Cancer Incidence in Scotland (to December 2018)

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The statistics last underwent a full assessment by the Office for Statistics Regulation (OSR) against the Code of Practice in May 2010. The OSR is the regulatory arm of the UK Statistics Authority.

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Find out more about National Statistics at:
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Introduction

This annual publication provides information on cancer incidence in Scotland, covering the years 1994-2018 for each main type of cancer. The information presented here updates information previously available on the Information Services Division website – now Public Health Scotland (PHS).

New cancer diagnoses (cancer incidence) reflect risk factors for developing cancer, an increase in efforts to detect cancer (such as public awareness and screening programmes) and an increase in the number of people at risk of developing cancer (with the ageing and expanding population). They inform our understanding of cancer prevention and the services needed to diagnose and treat cancer. We present information on cancer incidence to show changes over time, differences between groups of people (for example, by age, sex and socio-economic circumstances) and by geographic area. The rates, or risks, of developing cancer are given along with actual numbers.

Cancer registration in Scotland

The Scottish Cancer Registry has been collecting information on cancer since 1958. Data collected by the Registry are published by PHS. This information is 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. New developments in the Scottish Cancer Registration and Intelligence Service will make cancer data more readily available and will make data on waiting times, screening, diagnosis and treatment more easily linked to the Registry.

Cautions on interpreting these data

It may be misleading to focus too much attention on any apparent changes in incidence between 2017 and 2018; 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 the small numbers of cases. In these situations, it is more important to examine incidence rates for a number of years aggregated together, rather than focusing on a single year of incidence.

Cancer registrations are believed to be essentially complete for the year 2018, 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 around 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.
Data Visualisation

Data visualisation is included as part of this publication. This can be found on our website. If you have any comments or suggestions about this visualisation, please contact us by email.

Acknowledgement

This publication uses data shared by patients and collected by the NHS as part of their care and support. Data are processed in accordance with EU General Data Protection Regulation and Data Protection Act 2018 legislation.
Main Points

- The overall number of cancers increased from 30,600 in 2009 to 34,000 in 2018. The increase in numbers reflects a population which is growing and ageing. In contrast, the risk of developing cancer fell by 3.5% in the same time period.

- There were more cancers in females than males (around 17,200 vs 16,700) in 2018 but the risk of cancer is higher in males than females. The higher number in females is because females live longer than males and the types of cancer which males and females get differ.

- Three out of four cancers were diagnosed in those aged 60 and above.

- Lung cancer is the most common cancer (more than 5,300 registrations overall), although breast (around 5,100) and prostate (around 4,200) cancers are the most common in females and males, respectively. Bowel (colorectal) cancer is the fourth most common cancer (around 4,100).

- Lung cancer is three times more likely in the most deprived areas compared with the least deprived areas in Scotland. Colorectal and cervical cancers are also more likely in the more deprived areas. In contrast, breast and prostate cancers are more common in the less deprived areas.

- The earlier a patient is diagnosed with cancer, the more likely they are to have a good outcome. Four out of five breast cancers (79%) were diagnosed at an early stage (I or II). In contrast, almost half of lung cancers (46%) and a fifth of colorectal cancers (21%) were diagnosed at a late stage (Stage IV). The quality of information on cancer stage in Scotland has improved over time with fewer records having missing data.

- In females in the decade to 2018, there were significant increases in rates of thyroid cancer (up 60%), liver (up 54%) and uterus (up 19%), while there were significant falls in the rates of cancers of stomach (down 29%), and the ovary (down 15%). Rates for carcinoma in situ of cervix uteri (abnormalities of the cervix that sometimes lead to cancer) also fell by 26%, leukaemia by 23% and non-Hodgkin lymphoma by 12%.

- For males in the decade to 2018, there were significant increases in rates of thyroid cancer (up 56%), liver (up 37%), kidney (up 26%). Malignant melanomas also increased by 15%. There were significant falls in the rates of stomach cancer (39%) and leukaemia (26%).

- Lung cancer rates fell by 10% in the decade to 2018 due to a fall of 19% in men but almost no change in women; this is due to differing smoking patterns in previous decades. Prostate cancer increased by 7% while there was little change in breast cancer in women. Colorectal cancer rates fell 18% over the same period.
Results and Commentary

These statistics can be found by cancer site on the Public Health Scotland website cancer topic area. Other statistics available there include cancer mortality, lifetime risk, prevalence and survival.

