

Statistical bulletin

Cancer Survival in England- Adults Diagnosed: 2008 to 2012, followed up to 2013

Comparisons across 24 cancer types of the rate of survival for adults (aged 15 to 99) and short-term predicted survival rates for recently diagnosed patients.



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1 . **Headline figures**

- The trend of increasing survival continued for cancer patients diagnosed during 2008–2012
- Survival is generally lower for older patients than younger patients, even after adjusting for death from other causes than cancer
- Five-year net survival is over 80% for cancers of the breast (women), prostate, testis and thyroid gland, and for Hodgkin lymphoma and melanoma of the skin
- Five-year survival for cancers of the brain, lung, oesophagus, liver, mesothelioma, pancreas and stomach is less than 22%. Five-year survival from pancreatic cancer (5%) remains the lowest in both sexes
- For the first time, short-term predictions of one-year and five-year net survival for patients that would be diagnosed in 2013 are presented
- Also for the first time, one- and five-year cancer survival estimates have been provided for cancers of the liver and thyroid gland, and for mesothelioma

2 . **Summary**

This bulletin presents estimates of one-year and five-year net survival (%) for adults (aged 15–99 years) diagnosed with one of 24 common cancers in England during 2008–2012 and followed up to 31 December 2013 (see Background Notes 1–5). These 24 cancers comprised over 92% of all newly diagnosed cancers during 2008–2012, among adults eligible for analysis (see Background Note 4). Data are presented by sex, by age group and for all ages combined, both un-standardised and age-standardised (see Background Note 1). For the first time, this bulletin also presents short-term predictions of one-year and five-year net survival (%) for patients diagnosed in 2013 (see Background Note 2).

Previous editions of this ONS bulletin on cancer survival in England have included data on 21 'common cancers'. The recently published Cancer Registration Statistics ([series MB1, June 2014](#)) identified three cancers that have become more common: liver (ICD-10 code C22), mesothelioma (C45) and thyroid gland (C73). Survival estimates for these cancers are included here for consistency with that publication.

3 . **Results for patients diagnosed in 2008–2012**

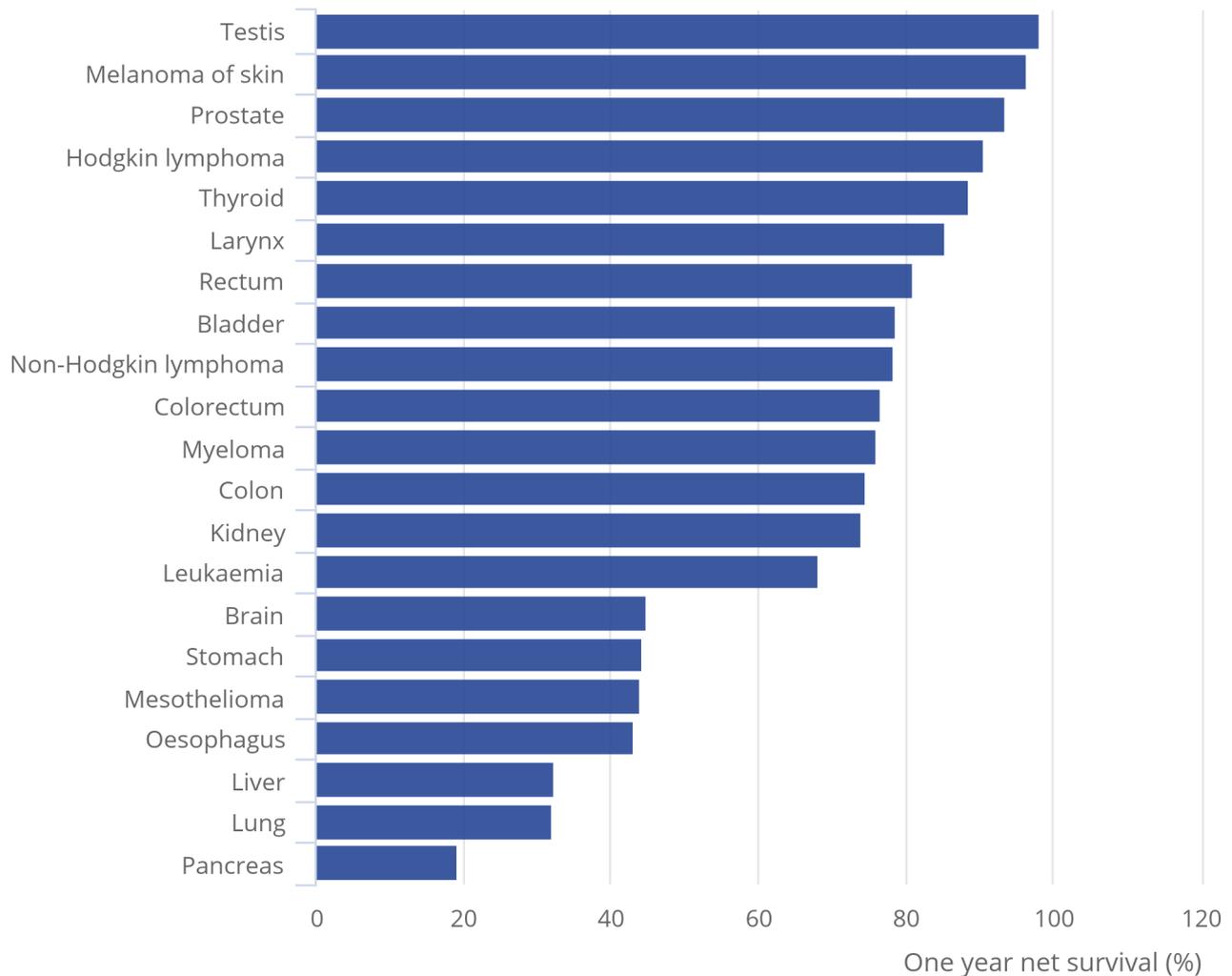
Figures 1 and 2 show age-standardised one-year net survival estimates, in rank order, for men and women respectively diagnosed with one of 24 common cancers during 2008–2012. Figures 3 and 4 show five-year net survival for these same cancers. These estimates are presented in Table 1, with 95% confidence intervals (see Background Note 7), and compared with the corresponding values for patients diagnosed during 2007–2011 ([Office for National Statistics 2013](<http://www.ons.gov.uk/ons/rel/cancer-unit/cancer-survival/cancer-survival-in-england--patients-diagnosed-2007-2011-and-followed-up-to-2012/index.html>) "Cancer Survival in England: Patients Diagnosed 2007-2011 and Followed up to 2012") (see Background Note 8).

