Pan Birmingham Cancer Needs Assessment Summary

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Acknowledgements

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Glossary

Acronym	Definition
BEN	Birmingham East and North Primary Care Trust
BHWP	Birmingham Health and Wellbeing Partnership
BME	Black and Minority Ethnicity
DSR	Direct Age Standardised Rate
GI	Gastrointestinal
GP	General Practice
HES	Hospital Episode Statistics
HoB	Heart of Birmingham Teaching Primary Care Trust
HSfE	Health Survey for England
ICD	International Classification of Diseases
IMD	Indices of Multiple Deprivation
JSNA	Joint Strategic Needs Assessment
LA	Local Authority
NHS	National Health Service
ONS	Office of National Statistics
PCT	Primary Care Trust
PHIT	Public Health Information Team
QOF	Quality and Outcome Framework
Sandwell	Sandwell Primary Care Trust
SB	NHS South Birmingham Primary Care Trust
SHA	Strategic Health Authority
SOA	Super Output Area
Solihull	Solihull Care Trust
tPCT	Teaching Primary Care Trust
WHO	World Health Organisation
WMCIU	West Midlands Cancer Intelligence Unit
NCHOD	National Centre for Health Outcomes and Development
Walsall	Walsall Teaching Primary Care Trust

Recommendations

The evidence presented suggested that more work should be undertaken on:

- Improving data collection in terms of recording lifestyle and demographic factors
- Improving the collection of disease-staging data and the links with survival data
- Increasing the uptake of screening for programmes available
- Improving the management of symptoms to decrease emergency admission
- Improving early detection rates in order to improve survival rate[1]
- Increasing easy access to treatment
- Improving outcomes for end of life care, which could benefit patients and deliver cost savings.
- Improving awareness about cancer and the importance of early detection.

Further work

The present work seeks to provide a baselinefor cancer in the Pan Birmingham Cancer Network area (Birmingham, Solihull, Sandwell and Walsall) in terms of the main indicators: survival, mortality, prevalence and incidence. Moreover, it seeks to understand the needs of the population and the gap between services provision.

In order to fully understand this, we recommendmore studies be conducted, in which analysis of the services and social needs are taken into account.

The followingshould be consideredin future needs assessments or equity audits:

- Investigation by specific cancer site
- Investigation of staging in relation to survival for our black and minority ethnic populations
- Investigation on survival and the impact on life expectancy outcomes
- Population access to treatment
- Distribution of services and access to services
- Cancer patients and quality of life

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[1]Letter to Cancer Network Directors, 21 September 2010, London: Department of Health Gateway Number: 14820.

1. Introduction

This Cancer Baseline Needs Assessment is part of the 2010 Joint Strategic Needs Assessment (JSNA). It is commissioned by the Pan Birmingham Cancer Network, on behalf of six Primary Care Trusts (PCTs): Heart of Birmingham Teaching PCT, NHS South Birmingham, NHS Birmingham East and North, Sandwell PCT, Solihull CT and Walsall Teaching PCT. The needs assessment is conducted by the Public Health Information Team at Birmingham Health and Wellbeing Partnership (http://www.bhwp.nhs.uk/phit).

This report is a summary of the Cancer JSNA 2010 using NAEDI (National Awareness and Early Diagnosis Initiative) guidelines for Baseline Assessment. The target audience of the report includes Directors of Public Health, commissioners working in the PCTs, PCT performance managers, commissioners in local authorities, elected members, and the third and independent sectors.

The risk of developing cancer rapidly increases with age, so in this study (1) we defined the *population 55 years and older* as the population at increased risk of getting cancer, and the *population aged 70-79* as the population at high risk.

Figure 1.1 shows the area covered in this report, and its population density. It should be noticed that the catchment area of the Heart of Birmingham PCTs is the densest area, with a population of 55 years and older of 44,000, but its population 70-79 is only 12,500. Birmingham East and North has the largest 55+ population (nearly 100,000) and population aged 70-79 (26,500). The smallest populations 55+ and 70-79 are not in the PCT with the smallest total population (Solihull), but in the Heart of Birmingham. Solihull has a relatively large population at increased or high risk of getting cancer.

Figure 1.1 Six PCTs covered by Pan Birmingham area[2]

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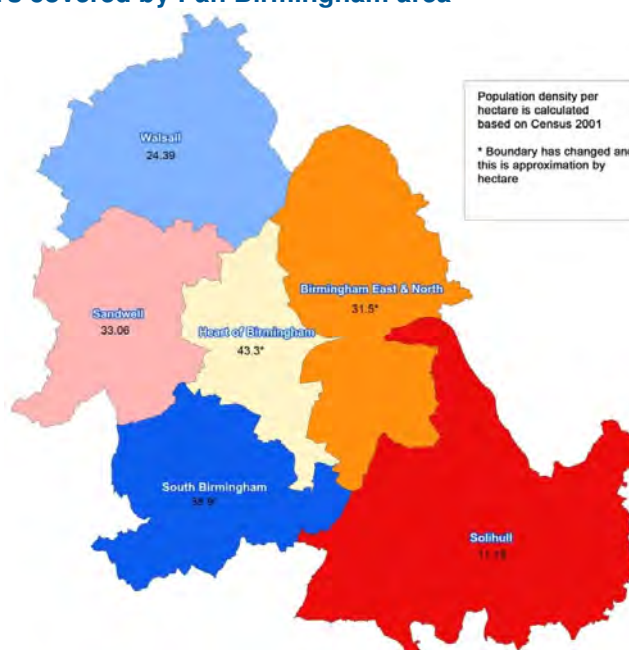
[2] PCT boundary mapping files provided by Dotted Eyes Ltd. Population density data: ONS

2. **One Year and five year survival**

Accurate population-based information on cancer patient survival is indispensable for effective cancer control, and treatment evaluation (2), but only population-based survival comparisons can provide information on the effectiveness of healthcare systems. Usually, one year survival is used as a proxy as indication of early detection and five year survival rate[3] is used as a proxy of treatment effectiveness.

The survival rate for all cancers has been increasing and there is a significant gap difference between females and males in the Pan Birmingham area, for both one year and 5 year survival rates (see Figure 2.1). The gap between England and Pan Birmingham rates has reduced, and Pan Birmingham has higher five year survival rate (see Table 2.1). Comparing PCTs survival rates overall shows that it is Sandwell who presents the lowest survival rate, whereas Solihull has the highest rate (see Table 2.2).

Lung cancer still has the lowest survival rate; the reasons for this lowest survival rate could be late detection and the characteristics of this type of cancer, among other factors. Breast and prostate cancers present the higher survival rates and this could be due to the screening procedures available for early detection and treatment. Cancer survival rate is linked directly to the type of cancer, how the specific cancer is developed and treatment available. Please refer to the main Cancer JSNA report for more detailed information (1).

Figure 2.1 One and five year survival rates by sex, 5 year rolling average, all cancer, Pan Birmingham, 1985/89 to 2002/2006
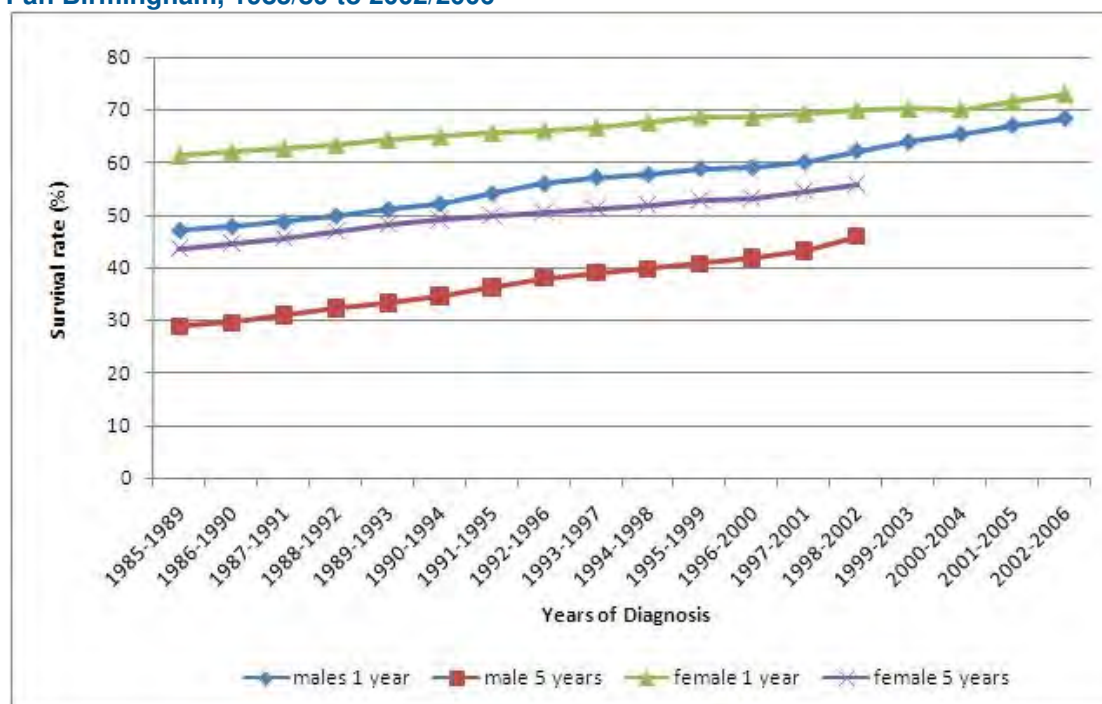
Data source: West Midlands Cancer Intelligence Unit

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[3] See Appendix 10

Table 2.1 Pan Birmingham and England survival rate

AREA	Period	Survival period	Survival rates male	female
Pan Birmingham	1985-89	1 year	45.2	61.2
	2002-06	1 year	68.2	73.0
England	2002-06	1 year	65.4	70.1
Pan Birmingham	1985-89	5 year	28.9	43.6
	1998-2002	5 year	45.9	55.8
England	1998-2002	5 year	44.8	54.1

Data source: West Midlands Cancer Intelligence Unit

Table 2.2 *Cancer survival rates for one year diagnosed (2006) and five year diagnosed (1998-2002) periods after diagnosis for male and female (orange colour shaded column/row) and follow up to end 2007*

Area	All cancers		Lung cancer		Colorectal cancer		Breast cancer		Prostate cancer	
Survival rate	1 yr	5 yrs	1 yr	5 yrs	1 yr	5 yrs	1 yr	5 yrs	1 yr	5 yrs
HoB tPCT	66.4	44.5	26.3	8.3	78.2	47.4			96.9	86.8
	70.3	52.8	32.8	10.2	70.1	47.7	93.8	82.2		
BEN PCT	66.9	45.5	27.1	8.1	75.1	49.7			96.8	84.4
	71.5	53.7	30.7	9.0	72.3	48.3	94.8	81.6		
SB PCT	69.0	49.4	31.2	7.7	74.5	54.0			97.2	88.7
	74.5	56.9	37.5	7.3	72.0	57.6	96.2	82.6		
Sandwell PCT	63.1	41.4	30.9	6.8	70.5	45.6			95.3	78.9
	67.6	49.6	28.4	5.6	70.3	45.0	93.5	80.8		
Solihull CT	74.5	57.1	34.0	8.1	78.6	55.1			100.3[4]	91.9
	76.5	61.4	36.7	9.9	72.3	66.6	96.1	82.0		
Walsall tPCT	65.6	42.0	27.9	5.8	76.8	57.2			95.3	77.2
	73.1	54.8	31.5	9.9	75.5	52.4	96.5	82.1		
Pan Birmingham(*)	69.2	45.0	31.9	7.3	74.3	49.4	97.0	75.3	99.0	82.8
	75.7	55.2	34.6	7.4	75.2	53.0				
England(*)	65.8	44.9	28.1	7.4	76.4	52.1	95.9	80.0	95.7	79.0
	70.6	54.4	29.9	8.1	72.9	52.4				

Data source: West Midlands Cancer Intelligence Unit
(*) Data Source: NCIS

[4] "Relative survival can exceed 100%, indicating that the survival in the group of cancer patients is higher than the survival expected in the matched group from the general population. This can happen when death information is missing, or there is a small population. However, it could also occur if patients are cured and subsequently have a healthier lifestyle or receive better treatment for co-morbidities than the reference population" (12). Solihull presents lower mortality and this could be the reason for higher survival rate. See the Appendix on Methods.

3. International survival rate comparisons

The World Health organisation (3) estimates that:

- Cancer is a leading cause of death worldwide. It accounted for 7.4 million deaths (around 13% of all deaths) in 2004
- Lung, stomach, liver, colon and breast cancer cause the most cancer deaths each year
- The most frequent types of cancer differ between men and women.
- More than 30% of cancer deaths are preventable (4)
- Tobacco use is the single most important risk factor for cancer
- Deaths from cancer worldwide are projected to continue rising, with an estimated 12 million deaths in 2030.

The comparison of the survival rate internationally is difficult due to data collection and methods used for the estimation of rates. EUROCARE (5) has only the 1995-1999 period, however Berrino et.al (2) reports up to 2002. EUROCARE 5 is still in development and it will contain more recentl data. Table *3.1* shows Pan Birmingham and five other European countries. This data is not comparable, and serves only as an illustration of the direction of Pan Birmingham. The table below shows the countries ranked by per capita total national expenditure for health (TNEH) adjusted for per capita purchasing power. The UK had lower survival than countries with similar TNEH, and Finland had better survival than expected from its health expenditure, suggesting effective health management.

Table 3.1 Five-year relative survival rate for all cancers from EUROCARE-4 dataset adjusted for ages.

Country(coverage[5])	Average TNEH/year US$ 1994-2002	Women		Men	
		Five year RS (*)	SE(*)	Five Year RS (*)	SE (*)
Switzerland (17%)	4251	56.6	0.4	48.3	0.5
Germany (1%)	3958	55.5	0.6	47.4	0.6
France (17%)	3039	56.6	0.3	45.5	0.4
UK (100%)	2542	51.4	0.1	41.4	0.2
Finland (100%)	2128	56.9	0.3	46.2	0.4
European Mean	N/A	54.6	0.1	44.8	0.1
Pan Birmingham		55.80		45.90	

Data Source: EUROCARE, Berrino et.al. (2) [6]
Pan Birmingham, five year period 1998-2002, 0-99 age group, WM Cancer Intelligence Unit
(*)SE means standard error, and RS means five years relative survival rate. The percentage indicates the cancer coverage.

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[5] The population coverage of cancer registration, there is a higher degree of variability between regional cancer registries. In consequence, the true survival statistics are not well known at present, and the currently available estimates could change substantially if cancer registration was extended to the entire national populations.
[6] EUROCARE-4 results includes for over half of participating cancer registries, cases diagnosed up to the end of 2002, all ages.

Table 3.2 Survival rates US and Pan Birmingham

	Male		Female	
	US [7] (75+) 1988-2006	Pan Birmingham	US (75+) 1988-2006	Pan Birmingham
One Year	71.4	68.2	65.4	73.0
Five Year	58.1	45.9	50.5	55.8

Data source SEER and and West Midlands Cancer Intelligence Unit (Pan Birmingham)
Pan Birmingham, one year 2002-2006, five year period 1998-2002, 0-99 age group

Table 3.2 shows the difficulties in making international comparisons, US data considers age at diagnosis 75+, and Pan Birmingham is all ages.

One of the limitations of cancer registry-based survival data is that they are rarely available by disease stage at diagnosis.

From the study of EUROCARE-4, they have found that male patients have significantly higher risk of dying than women, and Europe faces a major challenge in reducing these inequalities. This finding is also similar to the Pan Birmingham area.

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[7] See Appendix 15

4. Cancer prevalence and incidence

According to the cancer registry, the numbers of people living with cancer (by the end of 2007) in the pan Birmingham area are: all cancers (21,224); breast cancer (4,984); lung cancer (975); prostate cancer (4,249) and colorectal cancer (2,646). QOF data give lower prevalence than the registry.

QOF prevalence
QOF data shows annual increases in the crude prevalence rate of all cancers in all six PCTs in pan Birmingham. Solihull has consistently the highest and HoB the lowest prevalence rates from 2004/05 to 2008/09. Figure 4.1 shows the control chart for all GPs in the Pan Birmingham area. Some of the GPs present higher prevalence compare with the Pan Birmingham average (see Appendix 11 for comparison of individual PCTs against Pan Birmingham average).

Cancer prevalence and the link with cancer survival
The prevalence/incidence ratio by PCT varied from 2.40 in Sandwell (lowest cancer survival rates) to 2.93 in Solihull (highest cancer survival rates). Comparing the prevalence/incidence ratio with the one year and five year cancer survival rates we observe a tendency for the ratio to be higher in PCTs where the one- and five year survival rates are higher. A higher survival rate means that early detection and treatment are given good results.

