Life expectancy in England: variations and trends by gender, health authority, and level of deprivation

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Abstract

Study objectives—To investigate variations and trends in life expectancy in English district health authorities in relation to gender and Jarman deprivation level.

Design—Mortality data for English health authorities from 1984-94, compiled by the Office for National Statistics, were assessed conventionally and using life table techniques.

Setting—District health authorities in England.

Main outcome measures—Life expectancies in the 105 DHAs in relation to rank, to gender, and to deprivation category based on the census based Jarman score.

Conclusions—Differences in life expectancy had widened over the decade and prosperous areas with greatest longevity had seen the largest gains. In most deprived areas improvements in life expectancy were negligible. The greatest gender differences in life expectancy were also seen in deprived areas.

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The *Health of the Nation* white paper noted that effective strategies to improve health need to be sensitive to variations in health.¹ In a recent report on health variations, the Chief Medical Officer's Working Group concluded that action to tackle these is central to the achievement of the Government's *Health of the Nation* strategy.² It went on to specify actions that the Department of Health and the NHS can take to tackle the socioeconomic, regional, gender, and ethnic variations in health which prevail in the UK. Recommendations included the need for further research, including work on population groups at risk of poor health.

We examine the effects of regional variations in mortality on longevity. Mortality differences are conventionally assessed in terms of epidemiological measures such as standardised mortality rates/ratios that offer comparisons against a national average but give no tangible indication of their impact on longevity. Life table techniques convert mortality rates into life expectancy, a readily comprehensible summary index of mortality experience. Life expectancy data are available nationally,³ for regional health authorities,^{4 5} and for "clusters" of homogeneous areas⁵ but have not hitherto been examined for health authorities. Using mortality data for the decade 1984-94, we examined variations and trends in life expectancy at birth in relation to gender in district health authorities (DHAs) in England, using recent (1995) DHA boundaries. Life expectancy was also computed for "families" of DHAs grouped on the basis of 1991 censusbased Jarman deprivation scores.⁶⁷ Gender differences and trends in life expectancy over the decade 1984-94 were also examined by DHA and level of deprivation. The findings depict regional, socioeconomic, and gender inequalities in mortality in terms of a yardstick everyone can comprehend—how long men and women live.

Methods

The analysis is based on mortality data for England for the individual years 1984-94 compiled by the Office for National Statistics (ONS), and ONS final mid-year population estimates for the years 1984-94. Abridged life tables were constructed by sex using the method described by Elandt-Johnson and Johnson.⁸ The age groups used were <1, 1-4,5-9, ..., 80-84, 85+. Life expectancy at birth was computed for the three year period 1992-94 (three year averages were used to smooth out annual fluctuations at local level). It was also computed for 1984-86 to examine the absolute change in values between the start and end periods of the decade, and area rankings in the two periods. The SD and coefficient of variation were computed for the two periods to examine whether or not regional differences had altered. Trends in life expectancy were calculated using the methodology for computing mortality trends in the Public Health Common Data Set, produced annually by the Department of Health.7 Estimates of the average annual percent change were calculated using the logarithm of the annual life expectancies, on the basis of the formula $100(e^{b}-1)$ where b is the coefficient of the slope of the resultant regression line. A goodness of fit test showed strong evidence for a linear relationship (p<0.01 in all but 5 DHAs, and p value <0.05in the remaining 5 DHAs).

Life expectancies in 1992-94 in the 105 DHAs in England (boundaries as of April 1995) are presented by sex in rank order from highest to lowest. Values and ranks for 1984-86 are also given, along with the average annual percentage change in life expectancy during 1984-94. In the maps and graphs similar scales

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Accepted for publication July 1997 and/or intervals are used for males and females to facilitate comparison by gender.

DHAs were also grouped into seven categories on the basis of their Jarman deprivation scores, which are derived from a number of 1991 census based demographic and socioeconomic variables.⁶⁷ The basis for the grouping, and the DHAs in each group, are shown in table 1. Life expectancy data for the deprivation categories are presented in the same format as described above for DHAs. Life expectancies and Jarman scores for the individual DHAs were correlated to measure the association between deprivation and longevity. Gender differences and trends in life expectancy between 1984-94 were examined by deprivation level.

Results

LIFE EXPECTANCY AND TRENDS IN DHAS

In 1992-94 life expectancy at birth in England was 74.1 years for men and 79.5 years for women (table 2). With the exception of males in Solihull (West Midlands), the DHAs with the highest life expectancies were in the south, east, or west of England. Life expectancy in both 1984-86 and 1992-94 was lowest in Manchester in both sexes. Given the mortality rates prevailing in 1992-94, men and women in Manchester die 4.2 years and 2.8 years earlier respectively than the national averages. The contrast is greater when compared with DHAs where life expectancy is highest: men and women in DHAs with the highest life expectancy live on average 6.7 years and 4.7 years longer respectively than men and women in Manchester. Other DHAs with low life expectancies at the start and end of the decade include Liverpool, Sunderland, South of Tyne, and St Helens and Knowsley. The north-south gradient in life expectancy is clearly apparent in figure 1. Exceptions to this geographical divide are the inner London DHAs of South East London, East London and the City, and Camden and Islington, where male life expectancies are among the lowest in the country.

If geographical differentials in mortality had narrowed over the decade, trends in life expectancy (fig 2) could be expected to show a gradient in the opposite direction to that in figure 1—that is, greater change in areas with low life expectancy. Such a gradient is not universally apparent, and in many DHAs low life expectancy at the start of the decade was followed by little improvement.

These regional contrasts can be seen clearly in table 2. The annual increase in life expectancy in England over the decade was 0.35% in males and 0.25% in females. In Manchester life expectancy increased by only 0.10% in males (the lowest increase nationally) and by 0.22% in females. This was significantly lower than the corresponding figures, for instance, for Eastern Surrey (0.45% and 0.33%). Liverpool and parts of inner London (South East London, East London and the City, Camden and Islington) similarly experienced much less improvement, particularly in men, than some DHAs with the highest life expectancies.

The high-low difference in life expectancy between DHAs increased over the decade. In

KEY POINTS

- Life expectancy in health authorities in England varies by 6.7 years in males and 4.7 years in females.
- These differences have widened over the past decade.
- Deprivation (Jarman scores) is correlated with both levels and trends in life expectancy.
- Prosperous areas with the greatest longevity have seen the largest gains in life expectancy.
- Despite having the shortest life spans in the 1980s, most deprived areas (inner London, Manchester, and Liverpool) have experienced negligible improvements.
- Deprived areas have the greatest gender differences in life expectancy.

1984-86 the difference between the highest and lowest ranking DHAs was 5.2 years for males and 4.3 years for females; by 1992-94 the difference had widened by 1.5 years (29%) in males to 6.7 years, and by half a year (9%) in females to 4.7 years. Furthermore, the spread of the DHA values around the national average has not decreased over the decade. The SD for males was 1.24 years in 1984-86 and 1.34 years in 1992-94, and for females it was 1.05 and 1.10 years respectively, representing an increasing coefficient of variation from 1.72% to 1.81% in males and from 1.36% to 1.39% in females (although some of this could be due to random variation).

LIFE EXPECTANCY AND TRENDS BY LEVEL OF DEPRIVATION

Life expectancy by sex in DHAs grouped according to the level of deprivation is shown in table 3 and figure 3. Although there is considerable overlap in the life expectancy of DHA outliers in the different deprivation categories, the negative association between deprivation and life expectancy at DHA level is evident in a correlation coefficient of -0.77 for men and a somewhat weaker association of -0.56 for women. In 1992-94 life expectancy in the most affluent areas exceeded that in the most deprived areas, which include inner London, by 4.0 years in males and 2.4 years in females. These differences had increased over those prevailing in the mid-1980s (2.8 years and 1.6 years respectively). Despite having the highest life expectancy in the mid-1980s, the most affluent areas experienced significantly greater gains in life expectancy over the decade (0.38%)in males and 0.28% in females) than the most deprived areas where life expectancy was lowest (0.18% and 0.17% respectively).

The percentage change between 1984-86 and 1992-94 in deaths occurring up to specific ages in a cohort of 100 000 births was analysed by level of deprivation. In both sexes and all age groups there was a consistent negative association between the rate of mortality decline and the level of deprivation. This effect was particularly marked for the most deprived areas, where

