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Where the poor die in a rich city: the case of Oxford

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Abstract

Research to date has established that there is a relationship between high mortality rates and area deprivation in Britain. However, the majority of this research has looked at the regional level and the few studies that have looked at a smaller area level have tended to focus on London or the North. At a national level a relationship between housing tenure and mortality has also been found. This paper considers the relationship between mortality and place and in particular housing, at ward level in a city in the South East of England. It is found that, in Oxford, there is no straightforward relationship between housing tenure and mortality rates. Rather, it is pockets of poverty within Oxford, expressed in different types of housing, that are associated with high mortality rates. Whilst the very poorest live in the worst quality and least preferred housing, the extent of this relationship is likely to differ in different areas, according to the historical and current patterns of housing provision. A method of identifying such areas nationally is needed, as a reliance on national studies, particular those on tenure, is likely to obscure the true picture and extent of geographical inequalities in health.

Keywords: Housing tenure; Mortality; Poverty; Local studies; Oxford

1. Introduction

1.1. Health and place

Research going back at least a century in Britain has shown that there are geographical inequalities in health. Looking at mortality, rates vary between areas: between countries, between regions and also between districts and wards. At the regional level, mortality rates are highest in the north and in Scotland and lower in the south (Howe, 1986; Britton, 1990; Townsend and Davidson, 1982; Strachan et al., 1995). Moreover, there is evidence that regional differences in mortality are increasing. Raleigh and Kiri (1997) found evidence of widening regional differences in life expectancy between District Health Authorities and Dorling (1997) found widening regional differences in mortality when looking at County Boroughs across Britain. Rates also vary between types of area. For example, mortality rates tend to be lower in rural areas and higher in urban areas (Bentham, 1984; Britton, 1990; Watt et al., 1994), although in the past and today, there are exceptions to this.

A number of studies have reported variations in mortality on a more local level. Looking at wards in North East England, Townsend et al. (1988) found that the most deprived wards had proportionately almost five times as many deaths as the least deprived wards. Differences in mortality (and birthweight) between wards have also been found in Bristol

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(Townsend et al., 1984) and London (Edwards and Flatley, 1996). In Scotland, Carstairs and Morris (1991) found geographical inequalities at health board, local government district and postcode sector level. The North West Regional Health Authority's (1997) study in the North West similarly showed geographical inequalities between small localities. It has been argued (Townsend et al., 1984, 1988) that local neighbourhood is more strongly associated with health than is region.

Many of these studies of smaller areas have considered the areas being studied in terms of their level of deprivation using indices constructed from several measures of socio-economic position such as owner occupation, access to a car, social class and unemployment. Such studies (e.g. Robinson and Pinch, 1987; Phillimore et al., 1994; McCarron et al., 1994; Congdon, 1995), have found substantial differences in mortality between the most and least deprived areas. Townsend et al. (1988) found that, in the main, deprivation in an area was linked to high mortality rates, although some equally deprived areas had differing rates. In Wales, mortality rates at ward level have also been linked to its level of material deprivation (Williams et al., 1997). Looking at the North West, Gattrell (1997) found that over half of the mortality between wards can be predicted by level of deprivation in that ward; he also suggested that there was a relationship between mortality and relative spatial deprivation (as measured by deviation from the mean deprivation of all neighbouring wards) but only where deprivation exceeded the average.

Studies showing links between the deprivation and mortality rate of an area have contributed to the debate concerning explanations for geographical inequalities in health and, in particular, whether these differences are primarily due to the characteristics of 'people' or 'places', or in other words, the relative contribution of compositional and contextual factors (MacIntyre et al., 1993). A number of studies have considered this question. Sloggett and Joshi (1994) used data from the ONS Longitudinal Study to look at whether high mortality in deprived wards was due to the aggregate effect of personal factors or to community level factors. In terms of years of life lost they found that individual factors (such as car access and housing tenure) were stronger predictors than ward of residence. However, as the same individual and area variables were used in their study, this finding was not surprising. A number of other studies report an area effect over and above the compositional effect of the people living there (Charlton et al., 1983; Haan et al., 1987; Carstairs and Morris, 1991; Humphreys and Carr-Hill, 1991; Duncan and Jones, 1995; Shouls et al., 1996; Langford and Bentham, 1996). These findings lend support to the contextual argument, that health is not only a product of individual characteristics but also determined by the context in which a person lives. Phillimore and Morris (1991) suggest that we need a deeper understanding of what constitutes a 'place' in order to take this further. From their study of two towns with similar levels of social deprivation but varying premature mortality rates, Middlesborough and Sunderland, they conclude that we need to look beyond general explanations of health inequalities and more closely examine the social and economic histories of particular localities, such as the pattern of deprivation over a number of decades and the provision of social housing. MacIntyre et al. (1993) likewise suggest that it is not just the level of deprivation that is important to a place, but also the experience of that deprivation and the social, cultural and economic environment of particular places.

