

## **Assessing the Mortality Experience of Wards in Warwickshire, 1999-2003**

There is known to be substantial variation in mortality at small area level within most local authorities that cannot be captured by authority level analysis. In interpreting the results below, local knowledge and access to further information regarding the socio-economic context of the wards will help in assessing the plausibility of the results.

### **Key Findings**

- Some 42 wards in the County had an estimated Standardised Mortality Ratio higher than that for England and Wales, 15 wards significantly so.
- Life expectancy at birth was lower than the national average for 37 of the wards in Warwickshire, 11 of which were significantly lower.
- The SMRs and life expectancy at birth figures suggest a divide in mortality experience not only between the districts but within the districts themselves.
- Indication of a divide in mortality experience between the districts in the North of the County and those in the South of Warwickshire.

### **Standardised Mortality Ratio (SMR) (experimental statistics)**

The simplest form of mortality rate divides the total number of deaths in an area by the total population of that area. These crude rates can be misleading as the age structures of populations can differ widely between wards, and can therefore prove unhelpful for comparison purposes. The SMRs presented here have been standardised using death rates for England & Wales. The national death rates in each age group (up to age 85) were used to calculate how many deaths would be expected in a particular ward given the size and age structure of its population. This number of 'expected' deaths is then compared with the actual number of 'observed' deaths that took place in that ward.

The SMR can therefore be defined as the ratio of the observed number of deaths in a ward to the number expected if the ward had the same age-specific rates as England & Wales.

As national death rates were used as the standard for the results, the SMR of England & Wales is 100. This allows the mortality experience of each ward to be compared with the national average. If an SMR is less than 100 this means the number of deaths for a ward was less than would have been expected. Conversely, if an SMR is greater than 100 the number of deaths was greater than expected.

These ward-level SMRs are often based on small numbers of events. As these will be affected by some random variation, the results are therefore subject to some margin of error, illustrated by the accompanying 95 per cent confidence intervals. For comparison between areas the confidence intervals allow the differences which are statistically significant at the 95 per cent level (confidence limits do not overlap, ie do not include 100) to be distinguished from those more likely to result by chance (confidence limits do overlap, ie include 100). When an SMR of a ward is significantly higher or lower than the SMR for England and Wales there is less than one in twenty chance of the figure differing as a result of statistical variation.

There are instances when the SMR may provide a misleading summary comparison between areas. For example, where two areas have identical death rates in every age group, but different population age structures, their SMRs will differ. Alternative summary measures can be used to overcome these limitations, such as life expectancy or directly age-standardised mortality rates. However, since the number of deaths at ward-level in each age group can be very small, SMRs tend to be used in preference to directly standardised rates.

