

# Trends in Cancer Survival in Scotland, 1980-2004

ISD, National Services Scotland

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## Summary

This report provides a summary of the data available for analysis, and highlights some of the differences in survival trends for different cancers in relation to period of diagnosis, age and sex.

For more detailed information about each cancer, readers should refer to the individual cancer pages which can be found on our web site ([www.isdscotland/cancer](http://www.isdscotland/cancer)).

## Data and Methods

Data and methods are described in detail in Trends in Cancer Survival in Scotland 1971-1995, ISD 2000 ([http://www.isdscotland.org/isd/files/trends\\_1971-95.pdf](http://www.isdscotland.org/isd/files/trends_1971-95.pdf)).

In brief, observed survival is an estimate of the probability that a group of patients with a given disease will be alive at a specified time-point after diagnosis, irrespective of cause of death. Observed survival is always likely to be lower in older patients because they are at a greater risk of dying from other causes and therefore makes it difficult to compare survival between age groups or between populations with different age distributions.

Relative survival is an estimate of the observed survival divided by the expected probability of survival in the general population. This can be thought of as a measure of the net survival expectation after contracting cancer, or the probability of survival from cancer in the absence of other causes of death.

## Data available for analysis

The numbers of cases included in the analyses, by cancer and period of diagnosis, are shown in table 1. The highest numbers were seen for lung, colorectal, breast, prostate and bladder cancer, accounting for 57% of all malignancies in the period 1980-2004. Even with this large data set covering the whole of Scotland, the number of cases available for analysis was small for some cancers, such as cancer of the thyroid, particularly when broken down by age and sex.

**Table 1**

### Number of patients entered into survival analysis by cancer and period of diagnosis

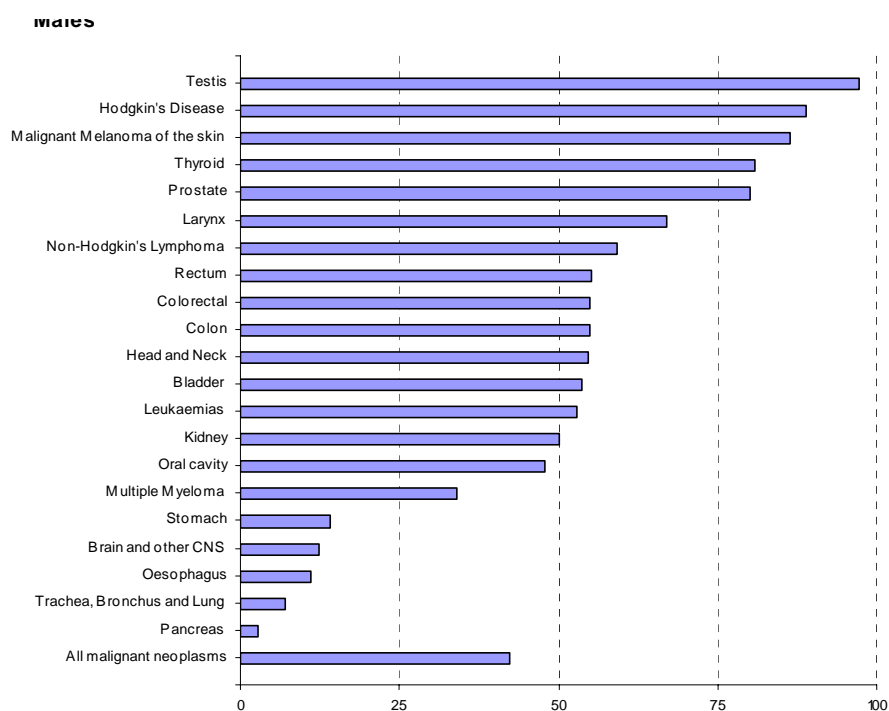
Cancer	Period of diagnosis					Total
	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	
Bladder (ICD-9 188; ICD-10 C67)	5,148	5,568	6,009	5,049	3,464	25,238
Brain and other CNS (ICD-9 191-192; ICD-10 C70-C72)	1,385	1,285	1,559	1,597	1,763	7,589
Cervix Uteri (ICD-9 180; ICD-10 C53)	2,027	2,096	2,012	1,696	1,408	9,239
Colon (ICD-9 153; ICD-10 C18)	8,163	8,787	9,564	9,981	10,145	46,640
Colorectal (ICD-9 153-154; ICD-10 C18-C20)	12,404	13,143	14,384	15,292	15,375	70,598
Corpus Uteri (ICD-9 182; ICD-10 C54)	1,514	1,550	1,467	1,902	2,067	8,500
Female Breast (ICD-9 174; ICD-10 C50)	11,592	12,224	14,451	15,910	16,779	70,956
Head and Neck (ICD-9, 140-149, 160-161; ICD-10 C00-C14, C30-C32)	3,245	3,438	3,865	4,414	4,487	19,449
Hodgkin's Disease (ICD-9 201; ICD-10 C81)	695	618	636	595	610	3,154
Kidney (ICD-9 189.0-189.1; ICD-10 C64-C65)	1,808	1,964	2,236	2,572	2,610	11,190
Larynx (ICD-9 161; ICD-10 C32)	1,052	1,120	1,342	1,378	1,385	6,277
Leukaemias (ICD-9 202.4, 204-208; ICD-10 C91-C95)	1,946	2,153	2,447	2,728	2,836	12,110
Malignant Melanoma of skin (ICD-10 C43)	1,453	2,129	2,454	3,029	3,501	12,566
Multiple Myeloma (ICD-9 203.0-203.1, 238.6; ICD-10 C90)	1,129	1,195	1,392	1,360	1,522	6,598
Non-Hodgkin's Lymphoma (ICD-9 200, 202.0-202.2, 202.8; ICD-10 C82-C85)	2,331	2,897	3,338	3,822	3,813	16,201
Oesophagus (ICD-9 150; ICD-10 C15)	2,517	2,601	3,220	3,536	3,620	15,494
Oral cancer (ICD-9 141, 143-145; ICD-10 C01-C06)	867	1,054	1,231	1,453	1,594	6,199
Ovary (ICD-9 183.0, 236.2 (M8440-M8490); ICD-10 C56)	2,280	2,462	2,684	2,819	2,799	13,044
Pancreas (ICD-9 157; ICD-10 C25)	2,912	2,740	2,664	2,699	2,728	13,743
Prostate (ICD-9 185; ICD-10 C61)	4,537	5,476	7,063	9,323	10,960	37,359
Rectum (ICD-9 154; ICD-10 C19-C20)	4,241	4,356	4,820	5,311	5,230	23,958
Stomach (ICD-9 151; ICD-10 C16)	5,788	5,553	4,793	4,415	4,001	24,550
Testis (ICD-9 186; ICD-10 C62)	611	692	837	890	991	4,021
Thyroid (ICD-9 193; ICD-10 C73)	440	473	494	583	660	2,650
Trachea, Bronchus and Lung (ICD-9 162; ICD-10 C33-C34)	20,774	20,691	20,923	20,919	20,243	103,550
All malignant neoplasms <sup>1</sup>	95,253	100,577	109,766	116,842	118,308	540,746

