Office for National Statistics

Statistical bulletin

Cancer Survival in England- Adults Diagnosed: 2009 to 2013, followed up to 2014

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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Release date:
19 November 2015

Next release:
To be announced

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1. Headline figures

- The highest 1- and 5- year survival estimate was for testicular cancer and melanoma of skin cancer (women); the lowest 1- and 5- year estimate was for pancreatic cancer
- The largest gender difference in 1-year survival was for bladder cancer, where 78.6% of men were expected to survive at least one year from their cancer compared with 67.1% of women
- For patients diagnosed between 2009 and 2013, 1-year survival continued to improve for most of the 24 cancers examined when compared with the 2008 to 2012 estimate
- For cancers of the brain, liver, lung, mesothelioma, oesophagus, pancreas and stomach 5-year survival remains below 25%
- For breast cancer (women), Hodgkin lymphoma, melanoma of skin, prostate cancer, testis and thyroid cancer 5-year survival is over 80%
- Age-specific cancer survival is usually higher for the younger age-groups compared with the older; however, breast and prostate cancer are examples where 5-year survival is higher for some older age groups than the younger age groups

2. Summary

This bulletin presents estimates of 1-year and 5-year net survival (%) for all adults (aged 15 to 99 years) diagnosed with one of the most common cancers in England between 2009 and 2013 and followed up to 2014. Net survival is estimated for 24 common cancers (based on the number of cancer diagnoses in England (ONS, 2015)), of which 5 are sex-specific common cancers. These cancers comprise over 92.4% of all newly diagnosed cancers among adults eligible for analysis.

Data are presented for men, women and both sexes, by age group and, for all ages combined, both un-standardised and age-standardised. Survival is age-standardised to take into account any changes in the age profile of the cancer patients. Confidence intervals are included in the reference tables, and can be used to give an indication of how accurate the survival estimate is. Further information on the methods used to estimate 1- and 5- year survival can be found in the background notes.

ONS publish rolling estimates of 1- and 5-year survival. The survival estimates reported here are for patients diagnosed between 2009 and 2013 and followed up to 31 December 2014. The previous bulletin (ONS, 2014) presented survival estimates for cancer patients diagnosed between 2008 and 2012 and followed up to 31 December 2013. Differences based on this and last year's survival estimates are likely to be small as many of the same patients are included in analyses.

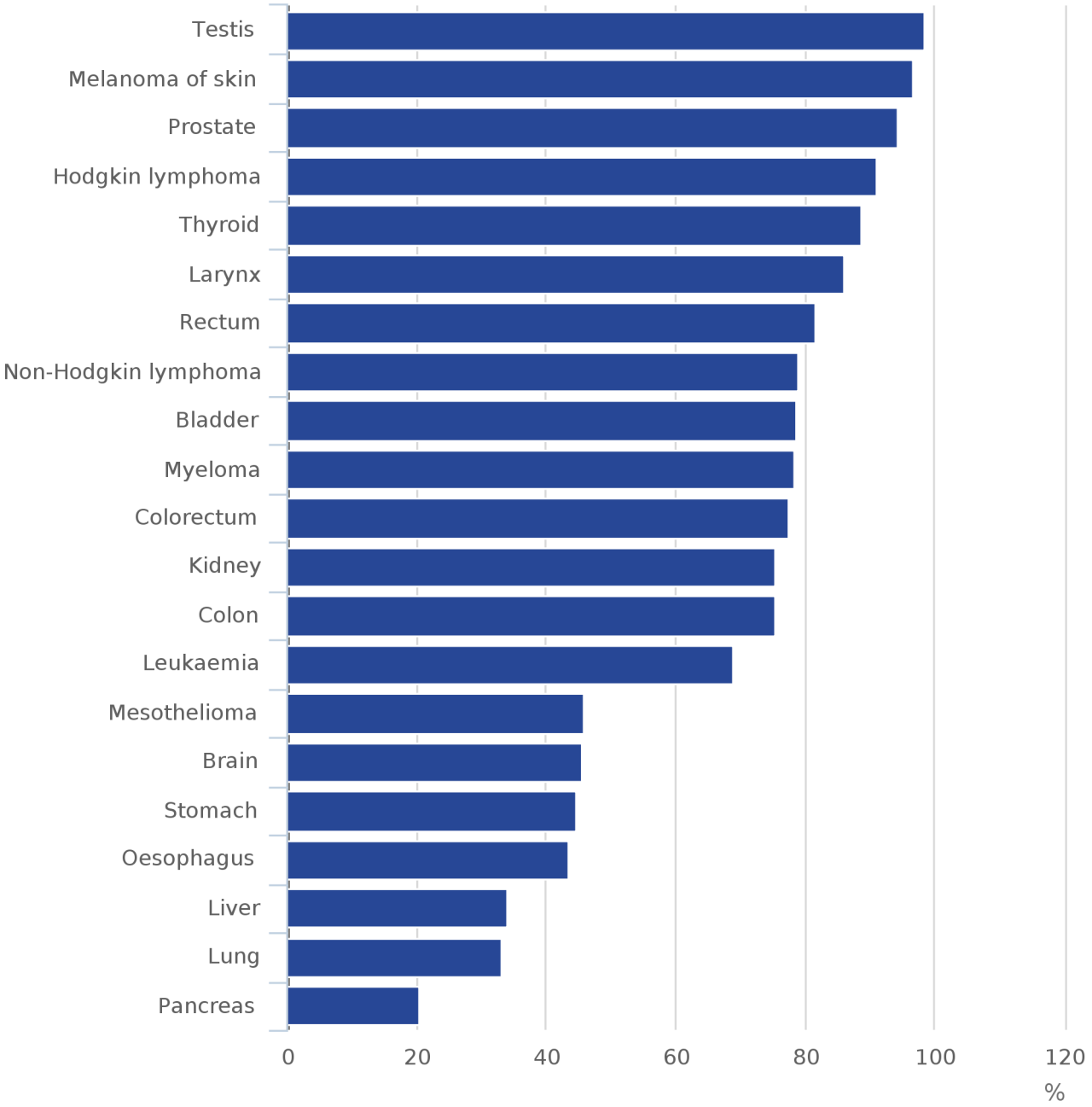
In the previous bulletin (ONS, 2014) predicted survival was included for the first time. In this bulletin predicted survival estimates have not been included, as feedback suggested that these estimates be included in a separate experimental statistics publication (to be published in 2016).

