21	0.23
other endocrine	C75	37	7	0.0%	0.41	15	3	0.0%	0.16	0.16
ill-defined site	C76	199	40	0.2%	2.18	134	27	0.3%	1.47	1.29
lymph nodes	C77	6	1	0.0%	0.07	2	0	0.0%	0.02	0.02
unknown primary site	C80	3431	686	3.5%	37.58	1676	335	3.4%	18.36	16.65
Hodgkin's disease	C81	412	82	0.4%	4.51	188	38	0.4%	2.06	2.00
follicular non-Hodgkin's lymphoma	C82	271	54	0.3%	2.97	133	27	0.3%	1.46	1.61
diffuse non-Hodgkin's lymphoma	C83	751	150	0.8%	8.23	345	69	0.7%	3.78	3.78
peripheral and cutaneous T cell lymphoma	C84	92	18	0.1%	1.01	42	8	0.1%	0.46	0.49
other and unspecified NHL	C85	864	173	0.9%	9.46	404	81	0.8%	4.43	4.46
malignant immunoproliferative disease	C88	40	8	0.0%	0.44	16	3	0.0%	0.18	0.15
multiple myeloma	C90	883	177	0.9%	9.67	390	78	0.8%	4.27	3.98
lymphoid leukaemia	C91	893	179	0.9%	9.78	361	72	0.7%	3.95	3.78
myeloid leukaemia	C92	528	106	0.5%	5.78	235	47	0.5%	2.57	2.61
monocytic leukaemia	C93	18	4	0.0%	0.20	8	2	0.0%	0.09	0.09
other specified leukaemia	C94	61	12	0.1%	0.67	26	5	0.1%	0.28	0.30
unspecified leukaemia	C95	221	44	0.2%	2.42	97	19	0.2%	1.06	0.94
other lymphoid and haematopoietic	C96	9	2	0.0%	0.10	4	1	0.0%	0.04	0.05
all malignant cancers		**85475**	**17095**	**88.1%**	**936.27**	**40746**	**8149**	**82.2%**	**446.32**	**443.49**
in situ cancers										
oral cavity, oesophagus and stomach	D00	87	17	0.1%	0.95	38	8	0.1%	0.42	0.38
other digestive	D01	177	35	0.2%	1.94	72	14	0.1%	0.79	0.78
middle ear and respiratory	D02	84	17	0.1%	0.92	21	4	0.0%	0.23	0.25
melanoma	D03	788	158	0.8%	8.63	527	105	1.1%	5.77	6.21
carcinoma of skin	D04	3772	754	3.9%	41.32	2664	533	5.4%	29.18	27.74
breast	D05	394	79	0.4%	4.32	392	78	0.8%	4.29	5.03
cervix	D06	3781	756	3.9%	41.42	3781	756	7.6%	41.42	41.70
other genital	D07	93	19	0.1%	1.02	53	11	0.1%	0.58	0.66
other sites	D09	83	17	0.1%	0.91	22	4	0.0%	0.24	0.24
all in situ cancers		**9259**	**1852**	**9.5%**	**101.42**	**7570**	**1514**	**15.3%**	**82.92**	**82.99**
benign neoplasms										
benign meninges	D32	329	66	0.3%	3.60	241	48	0.5%	2.64	2.80
benign brain	D33	192	38	0.2%	2.10	116	23	0.2%	1.27	1.43
benign endocrine	D35	224	45	0.2%	2.45	105	21	0.2%	1.15	1.22
all benign neoplasms		**745**	**149**	**0.8%**	**8.16**	**462**	**92**	**0.9%**	**5.06**	**5.45**
neoplasms of uncertain behaviour										
oral and digestive	D37	351	70	0.4%	3.84	187	37	0.4%	2.05	1.89
respiratory	D38	3	1	0.0%	0.03	2	0	0.0%	0.02	0.02
female genital	D39	71	14	0.1%	0.78	71	14	0.1%	0.78	0.84
male genital	D40	7	1	0.0%	0.08	0	0	0.0%	0.00	0.00
urinary	D41	33	7	0.0%	0.36	8	2	0.0%	0.09	0.10
meninges	D42	2	0	0.0%	0.02	0	0	0.0%	0.00	0.00
brain and CNS	D43	40	8	0.0%	0.44	17	3	0.0%	0.19	0.18
endocrine	D44	50	10	0.1%	0.55	29	6	0.1%	0.32	0.32
polycythaemia vera	D45	155	31	0.2%	1.70	71	14	0.1%	0.78	0.73
myelodysplastic syndromes	D46	345	69	0.4%	3.78	155	31	0.3%	1.70	1.47
other lymphoid, haematopoietic	D47	329	66	0.3%	3.60	166	33	0.3%	1.82	1.70
other sites	D48	130	26	0.1%	1.42	78	16	0.2%	0.85	0.90
all neoplasms of uncertain behaviour		**1516**	**303**	**1.6%**	**16.61**	**784**	**157**	**1.6%**	**8.59**	**8.14**
all registered cancers		**96995**	**19399**	**100.0%**	**1062.46**	**49562**	**9912**	**100.0%**	**542.89**	**540.08**

MALE									
WASR (per 100000 per year)	cumulative risk to age 75	cases 1994 – 1998	annual average no.of cases	% of all cancers	cases per 100000 per year	EASR (per 100000 per year)	WASR (per 100000 per year)	cumulative risk to age 75	
0.06	0.01%	21	4	0.0%	0.23	0.27	0.19	0.02%	other urinary
0.90	0.10%	97	19	0.2%	1.08	1.23	0.91	0.08%	eye
0.08	0.01%	7	1	0.0%	0.08	0.09	0.08	0.01%	meninges
4.88	0.48%	720	144	1.5%	8.00	8.90	7.24	0.76%	brain
0.24	0.02%	26	5	0.1%	0.29	0.31	0.29	0.02%	spinal cord
1.88	0.18%	95	19	0.2%	1.06	1.21	0.89	0.10%	thyroid
0.22	0.02%	29	6	0.1%	0.32	0.35	0.36	0.03%	adrenal
0.14	0.01%	22	4	0.0%	0.24	0.24	0.23	0.02%	other endocrine
0.87	0.09%	65	13	0.1%	0.72	0.86	0.54	0.06%	ill-defined site
0.01	0.00%	4	1	0.0%	0.04	0.04	0.04	0.00%	lymph nodes
10.94	1.26%	1755	351	3.7%	19.50	22.61	14.81	1.77%	unknown primary site
1.84	0.16%	224	45	0.5%	2.49	2.52	2.29	0.19%	Hodgkin's disease
1.20	0.13%	138	28	0.3%	1.53	1.81	1.34	0.14%	follicular non-Hodgkin's lymphoma
2.68	0.33%	406	81	0.9%	4.51	5.11	3.74	0.41%	diffuse non-Hodgkin's lymphoma
0.35	0.04%	50	10	0.1%	0.56	0.64	0.47	0.06%	peripheral and cutaneous T cell lymphoma
3.27	0.37%	460	92	1.0%	5.11	5.90	4.33	0.48%	other and unspecified NHL
0.10	0.01%	24	5	0.1%	0.27	0.32	0.20	0.03%	malignant immunoproliferative disease
2.63	0.32%	493	99	1.0%	5.48	6.37	4.21	0.51%	multiple myeloma
3.16	0.29%	532	106	1.1%	5.91	6.65	5.21	0.52%	lymphoid leukaemia
2.10	0.21%	293	59	0.6%	3.26	3.56	2.69	0.29%	myeloid leukaemia
0.07	0.01%	10	2	0.0%	0.11	0.12	0.10	0.01%	monocytic leukaemia
0.21	0.02%	35	7	0.1%	0.39	0.45	0.32	0.04%	other specified leukaemia
0.65	0.07%	124	25	0.3%	1.38	1.60	1.05	0.11%	unspecified leukaemia
0.06	0.00%	5	1	0.0%	0.06	0.06	0.07	0.00%	other lymphoid and haematopoietic
312.23	**29.87%**	**44729**	**8946**	**94.3%**	**496.92**	**575.88**	**387.22**	**36.46%**	**all malignant cancers**
									in situ cancers
0.24	0.03%	49	10	0.1%	0.54	0.64	0.45	0.05%	oral cavity, oesophagus and stomach
0.54	0.07%	105	21	0.2%	1.17	1.37	0.89	0.11%	other digestive
0.17	0.02%	63	13	0.1%	0.70	0.81	0.55	0.07%	middle ear and respiratory
4.54	0.51%	261	52	0.6%	2.90	3.41	2.41	0.29%	melanoma
18.50	2.30%	1108	222	2.3%	12.31	14.41	9.62	1.21%	carcinoma of skin
3.85	0.41%	2	0	0.0%	0.02	0.02	0.02	0.00%	breast
39.19	2.96%	0	0	0.0%	0.00	0.00	0.00	0.00%	cervix
0.52	0.05%	40	8	0.1%	0.44	0.51	0.36	0.03%	other genital
0.17	0.02%	61	12	0.1%	0.68	0.78	0.51	0.06%	other sites
67.72	**6.24%**	**1689**	**338**	**3.6%**	**18.76**	**21.96**	**14.81**	**1.81%**	**all in situ cancers**
									benign neoplasms
2.04	0.24%	88	18	0.2%	0.98	1.15	0.85	0.10%	benign meninges
1.19	0.12%	76	15	0.2%	0.84	0.94	0.79	0.08%	benign brain
1.03	0.10%	119	24	0.3%	1.32	1.49	1.17	0.12%	benign endocrine
4.27	**0.46%**	**283**	**57**	**0.6%**	**3.14**	**3.58**	**2.81**	**0.29%**	**all benign neoplasms**
									neoplasms of uncertain behaviour
1.67	0.15%	164	33	0.3%	1.82	2.03	1.41	0.16%	oral and digestive
0.02	0.00%	1	0	0.0%	0.01	0.02	0.01	0.00%	respiratory
0.69	0.07%	0	0	0.0%	0.00	0.00	0.00	0.00%	female genital
0.00	0.00%	7	1	0.0%	0.08	0.08	0.07	0.01%	male genital
0.08	0.01%	25	5	0.1%	0.28	0.34	0.24	0.03%	urinary
0.00	0.00%	2	0	0.0%	0.02	0.02	0.02	0.00%	meninges
0.16	0.01%	23	5	0.0%	0.26	0.28	0.23	0.02%	brain and CNS
0.29	0.02%	21	4	0.0%	0.23	0.21	0.22	0.02%	endocrine
0.50	0.06%	84	17	0.2%	0.93	1.10	0.77	0.10%	polycythaemia ver
0.96	0.10%	190	38	0.4%	2.11	2.37	1.51	0.17%	myelodysplastic syndromes
1.18	0.13%	163	33	0.3%	1.81	2.05	1.41	0.16%	other lymphoid, haematopoietic
0.76	0.07%	52	10	0.1%	0.58	0.63	0.55	0.05%	other sites
6.31	**0.61%**	**732**	**146**	**1.5%**	**8.13**	**9.12**	**6.44**	**0.71%**	**all neoplasms of uncertain behaviour**
390.52	**34.94%**	**47433**	**9487**	**100.0%**	**526.97**	**610.53**	**411.28**	**38.23%**	**all registered cancers**

Table A5.2 Summary table: all cancer deaths 1994 – 1998

		BOTH SEXES				FEMALE				
cancer site	IDC 10 code	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	EASR (per 100000 per year)
malignant cancers										
lip	C00	42	8	0.1%	0.23	6	1	0.0%	0.07	0.04
base of tongue	C01	8	2	0.0%	0.04	1	0	0.0%	0.01	0.01
other tongue	C02	169	34	0.5%	0.93	45	9	0.3%	0.49	0.46
gum	C03	12	2	0.0%	0.07	7	1	0.0%	0.08	0.07
floor of mouth	C04	36	7	0.1%	0.20	9	2	0.1%	0.10	0.09
palate	C05	20	4	0.1%	0.11	5	1	0.0%	0.05	0.06
other mouth	C06	64	13	0.2%	0.35	15	3	0.1%	0.16	0.12
parotid	C07	58	12	0.2%	0.32	20	4	0.1%	0.22	0.20
other salivary	C08	11	2	0.0%	0.06	4	1	0.0%	0.04	0.04
tonsil	C09	39	8	0.1%	0.22	9	2	0.1%	0.10	0.11
oropharynx	C10	29	6	0.1%	0.16	7	1	0.0%	0.08	0.08
nasopharynx	C11	37	7	0.1%	0.20	14	3	0.1%	0.15	0.13
pyriform	C12	39	8	0.1%	0.22	5	1	0.0%	0.05	0.06
hypopharynx	C13	41	8	0.1%	0.23	26	5	0.2%	0.28	0.27
other mouth/pharynx	C14	85	17	0.2%	0.47	18	4	0.1%	0.20	0.18
oesophagus	C15	1507	301	4.0%	8.31	574	115	3.3%	6.29	5.42
stomach	C16	1948	390	5.2%	10.74	780	156	4.5%	8.54	7.37
small intestine	C17	69	14	0.2%	0.38	35	7	0.2%	0.38	0.33
colon	C18	3465	693	9.3%	19.11	1617	323	9.4%	17.71	15.65
rectosigmoid	C19	143	29	0.4%	0.79	64	13	0.4%	0.70	0.63
rectum	C20	989	198	2.7%	5.45	352	70	2.0%	3.86	3.36
anus	C21	28	6	0.1%	0.15	19	4	0.1%	0.21	0.20
liver	C22	604	121	1.6%	3.33	256	51	1.5%	2.80	2.46
gallbladder	C23	129	26	0.3%	0.71	91	18	0.5%	1.00	0.95
other biliary	C24	115	23	0.3%	0.63	62	12	0.4%	0.68	0.56
pancreas	C25	1782	356	4.8%	9.83	872	174	5.1%	9.55	8.37
other digestive	C26	861	172	2.3%	4.75	424	85	2.5%	4.64	3.93
nasal cavity/middle ear	C30	9	2	0.0%	0.05	5	1	0.0%	0.05	0.06
sinuses	C31	32	6	0.1%	0.18	13	3	0.1%	0.14	0.12
larynx	C32	278	56	0.7%	1.53	57	11	0.3%	0.62	0.56
trachea	C33	14	3	0.0%	0.08	4	1	0.0%	0.04	0.05
lung	C34	7447	1489	20.0%	41.07	2594	519	15.0%	28.41	26.53
thymus	C37	6	1	0.0%	0.03	3	1	0.0%	0.03	0.04
mediastinum	C38	85	17	0.2%	0.47	20	4	0.1%	0.22	0.21
other chest	C39	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
bones, joints of limbs	C40	33	7	0.1%	0.18	17	3	0.1%	0.19	0.16
bones, joints head and trunk	C41	114	23	0.3%	0.63	49	10	0.3%	0.54	0.51
melanoma skin	C43	301	60	0.8%	1.66	161	32	0.9%	1.76	1.70
non-melanoma skin	C44	155	31	0.4%	0.85	47	9	0.3%	0.51	0.41
peritoneum	C48	65	13	0.2%	0.36	33	7	0.2%	0.36	0.34
connective tissues	C49	141	28	0.4%	0.78	65	13	0.4%	0.71	0.74
breast	C50	3183	637	8.5%	17.56	3156	631	18.3%	34.57	35.53
vulva	C51	65	13	0.2%	0.36	65	13	0.4%	0.71	0.61
vagina	C52	17	3	0.0%	0.09	17	3	0.1%	0.19	0.17
cervix	C53	375	75	1.0%	2.07	375	75	2.2%	4.11	4.39
corpus uteri	C54	219	44	0.6%	1.21	219	44	1.3%	2.40	2.32
uterus nos	C55	77	15	0.2%	0.42	77	15	0.4%	0.84	0.77
ovary	C56	1089	218	2.9%	6.01	1089	218	6.3%	11.93	12.18
other female genital	C57	14	3	0.0%	0.08	14	3	0.1%	0.15	0.16
penis	C60	27	5	0.1%	0.15	0	0	0.0%	0.00	0.00
prostate	C61	2564	513	6.9%	14.14	0	0	0.0%	0.00	0.00
testis	C62	35	7	0.1%	0.19	0	0	0.0%	0.00	0.00
other male genital	C63	2	0	0.0%	0.01	0	0	0.0%	0.00	0.00
kidney	C64	640	128	1.7%	3.53	242	48	1.4%	2.65	2.44
renal pelvis	C65	1	0	0.0%	0.01	0	0	0.0%	0.00	0.00
ureter	C66	10	2	0.0%	0.06	6	1	0.0%	0.07	0.06
bladder	C67	833	167	2.2%	4.59	272	54	1.6%	2.98	2.44
other urinary	C68	9	2	0.0%	0.05	5	1	0.0%	0.05	0.05
eye	C69	59	12	0.2%	0.33	33	7	0.2%	0.36	0.33
meninges	C70	13	3	0.0%	0.07	9	2	0.1%	0.10	0.08
brain	C71	1063	213	2.9%	5.86	469	94	2.7%	5.14	5.28