<sup>1</sup>ICD-9 140-208; ICD-10 C00-C97 excluding non-melanoma skin cancer (ICD-9 173; ICD-10 C44)

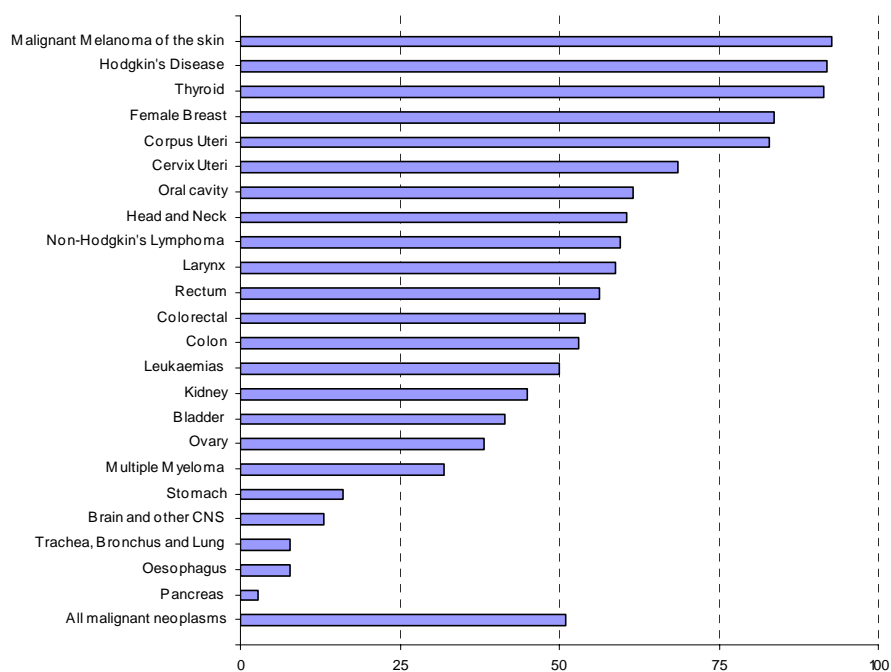
Improvements in diagnostic techniques, or the introduction of screening tests, can lead to the artificial appearance of an increase in risk, with cancers being diagnosed earlier, at a less advanced stage. It is possible that some of these cancers with a favourable prognosis would have never presented clinically during the patient's lifetime. This can impact on the assessment of trends in cancer survival over time so that significant trends in incidence should be taken into account when interpreting cancer survival trends.