Figure 1: One-year age-standardised net survival (%) for men diagnosed during 2008–2012 and followed up to 2013

England, common cancers for men

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England, common cancers for men



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

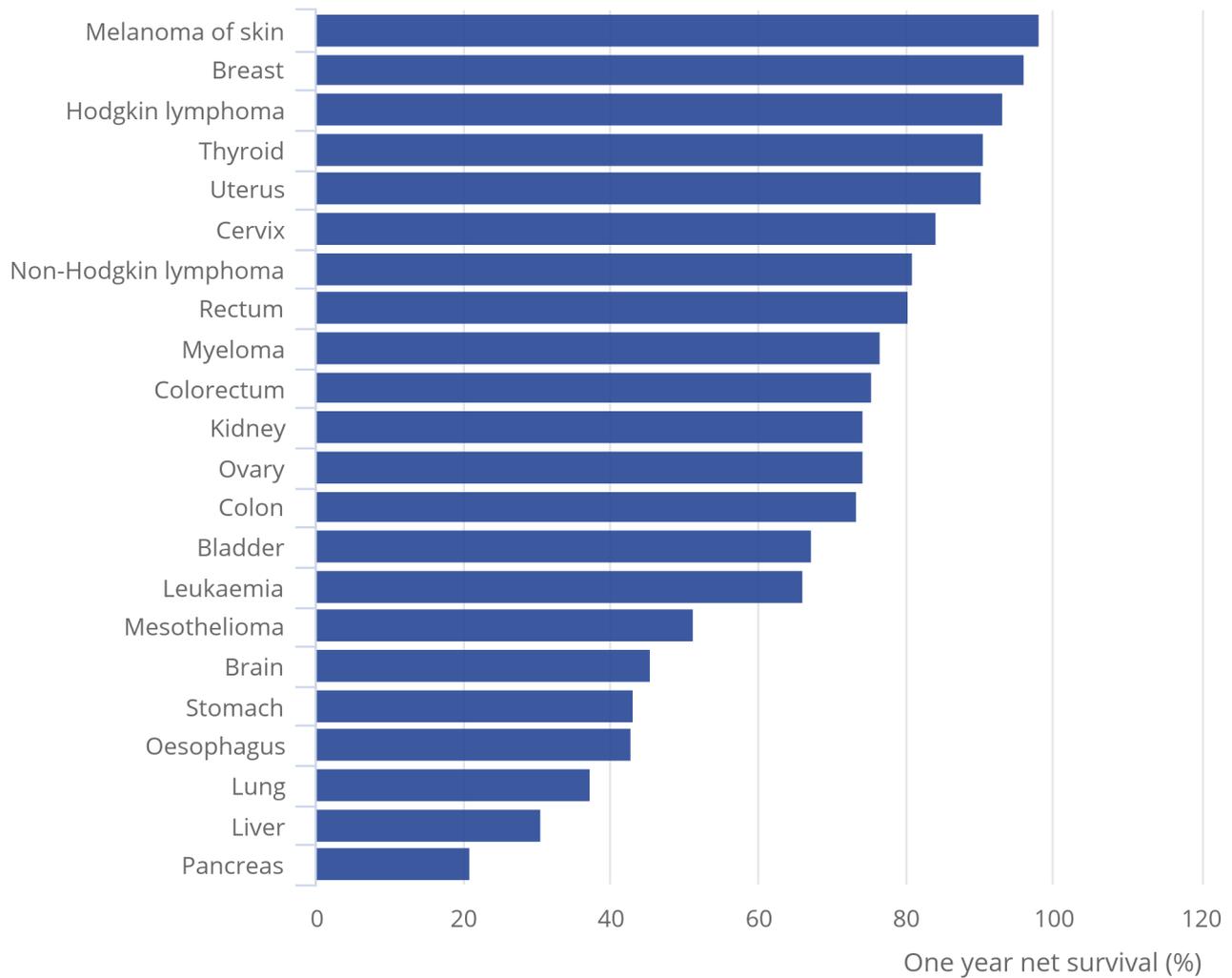
1. Men aged 15-99 years

Figure 2: One-year age-standardised net survival (%) for women diagnosed during 2008–2012 and followed up to 201

England, common cancers for women

Figure 2: One-year age-standardised net survival (%) for women diagnosed during 2008–2012 and followed up to 201