Cancer incidence - numbers and risks over time

The overall numbers of cancers diagnosed increased from 30,600 in 2009 to almost 34,000 in 2018. In contrast, the risks of developing cancer fell during the same period (by 3.5%; Figure 1 and Cancer incidence: all cancers).

The risk of all cancers (excluding non-melanoma skin cancers) has been higher in men than women, with a drop in age-adjusted incidence rates of 5.7% for males but no significant change in females over the last decade. The drop in male rates has reduced the gap between cancer risk in men and women. In contrast, there are more cancers diagnosed in women than men each year (over 17,200 females and over 16,700 males diagnosed in Scotland in 2018). The contrasting patterns between the numbers and rates between the sexes is due to there being more women living to older ages than men. The populations of both sexes continue to increase over time.

To understand the implications of these trends over time, each cancer needs to be considered separately. Some have increased and some have decreased by similar degrees, while patterns in men and women may have gone in opposite directions. (See Cancer Incidence by Site, below).

Note that all of the figures reported in this publication exclude diagnoses of non-melanoma skin cancers (over 12,400 in 2018); an explanation why can be found in Appendix 1.
Figure 1. Cancer incidence in Scotland, 1994-2018. Number of cases and age-adjusted incidence rate by sex.

Source: Scottish Cancer Registry

1. All cancers excluding non-melanoma skin cancers (ICD-10 C00-C97 excl C44).
2. The estimated 10-year changes in age-adjusted (using the 2013 European Standard Population) incidence rate quoted in the text are calculated using Poisson regression analysis. The 10-year fall in rates to 2018 was 5.7% in males and 0.8% in females.
Cancer incidence by age

The rate, or risk, of cancer diagnosis increases with age in both sexes (Figure 2). Age-specific numbers of cancers reflect both the risk and the number of people at risk. The number of cancers increases with age to a peak at 70-74 years, and then declines thereafter as the size of the older population decreases. In 2018, three-quarters (76%) of cancer diagnoses were in people aged 60 and over. There is however, a very different pattern observed for males and females in adults by age; with risks being higher in females aged 25-59 years and higher in males aged 60 and over. This pattern reflects the different types of cancer which males and females are diagnosed with (see Cancer Incidence by Site for more detail).

Figure 2. Number of cancer registrations and age-specific rates per 100,000 population for all malignant neoplasms\(^1\) diagnosed in 2018 by five-year age group and sex.

Source: Scottish Cancer Registry

1. All cancers excluding non-melanoma skin cancers (ICD-10 C00-C97 excl C44).
Cancer incidence by socio-economic circumstances

Generally, people who live in more deprived areas of Scotland are more likely to be diagnosed with cancer, with the most deprived areas in Scotland having incidence rates that are 28% higher than the least deprived areas (Figure 3). This overall pattern is strongly influenced by higher rates of smoking-related cancers in more deprived areas although the opposite pattern – higher rates of cancer in less deprived areas – is seen for several common cancers. Socio-economic deprivation may further increase the cancer risks of some behavioural factors.

Figure 3. Age-adjusted\(^1\) cancer incidence rates for all cancers combined (excluding non-melanoma skin cancer) by deprivation quintile\(^2\) in Scotland, 2014-2018.

There are variations in this pattern when looking at specific types of cancer.

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2. Deprivation quintile based on SIMD2016.
For lung cancer, age-adjusted incidence rates were three times higher in the most deprived areas of Scotland compared with the least deprived (age-adjusted incidence rates of 177 and 60 per 100,000, respectively for 2014-2018).

Figure 4. Age-adjusted\(^1\) cancer incidence rates for lung cancer by deprivation quintile\(^2\) in Scotland, 2014-2018.

Source: Scottish Cancer Registry

2. Deprivation quintile based on SIMD2016.
For female breast cancer, incidence was 14% higher in the least deprived areas compared with the most deprived (age-adjusted incidence rates of 180 and 157 per 100,000, respectively, for 2014-2018). This is likely to reflect differences in lifestyle, behaviour and reproductive factors, including higher rates of attendance at breast screening in less deprived areas.

Figure 5. Age-adjusted\(^1\) cancer incidence rates for female breast cancer by deprivation quintile\(^2\) in Scotland, 2014-2018.

