

Publication Report



Cancer Incidence in Scotland (2012)

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Introduction

The [Scottish Cancer Registry](#) has been collecting information on cancer since 1958. Data collected by the Registry are published by ISD and are used for a wide variety of purposes including: public health surveillance; health needs assessment, planning and commissioning of cancer services; evaluation of the impact of interventions on incidence and survival; clinical audit and health services research; epidemiological studies; and providing information to support genetic counselling and health promotion.

This publication provides information on cancer incidence in Scotland, covering the years 1988-2012 for each main type of cancer. The information presented here replaces information previously available on the ISD website. Cancer registrations are believed to be essentially complete for the year 2012, but it is important to note that the cancer registration database is dynamic. In common with cancer registries in other countries, cancer incidence rates in Scotland can take up to five years after the end of a given calendar year to reach 100% completeness and stability, due to the continuing accrual of late registrations coming to light through death certification, for example.

It may be misleading to focus too much attention on any apparent changes in incidence between 2011 and 2012; it is more informative to examine trends in incidence observed over a number of years. Striking changes from one year to the next may occur in the case of rare cancers, but these are likely to reflect random fluctuation caused by small numbers of cases. In such cases it is even more important to examine incidence rates for a number of years aggregated together, rather than focussing on a single year of incidence.

Methods

The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. Therefore, findings from this publication are not comparable with previous ISD reports. Further detail regarding this change and a worked example of EASRs using both ESP1976 and ESP2013 is included in [Appendix A1](#).

Please note that the crude incidence rates for 2002-2012 in this publication are based on updated population estimates that were produced by National Records of Scotland in December 2013. These updated population estimates have resulted in slightly different crude rates for the period 2002-2011 compared to the rates that were included in the previous version of this report (published in April 2013).

Revision – December 2014

The World Age Standardised Rates (WASRs) that appear in the accompanying data tables for this publication have been revised. At Scotland level, the WASRs for all persons have been corrected. The previously published WASRs for males and females were correct. At region and health board level, the WASRs for all persons and confidence intervals for males and females have been corrected. The previously published WASRs for males and females were correct. These corrections have minimal impact on this publication report and do not affect the commentary or key points that were previously published.

Key points

The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. See [Appendix A1](#) for further details.

- Over the last ten years, age-standardised incidence rates of cancer in Scotland have fallen by 5% in males but increased by 8% in females.
- For both males and females in Scotland combined, lung cancer is still the most common cancer overall, with 5,070 cases diagnosed in 2012 (17% of all cancers), compared to 4,623 cases (15%) of breast cancer and 3,849 cases of colorectal cancer (13%). The ranks and percentages of the three most common cancers are unchanged from 2011.
- Cancer incidence rates and trends in incidence rates show considerable variation between different types of cancer. For instance, the incidence rate of cancer of the kidney for all people has increased by 30% over the last ten years. In contrast, the incidence rate of cancer of the oesophagus has decreased by 9% over the same period.
- Excluding non-melanoma skin cancer, the actual number of cancers diagnosed in Scotland has increased over the last 10 years from 26,743 cases in 2002 to 30,450 in 2012. This is likely to be largely due to an ageing population.

Results and Commentary

Please note that details of these statistics can be found by cancer site on the [Cancer website](#). A summary is included alongside cancer mortality, risk, prevalence and survival in the [Cancer in Scotland Summary report](#).

Cancer Incidence

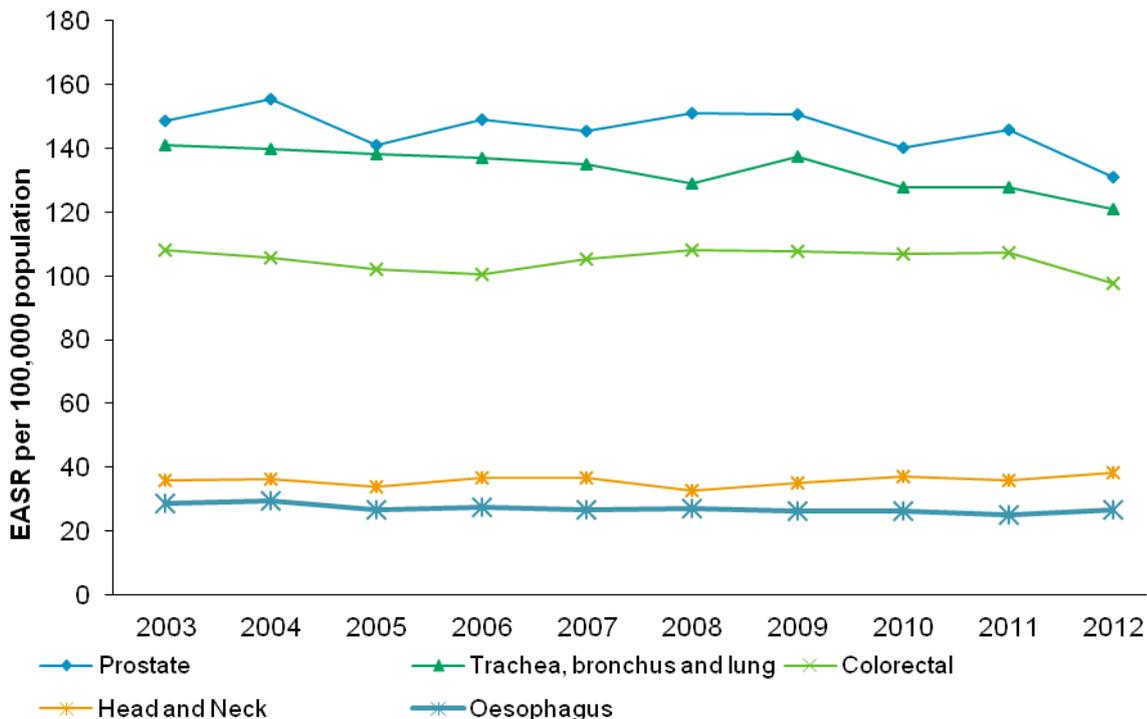
Approximately 14,600 males and 15,800 females were diagnosed with cancer in 2012. Non-melanoma skin cancers (NMSC), of which there were 10,872 registered in 2012, are excluded from the analysis of all cancers combined for three main reasons:

- In the interests of external comparison, because not all cancer registries collect data on NMSC;
- Because they are so common, only the first occurrence of a basal cell carcinoma (the most common type of NMSC) is collected in Scotland;
- Although numerically important in terms of NHS workload, NMSC is rarely fatal.