**Table 1; Number of wards with SMRs higher and lower than the national average**

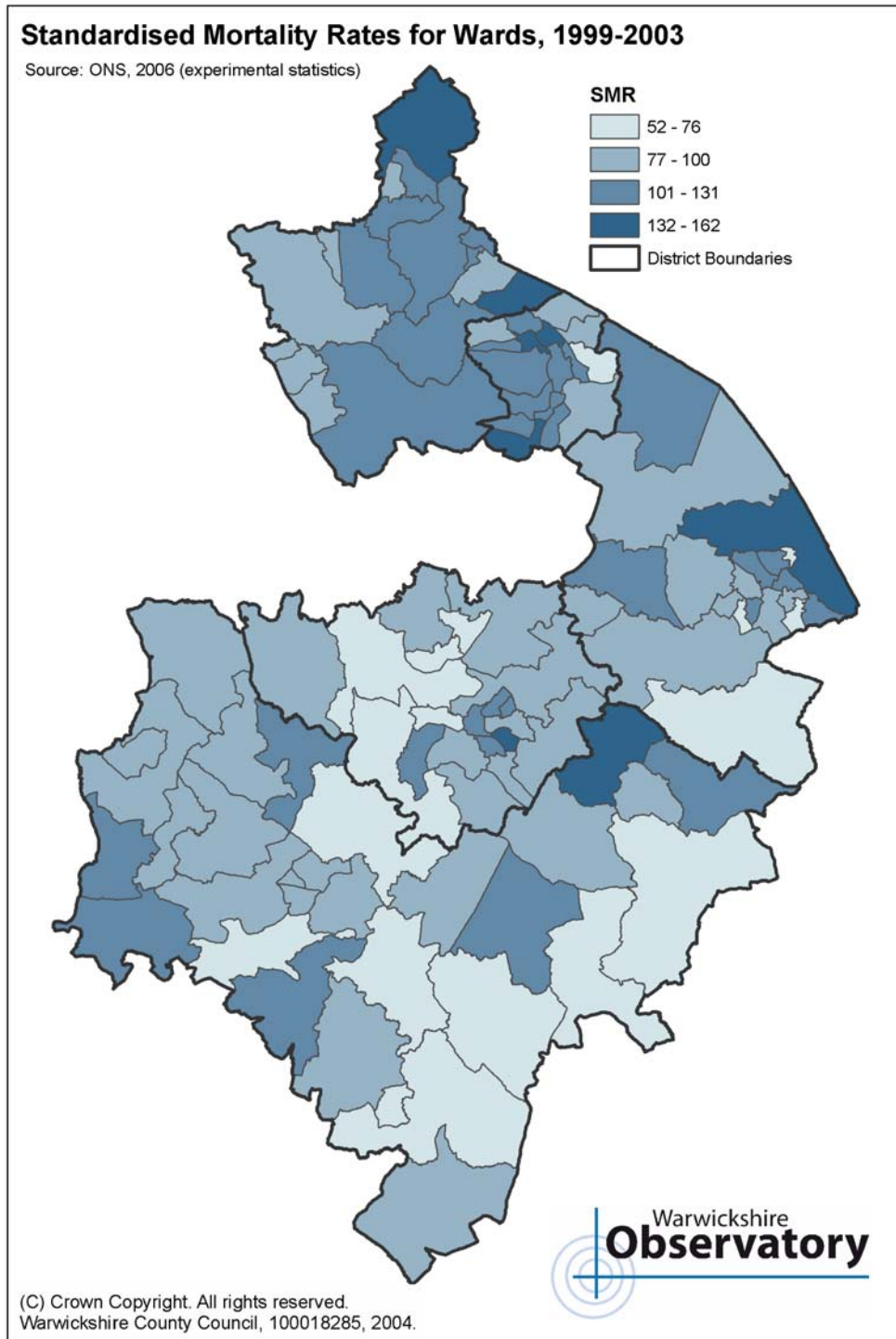
SMR (1999 - 2003)	North Warwickshire	Nuneaton & Bedworth	Rugby	Stratford on Avon	Warwick
SMR >100 (England & Wales)	10	12	8	7	5
SMR significantly >100 (E&W)	3	7	2	1	2
SMR <100 (E&W)	7	5	12	24	15
SMR significantly <100 (E&W)	0	2	4	14	9
Among 20% highest SMRs in E&W	3	6	2	4	2
Among 10% highest SMRs in E&W	2	4	1	1	1
Among 20% lowest SMRs in E&W	0	1	4	10	7
SMR Persons	105	110	95	87	90
SMR Males	104	108	92	86	88
SMR Females	105	112	98	89	92

Source: ONS, 2006 (experimental statistics)

Referring to Table 1, over half of the wards in Warwickshire with an SMR greater than the national average were in the districts of North Warwickshire and Nuneaton & Bedworth, with seven of the 15 statistically significant SMRs located in Nuneaton & Bedworth. Conversely, 62% of those wards in Warwickshire with mortality experience estimated to be lower than that for England & Wales were in Stratford-on-Avon and Warwick Districts, with fourteen and nine wards, respectively, statistically lower in these two districts. No wards in North Warwickshire had an SMR significantly lower than the national average, with just two in Nuneaton & Bedworth and four in Rugby.

Whilst Figure 1 provides a graphical overview of the mortality differences between and within the Districts, Tables 3a to 3e provide a breakdown of the wards and their SMRs within each District, highlighting the SMRs which are greater/lower and significantly greater/lower than the national average. Among the wards in Warwickshire, Avon and Swift ward in Rugby Borough has the highest estimated SMR for all persons with a figure of 162, and confidence limits ranging from 140 to 187. This was followed by Hartshill ward in North Warwickshire with an SMR of 146, ranging between 126 and 169. Leek Wootton ward in Warwick District had the lowest estimated SMR of 52 (confidence limits of 38 and 69), a mortality experience 48% below the national average.

