

Statistical bulletin

Geographic Patterns of Cancer Survival in England: Patients followed up to 2012

Cancer survival estimates for England by NHS Region, Clinical Senate and Area Team.



Contact:
Neil Bannister
cancer.newport@ons.gov.uk
+44 (0)1633 455704

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1 . Main findings

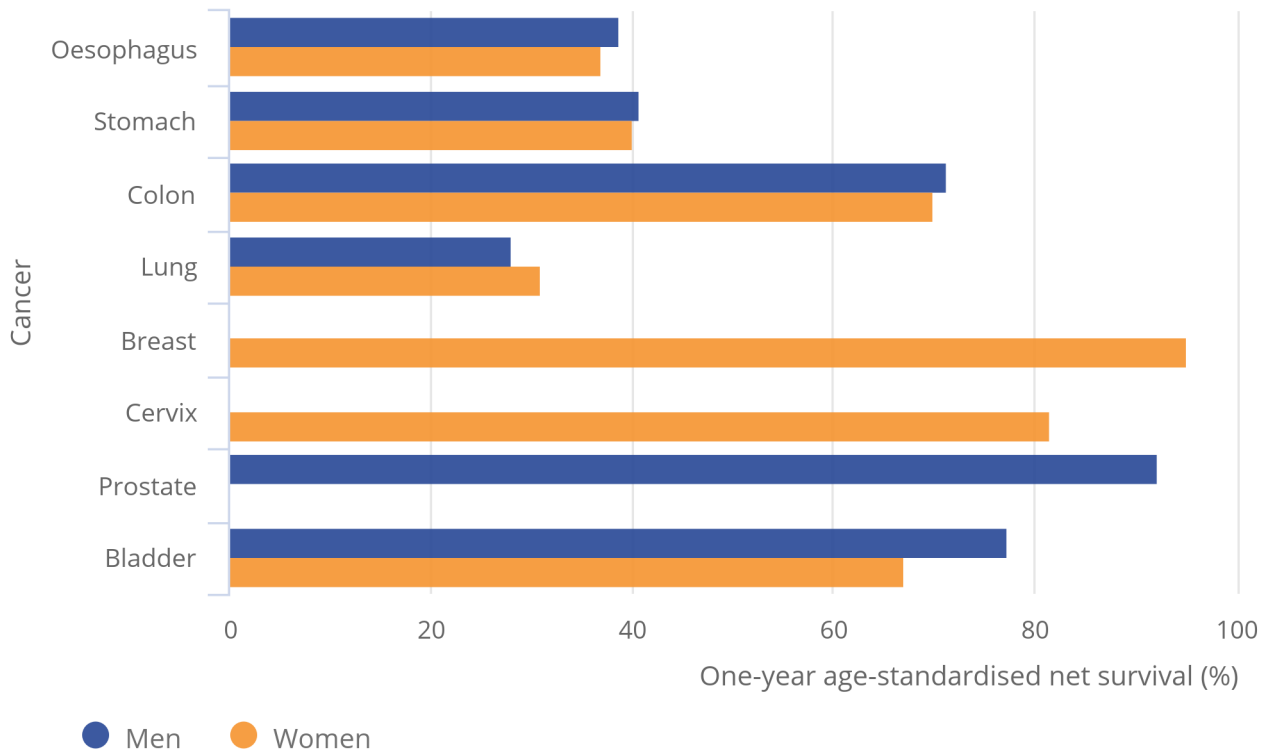
- One-year and five-year net survival increased for eight common cancers in England for adults (15-99 years) diagnosed during the period 2005-2007
- For men, the largest increase was 1.3 per cent per year in one-year survival for cancer of the oesophagus, and 1.3 per cent per year in five-year survival for cancer of the colon
- For women, the largest increase was 1.2 per cent per year in one-year survival for cancer of the oesophagus, and 1.7 per cent per year in five-year survival for cancer of the cervix
- The geographic disparities in net survival between NHS Regions, Clinical Senates and Area Teams in England are wide

2 . Summary

This bulletin presents age-standardised one- and five-year net survival estimates for men and women diagnosed with one of eight cancers in England during 2005–2007 and followed up to 2012. It includes data on cancers of the oesophagus, stomach, colon, lung, breast (women), cervix, prostate and bladder (Background notes 1, 2 and 3). Annual trends in unstandardised net survival during 2003–2007 are also presented (Background note 4). Results are presented for England as a whole and for three geographic levels of organisation of the NHS in England – NHS Region, Clinical Senate and Area Team (Background Note 5).