Excluding NMSC, the number of cancers diagnosed in Scotland has increased over the last 10 years from 26,743 cases in 2002 to 30,450 in 2012.

For males, the most common cancers are prostate, lung and colorectal cancers (Figure 1), collectively accounting for 52% of cancers in men. For females, the most common cancers are breast, lung and colorectal cancers (Figure 2), accounting for 56% of cancer in women.

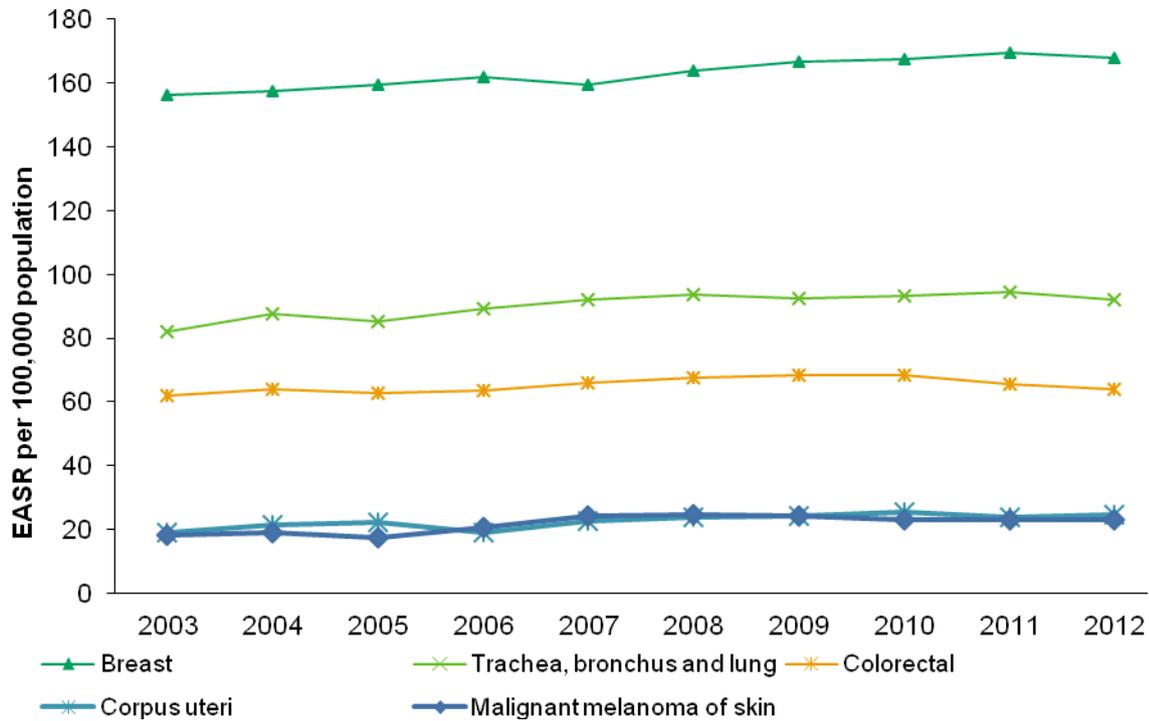
Figure 1. Recent trends (2003-2012) in age-standardised incidence¹ rates of the five most common cancers in males in 2012 (Scotland). (European Age Standardised Rate – using ESP2013¹)



Source: Scottish Cancer Registry

¹ The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. The European Age Standardised Rate (EASR) is calculated using ESP2013 and 5 year age groups 0-4, 5-9 up to an upper age group of 90+. See [Appendix A1](#) for further details.

Figure 2. Recent trends (2003-2012) in age-standardised incidence rates¹ of the five most common cancers in females in 2012 (Scotland). (European Age Standardised Rate – using ESP2013¹)

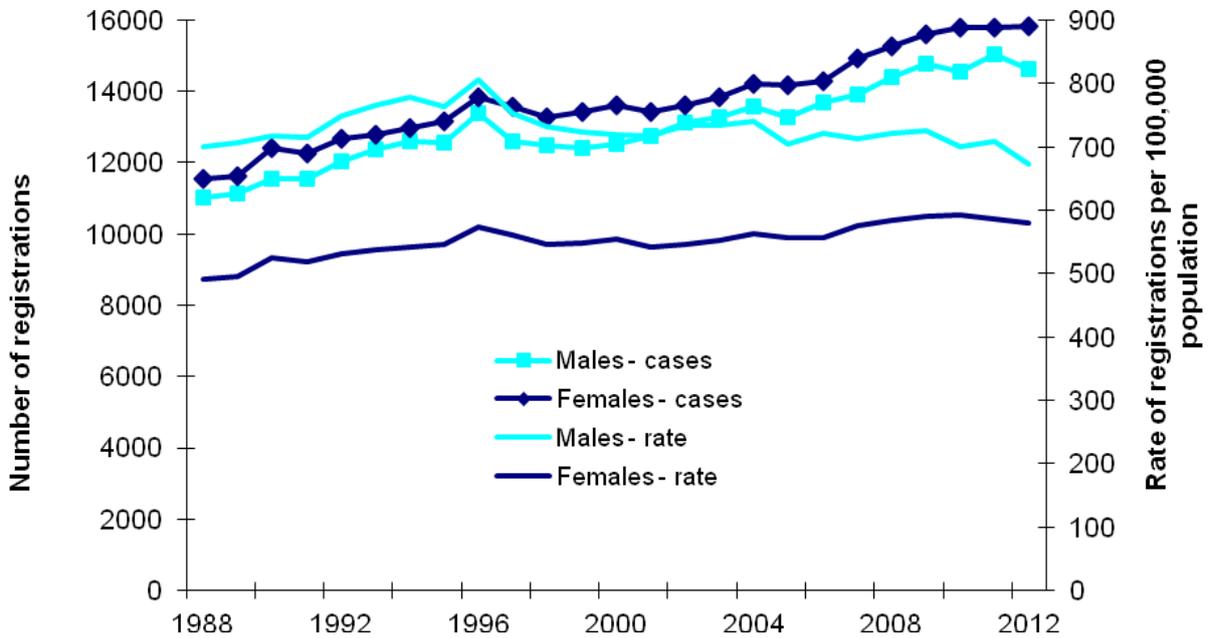


Source: Scottish Cancer Registry

1 The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. The European Age Standardised Rate (EASR) is calculated using ESP2013 and 5 year age groups 0-4, 5-9 up to an upper age group of 90+. See [Appendix A1](#) for further details.