Investigating the reasons for geographical inequalities in health can illuminate some of the factors by which certain people, or groups of people, experience worse health than others. Such investigation has become increasingly important as, in recent years, these inequalities in health are becoming greater (Britton, 1990; Phillimore et al., 1994; Staines and Cartright, 1995; Congdon, 1995; Edwards and Flatley, 1996; Williams et al., 1997; Raleigh and Kiri, 1997; Dorling, 1997). A person's chance of dying prematurely is now more strongly linked to the local area in which they live than at any time since comparable figures have been published.

1.2. Health and tenure

One aspect of place that has been studied in relation to health is housing tenure. Many deprivation indices use housing tenure (proportion of non-owner occupation) as one measure of deprivation and, as has been seen previously, these indices correlate strongly with mortality. Looking at 36 clusters of wards, categorised according to socio-demographic census variables, Fox and Goldblatt (1982); Britton et al. (1990) and Goldblatt (1990) found differences in health according to housing tenure, with areas with a high proportion of owner occupiers having lower mortality and those areas with a high proportion of council tenants, in particular areas of low social status, including urban or inner city estates, having higher mortality. Overall, areas with a high proportion of privately rented accommodation had mortality rates between the rates of the owner occupied and council housing areas; however, for men in low status clusters with a high proportion of privately rented accommodation, mortality rates were similar to those of council tenants. Using the Longitudinal Study (LS), Filakti and Fox (1995) and Smith and Harding (1997) found a housing tenure gradient in mortality rates, with owner occupiers having lower than average mortality rates, local authority

tenants having higher than average rates and private renters having rates between the two. Cancer rates have been found to be higher among council tenants (Ineichen, 1993) and owner occupiers survive cancer longer once it is diagnosed (Kogevinas, 1990).

At the extreme, being vulnerably housed (living in insecure accommodation, in hostels or on the streets) is associated with very poor health and premature mortality (Bines, 1994; Brickner et al., 1986; Robertson and Cousineau, 1986; Greve and Currie, 1990; Crisis Fact Sheet, 1997). The life expectancy of the roofless in London has fallen from 47 to 42 (Grenier, 1996). Death rates of rough sleepers in London are 25 times the national average for the population as a whole (Brimblecombe, 1998).

As with geographical (and other) inequalities in health, the gap between those living in different housing situations has increased. The mortality rates of the homeless have worsened (Grenier, 1996). Between 1971–81 and 1981–92 the differences in mortality between owner occupiers and local authority tenants widened, mainly as a result of the relative increase in mortality rate for local authority tenants (Filakti and Fox, 1995). Smith and Harding (1997) also found a steepening of the mortality gradient by tenure for women aged between 35 and 59 and men aged between 35 and 64, using the LS.

Some commentators have suggested that changes in the council sector since the late 1970s will have contributed to the poorer relative health of local authority tenants so that their health will have continued to decline further. The reduction in council stock has resulted in a higher proportion of those on low income and those unemployed being council tenants. Low income and unemployment, which became concentrated in this tenure during the 1980s, are both associated with poor health and high mortality (Morris et al., 1994; Davey Smith, 1996). In addition, the declining provision of social housing has led to greater reliance on multiple allocation criteria so that prospective tenants now need to better fulfil several requirements in order to gain housing. One of these criteria is medical need. Smith (1989) found that, depending on the area, between 13 and 70% of council applicants had used health reasons in support of their claim. Research shows that housing tenure has become more segregated by economic status and social class, with the public sector increasingly housing the poor (Murie, 1983; Forrest and Murie, 1988; 1990; Prescott-Clarke et al., 1988; 1994; Holmans, 1993). Similarly, health may affect whether a person is more or less able to move into owner occupation and may be a contributory factor for those leaving owner occupation through repossession. However, especially with owner occupation, the role of health status is complex, as those with wealth are more able to shield themselves from temporary loss of income through ill health and indeed are less likely to lose their income through ill health in the first place (Bartley and Owen, 1996).

1.3. Health and housing condition

Some of the research on tenure and health has looked beyond the broader categories. For example, Fox and Goldblatt (1982); Britton et al. (1990); Goldblatt (1990) looked at tenure within clusters of areas. These clusters were defined according to factors such as status (e.g. low, high) and area type (e.g. inner city). Some of these clusters include mixed tenure groups and others give more detail within tenure groups, giving a better understanding of the link between tenure and mortality. For example, the areas with higher than average Standardised Mortality Ratios (SMRs) included inner city areas with low quality older housing, overspill estates, urban local authority estates, mining areas, inner city council estates, areas with high proportions of houses in multiple occupation and immigrant inner city areas. Blackman et al. (1989) found inequalities within tenure groups, with the poorer parts of the council sector being worst off. Barrow and Bachan (1997) compared two run-down council estates in Tower Hamlets, representing the worst housing in the borough, with a refurbished good quality estate in Paddington and found incidences of ill health were seven times higher in the poor quality estates.

