

Cancer Incidence in Plymouth – 2007 follow-up report

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Introduction

In 2004 the Campaign Against Nuclear Storage and Radiation (CANSAR) expressed concern about radiation discharges from the Devonport Dockyard in Plymouth and possible impact on human health. The South West Public Health Observatory (SWPHO) addressed these concerns in reports published in June 2004 (1) and February 2006 (2). These reports concluded that while the incidence of cancer in Plymouth is higher than the national average this excess is due to high levels of socio-economic deprivation. The excess mainly comprises raised rates of lung and upper gastro-intestinal cancers known to be caused by smoking.

Both reports used a methodology of comparing the cancer incidence in Plymouth to that in Bristol and to the South West region. Objections were raised to this methodology by the CANSAR group on the grounds that Bristol is within 25 kilometres of the Oldbury nuclear power station and should not be used as a comparator.

This follow-up report therefore compares the total burden of cancer in Plymouth to several other local Authority areas in the UK. These areas are similar in character to Plymouth but not close to a nuclear power station. It is intended to be read in conjunction with the 2006 “Cancer Incidence in Plymouth” report (2) published by the South West Public Health Observatory.

Comparison of the South West with England

Figure 1 shows the Age Standardised Rates for cancer incidence and mortality in England and the South West. Incidence data for the South West is collected by the South West Public Health Observatory. Incidence data for England is assembled from other regional equivalents of SWPHO. Mortality data for England and the South West are provided by the Office of National Statistics.

Incidence graphs are similar for England and the South West, with both showing a gradual rise in the recorded cases of cancer over the last quarter-century. Historically the South West has had a lower rate than the national average, though in the last three years of available data (2002-2004) it has been approximately 2% higher.

Mortality due to cancer is similar in the South West to England as a whole, though consistently lower by approximately 5%. Both have shown a downward trend over the last 15 years. This trend has been explained firstly by advances in medical technology improving survival from cancer and secondly by the reduction in the prevalence of smoking and consequent drop in mortality due to lung cancer.

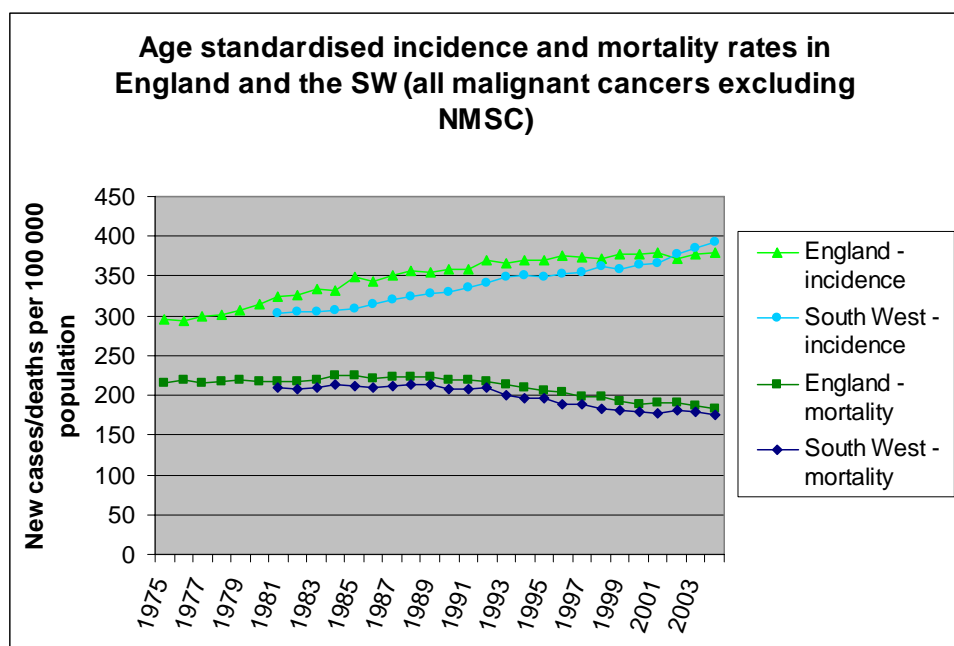


Figure 1, Age standardised incidence and mortality rates for the South West region and England, all malignant cancers excluding Non-melanoma skin cancer (NMSC).

Comparison of Plymouth with other cities

Choice of control areas

The 'character' of each local authority area in England is classified every ten years during the national census. Areas which were classified in the same group in both the 1991 and the 2001 census were considered. These areas are displayed in table 1.

Local Authority Name	Local Authority Code	2001 Census Area Classification Group	1991 Census Area Classification Group	ODPM 2004 Index of multiple deprivation rank	ODPM 2004 Index of multiple deprivation score	Distance to nuclear power station (km)
Leeds MCD	00DA	Regional Centres	Established Service Centres	68	27.68	93
Bristol UA	00HB	Regional Centres	Established Service Centres	67	27.72	25
Plymouth UA	00HG	Regional Centres	Established Service Centres	76	26.16	-
Portsmouth UA	00MR	Regional Centres	Established Service Centres	88	24.88	73
Southampton UA	00MS	Regional Centres	Established Service Centres	96	23.72	90
Exeter CD	18UC	Regional Centres	Established Service Centres	115	21.58	84
Hastings CD	21UD	Regional Centres	Established Service Centres	38	31.73	28
Lincoln CD	32UD	Regional Centres	Established Service Centres	72	27.23	170
Norwich CD	33UG	Regional Centres	Established Service Centres	61	28.33	61

Table 1. Local authority areas with similar character to Plymouth.