Over the decade up to 2012, the age-standardised incidence rate of cancer has fallen for males (a 5% decrease) and shows a significant, increasing trend for females (8% increase) (Figure 3).

Figure 3. New cancer¹ registrations in Scotland, 1988-2012: number of cases and age standardised rate² (European Age Standardised Rate – using ESP2013²)



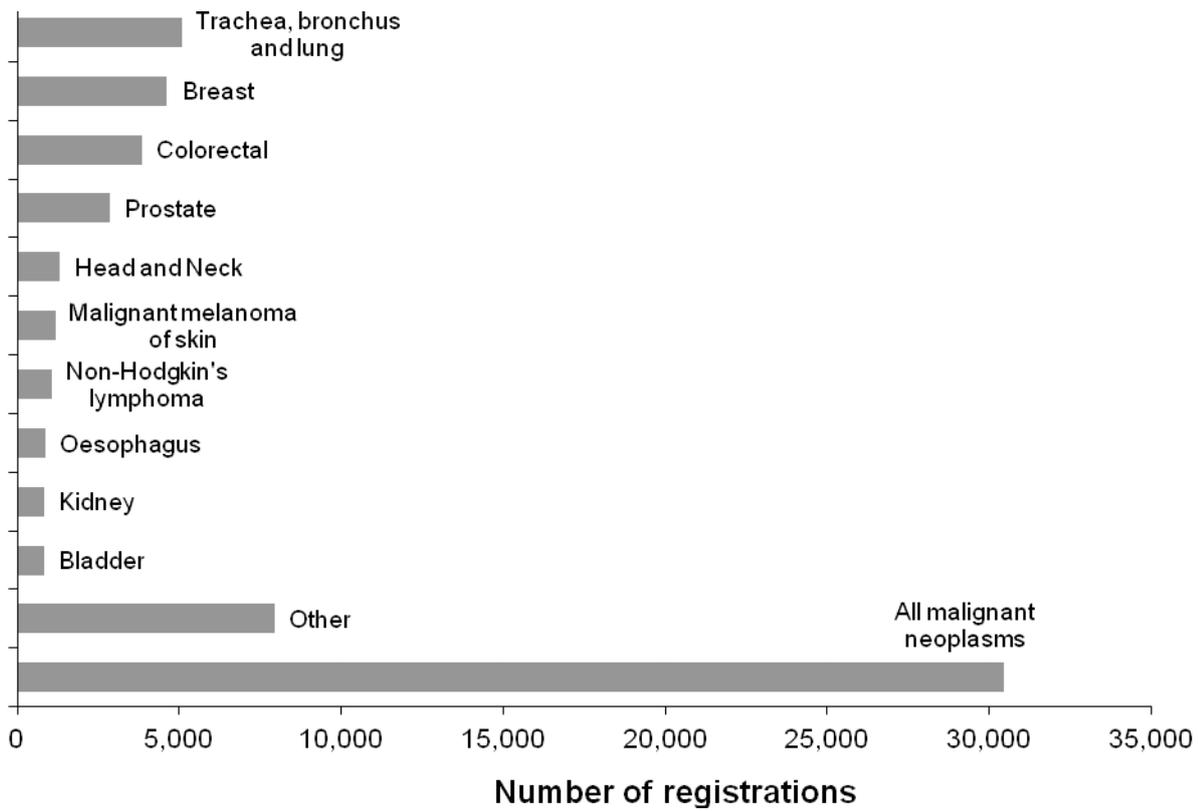
Source: Scottish Cancer Registry

1 All cancers excluding non-melanoma skin cancers (ICD-10 C00-C97 excl C44)

2 The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. The European Age Standardised Rate (EASR) is calculated using ESP2013 and 5 year age groups 0-4, 5-9 up to an upper age group of 90+. See [Appendix A1](#) for further details.

For both males and females in Scotland combined, lung cancer is still the most common cancer overall (Figure 4), with 5,070 cases diagnosed in 2012 (17% of all cancers), compared to 4,623 cases (15%) of breast cancer and 3,849 cases of colorectal cancer (13%). The ranks and percentages of the three most common cancers are unchanged from 2011.

Figure 4. Most common cancers in Scotland, 2012; all persons



All cancers excluding non-melanoma skin cancers (ICD-10 C00-C97 excl C44)

Source: Scottish Cancer Registry

Table 1 shows the numbers of cases in 2012, percentage frequency and estimated percentage change in age-adjusted incidence rates over ten years for the most common cancers. A p-value of less than 0.05 for the 10 year change indicates that this is statistically significant.

Table 1. Most common cancers in Scotland in 2012

Males

Rank	ICD-10 site grouping	Number	Frequency	10 year % change ¹	p-value
1	Prostate (C61)	2,857	19.6%	-2.4	0.5607
2	Trachea, bronchus and lung (C33-C34)	2,573	17.6%	-16.3	<0.0001
3	Colorectal (C18-C20)	2,100	14.4%	+1.2	0.6182
4	Head and Neck (C00-C14, C30-C32)	892	6.1%	+7.0	0.0666
5	Oesophagus (C15)	579	4.0%	-8.5	0.0147
6	Bladder (C67)	559	3.8%	-15.1	0.0005
7	Malignant melanoma of skin (C43)	549	3.8%	+43.2	<0.0001
8	Non-Hodgkin's lymphoma (C82-C85)	544	3.7%	+3.6	0.3294
9	Kidney (C64-C65)	479	3.3%	+22.4	<0.0001
10	Stomach (C16)	450	3.1%	-30.4	<0.0001
	Other malignant neoplasms	3,029	20.7%	x	x
	All malignant neoplasms excluding non-melanoma skin cancer	14,611	100.0%	-4.6	0.0002