3. 1-year survival

Figure 1 (men) and Figure 2 (women) show age-standardised 1-year net survival estimates for adults diagnosed with one of the most common cancers between 2009 and 2013. As in previous years survival from pancreatic cancer was the lowest, at 20.4% for men and 22.0% for women. The highest 1-year survival estimate was for testicular cancer at 98.3% and melanoma of the skin at 98.4% (women).

The largest gender difference[1] (11.5%) in survival is for bladder cancer, where 78.6% men were expected to survive at least one year from their cancer compared with 67.1% of women. The gender inequality in bladder cancer survival has been reported worldwide, and a number of reasons such as tumour biology, sex hormones, and earlier diagnosis in men than in women might explain the difference (Ristau & Davies, 2013; Lyratzopoulos, Abel, McPhail, et al., 2013).

Figure 1: One-year survival (%) for men diagnosed with a common cancer between 2009 and 2013 and followed up to 2014, England

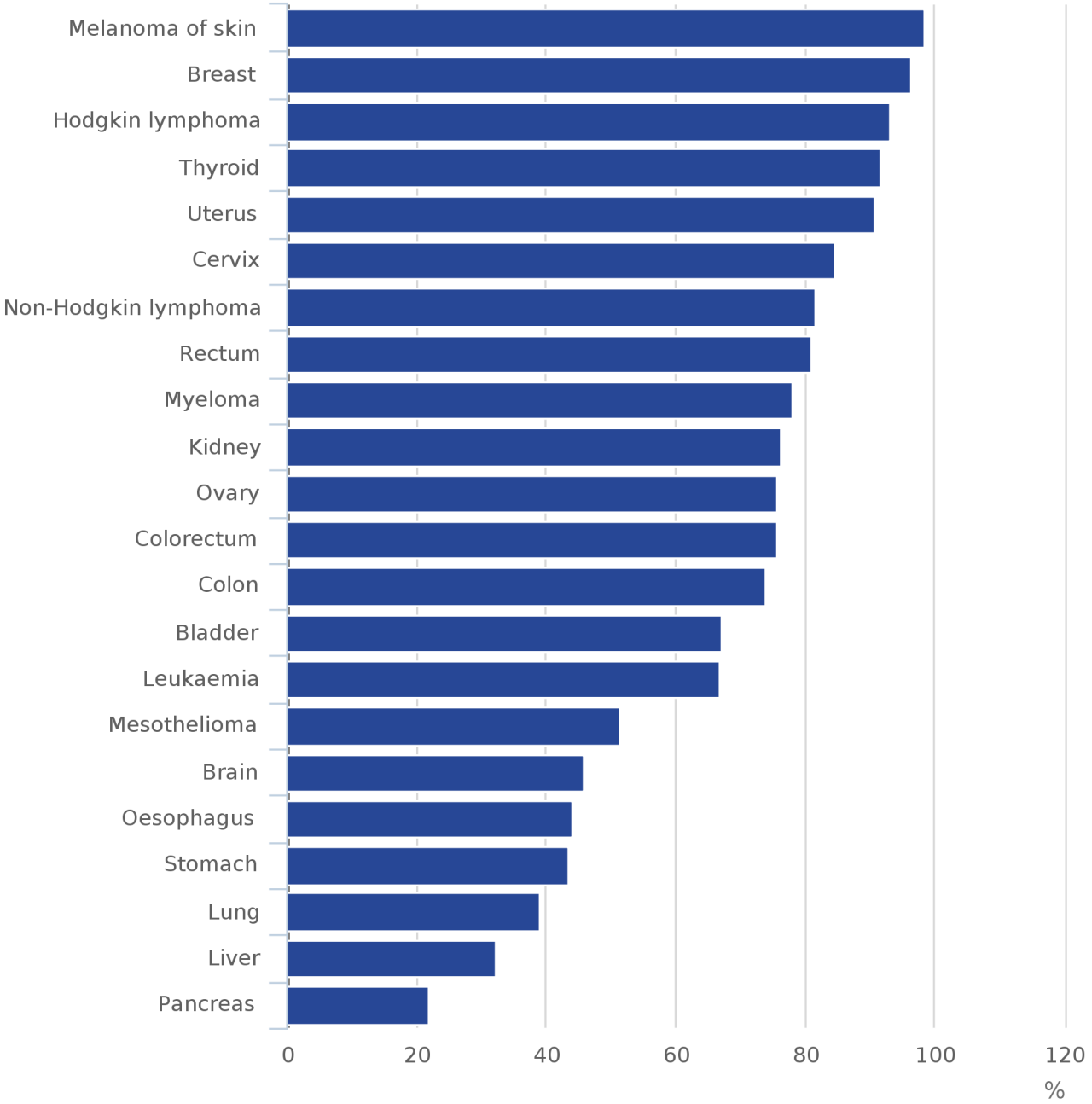


Source: Office for National Statistics, London School of Hygiene and Tropical Medicine

Notes:

1. Men aged 15 to 99 years
2. Age-standardised net survival
3. Survival estimates are displayed in rank order

Figure 2: One-year survival (%) for women diagnosed with a common cancer between 2009 and 2013 and followed up to 2014, England



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

Notes:

1. Women aged 15 to 99 years
2. Age-standardised net survival
3. Survival estimates are displayed in rank order

For the majority of common cancers 1-year survival has continued to improve. When comparing the 2008 to 2012 survival estimate with the 2009 to 2013 estimate (reference table 1 (241.5 Kb Excel sheet)) the largest increase (2.3%) for men was for myeloma cancer, increasing from 76.0% to 78.3%. For women, the largest increase (1.9%) was for kidney cancer, increasing from 74.3% to 76.2%.