			MALE						
WASR (per 100000 per year)	cumulative risk to age 75	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	EASR (per 100000 per year)	WASR (per 100000 per year)	cumulative risk to age 75	
									malignant cancers
0.03	0.00%	36	7	0.2%	0.40	0.46	0.27	0.02%	lip
0.01	0.00%	7	1	0.0%	0.08	0.10	0.06	0.00%	base of tongue
0.32	0.04%	124	25	0.6%	1.38	1.62	1.08	0.13%	other tongue
0.05	0.01%	5	1	0.0%	0.06	0.06	0.05	0.01%	gum
0.06	0.01%	27	5	0.1%	0.30	0.38	0.27	0.03%	floor of mouth
0.04	0.01%	15	3	0.1%	0.17	0.19	0.14	0.02%	palate
0.07	0.01%	49	10	0.2%	0.54	0.63	0.41	0.04%	other mouth
0.12	0.01%	38	8	0.2%	0.42	0.50	0.31	0.03%	parotid
0.02	0.00%	7	1	0.0%	0.08	0.09	0.05	0.01%	other salivary
0.08	0.01%	30	6	0.1%	0.33	0.40	0.27	0.04%	tonsil
0.06	0.01%	22	4	0.1%	0.24	0.29	0.21	0.03%	oropharynx
0.09	0.01%	23	5	0.1%	0.26	0.28	0.20	0.02%	nasopharynx
0.04	0.01%	34	7	0.2%	0.38	0.44	0.30	0.04%	pyriform
0.18	0.02%	15	3	0.1%	0.17	0.19	0.13	0.01%	hypopharynx
0.11	0.02%	67	13	0.3%	0.74	0.89	0.61	0.08%	other mouth/pharynx
3.41	0.38%	933	187	4.7%	10.37	12.16	7.95	0.92%	oesophagus
4.70	0.52%	1168	234	5.8%	12.98	15.15	9.74	1.09%	stomach
0.21	0.02%	34	7	0.2%	0.38	0.43	0.28	0.03%	small intestine
10.01	1.07%	1848	370	9.2%	20.53	23.86	15.36	1.74%	colon
0.40	0.04%	79	16	0.4%	0.88	1.04	0.70	0.09%	rectosigmoid
2.15	0.24%	637	127	3.2%	7.08	8.27	5.37	0.63%	rectum
0.14	0.01%	9	2	0.0%	0.10	0.12	0.07	0.00%	anus
1.60	0.17%	348	70	1.7%	3.87	4.50	2.95	0.36%	liver
0.62	0.07%	38	8	0.2%	0.42	0.48	0.30	0.04%	gallbladder
0.34	0.03%	53	11	0.3%	0.59	0.66	0.40	0.04%	other biliary
5.32	0.59%	910	182	4.5%	10.11	11.83	7.68	0.89%	pancreas
2.45	0.24%	437	87	2.2%	4.85	5.61	3.51	0.37%	other digestive
0.05	0.00%	4	1	0.0%	0.04	0.07	0.04	0.00%	nasal cavity/middle ear
0.08	0.01%	19	4	0.1%	0.21	0.26	0.18	0.02%	sinuses
0.36	0.04%	221	44	1.1%	2.46	2.94	1.93	0.23%	larynx
0.03	0.00%	10	2	0.0%	0.11	0.13	0.10	0.01%	trachea
17.59	2.20%	4853	971	24.2%	53.92	62.39	40.94	4.95%	lung
0.03	0.00%	3	1	0.0%	0.03	0.04	0.02	0.00%	thymus
0.14	0.02%	65	13	0.3%	0.72	0.86	0.58	0.07%	mediastinum
0.00	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	other chest
0.11	0.01%	16	3	0.1%	0.18	0.19	0.14	0.01%	bones, joints of limbs
0.37	0.04%	65	13	0.3%	0.72	0.84	0.64	0.06%	bones, joints head and trunk
1.17	0.13%	140	28	0.7%	1.56	1.81	1.25	0.13%	melanoma skin
0.25	0.02%	108	22	0.5%	1.20	1.45	0.86	0.07%	non-melanoma skin
0.24	0.03%	32	6	0.2%	0.36	0.41	0.28	0.03%	peritoneum
0.54	0.06%	76	15	0.4%	0.84	0.96	0.71	0.08%	connective tissues
24.71	2.73%	27	5	0.1%	0.30	0.36	0.24	0.03%	breast
0.39	0.04%	0	0	0.0%	0.00	0.00	0.00	0.00%	vulva
0.11	0.01%	0	0	0.0%	0.00	0.00	0.00	0.00%	vagina
3.32	0.36%	0	0	0.0%	0.00	0.00	0.00	0.00%	cervix
1.58	0.20%	0	0	0.0%	0.00	0.00	0.00	0.00%	corpus uteri
0.50	0.06%	0	0	0.0%	0.00	0.00	0.00	0.00%	uterus nos
8.45	1.01%	0	0	0.0%	0.00	0.00	0.00	0.00%	ovary
0.12	0.01%	0	0	0.0%	0.00	0.00	0.00	0.00%	other female genital
0.00	0.00%	27	5	0.1%	0.30	0.35	0.25	0.03%	penis
0.00	0.00%	2564	513	12.8%	28.49	32.93	18.89	1.56%	prostate
0.00	0.00%	35	7	0.2%	0.39	0.40	0.34	0.03%	testis
0.00	0.00%	2	0	0.0%	0.02	0.02	0.01	0.00%	other male genital
1.67	0.18%	398	80	2.0%	4.42	5.27	3.52	0.41%	kidney
0.00	0.00%	1	0	0.0%	0.01	0.01	0.01	0.00%	renal pelvis
0.04	0.00%	4	1	0.0%	0.04	0.05	0.03	0.00%	ureter
1.50	0.16%	561	112	2.8%	6.23	7.19	4.26	0.38%	bladder
0.04	0.00%	4	1	0.0%	0.04	0.06	0.03	0.00%	other urinary
0.21	0.03%	26	5	0.1%	0.29	0.35	0.23	0.02%	eye
0.06	0.01%	4	1	0.0%	0.04	0.04	0.03	0.00%	meninges
3.93	0.45%	594	119	3.0%	6.60	7.60	5.73	0.66%	brain

CONTINUED *Table A5.2 Summary table: all cancer deaths 1994 – 1998*

		BOTH SEXES				FEMALE				
cancer site	IDC 10 code	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	EASR (per 100000 per year)
spinal cord	C72	14	3	0.0%	0.08	4	1	0.0%	0.04	0.05
thyroid	C73	118	24	0.3%	0.65	81	16	0.5%	0.89	0.83
adrenal	C74	30	6	0.1%	0.17	10	2	0.1%	0.11	0.11
other endocrine	C75	27	5	0.1%	0.15	13	3	0.1%	0.14	0.13
ill-defined site	C76	442	88	1.2%	2.44	224	45	1.3%	2.45	2.11
unknown primary site	C80	2224	445	6.0%	12.27	1053	211	6.1%	11.53	10.22
Hodgkin's disease	C81	125	25	0.3%	0.69	44	9	0.3%	0.48	0.47
follicular non-Hodgkin's lymphoma	C82	5	1	0.0%	0.03	0	0	0.0%	0.00	0.00
diffuse non-Hodgkin's lymphoma	C83	8	2	0.0%	0.04	3	1	0.0%	0.03	0.03
peripheral and cutaneous T cell lymphoma	C84	8	2	0.0%	0.04	4	1	0.0%	0.04	0.05
other and unspecified NHL	C85	1018	204	2.7%	5.61	469	94	2.7%	5.14	4.84
multiple myeloma	C90	717	143	1.9%	3.95	339	68	2.0%	3.71	3.33
lymphoid leukaemia	C91	395	79	1.1%	2.18	145	29	0.8%	1.59	1.34
myeloid leukaemia	C92	447	89	1.2%	2.47	215	43	1.2%	2.36	2.23
monocytic leukaemia	C93	9	2	0.0%	0.05	3	1	0.0%	0.03	0.04
unspecified leukaemia	C95	194	39	0.5%	1.07	81	16	0.5%	0.89	0.73
other lymphoid and haematopoietic	C96	2	0	0.0%	0.01	0	0	0.0%	0.00	0.00
all malignant cancers		**37089**	**7418**	**99.5%**	**204.57**	**17142**	**3428**	**99.4%**	**187.77**	**175.96**
in situ cancers										
in situ: other genital	D07	1	0	0.0%	0.01	0	0	0.0%	0.00	0.00
all in situ cancers		**1**	**0**	**0.0%**	**0.01**	**0**	**0**	**0.0%**	**0.00**	**0.00**
benign neoplasms										
benign meninges	D32	20	4	0.1%	0.11	13	3	0.1%	0.14	0.13
benign brain	D33	15	3	0.0%	0.08	6	1	0.0%	0.07	0.06
benign: mouth and pharynx	D10	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
benign salivary glands	D11	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
benign colorectal	D12	4	1	0.0%	0.02	0	0	0.0%	0.00	0.00
benign other GI	D13	10	2	0.0%	0.06	3	1	0.0%	0.03	0.03
benign respiratory	D14	3	1	0.0%	0.02	2	0	0.0%	0.02	0.02
benign intrathoracic	D15	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
benign bone and cartilage	D16	3	1	0.0%	0.02	3	1	0.0%	0.03	0.03
benign soft tissue	D21	7	1	0.0%	0.04	6	1	0.0%	0.07	0.07
other benign skin	D23	2	0	0.0%	0.01	0	0	0.0%	0.00	0.00
benign other female genital	D28	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
benign male genital	D29	2	0	0.0%	0.01	0	0	0.0%	0.00	0.00
benign endocrine	D35	7	1	0.0%	0.04	3	1	0.0%	0.03	0.04
benign other/unspecified	D36	2	0	0.0%	0.01	1	0	0.0%	0.01	0.01
all benign neoplasms		**79**	**16**	**0.2%**	**0.44**	**41**	**8**	**0.2%**	**0.45**	**0.43**
neoplasms of uncertain behaviour										
uncertain: oral and digestive	D37	3	1	0.0%	0.02	1	0	0.0%	0.01	0.01
uncertain respiratory	D38	3	1	0.0%	0.02	1	0	0.0%	0.01	0.02
uncertain: female genital	D39	1	0	0.0%	0.01	1	0	0.0%	0.01	0.01
uncertain: male genital	D40	1	0	0.0%	0.01	0	0	0.0%	0.00	0.00
uncertain: urinary	D41	3	1	0.0%	0.02	2	0	0.0%	0.02	0.01
uncertain: meninges	D42	9	2	0.0%	0.05	5	1	0.0%	0.05	0.06
uncertain: brain and CNS	D43	4	1	0.0%	0.02	1	0	0.0%	0.01	0.01
uncertain: endocrine	D44	7	1	0.0%	0.04	4	1	0.0%	0.04	0.04
polycythaemia vera	D45	44	9	0.1%	0.24	21	4	0.1%	0.23	0.21
other uncertain lymphoid, haematopoietic	D47	41	8	0.1%	0.23	19	4	0.1%	0.21	0.17
uncertain: other sites	D48	5	1	0.0%	0.03	3	1	0.0%	0.03	0.03
all neoplasms of uncertain behaviour		**121**	**24**	**0.3%**	**0.67**	**58**	**12**	**0.3%**	**0.64**	**0.58**
all registered cancer deaths		**37290**	**7458**	**100.0%**	**205.68**	**17241**	**3448**	**100.0%**	**188.85**	**176.96**

