

## UK Cancer e-Atlas – Guide

The aim of the UK cancer e-Atlas is to provide a way to view cancer incidence, mortality and survival statistics by locality, UK constituencies and at national level. It provides the public, health care professionals, commissioners and health service managers with basic cancer information for the main types of cancer in males, females and persons. It is an interactive tool which uses maps, charts and data tables to display the information for the area of the UK you are interested in at looking at. You can also download the statistics in an excel format.

You have the choice to view the statistics in two map formats – the “Cancer e-Atlas by cancer network” and the “Cancer e-Atlas by NHS health boundaries”. The first displays cancer statistics for cancer networks (regional networks that support and promote the implementation of improvements in cancer care). The second e-Atlas provides statistics by NHS health boundaries which includes Primary Care Trusts (PCTs) for England and NHS/Health Boards for Scotland and Northern Ireland. Both e-Atlases provide national and UK constituency statistics.

The UK cancer e-Atlas has been jointly developed by the NCIN and the UK Association of Cancer Registries (UKACR). The cancer statistics are extracted from the UK Cancer Information Service (UKCIS) database, using the latest data available. The cancer incidence statistics are based on patients diagnosed in 2006-2008 (source: cancer registries). The cancer mortality data are based on people that died from cancer in 2007-2009 (source: ONS). The survival data are for patients diagnosed with cancer up to 2008 (source: cancer registries).

This guide provides advice on “Using and navigating the Cancer e-Atlas “ which explains the different sections and functions on the tool and a “Guide to the statistics” which provides some detail about the statistics in the cancer e-atlas including definitions, sources and advice on how to use the data. It also advises on other useful sources of cancer statistics.

### USING AND NAVIGATING THE CANCER E-ATLAS

The interactive cancer e-Atlas screen is split into five main sections.

- A. Tool facilities**
- B. A UK map allowing selection of localities**
- C. A data display area**
- D. A notes section describing each measurement in detail**
- E. A bar chart allowing comparisons between localities**

Each section is described in more detail below.

The screenshot shows the UK Cancer e-Atlas interface. At the top left, the title reads "UK Cancer e-Atlas by cancer network" and "Data being displayed: Breast - Female incidence". Below the title are several tool buttons: "Home", "Filter", "Select localities", "Export data", and "Show health boundary map". A blue box labeled "Section A - Tool facilities" encompasses these buttons. To the left is a map of the UK with a red region highlighted; a blue box labeled "Section B - Map" points to it. Below the map is a bar chart showing incidence rates over time, with a blue box labeled "Section E - A bar chart allowing comparisons between localities" pointing to it. The main area on the right is a data table with columns for "Cancer type", "Locality", "No. Cases (Number)", "Rate (%)", "EW range", and "Comparator to UK average rate". A blue box labeled "Section C - Data display area" points to this table. At the bottom right, there is a text area for notes, with a blue box labeled "Section D - Notes" pointing to it.