Figure 1: One-year net survival (per cent) for adults diagnosed in England during 2005–2007

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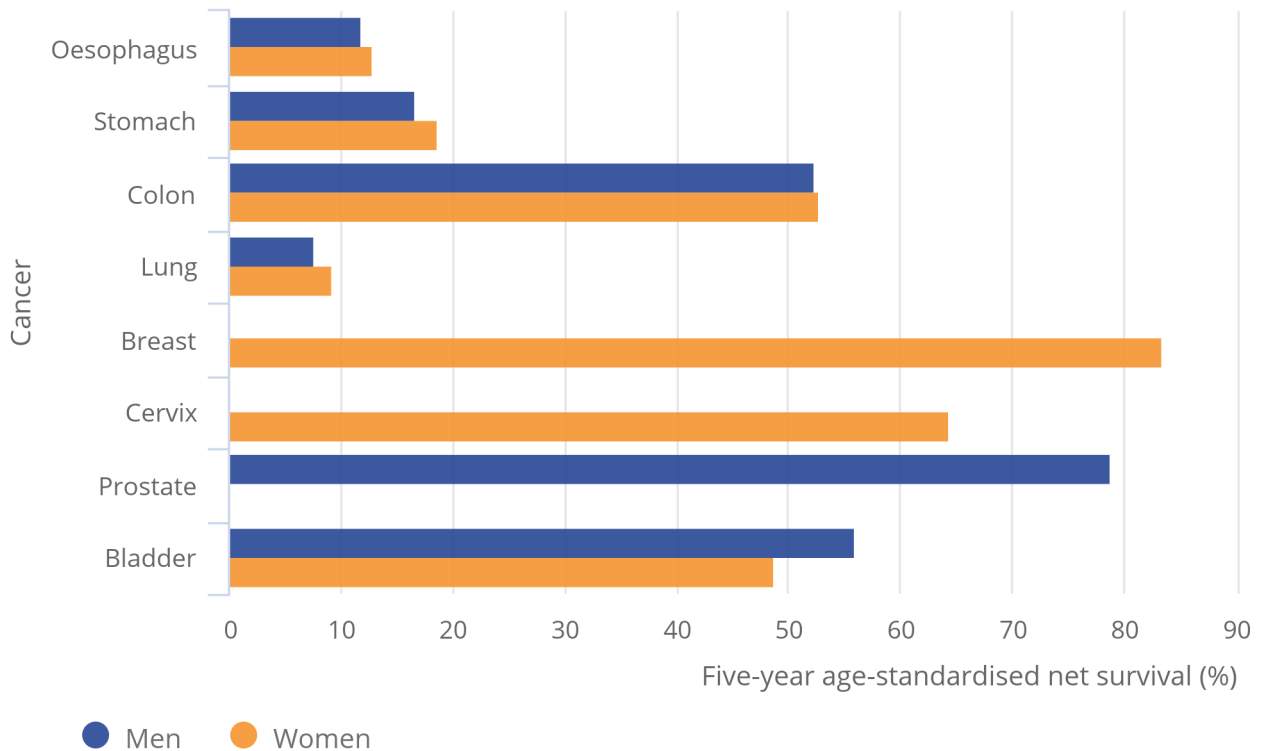
Source: Office for National Statistics and London School of Hygiene and Tropical Medicine

Notes:

1. Survival estimates were age-standardised using a standard population of cancer patients (see Background Note 4 of statistical bulletin).
2. Adults aged 15–99 years.

Figure 2: Five-year net survival (per cent) for adults diagnosed in England during 2005–2007

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

Notes:

1. Adults aged 15-99 years.
2. Survival estimates were age-standardised using a standard population of cancer patients (see Background Note 4).