## Cancer survival trends

**Figure 1**  
**Relative survival (%) at five years after diagnosis by cancer and sex**  
 patients diagnosed 2000-2004



**Females**



Percentage survival at five years after diagnosis varied from under 5% for cancer of the pancreas in males, to over 95% for testis cancer (figure 1 and table 2). Percentage survival was lowest in patients with cancers which often present at an advanced stage and are less amenable to treatment (examples being cancers of the pancreas, the lung and the oesophagus). Percentage survival tended to be better for cancers with which patients are more likely to present at an early stage (for example, cancers of the corpus uteri, bladder, thyroid, and malignant melanoma of the skin), for cancers which can be detected early by screening programmes (for example, cancers of the cervix uteri and breast), and for cancers for which there have been major advances in treatment (for example, cancer of the testis and Hodgkin's disease).

**Table 2**  
**Trends in survival by cancer, sex and period of diagnosis**

Relative survival (%) at one and five years; patients aged 15-99, diagnosed 1980-1984 to 2000-2004

Cancer	Sex	Relative survival (%) at 1 year					Relative survival (%) at 5 years					Change in relative survival at 5 years	
		1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	Whole period <sup>1</sup>	Between periods <sup>2</sup>
Bladder (ICD-9 188; ICD-10 C67)	Male	81.3	82.0	85.6	82.9	75.5	65.4	66.6	71.1	67.3	53.6	-11.8	-4%
	Female	70.1	74.0	73.4	70.3	61.4	56.3	60.0	61.2	54.5	41.5	-14.8	-6%
Brain and other CNS (ICD-9 191-192; ICD-10 C70-C72)	Male	25.1	28.5	35.0	37.4	34.7	12.0	12.6	16.6	18.4	12.4	0.3	1%
	Female	27.8	27.0	36.1	31.9	31.3	16.6	13.3	22.5	17.3	13.0	-3.6	-5%
Breast (Female) (ICD-9 174; ICD-10 C50)	Female	88.9	90.2	92.9	94.9	96.3	64.0	67.5	75.3	80.1	83.7	19.7	6%
Cervix Uteri (ICD-9 180; ICD-10 C53)	Female	77.7	82.2	84.5	85.8	87.3	53.5	63.3	65.1	68.8	68.5	15.1	5%
Colon (ICD-9 153; ICD-10 C18)	Male	56.8	61.8	66.8	71.7	74.1	37.4	41.4	45.1	50.8	54.8	17.5	8%
	Female	55.1	60.1	65.5	68.6	69.8	36.8	40.4	46.3	50.2	52.9	16.1	8%
Colorectal (ICD-9 153-154; ICD-10 C18-C21)	Male	58.8	63.8	68.8	73.4	76.1	35.9	40.2	44.1	50.8	54.9	19.0	9%
	Female	57.4	61.2	67.3	70.6	72.3	36.1	39.9	46.5	51.0	53.9	17.8	8%
Corpus Uteri (ICD-9 182; ICD-10 C54)	Female	84.2	87.3	88.5	91.5	92.8	71.5	75.6	76.7	81.1	82.9	11.4	3%
Head and Neck (ICD-9 140-149, 160-161; ICD-10 C00-C14, C30-C32)	Male	78.5	78.6	76.9	78.3	78.9	58.0	54.5	49.1	53.5	54.7	-3.2	-1%
	Female	72.8	74.0	74.0	76.5	80.2	54.2	54.4	53.2	55.6	60.7	6.5	2%
Hodgkin's Disease (ICD-9 201; ICD-10 C81)	Male	82.7	80.9	85.6	91.7	94.2	68.6	68.6	77.3	85.0	89.0	20.4	5%
	Female	80.4	83.3	81.5	90.2	96.1	65.3	68.3	67.8	82.3	91.9	26.6	7%
Kidney (ICD-9 189.0-189.1; ICD-10 C64-C65)	Male	51.5	58.1	61.1	62.7	67.6	35.4	39.5	42.0	44.0	50.1	14.6	7%
	Female	46.6	53.7	54.7	60.8	60.6	30.9	36.2	40.3	44.8	44.9	14.0	8%