England, common cancers for women



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

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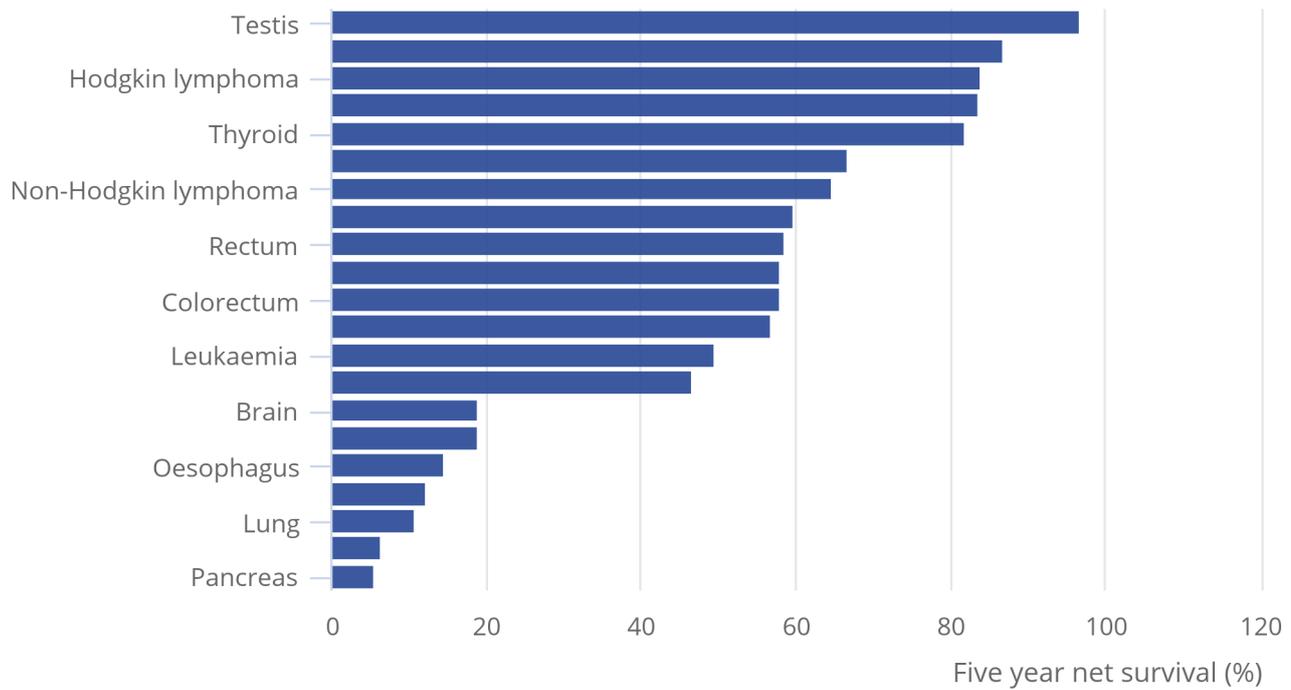
1. Women aged 15-99 years

Figure 3: Five-year age-standardised net survival (%) for men diagnosed during 2008–2012 and followed up to 2013

England, common cancers for men

Figure 3: Five-year age-standardised net survival (%) for men diagnosed during 2008–2012 and followed up to 2013

England, common cancers for men



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

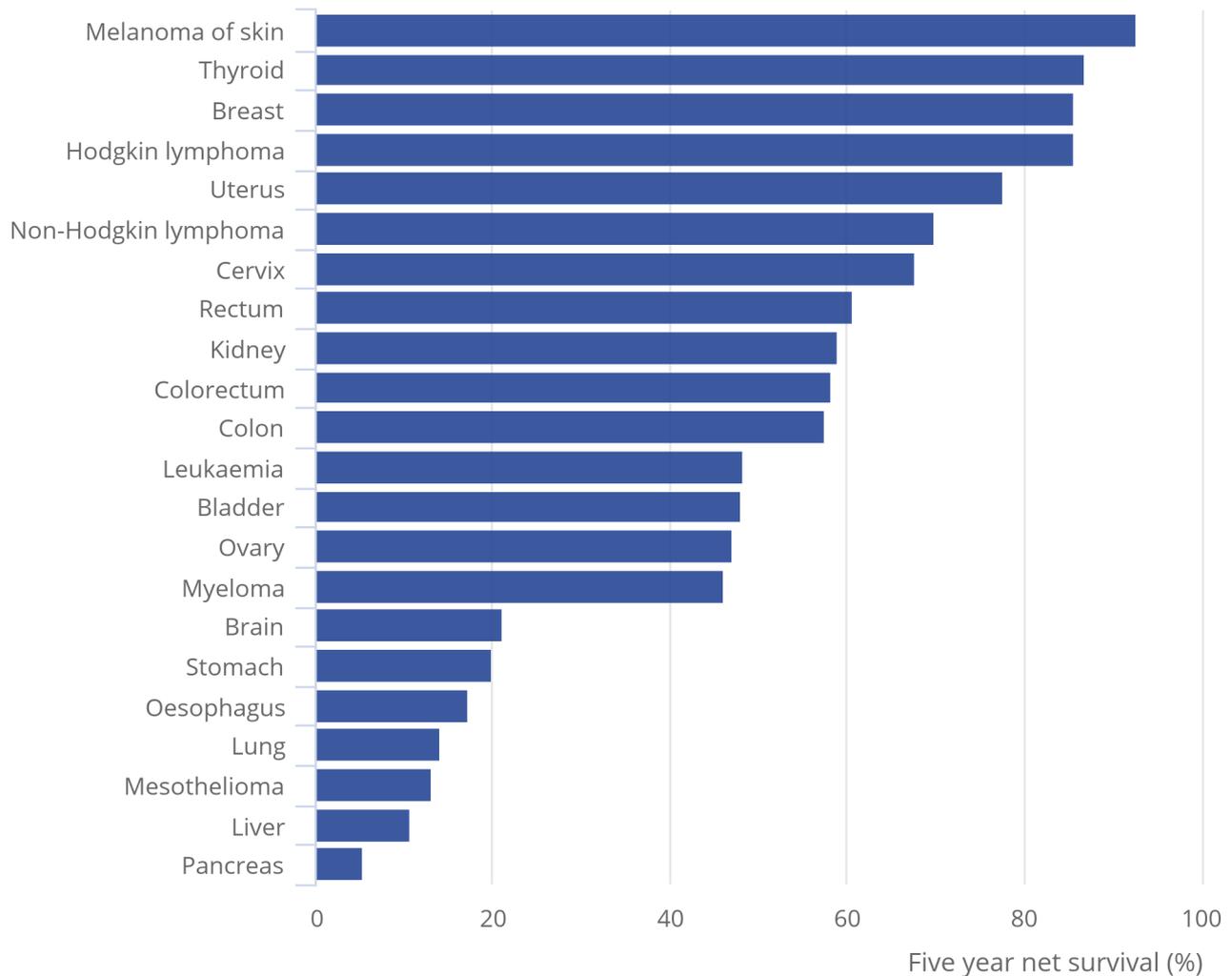
1. Men aged 15-99 years

Figure 4: Five-year age-standardised net survival (%) for women diagnosed during 2008–2012 and followed up to 2013