Figure 1



## **Life Expectancy at Birth (experimental statistics) 1999-2003**

Life expectancy at birth for a ward in 1999-2003 is an estimate of the average number of years a newborn baby would survive if he or she experienced the particular wards age-specific mortality rates for that time period throughout his or her life. The figure reflects mortality among those living within the ward in 1999-2003 rather than mortality among those born in each area. It is not therefore the number of years a baby born in the ward in 1999-2003 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 ward will live elsewhere for at least some part of their lives.

These life expectancy results have been calculated by ONS using deaths registered between 1999-2003 and abridged life tables where deaths and populations are aggregated into age groups.

As with the SMRs, the ward-level life expectancy figures are often based on rather small numbers of deaths. As these will be affected by some random variation, the results are therefore subject to some margin of error. Consequently, 95 per cent confidence intervals have been calculated for these figures.

ONS examined the correlation between the proportions of populations in communal establishments and life expectancy at birth. It was found that, on average, wards with higher proportions of their population in communal establishments had lower life expectancy. It was concluded that the best way to consider the impact of life expectancy at birth was to include an indicator of the proportion of the 2001 population of each ward aged 65+ which was resident in a 'Medical & Care' communal establishment.

**Table 2; Number of wards in each District in Warwickshire where life expectancy is estimated to be lower than that in England & Wales**

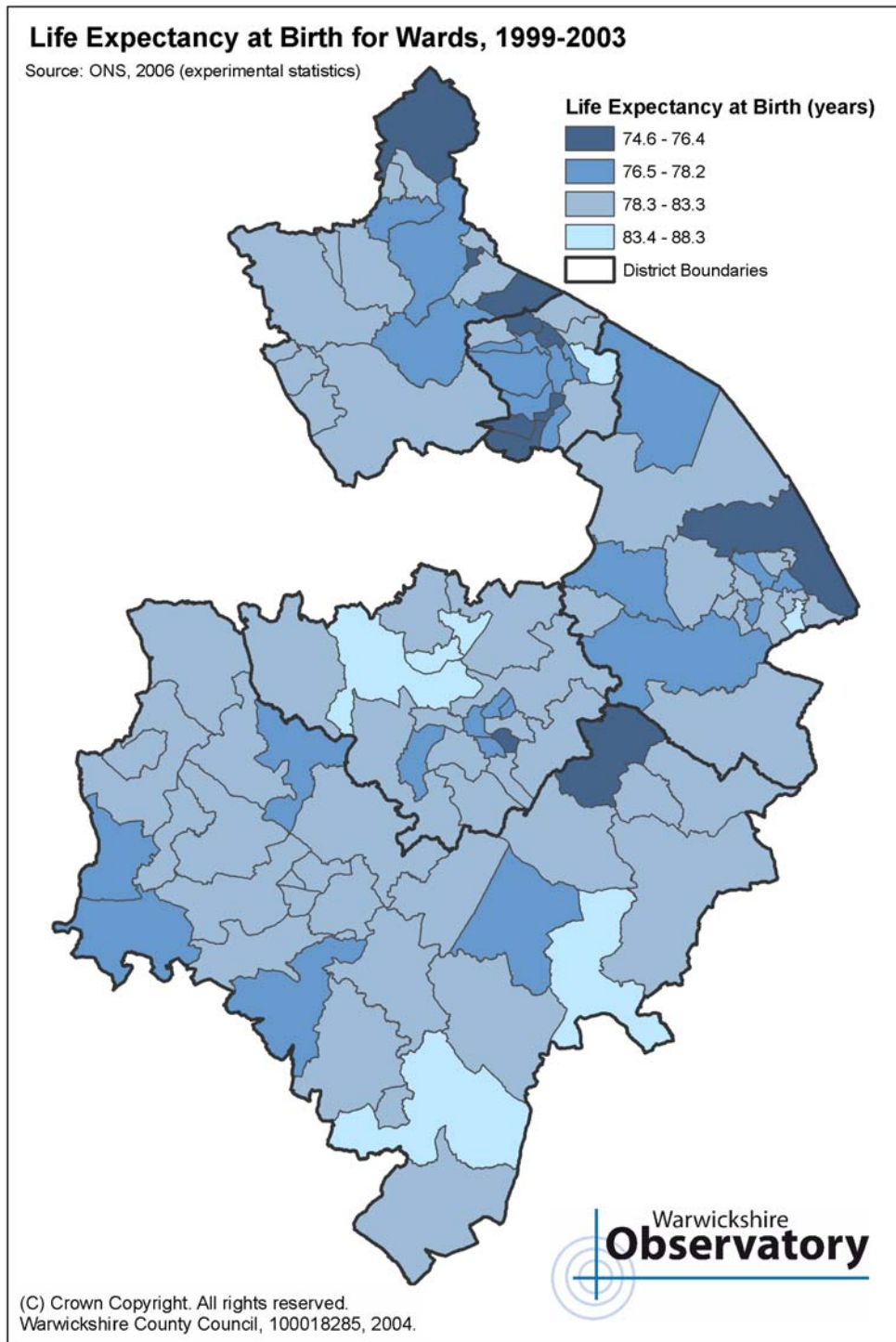
<b>Life Expectancy (LE) persons, 1999-2003</b>	<b>North Warwickshire</b>	<b>Nuneaton &amp; Bedworth</b>	<b>Rugby</b>	<b>Stratford on Avon</b>	<b>Warwick</b>
LE < England & Wales (78.3)	6	12	7	6	6
LE significantly < England & Wales (78.3)	3	5	1	0	2
Among 20% lowest LE in England & Wales	3	5	2	1	3