Source: Scottish Cancer Registry

2. Deprivation quintile based on SIMD2016.
For prostate cancer, incidence was 27% higher in the least deprived areas compared with the most deprived (age-adjusted incidence rates of 174 and 137 per 100,000, respectively, for 2014-2018). This may be an artefact reflecting higher rates of prostate specific antigen (PSA) testing of the populations in these areas (see Morgan et al)\(^1\), although there may be some sort of correlation with testosterone levels.

**Figure 6. Age-adjusted\(^1\) cancer incidence rates for prostate cancer by deprivation quintile\(^2\) in Scotland, 2014-2018.**

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\(^1\) Morgan RM, Steele RJ, Nabi G, McCowan C. Socioeconomic variation and prostate specific antigen testing in the community: a United Kingdom based population study. *J Urol.* 2013;190:1207-12.

The incidence of colorectal cancers is 5% higher in the most deprived areas compared with the least deprived (age-adjusted incidence rates of 79 and 75 per 100,000, respectively, for 2014-2018).

Figure 7. Age-adjusted\textsuperscript{1} cancer incidence rates for colorectal cancer by deprivation quintile\textsuperscript{2} in Scotland, 2014-2018.

![Bar chart showing age-adjusted incidence rates for colorectal cancer by deprivation quintile in Scotland, 2014-2018.](chart)

Source: Scottish Cancer Registry

2. Deprivation quintile based on SIMD\textsuperscript{2016}.

The incidence of cervical cancer is twice as high in women who live in the most deprived areas compared to the least deprived (age-adjusted incidence rates of 18 and 9 per 100,000 respectively for 2014-2018) reflecting socio-economic differences in exposure to risk factors, and lower attendance for cervical screening which aims to prevent cervical cancer by diagnosing and treating pre-cancerous changes. Head and neck cancers are almost three times more common in the most deprived compared to the least deprived areas (177% higher, age-adjusted incidence rates of 42 and 15 per 100,000 respectively). This reflects higher exposures to cigarette smoke and alcohol among people in more deprived areas.

Other cancers where the incidence is higher in more deprived areas include bladder, kidney, liver, oesophagus, pancreas and stomach. These may reflect increases in exposure to risk factors such as smoking, alcohol consumption and obesity in more deprived areas.
In contrast, malignant melanomas are almost twice as common (85% higher) in people from the least deprived areas compared with the most deprived (age-adjusted incidence rates of 33 and 18 per 100,000 respectively for 2014-2018).
Cancer incidence by stage over time

Cancer staging is the process of determining the extent to which a cancer has developed and spread at the time of diagnosis. For the majority of patients with cancer it is common practice to assign a number from I to IV to a cancer, with I indicating the cancer is confined to the original organ in which it occurred and IV being a cancer which has spread beyond the original organ and its local lymph glands (regional lymph nodes) to other parts of the body. Patients diagnosed with Stage I disease tend to have better outcomes and longer survival compared with patients diagnosed with Stage IV disease.

The completeness of recording of cancer staging information on the Scottish Cancer Registry has improved and been rolled out across further cancer sites over time. Apparent changes in stage may be because of better recording of stage rather than true changes. Therefore, it is important to check the proportion of cases with unknown stage when any inferences about comparisons of cancer registrations by stage are drawn over time. Additionally, the magnitude of improvement in recording stage is not the same for all cancer sites.

The most common stages of breast cancer diagnoses were Stages I and II (41% and 38%, respectively in 2018). The proportion of patients with an unknown stage has fallen to a small percentage (3.9%; Figure 8). The generally early diagnosis of breast cancer is largely due to ability to feel breast lumps that may be cancer, greater awareness of breast cancer symptoms, the presence of a screening programme and rapid referral of suspected breast cancers to diagnostic services.

**Figure 8. Trends in stage distribution of breast cancer in Scotland, 1999-2018.**

![Graph showing trends in stage distribution of breast cancer in Scotland, 1999-2018.](image-url)

Source: Scottish Cancer Registry
In contrast, for lung cancer, almost half are diagnosed when the cancer has spread elsewhere and the patient is unlikely to be cured (46% in 2018). Symptoms of lung cancer are common and not specific for lung cancer (for example, a persistent cough or unexplained weight loss) and often only appear later as the disease progresses. The proportions of both early (Stage I) and late (Stage IV) lung cancer have increased over the same period (Figure 9). Almost all of the increases in Stages I and IV are due to the improvement in recording of stage at diagnosis, as there has been a large reduction in the proportion of lung cancers with no stage recorded, falling from over 65% in 2005 to 7% in 2018.