Figure 4.1 Prevalence for all cancers by GP/PCTs[8]

QOF Cancer Prevalence in Pan Birmingham Practices (2008-09)

Source: QOF 2008-09

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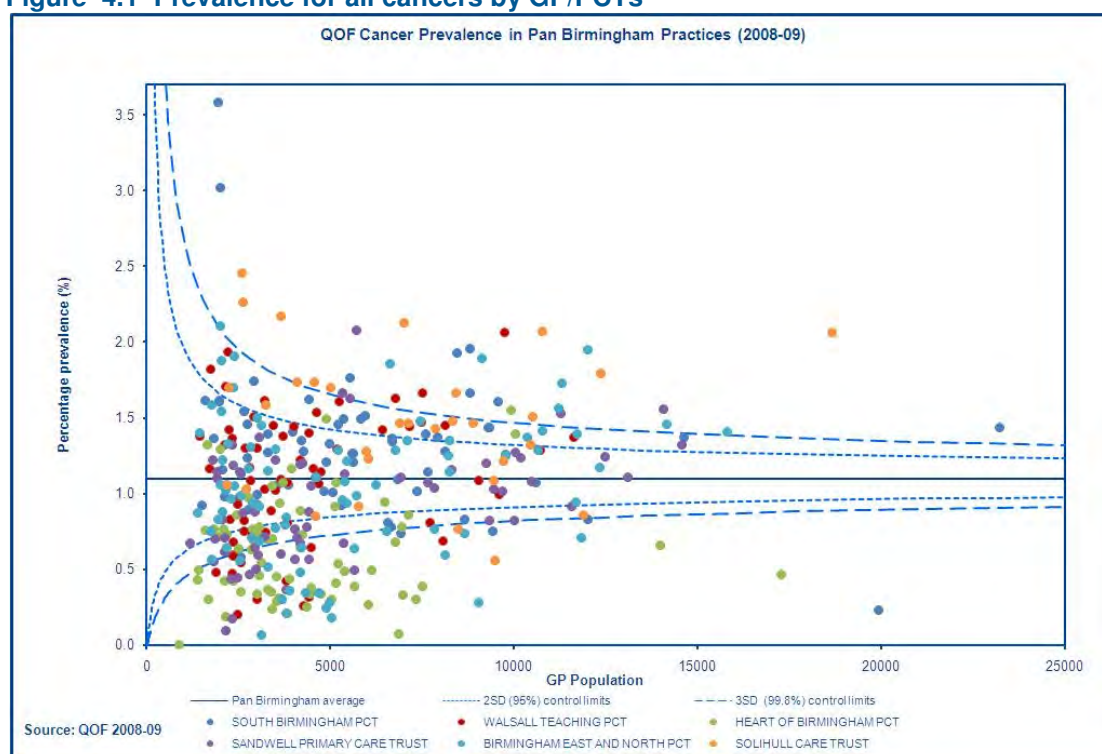
[8] The horizontal axis is the GP register population and the vertical axis is the prevalence by practice. 2SD means confidence of 95% and 3SD means confidence of 99.8%. The GP register population could contains people living elsewhere different from the actual PCT.

Incidence rates by cancer site

The following figures present a comparative analysis of the incidence rate by cancer site between Pan Birmingham and England. We observe that Pan Birmingham has slightly higher incidence for males than England, and England rate is slowing down for females and males for all cancer sites. In general, there is a gender gap in terms of incidence rate, and males are more likely to develop the illness. Prostate cancer is a strong contributor to this since the rate has been increasing very quickly..

Level relative to England in 2006: Comparing the 2006 England site-specific cancer rates with those for Pan Birmingham we observe that Pan Birmingham rates are higher for lung and prostate cancers. However the incidence rates used in the comparison were not standardized for ethnic composition. Pan Birmingham has an ethnic composition that could impact in these estimations *(see* (1)*).*

1985-2006 trend (relative to England): Pan Birmingham is mostly in line with England trends in site-specific cancer incidence. If England incidence for a site/sex specific cancer went up or down, then so in most cases did the pan Birmingham incidence. The direction of change only differed for male colorectal cancer where Pan Birmingham's rates slightly dropped between 1985 and 2006 whereas the England rates went up.

Mechanisms for detecting cancer and peoples' awareness of the illness have been improving. This could bias the interpretation of the increase of incidence rate as an increase of the illness (at present, due to lack of any other baseline).

Figure 4.2 Age standardised incidence rate of all cancers by sex, Pan Birmingham and England, 1985 - 2006
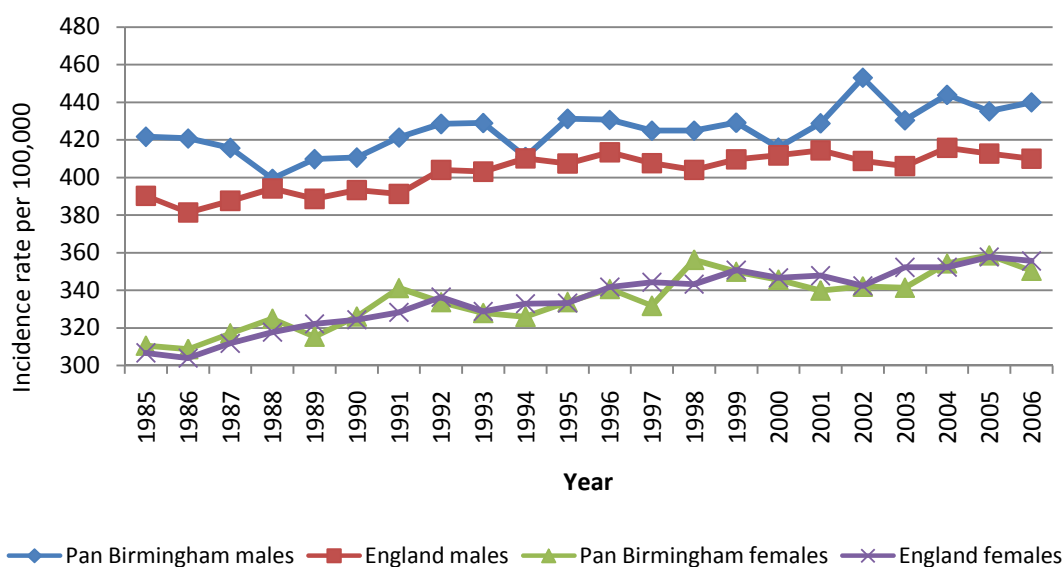
Data source: West Midlands Cancer Intelligence Unit

Figure 4.3 Age standardised incidence rate of lung cancer by sex, Pan Birmingham and England, 1985 – 2006
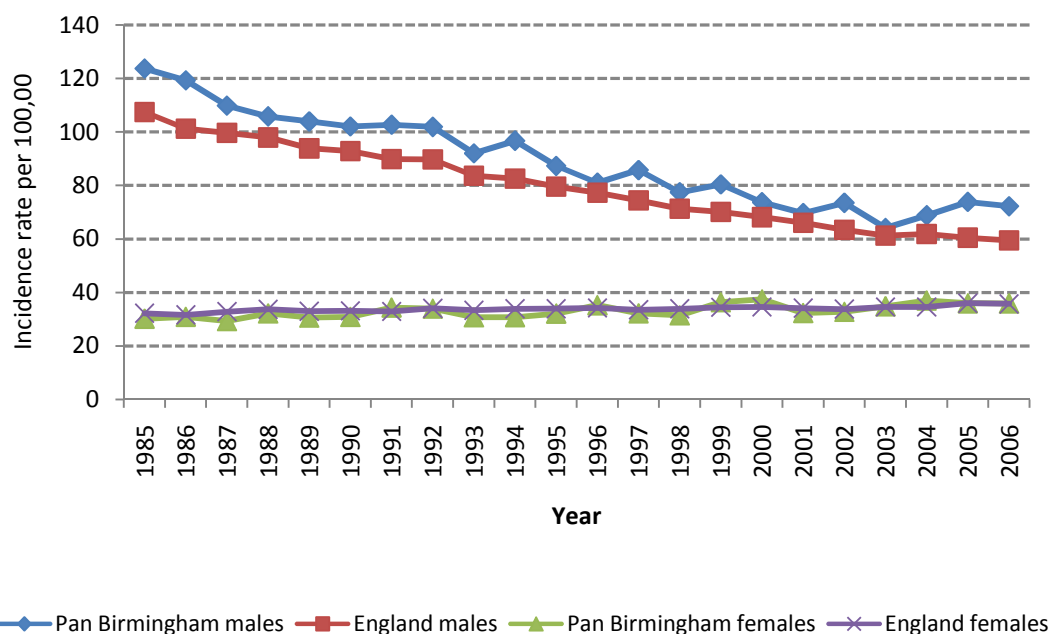
Data source: West Midlands Cancer Intelligence Unit

Figure 4.4 Age standardised incidence rate of colorectal cancer by sex, Pan Birmingham and England, 1985 – 2006

Data source: West Midlands Cancer Intelligence Unit

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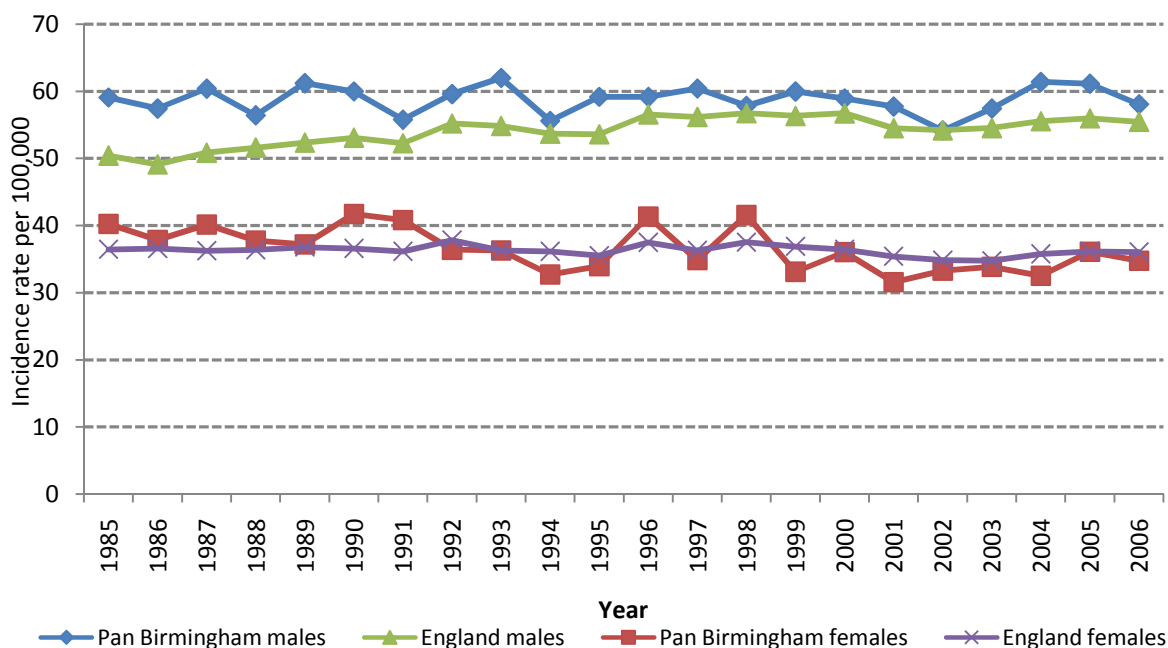
Figure 4.5 Age standardised incidence rate of breast cancer by sex, Pan Birmingham and England, 1985 - 2006
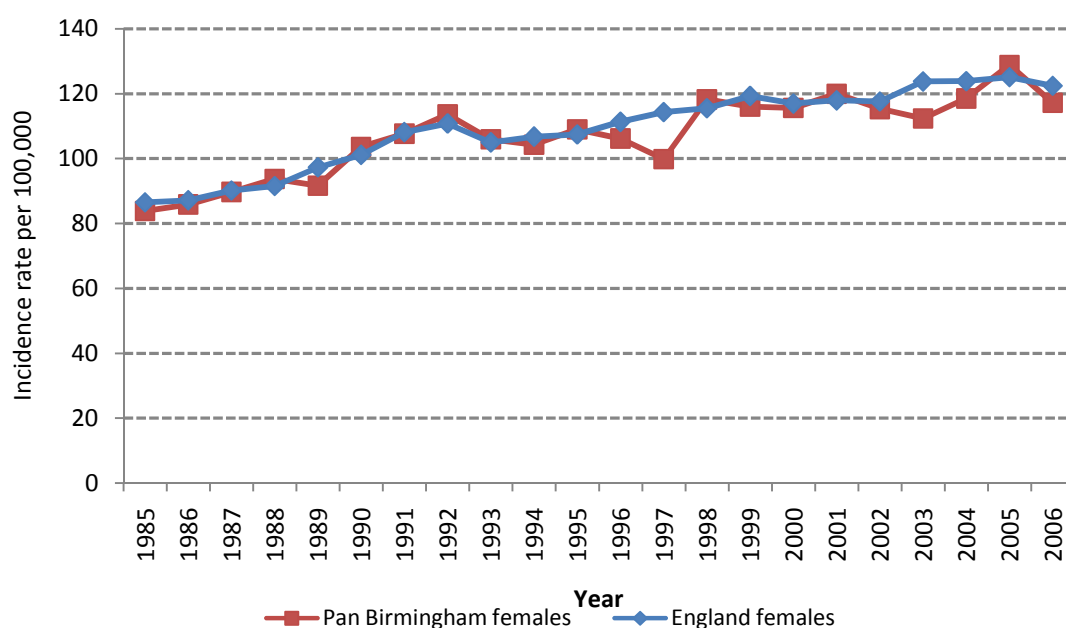
Data source: West Midlands Cancer Intelligence Unit

Figure 4.6 Age standardised incidence rate of prostate cancer by sex, Pan Birmingham and England, 1985 - 2006
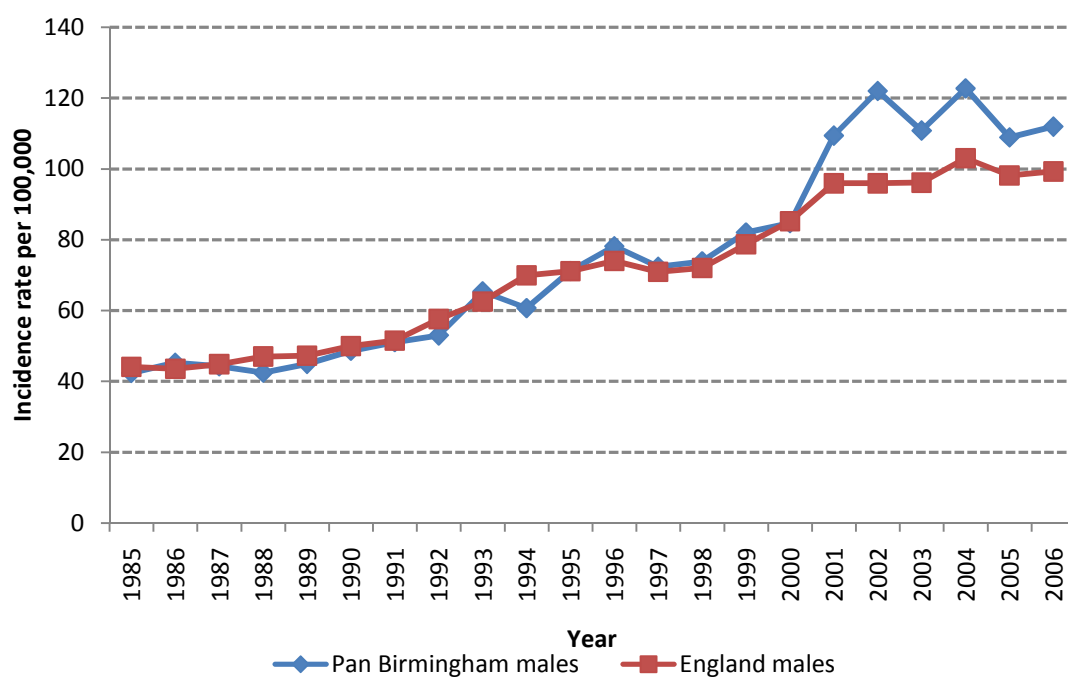
Data source: West Midlands Cancer Intelligence Unit

Table 4.1: Sex/site specific cancer incidence rates per 100,000 population; incidence rate change comparison

Type of cancer, sex	Pan Birmingham		England	
	1985-2006		1985-2006	
	% change		% change	
All cancers, male	4.3	●	5.0	●
All cancers, female	12.8	●	15.9	●
Lung cancer, male	-41.6	●	-44.7	●
Lung cancer, female	18.9	●	10.9	●
Colorectal cancer, male	-1.7	●	9.9	●
colorectal cancer, female	-13.4	●	-0.8	●
Prostate cancer, male	163.9	●	125.2	●
Breast cancer, female	39.7	●	41.5	●

[9]Data source: West Midlands Cancer Intelligence Unit.

In general (see Table 4.1, Table 7.5 and Cancer JSNA (1)) the Pan Birmingham incidence rate (2007) per 100,000 population is higher for both female and male compared to England. South Birmingham PCT presents the highest incidence rate 373.9 for female and Solihull CT the highest incidence rate for male 443.6.

4.1. Geographical distribution of incidence

Figure 4.7 and Figure 4.8 show age standardised incidence rate of all cancers by Middle Layer Super Output Areas[10] (MSOA) in the six Pan Birmingham PCTs, year 2007, in males and females accordingly. The figures show that there is not any particular geographical pattern in cancer incidence for males and females. The rate for males was higher in the south area of BEN PCT, central part of HoB tPCT, central area of NHS South Birmingham PCT, and eastern parts of Walsall tPCT and Sandwell PCT. The rate for females was higher in Solihull CT, the north and southeast of South Birmingham PCT, various parts in BEN PCT, the eastern part of HoB tPCT, northern part of Walsall tPCT and north and south areas of Sandwell PCT.

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[9] ● indicates decrease ● indicates increase

[10] **Middle Layer:** Minimum population 5,000, mean population 7,200. Built from Lower Layer SOAs. Commonly known as Middle Layer Super Output Area and abbreviated to MSOA.