MALE									
WASR (per 100000 per year)	cumulative risk to age 75	deaths 1994 – 1998	annual average no.of deaths	% of all cancers	deaths per 100000 per year	EASR (per 100000 per year)	WASR (per 100000 per year)	cumulative risk to age 75	
0.05	0.00%	10	2	0.0%	0.11	0.11	0.11	0.01%	spinal cord
0.54	0.06%	37	7	0.2%	0.41	0.47	0.30	0.03%	thyroid
0.11	0.01%	20	4	0.1%	0.22	0.26	0.21	0.02%	adrenal
0.09	0.01%	14	3	0.1%	0.16	0.18	0.16	0.02%	other endocrine
1.37	0.13%	218	44	1.1%	2.42	2.88	1.85	0.20%	ill-defined site
6.65	0.75%	1171	234	5.8%	13.01	14.99	9.75	1.13%	unknown primary site
0.35	0.04%	81	16	0.4%	0.90	0.99	0.74	0.07%	Hodgkin's disease
0.00	0.00%	5	1	0.0%	0.06	0.06	0.05	0.01%	follicular non-Hodgkin's lymphoma
0.01	0.00%	5	1	0.0%	0.06	0.07	0.05	0.00%	diffuse non-Hodgkin's lymphoma
0.03	0.00%	4	1	0.0%	0.04	0.06	0.04	0.01%	peripheral and cutaneous T cell lymphoma
3.25	0.38%	549	110	2.7%	6.10	7.04	4.86	0.56%	other and unspecified NHL
2.15	0.24%	378	76	1.9%	4.20	4.91	3.13	0.34%	multiple myeloma
0.94	0.08%	250	50	1.2%	2.78	3.16	2.29	0.23%	lymphoid leukaemia
1.62	0.17%	232	46	1.2%	2.58	2.98	2.02	0.23%	myeloid leukaemia
0.03	0.00%	6	1	0.0%	0.07	0.08	0.05	0.00%	monocytic leukaemia
0.48	0.05%	113	23	0.6%	1.26	1.44	0.87	0.08%	unspecified leukaemia
0.00	0.00%	2	0	0.0%	0.02	0.03	0.02	0.00%	other lymphoid and haematopoietic
117.86	**12.52%**	**19947**	**3989**	**99.5%**	**221.60**	**257.33**	**166.40**	**16.98%**	**all malignant cancers**
									in situ cancers
0.00	0.00%	1	0	0.0%	0.01				in situ: other genital
0.00	**0.00%**	**1**	**0**	**0.0%**	**0.01**	**0.01**	**0.01**	**0.00%**	**all in situ cancers**
									benign neoplasms
0.08	0.01%	7	1	0.0%	0.08	0.10	0.06	0.01%	benign meninges
0.04	0.01%	9	2	0.0%	0.10	0.11	0.09	0.01%	benign: mouth and pharynx
0.00	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	benign: mouth and pharynx
0.00	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	benign salivary glands
0.00	0.00%	4	1	0.0%	0.04	0.05	0.04	0.00%	benign colorectal
0.02	0.00%	7	1	0.0%	0.08	0.08	0.05	0.01%	benign other GI
0.02	0.00%	1	0	0.0%	0.01	0.01	0.01	0.00%	benign respiratory
0.01	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	benign intrathoracic
0.02	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	benign bone and cartilage
0.04	0.00%	1	0	0.0%	0.01	0.01	0.00	0.00%	benign soft tissue
0.00	0.00%	2	0	0.0%	0.02	0.03	0.02	0.00%	other benign skin
0.01	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	benign other female genital
0.00	0.00%	2	0	0.0%	0.02	0.02	0.01	0.00%	benign male genital
0.02	0.00%	4	1	0.0%	0.04	0.04	0.03	0.00%	benign endocrine
0.01	0.00%	1	0	0.0%	0.01	0.02	0.01	0.00%	benign other/unspecified
0.29	**0.04%**	**38**	**8**	**0.2%**	**0.42**	**0.47**	**0.33**	**0.04%**	**all benign neoplasms**
									neoplasms of uncertain behaviour
0.02	0.00%	2	0	0.0%	0.02	0.03	0.02	0.00%	uncertain: oral and digestive
0.01	0.00%	2	0	0.0%	0.02	0.02	0.01	0.00%	uncertain respiratory
0.01	0.00%	0	0	0.0%	0.00	0.00	0.00	0.00%	uncertain: female genital
0.00	0.00%	1	0	0.0%	0.01	0.01	0.01	0.00%	uncertain: male genital
0.01	0.00%	1	0	0.0%	0.01	0.02	0.01	0.00%	uncertain: urinary
0.05	0.00%	4	1	0.0%	0.04	0.05	0.04	0.00%	uncertain: meninges
0.01	0.00%	3	1	0.0%	0.03	0.03	0.03	0.00%	uncertain: brain and CNS
0.04	0.00%	3	1	0.0%	0.03	0.03	0.03	0.00%	uncertain: endocrine
0.14	0.02%	23	5	0.1%	0.26	0.29	0.19	0.02%	polycythaemia vera
0.10	0.01%	22	4	0.1%	0.24	0.29	0.18	0.02%	other uncertain lymphoid, haematopoietic
0.02	0.00%	2	0	0.0%	0.02	0.02	0.02	0.00%	uncertain: other sites
0.40	**0.04%**	**63**	**13**	**0.3%**	**0.70**	**0.79**	**0.53**	**0.05%**	**all neoplasms of uncertain behaviour**
118.55	**12.59%**	**20049**	**4010**	**100.0%**	**222.74**	**258.61**	**167.27**	**17.06%**	**all registered cancer deaths**

Table A5.3 New cancer cases: by site, sex and year of incidence, 1994 – 1998

		1994			1995			
cancer site	ICD 10 code	female	male	both sexes	female	male	both sexes	female
malignant cancers								
lip	C00	2	51	53	1	31	32	3
base of tongue	C01	3	12	15	3	15	18	1
other tongue	C02	14	26	40	15	39	54	12
gum	C03	2	2	4	2	5	7	1
floor of mouth	C04	6	27	33	10	17	27	4
palate	C05	3	8	11	2	9	11	2
other mouth	C06	7	10	17	7	12	19	10
parotid	C07	7	13	20	10	13	23	6
other salivary	C08	3	9	12	5	5	10	5
tonsil	C09	5	16	21	3	19	22	3
oropharynx	C10	2	12	14	1	8	9	5
nasopharynx	C11	1	9	10	4	9	13	1
pyriform	C12	3	17	20	6	11	17	6
hypopharynx	C13	11	6	17	7	7	14	6
other mouth/pharynx	C14	2	6	8	3	13	16	4
oesophagus	C15	123	164	287	133	168	301	110
stomach	C16	171	300	471	179	288	467	173
small intestine	C17	18	16	34	14	27	41	13
colon	C18	540	597	1137	521	553	1074	474
rectosigmoid	C19	61	95	156	38	76	114	58
rectum	C20	153	281	434	171	288	459	148
anus	C21	13	12	25	6	10	16	13
liver	C22	28	43	71	15	44	59	16
gallbladder	C23	21	7	28	21	16	37	24
other biliary	C24	19	31	50	23	31	54	39
pancreas	C25	166	159	325	147	143	290	172
other digestive	C26	13	13	26	12	18	30	14
nasal cavity/middle ear	C30	1	7	8	6	4	10	2
sinuses	C31	2	5	7	3	6	9	5
larynx	C32	19	92	111	16	99	115	18
trachea	C33	2	3	5	1	4	5	1
lung	C34	492	1038	1530	480	941	1421	497
thymus	C37	1	3	4	0	1	1	2
mediastinum	C38	2	10	12	2	9	11	4
other chest	C39	0	1	1	0	0	0	1
bones, joints of limbs	C40	9	15	24	12	7	19	7
bones, joints head and trunk	C41	4	6	10	3	13	16	6
melanoma skin	C43	240	134	374	233	121	354	230
non-melanoma skin	C44	2315	2812	5127	2320	2802	5122	2405
mesothelioma	C45	1	8	9	2	15	17	0
Kaposi's sarcoma	C46	0	7	7	0	6	6	1
peripheral nerves	C47	2	3	5	4	5	9	4
peritoneum	C48	9	6	15	6	5	11	4
connective tissues	C49	32	40	72	33	47	80	31
breast	C50	1505	13	1518	1525	8	1533	1588
vulva	C51	34	0	34	20	0	20	42
vagina	C52	9	0	9	9	0	9	11
cervix	C53	174	0	174	153	0	153	205
corpus uteri	C54	180	0	180	212	0	212	215
uterus nos	C55	32	0	32	16	0	16	13
ovary	C56	280	0	280	328	0	328	315
other female genital	C57	8	0	8	3	0	3	5
placenta	C58	1	0	1	0	0	0	0
penis	C60	0	18	18	0	24	24	0
prostate	C61	0	1068	1068	0	1112	1112	0
testis	C62	0	67	67	0	86	86	0
other male genital	C63	0	4	4	0	1	1	0
kidney	C64	84	138	222	89	123	212	87
renal pelvis	C65	5	7	12	1	9	10	4
ureter	C66	10	4	14	5	4	9	3
bladder	C67	171	341	512	106	335	441	130
other urinary	C68	1	5	6	2	4	6	3
eye	C69	22	20	42	17	18	35	23

1996		1997			1998			
male	both sexes	female	male	both sexes	female	male	both sexes	
								malignant cancers
44	47	8	31	39	3	39	42	lip
17	18	3	19	22	4	8	12	base of tongue
27	39	12	20	32	11	24	35	other tongue
6	7	0	1	1	7	2	9	gum
16	20	6	19	25	8	30	38	other mouth
5	7	5	6	11	4	9	13	palate
9	19	9	12	21	9	13	22	other mouth
15	21	7	19	26	7	14	21	parotid
3	8	3	3	6	6	3	9	other salivary
9	12	3	13	16	5	13	18	tonsil
4	9	0	9	9	2	4	6	oropharynx
15	16	1	12	13	1	9	10	nasopharynx
32	38	9	21	30	4	15	19	pyriform
8	14	2	4	6	5	7	12	hypopharynx
10	14	1	13	14	3	8	11	other mouth/pharynx
185	295	101	193	294	114	155	269	oesophagus
303	476	172	299	471	176	284	460	stomach
20	33	10	22	32	23	19	42	small intestine
577	1051	518	566	1084	501	569	1070	colon
83	141	57	85	142	51	90	141	rectosigmoid
309	457	186	347	533	206	344	550	rectum
8	21	13	9	22	13	13	26	anus
38	54	22	38	60	27	42	69	liver
11	35	40	13	53	25	9	34	gallbladder
37	76	40	29	69	28	33	61	other biliary
160	332	173	175	348	158	161	319	pancreas
19	33	13	13	26	15	10	25	other digestive
4	6	6	4	10	5	7	12	nasal cavity/middle ear
6	11	5	10	15	2	13	15	sinuses
85	103	15	82	97	20	94	114	larynx
2	3	0	2	2	4	1	5	trachea
958	1455	523	919	1442	545	1002	1547	lung
0	2	1	7	8	2	1	3	thymus
4	8	3	5	8	10	11	21	mediastinum
0	1	0	0	0	0	2	2	other chest
10	17	12	14	26	7	10	17	bones, joints of limbs
10	16	3	10	13	9	10	19	bones, joints head and trunk
127	357	236	167	403	235	152	387	melanoma skin
2878	5283	2449	2797	5246	2386	2673	5059	non-melanoma skin
14	14	4	21	25	1	11	12	mesothelioma
5	6	0	2	2	1	4	5	Kaposi's sarcoma
3	7	3	5	8	3	3	6	peripheral nerves
3	7	9	5	14	9	5	14	peritoneum
45	76	32	37	69	30	47	77	connective tissues
17	1605	1614	16	1630	1689	10	1699	breast
0	42	25	0	25	40	0	40	vulva
0	11	5	0	5	12	0	12	vagina
0	205	166	0	166	187	0	187	cervix
0	215	220	0	220	199	0	199	corpus uteri
0	13	12	0	12	15	0	15	uterus nos
0	315	332	0	332	307	0	307	ovary
0	5	4	0	4	9	0	9	other female genital
0	0	0	0	0	1	0	1	placenta
21	21	0	17	17	0	16	16	penis
1148	1148	0	1180	1180	0	1244	1244	prostate
102	102	0	80	80	0	111	111	testis
4	4	0	0	0	0	5	5	other male genital
147	234	83	172	255	90	176	266	kidney
10	14	7	4	11	0	1	1	renal pelvis
6	9	2	11	13	2	4	6	ureter
341	471	121	334	455	112	288	400	bladder
3	6	1	6	7	1	3	4	other urinary
13	36	19	21	40	21	25	46	eye

CONTINUED *Table A5.3 New cancer cases: by site, sex and year of incidence, 1994 – 1998*

		1994			1995			
cancer site	ICD 10 code	female	male	both sexes	female	male	both sexes	female
meninges	C70	3	2	5	2	1	3	0
brain	C71	96	139	235	108	153	261	113
spinal cord	C72	5	9	14	4	5	9	3
thyroid	C73	43	24	67	41	16	57	49
adrenal	C74	3	4	7	4	5	9	4
other endocrine	C75	2	2	4	2	5	7	4
ill-defined site	C76	31	11	42	25	14	39	38
lymph nodes	C77	0	0	0	0	0	0	1
unknown primary site	C80	320	390	710	338	366	704	337
Hodgkin's disease	C81	37	48	85	32	37	69	29
follicular non-Hodgkin's lymphoma	C82	38	17	55	18	15	33	26
diffuse non-Hodgkin's lymphoma	C83	65	80	145	63	69	132	64
peripheral and cutaneous T cell lymphoma	C84	12	11	23	11	6	17	7
other and unspecified NHL	C85	68	83	151	72	99	171	88
malignant immunoproliferative disease	C88	4	9	13	4	4	8	2
multiple myeloma	C90	99	100	199	67	96	163	68
lymphoid leukaemia	C91	82	101	183	55	121	176	68
myeloid leukaemia	C92	52	52	104	38	56	94	43
monocytic leukaemia	C93	2	0	2	1	0	1	2
other specified leukaemia	C94	4	9	13	4	10	14	5
unspecified leukaemia	C95	17	23	40	17	21	38	23
other lymphoid and haematopoietic	C96	1	1	2	0	0	0	1
all malignant cancers		8028	8932	16960	7872	8783	16655	8160
in situ cancers								
oral cavity, oesophagus and stomach	D00	14	10	24	8	6	14	7
other digestive	D01	19	23	42	15	19	34	13
middle ear and respiratory	D02	4	12	16	3	16	19	3
melanoma	D03	81	38	119	82	49	131	104
carcinoma of skin	D04	482	180	662	486	180	666	564
breast	D05	74	1	75	59	0	59	86
cervix	D06	709	0	709	656	0	656	814
other genital	D07	12	4	16	10	3	13	13
other sites	D09	7	13	20	3	5	8	0
all in situ cancers		1402	281	1683	1322	278	1600	1604
benign neoplasms								
meninges	D32	52	10	62	41	16	57	36
brain	D33	26	13	39	23	19	42	24
endocrine	D35	17	22	39	17	23	40	21
all benign neoplasms		95	45	140	81	58	139	81
neoplasms of uncertain behaviour								
oral and digestive	D37	30	17	47	39	30	69	38
respiratory	D38	0	1	1	2	0	2	0
female genital	D39	18	0	18	12	0	12	17
male genital	D40	0	1	1	0	1	1	0
urinary	D41	0	5	5	3	6	9	3
meninges	D42	0	0	0	0	1	1	0
brain and CNS	D43	4	2	6	2	1	3	5
endocrine	D44	4	6	10	9	2	11	8
polycythaemia vera	D45	23	15	38	14	19	33	12
myelodysplastic syndromes	D46	27	39	66	28	27	55	30
other uncertain lymphoid, haematopoietic	D47	38	31	69	32	38	70	33
uncertain: other sites	D48	10	10	20	13	11	24	17
all neoplasms of uncertain behaviour		**154**	**127**	**281**	**154**	**136**	**290**	**163**
all registered cancers		**9679**	**9385**	**19064**	**9429**	**9255**	**18684**	**10008**