*Source: Office for National Statistics (2006)*

Some 35% (37) of wards in Warwickshire were estimated to have a lower life expectancy at birth than life expectancy at birth in England and Wales, 10 of which were estimated to be significantly lower. Nuneaton & Bedworth had almost twice as many wards, compared with the other four districts, where life expectancy at birth was estimated to be lower than the national average, and twice as many wards that were significantly lower.

Abbey ward in Nuneaton & Bedworth had the lowest life expectancy at birth with a figure of 74.6 years, ranging between 73.1 and 76.1 years, followed by Avon and Swift ward in Rugby Borough with a life expectancy at birth of 74.8 years (With confidence limits of 73.3 and 76.4 years). The highest life expectancy at birth was in Leek Wootton ward with a figure of 88.3 years (confidence limits of 85.9 and 90.7 years).

Figure 2

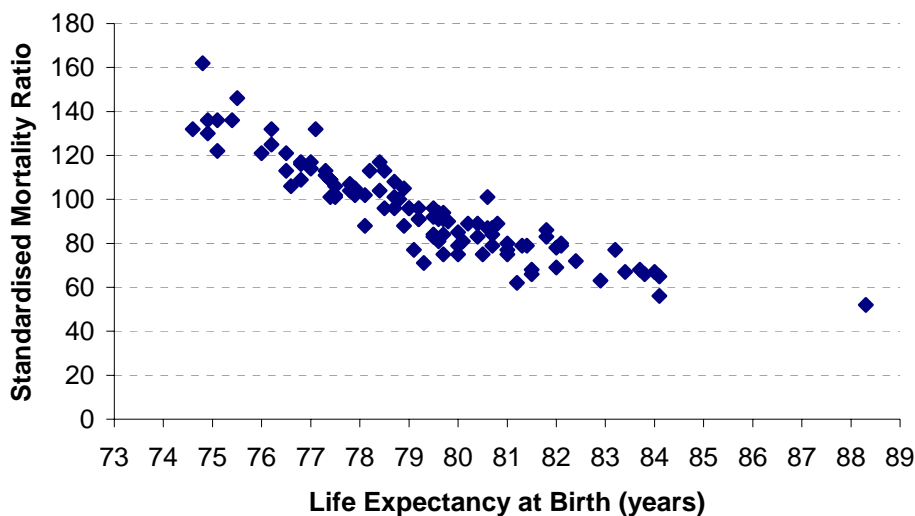


## **Discussion**

The SMRs and life expectancy figures display a geographical pattern that suggests a divide in mortality experience not only between the Districts but within the Districts themselves. The Figures and Tables highlight a divide between the Districts in the North of the County, namely North Warwickshire & Nuneaton & Bedworth, and the rest of the County, in particular Stratford-on-Avon. It should also be noted that whereas females tend to experience lower mortality than males, and have a higher life expectancy, the differences between the two sexes are also likely to vary by area.

