



# **Birmingham Health Profile**

## **Tackling Health Inequalities: Life Expectancy**

**Yang Tian, Chris Stephen, Mohan Singh and Iris Fermin**

**Birmingham Public Health Information Team**

**April 2009**

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

## Contents

<b>Introduction</b> .....	<b>1</b>
<b>Key findings</b> .....	<b>2</b>
<b>Part One Life expectancy in Birmingham: local context</b> .....	<b>7</b>
1.1 Age and sex distribution.....	7
1.2 Ethnicity .....	8
1.3 Deprivation.....	8
1.4 Education.....	9
1.5 Employment.....	10
1.6 Life style .....	10
<b>Part Two Life expectancy in Birmingham: an overview</b> .....	<b>11</b>
2.1 Trend over time.....	11
2.2 Variations in gender .....	13
2.3 Variations in ethnicity .....	14
2.4 Variations in deprivation level.....	14
2.5 Infant mortality .....	16
<b>Part Three Life expectancy in Birmingham: targets and gaps</b> .....	<b>20</b>
3.1 Health inequalities targets.....	20
3.2 Current situation.....	21
3.3 Causes of gap.....	22
<b>Part Four Life expectancy in Birmingham: local variations</b> .....	<b>28</b>
4.1 Life expectancy at PCT level.....	28
4.2 Life expectancy at ward level .....	32
4.3 Ward level variations by PCT .....	37
4.3 Identification of target wards .....	41
<b>References</b> .....	<b>47</b>

### Introduction

Life expectancy is one of the main indicators for health inequalities. It has been set as the overarching work stream for tackling health inequalities in Birmingham by the Health and Wellbeing Partnership (BHWP).

This report sets out to

- Investigate the life expectancy trends in Birmingham and variations in different groups and communities;
- Compare Birmingham's performance against Vital signs and Local Area Agreement (LAA) targets on life expectancy and inequalities in it, using the data updated to year 05/07; and
- Investigate life expectancy within Birmingham at Primary Care Trust (PCT) and electoral ward level to identify possible future focus of work for the local health services.

This report informs the BHWP's production of the Health Inequalities Delivery Plans 2009/2010. The target audience of the report includes Directors of Public Health, commissioners working in the PCTs, Birmingham City Council and the third and independent sectors and PCT performance managers.

This report is written by Birmingham Public Health Information Team, Suite 203, CIBA Building, 146, Hagley Road, Birmingham B16 9NX

Author                      Yang Tian (Public Health Information Team Leader)

0121 465 2995

yang.tian@benpct.nhs.uk

Chris Stephen (Public Health Information Analyst)

Mohan Singh (Public Health Database Administrator/  
Analyst)

Iris Fermin (Head of Information and Intelligence)

Section Director        Jim McManus (Joint Director of Public Health)

Health profiles for the 11 target wards identified in this report are published elsewhere in a separate report.

### Key findings

#### *Local context*

Birmingham is disadvantaged in terms of demographical and social factors that can affect life expectancy.

- 32.7% of the population in Birmingham is of Black and Minority Ethnicity (BME) group.
- Birmingham as a whole is the 10<sup>th</sup> most deprived Local Authority in England, particularly deprived in terms of income and employment. More than half (51%) of Birmingham's population is in the most deprived quintile (i.e. 20%) Super Output Areas (SOAs) nationally.

#### *Overview*

- Male life expectancy in Birmingham has increased by 4.9%. The gap between Birmingham and England has widened by 32% (0.51 year) from 91/93 to 05/07.
- Female life expectancy in Birmingham has increased by 3.6%. The gap between Birmingham and England has narrowed by 10% (0.11year) from 91/93 to 05/07.
- The gap between male and female life expectancy has narrowed by 12% from 91/93 to 05/07. However, the reduction is smaller than that in England (23%).
- The gap between the most deprived quintile SOAs and Birmingham as a whole has widened by 0.38 year for males (9.8%) but narrowed by 0.61 year (21.0%) for females, from 95/97 to 05/07.
- Infant mortality rate (per 1,000 births) has decreased by 4.6% (0.4) from 99/01 to 05/07. The gap between the most deprived quintile SOAs and Birmingham as a whole has narrowed by 46.7%.

#### *Targets and gaps*

- According to the Public Service Agreement (PSA) target, life expectancy in Birmingham needs to reach 77.56 years for males and 81.70 years for females, by 2010.
- Birmingham is 0.62 year under the national trajectory for males and 0.01 year under the trajectory for females, in 05/07.
- According to the revised Local Area Agreement (LAA) target, male life expectancy needs to reach 76.83 years by 2010. Birmingham is 0.18 year above the trajectory in 05/07.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

- Leading conditions that cause the gap between Birmingham and England are: circulatory diseases (34% for males, 25% for females), death under 28 days (14% for males, 18% for females), all cancers (13% for males and 12% for females).

### *Local variations*

- Male life expectancy has increased in all three Primary Care Trusts (PCTs) in Birmingham from 95/97 to 05/07. South PCT is the highest (76.32 years) followed by Birmingham East and North (BEN) PCT (76.01 years) and Heart of Birmingham (HOB) teaching PCT is the lowest (73.65 years), in 05/07.
  - South PCT has increased by 3.63% (2.67 years). The increase is bigger than Birmingham but smaller than England.
  - BEN PCT has increased by 3.46% (2.54 years). The increase is bigger than Birmingham but smaller than England.
  - HOB tPCT has increased by 3.39% (2.41 years). The increase is smaller than both Birmingham and England.
- Female life expectancy has increased in all three PCTs' in Birmingham from 95/97 to 05/07. South PCT is the highest (81.62 years) followed by BEN PCT (80.44 years) and HOB tPCT is the lowest (80.13 years), in 05/07
  - South PCT has increased by 3.52% (2.78 years). The increase is bigger than both Birmingham and England.
  - BEN PCT has increased by 2.51% (1.97 years). The increase is smaller than both Birmingham and England.
  - HOB tPCT has increased by 3.31% (2.57 years). The increase is bigger than both Birmingham and England.
- Local variations in life expectancy are significantly associated with deprivation.

### *Identification of target wards*

- 11 wards have been identified as target wards based on six criteria (life expectancy for males and females (05/07), mortality rates for cancers and circulatory diseases (in under 75s), Infant mortality rate (05/07) and Index of Multiple Deprivation (IMD) score (07).

## List of Tables

Table 1.1	Ethnicity groups for Birmingham, West Midlands and England, 2006.....	8
Table 1.2	Key figures for Education, Skills and Training in Birmingham, West Midlands and England, Sep 2006 – Aug 2007 .....	9
Table 1.3	Key figures for Work Deprivation in Birmingham, West Midlands and England, 2006 - 2007.....	10
Table 1.4	Key figures for life style in Birmingham, West Midlands and England, 2003-2005 and 2007-2008.....	10
Table 3.1	Directly Standardized Mortality Rates (DSRs) per 100,000 population for selected conditions by sex, Birmingham, 2005-2007 .....	23
Table 3.2	Directly Standardized Mortality Rates (DSRs) per 100,000 population for selected conditions by sex, 2005-2007: difference between Birmingham and England .....	24
Table 3.3	Diseases accountable for the gap in life expectancy between Birmingham and England, 2003-2005.....	25
Table 3.4	Age groups accountable for the gap in life expectancy between Birmingham and England, 2003-2005.....	26
Table 4.1	Correlation between life expectancy (05/07) and IMD score (2007) at ward level.....	36
Table 4.2	Male Life expectancy in 95/97 and 05/07 by PCT and ward.....	38
Table 4.3	Female Life expectancy in 95/97 and 05/07 by PCT and ward in Birmingham.....	40
Table 4.4	Wards against the six life expectancy factors.....	42
Table 4.5	Target wards vs. non-target wards against the six factors.....	43
Table 4.6	All-age all-cause mortality (AAACM) rates (2005 - 2007) by ward.....	45
Table 4.7	Target wards vs. non-target wards against AAACM 2005-2007 .....	46

## List of Figures

Figure 1.1 Population by age group and gender, Birmingham and England, 2007.....	7
Figure 2.1 Male life expectancy for Birmingham, West Midlands and England, 1991/93 – 2005/07.....	11
Figure 2.2 Female life expectancy for Birmingham, West Midlands and England, 1991/93 – 2005/07.....	12
Figure 2.3 Life expectancy by gender - 3 years rolling average, Birmingham and England, 1991/93 – 2005/07.....	13
Figure 2.4 Male life expectancy in Birmingham, England and the most deprived quintile in Birmingham, 1995/97-2005/07.....	14
Figure 2.5 Female life expectancy in Birmingham, England and the most deprived quintile SOAs in Birmingham, 1995/97-2005/07.....	15
Figure 2.6 Infant mortality rate per 1,000 birth in Birmingham, West Midlands, England and the most deprived quintile SOAs in Birmingham, 1999/01-2005/07.....	16
Figure 2.7 Perinatal mortality rate per 1,000 birth in Birmingham, West Midlands, England and the most deprived quintile SOAs in Birmingham, 1999/01-2005/07.....	18
Figure 3.1 Male life expectancy – trajectory and current situation, 1995/97-2005/07.....	21
Figure 3.2 Female life expectancy – trajectory and current situation, 1995/97-2005/07.....	22
Figure 3.3 Years of life lost for males by selected conditions, Birmingham, 2005-2007.....	27
Figure 3.4 Years of life lost for females by selected conditions, Birmingham, 2005-2007.....	27
Figure 4.1 Male life expectancy trend by PCT, 1995/97 – 2005/07.....	28
Figure 4.2 Female life expectancy trend by PCT, 1995/97 – 2005/07.....	30
Figure 4.3 Male life expectancy by PCT and ward, 2005-2007.....	32
Figure 4.4 Female life expectancy by PCT and ward, 2005-2007.....	33
Figure 4.5 Map - Male life expectancy by ward and PCT in Birmingham, 2005-2007.....	34
Figure 4.6 Map - Female life expectancy by ward and PCT in Birmingham, 2005-2007.....	35
Figure 4.7 Ward level male life expectancy 05/07 and the relative change of it from 95/97 to 05/07 by PCT.....	37
Figure 4.8 Ward level female life expectancy 05/07 and the relative change of it from 95/97 to 05/07 by PCT.....	39

## Glossary

<b>Acronym</b>	<b>Definition</b>
AAACM	All-Age All-Cause Mortality
BCC	Birmingham City Council
BEN	Birmingham East and North
BHWP	Birmingham Health and Wellbeing Partnership
BME	Black and Minority Ethnicity
CHD	Coronary Heart Disease
CI	Confidence Interval
DH	Department of Health
DSR	Directly Standardised Rate
HOB	Heart of Birmingham
ICD	International Classification of Diseases
IMD	Indices of Multiple Deprivation
IMR	Infant Mortality Rate
LAA	Local Area Agreement
LE	Life Expectancy
NHS	National Health Service
NI	National Indicator
ONS	Office of National Statistics
PCT	Primary Care Trust
PHIT	Public Health Information Team
PNMR	Parinatal Mortality Rate
PSA	Public Service Agreement
SB	South Birmingham
SHA	Strategic Health Authority
SOA	Super Output Area
VS	Vital Signs
YYL	Years of Life Lost

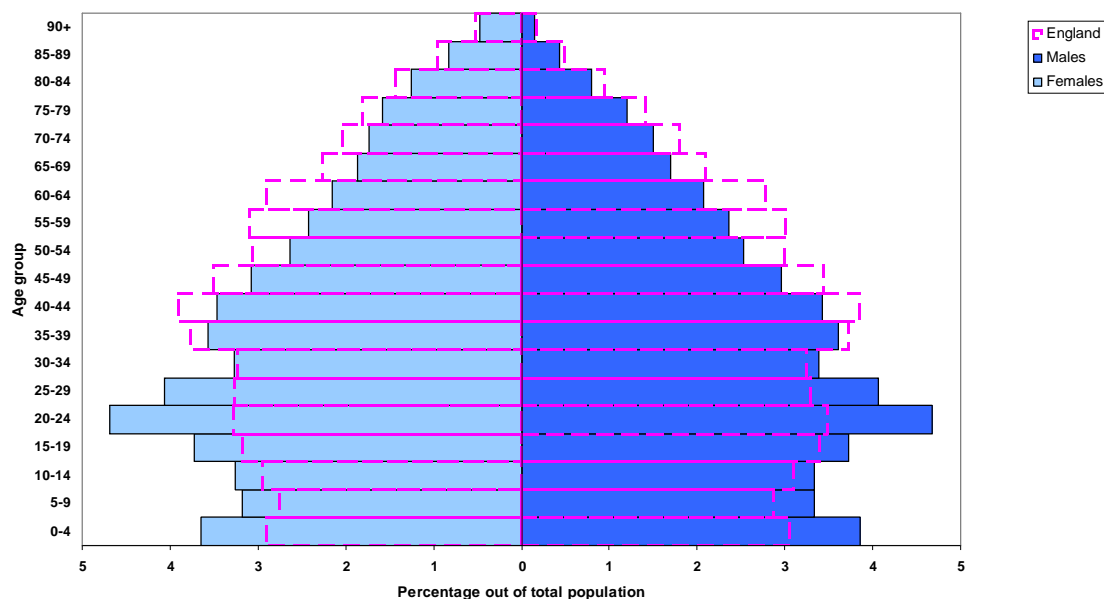
## Part One Life expectancy in Birmingham: local context

Health inequalities are driven by inequalities in society. They are affected by many different factors, such as lifestyle, material wealth, educational attainment, job security, housing conditions, and the health service<sup>1</sup>.

This part describes these factors in Birmingham to provide a local context for life expectancy inequalities. Comparisons are made with West Midlands and England.

### 1.1 Age and sex distribution

According to the mid-year population estimates from the Office of National Statistics (ONS) in 2007, Birmingham has a population of just over a million (1,010,200). Approximately 49% (496,200) are male and 51% are female (514,000). The population pyramid (Figure 1.1) below shows the age and sex distributions.



Data source: ONS 2007 mid year population estimates

**Figure 1.1 Population by age group and gender, Birmingham and England, 2007**

Figure 1.1 illustrates:

- Children under school leaving age (i.e. age 0 - 19) represent 28.1% (283,600) of the Birmingham population. Persons of retirement age (age 65+) account for 13.5% (136,700).
- Compared with the age structure of England, Birmingham has a larger proportion of children and young people, particularly in the 20-24 age band; and a smaller proportion of persons of older age groups.

## 1.2 Ethnicity

Table 1.1 shows the ethnic distribution in the Birmingham population, compared with West Midlands and England.

- About a third (32.7%) of the population in Birmingham is of non-white ethnicity (i.e. Black and Minority Ethnicity (BME) group). A further break down shows that within the BME group, Pakistanis represents 11%, Indian 6% and Black Caribbean 4.5%.
- The proportion of BME in Birmingham (32.7%) is approx 1.5 times higher than West Midlands (13.5%) and approx 3 times the average across England (11.3%).

Ethnicity groups	Birmingham		West Midlands		England	
	%	N*	%	N*	%	N*
<b>White</b>	<b>67.3</b>	667.0	<b>86.5</b>	5,366.7	<b>88.7</b>	45,018.1
<b>Asian or Asian British</b>	<b>20.7</b>	207.9	<b>8.2</b>	441.2	<b>5.5</b>	2,786.6
<b>Black or Black British</b>	<b>6.7</b>	67.0	<b>2.4</b>	130.9	<b>2.8</b>	1,403.0
<b>Mixed</b>	<b>3.2</b>	31.8	<b>1.7</b>	91.6	<b>1.6</b>	829.5
<b>Chinese or other</b>	<b>2.3</b>	22.9	<b>1.1</b>	59.6	<b>1.4</b>	725.7
<b>Total</b>	<b>100</b>	1,106.5	<b>100</b>	5,366.7	<b>100</b>	50,762.9

\*Thousand

Data source: ONS population estimates by ethnic group mid 2006

## 1.3 Deprivation

According to Index of Multiple Deprivations (IMD) 2007 published by ONS, Birmingham is one of the most deprived Local Authorities nationally.