Females

Rank	ICD-10 site grouping	Number	Frequency	10 year % change ¹	p-value
1	Breast (C50)	4,595	29.0%	+11.1	<0.0001
2	Trachea, bronchus and lung (C33-C34)	2,497	15.8%	+14.2	<0.0001
3	Colorectal (C18-C20)	1,749	11.0%	+5.8	0.0413
4	Corpus uteri (C54)	668	4.2%	+31.7	<0.0001
5	Malignant melanoma of skin (C43)	628	4.0%	+30.4	<0.0001
6	Ovary (C56)	610	3.9%	-11.8	0.0001
7	Non-Hodgkin's lymphoma (C82-C85)	524	3.3%	+10.4	0.0181
8	Head and Neck (C00-C14, C30-C32)	423	2.7%	+16.2	0.0115
9	Pancreas (C25)	386	2.4%	+13.3	0.0142
10	Kidney (C64-C65)	359	2.3%	+43.8	<0.0001
	Other malignant neoplasms	3,400	21.5%	x	x
	All malignant neoplasms excluding non-melanoma skin cancer	15,839	100.0%	+8.0	<0.0001

All persons

Rank	ICD-10 site grouping	Number	Frequency	10 year % change ¹	p-value
1	Trachea, bronchus and lung (C33-C34)	5,070	16.7%	-5.2	0.3422
2	Breast (C50) ²	4,623	15.2%	x	x
3	Colorectal (C18-C20)	3,849	12.6%	+3.0	0.0322
4	Prostate (C61) ²	2,857	9.4%	x	x
5	Head and Neck (C00-C14, C30-C32)	1,315	4.3%	+9.4	0.0001
6	Malignant melanoma of skin (C43)	1,177	3.9%	+36.7	<0.0001
7	Non-Hodgkin's lymphoma (C82-C85)	1,068	3.5%	+6.5	0.0110
8	Oesophagus (C15)	887	2.9%	-9.4	0.0085
9	Kidney (C64-C65)	838	2.8%	+29.7	<0.0001
10	Bladder (C67)	832	2.7%	-13.1	0.0254
	Other malignant neoplasms	7,934	26.1%	x	x
	All malignant neoplasms excluding non-melanoma skin cancer	30,450	100.0%	+0.8	0.0019

'x' = not applicable.

¹ Estimated 10-year change in age-adjusted incidence rates, calculated using Poisson regression analyses.

² Percentage change in incidence is not shown here for cancers occurring mainly or only in one sex.

Source: Scottish Cancer Registry, ISD

When attempting to interpret trends in cancer incidence, it is important to remember that recent patterns of cancer are, for the most part, likely to reflect trends in the prevalence of risk (and protective) factors going back several decades. The commentary below relates to changes in the incidence rates of different types of cancer over the last ten years.

Breast cancer

Breast cancer is the most common cancer in women. Over the last decade the incidence rate has increased by 11%; this is partly due to increased detection by the Scottish Breast Screening Programme, which has seen a rise in attendance over the same time period, and an extension in the age range invited for screening to include women up to the age of 70 years, phased in over the 3-year period beginning 1st April 2003. However, increases in the incidence of breast cancer might also be anticipated with higher prevalence of known risk factors among the female population, such as increases in the mother's age at the birth of her first child, decreases in family size, increases in post-menopausal obesity, and increases in alcohol consumption.

Prostate cancer

Prostate cancer is the most common cancer in men with a relative frequency of 20%. The incidence rate of prostate cancer has decreased slightly by 2% over the last decade.

Lung cancer

The long-term decline seen in the incidence rate of lung cancer in males, the second most common cancer in men, has continued, with a significant fall in the incidence rate of 16% over the last ten years. Lung cancer incidence rates in females increased by 14% over the last ten years. To a large extent, this trend reflects historic trends in the prevalence of smoking, which have differed between men and women.

Colorectal cancer

Colorectal cancer has increased significantly in women (by 6%) with a lesser, non-significant increase in men (around 1%). Modifiable risk factors for colorectal cancer are thought to include diet, lack of physical activity and long-term smoking. However, some of the recent observed increase in incidence may be associated with the introduction of the nationwide bowel screening programme.

Cancer of the corpus uteri

The incidence of cancer of the body of the uterus (corpus uteri) has increased significantly (by 32%) over the 10-year period 2002-2012. The majority of cancers at this anatomical site affect the endometrium or lining of the womb. The increase in incidence may be due, at least in part, to longstanding changes in fertility (since childbearing appears to protect against endometrial cancer) and increases in levels of obesity (which increase risk). A further contributing factor may be a decrease in rates of hysterectomy, which leaves a larger population at risk of developing uterine cancer.

Malignant melanoma of the skin

Malignant melanoma of the skin is the fifth most common cancer in women and seventh most common cancer in men. Incidence rates increased over the last decade by 43% in males and 30% in females. The primary recognised risk factor for melanoma of the skin is exposure to natural and artificial sunlight, especially but not exclusively at a young age.

Bladder cancer

The decline in bladder cancer incidence since 1998 may be, at least in part, an artefact due to a change in coding practice across cancer registries in the UK. Around a quarter of bladder tumours are no longer coded as invasive bladder cancers. This decrease is large enough to have an impact on the figures for all cancers combined.

Ovarian cancer

The 12% decrease observed in ovarian cancer incidence may be partly due to increased use of the oral contraceptive pill from the 1960s onwards, since this appears to protect against the development of ovarian cancer.

Oesophageal cancer

After a prolonged period of increasing incidence, oesophageal cancer now seems to be decreasing in incidence in both sexes. Established risk factors for oesophageal cancer include smoking, alcohol misuse, obesity, and chronic gastro-oesophageal reflux disease. Oesophageal cancer does not appear in table 1 for females as it is not one of the ten most common cancers for women.

Non-Hodgkin's lymphoma

Non-Hodgkin's lymphoma (NHL) has increased significantly in females (by 10%), with a lesser, non-significant increase in males (4%). Although immunosuppression has been associated with the development of NHL, much has still to be understood about its aetiology and so the reasons for the observed trends in incidence are unclear.

Pancreatic cancer

There have been significant increases in incidence of pancreatic cancer in both males (15%) and females (13%). Again, the aetiology of pancreatic cancer is poorly understood, although smoking is one reasonably well-established risk factor. Pancreatic cancer does not appear in table 1 for males as it is not one of the ten most common cancers for men.

