



**Brain Tumour
Research**

Funding the fight

BRAIN TUMOUR RESEARCH – FUNDING FLOWS

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London, April 2013 (updated)

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1. RESEARCH BRIEF AND HEADLINE FINDINGS

The background features a white triangular area on the left side, which contains the text. To the right and bottom, there are large, overlapping geometric shapes in shades of purple and maroon, creating a modern, abstract design.

RESEARCH BRIEF

- NPC were asked by *Brain Tumour Research* to review the research spending flows to cancer
- This data has been produced using publicly available information sources
- The available data was not as comprehensive as expected, however it is the best that is available, and has previously been used in other analyses of cancer research spend
- The issue of secondary brain tumours was not explored – this could be an area for further investigation. According to Prof Geoff Pilkington if secondary brain tumours were included in official figures then the number of recorded incidences of brain tumours would substantially increase

HEADLINE FINDINGS

- Brain tumours account for the highest individual cancer burden with the highest average years of life lost compared to all other cancers.
- Brain tumours have very low survival rates, and can occur earlier in life than many other cancers.
- The cumulative research spend on brain tumours between 2002 and 2011 was less than 1% of all NCRI research spend.
- Incidence of primary brain tumours is lower than many other cancers, and NPC believes this may make them harder to fundraise for, although this assumption needs further investigation.
- Funding for brain tumour research has increased in the past ten years, but from a very low base. Cancers like leukaemia and breast cancer have years of good funding and a good body of research to build on. Brain tumour research is playing catch-up.
- According to medical experts, brain tumour research benefits little from general cancer research, which makes up most of the research spend in the UK. This is because of the complexities of the brain. Most other cancers benefit more from general cancer research.

DATA USED IN THIS ANALYSIS

Office for National Statistics

- Cancer incidence in England <http://www.ons.gov.uk/ons/rel/vsob1/cancer-statistics-registrations--england--series-mb1-/index.html>
- Mortality statistics in England and Wales <http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/index.html>
- Cancer survival rates in England <http://www.ons.gov.uk/ons/rel/cancer-unit/cancer-survival/2006---2010--followed-up-to-2011/index.html>

National Cancer Research Institute

- Cancer Research Database <http://www.ncri.org.uk/default.asp?s=1&p=3&ss=1>

Academic Data

- Burnet, N.G., Jefferies, S.J., Benson, R.J., Hunt, D.P., and Treasure, F.P. (2005). Years of life lost (YLL) from cancer is an important measure of population burden and should be considered when allocating research funds. *British Journal of Cancer* 92, 241-245.

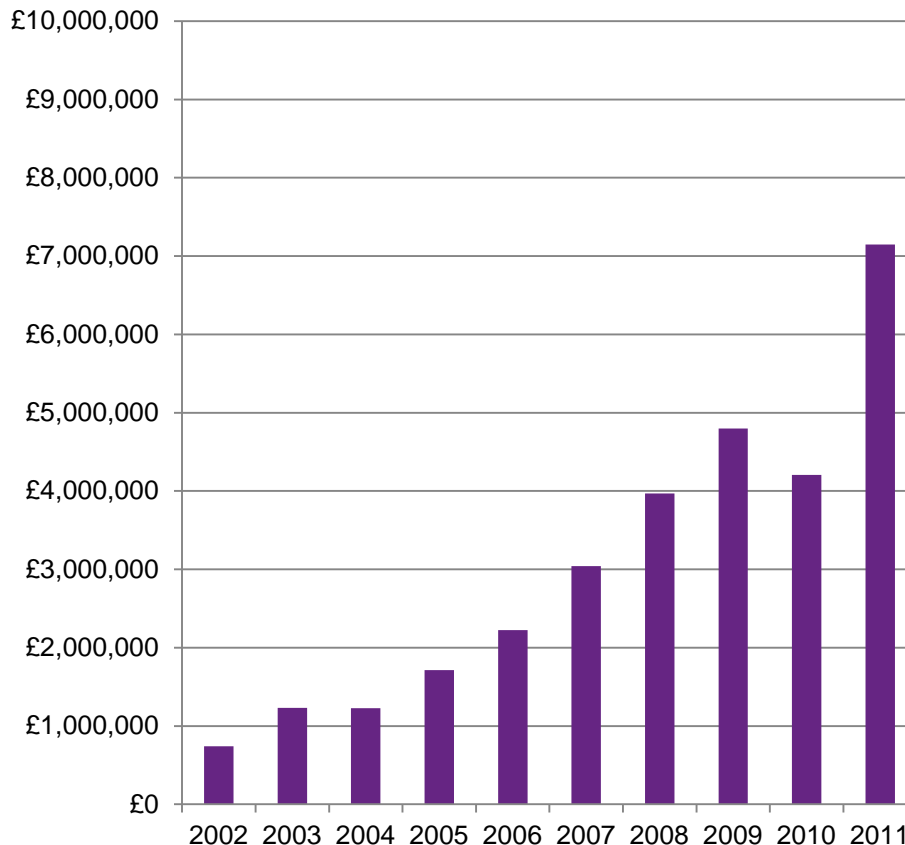
2. RESEARCH FUNDING FOR CANCER

Data:

NCRI Cancer Research Database

FUNDING FOR BRAIN TUMOUR RESEARCH HAS INCREASED, BUT FROM A VERY LOW BASE

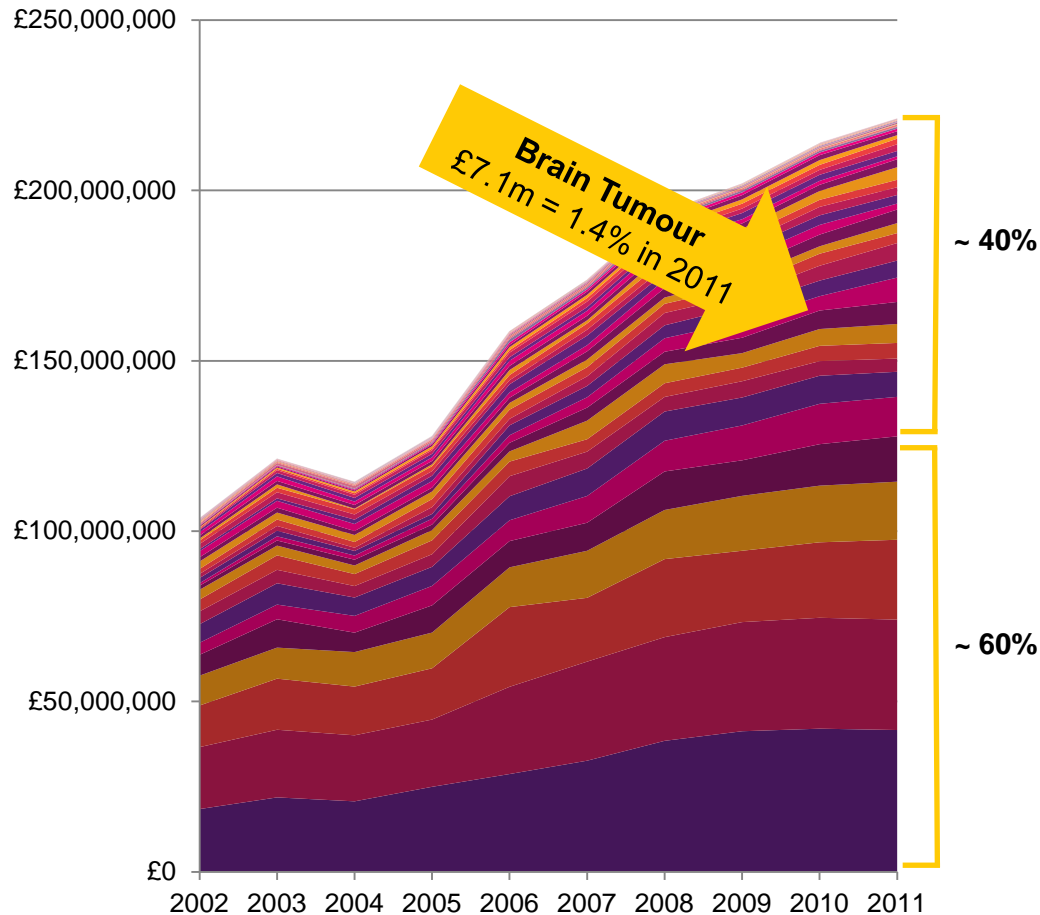
NCRI Spend on Brain Tumours 2002 - 2011



Source: NCRI Cancer Research Database

- In 2002 funding for brain tumours was £739,835 representing 0.3% of the total NCRI spend
- In 2011 funding for brain tumours had increased to £7,149,955 representing **1.4% of the total NCRI spend** including general spend
- **Cumulatively** between 2002 and 2011 spending on brain tumour research was **less than 1% of total NCRI spend**
- Between 2002 and 2011 the total NCRI site specific research spend more than doubled from £103,694,608 to £221,055,132

5 CANCER SITES SHARE 60% OF SITE SPECIFIC FUNDING, 43 CANCER SITES SHARE 40% SITE SPECIFIC FUNDING



- In the past ten years 5 cancer sites have consistently shared around 60% of all site specific funding resulting in 43 cancer sites sharing the remaining 40% of site specific funding - brain tumours are in this group
- Of site specific spend, brain tumours = c3.2%

Source: NCRI Cancer Research Database

3. BRAIN TUMOUR FUNDING COMPARED TO OTHER CANCERS

Data:

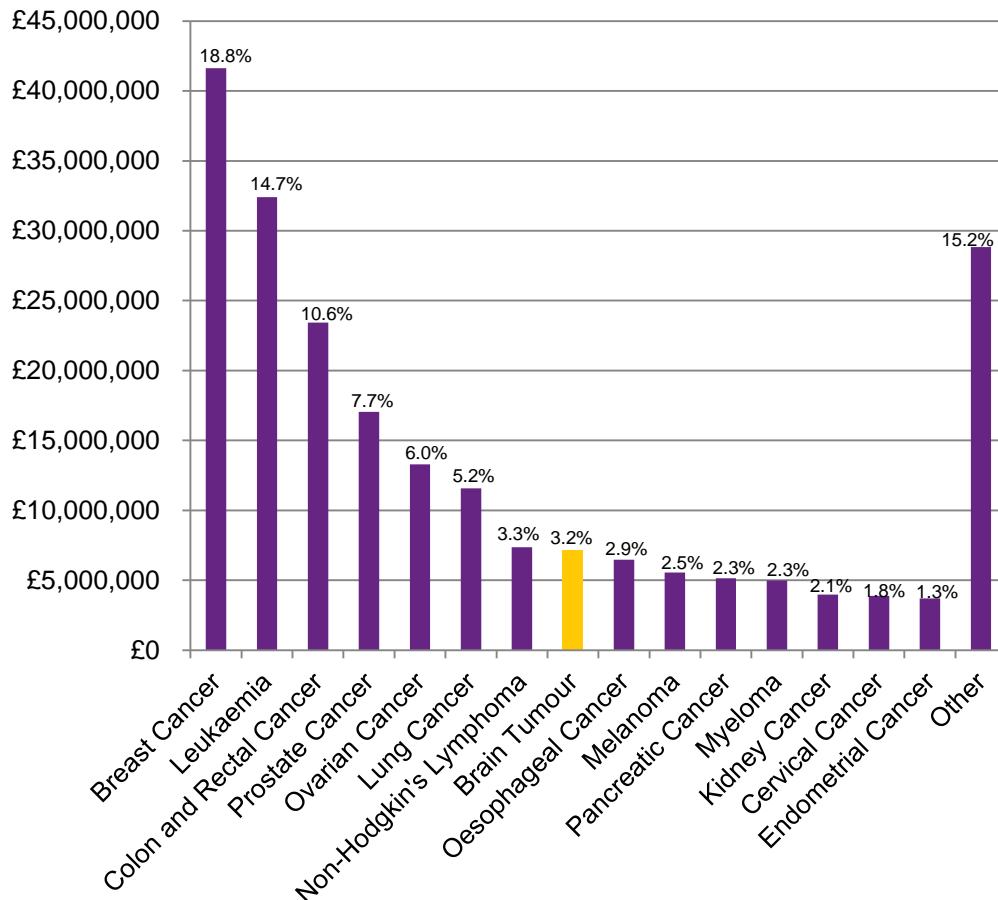
NCRI Cancer Research Database

ONS Cancer incidence in England

ONS Mortality statistic in England and Wales

ONS Cancer survival rates in England

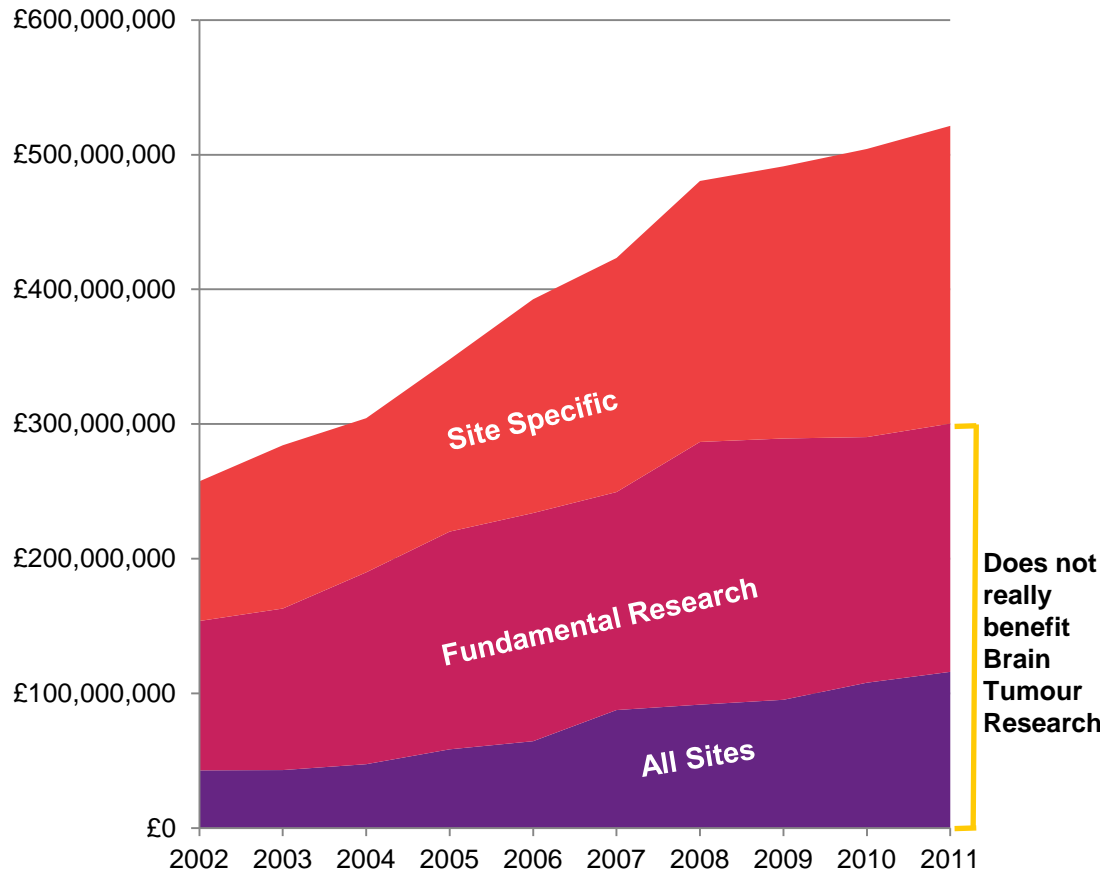
JUST 3.2% OF SITE SPECIFIC RESEARCH SPEND WENT ON BRAIN TUMOURS IN 2011



Source: NCRF Cancer Research Database

- This graph shows the NCRF site specific cancer research spend and the percentage of the site specific portfolio for common cancers in 2011
- Breast cancer (18.8%) and Leukaemia (14.7%) had the highest research spend in 2011
- Brain tumours accounted for 3.2% of site specific research spend in 2011

MOST NCRI SPEND IS ON GENERAL CANCER RESEARCH NOT SITE SPECIFIC RESEARCH



Source: NCRI Cancer Research

- General Research (fundamental research + all site research) accounts for around 60% of NCRI spending 2002 - 2011
- However, due to the complexity of the brain, general research does not often benefit brain tumour research (Prof Pilkington)
- Advances in brain tumour treatments come predominately from site specific research

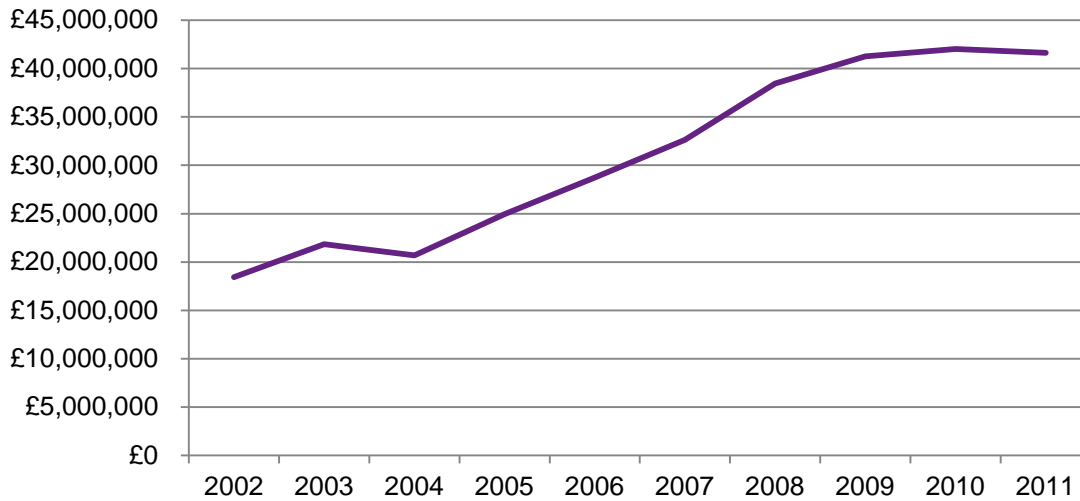
UNLIKE MANY OTHER CANCERS, BRAIN TUMOUR RESEARCH DOES NOT BENEFIT FROM GENERAL RESEARCH

Prof Geoff Pilkington, President *British Neuro-Oncology Society* explained:

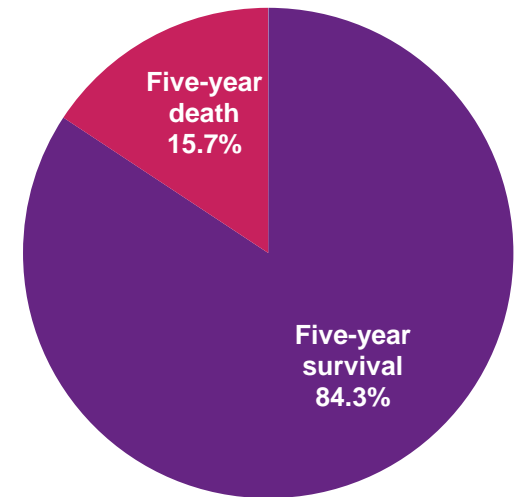
- Brain tumours are very different from other cancers.
- The 'blood-brain barrier' protects the brain from toxins in the blood, but this can also hinder brain tumour treatment. Many treatments, like chemotherapy, run through the blood and so cannot be used for fighting brain tumours. Brain tumours are therefore one of the most inaccessible tumours, and it is important to investigate specific new ways to deliver treatments.
- There are over 120 types of brain tumour, making research difficult. Furthermore, brain tumours are comprised of lots of different types of cells, which react differently to different forms of treatment. The cells that comprise other tumours are usually more uniform in their response to treatments.
- Many brain tumours are cellularly heterogeneous making them harder to treat. At the other extreme, all liver cells behave in the same way, so research into liver cancer treatment is less complicated in this regard.
- [Discoveries in general cancer research or from work on other sites are unlikely to have a major impact on brain tumour research.]

BREAST CANCER HAS RECEIVED A LOT OF FUNDING AND SURVIVAL RATES ARE HIGH

NCRI Funding - Breast Cancer Research



Breast Cancer: Five-year Survival and Death Rates ONS



Breast cancer receives a lot of funding

The five year survival rate is high at 84.3%

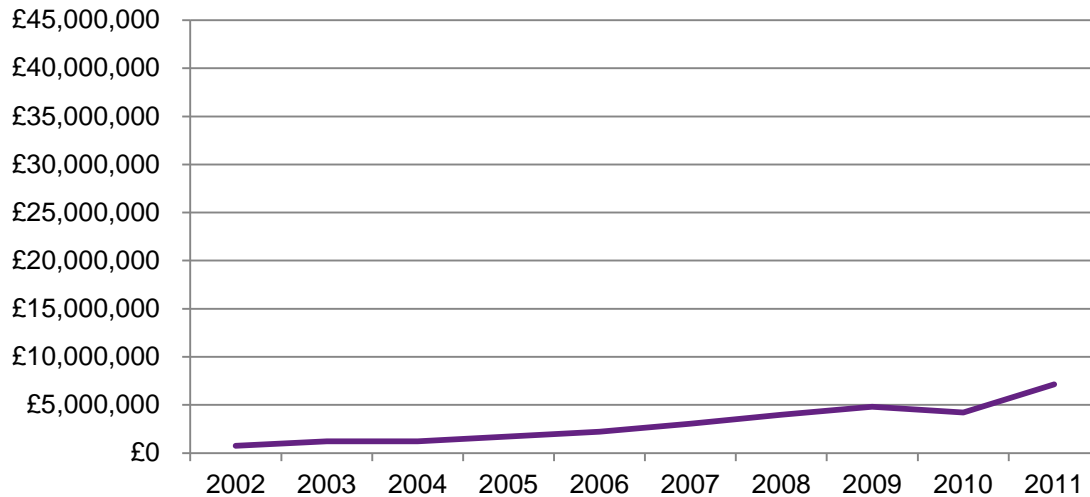
Many people are diagnosed with breast cancer

There is a large body of existing research which makes discovering treatments easier

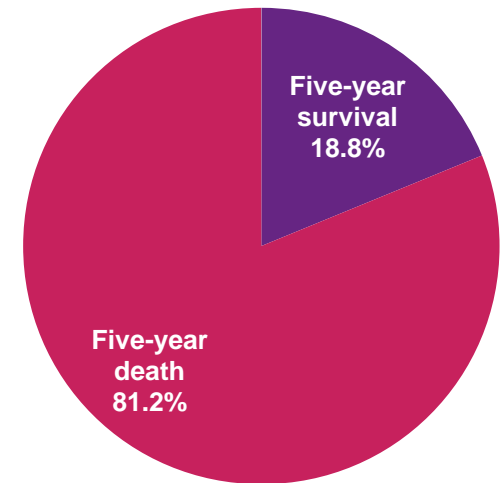
| 2010 latest ONS figures | |
|-------------------------|-------|
| Breast | |
| Diagnosed England Only | 41612 |
| Died England & Wales | 10353 |