**Figure 9. Trends in stage distribution of lung cancer in Scotland, 2005-2018.**

![Figure 9](source: Scottish Cancer Registry)
Over a fifth of colorectal cancers are diagnosed at a late stage (21% in 2018). There has been little change between 2009 and 2018 in the proportion of colorectal cancers with early stage disease (15% in 2018) (Figure 10). Bowel screening was introduced in Scotland for 50-74 year olds in 2007. A new bowel screening test (FIT) was introduced in November 2017, and a change from Dukes to TNM staging in the Scottish Cancer Registry began in January 2018, so a simple comparison of stages before and after the FIT test is not valid using these data.

Figure 10. Trends in stage\(^1\) distribution of colorectal cancer in Scotland, 1999-2018.

Source: Scottish Cancer Registry

Trends in unknown cancer stage

As mentioned above the completeness of recording of cancer staging information on the Scottish Cancer Registry has improved and the collection of staging data has been rolled out across further cancer sites over time. Figures 11-13 show this for the top 16 cancer sites.

The cancer sites are grouped by the length of time they have been recorded in the Scottish Cancer Registry.

Figure 11 includes information on the early cancer sites to collect staging information.

**Figure 11. Trends in percentage of cancer patients (for lung, breast, cervical and ovarian cancer) with unknown stage in Scotland, 1999-2018.**

Source: Scottish Cancer Registry
Figure 12 includes information on the cancer sites which begin collecting staging information between 2012 and 2014.

**Figure 12. Trends in percentage of cancer patients (for colorectal, oesophageal, stomach, pancreatic, prostate and kidney cancer) with unknown stage in Scotland, 2012-2018.**

Source: Scottish Cancer Registry
Figure 13 includes information on the cancer sites which begin collecting staging information between 2015 and 2016.

**Figure 13. Trends in percentage of cancer patients (for head and neck, melanoma, uterine, testicular, bladder and thyroid cancer) with unknown stage in Scotland, 2015-2018.**

Source: Scottish Cancer Registry
Cancer incidence by site

Lung cancer remained the most common cancer overall in Scotland, with there now being more cases of lung cancer in females than males. This is due to the differing patterns of smoking between the sexes over the previous decades with women starting to smoke later than men. There were 5,356 cases in total diagnosed in 2018. This accounted for 15.8% of all cancers in Scotland. There were a total of 5,054 cases of breast cancer (14.9%), with all but 19 cases being diagnosed in females. There were 4,193 cases of prostate cancer (12.3%) and 4,063 cases of colorectal cancer (12.0%), with around 200 extra cases in males than in females (Figure 14).

The most common cancers were breast, lung and colorectal cancers in females, accounting for 57% of all malignancies. In males, prostate, lung and colorectal cancers were the most common cancer (53% of cancers in men).

Figure 14. Most common 20 cancers in Scotland in 2018 for females and males (ordered by total for all persons).

Source: Scottish Cancer Registry
Cancer incidence by site and over time

A publication in the British Journal of Cancer\(^2\) estimated that nearly four in ten cancers can be attributed to potentially modifiable risk factors. Cigarette smoking, being overweight and some occupational risk factors are among the largest cancer risks to the Scottish population. The effects of sunburn, alcohol and a diet that is high in meat and low in fruit and vegetables are apparent in these cancer data. The success of the national HPV vaccination programme to prevent cervical cancer are also apparent.

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. In some situations, they may also reflect the effects of screening or other awareness campaigns to diagnose cancers earlier. The commentary below relates to average changes in the incidence rates of different types of cancer over the last ten years.

There have been significant changes in the rates of cancer over the decade to 2018. For females, there were significant increases in cancers of the thyroid (increased by 60%), liver (increased by 54%) and uterus (increased by 19%). Rates of colorectal and non-Hodgkin lymphoma fell 12% and ovarian cancers fell 15%. Leukaemias, stomach cancers and carcinoma in situ of cervix uteri (abnormalities of the cervix that sometimes lead to cancer) cancer also fell for women by 23%, 29% and 26%, respectively. The reduction in the histologically-verified CIN3 cervical cancer together with reductions in pre-cancerous conditions, indicate that HPV vaccination has been effective.