Figure 4.7 Age standardised incidence rate of all cancers by MSOA, males, Pan Birmingham, 2007
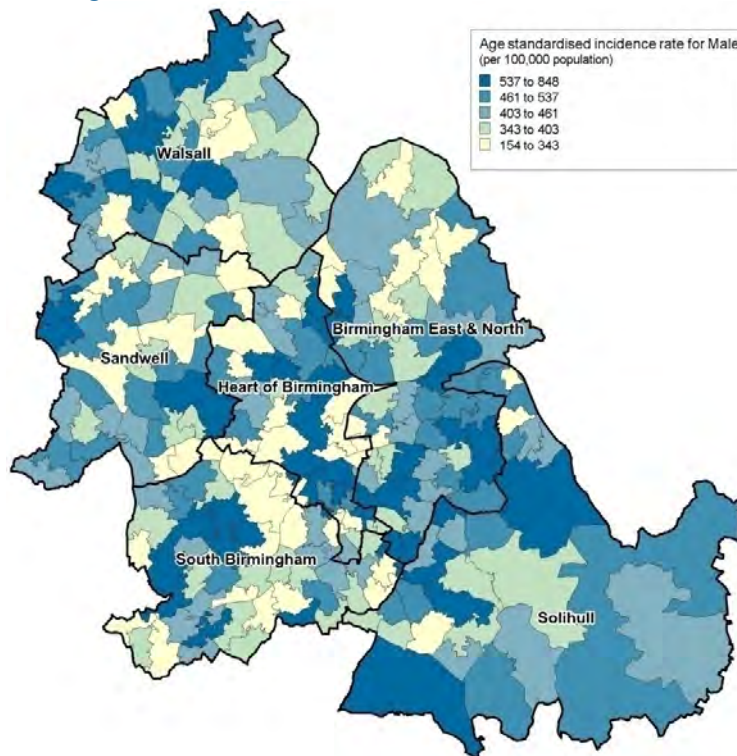
Data source: West Midlands Cancer Intelligence Unit

Figure 4.8 Age standardised incidence rate of all cancers by MSOA, females, Pan Birmingham, 2007
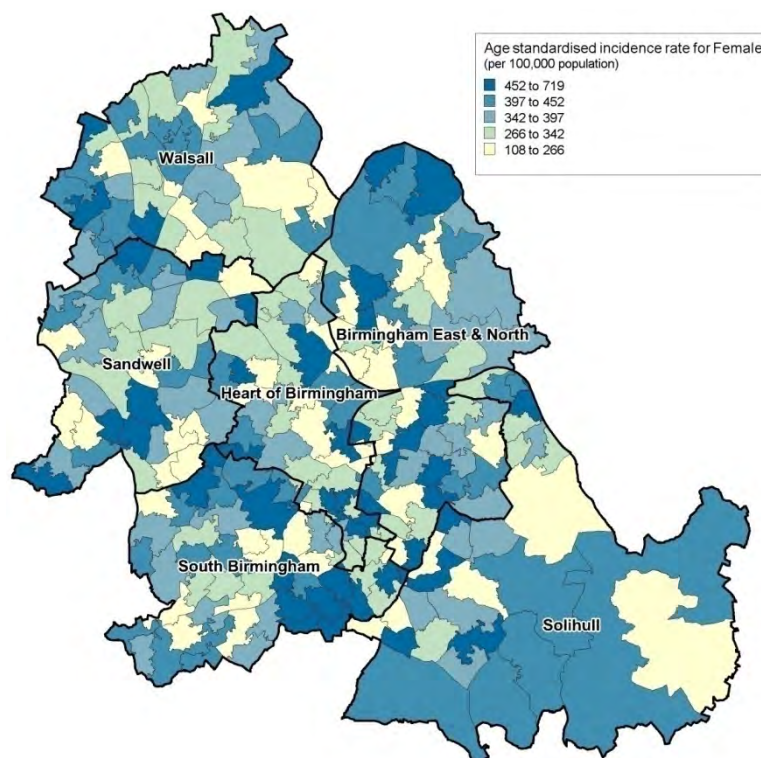
Data source: West Midlands Cancer Intelligence Unit

5. Cancer screening and early diagnosis

Early diagnosis is an important factor for cancer survival. In England there are a range of programmes for screening. These include:

- NHS Breast Screening Programme,
- NHS Cervical Screening Programme and the
- NHS Bowel Cancer Screening Programme.

There is no organised screening programme for prostate cancer but an informed choice programme, Prostate Cancer Risk Management, does exist (6).

Duffy, et.al (7), has shown that the benefit of mammographic screening in terms of lives saved is greater than the harm in terms of over diagnosis. Between 2 and 2.5 lives are saved for every over diagnosed case in breast screening. Table 5.1 shows the screening coverage[11] and diagnosis by referral.

Table 5.1 Screening and early diagnosis (8)

PCTs	Cervical (25-64) % coverage	Breast (53-70) % coverage	Referral /10,000 through 2 weeks referral	% 2WW with cancer	% diagnosis through 2WW
HoB	76.3!	66.0!	93	10	34
BEN	74.4!	72.4!	162	19	47
SB	72.9!	72.9	218	8	39
Sandwell	77.5	67.5	183	12	32
Solihull	77.7	77.9	202	20	48
Walsall	77.8	72.9	133	13	30

Cervical screening shows 2008/09 coverage.
Breast screening shows 2007/08 coverage.
Referrals per 10,000 populations through two weeks wait shows data from Q1 2009/10.
Percentage two-weeks wait with cancer shows Q3 2008/09.
Percentage diagnosed through two weeks wait. This shows the % of all cancer patients who were referred urgently for suspected cancer by their GP, data from Q3 2008/09.

Data source: Cancer Commissioning Toolkit and NCIS
(!) represents lowest quartile, (*) represents the highest quartile

Birmingham PCTs present the lowest coverage for cervical screening. BEN and HoB are also in the lowest quartile for the Breast Screening.

South Birmingham presents the highest two week referral with the highest survival, but with the lowest detection rate for the two week referral.

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[11] Coverage is defined as the percentage of women out of the eligible population that is covered by the breast/cervical screening programme.

5.1. Breast screening plots by PCTs

Figure 5.1 shows the General Practice (GP) coverage for four of the six (6) PCTs of the Pan Birmingham area which illustrates that there are still some practices where performance is lower than the Pan Birmingham average. Solihull CT presents the best coverage and HoB tPCT the worst. PCT detailed information can be found in the Appendix - Screening plots by PCTs[12].

Figure 5.1 Breast screening coverage
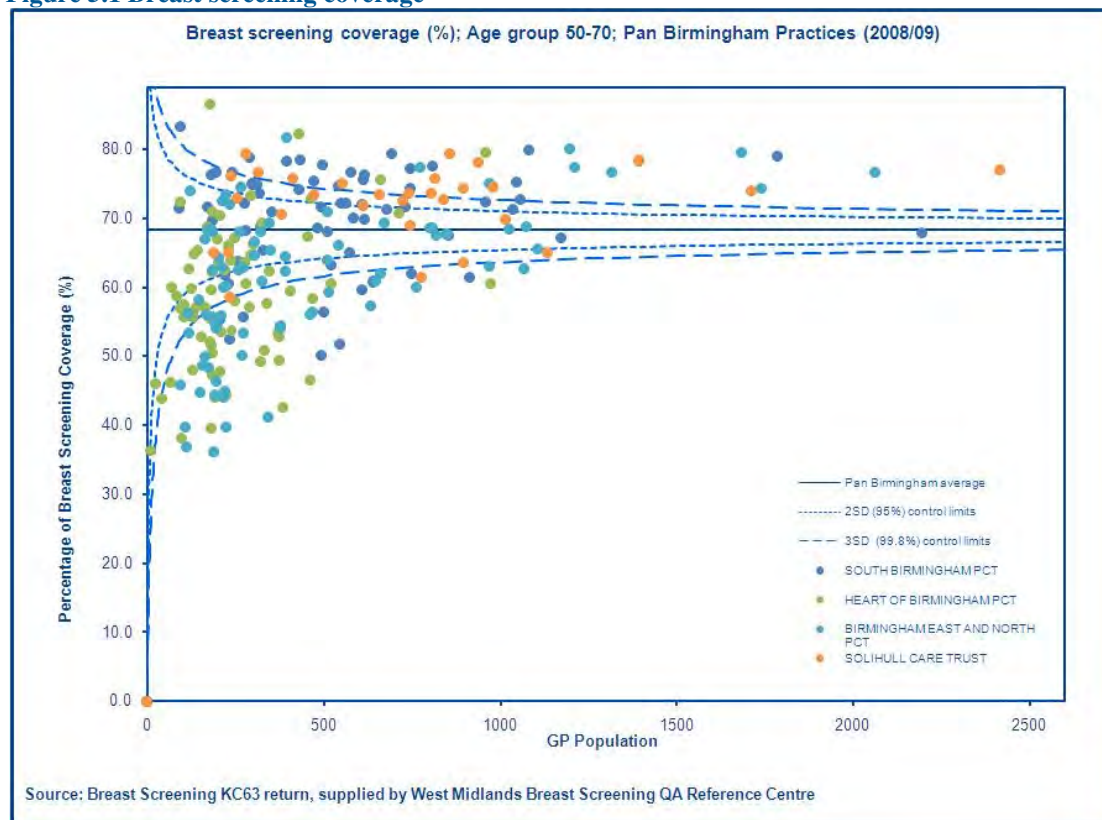
Estimation of the absolute benefits and harms of mammography screening for the breast cancer remains a subject of debate. The estimates from individual randomized trials suggest that between 300 and 500 women need to be screened every 2-3 years during a period of ten (10) years to prevent one death from breast cancer (7). There is a general opinion that the benefits of breast screening outweigh the harms. Duffy et.al. (7) suggested an absolute benefits of 5.7 breast deaths prevented per 1000 women screened for 20 years starting at the age 50. The corresponding over diagnosis per 1000 women screened for 20 years was 2.3 per 1000.

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[12] At the time of writing the report Walsall and Sandwell data at GP level was not available.

5.1.1. Bowel Screening

Table 5.2 shows that in general Pan Birmingham PCTs are not meeting the 60% target for screening uptake. HOB tPCT presents the lowest uptake.

Table 5.2 Bowel cancer screening uptake by PCT, all ages, 2009

PCT	Screening centre	Number invited	Completed kits returned	Uptake (%)
HOB tPCT	Sandwell and West Birmingham	15816	5583	35.3
BEN PCT	Heart of England	47917	23316	48.7
SB PCT	Sandwell and West Birmingham	13324	6180	46.4
Sandwell PCT	Sandwell and West Birmingham	30183	13909	46.1
Solihull CT	Heart of England	31070	17828	57.4
Walsall tPCT	Wolverhampton	37618	19534	51.9
West Midlands		462804	228338	52.5

Data source West Midlands Bowel Cancer Screening Uptake Rates, Report Number BC01, West Midlands Cancer Intelligence Unit

Unit   Green 60% or above uptake rate,   amber 50%-59% and   red lower than 50%

6. **Mortality and emergency admissions**

6.1. **Mortality**

Cancer mortality still remains a challenge for Pan Birmingham PCTs as is shown in the figures below. In summary:

- Cancer mortality rates in the Pan Birmingham area in 2007 were 219.7 per 100,000 for males and 151.2 per 100,000 for females.

- Male mortality in the Pan Birmingham area was consistently higher than England over the period (2002 - 2007) while female mortality was approximately the same as the national average.

- Male mortality had been consistently higher than female mortality, both locally and nationally

- Sandwell PCT presents a significant difference for all cancer mortality rates for both female and male compared to England (see Figure 6.1 and Figure 6.2)

- Sandwell PCT has the highest mortality rate for under 75s population, for both females and males.

In Appendix 13 more information about DSR[13] by cancer site and PCTs are presented.

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[13] DSR means direct age standardised rate per 100,000 population, see Appendix Methods

Figure 6.1 All ages mortality rates.

All Cancers DSR; Pan Birmingham PCTs compared to England: 2006-08 Data
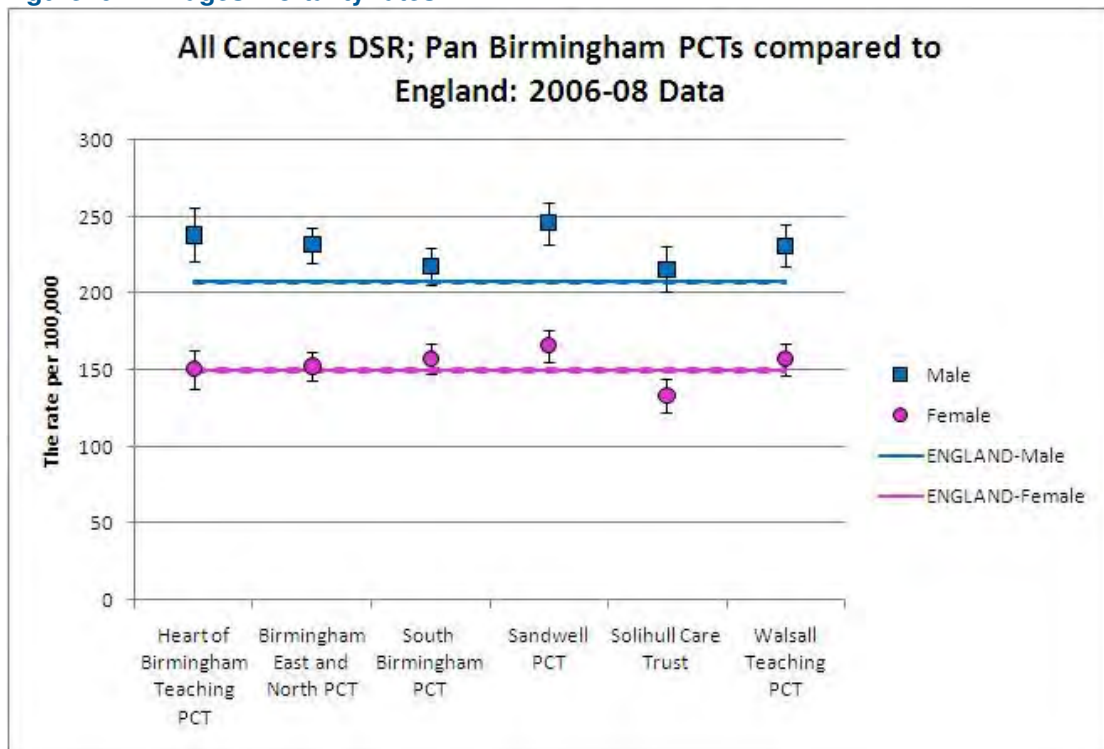
Data source: NCHOD

Figure 6.2 All cancer mortality rates for under 75 years of age.

All Cancers DSR under 75 years; Pan Birmingham PCTs compared to England: 2006-08 Data
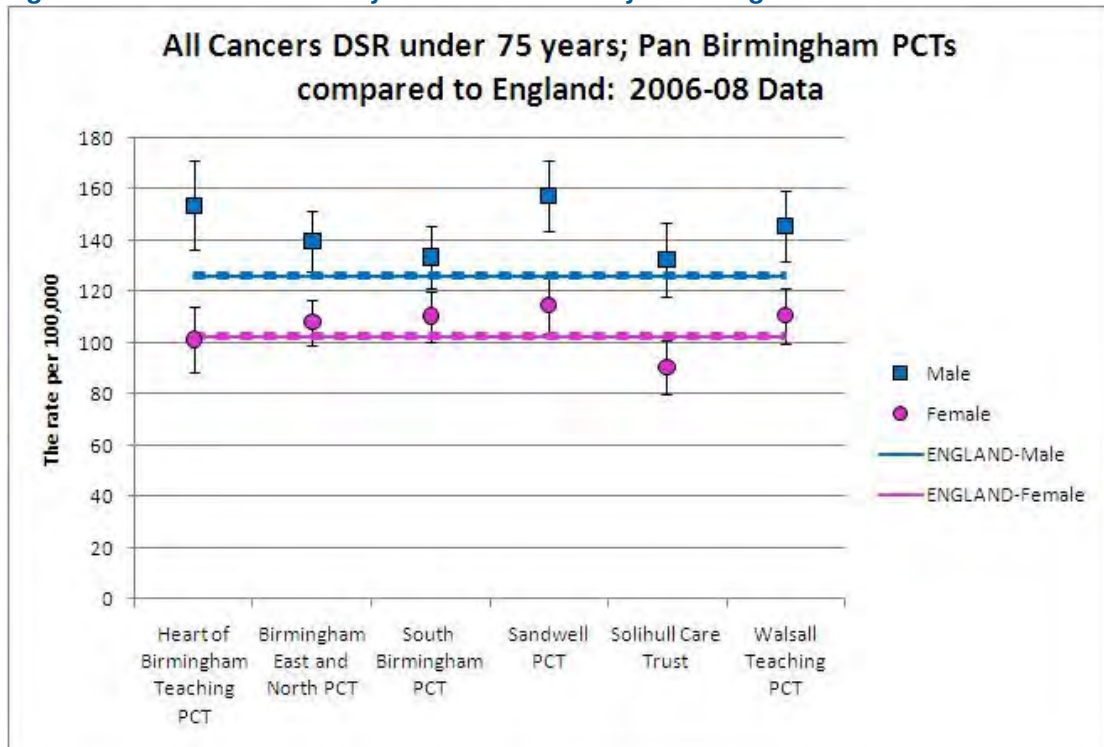
Data source: NCHOD

Figure 6.3 Age standardised mortality rate (per 100,000) by PCT, males, all cancers, Pan Birmingham and England, 2002 to 2008