Group	District health authority								
Deprivation level 1 (scores < -SD (ie	D09	Huntingdon	M04	Worcester					
< -17.37)	E05	North West Hertfordshire	M20	Solihull					
	E18	East and North Hertfordshire	M26	North Worcestershire					
	G12	Bromley	M27	South Staffordshire					
	H20	Western Surrey	M28	Warwickshire					
	H21	Eastern Surrey	N18	South Cheshire					
	J25	North and Mid Hampshire	P22	South Lancashire					
	K24	Buckinghamshire							
Deprivation level 2 (scores between -1.0 and	B21	North Yorkshire	J30	Wiltshire and Bath					
-0.5 of the SD)	C01	North Derbyshire	K13	Berkshire					
,	C14	North Nottinghamshire	K33	Northamptonshire					
	C15	Lincolnshire	K41	Oxfordshire					
	D01	Cambridge	L40	Gloucestershire					
	D13	East Norfolk	L51	Somerset					
	E06	South West Hertfordshire	M02	Herefordshire					
	F31	North Essex	M05	Shropshire					
	F32	South Essex	MI8	Dudley					
	G23	West Kent	P16	Stockport					
	H19	Kingston and Richmond							
Deprivation level 3 (scores between -0.5 and	A11	Northumberland	J10	Dorset					
0.0 of the SD)	A34	North Cumbria	J21	Portsmouth and SE Hampshire					
	C02	Southern Derbyshire	J22	Southampton and SW Hampshire					
	C03	Leicestershire	L10	Bristol					
	D05	North West Anglia	L21	Cornwall and Isles of Scilly					
	D12	Suffolk	L35	Exeter and North Devon					
	D14	Bedfordshire	M07	North Staffordshire					
	E07	Barnet	N17	North Cheshire					
	E09	Hillingdon	N43	Setton					
	H09	Croydon	P28	Morecambe Bay					
	H22	West Sussex							
Deprivation level 4 (scores between 0.0 and 0.5	A30	North Durham	G21	East Sussex					
of the SD)	A31	South Durham	G22	East Kent					
	B11	East Riding	J41	Isle of Wight					
	B16	Grimsby and Scunthorpe	L36	Plymouth and Torbay					
	B71	Wakefield	M21	Walsall					
	C08	Nottingham	N31	St Helens and Knowsley					
	C09	Barnsley	N51	Wirral					
	C10	Doncaster	P20	North West Lancashire					
	CII	Rotherham	P23	Wigan and Bolton					
	E19 F33	Brent and Harrow Barking and Havering	P24	Bury and Rochdale					
Deprivation level 5 (scores between 0.5 and 1.0	A16	Sunderland	G24	Bexley and Greenwich					
of the SD)	A32	Tees	H17	Merton, Sutton and Wandsworth					
	A33	South of Tyne	M17	Coventry					
	B51	West Yorkshire	M22	Wolverhampton					
	B61	Leeds	P21	East Lancashire					
	C12	Sheffield	P25	West Pennine					
	F34	Redbridge and Waltham Forest	P27	Salford and Trafford					
Deprivation level 6 (scores between 1.0 and	A35	Newcastle and North Tyneside	F36	New River					
1.96 of the SD)	B31	Bradford	M19	Sandwell					
·	E20	Ealing, Hammersmith and Hounslow	M25	South Birmingham					
	E21	Kensington, Chelsea and Westminster	M29	North Birmingham					
Deprivation level 7 (scores significantly greater	F35	East London and the City	N21	Liverpool					
than the mean at 5% level (ie ≥ 1.96 SD)	F37	Camden and Islington	P26	Manchester					
	G26	South East London							

Table 1 Jarman score based area classification using the distribution of district health authority scores (mean 0.00, (SD 17.37))

by the age of 40 men had lost all improvements in survival over the decade. Mortality changes within selected age groups in a cohort of 100 000 births were also analysed and showed that mortality in men aged 30-39 increased nationally and in all area groupings, with an increase of over 20% in the most deprived areas. Deprived areas also saw a significant increase in mortality among men aged 20-29. In most deprived areas, mortality increased also in women aged 10-19 and 20-29.

GENDER DIFFERENCES AND TRENDS IN LIFE EXPECTANCY

Female life expectancy in England in 1992-94 exceeded male life expectancy by 5.4 years (table 2), however, regional differences are apparent in this respect also (fig 4). The gender differential in 1992-94 was smaller in DHAs

with relatively high life expectancy, such as Cambridge (4.6 years) and Western Surrey (4.7), and greater in DHAs with relatively low life expectancy, such as Camden and Islington (7.0), Manchester (6.8), South East London (6.7), East London and the City (6.4), and Liverpool (6.1). Gender differences ranged from 5.0 years in the most affluent areas to 6.6 years in the most deprived areas (table 3). The strong positive association between deprivation and gender differences in life expectancy at DHA level is apparent in figure 4, and is reflected in a correlation coefficient of 0.8.

Furthermore, there was an association between deprivation and trends in gender differences in life expectancy. In England overall, the female-male difference in life expectancy narrowed somewhat from 5.83 years in 1984-86 to 5.38 years in 1992-94, a decline of





Figure 1 Life expectancy (in years) among men and women in English district health authorities, 1992-94.



Figure 2 Percentage increase in life expectancy among men and women in English district health authorities between 1984-86 and 1992-94.

Table 2 Life expectancy at birth in relation to gender in 1984-86 and 1992-94: English district health authorities ranked highest to lowest on the 1992-94 values