Kidney cancer

Cancers of the kidney continue to show significant increases in incidence rates over the last 10 years of 22% and 44% for males and females, respectively. The increase has occurred primarily in cancers of the renal parenchyma (ICD-10 C64) rather than of the renal pelvis (C65). The reason for this increase is not clear. Established risk factors include obesity and smoking, but advances in medical imaging may also have led to an increase in incidental diagnosis of some tumours.

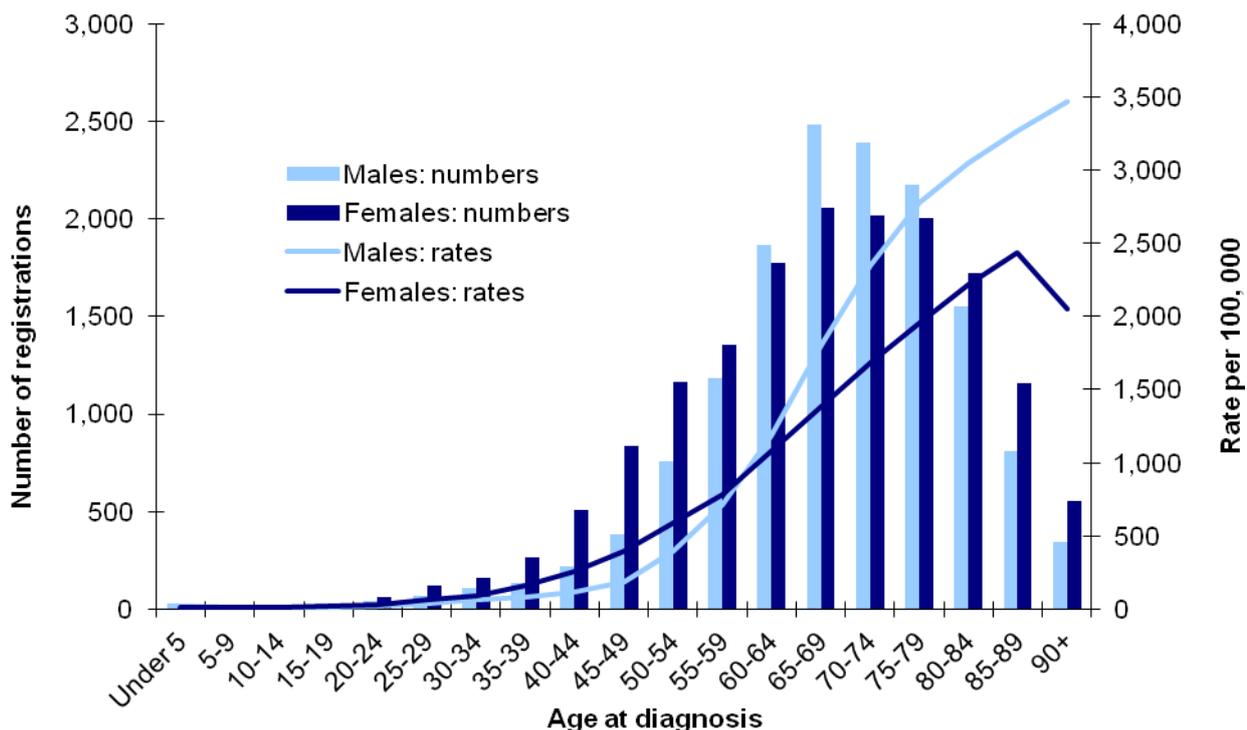
Stomach cancer

Cancer of the stomach continues to show highly significant decreases in incidence in both males (30%) and females (28%). This most probably reflects a decrease in prevalence of infection with the bacterium *Helicobacter pylori* (perhaps as a result of improvements in social conditions and widespread use of antibiotics). People infected with *Helicobacter pylori* have an increased risk of developing stomach cancer. The introduction of refrigeration has also probably had an effect on incidence as it reduced the need for potentially carcinogenic food preservatives. Stomach cancer does not appear in table 1 for females as it is not one of the ten most common cancers for women.

Age

The number of cancer diagnoses increases with age in both sexes (Figure 5), to age 65-69, and then declines thereafter as the population diminishes at older ages. The greater increase in the rate of cancer diagnoses in males relative to females in older age groups is partly reflective of the greater number of females in the population at those age groups.

Figure 5: Number of registrations and age-specific rates per 100,000, all malignant neoplasms¹ diagnosed in 2012, by sex



Source: Scottish Cancer Registry

¹ All cancers excluding non-melanoma skin cancers (ICD-10 C00-C97 excl C44)

Glossary

Benign tumour	A tumour that does not invade and destroy local tissue or spread to other sites in the body.
Cancer registry	The Scottish Cancer Registry is responsible for the collection of information on all new cases of cancer arising in residents of Scotland. More detailed information is available on the ISD website here .
Carcinoma	A cancer of the epithelial tissue that covers all the body's organs. Most cancers are carcinomas.
Confidence interval	The interval or range of values that is likely to contain the true value of a parameter.
Crude rate	The number of cases divided by the population. The crude rate does not attempt to adjust for differences in age and sex structures between different populations (see European age-standardised rate below). Typically expressed as the number of cases per 100,000 population.
Epithelial tissue	Tissue that covers the body's organs and other internal surfaces.
EASR	European Age Standardised Rate; the rate that would have been found if the population in Scotland had the same age-composition as the hypothetical standard European population. The 2013 European Standard Population (ESP2013) has been used to calculate EASRs within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Previous reports used ESP1976 to calculate EASRs. Figures using ESP1976 and ESP2013 are not comparable. Therefore, <u>findings from this publication are not comparable with previous ISD reports</u> . See Appendix A1 for further details.
ICD-10	The 10 th revision of the International Classification of Diseases produced by the World Health Organisation (WHO). It assigns codes to particular diseases and conditions.
Incidence	Incidence refers to the number of new cases of a condition in a defined population during a defined period and is typically expressed as the number of new cases per 100,000 population per year (or other suitable units).
Indolent tumour	One that grows slowly or is considered to be low risk.
Lifetime risk	A person's chance of developing cancer during their life.
Malignant tumour	Cancerous growth.
Mortality rate	The number of deaths as a rate per 100,000 population.
Neoplasm	Abnormal growth
NMSC	Non-melanoma skin cancer. A type of cancer that usually develops slowly in the upper layers of the skin.
Percentage	A rate, number or amount in each hundred.
Prevalence	The number of people with a diagnosis of a particular condition who are alive at a given point in time.