Many of the deprivation indices use not only housing tenure but also indicators of housing conditions, such as overcrowding. Much research has looked at the effect of housing conditions on health, although the focus of this work is mainly morbidity rather than mortality.

Respiratory and bronchial problems have been linked with damp housing conditions (Lowry, 1991; Hunt and McKenna, 1992; Leather et al., 1994; Packer et al., 1994; Shelter, 1998). Cold is associated with hypothermia and susceptibility to other illnesses (Arblaster and Hawtin, 1993; Leather et al., 1994), increases in blood pressure (Collins, 1993) and an increase in the risk of myocardial infarction and stroke (Lowry, 1991). Arblaster and Hawtin (1993) showed an excess of 8,000 winter deaths for each drop of one degree centigrade during cold weather. Poor housing is also linked to poor mental health (McCarthy et al., 1985; Birtchnell et al., 1988; Lowry, 1991; Thornicroft, 1991). Unsafe housing leads to greater numbers of accidents and deaths (Quick, 1991; Ranson, 1993; Dugdale and Draper, 1993; Ineichen, 1993) and overcrowding is associated with increases in infectious diseases (Leather et al., 1994), stomach cancer (Barker et al., 1990), accidents, fire and carbon monoxide poisoning (Lowry, 1991). Poor quality accommodation can

lead to problems with preparing and storing food (Leather et al., 1994), registering with a GP and accessing other medical services (Leather et al., 1994), anxiety and depression (Victor, 1992), infectious diseases, including hepatitis and TB (Leather et al., 1994), accidental and non-accidental injuries to children (Child Accident Prevention Trust, 1991), problems during pregnancy and low birthweight (Lowry, 1991), higher rates of miscarriage, still birth, infant mortality and congenital anomalies (Ineichen, 1993).

Tenure alone does not fully categorise a person's quality of housing. As Lee and Murie (1997) point out, different tenures have different market shares and different roles in different places. This leads to divisions within tenures and means that there is not a geographically uniform relationship between deprivation and tenure. It is likely that this spatial dimension to and the complexity of, the broad tenure categories will give different patterns of health inequalities. This is further suggested by the research looking at more detailed aspects of tenure and health and research on housing conditions and health, referred to above. The latter studies suggest not only that housing condition is crucial to health, but also that whilst there is a strong association with type of tenure — there being the highest proportion of unfit housing in the private sector (Dorling, 1995) — that poor housing can be found in all tenures. It may be the case that broad categories of tenure may not be as useful in looking at health determinants as would a more detailed investigations of housing. This may be particularly true when looking at the local level and when looking at certain areas of the country, for example the South, where the proportion of council housing is low and where the private rented market forms a relatively large part of the accommodation market in large cities. The majority of research to date, particularly that at small area level, has focused on the North and London where the situation is likely to be very different. The following case study of the city of Oxford looks in some detail at the relationship of place, and in particular housing, to health as measured by mortality at a very local level (ward and sub-ward) in an apparently affluent city in the prosperous South East.

2. Method: a local study

This paper presents new data on the patterns of inequalities in health for different local areas in the City of Oxford and considers some of the reasons for the patterns found. The local areas under consideration are electoral wards, which each contain approximately 7000 people. The areas used are the 1981 electoral wards. Although the ward boundaries changed in Oxford after 1981, using 1981 wards allows comparison over time. It also allows analysis of mortality rates over the entire period 1981–1992, for which figures are currently available, so giving larger numbers of cases and thus greater validity to estimates of inequality. The health measure used is mortality rates. Whilst it must be borne in mind that this is only one indicator of health and does not encompass the broad nature of health or ill health, it is used in this study as data on mortality represents a definite and indisputable outcome and is available at ward level. Mortality rates in this study are presented as Standardised Mortality Ratios for deaths for under 65 year olds. Deaths of under 65 year olds are considered premature and largely preventable by academic researchers as well as health authorities and health policy makers. In order to investigate explanations for mortality patterns, variables from the 1981 and 1991 censuses were used, as were interviews with key informants in health and housing in Oxford. The latter included workers in hostels for the homeless, council housing and mortgage lending institutions, representatives of voluntary organisations and those involved with health care provision and policy.

While findings presented in this paper refer to geographical inequalities in health at a very local level and hence deal only with Oxford, the results suggest possible explanations and avenues for exploration for looking at inequalities in the country as a whole, explanations that may be missed if looking at the national level. National studies tend to have an averaging effect which may mean not only that subtleties of the picture of inequalities in health are masked, but also that in places which do not fit the national trends, it is difficult to explain the reasons for the patterns observed.