England, common cancers for women

Figure 4: Five-year age-standardised net survival (%) for women diagnosed during 2008–2012 and followed up to 2013

England, common cancers for women



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

1. Women aged 15-99 years

The general trend of increasing five-year net survival continued for patients diagnosed during 2008–2012, with survival improving for most of the 24 cancers. There were five exceptions: bladder cancer in women (49.1% for patients diagnosed during 2007–2011, 48.0% for those diagnosed during 2008–2012), thyroid cancer in men (82.9%, 81.8%) and women (87.3%, 86.8%), testicular cancer (97.1%, 96.6%), Hodgkin lymphoma in women (86.0%, 85.7%) and mesothelioma in men (6.4%, 6.3%). For cancers that occur in both sexes, survival is generally higher in women, with one notable exception: bladder cancer (48.0% in women, 59.7% in men).

The five-year survival estimate for women diagnosed with myeloma during 2008–2012 was 46.2%, an increase of 4.6 percentage points from the value for 2007–2011: since the two periods overlap by four years, this is a large increase. There were other large increases for men with myeloma (up 3.9 percentage points to 46.7%) and men with leukaemia (up 2.5 percentage points to 49.5%). Generally, there were also increasing trends for one-year survival (data not presented).

There is a clear separation in five-year survival between the seven cancers with the poorest prognosis and all other cancers. Estimates are below 19% in men and 22% in women for cancers of the brain, lung, oesophagus, liver, pancreas and stomach, and mesothelioma. Five-year survival ranges from 5.4% for pancreatic cancer in men and women, up to 18.9% in men and 21.2% in women for brain tumours (Table 1). Prognosis from these cancers remains extremely poor, despite some encouraging recent improvements in one-year survival (data not presented). For all other cancers, five-year survival ranges from 46.2% for myeloma in women to 96.6% for testicular cancer.

Five-year net survival is over 80% for cancers of the breast (women), prostate, thyroid gland, Hodgkin lymphoma and melanoma of the skin (men), and above 90% for testicular cancer (96.6%) and for melanoma of the skin in women (92.6%). However, because of increasingly intensive diagnostic activity, an increasing proportion of men with prostate cancer and, to a lesser extent, women with breast cancer, are diagnosed with tumours at an early stage. These patients are more likely to die from causes other than the cancer. Estimating survival by stage is therefore of increasing public health importance for these cancers. When reliable data on stage are available for all cancer patients in England for a full five year period, it will be possible to estimate stage-specific survival routinely, in order to monitor progress more effectively at a national level.

Table 2 presents net survival at one and five years after diagnosis for each of the 24 common cancers, by sex and age group, and for all ages combined, both un-standardised and age-standardised.

There are distinct patterns in net survival by age, with generally lower survival among older patients and often higher survival among younger patients, even after taking account of the higher background mortality in the elderly. Breast cancer is a well-known exception to this pattern; five-year net survival is lower for women aged 15–39 years at diagnosis (85%) than for women aged 40–69 years (90% to 92%), because of screening activity in middle-aged women and differences in tumour characteristics between the age groups. Similarly, for prostate cancer, five-year survival is slightly higher for men aged 60–69 years (94%) than for men aged 15–49 years (91%). This is probably attributable to very early diagnosis following more widespread use of the prostate-specific antigen (PSA) test in older men.

4 . Predicted survival for patients diagnosed in 2013

New developments in the estimation of cancer survival now enable relatively accurate short-term predictions of survival for patients who were diagnosed more recently, and for whom long-term follow-up data are not yet available. These methods (period and hybrid, see Background Note 2) are not just projections into the future of recent trends in survival: they use the most recent data on the follow-up of cancer patients to 31 December 2013. The methods do depend on certain assumptions, but experience has shown that they are relatively reliable predictions of the five-year survival that we will be able to report when all the cancer patients have been followed up for at least five years.

In this bulletin, the hybrid estimates of age-standardised survival can be interpreted as the predicted one- and five-year survival for patients diagnosed in 2013. We have included these estimates to provide the most recent possible estimates of survival.