1996		1997			1998			
male	both sexes	female	male	both sexes	female	male	both sexes	
1	1	3	2	5	4	1	5	meninges
134	247	101	143	244	98	151	249	brain
4	7	3	3	6	5	5	10	spinal cord
15	64	34	23	57	45	17	62	spinal cord
4	8	6	5	11	2	11	13	adrenal
5	9	3	4	7	4	6	10	other endocrine
10	48	17	17	34	23	13	36	ill-defined site
1	2	1	1	2	0	2	2	lymph nodes
315	652	348	336	684	333	348	681	unknown primary site
44	73	44	43	87	46	52	98	Hodgkin's disease
32	58	25	36	61	26	38	64	follicular non-Hodgkin's lymphoma
75	139	73	82	155	80	100	180	diffuse non-Hodgkin's lymphoma
11	18	5	10	15	7	12	19	peripheral and cutaneous T cell lymphoma
89	177	91	95	186	85	94	179	other and unspecified NHL
5	7	1	3	4	5	3	8	malignant immunoproliferative disease
101	169	85	95	180	71	101	172	multiple myeloma
100	168	74	106	180	82	104	186	lymphoid leukaemia
53	96	51	63	114	51	69	120	myeloid leukaemia
3	5	1	5	6	2	2	4	monocytic leukaemia
3	8	7	6	13	6	7	13	other specified leukaemia
33	56	19	24	43	21	23	44	unspecified leukaemia
2	3	1	2	3	1	0	1	other lymphoid and haematopoietic
8976	17136	8319	9023	17342	8367	9015	17382	**all malignant cancers**
								in situ cancers
11	18	6	12	18	3	10	13	oral cavity, oesophagus and stomach
21	34	18	28	46	7	14	21	other digestive
12	15	5	13	18	6	10	16	middle ear and respiratory
59	163	140	64	204	120	51	171	melanoma
233	797	558	249	807	574	266	840	carcinoma of skin
0	86	81	0	81	92	1	93	breast
0	814	830	0	830	772	0	772	cervix
10	23	5	12	17	13	11	24	other genital
8	8	5	14	19	7	21	28	other sites
354	1958	1648	392	2040	1594	384	1978	**all in situ cancers**
								benign neoplasms
19	55	57	20	77	55	23	78	meninges
13	37	20	19	39	23	12	35	brain
27	48	26	26	52	24	21	45	endocrine
59	140	103	65	168	102	56	158	**all benign neoplasms**
								neoplasms of uncertain behaviour
33	71	44	34	78	36	50	86	oral and digestive
0	0	0	0	0	0	0	0	respiratory
0	17	10	0	10	14	0	14	female genital
1	1	0	1	1	0	3	3	male genital
5	8	1	3	4	1	6	7	urinary
1	1	0	0	0	0	0	0	meninges
4	9	2	5	7	4	11	15	brain and CNS
5	13	2	6	8	6	2	8	endocrine
16	28	16	22	38	6	12	18	polycythaemia vera
35	65	32	41	73	38	48	86	myelodysplastic syndromes
25	58	30	35	65	33	34	67	other uncertain lymphoid, haematopoietic
9	26	24	13	37	14	9	23	uncertain: other sites
134	**297**	**161**	**160**	**321**	**152**	**175**	**327**	**all neoplasms of uncertain behaviour**
9523	**19531**	**10231**	**9640**	**19871**	**10215**	**9630**	**19845**	**all registered cancers**

Table A5.4 Cancer deaths: by site, sex and year of death: 1994 to 1998

		1994			1995			
cancer site	ICD 10 code	female	male	both sexes	female	male	both sexes	female
malignant cancers								
lip	C00	1	6	7	1	9	10	2
base of tongue	C01	0	0	0	1	1	2	0
other tongue	C02	5	22	27	10	23	33	9
gum	C03	3	1	4	1	0	1	2
floor of mouth	C04	4	2	6	3	9	12	1
palate	C05	0	4	4	1	1	2	0
other mouth	C06	4	11	15	3	10	13	2
parotid	C07	10	5	15	2	6	8	2
other salivary	C08	0	1	1	1	2	3	0
tonsil	C09	2	8	10	2	8	10	1
oropharynx	C10	1	3	4	0	5	5	3
nasopharynx	C11	2	3	5	1	9	10	5
pyriform	C12	0	12	12	1	4	5	0
hypopharynx	C13	2	3	5	7	4	11	7
other mouth/pharynx	C14	5	14	19	5	14	19	3
oesophagus	C15	126	196	322	126	162	288	113
stomach	C16	178	240	418	152	259	411	162
small intestine	C17	4	4	8	7	9	16	7
colon	C18	321	357	678	332	395	727	327
rectosigmoid	C19	6	15	21	13	14	27	13
rectum	C20	86	130	216	73	138	211	58
anus	C21	1	3	4	7	1	8	4
liver	C22	56	73	129	44	73	117	45
gallbladder	C23	18	7	25	15	12	27	19
other biliary	C24	9	9	18	8	14	22	17
pancreas	C25	167	198	365	173	174	347	174
other digestive	C26	67	73	140	89	102	191	84
nasal cavity/middle ear	C30	1	0	1	2	2	4	0
sinuses	C31	3	6	9	1	3	4	2
larynx	C32	17	42	59	14	31	45	10
trachea	C33	0	2	2	3	4	7	1
lung	C34	517	1024	1541	534	1028	1562	505
thymus	C37	1	0	1	1	1	2	1
mediastinum	C38	2	9	11	8	8	16	3
other chest	C39	1	0	1	0	0	0	0
bones, joints of limbs	C40	3	5	8	5	4	9	2
bones, joints head and trunk	C41	5	13	18	9	9	18	9
melanoma skin	C43	25	22	47	26	33	59	33
non-melanoma skin	C44	10	23	33	8	26	34	3
peritoneum	C48	9	5	14	13	5	18	2
connective tissues	C49	8	13	21	14	8	22	17
breast	C50	647	4	651	651	7	658	633
vulva	C51	21	0	21	10	0	10	12
vagina	C52	5	0	5	2	0	2	4
cervix	C53	60	0	60	72	0	72	81
corpus uteri	C54	47	0	47	43	0	43	48
uterus nos	C55	20	0	20	18	0	18	11
ovary	C56	202	0	202	198	0	198	210
other female genital	C57	4	0	4	3	0	3	0
penis	C60	0	4	4	0	5	5	0
prostate	C61	0	475	475	0	521	521	0
testis	C62	0	9	9	0	3	3	0
other male genital	C63	0	0	0	0	1	1	0
kidney	C64	45	72	117	44	64	108	54
renal pelvis	C65	0	0	0	0	0	0	0
ureter	C66	2	0	2	2	1	3	0
bladder	C67	70	115	185	46	115	161	49
other urinary	C68	1	1	2	1	1	2	2
eye	C69	4	4	8	6	4	10	7
meninges	C70	2	0	2	4	2	6	2
brain	C71	101	118	219	88	135	223	111
spinal cord	C72	2	0	2	1	1	2	0
thyroid	C73	17	9	26	17	10	27	20

1996		1997			1998			
male	both sexes	female	male	both sexes	female	male	both sexes	
								malignant cancers
7	9	0	8	8	2	6	8	lip
4	4	0	2	2	0	0	0	base of tongue
21	30	9	38	47	12	20	32	other tongue
3	5	0	0	0	1	1	2	gum
5	6	1	7	8	0	4	4	floor of mouth
3	3	1	3	4	3	4	7	palate
13	15	4	8	12	2	7	9	other mouth
9	11	3	11	14	3	7	10	parotid
2	2	1	2	3	2	0	2	other salivary
6	7	2	4	6	2	4	6	tonsil
1	4	0	5	5	3	8	11	oropharynx
3	8	3	2	5	3	6	9	nasopharynx
8	8	0	2	2	4	8	12	pyriform
4	11	7	2	9	3	2	5	hypopharynx
15	18	2	13	15	3	11	14	other mouth/pharynx
187	300	107	200	307	102	188	290	oesophagus
233	395	139	230	369	149	206	355	stomach
5	12	10	11	21	7	5	12	small intestine
355	682	342	381	723	295	360	655	colon
18	31	17	17	34	15	15	30	rectosigmoid
117	175	81	123	204	54	129	183	rectum
0	4	3	3	6	4	2	6	anus
70	115	56	63	119	55	69	124	liver
5	24	19	5	24	20	9	29	gallbladder
14	31	14	7	21	14	9	23	other biliary
161	335	179	183	362	179	194	373	pancreas
100	184	84	87	171	100	75	175	other digestive
1	1	1	0	1	1	1	2	nasal cavity/middle ear
3	5	4	2	6	3	5	8	sinuses
49	59	9	57	66	7	42	49	larynx
2	3	0	1	1	0	1	1	trachea
953	1458	494	882	1376	544	966	1510	lung
1	2	0	0	0	0	1	1	thymus
17	20	3	16	19	4	15	19	mediastinum
0	0	0	0	0	0	0	0	other chest
2	4	5	2	7	2	3	5	bones, joints of limbs
14	23	18	15	33	8	14	22	bones, joints head and trunk
27	60	32	35	67	45	23	68	melanoma skin
19	22	12	21	33	14	19	33	non-melanoma skin
9	11	3	7	10	6	6	12	peritoneum
18	35	15	18	33	11	19	30	connective tissues
6	639	631	3	634	594	7	601	breast
0	12	13	0	13	9	0	9	vulva
0	4	3	0	3	3	0	3	vagina
0	81	82	0	82	80	0	80	cervix
0	48	40	0	40	41	0	41	corpus uteri
0	11	15	0	15	13	0	13	uterus nos
0	210	257	0	257	222	0	222	ovary
0	0	4	0	4	3	0	3	other female genital
7	7	0	5	5	0	6	6	penis
520	520	0	534	534	0	514	514	prostate
11	11	0	5	5	0	7	7	testis
1	1	0	0	0	0	0	0	other male genital
79	133	48	97	145	51	86	137	kidney
1	1	0	0	0	0	0	0	renal pelvis
0	0	1	2	3	1	1	2	ureter
113	162	60	113	173	47	105	152	bladder
1	3	0	0	0	1	1	2	other urinary
3	10	10	7	17	6	8	14	eye
1	3	1	0	1	0	1	1	meninges
117	228	93	119	212	76	105	181	brain
3	3	0	1	1	1	5	6	spinal cord
6	26	15	8	23	12	4	16	thyroid

CONTINUED *Table A5.4 Cancer deaths: by site, sex and year of death: 1994 to 1998*

		1994			1995			
cancer site	ICD 10 code	female	male	both sexes	female	male	both sexes	female
adrenal	C74	1	3	4	0	7	7	2
other endocrine	C75	3	3	6	6	3	9	1
ill-defined site	C76	38	38	76	41	45	86	45
unknown primary site	C80	188	240	428	203	231	434	205
Hodgkin's disease	C81	12	15	27	7	17	24	4
follicular non-Hodgkin's lymphoma	C82	0	0	0	0	2	2	0
diffuse non-Hodgkin's lymphoma	C83	3	1	4	0	1	1	0
peripheral and cutaneous T cell lymphoma	C84	0	2	2	0	1	1	3
other and unspecified NHL	C85	92	97	189	87	105	192	82
multiple myeloma	C90	77	73	150	67	82	149	65
lymphoid leukaemia	C91	29	48	77	29	47	76	24
myeloid leukaemia	C92	50	47	97	39	40	79	46
monocytic leukaemia	C93	1	2	3	0	1	1	1
unspecified leukaemia	C95	6	12	18	12	13	25	19
other lymphoid and haematopoietic	C96	0	1	1	0	0	0	0
all malignant cancers		**3430**	**3957**	**7387**	**3413**	**4085**	**7498**	**3389**
in situ cancers								
other genital	D07	0	0	0	0	1	1	0
all in situ cancers		**0**	**0**	**0**	**0**	**1**	**1**	**0**
benign neoplasms								
meninges	D32	2	0	2	1	0	1	3
brain	D33	1	0	1	1	3	4	1
mouth and pharynx	D10	0	0	0	0	0	0	0
salivary glands	D11	0	0	0	0	0	0	0
colorectal	D12	0	1	1	0	1	1	0
other GI	D13	0	0	0	0	2	2	2
respiratory	D14	0	0	0	1	0	1	0
intrathoracic	D15	0	0	0	0	0	0	1
bone and cartilage	D16	0	0	0	0	0	0	1
soft tissue	D21	2	0	2	0	0	0	0
other skin	D23	0	0	0	0	0	0	0
other female genital	D28	0	0	0	0	0	0	0
male genital	D29	0	0	0	0	0	0	0
endocrine	D35	0	0	0	0	1	1	0
other/unspecified	D36	0	0	0	0	0	0	0
all benign neoplasms		**5**	**1**	**6**	**3**	**7**	**10**	**8**
neoplasms of uncertain behaviour								
oral and digestive	D37	0	0	0	0	0	0	0
uncertain respiratory	D38	0	0	0	1	0	1	0
female genital	D39	0	0	0	0	0	0	0
male genital	D40	0	0	0	0	1	1	0
urinary	D41	0	1	1	0	0	0	1
meninges	D42	0	0	0	2	1	3	1
brain and CNS	D43	0	0	0	0	1	1	0
endocrine	D44	0	0	0	0	0	0	4
polycythaemia vera	D45	4	3	7	3	3	6	4
other lymphoid, haematopoietic	D47	1	4	5	6	1	7	7
other sites	D48	0	0	0	0	0	0	1
all neoplasms of uncertain behaviour		**5**	**8**	**13**	**12**	**7**	**19**	**18**
all cancer deaths		**3440**	**3966**	**7406**	**3428**	**4100**	**7528**	**3415**