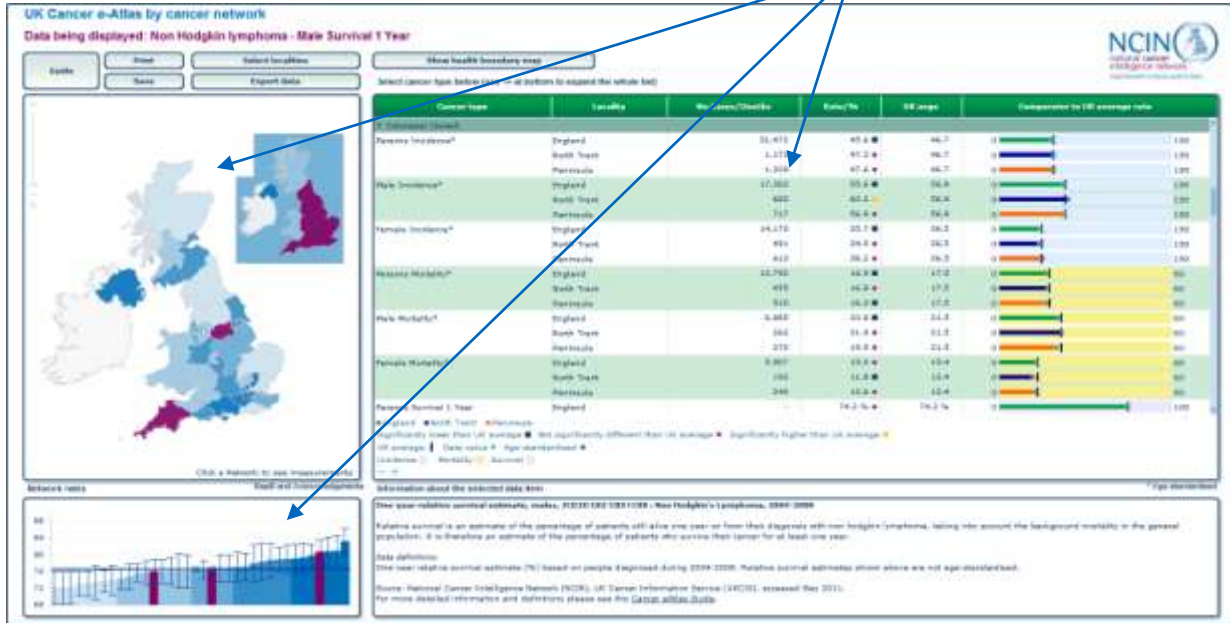
## SECTION A: TOOL FACILITIES

The titles at the top left hand corner of the screen describe the information that is being displayed.

A locality can be selected by name clicking on the button called "Select localities" above the UK map. Clicking this will show a list of locality options. Select the locality of interest and then click the "Select localities" button again to hide the list. Alternatively you can select a locality by clicking on the map itself (see 'A UK map allowing selection of a locality' section below).

You can compare up to 3 localities by pressing the control (Ctrl) key on your keyboard and then clicking with the mouse on locality in the list or on the map. This loads other sets of data so you can directly compare one locality to another.

You can compare up to 3 localities



Options are also provided to print and save the screen being displayed. Please note, to print the selected atlas it is advisable to go to the 'Printer preference' option and then select the following settings in the 'Page Setup' section:



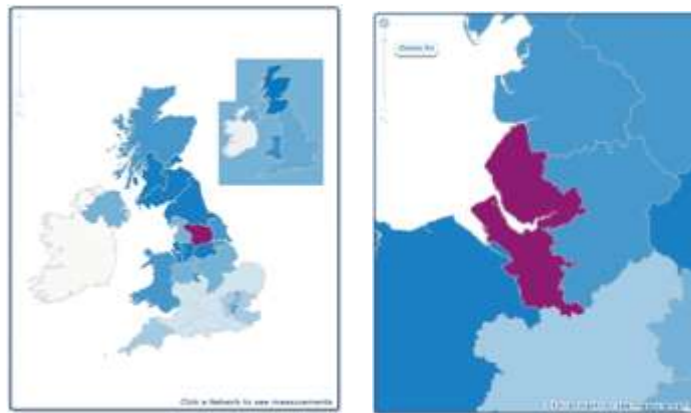
You are also given the option to go to a related Cancer e-Atlas and to download all of the data in an Excel format ('Export data' button)

## SECTION B: A UK MAP ALLOWING SELECTION OF A LOCALITY

To show data for a particular locality you can also select the area or areas you want to look at using the map. Move the mouse over the map, the name of each locality will be shown next to the mouse pointer and its location will be highlighted in purple. Clicking the mouse will highlight that area on the map and the data will be shown in the data table and bar chart sections. Once clicked, the cancer locality will remain highlighted as the mouse moves over the rest of the map.

As already mentioned, you can compare up to 3 areas by pressing the control (Ctrl) key on your keyboard and then clicking with the mouse on the map. This loads other sets of data so you can directly compare one locality to another.

To view UK, England, Scotland, Wales or Northern Ireland data click on mini UK map.



In some parts of the country there are localities crowded together. To help find a particular locality you can zoom into the map by clicking the '+' symbol located at the top left of the map. To zoom out again click the '-' and to view the full UK map click the magnifying glass. You can also drag the zoom bar up and down for fine scale work. Once zoomed in, the map can be dragged around the screen by holding down the left mouse button and moving the mouse in the required direction.