BRAIN TUMOURS HAVE RECEIVED LIMITED FUNDING AND SURVIVAL RATES ARE LOW

NCRI Funding for Brain Tumour Research



Brain Tumour: Five-year Survival and Death Rates ONS



Brain tumour research receives little funding

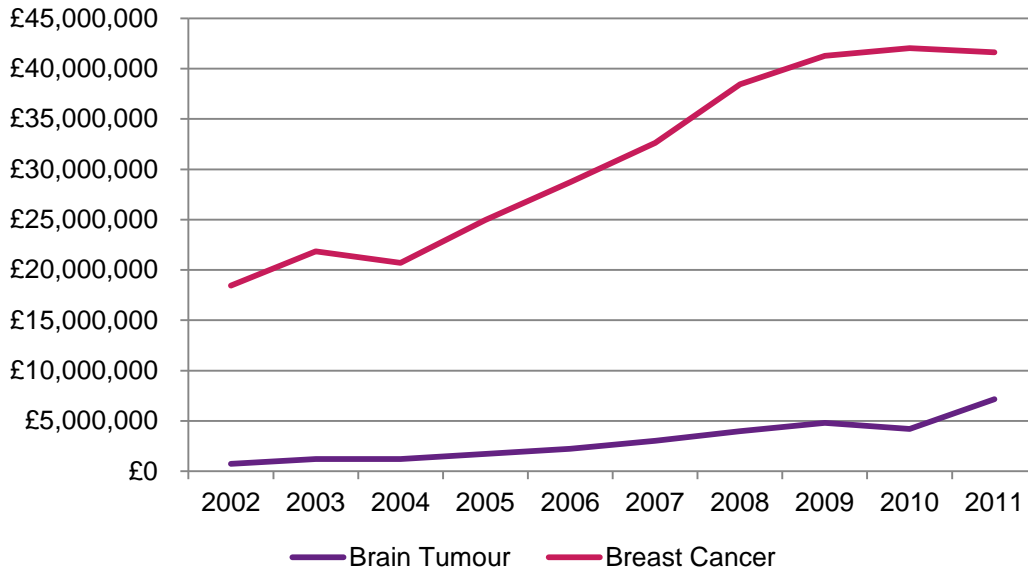
The five year survival rate is low at 18.8%

Fewer people are diagnosed with brain tumours than breast cancer

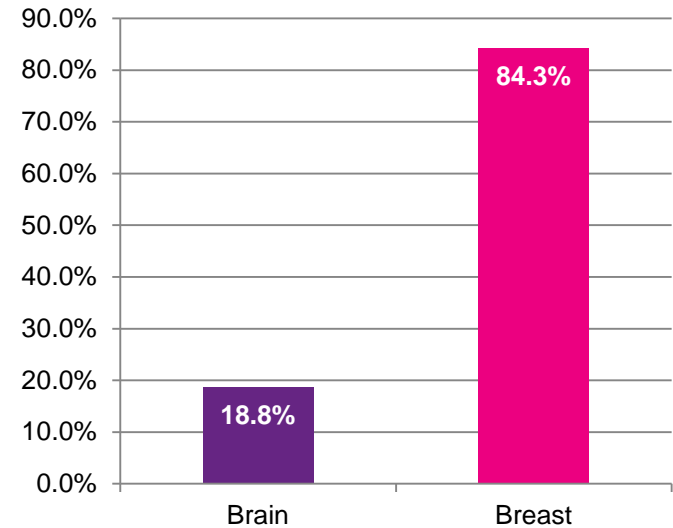
| 2010 latest ONS figures | |
|-------------------------|------|
| Brain | |
| Diagnosed England Only | 3935 |
| Died England & Wales | 3385 |

BREAST AND BRAIN FUNDING AND SURVIVAL RATES AT A GLANCE

NCRI Research Funding – Brain & Breast



ONS Five-year survival %



| 2010 latest ONS figures | | |
|-------------------------|-------|--------|
| | Brain | Breast |
| Diagnosed England Only | 3935 | 41612 |
| Died England & Wales | 3385 | 10353 |

Brain tumours receive less funding

Brain tumours have far lower 5 year survival rates

There are more instances of breast cancer

BRAIN TUMOUR RESEARCH LAGS BEHIND MORE PROMINENT CANCERS

- The figures on the last pages do not show causality between research spending and greater survival. However research can help develop treatments for specific cancers which can improve life chances.
- To develop clinical treatments, sustained research funding is needed over long periods of time. Brain tumour research funding started from a very low base, so the cumulative spend is low compared to other cancers. Between 2002 and 2011 spending on brain tumour research was less than 1% of total NCRI spend
- Thanks largely to sustained funding, breast cancer research is advanced, and the more advanced the research, the easier it is to discover treatments.
- Brain tumour research is not yet advanced, so treatments are much harder to discover.

4. CANCER INCIDENCE, SURVIVAL, MORTALITY AND AVERAGE YEARS LIFE LOST

Data:

NCRI Cancer Research Database

ONS Cancer incidence in England

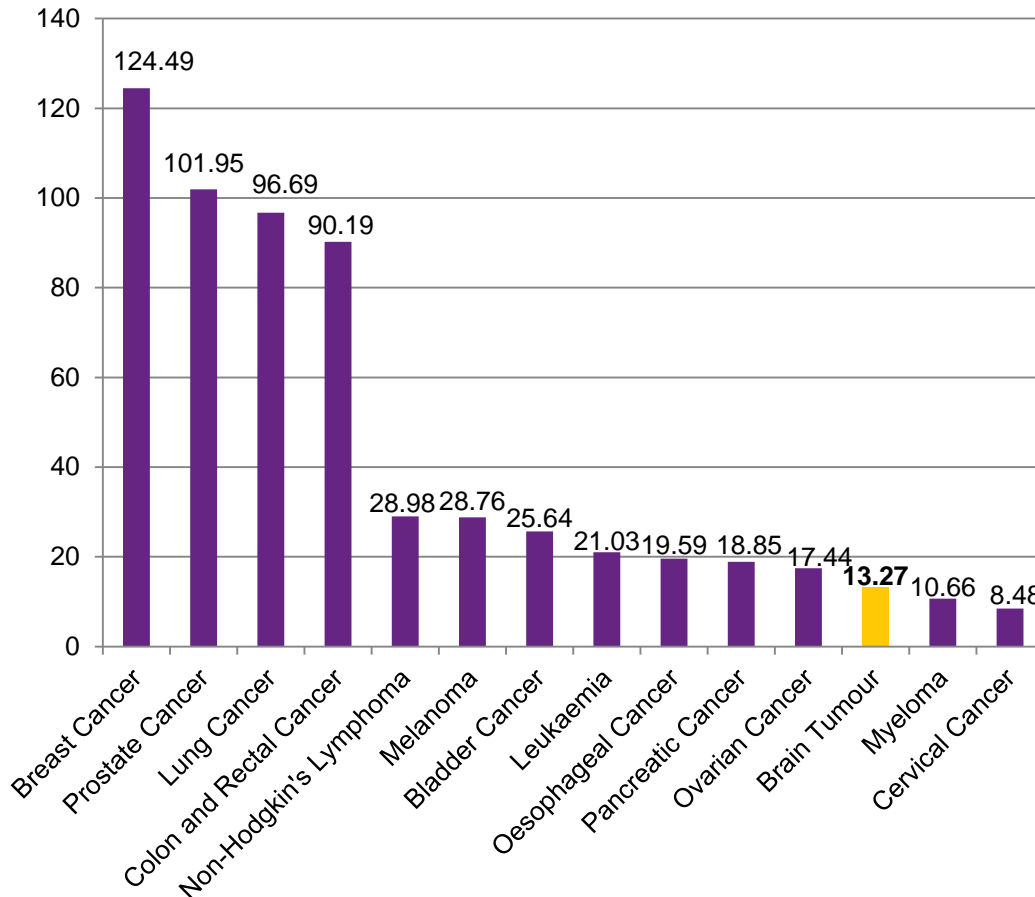
ONS Mortality statistics in England and Wales

ONS Cancer survival rates in England

Burnet, N.G., Jefferies, S.J., Benson, R.J., Hunt, D.P., and Treasure, F.P. (2005). Years of life lost (YLL) from cancer is an important measure of population burden-and should be considered when allocating research funds. *Br J Cancer* 92, 241-245.

THE INCIDENCE OF BRAIN TUMOURS IS RELATIVELY LOW IN ENGLAND

ONS Cancer Incidence

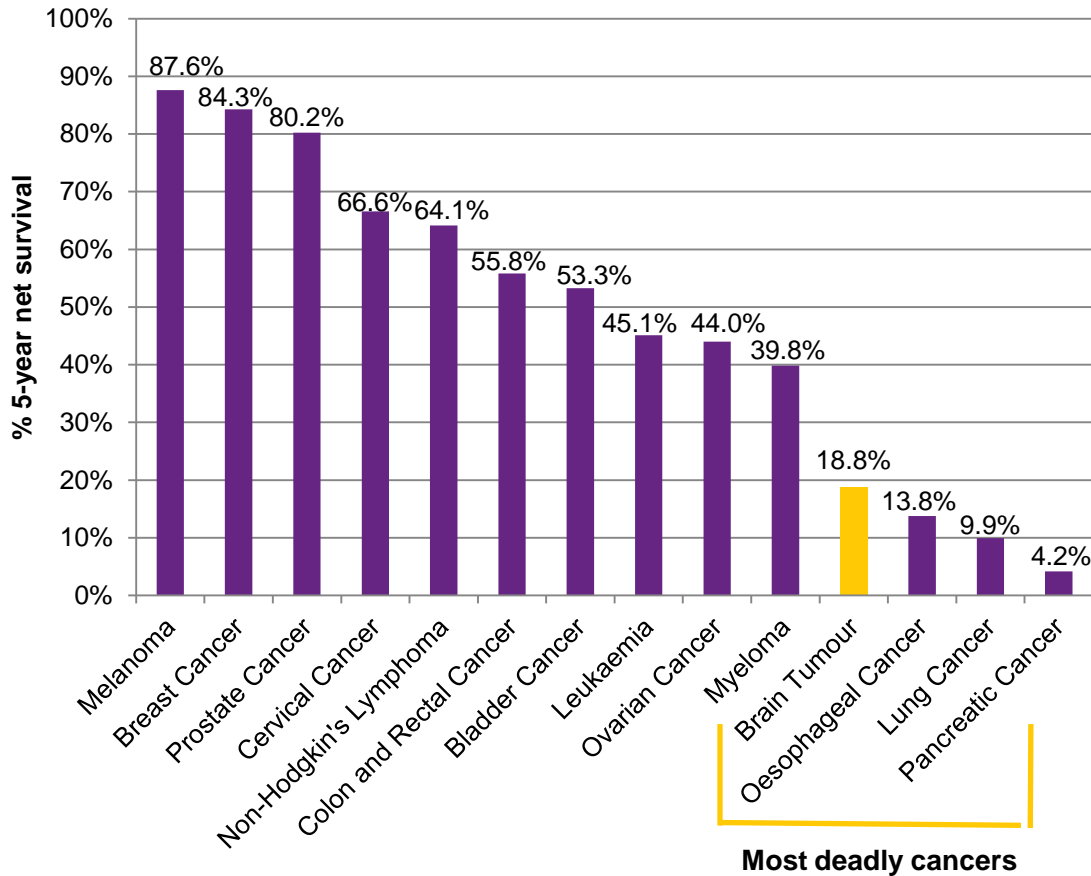


Source: ONS Cancer incidence in England 2001-2010

- This ONS data shows the mean rates of cancer in England per 200,000 between 2001-2010
- Breast cancer incidence is high: For 200,000 people we would expect that around 124 would develop breast cancer
- Brain tumour incidence is lower: For 200,000 people we would expect that around 13 would develop a brain tumour