List of Tables

Table No.	Cancer Incidence by year	Time period	File & size
0	Cancer in Scotland Summary	1988-2012	PDF [115 kb]
1	All Cancers - revised	1988-2012	Excel [994 kb]
2	Bladder - revised	1988-2012	Excel [960 kb]
3	Bone and Connective Tissues - revised	1988-2012	Excel [2026 kb]
4	Brain and CNS - revised	1988-2012	Excel [2670 kb]
5	Breast - revised	1988-2012	Excel [1447 kb]
6	Colorectal - revised	1988-2012	Excel [2106 kb]
7	Female Genital Organs - revised	1988-2012	Excel [1701 kb]
8	Head and Neck - revised	1988-2012	Excel [4742 kb]
9	Hodgkins Disease - revised	1988-2012	Excel [951 kb]
10	Kidney - revised	1988-2012	Excel [965 kb]
11	Leukaemias - revised	1988-2012	Excel [3111 kb]
12	Liver - revised	1988-2012	Excel [946 kb]
13	Lung and Mesothelioma - revised	1988-2012	Excel [1489 kb]
14	Male Genital Organs - revised	1988-2012	Excel [952 kb]
15	Multiple Myeloma - revised	1988-2012	Excel [945 kb]
16	Non-Hodgkins Lymphoma - revised	1988-2012	Excel [978 kb]
17	Oesophagus - revised	1988-2012	Excel [957 kb]
18	Pancreas - revised	1988-2012	Excel [957 kb]
19	Skin - revised	1988-2012	Excel [2684 kb]
20	Stomach - revised	1988-2012	Excel [961 kb]

Table No.	Summarised Cancer Incidence	Time period	File & size
21	All Cancers - revised	2008-2012	Excel [202 kb]
22	Bladder - revised	2008-2012	Excel [199 kb]
23	Bone and Connective Tissues - revised	2008-2012	Excel [306 kb]
24	Brain and CNS - revised	2008-2012	Excel [370 kb]
25	Breast - revised	2008-2012	Excel [247 kb]
26	Colorectal - revised	2008-2012	Excel [307 kb]
27	Female Genital Organs - revised	2008-2012	Excel [271 kb]

28	Head and Neck - revised	2008-2012	Excel [568 kb]
29	Hodgkins Disease - revised	2008-2012	Excel [200 kb]
30	Kidney - revised	2008-2012	Excel [200 kb]
31	Leukaemias - revised	2008-2012	Excel [409 kb]
32	Liver - revised	2008-2012	Excel [199 kb]
33	Lung and Mesothelioma - revised	2008-2012	Excel [249 kb]
34	Male Genital Organs - revised	2008-2012	Excel [198 kb]
35	Multiple Myeloma - revised	2008-2012	Excel [198 kb]
36	Non-Hodgkins Lymphoma - revised	2008-2012	Excel [201 kb]
37	Oesophagus - revised	2008-2012	Excel [198 kb]
38	Pancreas - revised	2008-2012	Excel [198 kb]
39	Skin - revised	2008-2012	Excel [363 kb]
40	Stomach - revised	2008-2012	Excel [199 kb]

Table No.	Other updated tables	Time period	File & size
41	Incidence and Mortality by ICD-10 code	2003-2012	Excel [273 kb]
42	Cervical cancer incidence timeline	1982-2012	Excel [116 kb]
43	Cancer Treatment summary	2008-2012	Excel [45 kb]

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Further Information

Further information can be found on the [ISD website](#)

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Appendix

A1 – Changes to the European Standard Population

The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Previous reports used ESP1976 to calculate EASRs. EASRs calculated using ESP1976 cannot be compared with EASRs calculated using ESP2013. This section contains a worked example of EASRs using both ESP1976 and ESP2013 to show how the rates differ and why they cannot be compared.

Example: Trend in age-standardised incidence rates for all cancers (excluding non-melanoma skin cancer) 2002-2012)

Based on the number of cancer registrations in each of the calendar years, the following rates were calculated:

Crude Rate

The crude rate is the total number of people with an illness (or who die) in a country or region, divided by the total population of that country or region, and is normally expressed 'per 1,000', 'per 10,000' or 'per 100,000'.

Making comparisons on the crude rate can be misleading if the age structures of the populations of the countries or regions are quite different. Areas with larger percentages of younger people are unlikely to have as high levels of death as areas with larger percentages of older people – and therefore if we don't adjust for these differences we may draw the wrong conclusion about the health of an area simply because of the age-structure of the population. EASRs allow us to make comparisons between different geographical areas as they allow the effects of having different age structures in either the same population over time or different geographies to be removed.

European Age-Sex Standardised Rate (EASR) using ESP1976

For each 5 year age group, the crude rate is calculated and then the weighted average of all age groups is taken based on the weightings of the 1976 European Standard Population, to give the overall EASR.

European Age-Sex Standardised Rate (EASR) using ESP2013

For each 5 year age group, the crude rate is calculated and then the weighted average of all age groups is taken based on the weightings of the 2013 European Standard Population, to give the overall EASR.