	2002	2003	2004	2005	2006	2007	2008	2006-2008
HoBtPCT	233	251	227	211	243	242	229	238
BEN PCT	281	236	238	228	235	233	228	232
SB PCT	245	245	247	239	220	218	216	218
Sandwell PCT	263	274	239	232	256	249	233	246
Solihull CT	231	205	195	183	230	227	192	216
Walsall PCT	233	230	227	231	243	229	222	231
England	227	222	217	213	211	207	205	207
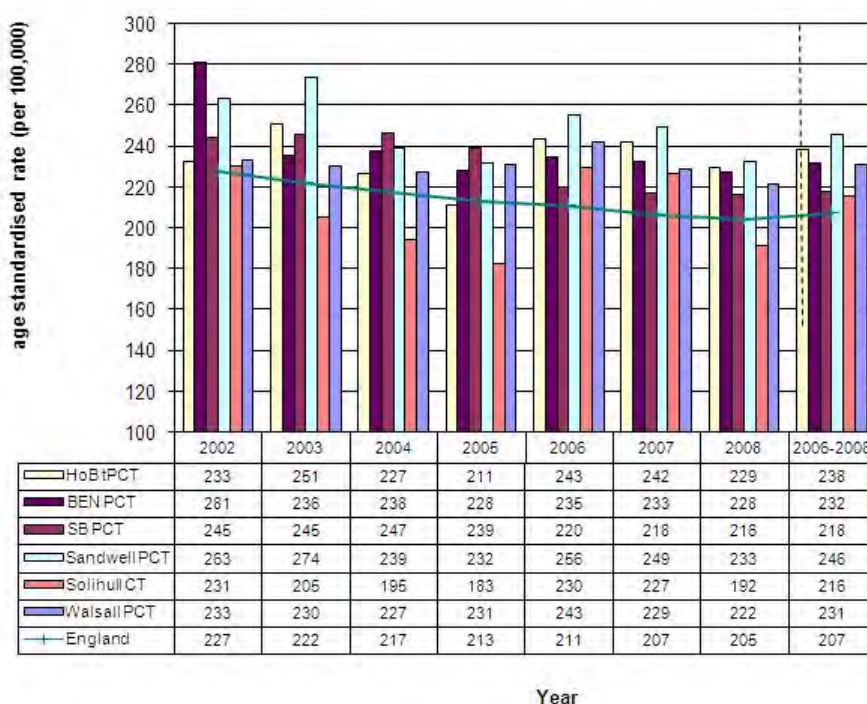
Data source: NCHOD

Figure 6.4 Age standardised mortality rate (per 100,000) by PCT, females, all cancers, Pan Birmingham and England, 2002 to 2008

	2002	2003	2004	2005	2006	2007	2008	2006-2008
HoBtPCT	153	133	155	165	145	153	154	151
BEN PCT	161	164	155	162	153	161	144	153
SB PCT	164	160	151	156	147	162	162	157
Sandwell PCT	170	168	165	149	169	158	171	166
Solihull CT	152	151	154	150	126	133	142	134
Walsall PCT	162	161	157	154	168	143	160	157
England	159	156	153	153	150	150	149	150
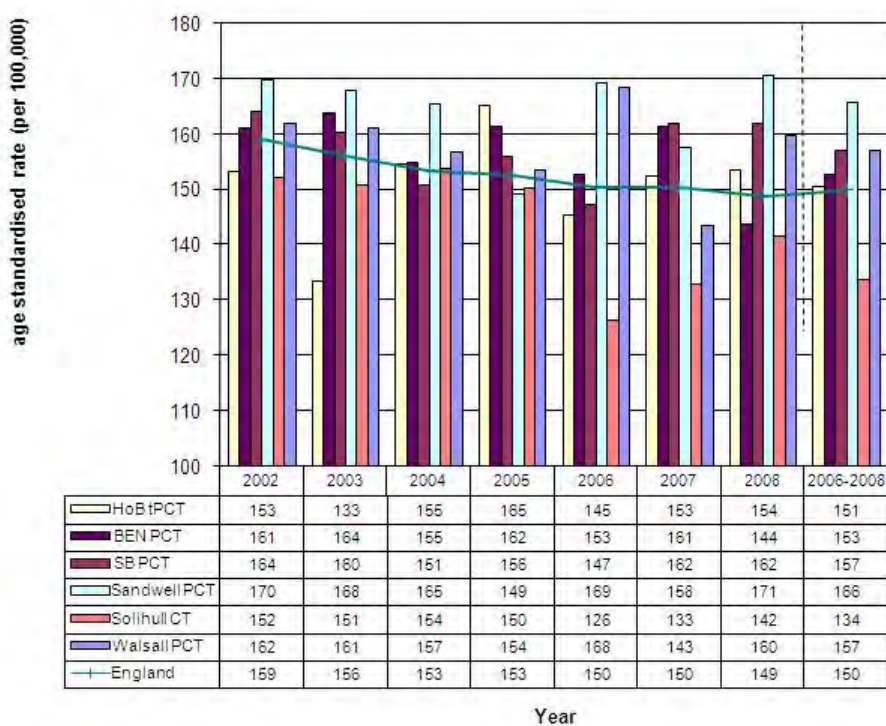
Data source: NCHOD

6.2. Emergency Admissions[14]

Emergency admissions due to cancer should be low if early detection and treatment management are well in place. This is considered in the figures below (Figure 6.5 to Figure 6.11 in which only the primary diagnosis was considered):

- NHS South Birmingham PCT presents the higher numbers of GP practices with a significant number of admissions higher than the average for Pan Birmingham.
- Walsall tPCT is the second PCT that has more practices with higher admission rate compared to the Pan Birmingham rate.

In Appendix 14 the emergency admission rate was calculated using all diagnoses[15] and the results show that the admission rate increased for all Pan Birmingham PCTs. HoB tPCT and Solihull CT continue to be the best in management of 'cancer symptoms'.

Figure 6.5 All cancer emergency admission rates

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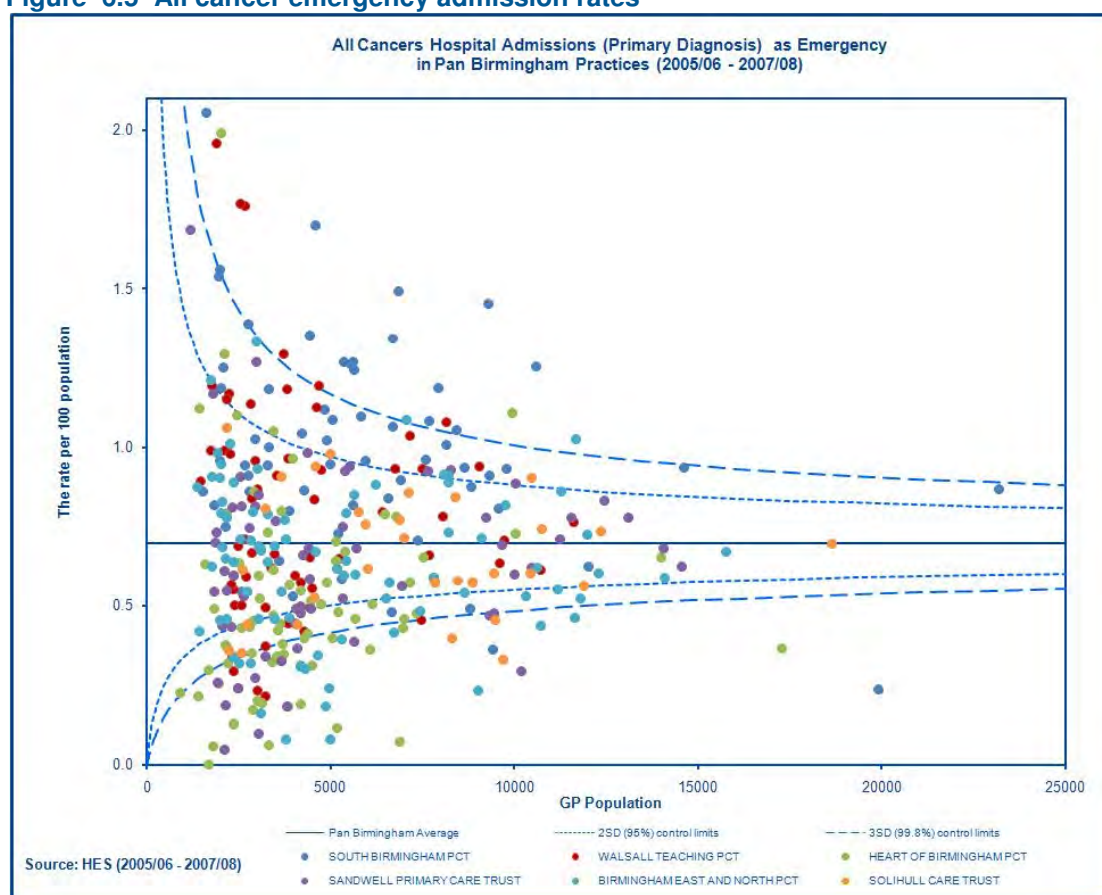
[14] HES data set has been used to produce these statistics, and the first diagnosis code has been used for the comparison.
[15] Normally up to 14 diagnosis is used to describe an episode in HES

Figure 6.6 Pan Birmingham all cancer admissions

All Cancers Hospital Admissions (All Diagnosis) as Emergency
in Pan Birmingham Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits — 3SD (99.8%) control limits
SOUTH BIRMINGHAM PCT — WALSALL TEACHING PCT — HEART OF BIRMINGHAM PCT
SANDWELL PRIMARY CARE TRUST — BIRMINGHAM EAST AND NORTH PCT — SOLIHULL CARE TRUST
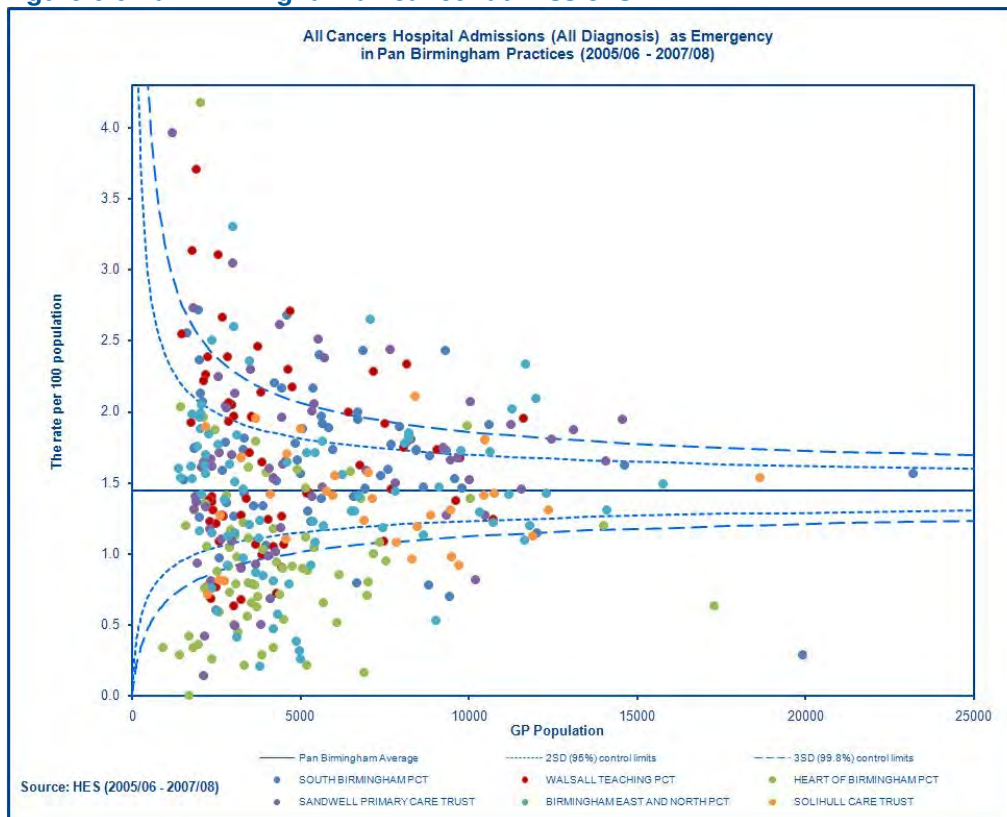
Figure 6.7 Heart of Birmingham tPCT emergency admission rates

All Cancers Hospital Admissions (Primary Diagnosis) as Emergency
in HOB tPCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits
3SD (99.8%) control limits — HEART OF BIRMINGHAM PCT
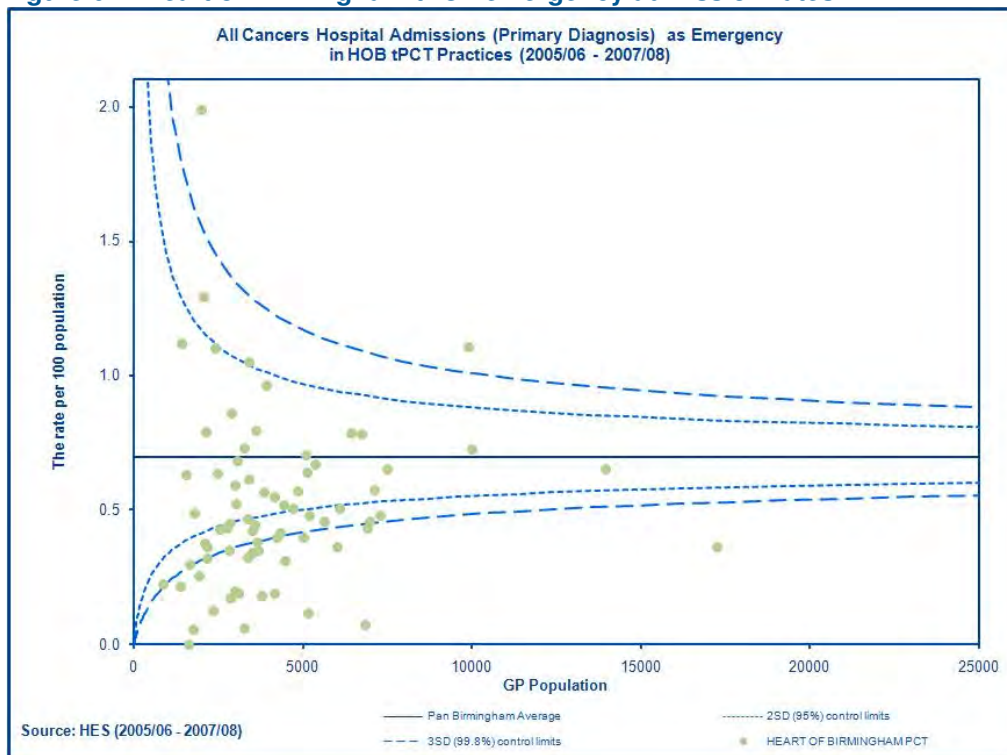
Figure 6.8 Birmingham East and North emergency admission rates

All Cancers Hospital Admissions (Primary Diagnosis) as Emergency
in BEN PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits
3SD (99.8%) control limits — BIRMINGHAM EAST AND NORTH PCT
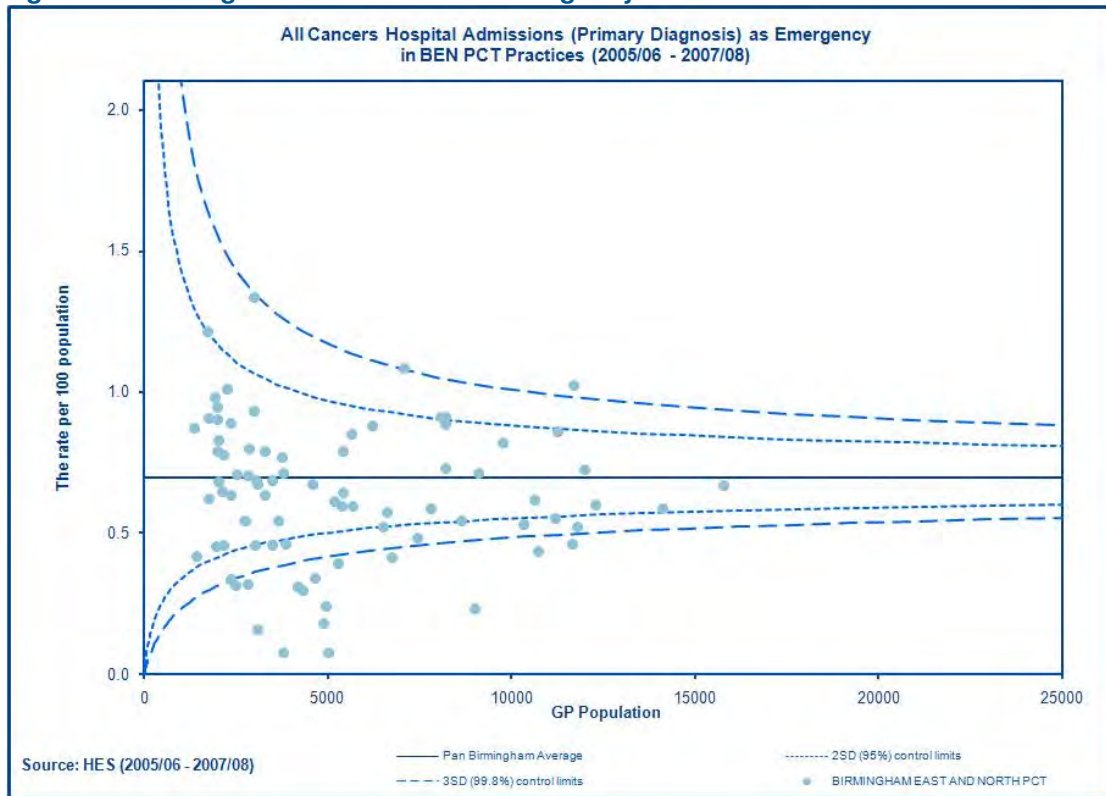
Figure 6.9 NHS South Birmingham PCT emergency admission rates

