

# **NDC National Evaluation**

## **Health of NDC Residents: Who has the most to gain?**

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# EXECUTIVE SUMMARY

## Introduction

Health is one of the core themes of the NDC Programme. Interventions aim to deliver health improvements to residents as a significant contribution to neighbourhood renewal. This paper provides an understanding of the health status within NDC areas and the inter-related factors that will influence self-reported health. The association between lifestyle and behaviour with self-reported health is considered. How factors such as housing, area characteristics and crime interact with health is also explored. Finally, change in the main health variables is considered. The paper draws mainly on data from the 2004 MORI/NOP NDC household survey, but also utilises the 2002 MORI/NOP NDC household survey as well as secondary and administrative data collected and analysed by the Social Disadvantaged Research Centre at the University of Oxford. Techniques used to explore the relationship between health and other factors include logistic regression modelling.

## Self reported health

Four main indicators of health are available from the household survey: health and change in health over last 12 months, long standing illness or disability and a SF-36 score for mental health. A number of key findings emerge in relation to these key indicators:

- NDC areas show poorer health levels than national averages for three of these four indicators
- The degree to which health inequalities exist varies considerably across individual Partnerships
- NDCs which are located in older, industrial, northern cities tend to have poorer health than those located in southern and eastern England
- NDC residents most likely to report poor health are: those from workless households and those with no qualifications or older residents. Logistic regression models confirm these relationships.

## Lifestyle

The MORI/NOP survey enables the lifestyle and health related behaviour of NDC residents to be considered. Whether residents smoke, how often they eat five portions of fruit or vegetables a day and whether they partake in a range of physical activities is examined both by individual Partnerships and across the Programme as a whole.

- There are noticeable regional differences across NDCs on the lifestyle indicators
- Only 11 per cent of NDC residents in London rarely or never eat five portions of fruit or vegetables a day compared with 40 per cent of NDC residents in The North West region.
- Odds ratios indicate that women have healthier lifestyles - they are less likely than men to have poor nutrition, smoke or lack exercise
- Odds ratios also indicate that black and Asian residents are more than 60 per cent less likely to smoke than white residents
- All three negative lifestyle factors significantly increase the chances that a person will have indicated some degree of poor health.

## **Access to health services**

Initial examination is made of the relationship between the use of primary health services and self reported health. Which areas and which groups of residents are most likely to have accessed GP services, find it difficult to see the GP and are dissatisfied with their GP are also considered.

- Although almost twice the proportion of NDC residents feel their health is not good compared with the national average, there are similarities between the proportion of NDC residents visiting their GP and the national average
- Odds ratios indicate that women are more than 60 per cent more likely than men to have seen a doctor in the past month
- Black and Asian residents are over 20 per cent more likely to have seen a doctor in the past month than white residents.

## **Health in the context of housing and area characteristics**

This chapter explores the relationship between housing and area characteristics on the one hand and health on the other.

- Residents who are dissatisfied with their accommodation, those dissatisfied with the state of repair of the home and those who are dissatisfied with the area have significantly lower average SF-36 mental health scores than those who are satisfied
- Individuals who report being afraid to go out after dark, indicate they are fearful of crime or have been a victim of crime are significantly more likely to have had poor health over the past year or have a low SF-36 mental health score.

## **The benefits of social capital and cohesion on health**

A number of questions in the household survey relate to a sense of community within NDCs.

- Odds ratios indicate that stronger community ties, in terms of networks do not necessarily lead to or reflect a healthier community
- Factors most likely to be beneficial to both residents' general and mental health wellbeing are whether they feel part of the local community, levels of community trust and feelings of security.

## **Change in NDC areas**

This chapter explores change in NDC areas using the MORI/NOP 2002/2004 household surveys and secondary and administrative data. Overall this section shows there has been little change in health indicators, as would be expected. Changes in relation to many health indicators and outcomes will only become apparent in the longer term. However, when change in the MORI/NOP household survey responses is explored by demographic characteristics some issues emerge:

- Men, the young, and black and Asian people indicate the greatest improvement in fruit and vegetable consumption
- Older people indicate most improvement in undertaking sustained periods of activity
- Asian people and women show greatest improvement in accessing health service indicators
- Black people reveal the largest improvements in health indicators.

## Implications for policy and strategy

Health inequalities are not a recent problem. The Black Report (1988) examined the relationship between mortality, morbidity and social class and made a number of recommendations to reduce health disadvantage through improved welfare benefits, housing programmes, better working conditions, and income redistribution through taxation. Acheson (1998) also reviewed trends in inequalities and health and life expectancy in England and identified a number of priority areas for future policy development, for which there was evidence of interventions that could reduce such inequalities.

However whilst health, as measured by life expectancy, has improved overall, morbidity and mortality rates still vary across the social strata and the health gap between those living in the least deprived areas of England compared with those living in the most deprived continues to widen. A number of community-based initiatives to address the wider issues around health, including the NDC Programme, have been, or are being funded nationally. Others include, for example, Health and other Action Zones, Healthy Living Centres, Sure Start and Sure Start plus.

Current policies make explicit the Government's present commitment to reduce inequalities in health (Department of Health 2002b) and improve health care provision (Department of Health NHS Plan, Modernisation Agenda). As part of its plan to tackle health inequalities the Government has set two national health inequalities targets to be achieved by 2010 (Department of Health, 2002b):

- To reduce by at least 10 per cent the gap in infant mortality between manual occupational groups and the population as a whole
- To reduce by at least 10 per cent the gap between the fifth of local authorities with the lowest life expectancy at birth and the population as a whole.

With a further target with respect to teenage conceptions:

- To reduce by 50 per cent the under-18 conception rate and reduce the gap between the highest quintile of wards and the average by 26%.

In addition, the Department of Health's Inequalities Unit has developed a shopping basket of 70 potential indicators. These currently draw predominantly on routinely collected data and provide comparisons at a national level on issues such as mortality rates for cardiovascular disease. The development of additional locally relevant indicators is also being pursued. National Service Frameworks are providing targets for care, but much of their focus is at the clinical end of the disease spectrum with a focus on NHS related activity.

Improving health can best be achieved by changing people's behaviour. Stopping smoking would have one of the biggest impacts on health and premature mortality (Doll et al 2004). A WHO report into diet, nutrition and prevention of chronic diseases has identified another potential health-threatening factor - obesity. This is becoming a world-wide epidemic, which the WHO has attributed to an increased consumption of foods high in sugars and saturated fats, in conjunction with a reduction in physical exercise (WHO 2003). In England the prevalence of obesity has risen rapidly and now stands at nine and eleven percent in men and women aged 16 to 24 years through to 28 percent and 29 percent in those aged 55 to 64 years (Department of Health, 2002c). The issue of overweight and/or obesity is a serious one as both are associated with higher risks of having Type 2 diabetes, cardiovascular disease, hypertension, stroke, osteoarthritis and certain forms of cancer. Coronary heart disease and cancers are the two leading causes of morbidity and mortality in England.

Reasons for the increased levels of obesity are fairly clear. Calorie intake has steadily increased through the consumption of easily available, inexpensive, energy-dense foods, served in large portions. Daily physical activity has declined because of: increased reliance on cars; increased numbers of sedentary jobs; and the proliferation and increased use of modern technology (video games, television, and computers).

Recent policy initiatives by Government have focussed on the issue of obesity and a number of approaches have been implemented. Primary prevention options instigated at government level include nutrition and healthy eating initiatives such as the five fruit a day scheme (Department of Health 2000b), and the National School Fruit Scheme (Department of Health 2000c). Those addressing inactivity and lack of exercise include the Local Exercise Action Pilots (LEAP) (Department of Health 2004a) and the Choosing Health consultation on increasing physical activity (Department of Health 2004b). At a local level, activities can be initiated and implemented around diet and exercise, targeting at-risk sectors of the population, such as people who are in a vulnerable period of their life (mid-childhood, adolescence, pregnancy, and menopause) or those who belong to ethnic and socio-economic groups at greater risk of developing obesity. NDCs are in a position to adopt many of these initiatives.

The data in this paper illustrates the health needs of NDCs and the association of health status with lifestyle behaviours, including smoking, fruit and vegetable consumption, and regular exercise. Most NDCs have introduced local projects to promote changes in lifestyle behaviour, often linking these to national campaigns, and thus maximising exposure to the scheme. Other NDC activities are focussing on improving health care services and access to them. At a national level, such policy initiatives are being instigated through the NHS Plan (Department of Health 2000a). The data in this paper demonstrate the need for such initiatives with, for instance, a negative relationship between GP use and health status in many NDC areas.

The analysis provided in this paper goes some way to understanding the relationships between health, lifestyle, access to services and area level characteristics. The differences between the NDC Programme and national trends, across individual Partnerships and between subgroups of residents have been examined.

# 1. INTRODUCTION

New Deal for Communities (NDC) is an area based regeneration programme which aims to improve the circumstances of those who live in some of the most deprived communities in England. There are five main themes of the Programme of which health is one.

NDC Partnerships are pioneering a number of neighbourhood level health interventions. These aim to deliver health improvements to residents as a significant contribution to neighbourhood renewal (Department of Health, 2002a). In many cases these involve initiatives designed to influence the lifestyle and behaviour of residents, which in turn will impact on their health. Issues around access to and delivery of local health services are also addressed by most Partnerships.

The Acheson Report (Acheson D, 1998) recommended that such health initiatives should be evaluated in terms of their impact on health inequalities. Through time the evaluation will measure any change in health experienced by residents during the period of the NDC Programme and, where possible, explore issues of attribution. However, in many cases, the impacts of initiatives are only likely to feed through to change in actual health after many years. In the short term, however, health indicators can be monitored with a view to observing trends. During the period of the Programme it will also be possible to record changes in those aspects of lifestyle and behaviour, which are known to have an impact on health.

This paper explores the 2004 MORI/NOP household survey which is the main source of data available on lifestyle, behaviour, self-reported health and health-related quality of life, satisfaction with and access to health services by NDC residents. The sample consists of approximately 500 residents in each of the 39 NDC areas, a total of 19,633 respondents. Use is also made of administrative data which includes: prescribing rates for mental illness; low birth weight rates; morbidity; standardised illness ratios and standardised drug misuse ratios. This data has been collected and analysed by the Social Disadvantaged Research Centre at the University of Oxford.

This paper investigates how the distribution of various self reported health measures differ across core sub-groups of residents. The association between lifestyle and behaviour with self-reported health is also considered. The interaction of health with other factors such as housing, area characteristics and aspects of crime is also explored. A number of bivariate and multivariate statistical techniques are employed including logistic regression modelling and factor analysis. NDC areas are contrasted with national benchmarks where possible. Comparison is also made with data from the comparator survey which was also conducted by MORI/NOP in 2004 and contains a sample of just over 4,000 residents from similarly deprived areas. Finally, change in health indicators is considered by comparing the 2004 household survey responses to the survey responses given in 2002.



## 2. SELF REPORTED HEALTH

### 2.1. Health indicators

The MORI/NOP household survey asks NDC residents a number of questions relating to their perceived health. There is some evidence that such measures can serve as proxies for actual health levels (Idler and Benyamini, 1997). The questions cover respondents' self-reported health in the past year, whether this has changed over the year, whether they have any long-standing illness, disability or infirmity and if so whether this affects their activities or is limiting. However, it is also worth noting that questions relating to a respondent's health over the past year may be influenced by the effect of any recent illness, i.e. if the respondent is feeling unwell when they are asked the question; they are more likely to respond that their health was not good over the past year. Full details of the questions asked are listed in the Appendix Table A1.

In addition to the above general health questions, items relating to the Short Form 36 (SF-36) mental wellbeing index are included in the questionnaire. High levels of mental ill health are of major national concern and are notably prevalent in areas of high social exclusion (Carvel, 2004). Scores on the index range from zero (worse possible mental health related quality of life) to 100 (best possible mental health related quality of life). This is one of the eight possible self reported quality of life domains measured by the SF-36 (Ware and Sherbourne, 1992). Such questionnaire instruments are extensively used in clinical practice to provide useful descriptive information relating to the effectiveness of health care interventions (Brazier et al, 2002). The SF-36 is probably the most widely evaluated generic quality of life instrument used in health related research (Garratt et al, 2002).

The analysis presented in this paper will therefore utilise four main indicators of health available from the household survey:

- health over last 12 months
- change in health over last 12 months
- long standing illness or disability
- SF-36 score for mental health.

For the purposes of statistical modelling in this paper the responses to these questions have been binarised. The outcome category of health is 'poor' used in the models is equivalent to those who responded their health was 'not good' in the past year. Details of the binarisation of the data can be seen in Appendix Table A1.

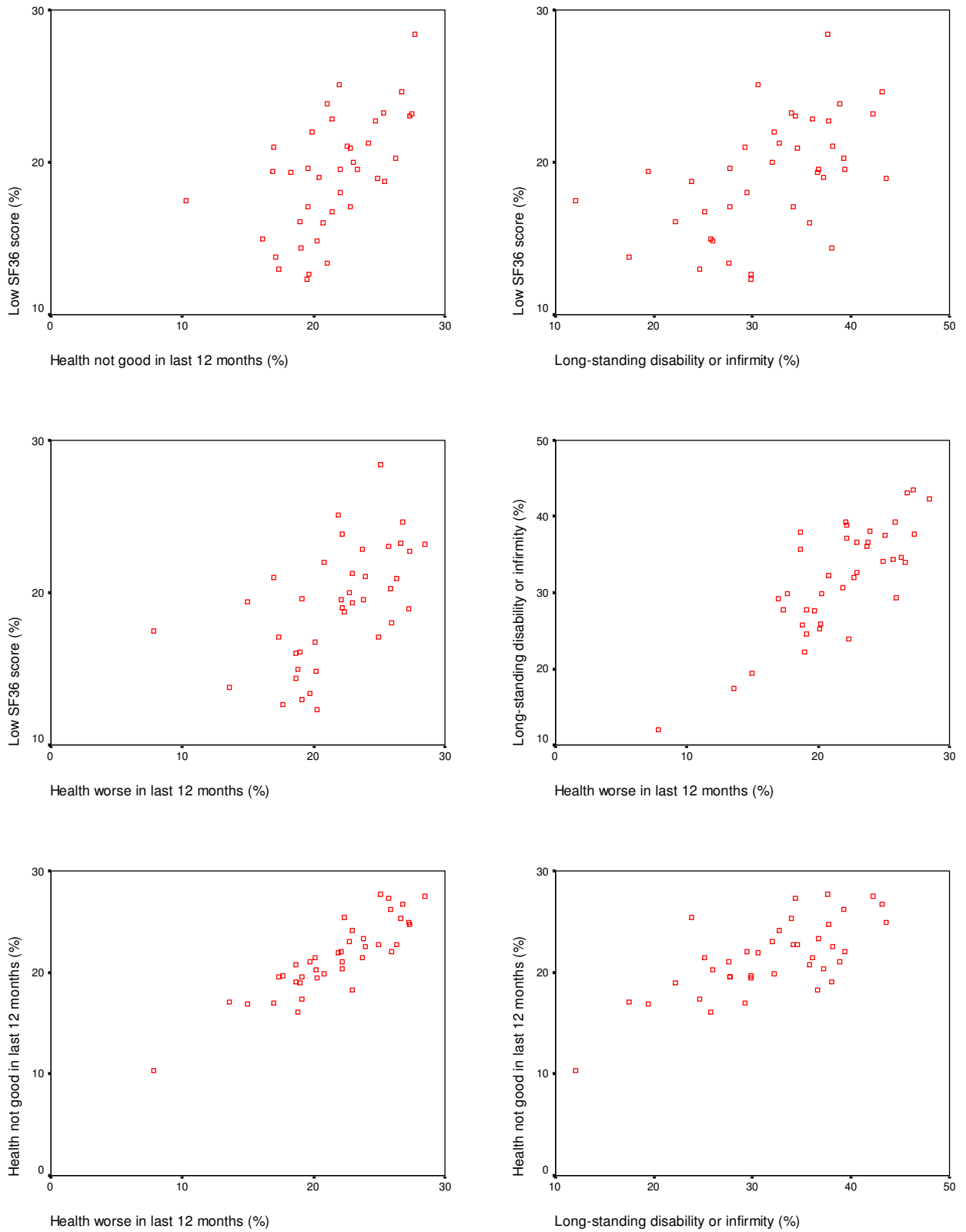
The relationship between each of these health measures is examined for each Partnership in the 6 scatter plots below (Figure 1). The charts show clearly that all six indicators are inter-related. The strength of association is stronger between health in general, change in health over the past 12 months and long standing illness or disability than it is between these indicators and the SF-36 mental health score. The significant correlation coefficients for combinations of these health measures are shown in Table 1 and confirm these relationships.

**Table 1: Health correlation coefficients**

<b>Variable 1</b>	<b>Variable 2</b>	<b>Correlation coefficient</b>
Health 'not good' in last 12 months	Long standing illness or disability	0.70**
Health 'not good' in last 12 months	Health 'worse' than 12 months ago	0.86**
Health 'worse' than 12 months ago	Long standing illness or disability	0.80**
Low SF-36 Mental Health score	Health 'worse' than 12 months ago	0.55**
Low SF-36 Mental Health score	Health 'not good' in last 12 months	0.58**
Low SF-36 Mental Health score	Long standing illness or disability	0.51**

\*\* Correlation is significant at the 0.01 level  
Source: MORI/NOP Household Survey 2004

**Figure 1: Scatter plots comparing percentage of NDC respondents reporting on various health measures**



Source: MORI/NOP Household Survey 2004

## 2.2. The geography of ill health

An objective of the NDC Programme is to reduce inequalities in health and well being between NDCs areas and the national average. At this interim stage of the evaluation, examination of the above health measures allows us to gauge the level of inequality that exists between NDC areas, comparator areas and national averages.

Self reported health indicators for NDCs are compared with the comparator survey and national figures in Table 2. Unfortunately, it is not possible to calculate a national benchmark for the SF-36 mental health score using the current Health Survey for England (HSE) data due to differences in the questions asked. The latest date for which it is possible to obtain a national benchmark for SF-36 was from the 1996 HSE survey and this has been included as a benchmark instead.

The data show that there is little difference between NDC areas as a whole and the comparator areas. However, NDC areas show poorer health levels than national averages. For example, 22 per cent of NDC residents consider their health to be 'not good' over the last 12 months compared with 14 per cent nationally.

**Table 2: Residents self reported health status**

	% of respondents		
	NDC areas	Comparator areas	National
<b>Health in last 12 months</b>			
Good	46	50	56
Fairly good	32	31	30
Not good	22	19	14
<b>Change in health status</b>			
Better	15	12	15
Same/Don't know	64	69	73
Worse	21	19	12
<b>Long standing illness/disability</b>			
No	68	70	65
Yes	32	30	35
<b>SF-36 mental health score</b>			
Mean score	71	73	75

Base: All

Source: MORI/NOP Household Survey 2004, Health Survey for England 1996, General Household Survey 2002/03

The proportion of NDC residents with a long standing illness or disability is, however, similar to the national benchmark. Nevertheless, when this question is qualified by asking whether the illness, disability or infirmity limits the respondent's activities, four out of five NDC residents say it does compared with only three out of five nationally.

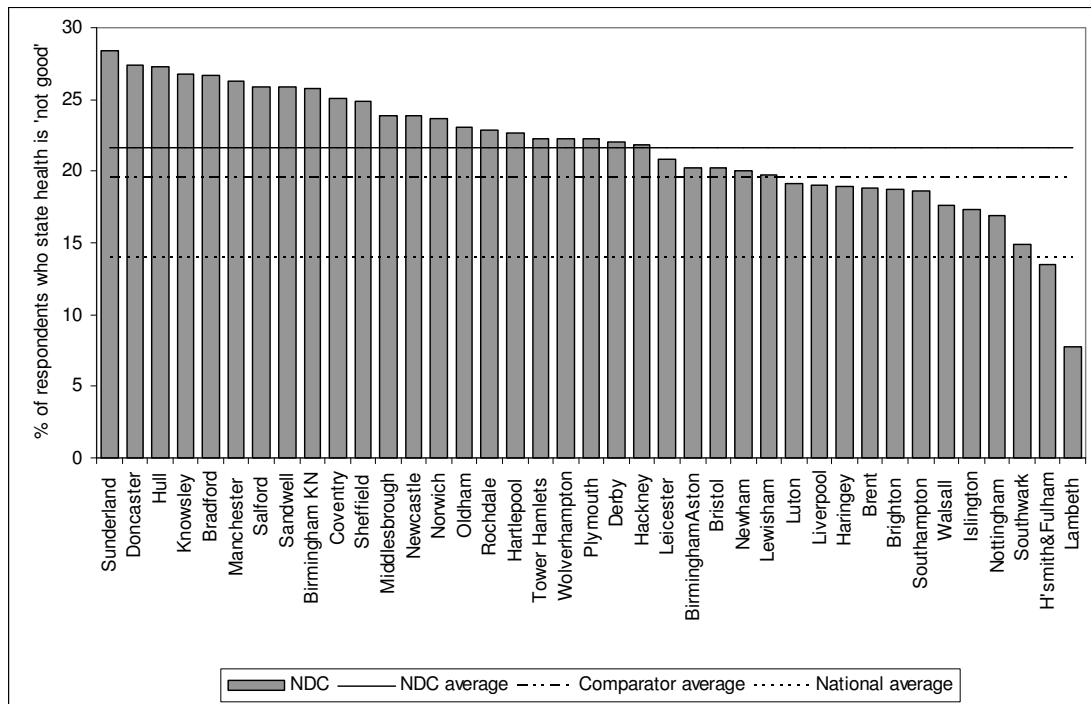
The degree to which health inequalities exist varies considerably across individual Partnerships as is shown in Figures 2 to 5. For example, the proportion of residents who think their health was 'not good' over the previous 12 months ranges from 28 per cent in Sunderland to 8 per cent in Lambeth. What is fairly consistent across the Partnerships though, is that they perform badly compared with the national average. Only Hammersmith and Fulham and Lambeth have lower proportions of residents who feel their health was not good over the last 12 months than the national average and only Lambeth has a lower proportion of residents who feel their health has deteriorated than nationally. A full breakdown of the key health indicators by individual NDCs and by all NDCs within each region is given in Appendix Table A2.

Three Partnerships - Knowsley, Coventry and Doncaster - are in the bottom 10 ranking Partnerships for all four indicators. Of these, Coventry has the highest proportion of residents who feel they 'have worse health than 12 months ago' (28 per cent) and the lowest average SF-36 Mental Health score (66).

At the other end of the scale, Partnerships in London, the South East and East of England regions perform consistently better than other Partnerships across all four measures. Two Partnerships, from the London region, are in the top 10 for all 4 indicators (Brent and Hammersmith & Fulham) and an additional three London Partnerships are in the top 10 for 3 or the 4 indicators (Southwark, Lambeth, and Haringey).

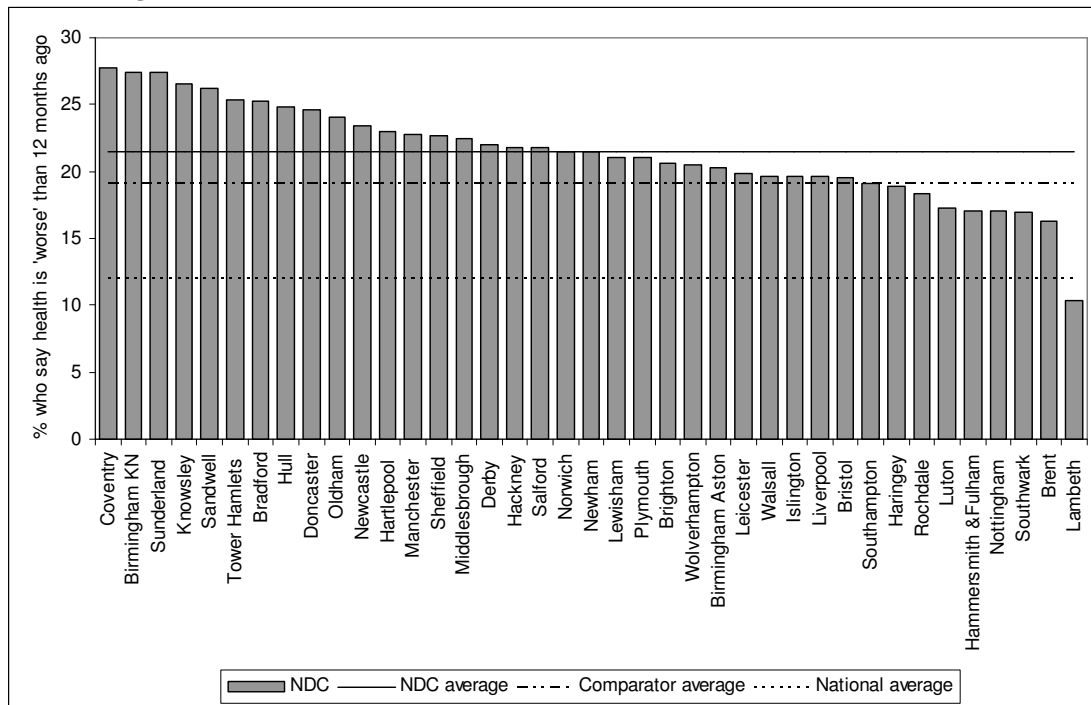
This pattern of poorer health in NDCs which are located in older, industrial, northern cities compared with better health in NDCs located in southern and eastern England reflects the underlying geography of ill health in the country. The spatial distribution of inequalities in life expectancy at birth (Department of Health 2002b, pp7-8) confirms this pattern and in particular the predominately urban nature of concentrations of ill health.

**Figure 2: Proportion of NDC residents who think their health was 'not good' over the last 12 months**



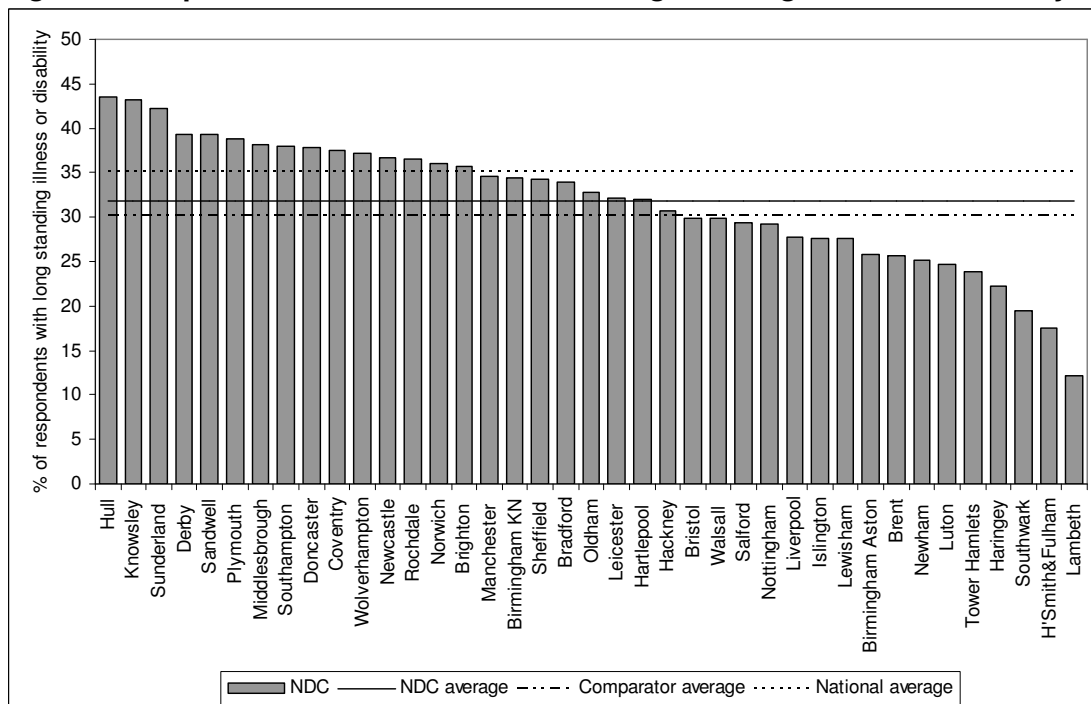
Source: MORI/NOP Household Survey 2004, General Household Survey 2002/3

**Figure 3: Proportion of NDC residents who think their health is 'worse' than 12 months ago**



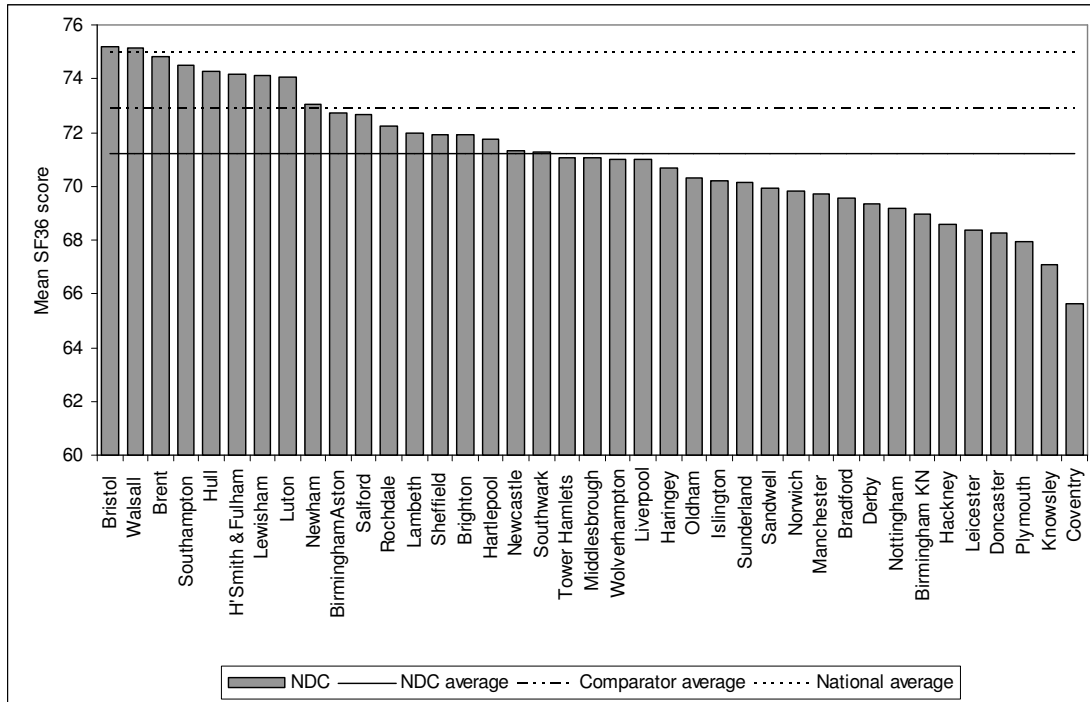
Source: MORI/NOP Household Survey 2004, Health Survey for England 1996

**Figure 4: Proportion of NDC residents with long standing illness or disability**



Source: MORI/NOP Household Survey 2004, General Household Survey 2004

**Figure 5: Mean SF-36 mental health score for NDCs**



Source: MORI/NOP Household Survey 2004  
National benchmark is 2002 data

Analysis above has considered health inequalities which exist across NDCs. The next section will consider to what extent health inequalities exist within different strata of NDC residents.