Mate image	Males		Ranks	Life expectancy		%			Ranks	Life expectancy		%
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DOI Cambridge 1 74.4 76.4 0.7 G10 Description 2 79.6 81.4 0.28 1171 Barner Surrey 15 73.9 76.0 0.43 Diametry 17 76.0 81.4 0.23 1171 Barner Surrey 15 73.9 76.0 0.43 Diametry 17 76.0 81.0 0.33 1171 Barner Surrey 17 73.4 75.9 0.34 L31 Surrent and North Deron 17 78.6 80.9 0.32 1121 Suffold 17 73.4 75.7 0.37 Barner 18 79.1 80.9 0.22 1121 Suffold Langetry 17 73.4 75.7 0.35 P31 North and Mid Hamphine 28 75.7 0.45 P31 North and Mid Hamphine 76.8 80.8 0.33 123 North and Mid Hamphine 17 73.4 75.7 0.45 P31 North and Mid Hamphine	000	England		72.1	74.1	0.35	000	England		77.9	79.5	0.25
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F11 North Escc. 11 7.5. 7.5. 0.35 F14 Isle of Wight 14 7.1. 80.8 0.2.3 L51 Somerset 10 7.5. 7.5. 0.32 D13 East Norfolk 9 7.0.3 80.7 0.20 L51 Somerset 10 7.5. 7.5.4 0.32 D13 East Norfolk 9 7.0.8 80.7 0.20 L51 Box Nordh 18 7.7.4 0.33 E18 East and North Hertfordshire 20 7.8.8 80.6 0.23 L61 Gioucencrishire 9 7.5.7 0.33 E16 Event and North Hertfordshire 13 7.6.8 80.6 0.35 L12 Southampton & SW Hans* 25 7.5.2 7.3.3 0.33 E16 Fymouth and Torbar 23 7.6.8 80.6 0.32 L10 Bristian 23 7.5.1 0.37 2.03 L10 Bristian 23 7.6.8 0.32 0.29 L10 Bristian Bristian 23 <th7.6< th=""> 80.4 0.25<!--</td--><td>E06</td><td>South West Hertfordshire</td><td>13</td><td>73.5</td><td>75.7</td><td>0.36</td><td>J22</td><td>Southampton & SW Hants*</td><td>6</td><td>79.3</td><td>80.8</td><td>0.23</td></th7.6<>	E06	South West Hertfordshire	13	73.5	75.7	0.36	J22	Southampton & SW Hants*	6	79.3	80.8	0.23
E18 East and North Herrfordshire 8 7.3.6 7.5.6 0.36 E19 Bernt and Harrow 5 7.9.3 80.7 0.20 L121 Svers Surset 7 7.3.8 7.5.4 0.32 D13 Suffok 10 7.0.9 80.6 0.27 L121 Wert Surset 7 7.3.8 7.5.4 0.39 D12 Suffok 10 7.0.9 80.6 0.25 L40 Gloucestershire 3 7.2.9 7.5.4 0.41 M02 Herefordshire 40 7.8.9 80.6 0.23 L40 Gloucestershire 2 7.3.3 7.3.4 0.31 L56 South West Hertfordshire 24 7.8.9 80.6 0.23 L10 Britoi 2 7.3.0 7.3.2 0.33 L50 Gloucestershire 10 7.8.0 80.6 0.30 0.30 L10 Britoi 2 7.3.0 7.3.2 0.35 D40 Houtingdon 31 7.6.6 80.5 0.30 0.30 L10 Britoi 3 7.4.	F31	North Essex	11	73.5	75.6	0.35	J41	Isle of Wight	14	79.1	80.8	0.23
L5.1 Somerset 10 7.3.5 7.5.6 0.2.9 D13 East Norfolk 19 7.0.8 0.7.7 0.2.7 D13 East Norfolk 18 7.3.4 7.5.5 0.2.9 D13 East Norfolk 19 7.0.8 0.0.6 0.2.1 D13 East Norfolk 18 7.3.4 7.5.5 0.3.1 M20 Suffolk 9 7.2.2 80.6 0.2.1 M10 Kingston and Richmond 22 7.3.3 7.5.4 0.3.0 E06 Suth West Hertfordshire 23 7.8.6 80.6 0.30 M20 Hereffordshire 9 7.3.2 7.5.3 0.33 L10 Stuth West Hertfordshire 12 7.9.1 80.6 0.2.3 L10 Diritof M21 7.5.1 0.3.2 D9 Huiningdon 31 7.8.6 80.4 0.2.3 L10 Diritof M34 7.5.1 0.3.7 D.3.1 North Esset MeetTordshire 12 7.8.6 80.3 0.2.4 L11 Cornwall and Lise of Scilly 37 7.2.8 7.6.0	E18	East and North Hertfordshire	8	73.6	75.6	0.36	E19	Brent and Harrow	5	79.3	80.7	0.20
H22 West Sussex 7 73.8 75.5 0.29 D12 Suthul 16 79.0 80.6 0.25 K24 Buckinghamshire 14 73.5 75.4 0.31 M20 Solthul 20 78.9 80.6 0.25 K24 Buckinghamshire 32 77.3 75.4 0.31 M21 Herefordshire 47 78.3 80.6 0.25 M02 Herefordshire 39 77.3 0.30 0.30 L30 North West Hertfordshire 37 78.6 80.6 0.25 K13 Berkshire 26 73.1 75.3 0.35 L40 Glaucestershire 15 79.0 80.6 0.23 J00 Witshire and Bath 21 73.3 75.0 0.35 L40 Butastal 12 78.6 80.4 0.28 J10 Witshire and Bath 28 73.0 75.0 0.36 L21 Korth Mest 12 78.6 80.3 0.24 J10 Witshire and Bath 28 72.6 74.9 0.31	L51	Somerset	10	73.5	75.6	0.32	D13	East Norfolk	19	79.0	80.7	0.27
D13 East Norfolk 18 7.3.4 7.5.5 0.31 M20 Solihull 9 7.9.2 80.6 0.21 L40 Gloucestershire 13 7.5.4 0.31 Els East aux North Hertfordshire 40 78.9 80.6 0.35 L41 Kingstor and Richmond 22 7.3.3 7.5.4 0.31 East Sussex 20 78.9 80.6 0.25 M21 Harcfordshire SW Hants* 2 7.3.1 75.3 0.33 East Sussex 27 78.9 80.6 0.25 K13 Bershkine SW Hants* 26 7.3.1 75.2 0.35 Els North West Herdfordshire 12 78.6 80.6 0.23 L10 Bratol Els 0.27 7.3.0 0.35 L40 Gloucestershire 13 78.6 80.5 0.23 L10 Bratol Ifarrow 19 73.0 7.5.0 0.36 Els North Sect 78.6 80.5 0.23 L10 Cornwall and Isles of Scilly 30 73.0 75.0 <td< td=""><td>H22</td><td>West Sussex</td><td>7</td><td>73.8</td><td>75.5</td><td>0.29</td><td>D12</td><td>Suffolk</td><td>16</td><td>79.0</td><td>80.6</td><td>0.25</td></td<>	H22	West Sussex	7	73.8	75.5	0.29	D12	Suffolk	16	79.0	80.6	0.25
K24 Buckinghamshire 14 73.5 75.4 0.33 E18 East and North Hertfordshire 20 78.3 80.6 0.26 H19 Kingston and Richmond 22 73.3 75.4 0.30 E66 South with the the the the the the the the the t	D13	East Norfolk	18	73.4	75.5	0.31	M20	Solihull	9	79.2	80.6	0.21
	K24	Buckinghamshire	14	73.5	75.4	0.33	E18	East and North Hertfordshire	20	78.9	80.6	0.26
H19 Kingston and Richmond 22 73.3 75.4 0.33 G21 East Sussex 25 78.9 80.6 0.30 122 Southampton & SW Hants* 25 73.2 73.3 0.33 L06 South Net Hertfordshire 27 78.9 80.6 0.30 122 Southampton & SW Hants* 25 73.2 73.3 0.33 L05 North Wert Hertfordshire 12 79.1 80.6 0.23 L10 Bretkhre 23 73.2 73.1 0.32 L01 Breth Hertfordshire 13 78.6 80.4 0.23 DW Hillingdon 23 73.7 0.32 L01 Hartingdon 21 78.9 80.4 0.25 L21 Cornwail and Isles of Scilly 37 7.8 73.0 0.37 L30 Wilthire and Bath 28 78.7 80.1 0.24 L21 Cornwail and Isles of Scilly 37 74.9 0.33 L21 Cornwail and Isles of Scilly 78.4 80.1 0.24 L31 Beref kand Irorbay 49 72.4	L40	Gloucestershire	33	72.9	75.4	0.41	M02	Herefordshire	40	78.3	80.6	0.35
	H19	Kingston and Richmond	22	73.3	75.4	0.33	G21	East Sussex	25	78.9	80.6	0.27
[22] Southampton & SW Hants* 25 73.2 73.3 0.35 Ecol North West Hertfordshire 24 78.9 80.6 0.23 L10 Bristol 29 73.0 75.2 0.35 L0 Bristol 27 78.6 80.5 0.30 L10 Bristol 23 78.7 0.30 L0 Bristol 23 78.6 80.5 0.30 E19 Breit and Harcow 19 77.1 0.32 L0.27 F11 North Esca Westminf 29 78.7 80.4 0.25 M04 Worcester 30 73.0 75.0 0.36 E21 Ken, Chelsea & Westminf 29 78.7 80.4 0.25 M04 Worcester 43 72.8 75.0 0.33 L30 Willingdon 10 79.2 80.1 0.34 10 M04 Worcester 48 73.0 74.9 0.31 L30 H01 78.4 80.1 0.27 Gaussershire 55 72.8 73.2 74.4 0.39 F3.2<	M02	Herefordshire	9	73.5	75.3	0.30	E06	South West Hertfordshire	33	78.6	80.6	0.30
K13 Berkshire 26 73.1 75.3 0.35 E05 North West Herrforshire 12 79.1 80.6 0.23 100 Wiltshire and Bath 21 73.0 75.2 0.30 L10 Bristol 32 78.6 80.5 0.30 130 Wiltshire and Bath 21 73.2 75.1 0.32 0.30 L10 Bristol 32 78.6 80.5 0.32 140 Workster 30 73.0 75.0 0.36 0.30 10 North Essex 21 78.6 80.4 0.23 121 Cornwall and Isles of Scilly 31 78.6 70.0 0.35 12 Wiltshire and Bath 29 78.6 80.3 0.24 121 Cornwall and Isles of Scilly 37 72.8 77.6 0.41 10 77.2 80.1 0.30 0.32 121 North Netkhare 45 72.4 74.4 80.1 0.26 0.32 Satt Essex 42 78.3 80.1 0.27 122 Satt Satt Satt Asset Satt Satt Satt As	J22	Southampton & SW Hants*	25	73.2	75.3	0.33	L36	Plymouth and Torbay	24	78.9	80.6	0.25
L10 Bristol 29 73.0 75.2 0.35 L40 Gloucestershire 15 79.0 80.5 0.23 B09 Hillingdon 23 73.2 75.1 0.32 D09 Huntingdon 31 78.6 80.5 0.30 B19 Breat and Harrow 19 73.4 75.1 0.32 D09 Huntingdon 31 78.6 80.5 0.23 L1 Cortwall and Idse of Scilly 30 73.4 75.1 0.37 130 Withire and Bath 28 78.7 80.4 0.24 D19 Huntingdon 24 72.2 75.0 0.33 L21 Cortwall and Idse of Scilly 30 78.6 80.1 0.24 L10 Kortskine 28 72.6 74.9 0.48 E04 Hillingdon 10 78.2 80.1 0.24 L20 Kortskine 32 72.9 74.8 0.30 G22 East Kent 47 73.2 80.1 0.26 Coyton Storeskine 35 72.8 74.7 0.41	K13	Berkshire	26	73.1	75.3	0.35	E05	North West Hertfordshire	12	79.1	80.6	0.23
[30] Wiltshire and Bath 21 73.2 75.2 0.30 L10 Bristol 32 78.6 80.5 0.30 E19 Brent and Harrow 19 73.4 75.1 0.32 0.27 F31 North Essex 21 78.0 80.4 0.28 E19 Brent and Harrow 19 73.4 75.0 0.37 10.03 Wiltshire and Bath 28 78.7 80.4 0.28 L11 Corrwall and Ises of Scilly 37 72.8 75.0 0.37 130 Wiltshire and Bath 28 78.7 80.4 0.28 D9 Huningdon 24 73.2 75.0 0.33 L10 Berkshire and Bath 28 78.6 80.1 0.28 G21 East Sussex 28 73.0 74.9 0.31 62.2 East Kent 77.2 80.1 0.27 G22 East Kent 45 72.4 74.8 0.30 G22 East Kent 47 72.2 80.1 0.27 G22 East Kent 47.6 74.6 0.32	L10	Bristol	29	73.0	75.2	0.35	L40	Gloucestershire	15	79.0	80.5	0.23