HOWEVER THE FIVE-YEAR SURVIVAL RATES FOR BRAIN TUMOURS ARE VERY LOW

ONS Five-Year Cancer Survival

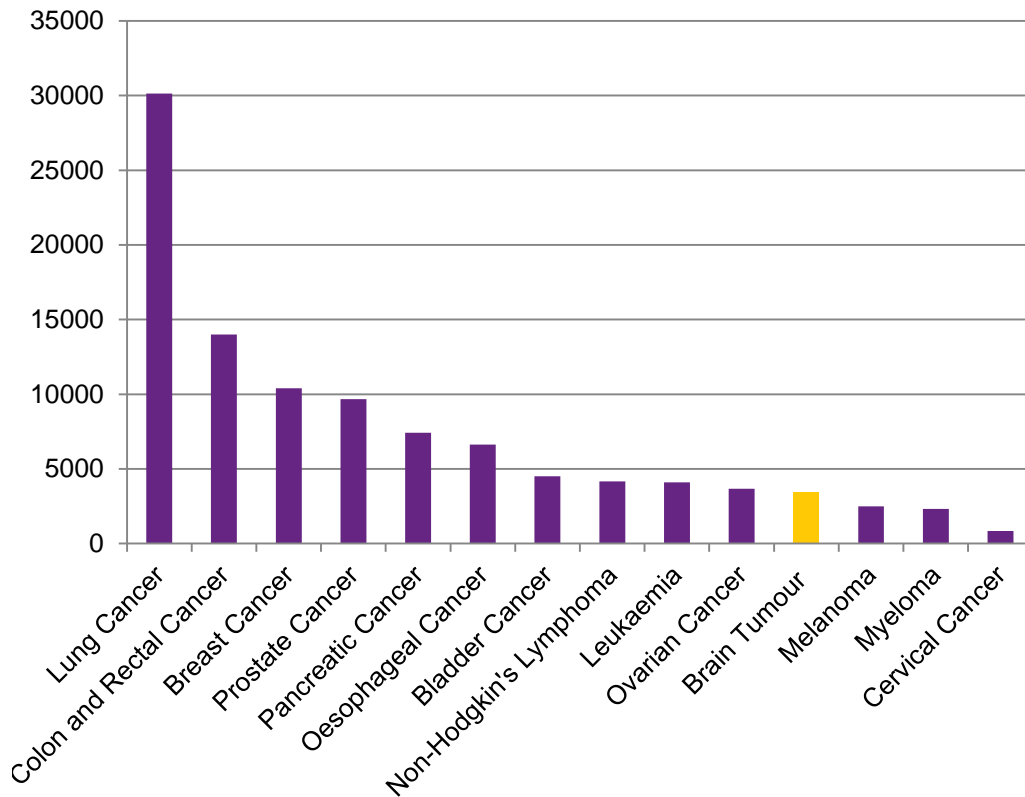


- Brain tumours have very low five-year survival rates
- Only 18.8% of people diagnosed with brain tumours survive five-years after their diagnosis

Source: ONS Cancer Survival rates in England

LOW MORTALITY RATES DUE TO LOW INCIDENCE MASK BRAIN TUMOURS' DEADLINESS

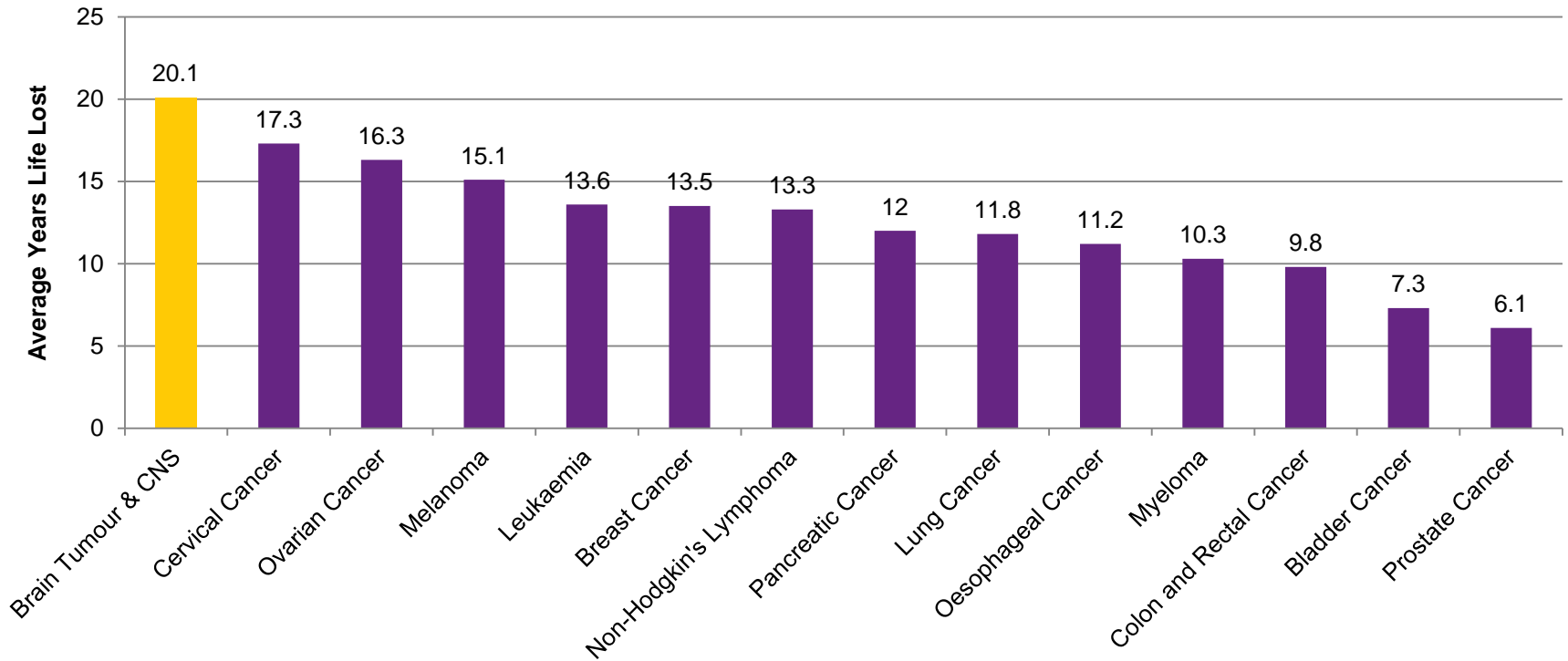
ONS Cancer Mortality 2011



- Brain tumours are more likely to kill than other cancers: survival rates are poor
- However, incidences of brain tumours are few
- So this leads to low overall mortality rates: this masks the real story of many years of life lost

Source: ONS Mortality Statistics in England and Wales 2011

BRAIN TUMOURS HAVE THE HIGHEST AVERAGE YEARS OF LIFE LOST OF ANY CANCER

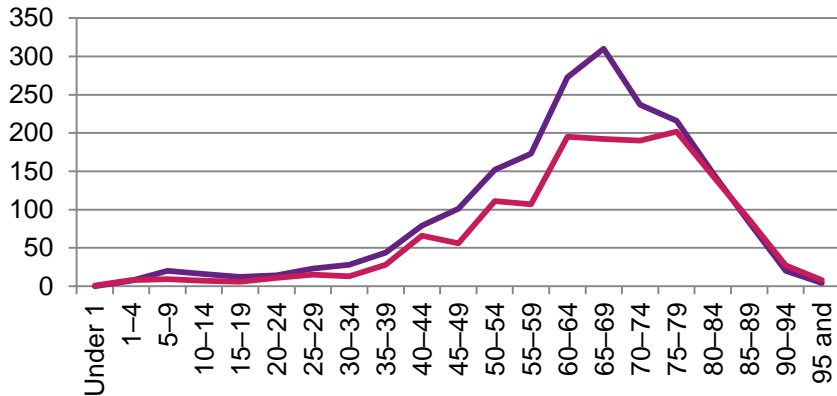


- Brain tumours and CNS cancers shorten people's lives more than any other type of cancer: 20.1 years on average lost
- The mean for all cancers is 12.5 years

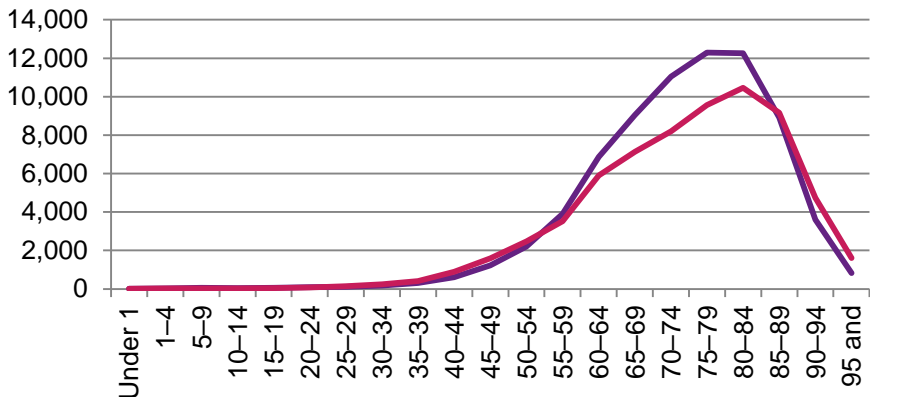
Source: Burnet, N.G., Jefferies, S.J., Benson, R.J., Hunt, D.P., and Treasure, F.P. (2005). Years of life lost (YLL) from cancer is an important measure of population burden and should be considered when allocating research funds. *Br J Cancer* 92, 241-245.

THE RELATIVE AGE AT WHICH PEOPLE GET BRAIN TUMOURS EXPLAINS THE LARGE NUMBER OF AVERAGE LIFE YEARS LOST

Brain Tumour Deaths by Age 2011



All Cancer Deaths by Age 2011

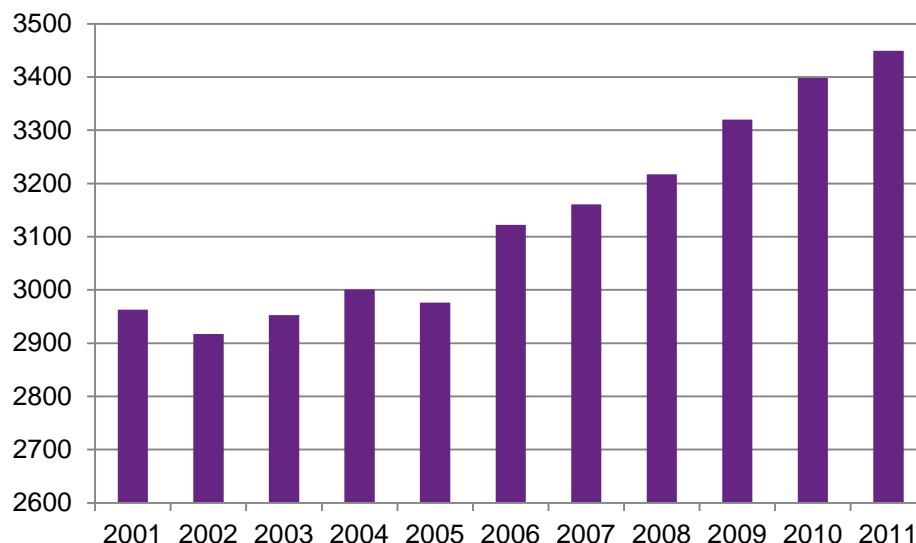


Source: ONS Mortality Statistics in England and Wales 2011

- Brain tumours account for a large proportion of childhood tumours
- Brain tumour also kill both men and women in their prime of life
- Deaths climb and peak in middle age – for men peaking age 65-69, and women reaching a plateau in their 60s and 70s
- The age of death in other cancers combined peaks much later – for men peaking age 75-79, for women over age 80

THE NUMBER OF PEOPLE DYING FROM BRAIN TUMOURS IS INCREASING

Deaths Caused by Brain Tumour 2001-2011



| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Deaths England and Wales | 2963 | 2917 | 2953 | 3001 | 2976 | 3122 | 3161 | 3217 | 3320 | 3398 | 3449 |