1996		1997			1998			
male	both sexes	female	male	both sexes	female	male	both sexes	
2	4	3	4	7	4	4	8	adrenal
1	2	2	3	5	1	4	5	other endocrine
45	90	58	38	96	42	52	94	ill-defined site
230	435	212	227	439	245	243	488	unknown primary site
20	24	11	14	25	10	15	25	Hodgkin's disease
0	0	0	0	0	0	3	3	follicular non-Hodgkin's lymphoma
0	0	0	2	2	0	1	1	diffuse non-Hodgkin's lymphoma
1	4	0	0	0	1	0	1	peripheral and cutaneous T cell lymphoma
109	191	88	100	188	120	138	258	other and unspecified NHL
79	144	63	72	135	67	72	139	multiple myeloma
53	77	34	50	84	29	52	81	lymphoid leukaemia
45	91	36	43	79	44	57	101	myeloid leukaemia
2	3	1	1	2	0	0	0	monocytic leukaemia
20	39	19	31	50	25	37	62	unspecified leukaemia
0	0	0	1	1	0	0	0	other lymphoid and haematopoietic
3960	**7349**	**3480**	**3953**	**7433**	**3430**	**3992**	**7422**	**all malignant cancers**
								in situ cancers
0	0	0	0	0	0	0	0	other genital
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**all in situ cancers**
								benign neoplasms
2	5	2	3	5	5	2	7	meninges
1	2	3	1	4	0	4	4	brain
0	0	1	0	1	0	0	0	mouth and pharynx
0	0	0	0	0	1	0	1	salivary glands
0	0	0	2	2	0	0	0	colorectal
2	4	0	2	2	1	1	2	other GI
0	0	1	0	1	0	1	1	respiratory
0	1	0	0	0	0	0	0	intrathoracic
0	1	2	0	2	0	0	0	bone and cartilage
1	1	1	0	1	3	0	3	soft tissue
1	1	0	1	1	0	0	0	other skin
0	0	1	0	1	0	0	0	other female genital
1	1	0	1	1	0	0	0	male genital
1	1	3	0	3	0	2	2	endocrine
0	0	0	1	1	1	0	1	other/unspecified
9	**17**	**14**	**11**	**25**	**11**	**10**	**21**	**all benign neoplasms**
								neoplasms of uncertain behaviour
0	0	1	1	2	0	1	1	oral and digestive
0	0	0	2	2	0	0	0	uncertain respiratory
0	0	0	0	0	1	0	1	female genital
0	0	0	0	0	0	0	0	male genital
0	1	1	0	1	0	0	0	urinary
2	3	1	1	2	1	0	1	meninges
0	0	0	0	0	1	2	3	brain and CNS
1	5	0	2	2	0	0	0	endocrine
4	8	7	9	16	3	4	7	polycythaemia vera
								other lymphoid,
8	15	3	3	6	2	6	8	haematopoietic
0	1	0	0	0	2	2	4	other sites
15	**33**	**13**	**18**	**31**	**10**	**15**	**25**	**all neoplasms of uncertain behaviour**
3984	**7399**	**3507**	**3982**	**7489**	**3451**	**4017**	**7468**	**all cancer deaths**

Table A5.5 Cancer cases by age and sex: 1994 – 1998 totals

		FEMALE																	
cancer site	ICD 10 code	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+
malignant cancers																			
lip	C00	0	0	0	0	0	0	0	0	1	1	0	0	1	2	4	5	1	2
base of tongue	C01	0	0	0	0	0	0	0	0	1	0	0	0	1	5	2	0	3	2
other tongue	C02	0	0	0	1	1	1	0	3	3	5	4	6	6	6	9	6	10	3
gum	C03	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	3	2	2
floor of mouth	C04	0	0	0	0	0	0	0	0	1	5	1	5	3	3	4	8	2	2
palate	C05	0	0	0	0	0	0	2	1	1	2	0	2	1	3	1	1	1	1
other mouth	C06	1	0	0	0	0	0	1	1	0	2	2	3	5	4	4	10	6	3
parotid	C07	0	1	1	0	0	2	2	0	1	2	2	1	2	6	2	4	3	8
other salivary	C08	0	0	0	0	0	0	1	1	0	1	3	2	1	3	2	3	4	1
tonsil	C09	0	0	0	0	0	0	0	0	1	4	2	2	1	2	5	2	0	0
oropharynx	C10	0	0	0	0	0	0	0	0	1	0	1	2	2	0	1	2	0	1
nasopharynx	C11	0	0	1	0	0	0	2	0	0	1	0	0	0	0	1	1	1	1
pyriform	C12	0	0	0	0	0	0	0	0	1	0	4	2	5	2	7	3	4	0
hypopharynx	C13	0	0	0	0	0	0	0	0	0	1	0	3	1	6	8	6	1	5
other mouth/pharynx	C14	0	0	0	0	0	0	0	1	0	0	1	1	0	2	2	5	1	0
oesophagus	C15	0	0	0	0	0	0	3	4	7	11	37	19	49	72	82	111	108	78
stomach	C16	0	0	0	0	1	1	3	13	18	27	31	38	76	115	169	122	149	108
small intestine	C17	0	0	0	0	0	0	2	0	2	3	6	5	9	9	13	14	7	8
colon	C18	0	0	0	1	1	3	16	20	57	87	136	216	218	359	412	434	353	241
rectosigmoid	C19	0	0	0	0	0	1	0	2	7	4	13	29	28	38	44	51	34	14
rectum	C20	0	0	0	0	0	2	8	10	19	43	46	73	100	107	151	135	97	73
anus	C21	0	0	0	0	0	1	0	1	3	2	3	5	6	7	6	6	10	8
liver	C22	2	0	0	1	0	2	1	0	2	3	8	3	9	13	26	17	12	9
gallbladder	C23	0	0	0	0	0	0	0	1	0	4	8	10	11	22	23	20	15	17
other biliary	C24	0	0	0	0	0	0	0	1	0	2	6	10	11	17	32	29	22	19
pancreas	C25	0	0	1	0	0	1	3	1	7	18	40	39	68	112	128	153	141	104
other digestive	C26	0	0	0	0	0	0	1	0	1	2	3	8	1	3	8	12	15	13
nasal cavity/middle ear	C30	0	0	0	0	0	0	0	1	0	1	3	1	2	4	4	2	1	1
sinuses	C31	0	0	1	1	0	0	1	0	0	0	1	1	1	0	1	3	3	4
larynx	C32	0	0	0	0	0	0	2	1	1	1	6	15	17	16	8	12	6	3
trachea	C33	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	3	0	1
lung	C34	0	0	1	2	3	1	4	11	45	51	123	166	273	423	535	492	286	121
thymus	C37	0	0	0	0	0	0	1	1	0	0	0	1	1	1	1	0	0	0
mediastinum	C38	0	0	0	0	0	0	1	0	1	1	1	0	1	4	4	2	5	1
other chest	C39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
bones, joints of limbs	C40	0	5	5	6	5	4	0	2	1	2	1	1	3	2	5	2	3	0
bones, joints head and trunk	C41	0	0	1	2	2	2	0	1	1	1	1	1	2	4	2	3	2	0
melanoma skin	C43	0	1	3	15	34	55	58	69	80	87	110	86	111	102	105	117	84	57
non-melanoma skin	C44	0	0	1	10	29	46	119	192	311	459	707	795	1004	1504	1870	1797	1626	1405
mesothelioma	C45	0	0	0	0	0	0	0	0	1	2	1	3	1	0	0	0	0	0
Kaposi's sarcoma	C46	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
peripheral nerves	C47	5	1	1	1	0	0	1	1	1	1	0	1	0	1	1	0	1	0
peritoneum	C48	1	0	0	0	0	0	1	0	3	2	0	3	2	7	4	3	7	4
connective tissues	C49	2	3	1	7	7	7	11	6	6	10	8	7	10	19	16	13	11	14
breast	C50	0	0	0	0	7	40	135	354	670	895	1004	942	847	839	775	667	452	294
vulva	C51	0	0	0	0	1	1	1	6	4	10	6	5	15	15	25	19	33	20
vagina	C52	0	0	0	1	0	1	1	1	1	3	5	7	2	5	4	6	3	6
cervix	C53	0	0	0	0	5	26	98	135	161	109	81	67	49	46	43	36	16	13
corpus uteri	C54	0	0	0	1	1	1	7	12	28	56	130	146	166	148	144	90	63	33
uterus NOS	C55	0	0	0	0	0	0	1	1	4	8	9	3	15	11	11	8	7	10
ovary	C56	1	0	4	10	14	34	40	63	91	128	152	174	169	181	180	154	106	61
other female genital	C57	0	0	0	0	0	0	0	0	2	2	3	4	2	6	1	2	4	3
placenta	C58	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
penis	C60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
prostate	C61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
testis	C62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
other male genital	C63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
kidney	C64	8	2	1	2	0	2	5	12	12	28	34	43	62	30	67	69	36	20
renal pelvis	C65	0	0	0	0	0	1	0	0	0	0	0	1	1	4	3	1	4	2
ureter	C66	0	0	0	0	0	0	1	0	1	0	0	1	5	2	2	2	6	2
bladder	C67	0	0	0	1	0	0	1	10	18	28	20	42	64	90	125	95	82	64
other urinary	C68	0	0	0	0	0	0	0	0	0	0	1	0	1	1	2	1	1	1

MALE																		
0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	
																		malignant cancers
0	0	0	0	0	0	0	1	4	7	9	18	25	33	38	28	24	9	lip
0	0	0	0	0	0	0	3	4	7	9	5	12	10	12	8	1	0	base of tongue
0	0	0	0	0	0	1	2	6	11	16	17	24	17	17	15	5	5	other tongue
0	0	0	0	0	0	1	0	0	0	0	0	2	3	2	2	4	2	gum
0	0	0	0	0	0	0	2	4	6	14	20	18	9	16	6	13	1	floor of mouth
0	0	0	0	0	0	0	0	0	3	4	4	10	5	5	4	2	0	palate
0	0	0	0	0	0	0	0	0	0	7	7	10	11	6	9	5	1	other mouth
0	0	1	0	1	1	0	2	2	1	2	5	6	11	15	11	8	8	parotid
0	0	1	0	0	0	1	1	1	2	1	2	1	6	3	1	2	1	other salivary
0	0	0	0	0	0	0	0	1	10	7	12	13	16	6	2	3	0	tonsil
0	0	0	0	0	0	0	0	4	2	4	4	5	5	7	4	2	0	oropharynx
0	2	2	1	1	0	2	2	4	7	3	7	9	7	4	1	2	0	nasopharynx
0	0	0	0	0	0	0	0	1	10	13	13	14	18	9	9	7	2	pyriform
0	0	0	0	0	0	0	0	0	2	1	5	4	5	6	4	2	3	hypopharynx
0	0	0	0	0	0	1	0	0	5	3	9	9	4	5	7	6	1	other mouth/pharynx
0	0	0	0	0	5	2	4	21	24	58	93	86	154	160	118	83	57	oesophagus
0	0	1	0	1	1	10	14	28	53	77	134	163	255	240	242	169	86	stomach
0	0	0	0	1	2	1	3	6	4	9	17	9	14	16	16	3	3	small intestine
0	0	0	0	1	4	16	29	47	107	138	241	358	478	513	476	307	147	colon
0	0	0	0	1	1	2	0	8	14	22	47	57	71	81	70	30	25	rectosigmoid
0	0	0	0	0	4	6	6	22	59	111	145	210	283	286	227	142	68	rectum
0	0	0	0	0	0	0	0	2	3	4	3	8	9	5	7	6	5	anus
0	0	1	1	1	3	2	2	7	5	11	9	30	38	40	30	17	8	liver
0	0	0	0	0	0	0	0	1	1	2	4	5	13	8	11	6	5	gallbladder
0	0	0	0	0	0	0	0	5	4	3	17	18	28	26	31	14	15	other biliary
0	0	0	0	0	0	3	7	11	20	49	57	87	123	147	147	91	56	pancreas
0	0	0	0	0	0	0	0	1	2	2	6	7	7	14	16	9	9	other digestive
1	0	0	0	0	0	0	0	0	3	3	1	7	2	1	3	4	1	nasal cavity/middle ear
0	0	0	0	0	0	1	0	1	3	2	7	5	6	8	3	2	2	sinuses
0	0	0	0	1	0	0	4	4	33	44	57	68	70	75	54	28	14	larynx
0	0	0	0	0	0	0	1	0	0	1	0	2	4	1	2	1	0	trachea
0	0	0	1	1	1	5	19	50	101	288	393	618	968	994	785	455	179	lung
0	0	0	0	0	0	1	0	1	4	1	1	0	3	1	0	0	0	thymus
1	0	0	0	2	1	0	1	2	3	1	2	4	6	5	6	3	2	mediastinum
0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	other chest
2	3	12	15	2	2	3	0	0	0	3	2	4	3	3	2	0	0	bones, joints of limbs
1	1	1	7	4	3	2	3	1	5	4	3	2	4	1	4	2	1	bones, joints head and trunk
0	0	2	6	16	27	44	28	44	51	63	52	75	59	76	83	40	35	melanoma skin
0	1	0	5	20	48	94	165	306	497	806	1118	1631	1961	2471	2192	1646	1001	non-melanoma skin
0	1	0	0	0	0	1	0	1	1	10	11	9	11	11	9	3	1	mesothelioma
0	0	0	0	0	2	4	3	6	2	2	1	1	1	1	0	0	1	Kaposi's sarcoma
3	2	2	0	1	0	2	1	2	1	1	1	1	1	0	1	0	0	peripheral nerves
0	0	0	0	0	1	0	2	2	1	1	3	4	5	2	0	3	0	peritoneum
7	2	1	8	5	5	7	12	9	15	15	17	19	21	29	23	14	7	connective tissues
0	0	0	0	0	0	0	1	4	2	4	7	7	10	14	7	4	4	breast
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	vulva
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	vagina
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	cervix
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	corpus uteri
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	uterus NOS
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ovary
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	other female genital
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	placenta
0	0	0	0	0	1	2	2	4	7	12	8	8	15	14	11	7	5	penis
0	0	0	0	0	0	0	0	5	23	114	229	540	931	1328	1223	877	482	prostate
1	0	1	29	75	79	98	69	38	25	14	6	3	3	1	1	3	0	testis
0	0	0	0	2	0	0	0	0	1	1	1	1	0	2	2	3	1	other male genital
11	1	0	0	1	7	3	10	28	54	72	82	94	121	112	82	51	27	kidney
0	0	0	0	0	0	0	0	1	0	2	3	3	5	2	6	6	3	renal pelvis
0	0	0	0	0	0	0	0	0	4	2	4	3	4	6	2	2	2	ureter
0	0	0	0	3	5	8	18	16	46	94	133	154	239	307	307	185	124	bladder
0	0	0	0	0	1	0	1	0	1	1	1	2	7	2	2	2	1	other urinary