3 . Results

One- and five-year net survival estimates are presented for patients diagnosed with cancer of the oesophagus, stomach, colon, lung, breast (women), cervix, prostate (Background note 7) or bladder in England during 2005–2007 and followed up to 2012 (Background notes 1 and 2). These cancers represent a large proportion of all cancers and correspond to a range of diagnosis and treatment pathways and trends in survival. The survival estimates are age-standardised to correct for changes in the age profile of cancer patients over time (Background note 3). We also present the unstandardised survival estimates for each year of the period 2003-2007, together with the annual percentage change (Background note 4).

For cancers of the colon, breast, cervix, prostate and bladder, survival in England is reasonably good: one-year survival above 67 per cent and five-year survival above 48 per cent (Figures 1 and 2). For cancers of the oesophagus, stomach and lung, however, survival in England remains very low, with one-year survival below 41 per cent and five-year survival below 19 per cent.

At the national level, a general upward trend in net survival was observed for most of the eight cancers. Sub-national variation in bladder cancer survival remained: this reflects progressive completion of changes in coding and classification by the regional cancer registries in England during this period (Background note 6).

Among men, the largest annual improvements in one-year net survival occurred for cancers of the oesophagus (1.3 per cent per year) and stomach (1.2 per cent per year). The largest improvement for five-year net survival for men was for cancer of the colon, with an increase of 1.3 per cent per year. Among women, the largest improvement in one-year net survival was for cancer of the oesophagus (1.2 per cent per year) and for five-year survival, cancer of the cervix (1.7 per cent per year).

Wide and persistent differences in net survival between the 25 Area Teams in England were seen for all cancers diagnosed during 2005-2007 (Tables 1 and 2). For women with cancers of the stomach, oesophagus and bladder, the range between the highest and lowest estimates was more than 14 per cent for one-year net survival, and 12-14 per cent for five-year survival. For men, the range between the highest and lowest estimates was 13 per cent for one-year net survival (stomach cancer) and 17 per cent for five-year net survival (prostate cancer).

The smallest differences in five-year net survival between the 25 Area Teams were seen for women with breast cancer (4.4 per cent) and for men and women with lung cancer (4.2 and 5.4 per cent, respectively).

Survival estimates for lung cancer remain low. The national estimate for one-year net survival for lung cancer was 28.0 per cent in men and 30.9 per cent in women. One-year net survival for lung cancer was much lower than the corresponding value for England in the Lancashire Area Team and in the Hertfordshire and the South Midlands Area Team: 4.6 per cent below the national level for men, and almost 7 per cent below the national level for women.

Table 1: Range in one-year net survival (%) across the area teams in England: adults diagnosed during 2005–2007 and followed up to 2012, eight common cancers, by sex

Age-standardised net survival (%)

Cancer	Men			Women			Persons		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Oesophagus	38.5	32.8	44.0	36.6	28.4	42.8	37.6	33.1	43.3
Stomach	40.1	33.1	46.0	39.3	32.4	46.5	39.8	33.6	46.0
Colon	70.8	63.8	75.7	69.6	63.9	74.3	70.2	64.4	73.7
Lung	27.9	23.4	31.3	30.7	24.2	34.1	29.1	23.7	31.3
Breast	--	--	--	95.0	93.0	96.0	--	--	--
Cervix	--	--	--	81.3	77.6	86.4	--	--	--
Prostate	92.0	86.6	96.0	--	--	--	--	--	--
Bladder	77.1	72.1	81.2	66.8	58.9	73.3	74.4	69.2	78.2

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

Notes:

1. Adults aged 15-99 years.
2. Survival estimates were age-standardised using a standard population of cancer patients (see Background Note 4 of statistical bulletin).
3. The symbol "--" means not available.

Table 2: Range in five-year net survival (%) across the Area Teams in England: adults diagnosed during 2005–2007 and followed up to 2012, eight common cancers, by sex

Age-standardised net survival (%)

Cancer	Men			Women			Persons		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Oesophagus	11.7	7.6	14.9	12.4	5.8	17.9	11.9	8.4	14.8
Stomach	16.0	10.8	21.7	17.2	10.7	24.4	16.5	12.1	22.4
Colon	51.8	47.9	57.2	51.9	46.2	59.1	52	48.5	57.3
Lung	7.6	5.6	9.8	9.1	6.2	11.6	8.2	5.8	10.5
Breast	--	--	--	83.3	80.9	85.2	--	--	--
Cervix	--	--	--	63.2	57.6	68.3	--	--	--
Prostate	78.3	68.3	85.4	--	--	--	--	--	--
Bladder	55.8	52.3	62.4	48.2	41.9	53.5	53.9	50.3	59.0

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

Notes:

1. Adults aged 15-99 years.
2. Survival estimates were age-standardised using a standard population of cancer patients (see Background Note 4 of statistical bulletin).
3. The symbol "--" means not available.