The level of social deprivation was scored for each area of England by the office of the deputy Prime Minister (ODPM). *Higher* deprivation scores or *lower* deprivation ranks indicate more social deprivation. More information about the deprivation indices is available online (3).

Plymouth is ranked as the 76th most deprived out of 354 Authorities in England. Only areas with a ranking within 10% of that of Plymouth, i.e. 35 places, were considered as being comparable to Plymouth. Exeter and Hastings were excluded on the basis of this criteria.

A map of major nuclear sites in the UK was obtained from the Institute of Engineering and Technology (4) and the distance of each Local Authority to the nearest nuclear power station calculated with an online mapping tool. Local authority areas within 50km of a nuclear site were rejected in order to obtain valid control areas to compare to Plymouth. Bristol and Hastings were excluded on the basis of this criteria.

The remaining five areas chosen for comparison with Plymouth are a mixture of inland urban areas (Leeds, Lincoln, and Norwich) and port cities (Portsmouth and Southampton).

Comparative data for Plymouth and other areas

The incidence rates of cancer are shown for the selected areas in figure 2. Incidence data is collected by SWPHO for areas in the South West and by the equivalent cancer registries for other local authority areas.

Most of the six areas have a higher incidence of cancer than the national average for the majority of the time periods. Socio-economic deprivation (and in particular the rate of smoking) has a known association with the incidence of cancer. A detailed investigation (5) of the link between socio-economic deprivation and the incidence of cancer has recently been published for the South-East of the country.

Plymouth does not stand out from the other five areas examined in any obvious way. Plymouth has neither the highest or lowest rate in any of the five periods. In three periods Plymouth has an incidence rate that is significantly higher than the England rates. For the other two periods (1990-1999) Plymouth does not differ significantly from the national rate.

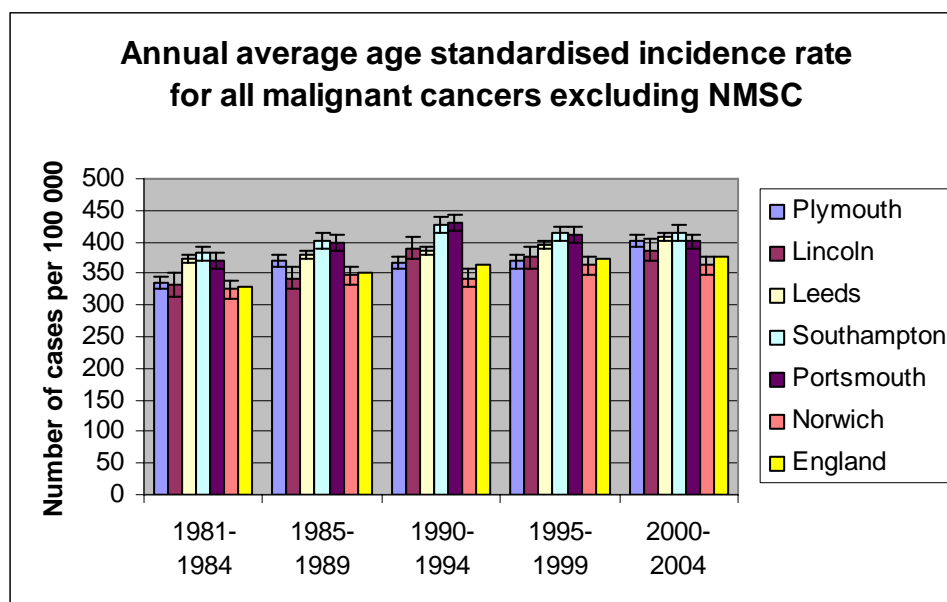


Figure 2, Cancer incidence rates in five time periods (all five years except 1981-1984) for five selected cities and England as a whole. Data covers all malignant cancers excluding Non-Melanoma Skin Cancer (NMSC).

Summary and Conclusions

The 2004 and 2006 reports “Cancer Incidence in Plymouth” (1,2) demonstrated that cancer incidence is higher in Plymouth than the national average. However within Plymouth there is no geographic association of cancer with the Tamar estuary and no excess of cancers known to be radiation-sensitive. There is an excess of cancers known to be related to socio-economic deprivation, particularly smoking.

This follow-up report demonstrates that areas of England most similar to Plymouth, but with no known nuclear facilities, show similarly raised levels of cancer to those in Plymouth. This supports the view that the excess of cancer in Plymouth compared to the national average is due to socio-economic deprivation and smoking. There is no evidence of any effect of radiation exposure from man-made sources.

References

(1) "Cancer incidence in Plymouth", South West Public Health Observatory, February 2006. Available online at

<http://www.swpho.nhs.uk/resource/view.aspx?RID=9093>

(2) "Cancer incidence in Plymouth", South West Public Health Observatory, February 2006. Available online at

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(4) "Nuclear Decommissioning", The Institute of Engineering and Technology, 2006. Available online at

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