Larynx (ICD-9 161; ICD-10 C32)	Male	85.1	87.3	86.4	85.7	85.0	65.9	65.8	60.8	65.0	67.1	1.2	0%
	Female	81.7	82.7	82.1	80.8	83.9	60.0	62.5	60.5	60.5	58.8	-1.2	0%
Leukaemias (ICD-9 202.4, 204-208; ICD-10 C91-C95)	Male	51.5	55.4	63.1	71.5	70.8	25.9	34.5	41.1	52.0	53.0	27.1	15%
	Female	48.6	51.1	60.9	64.0	65.3	25.0	30.4	43.8	47.3	50.0	24.9	15%
Malignant Melanoma of the skin (ICD-9 172; ICD-10 C43)	Male	85.4	93.4	94.6	95.8	95.4	61.8	75.5	81.0	84.2	86.5	24.7	7%
	Female	96.1	97.5	97.8	98.8	98.4	81.1	89.6	92.7	94.5	92.8	11.8	3%
Multiple Myeloma (ICD-9 203.0-203.1, 238.6; ICD-10 C90)	Male	54.0	51.8	62.5	68.4	70.8	16.1	18.8	25.6	29.0	33.9	17.8	16%
	Female	58.2	56.3	63.6	67.6	66.4	20.5	24.1	26.0	31.2	32.0	11.5	9%
Non-Hodgkin's Lymphoma (ICD-9 200, 202.0-202.2, 202.8; ICD-10 C82-C85)	Male	54.1	61.7	67.5	69.4	74.0	34.7	45.7	48.4	54.5	59.1	24.4	11%
	Female	60.4	61.8	65.2	69.9	72.9	41.5	43.3	48.8	52.8	59.5	18.0	7%
Oesophagus (ICD-9 150; ICD-10 C15)	Male	19.6	23.1	26.3	31.6	38.1	4.5	5.1	6.8	9.9	11.0	6.6	20%
	Female	21.9	23.9	26.7	29.1	31.6	6.5	8.3	8.6	9.2	7.7	1.2	3%
Oral cavity (ICD-9 141, 143-145; ICD-10 C01-C06)	Male	70.9	72.1	71.5	76.3	76.2	45.4	42.3	43.0	46.9	47.9	2.5	1%
	Female	74.9	70.5	72.5	77.9	78.9	55.1	47.5	51.9	55.2	61.6	6.5	2%
Ovary (ICD-9 183.0, 236.2 (M8440-M8490); ICD-10 C56)	Female	52.0	54.3	57.3	66.2	67.0	30.2	30.2	31.9	40.6	38.1	8.0	5%
Pancreas (ICD-9 157; ICD-10 C25)	Male	11.0	11.7	12.7	14.0	14.6	3.6	4.0	2.9	2.6	2.7	-0.9	-6%
	Female	12.8	10.1	10.0	13.8	15.1	3.6	2.3	2.8	3.2	2.7	-0.9	-6%
Prostate (ICD-9 185; ICD-10 C61)	Male	78.8	81.6	84.7	91.1	94.2	45.7	51.6	58.9	71.1	80.1	34.5	12%
Rectum (ICD-9 154; ICD-10 C19-C20)	Male	62.0	67.0	72.0	76.0	79.2	33.6	38.2	42.5	50.9	55.2	21.5	10%
	Female	62.4	63.9	71.6	75.3	78.2	34.7	38.7	46.8	53.0	56.3	21.6	10%
Stomach (ICD-9 151; ICD-10 C16)	Male	24.8	25.9	28.4	35.8	37.2	8.7	9.9	10.5	14.1	14.0	5.3	10%
	Female	22.5	25.7	28.0	34.2	33.9	8.6	11.3	12.6	15.5	16.0	7.5	13%
Testis (ICD-9 186; ICD-10 C62)	Male	94.0	95.8	96.6	98.2	98.3	86.2	92.5	93.4	97.2	97.2	11.0	2%
Thyroid (ICD-9 193; ICD-10 C73)	Male	72.2	80.8	80.5	90.1	86.0	67.3	77.1	71.9	86.9	80.8	13.5	4%
	Female	79.5	79.7	88.6	84.4	93.1	78.6	77.4	87.2	81.4	91.5	12.9	3%
Trachea, Bronchus and Lung (ICD-9 162; ICD-10 C33-C34)	Male	20.7	21.2	21.9	25.0	26.0	6.2	6.2	6.8	6.8	7.0	0.8	2%
	Female	20.3	21.1	21.8	26.5	28.8	5.7	6.2	6.4	7.9	7.8	2.1	6%
All malignant neoplasms (ICD-9 140-208 (excl 173); ICD-10 C00-C97 (excl C44))	Male	43.1	46.7	51.4	57.3	60.5	25.5	29.1	33.2	39.0	42.2	16.8	11%
	Female	56.6	58.2	61.4	64.7	66.8	38.0	40.6	45.1	48.7	51.0	13.0	6%

<sup>1</sup>The change over the whole period is calculated as the difference between relative survival at 5 years in 1980-84 and 2000-2004; for Oral Cavity cancer in Males this was an increase of 2.5%

<sup>2</sup>The rate of change between periods is the annualised percent change between each time period; for males with cancer of the Oral Cavity this was equivalent to 1% increase per period.