CONTINUED *Table A5.5 Cancer cases by age and sex: 1994 – 1998 totals*

		FEMALE																	
cancer site	**ICD 10 code**	**0–4**	**5–9**	**10–14**	**15–19**	**20–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**65–69**	**70–74**	**75–79**	**80–84**	**85+**
eye	C69	5	0	0	0	1	3	3	2	3	11	6	11	7	14	13	10	7	6
meninges	C70	0	0	0	0	1	0	1	0	0	1	0	1	0	1	2	3	2	0
brain	C71	18	26	18	10	17	16	22	25	17	32	29	42	52	55	51	54	25	7
spinal cord	C72	3	2	7	1	1	0	0	1	0	0	0	1	0	1	3	0	0	0
thyroid	C73	0	1	1	4	13	15	9	13	18	23	14	9	17	16	18	22	12	7
adrenal	C74	4	0	0	0	0	2	0	0	2	1	0	1	3	3	1	1	0	1
other endocrine	C75	0	0	0	1	0	1	0	3	2	2	0	0	3	0	0	1	2	0
ill-defined site	C76	2	1	0	0	0	1	0	2	1	3	6	4	10	16	18	25	26	19
lymph nodes	C77	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
unknown primary site	C80	0	0	0	0	3	5	4	19	29	45	64	89	139	208	300	299	283	189
Hodgkin's disease	C81	0	0	6	18	26	24	27	14	7	7	4	6	13	9	14	6	5	2
follicular non-Hodgkin's lymphoma	C82	0	0	0	2	1	3	8	6	6	11	19	16	14	15	13	14	4	1
diffuse non-Hodgkin's lymphoma	C83	1	2	2	2	3	3	4	10	6	10	28	29	30	57	59	46	31	22
peripheral and cutaneous T cell lymphoma	C84	0	0	0	0	0	1	3	1	4	4	5	5	0	5	6	1	1	6
other and unspecified NHL	C85	3	4	5	4	3	4	6	12	16	24	29	34	45	47	60	44	45	19
malignant immunoproliferative disease	C88	0	0	0	0	0	0	0	0	0	1	0	1	0	2	5	4	3	0
multiple myeloma	C90	0	0	0	0	0	1	1	0	3	14	13	28	40	47	78	88	56	21
lymphoid leukaemia	C91	32	21	12	7	4	2	2	4	4	10	22	18	21	36	52	49	46	19
myeloid leukaemia	C92	7	1	6	7	10	8	10	11	14	14	17	18	14	28	23	26	16	5
monocytic leukaemia	C93	1	0	0	0	0	0	0	1	1	0	0	1	0	0	2	1	0	1
other specified leukaemia	C94	1	0	0	0	0	0	0	0	1	1	2	5	0	5	3	5	2	1
unspecified leukaemia	C95	0	0	1	3	2	1	1	1	4	2	3	2	6	14	12	17	14	14
other lymphoid and haematopoietic	C96	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
all malignant cancers		**99**	**71**	**80**	**122**	**197**	**325**	**635**	**1065**	**1717**	**2331**	**3029**	**3323**	**3858**	**4962**	**5819**	**5478**	**4432**	**3203**
in situ cancers																			
oral cavity, oesophagus and stomach	D00	0	0	0	0	0	0	1	0	0	2	2	3	0	2	10	8	2	8
other digestive	D01	0	0	0	0	0	0	0	1	2	4	4	5	10	12	10	10	10	4
middle ear and respiratory	D02	0	0	0	0	0	0	0	0	3	0	3	2	2	2	5	4	0	0
melanoma	D03	0	0	1	0	8	6	10	19	35	42	54	61	61	67	55	57	31	20
carcinoma of skin	D04	0	0	0	0	0	1	2	5	21	49	102	185	313	438	496	481	358	213
breast	D05	0	0	0	1	0	2	4	24	42	87	83	42	31	27	26	11	8	4
cervix	D06	0	0	0	34	371	886	910	687	409	286	105	49	23	8	4	8	0	1
other genital	D07	0	0	0	0	1	2	0	9	3	10	9	5	5	2	4	1	2	0
other sites	D09	0	0	0	0	0	1	0	0	0	1	4	1	1	3	4	6	1	0
all in situ cancers		0	0	1	35	380	898	927	745	515	481	366	353	446	561	614	586	412	250
benign tumours																			
benign meninges	D32	0	1	0	1	2	1	7	9	18	21	24	27	21	27	36	23	16	7
benign brain	D33	1	0	4	6	3	3	11	8	12	18	13	13	10	8	5	1	0	0
benign endocrine	D35	0	0	2	1	14	7	9	11	10	8	9	9	6	7	7	4	1	0
all benign neoplasms		**1**	**1**	**6**	**8**	**19**	**11**	**27**	**28**	**40**	**47**	**46**	**49**	**37**	**42**	**48**	**28**	**17**	**7**
neoplasms of uncertain behaviour																			
oral and digestive	D37	0	1	10	33	17	6	9	3	10	8	9	3	9	16	18	18	12	5
respiratory	D38	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
female genital	D39	0	1	0	7	1	3	3	5	7	8	11	5	5	4	6	2	3	0
male genital	D40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
urinary	D41	0	0	0	0	0	1	0	0	0	0	1	1	2	1	1	0	0	1
meninges	D42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
brain and CNS	D43	0	1	1	2	2	0	2	0	2	1	0	2	0	1	1	2	0	0
endocrine	D44	1	2	2	1	2	1	1	3	1	4	3	1	1	1	1	3	1	0
polycythaemia vera	D45	0	0	0	0	1	0	0	4	5	2	4	5	2	12	10	11	11	4
myelodysplastic syndromes	D46	0	0	1	2	2	0	0	2	2	1	3	6	12	18	26	34	30	16
other lymphoid, haematopoietic	D47	1	1	1	3	3	0	3	3	4	8	13	7	7	16	29	34	14	19
other sites	D48	1	3	1	3	3	3	5	10	11	9	9	4	2	4	2	3	2	3
all neoplasms of uncertain behaviour		**3**	**9**	**16**	**53**	**31**	**14**	**23**	**30**	**42**	**41**	**53**	**34**	**40**	**73**	**94**	**107**	**73**	**48**
all registered cancers		**103**	**81**	**103**	**218**	**627**	**1248**	**1612**	**1868**	**2314**	**2900**	**3494**	**3759**	**4381**	**5638**	**6575**	**6199**	**4934**	**3508**

MALE																		
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+
eye	8	0	0	0	1	1	2	1	5	6	6	8	11	5	11	21	8	3
meninges	1	0	0	0	0	0	0	1	1	1	1	0	1	0	0	1	0	0
brain	16	28	24	30	13	25	29	36	42	54	56	82	62	76	80	42	20	5
spinal cord	2	3	1	3	0	1	0	3	2	1	3	2	1	3	0	1	0	0
thyroid	0	0	0	2	2	4	3	3	4	5	14	9	9	10	14	11	4	1
adrenal	8	2	1	0	0	0	2	2	3	2	0	3	2	0	2	2	0	0
other endocrine	1	2	4	1	3	0	0	1	1	0	0	1	2	3	1	1	1	0
ill-defined site	0	0	0	0	0	0	0	0	2	0	0	6	11	5	12	13	8	8
lymph nodes	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0
unknown primary site	0	1	1	1	2	6	10	12	26	35	98	130	187	274	355	285	218	114
Hodgkin's disease	0	7	12	25	18	22	19	20	23	15	18	10	7	7	9	11	1	0
follicular non-Hodgkin's lymphoma	0	0	0	1	1	4	3	15	7	18	18	18	14	11	9	8	6	5
diffuse non-Hodgkin's lymphoma	3	2	6	10	7	4	16	11	20	21	36	36	44	53	51	41	35	10
peripheral and cutaneous T cell lymphoma	0	0	0	0	0	1	1	2	4	5	2	5	7	9	8	5	1	0
other and unspecified NHL	2	2	4	8	7	3	21	18	19	35	43	50	49	75	43	46	25	10
malignant immunoproliferative disease	0	0	0	0	0	0	0	0	0	0	1	2	0	5	8	3	2	3
multiple myeloma	0	0	0	0	0	0	1	7	15	14	15	60	61	66	93	81	56	24
lymphoid leukaemia	44	16	12	15	5	2	4	6	17	19	23	30	63	60	80	58	52	26
myeloid leukaemia	3	5	7	8	9	8	13	14	17	10	16	16	26	34	43	28	28	8
monocytic leukaemia	0	0	0	0	1	0	1	1	0	0	0	0	3	1	3	0	0	0
other specified leukaemia	0	0	0	0	0	1	0	0	1	0	3	1	12	4	4	6	3	0
unspecified leukaemia	1	0	0	0	1	4	3	1	1	2	4	8	9	16	24	16	19	15
other lymphoid and haematopoietic	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
all malignant cancers	**119**	**81**	**97**	**178**	**210**	**291**	**451**	**572**	**925**	**1495**	**2498**	**3521**	**5047**	**6810**	**8005**	**6995**	**4792**	**2642**
in situ cancers																		
oral cavity, oesophagus and stomach	0	0	0	0	0	0	1	1	1	4	6	2	11	6	4	6	5	2
other digestive	0	0	0	0	0	0	0	2	0	4	9	9	5	21	20	23	6	6
middle ear and																		
respiratory	0	0	0	0	0	0	0	1	1	1	4	4	11	10	13	10	6	2
melanoma	0	0	1	1	2	3	3	6	11	18	19	27	33	44	38	31	14	10
carcinoma of skin	0	0	1	0	0	2	3	8	14	32	69	88	146	185	230	164	107	59
breast	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
cervix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
other genital	0	0	0	0	0	0	4	7	2	1	1	5	3	4	2	4	4	3
other sites	0	0	0	0	1	0	0	0	1	3	1	5	10	6	10	10	10	4
all in situ cancers	0	0	2	1	3	5	11	25	30	63	109	140	219	277	317	249	152	86
benign tumours																		
benign meninges	2	0	0	1	0	1	3	4	4	6	3	10	15	17	6	9	4	3
benign brain	2	0	1	3	4	3	8	6	9	9	9	7	2	10	2	1	0	0
benign endocrine	0	0	0	2	3	10	7	7	12	11	17	8	14	4	10	12	2	0
all benign neoplasms	**4**	**0**	**1**	**6**	**7**	**14**	**18**	**17**	**25**	**26**	**29**	**25**	**31**	**31**	**18**	**22**	**6**	**3**
neoplasms of uncertain behaviour																		
oral and digestive	0	0	5	6	3	1	1	6	3	7	8	18	13	12	32	24	18	7
respiratory	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
female genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
male genital	0	0	0	0	2	0	1	0	1	1	1	0	0	0	1	0	0	0
urinary	1	0	0	0	0	0	0	0	0	4	0	3	2	2	7	2	1	3
meninges	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
brain and CNS	0	0	0	5	1	0	3	0	1	2	1	5	2	1	2	0	0	0
endocrine	0	0	4	4	3	1	1	3	1	1	1	0	1	0	1	0	0	0
polycythaemia vera	0	0	0	0	0	3	2	1	4	2	9	13	7	12	16	11	3	1
myelodysplastic syndromes	1	0	1	0	1	1	1	0	1	1	2	13	18	23	42	45	29	11
other lymphoid, haematopoietic	0	1	2	2	1	3	4	3	5	6	5	14	17	20	30	27	16	7
other sites	6	0	0	7	4	2	1	0	5	1	3	1	2	6	6	1	3	4
all neoplasms of uncertain behaviour	**8**	**1**	**12**	**25**	**15**	**11**	**14**	**13**	**21**	**25**	**31**	**68**	**62**	**76**	**137**	**110**	**70**	**33**
all registered cancers	**131**	**82**	**112**	**210**	**235**	**321**	**494**	**627**	**1001**	**1609**	**2667**	**3754**	**5359**	**7194**	**8477**	**7376**	**5020**	**2764**

Table A5.6 Case numbers and European age-standardised incidence rates: by site, sex and health board area of residence, 1994-1998