For males, there were significant increases in cancers of the liver (increased by 37%), thyroid (increased by 56%), kidney (increased by 26%) and malignant melanomas (increased by 15%). Rates of colorectal cancer fell 22% and lung cancer fell 19%. Leukaemias and stomach cancers also fell for men by 26% and 39%, respectively.

Table 1: Most common cancers in Scotland in 2018: Rank, number, frequency and change in age-adjusted incidence rate since 2008.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Type of cancer</th>
<th>Number</th>
<th>Frequency</th>
<th>EASR 1-2</th>
<th>10 year % change 3</th>
<th>p-value 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Prostate (C61)</td>
<td>4,193</td>
<td>25.1%</td>
<td>171.7</td>
<td>+7.1</td>
<td>0.0453</td>
</tr>
<tr>
<td>2</td>
<td>Trachea, bronchus and lung (C33-C34)</td>
<td>2,569</td>
<td>15.4%</td>
<td>107.8</td>
<td>-18.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>3</td>
<td>Colorectal (C18-C20)</td>
<td>2,142</td>
<td>12.8%</td>
<td>88.7</td>
<td>-21.9</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4</td>
<td>Head and Neck (C00-C14, C30-C32)</td>
<td>938</td>
<td>5.6%</td>
<td>36.9</td>
<td>+3.8</td>
<td>0.2506</td>
</tr>
<tr>
<td>5</td>
<td>Kidney (C64-C65)</td>
<td>703</td>
<td>4.2%</td>
<td>28.4</td>
<td>+25.9</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>6</td>
<td>Malignant melanoma of skin (C43)</td>
<td>699</td>
<td>4.2%</td>
<td>29.1</td>
<td>+14.8</td>
<td>0.0019</td>
</tr>
<tr>
<td>7</td>
<td>Non-Hodgkin lymphoma (C82-C86)</td>
<td>584</td>
<td>3.5%</td>
<td>23.8</td>
<td>-1.4</td>
<td>0.7312</td>
</tr>
<tr>
<td>8</td>
<td>Bladder (C67)</td>
<td>583</td>
<td>3.5%</td>
<td>25.0</td>
<td>-6.5</td>
<td>0.0595</td>
</tr>
<tr>
<td>9</td>
<td>Oesophagus (C15)</td>
<td>582</td>
<td>3.5%</td>
<td>23.9</td>
<td>-5.9</td>
<td>0.1358</td>
</tr>
<tr>
<td>10</td>
<td>Pancreas (C25)</td>
<td>414</td>
<td>2.5%</td>
<td>17.6</td>
<td>-4.1</td>
<td>0.3186</td>
</tr>
<tr>
<td></td>
<td>Other malignant neoplasms</td>
<td>3,326</td>
<td>19.9%</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>All malignant neoplasms excluding non-melanoma skin cancer</td>
<td>16,733</td>
<td>100.0%</td>
<td>690.5</td>
<td>-5.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Breast (C50)</td>
<td>5,035</td>
<td>29.2%</td>
<td>174.9</td>
<td>+1.5</td>
<td>0.3776</td>
</tr>
<tr>
<td>2</td>
<td>Trachea, bronchus and lung (C33-C34)</td>
<td>2,787</td>
<td>16.2%</td>
<td>95.7</td>
<td>+1.8</td>
<td>0.3411</td>
</tr>
<tr>
<td>3</td>
<td>Colorectal (C18-C20)</td>
<td>1,921</td>
<td>11.2%</td>
<td>65.8</td>
<td>-11.9</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4</td>
<td>Corpus uteri (C54)</td>
<td>797</td>
<td>4.6%</td>
<td>27.6</td>
<td>+19.3</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>5</td>