- Birmingham is ranked as the 10<sup>th</sup> most deprived Local Authority in England (out of 354 Local Authorities), in terms of overall IMD score (i.e. the higher the score the more deprived).
- Birmingham is also ranked as THE MOST deprived Local Authority nationally, in terms of income and employment.
- More than half (51%; 568,576) of Birmingham's population is in the most deprived quintile (i.e. 20%) nationally.

## 1.4 Education

Table 1.2 shows the key figures for education, skills and training in Birmingham in the school year 06/07, compared with West Midlands and England.

- The proportion of pupils achieving 5 or more GCSE's (i.e. Key Stage 4) at A\*-C (60.7%) in Birmingham is slightly higher than that of West Midlands (59.4%) and England (60.4%).
- Birmingham pupils' achievement at Key Stages 1, 2 and 3 is consistently under the regional and national average, across all subjects. In particular, KS 3 Science (8 % points under England), KS 3 Maths (6 % points under England), KS 1 Reading (5 % points under England) and KS 1 Writing (6 % points under England).
- Birmingham also has higher school absence rate than both the regional and national average (23% more in unauthorized absence than England).

**Table 1.2 Key figures for Education, Skills and Training in Birmingham, West Midlands and England, Sep 2006 – Aug 2007**

		<b>Birmingham</b>	<b>West Midlands</b>	<b>England</b>
<b>16-18 Year old students entered for Level 3 qualifications</b>	N	5,263	29,523	282,120
<b>Average level 3 QCA point Score</b>	Score	679.2	697.9	712.1
<b>All pupils at the end of KS4 (GCSE)</b>	N	12,919	68,136	666,247
<b>KS 4 achieving 5+ A*-C</b>	%	<b>60.7</b>	<b>59.4</b>	<b>60.4</b>
<b>Pupils Eligible for KS 3</b>	N	13,017	65,431	599,108
<b>KS3 English A*-C</b>	%	<b>70</b>	<b>73</b>	<b>74</b>
<b>KS3 Maths A*-C</b>	%	<b>70</b>	<b>74</b>	<b>76</b>
<b>KS3 Science A*-C</b>	%	<b>65</b>	<b>71</b>	<b>73</b>
<b>Pupils Eligible for KS2</b>	N	13,519	64,609	569,006
<b>KS2 English A* - C</b>	%	<b>76</b>	<b>79</b>	<b>80</b>
<b>KS2 Maths A* - C</b>	%	<b>73</b>	<b>76</b>	<b>77</b>
<b>KS2 Science A* - C</b>	%	<b>84</b>	<b>87</b>	<b>88</b>
<b>Pupils Eligible for KS1</b>	N	13,138	60,947	547,984
<b>KS1 Reading A* - C</b>	%	<b>79</b>	<b>83</b>	<b>84</b>
<b>KS1 Writing A* - C</b>	%	<b>74</b>	<b>80</b>	<b>80</b>
<b>KS 1 Maths A* - C</b>	%	<b>86</b>	<b>89</b>	<b>90</b>
<b>Overall absence in all schools</b>	%	<b>6.77</b>	<b>6.56</b>	<b>6.49</b>
<b>Unauthorised absence in all schools</b>	%	<b>1.23</b>	<b>0.95</b>	<b>1</b>

Data source: ONS, Neighbourhood Statistics

## 1.5 Employment

Table 1.3 shows key figures for work deprivation in Birmingham, West Midlands and England. In general, Birmingham is more deprived in terms of employment. The unemployment rate in Birmingham is nearly two thirds higher (63.6%) than that in England. The proportion of job seekers in Birmingham is three times as that in England.

**Table 1.3 Key figures for Work Deprivation in Birmingham, West Midlands and England, 2006 - 2007**

	Birmingham	West Midlands	England
<b>Economic Activity Rate (Apr 06 – Mar 07)</b>	68.9%	77.3%	78.6%
<b>Employment Rate (Apr 06 – Mar 07)</b>	62.2%	73%	74.3%
<b>Unemployment Rate (Apr 06 – Mar 07)</b>	9%	5.6%	5.5%
<b>People of working age claiming a key benefit (Aug 06)</b>	22%	16%	14%
<b>Job seekers (Aug 06)</b>	6%	3%	2%
<b>Incapacity benefits (Aug 06)</b>	9%	7%	7%

Data source: ONS, Neighbourhood Statistics

## 1.6 Life style

Table 1.4 provides a summary of life style indicators in Birmingham, in comparison with West Midlands and England. The data presented are from two national surveys: Healthy Survey for England by the NHS Information Centre and Active People Survey by Sport England.

- In terms of proportion of people who smoke, binge drink and are obese, Birmingham is not much different from the national average (i.e. difference within 1 percentage point).
- Compared with the national average, smaller proportion of people living in Birmingham eat healthily (1.2 percentage points lower) and physically active (4.4 percentage points lower).

**Table 1.4 Key figures for life style in Birmingham, West Midlands and England, 2003-2005 and 2007-2008**

	Year	Birmingham	West Midlands	England
<b>Adults who smoke</b>	2003/5	24.9%	24.0%	24.1%
<b>Binge drinking adults*</b>	2003/5	17.8%	17.9%	18.0%
<b>Healthy eating adults**</b>	2003/5	25.1%	25.1%	26.3%
<b>Physically active adults***</b>	2007/8	16.9%	19.1%	21.3%
<b>Obese adults****</b>	2003/5	23.4%	26.5%	23.6%

\* Binge drinking: men were defined as having indulged in binge drinking if they had consumed 8 or more units of alcohol on the heaviest drinking day in the previous seven days; for women the cut-off was 6 or more units of alcohol.

\*\* Healthy eating: five or more portions of fruit and vegetables on the previous day

\*\*\* Physically active: 30 minutes of moderate intensity sport and active recreation on at least three days a week basis.

\*\*\*\* Obese: BMI > 30

Data source: Physically active adults: Active People Survey, Sport England

All other indicators: Synthetic estimates of healthy life styles, NHS Information Centre

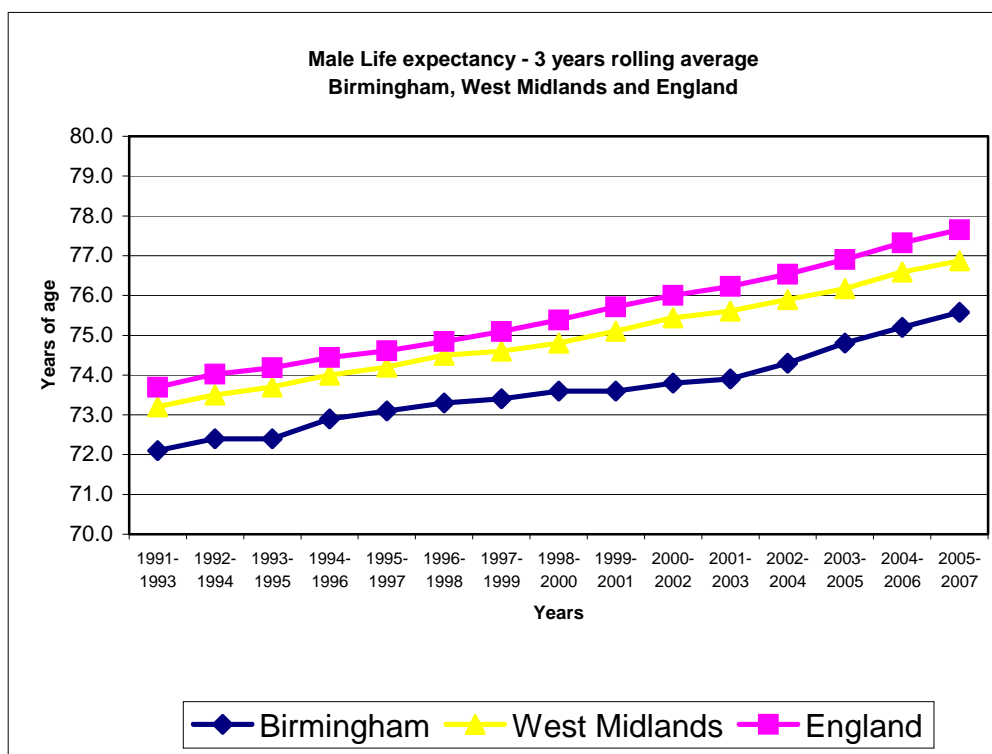
## Part Two Life expectancy in Birmingham: an overview

Life expectancy at birth for a particular area and for a particular time period is an estimate of the average number of years a new born baby would survive if he or she experienced that area's age-specific mortality rates for that time period throughout his or her life<sup>2</sup>. The figure reflects mortality amongst those living in the area in the particular time period, rather than mortality amongst those born in the area. It is not therefore the number of years a baby born in the area in the time period could actually expect to live, both because the death rates of the area are likely to change in the future and because many of those born in the area will live elsewhere for at least some part of their lives.

This part gives an overview of life expectancy at birth in Birmingham, in terms of trend and variations in different groups and communities.

### 2.1 Trend over time

Figure 2.1 shows trend of male expectancy in Birmingham from 1991 to 2007 on a 3-year basis, in comparison with West Midlands and England.

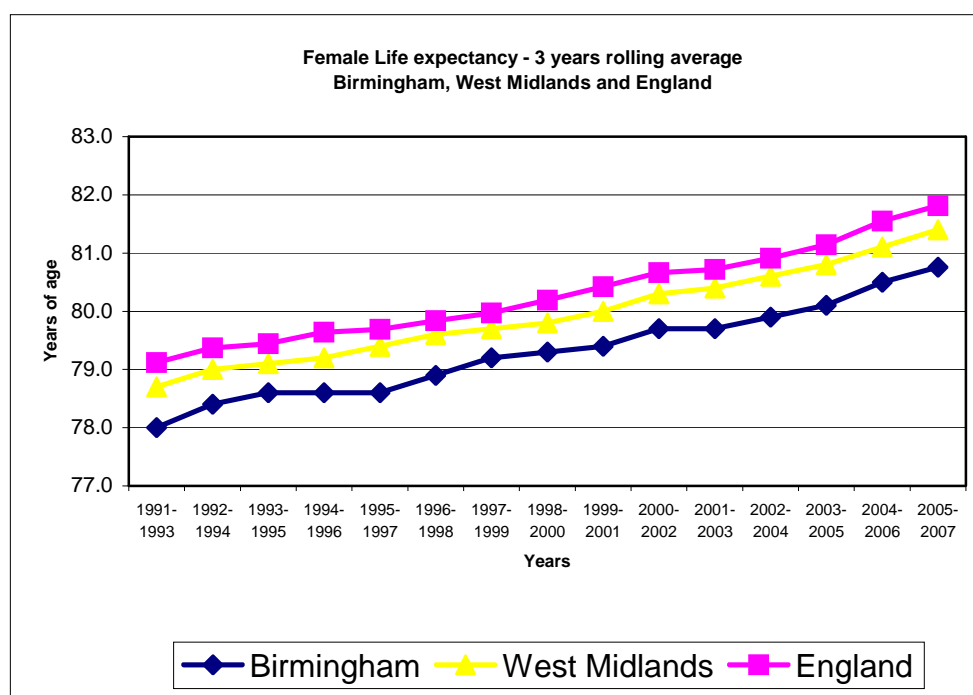


Data source: ONS

**Figure 2.1 Male life expectancy for Birmingham, West Midlands and England, 1991/93 – 2005/07**

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Figure 2.2 shows the trend of female expectancy in Birmingham from 1991 to 2007 on a 3-year basis, in comparison with West Midlands and England.



Data source: ONS

**Figure 2.2 Female life expectancy for Birmingham, West Midlands and England, 1991/93 – 2005/07**

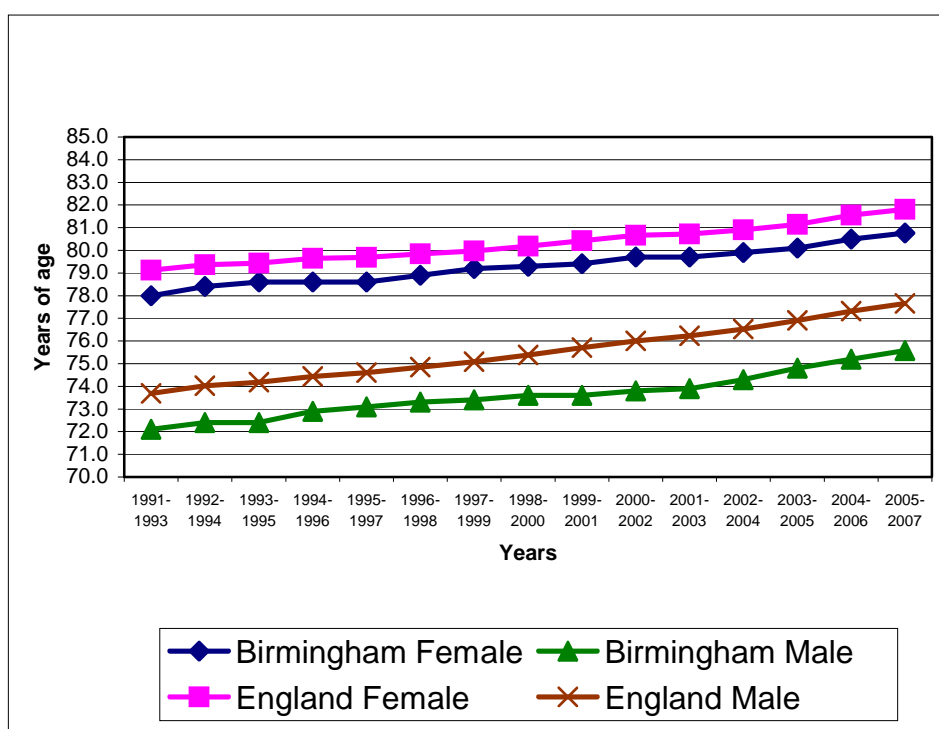
As illustrated in Figure 2.1 and Figure 2.2, life expectancy for both males and females in Birmingham has increased over the period shown. Male life expectancy has increased faster than female life expectancy. The life expectancy in Birmingham is lower than regional and national average. The gap between Birmingham and England has narrowed for females and widened for males.

- Male life expectancy in Birmingham has increased by 4.9% (3.5 years, from 72.1 years to 75.6 years).
- The gap of male life expectancy between Birmingham and England has widened by 0.51 year (i.e. 6 months) from 1.59 years to 2.1 years, which means an increase of 32%.
- Female life expectancy in Birmingham has increased by 3.6% (2.8 years, from 78.0 years to 80.8 years).
- The gap of female life expectancy between Birmingham and England has narrowed by 10% (0.11 year (i.e. 40 days)'s gap, from 1.12 years to 1.01 years).

## 2.2 Variations in gender

Figure 2.3 shows life expectancy in Birmingham by gender, from 1991 to 2007, on a 3-year basis, in comparison with England. It shows that the variation in gender has narrowed in Birmingham. However, the gap has narrowed more nationally.

- Female life expectancy is consistently higher than male life expectancy in Birmingham.
- The gap between male and female life expectancies in Birmingham has narrowed from 5.9 years (Female 78 years; male 72.1 years) in the years 91/93 to 5.2 years (Female 80.8 years, male 75.6 years) in the years 05/07, which is a reduction of 12%.
- During the same period, the gap between male and female life expectancy in England has narrowed from 5.43 years (Female 79.12 years, male 73.69 years) to 4.16 years (Female 81.81 years; male 77.65 years), which is a reduction of 23%.