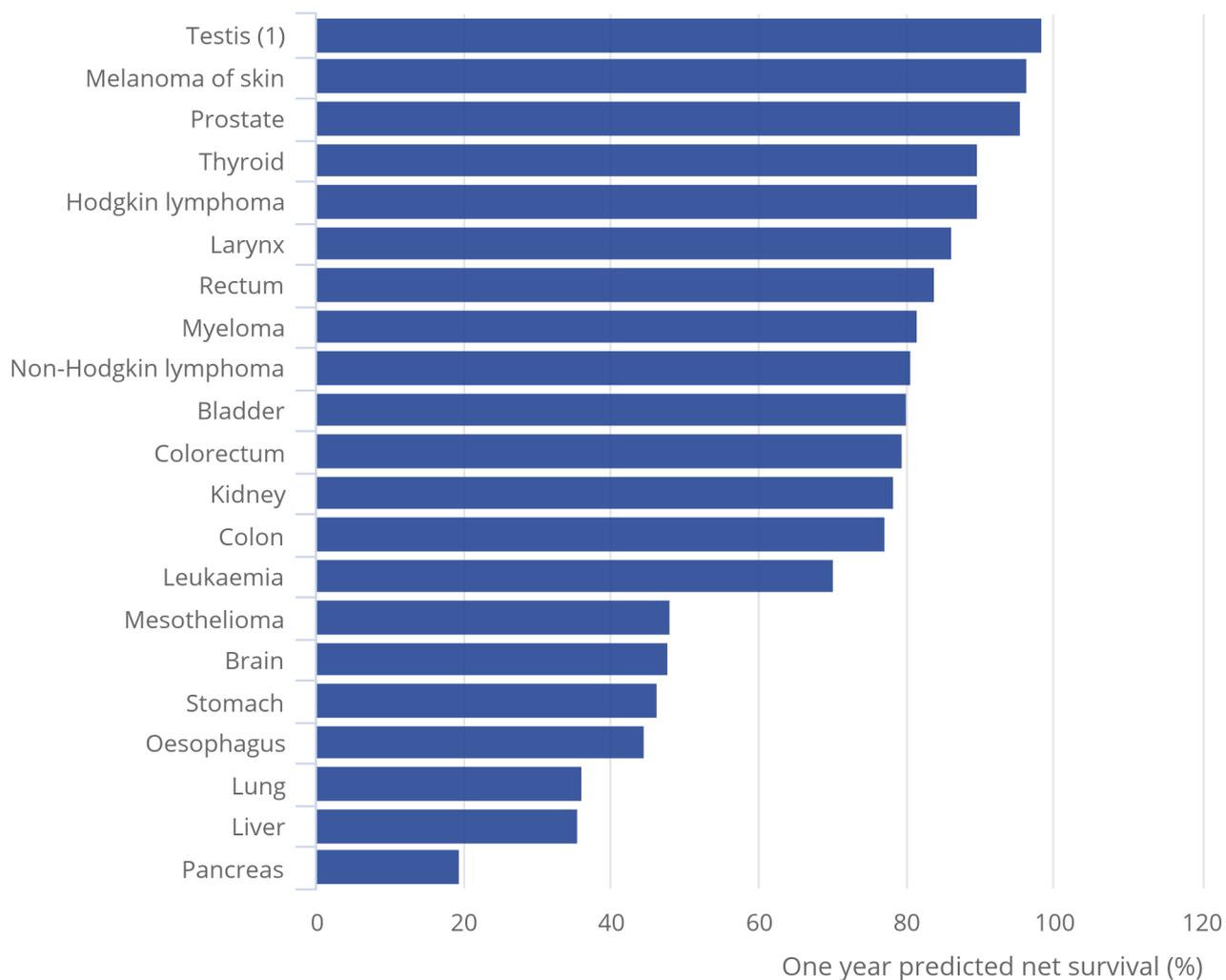
Figures 5, 6, 7 and 8 show the predicted age-standardised net survival at one and five years, in rank order, for the 24 common cancers in men and women that would be diagnosed in 2013 (see Background Note 2). Table 3 presents the predicted one-year and five-year survival estimates for patients diagnosed in 2013, by sex and age group, and for all ages combined, both un-standardised and age-standardised.

Figure 5. Predicted one-year age-standardised net survival (%) for men who would be diagnosed in 2013

England, common cancers for men

Figure 5. Predicted one-year age-standardised net survival (%) for men who would be diagnosed in 2013

England, common cancers for men



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

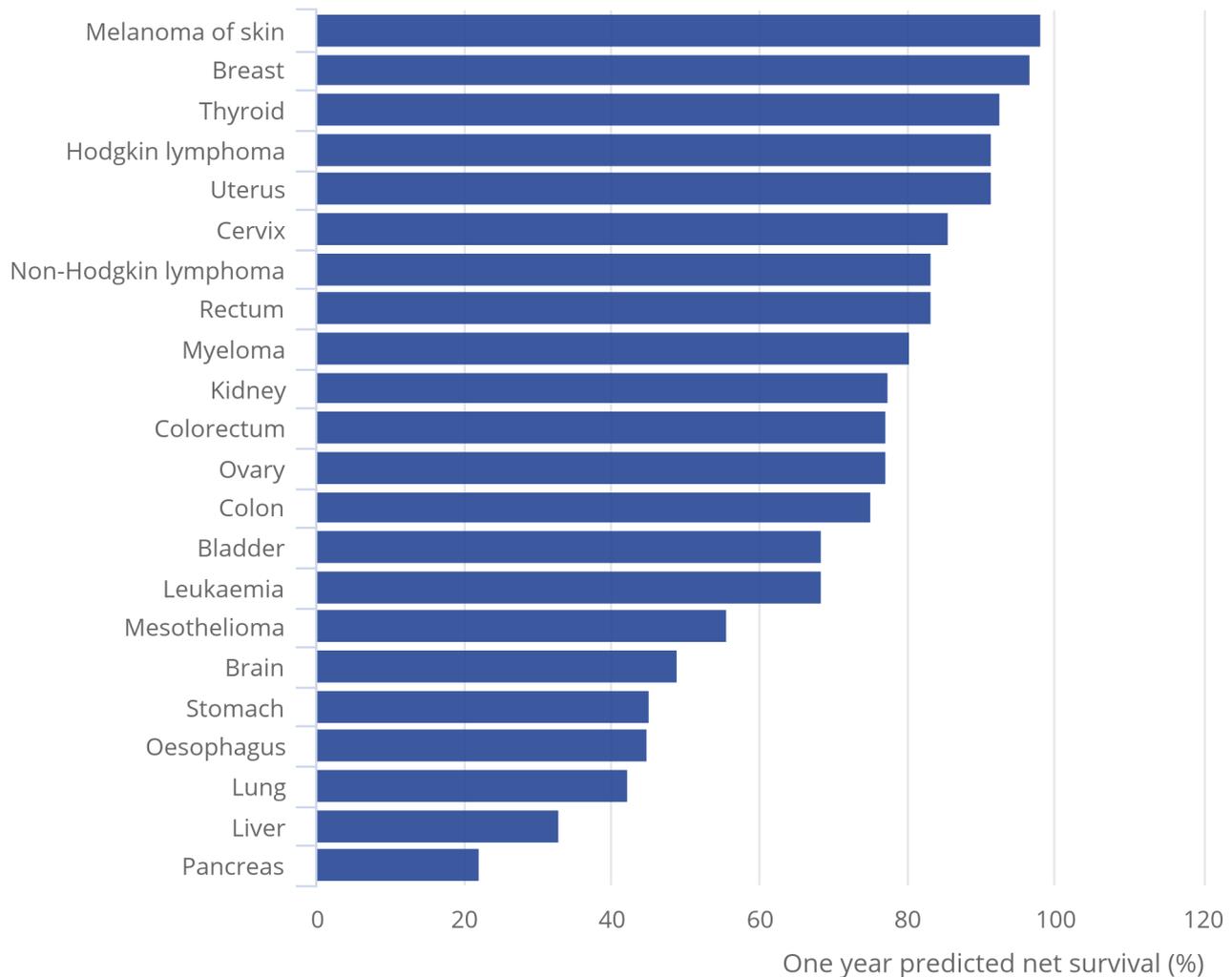
1. Age-standardised estimates were unable to be calculated for Hodgkin lymphoma, melanoma of the skin and testicular cancer due to small counts. Therefore, unstandardised estimates are shown for these cancers
2. Men aged 15-99 years