### 2.3. The demographics of ill health

In order to target health interventions within NDC Partnerships it is important to gain an understanding of the common characteristics of residents with poor health. To what extent is sex, age or ethnicity linked with residents' health status?

Table 3 indicates that there is little difference between men and women for three of the four health measures. However, the average SF-36 mental health score for males was significantly higher than for females in NDC areas (74 compared with 68). The 95 per cent confidence intervals shown in the error bar charts<sup>1</sup> in Figure 6 confirm this. That men have a better mental health score than women reflects national trends, though the scores for both are lower in NDC areas than nationally (Health Survey for England, 1996).

As would be expected, health status declines as age increases as is shown in Table 3. Residents aged 16 to 24 are the least likely of all age groups to feel; their health has not been good (8 per cent), their health has got worse (11 per cent) and have long standing illness or disability (11 per cent). The greater incidence of ill health amongst older residents is also apparent with the relevant figures for residents aged over 65 being 36 per cent, 34 per cent and 58 per cent respectively.

<sup>1</sup> An error bar shows the average score for a category (indicated by the central symbol), together with limits of the upper and lower 95 per cent confidence interval (indicated by the bars). If the interval bars do not overlap across categories, then this is evidence that there are real differences between categories.

The SF-36 mental health score however varies little with age. All age groups have a score which falls within the range of 70 to 74. This again reflects underlying national trends which have been reported from other large scale surveys (Brazier et al, 1992).

Table 3 also indicates that there are noticeable health inequalities between different ethnic groups in NDC areas. White residents are most likely to indicate poor health across all four measures than black or Asian residents. For example, 36 per cent of white respondents report having a long standing illness or disability compared with only 21 per cent of Asian respondents and 22 per cent of black respondents.

**Table 3: Self reported health status by sex, age and ethnicity**

	percentage of respondents reporting			
	health 'not good' in last 12 months	health 'worse' than 12 months ago	long standing illness or disability	mean SF-36 score
<b>Sex</b>				
Male	20	19	32	74
Female	23	23	32	68
<b>Age</b>				
16-24	8	11	11	74
25-49	18	18	25	70
50-64	34	30	51	70
65+	36	34	58	74
<b>Ethnicity</b>				
White	23	23	36	71
Asian	18	19	21	73
Black	17	16	22	73
<b>NDC Total</b>	22	21	32	71

Source: MORI/NOP Household Survey 2004, General Household Survey 2002/3

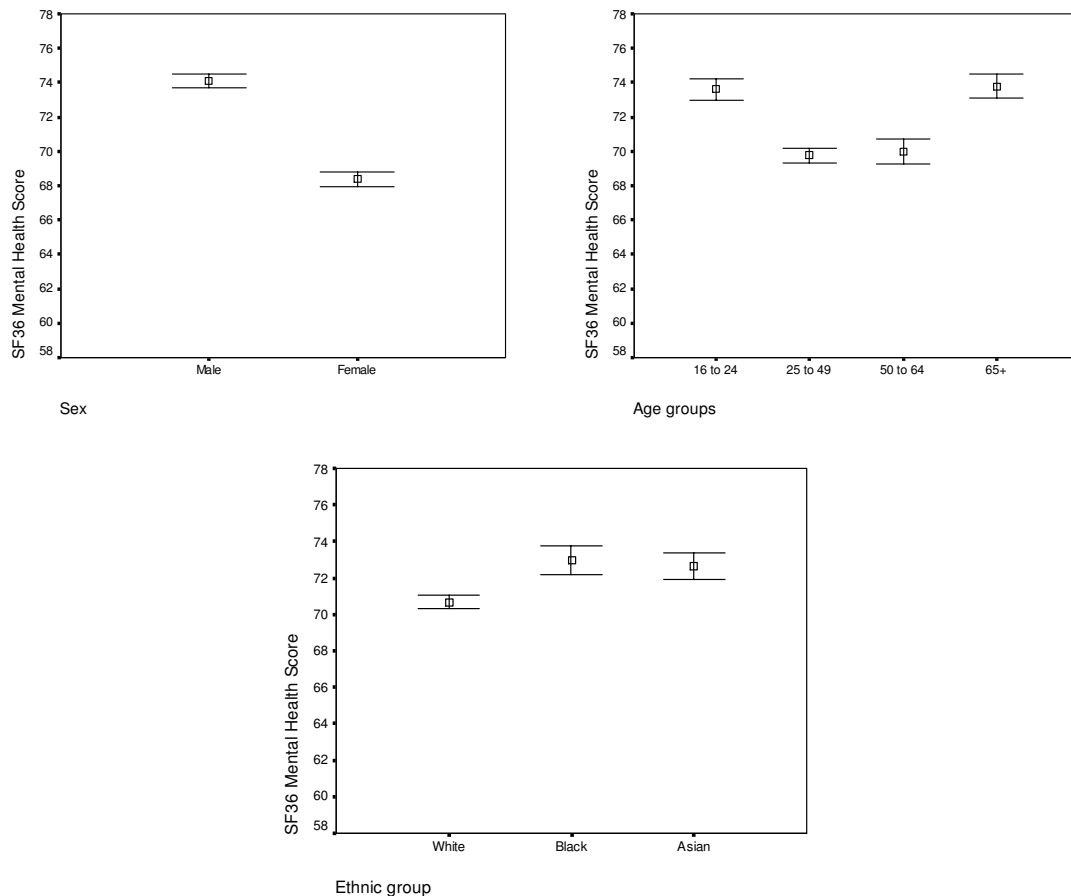
However, the differences between ethnic groups are not so marked when the SF-36 mental health score is considered as this only ranges from 71 to 73 per cent across the three ethnic groups. Figure 6 does indicate though that the difference between black and white respondents is significant at the 5 per cent level.

The poorer health amongst white residents may however be a function of the differences in age structure of various ethnic groups in NDC areas. Both black and Asian respondents have a younger age profile than white residents - 78 per cent of Asian respondents were aged under 45 compared with 71 per cent of black respondents and only 55 per cent of white respondents.

Later in this paper logistic regression modelling will be used to take account of various underlying characteristics of the population - such as age - to determine how these health measures vary when such considerations are taken into account.



**Figure 6: Demographic factors by mean SF-36 mental health score**



Source: MORI/NOP Household Survey 2004

## 2.4. Individual circumstances and health

Employment, education and income have all been linked with health inequalities. Acheson (1998, online document) states:

*'unemployment is an important determinant of inequalities in the health of adults of working age in Britain'.*

Unemployment can be seen to affect health through increased poverty, social exclusion, changing health related behaviour and disrupting future work careers. Acheson also addresses the links between education and health inequalities. Education affects health in a number of ways. For example, it acts to influence an individual's employment prospects which in turn influence income, housing and individual's socio-economic position. Education also provides practical and emotional knowledge and skills to achieve a full and healthy life. Is there any evidence that worklessness, low incomes and poor educational attainment are related to poor health in NDC areas? Table 4 presents the main health indicators in relation to these factors.

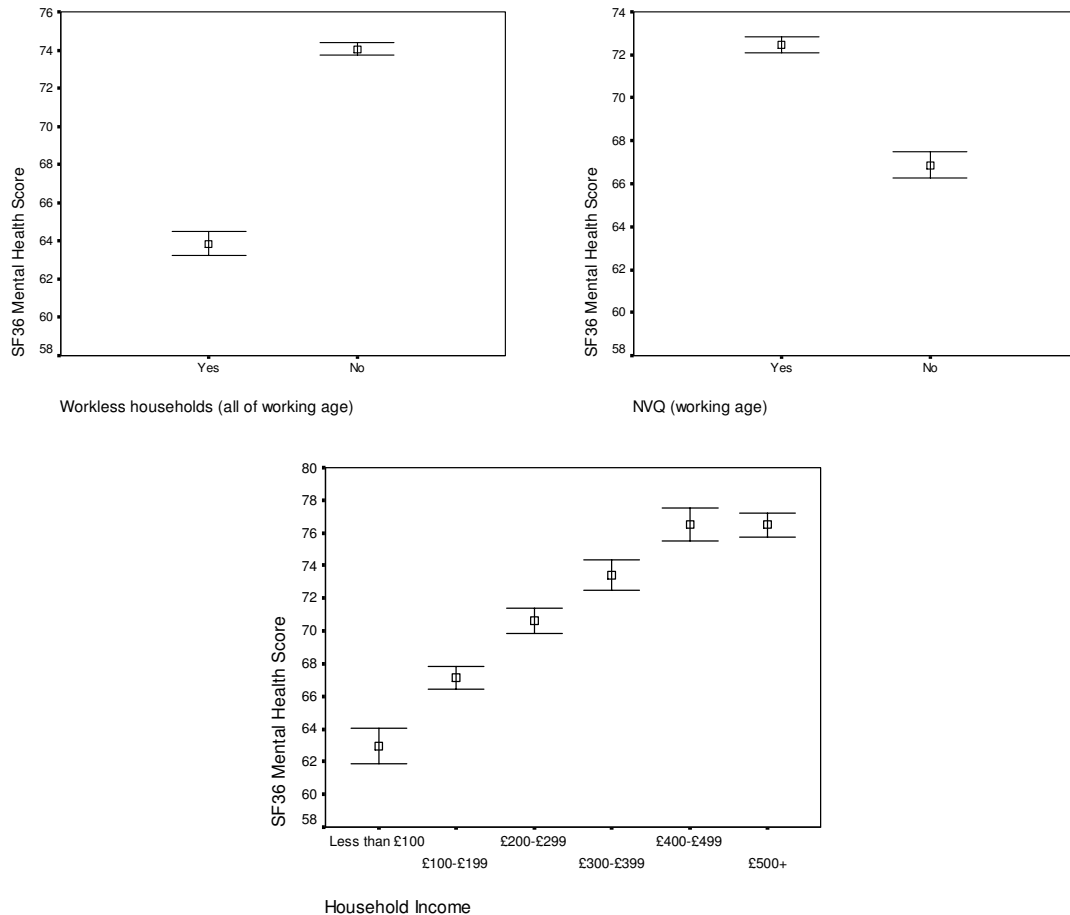
Residents from working age workless households are much more likely to feel; their health has not been good (32 per cent), health has got worse (27 per cent) and have long standing illness or disability (42 per cent) than households which are not workless. Residents in working age workless households also have a significantly lower SF-36 mental health score than those in worker households (see Figure 7). When all those in workless households of any ages are considered a similar picture emerges.

**Table 4: Individual circumstances by health status**

	percentage of respondents reporting			mean SF-36 score
	health 'not good' in last 12 months	health 'worse' than 12 months ago	long standing illness or disability	
<b>Worklessness*</b>				
No	14	16	22	74
Yes	32	27	42	64
<b>NVQ*</b>				
Yes	14	16	22	72
No	28	24	36	67
<b>Household weekly income</b>				
Less than £100	34	29	43	63
£100 - £199	33	29	46	67
£200 - £299	23	23	36	71
£300 - £399	17	18	25	73
£400 - £499	11	13	20	77
£500+	8	13	19	76
Don't know/refused	17	18	25	73
<hr/>				
NDC Total	22	21	32	71

\*Base: All working age  
Source: MORI/NOP Household Survey 2004

**Figure 7: Individual circumstances by mean SF-36 mental health score**



Base: All / \*Base: All working age  
Source: MORI/NOP Household Survey 2004

Working age respondents with no qualifications are also more likely to have poor health than respondents who have an NVQ qualification or above. For example 36 per cent of respondents without an NVQ have long standing illness or disability compared with 22 per cent of residents who have a qualification. Again it is likely that this is in part a function of age in that older residents are less likely to have formal qualifications.

Table 4 also indicates that income is related to health status. As income increases all four health status measures improve. For example 34 per cent of residents with a household income of less than £100 a week feel their health has not been good over the last 12 months. In direct contrast, only 8 per cent of residents with a household income of £500 or more per week feel their health is not good.

## 2.5. Modelling how health varies across Partnerships

The analysis to date has indicated certain groups of the population within NDC areas are more likely to experience general ill health than others. These groups may therefore benefit more than others from specific health interventions: older residents - who are also more likely to be white and have no qualifications, and those from workless, lower income households. Where interventions aim to improve the mental health well-being of individuals the initiatives may need a slightly different focus. Again those from workless households, with lower incomes and no qualifications are more likely to require help but in addition women may require specific attention. Age and

ethnicity, however, appear to be less differentiating factors. The distribution of these groups will, of course, be uneven across Partnerships.

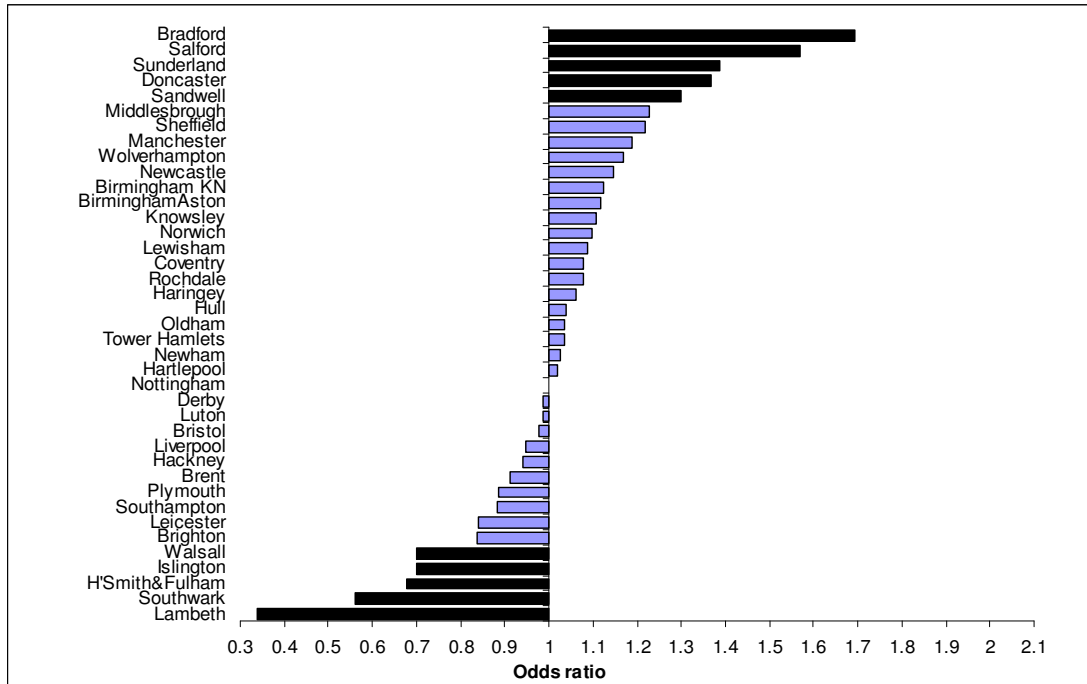
It is important therefore to consider to what extent the underlying characteristics of each NDC area explain the degree of ill health experienced amongst residents living there. What is needed is further analysis of the survey findings which goes beyond the bivariate or two-way exploration of the data presented above. Methods need to be employed that take into account the underlying characteristics of an area in order to gauge the influence that other factors may have on the variation in health. Multivariate modelling techniques - specifically logistic regression modelling - facilitate this through a more sophisticated investigation into the possible influences on health in NDC areas.

Logistic regression can be used to unpick different factors explaining why one group of residents is more likely to experience ill health than another. This technique is useful as it allows a number of underlying explanatory variables - such as age, ethnicity and tenure - to be taken into account when calculating the extent to which other factors, for example worklessness, have on ill health.

The results of such an analytical approach can be presented as a series of odds ratios (ORs). ORs reflect the probability of a person being in one group rather than another after all other factors in the model have been taken into account. For example, an OR of 2 means that a person with a known attribute - for example, being unemployed - is, on average, twice as likely to say their health is not good as a person who is not unemployed, after all other factors (such as age and ethnicity) have been taken into account. In other words, the OR adjusts for other factors.

The first model presented in Figure 8 depicts the adjusted ORs for reporting poor health in the past twelve months by NDC Partnership. The ORs have been adjusted for respondents' age, sex, self-reported ethnicity, and their educational attainment. The responses on household composition, tenure, and whether the respondent was a member of a workless household were also factors that were adjusted for. All of these attributes were significant in predicting whether a respondent had experienced ill health in the past twelve months. The OR scores indicate, on average, how likely a respondent from a particular NDC area is to have experienced poor health over the past year compared with the average, taking into account the respondent and household characteristics given above. The average OR score across all Partnerships is represented as one.

**Figure 8: Adjusted ORs for poor health in past twelve months by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

Five NDC Partnerships have ORs which are significantly above one - Bradford, Salford, Sunderland, Doncaster, and Sandwell. All five of these, are also in the top eight Partnerships with the highest percentage of respondents saying their health is not good in Figure 2. The ORs in Figure 8 indicate that, on average, both Bradford and Salford respondents are more than 30% more likely than NDC residents as a whole to say their health was poor over the past year. A full table of the ORs with confidence intervals is given in the Appendix Table A3

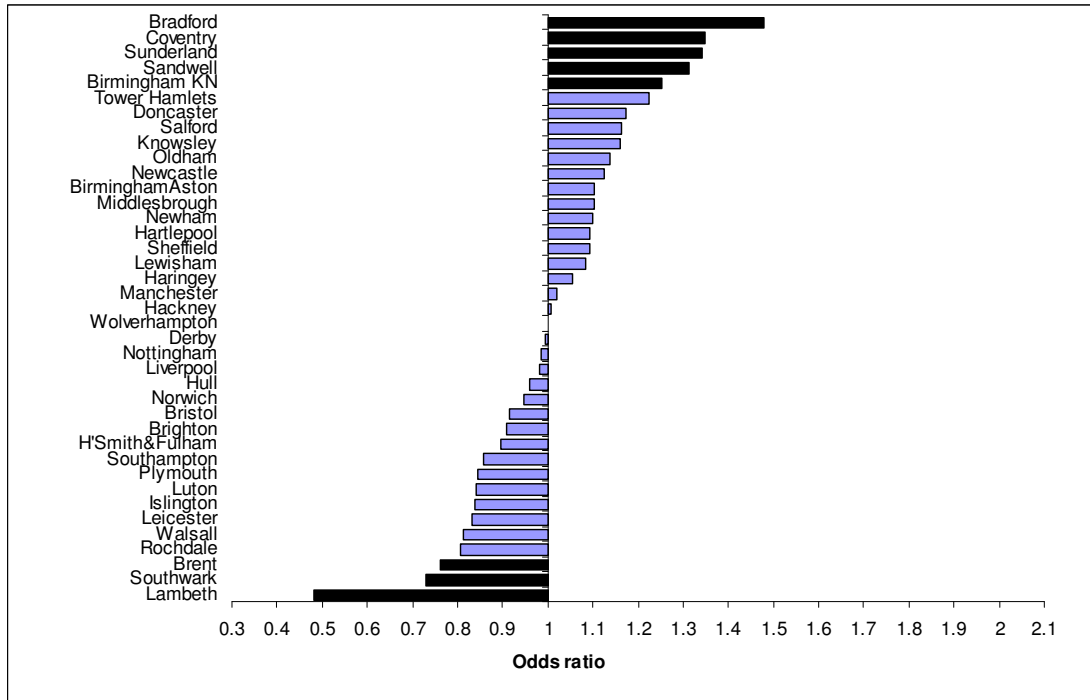
There are some noticeable differences in the ordering of NDC Partnerships in Figure 8 compared with the simple ranking by percentage figures outlined in Figure 2 above. These differences are due to the ORs taking into account the underlying structure of the local population - as for example, it would be expected that a higher percentage of residents would be in poor health in areas with an aging population. Hull, which had the third highest percentage of residents with poor health over the past year, appears half way down the list of ORs for this outcome. With an OR of one they are no different than NDCs as a whole in terms of poor health. Wolverhampton, on the other hand, was half way down the list of 'percentage with poor health' in Figure 2, but has the ninth highest ORs for poor health in the past 12 months. Respondents in that NDC area are however, not significantly more likely to report ill health than NDCs as a whole.

Logistic regression models have also run for the likelihood of respondents saying their health had got worse over the past year, whether they had a low SF-36 mental health score and for self-reported long standing illness or disability. The ORs for these models are shown in Figures 9 to 11 respectively. These models take into account the same explanatory factors as those listed above for Figure 8.

Respondents in Bradford, Coventry, Sunderland, Sandwell and Birmingham Kings Norton were all significantly more likely to say their health had got worse over the past year than NDC residents as a whole. Respondents in Southwark, Lambeth, and Brent however, were significantly less likely than NDC residents on the whole to say their

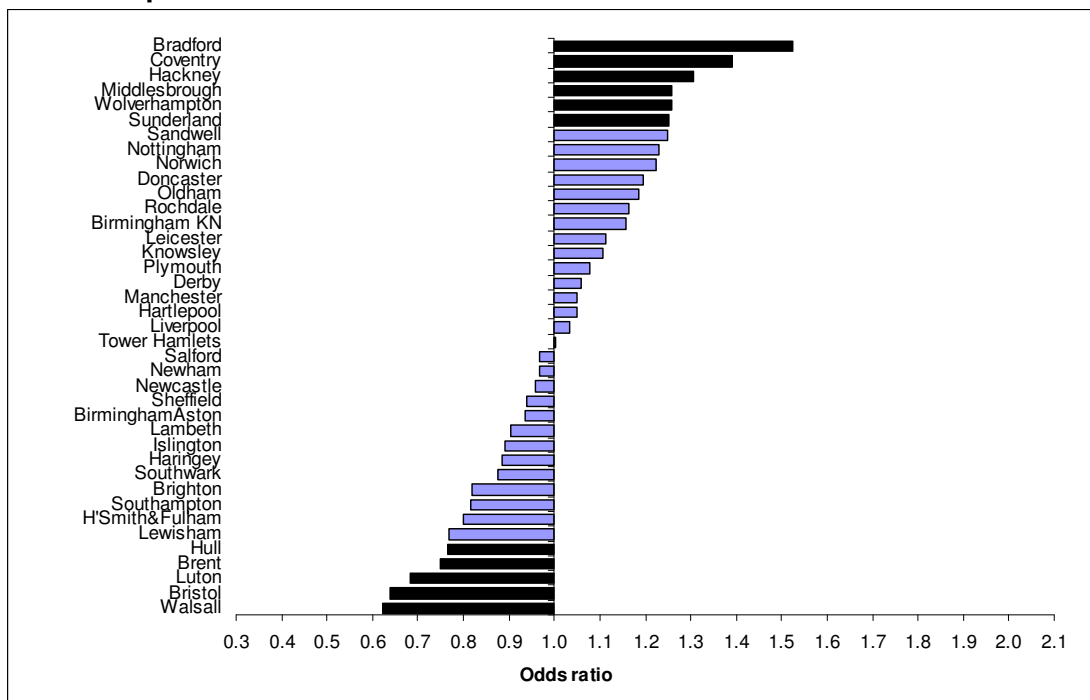
health had deteriorated. A full table of the ORs relating to Figure 9 is given in the Appendix Table A4.

**Figure 9: Adjusted ORs for health worse in past twelve months by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

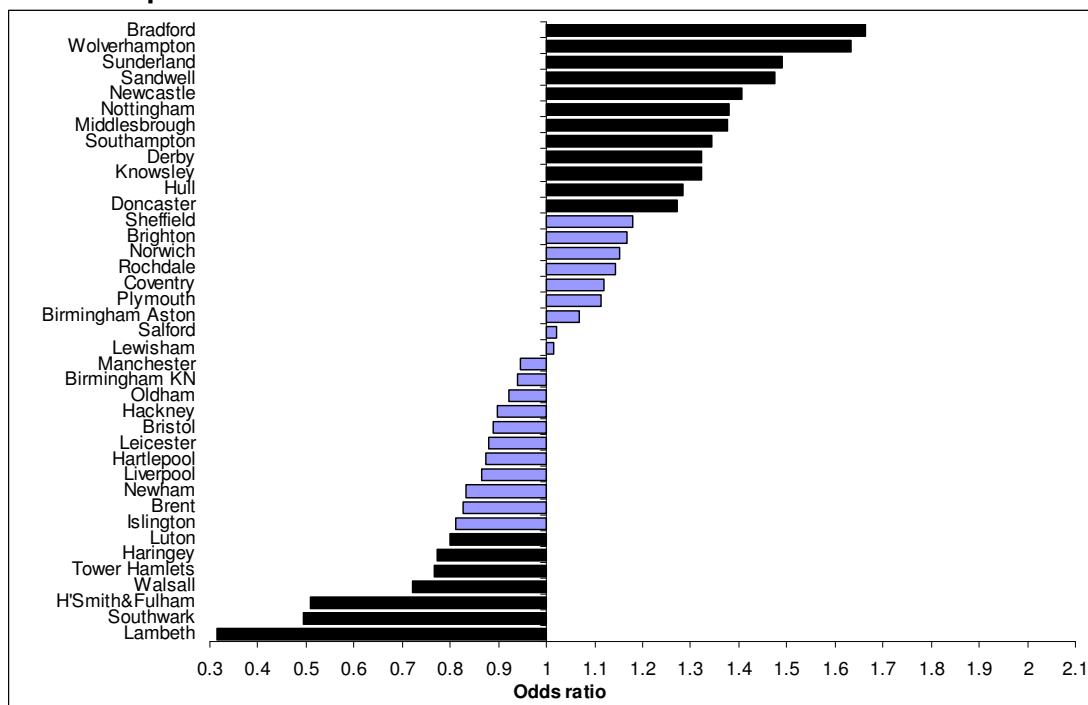
**Figure 10: Adjusted ORs ratios for low\* SF-36 mental health score by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
 \* more than one standard deviation below the average  
 Source: MORI/NOP Household Survey 2004

Full details of the ORs illustrated in Figure 10, for determining whether a NDC Partnership has a low SF-36 mental health score, are given in the Appendix Table A5. Respondents from Bradford are 52 per cent more likely to have a low SF-36 mental health score than NDC residents as a whole. This reflects their position in Figure 5 of having one of the lowest SF-36 score of all NDCs. For many other NDCs however, after the underlying characteristics of the population has been taken into account, their position in the ordering of NDCs on ORs for a low SF-36 mental health score is very different than that emerging from the average scores presented in Figure 5. For example, Knowsley had the second lowest SF-36 score in Figure 5, but was not amongst the six NDCs with significantly high ORs of having a low SF-36 mental health score in Figure 10.

**Figure 11: Adjusted ORs ratios for long standing illness or disability by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
Source: MORI/NOP Household Survey 2004

The final set of ORs presented in Figure 11 are for the prevalence of self-reported long standing illness or disability in individual Partnerships. The full details of the ORs with associated statistics are in Appendix Table A6. The London boroughs of Lambeth, Hammersmith and Fulham and Southwark are at least 50 per cent less likely than NDCs as a whole to have residents with long standing illness or disabilities.

## 2.6. The underlying explanatory factors for poor health

The logistic regression models presented above take into account a number of underlying explanatory factors when calculating ORs for individual Partnerships. As mentioned earlier, the ORs are adjusted for respondents' age, sex, self-reported ethnicity, and their educational attainment (highest NVQ level). The responses on household composition, tenure, and whether the respondent is a member of a workless household are further factors for which adjustment has been made. The extent to which these factors influence ill health are presented in Table 5.

**Women** in NDC areas, on the whole, are significantly more likely to report poorer health than men for three of the four indicators in Table 5. The most noticeable

difference between men and women is for the SF-36 mental health well being score. After taking into account other underlying factors such as age and ethnicity, women are 60 per cent more likely than men to have a low mental health score.

The ORs for **age** also show some interesting patterns. It would be expected that the likelihood of ill health increases with age and, to a certain extent, this is reflected in the figures. However, the ORs for each of the health outcomes only increase up to middle age, peaking in the 55-64 year olds, except for the SF-36 score, which peaks at 45-54. The ORs then begin to fall for the older age groups. So, those reaching the end of their working lives are more likely to report having general health problems, such as their health being worse than a year ago or having a long standing illness, than those over retirement age. Those aged 45-54 are nearly 86 per cent more likely as 16-24 year olds to have a low SF-36 mental health score. This contrasts with the over 75s who are nearly half as likely as the youngest age group to have a low SF-36 score. The highest ORs for reporting long standing illness or disability is amongst the 55-64 age group.

**Household composition** has little bearing on these health indicators. The base category for the model is taken as households made up of a couple with no dependent children. The significant differences are amongst lone parents who are 12 per cent less likely than couples with children to state they were in poor health in the past year or to have a long standing illness or disability. Those in single person households are the most likely to have a long standing illness or disability.