For the majority of cancers, survival at one year after diagnosis has improved over the period surveyed (table 2), with the most improvement being seen in some of the lympho-

haematopoietic malignancies, probably due to the development and implementation of increasingly effective therapies.

Over the period surveyed, most cancers showed some improvement in survival at five years after diagnosis (table 2), and for some cancers this improvement was large: for malignant melanoma of the skin, percentage survival at five years after diagnosis in males increased from 61% in the period 1980-84 to 86% in the period 2000-04, an absolute increase of 25%. Over the same period the increase for females was 12%, from 81% (1980-84) to 93% (2000-04). These increases may reflect an increase in diagnosis of early stage disease following health education programmes aimed at encouraging earlier presentation and referral. Large absolute increases in percentage survival at five years were also seen for colorectal cancer (19% and 18% for males and females, respectively), Hodgkin's Disease (20% for males and 27% for females), and leukaemia (27% for males and 25% for females). The improvement observed for prostate cancer survival in the most recent periods is likely to reflect the introduction of prostate-specific antigen (PSA) testing, resulting in the diagnosis of some less 'aggressive' tumours (Brewster *et al*, 2000).

However, improvements in survival at five years were in many cases, smaller than at one year indicating that, although survival is improving, either because of earlier diagnosis or improved treatment, the majority of cancer patients are not being 'cured'. This is a common finding in studies of cancer survival (Clinical Outcomes Working Group, 1999). Cancers which were exceptions to this rule, and for which the increase over the period surveyed in percentage survival was greater at five years than at one year were malignant melanoma of the skin, Hodgkin's disease, breast cancer, corpus uteri, prostate, testicular cancer and leukaemias. The improvement in survival for malignant melanoma of the skin seems to be only partly explained by an increasing proportion of thinner tumours (MacKie *et al*, 1997). In Hodgkin's disease, there have been major improvements in treatment using combination chemotherapy and radiotherapy (Boyle *et al*, 1988). The improvement in survival for breast cancer is mainly likely to reflect the introduction and increasing use of systemic adjuvant therapy (Scottish Breast Cancer Focus Group *et al*, 1996) as well as the national breast screening programme. Likewise, survival has improved in testis cancer largely because of the advent of effective chemotherapy (Coleman *et al*, 1999).

At the other end of the scale there was either no improvement or a slight decrease over the period surveyed in survival at five years after diagnosis for cancer of the pancreas, cancers of the brain and larynx in females, and cancers of the head and neck in males. The lack of improvement for patients with head and neck cancers is largely an artefact of the large decrease in the proportion of lip tumours, which usually have an excellent prognosis. Survival at specific sites within the head and neck has generally improved. There may also be an impact of changes over time to a less favourable case-mix, both in terms of the distribution of anatomical subsites and in terms of the proportion of patients from deprived areas (Macfarlane *et al*, 1996) who tend to have a poorer prognosis.

The recent decrease in survival from bladder cancer is an artefact of classification. Over the period 1996 to 1999 there was a marked reduction in the numbers of registrations of invasive bladder carcinoma, reflecting a change in coding practice recommended by the European Network of Cancer Registries (ENCR) and subsequently by the United Kingdom Association of Cancer Registries (UKACR). Some cases classified and coded previously as invasive bladder cancer (ICD-10 C67) are now coded as carcinoma in situ of the bladder (D09.0) or neoplasms of uncertain or unknown behaviour of the bladder (D41.4). Survival from non-invasive bladder tumours is usually very high, so the re-classification of such tumours has led to an apparent decrease in survival from invasive bladder cancer.

For 'all malignant neoplasms', percentage survival at one year after diagnosis for males increased from 43% in the period 1980-84 to 61% in the period 2000-04, an absolute increase of 18%. The corresponding increase for females was from 57% to 67%, an absolute increase of 10%. This is less than the increase in males because there was a comparatively small improvement in survival over the period for breast and gynaecological cancers, which contribute a large proportion of the cancers in females, and for most of which survival is already relatively high, rather than because cancer survival has improved more in males than

in females for specific cancers. Meanwhile, survival at five years improved by 17% in males and 13% in females, that is, a annual average increase of 4.2% between periods in males and 3.3% between periods in females. 'All malignant neoplasms' includes a wide mix of cancers with different survival patterns and the improvement may mask a change in the proportions of cancers as well as representing a genuine improvement in survival over time.