Data source: ONS

**Figure 2.3** Life expectancy by gender - 3 years rolling average, Birmingham and England, 1991/93 – 2005/07

### 2.3 Variations in ethnicity

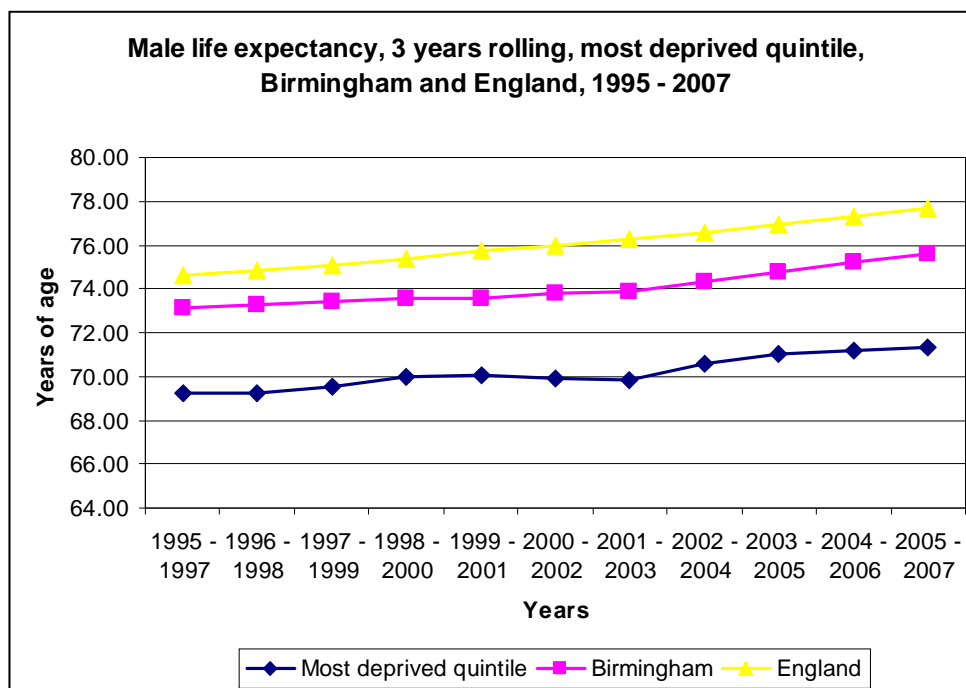
As ethnicity is not routinely collected for death registrations in England, no data is available to determine ethnic variations in life expectancy, either nationally or locally. Nevertheless large-scale surveys like the Health Survey for England show that BME groups (i.e. non-White) as a whole are more likely to report ill-health, and the ill-health among BME people starts at a younger age than in the White British<sup>3</sup>.

A study conducted by Lancashire County Council<sup>4</sup> showed that life expectancy in Black and Minority Ethnicity (BME) groups was 2.2 years lower than people from White ethnicity group. Considering the large proportion of BME population in Birmingham (32.7%, see Section 1.2 for details), the inequality in BME groups can largely affect the overall life expectancy in Birmingham.

### 2.4 Variations in deprivation level

Life expectancy in the most deprived quintile Super Output Areas (SOAs) in Birmingham was calculated (based on the 2007 IMD Score for Lower Super Output Areas) and comparisons were made with Birmingham and England.

Figure 2.4 shows male life expectancy trend for the most deprived quintile SOAs in Birmingham from 95/97 to 05/07, in comparison with Birmingham as a whole and England.



Data source: Most deprived quintile – PHIT; Birmingham and England – ONS

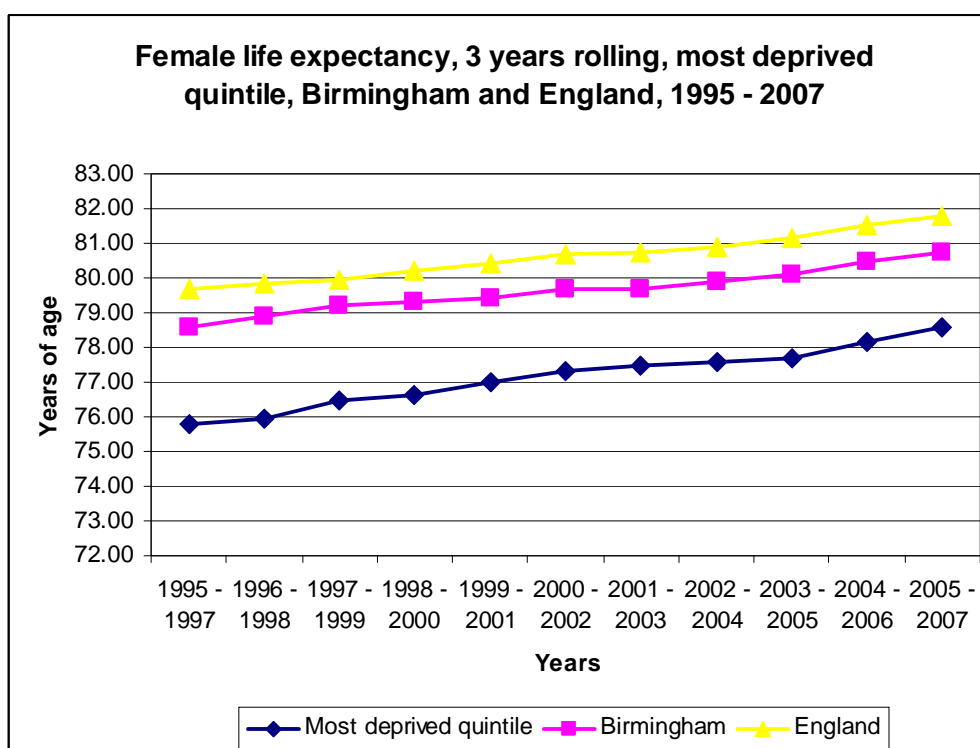
**Figure 2.4 Male life expectancy in Birmingham, England and the most deprived quintile in Birmingham, 1995/97-2005/07**

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Figure 2.4 shows that male life expectancy in the most deprived quintile SOAs is lower than Birmingham and England.

- Male life expectancy for the most deprived quintile in Birmingham has increased by 3.02% (2.09 years, from 69.25 years to 71.34 years) over the period of time.
- The gap between the most deprived quintile and Birmingham is 4.23 years in 05/07. It is approx 3 times (2.80) as the gap between Birmingham and England (1.51 years).
- The gap of male life expectancy between the most deprived quintile and Birmingham as a whole has widened by 0.38 year (i.e. approx 4 and a half months) from 3.85 years to 4.23 years (9.8%).
- Inequality of male life expectancy within Birmingham has getting worse.

Figure 2.5 shows female life expectancy trend for the most deprived quintile SOAs in Birmingham from 95/97 to 05/07, in comparison with Birmingham as a whole and England.



Data source: Most deprived quintile – PHIT; Birmingham and England – ONS

**Figure 2.5 Female life expectancy in Birmingham, England and the most deprived quintile SOAs in Birmingham, 1995/97-2005/07**

Figure 2.5 shows that female life expectancy in the most deprived quintile is lower than Birmingham and England.

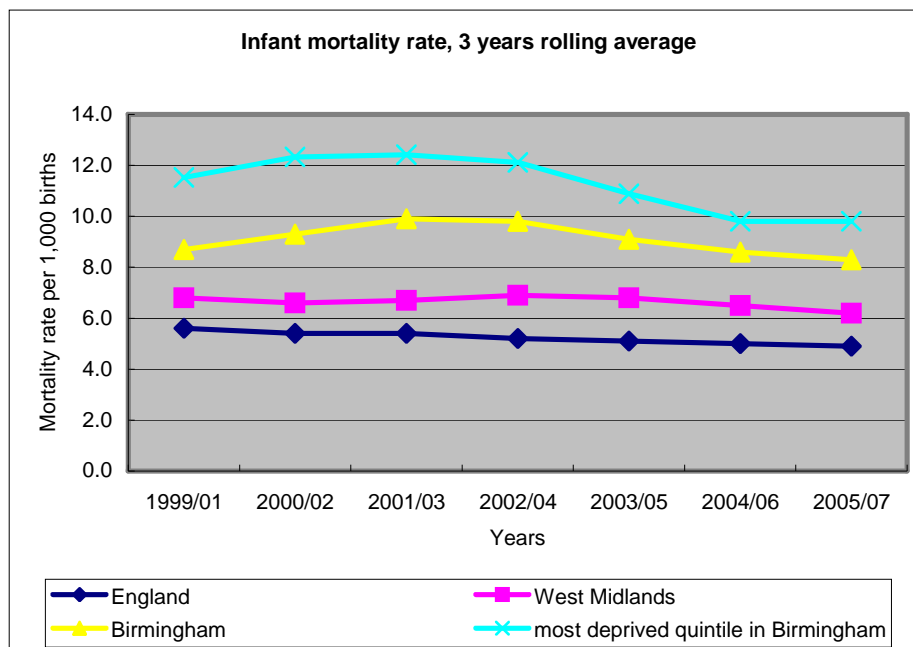
## Birmingham Health Inequalities Profile: Life expectancy – 2009

- Female life expectancy for the most deprived quintile in Birmingham has increased by 3.65% (2.77 years, from 75.80 years to 78.57 years) over the period of time.
- The gap between the most deprived quintile and Birmingham is 2.19 years in 05/07. It is approx twice (2.09) as the gap between Birmingham and England (1.05 years).
- The gap of female life expectancy between the most deprived quintile and Birmingham as a whole has narrowed by 0.61 year (i.e. approx 7 months) from 2.80 years to 2.19 years (21.8%).
- Inequality of female life expectancy within Birmingham has been improving.

### 2.5 Infant mortality

In areas with high infant mortality rates, the life expectancy at birth is highly sensitive to the rate of death in the first few years of life. Infant Mortality Rate (IMR) is calculated as the number of newborns dying under one year of age (excluding still births) in every 1,000 live births during the year.

Figure 2.6 shows trends of IMR in Birmingham, West Midlands, England and the most deprived quintile (i.e. 20%) SOAs in Birmingham (based on Lower Super Output Area level IMD score 2007), from 1999 to 2007, on a 3-year basis.



Data source:  
 Birmingham, West Midlands and England: National Centre for Health Outcomes Development  
 Most deprived quintile in Birmingham: PHIT

**Figure 2.6** Infant mortality rate per 1,000 birth in Birmingham, West Midlands, England and the most deprived quintile SOAs in Birmingham, 1999/01-2005/07

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

As illustrated in Figure 2.6, in 05/07, the IMR in Birmingham is about 70% higher than England and the IMR in the most deprived quintile is about twice that for England.

- From 99/01 to 05/07, the IMR in Birmingham has decreased by 4.6% (0.4). It increased to about one death in every 100 births in the years 01/03 and 02/04, then fell to similar level as in 99/01(8.7), and further decreased in 05/07 to 8.3.
- The most deprived quintile SOAs in Birmingham share a similar trend over the period as Birmingham, but with steeper decrease between 02/04 and 04/06. During the whole period, IMR in the most deprived quintile group has decreased from 11.5 to 9.8 (15%).
- The gap between the most deprived quintile and Birmingham as a whole has decreased by 46.7% from 2.8 to 1.5.
- During the same period, the IMR in England has decreased smoothly from 5.6 to 4.9 (at about 0.1 per year). The gap between Birmingham and England has widened from 3.1 to 3.4 (10%).

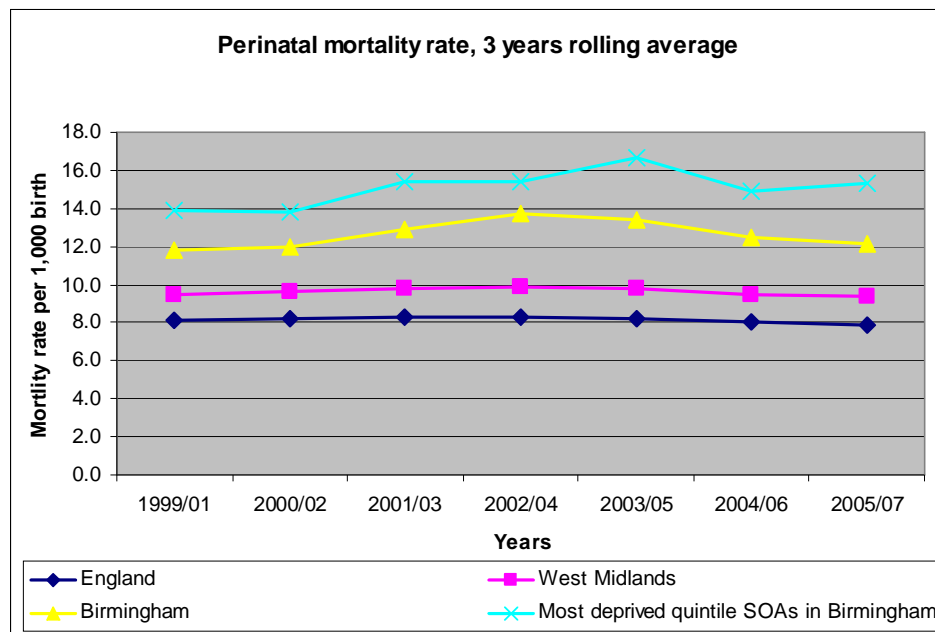
Birmingham has an annual average of 135 infant deaths in 05/07, and it is 50 infant deaths in the most deprived quintile SOAs during the same period. This means that to reach the same level of the IMR in England

- Birmingham needs to save 55 more lives of babies' (under one year old) to reduce to 80 infant deaths per year.
- The most deprived quintile SOAs need to save 25 more lives of babies' (under one year old) to reduce to 25 infant deaths per year.
- The most deprived quintile SOAs need to save 8 more lives of babies (under one year old) to reduce to 42 infant deaths per year to reach the same level of the IMR in Birmingham.

### *Perinatal mortality*

Perinatal mortality (PNM), also perinatal death, refers to the death of a fetus or neonate and is the basis to calculate the perinatal mortality rate. Variations in the precise definition of the perinatal mortality exist specifically concerning the issue of inclusion or exclusion of early fetal and late neonatal fatalities. The definition of perinatal mortality used in this report is: deaths during childbirth (i.e. still births) and up to seven completed days of life.

Figure 2.7 shows trends of Perinatal mortality rate (PNMR) in Birmingham, West Midlands, England and the most deprived quintile (i.e. 20%) SOAs in Birmingham (based on Lower Super Output Area level IMD score 2007), from 1999 to 2007, on a 3-year basis.



Data source:  
 Birmingham, West Midlands and England: National Centre for Health Outcomes Development  
 Most deprived quintile in Birmingham: PHIT

**Figure 2.7 Perinatal mortality rate per 1,000 birth in Birmingham, West Midlands, England and the most deprived quintile SOAs in Birmingham, 1999/01-2005/07**

As illustrated in Figure 2.7, in 05/07, the PNMR in Birmingham (12.1) is 53% higher than that in England (7.9) and the PNMR in the most deprived quintile SOAs (15.1) is nearly twice as the national average (91% higher).

- From 99/01 to 05/07, the PNMR in Birmingham has increased by 2.5% (0.3). It increased to 13.7 deaths in every 1,000 births in the years 02/04, then fell to similar level as in 00/02 (12.1) in 05/07.
- The PNMR in the most deprived quintile SOAs in Birmingham has increased by 7.1% (1.0) during the period. It first increased from 14.1 in 1999/01 to 16.8 in 2003/05, and then it decreased to 15.1 in 2005/07, which is about the same level as in 2001/03.
- The gap between the most deprived quintile SOAs and Birmingham as a whole has widened by 30.5% from 2.3 to 3.0.