**Table 5: Adjusted ORs for explanatory variables in base model for poor health**

Variable and category	Poor health in last 12 months Adjusted OR	Health worse in last 12 months Adjusted OR	Low SF-36 mental health score* Adjusted OR	Long standing illness or disability Adjusted OR
<b>Sex</b>				
Male	1.00	1.00	1.00	n.s.
Female	<b>1.23</b>	<b>1.25</b>	<b>1.60</b>	
<b>Age group</b>				
16 – 24	1.00	1.00	1.00	1.00
25 – 34	<b>1.68</b>	<b>1.40</b>	<b>1.29</b>	<b>1.72</b>
35 – 44	<b>3.43</b>	<b>2.29</b>	<b>1.79</b>	<b>3.48</b>
45 – 54	<b>5.31</b>	<b>3.27</b>	<b>1.86</b>	<b>5.61</b>
55 – 64	<b>5.61</b>	<b>3.58</b>	<b>1.23</b>	<b>8.00</b>
65 – 74	<b>4.02</b>	<b>3.21</b>	<b>0.66</b>	<b>6.15</b>
75 & over	<b>4.14</b>	<b>3.65</b>	<b>0.57</b>	<b>5.47</b>
<b>Household composition</b>				
Couple, no dep't children	1.00	n.s.	n.s.	1.00
Couple, with dep't children	0.94			0.92
Lone parent	<b>0.82</b>			<b>0.72</b>
Single person	1.10			<b>1.24</b>
Large adult household**	1.07			1.06
<b>Ethnicity</b>				
White	1.00	1.00	1.00	1.00
Black	<b>0.82</b>	<b>0.77</b>	<b>0.75</b>	<b>0.69</b>
Asian	1.09	1.11	<b>0.86</b>	<b>0.75</b>
<b>Workless household</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>2.47</b>	<b>1.71</b>	<b>1.99</b>	<b>2.41</b>
<b>Tenure</b>				
Owner	1.00	1.00	1.00	1.00
Social rent: local authority	<b>1.60</b>	<b>1.51</b>	<b>1.52</b>	1.56
Social rent: housing assoc	<b>1.45</b>	<b>1.33</b>	<b>1.38</b>	<b>1.65</b>
Private rent	1.02	<b>1.09</b>	1.08	0.95
<b>NVQ level</b>				
NVQ 4+	1.00	1.00	1.00	1.00
No NVQ	<b>1.46</b>	<b>1.28</b>	<b>1.58</b>	<b>1.19</b>
NVQ 1	<b>1.35</b>	<b>1.26</b>	<b>1.49</b>	1.12
NVQ 2	<b>1.23</b>	<b>1.25</b>	<b>1.31</b>	1.09
NVQ 3	<b>1.29</b>	<b>1.24</b>	1.04	<b>1.19</b>

Note: \* A low mental health score was classified as one which was more than one standard deviation below the mean.

\*\* Large adult households are those containing two or more adults who neither partners or related to each other

Those in **bold** are significantly greater than or less than 1 at the 5% level of significance.

The first category of each variable is the base level with an odds ratio of 1. The odds ratios for other categories within a variable are in relation to this base group for e.g. a person in a workless household in NDC areas is 2.46 times more likely to have had poor health over the past 12 months than residents in worker households in these areas.

n.s. = non significant.

The model indicates that **ethnicity** also has a bearing on ill health. Earlier, in Table 3, white residents were reported to be more likely than black or Asian residents to indicate poor health on all four measures. However, after age and other demographic information are taken into account, the ORs in Table 5 present a different picture. The ORs indicate that it is the Asian residents who are the most likely to report poor or deteriorating health in the past year. White residents are however most likely to have a low SF-36 mental health score or have a long standing illness or disability. Conversely, black residents are the least likely to have a low mental health score or long standing illness or disability. These mixed results present a complex picture of the health of NDC residents when considered by ethnicity. The health issues affecting one section of the population are not necessarily the same as those affecting others.

The final three variables in Table 5 - **worklessness, education and tenure** - also have a bearing on the health measures. Residents in workless households are more than twice as likely as those in worker households to have had poor health in the past year, or a long standing illness. In addition, those with no qualifications or in social rented housing are also more likely to have health problems than those with qualifications or in other forms of housing. Thus, even within deprived areas, familiar health inequality patterns exist.

This section of the paper has shown the degree to which health problems vary considerably across NDCs. However, it should be remembered that all NDCs are more likely to report a greater degree of ill health than nationally. In general, NDCs located in older, northern, industrial cities have greater proportions of residents indicating poor or deteriorating health. The profile of residents in terms of their age, ethnicity, education, employment and income as well as the housing stock profile of the area are likely to impact on the level of ill health within each NDC.

As one route to improving the health of NDC residents, initiatives may aim to influence the lifestyle of residents. The following section profiles NDC areas in terms of key lifestyle indicators, again in the hope of identifying key sections of the population who would benefit from targeted health initiatives.

### 3. LIFESTYLE

#### 3.1. Lifestyle indicators

Smoking, exercise and nutrition are thought to be influencing factors for cardiovascular disease and cancer (Department of Health, 2002a). In an attempt to reduce the incidence of these diseases, reduced levels of smoking, increased levels of exercise and improved nutrition amongst NDC residents have been identified by NDC Partnerships as important health related outcomes.

The NDC household survey asks a number of questions of residents on lifestyle and health related behaviour. These relate to whether residents smoke, how often they eat five portions of fruit or vegetables a day and whether they partake in a range of physical activities. Full details of the questions are provided in the Appendix Table A7. An important question for this research therefore is to what extent does smoking, fruit and vegetable consumption and physical activity appear to influence self-reported health? This will be explored by examining the relationship between two of the health measures - health in last 12 months and the SF-36 mental health score - and an individual's smoking status, physical activity and fruit and vegetable consumption.

	% of respondents		
	NDC Areas	Comparator areas	National
<b>Five fruit portions a day</b>			
5 times a week or more	33	35	-
1-4 times a week	41	42	-
Rarely or never	26	22	-
<b>Smoke cigarettes</b>			
No	62	67	74
Yes	38	33	26
<b>Physical activity score</b>			
3+	49	51	-
1-2	42	40	-
0	9	9	-

Source: MORI/NOP Household Survey 2004, General Household Survey 2002

Physical activity is examined using a composite score. Respondents were asked which of 14 categories of exercise they 'do nowadays for 20 minutes at a time' (see Appendix Table A7). Respondents were also asked if they do any 'other' exercise. A score of 1 was awarded to every positive response given, resulting in a possible range of scores from 0 to 15. A score of 0, for example, would indicate that the respondent does not take part in any physical activity for more than 20 minutes at a time.

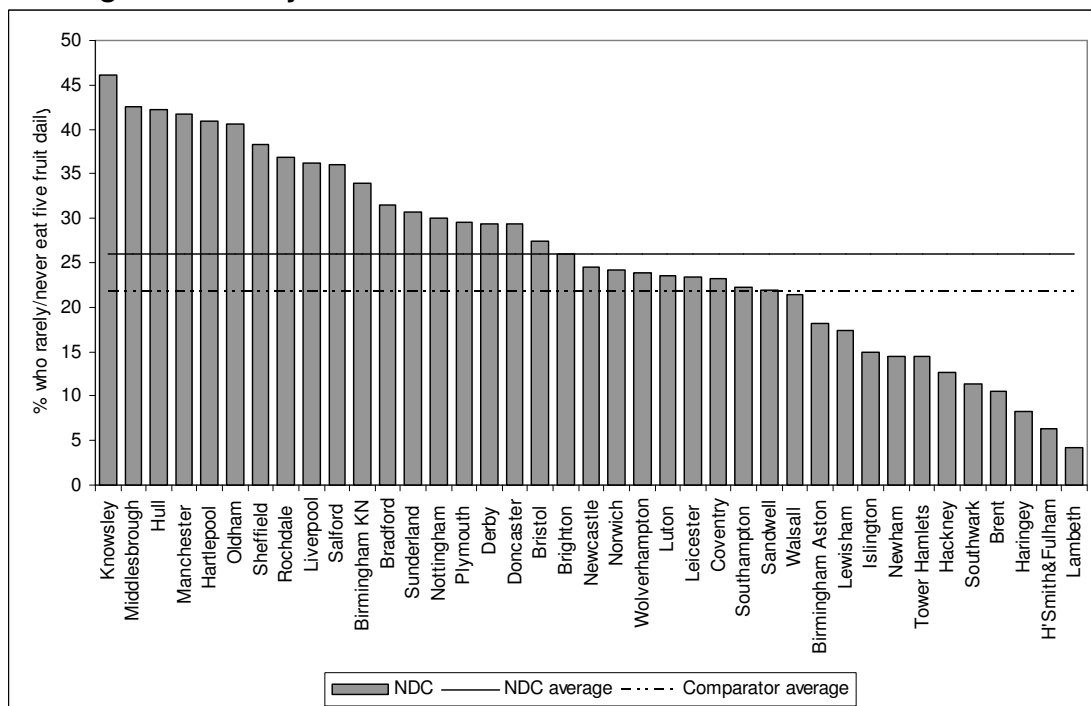
Table 6 compares NDC, comparator and national averages for key lifestyle indicators. National benchmark data are only available for smoking status. There is little difference between NDC and comparator area residents in relation to fruit and vegetable consumption and physical activity levels. However, NDC residents are more likely to smoke (38 per cent), than both comparator area residents (33 per cent) and the national average (26 per cent).

Although the difference between NDC and comparator areas for both fruit and vegetable consumption and exercise is small, there are large variations amongst the NDC Partnerships and between the regions (see Figures 12 to 14 and Appendix Table A8).

One of the most noticeable regional differences between NDCs is in relation to fruit and vegetable consumption. The ten Partnerships in which residents are least likely rarely to eat five portions of fruit or vegetables a day at least once a week are all from the London region. The regional summary provided in Appendix Table A8 indicates that only 12 per cent of NDC residents in London rarely or never eat five portions of fruit or vegetables a day. This is twelve percentage points lower than the West Midlands region which has the next lowest proportion with 24 per cent of residents in this category. The situation in London NDCs contrasts sharply with the poor nutrition of The North West NDC residents, where 40 per cent rarely or never eat five portions of fruit or vegetables a day.

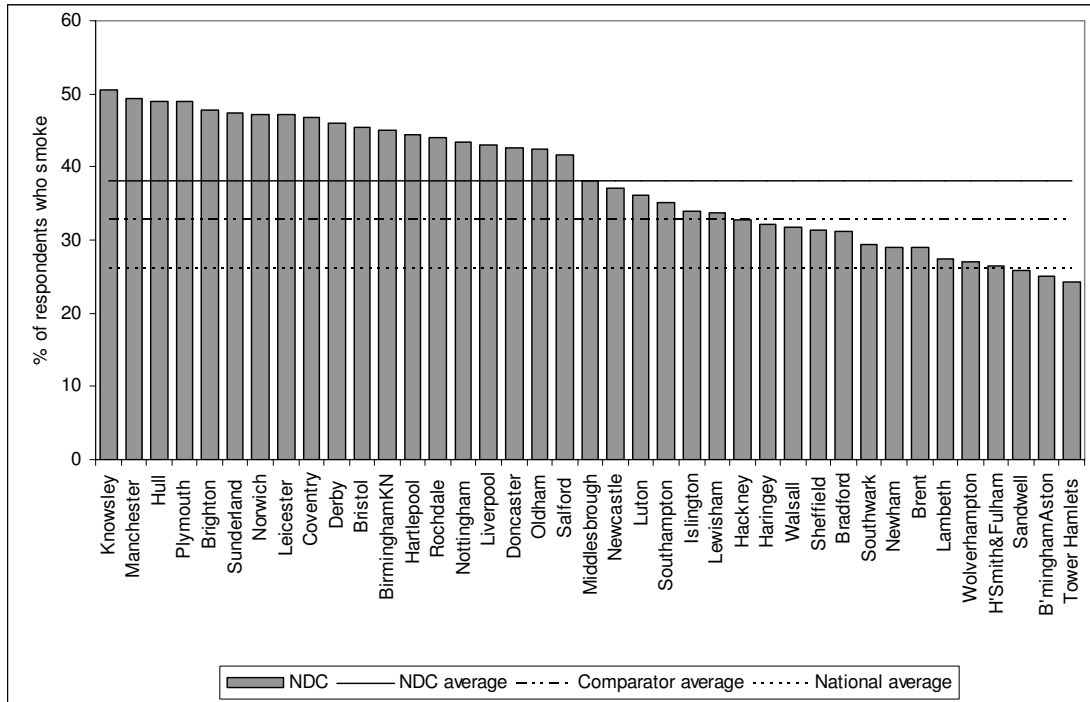
NDC residents from the London region are also the least likely to smoke and the second least likely to do no exercise. Some 30 per cent of residents from London NDCs smoke compared with 47 per cent from the South West region and only 7 per cent do no exercise compared with 11 per cent from Yorkshire & Humber and The North West. Three NDCs have lower rates of smoking than nationally: Birmingham Kings Norton, Tower Hamlets and Sandwell. Overall, residents in London NDCs have the healthiest lifestyle. This is perhaps in part reflected in their predominance amongst those NDCs with the lowest levels of reported poor health over the past twelve months as outlined in the previous section.

**Figure 12: Proportion of NDC residents who rarely/never eat five portions of fruit/vegetables a day**



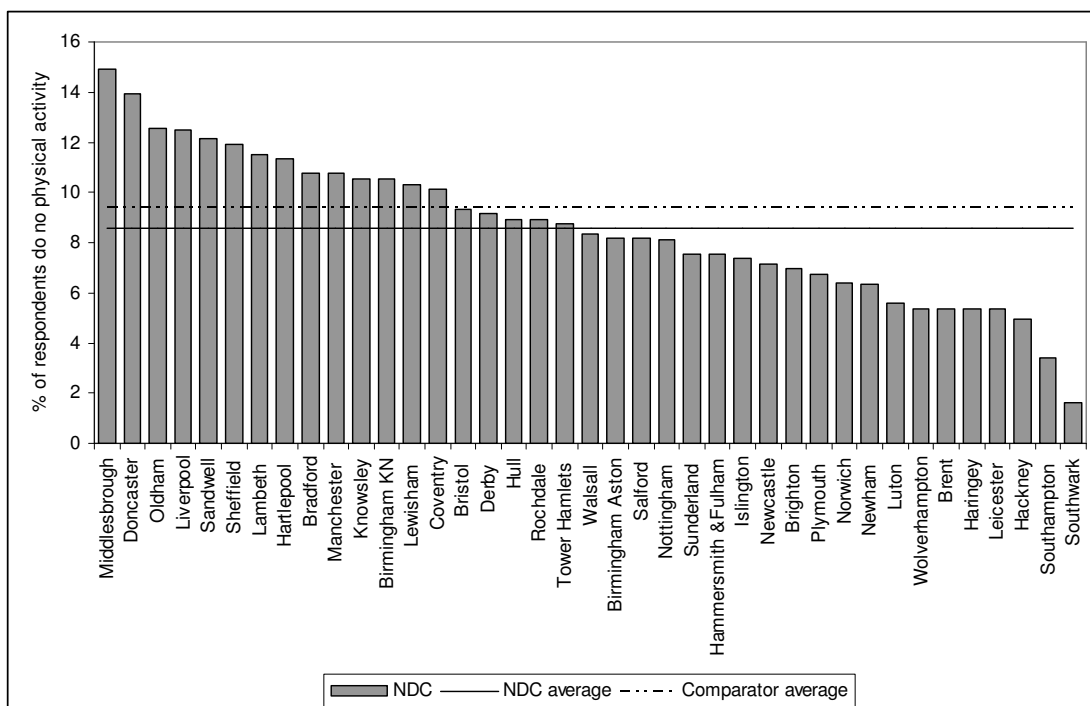
Source: MORI/NOP Household Survey 2004

**Figure 13: Proportion of NDC residents who smoke**



Source: MORI/NOP Household Survey 2004, General Household Survey 2004

**Figure 14: Proportion of NDC residents who do no physical activity for at least 20 minutes at a time**

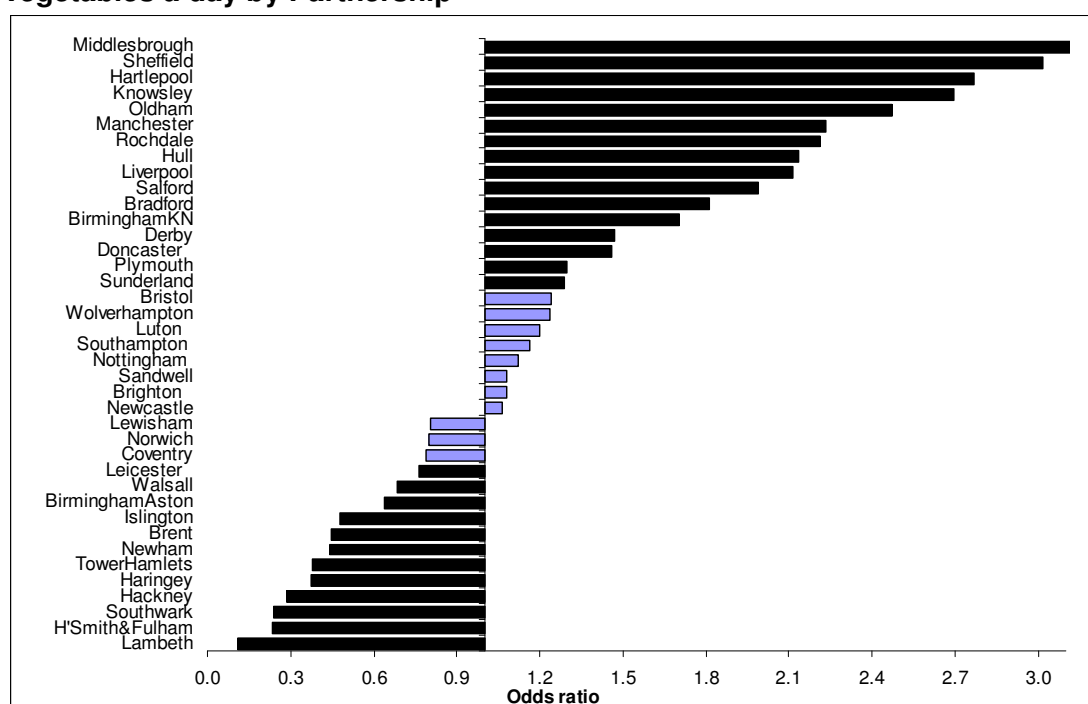


Source: MORI/NOP Household Survey 2004

### 3.2. Modelling how lifestyle varies across Partnerships

The basic exploration of the data above reveals the distribution lifestyle indicators across Partnerships. However, this does not take into account the extent to which the underlying composition of the local population will affect the magnitude of each of the measures. By using logistic regression techniques it can be seen how indicators vary by Partnership after taking into account the underlying characteristics of each area. Figures 15 to 17 present the ORs for logistic regression models by Partnership for each lifestyle indicator. These models take into account the same base group of explanatory factors used in chapter 2: age; sex; self-reported ethnicity; educational attainment; household composition; tenure; and whether the respondent is a member of a workless household.

**Figure 15 Adjusted ORs ratios for rarely or never eating five portions of fruit or vegetables a day by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
Source: MORI/NOP Household Survey 2004

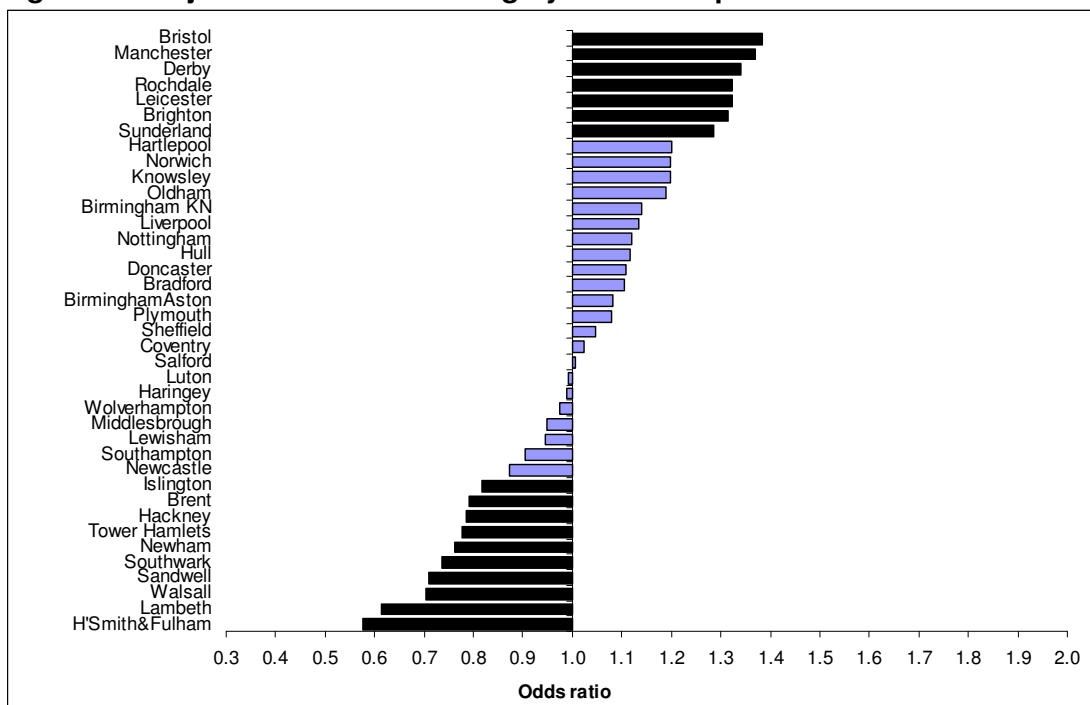
The ORs for poor nutrition in Figure 15 show a far wider range than those for the smoking (Figure 16) and exercise indicators (Figure 18). As there is such a large range, there are also far more Partnerships which are significantly different from the average for NDC areas as a whole. This large variation reflects the marked regional differences in fruit and vegetable consumption highlighted earlier. Nine of the twelve Partnerships with significantly lower than average ORs for rarely or never eating five portions of fruit or vegetables a day are in the London region. At the other end of the scale the list is dominated by NDCs located in more northern regions. A full list of the ORs for poor nutrition is given in Appendix Table A9 along with the 95 per cent confidence intervals.

The ORs in Figure 16 are for whether residents smoke. Ten NDCs had a significantly lower likelihood of residents smoking than NDC areas as a whole. Eight of these were London NDCs. The lowest OR was for Hammersmith & Fulham where residents are 42 per cent less likely to smoke than NDC areas on average after adjusting for underlying characteristics. Earlier in Figure 13, Birmingham Aston, Sandwell and Tower Hamlets were shown to have below national rates of smoking. However, after

the core characteristics of the population in these areas were taken into account Birmingham Aston did not have significantly lower ORs for smoking than NDC areas on the whole. The ORs for smoking were highest in NDCs based in older industrial towns. ORs for individual Partnerships for smoking are given in Appendix Table A10.

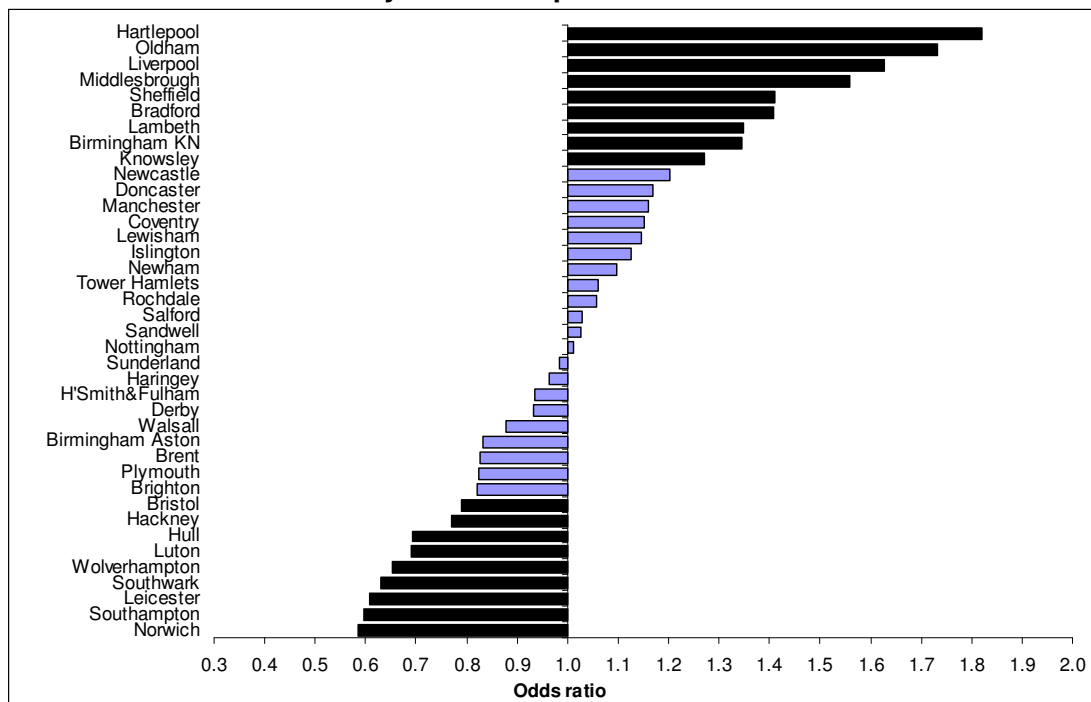
Figure 17 illustrates the ORs for doing little or no exercise. Full details of the ORs for individual Partnerships are given in Appendix Table A11. Nine NDCs have significantly higher ORs of doing little or no exercise than NDC areas as a whole. Again these are mainly located in northern industrial towns. Residents in Hartlepool NDC are 82 per cent more likely than NDC residents as a whole to do one or fewer spells of continuous physical activity. This contrasts with Norwich which is more than 40 per cent less likely than NDC as a whole to fall into this category.

**Figure 16: Adjusted ORs for smoking by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
Source: MORI/NOP Household Survey 2004

**Figure 17: Adjusted ORs for one or less spells of physical activity for at least 20 minutes at a time by Partnership**



Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

When the results of the three logistic models by Partnership are considered alongside each other, seven Partnerships have significantly above average ORs for two of the three lifestyle indicators. These seven are all located in The North West, North East, and Yorkshire & Humber regions. Both Hackney and the Southwark NDCs have significantly below average ORs for all three indicators.

### 3.3. Underlying explanatory factors of lifestyle

So far, this analysis has examined the extent to which lifestyle indicators vary across NDCs. Differences by NDC were considered first in terms of the percentage of residents who smoked, had poor nutrition or took little or no exercise. The likelihood of having these attributes was then modelled for Partnerships using logistic regression. This method takes into account the underlying characteristics of the local population. The models by Partnership use the same base explanatory factors as in the previous section. ORs for the explanatory factors which underpin these models are presented in Table 7.

The ORs indicate that **women** have healthier lifestyles than **men** on these given indicators. They are less likely than men to have poor nutrition, smoke or lack exercise.

When lifestyle factors are considered by **age** there are mixed results. Older residents are more likely to eat well compared with younger residents. They are also far less likely to smoke. However, the likelihood of not doing any exercise increases steadily with age. Those over retirement age are at least one and a half times as likely as the youngest working age residents to do little or no concentrated spells of physical activity.

The type of **household** in which residents live is also associated with their chances of eating healthily, smoking or taking exercise. Over and above the effects of age,



households with dependant children are least likely to do little or no exercise. The demands of being a lone parent may be reflected in the fact they are less likely than couples with children to do little or no exercise. When nutrition is considered, a different pattern emerges. Single adults or adults who live with others are the most likely to rarely or never eat five portions of fruit or vegetables a day. Perhaps this may be an indication that people who live on their own are less likely to bother cooking a proper meal. Lone parents are also more likely than couples with or without children to have poor nutrition. Single adult households and lone parents are also those most likely to smoke.

Cultural differences are perhaps emerging when issues around lifestyle are considered by **ethnicity**. Black and Asian residents are over 20 per cent less likely than white residents to rarely or never eat the recommended amount of fresh fruit and vegetables a day. Black and Asian residents are also more than 60 per cent less likely to smoke than white residents. However, there is no significant difference between black and white residents on lack of exercise. Asian residents on the other hand are significantly more likely to record little in the way of regular continuous spells of activity.

The other main explanatory variables in the model show similar trends across the predicted outcomes. Those from **workless households**, those in **rented housing** (social or private) or those with **no qualifications** are more likely than other groups to do little or no exercise, have poor nutrition and smoke.

**Table 7: Adjusted ORs for explanatory variables in base model for lifestyle indicators**

Variable and category	Smoking Adjusted OR	Rarely or never have 5 portions of fruit or veg a day Adjusted OR	One or fewer spells of physical activity* Adjusted OR
<b>Sex</b>			
Male	1.00	1.00	1.00
Female	<b>0.73</b>	<b>0.66</b>	<b>0.63</b>
<b>Age group</b>			
16 – 24	1.00	1.00	1.00
25 – 34	<b>1.43</b>	0.89	1.09
35 – 44	<b>1.41</b>	0.89	<b>1.17</b>
45 – 54	<b>1.24</b>	<b>0.80</b>	<b>1.56</b>
55 – 64	<b>0.87</b>	<b>0.70</b>	<b>1.73</b>
65 – 74	<b>0.42</b>	<b>0.65</b>	<b>1.50</b>
75 & over	<b>0.17</b>	<b>0.57</b>	<b>3.05</b>
<b>Household composition</b>			
Couple, no dep't children	1.00	1.00	1.00
Couple, with dep't children	<b>0.88</b>	0.90	0.93
Lone parent	<b>1.31</b>	1.13	<b>0.57</b>
Single person	<b>1.23</b>	<b>1.35</b>	0.99
Large adult household**	1.03	<b>1.15</b>	<b>1.15</b>
<b>Ethnicity</b>			
White	1.00	1.00	1.00
Black	<b>0.37</b>	<b>0.77</b>	1.10
Asian	<b>0.32</b>	<b>0.65</b>	<b>1.71</b>
<b>Workless household</b>			
No	1.00	1.00	1.00
Yes	<b>1.18</b>	<b>1.12</b>	<b>1.40</b>
<b>Tenure</b>			
Owner	1.00	1.00	1.00
Social rent: local authority	<b>1.82</b>	<b>1.39</b>	<b>1.47</b>
Social rent: housing assoc	<b>1.79</b>	<b>1.45</b>	<b>1.28</b>
Private rent	<b>1.75</b>	<b>1.17</b>	<b>1.28</b>
<b>NVQ level</b>			
NVQ 4+	1.00	1.00	1.00
No NVQ	<b>1.82</b>	<b>2.37</b>	<b>2.36</b>
NVQ 1	<b>1.65</b>	<b>1.67</b>	<b>1.64</b>
NVQ 2	<b>1.46</b>	<b>1.50</b>	<b>1.30</b>
NVQ 3	<b>1.14</b>	<b>1.31</b>	1.14

Note: \*A spell of physical activity for at least 20 minutes

\*\* Large adult households are those containing two or more adults who neither partners or related to each other. Those in **bold** are significantly greater than or less than 1 at the 5% significance level. The first category of each variable is the base level with an odds ratio of 1. The odds ratios for other categories within a variable are in relation to this base group for e.g. A person in a workless household in NDC areas is 36 per cent more likely than residents in worker households to do less than one spell of continuous physical activity nowadays.