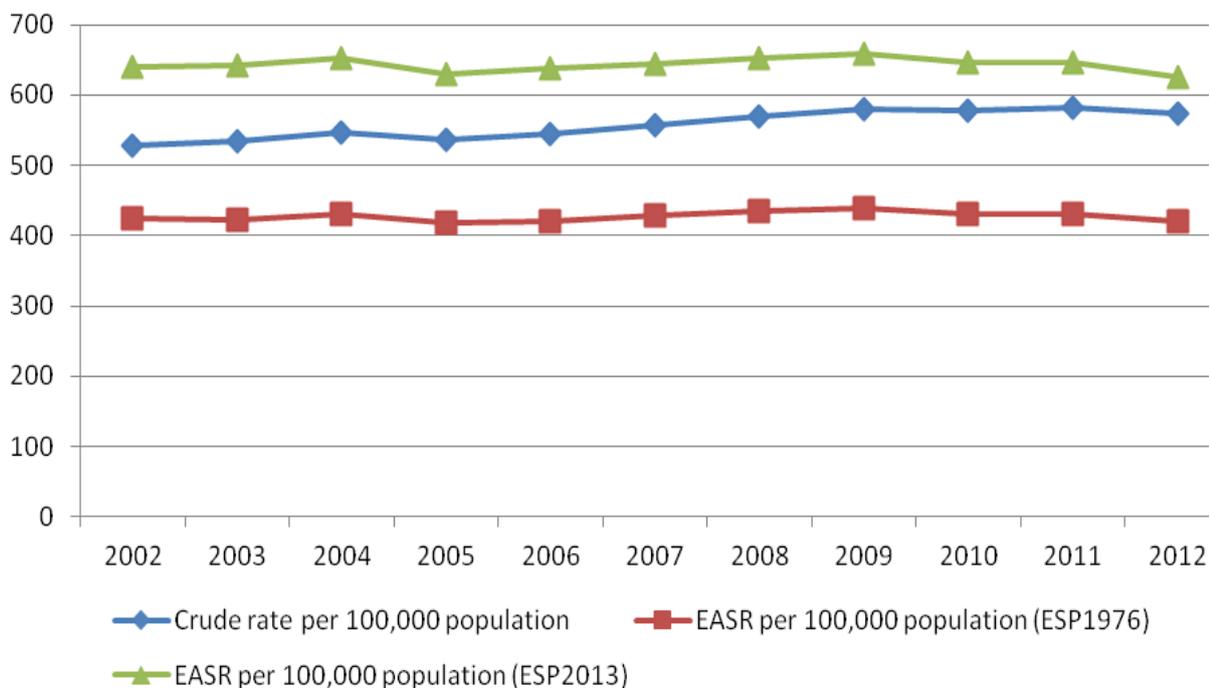
The table and chart below are for illustrative purposes to show how the rates differ.

Table A1.1: Comparison of European Age-Sex Standardised Rates (EASRs)^{1,2} of incidence for all cancer types (excluding non-melanoma skin cancer) using both 1976³ and 2013^{4,5} European Standard Populations, and crude rates, by calendar year (2002-2012)

	Calendar Year										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of registrations	26,743	27,090	27,797	27,454	27,985	28,818	29,670	30,399	30,362	30,840	30,450
Crude rate per 100,000 population	527.9	534.5	546.7	537.2	545.2	557.4	570.3	581.0	577.0	581.9	573.1
EASR per 100,000 population (ESP1976)	423.5	423.2	430.5	418.0	421.3	427.7	434.2	438.2	431.4	431.0	420.3
EASR per 100,000 population (ESP2013)	640.1	643.1	651.8	630.6	639.1	644.6	652.3	658.1	646.1	646.9	626.4

Source: Scottish Cancer Registry

Figure A1.1: Comparison of European Age-Sex Standardised Rates (EASRs)^{1,2} of incidence for all cancer types (excluding non-melanoma skin cancer) using both 1976³ and 2013^{4,5} European Standard Populations, and crude rates, by calendar year (2002-2012)



Source: Scottish Cancer Registry

Notes:

1. The population estimates used in the calculation of rates above are based on the 2011 Census results.
2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. European Age-Sex Standardised Rates (EASRs) using ESP1976 and ESP2013 are not comparable.
3. European Age-Sex Standardised Rate (EASR), calculated using ESP1976 and using 5 year age groups 0-4, 5-9 up to an upper age group of 85+.
4. European Age-Sex Standardised Rate (EASR), calculated using ESP2013 and using 5 year age groups 0-4, 5-9 up to an upper age group of 90+.
5. The upper age group for the 2013 European Standard Population structure is 95+. However, due to Scotland population estimates data being unavailable for the 95+ age group for all required geographies and for all required years, the upper age group used is 90+. This is an amalgamated age group containing both the 90-94 and 95+ age groups.

From this example (see Table A1.1 and Figure A1.1 above), it can be seen that the EASR (using ESP2013) is the highest of the three rates. The Crude Rate is in the middle and the EASR (using ESP1976) is the lowest. The incidence of cancer is higher in older age groups (figure 5). ESP2013 differs from ESP1976 by its inclusion of fewer young people and more

people from older age groups. Therefore, in this example, the EASRs calculated using ESP2013 are higher than those calculated using ESP1976. The trends shown for each method of calculating rates are similar, giving confidence to trend analysis. EASRs (using ESP1976) are not comparable with EASRs (using ESP2013). For example, comparing the EASR (using ESP1976) for calendar year 2011 in a report issued in 2013, to an EASR (using ESP2013) relating to the same year 2011, in a report issued in 2014, is meaningless. On this basis, findings from this publication are not comparable with previous ISD reports.

Further information can be obtained from:

ISD website: <http://www.isdscotland.org/Products-and-Services/GPD-Support/>

ONS website: <http://www.ons.gov.uk/ons/about-ons/get-involved/consultations/consultations/implementation-of-the-2013-european-standard-population/index.html>

A2 – Background Information

Although cancer registrations are believed to be essentially complete for the year 2012, it is important to note that the cancer registration database is dynamic. In common with other cancer registries, cancer incidence rates in Scotland can take up to five years after the end of a given calendar year to stabilise due to the continuing accrual of late registrations coming to light, for example through death certification. At this stage, it may be misleading to focus too much attention on any apparent changes in incidence between 2011 and 2012; it is more informative to examine trends in incidence observed over a number of years. Striking changes from one year to the next may occur in the case of rare cancers, but these are likely to reflect random fluctuation caused by small numbers of cases - in such cases, it is even more important to examine incidence rates for a number of years aggregated together, rather than focusing on a single year of incidence.

Note that cancer registrations differ from recorded hospital admissions for cancer, the statistics for which can be found on the [Hospital Care](#) pages on the [ISD Website](#). An individual diagnosed with a new primary cancer would have a single registration for that cancer, whereas he/she might have multiple admissions to hospital for the cancer. Moreover, the diagnosis and treatment of cancer does not inevitably lead to hospital admission in every case.

Comparisons of cancer statistics across the UK are regularly produced by the Office for National Statistics (ONS). The most recent [comparison of incidence and mortality statistics](#) can be found on their website. Please note that ONS have no plans to update the comparison in future.