All Cancers Hospital Admissions as Emergency (Primary Diagnosis)
in SB PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits
3SD (99.8%) control limits — SOUTH BIRMINGHAM PCT
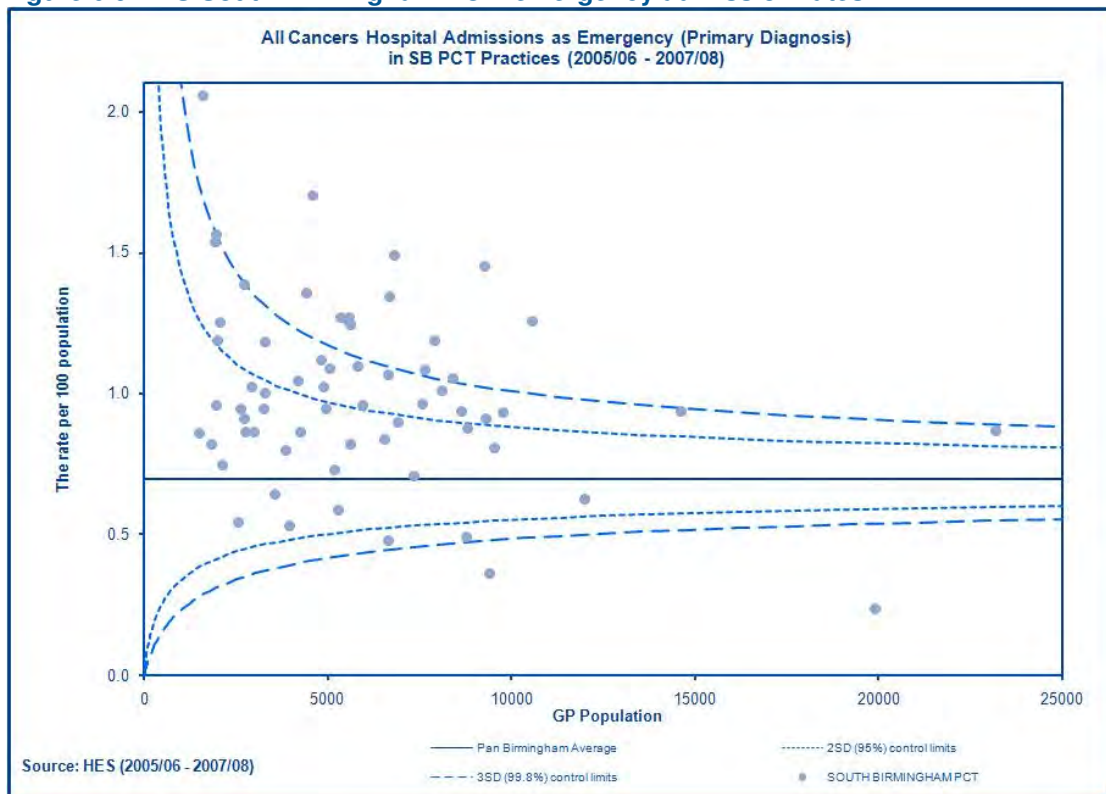
Figure 6.10 Sandwell PCT emergency admission rates

All Cancers Hospital Admissions as Emergency (Primary Diagnosis)
in Sandwell PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits
3SD (99.8%) control limits — SANDWELL PRIMARY CARE TRUST
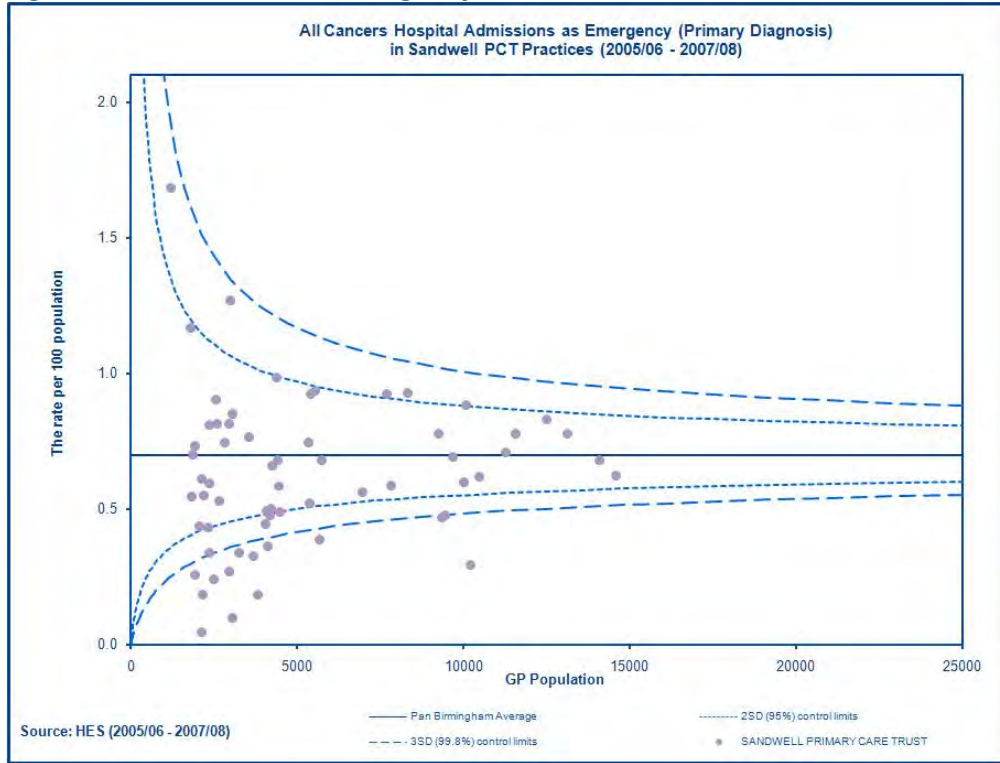
Figure 6.11 Solihull CT emergency admission rates

All Cancers Hospital Admissions as Emergency (Primary Diagnosis)
in Solihull CT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

Pan Birmingham Average — 2SD (95%) control limits
3SD (99.8%) control limits — SOLIHULL CARE TRUST
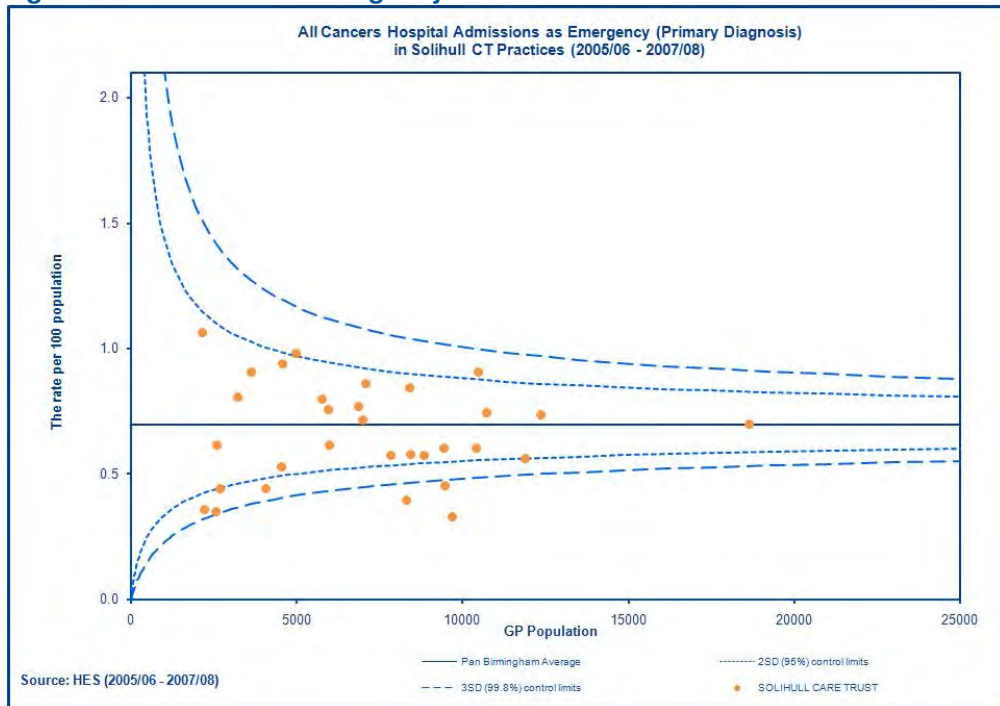
Figure 6.12 Walsall tPCT emergency admission rates

All Cancers Hospital Admissions as Emergency (Primary Diagnosis) in Walsall tPCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)
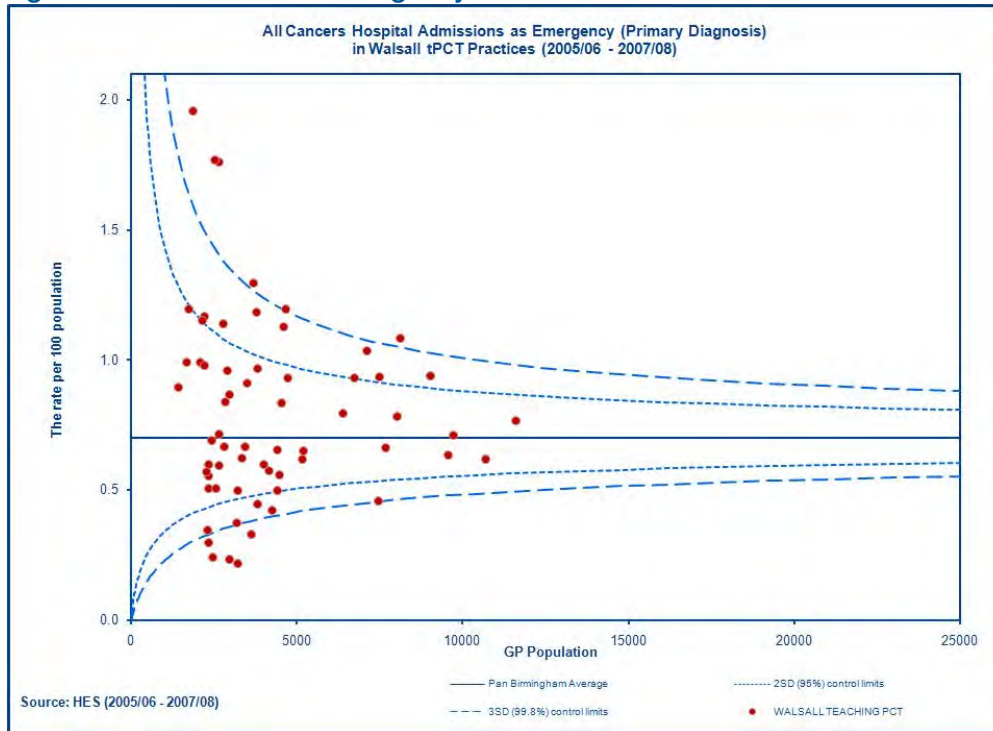
7. Discussion and Projections

Cancer represents one of main causes for mortality for all ages in the area of Pan Birmingham (see Figure 7.1 and Figure 7.2) but the survival rates have been increasing. There is a gender gap between males and femalesas shown in Table 7.1 where males are normally at a disadvantage. The grey cell in this table indicates that for colorectal cancer males have more chance of survivingone year than females. This table shows that in the Pan Birmingham area male *cancer incidence rates* are substantially higher than female rates, with the exception of skin cancer (1).

Male *cancer mortality rates* are higher for 'all cancers' as well as for lung and colorectal site cancers for which we had information. Males *chances to live with any kind of cancer for at least one or five years* after diagnosis are also lower than those for females, although male populations may have better survival chances for certain kinds of cancer, most notably cancer in the upper gastro-intestinal system (upper GI).

Figure 7.1 Pan Birmingham female main causes of death 2006-2008
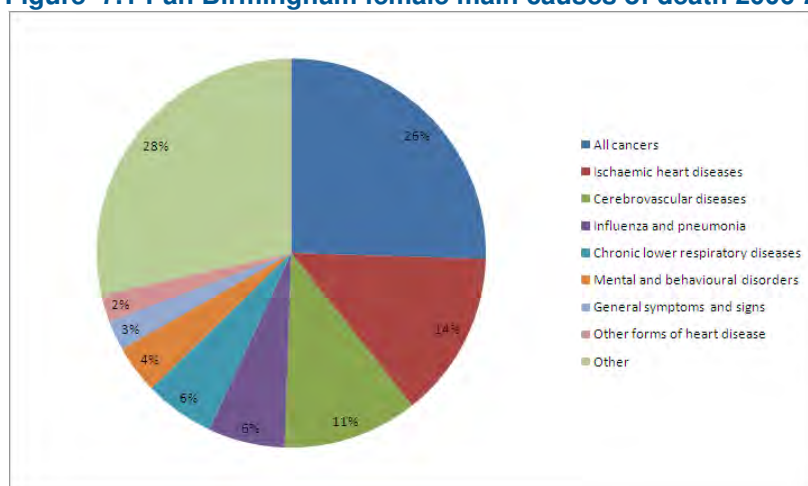
Data source: ONS-WMPHO

Figure 7.2 Pan Birmingham male main causes of death 2006-2008

Legend:
- All cancers — 30%
- Ischaemic heart diseases — 19%
- Cerebrovascular diseases — 8%
- Chronic lower respiratory diseases — 6%
- Influenza and pneumonia — 5%
- Diseases of liver — 3%
- Mental and behavioural disorders — 2%
- Other — 27%
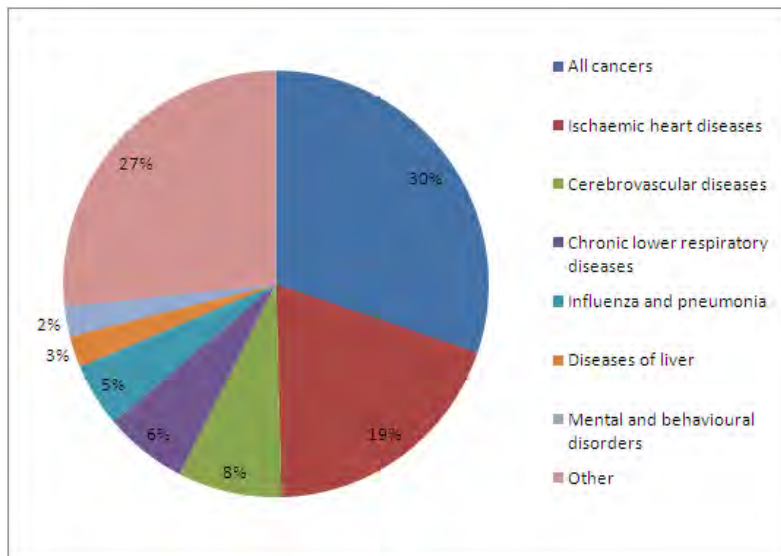
Data source: ONS-WMPHO

Table 7.1 Gender gap in cancer incidence, mortality and survival; Pan Birmingham using latest available data, minus sign indicates male is in disadvantage

Cancer site	Incidence	1 year survival	5 year survival	Mortality
All cancers	**-20%**	**-7%**	**-22%**	**-31%**
Lung	-50%	-12%	-10%	-44%
Colorectal	-40%	2%	-6%	-38%

Data source: West Midlands Cancer Intelligence Unit

In summary (see Table 7.5):

Cancer incidence
'All cancers' incidence has been rising. Male incidence is higher than female incidence, but the latter is rising faster.
- Most male site specific cancer incidences are higher than females.
- The gap between male and female lung/upper GI/head and neck cancer incidence is decreasing.
- Breast/head and neck/prostate cancer incidences are increasing.
- Male bowel/head and neck cancer incidences are higher than national ones.
- Cervical cancer incidence is decreasing.
- Mesothelioma incidence is rising and the gap between men and women is widening.
- Female skin cancer incidence is higher than male and is higher than national incidence.

PCT burden of disease
Solihull PCT has the highest disease incidence from all cancers for males, and NHS South Birmingham for females. Sandwell has the highest mortality rate for males and females. Sandwell has the lowest survival rate for females and Walsall for males.
- Lung cancer burden of disease is higher in Sandwell.
- Breast cancer burden of disease is higher in BEN, South and Solihull.
- Prostate cancer is relatively high in Solihull.
- Colorectal cancer burden of disease is higher in Solihull.

Staging
Staging of cancer is not well recorded for most cancers, with the exception of breast and bowel cancers and to a lesser extent gynaecological cancers.

Age and gender
Cancer incidence/mortality is increasing with age and it is higher for men than women.

Deprivation
- Prostate and breast cancer incidences have an inverse correlation with deprivation, whereas lung and bowel are correlated with deprivation.
- 'All cancers' and lung cancer mortality rates are positively correlated to deprivation.
- Breast, bowel, prostate cancer mortality rates are not correlated to deprivation.
- Cancer survival is positively correlated to deprivation.

Cancer prevalence

Solihull has higher prevalence according to QOF records. HOB has lower prevalence. QOF cancer recording has been improving in the last five years, but there is likely to be significant underreporting (especially in Walsall, HOB and Solihull).

Ethnicity

Ethnicity is not well recorded. For most cancers, incidence is lower for BME groups with the exception of:
- Increased incidence of prostate cancer amongst black men
- Stomach, multiple myelomas, liver and cervical cancer in black people.
- Liver and cervical cancer (>65) in Asian people.

Mortality

- Cancer deaths are higher than the national average in Solihull and lower in HOB.
- 'All cancers' mortality rate has been decreasing.
- Male 'all cancers', lung and bowel mortality rates are higher than national rates.
- Sandwell PCT bowel and prostate mortality rates are above national average.

Survival

- One and five year survival rates have been improving over last 25 years.
- The gap between men and women is decreasing.
- Sandwell PCT has a lower 'all cancers' survival rate than national one.
- Sandwell PCT has the worst breast, bowel, prostate and lung survival rates in the Pan Birmingham area.

Screening

- HOB and Sandwell have low breast screening coverage.
- Cervical screening is relatively low in 25-34 year old women.
- All three Birmingham PCTs have low cervical screening coverage.
- Sandwell, HOB, South Birmingham and BEN have low bowel screening uptake.
- Bowel screening uptake is better in women than men.

Projections

It is expected that thenumber of new cancers will increase and the male population will become the more affected in the UK as shown in Table 7.2.

Table 7.2 Projections for United Kingdom All cancers excl. non-melanoma skin cancer

Year	Estimated number of new cancers (all ages	Male	Female	Both sexes
2008		164027	146898	310925
	ages < 65	50969	60319	111288
	ages >= 65	113058	86579	199637
2020		195396	166203	361599
	ages < 65	54793	64760	119553
	ages >= 65	140603	101443	242046
	Demographic Change	31369	19305	50674
	ages < 65	3824	4441	8265
	ages >= 65	27545	14864	42409

Source: GLOBOCAN 2008 (IARC) - 18.6.2010

Population forecasts were extracted from the *United Nations, World Population prospects, the 2008 revision*. Numbers are computed using age-specific rates and corresponding populations for 10 age-groups.