Figure 6. Predicted one-year age-standardised net survival (%) for women who would be diagnosed in 2013

England, common cancers for women

Figure 6. Predicted one-year age-standardised net survival (%) for women who would be diagnosed in 2013

England, common cancers for women



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

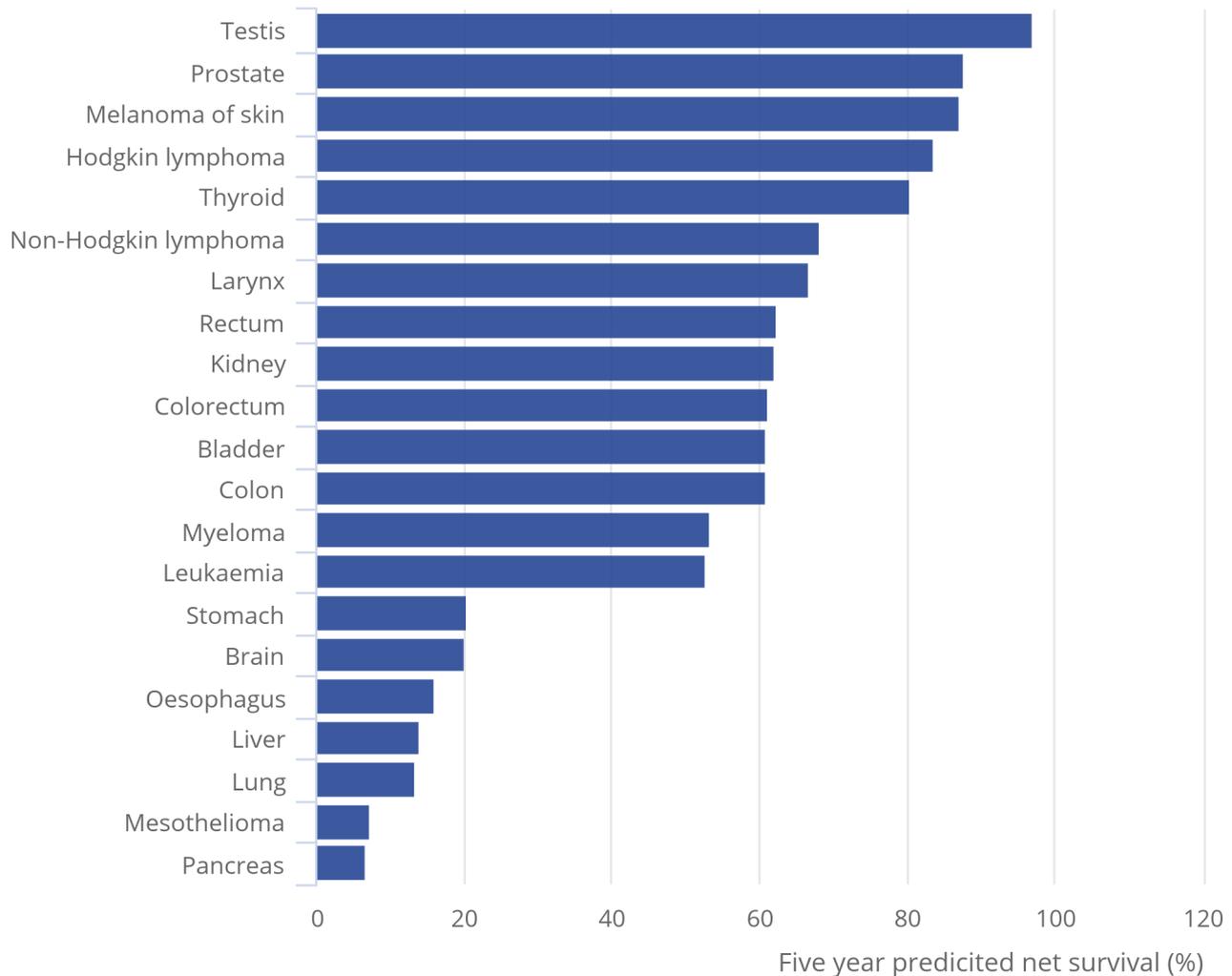
1. Age-standardised estimates were unable to be calculated for Hodgkin lymphoma and melanoma of the skin due to small counts. Therefore, unstandardised estimates are shown for these cancers
2. Women aged 15-99 years

Figure 7. Predicted five-year age-standardised net survival (%) for men who would be diagnosed in 2013

England, common cancers for men

Figure 7. Predicted five-year age-standardised net survival (%) for men who would be diagnosed in 2013