- The number of people dying from brain tumours has increased over the past 10 years
- In 2001 there were 2,963 deaths attributed to brain tumours
- In 2011 this had risen to 3,449 deaths attributed to brain tumours
- This is a 16% increase

Source: ONS Mortality Statistics in England and Wales 2001- 2011

IN SUMMARY

- Incidence of brain tumours in the English population is low but rising
- From 2001 – 2011 the ONS have recorded a 16% increase in the number of people dying from brain tumours
- Brain tumours are deadly, with only 18.8% of people diagnosed surviving five years
- Brain tumours also have the highest individual burden of any cancer with on average 20.1 years of life lost per person versus 12.5 years on average for all other cancers
- However, due to the low relative incidence of brain tumours, the overall mortality rate attributed to brain tumours is low: using mortality rates masks the grimmer picture

5. RESEARCH SPEND BY CANCER INCIDENCE, SURVIVAL, MORTALITY AND AVERAGE LIFE YEARS LOST

Data:

NCRI Cancer Research Database

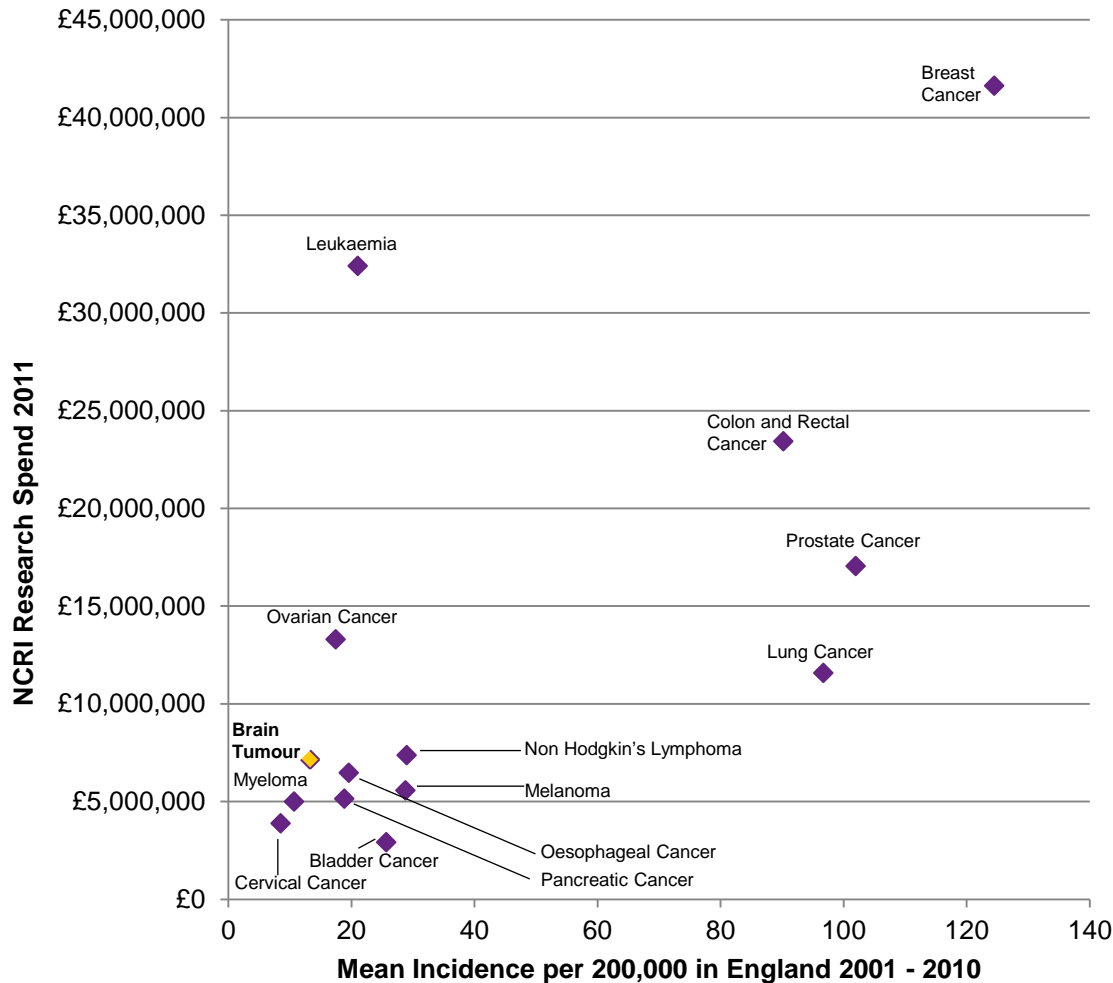
ONS Cancer incidence in England

ONS Mortality statistics in England and Wales

ONS Cancer survival rates in England

Burnet, N.G., Jefferies, S.J., Benson, R.J., Hunt, D.P., and Treasure, F.P. (2005). Years of life lost (YLL) from cancer is an important measure of population burden-and should be considered when allocating research funds. *Br J Cancer* 92, 241-245.

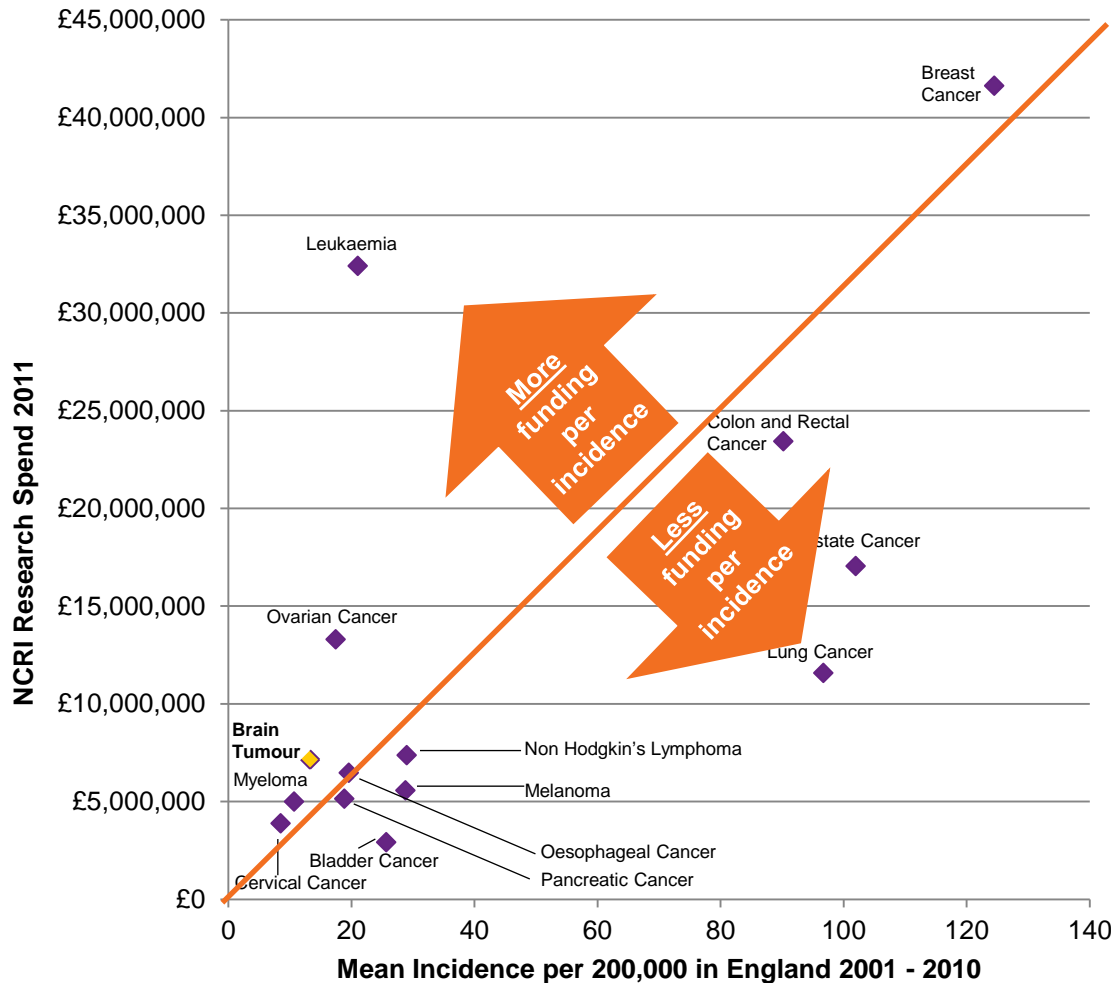
BRAIN TUMOURS ARE IN A CLUSTER OF LOW FUNDED CANCERS WITH LOW INCIDENCE



- This table shows NCRI research spend (2011) plotted against cancer incidence
- Brain tumours have low incidence and low spend
- Breast cancer has high incidence and high spend
- Leukaemia is an outlier with low incidence and high spend

Source: NCRI Cancer Research Database
Source: ONS Cancer incidence in England 2001-2010

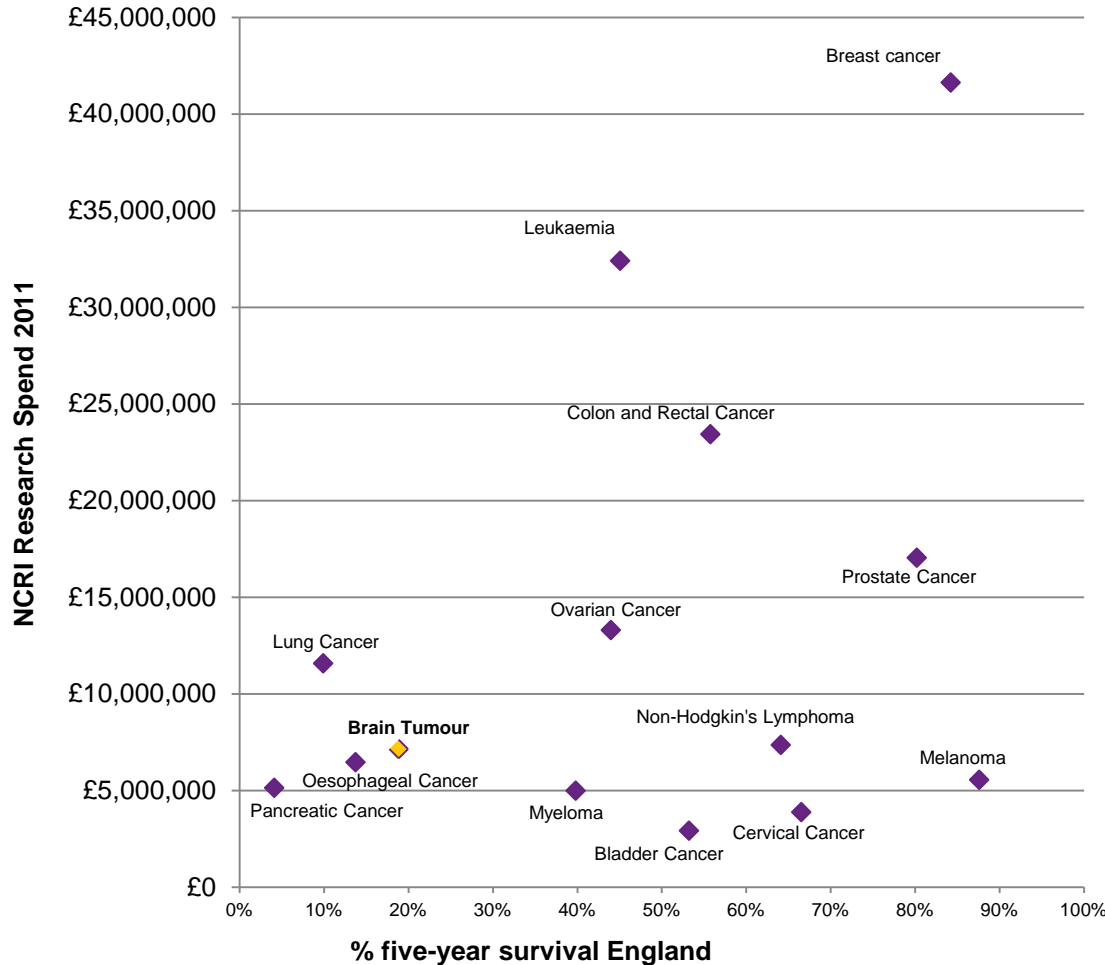
BRAIN TUMOURS ARE IN A CLUSTER OF LOW FUNDED CANCERS WITH LOW INCIDENCE



- It is better to have low incidence of a cancer and a high research spend – the top left side of the graph
- It may be worse to have high incidence of a specific cancer but relatively low research spend – the bottom right side of the graph