ONS carried out checks between the two datasets and concluded that although the SMR estimates were based on deaths under age 85, the two datasets appeared to be consistent and correlated well. This is illustrated in Figure 3, in which the scatterplot highlights the negative correlation between the two indicators, whereby the lower the life expectancy at birth, the higher the standardised mortality ratio tends to be. Within Nuneaton & Bedworth, for example, the five wards estimated to have statistically significantly lower life expectancy at birth than the national average also feature among the wards estimated to have a SMR higher than that for England & Wales. Conversely, the five wards with a life expectancy at birth estimated to be higher than that for England & Wales are also the same five wards with a SMR estimated to be lower than the national average.

**Figure 3; Illustrating the correlation between SMRs and life expectancy at birth**



In attempting to explain the differences in mortality experience at this small area level, one could consider the socio-economic and ethnic differences between the areas as an indication of the socio-economic and ethnic inequalities in health and/or the creation of an environment conducive to an individual's particular choices with regards to diet and lifestyle impacting on health. Interventions undertaken to narrow the north-south divide in terms of achievement, opportunity and quality life should also have an indirect positive effect on mortality.

## TABLES

**Table 3a: SMRs for Wards in North Warwickshire, 1999-2003**

Ward	SMR	Lower 95% CI	Upper 95% CI	Quintile	Twentieth
Hartshill	146	126	169	5	20
Newton Regis and Warton	136	115	160	5	19
Atherstone Central	122	103	143	5	18
Baddesley and Grendon	113	97	131	4	16
Fillongley	113	95	133	4	16
Atherstone North	108	91	127	4	15
Arley and Whitacre	105	90	120	4	14
Polesworth East	105	88	126	4	14
Dordon	101	82	122	4	13
Hurley and Wood End	101	84	122	4	13
Coleshill North	96	77	119	3	11
Polesworth West	94	75	116	3	10
Atherstone South & Mancetter	92	78	109	3	10
Coleshill South	89	74	106	3	9
Curdworth	89	73	107	2	8
Water Orton	88	72	106	2	8
Kingsbury	87	70	106	2	8

Source: Office for National Statistics (2006) (experimental statistics)

Wards were divided into quintiles and twentieths based on their unrounded SMRs

Quintiles: 1 = Lowest SMRs, 5 = Highest SMRs

Twentieths: 1 = Lowest SMRs, 20 = Highest SMRs

**Table 3b: SMRs for wards in Nuneaton & Bedworth, 1999-2003**

Ward	SMR	Lower 95% CI	Upper 95% CI	Quintile	Twentieth
Exhall	136	123	149	5	19
Abbey	132	118	147	5	19
Bar Pool	132	117	148	5	19
Bede	130	117	144	5	19
Heath	125	111	140	5	18
Camp Hill	121	107	136	5	17
Wem Brook	114	102	126	4	16
Poplar	113	99	130	4	16
Kingswood	111	97	127	4	15
Arbury	109	94	127	4	15
Attleborough	109	96	123	4	15
Slough	109	96	124	4	15
Galley Common	96	80	115	3	11
Bulkington	94	83	105	3	10
Weddington	90	79	101	3	9
St Nicolas	81	70	93	2	6
Whitestone	65	55	76	1	1

Source: Office for National Statistics (2006) (experimental statistics)