Notes for 1-year survival

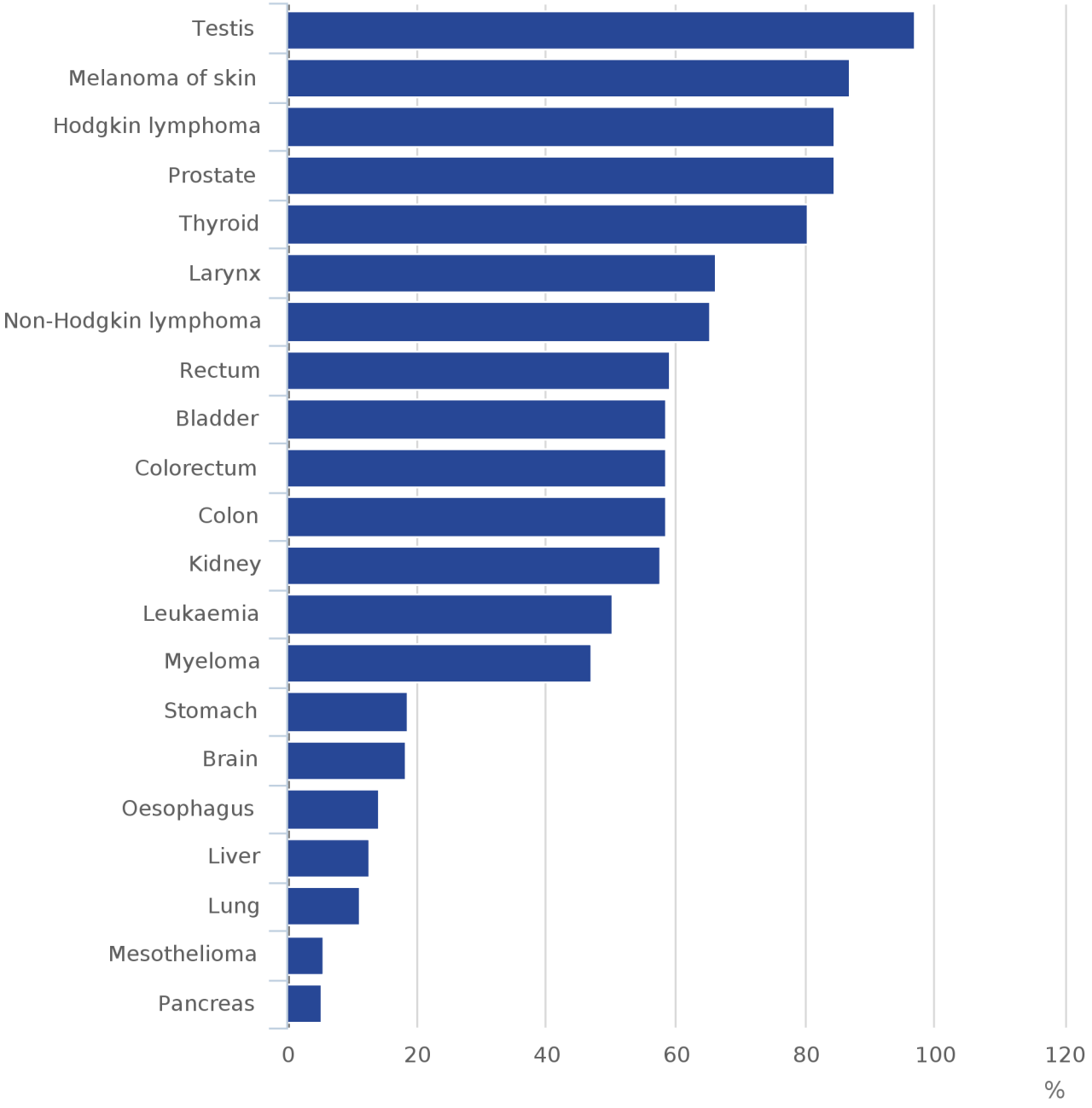
1. Differences are calculated using unrounded survival estimates.

4. 5-year survival

Figure 3 (men) and Figure 4 (women) show age-standardised 5-year net survival estimates, for adults diagnosed with one of the most common cancers between 2009 and 2013. Survival is below 25% for 7 cancers (brain, liver, lung, mesothelioma, oesophagus, pancreas and stomach). Survival estimates are above 80% for adults diagnosed with hodgkin lymphoma, thyroid cancer, melanoma of skin, breast cancer (women), and for men diagnosed with prostate and testicular cancer.

The lowest estimate of 5-year survival was for men (5.2%) and women (5.6%) diagnosed with pancreatic cancer. The highest 5-year survival estimate among men was for testicular cancer at 97.0%, and among women for melanoma of skin at 92.8%. In general 5-year survival was higher for women than men - with a notable exception of bladder cancer, with a 10.6% difference between men (58.6%) and women (47.9%).

Figure 3: Five-year survival (%) for men diagnosed with a common cancer between 2009 and 2013 and followed up to 2014, England



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

Notes:

1. Men aged 15 to 99 years

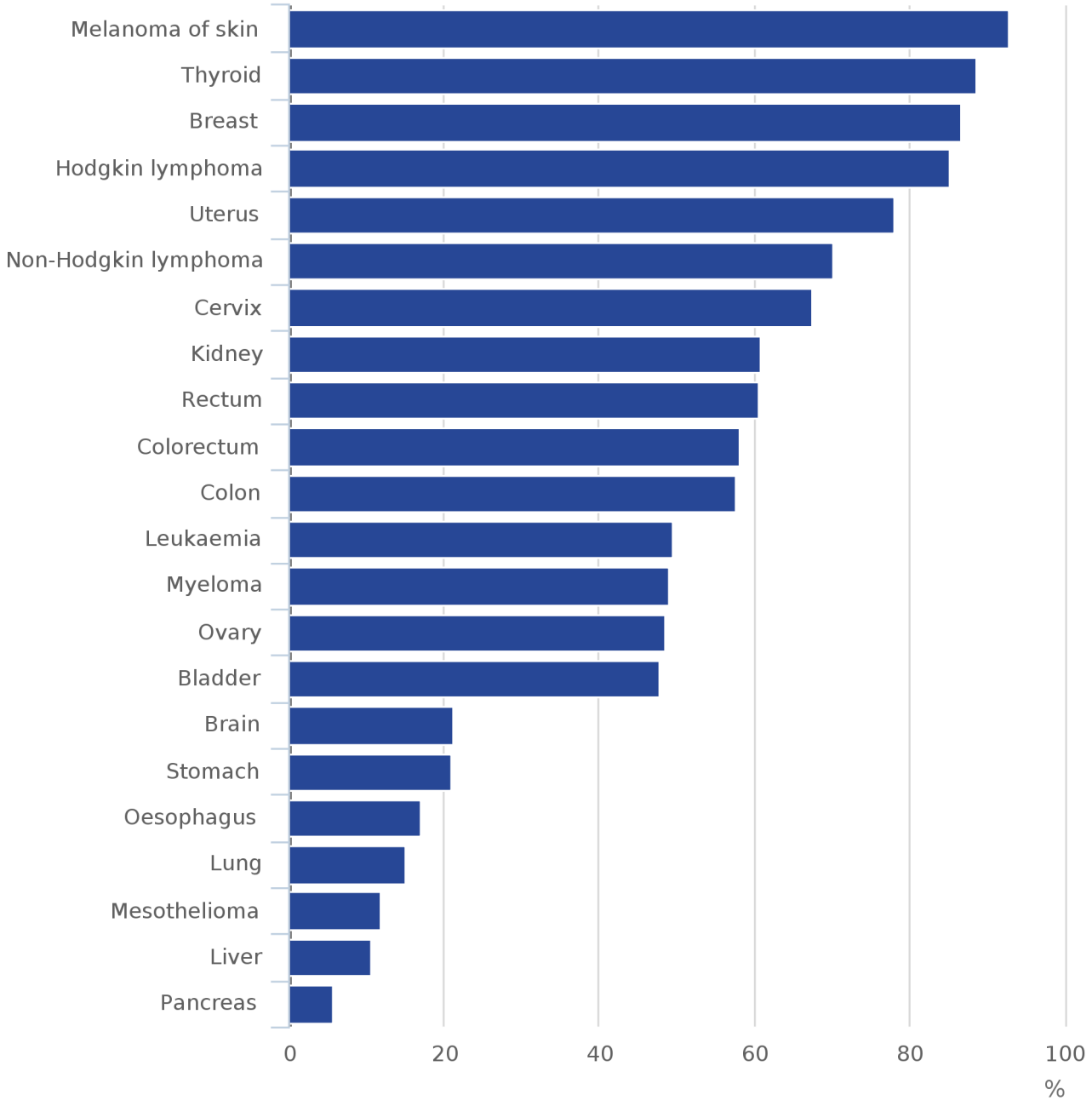
2. Age-standardised net survival

3. Survival estimates are displayed in rank order

4. Survival rate above 80%:
   Testis
   Melanoma of skin
   Hodgkin lymphoma
   Prostate
   Thyoid

5. Survival below 25%:
   Stomach
   Oesophagus
   Liver
   Lung
   Mesothelioma
   Pancreas

Figure 4: Five-year survival (%) for women diagnosed with a common cancer between 2009 and 2013 and followed up to 2014, England



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

Notes:

1. Women aged 15 to 99 years

2. Age-standardised net survival

3. Survival estimates are displayed in rank order

4. Survival above 80%:
   Melanoma of skin
   Thyroid
   Breast
   Hodgkin lymphoma

5. Survival below 25%:
   Brain
   Stomach
   Oesophagus
   Lung
   Mesothelioma
   Liver
   Pancreas

The largest increases[1] in 5-year survival among men were for kidney cancer, and myeloma for women (when comparing 5-year survival in 2008 to 2012 to the estimate for 2009 to 2013; reference table 2 (241.5 Kb Excel sheet)). For men the kidney cancer survival estimate slightly increased (0.9%), from 56.7% to 57.6%. For women, myeloma cancer survival increased by 2.8%, from 46.2% to 49.0%.