Épo Hullingdon 23 73.2 75.1 0.32 D09 Huntingdon 31 78.6 80.5 0.28 Bienet and Harcow 19 73.4 75.1 0.37 0.36 E21 Ken, Chelsea & Kersminf 29 78.7 80.4 0.28 M04 Worcester 30 73.0 75.0 0.33 L21 Cornwall and Isles of Scilly 30 78.6 80.3 0.24 D09 Huntingdon 24 73.2 75.0 0.33 L21 Cornwall and Isles of Scilly 30 78.6 80.3 0.24 B1 North Nortshire 38 72.6 74.9 0.34 E09 Hillingdon 10 77.2 80.1 0.28 G21 East Sussex 28 73.0 74.9 0.30 G22 East Kent 77.4 80.1 0.29 G22 East Kent 49 72.4 74.7 0.32 Kent 77.4 80.1 0.20 J30 North Mest Anglia 41 72.6 74.6 0.32 F34 Redoridge & K	130	Wiltshire and Bath	21	73.3	75.2	0.30	L10	Bristol	32	78.6	80.5	0.30
Ei9 Brent and Harrow 19 73.4 75.1 0.27 F31 North Essex 21 78.9 80.4 0.25 Mod Worcsetter 30 73.0 75.0 0.36 E21 Ker, Chelsea & Westmini 29 78.7 80.3 0.24 DoP Huntingdon 24 73.2 75.0 0.33 L21 Cornwall and Isles of Scilly 30 78.6 80.3 0.24 DoP Huntingdon 50 72.3 74.9 0.41 E94 Hillingdon 10 79.2 80.1 0.12 G21 East Sussex 28 73.0 74.9 0.41 E99 Hillingdon 10 79.2 80.1 0.28 G23 West Kent 45 72.4 74.8 0.30 G42 East Kent 47 78.2 80.1 0.20 C33 Leicestershire 35 72.8 74.7 0.41 B21 North Yorkhire 37 78.4 80.1 0.20 C33 Leicestershire 39 72.6 74.6 0.32 <td>E09</td> <td>Hillingdon</td> <td>23</td> <td>73.2</td> <td>75.1</td> <td>0.32</td> <td>D09</td> <td>Huntingdon</td> <td>31</td> <td>78.6</td> <td>80.5</td> <td>0.28</td>	E09	Hillingdon	23	73.2	75.1	0.32	D09	Huntingdon	31	78.6	80.5	0.28
Mo4 Worcester 30 75.0 0.36 E21 Ken, Chelsea & Westminf 29 78.7 80.4 0.28 L1 Cornwall and Isles of Scilly 30 71.8 75.0 0.37 L21 Cornwall and Isles of Scilly 30 78.6 80.3 0.24 D09 Huntingdon 50 72.3 74.9 0.38 K13 Berkshire 41 78.2 80.1 0.15 G21 East Sussex 28 73.0 74.9 0.30 M04 Worcester 48 80.1 0.27 G22 East Kent 45 72.4 74.8 0.30 G22 East Kent 47 78.4 80.1 0.26 G22 East Kent 49 72.4 74.7 0.32 C23 Leicestershire 37 78.4 80.1 0.26 Mort Mest Angia 41 72.6 74.6 0.32 F36 Nert Mish Forest; 11 79.2 80.21 0.21 Nort Main Forest;	E19	Brent and Harrow	19	73.4	75.1	0.27	F31	North Essex	21	78.9	80.4	0.25
121 Cornwall and Isles of Scilly 37 72.8 75.0 0.37 J30 Wilshire and Bath 28 78.7 80.3 0.24 D09 Huningdon 24 73.2 75.0 0.33 12.1 Cornwall and Isles of Scilly 30 78.6 80.3 0.24 B21 North Yorkshire 38 72.6 74.9 0.41 Eventhic Scill 80.1 0.28 G21 East Sussex 28 73.0 74.9 0.41 Eventhic Scill 80.1 0.30 G23 West Kent 45 72.4 74.8 0.30 G22 East Kent 47 78.4 80.1 0.26 G22 East Kent 47 74.7 0.41 B21 North Yorkshire 37 78.8 80.1 0.20 C03 Leicestershire 37 72.8 74.7 0.41 B21 North Yorkshire 38 78.4 79.9 0.26 C03 Leicestershire 37 72.6 74.6 0.32 C03 Leicestershire 37 73.9 0.24	M04	Worcester	30	73.0	75.0	0.36	E21	Ken, Chelsea & Westmin¶	29	78.7	80.4	0.28
	L21	Cornwall and Isles of Scilly	37	72.8	75.0	0.37	130	Wiltshire and Bath	28	78.7	80.3	0.24
B21 North Yorkshire 38 72.6 74.9 0.38 K13 Berkshire 41 78.3 80.1 0.28 G21 East Sussex 28 73.0 74.9 0.41 E00 Hillingdon 10 79.2 80.1 0.15 G21 East Sussex 28 73.0 74.9 0.30 MO4 Worcester 48 78.2 80.1 0.27 G23 West Kent 47 74.8 0.30 G22 East Kent 47 78.4 80.1 0.26 G21 East Kent 49 72.4 74.7 0.32 K24 Buckinghamakire 22 78.9 80.1 0.26 G31 North Mest Anglia 41 72.6 74.6 0.32 C31 Redbridge & Walth Forest; 11 79.2 78.9 80.1 0.26 Morth Mest Anglia 41 72.6 74.6 0.33 Mo5 Shropshire 48 78.8 0.35 F12 <td>D09</td> <td>Huntingdon</td> <td>24</td> <td>73.2</td> <td>75.0</td> <td>0.33</td> <td>L21</td> <td>Cornwall and Isles of Scilly</td> <td>30</td> <td>78.6</td> <td>80.3</td> <td>0.24</td>	D09	Huntingdon	24	73.2	75.0	0.33	L21	Cornwall and Isles of Scilly	30	78.6	80.3	0.24
HOP ECONDANC CONDANC AND STREAM5072.374.90.41ED9Hillingdon Horester1079.280.10.15G21East Sussex2873.074.90.30MOM Worcester4878.380.10.30G22East Kent4572.474.80.39G22East Kent4778.280.10.29G22East Kent4972.474.70.41B21North Vershaire3778.480.10.29G23East Serts4972.474.70.41B21North Vershaire3778.480.10.20D05North West Anglia4172.674.60.32C34Redbridge Walth Forest1179.280.00.13X33North Mest Anglia4172.674.60.32C36Net Nere4378.379.90.24K33North West Anglia4172.674.60.32C36Net Nere4378.379.90.24K33North West Anglia4172.674.60.33MO5Shropshire6277.679.80.35C14Bedfordshire4372.774.60.33MO5Shropshire6277.679.80.26C14Verstowickhire5172.774.50.35G22Heidy and Greenwich5477.879.80.21C14Bedfordshire4372.774.5 <td>B21</td> <td>North Yorkshire</td> <td>38</td> <td>72.6</td> <td>74.9</td> <td>0.38</td> <td>K13</td> <td>Berkshire</td> <td>41</td> <td>78.3</td> <td>80.1</td> <td>0.28</td>	B21	North Yorkshire	38	72.6	74.9	0.38	K13	Berkshire	41	78.3	80.1	0.28
	H09	Croydon	50	72.3	74.9	0.41	E09	Hillingdon	10	79.2	80.1	0.15
C23West Kent45 72.4 74.8 0.39 $F32$ South Essex 42 78.3 80.1 0.27 L36Plymouth and Torbay 32 72.9 74.8 0.30 $G22$ East Kent 47 78.4 80.1 0.29 G22East Kent 49 72.4 74.7 0.41 $B21$ North Yorkshire 37 78.4 80.1 0.20 C03Leicestershire 35 72.8 74.7 0.41 $B21$ North Submit Singer 22 78.9 80.1 0.20 C03Leicestershire 38 78.4 79.9 0.24 0.24 0.23 0.23 0.25 C04Mess Kanit 39 72.6 74.6 0.32 $C30$ 0.55 0.26 0.26 M28Warwickshire 54 72.1 74.6 0.33 MO5Shropshire 62 77.6 79.8 0.26 M21Bedfordshire 43 72.5 74.6 0.33 MO5Shropshire 62 77.6 79.8 0.29 M05Shropshire 48 72.4 74.5 0.36 G24Bedefordshire 44 78.2 79.8 0.29 M05Shropshire 48 72.4 74.5 0.36 G24Bedefordshire 46 77.8 9.29 M05Shropshire 48 72.4 74.3 0.36 G24Bedefordshire 46 78.4 79.8 0.29 <t< td=""><td>G21</td><td>East Sussex</td><td>28</td><td>73.0</td><td>74.9</td><td>0.30</td><td>M04</td><td>Worcester</td><td>48</td><td>78.2</td><td>80.1</td><td>0.30</td></t<>	G21	East Sussex	28	73.0	74.9	0.30	M04	Worcester	48	78.2	80.1	0.30
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	G23	West Kent	45	72.4	74.8	0.39	F32	South Essex	42	78.3	80.1	0.27
C22East Kent19 72.4 74.7 0.41 B21North Vorkshine3778.480.10.26C03Lcicestershine3572.874.7 0.32 K24Buckinghamshire3278.980.10.20D05North West Anglia4172.674.6 0.32 C03Lcicestershine3878.479.90.24K33Northamptonshine3972.674.6 0.32 C03Lcicestershine3878.379.90.24K23North Essex3472.874.6 0.32 F36New River4379.90.24H28Gotodshire5472.174.6 0.43 JD1Portsmouth & SE Hants†1879.90.14H14Bedfordshire5472.174.6 0.33 M05Shropshire5477.87.80.28M205North Worcstershire5372.274.4 0.33 M05North West Anglia4978.179.80.28M205North Worcstershire5372.274.4 0.35 M14Bedfordshire4478.80.20M205North Worcstershire5272.274.4 0.37 M18Dudley5677.779.70.27F34Redbridge & Walth Forest;677.772.474.3 0.33 H28Morecambe Bay78.477.00.26C15Lincolnshire4772.474.	L36	Plymouth and Torbay	32	72.9	74.8	0.30	G22	East Kent	47	78.2	80.1	0.29
$\overline{03}$ Leicestershire 35 72.8 74.7 0.32 72.4 Redbridge & Walth Forest; 11 79.2 80.1 0.20 D05North West Anglia 41 72.6 74.6 0.36 $F34$ Redbridge & Walth Forest; 11 79.2 80.0 0.13 X3North Essex 34 72.6 74.6 0.32 $C03$ Leicestershire 38 78.4 79.9 0.24 R2Warkickhire 54 72.1 74.6 0.32 $F36$ New River 43 78.3 79.9 0.14 D14Bedfordshire 43 72.5 74.6 0.33 $M05$ Shropshire 62 77.6 79.8 0.35 J11Portsmouth & SE Hants† 40 72.6 74.6 0.33 $M05$ Shropshire 48 72.4 74.5 0.25 H09Croydon 54 77.8 79.8 0.28 J21Portsmouth & SE Hants† 43 72.7 74.5 0.35 G24Beskey and Greenvich 36 78.4 79.8 0.20 M26North Worcestershire 53 72.2 74.4 0.37 0.14 Budley 56 77.7 79.7 0.27 F34Redbridge & Walth Forest; 36 72.8 74.3 0.35 G23West Kent 39 78.4 79.6 0.20 F34Redbridge & Walth Forest; 36 72.7 74.3 0.30 H17Merton, Sutton & Wands </td <td>G22</td> <td>East Kent</td> <td>49</td> <td>72.4</td> <td>74.7</td> <td>0.41</td> <td>B21</td> <td>North Yorkshire</td> <td>37</td> <td>78.4</td> <td>80.1</td> <td>0.26</td>	G22	East Kent	49	72.4	74.7	0.41	B21	North Yorkshire	37	78.4	80.1	0.26
Does Does North West Anglia172.674.60.36F34 F34Redbridge & Walth Forest‡1179.280.00.13K33 K33 Northamptonshire3972.674.60.32C03Leicestershire3878.479.90.24K35 South Essex3472.874.60.32C73Nortsmouth & SE Hants†1879.00.26M18 M260rdshire5472.174.60.43J21Portsmouth & SE Hants†1879.00.79.90.14J11 Bedfordshire4372.574.60.33M05Shropshire6277.679.80.35J21 Portsmouth & SE Hants†4072.674.60.33D05North West Anglia4978.179.80.29M05 Shropshire4872.474.50.36G24Bedfordshire4478.279.80.29M05 Shropshire4872.474.50.36G24Bedfordshire4478.279.80.21N18 South Cheshire5272.274.40.37M18Dadley5677.779.70.27F34 Redbridge & Walth Forest‡3678.479.60.2078.479.60.20F34 F44Redgridge & Walth Forest‡3677.779.70.270.26C15 Lincolnshire4772.474.30.33P28Moreambe Bay5877.779.60.28	C03	Leicestershire	35	72.8	74.7	0.32	K24	Buckinghamshire	22	78.9	80.1	0.20