## SECTION C: A DATA DISPLAY AREA

The data display area (tabulation) shows the information for the selected locality. Click on a cancer type name (highlighted in green) to select the cancer you are interested in. A list of the cancer statistics for that cancer will appear in the data table.

To view the statistics of interest (e.g incidence, mortality or survival) click on the measurements in the data table, and the data will also be displayed in the bar chart and an explanation of the data will be provided in the bottom left of the screen. Use the scroll bar on the right of the data table to see more data.

To expand and collapse list of cancer types, click on the “-“ or “+” symbols (below the data table)

Cancer type	Locality	No.Cases/Deaths	Rate/%	UK aveg	Comparator to UK average rate
<b>Colorectal (bowel)</b>					
Persons Incidence*	West of Scotland	1,698	52.9	46.7	0 150
Male Incidence*	West of Scotland	916	56.1	36.9	0 150
Female Incidence*	West of Scotland	782	41.7	36.3	0 150
Persons Mortality*	West of Scotland	737	23.7	17.3	0 60
Male Mortality*	West of Scotland	377	26.6	21.5	0 60
Female Mortality*	West of Scotland	340	16.8	13.4	0 60
Persons Survival 1 Year	West of Scotland	-	73.3 %	74.2 %	0 100
Male Survival 1 Year	West of Scotland	-	72.9 %	75.7 %	0 100
Female Survival 1 Year	West of Scotland	-	72.5 %	72.3 %	0 100
Persons Survival 3 Year	West of Scotland	-	56.2 %	58.7 %	0 100
Male Survival 3 Year	West of Scotland	-	56.9 %	59.4 %	0 100
Female Survival 3 Year	West of Scotland	-	55.6 %	57.9 %	0 100
Persons Survival 5 Year	West of Scotland	-	54.0 %	54.9 %	0 100
Male Survival 5 Year	West of Scotland	-	51.9 %	54.1 %	0 100

The data display area is split into five columns of data and a chart display.

The first column shows the title of the measurement e.g the cancer type header, incidence, mortality survival.

The second column shows the locality to which the measurement and data refers.

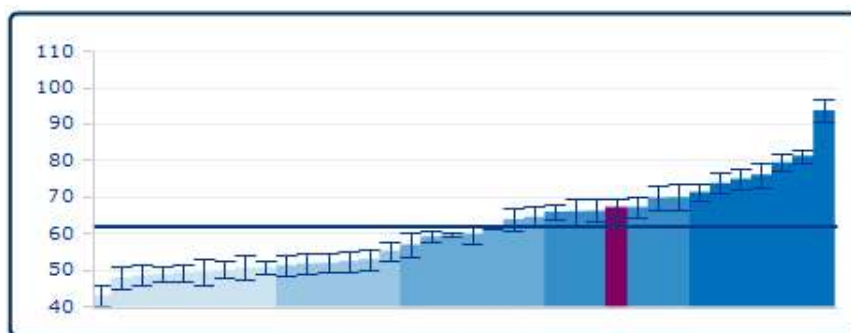
The third, fourth and fifth columns gives the values of the measurement for the relevant area. For information about the data being displayed go to “A guide to the statistics” section below.

#### SECTION D: NOTES AREA

Selecting the data by clicking it with the mouse will display an explanation of the data in the notes box at the bottom right of the screen. This will include brief details of the data being displayed and how it should be interpreted.

#### SECTION E: A BAR CHART ALLOWING COMPARISONS BETWEEN LOCALITIES

When a measurement for a locality is selected, the bar chart will show the values for other localities. The selected locality will be highlighted in purple and moving the mouse over the chart will show the names and data value for other cancer localities.



The chart displays values (the incidence/mortality rates or the survival estimates) for all the localities in ascending data order. The confidence intervals (95%) are provided on the bars. The blue horizontal line is the UK average. For more information on the statistics and confidence intervals please refer to “A guide to the statistics” section below.