### 3.4. The relationship between lifestyle and health

Relationship between health and lifestyle (Table 8) are to be expected: residents who rarely or never eat five portions of fruit or vegetables; those who smoke; and those who do no physical exercise; are more likely to feel that their health has not been good over the previous 12 months. Some 28 per cent of residents who rarely or never eat five portions of fruit or vegetables a day feel they do not have good health compared with 19 per cent of residents who eat five portions five times a week or more. For residents who smoke 25 per cent feel their health is not good compared with 19 per cent of those who don't. Over half of those who do no physical exercise (for at least 20 minutes at a time) feel their health is not good. This is more than double the rate amongst residents who do one to two types of physical activity and over treble the rate amongst residents who do three or more types of activity. To summarise, health is less good in those living unhealthy lifestyles.

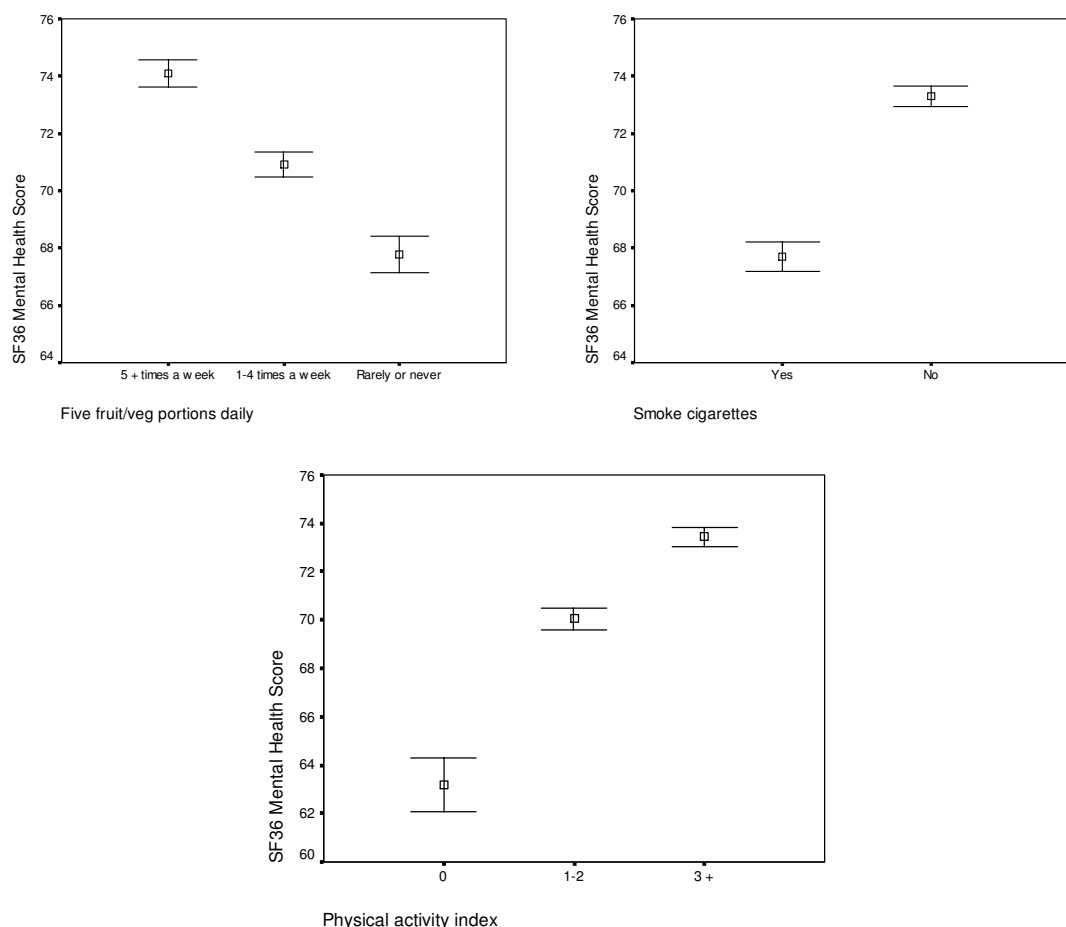
**Table 8: Lifestyle indicators by self reported health**

	% health 'not good' in last 12 months	SF-36 score
<b>Five fruit portions a day</b>		
5 times a week or more	19	74
1-4 times a week	20	71
Rarely or never	28	68
<b>Smoke cigarettes</b>		
No	19	73
Yes	25	68
<b>Physical activity score</b>		
3+	14	73
1-2	25	70
0	52	63
<hr/>		
NDC Total	22	71

Source: MORI/NOP Household Survey 2004

Examination of the links between the SF-36 mental health score and lifestyle also reveals a similar relationship. Residents who smoke have on average a lower SF-36 score than those who do not, 68 compared with 73. The average SF-36 mental health score also decreases with lower levels of both fruit and vegetable consumption and exercise. The error bars in Figure 18 confirms that there are significant differences between categories for all three lifestyle factors.

**Figure 18: Lifestyle indicators by SF-36 mental health index**



Source: MORI/NOP Household Survey 2004

**Table 9: Correlation coefficients for lifestyle indicators**

Variable 1	Variable 2	Correlation coefficient
Rarely or never eat 5 portions of fruit or vegetables a day	Do no exercise	0.54**
Rarely or never eat 5 portions of fruit or vegetables a day	Smoking	0.69**
Do no exercise	Smoking	0.19

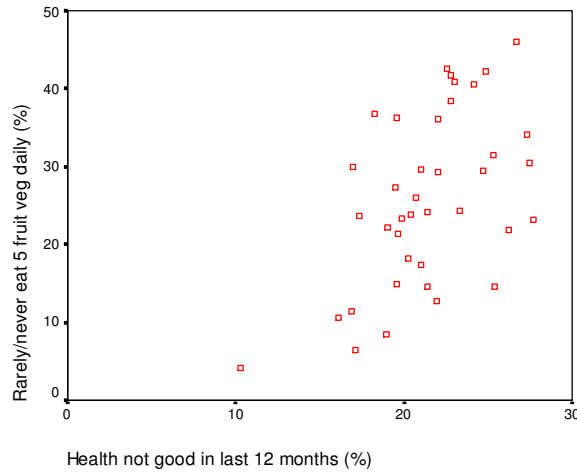
\*\* Correlation is significant at the 0.01 level

When correlations for the lifestyle indicators are explored (Table 9) there is a strong significant positive relationship between the proportion of residents in an NDC who rarely have five portions of fruit and vegetables and smoking or taking no exercise. So, the higher the proportion of residents with poor nutrition in an area, the higher are the levels of smoking and greater the number of people who do no exercise. However, there is a weak, not significant relationship between rates of smoking in an NDC and lack of exercise.

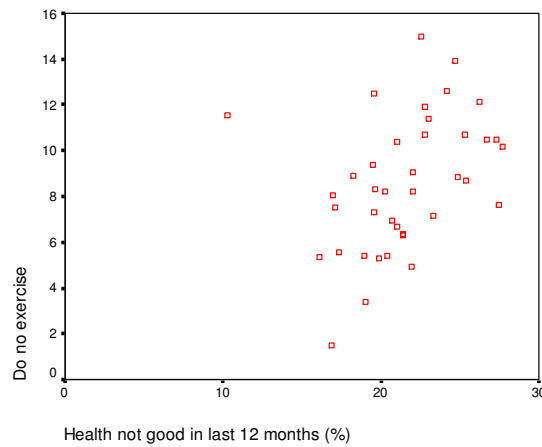
The relationship between each lifestyle indicator and 'poor health over past year' is explored at Partnership level in Figure 19. The correlation coefficients between the degree of ill health in the area and poor nutrition and lack of exercise are positive at

the 1% level. The relationship between health is 'not good' and smoking is also positive and significant at the 5% level.

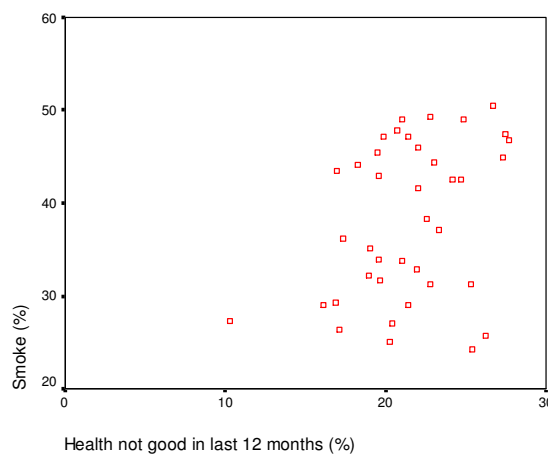
**Figure 19: Scatter charts of lifestyle indicators against level of poor health in NDC area over past year**



correlation coefficient = 0.53\*\*



correlation coefficient = 0.38\*



correlation coefficient = 0.35\*

\*\* Correlation is significant at the 0.01 level

\* Correlation is significant at the 0.05 level

To what extent then does the relationship between lifestyle and poor health in NDC areas hold true when the underlying characteristics of the local population are taken into account? Logistic regression modelling is used to further explore the relationship. The ORs from the resultant model are given in Table 10. These ORs are adjusted for

the basic demographic characteristics of the NDC population, as in the previous models in this paper.

**Table 10: Adjusted ORs for poor health given lifestyle as explanatory factors**

Variable and category	Poor health in last 12 months Adjusted OR	Health worse in last 12 months Adjusted OR	Low SF-36 mental health score* Adjusted OR	Long standing illness or disability Adjusted OR
<b>Smoke</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>1.38</b>	<b>1.26</b>	<b>1.44</b>	<b>1.13</b>
<b>Five fruit/veg rarely/never</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>1.25</b>	<b>1.27</b>	<b>1.29</b>	<b>1.17</b>
<b>One/no spells of physical activity</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>2.57</b>	<b>1.92</b>	<b>1.54</b>	<b>2.15</b>

Note: \*A low mental health score was classified as one which was more than one standard deviation below the mean.  
 Those in **bold** are significantly greater than or less than 1 at the % level of significance.  
 The first category of each variable is the base level with an odds ratio of 1. The odds ratios for other categories within a variable are in relation to this base group for e.g. a person who smokes is 1.49 times more likely than someone who does not to have a low mental health score.  
 n.s. = non significant.

All three negative lifestyle factors significantly increase the chances that a person will have indicated some degree of poor health. The ORs in Table 10 indicate that smokers in NDC areas are nearly 40 per cent more likely than non smokers to say their health was poor and has deteriorated in the past year. They are also 44 per cent more likely than non smokers to have a low mental health score. But the largest difference in ORs for having poor health is amongst those who do little exercise. They are two and a half times more likely than those who do at least one concentrated spell of exercise to say their health was poor in the past year.

The results emerging from this section highlight the importance of NDC initiatives to influence the lifestyle of residents. If, as a result of NDC interventions, more NDC residents give up smoking, do more exercise or improve their diet, then there is likely to be a positive impact on their health.

## 4. ACCESS TO HEALTH SERVICES

### 4.1. Indicators of access to local health services

The Acheson report (Acheson, 1998) into health inequalities recommended that 'providing equitable access to effective care in relation to need should be a governing principle of all policies in the NHS'. As this Report makes clear access to health care is influenced by both 'supply' and 'demand' factors. Supply factors include the geographical distribution and availability of primary care, cultural sensitivity, distance and transport. Demand factors include; lay health beliefs, knowledge of available services, and wider socio-economic influences.

The NDC household survey asks residents a number of questions relating to access to both primary and secondary care services (see Appendix Table A12). Within this section of the paper the focus will be on primary care services. An initial examination will be made of the relationship between the use of health services and self reported health. Areas and groups of residents most likely to have accessed GP services, find it difficult to see the GP and are dissatisfied with their GP are subsequently identified.

As would be expected, those who have been to see their doctor more recently are more likely to say their health was 'not good' than those who have not seen a GP recently (see Table 11). They are also more likely to have a lower SF-36 mental health score.

**Table 11: Self reported health by time last saw GP**

	% health 'not good' in last 12 months	mean SF-36 score
In the last week	42	64
In the last month	35	67
In the last 6 months	19	72
In the last year	10	74
Longer ago or never	5	78
<hr/>		
NDC Total	22	71

Source: MORI/NOP Household Survey 2004

The proportion of NDC residents seeing a GP in the last month is compared with both comparator and national averages in Table 12. Interestingly, although the proportion of NDC residents who said their health was not good was almost twice the national average, there is hardly any difference between NDC areas as a whole and the national average in terms of visiting a GP. When individual NDCs are explored (Figure 20) half have lower than national rates for visiting a doctor in the past month.

Perhaps this low level of attending a doctor's surgery within NDCs is a reflection of the types of ill health residents are experiencing. For some, not using services may be due to social and cultural reasons. For example, some groups would feel it is inappropriate to go to GP for mental health problems and may need an 'acute episode' to justify attendance. Lower levels of visiting a doctor against a background of high levels of reported ill health may also mean that barriers deter residents from accessing services. These may include language barriers, cultural factors and a lack of awareness of services available.

Table 12 also indicates that NDC and comparator area residents are much more likely to find it difficult to see a GP or be dissatisfied with their GP than the national average. For example twice the proportion of NDC residents are dissatisfied with their family GP compared with nationally. On both these indicators the NDC areas as a whole performed slightly worse than the comparator areas.

**Table 12: Access to health services**

	% of respondents		
	NDC Areas	Comparator areas	National
<b>Seen GP in last month?</b>			
No	62	64	63
Yes	38	36	37
<b>Find it difficult to see GP?</b>			
No	74	76	78
Yes	26	24	22
<b>Dissatisfied with GP?</b>			
No	90	91	95
Yes	10	9	5

Source: MORI/NOP Household Survey 2004, MORIOmnibus2004, People'sPanel1998

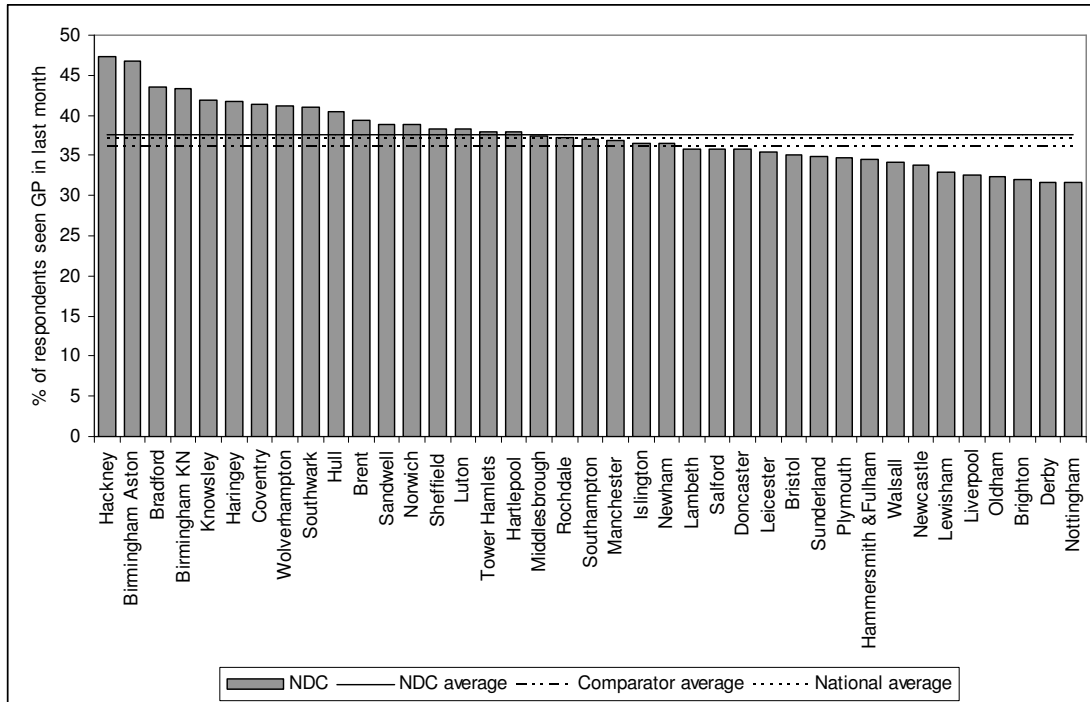
The NDC averages hide wide variations in access to, and satisfaction with health services across individual Partnerships (Figures 20 to 22). Full details by Partnership and regional summaries are provided in Appendix Table A13. A similar ordering of Partnerships can be seen in Figure 21 and 22 for difficulties in seeing a doctor and dissatisfaction with the service, though this is not the case for Figure 20 - seeing a doctor in the past month. These relationships are to be expected: difficulty in seeing a GP is likely to lead to dissatisfaction with the service, but being ill is independent of the service provided in the area. A significant correlation of 0.38 between dissatisfaction with a GP and difficulty of seeing a GP confirms the relationship. The proportion of residents who have been to see their doctor in the month is not significantly related to either of the other two indicators.

The top and bottom NDCs on all three indicators are however similar. Perhaps this is an indication that it is those in greatest need of health services who receive the poorest care, the 'inverse care law' (Tudor Hart, 1971) applying even within these deprived areas. Alternatively, it may just be that those who use services more often are more likely to have cause to complain. However this is not always the case. Hackney for example has the highest proportion of residents who have seen a GP in the last month (47 per cent), but is one of the 10 Partnerships where residents are least likely to find it difficult to see a GP (17 per cent) and to be dissatisfied with their GP (six per cent).

As well as half of NDCs (Figure 20) having below the national average rate for visiting a doctor, Figure 21 indicates that in sixteen a lower proportion of residents have difficulty in seeing a doctor than the national average. Only two NDCs, Sheffield and Southampton, had fewer residents dissatisfied with their GP than the national average.

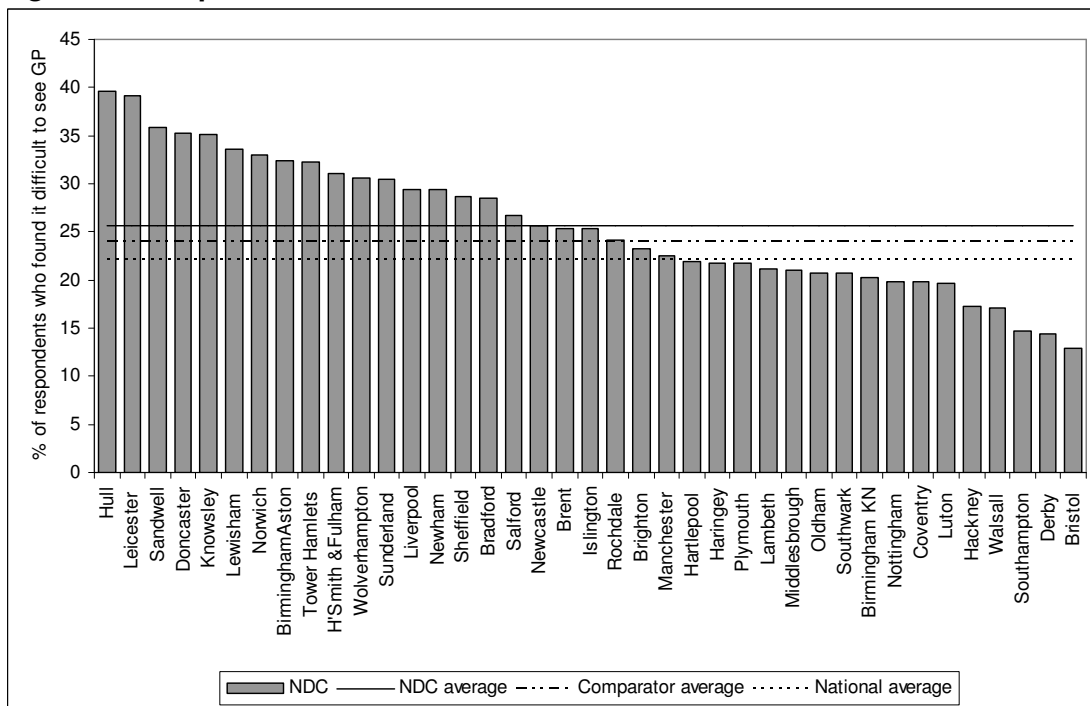


**Figure 20: Proportion of NDC residents who have seen GP in last month**



Source: MORI/NOP Household Survey 2004, MORI Omnibus 2004

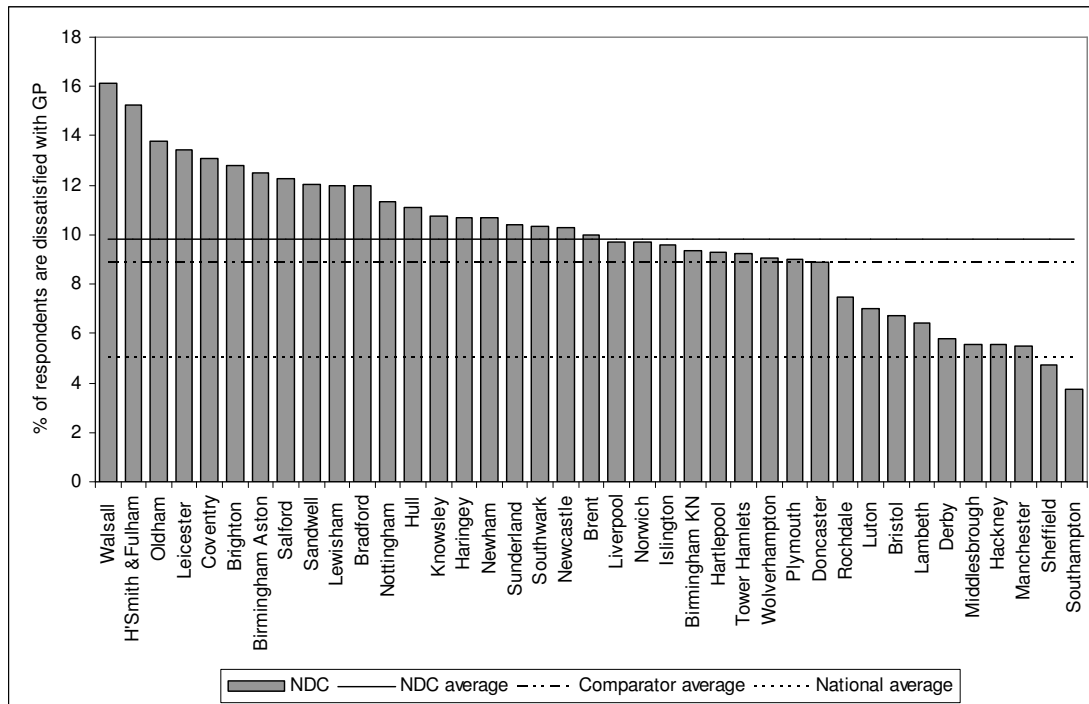
**Figure 21: Proportion of NDC residents which find it difficult to see GP**



Base: All seen GP in last year

Source: MORI/NOP Household Survey 2004, MORI Omnibus 2004

**Figure 22: Proportion of NDC residents that are dissatisfied with GP**



Base: All seen GP in last year  
 Source: MORI/NOP Household Survey 2004, People's Panel 1998

#### 4.2. Modelling access and satisfaction with services

As previously explained in this paper, the distribution of variables will be influenced by the underlying structure and characteristics of the local population in each area. Therefore, it might be expected for instance that an area with an ageing population would have greater demand on local health services. Alternatively, areas with a high birth rate or large numbers of children may also present a different range of demands on the local doctor's surgery.

Access to, and satisfaction with, local services are therefore modelled using logistic regression techniques. These models generate ORs which estimate, within each individual Partnership, the likelihood of residents accessing, or expressing dissatisfaction with, local health services. All the ORs generated are adjusted for the core explanatory factors which have been used in the other models in this paper. This includes adjusting for age, ethnicity and gender. The ORs for seeing a GP in the past month are shown in Figure 23; those for finding it difficult to see a GP in Figure 24; and ORs for being dissatisfied with their GP are illustrated in Figure 25. There is a similar order of NDCs by ORs for all three indicators as there are in the previous charts of percentages in Figures 20 to 22. The corresponding details of the ORs for these respective models are given in Appendix Table A14 to A16.

In Figure 23 it can be seen that five NDCs have significantly higher ORs of seeing a GP in the past month than for NDCs as a whole. In Hackney the ORs increase by 48 per cent. The top three -Hackney, Birmingham Aston and Bradford, - were also the top three in terms of percentages in Figure 20. A similar case emerges for the three least likely to have seen a GP, with the exception of Nottingham, which moves from the bottom to eleventh from the bottom.

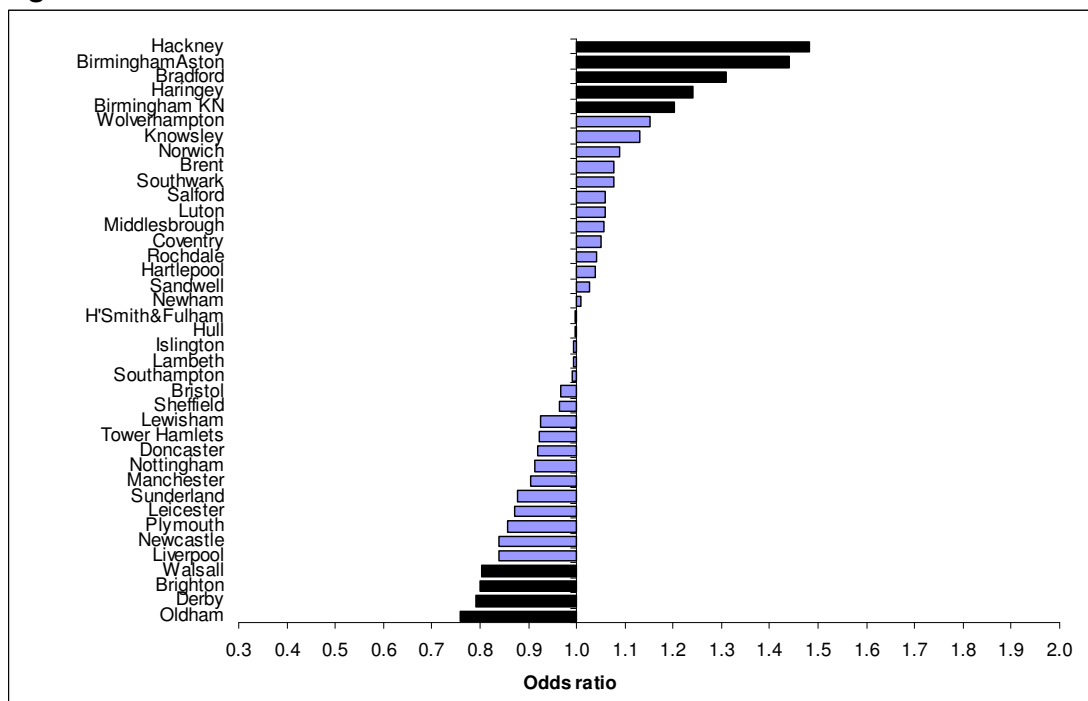
There are thirteen NDCs with ORs which are significantly above NDC as a whole for difficulty in seeing a GP (Figure 24). Again a very similar ordering of NDCs as in Figure 21 is apparent. In Hull and Leicester, residents are almost twice as likely as

NDC residents as a whole to find it difficult to see a GP. Derby and Hackney NDCs are amongst the 10 Partnerships significantly less likely to find it difficult to see a GP compared with the NDC average. However, whilst Derby residents were significantly less likely to have seen a doctor than the NDC average, Hackney residents were significantly more likely to have seen one. This leads to different possible explanations. Lack of difficulty in seeing a GP in Derby is likely to be influenced by infrequency of use of the services. For example, if a person has only visited the doctor once in the past year then they may be less likely to have had difficulty in accessing a doctor than if they had had to make frequent appointments over the same period. In Hackney however, the fact that residents are more likely to have seen a doctor, yet were less likely to have had a difficulty in doing so, this possibly implies that the level of services in the area can meet greater demand.

Figure 25 depicts the likelihood of residents being dissatisfied with their GP. In Walsall residents were twice as likely to be dissatisfied with the service as NDC residents as a whole. Southampton NDC on the other hand is over 60 per cent less likely as NDC residents on average to be dissatisfied with their GP.

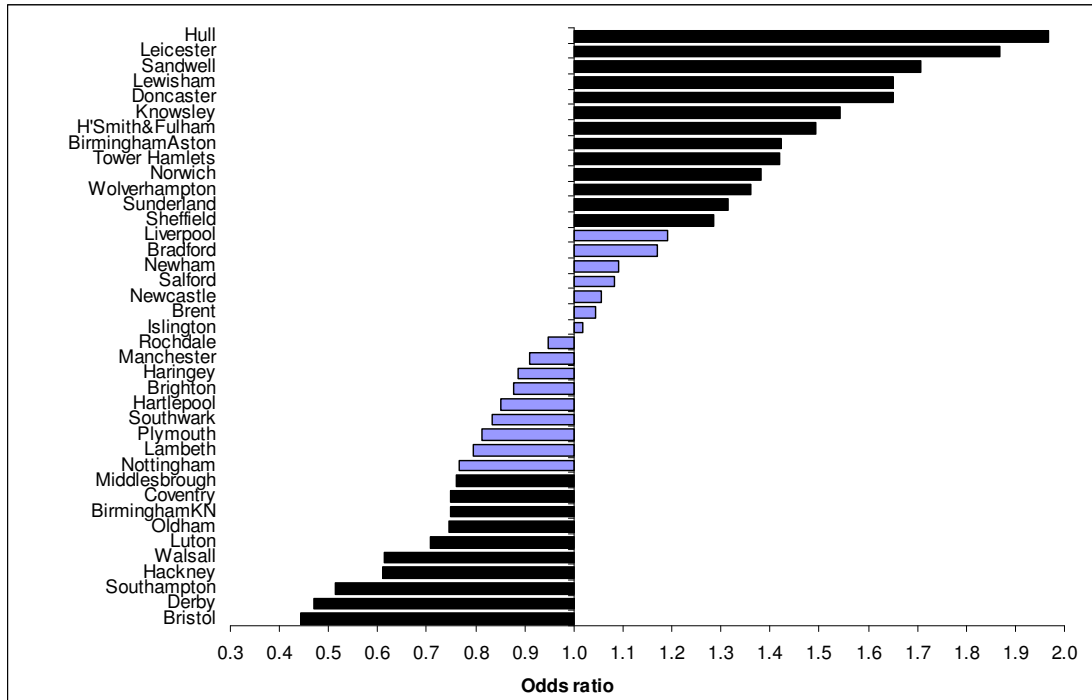
When the three sets of ORs are considered alongside each other it can be seen that only Derby shows significantly 'good performance' on all three indicators. No NDCs however has significant 'poor performance' across all three. Although residents from four NDCs: Leicester, Sandwell, Lewisham, and Hammersmith and Fulham, were significantly more likely to have had difficulty in seeing a GP and were dissatisfied with the service when compared with the NDC area average.