K33Northamptonshire3972.674.60.32C03Leicestershire3878.479.90.24F32South Essex3472.874.60.32C03Leicestershire4378.379.90.26K28Warvickshire5472.174.60.43J21Portsmouth & SE Hants†1879.00.14D14Bedfordshire4372.574.60.33M05Shropshire6277.679.80.35J21Portsmouth & SE Hants†1872.074.50.25H09Croydon5477.879.80.29M05Shropshire4872.474.50.36G24Bexley and Greenwich3678.479.80.20M05North Worcestershire5372.274.40.37M18Dudley5677.779.70.27F34Redoridge & Walth Forest‡6772.874.30.34G23West Kent3978.479.60.20K18South Cheshire4772.474.30.33P28Morccambe Bay5877.779.50.28K18Riding6771.574.20.47M61Leeds7477.279.50.31K18Dudley6471.574.20.34M28Warwickshire6577.579.50.31K18Dudley6471.574.20.34M28Warwic	D05	North West Anglia	41	72.6	74.6	0.36	F34	Redbridge & Walth Forest‡	11	79.2	80.0	0.13
Number17.874.60.32F3.6New River1378.379.90.26M28Warwickshire5472.174.60.43J21Portsmouth & SE Hants†1879.079.90.14D14Bedfordshire5472.174.60.33JD7Shropshire6277.679.80.35J21Portsmouth & SE Hants†4072.674.60.33DD5North West Anglia4978.179.80.28J21Portsmouth & SE Hants†4072.674.60.33DD5North West Anglia4978.179.80.28M05Shropshire4872.474.50.36G24Beckey and Greenwich3678.479.80.29M05Shropshire5272.274.40.37M18Bodfordshire4478.279.80.21N18South Cheshire5272.274.40.37M18Bodfordshire5677.779.70.26C15Lincolnshire4772.474.30.34C23West Kent3978.479.60.28R24packey and Greenwich4671.574.20.47B61Leeds7477.279.50.35R11East Rding6771.574.20.47B61Leeds7477.279.50.35R24packey and Greenwich4672.274.00.38Barking and	K33	Northamptonshire	30	72.6	74.6	0.32	C03	Leicestershire	38	78.4	79.9	0.24
Diamickshire 21 72.0 72.0 72.1 74.6 0.43 121 Portsmouth & SE Hants† 18 70.0 70.9 0.14 D14 Bedfordshire 43 72.5 74.6 0.33 M05 Shropshire 62 77.6 79.8 0.35 J1 Portsmouth & SE Hants† 10 72.6 74.6 0.33 D05 North West Anglia 49 78.1 79.8 0.22 J1 Isle of Wight 31 72.9 74.5 0.36 G24 Bexkley and Greenwich 36 78.4 79.8 0.29 M26 North Worcestershire 52 72.2 74.4 0.37 M18 Dudley 56 77.7 79.7 0.27 P34 Rothridge & Waith Forest‡ 36 72.8 74.3 0.32 E20 Ealing, H'smith & Houns** 52 78.0 79.0 0.20 F34 Rothridge & Waith Forest‡ 36 72.4 74.3 0.33 P28 Morecambe Bay 58 77.7 79.5 0.28 B21 East Riding	F32	South Essey	34	72.8	74.6	0.32	F36	New River	43	78.3	79.9	0.26
114 Bedfordshire 13 72.5 74.6 0.33 M05 Shropshire 62 77.6 79.8 0.35 121 Portsmouth & SE Hants† 40 72.6 74.6 0.33 D05 North West Anglia 49 78.1 79.8 0.28 121 Portsmouth & SE Hants† 40 72.6 74.6 0.33 D05 North West Anglia 49 78.1 79.8 0.28 M05 Shropshire 48 72.4 74.5 0.36 G24 Bexley and Greenwich 36 78.4 79.8 0.20 Nuch Korcestershire 53 72.2 74.4 0.37 M18 Dudley 56 77.7 79.7 0.27 F34 Redbridge & Walth Forest‡ 36 72.8 74.3 0.30 H1 Bedfordshire 52 78.6 79.6 0.18 G24 Bexley and Greenwich 46 72.4 74.3 0.33 P16 More cambe Bay 74 77.2 79.5 0.33 M27 South Staffordshire 56 72.0 74	M28	Warwickshire	54	72.1	74.6	0.43	121	Portsmouth & SE Hantst	18	79.0	79.9	0.14
D11 Detromante D1 T2.5 T2.6 T2.7 T2.7 T2.7 T2.7 T2.4 T2.7 T2.4 T2.7 T2.4 T2.3 T2.7 T2.4 T2.3 T2.7 T2.4 T2.3 T2.7	D14	Bedfordshire	43	72.5	74.6	0.33	M05	Shronshire	62	77.6	79.8	0.35
Definition Output 31 72.9 74.5 0.25 H09 Crowdon 54 77.8 79.8 0.29 M05 Shropshire 48 72.4 74.5 0.36 G24 Bexley and Greenwich 36 78.4 79.8 0.20 M16 Nuth Worcestershire 52 72.2 74.4 0.37 M18 Dudley 56 77.7 79.7 0.27 F34 Redbridge & Walth Forest‡ 36 72.8 74.3 0.32 E20 Ealing, H'smith & Hours* 52 78.0 79.7 0.26 C15 Lincolnshire 47 72.4 74.3 0.33 P28 Morecambe Bay 58 77.7 79.5 0.28 B11 East Riding 67 71.5 74.2 0.47 B61 Leeds 74 77.5 75.5 0.31 M18 Dudley 64 71.5 74.2 0.46 N18 South Cheshire 61 77.6 79.4	121	Portsmouth & SF Hants+	40	72.6	74.6	0.33	D05	North West Anglia	49	78.1	79.8	0.28
International 1 <th1< th=""> 1 1 <th1< th=""> <th< td=""><td>141</td><td>Isle of Wight</td><td>31</td><td>72.9</td><td>74.5</td><td>0.25</td><td>H09</td><td>Crovdon</td><td>54</td><td>77.8</td><td>79.8</td><td>0.29</td></th<></th1<></th1<>	141	Isle of Wight	31	72.9	74.5	0.25	H09	Crovdon	54	77.8	79.8	0.29
Number Number 1 72.2 74.5 0.39 D14 Bedfordshire 44 78.2 79.8 0.21 N18 South Cheshire 52 72.2 74.4 0.37 M18 Dudley 56 77.7 79.7 0.26 F34 Redbridge & Wath Forest‡ 36 72.8 74.3 0.34 G23 West Kent 39 78.4 79.6 0.20 F36 New River 42 72.5 74.3 0.33 P28 Morecambe Bay 58 77.7 79.5 0.28 B11 East Riding 67 71.5 74.2 0.47 Markeshire 65 77.5 79.5 0.31 M27 South Staffordshire 56 77.5 74.2 0.34 M28 Warvickshire 61 77.6 79.4 0.28 B11 East Riding G7 71.9 74.2 0.34 M28 Warvickshire 61 77.6 79.4 0.28	M05	Shronshire	48	72.4	74.5	0.36	G24	Bexley and Greenwich	36	78.4	79.8	0.20
NilsNoth Cheshire5272.274.40.37M18Dudley5677.779.70.27F34Redbridge & Walth Forest‡3672.874.30.34G23West Kent3978.479.70.26C15Lincolnshire4772.474.30.34G23West Kent3978.479.60.26G24Bexley and Greenwich4672.474.30.33P28Morecambe Bay5877.779.50.28B11East Riding6771.574.20.34B61Leeds7477.279.50.28M18Dudley6471.574.20.34M28Warvickshire6577.579.50.35M18Dudley6471.574.20.38F33Barking and Havering4678.279.40.19F33Barking and Havering5172.374.20.29C12Sheffield7077.379.30.24P28Morecambe Bay6071.874.00.28B11East Riding5078.079.30.24C14North Nottinghamshire5871.974.00.28B11East Riding5078.079.30.24P22South Lancashire6371.679.40.3071.679.30.240.29C14North Nottinghamshire5871.974.00.34C08Nottingham <td>M26</td> <td>North Worcestershire</td> <td>53</td> <td>72.2</td> <td>74.5</td> <td>0.39</td> <td>D14</td> <td>Bedfordshire</td> <td>44</td> <td>78.2</td> <td>79.8</td> <td>0.21</td>	M26	North Worcestershire	53	72.2	74.5	0.39	D14	Bedfordshire	44	78.2	79.8	0.21
ArtoDoteTableT	N18	South Cheshire	52	72.2	74.4	0.37	M18	Dudley	56	77.7	79.7	0.27
Arrive Network Arriv	F34	Redbridge & Walth Forest ⁺	36	72.8	74.3	0.25	E20	Ealing, H'smith & Houns**	52	78.0	79.7	0.26
Bit Differentiation 12 72.5 74.3 0.30 H17 Merton, Sutton & Wands§ 35 78.5 79.6 0.18 G24 Bexkey and Greenwich 46 72.4 74.3 0.33 P28 Morecambe Bay 58 77.7 79.5 0.28 B11 East Riding 67 71.5 74.2 0.47 B61 Leeds 74 77.5 0.35 M27 South Staffordshire 56 72.0 74.2 0.34 M28 Warwickshire 65 77.5 79.5 0.31 M18 Dudley 64 71.5 74.2 0.38 F33 Barking and Havering 61 77.6 79.4 0.28 P16 Stockport 57 71.9 74.2 0.29 C12 Sheffield 70 77.3 79.4 0.30 P28 Morecambe Bay 60 71.8 74.0 0.34 M27 South Staffordshire 67 77.4 79.3 0.29 P117 Merton, Nuttinghamshire 58 71.9 74.0 0.34 M27<	CI5	Lincolnshire	47	72.4	74.3	0.34	G23	West Kent	39	78.4	79.6	0.20
Bexley and Greenwich4672.474.30.33P28Morecambe Bay5877.779.50.28B11East Riding6771.574.20.47B61Leeds7477.279.50.35M27South Staffordshire5672.074.20.47B61Leeds7477.279.50.31M27South Staffordshire5677.579.50.420.46N18South Cheshire6177.679.40.28P16Stockport5771.974.20.38F33Barking and Havering4678.279.40.19F33Barking and Havering5172.374.20.29C12Sheffield7077.379.40.19P28Morecambe Bay6071.874.00.37C15Lincolnshire4578.279.40.19H17Mercon, Sutton & Wands§4472.574.00.28B11East Riding5078.079.30.24C14North Nottinghamshire5871.974.00.34M27South Staffordshire6777.479.30.29P22South Lancashire6371.673.90.42C16Stockport6077.779.20.26C01North Derbyshire5572.173.90.30C02Southern Derbyshire6677.579.30.26C02South Lancashire72<	F36	New River	42	72.5	74.3	0.30	H17	Merton, Sutton & Wands	35	78.5	79.6	0.18
B11 East Riding 67 71.5 74.2 0.47 B61 Leeds 74 77.2 79.5 0.35 M27 South Staffordshire 56 72.0 74.2 0.34 M28 Warwickshire 65 77.5 79.5 0.31 M18 Dudley 64 71.5 74.2 0.34 M28 Warwickshire 61 77.6 79.4 0.28 P16 Stockport 57 71.9 74.2 0.29 C12 Sheffield 70 77.3 79.4 0.19 P28 Morecambe Bay 60 71.8 74.0 0.28 B11 East Riding 50 78.0 79.3 0.24 C14 North Nottinghamshire 58 71.9 74.0 0.34 M27 Southern Derbyshire 63 71.6 73.9 0.43 C08 Nottingham 63 77.6 79.3 0.27 C01 North Nottinghamshire 55 72.1 73.9 0.42 P16 Stockport 60 77.7 79.2 0.26	G24	Beyley and Greenwich	46	72.4	74.3	0.33	P28	Morecambe Bay	58	77.7	79.5	0.28
Data Bart Ring Or The	B11	Fast Riding	67	71.5	74.2	0.47	B61	Leeds	74	77.2	79.5	0.35