<td>Malignant melanoma of skin (C43)</td>
<td>711</td>
<td>4.1%</td>
<td>24.9</td>
<td>-1.1</td>
<td>0.7825</td>
</tr>
<tr>
<td>6</td>
<td>Ovary (C56)</td>
<td>583</td>
<td>3.4%</td>
<td>20.2</td>
<td>-14.6</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>7</td>
<td>Non-Hodgkin lymphoma (C82-C86)</td>
<td>470</td>
<td>2.7%</td>
<td>16.2</td>
<td>-12.4</td>
<td>0.0081</td>
</tr>
<tr>
<td>8</td>
<td>Kidney (C64-C65)</td>
<td>416</td>
<td>2.4%</td>
<td>14.3</td>
<td>+4.4</td>
<td>0.4109</td>
</tr>
<tr>
<td>9</td>
<td>Pancreas (C25)</td>
<td>397</td>
<td>2.3%</td>
<td>13.4</td>
<td>+0.9</td>
<td>0.8638</td>
</tr>
<tr>
<td>10</td>
<td>Head and Neck (C00-C14, C30-C32)</td>
<td>382</td>
<td>2.2%</td>
<td>13.2</td>
<td>-0.9</td>
<td>0.8711</td>
</tr>
<tr>
<td></td>
<td>Other malignant neoplasms</td>
<td>3,726</td>
<td>21.6%</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>All malignant neoplasms excluding non-melanoma skin cancer</td>
<td>17,225</td>
<td>100.0%</td>
<td>594.4</td>
<td>-0.8</td>
<td>0.3187</td>
</tr>
<tr>
<td><strong>All persons</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Trachea, bronchus and lung (C33-C34)</td>
<td>5,356</td>
<td>15.8%</td>
<td>101.7</td>
<td>-10.3</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Breast (C50)</td>
<td>5,054</td>
<td>14.9%</td>
<td>43.9</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>Prostate (C61)</td>
<td>4,193</td>
<td>12.3%</td>
<td>85.9</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td>Colorectal (C18-C20)</td>
<td>4,063</td>
<td>12.0%</td>
<td>77.2</td>
<td>-18.1</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>5</td>
<td>Malignant melanoma of skin (C43)</td>
<td>1,410</td>
<td>4.2%</td>
<td>27.0</td>
<td>+7.0</td>
<td>0.0338</td>
</tr>
<tr>
<td>6</td>
<td>Head and Neck (C00-C14, C30-C32)</td>
<td>1,320</td>
<td>3.9%</td>
<td>25.1</td>
<td>+2.4</td>
<td>0.2605</td>
</tr>
<tr>
<td>7</td>
<td>Kidney (C64-C65)</td>
<td>1,119</td>
<td>3.3%</td>
<td>21.3</td>
<td>+17.8</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>8</td>
<td>Non-Hodgkin lymphoma (C82-C86)</td>
<td>1,054</td>
<td>3.1%</td>
<td>20.0</td>
<td>-6.3</td>
<td>0.0590</td>
</tr>
<tr>
<td>9</td>
<td>Oesophagus (C15)</td>
<td>877</td>
<td>2.6%</td>
<td>16.9</td>
<td>-6.9</td>
<td>0.0698</td>
</tr>
<tr>
<td>10</td>
<td>Pancreas (C25)</td>
<td>811</td>
<td>2.4%</td>
<td>15.5</td>
<td>-1.9</td>
<td>0.7171</td>
</tr>
<tr>
<td></td>
<td>Other malignant neoplasms</td>
<td>8,701</td>
<td>25.6%</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>All malignant neoplasms excluding non-melanoma skin cancer</td>
<td>33,958</td>
<td>100.0%</td>
<td>642.4</td>
<td>-3.5</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Source: Scottish Cancer Registry