During the same period, the PNMR in England is has decreased smoothly from 8.1 to 7.9. The gap between Birmingham and England has widened from 3.7 to 4.2 (13.5%).

Birmingham has an annual average of 199 perinatal deaths in 05/07, and it is 78 perinatal deaths in the most deprived quintile SOAs during the same period. This means that to reach the same level of the PNMR in England

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

- Birmingham needs to save 70 more perinatal deaths to reduce it to 129 perinatal deaths per year.
- The most deprived quintile SOAs need to save 37 perinatal deaths to reduce it to 41 perinatal deaths per year.
- The most deprived quintile SOAs need to save 16 more perinatal deaths to reduce it to 62 perinatal deaths per year to reach the same level of the PNMR in Birmingham.

## Part Three Life expectancy in Birmingham: targets and gaps

This part presents life expectancy at birth figures and all-age all-cause mortality (AAACM) rates, updated to 2005-07 for Birmingham. These figures are used to monitor progress against Department of Health (DH) Public Service Agreement (PSA) targets, Vital Signs (VS) targets and Local Area Agreement (LAA) targets on overall life expectancy and inequalities in life expectancy. Gap between Birmingham and the national average are investigated into and causes of gap in terms of diseases and age groups are described.

### 3.1 Health inequalities targets

Targets to increase overall life expectancy at birth in England and to reduce inequalities in life expectancy were included in the DH PSA published as part of the Government Spending Review 2004<sup>5</sup>. Indicators on overall AAACM in England and inequalities in AAACM were included in PSA Delivery Agreement 18 (Promote better health and wellbeing for all), published as part of the Government 2007 Comprehensive Spending Review<sup>6</sup>.

The inequality dimension of the target is monitored by comparing the progress of England as a whole with equivalent progress of the Spearhead Group of health deprived areas. The spearhead group is defined as the 20% worst areas in England in terms of health and deprivation indicators. Birmingham is among the 70 local authorities that make the spearhead group.

The Health Inequalities National Target is to:

**Reduce by at least 10 percent the gap in life expectancy between the Spearhead Group and the population as whole by 2010, using 1996 as the baseline year.**

The national target is reflected in the AAACM target (which is the indicator used as a proxy for life expectancy at sub national level) in NHS Vital Signs (i.e. VSC01) and local governments' LAA (i.e. NI 120).

In Birmingham, this target was revisited in 2006 when the 'LAA 2006-2008' was agreed. Based on reviewing of the trajectory and actual life expectancy trend in Birmingham at the time, the target for male life expectancy was revised in the LAA Floor Target Action Plan, 2006<sup>7</sup> and was agreed by the local government and the West Midlands Government Office. Target for female life expectancy remained the same as the original national target.

The revised target for male life expectancy is to:

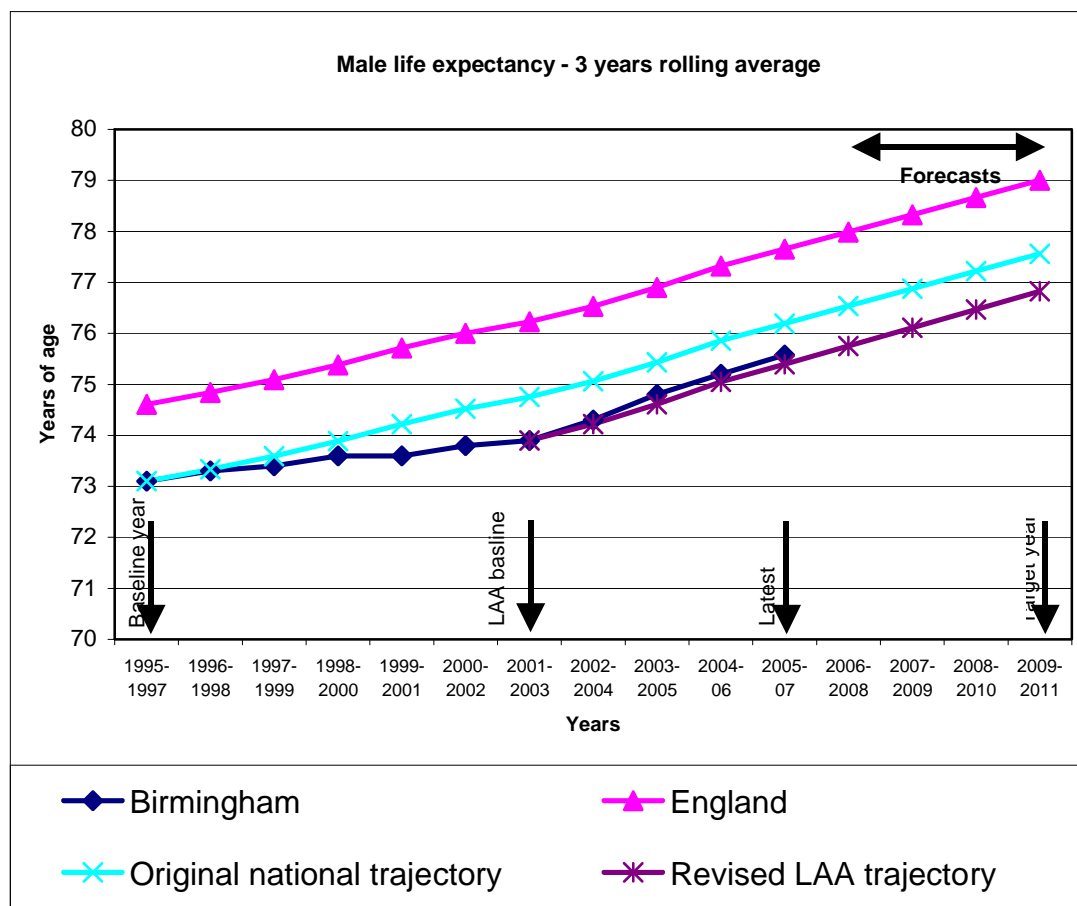
**Reduce by at least 10 percent the gap in male life expectancy between Birmingham and England by 2010, using 2002 as the baseline year.**

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Relative gap is used as the measure of the ‘gap’ in the targets described above. Relative gap equals to difference in rates between England and Spearhead Group as a percentage of the England rate<sup>8</sup>.

### 3.2 Current situation

Trajectories for male and female life expectancy were calculated based on the targets described in Section 3.1. Figure 3.1 shows male life expectancy trend in Birmingham, against the original national trajectory and the revised LAA trajectory. It contains projections to 2009-11 (target year).



Data source:  
 England and Birmingham - ONS  
 England MLE Forecasts - Yorkshire and Humber Public Health Observatory  
 Trajectories – PHIT

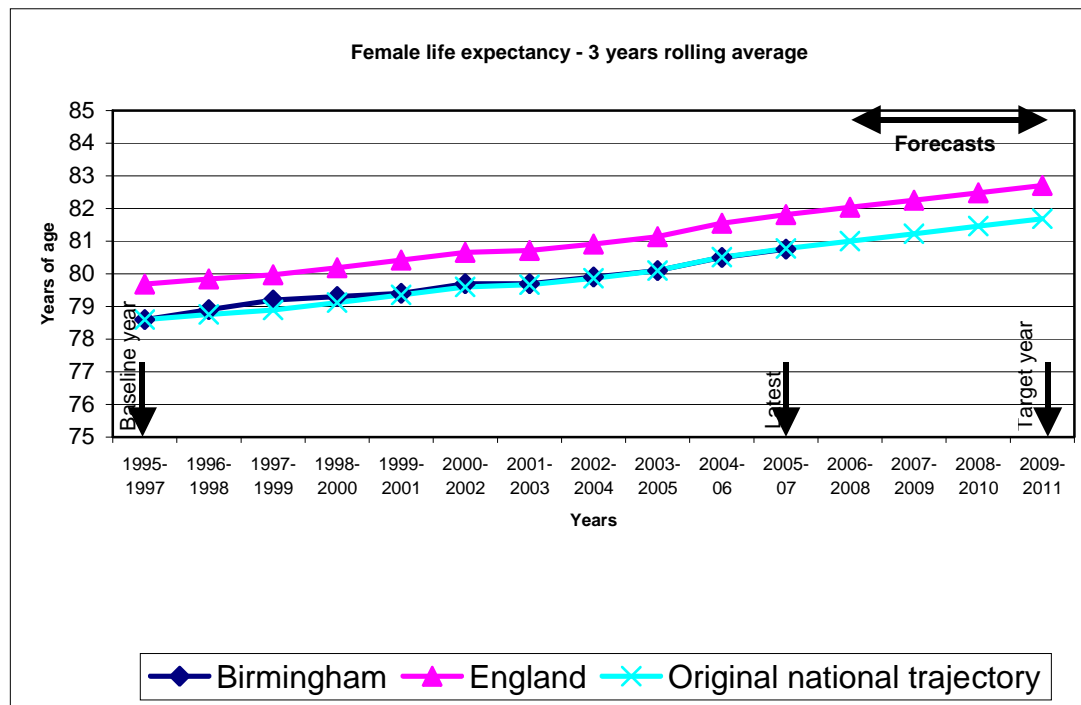
**Figure 3.1 Male life expectancy – trajectory and current situation, 1995/97-2005/07**

As Figure 3.1 illustrates, the relative gap between Birmingham and England has widened from 2.02% (absolute gap = 1.51 years) in 95/97 to 2.68% (absolute gap = 2.08 years) in 05/07. Birmingham is 0.62 year under the original national trajectory in 05/07. These figures suggest that the original 2010 national target for Birmingham remains challenging if the current trend continues.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Looking at Birmingham's trend against the revised LAA trajectory, the relative gap between Birmingham and England has narrowed from 3.06% (absolute gap = 2.33 years) in 01/03 to 2.68% (absolute gap = 2.08 years) in 05/07. Birmingham is 0.18 year above the trajectory in 05/07. In other words, if the current trend continues, Birmingham will meet this target in 2010.

Figure 3.2 shows female life expectancy trend in Birmingham, against the original national trajectory. It contains projections to 2009-11 (target year).



Data source:  
 England and Birmingham - ONS  
 England MLE Forecasts - Yorkshire and Humber Public Health Observatory  
 Trajectory – PHIT

**Figure 3.2 Female life expectancy – trajectory and current situation, 1995/97-2005/07**

As Figure 3.2 illustrates, the relative gap between Birmingham and England has narrowed from 1.37% (absolute gap = 1.09 years) in 95/97 to 1.29% (absolute gap = 1.05 years) in 05/07. Birmingham is on track of the trajectory as it is only 0.01 year (4 days) under the national trajectory in 05/07. If the current trend continues, Birmingham will meet this target in 2010.

### 3.3 Causes of gap

This part investigates into the gap between Birmingham and England in terms of diseases that cause the gap.

#### *Mortality rates on selected diseases*

Age-specific mortality rate is used to calculate life expectancy at birth. Disease specific standardised mortality rates are investigated into in this part in order to identify:

## Birmingham Health Inequalities Profile: Life expectancy – 2009

- Leading diseases that contribute to the overall mortality rates in Birmingham, and
- Leading diseases that contribute to the gap in overall mortality rates between Birmingham and England.

Table 3.1 shows directly standardized mortality rates for selected conditions in Birmingham in 2005-2007. The percentage of each disease's rate out of the overall rate is also shown here. According to the figures, cancers (29.52%), circulatory diseases (32.34%), coronary heart disease (16.87%) and stroke (8.33%) are the major killers. They make more than 80% of the overall DSR.

**Table 3.1 Directly Standardized Mortality Rates (DSRs) per 100,000 population for selected conditions by sex, Birmingham, 2005-2007**

	DSR	% out of all causes rate*
<b>All Causes</b>	<b>670.47</b>	
All Causes, Males	823.01	
All Causes, Females	543.89	
<b>All Cancers</b>	<b>187.07</b>	<b>29.52%</b>
All Cancers, Males	229.58	29.60%
All Cancers, Females	156.61	30.21%
<b>Colorectal Cancers</b>	<b>18.49</b>	<b>2.76%</b>
Colorectal Cancers, Males	24.06	2.92%
Colorectal Cancers, Females	14.03	2.58%
<b>Lung Cancers</b>	<b>46.44</b>	<b>6.93%</b>
Lung Cancers, Males	63.87	7.76%
Lung Cancers, Females	33.12	6.09%
<b>Cervical Cancer (Females only)</b>	<b>2.49</b>	<b>0.37%</b>
<b>Breast Cancer (Females only)</b>	<b>24.97</b>	<b>3.03%</b>
<b>Prostate Cancer (Males only)</b>	<b>22.09</b>	<b>4.06%</b>
<b>All Circulatory Diseases**</b>	<b>216.82</b>	<b>32.34%</b>
All Circulatory Diseases, Males	280.6	34.09%
All Circulatory Diseases, Females	162.03	29.79%
<b>Coronary Heart Disease</b>	<b>113.13</b>	<b>16.87%</b>
Coronary Heart Disease, Males	162.82	19.78%
Coronary Heart Disease, Females	70.86	13.03%
<b>Stroke</b>	<b>55.84</b>	<b>8.33%</b>
Stroke, Males	60.3	7.33%
Stroke, Females	51.69	9.50%
<b>Diabetes</b>	<b>11.65</b>	<b>1.74%</b>
Diabetes, Males	13.22	1.61%
Diabetes, Females	10.08	1.85%
<b>Chronic Renal Failure</b>	<b>1.89</b>	<b>0.28%</b>
Chronic Renal Failure, Males	2.23	0.27%
Chronic Renal Failure, Females	1.7	0.31%

\* Percentage of rate for the specific disease out of rate for all causes

\*\* Diseases of the Circulatory System (ICD-10 code: I00 – I99)

Data source: National Centre for Health Outcomes Development

## Birmingham Health Inequalities Profile: Life expectancy – 2009

DSRs for selected diseases shown in Table 3.1 were then compared with England's rates. Confidence intervals for the rates were taken into consideration in the comparison and only those rates that were significantly higher in Birmingham were taken into account. Absolute gap between Birmingham and England was calculated for each disease.

Table 3.2 shows the result of the comparison. Based on each disease's contribution to the overall absolute gap, the figures suggest that circulatory diseases (31.12%), coronary heart diseases (23.94%) and cancers (15.21%), especially lung cancer (10.50%) are the main contributors to the gap between Birmingham and England. They together make 70% of the gap. These diseases should be targeted to reduce the gap.