M18 Dudley 64 71.5 74.2 0.46 N18 South Cheshire 61 77.6 79.4 0.28 P16 Stockport 57 71.9 74.2 0.38 F33 Barking and Havering 46 78.2 79.4 0.19 F33 Barking and Havering 51 72.3 74.2 0.29 C12 Sheffield 70 77.3 79.4 0.19 P28 Morecambe Bay 60 71.8 74.0 0.27 C15 Lincolnshire 45 78.2 79.4 0.19 P28 Morecambe Bay 60 71.8 74.0 0.28 B11 East Riding 50 78.0 79.3 0.24 C14 North Nottinghamshire 58 71.9 74.0 0.34 M27 South Staffordshire 67 77.4 79.3 0.29 P22 Southern Derbyshire 55 72.1 73.9 0.30 C02 Southern Derbyshire 66 77.5 79.3 0.26 C02 Southern Derbyshire 55 72.1 73.	M27	South Staffordshire	56	72.0	74.2	0.34	M28	Warwickshire	65	77.5	79.5	0.31
P16 Stockport 57 71.9 74.2 0.38 F33 Barking and Havering 46 78.2 79.4 0.19 F33 Barking and Havering 51 72.3 74.2 0.29 C12 Sheffield 70 77.3 79.4 0.30 P28 Morecambe Bay 60 71.8 74.0 0.37 C15 Lincolnshire 45 78.2 79.4 0.19 H17 Merton, Sutton & Wands§ 44 72.5 74.0 0.28 B11 East Riding 50 78.0 79.3 0.24 C14 North Nottinghamshire 58 71.9 74.0 0.34 M27 South Staffordshire 67 77.4 79.3 0.29 P22 South Lancashire 63 71.6 73.9 0.43 C08 Nottingham 63 77.6 79.3 0.26 C02 Southern Derbyshire 66 71.5 73.9 0.42 P16 Stockport 60 77.7 79.2 0.26 B01 Leeds 72 71.2 73.9	M18	Dudley	64	71.5	74.2	0.46	N18	South Cheshire	61	77.6	79.4	0.28
110 Discription 112 113 112 112	P16	Stockport	57	71.9	74.2	0.38	F33	Barking and Havering	46	78.2	79.4	0.19
P35 More and Participy P1	F33	Barking and Havering	51	72.3	74.2	0.29	C12	Sheffield	70	77.3	79.4	0.30
12.0 Merton, Sutton & Wands§ 34 72.5 74.0 0.28 B11 East Riding 50 78.0 79.3 0.24 C14 North Nottinghamshire 58 71.9 74.0 0.34 M27 South Staffordshire 67 77.4 79.3 0.29 P22 South Lancashire 63 71.6 73.9 0.43 C08 Nottingham 63 77.6 79.3 0.27 C01 North Derbyshire 55 72.1 73.9 0.43 C08 Nottingham 63 77.6 79.3 0.26 C02 Southern Derbyshire 66 77.7 79.2 0.26 B61 Leeds 72 71.2 73.9 0.44 M26 North Worcestershire 53 77.9 79.2 0.26 B61 Leeds 72 71.2 73.9 0.44 M26 North Worcestershire 53 77.9 79.2 0.26 B16 Grimsby and Scunthorpe 65 71.5 73.5 0.32 K33 Northamptonshire 51 78.0	P28	Morecambe Bay	60	71.8	74.0	0.37	C15	Lincolnshire	45	78.2	79.4	0.19
1111 North Northing during withing 11 11.2 11.0	H17	Merton Sutton & Wands	44	72.5	74.0	0.28	B11	East Riding	50	78.0	79.3	0.24
C14 North Nothinghamshift 56 11.5 11.6 17.3 11.6 17.3 11.6 1	C14	North Nottinghamshire	58	71.9	74.0	0.34	M27	South Staffordshire	67	77.4	79.3	0.29
122 South Darkashire 05 11.0 13.7 0.10 10.0 </td <td>D22</td> <td>South Lancashire</td> <td>63</td> <td>71.6</td> <td>73.9</td> <td>0.43</td> <td>C08</td> <td>Nottingham</td> <td>63</td> <td>77.6</td> <td>79.3</td> <td>0.27</td>	D22	South Lancashire	63	71.6	73.9	0.43	C08	Nottingham	63	77.6	79.3	0.27
Color North Derbyshire G6 71.5 73.9 0.42 P16 Stockport G0 77.7 79.2 0.26 B61 Leeds 72 71.2 73.9 0.42 P16 Stockport 60 77.7 79.2 0.26 B61 Leeds 72 71.2 73.9 0.44 M26 North Worcestershire 53 77.9 79.2 0.21 C08 Nottingham 59 71.8 73.6 0.32 M22 Wolverhampton 72 77.2 79.2 0.28 B16 Grimsby and Scunthorpe 65 71.5 73.5 0.32 K33 Northamptonshire 51 78.0 79.1 0.15 M43 Sefton 71 71.2 73.5 0.38 C14 North Nottinghamshire 69 77.3 79.1 0.29 A11 Northumberland 69 71.3 73.5 0.34 M25 South Birmingham 81 77.0 79.0 <	C01	North Derbyshire	55	72.1	73.9	0.30	C02	Southern Derbyshire	66	77.5	79.3	0.26
Bota Lieds 72 71.2 73.9 0.44 M26 North Worcestershire 53 77.9 79.2 0.21 B61 Leeds 72 71.2 73.9 0.44 M26 North Worcestershire 53 77.9 79.2 0.21 C08 Nottingham 59 71.8 73.6 0.32 M22 Wolverhampton 72 77.2 79.2 0.28 B16 Grimsby and Scunthorpe 65 71.5 73.5 0.32 K33 Northamptonshire 51 78.0 79.1 0.15 N43 Sefton 71 71.2 73.5 0.38 C14 North Nortinghamshire 69 77.3 79.1 0.29 A11 Northumberland 69 71.3 73.5 0.34 M25 South Birmingham 81 77.0 79.0 0.32 E21 Ken, Chelsea & Westmin¶ 68 71.3 73.5 0.34 M25 South Birmingham 81 77.0 79.0 0.32 M51 Wirral 70 71.2 73.4 0.36 <td>C02</td> <td>Southern Derbyshire</td> <td>66</td> <td>71.5</td> <td>73.9</td> <td>0.42</td> <td>P16</td> <td>Stockport</td> <td>60</td> <td>77.7</td> <td>79.2</td> <td>0.26</td>	C02	Southern Derbyshire	66	71.5	73.9	0.42	P16	Stockport	60	77.7	79.2	0.26
Dot 12 11.2 <t< td=""><td>B61</td><td>Leeds</td><td>72</td><td>71.2</td><td>73.9</td><td>0.44</td><td>M26</td><td>North Worcestershire</td><td>53</td><td>77.9</td><td>79.2</td><td>0.21</td></t<>	B61	Leeds	72	71.2	73.9	0.44	M26	North Worcestershire	53	77.9	79.2	0.21
Core B16Grimsby and Scunthorpe 55 71.5 73.5 0.32 $K33$ Northamptonshire 51 78.0 79.1 0.15 B16Grimsby and Scunthorpe 65 71.5 73.5 0.32 K33Northamptonshire 69 77.3 79.1 0.29 A11Northumberland 69 71.3 73.5 0.38 C14North Nottinghamshire 69 77.3 79.1 0.29 A11Northumberland 69 71.3 73.5 0.41 B16Grimsby and Scunthorpe 78 77.1 79.0 0.28 E21Ken, Chelsea & Westmin¶ 68 71.3 73.5 0.34 M25South Birmingham 81 77.0 79.0 0.32 N51Wirral 70 71.2 73.4 0.36 N51Wirral 71 77.3 78.9 0.20 A34North Cumbria 74 71.0 73.3 0.30 F37Camden and Islington 57 77.7 78.8 0.20 B51West Yorkshire 86 70.7 73.2 0.45 N43Sefton 64 77.6 78.8 0.22 B20Faling H"wirth & Houns** 61 71.7 73.2 0.25 P22South Lancashire 82 76.9 78.8 0.32	C00	Nottingham	50	71.2	73.6	0 32	M22	Wolverhampton	72	77.2	79.2	0.28
Bito Ormitsby and Scinthiorpe O. 11.2 13.5 0.32 ROS information i	CU0 D16	Grimshy and Sounthorno	65	71.5	73 5	0.32	K33	Northamptonshire	51	78.0	79.1	0.15
A11 Northumberland 69 71.3 73.5 0.41 B16 Grimsby and Scunthorpe 78 77.1 79.0 0.28 E21 Ken, Chelsea & Westmin¶ 68 71.3 73.5 0.41 B16 Grimsby and Scunthorpe 78 77.1 79.0 0.32 N51 Wirral 68 71.2 73.4 0.36 N51 Wirral 71 77.3 78.9 0.20 A34 North Cumbria 74 71.0 73.3 0.38 C01 North Derbyshire 68 77.4 78.9 0.20 A34 North Cumbria 74 71.0 73.3 0.38 C01 North Derbyshire 68 77.4 78.9 0.20 B51 West Yorkshire 86 70.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.22 B51 West Yorkshire 61 71.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.22 B20 Faling Hirmith & Houns** 61 71.7 73.2	D10	Soften	71	71.0	73.5	0.32	C14	North Nottinghamshire	69	77.3	79.1	0.29
A11Normanic 0.7 1.3 73.5 0.34 $M25$ South Birmingham 81 77.0 79.0 0.32 E21Ken, Chelsea & Westmin¶ 68 71.3 73.5 0.34 $M25$ South Birmingham 81 77.0 79.0 0.32 M51Wirral 70 71.2 73.4 0.36 $M51$ Wirral 71 77.3 78.9 0.20 A34North Cumbria 74 71.0 73.3 0.38 C01North Derbyshire 68 77.4 78.9 0.21 C12Sheffield 62 71.7 73.3 0.30 F37Camden and Islington 57 77.7 78.8 0.20 B51West Yorkshire 86 70.7 73.2 0.45 N43Sefton 64 77.6 78.8 0.22 F20Faling Hirmith & Houns** 61 71.7 73.2 0.25 P22South Lancashire 82 76.9 78.8 0.32	1N43 A 1 1	Northumberland	60	71 3	73 5	0.41	B16	Grimsby and Scunthorpe	78	77.1	79.0	0.28
Instruction Instruction <thinstruction< th=""> <thinstruction< th=""></thinstruction<></thinstruction<>	A11 E21	Kan Chalses & Westmin [®]	68	71 3	73.5	0.34	M25	South Birmingham	81	77.0	79.0	0.32
A34 North Cumbria 74 71.0 73.3 0.38 C01 North Derbyshire 68 77.4 78.9 0.21 C12 Sheffield 62 71.7 73.3 0.38 C01 North Derbyshire 68 77.4 78.9 0.21 C12 Sheffield 62 71.7 73.3 0.30 F37 Camden and Islington 57 77.7 78.8 0.20 B51 West Yorkshire 86 70.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.22 F20 Faling Hismith & Houns** 61 71.7 73.2 0.25 P22 South Lancashire 82 76.9 78.8 0.32	621 N51	Winnel	70	71.0	734	0.34	N51	Wirral	71	77.3	78.9	0.20
C12 Sheffield 62 71.7 73.3 0.30 F37 Canden and Islington 57 77.7 78.8 0.20 B51 West Yorkshire 86 70.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.20 B51 West Yorkshire 86 70.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.20 B51 West Yorkshire 61 71.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.22 B51 West Yorkshire 61 71.7 73.2 0.45 N43 Sefton 64 77.6 78.8 0.22	1001 424	wiifai North Cumbria	74	71.0	73 3	0.38	COL	North Derbyshire	68	77.4	78.9	0.21
C12 Statistic C13 Call of the statistic Call of the statist Call of the statistic <thcall of<="" td=""><td>C12</td><td>Shoffield</td><td>62</td><td>71 7</td><td>73 3</td><td>0.30</td><td>F37</td><td>Camden and Islington</td><td>57</td><td>77.7</td><td>78.8</td><td>0.20</td></thcall>	C12	Shoffield	62	71 7	73 3	0.30	F37	Camden and Islington	57	77.7	78.8	0.20
E20 Faling H's Houns** 61 717 732 0.25 P22 South Lancashire 82 76.9 78.8 0.32	C12 B51	West Vorkshire	86	70.7	73.2	0.45	N43	Sefton	64	77.6	78.8	0.22
	E20	Ealing, H'smith & Houns**	61	71.7	73.2	0.25	P22	South Lancashire	82	76.9	78.8	0.32