England, common cancers for men



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

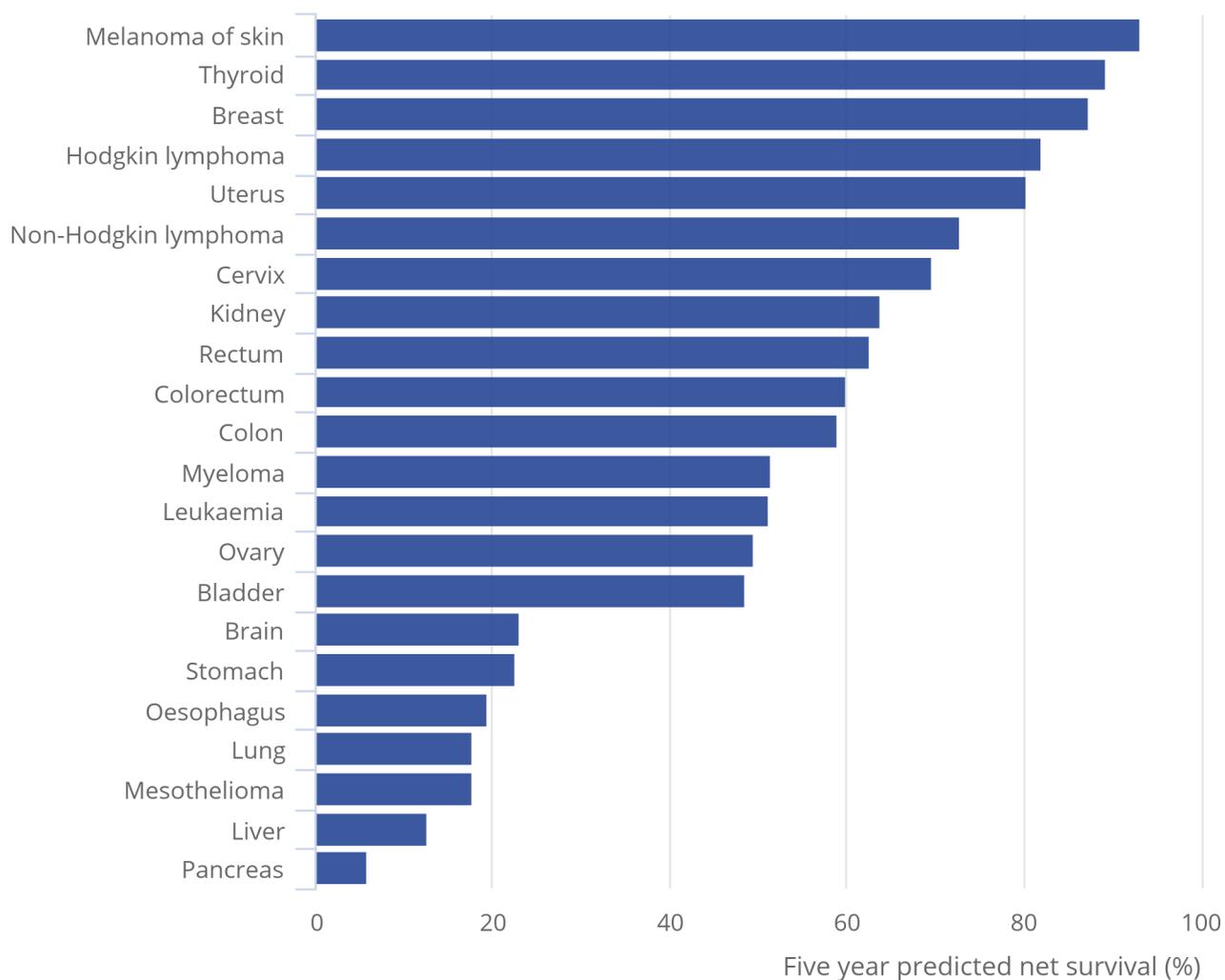
1. Age-standardised estimates were unable to be calculated for Hodgkin lymphoma, melanoma of the skin and testicular cancer due to small counts. Therefore, unstandardised estimates are shown for these cancers
2. Men aged 15-99 years

Figure 8. Predicted five-year age-standardised net survival (%) for women who would be diagnosed in 2013

England, common cancers for women

Figure 8. Predicted five-year age-standardised net survival (%) for women who would be diagnosed in 2013

England, common cancers for women



Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

1. Age-standardised estimates were unable to be calculated for Hodgkin lymphoma and melanoma of the skin due to small counts. Therefore, unstandardised estimates are shown for these cancers
2. Women aged 15-99 years

For most cancers, the predicted survival for patients diagnosed in 2013 is higher than for those diagnosed during 2008–2012. The largest increases in one-year survival are for men with myeloma and kidney cancer, and for men and women with mesothelioma and lung cancer. The largest improvements in five-year survival are for prostate cancer, for women with kidney cancer, and for men and women with myeloma. The only exceptions to the overall trend are for five-year survival in men with cancers of the larynx and thyroid gland.

5 . International comparisons

Overall, cancer survival in England has been improving steadily. However, the International Cancer Benchmarking Partnership study showed while one-year and five-year survival from breast, colorectal, lung and ovarian cancers improved between 1995 and 2007 in Australia, Canada, Denmark, Norway, Sweden and the United Kingdom ([Coleman et al. 2011](#)), survival in England at one and five years was generally lower than in these comparably wealthy countries.

6 . Additional information

Further information about cancer survival estimates published by the Office for National Statistics (ONS) can be found in the [Quality and Methodology Information Report on cancer survival](#).

Quality and Methodology Information reports (previously known as 'Summary Quality Reports') collect qualitative information on the six Eurostat criteria of quality (relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence) and address relevant Key Quality Measures. They also summarise methods used to compile outputs and describe the methods' impact on the quality of estimates produced.

Further cancer statistics for the United Kingdom:

[Statistics on cancer in Scotland](#)

[Statistics on cancer in Wales](#)

[Statistics on cancer in Northern Ireland](#)

7 . Users and uses

Key users of cancer survival estimates include the Department of Health, academics and researchers, cancer charities, cancer registries, other government organisations, researchers within ONS, the media, and the general public. The Department of Health uses cancer survival figures to brief parliamentary ministers, and as part of the evidence base to inform cancer policy and programmes, for example in drives to improve survival rates. Cancer survival estimates will also be used to measure progress against [NHS Outcomes Framework indicators](#). Academics and researchers use the figures to inform their own research. Similarly cancer registries and other government organisations use the figures to carry out individual and collaborative projects to apply subject knowledge to practice. Charities use the data so they can provide reliable and accessible information about cancer to a wide range of groups, including patients and health professionals via health awareness campaigns and cancer information leaflets/web pages. Researchers within ONS use the data to support further research and to publish alongside other National Statistics.