4 . Policy context

The Department of Health's cancer strategy for 2011, "Improving Outcomes: A Strategy for Cancer", points out that while improvements in the quality of cancer services in England have been made, a significant gap remains in survival compared with the European average. Survival probabilities for cervical, colorectal and breast cancer in the UK as a whole are some of the lowest among the 34 member states of the [Organisation for Economic Co-operation and Development](#) (OECD). Survival for colon, lung and breast cancers in England, Northern Ireland and Wales during 1995-2007 was reported as lower than in Australia, Canada, Norway and Sweden in a recent study (Coleman et al., 2011).

As part of [The National Cancer Strategy](#), in the document "Improving Outcomes: A Strategy for Cancer", the Department of Health sets out how it aims to improve survival for all cancer patients, with the aim of "saving an additional 5,000 lives every year" by 2014/15.

'Outcomes strategies' set out how the National Health Service (NHS) and the public health and social care services intend to contribute to the ambitions for progress in cancer control agreed with the Secretary of State in each of the high-level outcomes frameworks. The set of indicators included in the [NHS Outcomes Framework 2012 to 2013](#) includes one- and five-year relative survival from colorectal, breast and lung cancers.

5 . Authors

Tsion Solomon¹, Michel P Coleman¹, Vikki Lee², Emma Gordon², Rose Drummond², Stephen Rowlands², Neil Bannister² and Bernard Rachet¹

Notes for authors

1. Cancer Research UK Cancer Survival Group, London School of Hygiene and Tropical Medicine.
2. Cancer Analysis Team, Office for National Statistics.

6 . Acknowledgements

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7. Additional Information

The detailed results are displayed in tables that can be downloaded from the [Office for National Statistics](#) website.

The tables include estimates for England and for each of the 4 NHS Regions, 12 Clinical Senates and 25 Area Teams. Results are presented separately for men and women, and for both sexes combined (persons). For some cancers, the number of deaths in certain age categories was too small to enable age-standardisation, so the unstandardised survival estimate is given instead. A similar limitation was sometimes encountered for unstandardised survival for one or more calendar years in the trend analyses.

Further information about the cancer survival estimates published by the Office for National Statistics (ONS) can be found in the [Summary Quality Report \(257.4 Kb Pdf\)](#) for cancer survival.

Summary Quality Reports are overview notes which present key qualitative information on the various dimensions of the quality of statistics, as well as providing a summary of the methods used to compile the results.

8. References

Coleman MP, Rachet B, Woods LM, Mitry E, Riga M, Cooper N, Quinn MJ, Brenner H and Estève J (2004). Trends and socio-economic inequalities in cancer survival in England and Wales up to 2001. *British Journal of Cancer* 90, 1367-1373.

Pohar Perme M, Stare J and Estève J (2012). On estimation in relative survival. *Biometrics* 68, 113-120.

Coleman MP, Babb P, Damiecki P, Grosclaude P, Honjo S, Jones J, Knerer G, Pitard A, Quinn MJ, Sloggett A and De Stavola BL (1999). Cancer survival trends in England and Wales 1971-1995: deprivation and NHS Region. *Studies in Medical and Population Subjects* no. 61. London: The Stationery Office, pp1-695.

Coleman MP et al. (2011). Cancer survival in Australia, Canada, Denmark, Norway, Sweden and the UK, 1995-2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data. *The Lancet* 377, 127-138.

[Geographic Patterns of Cancer Survival in England](#) - Patients followed up to 2011.

Danieli C, Remontet L, Bossard N, Roche L and Belot A (2012). Estimating net survival: the importance of allowing for informative censoring. *Statistics in Medicine* 31, 775-786.