## A GUIDE TO THE STATISTICS

This section of the guide provides information on the statistics that are included in the Cancer e-Atlas, including definitions, sources and advice on how to use the data. All of the data in the Cancer e-Atlas can be downloaded (click 'Export data' button).

- a. [What cancer types are included in the Cancer e-Atlas?](#)
- b. [Geographical data displayed in the Cancer e-Atlas](#)
- c. [Cancer incidence statistics \(includes definitions for age-standardised rates and confidence intervals\)](#)
- d. [Cancer mortality statistics](#)
- e. [Cancer survival statistics](#)
- f. [What is the UKCIS?](#)
- g. [Other useful sources of cancer statistics](#)
- h. [Any questions?](#)

## WHAT CANCER TYPES ARE INCLUDED IN THE CANCER E-ATLAS?

The cancer sites provided in this e-Atlas along with their corresponding international classification of diseases (ICD10) codes are listed below.

<b>All cancers: All malignant neoplasms (excluding non-melanoma skin cancer) - C00-C97 excluding C44</b>			
<b>Bladder: C67</b>	<b>Colorectal: C18-C20</b>	<b>Melanoma: C43</b>	<b>Pancreas: C25</b>
<b>Brain: C71</b>	<b>Kidney: C64</b>	<b>Non-Hodgkin lymphoma: C82-C85+C96</b>	<b>Prostate: C61</b>
<b>Breast: C50</b>	<b>Leukaemia: C91-C95</b>	<b>Oesophagus: C15</b>	<b>Stomach: C16</b>
<b>Cervix: C53</b>	<b>Lung: C33-C34</b>	<b>Ovary: C56-C574</b>	<b>Uterus: C54-C55</b>

## GEOGRAPHICAL DATA DISPLAYED IN THE CANCER E-ATLAS

You have the choice to view the statistics in two map formats – the “Cancer e-Atlas by cancer network” and the “Cancer e-Atlas by NHS health boundaries”. The first displays cancer statistics for cancer networks (regional networks that support and promote the implementation of improvements in cancer care). The second e-Atlas provides statistics by NHS health boundaries which includes Primary Care Trusts (PCTs) for England and NHS/Health Boards for Scotland and Northern Ireland. Both e-Atlases provide national and UK constituency statistics.

Occasionally PCTs merge but the Cancer e-Atlas reflects PCTs as of March 2011.

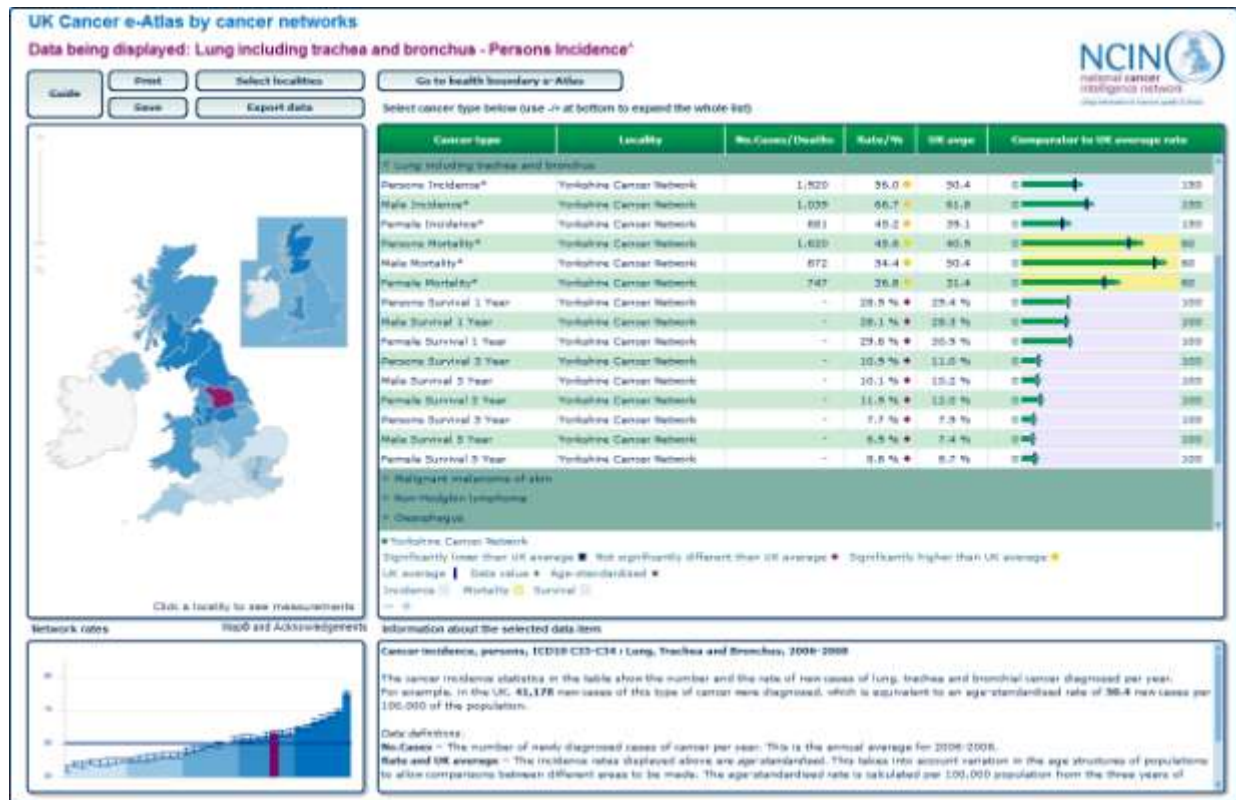
The Shetland, Orkney and Western Isles statistics have been omitted from the Cancer e-Atlas due to small numbers.