For a few cancers 5-year survival estimates for the period 2009 to 2013 were slightly lower than the estimates for the period 2008 to 2012 (reference table 2 (241.5 Kb Excel sheet)). For men, the largest decrease (1.2%) in 5-year survival was for thyroid cancer, decreasing from 81.8% to 80.5%. Whereas for women the largest decrease (1.5%) in 5-year cancer survival was for mesothelioma, from 13.1% to 11.7%.

Notes for 5-year survival

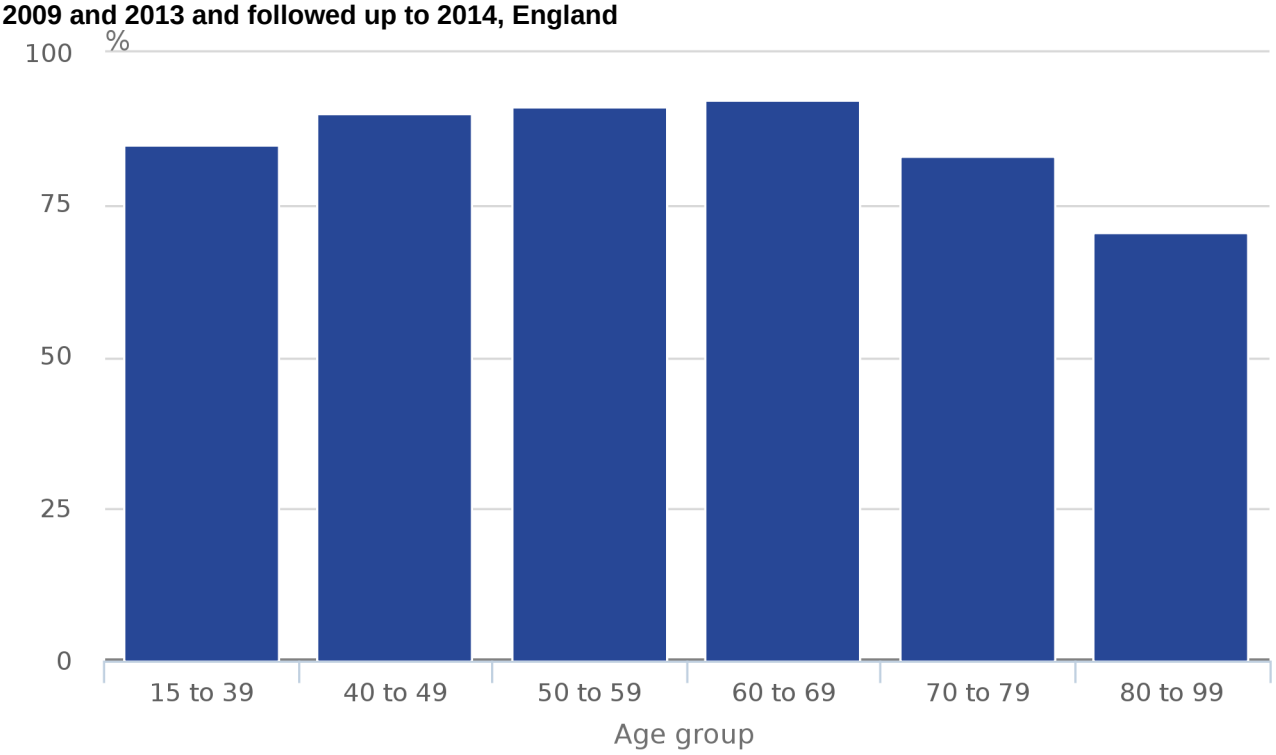
1. Differences are calculated using unrounded survival estimates.

5. Age-specific survival

Reference table 3 (241.5 Kb Excel sheet) presents age-specific net survival at 1- and 5- years after diagnosis for each of the most common cancers. There are distinct patterns in survival by age group, with generally lower survival among older patients and higher survival among younger patients, even after taking account that the elderly are also more likely to die of other causes.

Breast cancer (Figure 5) is a well-known exception to this pattern; 5-year survival is lower for women aged 15 to 39 years at diagnosis (84.9%) than for women aged 40 to 69 years (ranging from 90.0% to 92.4%). These differences are probably explained by breast screening in women aged 50 to 70, and by the National Health Service introducing an age extension trial in 2009 (Public Health England, 2015), where some younger women aged 47 to 49 and some older women aged 71 to 73 are invited for screening. Screening aims to detect a tumour at an earlier stage of cancer, which helps improve survival chances.