Source: NCRI Cancer Research Database
Source: ONS Cancer incidence in England 2001-2010

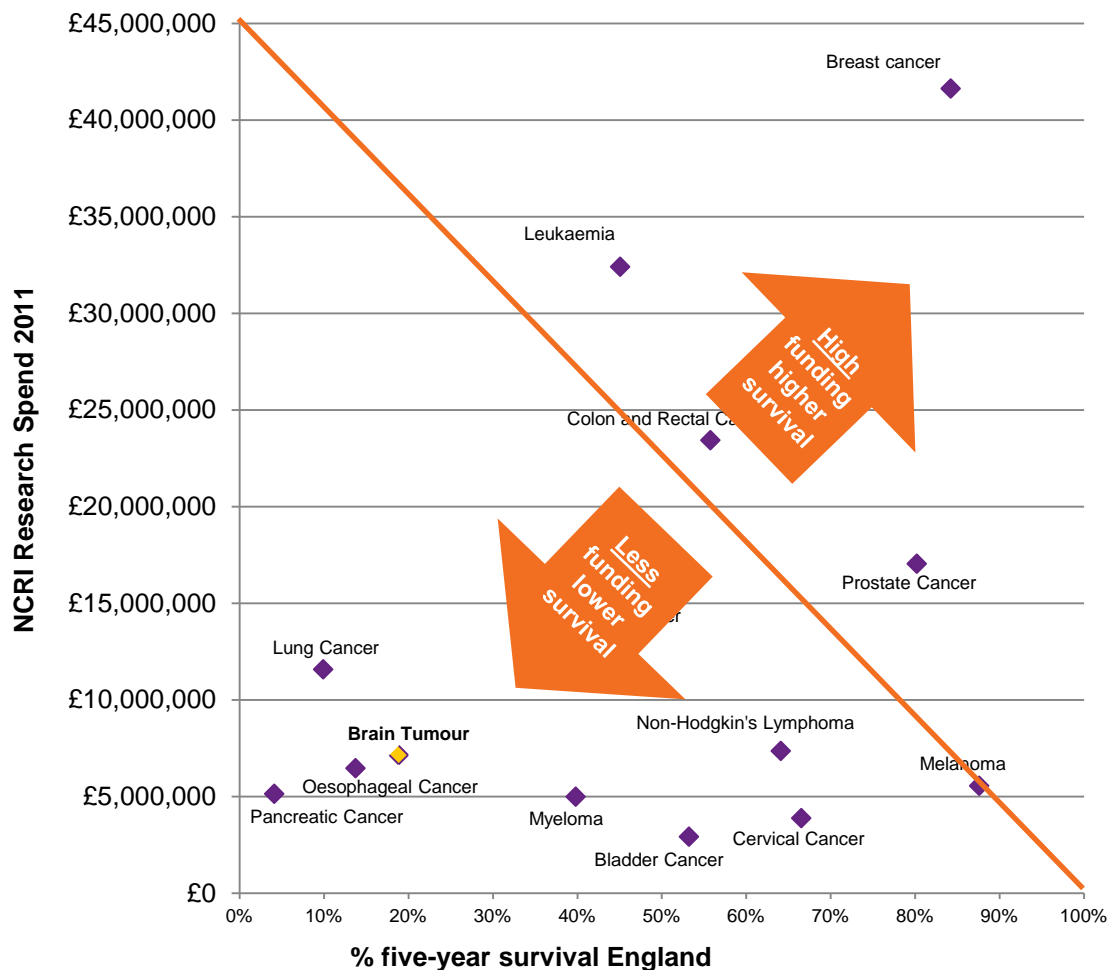
LOOKING AT SURVIVAL RATES, BRAIN TUMOURS ARE IN A POOR POSITION



- This table shows ONS survival rates plotted against NCRI research spend 2011
- Brain tumours have a very low five-year survival rate, and also a low NCRI research spend in 2011
- Few low survival cancers have high spend

Source: NCRI Cancer Research Database
Source: ONS Cancer survival rates in England

LOOKING AT SURVIVAL RATES, BRAIN TUMOURS ARE IN A POOR POSITION

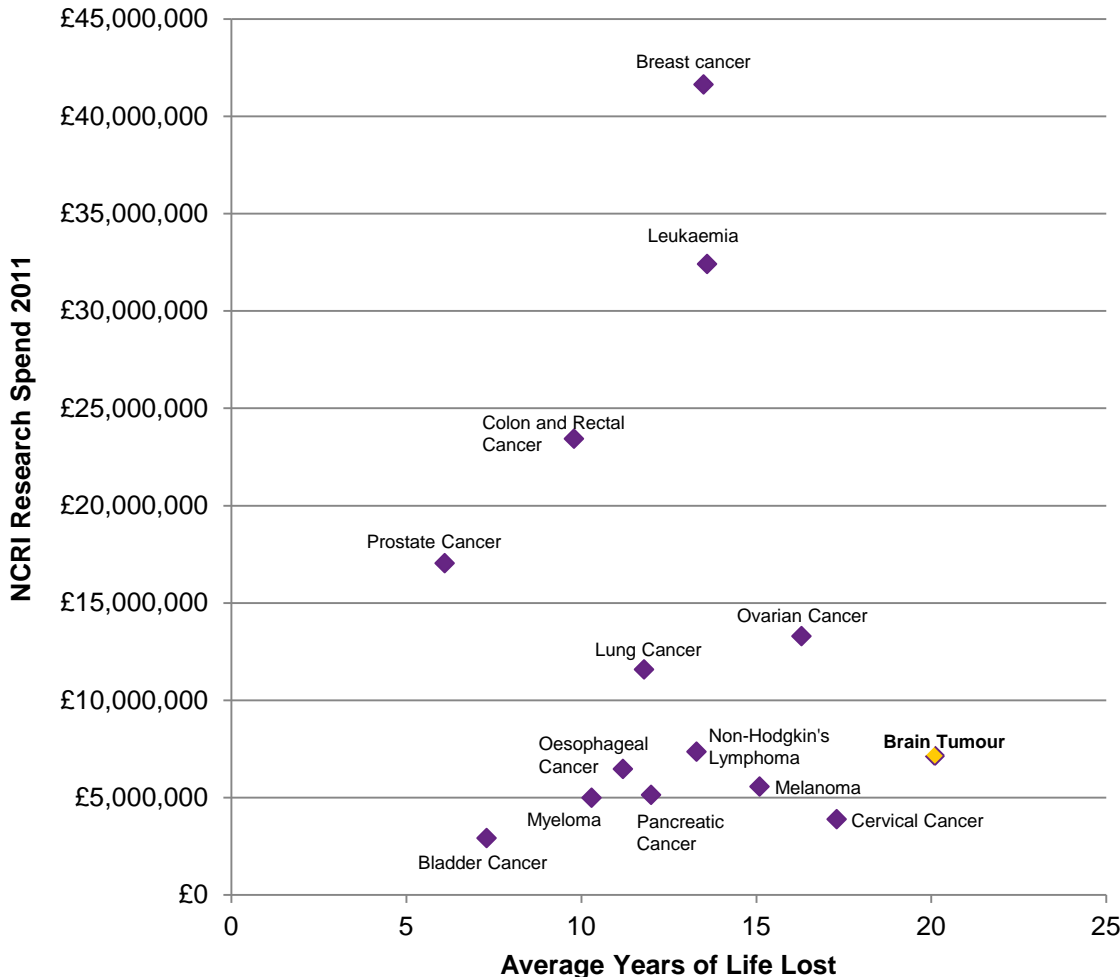


- It is better to have higher survival rates for a cancer and higher funding – top right side of the graph
- It may be worse to have lower survival rates and less funding – bottom left hand side of the graph
- Brain tumour research is not in a good position

Source: NCRl Cancer Research Database
Source: ONS Cancer survival rates in England



THE AVERAGE YEARS OF LIFE LOST TO BRAIN NPC TUMOURS IS HIGH AND THE RESEARCH SPEND LOW

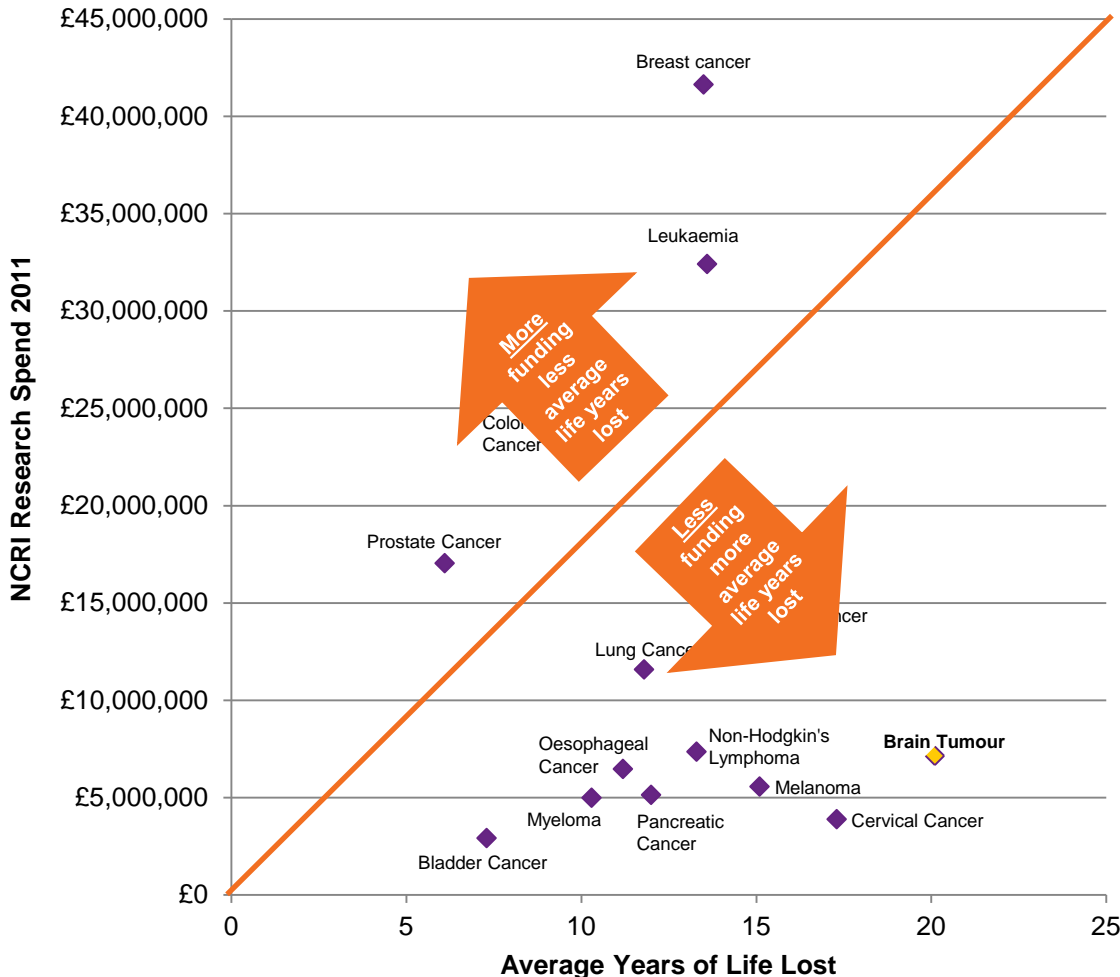


- Brain tumour is in the worst position in this graph
- Brain tumours have the highest average life years lost - 20.1 years
- However the research spend is very low
- Colon and rectal cancer research received three times as much funding as brain tumour despite the average life years lost being much lower at 9.8 years

Source: NCRI Cancer Research Database
Source: Burnet et al. 2005



THE AVERAGE YEARS OF LIFE LOST TO BRAIN NPC TUMOURS IS HIGH AND THE RESEARCH SPEND LOW



- It is better to have more funding and less average life years lost – top left side of the graph
- It may be worse to have lower funding and more average life years lost – bottom right hand side of the graph

Source: NCRI Cancer Research Database
Source: Burnet et al. 2005

6. NOTES ON DATA AND BRAIN CANCER

The background features a white triangular area on the left side, which is the space where the text is located. To the right and bottom, there are several overlapping geometric shapes in shades of purple and maroon, creating a modern, abstract design.