**Table 3**  
**Median observed survival in years, by cancer and period of diagnosis**  
patients aged 15-74

Cancer	Period of diagnosis				
	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004
Bladder (ICD-9 188; ICD-10 C67)	6.0	7.1	8.2	6.4	-
Brain and other CNS (ICD-9 191-192; ICD-10 C70-C72)	0.3	0.4	0.6	0.6	0.7
Cervix Uteri (ICD-9 180; ICD-10 C53)	6.2	13.1	-	-	-
Colon (ICD-9 153; ICD-10 C18)	1.8	2.2	2.8	3.9	-
Colorectal (ICD-9 153-154; ICD-10 C18-C20)	1.9	2.3	2.9	4.1	-
Corpus Uteri (ICD-9 182; ICD-10 C54)	14.1	16.0	-	-	-
Female Breast (ICD-9 174; ICD-10 C50)	7.5	9.2	-	-	-
Head and Neck (ICD-9, 140-149, 160-161; ICD-10 C00-C14, C30-C32)	4.9	4.6	3.8	4.6	-
Hodgkin's Disease (ICD-9 201; ICD-10 C81)	15.3	-	-	-	-
Kidney (ICD-9 189.0-189.1; ICD-10 C64-C65)	1.0	1.6	1.9	2.5	-
Larynx (ICD-9 161; ICD-10 C32)	6.3	6.3	5.5	6.1	-
Leukaemias (ICD-9 202.4, 204-208; ICD-10 C91-C95)	1.4	1.7	2.6	4.4	-
Malignant Melanoma of skin (ICD-9 172; ICD-10 C43)	17.5	-	-	-	-
Multiple Myeloma (ICD-9 203.0-203.1, 238.6; ICD-10 C90)	1.6	1.5	2.1	2.6	1.9
Non-Hodgkin's Lymphoma (ICD-9 200, 202.0-202.2, 202.8; ICD-10 C82-C85)	1.9	3.3	4.2	5.7	-
Oesophagus (ICD-9 150; ICD-10 C15)	0.4	0.5	0.5	0.6	0.7
Oral cancer (ICD-9 141, 143-145; ICD-10 C01-C06)	3.8	3.2	3.1	4.1	-
Ovary (ICD-9 183.0, 236.2 (M8440-M8490); ICD-10 C56)	1.3	1.7	2.0	3.3	-
Pancreas (ICD-9 157; ICD-10 C25)	0.2	0.2	0.2	0.3	0.3
Prostate (ICD-9 185; ICD-10 C61)	3.1	3.6	4.6	6.2	-
Rectum (ICD-9 154; ICD-10 C19-C20)	2.1	2.6	3.0	4.5	-
Stomach (ICD-9 151; ICD-10 C16)	0.3	0.4	0.4	0.6	0.7
Testis (ICD-9 186; ICD-10 C62)	-	-	-	-	-
Thyroid (ICD-9 193; ICD-10 C73)	21.1	-	-	-	-
Trachea, Bronchus and Lung (ICD-9 162; ICD-10 C33-C34)	0.3	0.3	0.4	0.4	0.5
All malignant neoplasms <sup>1</sup>	1.1	1.5	1.9	2.8	-

<sup>1</sup>ICD-9 140-208; ICD-10 C00-C97 excluding non-melanoma skin cancer (ICD-9 173; ICD-10 C44)

**Notes**

- a) The median observed survival time is the length of time after diagnosis until half the patients have died, irrespective of the cause of death
- b) Where less than half the patients had died by the end of the period of follow up (31 December 2005) the median survival time could not be calculated and is shown as missing ('-')

The numbers of deaths due to cancer decrease exponentially as time from diagnosis increases. Thus, for example, if the median survival is two years, half the patients will have died within two years of diagnosis, but many of the remainder will survive substantially longer than a further two years. Median survival is highest in those cancers that have a good prognosis and/or are often diagnosed in younger people (for example, cancers of the testis, thyroid, corpus uteri, and Hodgkin's disease) (table 3). Estimates of the median observed survival broadly support the results shown in table 2. Over the period surveyed, median survival has doubled, or in some cases, more than doubled, for cancers of the prostate and cervix uteri as well as Non-Hodgkin's lymphoma and leukaemias, and for many cancers median survival has been extended by a year or more. For cancers with a very favourable prognosis, more than half the patients were still alive at the end of the period of follow-up for this analysis and so median survival could not be calculated. For 'all malignant neoplasms' median survival increased from 1.1 to 2.8 years.