**Figure 23: ORs for seen a GP in the last month**



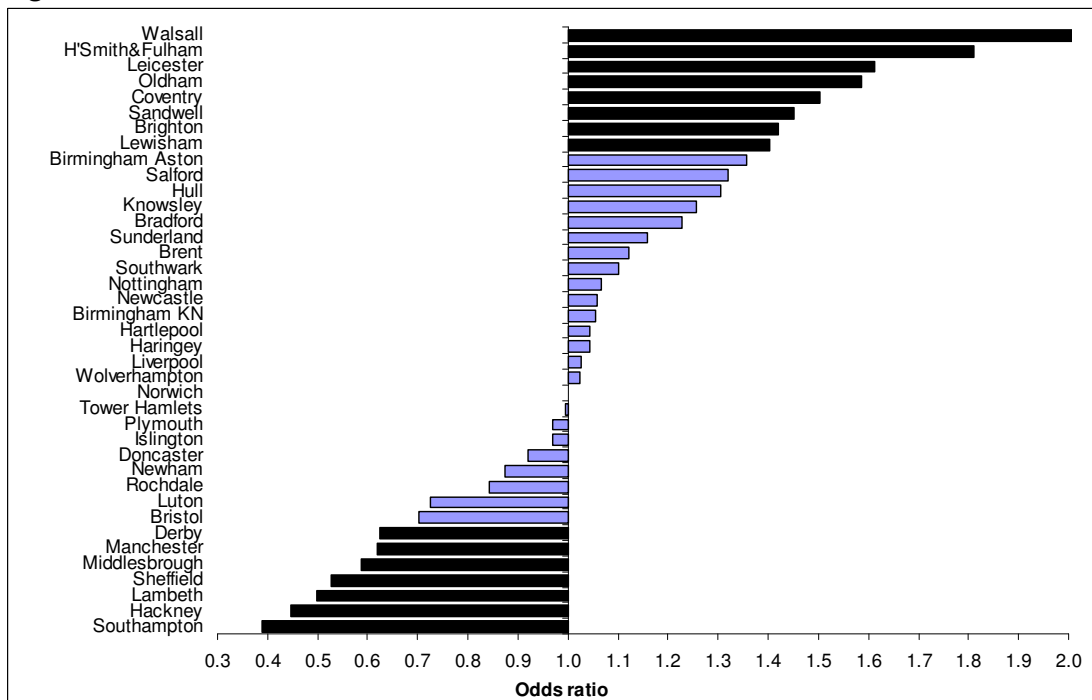
Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

**Figure 24: ORs for difficulty in seeing a GP**



Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

**Figure 25: ORs for dissatisfied with GP**



Note: bars in black represent areas where OR is significant at the 5% level  
 Source: MORI/NOP Household Survey 2004

### 4.3. Demand for local health services

It is likely that the demand for health services will differ across groups of residents. By being aware of groups that either access health services more frequently or by identifying those most likely to find the service provided inadequate, it may be possible to tailor NDC interventions to improve local services.

Table 13 presents indicators of access to, and satisfaction with, health services by main demographic characteristics. The data indicates that a higher proportion of female than male residents have seen a GP in the last month. This reflects national trends in that men tend to be less likely to seek medical advice than women. Women are also slightly more likely to find it difficult to see a GP than men or be dissatisfied with the service. As would be expected, the proportion of residents who have seen their GP in the last month increases with age. Half of the residents aged 65 and over have seen the GP in the last month compared with 29 per cent of residents aged 16 to 24. Residents aged over 65 are least likely to find it difficult to see their GP (18 per cent). All other age groups fall within the range 25 per cent to 29 per cent. It is possible that this difference could be due to surgery opening times and day time commitments of working residents. Younger residents are also more likely to be dissatisfied with their GP compared with older age groups.

**Table 13: Demographic information by access to health services**

	<b>% seen GP in last month</b>	<b>% find it difficult to see GP</b>	<b>% dissatisfied with GP</b>
<b>Sex</b>			
Male	31	24	9
Female	43	27	10
<b>Age</b>			
16-24	29	26	13
25-49	35	29	11
50-64	44	25	8
65+	50	18	4
<b>Ethnicity</b>			
Black	41	22	9
Asian	39	30	11
White	37	25	10
<b>NDC Total</b>	<b>38</b>	<b>26</b>	<b>10</b>

Source: MORI/NOP Household Survey 2004

Earlier in section 2 the analysis indicated that a higher proportion of white respondents indicate poor health status compared with black or Asian residents. White residents are however least likely to have seen a GP in the last month, 37 per cent compared with 39 per cent of Asian and 41 per cent of black respondents. This may be a function of the older age structure of white NDC residents compared with other ethnic groups. On-going ill health associated with old age may be less likely to result in a trip to a doctor than a specific illness occurring at a particular point in time.

Asian residents are more likely to be dissatisfied or find it difficult to see their GP compared with white and black respondents. Some 11 per cent of Asian residents are dissatisfied with their GP compared with 10 per cent of white and 9 per cent of black respondents.

Table 14 gives the ORs from a logistic regression model which adjusts for all the main explanatory demographic variables as in the previous models in this paper.

**Women** are more than 60 per cent more likely than **men** to have seen a doctor in the past month. This may to some extent explain why they are also 12 per cent more

likely to have had difficulty in seeing a GP than men. There were no significant differences in dissatisfaction with a GP between men and women.

**Table 14 Adjusted ORs for explanatory variables in base model for access to and satisfaction with health local services**

Variable and category	seen GP in last month Adjusted OR	find it difficult to see GP Adjusted OR	dissatisfied with GP Adjusted OR
<b>Sex</b>			
Male	1.00	1.00	n.s.
Female	<b>1.64</b>	<b>1.12</b>	
<b>Age group</b>			
16 - 24	1.00	1.00	1.00
25 - 34	<b>1.18</b>	<b>1.20</b>	0.97
35 - 44	<b>1.30</b>	<b>1.19</b>	0.84
45 - 54	<b>1.75</b>	<b>1.26</b>	<b>0.74</b>
55 - 64	<b>2.16</b>	0.95	<b>0.57</b>
65 - 74	<b>2.44</b>	<b>0.76</b>	<b>0.35</b>
75 & over	<b>2.16</b>	<b>0.67</b>	<b>0.30</b>
<b>Household composition</b>			
Couple, no dep't children	1.00	n.s.	1.00
Couple, with dep't children	<b>1.18</b>		<b>1.21</b>
Lone parent	1.03		1.14
Single person	0.99		1.16
Large adult household*	0.94		<b>1.22</b>
<b>Ethnicity</b>			
White	1.00	1.00	n.s.
Black	<b>1.22</b>	<b>0.76</b>	
Asian	<b>1.33</b>	0.99	
<b>Workless household</b>			
No	1.00	n.s.	n.s.
Yes	<b>1.43</b>		
<b>Tenure</b>			
Owner	1.00	n.s.	n.s.
Social rent: local authority	<b>1.20</b>		
Social rent: housing assoc	<b>1.23</b>		
Private rent	0.93		
<b>NVQ level</b>			
NVQ 4+	1.00	n.s.	n.s.
No NVQ	<b>1.35</b>		
NVQ 1	<b>1.31</b>		
NVQ 2	<b>1.27</b>		
NVQ 3	<b>1.18</b>		

Note: Those in **bold** are significantly greater than or less than 1 at the 5% level.  
The first category of each variable is the base level with an odds ratio of 1. The odds ratios for other categories within a variable are in relation to this base group for e.g. a person in a workless household in NDC areas is 1.55 times more likely to have seen a doctor in the month than residents in worker households in these areas.

\* Large adult households are those containing two or more adults who neither partners or related to each other

n.s. = non significant.

As might be expected, the likelihood of visiting a doctor increases with **age**. Those over 55 are more than twice as likely to have seen a doctor in the past month as the youngest age group. Those over retirement age are also significantly less likely to have had difficulty in seeing a doctor. Since retired people will have greater flexibility to accept appointments at any time, this is also as would be expected. Finally, the likelihood of being dissatisfied with a GP falls significantly with age. Having difficulty in seeing a doctor may be one of the factors feeding through to satisfaction and this may hold the key to the explanation here. It is also well documented that older people have different expectations and tend to be more satisfied with their health care provision than younger people.

**Ethnicity** does have some bearing on all three indicators but patterns vary for each. Black and Asian residents are over 20 per cent more likely to have seen a doctor in the past month than white residents. Black residents are significantly less likely than both white and Asian residents to find it difficult to see a GP. There were no significant differences in dissatisfaction with a GP amongst ethnic groups.

This section has highlighted differences across NDCs and residents within them in relation to accessing services. The proportion of people visiting a doctor in NDC areas as a whole is on a par with the national average and for half of the individual NDCs the rates are below the national average. This is in the context of almost double the rate of people saying their health is not good compared with national averages. When the ORs are considered by individual Partnerships no obvious geographic patterns emerge. There are however, similar positions for some NDCs in the top and bottom positions in terms of both the ORs of having poor health in the past year and the OR of visiting a doctor in the past month. Dissatisfaction with GPs shows few significant differences across the main explanatory variables. However, of the ethnic groups considered, the Asian community is the most dissatisfied with their GP.

Pen portraits summarising combinations of ORs indicate that older Asian women in workless households, having no qualifications, and living in social rented housing have the highest ORs of having accessed local health provision recently. Better educated, white women, aged 25 to 54 find it most difficult to see a GP. White residents aged between 16 and 44 are most likely to be dissatisfied with their GP.

## 5. HEALTH IN THE CONTEXT OF HOUSING AND AREA CHARACTERISTICS

This section considers the degree to which area level characteristics have a bearing on the health of residents. Issues considered include housing, perceived problems in the area and issues around incidence and fear of crime. It is likely that improvements to health will not only be achieved through direct health initiatives, but also via indirect channels such as improving the local housing stock and the physical environment, reducing crime and generally ameliorating the quality of life of residents (Pantazis and Gordon, 2000)

### 5.1. Health, housing and the physical environment

Evidence suggests that housing directly impacts upon physical wellbeing. Housing has an impact upon disability and severe ill health over a person's life course (Marsh et al 1999). Damp homes are believed to be linked to respiratory and other problems, particularly in children (Evans et al, 2000). Cold homes in England have also been associated with excess winter mortality (Wilkinson et al, 2001). Issues such as noisy neighbours and a poor local environment are also likely to affect quality of life and may impact on mental health (Green et al, 2001).

There is clear evidence that residents in NDC areas are more likely to be dissatisfied with their accommodation and the state of repair of their home than the national average (Beatty et al 2005). Other area level factors such as lawlessness and dereliction, problems with the local environment and difficulties in social relations were also identified as drivers of intended mobility of residents in the paper. To what extent therefore, are these factors also associated with poor health and mental wellbeing of residents in NDC areas?

Table 15 indicates that residents who are dissatisfied with their accommodation, those dissatisfied with the state of repair of home and those who are dissatisfied with the area have a lower average SF-36 mental health score than those who are satisfied. They are also more likely to feel their health has not been good over the last 12 months. For example, 20 per cent of residents who are satisfied with their accommodation feel their health is not good, compared with 30 per cent of residents who are dissatisfied.

**Table 15: Housing, satisfaction with the area and health status**

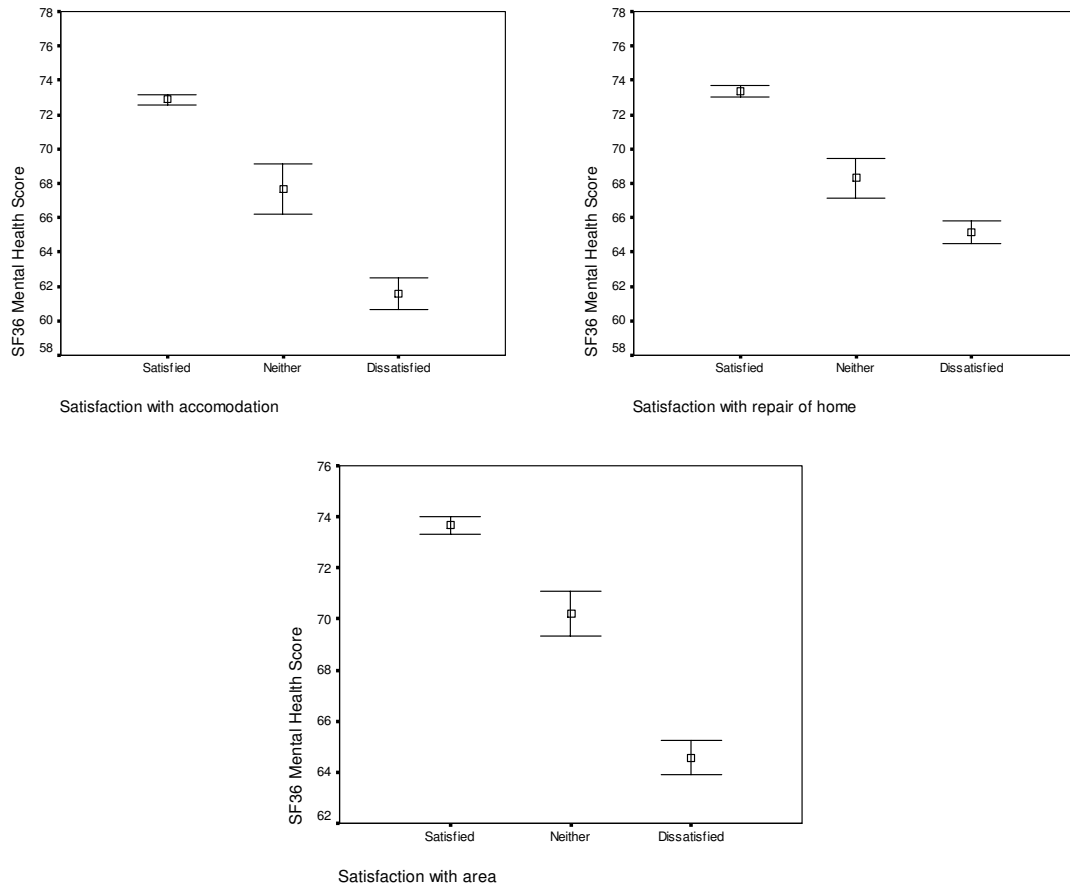
	% health 'not good' in last 12 months	SF-36 score
<b>Overall satisfaction with accommodation?</b>		
Satisfied	20	73
Neither satisfied nor dissatisfied	20	68
Dissatisfied	30	62
<b>Overall satisfaction with state of repair of home</b>		
Satisfied	20	73
Neither satisfied nor dissatisfied	21	68
Dissatisfied	28	65
<b>Overall satisfaction with area?</b>		
Satisfied	20	74
Neither satisfied nor dissatisfied	19	70
Dissatisfied	27	65
NDC Total	22	71

Source: MORI/NOP Household Survey 2004



Further examination of the relationship between mental health and the physical setting is presented in the error bar diagrams (Figure 26). The non overlapping error bars indicate that the SF-36 mental health scores differ significantly across satisfaction with accommodation, satisfaction with area, and satisfaction with state of repair of home.

**Figure 26: Physical setting by health status**



Source: MORI/NOP Household Survey 2004

## 5.2. Crime and health

Implicit and explicit fear of crime and experience of crime can have a negative effect on individuals' quality of life and health. It restricts the freedom of those who feel vulnerable and can be the cause of mental distress and social exclusion (Green et al. 2002). Evidence also suggests that 'crime and fear of crime is felt disproportionately by disadvantaged groups' (Acheson, 1998). Analysing data from the 1996 British Crime Survey, Chandola (2001) found, that at the neighbourhood level fear of crime was associated with self-rated health even after adjusting for health behaviours. Also, in an analysis of British Crime Survey data, Mirrlees-Black et al (1998) found that individuals who perceive their health to be bad are more likely to worry about crime. This study found that 'while 19 percent of people nationally were very worried about burglary, the figure was 30 percent for those in poor health'.

Fear of crime can be measured from the household survey through both implicit and explicit questions. Explicit measures record responses to questions that mention a particular crime for example; 'How worried are you about being mugged or robbed?'. Implicit fear of crime is measured using responses to questions that do not directly mention crime for example; 'How safe do you feel walking alone in this area after dark?'. A study by Green, Gilbertson and Grimsley (2002) investigated the correlation between residents' health and fear of crime in high rise flats in Liverpool. This found

implicit measures of fear to be a good predictor of health status whilst explicit measures were found to have weaker associations. A full list of the questions available in the NDC household survey relating to fear of crime is given in Appendix Table A18.

Whereas, implicit fear of crime is measured in this paper as the response to a single question, explicit fear of crime is operationalised by use of an index. Residents were asked about how worried they were regarding eleven different types of crime. Two of these - both relating to car crime - were excluded from the index as they were not applicable to those not owning a car. The remaining nine questions were coded: 'very worried' responses were awarded 4 points; 'fairly worried' 3 points; 'not very worried' 2 points; and 'not worried at all' or 'not applicable' 1 point. Points were summed across all nine questions resulting in a possible range of scores from 9 to 36. A score of 36 would indicate a 'very worried' response to all nine questions.

As well as fear of crime, actual experience of crime is also associated with ill health. In the USA, at large area level, actual crime rates have been associated with standardised mortality (Wilkinson et al, 1998). The household survey provides indicators of whether residents have been a victim of a specified list of crimes in the past year. The full details of these questions are provided in Appendix Table A18. In the following analysis these questions have been amalgamated to indicate the number of times in the past year that a resident has been a victim of crime.

The main indicators of implicit and explicit fear of crime and being a victim of crime are cross-tabulated by self reported health measures in Table 16. Residents feeling unsafe out alone after dark are more likely to have a lower SF-36 mental health score and feel their health has not been good over the last 12 months compared with those that feel safe.

A similar picture is also evident when examining explicit fear of crime. Residents with a high score on the fear of crime index are, again, more likely to have a lower SF-36 mental health score and feel their health has not been good over the last 12 months than those with lower scores.

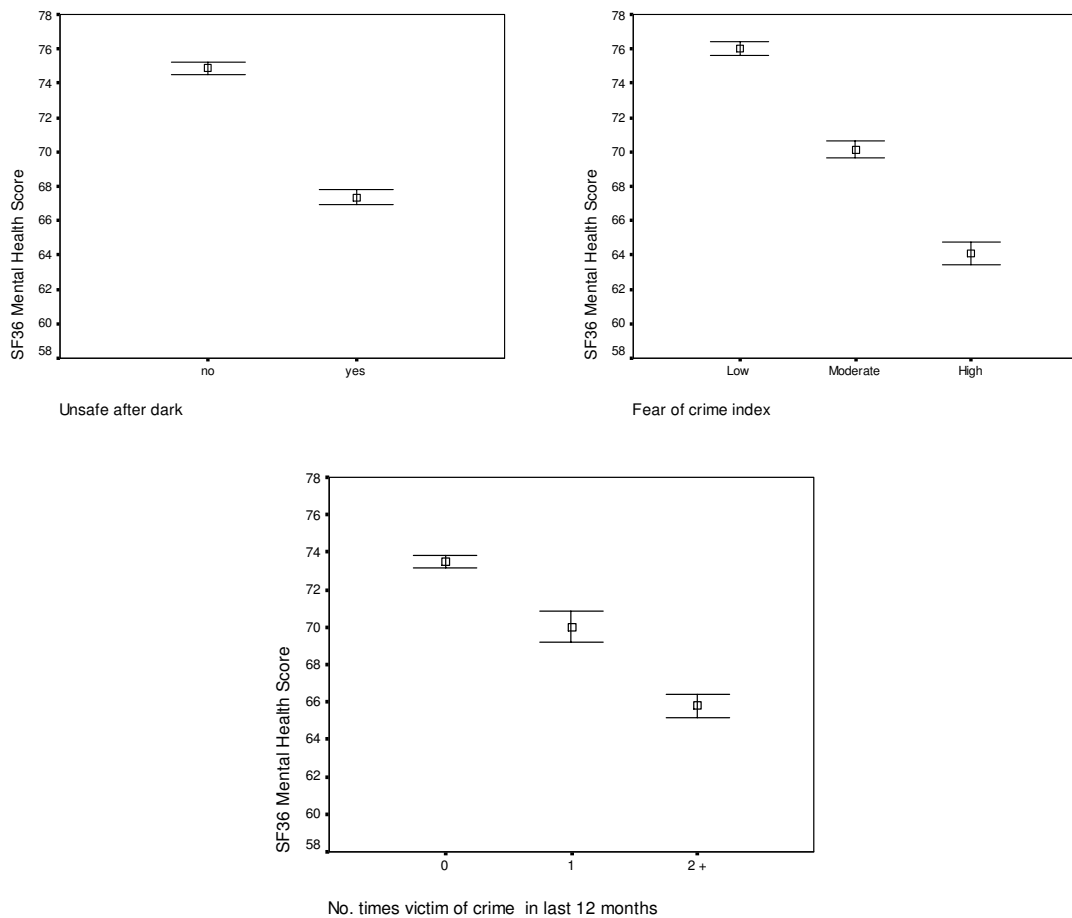
Whether a resident has been a victim of crime also increases the likelihood that they will have a low SF-36 mental health score and report that their health has not been good over the past year. The chances of indicating these poor health outcomes is increased as the number of times an individual has been a victim increases.

**Table 16: Fear and experience of crime by self reported health**

	% health 'not good' in last 12 months	SF-36 score
<b>Implicit: Safe out alone after dark</b>		
Yes	17	75
No	26	67
<b>Explicit: Fear of crime index</b>		
Low (9-17)	20	76
Moderate (18-24)	21	70
High (25-36)	26	64
<b>No. times a victim of crime in last 12 mths</b>		
None	20	73
One	22	70
Two plus	25	66
NDC Total	22	71

Source: MORI/NOP Household Survey 2004

**Figure 27: Fear and experience of crime by mental health**



Source: MORI/NOP Household Survey 2004

The relationships in Table 16 are re-emphasised in Figure 27 which provides error bars for crime indicators against SF-36 mental health scores. It can be seen by the non overlapping error bars, that there are significant differences in the mental health score for those who fear crime and those who do not.

### 5.3. The relationship between housing, area characteristics and health

This section has so far explored the degree to which health of NDC residents is related to their accommodation and their perceptions of the area (both in terms of problems in the locality and the fear and experience of crime). The bivariate relationships between each of the variables and health have been considered. The following section now considers a more sophisticated multivariate analysis. This enables the underlying characteristics of an area to be taken into account when considering the extent to which housing and area level factors are related to health.

**Table 17 Adjusted ORs for poor health given housing, area characteristics and crime as explanatory factors**

Variable and category	Poor health in last 12 months Adjusted OR	Health worse in last 12 months Adjusted OR	Low SF-36 mental health score* Adjusted OR	Long standing illness or disability Adjusted OR
<b>HOUSING</b>				
<b>Accommodation</b>				
Satisfied	1.00	1.00	1.00	1.00
Dissatisfied	<b>1.55</b>	<b>1.59</b>	<b>1.83</b>	<b>1.17</b>
<b>State of repair of home</b>				
Satisfied	1.00	1.00	1.00	1.00
Dissatisfied	<b>1.49</b>	<b>1.43</b>	<b>1.44</b>	<b>1.28</b>
<b>AREA</b>				
<b>Satisfaction with area</b>				
Satisfied	1.00	1.00	1.00	n.s.
Dissatisfied	<b>1.28</b>	<b>1.24</b>	<b>1.51</b>	
<b>Lawlessness &amp; dereliction score</b>				
Low	1.00	1.00	1.00	1.00
Moderate	<b>1.16</b>	<b>1.17</b>	<b>1.23</b>	<b>1.19</b>
High	<b>1.33</b>	<b>1.34</b>	<b>1.38</b>	<b>1.33</b>
<b>Environment problems score</b>				
Low	1.00	1.00	1.00	1.00
Moderate	1.05	1.09	1.01	1.06
High	<b>1.19</b>	<b>1.21</b>	<b>1.17</b>	<b>1.14</b>
<b>Poor social relations score</b>				
Very low	1.00	1.00	1.00	1.00
Low	1.10	<b>1.13</b>	<b>1.18</b>	<b>1.16</b>
Moderate	<b>1.34</b>	<b>1.28</b>	<b>1.35</b>	<b>1.24</b>
High	<b>1.31</b>	1.05	<b>1.75</b>	<b>1.38</b>
Very High	<b>1.57</b>	<b>1.75</b>	<b>1.95</b>	0.98
<b>CRIME</b>				
<b>Fear of crime score</b>				
Low	1.00	1.00	1.00	n.s.
Moderate	1.06	1.01	<b>1.39</b>	
High	<b>1.24</b>	<b>1.17</b>	<b>2.01</b>	
<b>No. times a victim of crime in 12 months</b>				
None	1.00	1.00	1.00	1.00
One	<b>1.27</b>	<b>1.24</b>	<b>1.27</b>	<b>1.18</b>
Two	<b>1.25</b>	<b>1.24</b>	<b>1.39</b>	<b>1.50</b>
Three or more	<b>1.88</b>	<b>1.71</b>	<b>2.15</b>	<b>1.65</b>

Note: \*A low mental health score was classified as one which was more than one standard deviation below the mean.

Those in **bold** are significantly greater than or less than 1 at the 5% level of significance.

The first category of each variable is the base level with an odds ratio of 1. The odds ratios for other categories within a variable are in relation to this base group for e.g. A person who has been a victim of crime twice or more in the past year is 2.06 times more likely to have a low SF-36 score than someone who has not.

n.s. = non significant.

Logistic regression is used to determine the extent to which housing, the area<sup>2</sup> and crime explain health of residents in NDC areas. The model adjusts for the main demographic characteristics as in previous models in this paper. The resultant ORs (Table 17) indicate that negative perceptions of the area are influential factors in relation to poor health. The least influential are problems to do with the local environment, although these were statistically significant on all four indicators of ill health. Lawlessness and dereliction in an area appears to have a greater effect on ill health than local environmental problems. Those who scored highly for this indicator were significantly more likely to have poor or deteriorating health, a low SF-36 mental health score or a long standing illness or disability. The ORs were at around 30 per cent higher on each of these health indicators than those with a low score for lawlessness and dereliction.

Issues relating to poor local social relations - such as problems with neighbours - also explained a degree of ill health. Those with moderate scores or above were over 30 per cent more likely to have poor health in the past year. These ORs increased by over 50 per cent for those with a very high score for poor social relations. The largest increase of OR was for having a low mental health score. ORs for this increased for all those with a degree of social relations problems and for those with very high scores the ORs nearly doubled.

Fear of crime also increased the ORs of having health problems. Those with high scores were between 10 to 20 per cent more likely to indicate poor or deteriorating health. Mental health suffered the most, with the ORs significantly increasing for those with a moderate as well as a high score. Again the ORs for a poor mental health score more than doubled for those with a high fear of crime score.

Being a victim of crime also had a significant effect on the four health indicators. The OR increased if the resident had been a victim more than once in the past year. Once again, the greatest increase in ORs was for having a low mental health score which more than doubled for those who had been a victim of crime three or more times during the past year.

The more general area dissatisfaction measure demonstrates a weaker association with self reported ill health than the more explicit area lawlessness and social characteristics. Over and above area effects, however, those who record problems and dissatisfaction with their accommodation are significantly more likely to report ill health than those who are relatively happy with their homes.

The results for this section show clearly that improving housing conditions, the area people live in and reducing crime are likely to have positive effects on the health of residents. This is especially the case for their mental health and well being.

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<sup>2</sup> . The household survey asked a number of questions relating to perceived problems in the area. These variables are all strongly correlated and, using the statistical technique of factor analysis, can be grouped into three main aspects or dimensions: lawlessness and dereliction, problems with the local environment, and difficulties in social relations. A composite score for each dimension was obtained by summing responses across the variables in each group. The higher the score, the greater the perceived number and level of local problems. A full list of the questions for each dimension is provided in Appendix Table A17.

## 6. THE BENEFITS OF SOCIAL CAPITAL AND COHESION ON HEALTH

### 6.1. Indicators of social capital and their relevance to health

Robert Putnam's comment that '(socially) connected people live longer, happier lives' (Putnam, 2001) encapsulates the developing interest in the nature and strength of relationships between levels of, what has become known as, social capital in a society and the health of its citizens. Baum and Ziersch (2003) give a brief glossary of concepts of social capital within a health context. These include social networks or ties between individuals and groups; participation and engagement with indicators such as voting levels and membership of voluntary and other organisations; reciprocity or 'give and take' between individuals in a community and levels of community trust, both at an individual level and trust in organisations or institutions.

Kawachi and Berkman (2000) consider a number of area based studies on links between social capital and health whilst Cattell (2001) provides an in depth qualitative study of London neighbourhoods which focuses on health links with the richness of social networks. Kawachi et al (1997) found strong cross-sectional correlations between indicators of social capital aggregated at the US state level and mortality rates. Levels of interpersonal trust and density of membership of civic associations were powerful predictors of most major causes of death. A subsequent study (Kawachi et al, 1999) explored the relationship between state-level social capital and individual self-rated health. A strong association between low trust and reciprocity and risk of self-rated poor health remained after controlling for socio-economic factors.

As part of a Health Action Zone evaluation, Green et al (2000) used individual level survey data from deprived communities to model social capital dimensions, including feelings of insecurity, on self reported health outcomes in the context of a psychosocial perspective on health inequalities (Elstad, 1998). Key explanatory variables of self reported general and mental ill health and perceived stress were both levels of trust between community residents (horizontal trust) and trust in authority or institutions (vertical trust), aspects of engagement and feelings of neighbourhood insecurity. The importance of community trust levels in this context has consistently emerged and may have policy implications. Gilson (2003) specifically explores trust levels and health care whilst Grimsley et al (2003) investigate models of community trust generation. Finally, in the context of regeneration, Green et al (2001) explore in a quantitative study the explicit links between health and social capital and regeneration and sustainability of deprived communities.