Wards were divided into quintiles and twentieths based on their unrounded SMRs

Quintiles: 1 = Lowest SMRs, 5 = Highest SMRs

Twentieths: 1 = Lowest SMRs, 20 = Highest SMRs

**Table 3c: SMRs for wards in Rugby, 1999-2003**

Ward	SMR	Lower 95% CI	Upper 95% CI	Quintile	Twentieth
Avon and Swift	162	140	187	5	20
Newbold	116	103	131	5	17
Benn	113	97	130	4	16
Overslade	109	97	123	4	15
Hillmorton	104	92	118	4	14
Wolvey	104	81	132	4	14
Earl Craven and Wolston	102	89	117	4	13
Brownsover South	101	81	125	4	13
Admirals	96	79	115	3	11
Caldecott	96	83	110	3	11
New Bilton	91	78	105	3	9
Dunchurch and Knightlow	88	77	101	2	8
Eastlands	83	71	96	2	6
Fosse	83	69	100	2	6
Lawford and King's Newnham	81	66	100	2	6
Ryton-on-Dunsmore	79	58	104	2	5
Brownsover North	75	55	100	1	4
Leam Valley	69	50	93	1	2
Bilton	68	58	79	1	2
Paddock	66	54	81	1	2

Source: Office for National Statistics (2006) (experimental statistics)

Wards were divided into quintiles and twentieths based on their unrounded SMRs

Quintiles: 1 = Lowest SMRs, 5 = Highest SMRs

Twentieths: 1 = Lowest SMRs, 20 = Highest SMRs

**Table 3d: SMRs for wards in Warwick, 1999-2003**

Ward	SMR	Lower 95% CI	Upper 95% CI	Quintile	Twentieth
Willes	136	121	153	5	19
Brunswick	121	108	135	5	17
Milverton	107	96	119	4	14
Crown	106	92	121	4	14
Warwick West	106	95	118	4	14
Manor	102	92	112	4	13
Clarendon	100	87	115	3	12
Warwick South	89	79	101	3	9
Bishop's Tachbrook	87	67	111	2	8
Lapworth	87	71	106	2	8
Whitnash	84	73	95	2	7
Abbey	79	70	89	2	5
Cubbington	79	69	91	2	5
Stoneleigh	78	59	100	1	4
Radford Semele	77	59	98	1	4
Warwick North	75	65	86	1	4
Park Hill	68	59	78	1	2
St John's	67	59	76	1	2
Budbrooke	63	51	76	1	1
Leek Wootton	52	38	69	1	1

Source: Office for National Statistics (2006) (experimental statistics)

**Table 3e: SMRs for Wards in Stratford on Avon, 1999-2003**

Ward	SMR	Lower 95% CI	Upper 95% CI	Quintile	Twentieth
Long Itchington	132	109	158	5	19
Claverdon	117	96	140	5	17
Quinton	117	94	144	5	17
Stockton and Napton	117	93	146	5	17
Alcester	104	92	118	4	14
Kineton	102	85	120	4	13
Bidford and Salford	101	88	115	4	13
Stratford Mount Pleasant	96	81	112	3	11
Studley	96	83	109	3	11
Southam	91	78	105	3	9
Stratford Avenue & New Town	91	79	103	3	9
Wellesbourne	91	79	103	3	9
Tredington	86	69	105	2	7
Aston Cantlow	85	66	108	2	7
Henley	84	72	96	2	7
Sambourne	84	64	110	2	7
Kinwarton	83	63	106	2	6
Harbury	80	66	95	2	5
Long Compton	80	63	100	2	5
Stratford Alveston	79	68	90	2	5
Stratford Guild and Hathaway	79	69	89	2	5
Bardon	77	60	97	1	4
Tanworth	77	63	92	1	4
Shipston	75	64	88	1	4
Welford	75	59	96	1	4
Snitterfield	72	55	93	1	3
Vale of the Red Horse	71	55	90	1	2
Burton Dassett	67	50	89	1	2
Fenny Compton	66	51	85	1	2
Ettington	62	46	82	1	1
Brailes	56	42	73	1	1

Source: Office for National Statistics (2006) (experimental statistics)