**Table 4****Relative survival by cancer, sex, and age group**

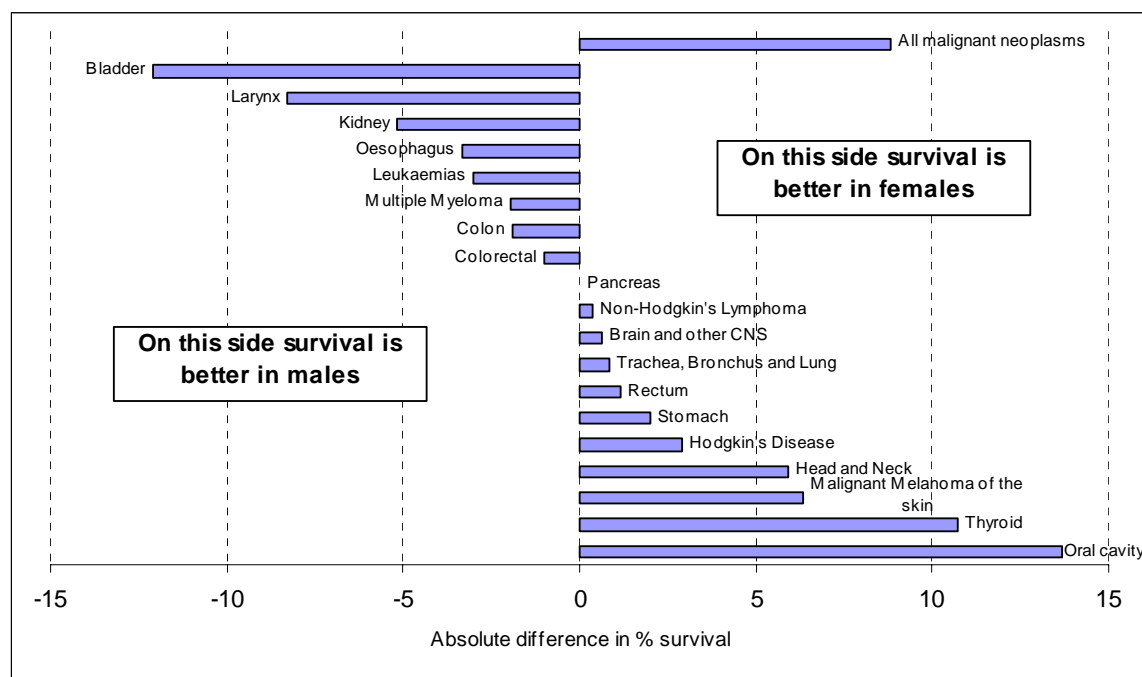
Relative survival (%) at five years after diagnosis: patients diagnosed 2000-2004