8 . Policy context

In [Improving Outcomes: A Strategy for Cancer](#) (January 2011), the Department of Health stated that, although improvements have been made in the quality of cancer services in England, significant gaps remain in mortality and survival rates compared with the European average.

The Outcomes Strategy sets out how the Department of Health aims to improve outcomes for all cancer patients and improve cancer survival rates, with the aim of saving an additional 5,000 lives every year by 2014/15.

Outcomes strategies set out how the NHS, public health and social care services will contribute to the ambitions for progress agreed with the Secretary of State in each of the high-level outcomes frameworks. The indicators set for the [NHS Outcomes Framework 2013 to 2014](#) include one- and five-year cancer survival indicators for all cancers combined, and for colorectal, breast and lung cancers combined.

9 . Acknowledgement

The National Cancer Registry at the Office for National Statistics and the London School of Hygiene & Tropical Medicine wish to acknowledge the work of the regional cancer registries in England, which provided the raw data for these analyses.

10 . Authors

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Notes for Authors

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Rachet B, Woods LM, Mityr E, Riga M, Cooper C, Quinn MJ, Steward JA, Brenner H, Estève J, Sullivan R, Coleman MP. Cancer survival in England and Wales at the end of the 20th century. *Br J Cancer* 2008; 99 (Suppl. 1): 2-10.

Office for National Statistics. [Cancer survival in England: patients diagnosed 2007–2011, followed up to 2012](#). London: ONS, October 2013.

Pohar Perme MJ, Stare J, Estève J. On estimation in relative survival. *Biometrics* 2012; 68:113-120

12. Background notes

1. Net survival is an estimate of the probability of survival from the cancer alone. It can be interpreted as the survival of cancer patients after taking into account the 'background' mortality that the patients would have experienced if they had not had cancer. Background mortality is derived from life tables of all-cause mortality rates in the general population. Net survival varies with age, and the age profile of cancer patients can vary with time and between geographical areas, so the estimates are also age-standardised to facilitate comparison. Estimates are shown with their 95% confidence intervals (see Background Note 7). For convenience, net survival is expressed as a percentage in the range 0–100%.
2. The period approach to estimate survival is used to predict the survival for patients who were diagnosed more recently, and for whom long-term follow-up data are not yet available. However, the period approach cannot be used when the follow-up data are more recent than the incidence data, as in the current situation: follow-up data to the end of 2013, while the incidence data are only available up to the end of 2012. In such a situation, the hybrid approach is applied (Brenner et al. 2004); the survival estimates can be interpreted as the survival of patients who would be diagnosed in 2013.
3. We use an unbiased estimator of net survival (Pohar Perme et al. 2012). Patients known to have died on the same day as they were diagnosed (zero follow-up time) are included in the analyses. Patients for whom a death certificate was the only information available are excluded, because their duration of survival is unknown.
4. All adults (aged 15–99 years) in England who were diagnosed during 2008–2012 with one of 24 common cancers as an invasive, primary, malignant neoplasm were eligible for analysis. Patients whose tumour was benign (not malignant) or in situ (malignant but not invasive) or of uncertain behaviour (uncertain whether benign or malignant), or for which the organ of origin was unknown, are excluded. Details of the eligibility and exclusion criteria have been published (Coleman et al. 1999).
5. Cancers were defined by anatomic site codes in the International Classification of Diseases, Tenth Revision (ICD-10) and by morphology and behaviour codes in the International Classification of Diseases for Oncology, Second Edition (ICD-O-2) (Table 4).
6. Cancers of the colon and rectum are included separately among the 24 common cancers. Combined data for colorectal cancer are also presented.
7. A 95% confidence interval is a measure of the uncertainty around an estimate. It provides a range of values which contains the true population parameter – in this case the survival estimate - with a 95% level of confidence.

8. Differences between survival estimates for the two periods are taken as the arithmetic difference: for example, 12% is shown as 2% (not 20%) higher than 10%. Survival figures are rounded to one decimal place, but the differences are based on the exact underlying figures.
9. When the data for this report were extracted for analysis on 22 May 2014, cancer registrations in 2012 were believed to be at least 99% complete, and each patient's vital status at 31 December 2013 was known for over 99% of cancers registered during the period 2008–2012. As in other countries, cancer registration is a dynamic process: a small number of late registrations may arrive up to five years after the end of a given calendar period, whereas other registrations may be amended or deleted. The figure of 99% completeness is based on the average number of cases for the three previous years (2009–2011), including late registrations received after publication of the data for those years.
10. The mean number of patients per year was calculated by dividing by five the total number of patients diagnosed over the five-year periods 2007–2011 or 2008–2012.
11. Predicted age-specific survival could not be estimated in the oldest age group (80–99 years) for Hodgkin lymphoma, melanoma of the skin and testicular cancer, because there were too few events: therefore, age-standardised estimates could not be produced for these cancers. The unstandardised estimates are shown instead in Figures 5, 6, 7 and 8.
12. A list of the names of those given pre-publication access to the statistics and written commentary is available in [Pre-release Access List: Cancer Survival in England: Patients Diagnosed 2008–2012 and followed up to 2013 " Pre-release Access to Official Statistics Order 2008."](#) The rules and principles which govern pre-release access are featured within the [Pre-release Access to Official Statistics Order 2008](#).
13. We would welcome feedback on the content, format and relevance of this release. Please contact cancer.newport@ons.gsi.gov.uk.
14. Follow ONS on [Twitter](#) and [Facebook](#).
15. The UK 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
- 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.

16. **Next publication:**
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17. **Issued by:**
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18. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.