**Table 3.2 Directly Standardized Mortality Rates (DSRs) per 100,000 population for selected conditions by sex, 2005-2007: difference between Birmingham and England**

	Birmingham	England	Absolute gap*	% absolute gap in all causes rate**
<b>All Causes</b>	<b>670.47</b>	<b>594.73</b>	<b>75.74</b>	
All Causes, Males	823.01	710.11	112.9	
All Causes, Females	543.89	500.22	43.67	
<b>All Cancers</b>	<b>187.07</b>	<b>175.55</b>	<b>11.52</b>	<b>15.21%</b>
All Cancers, Males	229.58	210.17	19.41	17.19%
All Cancers, Females	156.61	151.12	5.49	12.57%
<b>All Circulatory Diseases***</b>	<b>216.82</b>	<b>193.25</b>	<b>23.57</b>	<b>31.12%</b>
All Circulatory Diseases, Males	280.6	241.7	38.9	34.46%
All Circulatory Diseases, Females	162.03	152.72	9.31	21.32%
<b>Coronary Heart Disease</b>	<b>113.13</b>	<b>95</b>	<b>18.13</b>	<b>23.94%</b>
Coronary Heart Disease, Males	162.82	134.92	27.9	24.71%
Coronary Heart Disease, Females	70.86	62.71	8.15	18.66%
<b>Stroke</b>	<b>55.84</b>	<b>50.02</b>	<b>5.82</b>	<b>7.68%</b>
Stroke, Males	60.3	51.41	8.89	7.87%
Stroke, Females	51.69	48.11	3.58	8.20%
<b>Diabetes</b>	<b>11.65</b>	<b>6.29</b>	<b>5.36</b>	<b>7.08%</b>
Diabetes, Males	13.22	7.4	5.82	5.16%
Diabetes, Females	10.08	5.4	4.68	10.72%
<b>Lung Cancers</b>	<b>46.44</b>	<b>38.49</b>	<b>7.95</b>	<b>10.50%</b>
Lung Cancers, Males	63.87	50.32	13.55	12.00%
Lung Cancers, Females	33.12	29.43	3.69	8.45%

Data source: National Centre for Health Outcomes Development

\* Absolute gap is used as the target measure for the National Indicator

\*\* Percentage as gap in the specific disease over gap in all causes

\*\*\* Diseases of the Circulatory System (ICD-10 code: I00 – I99)

***Diseases and age groups accountable for the gap***

Table 3.3 shows diseases accountable for the gap in life expectancy between Birmingham and England, based on calculation from the Health Inequalities Intervention Tool developed by the Department of Health and the Association of Public Health Observatories. The calculation is based on the 2003-2005 life expectancy data. Details of the methodology can be found from the Health Inequalities Intervention Tool<sup>9</sup>.

<b>Table 3.3 Diseases accountable for the gap in life expectancy between Birmingham and England, 2003-2005</b>		
	<b>Male</b>	<b>Female</b>
<b>All circulatory diseases</b>	34%	25%
<b>All Cancers</b>	13%	12%
<b>Respiratory diseases</b>	13%	9%
<b>Digestive</b>	7%	6%
<b>External causes</b>	3%	7%
<b>Infectious and parasitic diseases</b>	2%	2%
<b>Other</b>	13%	20%
<b>Deaths under 28 days</b>	14%	18%

Data source: Health Inequalities Intervention Tool

Figures on Table 3.3 show that

- Circulatory diseases (34%), deaths under 28 days (14%), cancers (13%) and respiratory diseases (13%) are the leading diseases that accountable for the gap in life expectancy for males. They together are accountable for 74% of the gap.
- Circulatory diseases (25%), deaths under 28 days (18%), cancers (12%) and respiratory diseases (9%) are the leading diseases that accountable for the gap in life expectancy for females. They together are accountable for 64% of the gap.
- These results are consistent with the leading diseases contributing to the gap in DSRs shown in Table 3.2.
- In particular, these figures emphasise infant mortality as one of the leading causes of the gaps in addition to the diseases. Infant mortality's contribution to the gap is comparable to cancers.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Table 3.4 shows the age groups accountable for the gap in life expectancy between Birmingham and England. The data is from the same source as the data shown in Table 3.3 (i.e. Health Inequalities Intervention Tool).

<b>Table 3.4 Age groups accountable for the gap in life expectancy between Birmingham and England, 2003-2005</b>		
<b>Age group</b>	<b>Male</b>	<b>Female</b>
<b>&lt;1</b>	<b>15%</b>	<b>25%</b>
<b>1-9</b>	1%	3%
<b>10-19</b>	2%	4%
<b>20-29</b>	1%	0%
<b>30-39</b>	0%	0%
<b>40-49</b>	<b>13%</b>	7%
<b>50-59</b>	<b>20%</b>	<b>12%</b>
<b>60-69</b>	<b>28%</b>	<b>18%</b>
<b>70-79</b>	<b>19%</b>	<b>26%</b>
<b>80+</b>	1%	5%

Data source: Health Inequalities Intervention Tool

Figures on Table 3.4 show that:

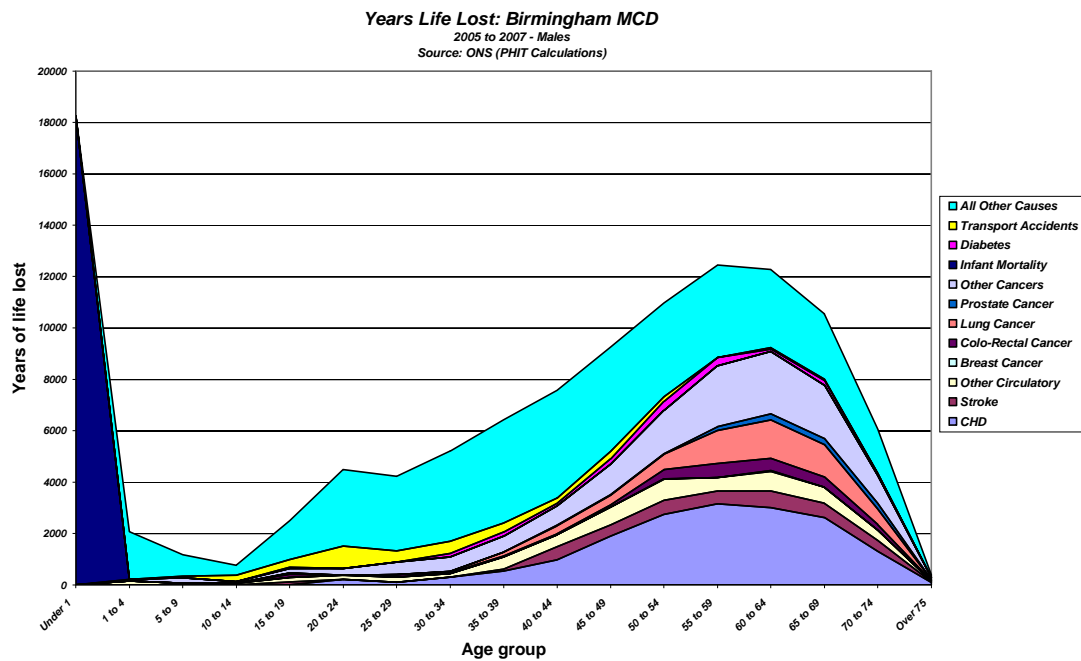
- For males, the major gap starts at the 40-49 age band and continues to the 70-79 age band. They together make 80% of the gap. Infant mortality is another leading contributor (15%).
- For females, the major gap starts at the 50-59 age band and continues to the 70-79 age band. They together make 56% of the gap. Infant mortality is accountable for 25% of the gap.
- The figures highlight infant mortality, as well as the middle age groups as the main age groups that accountable for the gap.

### *Years of Life Lost*

This part investigates into Years of Life Lost (YLL) by disease and age group to provide a combined picture of diseases' and age groups' contribution to deaths in Birmingham. YLL take into account the age at which deaths occur by giving greater weight to deaths occurring at younger ages and lower weight to deaths occurring at older ages. The YLL (percentage of total) indicator measures the YLL due to a particular cause of death as a proportion of the total YLL lost due to premature mortality in the population<sup>10</sup>.

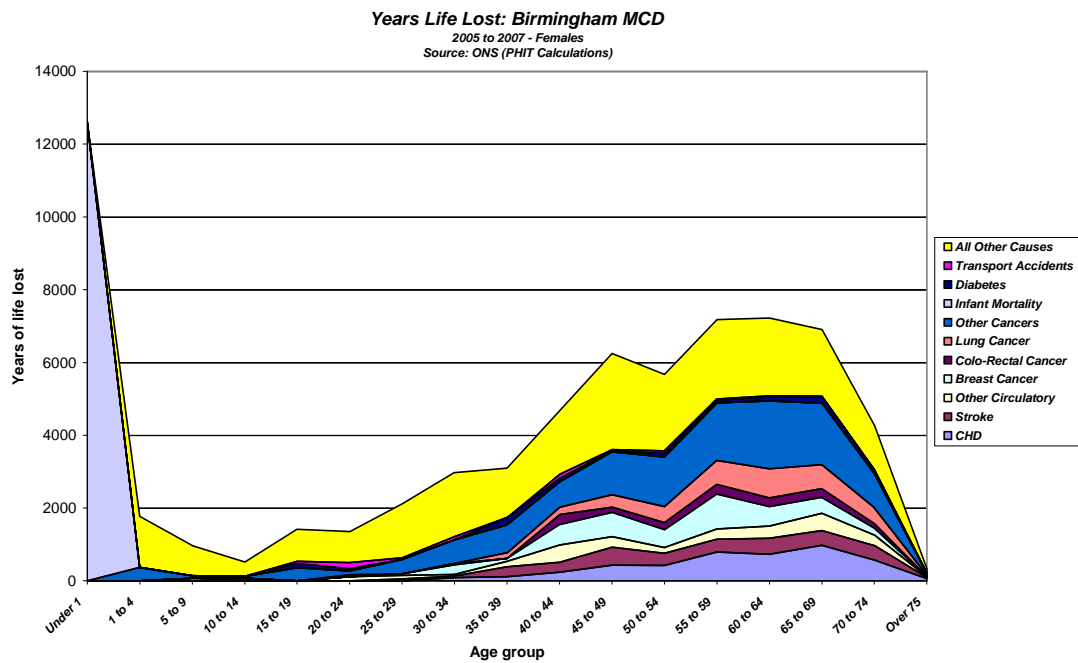
Figure 3.3 and Figure 3.4 show YLL for males and females in Birmingham accordingly. These figures are consistent with the leading causes of gaps described earlier in section 3.3. Cancers, circulatory diseases and infant mortality account for most of the YLL.

## Birmingham Health Inequalities Profile: Life expectancy – 2009



Data source: PHIT

**Figure 3.3** Years of life lost for males by selected conditions, Birmingham, 2005-2007



Data source: PHIT

**Figure 3.4** Years of life lost for females by selected conditions, Birmingham, 2005-2007

## Part Four Life expectancy in Birmingham: local variations

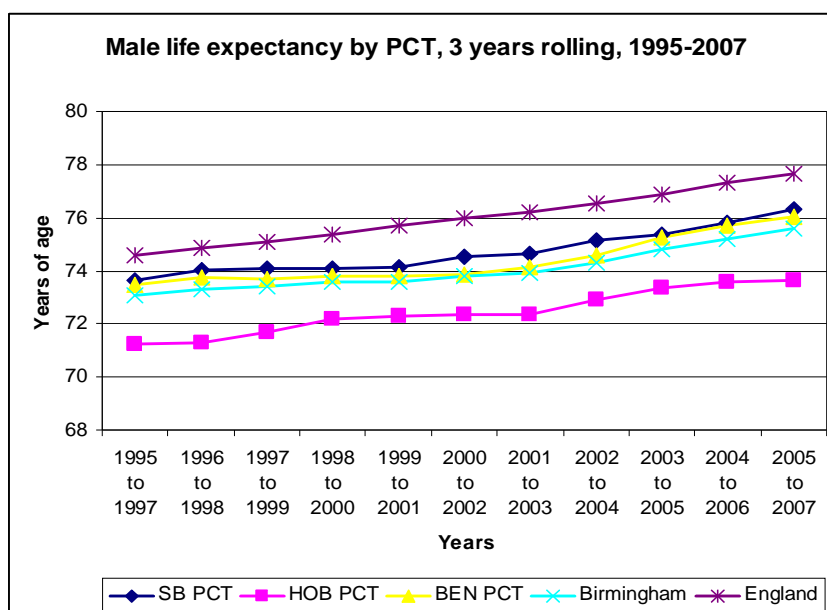
There is a great deal of local variation in life expectancy within Birmingham. This part investigates into these local variations. Life expectancy is studied at Primary Care Trust (PCT) and electoral ward level. Electoral wards/divisions are the key building block of the UK’s administrative geography, being the spatial units used to elect local government councillors in metropolitan and non-metropolitan districts, unitary authorities and the London boroughs in England<sup>11</sup>.

There are in total 40 wards in Birmingham. The population size of these wards varies from 18.3 thousand to 33.7 thousand (ONS 2006 ward level population estimates), with mean population size of 25.2 thousand. There are three PCTs in Birmingham. The PCT boundary in Birmingham is set based on ward boundary. i.e. Birmingham East and North PCT (BEN) 16 wards, Heart of Birmingham PCT (HOB) 10 wards and South Birmingham PCT (South) 14 wards.

This part investigates into local variations in Birmingham, in particular, variance with deprivation. This part also summarises implications to each local PCT, based on the ward level variations. Finally, this part identifies target wards for future focus of work.

### 4.1 Life expectancy at PCT level

This part looks at life expectancy trends in the three PCTs in Birmingham. Figure 4.1 shows male life expectancy trend by PCT, from 95/97 to 05/07.



Data source: PCT – PHIT; Birmingham and England – ONS

Figure 4.1 Male life expectancy trend by PCT, 1995/97 – 2005/07

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

Figure 4.1 shows that during the period of time male life expectancy in all three PCTs has increased. South PCT is the highest in Birmingham, followed by BEN PCT. Both are above the Birmingham average. HOB tPCT is the lowest and it is below Birmingham average. All three PCTs' are below the national average.

### For South PCT

- Male life expectancy has increased by 3.63% (2.67 years, from 73.65 years to 76.32 years) over the period of time.
- The gap between the South PCT and England is 1.33 years in 05/07. It has widened by 38.39% (0.37 years, from 0.96 years to 1.33 years).
- Male life expectancy in South PCT is 0.75 years higher than Birmingham in 05/07. The gap between Birmingham and the South PCT has widened by 0.20 year (i.e. approx 2 and a half months) from 0.55 years (36.18%).
- Male life expectancy in South PCT has increased faster than Birmingham, but more slowly than England.

### For BEN PCT

- Male life expectancy has increased by 3.46% (2.54 years, from 73.47 years to 76.01 years) over the period of time.
- The gap between BEN PCT and England is 1.64 years in 05/07. It has widened by 44.04% (0.50 years, from 1.14 years).
- Male life expectancy in BEN PCT is 0.44 year higher than Birmingham in 05/07. The gap between Birmingham and the BEN PCT has widened by 0.07 year (i.e. approx 25 days) from 0.37 years (17.9%).
- Male life expectancy in BEN PCT has increased faster than Birmingham, but more slowly than England.

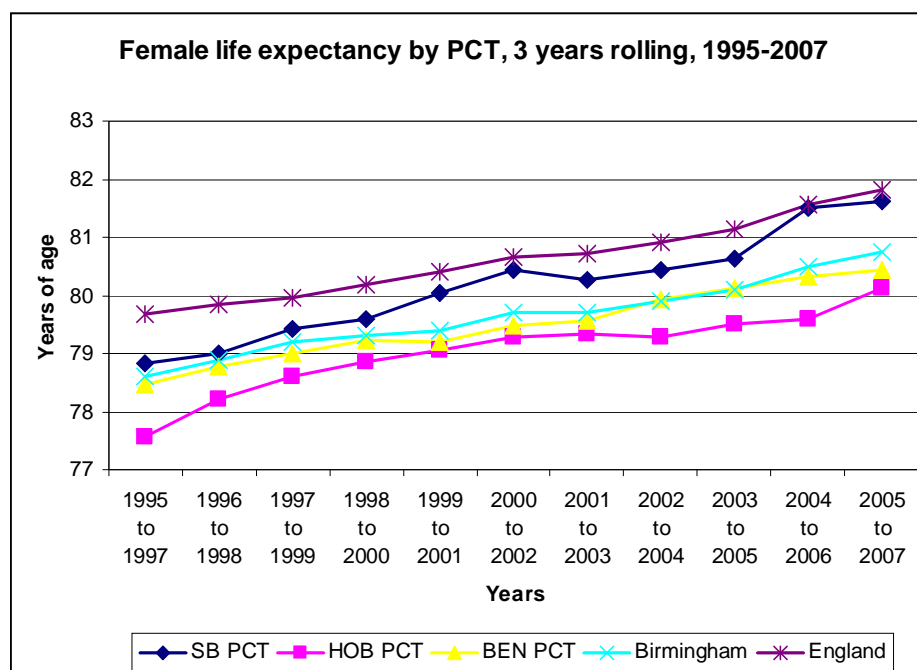
### For HOB tPCT

- Male life expectancy has increased by 3.39% (2.41 years, from 71.24 years to 73.65 years) over the period of time.
- The gap between HOB tPCT and England is 4.00 years in 05/07. It has widened by 18.55% (0.63 years, from 3.37 years).
- Male life expectancy in HOB tPCT is 1.92 years lower than Birmingham in 05/07. The gap between Birmingham and the HOB tPCT has widened by 0.06 year (i.e. approx 22 days) from 1.86 years (3.11%).