Cancer	Sex	Age group					
		15-44	45-54	55-64	65-74	75-84	85-99
Bladder (ICD-9 188; ICD-10 C67)	Male	69.8	60.2	65.9	53.2	45.4	18.8
	Female	27.0	55.0	53.5	48.4	38.2	14.6
Brain and other CNS (ICD-9 191-192; ICD-10 C70-C72)	Male	43.7	14.7	2.8	1.3	0.0	1.9
	Female	41.3	17.3	6.2	7.8	0.7	4.4
Breast (Female) (ICD-9 174; ICD-10 C50)	Female	81.6	87.3	87.5	80.3	74.1	55.1
Cervix Uteri (ICD-9 180; ICD-10 C53)	Female	83.5	65.3	52.9	43.3	25.0	6.6
Colon (ICD-9 153; ICD-10 C18)	Male	62.4	59.6	59.8	56.7	48.8	38.2
	Female	60.1	54.1	62.0	59.7	48.3	33.9
Colorectal (ICD-9 153-154; ICD-10 C18-C21)	Male	62.1	60.5	59.0	55.4	49.5	45.0
	Female	63.6	58.6	62.1	59.4	49.3	34.1
Corpus Uteri (ICD-9 182; ICD-10 C54)	Female	93.5	90.6	88.4	76.6	61.3	33.3
Head and Neck (ICD-9 140-149, 160-161; ICD-10 C00-C14, C30-C32)	Male	73.6	55.7	55.5	50.7	50.3	44.5
	Female	83.6	66.6	61.4	56.4	55.2	21.8
Hodgkin's Disease (ICD-9 201; ICD-10 C81)	Male	96.2	77.6	66.9	71.8	8.7	x <sup>1</sup>
	Female	x <sup>1</sup>	65.2	86.1	50.1	13.5	x <sup>1</sup>
Kidney (ICD-9 189.0-189.1; ICD-10 C64-C65)	Male	61.2	60.3	52.8	50.0	32.1	26.1
	Female	67.5	57.6	51.9	43.8	37.3	11.4
Larynx (ICD-9 161; ICD-10 C32)	Male	87.9	69.5	71.1	59.4	54.5	60.4
	Female	68.9	66.0	60.6	53.9	53.5	42.8
Leukaemias (ICD-9 202.4, 204-208; ICD-10 C91-C95)	Male	51.7	73.8	64.7	51.7	31.6	27.6
	Female	59.4	59.3	54.4	51.8	42.7	32.9
Malignant Melanoma of the skin (ICD-9 172; ICD-10 C43)	Male	89.4	87.1	85.1	78.0	81.1	65.6
	Female	94.1	91.0	89.9	92.2	90.4	84.4
Multiple Myeloma (ICD-9 203.0-203.1, 238.6; ICD-10 C90)	Male	65.4	50.9	37.7	31.5	17.6	18.5
	Female	75.6	58.1	40.2	31.7	23.4	15.5
Non-Hodgkin's Lymphoma (ICD-9 200, 202.0-202.2, 202.8; ICD-10 C82-C85)	Male	72.6	75.4	57.8	52.5	41.4	11.7
	Female	78.5	74.7	67.6	61.8	35.9	32.7
Oesophagus (ICD-9 150; ICD-10 C15)	Male	15.0	18.6	14.8	8.6	5.2	0.4
	Female	12.2	12.0	14.4	12.2	3.8	0.3
Oral cavity (ICD-9 141, 143-145; ICD-10 C01-C06)	Male	72.6	50.6	47.2	39.1	46.2	20.6
	Female	81.2	69.2	63.1	56.1	58.8	17.4
Ovary (ICD-9 183.0, 236.2 (M8440-M8490); ICD-10 C56)	Female	83.9	58.6	34.4	27.1	13.0	8.6
Pancreas (ICD-9 157; ICD-10 C25)	Male	6.9	2.5	3.3	2.0	2.3	1.1
	Female	16.4	8.4	3.2	0.1	2.3	2.2
Prostate (ICD-9 185; ICD-10 C61)	Male	71.4	81.3	85.2	81.5	74.1	53.3
Rectum (ICD-9 154; ICD-10 C19-C20)	Male	61.5	60.9	58.5	53.2	50.9	41.7
	Female	69.9	66.0	61.9	58.6	52.0	31.1
Stomach (ICD-9 151; ICD-10 C16)	Male	14.2	13.3	18.4	15.0	12.9	0.2
	Female	21.7	25.4	23.9	21.2	11.1	7.1
Testis (ICD-9 186; ICD-10 C62)	Male	97.9	94.3	94.2	72.7	38.2	x <sup>1</sup>
Thyroid (ICD-9 193; ICD-10 C73)	Male	89.1	85.7	78.9	52.5	38.5	x <sup>1</sup>
	Female	98.7	94.1	81.6	76.3	52.5	19.3
Trachea, Bronchus and Lung (ICD-9 162; ICD-10 C33-C34)	Male	22.3	9.5	8.3	7.3	4.7	1.6
	Female	21.1	16.1	10.3	8.3	3.4	2.9
All malignant neoplasms (ICD-9 140-208 (excl 173); ICD-10 C00-C97 (excl C44))	Male	72.5	47.8	43.5	40.7	34.8	26.2
	Female	78.8	70.8	59.1	43.7	32.8	24.5

<sup>1</sup>Because of small numbers of cases in age groups it was not possible to calculate survival rates in some cancers

Survival was better in younger patients for most cancers (table 4), even though adjustment was made for the higher general mortality in older age groups. This could be due to differences in tumour biology, better general health, earlier diagnosis, or better availability and effectiveness of treatment. Large variations between age groups were seen for many cancers, however, please note that in the younger age groups some of these survival estimates are based on small numbers of cases.

**Figure 2**  
**Absolute difference<sup>1</sup> in relative survival at five years by cancer**  
 males compared to females; patients aged 15-99, diagnosed 2000-2004



<sup>1</sup> Absolute differences in survival between males and females have been shown; for example, the % survival for Hodgkin's Disease was 91.9% in females and 89% in males. Subtraction gives a difference of 2.9%.

For many cancers, survival prospects differed between males and females (figure 2). Cancers where the difference was comparatively large included oral cavity, thyroid and malignant melanoma of the skin, for all of which females had better survival than males. Males had a higher survival rate than females in larynx, bladder and kidney cancers. Survival for 'all malignant neoplasms' was higher in females than in males, the chief reason being that lung cancer, which has low survival, is at present considerably more common in men than in women; whereas breast cancer, the most common cancer in females, has a relatively good prognosis.

## Conclusion

This was a large population-based survival analysis which included all patients diagnosed with cancer in Scotland between 1980 and 2004, about half a million patients in all. Over this period improvements in survival were seen for the majority of cancers, and for several cancers the improvement was substantial. For many cancers there were major advances in therapy over the period, but unfortunately this did not apply to all cancers. Because the mix of cancers differs between males and females, and survival prognosis is different for different cancers, overall survival was higher in females than in males, whereas the improvement in survival over the period was greater in males than in females. Younger patients generally had more favourable survival than older patients.

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