Wards were divided into quintiles and twentieths based on their unrounded SMRs

Quintiles: 1 = Lowest SMRs, 5 = Highest SMRs

Twentieths: 1 = Lowest SMRs, 20 = Highest SMRs

**Table 4a: Life Expectancy at birth for wards in North Warwickshire, 1999-2003**

Ward	Life expectancy at birth (years)	Lower 95% CI	Upper 95% CI	Quintile <sup>1</sup>	Medical & Care establishments - population indicator <sup>2</sup>
Newton Regis & Warton	74.9	72.7	77.1	5	5
Atherstone Central	75.1	72.8	77.4	5	2
Hartshill	75.5	73.9	77.1	5	4
Baddesley & Grendon	77.3	75.6	79.0	4	3
Dordon	77.4	75.4	79.4	4	1
Arley and Whitacre	77.9	76.5	79.4	4	0
Fillongley	78.5	76.9	80.0	3	4
Atherstone North	78.7	77.0	80.3	3	3
Polesworth East	78.9	76.9	80.8	3	1
Water Orton	78.9	76.5	81.2	3	2
Atherstone South & Mancetter	79.5	77.6	81.4	3	0
Coleshill North	79.5	77.3	81.8	3	0
Polesworth West	79.6	77.4	81.8	3	0
Coleshill South	80.2	78.0	82.5	2	4
Curdworth	80.4	78.6	82.1	2	0
Hurley and Wood End	80.6	78.8	82.5	2	0
Kingsbury	80.6	78.9	82.3	2	0

Source: Office for National Statistics (2006) (experimental statistics)

**Table 4b: Life Expectancy at birth for wards in Nuneaton & Bedworth, 1999-2003**

Ward	Life expectancy at birth (years)	Lower 95% CI	Upper 95% CI	Quintile <sup>1</sup>	Medical & Care establishments - population indicator <sup>2</sup>
Abbey	74.6	73.1	76.1	5	1
Bede	74.9	73.2	76.6	5	1
Exhall	75.4	74.2	76.7	5	5
Camp Hill	76.0	74.7	77.4	5	2
Heath	76.2	74.8	77.5	5	2
Wem Brook	77.0	75.7	78.4	4	1
Bar Pool	77.1	75.8	78.5	4	0
Kingswood	77.3	75.6	78.9	4	1
Arbury	77.4	75.9	79.0	4	3
Attleborough	77.4	76.0	78.8	4	3
Slough	77.4	76.0	78.8	4	3
Poplar	78.2	76.8	79.6	4	0
Galley Common	78.5	76.9	80.1	3	0
Bulkington	79.7	78.5	81.0	2	1
Weddington	79.8	78.6	80.9	2	1
St Nicolas	80.1	78.8	81.4	2	3
Whitestone	84.1	82.8	85.4	1	0

Source: Office for National Statistics (2006) (experimental statistics)

**Table 4c: Life expectancy at birth for wards in Rugby, 1999-2003**

Ward	Life expectancy at birth (years)	Lower 95% CI	Upper 95% CI	Quintile <sup>1</sup>	Medical & Care establishments - population indicator <sup>2</sup>
Avon and Swift	74.8	73.3	76.4	5	5
Benn	76.5	74.8	78.2	5	2
Newbold	76.8	75.3	78.3	4	2
Overslade	76.8	75.2	78.4	4	4
Wolvey	77.9	75.1	80.6	4	0
Dunchurch and Knightlow	78.1	76.2	80.0	4	2
Earl Craven and Wolston	78.1	76.6	79.6	4	3
Hillmorton	78.4	77.1	79.7	3	3
Brownsover South	78.7	76.5	80.9	3	0
Caldecott	78.7	77.1	80.3	3	3
Admirals	79.0	77.3	80.7	3	0
Fosse	79.5	77.3	81.7	3	0
Lawford and King's Newnham	79.6	77.6	81.6	3	0
New Bilton	79.7	78.1	81.3	3	1
Brownsover North	80.0	77.5	82.5	2	0
Bilton	81.5	79.7	83.2	1	4
Eastlands	81.8	80.2	83.4	1	0
Leam Valley	82.0	80.2	83.8	1	0
Ryton-on-Dunsmore	82.1	79.6	84.6	1	0
Paddock	83.8	81.8	85.8	1	0

Source: Office for National Statistics (2006) (experimental statistics)