## CANCER INCIDENCE

Cancer incidence is the number of new cases of cancer diagnosed for a given period. The cancer incidence statistics in the Cancer e-Atlas show the number and the rate of new cases of cancer diagnosed per year (which is an annual average for patients diagnosed in 2006-8).

An example is provided below to help explain what data is being displayed.

### Working Example - Yorkshire cancer network, lung cancer:



**Number of cases (No. cases column):** The number of newly diagnosed cases of cancer per year. This is the annual average for 2006-2008. For the example above, there was an average of 1,039 new cases of lung cancer were diagnosed in males (each year) in the Yorkshire cancer network.

**Rate (Rate/% column):** Cancer incidence rates are the number of newly diagnosed cases of cancer per 100,000 population. The incidence rates displayed in Cancer e-Atlas are age-standardised. Using the example above, the Yorkshire cancer network has an age-standardised rate of around 67 new cases per 100,000 male population (per year).

### What are age-standardised rates?

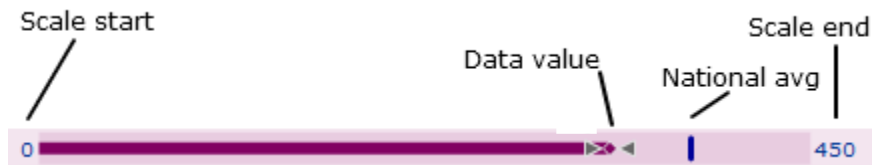
Age-standardised rates take into account the variation in the age structures of populations. For example, Dorset has a higher proportion of elderly people than London. Cancer is much more common in the elderly, so a more elderly population will in general have a higher incidence of cancer. The age-standardised rates adjust for age to allow comparisons between different areas to be made.

The directly age-standardised rates are calculated by taking the age-specific crude rates and applying them to the age distribution of a hypothetical population (in this case, a Standard European Population).

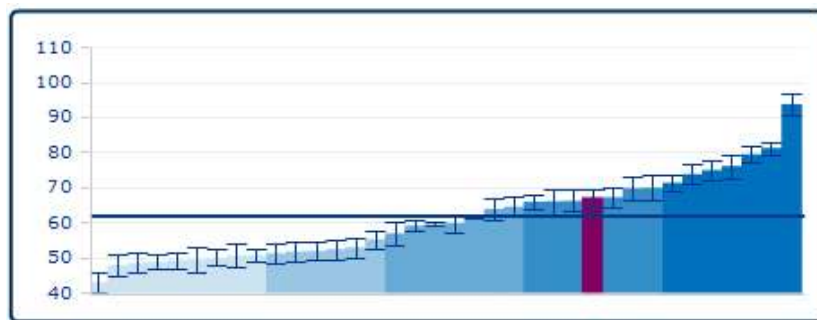
**UK average (UK avge column):** This is the age-standardised rate for the UK. In the example above the UK age-standardised is rate for males is around 62 new cases per 100,000 male population (per year).