Cancer Target

Looking at the Pan Birmingham area at the baseline point there is a small gap, however this gap has been widening and at present it is a challenge to meet the target for 2011. This represents reducing by 3 deaths per 100.000 populations. Mortality is affected by early diagnosis and the effectiveness of the treatment received, as a short term measure. But to improve the burden of this disease, changes in lifestyle must be encouraged.

Figure 7.3 Mortality target gap for Pan Birmingham
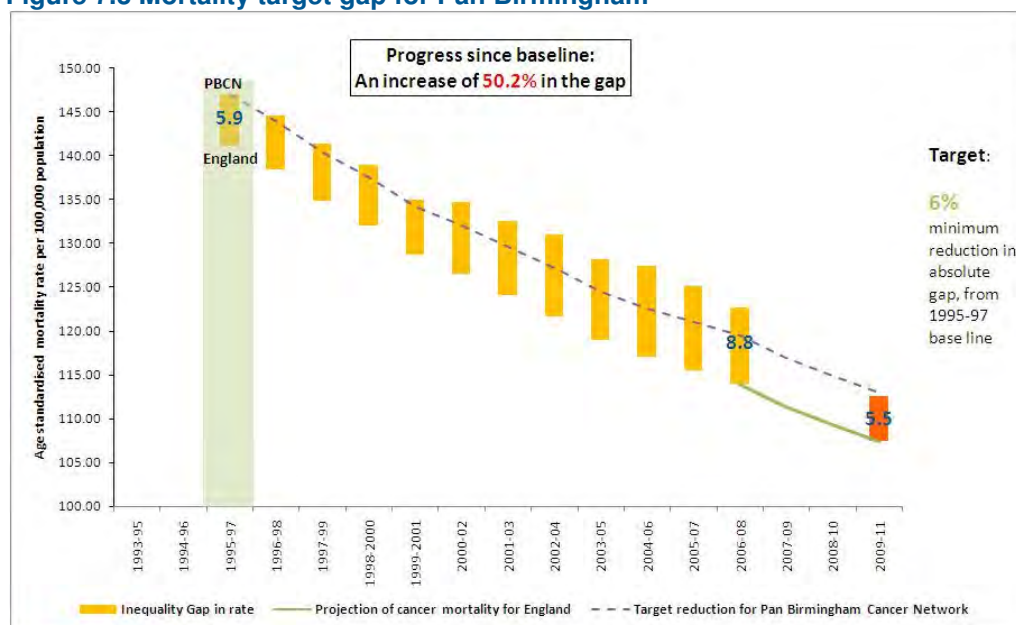
Data source: ONS mortality dataset

End of Life Care

Although every person may have a different idea about what would, for them, constitute a 'good death', for many this would involve (9):

- Being treated as an individual, with dignity and respect;
- Being without pain and other symptoms;
- Being in familiar surroundings; and
- Being in the company of close family and/or friends.

Nationally, an indicator used to reflect the choice at the moment of death is death at home, as a proxy for being in the company of close family /friends and carers. Table 7.3 shows that the percentage of people who died at home has slightly increased. In this area, however, there is still substantial room for improvement for cancer patients.

Table 7.3 Pan Birmingham's cancer patients and place of death

	Death at home 2006	Death at hospice 2006	Death at home 2007	Death at hospice 2007	Death at home 2008	Death at hospice 2008
Number	594	342	619	364	637	315
Percentage (%)	14%	8%	14%	8%	15%	7%
Total Number of Deaths	4275		4311		4248	

Data source: WMPHO

Table 7.4 Number of deaths by PCTs

	2006	2007	2008
HoB tPCT	439	442	445
BEN PCT	984	1021	959
SB PCT	787	835	831
Sandwell PCT	804	789	775
Solihull CT	533	562	538
Walsall tPCT	728	662	700
Pan Birmingham	4275	4311	4248

Data source: WMPHO

Table 7.5 Summary of the major cancers indicators

	Gender	All Cancers				Lung Cancer			Breast Cancer (female only)			Colorectal Cancer			Prostate Cancer (Male Only)		
		Incidence 2007	Prevalence 0809 QOF	Mortality 2008	Survival 5 yr 1998-2002	Incidence 2007	Mortality 2008	Survival 5 yr 1998-2002	Incidence 2007	Mortality 2008	Survival 5 yr 1998-2002	Incidence 2007	Mortality 2008	Survival 5 yr 1998-2002	Incidence 2007	Mortality 2008	Survival 5 yr 1998-2002
England	Male	408.4	1.3%	204.6	44.8	57.5	49.0	7.2				54.5	22.2	52.0	98.9	23.9	79.0
	Female	356.8		148.9	54.1	36.17	30.4	8.1	121.3	26.2	82.0	35.9	14.0	52.0	n/a		
PAN BHAM	Male	419.3	1.1%	n/a	45.9	63.1	n/a	7.3				60.9	n/a	50.0	101.7	n/a	82.7
	Female	362.7		n/a	55.8	36.2	n/a	8.0	125.1	n/a	82.2	36.3	n/a	53.0	n/a		
BEN PCT	Male	426.4	1.1%	227.7	45.5	67.7	63.9	8.1				57.9	23.6	49.7	103.3	20.2	84.4
	Female	358.8		143.9	53.7	38.6	25.7	9.0	126.3	27.8	81.6	32.1	13.9	48.3	n/a		
HOB PCT	Male	428.6	0.6%	229.4	44.5	68.9	60.8	8.3				53.6	21.2	47.4	111.2	25.3	86.8
	Female	336.2		153.6	52.8	70.0	24.2	10.2	102.2	25.7	82.2	25.3	19.4	47.7	n/a		
South PCT	Male	413.5	1.2%	216.2	49.4	67.1	64.3	7.7				59.3	29.9	54.0	98.0	19.3	88.7
	Female	382.9		161.9	56.9	32.4	40.6	7.3	126.5	24.1	82.6	40.2	16.0	57.6	n/a		
Sandwell PCT	Male	414.2	1.0%	232.7	41.4	72.5	55.8	6.8				56.9	27.2	45.6	89.5	32.7	78.9
	Female	354.6		170.6	49.6	36.1	37.2	5.6	116.2	27.8	80.8	35.3	17.4	45.0	n/a		
Solihull PCT	Male	443.6	1.5%	191.5	57.1	50.5	43.4	8.1				73.6	23.1	55.1	131.8	19.9	91.9
	Female	358.7		141.6	61.4	29.2	28.8	9.9	125.3	26.0	82.0	44.2	13.1	66.6	n/a		
Walsall PCT	Male	427.0	1.2%	221.7	42.0	67.1	58.9	5.8				60.4	28.2	57.2	94.0	23.1	77.2
	Female	346.8		159.8	54.8	35.7	36.1	9.9	119.4	23.7	82.1	36.3	14.3	52.4	n/a		

Data Source: CIU Website / NCHOD / Cancer network Birmingham/IC Center QOF

8. References

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10. Appendix - methods

This chapter describes the methods used in this study to achieve the two objectives set out in Section 1.2.

10.1. Definitions

10.1.1. Cancers covered by this report

Cancer is a disease caused by normal cells changing so that they grow in an uncontrolled way. The uncontrolled growth causes the formation of a lump, called a tumour. If not treated, the tumour can cause problems by spreading into normal tissues nearby or by causing pressure on other body structures (*Cancer Research UK*). There are over 200 different types of cancer because there are over 200 different types of body cells. The ten most common types of cancers are investigated in this study. The International Classification of Disease (ICD-10) codes of these major cancers are shown in Table 10.1

Table 10.1 International Classification of Disease (ICD-10) codes for the cancers covered in this study

Type of Cancer	Code
All cancers	**C**
Lung cancer	**C34**
Breast cancer	**C50**
Colon cancer	**C18 – C21**
Prostate cancer	**C61**

10.1.2. Geographical boundaries of Pan Birmingham

The Pan Birmingham Cancer Network covers six <u>entire</u> PCTs: Heart of Birmingham Teaching PCT, NHS South Birmingham, NHS Birmingham East and North, Sandwell PCT, Solihull PCT and Walsall Teaching PCT. It also covers <u>part</u> of South Staffordshire PCT. In this report, the pan Birmingham area normally refers to the six PCTs as a whole (excluding the part of South Staffordshire PCT). However, a caveat is provided for any statistics that include the part of South Staffordshire PCT. Please refer to the footnotes of the figures/tables.

10.2.   **Data sources**

Five main data sources were used in this study as listed in Table 10.2

Table 10.2 Data sources used in the needs assessment

Data	Source of data	Use of data
Cancer registry data	West Midlands Cancer Intelligence Unit	cancer incidence, prevalence and survival rates
Primary care data	Quality and Outcome Framework (QOF))	cancer prevalence
Mortality data	ONS death registry	cancer mortality
Referrals data	Pan-Birmingham Cancer Network	cancer diagnosis and referrals
Emergency Admission	HES	Emergency admission

10.3.   **Data analysis**

This part describes the statistical and epidemiological techniques used in this study.

10.3.1.   **Incidence and prevalence**

In this study, the concepts of incidence and prevalence were used to show the epidemiological trends of cancers. We define **disease prevalence** in a population as the number of cases of the disease in the population during a particular period, usually a year. In prevalence measurement all cases are included, that is patients who already had the disease before the studied period (existing patients) as well as those patients who were diagnosed with the disease in the particular year (new patients). Because existing and new patients are considered, prevalence gives a good estimate of how widespread a condition is within a population over a certain period of time.

The **prevalence rate** is obtained by dividing the total number of cases of a disease (existing and new cases) in the population by the number of individuals in the population at risk of developing the disease. Simply, prevalence relates total number of cases to total population.

Prevalence can also be measured with respect to a relevant subgroup of a population like males/females, certain age groups, ethnic groups or groups living in certain parts of Birmingham

The **incidence of a disease** refers to the occurrence of new cases of a disease within a specified period of time. **The incidence rate** is the number of new cases of a certain condition in a certain period divided by the number of individuals in the population.

10.3.2.   Survival rate

People's prognosis of living with major types of cancer in the pan Birmingham area after having been diagnosed is measured in this report by one and five year survival rates. These rates present the percentage of people in a study or treatment group who are still alive one or five years after having been diagnosed with the disease; they are a good indicator of the fatality of a disease and conveys meaning about a patient's prognosis to live with the disease. Whether a type of cancer has a good or bad prognosis can be determined from its survival rate.

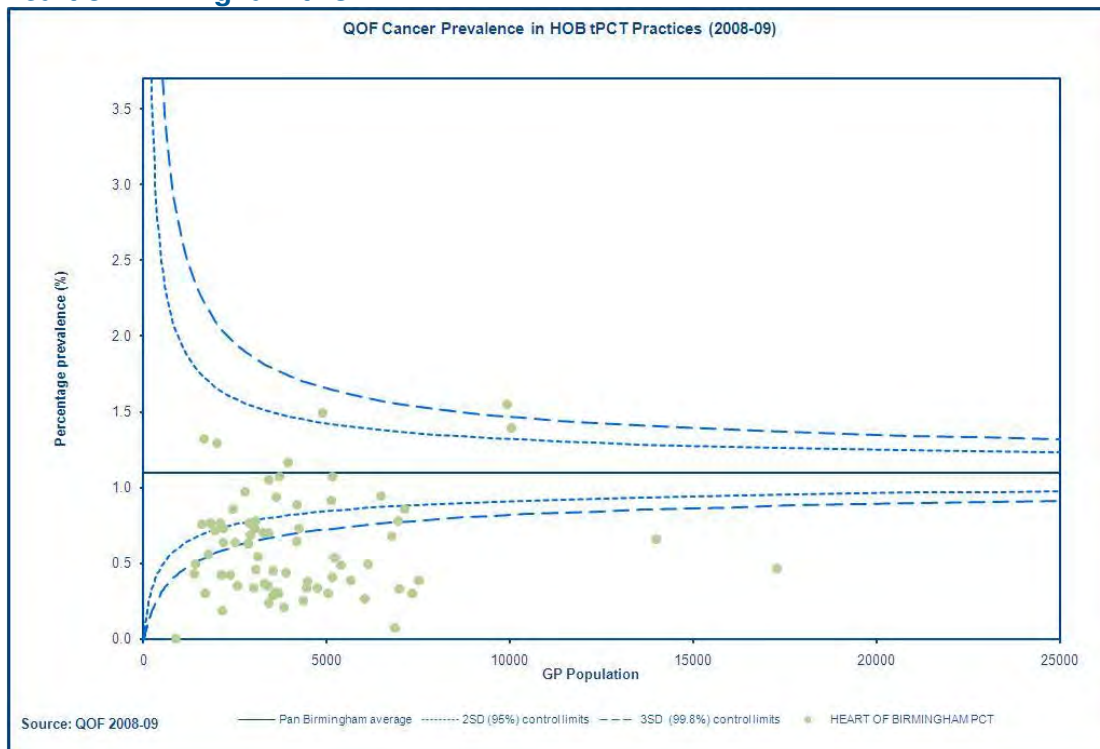### 10.3.3.   Age standardised rate

Wherever possible, crude incidence, prevalence and hospital admissions rates for Birmingham were converted to age standardised rates in order to have a better comparison with regional and national rates. **Directly age-standardised rates** (**DSR**) are calculated by applying the age-specific rates by gender, and by 5-year age groups from age 0-4, up to age 80-84 and then 85 and over, to the European Standard Population.
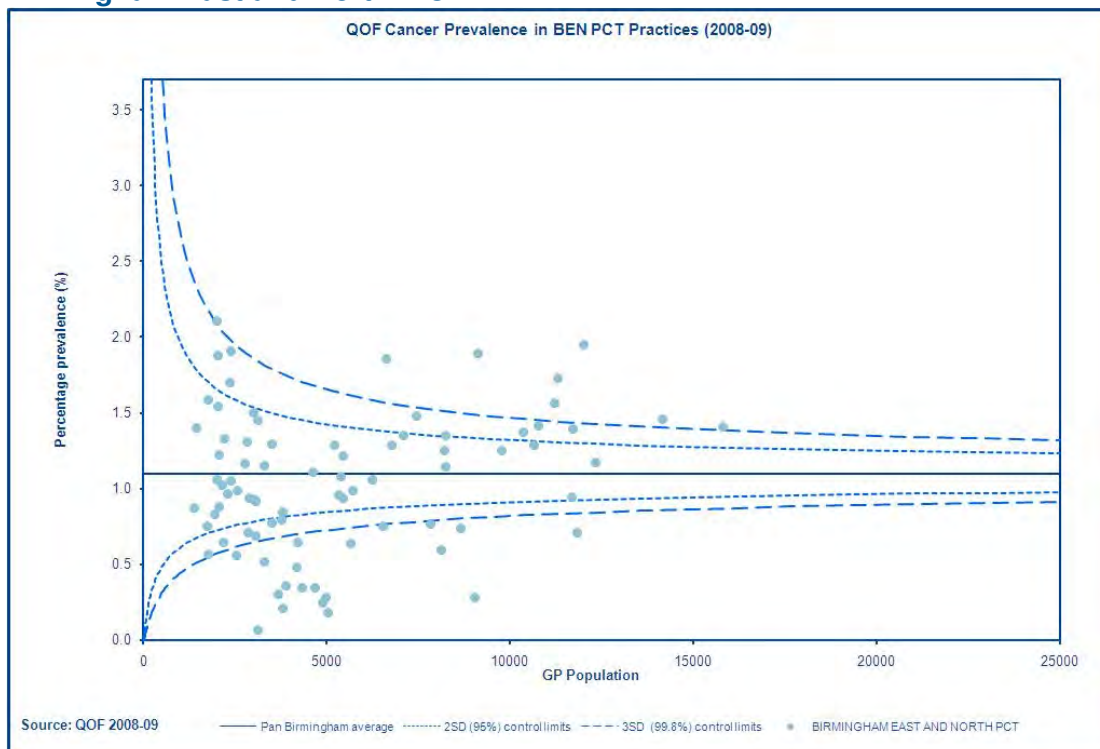
10.3.4.   Funnel Plots