Figure 5: Age-specific 5-year net cancer survival (%), for women diagnosed with breast cancer between 2009 and 2013 and followed up to 2014, England



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

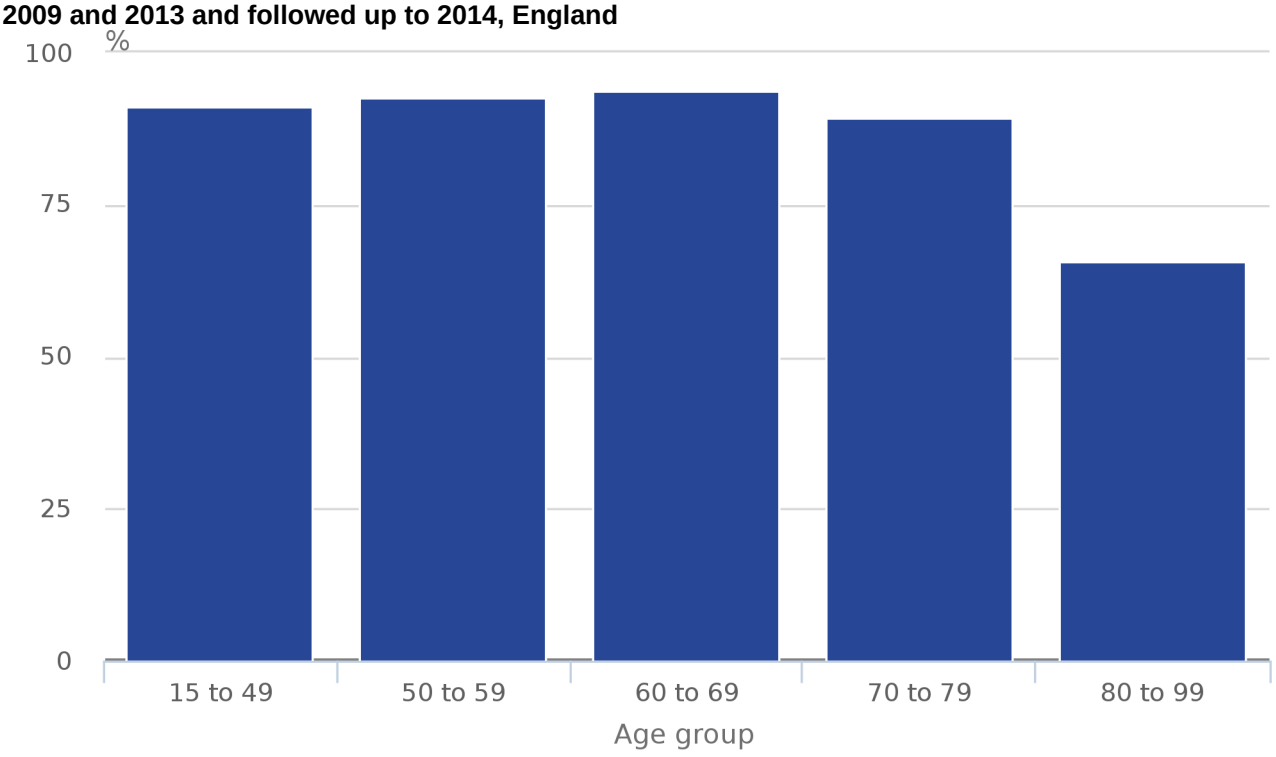
Notes:

1. Net survival is estimated

2. Cancer survival is usually higher for younger than older people. However, 5 year survival for breast cancer is higher in women aged 40 to 69 compared with the younger age group (15 to 39). This could be because cancer is caught through the national breast cancer screening programme at an earlier stage in the older age groups

Similarly, for prostate cancer (Figure 6), 5-year survival is slightly higher for men aged 50 to 69 years than for men aged 15 to 49 years. This might be due to more widespread (but not national) use of the prostate-specific antigen (PSA) test in older men.

Figure 6: Age-specific 5-year net cancer survival (%), for men diagnosed with prostate cancer between 2009 and 2013 and followed up to 2014, England



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

Notes:

1. Net survival is estimated

2. Cancer survival is usually higher for younger then older people. Yet, for prostate cancer, 5 year survival is slightly higher in men aged 50 to 69 compared with the younger age group. This might be explained by men over the age of 50 being tested for prostate specific antigens

6. International comparisons

Overall, cancer survival has been improving steadily in England but is still lower than in comparably wealthy countries. Findings from the CONCORD-2 study have shown that 5-year survival for adult patients in England diagnosed between 2005 and 2009 with leukaemia and cancers of the stomach, colon, rectum, liver, lung, breast, cervix, ovary and prostate is still lower than in Australia, Canada, Denmark, Norway and Sweden (Allemani, Weir, Carreira, Harewood, Spika, Wang, et al., 2015). A study (Walters, Benitez-Majano, Muller, Coleman, Allemani, Butler, et al., 2015) using more recent data has shown that England is not closing the international gap with survival from cancers of the stomach, colon, rectum, lung, breast, ovary remaining lower than in particular in Australia, Canada, Norway and Sweden.