		EHB				MHB				MWHB				NEHB			
cancer site	**ICD 10 code**	**female cases 1994-8**	**male cases 1994-8**	**female EASR***	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**
all malignant cancers																	
lip	C00	5	24	0.15	1.10	4	22	0.67	4.51	1	9	0.14	1.28	1	12	0.10	1.80
base of tongue	C01	2	33	0.07	1.37	1	2	0.17	0.49	2	6	0.20	0.90	1	3	0.11	0.41
other tongue	C02	30	47	0.95	2.07	1	10	0.21	2.25	3	8	0.42	1.25	4	11	0.49	1.60
gum	C03	2	4	0.07	0.21	1	0	0.25	0.00	0	3	0.00	0.44	0	1	0.00	0.11
floor of mouth	C04	16	48	0.46	2.08	2	8	0.49	1.73	1	12	0.14	1.73	2	10	0.29	1.48
palate	C05	10	14	0.30	0.61	0	0	0.00	0.00	1	4	0.14	0.53	1	2	0.20	0.27
other mouth	C06	13	29	0.34	1.28	3	3	0.64	0.56	3	1	0.22	0.17	5	5	0.72	0.79
parotid	C07	12	23	0.36	1.02	1	4	0.14	0.71	2	3	0.23	0.40	4	5	0.51	0.73
other salivary	C08	4	7	0.14	0.26	1	0	0.14	0.00	1	0	0.07	0.00	4	4	0.52	0.62
tonsil	C09	7	25	0.25	1.05	2	3	0.39	0.64	2	11	0.33	1.75	2	4	0.30	0.63
oropharynx	C10	5	9	0.15	0.38	0	3	0.00	0.51	3	5	0.49	0.72	0	2	0.00	0.30
nasopharynx	C11	2	15	0.05	0.57	1	3	0.11	0.60	0	2	0.00	0.24	1	3	0.11	0.46
pyriform	C12	9	34	0.35	1.51	3	4	0.55	0.83	3	7	0.37	1.01	2	4	0.26	0.60
hypopharynx	C13	8	10	0.22	0.43	4	3	0.80	0.77	0	4	0.00	0.57	2	0	0.22	0.00
other mouth/pharynx	C14	5	16	0.17	0.72	1	2	0.16	0.39	1	4	0.07	0.56	0	2	0.00	0.27
oesophagus	C15	236	276	7.00	12.36	36	49	6.74	10.24	45	73	5.20	10.45	42	88	4.97	13.65
stomach	C16	339	538	10.18	23.84	39	97	7.07	20.00	74	94	8.15	13.43	102	139	12.10	20.45
small intestine	C17	23	38	0.71	1.56	10	7	2.12	1.47	6	5	0.78	0.71	6	8	0.75	1.25
colon	C18	852	903	26.55	39.78	164	176	31.51	36.44	157	228	19.31	31.82	207	242	26.56	35.66
rectosigmoid	C19	111	143	3.46	6.48	11	19	2.31	3.92	27	41	3.64	5.84	13	35	1.95	5.60
rectum	C20	307	529	9.82	23.46	44	75	8.71	16.3	56	125	6.64	17.59	71	130	9.20	19.4
anus	C21	19	12	0.56	0.54	6	4	1.39	0.78	3	5	0.41	0.67	8	8	0.87	1.17
liver	C22	43	81	1.30	3.51	3	8	0.63	1.52	9	6	1.21	0.90	7	17	1.01	2.58
gallbladder	C23	39	14	1.31	0.67	8	1	1.33	0.22	8	10	1.09	1.42	7	6	0.83	0.94
other biliary	C24	53	35	1.62	1.69	12	12	1.89	2.60	14	14	1.84	2.11	17	15	1.98	2.05
pancreas	C25	248	214	7.33	9.62	42	53	7.16	10.96	80	85	8.90	12.12	65	72	8.18	10.62
other digestive	C26	18	21	0.54	0.97	2	3	0.58	0.66	4	4	0.33	0.51	4	4	0.39	0.50
nasal cavity/middle ear	C30	9	10	0.29	0.42	2	1	0.41	0.28	2	3	0.31	0.39	1	3	0.15	0.49
sinuses	C31	3	11	0.09	0.50	1	2	0.16	0.52	0	1	0.00	0.16	1	4	0.18	0.64
larynx	C32	39	161	1.36	6.99	6	34	1.14	7.36	7	47	0.91	6.83	7	29	1.16	4.49
trachea	C33	3	7	0.11	0.30	0	0	0.00	0.00	0	1	0.00	0.10	0	2	0.00	0.31
lung	C34	1147	1902	36.30	84.28	113	260	20.94	52.36	178	366	21.21	51.77	189	364	25.30	54.86
thymus	C37	2	4	0.07	0.14	0	2	0.00	0.42	0	0	0.00	0.00	2	1	0.33	0.16
mediastinum	C38	8	17	0.23	0.70	2	1	0.27	0.17	1	4	0.14	0.60	1	1	0.15	0.13
other chest	C39	0	1	0.00	0.04	0	0	0.00	0.00	0	2	0.00	0.32	0	0	0.00	0.00
bones, joints of limbs	C40	18	16	0.50	0.53	3	6	0.75	1.04	2	3	0.20	0.37	3	3	0.48	0.40
bones, joints head and trunk	C41	10	19	0.28	0.65	0	3	0.00	0.52	1	0	0.12	0.00	1	5	0.14	0.53
melanoma skin	C43	422	260	13.72	10.44	62	43	12.58	9.40	96	66	12.59	9.23	102	56	13.58	8.19
non-melanoma skin	C44	4838	4638	150.61	206.19	580	766	107.32	161.58	742	1058	85.11	148.16	954	1213	118.85	186.26
mesothelioma	C45	3	31	0.10	1.36	1	5	0.25	0.96	1	5	0.18	0.78	1	6	0.20	1.01
Kaposi's sarcoma	C46	1	15	0.04	0.52	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00
peripheral nerves	C47	8	4	0.26	0.11	1	1	0.21	0.22	1	3	0.15	0.35	0	2	0.00	0.30
peritoneum	C48	10	11	0.33	0.44	1	4	0.17	0.98	6	1	0.70	0.16	2	1	0.22	0.13
connective tissues	C49	62	74	1.91	2.96	7	18	1.15	3.53	15	23	1.64	3.10	17	11	2.25	1.67
breast	C50	2964	28	102.29	1.30	477	0	104.02	0.00	648	3	89.38	0.37	579	1	83.90	0.13
vulva	C51	57	0	1.80	0.00	6	0	0.95	0.00	9	0	0.93	0.00	24	0	2.79	0.00
vagina	C52	13	0	0.45	0.00	4	0	0.69	0.00	5	0	0.65	0.00	1	0	0.10	0.00
cervix	C53	346	0	11.09	0.00	71	0	15.67	0.00	73	0	10.01	0.00	71	0	9.71	0.00
corpus uteri	C54	338	0	11.89	0.00	46	0	10.11	0.00	96	0	12.79	0.00	67	0	10.12	0.00
uterus nos	C55	27	0	0.94	0.00	7	0	1.38	0.00	9	0	1.08	0.00	4	0	0.56	0.00
ovary	C56	531	0	17.64	0.00	82	0	17.56	0.00	128	0	17.71	0.00	126	0	17.48	0.00
other female genital	C57	13	0	0.46	0.00	4	0	0.90	0.00	2	0	0.13	0.00	0	0	0.00	0.00
placenta	C58	1	0	0.02	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00
penis	C60	0	31	0.00	1.32	0	7	0.00	1.49	0	8	0.00	1.12	0	10	0.00	1.50
prostate	C61	0	1750	0.00	80.36	0	360	0.00	70.84	0	460	0.00	62.96	0	464	0.00	68.64
testis	C62	0	172	0.00	5.12	0	23	0.00	4.55	0	32	0.00	3.92	0	35	0.00	4.42
other male genital	C63	0	6	0.00	0.29	0	1	0.00	0.18	0	0	0.00	0.00	0	1	0.00	0.13
kidney	C64	147	267	4.91	11.47	24	58	4.73	12.08	40	54	5.02	7.83	32	61	4.33	9.38
renal pelvis	C65	9	8	0.27	0.41	0	6	0.00	1.29	0	3	0.00	0.37	1	1	0.11	0.17
ureter	C66	16	10	0.51	0.45	0	2	0.00	0.37	0	2	0.00	0.29	0	3	0.00	0.50
bladder	C67	253	572	7.83	25.54	38	79	7.32	16.57	62	134	7.38	19.47	48	133	6.04	20.77
other urinary	C68	2	8	0.06	0.32	1	1	0.21	0.22	0	3	0.00	0.37	2	0	0.28	0.00

NWHB				SEHB				SHB				WHB				
female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	
3	31	0.34	5.68	0	12	0.00	1.40	0	11	0.00	0.82	3	75	0.31	8.25	lip
3	4	0.47	0.76	1	6	0.11	0.73	2	6	0.13	0.51	2	11	0.19	1.40	base of tongue
2	11	0.30	2.16	8	12	0.88	1.52	10	22	0.58	1.79	6	15	0.69	1.69	other tongue
0	2	0.00	0.25	3	1	0.25	0.09	3	1	0.20	0.08	3	4	0.21	0.45	gum
2	4	0.23	0.95	4	2	0.49	0.24	5	16	0.44	1.29	2	9	0.31	0.99	floor of mouth
1	1	0.15	0.25	1	1	0.12	0.13	1	10	0.08	0.82	1	5	0.11	0.64	palate
6	4	1.05	0.78	4	2	0.47	0.18	3	9	0.21	0.71	5	3	0.58	0.30	other mouth
4	7	0.56	1.29	3	7	0.30	0.77	6	15	0.35	1.24	5	10	0.65	1.19	parotid
1	1	0.12	0.10	2	3	0.19	0.42	7	6	0.50	0.47	2	2	0.21	0.24	other salivary
1	8	0.12	1.69	2	9	0.17	1.06	0	5	0.00	0.42	3	5	0.35	0.59	tonsil
1	4	0.25	0.72	0	3	0.00	0.37	1	6	0.09	0.52	0	5	0.00	0.64	oropharynx
1	4	0.22	0.93	1	9	0.08	1.02	0	9	0.00	0.73	2	9	0.17	1.06	nasopharynx
4	9	0.78	1.74	3	10	0.21	1.13	3	21	0.20	1.81	1	7	0.05	0.78	pyriform
2	0	0.26	0.00	4	3	0.46	0.38	8	6	0.51	0.54	3	6	0.37	0.73	hypopharynx
1	4	0.20	0.71	1	4	0.08	0.45	4	13	0.25	1.13	0	5	0.00	0.59	other mouth/pharynx
21	46	3.19	8.54	66	98	5.71	11.05	97	150	5.90	12.51	38	85	3.46	9.43	oesophagus
47	104	7.10	18.45	78	156	7.32	17.86	107	194	6.77	15.56	85	151	7.89	16.15	stomach
6	6	1.06	1.24	9	12	0.84	1.38	11	12	0.77	1.00	7	16	0.72	1.90	small intestine
214	210	34.53	36.76	264	301	24.87	34.26	460	477	30.36	39.39	236	325	22.78	35.17	colon
24	34	3.67	6.26	23	44	2.36	4.92	24	48	1.62	3.91	32	65	3.04	7.28	rectosigmoid
32	100	4.41	18.29	95	170	9.82	19.26	173	259	12.27	21.36	86	181	7.88	20.42	rectum
10	4	1.65	0.68	5	6	0.52	0.73	6	8	0.38	0.75	1	5	0.07	0.50	anus
1	15	0.22	2.70	13	32	1.13	3.64	21	27	1.27	2.19	11	19	1.20	2.10	liver
10	3	1.36	0.45	17	5	1.76	0.69	34	6	2.04	0.44	8	11	0.76	1.23	gallbladder
11	18	1.51	3.29	20	18	1.69	2.07	11	30	0.75	2.43	11	19	0.87	2.05	other biliary
51	66	7.43	11.18	78	89	7.40	10.54	142	128	9.14	10.52	110	90	9.82	9.37	pancreas
5	2	0.83	0.45	9	15	0.84	1.75	17	17	0.98	1.32	8	7	0.61	0.75	other digestive
0	2	0.00	0.31	1	3	0.10	0.33	3	0	0.18	0.00	2	4	0.31	0.47	nasal cavity/middle ear
2	5	0.23	0.75	2	3	0.13	0.32	6	5	0.33	0.42	2	9	0.24	1.16	sinuses
2	23	0.27	4.51	7	48	0.78	5.58	17	67	1.29	5.59	3	42	0.37	4.83	larynx
1	0	0.27	0.00	2	0	0.15	0.00	1	2	0.05	0.16	1	0	0.09	0.00	trachea
140	345	21.72	61.53	233	513	22.61	57.19	338	687	22.58	56.08	199	421	18.61	45.57	lung
0	0	0.00	0.00	0	1	0.00	0.14	2	4	0.14	0.34	0	0	0.00	0.00	thymus
0	1	0.00	0.21	4	1	0.38	0.11	1	6	0.08	0.46	4	8	0.35	0.81	mediastinum
0	0	0.00	0.00	0	0	0.00	0.00	1	0	0.04	0.00	0	0	0.00	0.00	other chest
5	4	0.90	0.60	2	2	0.20	0.18	9	15	0.57	0.95	5	7	0.47	0.74	bones, joints of limbs
1	5	0.22	1.10	2	6	0.19	0.63	5	6	0.43	0.46	5	5	0.50	0.61	bones, joints head and trunk
56	36	10.60	7.15	137	66	14.40	7.42	195	118	13.79	9.59	104	56	12.15	6.54	melanoma skin
630	905	94.88	160.43	1070	1318	100.80	148.86	1958	2445	131.50	199.02	1102	1616	104.81	173.93	non-melanoma skin
1	2	0.27	0.36	0	3	0.00	0.34	0	10	0.00	0.84	1	7	0.16	0.91	mesothelioma
0	2	0.00	0.42	0	0	0.00	0.00	0	5	0.00	0.41	1	2	0.11	0.25	Kaposi's sarcoma
1	1	0.23	0.21	2	5	0.20	0.54	2	3	0.13	0.27	1	0	0.13	0.00	peripheral nerves
4	1	0.53	0.20	5	1	0.46	0.11	4	2	0.33	0.17	5	3	0.41	0.30	peritoneum
5	15	1.18	2.75	15	21	1.48	2.37	23	43	1.64	3.36	14	11	1.20	1.19	connective tissues
480	10	91.82	1.75	777	11	85.21	1.30	1253	5	96.42	0.37	741	6	90.90	0.80	breast
10	0	1.52	0.00	14	0	1.31	0.00	29	0	1.67	0.00	12	0	1.03	0.00	vulva
4	0	0.42	0.00	10	0	1.07	0.00	4	0	0.29	0.00	5	0	0.64	0.00	vagina
42	0	8.82	0.00	99	0	11.06	0.00	114	0	9.16	0.00	69	0	9.07	0.00	cervix
68	0	13.59	0.00	116	0	12.85	0.00	194	0	14.94	0.00	101	0	12.82	0.00	corpus uteri
10	0	2.11	0.00	7	0	0.79	0.00	9	0	0.49	0.00	15	0	1.46	0.00	uterus nos
106	0	19.40	0.00	186	0	19.95	0.00	261	0	19.83	0.00	142	0	16.25	0.00	ovary
4	0	0.76	0.00	1	0	0.12	0.00	2	0	0.15	0.00	3	0	0.24	0.00	other female genital
0	0	0.00	0.00	0	0	0.00	0.00	1	0	0.08	0.00	0	0	0.00	0.00	placenta
0	10	0.00	2.05	0	12	0.00	1.36	0	5	0.00	0.42	0	13	0.00	1.49	penis
0	408	0.00	68.07	0	715	0.00	79.72	0	926	0.00	72.46	0	668	0.00	65.49	prostate
0	19	0.00	3.80	0	36	0.00	3.63	0	90	0.00	6.46	0	39	0.00	4.52	testis
0	0	0.00	0.00	0	1	0.00	0.10	0	5	0.00	0.36	0	0	0.00	0.00	other male genital
34	56	6.51	10.67	49	81	4.65	9.48	64	103	4.53	8.33	43	76	5.03	9.03	kidney
0	5	0.00	0.84	1	4	0.08	0.50	3	2	0.20	0.14	3	2	0.23	0.13	renal pelvis
0	4	0.00	0.77	2	1	0.16	0.14	0	5	0.00	0.38	4	2	0.29	0.22	ureter
36	121	6.32	20.29	66	178	6.30	19.89	99	263	6.25	21.45	38	159	3.64	16.76	bladder
2	1	0.26	0.25	1	3	0.08	0.42	0	4	0.00	0.32	0	1	0.00	0.12	other urinary

CONTINUED *Table A5.6 Case numbers and European age-standardised incidence rates: by site, sex and health board area of residence, 1994-1998*