1. EASR: age- and sex-standardised (using the 2013 European Standard Population) incidence rate per 100,000 person-years at risk.
2. 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+.
3. Estimated 10-year change in age-adjusted incidence rates, calculated using Poisson regression analyses.
4. p-value is the probability that the 10-year percentage change occurred by chance. A p-value of less than 0.05 indicates that the change is statistically significant.
5. Percentage change in incidence is not shown here for cancers occurring mainly or only in one sex.
Figure 15. 10-year percentage change in age-adjusted incidence rate for 20 most common cancers in Scotland.

Source: Scottish Cancer Registry

Colorectal cancer

Over half of bowel cancers are likely to be preventable in the UK, with eating processed meat, being overweight or obese, alcohol consumption and smoking being among the commonest risk factors. Recent decreases in incidence might reflect the removal of pre-malignant polyps at colonoscopies resulting from the Scottish Bowel Screening Programme, but the larger decrease in men compared with women is not consistent with men’s lower uptake of screening. Overweight and obesity prevalence has not fallen while smoking rates have decreased.

Non-Hodgkin lymphoma

Non-Hodgkin lymphoma (NHL) decreased in females by 12% but did not change significantly in males. Although immunosuppression has been associated with the development of NHL, much has still to be understood about the causes of NHL.

Cancer of the body of the uterus (corpus uteri)

The majority of these cancers affect the endometrium or lining of the womb. The increase in incidence (19%) 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.

Liver cancer

About half of liver cancers are preventable in the UK, with overweight and obesity, smoking, infections and alcohol being among the commonest causes. The long-term and persistent
increase in overweight and obesity may explain substantial increases in risks of liver cancer (54% increase for females and 37% for males).

Cervical cancer (cervix uteri)
The incidence of cervical cancer has not changed significantly over the last ten years for all ages combined. It was the eleventh most common cancer in females in Scotland in 2018 but it is the most common cancer in women under the age of 35 (as it is in the rest of the UK). The main risk factor for cervical cancer is infection with the human papilloma virus (HPV). Rates of cervical cancer were much lower in 2018 in 20-29 year-old women compared to previous years while rates of histologically-verified CIN3 (the most serious pre-cancerous form of cervical intraepithelial neoplasia) have been falling for several years and is significantly different over the last ten years. Together, these suggest that the HPV vaccination programme introduced in Scotland in 2008 has been effective in reducing cervical cancer.

Breast cancer
Known risk factors for breast cancer include older mother’s age at the birth of her first child, having a smaller number of, or no children, post-menopausal obesity and alcohol consumption. The introduction or extension of existing screening programmes has also led to increases in diagnoses of breast cancer.

Prostate cancer
There are few modifiable risk factors for prostate cancer. The rate of prostate-specific antigen testing has a significant effect on rates of diagnosis, as well as testosterone levels.

Lung cancer
The single largest risk factor for lung cancer is cigarette smoking and the large decrease in lung cancer in men reflects decreases in smoking prevalence over several decades. Occupational exposures and low fruit and vegetable consumption may also be risk factors.

Malignant melanoma of the skin
Malignant melanoma of the skin is the fifth most common cancer in women and sixth in men. Incidence rates increased over the last decade by 15% in males and while they did not change significantly in females over the past decade, substantial increases have occurred previously. 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.

Ovarian cancer
The 15% 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.

Kidney cancer
Cancers of the kidney continue to show increases in incidence rates over the last ten years of 26% and 4% for males and females, respectively. The change in females may be a chance finding and is not statistically significant. The increase has occurred primarily in cancers of
the renal parenchyma rather than of the renal pelvis. 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.

Thyroid cancer
Thyroid cancer rates increased 56% in men and 60% in women in the decade to 2018. Similar increases have been observed in other countries but it is not clear to what extent it represents a true increase in the occurrence of thyroid cancer or society getting better at detecting previously undiagnosed disease. A number of known risk factors for thyroid cancer exist, including exposure to radiation, family history and obesity.
Glossary

Age-adjusted rate
See European Age Standardised Rate (EASR) below.

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 PHS 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.

European Age Standardised Rate (EASR)
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.

ICD-10
The 10th 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).

Malignant tumour
Cancerous growth.

Mortality rate
The number of deaths as a rate per 100,000 population.

Neoplasm
Abnormal growth

Non-melanoma skin cancer (NMSC)
A type of cancer that usually develops slowly in the upper layers of the skin.
| Percentage | A number or amount in each hundred. |
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Further Information

Further information and data for this publication are available from the publication page on our website.

The next release of this publication will be 27 April 2021.

Rate this publication

Let us know what you think about this publication via. the link at the bottom of this publication page on the PHS website.
Appendices

Appendix 1 – Background information

Source of data

The Scottish Cancer Registry is the source of the cancer incidence data provided in this publication. More information on the registry can be found on the Public Health Scotland website.

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 PHS 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.

Non-melanoma skin cancer

As noted within the main body of the publication, non-melanoma skin cancer is excluded from analyses of all cancers combined for the following reasons:

- In the interests of comparison with other countries, because not all cancer registries collect data on non-melanoma skin cancers.
- Only the first occurrence of a basal cell carcinoma (the most common type of non-melanoma skin cancer) is collected in Scotland because they are so common.

The PHS data on non-melanoma skin cancer is available on our website.

Data completeness

Cancer registrations are believed to be essentially complete for the year 2018, but 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.

This seems to be a particular issue for chronic lymphocytic leukaemia (CLL) – if the disease is progressing slowly and diagnosed incidentally on the basis of a blood test, hospital contact (and therefore opportunities for ascertainment) may be limited for some months or even years after diagnosis.