* Southampton and South West Hampshire.
† Portsmouth and South East Hampshire.
‡ Redbridge and Waltham Forest.
§ Merton, Sutton and Wandsworth.
¶ Kensington, Chelsea and Westminster.
** Ealing, Hammersmith and Hounslow.

Table 2 continued

Males		Ranks	Life expectancy		%			Ranks	Life expec	tancy	% annual
		in 1984-86	1984-86	1992-94	increase	Female	\$	<i>1984-86</i>	1984-86	1992-94	increase
C10	Doncaster	75	71.0	73.2	0.38	A34	North Cumbria	80	77.0	78.8	0.29
M21	Walsall	81	70.8	73.1	0.36	M17	Coventry	59	77.7	78.7	0.17
C11	Rotherham	73	71.2	73.1	0.29	P20	North West Lancashire	77	77.2	78.7	0.24
B31	Bradford	96	70.3	72.9	0.43	C11	Rotherham	76	77.2	78.6	0.23
B71	Wakefield	87	70.6	72.9	0.42	C10	Doncaster	79	77.1	78.5	0.25
M17	Coventry	78	70.9	72.9	0.34	B51	West Yorkshire	97	76.3	78.5	0.33
A31	South Durham	91	70.5	72.9	0.39	B31	Bradford	96	76.3	78.5	0.33
P23	Wigan and Bolton	100	70.2	72.8	0.44	G26	South East London	55	77.7	78.4	0.11
N17	North Cheshire	77	71.0	72.8	0.32	M07	North Staffordshire	87	76.5	78.4	0.29
M07	North Staffordshire	92	70.4	72.8	0.41	A11	Northumberland	89	76.5	78.3	0.28
P20	NW Lancashire	83	70.7	72.7	0.30	M29	North Birmingham	83	76.8	78.3	0.24
C09	Barnsley	76	71.0	72.7	0.29	M19	Sandwell	73	77.2	78.3	0.20
M29	North Birmingham	89	70.6	72.6	0.34	A31	South Durham	86	76.7	78.1	0.23
M25	South Birmingham	82	70.8	72.6	0.32	M21	Walsall	91	76.4	78.1	0.28
M22	Wolverhampton	79	70.9	72.6	0.30	C09	Barnsley	88	76.5	78.1	0.23
A35	Newcastle and North Tyneside	84	70.7	72.6	0.29	A35	Newcastle and North Tyneside	84	76.8	78.1	0.20
A30	North Durham	93	70.4	72.6	0.36	F35	East London and the City	75	77.2	78.1	0.17
P24	Bury and Rochdale	90	70.5	72.5	0.35	N17	North Cheshire	98	76.2	78.0	0.30
P21	East Lancashire	94	70.4	72.4	0.38	B71	Wakefield	94	76.3	78.0	0.26
P27	Salford and Trafford	95	70.3	72.4	0.36	P27	Salford and Trafford	85	76.7	78.0	0.20
N31	St Helens and Knowsley	102	70.0	72.4	0.41	P24	Bury and Rochdale	95	76.3	77.9	0.22
A32	Tees	99	70.3	72.2	0.34	A30	North Durham	93	76.4	77.8	0.20
A16	Sunderland	97	70.3	72.1	0.32	P23	Wigan and Bolton	100	76.2	77.8	0.28
P25	West Pennine	88	70.6	72.1	0.27	P21	East Lancashire	104	75.9	77.8	0.33
M19	Sandwell	101	70.2	72.0	0.31	A33	South of Tyne	90	76.5	77.8	0.22
A33	South of Tyne	103	70.0	71.9	0.34	A32	Tees	92	76.4	77.8	0.23
F37	Camden and Islington	80	70.9	71.8	0.16	P25	West Pennine	99	76.2	77.7	0.24
G26	South East London	85	70.7	71.7	0.18	N31	St Helens and Knowsley	102	76.1	77.6	0.24
F35	East London and the City	98	70.3	71.7	0.23	A16	Sunderland	101	76.2	77.4	0.17
N21	Liverpool	104	69.8	71.2	0.24	N21	Liverpool	103	76.0	77.3	0.21
P26	Manchester	105	69.2	69.9	0.10	P26	Manchester	105	75.4	76.7	0.22