Comparisons are also produced by Cancer Research UK, and the most recent [incidence report](#) can be found on their [CancerStats page](#). The interactive, web-based [Cancer e-Atlas](#) produced by the National Cancer Intelligence Network is also a good source.

Comparison of Scottish and UK cancer data to that of other countries is a complex process because of the wide variation amongst data collection and coding practices, as well as variation in the quality and completeness of data. The International Agency for Research on Cancer maintain an online database, [Cancer Mondial](#), that is searchable for comparative data.

A3 – Publication Metadata (including revisions details)

Metadata Indicator	Description
Publication title	Cancer Incidence in Scotland (2012)
Description	Annual and 5 year summaries of new incidence cases of cancer in Scotland, by Cancer Network Region and Health Board. Within Scotland and Network levels of reporting, the incidence figures are broken down by age group and sex.
Theme	Health and Social Care
Topic	Conditions and Diseases
Format	Excel workbooks
Data source(s)	Scottish Cancer Registry (SMR06)
Date that data are acquired	10 th March 2014
Release date	29 th April 2014
Frequency	Annual
Timeframe of data and timeliness	Data up to 31 December 2012. No delays between data availability and processing of data for publication.
Continuity of data	Reports include data from 1988 to 2012. Coding of cancer registrations moved from ICD-9 to ICD-10 and from ICD-O to ICD-O2 in incidence year 1997, then to ICD-O3 in incidence year 2006. ICD codes have been back-mapped to 1988 for continuity of reporting. The range of statistics provided does mean that the continuity will vary, and while considered to be very high, any notable discontinuities (eg for specific conditions) will be highlighted within the published data.
Revisions statement	As with other population-based cancer registries, the Scottish Cancer Registry is dynamic, with ongoing updating of records. Each year's release includes a refresh of the previous years, and as new registrations from previous years come to light, or changes in the coding are taken into account, the numbers may change. The timing of the release is intended to balance the likelihood of significant revision with timeliness of data.
Revisions relevant to this publication	The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Previous reports used ESP1976 to calculate EASRs. EASRs calculated using ESP1976 cannot be compared with EASRs calculated using ESP2013. Therefore, <u>findings from this publication are not comparable with previous ISD reports</u> . Further detail regarding this change and a worked example of EASRs using both ESP1976 and ESP2013 is included in Appendix

	<p>A1.</p> <p>The publication was revised in December 2014 to correct errors in the World Age Standardised Rates (WASRs) for 'all persons' (at Scotland, region and health board level) and the confidence intervals for males and females (region and health board level only). The previously published WASRs for males and females were correct.</p>
Concepts and definitions	See the Cancer Information FAQs
Relevance and key uses of the statistics	The number and type of cancer registrations, by sex and geography, allow planning for provision of cancer treatment services and palliative care planning. Permits indirect measure of success of public health measures and interventions over the longer term.
Accuracy	<p>Registry data are subject to validation at data entry and quality assurance procedures. See the Cancer Information FAQs.</p> <p>Reported data are compared to previous years' figures and to expected trends.</p>
Completeness	At time of extraction, data for the most recent year are estimated to be at least 98% complete. See above note on Revisions. Routine indicators of data quality are compared to the rest of the UK and to other countries, and are available at www.ukacr.org . There have been adhoc studies of data completeness in the past. See the Cancer Information FAQs .
Comparability	<p>The European age standardised rates (EASRs) produced in this publication use the 2013 European Standard Population are not comparable with rates produced in previous years using the 1976 European Standard Population.</p> <p>Cancer incidence data are regularly compared with the UK and other countries, for example in the publication Cancer Incidence in Five Continents.</p>
Accessibility	It is the policy of ISD Scotland to make its web sites and products accessible according to published guidelines .
Coherence and clarity	All Cancer tables are accessible via the Cancer pages on the ISD website . Cancer sites are presented within Excel spreadsheets of cancer groupings, where appropriate. This should minimise the number of spreadsheets a user has to go through to find data, as well as ensure that they are selecting the correct data. Geographical hierarchies are also presented using drop down menus. Spreadsheets may require the user to manipulate drop-down menus, to avoid a frequent problem of confounding data on males and females, and geographical designations.
Value type and unit of	Number of new cases of cancer as count; rates of cancer as crude, European age standardised (using the 2013

measurement	European Standard Population), World Age standardised, and as Standardised incidence ratios. Number, eg 1.1
Disclosure	The ISD protocol on Statistical Disclosure Protocol is followed.
Official Statistics designation	National Statistics
UK Statistics Authority Assessment	May 2010
Last published	April 2013
Next published	April 2015
Date of first publication	
Help email	nss.isdcancerstats@nhs.net
Date form completed	31 st March 2014

A4 – Early Access details (including Pre-Release Access)

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD are obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access and, separately, those receiving extended Pre-Release Access.

Standard Pre-Release Access:

- Scottish Government Health Department
- NHS Board Chief Executives
- NHS Board Communication leads

Extended Pre-Release Access

Extended Pre-Release Access of 8 working days is given to a small number of named individuals in the Scottish Government Health Department (Analytical Services Division). This Pre-Release Access is for the sole purpose of enabling that department to gain an understanding of the statistics prior to briefing others in Scottish Government (during the period of standard Pre-Release Access).

- Scottish Government Health Department (Analytical Services Division)

A5 – ISD and Official Statistics

About ISD

Scotland has some of the best health service data in the world combining high quality, consistency, national coverage and the ability to link data to allow patient based analysis and follow up.

Information Services Division (ISD) is a business operating unit of NHS National Services Scotland and has been in existence for over 40 years. We are an essential support service to NHSScotland and the Scottish Government and others, responsive to the needs of NHSScotland as the delivery of health and social care evolves.

Purpose: To deliver effective national and specialist intelligence services to improve the health and wellbeing of people in Scotland.

Mission: Better Information, Better Decisions, Better Health

Vision: To be a valued partner in improving health and wellbeing in Scotland by providing a world class intelligence service.

Official Statistics

Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. ISD is designated by legislation as a producer of 'Official Statistics'. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within ISD.

ISD's statistical publications are currently classified as one of the following:

- National Statistics (ie assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (ie legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (ie still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on ISD's statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the [ISD website](#).

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.