7. Policy context

Health policy-makers use population-based cancer survival statistics to plan services aimed at cancer prevention and treatment. Cancer survival estimates feed in to national cancer plans, such as: ‘ Achieving world-class cancer outcomes: A Strategy for England 2015 to 2020’. The report recommends 6 strategic priorities to help improve cancer survival in England by 2020.

Cancer survival estimates also feed into outcomes strategies that set out how the NHS, public health and social care services will contribute to the progress agreed with the Secretary of State, in each of the high-level outcomes frameworks. The indicators set for the National Health Service (NHS) Outcomes Framework include 1- and 5- year survival from colorectal, breast and lung cancers.

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Produced in partnership with:

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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 National Cancer Registration Service (NCRS) in England, which provided the raw data for these analyses.

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11. Background notes

1. Net survival is the probability of survival derived solely from the risk of death from cancer alone, compensating for the risk of death from other causes (background mortality). Background mortality is accounted for through life tables (Cancer Research UK Cancer Survival Group, 2004) of all-cause mortality rates for the general population in England. For convenience, net survival is expressed as a percentage in the range 0 to 100%.

2. The ‘complete approach’ to estimating survival is applied (Brenner & Gefeller, 1997), including all patients diagnosed between 2009 to 2013. Survival is estimated using the Pohar-Perme estimator (Pohar Perme, Stare & Estève, 2012), which provides unbiased estimates of net survival at all ages. Survival is estimated using the publicly available stns algorithm (Clerc-Urmès, Grzebyk, Hédelin, 2014) in STATA 13 software.

3. Net survival varies with age, and the age profile of cancer patients varies with time and between geographical areas. Therefore estimates are age-standardised to facilitate comparison over time and across different geographical areas. The weights used to age-standardise survival can be found in Coleman et al..

4. Confidence intervals (95%) can be found in the reference tables provided. 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 with a 95% level of confidence.

5. All adults (aged 15 to 99 years) in England who were diagnosed between 2009 and 2013 with 1 of the 24 most common cancers as an invasive, primary, malignant neoplasm were eligible for inclusion in the analyses. Ineligible patients were those 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. Details of the eligibility and exclusion criteria have been published.

6. 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) (reference table 4 (241.5 Kb Excel sheet)).

7. The 2 changes implemented for the 2012 publication of the national cancer survival statistics have been maintained this year, namely:

    1. we estimate net survival, using an unbiased estimator, instead of relative survival

    1. patients with zero follow-up time are included: these are patients known to have died on the same day as they were diagnosed, but patients for whom a death certificate was the only information available are excluded, because their duration of survival is unknown

8. Data are presented for cancer of the colon and cancer of the rectum separately, and also combined (colorectal cancer).

9. Differences between survival estimates for the 2 periods are taken as the arithmetic difference: for example, 12% is shown as 2% (not 20%) higher than 10%. Survival figures are rounded to 5 decimal places in the reference tables, but the differences are based on the exact underlying figures and displayed in the bulletin to 1 decimal place.

10. When the data for this report were extracted for analysis on 17 May 2015, cancer registrations in 2013 were believed to be at least 99% complete, and each patient's vital status at 31 December 2014 was known for 99% of cancers registered between 2009 and 2013. As in other countries, cancer registration is a dynamic process: a small number of late registrations may arrive up to 5-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 3 previous years (2009 to 2011), including late registrations received after publication of the data for those years

11. More information regarding these statistics can be found in the Quality and Methodology Information (QMI) report 16 for cancer survival. QMI reports are overview notes which pull together important qualitative information on the various dimensions of the quality of statistics as well as providing a summary of the methods used to compile the output.

12. Further cancer statistics for the UK can be found through the:

    - Information Services Division (Scotland)
    - Welsh Cancer Intelligence Surveillance Unit
    - Northern Ireland Cancer Registry

13. 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: adults diagnosed in 2009 to 2013, followed up to 2014. The rules and principles which govern pre-release access are featured within the Pre-release Access to Official Statistics Order 2008.

14. The UK Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registrations 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.

15.

16. Next publication: Autumn 2016

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