Funnel plots (10) are scatter plots upon which confidence limits have been superimposed. They are useful when observations for different areas are based on varying sample sizes. Mean values are plotted on the same graph and lines indicating upper and lower control limits are added. Traditionally use ±3sigma (3σ) control limits. These are 3 standard deviations from the mean and therefore, in a stable system with no special-cause variation, should include around 99.8% of observations (the results of observing stable systems in a variety of settings indicate that using 3σ control limits is appropriate). The main difference between methods is the way that the process mean and the process standard deviation (sigma) are estimated.
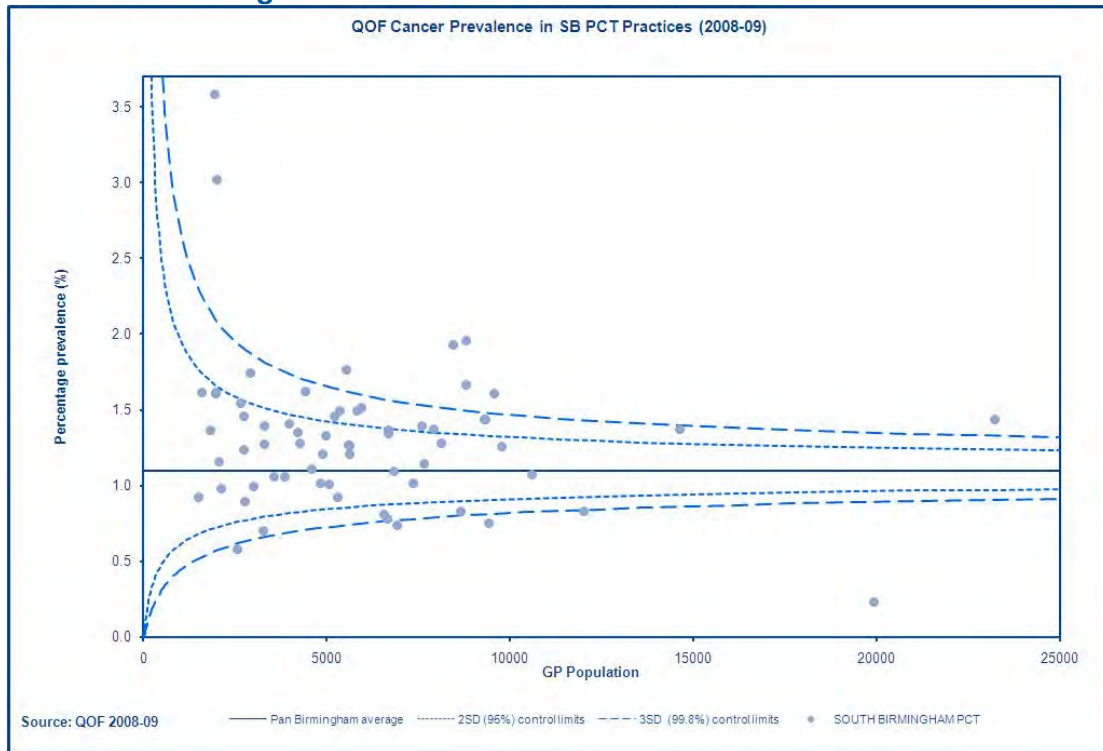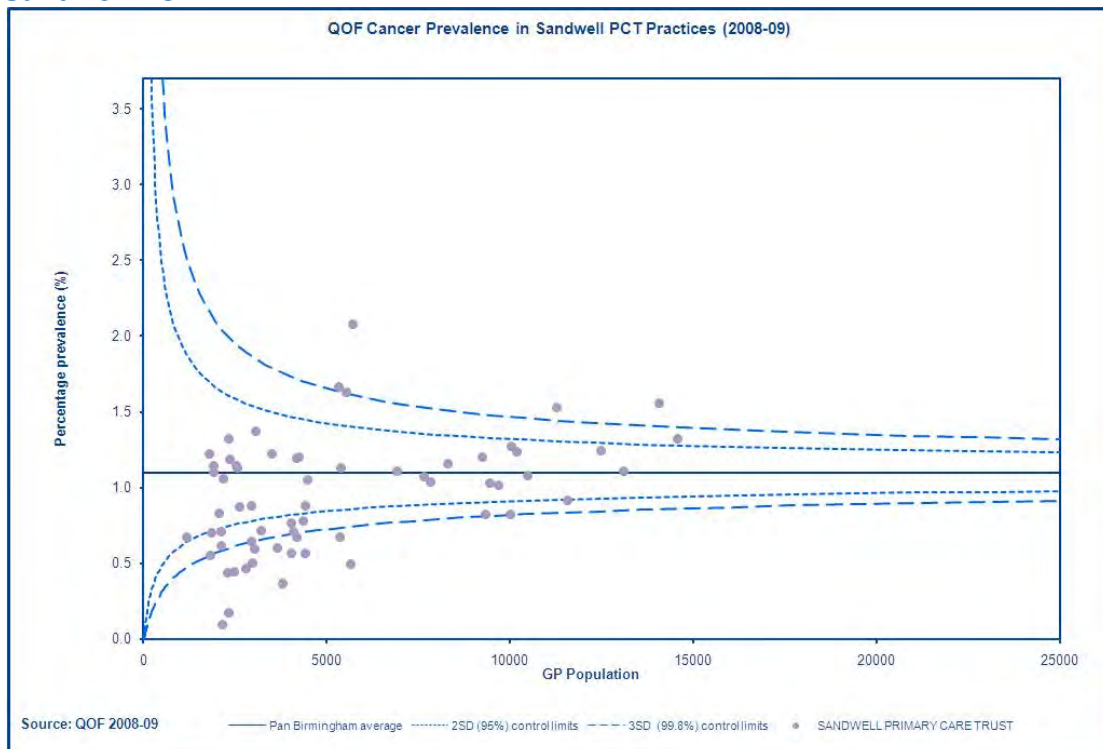
11. Appendix - QOF by PCTs

Heart of Birmingham tPCT

QOF Cancer Prevalence in HOB tPCT Practices (2008-09)

Source: QOF 2008-09 — Pan Birmingham average ·········· 2SD (95%) control limits — — — 3SD (99.8%) control limits ● HEART OF BIRMINGHAM PCT

Birmingham East and North PCT

QOF Cancer Prevalence in BEN PCT Practices (2008-09)

Source: QOF 2008-09 — Pan Birmingham average ·········· 2SD (95%) control limits — — — 3SD (99.8%) control limits ● BIRMINGHAM EAST AND NORTH PCT
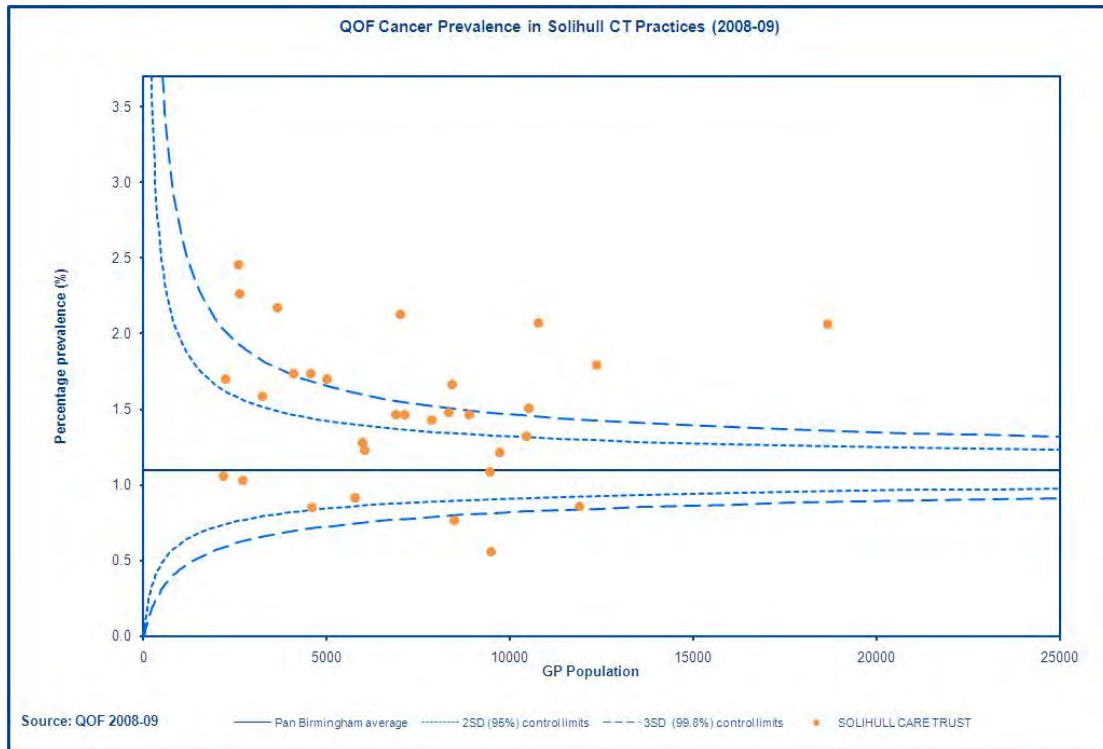
NHS South Birmingham PCT

Sandwell PCT

Solihull CT

QOF Cancer Prevalence in Solihull CT Practices (2008-09)
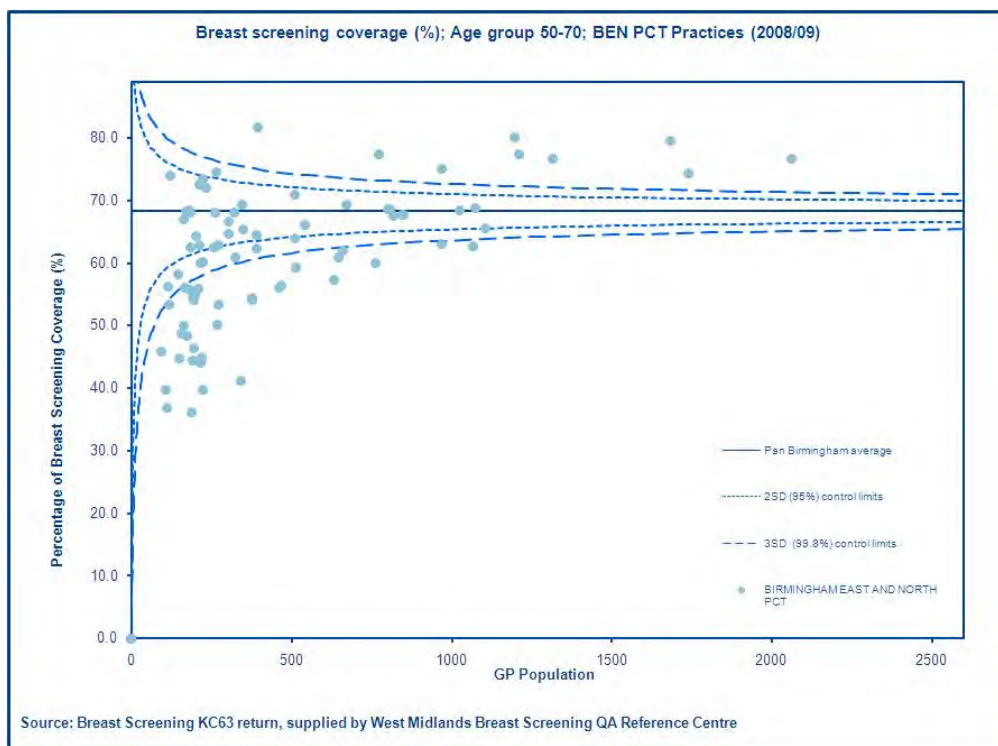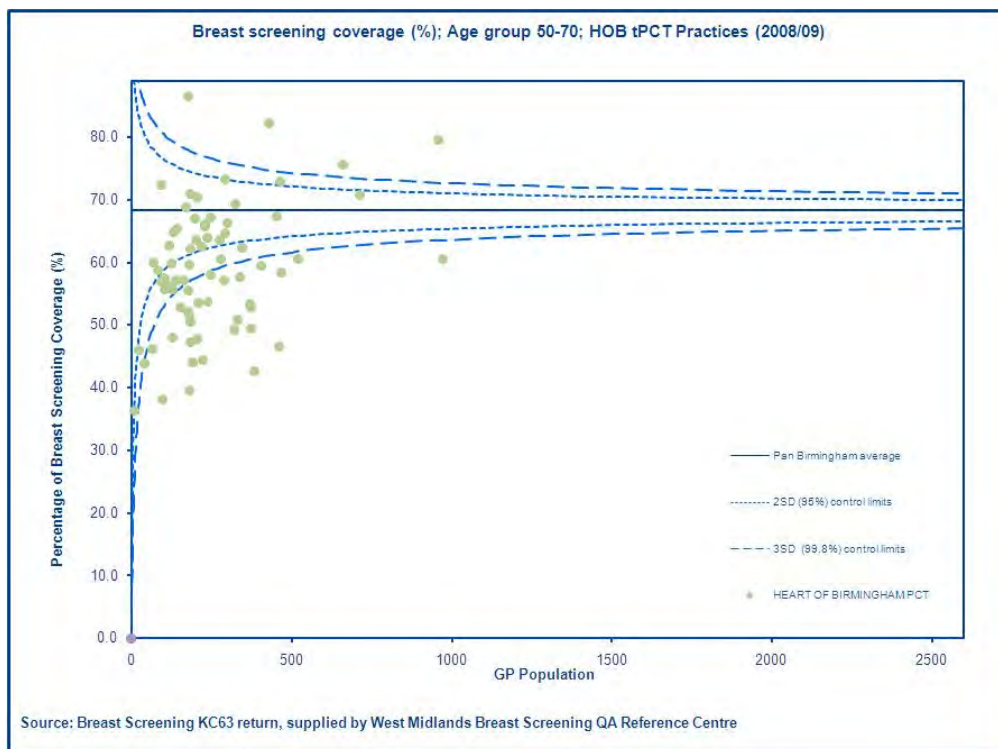
Source: QOF 2008-09 — Pan Birmingham average ········ 2SD (95%) control limits − − − 3SD (99.8%) control limits ● SOLIHULL CARE TRUST

Walsall tPCT

QOF Cancer Prevalence in Walsall tPCT Practices (2008-09)

Source: QOF 2008-09 — Pan Birmingham average ········ 2SD (95%) control limits − − − 3SD (99.8%) control limits ● WALSALL TEACHING PCT

12. **Appendix - Screening plots by PCTs**

Breast screening coverage (%); Age group 50-70; HOB tPCT Practices (2008/09)

Source: Breast Screening KC63 return, supplied by West Midlands Breast Screening QA Reference Centre

Breast screening coverage (%); Age group 50-70; BEN PCT Practices (2008/09)

Source: Breast Screening KC63 return, supplied by West Midlands Breast Screening QA Reference Centre
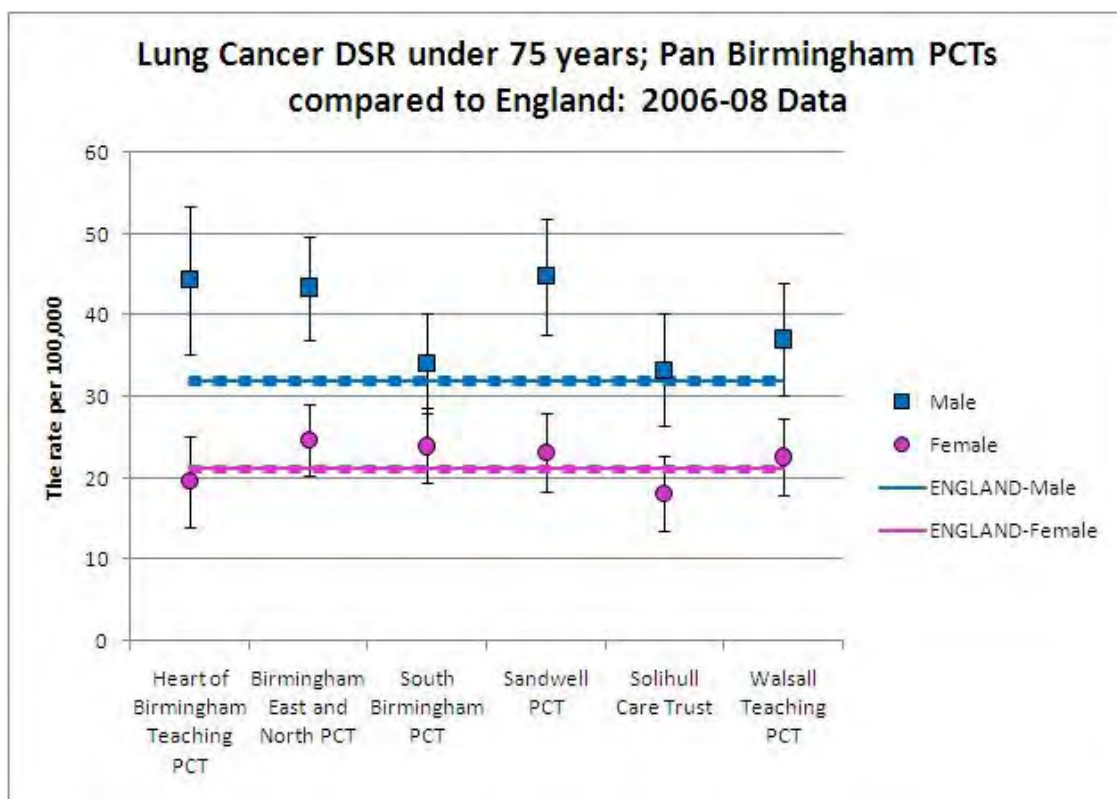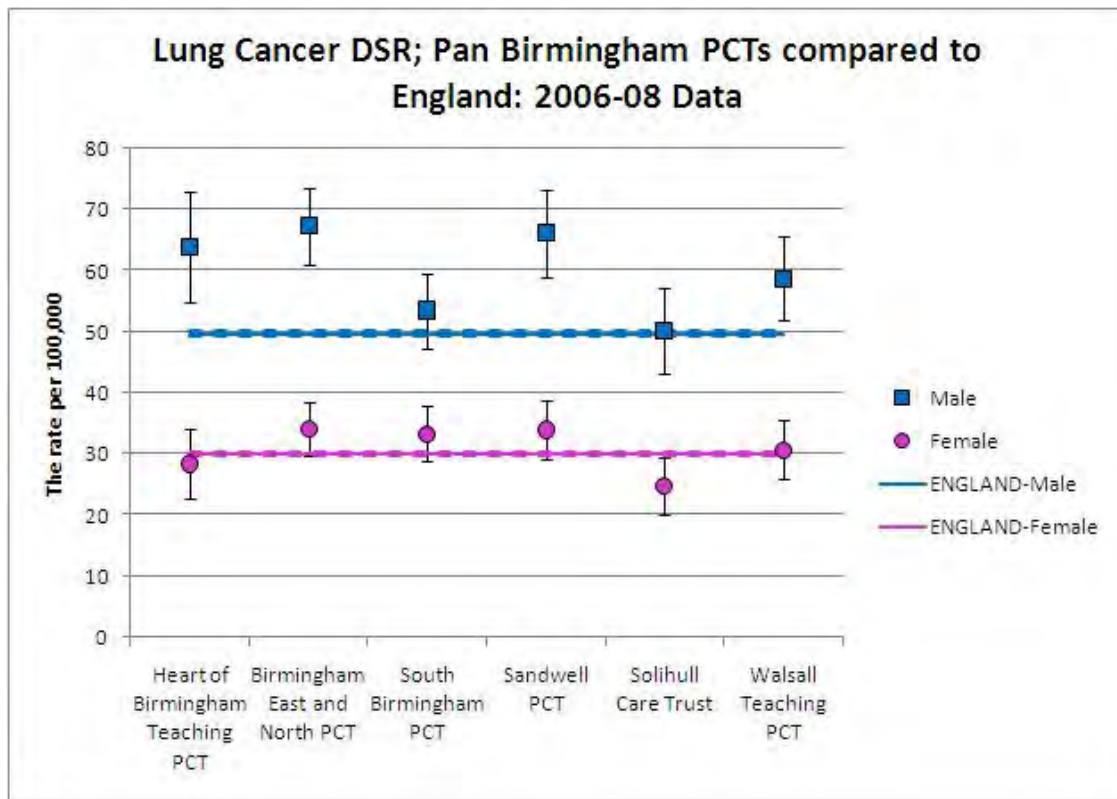
Breast screening coverage (%); Age group 50-70; NHS South Birmingham PCT Practices (2008/09)