**Table 4d; Life expectancy at birth for wards in Ward, 1999-2003**

Ward	Life expectancy at birth (years)	Lower 95% CI	Upper 95% CI	Quintile <sup>1</sup>	Medical & Care establishments - population indicator <sup>2</sup>
Willes	75.1	73.8	76.4	5	4
Brunswick	76.5	75.1	77.9	5	0
Crown	76.6	75.0	78.3	5	2
Manor	77.5	76.1	79.0	4	5
Warwick West	77.5	76.2	78.9	4	1
Milverton	77.8	76.6	79.0	4	5
Clarendon	78.8	77.3	80.3	3	1
Whitnash	79.7	78.4	81.0	3	2
Cubbington	80.0	78.5	81.6	2	2
Warwick North	80.5	79.2	81.8	2	2
Bishop's Tachbrook	80.7	77.5	83.9	2	0
Lapworth	80.7	78.8	82.6	2	2
Warwick South	80.8	79.7	82.0	2	2
Abbey	81.4	80.2	82.7	1	2
Stoneleigh	82.0	79.5	84.6	1	0
Budbrooke	82.9	81.2	84.6	1	0
Radford Semele	83.2	80.6	85.9	1	0
St John's	83.4	82.0	84.7	1	2
Park Hill	83.7	82.5	84.9	1	1
Leek Wootton	88.3	85.9	90.7	1	0

Source: Office for National Statistics (2006) (experimental statistics)

**Table 4e; Life expectancy at birth for wards in Stratford-on-Avon, 1999-2003**

Ward	Life expectancy at birth (years)	Lower 95% CI	Upper 95% CI	Quintile <sup>1</sup>	Medical & Care establishments - population indicator <sup>2</sup>
Long Itchington	76.2	74.0	78.4	5	5
Claverdon	76.8	74.0	79.6	4	4
Quinton	77.0	74.8	79.2	4	4
Bidford and Salford	77.5	75.9	79.1	4	5
Alcester	77.8	76.1	79.5	4	2
Kineton	77.9	76.1	79.7	4	5
Stockton and Napton	78.4	76.3	80.5	3	0
Stratford Mount Pleasant	79.0	77.2	80.7	3	2
Bardon	79.1	75.5	82.7	3	0
Southam	79.2	78.0	80.4	3	2
Stratford Avenue & New Town	79.2	77.8	80.6	3	2
Studley	79.2	78.0	80.5	3	2
Vale of the Red Horse	79.3	75.9	82.6	3	0
Sambourne	79.5	76.5	82.5	3	4
Wellesbourne	79.6	78.3	81.0	3	2
Welford	79.7	76.5	82.9	3	0
Aston Cantlow	80.0	76.6	83.4	2	0
Kinwarton	80.4	77.0	83.9	2	0
Henley	80.7	79.0	82.3	2	0
Stratford Guild & Hathaway	80.7	79.2	82.3	2	2
Long Compton	81.0	77.6	84.5	2	0
Shipston	81.0	79.4	82.6	2	2
Tanworth	81.0	79.1	83.0	2	3
Ettington	81.2	77.7	84.6	1	0
Stratford Alveston	81.3	80.1	82.4	1	2
Fenny Compton	81.5	79.2	83.7	1	0
Tredington	81.8	80.1	83.5	1	0
Harbury	82.1	80.4	83.7	1	0
Snitterfield	82.4	79.1	85.6	1	0
Burton Dassett	84.0	81.8	86.1	1	0
Brailes	84.1	81.9	86.4	1	0

Source: Office for National Statistics (2006) (experimental statistics)

<sup>1</sup>The quintiles are based on unrounded life expectancy results which were ranked from highest and lowest then divided into fifths (quintiles).

Quintile 1 = Fifth of wards with the highest life expectancy

Quintile 5 = Fifth of wards with the lowest life expectancy

<sup>2</sup>This indicator represents the proportion of the population of each ward aged 65 and over who were resident in Medical & Care communal establishments in 2001. A '0' indicates that none of a ward's 65+ population was resident in a Medical & Care establishment in 2001

Quintile 1 = Lowest proportion of ward populations aged 65 and over who were resident in Medical & Care establishments in 2001

Quintile 5 = Highest proportion of ward populations aged 65 and over who were resident in Medical & Care establishments in 2001.