## Birmingham Health Inequalities Profile: Life expectancy – 2009

- Male life expectancy in HOB tPCT has increased more slowly than both Birmingham and England.

Figure 4.2 shows female life expectancy trend by PCT, from 95/97 to 05/07.



Data source: PCT – PHIT; Birmingham and England – ONS

**Figure 4.2 Female life expectancy trend by PCT, 1995/97 – 2005/07**

Figure 4.2 shows that during the period of time female life expectancy in all three PCTs' has increased. South PCT is the highest in Birmingham, followed by BEN PCT, which is very close to the Birmingham average. HOB tPCT is the lowest and it is below the Birmingham average. All three PCT's are below the national average.

For South PCT

- Female life expectancy has increased by 3.52% (2.78 years, from 78.84 years to 81.62 years) over the period of time.
- The gap between the South PCT and England is 0.19 years in 05/07. It has narrowed by 77.30% (0.66 year, from 0.85 year to 0.19 year).
- Female life expectancy in South PCT is 0.86 year higher than Birmingham in 05/07. The gap between Birmingham and the South PCT has widened by 0.62 year (i.e. approx 7 and a half months) from 0.24 year (259.91%).
- Female life expectancy in South PCT has increased faster than both Birmingham and England.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

---

### For BEN PCT

- Female life expectancy has increased by 2.51% (1.97 years, from 78.47 years to 80.44 years) over the period of time.
- The gap between BEN PCT and England is 1.37 years in 05/07. It has widened by 12.03% (0.15 year, from 1.22 years).
- Female life expectancy in BEN PCT is 0.32 year lower than Birmingham in 05/07. The gap between Birmingham and BEN PCT has widened by 0.19 year (i.e. approx 2 months) from 0.13 years (142.41%).
- Female life expectancy in BEN PCT has increased more slowly than both Birmingham and England.

### For HOB tPCT

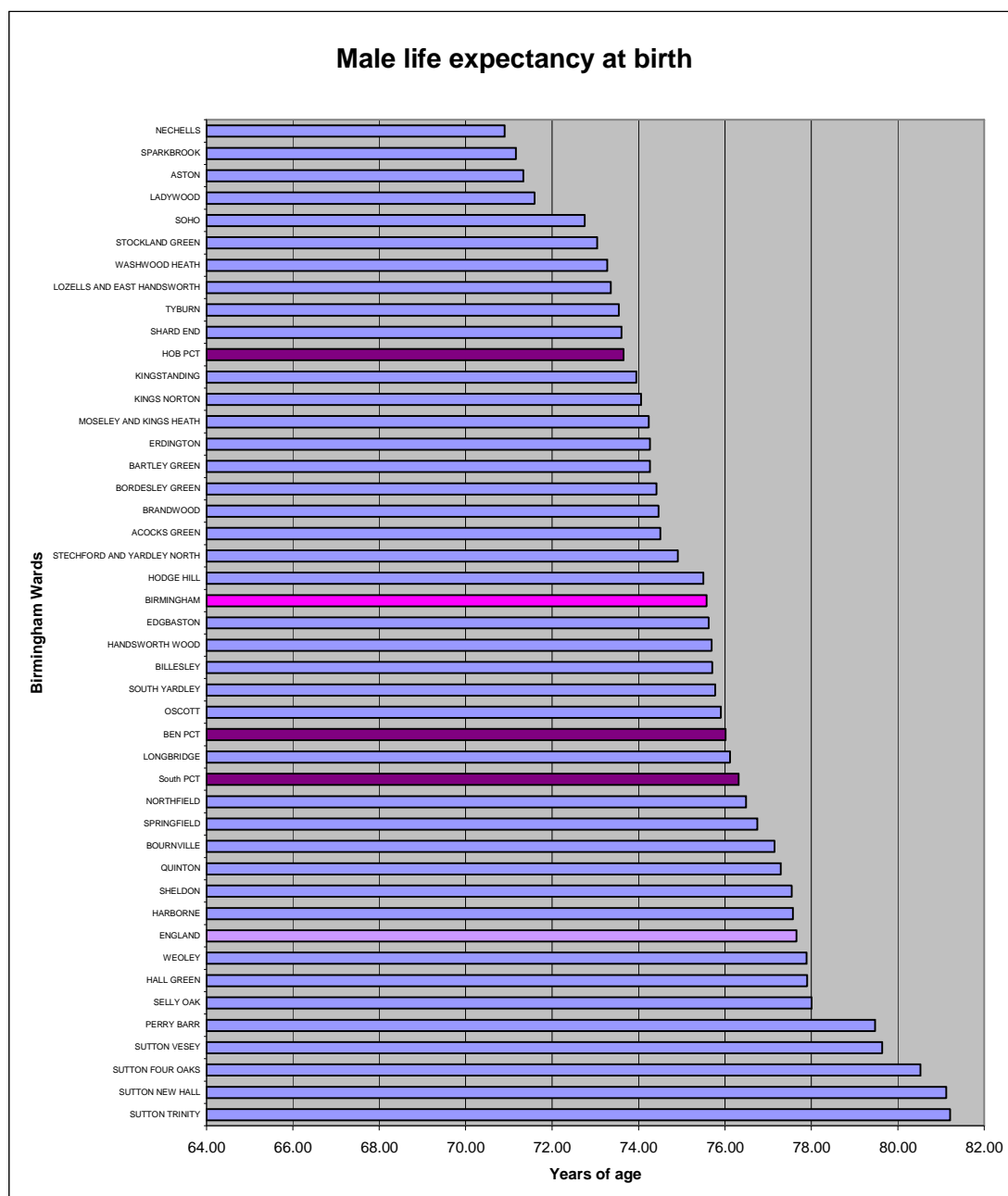
- Female life expectancy has increased by 3.31% (2.57 years, from 77.56 years to 80.13 years) over the period of time.
- The gap between HOB tPCT and England is 1.68 years in 05/07. It has narrowed by 21.08% (0.45 year, from 2.13 years).
- Female life expectancy in HOB tPCT is 0.63 year lower than Birmingham in 05/07. The gap between Birmingham and the HOB PCT has narrowed by 0.41 year (i.e. approx 5 months) from 1.04 years (39.54%).
- Female life expectancy in HOB tPCT has increased faster than both Birmingham and England.

## 4.2 Life expectancy at ward level

This part describes local variations in life expectancy at ward level.

### Local variations

Male life expectancy in Birmingham wards varies from 70.90 years to 81.21 years (mean = 75.56 years; Std. Deviation = 2.65 years) in 05/07. Figure 4.3 shows male life expectancy by ward and PCT. Eight wards (20%) are above the national average. The other 32 wards (80%) are below the national average.

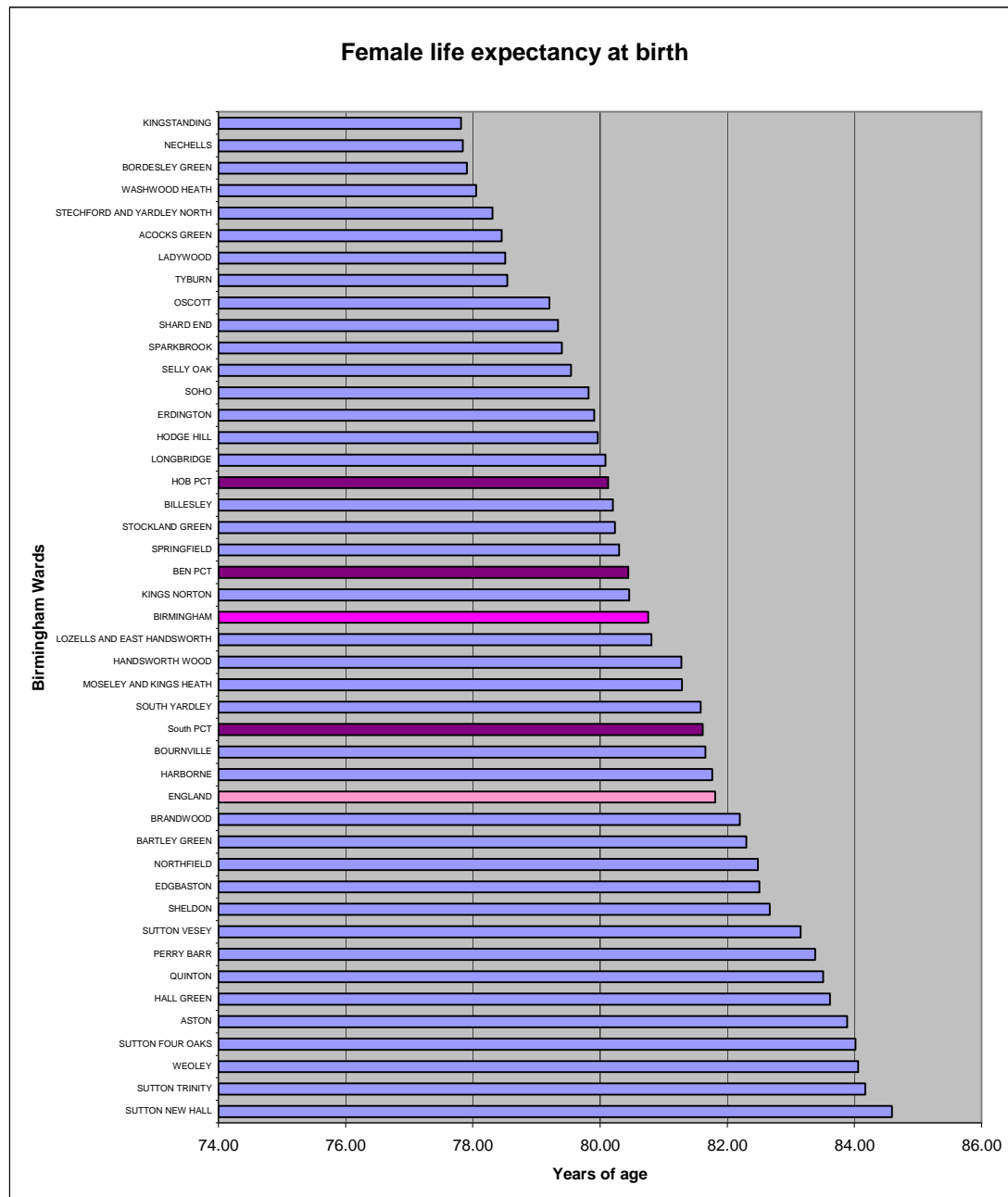


Data source: PHIT calculation

Figure 4.3 Male life expectancy by PCT and ward, 2005-2007

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Female life expectancy in Birmingham wards varies from 77.82 to 84.59 years (mean = 80.97 years; Std. Deviation = 2.07 years) in 05/07. Figure 4.4 shows female life expectancy by ward and PCT in Birmingham. Life expectancy for 14 wards (35%) is above the national average. The other 26 wards (65%) are below the national average.



Data source: PHIT calculation

**Figure 4.4 Female life expectancy by PCT and ward, 2005-2007**

### *Local geographical variations*

Figure 4.5 and Figure 4.6 illustrate geographical variation of life expectancy, for males and females accordingly. Figure 4.5 shows that life expectancy for

## Birmingham Health Inequalities Profile: Life expectancy – 2009

males is highest in North Birmingham wards and lowest in central Birmingham wards. Southern wards are in the middle range.

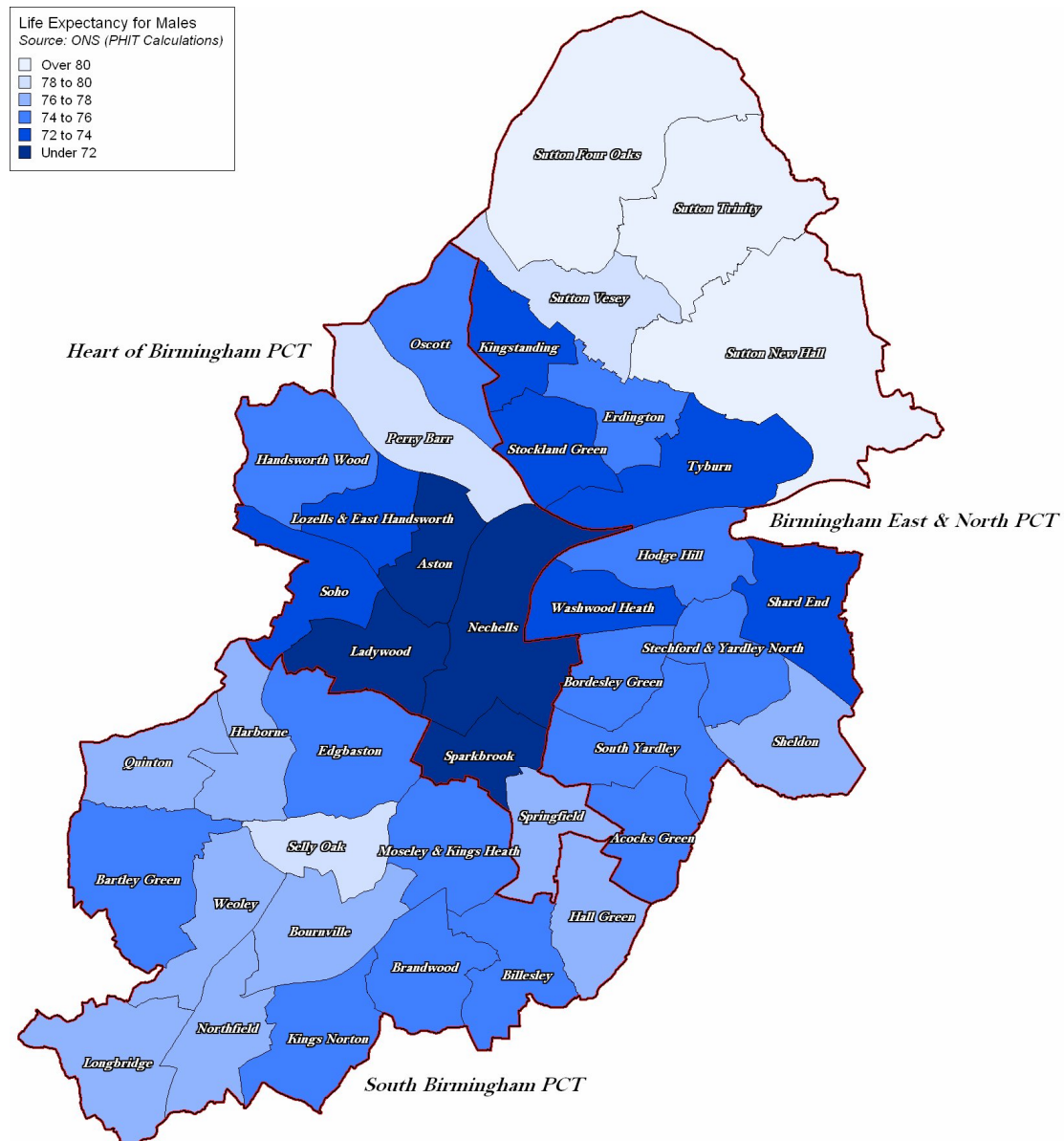


Figure 4.5 Map - Male life expectancy by ward and PCT in Birmingham, 2005-2007

Birmingham Health Inequalities Profile: Life expectancy – 2009

Figure 4.6 shows that life expectancy for females is highest in North Birmingham wards as well as in some of the South Birmingham wards. It is the lowest in central (especially east central) Birmingham wards.