There are a number of questions in the household survey which relate to a sense of community within NDCs. These are listed fully in the Appendix Table A19. This section will relate these variables to the self reported health of residents and their SF-36 mental health score.

First of all, the relationship between the four measures of social cohesion and community available in the survey are examined in Table 18. Feeling part of the community is not significantly correlated with feeling the community is friendly or that neighbours look out for each other.

**Table 18: Social capital and community correlation coefficients**

Variable name	Variable name	Correlation coefficient
Neighbours look out for each other	Community friendly	0.82**
Neighbours look out for each other	Know local people	0.75**
Know local people	Community friendly	0.67**
Know local people	Feel part of the community	0.39*
Community friendly	Feel part of the community	0.12
Neighbours look out for each other	Feel part of the community	0.19

\*\*Correlation is significant at the 0.01 level

\* Correlation is significant at the 0.05 level

The degree to which the characteristics of 'community spirit' are related to levels of general good health and mental health well being are explored in Table 19. There is little difference in general health amongst those who feel their area does or does not have three of the four community indicators - neighbours look out for each other, knowing other locals and feeling part of the community. However, a higher proportion of residents that feel the community is not friendly report their health as 'not good'.

The picture is, however, more differentiated when the SF-36 mental health scores by social cohesion and community indicators are examined. Again, there is little difference between those who do or do not know local people. However, though the difference is small, it can be seen from Figure 29 that the SF-36 for those who know local people is significantly better than in those who do not.

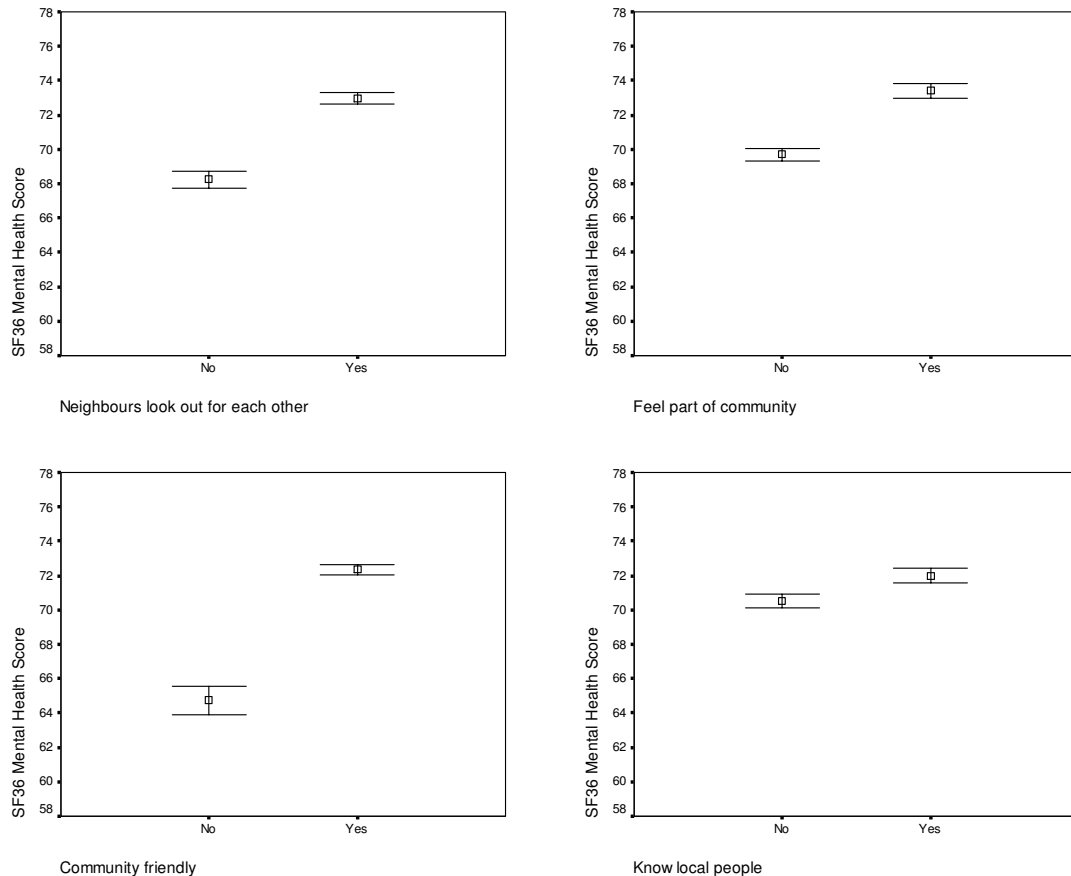
There are more noticeable differences for the SF-36 scores on the other three indicators. Whether or not the community is perceived as friendly indicates the strongest association with poor mental health. Those who think the community is not friendly have an SF-36 mental health score nearly eight points below those who think it is friendly.

**Table 19: Sense of community and self reported health**

	% health 'not good' in last 12 months	mean SF-36 score
<b>Neighbours look out for each other</b>		
Yes	22	73
No	23	68
<b>Feel part of the community</b>		
Yes	21	73
No	22	70
<b>Community friendly</b>		
Yes	21	72
No	24	65
<b>Know local people</b>		
Yes	23	72
No	21	70
<b>NDC Total</b>	<b>22</b>	<b>71</b>

Source: MORI/NOP Household Survey 2004

**Figure 29: Social cohesion by mental health**



Source: MORI/NOP Household Survey 2004

## 6.2. Modelling social capital dimensions and health outcomes

Exploratory logistic modelling was undertaken in order to investigate relationships between various dimensions of social capital and community cohesion and self-rated health. The dimensions considered reflect neighbourhood *reciprocity* (feeling part of the community, local people friendly), social *networks* (know local people), *engagement* (involvement with local organisations), feelings of neighbourhood *security* (afraid to walk alone in the area after dark) and trust.

The household questionnaire contains four main trust measures which relate to trust levels in the local council, police, health services and schools. Each item was coded on a five point scale ranging from 'not at all' to 'a great deal'. A factor analysis on the four trust measures indicated a single underlying dimension which was interpreted as a measure of local vertical trust. Individual vertical trust scores were then grouped into three categories: low, moderate and high.

Table 20 presents the ORs from a main effects logistic regression model which considers the extent to which the various social cohesion and community involvement factors contribute to the likelihood of having ill health. The ORs are adjusted for core demographic characteristics as in previous models in this paper: age; sex; self-reported ethnicity; educational attainment; household composition; tenure; and whether the respondent was a member of a workless household.



**Table 20: Adjusted ORs for poor health given social capital dimensions as explanatory factors**

Variable and category	Poor health in last 12 months	Health Worse Last 12 mts	Low SF36 mental health score*	Long standing illness or Disability
	Adjusted OR	Adjusted OR	Adjusted OR	Adjusted OR
<b>Not part of local community (cohesion &amp; reciprocity)</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>1.14</b>	<b>1.20</b>	<b>1.13</b>	<b>1.08</b>
<b>Neighbours not friendly (cohesion &amp; reciprocity)</b>				
No	1.00	1.00	1.00	n.s.
Yes	<b>1.18</b>	<b>1.17</b>	<b>1.48</b>	
<b>Don't know neighbours (networks)</b>				
No	n.s.	1.00	n.s.	n.s.
Yes		<b>0.90</b>		
<b>Vertical trust (community trust)</b>				
High	1.00	1.00	1.00	1.00
Moderate	<b>1.37</b>	<b>1.24</b>	<b>1.23</b>	<b>1.11</b>
Low	<b>1.85</b>	<b>1.62</b>	<b>1.84</b>	<b>1.21</b>
<b>Unsafe walking alone in area after dark? (security)</b>				
No	1.00	1.00	1.00	1.00
Yes	<b>1.47</b>	<b>1.31</b>	<b>1.64</b>	<b>1.24</b>

Note: \* A low mental health score was classified as one which was more than one standard deviation below the mean.

Those in **bold** are significantly greater than or less than 1 at the 5% level of significance.

The first category of each variable is the base level with an odds ratio of 1.

n.s. = non significant.

Results indicate that stronger community ties, in terms of reciprocity, and networks, in an area do not necessarily lead to or reflect a healthier community. The first point to note is that many of the relationships tested for the first four explanatory variables in Table 20 were not significant. That is, certain of the community cohesion variables are not significant explanatory factors for some of the health indicators.

The extent to which residents know local people can be taken as a good guide to the closeness of the community. However, for three of the four health indicators there are no significant differences in the health for those who know most of the local people or those who don't. The variable is only significant in relation to health deterioration whereby, those who know their neighbours are 10 per cent less likely to feel that their health has deteriorated over the last 12 months compared with those who don't know many or most of their neighbours.

On the other hand, feeling part of the community was a significant factor in explaining all four of the health indicators. Whether local people were perceived as not friendly also increased the ORs of having poor health by 18 per cent, and deteriorating health by 17 per cent. Feeling part of the community had the greatest effect on mental health; with the chances of having a low SF-36 score increasing by 48 per cent for those who felt local people were not friendly. The most striking results from the model, however, are the notably strong relationships between ill health and (lack of) trust. This is consistent with many other studies and clearly warrants further investigation.

Many NDC interventions relate to reducing crime and, in effect, increasing feelings of community safety and security. The ORs for the local security variable in Table 20 indicate that, if such interventions succeed, there could well be a substantial improvement in local health, particularly mental health related wellbeing. Of course, there is an argument that the causal pathway may well be from mental wellbeing to implicit fear of crime or insecurity: that people with low levels of mental wellbeing may feel insecure because of that very condition. Green et al (2002), however, produced evidence using econometric modelling that, though there may be a feedback mechanism at work, the main pathway appears to be in the direction from feelings of insecurity to low mental wellbeing.

Overall this section has highlighted a number of interactions between health and whether NDC areas have key attributes which may be considered to contribute to a sense of community in these areas:

- whether residents know other local people has limited effect on their general and mental health wellbeing. This bodes well for areas where there may be high levels of mobility and turnover of certain sections of residents - although the relevant survey question does not address the nature or quality of such relationships
- certain other community characteristics which tend to be considered as positive - feeling part of the community or involvement in voluntary organisations - actually have little effect on the health measures considered
- the factors most likely to be beneficial to both residents' general and mental health wellbeing are levels of community trust and feelings of security.

## 7. CHANGE IN NDC AREAS

### 7.1. Change in health in NDC areas

This chapter considers change in NDC by utilising two main sources of data. First, in addition to the 2004 Household Survey, MORI/NOP conducted a household 'baseline survey' in 2002. Second, secondary and administrative change data on low birth weights, mental health, standardised illness ratio, hospital admissions and mortality has been collected and analysed by the Social Disadvantaged Research Centre at the University of Oxford. These data sets provide a valuable source through which to consider the question: how has health changed in these areas since the NDC Programme began? Many potential outcomes of health initiatives are only likely to arise in the longer term. For example, reduction in coronary heart disease through the implementation of healthy eating programmes is unlikely to be evident over a 12 month period.

### 7.2. Household Survey: area change data 2002 to 2004

Area level change highlights changes to NDC and comparator areas between the baseline (2002) and a later interim position (2004).

#### Cross sectional analysis

Table 21 provides headline change in respect of health, lifestyle and access to health services at the Programme wide level. Although six of the 10 indicators explored improved over the two year period, for only one was this change significant and meaningful: residents finding it difficult to see their GP improved by three percentage points.

**Table 21: Change in health, lifestyle and access to health indicators, 2002-2004**

	% of respondents / mean score		
	2002	2004	Change
<b>Health</b>			
Health 'not good' last 12 months	23	22	-1
Health 'worse' in last 12 months	22	21	0
Long standing illness/disability	33	32	-1
Mean SF36 score	70	71	1
<b>Lifestyle</b>			
Rarely/never eat 5 a day	28	26	-2
Smoke	40	38	-1
No activity 20mins a time	9	9	0
<b>Access to health services</b>			
Seen GP in last month	38	38	0
Difficult to see a GP	28	26	-3
Dissatisfied with GP	10	10	0

Source MORI/NOP Household Survey 2004 & 2002

Tables 22, 23 and 24 explore change by key demographic characteristics. Table 22 illustrates change by sex. Although differences are small, Table 22 indicates that male residents showed greatest improvements in health and lifestyle indicators, whilst females showed greater improvement in access to health service indicators. For example, the proportion of female residents finding it difficult to see their GP improved by four percentage points (31 per cent in 2002 to 27 per cent in 2004) compared with a two percentage point improvement for males (26 per cent in 2002 to 24 per cent in 2004).

**Table 22: Change in health, lifestyle and access to health indicators by sex, 2002-2004**

	Male			Female		
	02	04	Change	02	04	Change
<b>Health</b>						
Health 'not good' last 12 months	21	20	-2	24	23	-1
Health 'worse' in last 12 months	21	19	-1	23	23	1
Long standing illness/disability	33	32	-1	33	32	-1
Mean SF36 score	73	74	1	67	68	1
<b>Lifestyle</b>						
Rarely/never eat 5 a day	31	29	-3	25	23	-2
Smoke	41	40	-2	38	37	-1
No activity 20mins a time	11	11	0	7	6	-1
<b>Access to health services</b>						
Seen GP in last month	32	31	0	44	43	-1
Difficult to see a GP	26	24	-2	31	27	-4
Dissatisfied with GP	9	9	0	11	10	-1

Source MORI/NOP Household Survey 2004 & 2002

Table 23, which illustrates difference in change by age, does not indicate a consistent pattern. Interestingly the youngest age group (16 to 44) showed the most improvement in fruit and vegetable consumption (3 percentage point improvement), whilst the oldest age group showed the most improvement in undertaking sustained periods of activity (4 percentage point improvement).

**Table 23: Change in health, lifestyle and access to health indicators by age, 2002-2004**

	16-44			45-64			65-74			75+		
	02	04	Change	02	04	Change	02	04	Change	02	04	Change
<b>Health</b>												
Health 'not good'	14	14	-1	34	32	-2	37	35	-2	41	39	-2
Health 'worse'	15	15	0	30	29	-1	33	32	0	37	38	1
LSI/disability	21	19	-2	48	47	-1	55	57	1	58	59	1
Mean SF36 score	71	71	0	68	69	1	72	74	2	71	73	2
<b>Lifestyle</b>												
Rarely/never eat 5 a day	28	26	-3	28	26	-2	26	26	0	26	27	0
Smoke	43	41	-2	42	41	-1	29	27	-2	14	15	1
No activity 20mins a time	5	5	0	11	11	0	17	14	-3	30	26	-4
<b>Access to services</b>												
Seen GP in last month	33	32	-1	43	42	-1	49	50	2	48	49	1
Difficult to see a GP	30	28	-2	30	26	-3	23	18	-4	19	17	-2
Dissatisfied with GP	12	12	0	8	8	0	5	5	-1	4	4	0

Source MORI/NOP Household Survey 2004 & 2002

Finally, differences in changes across ethnic groups are explored in Table 24. Overall, black residents appear to show the highest levels of improvement in health indicators. For example the proportion of black residents suffering from long standing illness or disability improved by three percentage points between 2002 to 2004 from 18 per cent to 16 per cent. However, Asian residents indicate the greatest improvement in access to health service indicators.

**Table 24: Change in health, lifestyle and access to health indicators by ethnicity, 2002-2004**

	White			Black			Asian		
	02	04	Change	02	04	Change	02	04	Change
<b>Health</b>									
Health 'not good' last 12 months	24	23	-1	19	17	-2	20	18	-2
Health 'worse' in last 12 months	22	23	0	18	16	-2	20	19	-1
Long standing illness/disability	36	36	0	25	22	-3	22	21	-1
Mean SF36 score	70	71	1	72	73	1	71	72	1
<b>Lifestyle</b>									
Rarely/never eat 5 a day	30	29	-1	19	16	-3	22	19	-3
Smoke	45	44	-1	24	24	1	21	20	-1
No activity 20mins a time	9	9	-1	7	6	-1	9	10	1
<b>Access to health services</b>									
Seen GP in last month	36	37	0	44	41	-3	42	39	-3
Difficult to see a GP	29	25	-3	24	22	-2	32	30	-2
Dissatisfied with GP	9	10	0	9	9	0	14	11	-3

Source MORI/NOP Household Survey 2004 & 2002

### NDC and comparator areas

Table 25 illustrate change in NDC areas between 2002 and 2004 compared with that occurring in the comparator areas over the same period. For three of the 10 indicators explored, NDC areas indicate greater improvement than comparator areas. However, for five of the indicators, comparator areas improved by more than NDC areas. Of these, the difference is most marked for access to health service indicators and in particular 'difficult to see a GP'. This indicator improved by nine percentage points in comparator areas, six percentage points more than for NDC areas (which indicated a three percentage point improvement).

**Table 25: Change in NDC and comparator areas 2002 to 2004**

	NDC Change 2002 to 2004	Comparator change 2002 to 2004	Difference in change 2002 to 2004
<b>Health</b>			
Health 'not good' last 12 months	-1	-1	0
Health 'worse' in last 12 months	0	0	0
Long standing illness/disability	-1	-2	1
Mean SF36 score	1	0	1
<b>Lifestyle</b>			
Rarely/never eat 5 a day	-2	-6	3
Smoke	-1	-1	-1
No activity 20mins a time	0	1	-2
<b>Access to health services</b>			
Seen GP in last month	0	-2	2
Difficult to see a GP	-3	-9	6
Dissatisfied with GP	0	-2	2

Source MORI/NOP Household Survey 2004 & 2002

### 7.3. Changes to people in places: Longitudinal data

Most of the analysis in this paper is based on cross-sectional data: areas are compared at different periods of time. However, in 2005 individual change data from the household surveys became available. Some 10,638 people in NDC areas and 1,010 in the comparator areas, who were questioned in 2002 were re-interviewed in 2004. These two 'panels' are exceptionally important in highlighting relationships between interventions and outcomes because:

- those constituting the NDC panel remained in the area for the 2002 to 2004 period, and are thus most likely to have benefited from Partnership supported interventions
- it is possible to tease out what happens to individuals through time.

**Table 26: Longitudinal Panels: Change in NDC and comparator areas 2002 to 2004**

	<b>NDC Change 2002 to 2004</b>	<b>Comparator change 2002 to 2004</b>	<b>Difference in change 2002 to 2004</b>
<b>Health</b>			
Health 'not good' last 12 months	0	-2	2
Health 'worse' in last 12 months	2	0	3
Long standing illness/disability	2	0	2
Mean SF36 score	0	1	-1
<b>Lifestyle</b>			
Rarely/never eat 5 a day	-2	-2	0
Smoke	-1	-2	0
No activity 20mins a time	1	2	-1
<b>Access to health services</b>			
Seen GP in last month	-1	-2	2
Difficult to see a GP	-3	-7	4
Dissatisfied with GP	-1	-4	3

Source MORI/NOP Household Survey 2004 & 2002

In subsequent phases of the evaluation longitudinal data are likely to play a major role in isolating longer term relationships between NDC interventions, on the one hand, and individual level outcomes, on the other. At this stage, however, it is only possible to identify some key differences between what happened for those in NDC areas between 2002 and 2004 when compared with those living in comparator areas (Table 26). However, similar to Table 25, comparator areas appear to be making more improvements than NDC areas.

#### Changes in outcomes for individuals

Sections above explore net change between 2002 and 2004, but in practice there will be a great deal of churning at the individual level. One way of exploring individual change is to identify the percentage of those giving a negative response to a particular question in 2002 but a positive one by 2004 (and vice-versa). Table 27 indicates that there has been considerable individual level churning for those living in NDC areas. For example, in Table 26 levels of residents indicating their health was not good remained stable between 2002 and 2004 for NDC 'panel' respondents. However, Table 27 indicates that actually 10 per cent of 'panel' respondents no longer felt their health was not good, whilst 10 per cent had alternatively begun to feel their health was not good.

**Table 27: NDC Longitudinal Panel: change in outcome 2002 to 2004**

	Yes 2002 to No/don't know 2004	No/don't know 2002 to Yes 2004
<b>Health</b>		
Health 'not good' last 12 months	10	10
Health 'worse' in last 12 months	12	14
Long standing illness/disability	9	10
<b>Lifestyle</b>		
Rarely/never eat 5 a day	15	12
Smoke	5	4
No activity 20mins a time	5	6
<b>Access to health services</b>		
Seen GP in last month	18	18
Difficult to see a GP	15	12
Dissatisfied with GP	7	6

Source MORI/NOP Household Survey 2004 & 2002

#### 7.4. Secondary and administrative change data

The secondary and administrative health data, collected and analysed by the Social Disadvantaged Research Centre at the University of Oxford, examines change in the following indicators:

- mental health (2001 to 2003)
- low birth weights (1996-00 to 1999-03)
- mortality (1999-01 to 2001-02)
- standardised illness ratio (1999-01 to 2001-03)
- hospital admissions (1999-01 to 2001-03)

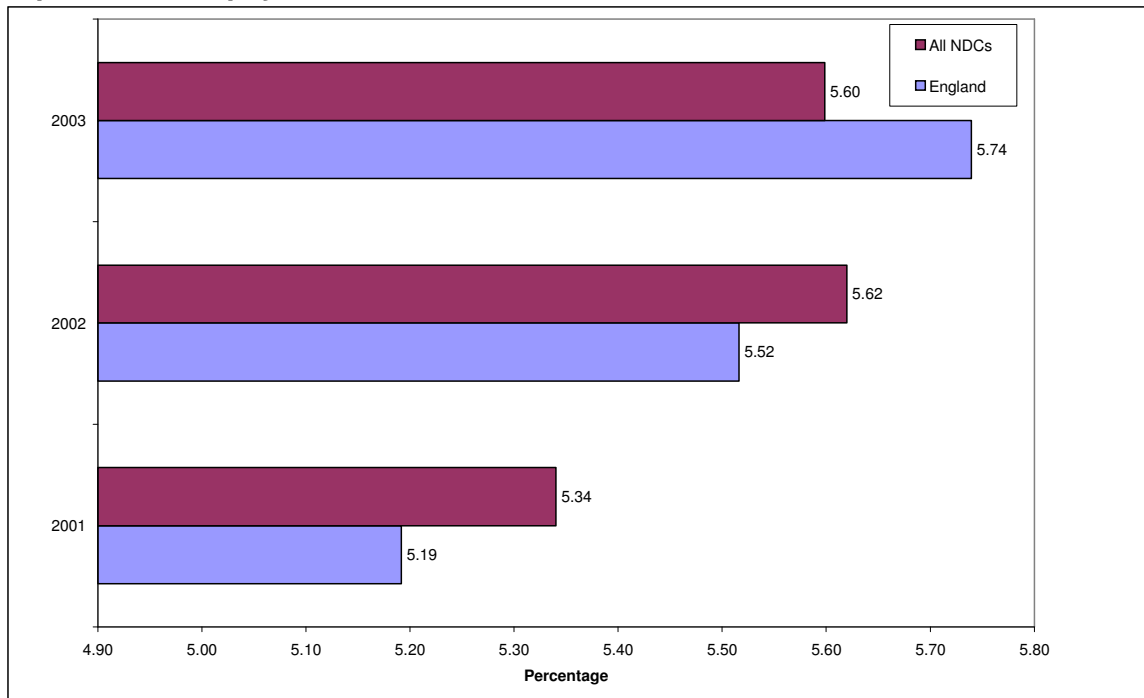
#### 7.5. Mental health

Analyses of ill health in an area have traditionally measured mortality and physical morbidity. However, there is now a widespread acknowledgement that mental health is an equally important component of overall health. While data on mental health are not readily available at the small area level, various means by which to gauge the mental health of an area are becoming more accessible. This indicator uses information on drug prescribing to estimate levels of mental health. Because information on the conditions for which various types of drugs are prescribed as well as the typical dosages are known, it is possible to estimate the number of patients within a particular GP practice who are suffering from mental health problems. The practice rates are distributed to geographical areas through knowledge of practice population distribution.

The mental health problems examined here are depression, anxiety, and psychoses. While this information is a good indicator of the number of people in an area receiving drug therapy for mental illness, it is important to recognise that this figure will not include everyone suffering from mental health problems. More importantly, the extent of the coverage may vary spatially. For example, one GP may be more or less keen on the use of drugs for the treatment of mental health than another. Some groups of people may also be less likely to enter into primary care for the treatment of such

problems. For these reasons, these figures are a good starting point but should be treated with caution.

**Figure 30: Estimated rates of prescribing for mental health problems (anxiety, depression and psychosis) 2001 to 2003**



Source: SDRC

Figure 30 illustrates levels of prescribing for mental health problems in 2001, 2002 and 2003, compared with the national picture. Between 2001 and 2003 most NDCs areas saw an increase in the estimated proportion of a population being prescribed drugs for depression, anxiety, and psychoses. In 2001 NDCs, as a whole, had a prescribed to population rate of 5.3 per cent and by 2003 this had risen to 5.6%. However this trend seems to reflect a more general pattern across England where the proportion of population prescribed drugs for mental health problems also rose from 5.2 per cent to 5.7 per cent. In 2003, therefore, the England average rate of prescribing for mental health problems was actually higher than the NDC average.

Rates of prescribing vary considerably across NDC areas. In 2003, Norwich had the highest rate of prescribing (9.4 per cent) and Newham the lowest (3.6 per cent). However these rates seem to reflect to some extent a wider pattern of prescribing. For example, the Local Authority prescribing rate for Norwich as a whole is 8.7 per cent and 3.0 per cent in Newham.

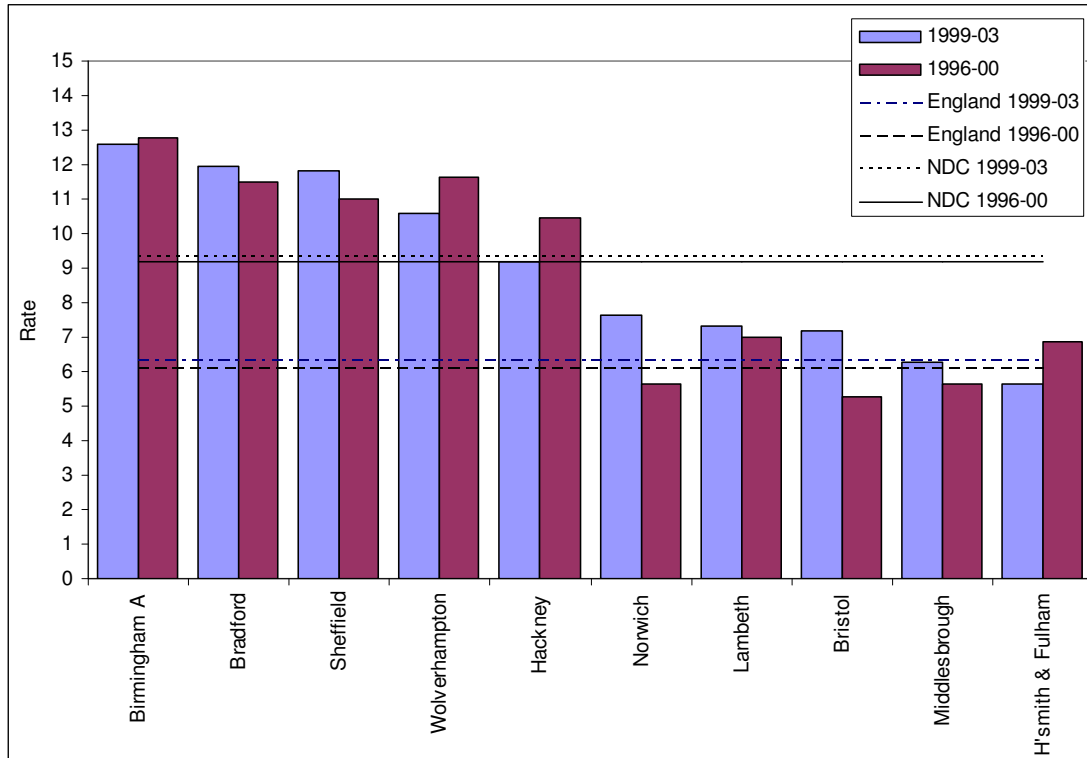
## 7.6. Low Birth weight

Low birth weight is defined here as singleton live births under 2500g as a proportion of all live singleton births. Low birth weight is linked to both increased mortality and morbidity in infancy and an increased risk of cardio-vascular disease in later life. It is therefore a measure not only of immediate health risk but also of future health problems that may not surface until later life. The most up-to-date measure of low birth weight is the proportion of live singleton births for the period 1999-2002 which were less than 2500g. It is necessary to combine the data from this five-year period to avoid rendering data unreliable due to small numbers in any one year.



Low birth weight births as a proportion of all singleton live births have risen in NDC areas from 9.0 per cent in 1996-2000 to 9.3 per cent in 1999-2003. Although NDC rates remain substantially higher than for England as a whole, this upward trend is also apparent in the data for England (6.1 per cent in 1996-2000 to 6.3 per cent in 1999-2003).

**Figure 31: Rate of low weight births in the top and bottom five NDC areas**



Source: SDRC

Figure 31 illustrates the low birth weight rates in the five NDC areas with the lowest proportions in 1996-2000 compared with the top five areas. The five NDC areas with the lowest rates in 1996-2000 all experienced an increase by 1999-2003. However, there does not appear to be a consistent pattern of change across NDC areas with the highest rates in 1996-2000: Hull, Sheffield and Bradford all experienced an increase, whilst Hackney and Wolverhampton experienced a reduction.