9. Background notes

1. Data were obtained from cancer registries and collated by the Office for National Statistics (ONS). Patients were included in the analyses if they were diagnosed between the ages of 15 and 99 years with a primary, invasive, malignant neoplasm at one of the eight specified sites, as defined in the 10th edition of the International Classification of Diseases: oesophagus (C15); stomach (C16); colon: (C18); lung (C34); breast (C50); cervix (C53); prostate (C61); bladder (C67). Records of patients registered only from a death certificate, or diagnosed with a benign or in situ tumour, or a tumour that could not be classified as definitely malignant, were not included in the analyses. For further details of the exclusion criteria see Coleman et al. (2004).
2. Net survival is the survival of the cancer patients estimated after correction for the expected or background mortality from other causes of death. Expected mortality is derived from general population life tables of mortality, stratified by single year of age, sex, single calendar year, deprivation category and geographic region. Patients who were known to have died on the same day as they were diagnosed were included in the analyses with a survival time of one day. Estimation of net survival was carried out with a non-parametric estimator (Pohar Perme et al., 2012) implemented in Stata within the stns command. This method adjusts for the informative censoring that arises when, for example, the death from cancer of elderly patients is less likely to be observed because of a higher competing risk of death from other causes (Danieli et al., 2012). For convenience, net survival is expressed as a percentage in the range 0–100 per cent.
3. Net survival varies with age at diagnosis. The age profile of cancer patients may also change over time, and it may differ between geographic areas. To enable comparison of survival for all ages combined over long periods of time, or between geographical areas, age-standardised estimates are calculated as a weighted sum of the age-specific survival estimates, using a standard set of age weights. Here, we used

the weights from the age distribution of cancer patients diagnosed during 1986–1990 in England and Wales, as presented in Coleman et al. (1999). This enables direct comparison of age-standardised survival estimates over the last 20 years. Age standardisation requires an estimate of survival to be available for each age group. Age-specific estimates may not be available if there are too few events (deaths) in a given age group. This can happen because survival is very high (there are very few deaths) or because it is very low (most of the patients have died early in the five-year period of follow-up).

4. Net survival has been estimated for patients diagnosed in each of the years 2003–2007; these estimates are not age-standardised. The annual trend in survival is expressed as the absolute change in survival (per cent per year), estimated from a variance-weighted least squares regression of the annual survival estimates. The trend is reported only if at least three annual survival estimates are available and the absolute difference in survival between two consecutive years is not more than 20%.
5. The previous publication of this bulletin presented results by region, Strategic Health Authority and Cancer Network. SHAs and Cancer Networks were abolished on 31 March 2013 when the Health and Social Care Act 2012 came into force. A suite of new NHS geographic boundaries for England came into force on that date, including NHS Regions, Clinical Senates and Area Teams. The twelve Clinical Senates provide strategic clinical advice and leadership to Clinical Commissioning Groups (CCGs) and NHS England. Assigned to fixed geographies, Clinical Senates include a range of health professionals and take an overview of health and healthcare for local populations by providing advice and leadership on how services should be designed to provide the best overall care and outcomes for patients. CCGs nest into NHS Area Teams and Regions.
6. Transitional-cell papillomas of the bladder diagnosed from 1 January 2000 onwards were reclassified from malignant to non-malignant. Survival from transitional-cell papillomas is high. Excluding these tumours from survival analyses, which are restricted to malignant neoplasms, therefore reduces the overall estimate of survival from bladder cancer. Geographic variation in the speed with which these changes in pathological classification were applied also affects the geographic pattern of survival.
7. Introduction of the Prostate-Specific Antigen (PSA) test during the 1990s increased the diagnosis of asymptomatic prostate cancers. Men with these tumours have higher survival.
8. Previous analyses for Government Office Region, [Strategic Health Authority and Cancer Network](#) have been published.
9. ONS publishes cancer survival figures for England only. Figures for [cancer survival in Scotland](#) are produced by ISD Scotland.

[Survival for cancer in Wales](#) is produced by the Welsh Cancer Intelligence and Surveillance Unit
10. A [Pre release Access list](#) of those given pre-publication access to the contents of this release is available.
11. 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.