Source: Breast Screening KC63 return, supplied by West Midlands Breast Screening QA Reference Centre

Breast screening coverage (%); Age group 50-70; Solihull CT Practices (2008/09)

Source: Breast Screening KC63 return, supplied by West Midlands Breast Screening QA Reference Centre

13. Appendix - Mortality rate by cancer site
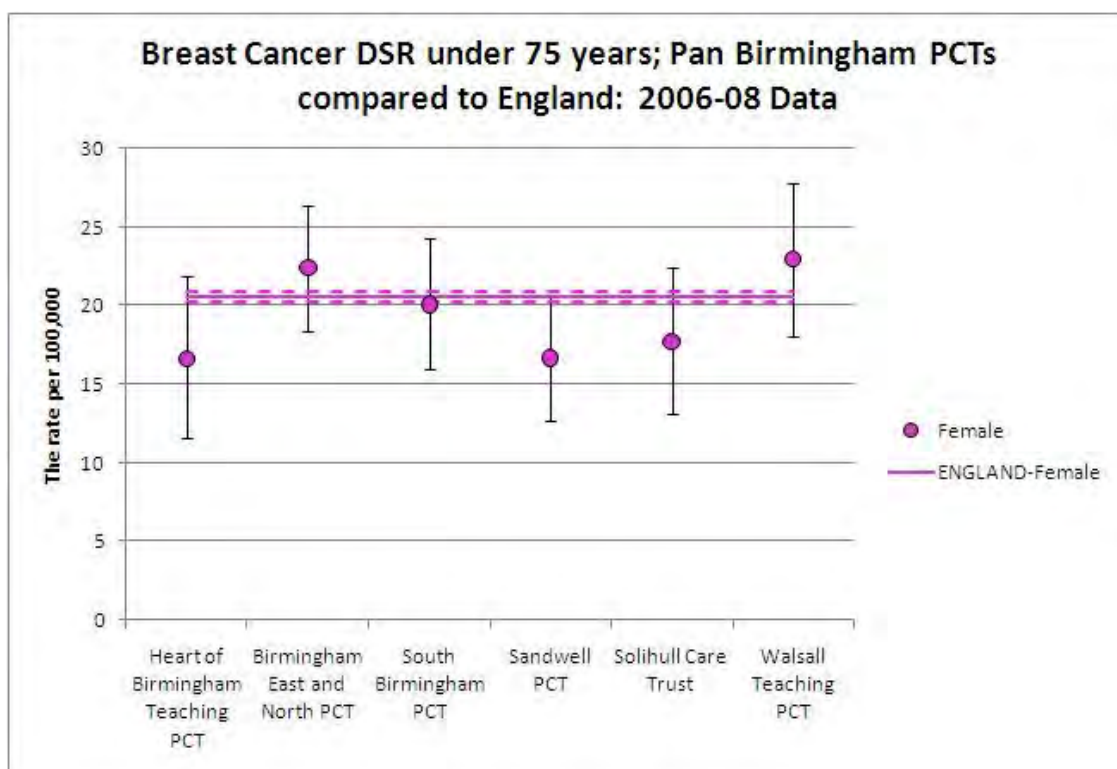

Lung Cancer DSR; Pan Birmingham PCTs compared to England: 2006-08 Data

Lung Cancer DSR under 75 years; Pan Birmingham PCTs compared to England: 2006-08 Data

Colorectal Cancer DSR; Pan Birmingham PCTs compared to England: 2006-08 Data

Colorectal Cancer DSR under 75 years; Pan Birmingham PCTs compared to England: 2006-08 Data

Breast Cancer DSR; Pan Birmingham PCTs compared to England: 2006-08 Data

Breast Cancer DSR under 75 years; Pan Birmingham PCTs compared to England: 2006-08 Data

Prostate Cancer DSR; Pan Birmingham PCTs compared to England: 2006-08 Data

Prostate Cancer DSR under 75 years; Pan Birmingham PCTs compared to England: 2006-08 Data

Table 13.1 Direct standardised mortality rate per 100,000 year 2008

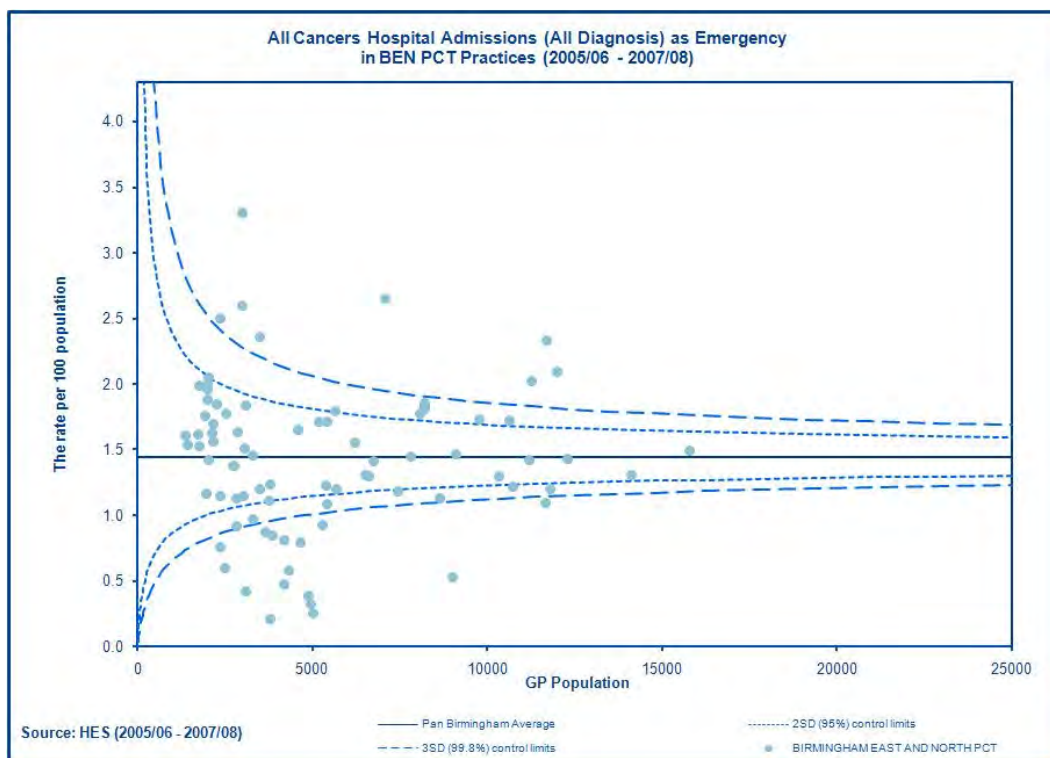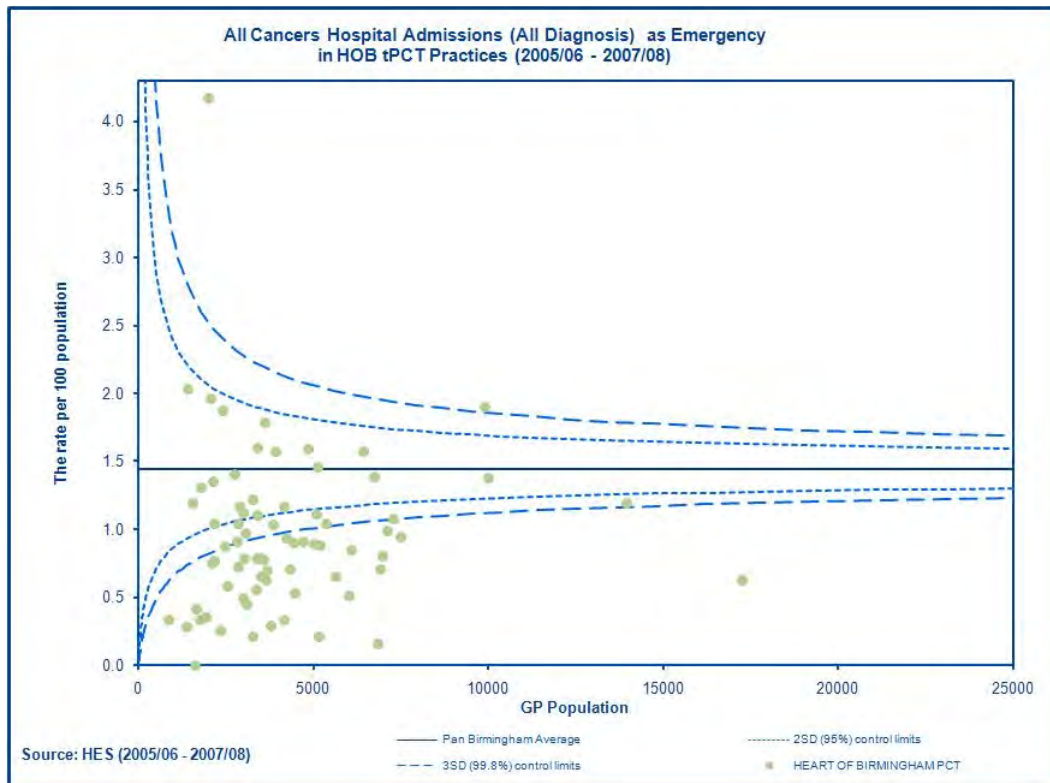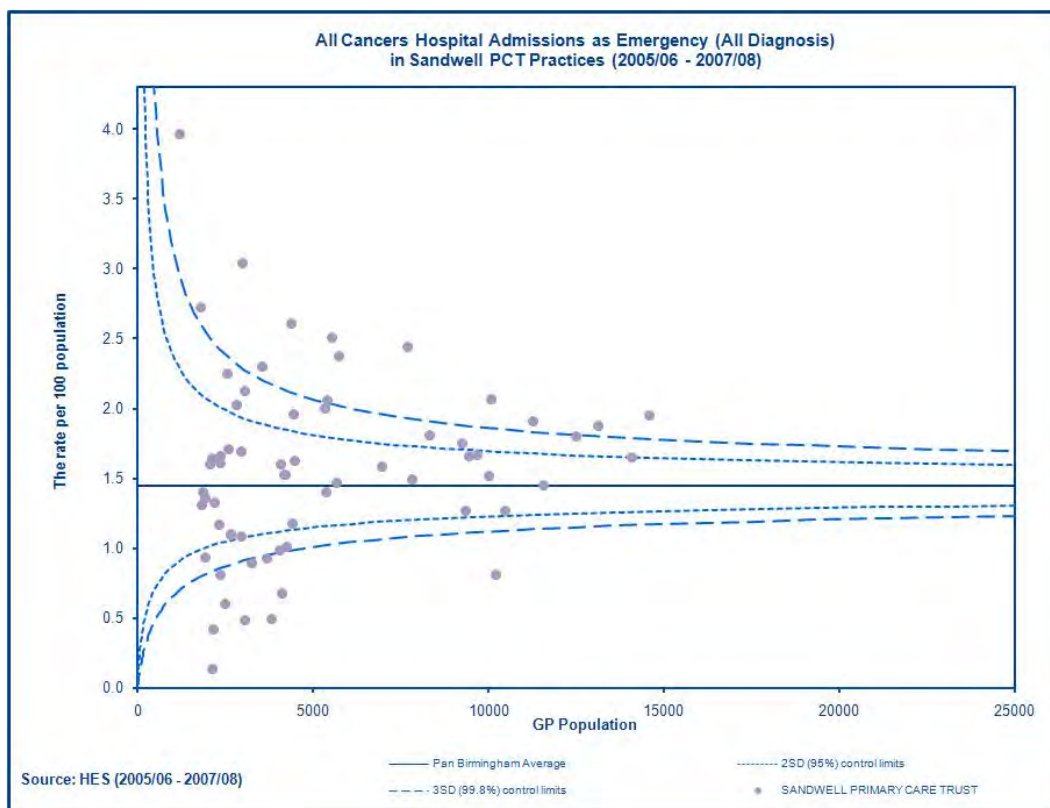|	All cancers	Lung	Colorectal	Breast	Prostate
Male / **Female**	DSR 2008	DSR 2008	DSR 2007	DSR 2008	DSR 2008
HoB tPCT	229	61	32		25
	154	24	7	26	
BEN PCT	228	64	18		20
	144	26	11	28	
SB PCT	216	56	27		19
	162	37	15	24	
Sandwell PCT	233	56	25		33
	171	37	11	28	
Solihull CT	192	43	19		20
	142	29	15	26	
Walsall tPCT	222	59	21		23
	160	36	13	24	
England	205	49	21		24
	149	30	13	26	

Data source: NCHOD

14. Appendix - Emergency admission rates using all the diagnoses of the HES dataset

All Cancers Hospital Admissions (All Diagnosis) as Emergency in HOB tPCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

All Cancers Hospital Admissions (All Diagnosis) as Emergency in BEN PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

All Cancers Hospital Admissions as Emergency (All Diagnosis) in SB PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

All Cancers Hospital Admissions as Emergency (All Diagnosis) in Sandwell PCT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

All Cancers Hospital Admissions as Emergency (All Diagnosis) in Solihull CT Practices (2005/06 - 2007/08)

Source: HES (2005/06 - 2007/08)

All Cancers Hospital Admissions as Emergency (All Diagnosis) in Walsall tPCT Practices (2005/06 - 2007/08)
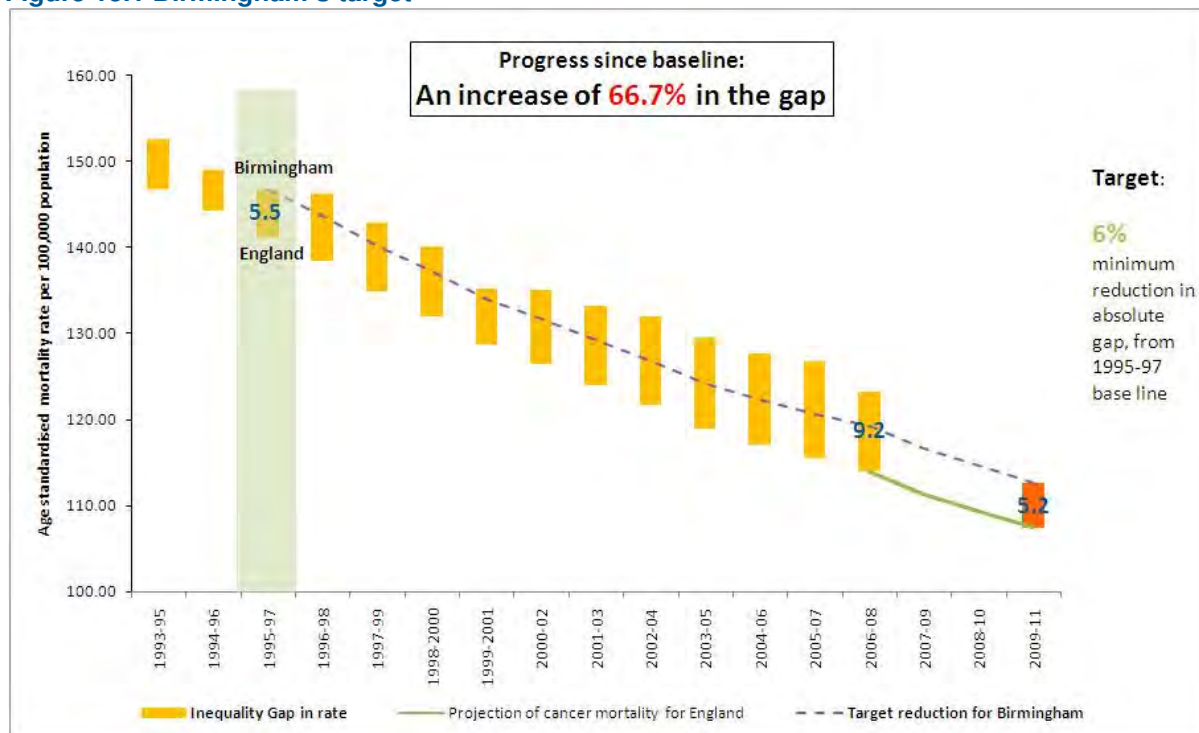
Source: HES (2005/06 - 2007/08)

15. Appendix mortality target

Birmingham at the baseline point presented a small gap, however this gap has been widening and at the present is a challenge to meet the target for 2011. This represents to reduce 4 deaths by 100,000 populations for Birmingham.

Figure 15.1 Birmingham's target

16. Appendix - US cancer survival

Relative Survival By Survival Time
By Sex
All Sites, Ages 75+, All Races,
1988-2006

Cancer sites include invasive cases only unless otherwise noted.
Survival source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
The annual survival estimates are calculated using monthly intervals.