Table 3 Life expectancy at birth in relation to gender in 1984-86 and 1992-94: English district health authorities grouped by level of deprivation, listed in order of increasing deprivation

	Males				Females		Female-male difference in life expectancy (y)			
Level of deprivation	Rank in 1984-86	Life expectancy		%		Life expectancy				%
		1984-86	1992-94	- annual increase	1984-86	1984-86	1992-94	- annual increase	1984-86	1992-94
England Deprivation		72.1	74.1	0.35		77.9	79.5	0.25	5.8	5.4
level 1 Deprivation	1	73.0	75.2	0.38	2	78.4	80.2	0.28	5.4	4.9
level 2 Deprivation	2	72.9	75.0	0.35	1	78.5	80.1	0.25	5.5	5.1
level 3 Deprivation	3	72.6	74.8	0.36	3	78.4	80.0	0.25	5.8	5.3
level 4 Deprivation	4	71.6	73.7	0.35	4	77.6	79.1	0.24	6.0	5.5
level 5 Deprivation	5	71.1	73.0	0.34	6	77.1	78.7	0.25	6.0	5.6
level 6 Deprivation	6	71.0	72.9	0.32	5	77.3	78.9	0.26	6.3	6.0
level 7	7	70.2	71.2	0.18	7	76.8	77.8	0.17	6.7	6.6

Note: definition of deprivation levels is given in table 1.

0.45 years (table 3). Affluent areas showed a greater narrowing of this differential than deprived areas: -0.48 years in the most affluent areas, with practically no change in the most deprived areas (-0.06 years).

Discussion

There have been major changes in ONS systems of processing mortality data, which came into effect from 1993 and affect cause of death coding. The all cause mortality data used here are unaffected, except for the change from numbers of registrations annually to numbers of occurrences. ONS expects this change to have little effect on annual totals.⁹

Life expectancy conveys the impact of mortality more readily than rates/ratios. It should, however, be noted that life table methodology is based on death rates prevailing in a particular period, comprising the mortality experience of many successive birth cohorts. Hence life expectancy is a "period" measure, describing how long a person would live if the mortality rates of a particular period prevailed for an entire generation. In this paper we have measured life expectancy based on mortality levels in the decade up to 1994; since it is realistic to expect mortality to continue to fall in the future, those born now are likely to live longer than predicted by this approach.

The findings presented here quantify the effects on longevity of regional differences in mortality in England. For instance, given the local mortality rates in the early 1990s, a male baby in Cambridge can expect to live almost 7 years longer than his counterpart in Manchester, the difference for a female baby being almost 4.5 years. Furthermore, regional differences have widened over the past decade. The lowest ranking areas in this analysis have



Figure 3 Male and female life expectancy at birth in district health authorities in England, 1992-94. Note: DL 1 <-SD (ie <-17.37); DL 2, between -1 and -0.5 of the SD; DL 3, between -0.5 and 0 of the SD; DL 4, between 0 and 0.5 of the SD; DL 5, between 0.5 and 1 of the SD; DL 6, between 1 and 1.96 of the SD; DL 7, significantly greater than the mean at the 5% level.



Figure 4 Female-male differences in life expectancy among English district health authorities, 1992-94. Note: deprivation levels are defined in the same way as in figure 3.

life expectancies in 1992-94 equivalent to those of England and Wales two decades ago.³

Using Jarman scores^{6 7} as a measure of deprivation, we found a correlation coefficient between deprivation and life expectancy of -0.77 for men and -0.56 for women. Although other measures of deprivation are also

available,¹⁰¹¹ Jarman scores were used here because they are available for the 1995 DHA boundaries. Any method combining several variables into a single index has its limitations. However, correlation coefficients obtained by Eames *et al* between mortality and different deprivation indices do not vary greatly,¹² and are similar to our results.

We have shown that not only is life expectancy in English DHAs inversely associated with deprivation, but that the prosperous, longest lived populations have seen the greatest gains in life expectancy over the decade. In contrast, the most deprived DHAs (inner London, Manchester and Liverpool) experienced negligible improvements in longevity, despite having the lowest life spans in the mid-1980s. Inner London has shown the poorest gains, and male life expectancy in parts of the capital is among the lowest in the country. Another significant finding is that survival rates for young men aged 30-39 have deteriorated nationally, and in all area groupings, the decline being greatest in deprived areas, which also showed a significant fall in survival rates at 20-29. Mortality increased also in young women, but only in the very deprived areas.

From the data available, it is not possible to quantify the contribution of migration to life expectancy variations between DHAs. It is possible that the higher life expectancy of an area reflects in-migration of healthy people (and conversely), and that widening geographical differences reflect, at least in part, the effects of selective migration. While the health of migrants has important policy implications, such data would be available only on a sample basis. Furthermore, it does not detract from the value of an ecological investigation into local variations in health in order to identify the most disadvantaged areas.

The findings presented here are consistent with those noted by Charlton in his analysis of life expectancy for regional health authorities and the ONS area classification groups.⁵ The latter is an area typology based on homogeneity across a range of demographic, housing, and socioeconomic variables. Charlton went on to show that the high mortality "Ports and industry" areas have the highest mortality from lung cancer, coronary heart disease, and stroke, and that people in inner London have the highest mortality from respiratory diseases and injury and poisoning.

There is mounting evidence about the association between socioeconomic inequalities and mortality differentials in England, ¹²⁻²³ and that the degree of socioeconomic inequality within an area contributes an additional effect over and above that of the level of deprivation alone.²⁴⁻³⁰ The analysis of Phillimore *et al* showed a widening of mortality differentials between affluent and deprived electoral wards in northern England between 1981 and 1991.¹³ Eames *et al* have shown that premature mortality from all causes, coronary heart disease, and smoking-related diseases is associated with deprivation.¹² Sloggett and Joshi used longitudinal data to distinguish between the effects on mortality of deprivation at population and individual level.²³ They found that it is disadvantaged people that are at risk, irrespective of whether they live in deprived or affluent areas, and concluded that people not areas should be targeted by health interventions.

In contrast, Illslev and Le Grand concluded that age and sex specific regional trends in mortality between 1931 and 1987-89 suggest that behavioural risk factors and ethnicity, rather than deprivation, make the greatest contribution to the persistence of geographical differentials.³¹ They noted that a convergence in regional differences in childhood mortality, the most vulnerable to the effects of poverty, contrasted with widening differences among the middle aged after 1961, which they attributed to differential changes in risk behaviour relating to coronary heart disease and lung cancer, with affluent groups responding most effectively to health promotion messages about behaviour induced diseases.

Although the major impact on life expectancy of regional differences in mortality is registered in middle aged adults, a significant difference in mortality continues to be apparent even at younger ages. This is reflected in the 1993 SMRs for ages 0-14 years of 72 in prosperous areas and 89 in growth areas, contrasting with 125 in manufacturing areas and 116 in inner London (England and Wales=100).7 Thus, although the historical narrowing of mortality differentials regionally has been greatest at younger ages, the differences remain substantial even now.

However, Illsley and Le Grand's argument is consistent with our findings that regional differences in life expectancy are greater for males than for females, and that deprived areas not only have lower life expectancies but also greater gender differences. Deprived areas also showed the least narrowing of gender differences over the decade. It is not clear why deprivation should impact more on male than on female longevity. If the higher mortality of people in deprived areas reflects the cumulative effects of deprivation through childhood and later life,^{30 32} it is not obvious why the effects should be greater for men than for women. Possible explanations are: selective migration to deprived areas of males in poor health; greater gender variation in deprived areas in the incidence of external causes of death such as accidents, suicide and violence; and finally, deprivation could be a stronger proxy for health risk behaviour in men than in women.

Rising mortality in young men irrespective of the area's socioeconomic status may reflect the increasing contribution of suicide and/or AIDS; the adverse effects on survival among young women in very deprived areas is less readily explained. Government population projections for England anticipated an AIDS related increase in young male mortality up to the mid-1990s; they also forecast an increase in young female mortality between 1994 and 1995.

Areas with low life expectancy (particularly inner London) are also those with substantial ethnic minority populations. Infant mortality is

significantly higher than the national average in infants of African-Caribbean and Pakistani born mothers, but not significantly different in infants of mothers born in India, Bangladesh or East Africa.³⁴ The 1991 census based analysis of mortality in England and Wales by country of birth shows raised SMRs at ages 20-69 for migrants from Africa and for South Asian men (but not women); Caribbean migrants had low SMRs.35 The contribution of ethnicity to the regional differences in life expectancy noted here is difficult to ascertain but, since ethnicity is associated with deprivation, it is unlikely to have a strong independent effect.

The congruence between behavioural risk factors, the insults to physical and mental health imposed by deprivation, and ethnicity makes the issue of causation particularly complex. The Variations In Health report² concluded that differential lifetime exposure to health damaging or health promoting physical and social environments is the main explanation for variations in life expectancy, with health related social mobility, health damaging or health promoting behaviours, use of health services, and biological factors also contributing. In the next phase of this work we will explore shifts in age, gender and cause specific mortality to help identify the nature and sources of the variations noted in this paper.

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