## 7.7. Mortality

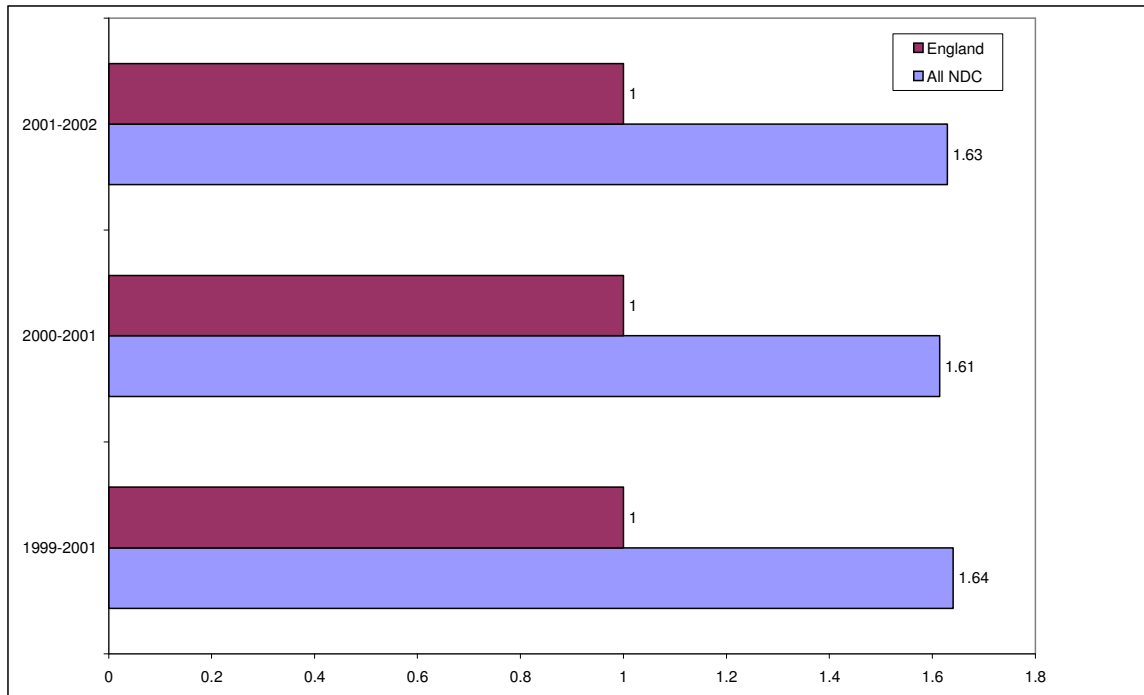
As with measures of ill health and disability, when exploring deaths, it is important to take the age structure of the area into account, by using an age standardised measure of mortality, in this case the Standardised Mortality Ratio (SMR) (see appendix A20). The SMR is calculated for the under 75 population using data based on the registered number of deaths over a four year period. Combining this number of years is necessary to avoid rendering the SMR unreliable due to small population at risk of death in any one year. A SMR score of one indicates a level that would be expected given the areas age and gender structure. A score of more than one indicates a higher than expected level and a score of less, a lower than expected level.

Inequalities are evident when comparing SMR for NDC areas and national averages. Almost all NDC areas, over all time periods measured, had a SMR, for those under 75, of greater than one - indicating a greater number deaths than would be expected given these areas' age and sex structure. However this varied greatly between NDCs. For

example, Southwark had an SMR not significantly different from one, while Newcastle had an SMR above two - indicating a rate twice that expected.

Figure 32 illustrates the SMR for NDC areas between 1999-2001 and 2001-2002 and compares this to the England average. As would be expected, over the three time points measured there was no evidence of change in the SMR for all NDC areas combined.

**Figure 32: Standardised Mortality Ratios for those aged under 75**



Source: SDRC

## 7.8. Morbidity

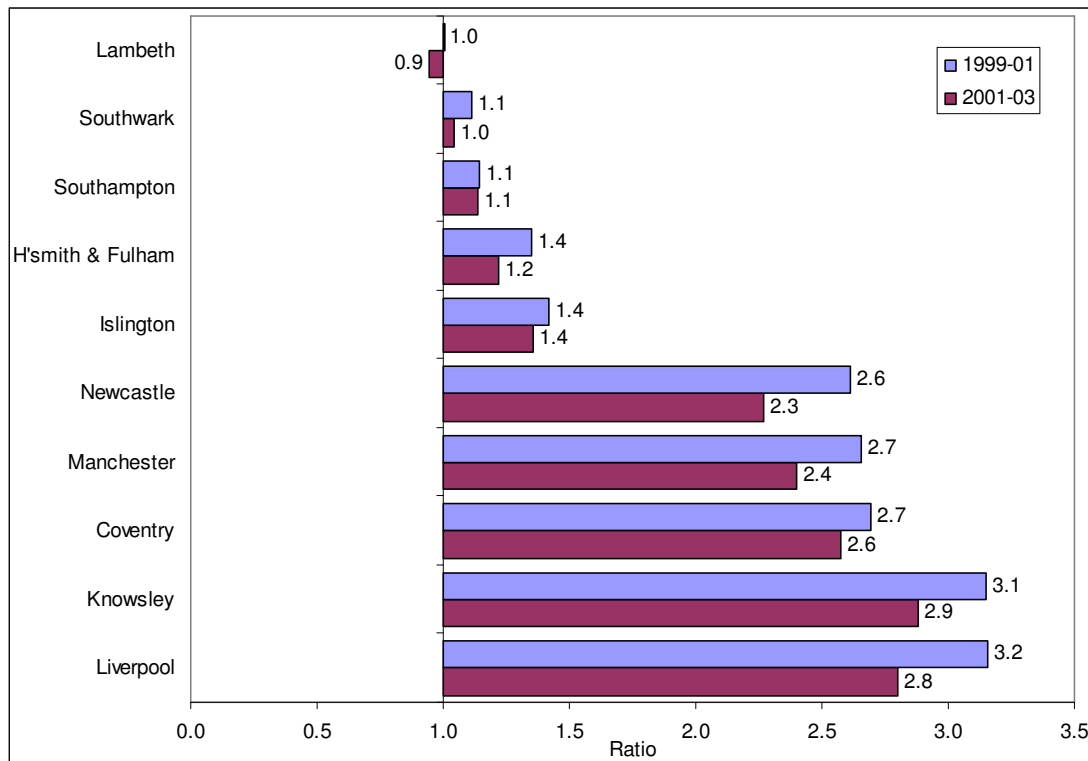
Chronic and acute morbidity were captured from two sources:

- information on people receiving social security payments for disability or illness
- and for people who have had an inpatient hospital stay.

The rate of sickness and disability in an area can be measured using information on receipt of particular benefits. IB and SDA are benefits paid to individuals of working age who are unable to work because of ill health. Disability Living Allowance (DLA) and Attendance Allowance (AA) are benefits payable to individuals with levels of disability that necessitate aid with mobility and personal care. Any person receiving one or more of these four benefits is counted as someone suffering from morbidity or disability.

Different age structures of areas can be accounted for by using an age standardised measure of illness and disability, in this case the Standardised Illness Ratio (SIR). If the SIR of an area is the level expected given the age and sex structure of the area, it has a value of one. A SIR of greater than one indicates a higher level of illness and disability than expected.

**Figure 33: Standard Illness Ratio for five NDC areas with the highest and lowest ratio in 1999-2001**



Source: SDRC

The standard illness ratio declined in all but one of the NDCs between 1999-01 and 2001-03. Most of this change, however, was between 1999-2001 and 2000-2002. The average NDC ratio was 1.93 in 1999-2001 and fell to 1.77 in 2001-2003. This figure though is still high, indicating that within NDC areas there is a rate of illness and disability approaching twice that expected given age and gender profiles.

Figure 33 illustrates the SIR for the five NDCs with the highest and lowest ratios in 1999-2001. Liverpool and Knowsley both have extremely high rates of morbidity, close to 3 times that expected. In contrast in Lambeth the rate was no higher than would be expected given its age and gender profile in 1999-2001 and below that in 2001-2003.

More detail on specific causes of ill-health can be provided by looking at the reasons why people are admitted into hospital. As with general measures of illness the impact of the age structures has to be taken into account when comparing incidence of hospital admissions. This will be performed by using an age standardised measure of hospital admissions, in this case the Standardised Drug Misuse Ratio (SDMR), the Standardised Alcohol Misuse Ratio (SAMR), the Standardised Hospital Admissions for Cancer Ratio (SCAR) and the Standardised Hospital Admissions for Heart Disease Ratio (SHAR). If each of these figures for an area is the level expected given the age and sex structure of the area, it has a value of one. A value greater than one indicates a higher level of hospital admission than expected. These figures are calculated using data over a three year period.

**Table 28: Standardised Ratios for hospital admissions for various diagnosis for all NDCs.**

Diagnosis	1999-2001	2000-2001	2001-2003
Cancer	1.20	1.21	1.20
Heart disease	1.38	1.39	1.40
Alcohol misuse	2.32	2.26	2.18
Drug misuse	3.37	3.42	3.46

Source: SDRC

The average standardised ratios for NDC areas are shown in Table 28. Across NDCs there was a consistent 20 per cent greater than expected rate of admissions for cancer across the study period. For admissions relating to heart disease there was a 40 per cent higher than expected rate in all the NDC areas. There was slight evidence for an increase in these admissions over the study period.

NDCs had on average greater than expected rates of admission for alcohol related conditions of between 2.32 and 2.18 over the study period. This represents a rate of admissions over 200 per cent of that expected given age and gender profiles. There is some evidence that this rate has dropped over the study period. In 1999-2001 Newcastle NDC area had the highest standardised ratio of alcohol related admission. At 5.82 this ratio indicates almost a 600 per cent higher than expected rate. In contrast the Tower Hamlets had a ratio of just 0.58, indicating that it has almost half the expected rate.

Finally, NDCs had on average the very much greater than expected rate of admissions for drug related conditions of between 3.37 and 3.46 over the study period. This represents a rate of admissions of over 300 per cent of that expected given their age and gender profile. There is some evidence that this rate has increased over the study period. Individual NDC areas had an even higher ratio. For example, Liverpool had a rate that was around 11-12 times higher than expected. However, as with alcohol misuse, there were also some NDC areas that had rates close to the national average, though not below it.

Overall, this section has shown that it is as yet difficult to identify change in relation to key health indicators. However, when change emerging from the 2002 and 2004 household surveys is explored by demographic characteristics some key findings emerge:

- men, younger, black and Asian people indicate the greatest improvement in fruit and vegetable consumption
- older people show most improvement in undertaking sustained periods of activity
- Asian people and women reveal greatest improvement in accessing health service indicators
- Black people indicate the greatest improvement in health indicators.

## 8. IMPLICATIONS FOR POLICY AND STRATEGY

### 8.1. Policy implications

Health inequalities are not a recent problem. The Black Report (1988) examined the relationship between mortality, morbidity and social class and made a number of recommendations to reduce health disadvantage through improved welfare benefits, housing programmes, better working conditions, and income redistribution through taxation. Acheson (1998) also reviewed trends in inequalities and health and life expectancy in England and identified a number of priority areas for future policy development.

However whilst health, as measured by life expectancy, has improved overall, morbidity and mortality rates still vary across social strata and the health gap between those living in the least deprived areas of England compared with those living in the most deprived continues to widen. A number of community-based initiatives to address the issues around health, including the NDC Programme, have been, or are being funded nationally, including Health and other Action Zones, Healthy Living Centres, Sure Start and Sure Start plus. Current policies make explicit the Government's present commitment to reduce inequalities in health (Department of Health 2002b) and to improve health care provision (Department of Health NHS Plan, Modernisation Agenda). As part of its plan to tackle health inequalities the Government has introduced a series of national floor targets to be achieved by 2010 including:

- to reduce by at least 10 per cent the gap in infant mortality between manual occupational groups and the population as a whole
- to reduce by at least 10 per cent the gap between the fifth of local authorities with the lowest life expectancy at birth and the population as a whole
- to reduce by 50 per cent the under-18 conception rate by 2010
- to substantially reduce mortality rates from heart disease and stroke related diseases by at least 40 and from cancer by at least 20 per cent in people under 75
- reduce adult smoking rates to 21 per cent or less, with a reduction in prevalence among manual occupation groups to 26 per cent or less.

Improving health can best be achieved by changing people's behaviour. Stopping smoking would have one of the biggest impacts on health and premature mortality (Doll et al 2004). A WHO report into diet, nutrition and prevention of chronic diseases has identified another potential health-threatening factor - obesity. This is becoming a world-wide epidemic, which the WHO has attributed to an increased consumption of foods high in sugars and saturated fats, in conjunction with a reduction in physical exercise (WHO 2003). In England the prevalence of obesity has risen rapidly and by 2002 stood at nine and eleven percent in men and women aged 16 to 24 years through to 28 percent and 29 percent in those aged 55 to 64 years (Department of Health, 2002c). The issue of overweight and/or obesity is a serious one as both are associated with higher risks of having Type 2 diabetes, cardiovascular disease, hypertension, stroke, osteoarthritis and certain forms of cancer. Coronary heart disease and cancers are the two leading causes of morbidity and mortality in England.

Recent policy initiatives by Government have focussed on the issue of obesity and a number of approaches have been implemented. Primary prevention options instigated at government level include nutrition and healthy eating initiatives such as the five fruit a day scheme (Department of Health 2000b), and the National School Fruit Scheme

(Department of Health 2000c). Those addressing inactivity and lack of exercise include the Local Exercise Action Pilots (LEAP) (Department of Health 2004a) and the Choosing Health consultation on increasing physical activity (Department of Health 2004b). At a local level, activities can be initiated and implemented around diet and exercise, targeting at-risk sectors of the population, such as people who are in a vulnerable period of their life (mid-childhood, adolescence, pregnancy, and menopause) or those who belong to ethnic and socio-economic groups at greater risk of developing obesity. NDCs are in a position to adopt many of these initiatives.

The data outlined in this paper illustrates the health needs of NDCs and the association of health status with lifestyle behaviours, including smoking, fruit and vegetable consumption, and regular exercise. Most NDCs have introduced local projects to promote changes in lifestyle behaviour, often linking these to national campaigns, and thus maximising exposure to the scheme. Other NDC activities are focussing on improving health care services and access to them. The data in this paper demonstrate the need for such initiatives there being for instance a negative relationship between GP use and health status in many NDC areas.

But perhaps ultimately three key messages emerge from this analysis:

- the need for Partnerships fully to understand the nature of the local problem they are facing: health status and use of services varies markedly across NDC: health programmes need to be embedded within the local context
- of all the key outcomes facing NDCs health is perhaps the one which requires a 'joined-up' programme: improvements in health require changes in allied policy agendas: reductions in crime and fear of crime; environmental improvements; better educational standards, more jobs and so on
- and partly as a consequence of the joined up nature of effective health interventions, changes in outcomes may take many years to become fully apparent.

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## APPENDICES

### Appendix A1: NDC household survey health status questions

QHE1	Over the last 12 months, would you say your health has on the whole been? Good Fairly good Not good
QHE2	Compared with one year ago, how would you rate your health in general now? Much better than one year ago Somewhat better than one year ago About the same Somewhat worse than one year ago Much worse than one year ago
QHE3	Do you have any long-standing illness, disability or infirmity? Yes No
QHE4	(If yes to 3) Does this illness, disability or infirmity limit your activities in any way? Yes No

#### Binarisation of self reported health questions

Outcome	Modelled response	Original categories included
Poor health over last 12 months	1 = Yes versus 0 = No	= health not good = health good or fairly good or don't know
Health worse in last 12 months	1=Yes versus 0=No	= Yes = No/don't know
Low SF-36 Mental Health	1=yes versus 0=No	= SF-36 score more than one standard deviation below the overall mean = SF-36 score less than one standard deviation below the overall mean
Long standing illness or disability	1=Yes versus 0=No	= Yes = No/don't know

## Appendix A2: Health status by Partnership and region

NDC Area	% health 'not good' in last 12 months	% health 'worse' than 12 months ago	% Longterm illness	SF36 Score
<b>Eastern</b>	<b>21</b>	<b>19</b>	<b>30</b>	<b>72</b>
Norwich	24	21	36	70
Luton	19	17	25	74
<b>South East</b>	<b>19</b>	<b>20</b>	<b>37</b>	<b>73</b>
Brighton	19	21	36	72
Southampton	19	19	38	75
<b>South West</b>	<b>21</b>	<b>20</b>	<b>34</b>	<b>72</b>
Bristol	20	19	30	75
Plymouth	22	21	39	68
<b>West Midlands</b>	<b>23</b>	<b>24</b>	<b>34</b>	<b>71</b>
Birmingham Kings Norton	26	27	34	69
Birmingham Aston	20	20	26	73
Coventry	25	28	38	66
Sandwell	26	26	39	70
Walsall	18	20	30	75
Wolverhampton	22	20	37	71
<b>East Midlands</b>	<b>20</b>	<b>20</b>	<b>34</b>	<b>69</b>
Derby	22	22	39	69
Leicester	21	20	32	68
Nottingham	17	17	29	69
<b>Yorkshire &amp; Humber</b>	<b>27</b>	<b>24</b>	<b>37</b>	<b>71</b>
Bradford	27	25	34	70
Doncaster	27	25	38	68
Hull	27	25	44	74
Sheffield	25	23	34	72
<b>North West</b>	<b>24</b>	<b>22</b>	<b>34</b>	<b>71</b>
Knowsley	27	27	43	67
Liverpool	19	20	28	71
Manchester	26	23	35	70
Oldham	23	24	33	70
Rochdale	23	18	37	72
Salford	26	22	29	73
<b>North East</b>	<b>25</b>	<b>24</b>	<b>37</b>	<b>71</b>
Hartlepool	23	23	32	72
Middlesbrough	24	23	38	71
Newcastle	24	23	37	71
Sunderland	28	27	42	70
<b>London</b>	<b>18</b>	<b>19</b>	<b>23</b>	<b>72</b>
Brent	19	16	26	75
Hammersmith & Fulham	14	17	17	74
Hackney	22	22	31	69
Haringey	19	19	22	71
Islington	17	20	28	70
Lambeth	8	10	12	72
Lewisham	20	21	28	74
Newham	20	21	25	73
Southwark	15	17	19	71
Tower Hamlets	22	25	24	71
<b>Total NDCs</b>	<b>22</b>	<b>21</b>	<b>32</b>	<b>71</b>

Base: All / Source: MORI/NOP Household Survey 2004

## Appendix A3: ORs for health was 'poor' over past 12 months by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Lambeth</b>	<b>&lt;0.01</b>	<b>0.34</b>	<b>0.24</b>	<b>0.48</b>
<b>Southwark</b>	<b>&lt;0.01</b>	<b>0.56</b>	<b>0.43</b>	<b>0.74</b>
<b>Fulham</b>	<b>0.01</b>	<b>0.68</b>	<b>0.52</b>	<b>0.89</b>
<b>Islington</b>	<b>0.01</b>	<b>0.70</b>	<b>0.54</b>	<b>0.90</b>
<b>Walsall</b>	<b>&lt;0.01</b>	<b>0.70</b>	<b>0.55</b>	<b>0.89</b>
Brighton	0.14	0.84	0.66	1.06
Leicester	0.14	0.84	0.67	1.06
Southampton	0.30	0.88	0.70	1.12
Plymouth	0.28	0.88	0.71	1.11
Brent	0.46	0.91	0.71	1.16
Hackney	0.61	0.94	0.75	1.19
Liverpool	0.65	0.95	0.75	1.20
Bristol	0.83	0.98	0.77	1.23
Luton	0.92	0.99	0.78	1.25
Derby	0.92	0.99	0.79	1.24
Nottingham	0.99	1.00	0.77	1.30
Hartlepool	0.87	1.02	0.81	1.28
Newham	0.83	1.03	0.81	1.31
Tower Hamlets	0.79	1.03	0.81	1.32
Oldham	0.77	1.03	0.83	1.29
Hull	0.73	1.04	0.84	1.28
Haringey	0.63	1.06	0.83	1.36
Rochdale	0.51	1.08	0.86	1.35
Coventry	0.50	1.08	0.86	1.35
Lewisham	0.49	1.09	0.86	1.38
Norwich	0.41	1.10	0.88	1.37
Knowsley	0.35	1.11	0.90	1.37
Aston	0.37	1.12	0.88	1.42
Kings Norton	0.29	1.12	0.91	1.39
Newcastle	0.23	1.15	0.92	1.43
Wolverhampton	0.18	1.17	0.93	1.47
Manchester	0.12	1.19	0.96	1.47
Sheffield	0.08	1.22	0.98	1.52
Middlesbrough	0.07	1.23	0.98	1.53
<b>Sandwell</b>	<b>0.02</b>	<b>1.30</b>	<b>1.05</b>	<b>1.61</b>
<b>Doncaster</b>	<b>&lt;0.01</b>	<b>1.37</b>	<b>1.11</b>	<b>1.69</b>
<b>Sunderland</b>	<b>&lt;0.01</b>	<b>1.39</b>	<b>1.12</b>	<b>1.71</b>
<b>Salford</b>	<b>&lt;0.01</b>	<b>1.57</b>	<b>1.26</b>	<b>1.95</b>
<b>Bradford</b>	<b>&lt;0.01</b>	<b>1.69</b>	<b>1.35</b>	<b>2.12</b>

Note: Ordered by odds ratio for health not good over past 12 months  
5% significant above and below areas in **bold**  
odds ratio of 1 is the average across all NDCs

## Appendix A4: ORs for health worse in last 12 months by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Lambeth</b>	<b>&lt;0.01</b>	<b>0.48</b>	<b>0.36</b>	<b>0.65</b>
<b>Southwark</b>	<b>0.01</b>	<b>0.73</b>	<b>0.57</b>	<b>0.94</b>
<b>Brent</b>	<b>0.03</b>	<b>0.76</b>	<b>0.59</b>	<b>0.98</b>
Rochdale	0.07	0.81	0.64	1.02
Walsall	0.08	0.81	0.65	1.02
Leicester	0.11	0.83	0.66	1.04
Islington	0.15	0.84	0.66	1.06
Luton	0.16	0.84	0.66	1.07
Plymouth	0.13	0.84	0.68	1.05
Southampton	0.19	0.86	0.68	1.08
Fulham	0.37	0.89	0.70	1.14
Brighton	0.41	0.91	0.73	1.14
Bristol	0.44	0.91	0.73	1.15
Norwich	0.63	0.95	0.76	1.18
Hull	0.70	0.96	0.78	1.18
Liverpool	0.88	0.98	0.78	1.24
Nottingham	0.91	0.99	0.77	1.26
Derby	0.97	1.00	0.80	1.24
Wolverhampton	1.00	1.00	0.80	1.26
Hackney	0.95	1.01	0.81	1.26
Manchester	0.85	1.02	0.82	1.27
Haringey	0.66	1.06	0.83	1.34
Lewisham	0.49	1.09	0.86	1.37
Sheffield	0.43	1.09	0.88	1.36
Hartlepool	0.43	1.09	0.88	1.36
Newham	0.41	1.10	0.88	1.38
Middlesbrough	0.38	1.10	0.89	1.37
Aston	0.41	1.10	0.87	1.39
Newcastle	0.29	1.12	0.91	1.40
Oldham	0.24	1.14	0.92	1.41
Knowsley	0.16	1.16	0.94	1.42
Salford	0.18	1.16	0.93	1.45
Doncaster	0.14	1.17	0.95	1.45
Tower Hamlets	0.08	1.22	0.98	1.53
<b>Kings Norton</b>	<b>0.03</b>	<b>1.25</b>	<b>1.02</b>	<b>1.54</b>
<b>Sandwell</b>	<b>0.01</b>	<b>1.31</b>	<b>1.07</b>	<b>1.62</b>
<b>Sunderland</b>	<b>&lt;0.01</b>	<b>1.34</b>	<b>1.09</b>	<b>1.65</b>
<b>Coventry</b>	<b>&lt;0.01</b>	<b>1.35</b>	<b>1.09</b>	<b>1.66</b>
<b>Bradford</b>	<b>&lt;0.01</b>	<b>1.48</b>	<b>1.19</b>	<b>1.84</b>

## Appendix A5: ORs for low\* SF-36 mental health score by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Walsall</b>	<b>&lt;0.01</b>	<b>0.62</b>	<b>0.48</b>	<b>0.82</b>
<b>Bristol</b>	<b>&lt;0.01</b>	<b>0.64</b>	<b>0.49</b>	<b>0.84</b>
<b>Luton</b>	<b>0.01</b>	<b>0.68</b>	<b>0.52</b>	<b>0.89</b>
<b>Brent</b>	<b>0.03</b>	<b>0.75</b>	<b>0.58</b>	<b>0.97</b>
<b>Hull</b>	<b>0.02</b>	<b>0.77</b>	<b>0.61</b>	<b>0.96</b>
Lewisham	0.05	0.77	0.59	1.00
Fulham	0.09	0.80	0.62	1.04
Southampton	0.12	0.82	0.63	1.06
Brighton	0.11	0.82	0.64	1.04
Southwark	0.29	0.88	0.68	1.12
Haringey	0.37	0.89	0.68	1.15
Islington	0.36	0.89	0.70	1.14
Lambeth	0.43	0.90	0.70	1.16
Aston	0.61	0.93	0.72	1.22
Sheffield	0.61	0.94	0.74	1.20
Newcastle	0.71	0.96	0.76	1.21
Newham	0.79	0.97	0.76	1.23
Salford	0.78	0.97	0.76	1.22
Tower Hamlets	0.98	1.00	0.78	1.29
Liverpool	0.77	1.04	0.82	1.31
Hartlepool	0.68	1.05	0.83	1.32
Manchester	0.67	1.05	0.84	1.32
Derby	0.62	1.06	0.84	1.34
Plymouth	0.51	1.08	0.87	1.34
Knowsley	0.35	1.11	0.89	1.37
Leicester	0.34	1.11	0.89	1.39
Kings Norton	0.19	1.16	0.93	1.44
Rochdale	0.19	1.16	0.93	1.46
Oldham	0.14	1.19	0.95	1.48
Doncaster	0.11	1.20	0.96	1.49
Norwich	0.07	1.22	0.98	1.52
Nottingham	0.08	1.23	0.98	1.55
Sandwell	0.05	1.25	1.00	1.57
<b>Sunderland</b>	<b>0.04</b>	<b>1.25</b>	<b>1.01</b>	<b>1.55</b>
Wolverhampton	0.06	1.26	0.99	1.59
<b>Middlesbrough</b>	<b>0.04</b>	<b>1.26</b>	<b>1.01</b>	<b>1.57</b>
<b>Hackney</b>	<b>0.02</b>	<b>1.31</b>	<b>1.05</b>	<b>1.62</b>
<b>Coventry</b>	<b>&lt;0.01</b>	<b>1.39</b>	<b>1.13</b>	<b>1.71</b>
<b>Bradford</b>	<b>&lt;0.01</b>	<b>1.52</b>	<b>1.21</b>	<b>1.91</b>

Note: Ordered by odds ratio for low SF-36 mental health score

\* more than one standard deviation below the average

5% significant above and below areas in **bold**  
odds ratio of 1 is the average across all NDCs

## Appendix A6: ORs for the incidence of long standing illness, disability or infirmity by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
Lambeth	<0.01	0.31	0.24	0.42
Southwark	<0.01	0.49	0.39	0.63
Fulham	<0.01	0.51	0.40	0.65
Walsall	<0.01	0.72	0.59	0.89
Tower Hamlets	0.03	0.77	0.60	0.97
Haringey	0.03	0.77	0.61	0.98
Luton	0.05	0.80	0.64	1.00
Islington	0.06	0.81	0.65	1.01
Brent	0.10	0.83	0.66	1.04
Newham	0.11	0.83	0.66	1.05
Liverpool	0.20	0.87	0.70	1.08
Hartlepool	0.21	0.88	0.71	1.08
Leicester	0.24	0.88	0.71	1.09
Bristol	0.28	0.89	0.72	1.10
Hackney	0.33	0.90	0.72	1.11
Oldham	0.44	0.92	0.75	1.13
Kings Norton	0.54	0.94	0.77	1.15
Manchester	0.59	0.94	0.77	1.16
Lewisham	0.89	1.02	0.81	1.27
Salford	0.86	1.02	0.82	1.26
Aston	0.57	1.07	0.85	1.34
Plymouth	0.29	1.11	0.91	1.36
Coventry	0.29	1.12	0.91	1.38
Rochdale	0.20	1.14	0.93	1.40
Norwich	0.17	1.15	0.94	1.41
Brighton	0.14	1.17	0.95	1.43
Sheffield	0.12	1.18	0.96	1.45
<b>Doncaster</b>	<b>0.02</b>	<b>1.27</b>	<b>1.04</b>	<b>1.55</b>
<b>Hull</b>	<b>0.01</b>	<b>1.28</b>	<b>1.05</b>	<b>1.56</b>
<b>Knowsley</b>	<b>0.01</b>	<b>1.32</b>	<b>1.09</b>	<b>1.61</b>
<b>Derby</b>	<b>0.01</b>	<b>1.32</b>	<b>1.08</b>	<b>1.62</b>
<b>Southampton</b>	<b>&lt;0.01</b>	<b>1.34</b>	<b>1.10</b>	<b>1.64</b>
<b>Middlesbrough</b>	<b>&lt;0.01</b>	<b>1.38</b>	<b>1.13</b>	<b>1.68</b>
<b>Nottingham</b>	<b>&lt;0.01</b>	<b>1.38</b>	<b>1.10</b>	<b>1.72</b>
<b>Newcastle</b>	<b>&lt;0.01</b>	<b>1.41</b>	<b>1.14</b>	<b>1.74</b>
<b>Sandwell</b>	<b>&lt;0.01</b>	<b>1.47</b>	<b>1.21</b>	<b>1.80</b>
<b>Sunderland</b>	<b>&lt;0.01</b>	<b>1.49</b>	<b>1.22</b>	<b>1.82</b>
<b>Wolverhampton</b>	<b>&lt;0.01</b>	<b>1.63</b>	<b>1.33</b>	<b>2.01</b>
<b>Bradford</b>	<b>&lt;0.01</b>	<b>1.66</b>	<b>1.34</b>	<b>2.07</b>

Note: Ordered by odds ratio for long standing illness, disability or infirmity  
5% significant above and below areas in **bold**  
odds ratio of 1 is the average across all NDCs

## Appendix A7: NDC household survey questions relating to lifestyle

- QHE6 Can you tell me how often, on average, you eat five portions of fruit or vegetables a day? By a portion I mean a typical serving or decent-sized helping of fruit and vegetables, for example an apple, a cupful of grapes, a glass of fruit juice
- Every day
  - 5-6 times a week
  - 3-4 times a week
  - 1-2 times a week
  - Less than once a week
  - Rarely or never
- QHE7 Do you smoke cigarettes at all nowadays?
- Yes
  - No
- QHE8 Would you like to give up smoking?
- Yes
  - No
- QHE9 Have you ever tried to give up smoking altogether?
- Yes
  - No
- QHE10 Do you ever do any of these types (or other similar types) of physical activity now days, for at least 20 minutes at a time?
- Housework
  - Gardening
  - DIY or building
  - Walking
  - Swimming
  - Cycling
  - Workout at the gym/exercise bike/weight training
  - Aerobics/keep fit/gymnastics/dance for fitness
  - Any other type of dancing
  - Running/jogging
  - Football/rugby
  - Badminton/tennis
  - Squash
  - Exercises (press-ups, sit ups, etc)
  - Other