NCRI DATA PROVIDES A VERY USEFUL SNAPSHOT OF CANCER RESEARCH SPEND IN THE UK



The following organisations submit data which is included in the NCRI annual figures:

- Association of British Pharmaceutical Industry
- Association for International Cancer Research
- Breakthrough Breast Cancer
- Biotechnology and Biological Sciences Research Council
- Breast Cancer Campaign
- Cancer Research UK
- Children with Cancer UK
- Chief Scientist Office, Scottish Government Health Directorates
- Department of Health
- Economic and Social Research Council
- Leukaemia & Lymphoma Research
- Ludwig Institute for Cancer Research
- Macmillan Cancer Support
- Marie Curie Cancer Care
- Medical Research Council
- Northern Ireland Health & Social Care - R&D Office
- Prostate Cancer UK
- Roy Castle Lung Cancer Foundation
- Tenovus The Cancer Charity
- Welsh Government - National Institute for Social Care and Health Research
- The Wellcome Trust
- Yorkshire Cancer Research

The charity sector is a key funder for cancer research and many of these organisations are charities

HOWEVER, MORE COMPREHENSIVE DATA WOULD BE USEFUL

- NCRI data includes the research spend of the membership organisations listed in the previous slide, who invest over £1million annually
- The NCRI data does not take into account the spend of organisation's that invest less than £1million on research annually and who are not members of the Association of Medical Research Charities
- Some organisations, including recently established charities such as *Brain Tumour Research*, fund site specific research over £1million but are not included in the NCRI data
- The NCRI cancer research database is the most comprehensive source available to analyse cancer research funding
- However, it would be more useful if it were expanded to include funding from other sources, across the range of different cancer sites

THE CHALLENGES OF DATA COLLECTION

- Classification is an issue with all datasets. We heard anecdotal evidence that the classification of research at some NCRI membership bodies was not robust.
- Cancer research is a broad term that encompasses both qualitative, quantitative, lab-based research and clinical trials. It would be useful to break down the funding statistics into these strands to understand what is funded.
- The ONS data only counts grade 3 and grade 4 brain tumours which are malignant in its figures. Yet according to Prof Geoff Pilkington, all brain tumours are potentially life threatening, regardless of their grade. By virtue of their position in the body, they are biologically malignant because they expand into a restricted space (the skull) causing pressure and interfering with other brain functions.
- Furthermore, although grade 2 primary brain tumours are classified as benign, they become malignant with time.

THE CHALLENGES OF DATA COLLECTION

- According to Prof Pilkington, the ONS data counts the primary sites of cancer in the body, however, it is not always a primary cancer that causes death. For example, once a secondary brain tumour develops the prognosis of a patient vastly decreases and it is often the secondary brain tumour that causes mortality. As this is not picked up in ONS statistics, the actual incidence and mortality rates for brain tumours could be much higher than the ONS figures indicate.
- The datasets used in this research include ONS data for cancer incidence and cancer survival covering England, and ONS data for cancer mortality in England and Wales. The geographic scope of this data is a feature of how it is collated by the ONS. Figures for Scotland and Ireland are separate and have not been included in this analysis.

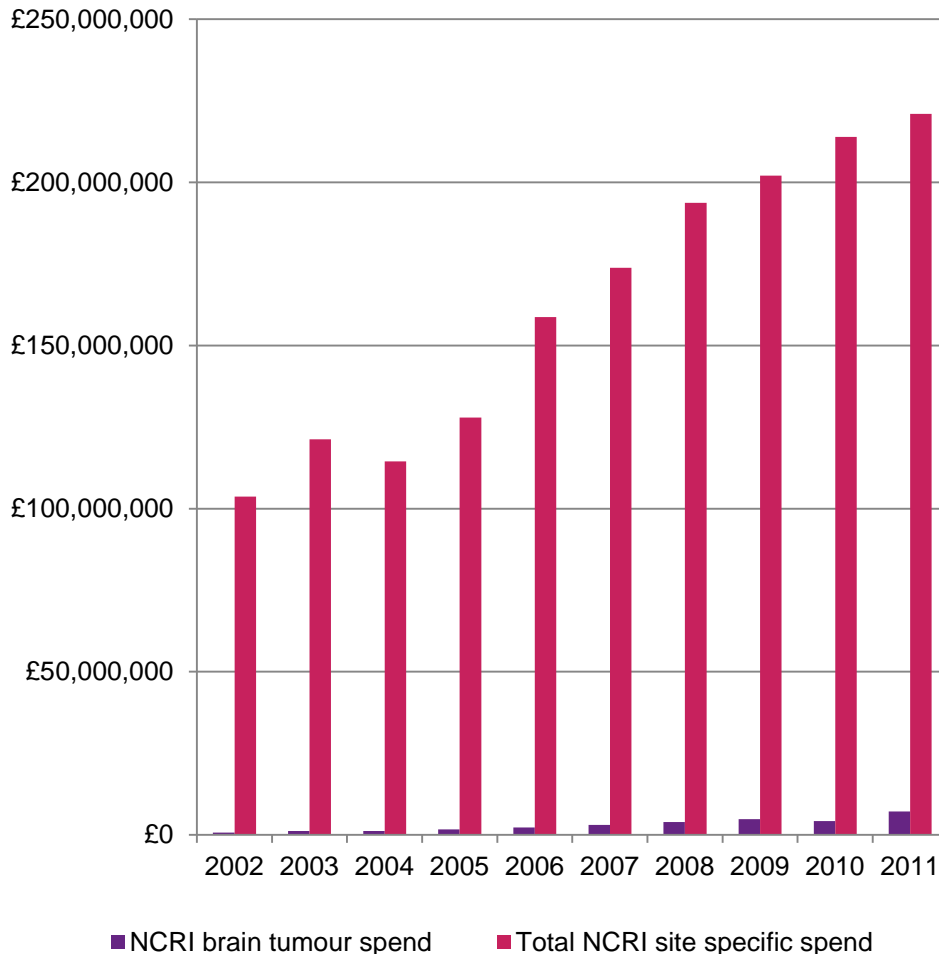
FURTHER RESEARCH

- More analysis of age profile of brain tumour mortality may show some interesting trends

7. APPENDICES

Data tables and graphs

TOTAL SPEND ON SITE SPECIFIC CANCER RESEARCH HAS DOUBLED 2002-2011



- In 2002 total NCRI site specific spend was £103,694,608
- In 2011 total NCRI site specific spend was £221,055,132
- Funding for brain tumour research has also increased during this time, from £739,835 in 2002 (0.3% total NCRI spend) to £7,149,955 in 2011 (1.4% total NCRI spend)

Source: NCRI Cancer Research Database

CANCER FUNDING IN 2011

NCRI SPEND BY DISEASE SITE

| | |
|-------------------|-------------------------|
| £41,632,373 | Breast Cancer |
| £32,403,522 | Leukaemia |
| £23,435,013 | Colon and Rectal Cancer |
| £17,046,461 | Prostate Cancer |
| £13,298,944 | Ovarian Cancer |
| £11,585,758 | Lung Cancer |
| £7,363,828 | Non-Hodgkin's Lymphoma |
| £7,149,955 | Brain Tumour |
| £6,468,554 | Oesophageal Cancer |
| £5,561,505 | Melanoma |
| £5,146,233 | Pancreatic Cancer |
| £4,986,864 | Myeloma |
| £4,581,616 | Skin Cancer |
| £3,981,528 | Kidney Cancer |
| £3,883,885 | Cervical Cancer |
| £3,699,689 | Endometrial Cancer |
| £2,933,882 | Hodgkin's Disease |
| £2,917,277 | Bladder Cancer |
| £2,512,064 | Sarcoma |
| £2,333,330 | Testicular Cancer |
| £2,277,094 | Stomach Cancer |
| £2,178,295 | Pharyngeal Cancer |
| £1,979,545 | Wilm's Tumour |
| £1,755,136 | Liver Cancer |

Top 5 cancer spend

| | |
|------------|---|
| £1,625,759 | Laryngeal Cancer |
| £1,563,237 | Oral Cavity and Lip Cancer |
| £1,156,207 | Nervous system |
| £1,037,713 | Neuroblastoma |
| £862,243 | Kaposi's Sarcoma |
| £752,761 | Bone Cancer |
| £535,956 | Vulva Cancer |
| £511,456 | Anal Cancer |
| £340,633 | Penile Cancer |
| £323,208 | Salivary Gland Cancer |
| £246,563 | Adrenocortical Cancer |
| £209,549 | Pituitary Tumour |
| £189,055 | Small Intestine Cancer |
| £181,043 | Vaginal Cancer |
| £167,858 | Thyroid Cancer |
| £97,826 | Nasal Cavity and Paranasal Sinus Cancer |
| £81,976 | Parathyroid Cancer |
| £25,224 | Primary CNS Lymphoma |
| £23,345 | Primary of Unknown Origin |
| £11,170 | Gallbladder Cancer |
| - | Eye Cancer |
| - | Retinoblastoma |
| - | Vascular System |

Source: NCRI Cancer Research Database

INCIDENCE PER 100,000 BY NCRI RESEARCH SPEND 2011



| Site | Mean incidence per 200,000 in England 2001 - 2010 | NCRI Spend in 2011 |
|-------------------------|---|--------------------|
| Breast Cancer | 124.49 | £41,632,373 |
| Prostate Cancer | 101.95 | £17,046,461 |
| Lung Cancer | 96.69 | £11,585,758 |
| Colon and Rectal Cancer | 90.19 | £23,435,013 |
| Non-Hodgkin's Lymphoma | 28.98 | £7,363,828 |
| Melanoma | 28.76 | £5,561,505 |
| Bladder Cancer | 25.64 | £2,917,277 |
| Leukaemia | 21.03 | £32,403,522 |
| Oesophageal Cancer | 19.59 | £6,468,554 |
| Pancreatic Cancer | 18.85 | £5,146,233 |
| Ovarian Cancer | 17.44 | £13,298,944 |
| Brain Tumour | 13.27 | £7,149,955 |
| Myeloma | 10.66 | £4,986,864 |
| Cervical Cancer | 8.48 | £3,883,885 |

- This table shows the mean incidence of cancer per 200,000 people using figures from 2001 – 2010
- It also shows NCRI research spend in 2011

Source: NCRI Cancer Research Database
Source: ONS Cancer incidence in England 2001-2010