**Significance symbols (the coloured symbol by the locality rate):** This indicates whether the age-standardised rate for the locality is significantly different to the UK average. This measure uses a statistical test using confidence intervals (for more info see “bar chart” section below). A blue square shows that the locality rate is significantly lower than the UK average; a yellow circle shows that locality rate is significantly higher than the UK average; and a purple diamond shows that the locality rate is not significantly different to the UK average. Using the example above, the Yorkshire cancer network age-standardised incidence rate is significantly higher than the national average as it has a yellow circle.

**Horizontal bar chart:** This shows the locality age-standardised rate compared to the UK rate (the blue vertical line).



**Bar chart (bottom left hand corner of the screen):** This chart shows that range of age-standardised rates or survival estimates across the localities. Each bar displays the confidence interval range. The lowest rates are shaded in the lightest blue colour, the highest are in the darkest blue. In the example below, the Yorkshire cancer network (bar highlighted in purple) is higher than the UK average (blue horizontal line). The confidence interval for this network does not overlap the blue line (UK average), so the network’s age-standardised rate is significantly higher than the UK average. If the confidence interval does overlap the blue line, so UK average the age-standardised rate is not significantly different from the UK average.





### *What are confidence intervals?*

For the age-standardised rate and survival estimates, a 95% confidence interval is given. Confidence intervals are used as a measure of uncertainty in the estimated proportions. The upper and lower limits of the interval show how big a contribution chance may have made to a particular statistic. The 95% confidence intervals quoted give the range in which the proportion in question would fall 19 times out of 20, were it possible to repeat the analysis.

Incidence data Source: UKCIS. The incidence data are provided via the regional Cancer Registries who collect data relating to each new diagnosis of cancer that occurs in their resident populations. This does not include secondary cancers or recurrences. Data are reported according to the calendar year in which the cancer was diagnosed.

## CANCER MORTALITY

Cancer mortality is the number of people who have died from a particular type of cancer. The statistics show the number and the rate of cancer deaths per year (which is an annual average for 2007-9).

Please also **see the cancer incidence section** above for more information about age-standardised rates, confidence intervals and how to interpret the statistics.

**Number of cases (No.deaths column):** – The number of deaths from cancer per year. This is the annual average for 2007-2009.

**Rate and UK average (Rate/% & UK avge columns):** Cancer mortality rates are the number of deaths from cancer per 100,000 population. The mortality rates displayed in Cancer e-Atlas are age-standardised (for an age-standardised rate definition, please see incidence section above). Rates are provided for the selected locality and for the UK.

For Yorkshire cancer network example above, in the UK, an average of 872 people died from lung cancer (each year), which is equivalent to an age-standardised rate of 54 deaths per 100,000 of the population. This compares to a UK average of 50 deaths per 100,000. The yellow circle symbol by the network's rate indicates that the Yorkshire cancer network is significantly higher than the UK average (for more information these symbols, please see incidence section above).

Source: UKCIS. Mortality data are provided by the Office for National Statistics (ONS) and relate to all deaths registered with cancer mentioned as an underlying cause of death.

## CANCER SURVIVAL

Survival estimates are the percentage of patients that are still alive a specified time after their diagnosis of cancer. There are a number of methods used to calculate cancer survival. The most commonly used method is called relative survival. Relative survival provides an estimate of the percentage of patients still alive a specified number of days/months/years from their diagnosis, whilst taking into account the background mortality in the general population e.g. people that would be expected to have died from other causes during that period if they did not have cancer.