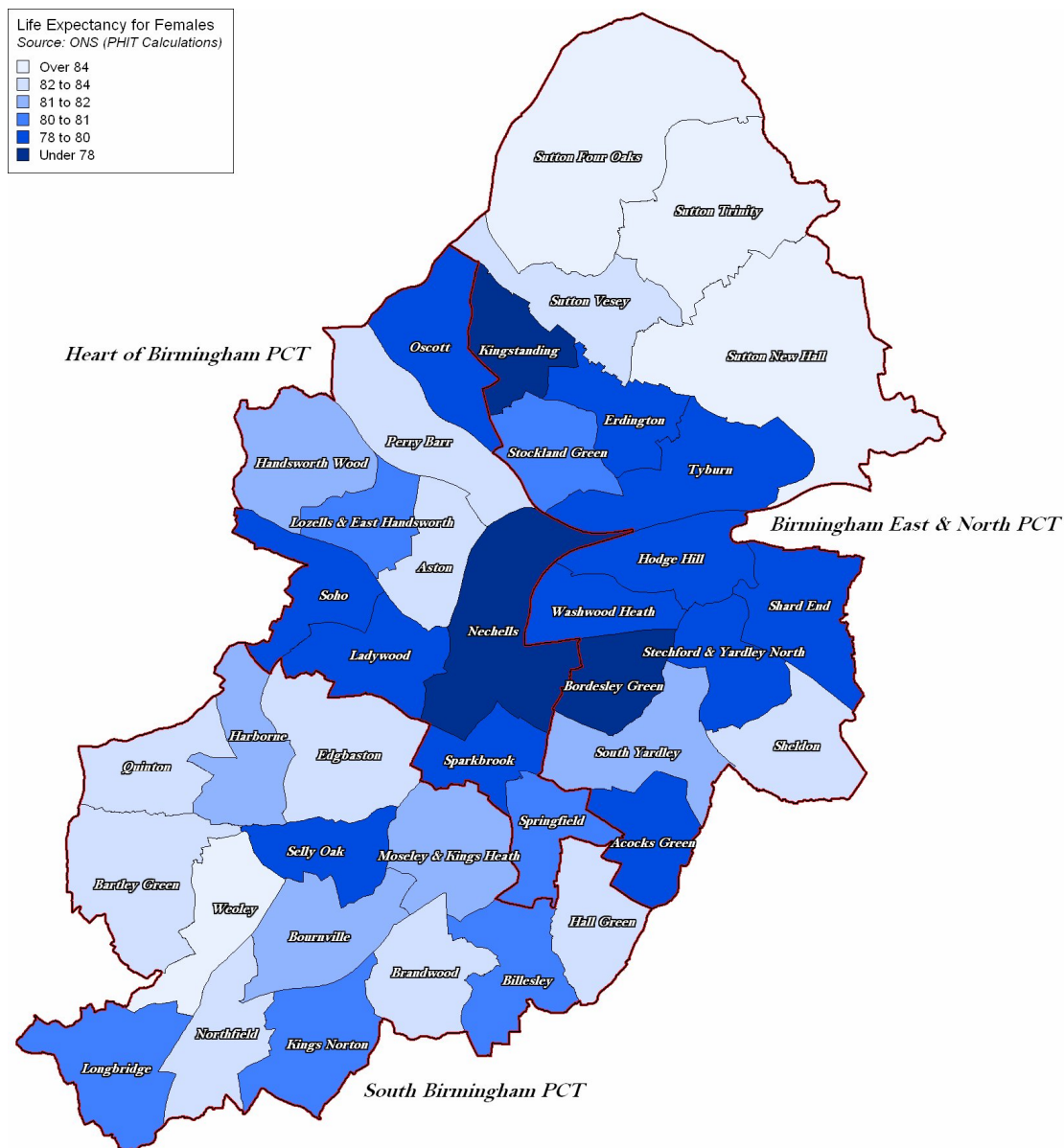


Figure 4.6 Map - Female life expectancy by ward and PCT in Birmingham, 2005-2007

**Local variations and deprivation**

IMD score (2007) for wards were correlated with life expectancy for males and females (05/07) in order to study the relation between the life expectancy variation and deprivation,

The result of the correlation is shown in Table 4.1. Statistically significant association was found for both male (correlation coefficient = -0.87,  $p < 0.01$ ) and female life expectancy (correlation coefficient = -0.68,  $p < 0.01$ ). The result suggests that life expectancy is lower in the more deprived wards (i.e. higher IMD score), for both males and females. In other words, local inequality in life expectancy is associated with deprivation. This association is stronger for males than for females.

Table 4.1 Correlation between life expectancy (05/07) and IMD score (2007) at ward level			
		Male life expectancy (05/07)	Female life expectancy (05/07)
2007 IMD Score	Pearson Correlation	-0.87**	-0.68**
	P value	.000	.000
	N	40	40

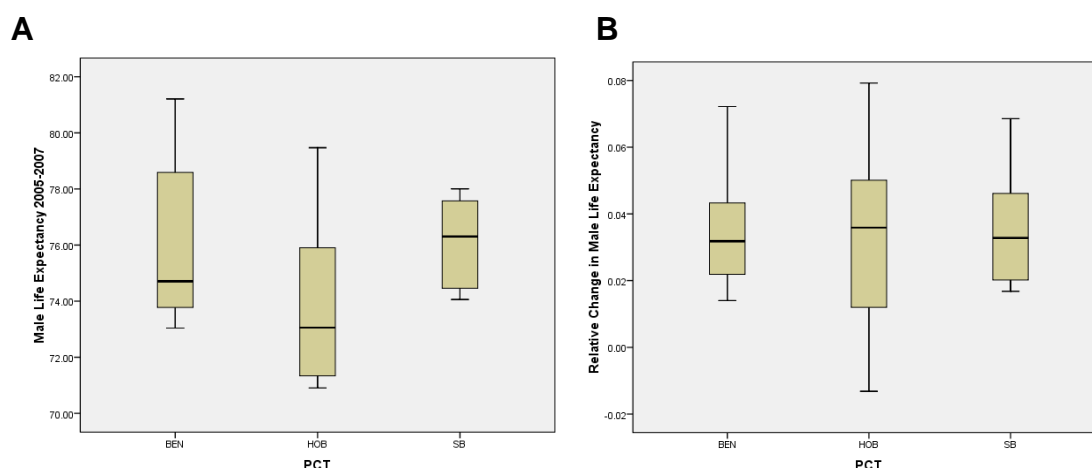
\*\* . Correlation is significant at the 0.01 level (2-tailed).

### 4.3 Ward level variations by PCT

This part groups wards by PCT and investigates into ward level variations by PCT. Ward level life expectancy and relative change<sup>i</sup> in it from 95/97 to 05/07 are investigated into.

Figure 4.7 shows box plot<sup>ii</sup> of ward level male life expectancy in 05/07 (Panel A) and the relative change of it from 95/97 to 05/07 (Panel B) by PCT.

- Panel A shows that median ward level life expectancy is the highest for South PCT and the lowest for HOB tPCT. Ward level male life expectancy in BEN PCT and HOB tPCT has more variance than in South PCT, especially the upper-end.
- Panel B shows that median ward level relative changes in three PCT's are similar. HOB tPCT has more variance than BEN PCT and South PCT.



**Figure 4.7 Ward level male life expectancy 05/07 and the relative change of it from 95/97 to 05/07 by PCT**

Table 4.2 presents details of the local variations. It ranks male life expectancy in 95/97, 05/07 and change from 95/97 to 05/07. Wards among the top quintile (8) on each item are highlighted as green (i.e. highest life expectancy, biggest increase, etc). The bottom quintile is highlighted as red in the table.

<sup>i</sup> Change from 95/97 to 05/07 as a percentage of life expectancy in 95/97.

<sup>ii</sup> Vertical boxplot: the boundaries of the box are Tukey's hinges. The median is identified by a line inside the box. The length of the box is the interquartile range (IQR) computed from Tukey's hinges. Values more than three IQR's from the end of a box are labelled as extreme, denoted with an asterisk (\*). Values more than 1.5 IQR's but less than 3 IQR's from the end of the box are labelled as outliers (o).

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Table 4.2 Male Life expectancy in 95/97 and 05/07 by PCT and ward

Ward	PCT	Male Life expectancy at birth			
		95/97	05/07	Change N*	Change %**
ACOCKS GREEN	BEN	72.89	74.51	1.62	2.2%
BORDESLEY GREEN	BEN	71.82	74.41	2.59	3.6%
ERDINGTON	BEN	72.41	74.26	1.85	2.6%
HODGE HILL	BEN	73.48	75.5	2.02	2.7%
KINGSTANDING	BEN	70.07	73.95	3.88	5.5%
SHARD END	BEN	72.05	73.61	1.56	2.2%
SHELDON	BEN	73.82	77.54	3.72	5.0%
SOUTH YARDLEY	BEN	72.55	75.77	3.22	4.4%
STECHFORD AND YARDLEY NORTH	BEN	71.88	74.91	3.03	4.2%
STOCKLAND GREEN	BEN	72.03	73.04	1.01	1.4%
SUTTON FOUR OAKS	BEN	77.47	80.53	3.06	4.0%
SUTTON NEW HALL	BEN	79.21	81.12	1.91	2.4%
SUTTON TRINITY	BEN	75.74	81.21	5.47	7.2%
SUTTON VESEY	BEN	76.66	79.63	2.97	3.9%
TYBURN	BEN	72.12	73.54	1.42	2.0%
WASHWOOD HEATH	BEN	72.21	73.28	1.07	1.5%
ASTON	HOB	72.29	71.34	-0.95	-1.3%
HANDSWORTH WOOD	HOB	72.74	75.69	2.95	4.0%
LADYWOOD	HOB	69.71	71.59	1.88	2.7%
LOZELLS AND EAST HANDSWORTH	HOB	69.86	73.36	3.50	5.0%
NECHELLS	HOB	68.37	70.9	2.53	3.7%
OSCOTT	HOB	73.35	75.9	2.55	3.5%
PERRY BARR	HOB	73.64	79.47	5.83	7.9%
SOHO	HOB	68.71	72.75	4.04	5.9%
SPARKBROOK	HOB	70.62	71.16	0.54	0.8%
SPRINGFIELD	HOB	75.84	76.75	0.91	1.2%
BARTLEY GREEN	SB	72.92	74.27	1.35	1.8%
BILLESLEY	SB	73.62	75.7	2.08	2.8%
BOURNVILLE	SB	73.99	77.15	3.16	4.3%
BRANDWOOD	SB	72.81	74.46	1.65	2.3%
EDGBASTON	SB	74.29	75.62	1.33	1.8%
HALL GREEN	SB	75.39	77.9	2.51	3.3%
HARBORNE	SB	74.14	77.58	3.44	4.6%
KINGS NORTON	SB	72.59	74.06	1.47	2.0%
LONGBRIDGE	SB	73.74	76.12	2.38	3.2%
MOSELEY AND KINGS HEATH	SB	70.56	74.24	3.68	5.2%
NORTHFIELD	SB	73.11	76.49	3.38	4.6%
QUINTON	SB	76.01	77.29	1.28	1.7%
SELLY OAK	SB	74.65	78	3.35	4.5%
WEOLEY	SB	72.90	77.89	4.99	6.8%

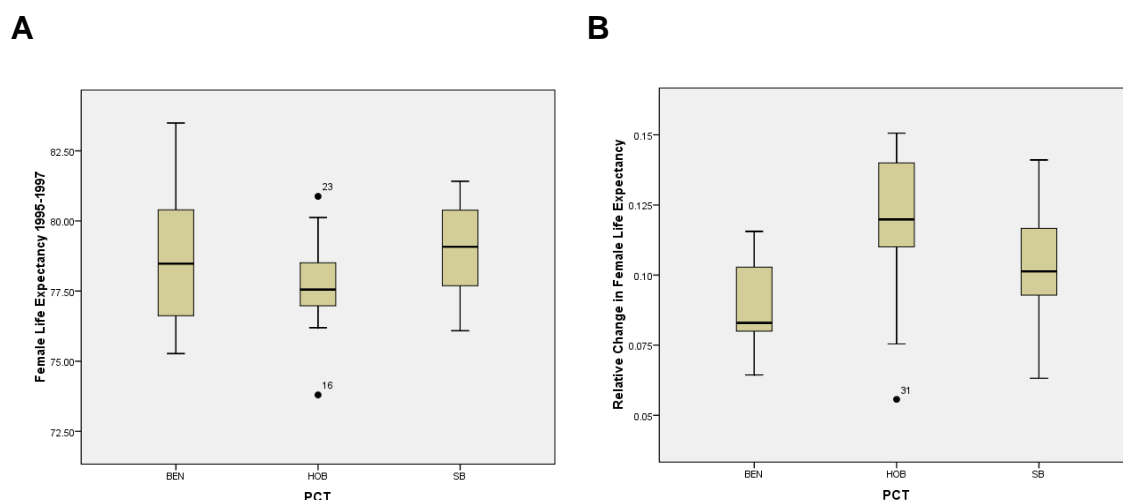
\* Absolute change from 95/97 to 05/07

\*\* Absolute change as percentage out of 95/97 life expectancy

Birmingham Health Inequalities Profile: Life expectancy – 2009

Figure 4.8 shows box plot of ward level female life expectancy in 05/07 (Panel A) and the relative change of it from 95/97 to 05/07 (Panel B) by PCT.

- Panel A shows that median ward level female life expectancy is the highest for South PCT and lowest for HOB tPCT. It has more variance in BEN wards than the other two PCTs. HOB tPCT has two outliers (Perry Barr at upper end and Ladywood at lower end).
- Panel B shows that median ward level relative change is the highest for HOB tPCT and the lowest for BEN PCT. It has more variance in HOB and South PCT. HOB tPCT has an outlier at lower end (Springfield).