CANCER FIVE-YEAR NET SURVIVAL BY NCRI RESEARCH SPEND 2011

| Site | Five-year Net Survival | NCRI Spend in 2011 |
|-------------------------|------------------------|--------------------|
| Melanoma | 87.6% | £5,561,505 |
| Breast Cancer | 84.3% | £41,632,373 |
| Prostate Cancer | 80.2% | £17,046,461 |
| Cervical Cancer | 66.6% | £3,883,885 |
| Non-Hodgkin's Lymphoma | 64.1% | £7,363,828 |
| Colon and Rectal Cancer | 55.8% | £23,435,013 |
| Bladder Cancer | 53.3% | £2,917,277 |
| Leukaemia | 45.1% | £32,403,522 |
| Ovarian Cancer | 44.0% | £13,298,944 |
| Myeloma | 39.8% | £4,986,864 |
| Brain Tumour & CNS | 18.8% | £7,149,955 |
| Oesophageal Cancer | 13.8% | £6,468,554 |
| Lung Cancer | 9.9% | £11,585,758 |
| Pancreatic Cancer | 4.2% | £5,146,233 |

- This table shows the five year net survival rates for common cancers in England
- It also shows NCRI research spend in 2011

Source: NCRI Cancer Research Database
Source: ONS Cancer survival rates in England

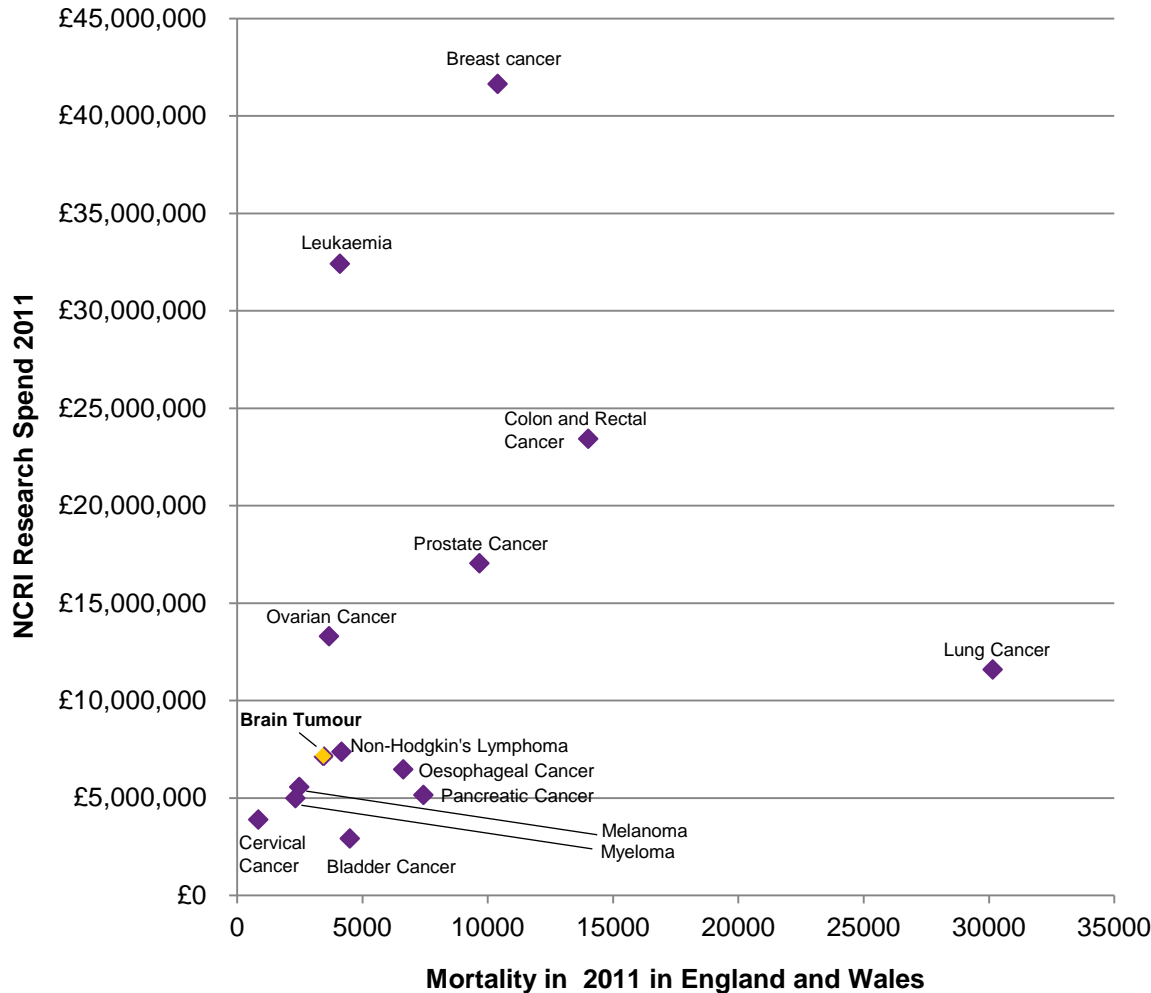
CANCER MORTALITY BY NCRI RESEARCH SPEND 2011

| Site | Mortality 2011 in England and Wales | NCRI Spend 2011 |
|-------------------------|-------------------------------------|-----------------|
| Lung Cancer | 30148 | £11,585,758 |
| Colon and Rectal Cancer | 14006 | £23,435,013 |
| Breast Cancer | 10395 | £41,632,373 |
| Prostate Cancer | 9671 | £17,046,461 |
| Pancreatic Cancer | 7434 | £5,146,233 |
| Oesophageal Cancer | 6635 | £6,468,554 |
| Bladder Cancer | 4505 | £2,917,277 |
| Non-Hodgkin's Lymphoma | 4169 | £7,363,828 |
| Leukaemia | 4098 | £32,403,522 |
| Ovarian Cancer | 3671 | £13,298,944 |
| Brain Tumour | 3443 | £7,149,955 |
| Melanoma | 2486 | £5,561,505 |
| Myeloma | 2330 | £4,986,864 |
| Cervical Cancer | 844 | £3,883,885 |

- This table shows the mortality figures for common cancers in England and Wales
- It also shows NCRI research spend in 2011

Source: NCRI Cancer Research Database
Source: ONS Mortality statistics in England and Wales

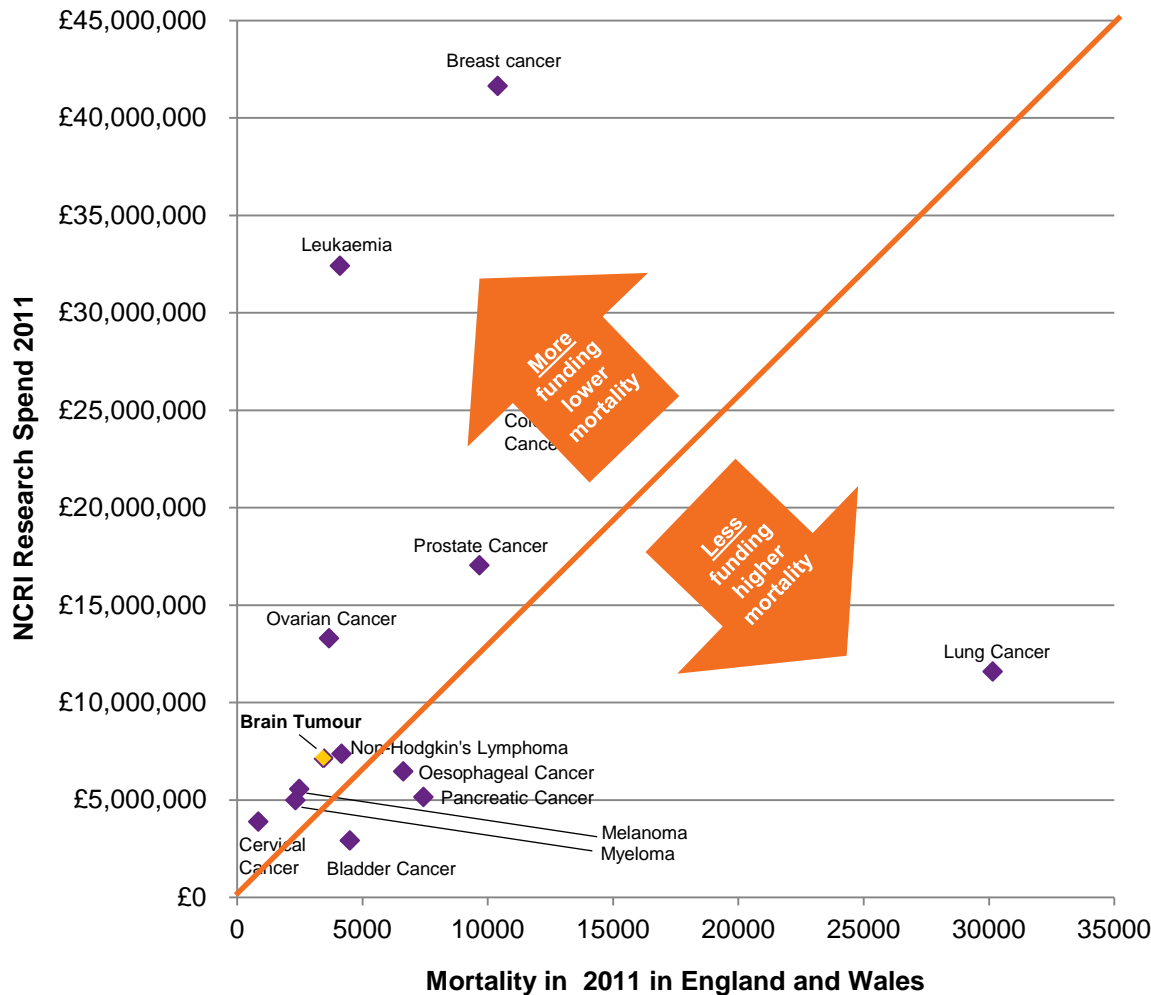
BRAIN TUMOURS ARE REASONABLY FUNDED IF MORTALITY RATES ARE USED



- Brain tumours are in a cluster of uncommon cancers with low mortality rates and relatively low spend.
- The low mortality rate is a consequence of brain tumours being a relatively uncommon form of cancer, compared to breast cancer

Source: NCRI Cancer Research Database
Source: ONS Mortality statistics in England and Wales

BRAIN TUMOURS DO NOT FARE WELL COMPARED TO OTHER CANCER MORTALITY RATES



- It is better to have more funding and lower mortality rates – top left side of the graph
- It may be worse to have lower funding and higher mortality rates – bottom right hand side of the graph

Source: NCRF Cancer Research Database
 Source: ONS Mortality statistics in England and Wales

AVERAGE YEARS OF LIFE LOST BY NCRI RESEARCH SPEND 2011

| Site | Average Years Life Lost (years) | NCRI Spend 2011 |
|-------------------------|---------------------------------|-----------------|
| Brain Tumour & CNS | 20.1 | £7,149,955 |
| Cervical Cancer | 17.3 | £3,883,885 |
| Ovarian Cancer | 16.3 | £13,298,944 |
| Melanoma | 15.1 | £5,561,505 |
| Leukaemia | 13.6 | £32,403,522 |
| Breast Cancer | 13.5 | £41,632,373 |
| Non-Hodgkin's Lymphoma | 13.3 | £7,363,828 |
| Pancreatic Cancer | 12 | £5,146,233 |
| Lung Cancer | 11.8 | £11,585,758 |
| Oesophageal Cancer | 11.2 | £6,468,554 |
| Myeloma | 10.3 | £4,986,864 |
| Colon and Rectal Cancer | 9.8 | £23,435,013 |
| Bladder Cancer | 7.3 | £2,917,277 |
| Prostate Cancer | 6.1 | £17,046,461 |

- This table shows the Average Years Life Lost for common cancers, according to an academic study by Burnet et al (2005) published in British Journal of Cancer
- It also shows NCRI research spend in 2011

Source: NCRI Cancer Research Database
Source: Burnet et al. 2005



**Brain Tumour
Research**

Funding the fight