The Cancer e-atlas provides one-year relative survival estimates (based on people diagnosed with cancer during 2004-2008), three-year relative survival estimates (based on people diagnosed during 2002-2006) and five-year relative survival estimates (based on people diagnosed during 2000-2004). The relative survival rates for all cancer sites are included in the cancer network cancer e-Atlas. For the

NHS health boundaries e-Atlas, rates are provided for breast (female), prostate (male), colorectal and lung. Please note - ***The relative survival estimates are not age-standardised.***

Using the Yorkshire cancer network example above, the one-year survival estimate (***Rate/% column***) for males is 28.1%. The UK average (***UK avge column***) is 28.3%. The purple diamond symbol beside the locality rate indicates that the Yorkshire cancer network is not significantly different to the UK average.

Please also ***see the cancer incidence section*** above for more information on how to interpret the statistics.

Other information about survival:

- Relative survival is defined as the observed survival rate divided by the expected survival rate of a similar cohort of people in the general population with respect to age, sex and year of observation. The expected survival rate is estimated using aggregated all cause mortality data.
- Due to the instability of the resulting survival estimates, rates are not provided where there are fewer than 10 cases entering the analysis for a particular year.
- The following cases have been excluded from the relative survival analyses in the Cancer e-Atlas:
  - Cases where the date of diagnosis is the same as the date of death (mainly Death Certificate Only cases)
  - Cases with incomplete dates (such as unknown month of diagnosis or death)
  - Cases aged over 99 at diagnosis
- Since relative survival rates are calculated from a ratio, they can rise above 100% if the cohort of people with the cancer in question survive better than their counterparts in the general population. Similarly, relative survival rates can increase slightly with successive years after diagnosis. These occurrences are generally observed with the very good survival cancers, such as non-melanoma skin cancer, or where the number of cases involved is small. For cancers with poor prognosis, sometimes a relative survival estimate and its confidence intervals cannot be calculated e.g. if the ratio's numerator is zero.
- In the Cancer e-Atlas, the actuarial method of calculating relative survival is used (D.M. Parkin and T. Hakulinen, pp159-176, Chapter 12 Analysis of Survival in Cancer Registration: Principles and Methods, IARC Scientific Publications No. 95, Lyon, 1991). This method is also used by the International Agency for Research on Cancer in the EURO CARE and EURO CARE-2 studies (IARC Scientific Publications No. 132, Lyon, 1995 and No. 151, Lyon, 1999, respectively). An alternative method of calculating relative survival is to use a non-proportional hazards model, such as that used by the Office for National Statistics (Cancer Survival Trends in England and Wales 1971-1995, Series SMPS No. 61, The Stationery Office: London, 1999).
- Differences in relative survival methods or exclusion criteria may cause discrepancies with relative survival rates presented in other publications. For these reasons, relative survival rates should not be compared across different publications (for example, survival rates presented in the Cancer e-Atlas should not be compared with survival rates published by the Office for National Statistics).

## WHAT IS THE UKCIS?

The cancer statistics are extracted from the UK Cancer Information Service (UKCIS) database, using the latest data available. UKCIS offers secure and timely information on cancer incidence, mortality and survival. UKCIS is a national web-based reporting tool, running across the NHS national network, providing the user access to cancer information for their area. To use the UKCIS you must be registered and connected to the NHS network. For more information -

[http://www.ncin.org.uk/cancer\\_information\\_tools/ukcis.aspx](http://www.ncin.org.uk/cancer_information_tools/ukcis.aspx)

## OTHER USEFUL SOURCES OF CANCER STATISTICS

The Cancer e-Atlas provides cancer incidence, mortality and survival statistics. A wide range of information on these statistics and other cancer information are available. Below are some example sources that you may find useful:

- [What cancer statistics are available, and where can I find them?](#) provides an overview about cancer statistics, including information on the latest statistics publicly available and where to find them. This is intended to be a useful reference guide for infrequent users of cancer statistics or for audiences that may not be familiar with this information.
- [Improving outcomes: a strategy for cancer - NCIN information supplement](#) A report summarising a variety of cancer statistics.
- Cancer Research UK also provides detailed information about cancer incidence, mortality and survival statistics <http://info.cancerresearchuk.org/cancerstats/>

## ANY QUESTIONS

If you have questions about the Cancer e-Atlas or about cancer statistics/information please contact the NCIN at [enquiries@ncin.org.uk](mailto:enquiries@ncin.org.uk) .