**Figure 4.8 Ward level female life expectancy 05/07 and the relative change of it from 95/97 to 05/07 by PCT**

Table 4.3 presents details of the local variations. It ranks female life expectancy in 95/97, 05/07 and change from 95/97 to 05/07. Wards among the top quintile (8) on each item are highlighted as green (i.e. highest life expectancy, biggest increase, etc). The bottom quintile is highlighted as red in the table.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

**Table 4.3 Female Life expectancy in 95/97 and 05/07 by PCT and ward in Birmingham**

Ward	PCT	Female Life expectancy at birth			
		95/97	05/07	Change N	Change %
ACOCKS GREEN	BEN	76.91	78.46	1.55	2.0%
BORDESLEY GREEN	BEN	76.27	77.91	1.64	2.1%
ERDINGTON	BEN	78.95	79.91	0.96	1.2%
HODGE HILL	BEN	80.24	79.97	-0.27	-0.3%
KINGSTANDING	BEN	75.27	77.82	2.55	3.4%
SHARD END	BEN	78.34	79.34	1.00	1.3%
SHELDON	BEN	79.00	82.67	3.67	4.6%
SOUTH YARDLEY	BEN	78.18	81.58	3.40	4.3%
STECHFORD AND YARDLEY NORTH	BEN	78.62	78.31	-0.31	-0.4%
STOCKLAND GREEN	BEN	75.95	80.23	4.28	5.6%
SUTTON FOUR OAKS	BEN	81.70	84.02	2.32	2.8%
SUTTON NEW HALL	BEN	83.49	84.59	1.10	1.3%
SUTTON TRINITY	BEN	82.06	84.17	2.11	2.6%
SUTTON VESEY	BEN	80.55	83.16	2.61	3.2%
TYBURN	BEN	76.34	78.54	2.20	2.9%
WASHWOOD HEATH	BEN	76.91	78.05	1.14	1.5%
ASTON	HOB	77.02	83.89	6.87	8.9%
HANDSWORTH WOOD	HOB	77.58	81.28	3.70	4.8%
LADYWOOD	HOB	73.80	78.51	4.71	6.4%
LOZELLS AND EAST HANDSWORTH	HOB	78.21	80.81	2.60	3.3%
NECHELLS	HOB	76.19	77.84	1.65	2.2%
OSCOTT	HOB	77.52	79.2	1.68	2.2%
PERRY BARR	HOB	80.88	83.38	2.50	3.1%
SOHO	HOB	76.97	79.82	2.85	3.7%
SPARKBROOK	HOB	78.51	79.4	0.89	1.1%
SPRINGFIELD	HOB	80.13	80.3	0.17	0.2%
BARTLEY GREEN	SB	80.36	82.3	1.94	2.4%
BILLESLEY	SB	77.97	80.2	2.23	2.9%
BOURNVILLE	SB	78.13	81.66	3.53	4.5%
BRANDWOOD	SB	79.45	82.2	2.75	3.5%
EDGBASTON	SB	79.00	82.51	3.51	4.4%
HALL GREEN	SB	81.42	83.62	2.20	2.7%
HARBORNE	SB	77.69	81.76	4.07	5.2%
KINGS NORTON	SB	77.43	80.46	3.03	3.9%
LONGBRIDGE	SB	81.14	80.09	-1.05	-1.3%
MOSELEY AND KINGS HEATH	SB	76.09	81.29	5.20	6.8%
NORTHFIELD	SB	80.38	82.48	2.10	2.6%
QUINTON	SB	80.70	83.51	2.81	3.5%
SELLY OAK	SB	77.44	79.55	2.11	2.7%
WEOLEY	SB	79.16	84.06	4.90	6.2%

\* Absolute change from 95/97 to 05/07

\*\* Absolute change as percentage out of 95/97 life expectancy

#### 4.4 Identification of target wards

The Department of Health used five criteria to identify the Spearhead Group in England<sup>12</sup>. To identify local spearhead group (or target wards), same criteria were used. In addition to the five criteria, local emphasis on infant mortality as one of the leading causes of gap (see Part Three for details) was also taken into consideration.

This part assesses all 40 Birmingham wards against the following 6 factors:

- Male life expectancy at birth (05/07)
- Female life expectancy at birth (05/07)
- Cancer mortality rate in under 75s (05/07)
- Circulatory disease mortality rate in under 75s (05/07)
- Infant mortality rate (05/07)
- IMD 2007 score

The target wards consist of the ward areas that are in the bottom quintile (i.e. bottom 8) in Birmingham for 3 or more of the above 6 factors.

Table 4.4 shows all 40 wards in Birmingham against these six factors. 11 wards (out of 40) were identified as target wards (highlighted as red). Six of them are in BEN PCT; the other five in HOB tPCT; none of them is in South Birmingham PCT.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Table 4.4 Wards against the six life expectancy factors							
Ward	PCT	MLE 05/07	FLE 05/07	Cancer 05/07	Circulatory 05/07	IMR 05/07	IMD 2007
ACOCKS GREEN	BEN	74.51	78.46	209.67	269.55	10.33	37.59
ASTON	HOB	71.34	83.89	184.41	220.88	10.48	46.30
BARTLEY GREEN	SB	74.27	82.30	199.43	232.30	8.47	35.43
BILLESLEY	SB	75.70	80.20	200.42	207.18	5.43	33.38
BORDESLEY GREEN	BEN	74.41	77.91	211.72	249.04	13.02	48.02
BOURNVILLE	SB	77.15	81.66	185.95	223.81	0.00	22.71
BRANDWOOD	SB	74.46	82.20	202.68	205.65	2.97	31.60
EDGBASTON	SB	75.62	82.51	173.05	233.42	8.97	22.57
ERDINGTON	BEN	74.26	79.91	197.29	262.44	9.15	28.97
HALL GREEN	SB	77.90	83.62	174.21	177.08	5.28	19.32
HANDSWORTH WOOD	HOB	75.69	81.28	170.48	205.10	7.54	28.94
HARBORNE	SB	77.58	81.76	184.44	200.75	7.25	21.23
HODGE HILL	BEN	75.50	79.97	220.94	225.23	10.92	35.28
KINGS NORTON	SB	74.06	80.46	174.92	235.86	2.77	35.37
KINGSTANDING	BEN	73.95	77.82	236.32	247.69	5.04	46.44
LADYWOOD	HOB	71.59	78.51	191.61	308.96	10.24	45.77
LONGBRIDGE	SB	76.12	80.09	226.29	201.54	0.00	31.45
LOZELLS AND EAST HANDSWORTH	HOB	73.36	80.81	169.82	228.41	10.96	46.22
MOSELEY AND KINGS HEATH	SB	74.24	81.29	184.09	250.10	0.00	26.34
NECHELLS	HOB	70.90	77.84	240.13	276.10	11.20	53.13
NORTHFIELD	SB	76.49	82.48	192.97	194.30	6.39	24.45
OSCOTT	HOB	75.90	79.20	201.02	241.00	5.85	26.06
PERRY BARR	HOB	79.47	83.38	167.41	169.69	3.11	24.04
QUINTON	SB	77.29	83.51	158.83	189.50	5.57	28.25
SELLY OAK	SB	78.00	79.55	157.98	265.44	0.00	16.12
SHARD END	BEN	73.61	79.34	209.77	265.26	9.76	49.03
SHELDON	BEN	77.54	82.67	186.12	191.39	12.66	31.24
SOHO	HOB	72.75	79.82	155.36	308.96	9.98	52.00
SOUTH YARDLEY	BEN	75.77	81.58	194.18	210.94	7.25	34.08
SPARKBROOK	HOB	71.16	79.40	196.61	296.84	7.26	46.79
SPRINGFIELD	HOB	76.75	80.30	179.40	218.59	8.81	32.62
STECHFORD AND YARDLEY NORTH	BEN	74.91	78.31	219.93	258.28	11.47	36.45
STOCKLAND GREEN	BEN	73.04	80.23	193.83	277.63	8.26	30.80
SUTTON FOUR OAKS	BEN	80.53	84.02	157.76	148.68	4.17	9.81
SUTTON NEW HALL	BEN	81.12	84.59	145.92	142.31	0.00	10.16
SUTTON TRINITY	BEN	81.21	84.17	122.75	172.24	0.00	13.82
SUTTON VESEY	BEN	79.63	83.16	151.35	172.51	0.00	11.09
TYBURN	BEN	73.54	78.54	237.01	279.00	10.08	41.56
WASHWOOD HEATH	BEN	73.28	78.05	195.54	245.39	10.31	53.37
WEOLEY	SB	77.89	84.06	179.42	174.29	5.45	31.35

Birmingham Health Inequalities Profile: Life expectancy – 2009

Table 4.5 summarises the difference of all non-target vs. target wards group against the six factors chosen as the criteria for target wards. Box plots are used to illustrate the difference in the two populations (i.e. target wards vs non-target wards). It shows that target wards are generally worse than the non-target wards in terms of the six factors, and the variance in target wards is less than that of the non-target wards. In other words, the most disadvantageous wards have been targeted.

Table 4.5 Target wards vs. non-target wards against the six factors	
<p><b>Male life expectancy</b></p>	
<p><b>Female life expectancy</b></p>	
<p><b>Cancer mortality rate under 75</b></p>	

Birmingham Health Inequalities Profile: Life expectancy – 2009

<p><b>Circulatory diseases mortality rate under 75</b></p>	
<p><b>Infant mortality rate</b></p>	
<p><b>IMD Score</b></p>	

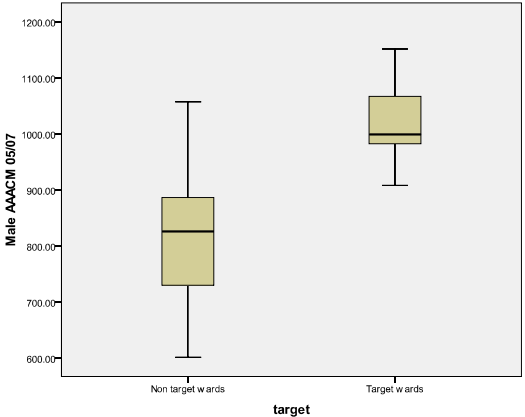
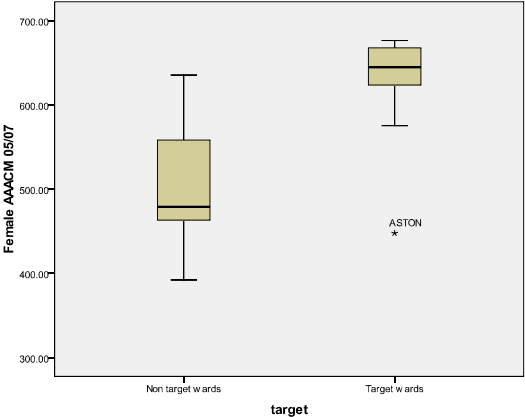
As all-age all-cause mortality (AAACM) rate is used as a proxy for life expectancy at sub-national level, ward level AAACM is assessed. Table 4.6 shows AAACM (05/07) by ward and sex. Wards that are in the bottom quintile (i.e. highest 8) are highlighted as blue. 12 wards are identified as ‘AAACM target wards’ as in the bottom quintile of either male or female AAACM. Three of them are in HOB tPCT and the other 9 are in BEN PCT. Matching the ‘AAACM target wards’ identified in this table and the ‘life expectancy target wards’ identified in Table 4.4, those wards that are identified as ‘target wards’ in both tables (i.e. life expectancy and AAACM) are highlighted as purple.

## Birmingham Health Inequalities Profile: Life expectancy – 2009

Table 4.6 All-age all-cause mortality (AAACM) rates (2005 - 2007) by ward			
Ward	PCT	Male AAACM 05/07	Female AAACM 05/07
<b>ACOCKS GREEN</b>	<b>BEN</b>	998.82	631.47
<b>ASTON</b>	<b>HOB</b>	974.47	447.68
BARTLEY GREEN	SB	978.85	509.74
BILLESLEY	SB	881.46	593.43
<b>BORDESLEY GREEN</b>	<b>BEN</b>	907.75	<b>644.68</b>
BOURNVILLE	SB	863.96	525.77
BRANDWOOD	SB	896.41	474.31
EDGBASTON	SB	795.54	439.30
<b>ERDINGTON</b>	<b>BEN</b>	<b>996.22</b>	558.07
HALL GREEN	SB	757.14	436.01
HANDSWORTH WOOD	HOB	846.60	486.11
HARBORNE	SB	750.26	479.25
HODGE HILL	BEN	861.53	545.74
KINGS NORTON	SB	967.24	610.19
<b>KINGSTANDING</b>	<b>BEN</b>	989.22	<b>672.94</b>
<b>LADYWOOD</b>	<b>HOB</b>	<b>1085.31</b>	<b>642.54</b>
LONGBRIDGE	SB	949.52	599.68
LOZELLS AND EAST HANDSWORTH	HOB	866.19	477.67
MOSELEY AND KINGS HEATH	SB	885.77	469.92
<b>NECHELLS</b>	<b>HOB</b>	<b>1104.12</b>	<b>666.29</b>
NORTHFIELD	SB	821.73	474.02
OSCOTT	HOB	883.52	626.48
PERRY BARR	HOB	679.02	392.20
QUINTON	SB	703.18	411.18
SELLY OAK	SB	773.62	616.15
<b>SHARD END</b>	<b>BEN</b>	972.37	<b>635.34</b>
SHELDON	BEN	716.51	485.03
<b>SOHO</b>	<b>HOB</b>	996.01	575.15
SOUTH YARDLEY	BEN	825.29	478.14
<b>SPARKBROOK</b>	<b>HOB</b>	<b>1048.32</b>	615.77
SPRINGFIELD	HOB	710.39	537.11
<b>STECHFORD AND YARDLEY NORTH</b>	<b>BEN</b>	<b>1010.59</b>	<b>668.56</b>
<b>STOCKLAND GREEN</b>	<b>BEN</b>	<b>1057.10</b>	581.39
SUTTON FOUR OAKS	BEN	646.44	433.73
SUTTON NEW HALL	BEN	636.33	424.95
SUTTON TRINITY	BEN	600.69	435.86
SUTTON VESEY	BEN	729.46	468.17
<b>TYBURN</b>	<b>BEN</b>	<b>1151.08</b>	<b>676.13</b>
<b>WASHWOOD HEATH</b>	<b>BEN</b>	941.51	<b>650.71</b>
WEOLEY	SB	789.22	463.17

## Birmingham Health Inequalities Profile: Life expectancy – 2009

The comparison between the ‘target wards’ identified based on life expectancy and AAACM (in Table 4.4 and 4.6) confirms that life expectancy and AAACM at Ward level are highly associated. 9 wards (3 in HOB, 6 in BEN) are identified as the ‘target wards’ using both sets of criteria. Table 4.7 shows the difference of all non-target vs. target wards group (as identified in Table 4.4) against AAACM for males and females.

Table 4.7 Target wards vs. non-target wards against AAACM 2005-2007	
<p><b>Male AAACM (05/07)</b></p>	
<p><b>Female AAACM (05/07)</b></p>	

## References

- <sup>1</sup> Parliamentary Office of Science and Technology. Ethnicity and Health, January 2007, Number 276
- <sup>2</sup> South East England Public Health Observatory. Technical Report: Calculating life expectancy in small areas, November 2005
- <sup>3</sup> Bhopal, R, Race, Ethnicity and Health in Multicultural Societies, Oxford 2007
- <sup>4</sup> [http://www.lancashire.gov.uk/office\\_of\\_the\\_chief\\_executive/lancashireprofile/monitors/lifeexpectethnic.asp](http://www.lancashire.gov.uk/office_of_the_chief_executive/lancashireprofile/monitors/lifeexpectethnic.asp)
- <sup>5</sup> Spending Review 2004, HM Treasury  
[http://www.hm\\_treasury.gov.uk/spending\\_review/spend\\_sr04/spend\\_sr04\\_index.cfm](http://www.hm_treasury.gov.uk/spending_review/spend_sr04/spend_sr04_index.cfm)
- <sup>6</sup> 2007 Pre-Budget Report and Comprehensive Spending Review, HM Treasury  
[http://www.hm-treasury.gov.uk/pbr\\_csr07\\_index.htm](http://www.hm-treasury.gov.uk/pbr_csr07_index.htm)
- <sup>7</sup> Birmingham Health and Wellbeing Partnership. Floor Target Action Plan April 2006: Tackling infant mortality and male life expectancy. April, 2006
- <sup>8</sup> Health inequality target monitoring: update to include data for 2006 [life expectancy report], Department of Health (Dec 2007)  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH\\_081280](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_081280)
- <sup>9</sup> Health Inequalities Intervention Tool.  
<http://www.nepho.org.uk/index.php?c=1768>
- <sup>10</sup> WHO. Distribution of years of life lost by broader causes (percentage of total)  
<http://www.who.int/whosis/indicators/compendium/2008/11lr/en/>
- <sup>11</sup> ONS. Beginners' guide to UK geography: Electoral wards/divisions.  
[http://www.statistics.gov.uk/geography/electoral\\_wards.asp](http://www.statistics.gov.uk/geography/electoral_wards.asp)
- <sup>12</sup> Department of Health. Mortality target monitoring: update to include data for 2007. October 2008  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH\\_088867](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_088867)