## Appendix A8: Lifestyle by Partnership and region

<b>NDC Area</b>	<b>% rarely or never eat 5 fruit portions a day</b>	<b>% Smoke</b>	<b>% do no physical exercise</b>
<b>Eastern</b>	<b>24</b>	<b>42</b>	<b>6</b>
Norwich	24	47	6
Luton	24	36	6
<b>South East</b>	<b>24</b>	<b>41</b>	<b>5</b>
Brighton	26	48	7
Southampton	22	35	3
<b>South West</b>	<b>29</b>	<b>47</b>	<b>8</b>
Bristol	27	45	9
Plymouth	30	49	7
<b>West Midlands</b>	<b>24</b>	<b>34</b>	<b>9</b>
Birmingham Kings Norton	34	45	11
Birmingham Aston	18	25	8
Coventry	23	47	10
Sandwell	22	26	12
Walsall	21	32	8
Wolverhampton	24	27	5
<b>East Midlands</b>	<b>28</b>	<b>45</b>	<b>8</b>
Derby	29	46	9
Leicester	23	47	5
Nottingham	30	43	8
<b>Yorkshire &amp; Humber</b>	<b>35</b>	<b>39</b>	<b>11</b>
Bradford	32	31	11
Doncaster	29	43	14
Hull	42	49	9
Sheffield	38	31	12
<b>North West</b>	<b>40</b>	<b>45</b>	<b>11</b>
Knowsley	46	50	11
Liverpool	36	43	13
Manchester	42	49	11
Oldham	41	42	13
Rochdale	37	44	9
Salford	36	42	8
<b>North East</b>	<b>35</b>	<b>42</b>	<b>10</b>
Hartlepool	41	44	11
Middlesbrough	42	38	15
Newcastle	24	37	7
Sunderland	31	47	8
<b>London</b>	<b>11</b>	<b>30</b>	<b>7</b>
Brent	11	29	5
Hammersmith & Fulham	6	26	8
Hackney	13	33	5
Haringey	8	32	5
Islington	15	34	7
Lambeth	4	27	12
Lewisham	17	34	10
Newham	15	29	6
Southwark	11	29	2
Tower Hamlets	15	24	9
<b>Total NDCs</b>	<b>26</b>	<b>38</b>	<b>9</b>

Base: All

Source: MORI/NOP Household Survey 2004

## Appendix A9: ORs for rarely or never eating five portions of fruit or vegetables a day by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
Lambeth	<0.01	0.11	0.06	0.21
Fulham	<0.01	0.23	0.15	0.36
Southwark	<0.01	0.24	0.15	0.38
Hackney	<0.01	0.29	0.19	0.43
Haringey	<0.01	0.37	0.25	0.55
Tower Hamlets	<0.01	0.38	0.26	0.56
Newham	<0.01	0.44	0.31	0.63
Brent	<0.01	0.45	0.32	0.63
Islington	<0.01	0.48	0.34	0.66
Aston	0.01	0.64	0.46	0.88
Walsall	0.01	0.69	0.52	0.90
Leicester	0.04	0.76	0.59	0.99
Coventry	0.06	0.79	0.61	1.01
Norwich	0.09	0.80	0.61	1.04
Lewisham	0.13	0.80	0.60	1.07
Newcastle	0.62	1.06	0.84	1.35
Brighton	0.53	1.08	0.85	1.37
Sandwell	0.53	1.08	0.84	1.39
Nottingham	0.36	1.12	0.88	1.43
Southampton	0.23	1.16	0.91	1.48
Luton	0.14	1.20	0.94	1.53
Wolverhampton	0.09	1.24	0.96	1.59
Bristol	0.07	1.24	0.99	1.57
<b>Sunderland</b>	<b>0.02</b>	<b>1.29</b>	<b>1.03</b>	<b>1.61</b>
<b>Plymouth</b>	<b>0.02</b>	<b>1.30</b>	<b>1.04</b>	<b>1.62</b>
<b>Doncaster</b>	<0.01	<b>1.46</b>	<b>1.17</b>	<b>1.82</b>
<b>Derby</b>	<0.01	<b>1.47</b>	<b>1.18</b>	<b>1.84</b>
<b>Kings Norton</b>	<0.01	<b>1.70</b>	<b>1.38</b>	<b>2.10</b>
<b>Bradford</b>	<0.01	<b>1.81</b>	<b>1.44</b>	<b>2.28</b>
<b>Salford</b>	<0.01	<b>1.99</b>	<b>1.62</b>	<b>2.44</b>
<b>Liverpool</b>	<0.01	<b>2.11</b>	<b>1.72</b>	<b>2.60</b>
<b>Hull</b>	<0.01	<b>2.14</b>	<b>1.76</b>	<b>2.60</b>
<b>Rochdale</b>	<0.01	<b>2.21</b>	<b>1.80</b>	<b>2.71</b>
<b>Manchester</b>	<0.01	<b>2.23</b>	<b>1.83</b>	<b>2.72</b>
<b>Oldham</b>	<0.01	<b>2.47</b>	<b>2.03</b>	<b>3.01</b>
<b>Knowsley</b>	<0.01	<b>2.70</b>	<b>2.23</b>	<b>3.26</b>
<b>Hartlepool</b>	<0.01	<b>2.77</b>	<b>2.27</b>	<b>3.37</b>
<b>Sheffield</b>	<0.01	<b>3.02</b>	<b>2.47</b>	<b>3.68</b>
<b>Middlesbrough</b>	<0.01	<b>3.14</b>	<b>2.59</b>	<b>3.80</b>

Note: Ordered by odds ratio for rarely or never eating five portions of fruit or vegetables a day  
 5% significant above and below areas in **bold**  
 odds ratio of 1 is the average across all NDCs

## Appendix A10: ORs for smoking by NDC

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Fulham</b>	<b>&lt;0.01</b>	<b>0.58</b>	<b>0.47</b>	<b>0.71</b>
<b>Lambeth</b>	<b>&lt;0.01</b>	<b>0.61</b>	<b>0.50</b>	<b>0.76</b>
<b>Walsall</b>	<b>&lt;0.01</b>	<b>0.70</b>	<b>0.58</b>	<b>0.86</b>
<b>Sandwell</b>	<b>&lt;0.01</b>	<b>0.71</b>	<b>0.57</b>	<b>0.88</b>
<b>Southwark</b>	<b>&lt;0.01</b>	<b>0.74</b>	<b>0.60</b>	<b>0.91</b>
<b>Newham</b>	<b>0.01</b>	<b>0.76</b>	<b>0.62</b>	<b>0.94</b>
<b>Tower Hamlets</b>	<b>0.03</b>	<b>0.78</b>	<b>0.62</b>	<b>0.97</b>
<b>Hackney</b>	<b>0.02</b>	<b>0.79</b>	<b>0.64</b>	<b>0.96</b>
<b>Brent</b>	<b>0.03</b>	<b>0.79</b>	<b>0.64</b>	<b>0.97</b>
Islington	0.05	0.82	0.67	1.00
Newcastle	0.17	0.87	0.72	1.06
Southampton	0.32	0.91	0.75	1.10
Lewisham	0.58	0.94	0.77	1.16
Middlesbrough	0.58	0.95	0.78	1.15
Wolverhampton	0.81	0.97	0.79	1.21
Haringey	0.91	0.99	0.80	1.22
Luton	0.94	0.99	0.82	1.21
Salford	0.96	1.00	0.83	1.21
Coventry	0.81	1.02	0.85	1.24
Sheffield	0.66	1.05	0.86	1.28
Plymouth	0.42	1.08	0.90	1.30
Aston	0.48	1.08	0.87	1.35
Bradford	0.36	1.10	0.89	1.37
Doncaster	0.29	1.11	0.92	1.34
Hull	0.25	1.12	0.93	1.34
Nottingham	0.26	1.12	0.92	1.36
Liverpool	0.19	1.14	0.94	1.37
Kings Norton	0.17	1.14	0.94	1.37
Oldham	0.07	1.19	0.98	1.44
Knowsley	0.06	1.20	0.99	1.44
Norwich	0.05	1.20	1.00	1.44
Hartlepool	0.06	1.20	0.99	1.45
<b>Sunderland</b>	<b>0.01</b>	<b>1.29</b>	<b>1.07</b>	<b>1.55</b>
<b>Brighton</b>	<b>&lt;0.01</b>	<b>1.31</b>	<b>1.09</b>	<b>1.58</b>
<b>Leicester</b>	<b>&lt;0.01</b>	<b>1.32</b>	<b>1.10</b>	<b>1.59</b>
<b>Rochdale</b>	<b>&lt;0.01</b>	<b>1.32</b>	<b>1.10</b>	<b>1.59</b>
<b>Derby</b>	<b>&lt;0.01</b>	<b>1.34</b>	<b>1.11</b>	<b>1.61</b>
<b>Manchester</b>	<b>&lt;0.01</b>	<b>1.37</b>	<b>1.14</b>	<b>1.65</b>
<b>Bristol</b>	<b>&lt;0.01</b>	<b>1.38</b>	<b>1.15</b>	<b>1.66</b>

Note: Ordered by odds ratio for smoking  
 5% significant above and below areas in **bold**  
 odds ratio of 1 is the average across all NDCs

## Appendix A11: ORs for one or less spells\* of physical activity

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Norwich</b>	<b>&lt;0.01</b>	<b>0.58</b>	<b>0.45</b>	<b>0.75</b>
<b>Southampton</b>	<b>&lt;0.01</b>	<b>0.59</b>	<b>0.46</b>	<b>0.77</b>
<b>Leicester</b>	<b>&lt;0.01</b>	<b>0.61</b>	<b>0.48</b>	<b>0.77</b>
<b>Southwark</b>	<b>&lt;0.01</b>	<b>0.63</b>	<b>0.49</b>	<b>0.81</b>
<b>Wolverhampton</b>	<b>&lt;0.01</b>	<b>0.65</b>	<b>0.52</b>	<b>0.83</b>
<b>Luton</b>	<b>&lt;0.01</b>	<b>0.69</b>	<b>0.54</b>	<b>0.88</b>
<b>Hull</b>	<b>&lt;0.01</b>	<b>0.69</b>	<b>0.55</b>	<b>0.87</b>
<b>Hackney</b>	<b>0.03</b>	<b>0.77</b>	<b>0.61</b>	<b>0.97</b>
Bristol	0.05	0.79	0.63	1.00
Brighton	0.09	0.82	0.65	1.03
Plymouth	0.09	0.82	0.66	1.03
Brent	0.11	0.83	0.65	1.04
Aston	0.10	0.83	0.67	1.04
Walsall	0.25	0.88	0.71	1.10
Derby	0.54	0.93	0.74	1.17
Fulham	0.57	0.94	0.74	1.18
Haringey	0.76	0.96	0.76	1.22
Sunderland	0.87	0.98	0.79	1.22
Nottingham	0.91	1.01	0.81	1.27
Sandwell	0.81	1.03	0.83	1.27
Salford	0.80	1.03	0.83	1.28
Rochdale	0.61	1.06	0.85	1.32
Tower Hamlets	0.59	1.06	0.86	1.31
Newham	0.41	1.10	0.88	1.37
Islington	0.29	1.12	0.91	1.40
Lewisham	0.23	1.15	0.92	1.43
Coventry	0.19	1.15	0.93	1.42
Manchester	0.17	1.16	0.94	1.43
Doncaster	0.14	1.17	0.95	1.44
Newcastle	0.08	1.20	0.98	1.47
<b>Knowsley</b>	<b>0.02</b>	<b>1.27</b>	<b>1.03</b>	<b>1.56</b>
<b>Kings Norton</b>	<b>&lt;0.01</b>	<b>1.35</b>	<b>1.10</b>	<b>1.65</b>
<b>Lambeth</b>	<b>0.01</b>	<b>1.35</b>	<b>1.09</b>	<b>1.67</b>
<b>Bradford</b>	<b>&lt;0.01</b>	<b>1.41</b>	<b>1.15</b>	<b>1.73</b>
<b>Sheffield</b>	<b>&lt;0.01</b>	<b>1.41</b>	<b>1.16</b>	<b>1.73</b>
<b>Middlesbrough</b>	<b>&lt;0.01</b>	<b>1.56</b>	<b>1.27</b>	<b>1.91</b>
<b>Liverpool</b>	<b>&lt;0.01</b>	<b>1.63</b>	<b>1.33</b>	<b>1.99</b>
<b>Oldham</b>	<b>&lt;0.01</b>	<b>1.73</b>	<b>1.42</b>	<b>2.11</b>
<b>Hartlepool</b>	<b>&lt;0.01</b>	<b>1.82</b>	<b>1.49</b>	<b>2.22</b>

Note: \* a spell is considered as 20 continuous minutes of activity  
 Ordered by odds ratio for one or less spells of activity  
 5% significant above and below areas in **bold**  
 odds ratio of 1 is the average across all NDCs

## Appendix A12: NDC household survey questions relating to access to health services

- QHE12 When did you last see your family doctor/GP about your own health?
- In the last week
  - In the last month
  - In the last 6 months
  - In the last year
  - Longer ago
  - Never
  - Not registered with a doctor
- QHE13 (If seen GP in last year) How easy or difficult is it for you to see your family doctor/GP when you need to?
- Very easy
  - Fairly easy
  - Fairly difficult
  - Very difficult
  - Don't know/not applicable
- QHE14 How satisfied or dissatisfied are you with your family doctor/GP
- Very satisfied
  - Fairly satisfied
  - Neither satisfied nor dissatisfied
  - Fairly dissatisfied
  - Very dissatisfied
  - Don't know
- QHE15 When did you last use your local hospital - including outpatient services and the Accident and Emergency department?
- In the last week
  - In the last month
  - In the last 6 months
  - In the last year
  - Longer ago
  - Never
- QHE16 And how satisfied or dissatisfied are you with the service provided by your local hospital - including outpatient services and the Accident and Emergency department?
- Very satisfied
  - Fairly satisfied
  - Neither satisfied nor dissatisfied
  - Fairly dissatisfied
  - Very dissatisfied
  - Don't know

## Appendix A13: Access to health services by Partnership and region

NDC Area	% Seen GP in last month	% difficult to see GP	% dissatisfied with GP
<b>Eastern</b>	<b>39</b>	<b>26</b>	<b>8</b>
Norwich	39	33	10
Luton	38	20	7
<b>South East</b>	<b>35</b>	<b>19</b>	<b>8</b>
Brighton	32	23	13
Southampton	37	15	4
<b>South West</b>	<b>35</b>	<b>17</b>	<b>8</b>
Bristol	35	13	7
Plymouth	35	22	9
<b>West Midlands</b>	<b>41</b>	<b>26</b>	<b>12</b>
Birmingham Kings Norton	43	20	9
Birmingham Aston	47	32	12
Coventry	41	20	13
Sandwell	39	36	12
Walsall	34	17	16
Wolverhampton	41	31	9
<b>East Midlands</b>	<b>33</b>	<b>24</b>	<b>10</b>
Derby	32	14	6
Leicester	35	39	13
Nottingham	32	20	11
<b>Yorkshire &amp; Humber</b>	<b>40</b>	<b>33</b>	<b>9</b>
Bradford	43	28	12
Doncaster	36	35	9
Hull	40	40	11
Sheffield	38	29	5
<b>North West</b>	<b>36</b>	<b>26</b>	<b>10</b>
Knowsley	42	35	11
Liverpool	33	29	10
Manchester	37	23	5
Oldham	32	21	14
Rochdale	37	24	7
Salford	36	27	12
<b>North East</b>	<b>36</b>	<b>25</b>	<b>9</b>
Hartlepool	38	22	9
Middlesbrough	37	21	6
Newcastle	34	26	10
Sunderland	35	30	10
<b>London</b>	<b>38</b>	<b>26</b>	<b>10</b>
Brent	39	25	10
Hammersmith & Fulham	35	31	15
Hackney	47	17	6
Haringey	42	22	11
Islington	37	25	10
Lambeth	36	21	6
Lewisham	33	34	12
Newham	36	29	11
Southwark	41	21	10
Tower Hamlets	38	32	9
<b>Total NDCs</b>	<b>38</b>	<b>26</b>	<b>10</b>

Base: All

Source: MORI/NOP Household Survey 2004

## Appendix A14: ORs for seen GP in last month

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Oldham</b>	<b>0.01</b>	<b>0.76</b>	<b>0.63</b>	<b>0.92</b>
<b>Derby</b>	<b>0.02</b>	<b>0.79</b>	<b>0.65</b>	<b>0.96</b>
<b>Brighton</b>	<b>0.02</b>	<b>0.80</b>	<b>0.66</b>	<b>0.97</b>
<b>Walsall</b>	<b>0.02</b>	<b>0.80</b>	<b>0.67</b>	<b>0.97</b>
Liverpool	0.07	0.84	0.69	1.02
Newcastle	0.07	0.84	0.69	1.02
Plymouth	0.11	0.86	0.71	1.03
Leicester	0.16	0.87	0.72	1.05
Sunderland	0.18	0.88	0.73	1.06
Manchester	0.30	0.91	0.75	1.09
Nottingham	0.37	0.91	0.75	1.12
Doncaster	0.38	0.92	0.76	1.11
Tower Hamlets	0.42	0.92	0.76	1.12
Lewisham	0.44	0.93	0.76	1.13
Sheffield	0.70	0.96	0.80	1.16
Bristol	0.73	0.97	0.80	1.17
Southampton	0.92	0.99	0.82	1.20
Lambeth	0.94	0.99	0.82	1.20
Islington	0.96	0.99	0.82	1.21
Hull	0.98	1.00	0.83	1.20
Fulham	0.99	1.00	0.82	1.21
Newham	0.92	1.01	0.83	1.22
Sandwell	0.77	1.03	0.86	1.24
Hartlepool	0.70	1.04	0.86	1.25
Rochdale	0.68	1.04	0.86	1.25
Coventry	0.61	1.05	0.87	1.27
Middlesbrough	0.57	1.05	0.88	1.27
Luton	0.55	1.06	0.88	1.28
Salford	0.54	1.06	0.88	1.28
Southwark	0.46	1.08	0.89	1.30
Brent	0.44	1.08	0.89	1.30
Norwich	0.37	1.09	0.90	1.31
Knowsley	0.19	1.13	0.94	1.36
Wolverhampton	0.14	1.15	0.96	1.39
Kings Norton	0.05	1.20	1.00	1.44
<b>Haringey</b>	<b>0.03</b>	<b>1.24</b>	<b>1.02</b>	<b>1.51</b>
<b>Bradford</b>	<b>0.01</b>	<b>1.31</b>	<b>1.08</b>	<b>1.58</b>
<b>Aston</b>	<b>&lt;0.01</b>	<b>1.44</b>	<b>1.19</b>	<b>1.74</b>
<b>Hackney</b>	<b>&lt;0.01</b>	<b>1.48</b>	<b>1.23</b>	<b>1.78</b>

Note: Ordered by odds ratio for accessing GP in past month  
 5% significant above and below areas in **bold**  
 odds ratio of 1 is the average across all NDCs

## Appendix A15: ORs for difficulty seeing GP

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Bristol</b>	<b>&lt;0.01</b>	<b>0.44</b>	<b>0.33</b>	<b>0.60</b>
<b>Derby</b>	<b>&lt;0.01</b>	<b>0.47</b>	<b>0.35</b>	<b>0.63</b>
<b>Southampton</b>	<b>&lt;0.01</b>	<b>0.51</b>	<b>0.39</b>	<b>0.67</b>
<b>Hackney</b>	<b>&lt;0.01</b>	<b>0.61</b>	<b>0.47</b>	<b>0.80</b>
<b>Walsall</b>	<b>&lt;0.01</b>	<b>0.61</b>	<b>0.47</b>	<b>0.80</b>
<b>Luton</b>	<b>0.01</b>	<b>0.71</b>	<b>0.55</b>	<b>0.90</b>
<b>Oldham</b>	<b>0.02</b>	<b>0.75</b>	<b>0.58</b>	<b>0.96</b>
<b>Kings Norton</b>	<b>0.02</b>	<b>0.75</b>	<b>0.59</b>	<b>0.95</b>
<b>Coventry</b>	<b>0.02</b>	<b>0.75</b>	<b>0.58</b>	<b>0.96</b>
<b>Middlesbrough</b>	<b>0.02</b>	<b>0.76</b>	<b>0.60</b>	<b>0.97</b>
Nottingham	0.06	0.77	0.58	1.01
Lambeth	0.07	0.80	0.62	1.02
Plymouth	0.09	0.81	0.64	1.03
Southwark	0.16	0.83	0.64	1.08
Hartlepool	0.20	0.85	0.67	1.09
Brighton	0.30	0.88	0.69	1.12
Haringey	0.35	0.89	0.69	1.14
Manchester	0.45	0.91	0.71	1.16
Rochdale	0.66	0.95	0.75	1.20
Islington	0.89	1.02	0.80	1.30
Brent	0.71	1.05	0.83	1.32
Newcastle	0.65	1.06	0.83	1.34
Salford	0.49	1.08	0.86	1.36
Newham	0.47	1.09	0.86	1.38
Bradford	0.18	1.17	0.93	1.47
Liverpool	0.16	1.19	0.93	1.52
<b>Sheffield</b>	<b>0.03</b>	<b>1.28</b>	<b>1.03</b>	<b>1.60</b>
<b>Sunderland</b>	<b>0.01</b>	<b>1.31</b>	<b>1.06</b>	<b>1.64</b>
<b>Wolverhampton</b>	<b>0.01</b>	<b>1.36</b>	<b>1.10</b>	<b>1.69</b>
<b>Norwich</b>	<b>&lt;0.01</b>	<b>1.38</b>	<b>1.12</b>	<b>1.70</b>
<b>Tower Hamlets</b>	<b>&lt;0.01</b>	<b>1.42</b>	<b>1.13</b>	<b>1.79</b>
<b>Aston</b>	<b>&lt;0.01</b>	<b>1.42</b>	<b>1.14</b>	<b>1.77</b>
<b>Fulham</b>	<b>&lt;0.01</b>	<b>1.49</b>	<b>1.19</b>	<b>1.87</b>
<b>Knowsley</b>	<b>&lt;0.01</b>	<b>1.54</b>	<b>1.25</b>	<b>1.91</b>
<b>Doncaster</b>	<b>&lt;0.01</b>	<b>1.65</b>	<b>1.34</b>	<b>2.03</b>
<b>Lewisham</b>	<b>&lt;0.01</b>	<b>1.65</b>	<b>1.31</b>	<b>2.07</b>
<b>Sandwell</b>	<b>&lt;0.01</b>	<b>1.71</b>	<b>1.38</b>	<b>2.11</b>
<b>Leicester</b>	<b>&lt;0.01</b>	<b>1.87</b>	<b>1.52</b>	<b>2.30</b>
<b>Hull</b>	<b>&lt;0.01</b>	<b>1.97</b>	<b>1.59</b>	<b>2.43</b>

Note: Ordered by odds ratio for difficulty in accessing GP  
5% significant above and below areas in **bold**  
odds ratio of 1 is the average across all NDCs



## Appendix A16: ORs for dissatisfied with GP

NDC	Significance	Odds Ratios (OR)	OR: Lower 95% CI	OR: Upper 95% CI
<b>Southampton</b>	<b>0.00</b>	<b>0.39</b>	<b>0.23</b>	<b>0.65</b>
<b>Hackney</b>	<b>0.00</b>	<b>0.45</b>	<b>0.28</b>	<b>0.72</b>
<b>Lambeth</b>	<b>0.00</b>	<b>0.50</b>	<b>0.32</b>	<b>0.79</b>
<b>Sheffield</b>	<b>0.01</b>	<b>0.53</b>	<b>0.33</b>	<b>0.83</b>
<b>Middlesbrough</b>	<b>0.01</b>	<b>0.59</b>	<b>0.39</b>	<b>0.89</b>
<b>Manchester</b>	<b>0.03</b>	<b>0.62</b>	<b>0.40</b>	<b>0.96</b>
<b>Derby</b>	<b>0.03</b>	<b>0.63</b>	<b>0.41</b>	<b>0.96</b>
Bristol	0.08	0.70	0.47	1.04
Luton	0.10	0.73	0.50	1.06
Rochdale	0.37	0.84	0.58	1.23
Newham	0.49	0.88	0.60	1.28
Doncaster	0.64	0.92	0.64	1.31
Islington	0.86	0.97	0.66	1.41
Plymouth	0.86	0.97	0.69	1.37
Tower Hamlets	0.98	1.00	0.69	1.44
Norwich	1.00	1.00	0.71	1.40
Wolverhampton	0.89	1.02	0.73	1.44
Liverpool	0.89	1.03	0.71	1.49
Haringey	0.81	1.04	0.73	1.48
Hartlepool	0.81	1.04	0.74	1.48
Kings Norton	0.75	1.06	0.76	1.47
Newcastle	0.74	1.06	0.75	1.49
Nottingham	0.71	1.07	0.75	1.51
Southwark	0.60	1.10	0.77	1.57
Brent	0.50	1.12	0.80	1.57
Sunderland	0.38	1.16	0.83	1.61
Bradford	0.22	1.23	0.88	1.71
Knowsley	0.17	1.26	0.91	1.74
Hull	0.11	1.30	0.94	1.81
Salford	0.08	1.32	0.97	1.79
Aston	0.06	1.36	0.99	1.86
<b>Lewisham</b>	<b>0.04</b>	<b>1.40</b>	<b>1.01</b>	<b>1.94</b>
<b>Brighton</b>	<b>0.03</b>	<b>1.42</b>	<b>1.04</b>	<b>1.94</b>
<b>Sandwell</b>	<b>0.02</b>	<b>1.45</b>	<b>1.07</b>	<b>1.98</b>
<b>Coventry</b>	<b>0.01</b>	<b>1.50</b>	<b>1.11</b>	<b>2.04</b>
<b>Oldham</b>	<b>0.00</b>	<b>1.59</b>	<b>1.17</b>	<b>2.15</b>
<b>Leicester</b>	<b>0.00</b>	<b>1.61</b>	<b>1.20</b>	<b>2.16</b>
<b>Fulham</b>	<b>0.00</b>	<b>1.81</b>	<b>1.35</b>	<b>2.43</b>
<b>Walsall</b>	<b>0.00</b>	<b>2.10</b>	<b>1.59</b>	<b>2.77</b>

Note: Ordered by odds ratio for difficulty in accessing GP  
5% significant above and below areas in **bold**  
odds ratio of 1 is the average across all NDCs

## **Appendix A17: List of variables included in composite scores of problems in the area**

### **Lawlessness and dereliction**

- Disturbance from crowds/gangs/hooliganism
- Teenagers on the streets
- Drug dealing and use
- Household burglary
- Car crime
- Vandalism & graffiti
- Abandoned or burnt out cars
- Property set on fire
- Run down or boarded up properties
- Racial harassment

### **Difficulties in social relations**

- Problems with neighbours
- People being attacked or harassed

### **Problems with the local environment**

- Dogs causing nuisance and mess
- Litter and rubbish in the streets
- The speed and volume of road traffic
- Poor public transport
- Poor quality or lack of parks/open spaces

## Appendix A18: NDC Household Survey fear of crime questions

### Implicit fear of crime

QCR1 How safe do you feel walking alone in or around this area after dark?

- Very safe
- Fairly safe
- A bit unsafe
- Very unsafe

### Explicit fear of crime

QCR3 Most of us worry at some time or other about being the victim of crime. Using one of the following phrases, could you tell me how worried you are about the following happening to you?

- Very worried
- Fairly worried
- Not very worried
- Not at all worried
- Not applicable

1. Having your home broken into and something stolen
2. Being mugged and robbed
3. Having your car stolen
4. Having things stolen from your car
5. Being sexually assaulted
6. Being physically attacked by strangers
7. Being insulted or pestered by anybody while in the street or any other public place
8. Being subject to physical attack because of the colour of your skin, ethnic origin or religion
9. Vandalism to your home or car
10. Having somebody distract you or pose as an official (e.g. a meter reader) and steal from your home
11. Being physically attacked by someone you know

### Experience of being a victim of Crime

QCR4 The next question concerns things that may have happened in the last year, in which you may have been the victim of a crime or offence. I don't just want to know about serious incidents - I want to know about small things too. In the last 12 months...

1. has anyone got into your home without permission and stolen or tried to steal anything?
2. was anything that belonged to someone in your household stolen from OUTSIDE your home?
3. was anything you were carrying stolen?
4. has anyone, including people you know well deliberately hit you with fists or with a weapon of any sort or kicked you or used force or violence in any other way?
5. did anyone deliberately deface or do damage to your home or anything OUTSIDE it that belonged to someone in your household?
6. has anyone threatened to damage things of your or threatened to use force or violence on you in anyway that actually frightened you?
7. has anyone racially harrassed or racially abused you?

## Appendix A19: NDC Household Survey community involvement questions

- QCO1 Overall, to what extent do you feel part of the local community?  
A great deal  
A fair amount  
Not very much  
Not at all  
Don't know
- QCO2 On the whole, would you describe the people who live in this area as friendly, or not?  
Very friendly  
Fairly friendly  
Not very friendly  
Or not at all friendly?
- QCO3 Would you say you know?  
Most of the people in your neighbourhood  
Many of the people in your neighbourhood  
A few people in your neighbourhood  
Or that you do not know people in your neighbourhood?
- QCO4 Would you say this is a place where neighbours look out for each other?  
Yes  
No  
Don't know

## Appendix A20: Deriving indirectly standardised Ratios

The Standardised Mortality Ratio (SMR), Illness Ratio (SIR), Standardised Drug Misuse Ratio (SDMR), the Standardised Alcohol Misuse Ratio (SAMR), the Standardised Hospital Admissions for Cancer Ratio (SCAR) and the Standardised Hospital Admissions for Heart Disease Ratio (SHAR) all result from a method for indirectly age and sex standardising death and illness rates in an NDC. The standard population used is that of England.

Here the SMR is used as an example. For NDC  $j$  it is:

$$SMR_j = \frac{d_j}{\sum_i p_{ji} r_i}$$

where:

$d_j$  = observed deaths in NDC  $j$ .

$p_{ji}$  = the population in age/ sex group  $i$  in NDC  $j$ .

$r_i$  = **risk of death in age/ sex group  $i$  within the standard population.**