		EHB				MHB				MWHB				NEHB			
cancer site	**ICD 10 code**	**female cases 1994-8**	**male cases 1994-8**	**female EASR***	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**	**female cases 1994-8**	**male cases 1994-8**	**female EASR**	**male EASR**
eye	C69	37	19	1.18	0.80	2	9	0.42	1.89	7	8	0.68	1.16	11	9	1.54	1.36
meninges	C70	4	1	0.14	0.03	0	0	0.00	0.00	3	2	0.26	0.28	0	1	0.00	0.18
brain	C71	193	244	6.21	9.20	26	33	4.82	6.66	41	57	5.15	7.87	43	65	5.86	9.29
spinal cord	C72	8	11	0.23	0.41	0	2	0.00	0.35	1	1	0.09	0.16	1	5	0.10	0.61
thyroid	C73	73	24	2.25	0.91	11	7	2.02	1.59	18	9	2.32	1.28	18	6	2.61	0.88
adrenal	C74	5	7	0.18	0.24	3	4	0.57	0.79	1	1	0.15	0.14	1	6	0.15	0.88
other endocrine	C75	4	6	0.13	0.20	1	2	0.20	0.40	0	1	0.00	0.13	1	2	0.14	0.18
ill-defined site	C76	35	16	1.00	0.79	7	3	1.35	0.62	19	8	2.21	1.12	11	9	1.27	1.28
lymph nodes	C77	1	1	0.03	0.04	0	0	0.00	0.00	0	1	0.00	0.13	1	1	0.07	0.09
unknown primary site	C80	603	581	18.16	25.89	113	107	20.99	21.93	164	170	18.85	24.26	141	160	16.96	24.17
Hodgkin's disease	C81	86	100	2.37	3.36	6	9	0.98	1.72	23	14	2.86	1.79	12	19	1.68	2.40
follicular non-Hodgkin's lymphoma	C82	53	55	1.85	2.25	10	8	2.22	1.84	8	4	1.11	0.56	7	13	0.88	1.92
diffuse non-Hodgkin's lymphoma	C83	133	116	4.18	4.75	21	27	4.36	5.58	38	42	4.77	6.08	27	40	3.66	5.76
peripheral and cutaneous T cell lymphoma	C84	18	26	0.56	1.06	1	1	0.21	0.20	3	3	0.39	0.43	2	3	0.35	0.43
other and unspecified NHL	C85	136	127	4.38	5.10	23	29	4.55	6.62	35	37	4.46	5.31	27	33	3.63	4.99
malignant immunoproliferative disease	C88	4	3	0.09	0.13	0	2	0.00	0.35	1	4	0.14	0.57	0	3	0.00	0.43
multiple myeloma	C90	111	138	3.45	6.06	22	32	4.23	6.69	30	46	3.61	6.65	33	47	3.96	7.36
lymphoid leukaemia	C91	120	147	3.68	6.05	30	33	6.17	6.87	38	44	4.17	6.10	26	53	3.31	7.43
myeloid leukaemia	C92	78	91	2.44	3.50	14	19	2.96	3.51	14	28	1.73	3.71	16	25	2.18	3.93
monocytic leukaemia	C93	6	2	0.19	0.08	0	0	0.00	0.00	1	0	0.13	0.00	1	0	0.11	0.00
other specified leukaemia	C94	5	10	0.18	0.44	0	2	0.00	0.46	1	3	0.17	0.48	12	6	1.36	0.89
unspecified leukaemia	C95	32	24	0.96	1.06	3	4	0.51	0.74	10	12	0.99	1.65	6	4	0.62	0.75
other lymphoid and haematopoietic	C96	1	0	0.02	0.00	1	0	0.28	0.00	0	1	0.00	0.14	0	1	0.00	0.14
all malignant cancers		**15464**	**14924**	**494.63**	**654.64**	**2235**	**2587**	**441.89**	**534.84**	**3086**	**3547**	**382.90**	**498.14**	**3211**	**3753**	**421.47**	**564.50**
in situ cancers																	
oral cavity, oesophagus and stomach	D00	10	12	0.31	0.54	2	6	0.24	1.31	5	1	0.64	0.13	2	2	0.28	0.26
other digestive	D01	17	29	0.48	1.34	4	4	0.79	0.77	6	6	0.85	0.94	9	16	1.39	2.37
middle ear and respiratory	D02	8	22	0.24	1.02	0	8	0.00	1.63	3	6	0.51	0.86	0	2	0.00	0.26
melanoma	D03	185	76	6.14	3.31	27	12	6.00	2.56	33	18	4.53	2.58	41	17	5.61	2.57
carcinoma of skin	D04	1135	422	35.34	18.59	184	97	34.13	20.15	155	72	18.04	10.13	142	62	18.64	9.75
breast	D05	176	1	6.37	0.04	26	0	6.17	0.00	19	0	2.88	0.00	24	0	3.69	0.00
cervix	D06	1704	0	47.18	0.00	205	0	43.49	0.00	197	0	26.40	0.00	350	0	48.54	0.00
other genital	D07	30	16	1.07	0.63	3	1	0.56	0.22	2	4	0.25	0.64	6	5	0.95	0.82
other sites	D09	9	21	0.30	0.94	1	3	0.16	0.55	1	1	0.17	0.13	3	19	0.40	2.74
all in situ cancers		**3274**	**599**	**97.43**	**26.41**	**452**	**131**	**91.54**	**27.19**	**421**	**108**	**54.27**	**15.41**	**577**	**123**	**79.50**	**18.77**
benign tumours																	
meninges	D32	88	26	2.87	1.09	15	3	3.13	0.71	17	10	2.27	1.48	13	7	1.85	1.18
brain	D33	41	34	1.39	1.19	4	5	1.01	1.08	12	7	1.51	0.96	8	3	1.13	0.43
endocrine	D35	36	35	1.08	1.36	8	8	1.64	1.58	11	14	1.57	1.97	6	10	0.86	1.35
all benign tumours		**165**	**95**	**5.34**	**3.64**	**27**	**16**	**5.78**	**3.37**	**40**	**31**	**5.35**	**4.41**	**27**	**20**	**3.84**	**2.96**
neoplasms of uncertain behaviour																	
oral and digestive	D37	59	60	1.69	2.54	12	5	2.00	1.02	9	7	1.03	0.92	18	9	2.18	1.23
respiratory	D38	1	0	0.02	0.00	0	1	0.00	0.28	0	0	0.00	0.00	1	0	0.10	0.00
female genital	D39	24	0	0.81	0.00	3	0	0.59	0.00	7	0	1.09	0.00	7	0	0.97	0.00
male genital	D40	0	2	0.00	0.08	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00
urinary	D41	3	5	0.10	0.21	1	1	0.25	0.32	1	1	0.09	0.14	1	1	0.18	0.13
meninges	D42	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00
brain and CNS	D43	10	6	0.31	0.21	2	0	0.41	0.00	1	4	0.09	0.55	1	3	0.13	0.41
endocrine	D44	11	3	0.35	0.07	1	4	0.16	0.66	0	1	0.00	0.13	2	2	0.29	0.22
polycythaemia vera	D45	26	28	0.75	1.25	7	7	1.48	1.50	7	10	0.82	1.34	7	6	0.90	0.96
myelodysplastic syndromes	D46	36	60	1.03	2.70	6	12	0.97	2.32	15	11	1.74	1.47	14	19	1.78	2.70
other uncertain lymphoid, haematopoietic	D47	64	51	1.91	2.03	7	8	1.53	1.62	19	12	2.16	1.69	15	14	1.91	1.92
other sites	D48	35	12	1.12	0.45	3	3	0.65	0.61	4	5	0.53	0.62	5	5	0.64	0.62
all neoplasms of uncertain behaviour		**269**	**227**	**8.09**	**9.54**	**42**	**41**	**8.04**	**8.33**	**63**	**51**	**7.55**	**6.86**	**71**	**59**	**9.08**	**8.19**
all registered cancers		**19172**	**15845**	**605.52**	**694.20**	**2756**	**2775**	**547.23**	**573.72**	**3610**	**3737**	**450.08**	**524.87**	**3886**	**3955**	**513.88**	**594.43**

NWHB				SEHB				SHB				WHB				
female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	female cases 1994-8	male cases 1994-8	female EASR	male EASR	
10	7	1.95	1.37	10	16	1.07	1.73	14	22	1.21	1.78	11	7	1.15	0.82	eye
0	0	0.00	0.00	0	0	0.00	0.00	4	2	0.23	0.17	1	1	0.09	0.09	meninges
24	44	4.56	8.54	52	67	5.61	7.47	83	126	6.04	10.22	54	84	6.03	9.81	brain
0	0	0.00	0.00	2	4	0.17	0.40	8	1	0.62	0.07	0	2	0.00	0.20	spinal cord
13	6	2.29	1.12	25	10	2.56	1.14	30	22	2.12	1.88	24	11	2.84	1.30	thyroid
0	4	0.00	0.76	2	2	0.22	0.24	5	4	0.39	0.34	2	1	0.25	0.12	adrenal
2	3	0.30	0.57	3	3	0.33	0.30	2	3	0.09	0.23	2	2	0.28	0.16	other endocrine
9	6	1.52	1.06	27	13	2.19	1.52	12	5	0.70	0.49	14	5	1.47	0.48	ill-defined site
0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0	1	0.00	0.09	lymph nodes
126	109	18.44	19.08	147	172	13.16	19.58	229	277	13.57	21.75	152	179	14.44	19.30	unknown primary site
9	12	1.78	2.35	15	16	1.44	1.67	24	38	1.77	2.61	13	16	1.56	1.75	Hodgkin's disease
7	6	1.39	1.08	12	16	1.26	1.98	23	22	1.83	1.77	13	14	1.72	1.80	follicular non-Hodgkin's lymphoma
27	28	4.63	5.10	32	50	3.27	5.58	41	59	2.91	4.74	26	44	2.87	4.63	diffuse non-Hodgkin's lymphoma
3	2	0.53	0.49	5	4	0.56	0.43	5	8	0.42	0.68	5	3	0.64	0.27	peripheral and cutaneous T cell lymphoma
24	29	4.44	5.67	44	55	4.49	6.14	69	100	4.81	8.09	46	49	4.79	5.56	other and unspecified NHL
0	2	0.00	0.28	3	2	0.22	0.22	7	3	0.49	0.30	1	5	0.09	0.53	malignant immunoproliferative disease
32	40	5.00	7.20	33	41	3.16	4.56	91	94	5.95	7.56	38	55	3.18	5.95	multiple myeloma
17	34	2.62	5.95	26	37	2.68	4.15	74	127	4.99	10.07	30	56	2.97	6.15	lymphoid leukaemia
18	19	3.16	3.40	24	23	2.54	2.38	42	53	2.97	4.03	29	35	3.08	3.81	myeloid leukaemia
0	1	0.00	0.20	0	1	0.00	0.10	0	4	0.00	0.33	0	2	0.00	0.20	monocytic leukaemia
1	4	0.28	0.84	1	1	0.11	0.10	6	5	0.51	0.39	0	4	0.00	0.45	unspecified leukaemia
5	14	0.87	2.28	28	44	2.55	5.06	10	14	0.62	1.27	3	8	0.20	0.71	unspecified leukaemia
0	1	0.00	0.14	1	1	0.12	0.11	0	0	0.00	0.00	1	1	0.14	0.06	other lymphoid and haematopoietic
2435	**3054**	**408.60**	**542.80**	**4017**	**4641**	**401.29**	**523.56**	**6533**	**7327**	**455.12**	**591.84**	**3761**	**4887**	**392.60**	**526.00**	**all malignant cancers**
																in situ cancers
4	2	0.52	0.43	5	4	0.48	0.44	6	7	0.36	0.63	4	15	0.35	1.60	oral cavity, oesophagus and stomach
7	15	1.19	2.65	8	10	0.85	1.11	12	21	0.75	1.71	9	4	1.06	0.44	other digestive
3	7	0.69	1.34	2	5	0.26	0.60	5	7	0.33	0.52	0	6	0.00	0.65	middle ear and respiratory
24	10	4.97	1.70	38	18	3.95	2.06	106	59	8.57	4.76	72	51	8.21	6.02	melanoma
112	31	16.83	5.40	254	136	24.32	15.84	443	169	30.42	13.63	239	119	21.60	12.83	carcinoma of skin
30	1	6.63	0.20	31	0	3.59	0.00	49	0	3.92	0.00	37	0.00	5.09	0.00	breast
186	0	39.98	0.00	373	0	40.46	0.00	503	0	37.64	0.00	263	0.00	33.25	0.00	cervix
3	2	0.51	0.31	1	3	0.14	0.34	6	3	0.48	0.20	2	6	0.20	0.74	other genital
0	3	0.00	0.60	1	5	0.08	0.60	2	3	0.18	0.25	5	6	0.47	0.75	other sites
369	**71**	**71.32**	**12.63**	**713**	**181**	**74.13**	**20.99**	**1132**	**269**	**82.65**	**21.70**	**631**	**207**	**70.23**	**23.03**	**all in situ cancers**
																benign tumours
10	5	2.11	0.91	23	6	2.75	0.69	46	14	3.42	1.18	29	17	3.09	2.10	meninges
9	4	1.91	0.85	10	5	1.07	0.60	19	9	1.57	0.71	13	9	1.87	1.10	brain
5	7	1.02	1.43	6	11	0.65	1.24	25	19	2.01	1.49	8	15	1.12	1.96	endocrine
24	**16**	**5.04**	**3.19**	**39**	**22**	**4.47**	**2.53**	**90**	**42**	**7.00**	**3.38**	**50**	**41**	**6.08**	**5.16**	**all benign tumours**
																neoplasms of uncertain behaviour
15	18	2.45	3.31	29	24	2.84	2.54	31	27	2.10	2.12	14	14	1.52	1.61	oral and digestive
0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00	0	0	0.00	0.00	respiratory
5	0	0.68	0.00	14	0	1.45	0.00	1	0	0.07	0.00	10	0	1.31	0.00	female genital
0	3	0.00	0.61	0	1	0.00	0.13	0	0	0.00	0.00	0	1	0.00	0.11	male genital
0	2	0.00	0.40	0	2	0.00	0.25	0	2	0.00	0.16	2	11	0.26	1.17	urinary
0	0	0.00	0.00	0	0	0.00	0.00	0	2	0.00	0.15	0	0	0.00	0.00	meninges
1	1	0.14	0.25	2	3	0.20	0.28	0	5	0.00	0.40	0	1	0.00	0.14	brain and CNS
3	2	0.52	0.37	5	5	0.50	0.54	5	1	0.36	0.07	2	3	0.28	0.27	endocrine
3	1	0.51	0.25	7	7	0.70	0.75	8	18	0.56	1.49	6	7	0.54	0.85	polycythaemia vera
12	10	1.77	1.54	13	15	1.08	1.69	56	58	3.30	4.43	3	5	0.18	0.50	myelodysplastic syndromes
10	8	1.69	1.48	11	24	1.00	2.80	20	28	1.33	2.27	20	18	1.86	1.80	other uncertain lymphoid, haematopoietic
9	5	1.76	0.92	11	4	1.23	0.49	6	11	0.42	0.95	5	7	0.60	0.77	other sites
58	**50**	**9.52**	**9.13**	**92**	**85**	**9.00**	**9.47**	**127**	**152**	**8.14**	**12.04**	**62**	**67**	**6.55**	**7.22**	**all neoplasms of uncertain behaviour**
2886	**3191**	**494.47**	**567.75**	**4861**	**4929**	**488.89**	**556.55**	**7882**	**7790**	**552.86**	**629.01**	**4504**	**5202**	**475.48**	**561.40**	**all registered cancers**

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