Note on trends

It may be misleading to focus too much attention on any apparent changes in incidence between 2017 and 2018; 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.
Comparisons – UK and international
Cancer incidence publications for the rest of the UK can be found at the links below:

England  
Wales  
Northern Ireland

Comparisons are also produced by Cancer Research UK, and the most recent incidence data can be found on their CancerStats page.

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, Global Cancer Observatory, that is searchable for comparative data.

Age-adjusted incidence rates
Based on the number of cancer registrations in each of the calendar years, the following rates were calculated for this publication:

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 incidence 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. European Age-Sex Standardised Rates (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 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.
# Appendix 2 – Publication Metadata

<table>
<thead>
<tr>
<th>Metadata Indicator</th>
<th>Description</th>
</tr>
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<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td>Theme</td>
<td>Health and Social Care</td>
</tr>
<tr>
<td>Topic</td>
<td>Conditions and Diseases</td>
</tr>
<tr>
<td>Format</td>
<td>Excel workbooks</td>
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<tr>
<td>Data source(s)</td>
<td>Scottish Cancer Registry (SMR06)</td>
</tr>
<tr>
<td>Date that data are acquired</td>
<td>31 January 2020</td>
</tr>
<tr>
<td>Release date</td>
<td>28 April 2020</td>
</tr>
<tr>
<td>Frequency</td>
<td>Annual</td>
</tr>
<tr>
<td>Timeframe of data and timeliness</td>
<td>Data up to 31 December 2018. No delays between data availability and processing of data for publication.</td>
</tr>
<tr>
<td>Continuity of data</td>
<td>Reports include data from 1994 to 2018. 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 1989 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.</td>
</tr>
<tr>
<td>Revisions statement</td>
<td>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.</td>
</tr>
<tr>
<td>Revisions relevant to this publication</td>
<td>The definition of Non Hodgkin Lymphoma has changed to include ICD-10 code C86, which was introduced in 2014. Incidence figures for 2014 and 2015 have been recalculated. There is minimal impact on the overall incidence figures for Non Hodgkin Lymphoma.</td>
</tr>
<tr>
<td>Concepts and definitions</td>
<td>See the <a href="#">Cancer Information FAQs</a></td>
</tr>
<tr>
<td>Relevance and key uses of the statistics</td>
<td>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. Key uses include: 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.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Registry data are subject to validation at data entry and quality assurance procedures. See the <a href="#">Cancer Information FAQs</a>. Reported data are compared to previous years' figures and to expected trends.</td>
</tr>
<tr>
<td>Completeness</td>
<td>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</td>
</tr>
</tbody>
</table>
are available on the [UKIACR website](https://www.ukiacr.org). There have been ad hoc studies of data completeness in the past. See the [Cancer Information FAQs](https://www.ukiacr.org/cancer-information-faqs).

**Comparability**
Cancer incidence data are regularly compared with the UK and other countries, for example in the publication *Cancer Incidence in Five Continents*. Cancer incidence data is also published separately for [England](https://www.gov.uk/government/publications), [Wales](https://www.gov.uk/government/publications) and [Northern Ireland](https://www.gov.uk/government/publications).

**Accessibility**
It is the policy of Public Health Scotland to make its web sites and products accessible according to [published guidelines](https://www.gov.uk/government/publications).

**Coherence and clarity**
All Cancer tables are accessible via the [Cancer pages on the PHS website](https://www.cancerincidenceinfivescontinents.org/). 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 measurement**
Number of new cases of cancer as count; rates of cancer as crude, European age standardised, World Age standardised, and as Standardised incidence ratios. Number, eg 1.1

**Disclosure**
The [PHS protocol on Statistical Disclosure Protocol](https://www.gov.uk/government/publications) is followed.

**Official Statistics designation**
National Statistics

**UK Statistics Authority Assessment**
May 2010

**Last published**
30 April 2019

**Next published**
27 April 2021

**Date of first publication**

**Help email**
phs.isdcancerstats@nhs.net

**Date form completed**
07 April 2020
Appendix 3 – Early access details

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", PHS is 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.

Standard Pre-Release Access:
Scottish Government Health Department
NHS Board Chief Executives
NHS Board Communication leads
Appendix 4 – PHS and Official Statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public’s health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the Code of Practice for Statistics in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the ‘five safes’.