3. Oxford

Oxford is a city of some 100,000 people situated fifty miles west of London and sixty miles south of Birmingham. It is known primarily for its University, an institution that has been present in Oxford at least since the formation of University college in 1249 and that has dominated the city ever since — politically, economically and physically. In 1913, Morris Motors started a car factory in the city. The growth of the car factory continued until employment peaked at 28,300 workers in 1973. However, this fell dramatically, to 4500, over the next two decades (Ward et al., 1993). Both the university and the car plant influenced housing in Oxford, in terms of the type of housing, where and by whom it was built and who lived there. At the beginning of the century there was a large development

of Victorian houses in north Oxford built by St. John's College which housed middle class employees of the university. Once the car plant started developing it became a key factor in housing demand in the city (Public Record Office, 1919) and this demand increased over time resulting in large numbers of council houses being built which only in part solved the severe housing problems in the city, which continue today. These two separate spatial and temporal trends in housing are still discernible today and have left Oxford a divided city. University academic staff and students tend to be concentrated in the north of the city (this being reflected in house prices, schools examination performance and so on). The east of Oxford, the area around the car plant, has the highest concentration of council housing and lower house prices. However, despite this spatial segregation, within even quite small areas of Oxford, there are relatively wealthy and very poor people living almost side by side. One example is South ward, the varied housing history of which has resulted in Victorian family homes (some owner-occupied and some privately rented), several streets of council housing built in the 1930s and 1940s on reclaimed marsh land and the highest concentration of hostels for the homeless in the city. Fig. 1 shows a ward map of Oxford using 1981 boundaries.

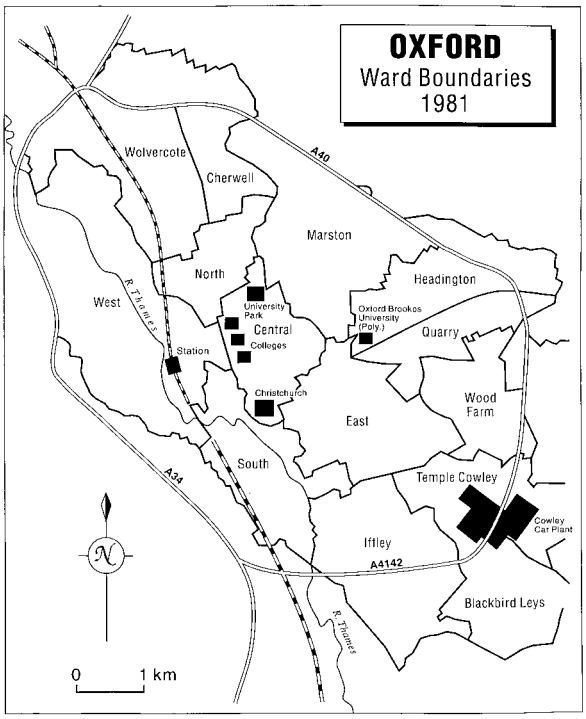

Fig. 1. Ward map of Oxford with 1981 boundaries.

Table 1
SMRs at ward level in Oxford: all deaths under 65[a]

1981–92	SMR	Lower 95%	Upper 95%
North	65	52	81
Central	70	49	97
Wolvercote	74	62	89
Headington	78	66	90
Cherwell	82	69	96
Marston	86	73	101
Temple Cowley	87	74	101
Quarry	88	74	103
East	99	84	115
Wood Farm	101	88	115
St. Clement's	102	87	118
Iffley	104	90	118
Blackbird Leys	106	93	120
West	108	92	127
South	130	114	148

[a] The first five rows are those with SMRs significantly below the England and Wales average. The last row has an SMR significantly above average.

4. Findings and discussion

4.1. Differences in mortality patterns within Oxford

Although the SMR for Oxford as a whole at 96 is under the average for England and Wales (100), showing that people living in Oxford have less chance of dying prematurely than average, it can be seen from Table 1 that their local relative rates range from 65 to 130. This means that those under 65 living in North ward are a third less likely to die in any year than their counterparts of the same age and sex in Oxford generally; those in South ward, are a third more likely (from here on this is referred to as 'chances of dying prematurely'). Taken together, those living in South ward were twice as likely to die prematurely than those in North ward. The 95% confidence intervals in Table 1 show that there is only one area where mortality rates are significantly higher than the England and Wales average — South ward, with Central, Cherwell, Headington, North and Wolvercote having significantly lower than average SMRs. In order to investigate these differences further, patterns of housing tenure in wards were compared to ward mortality rates. (Note, in this paper, when comparing mortality rates with 1991 data, only 1986–91 deaths are used in order to be nearest the census date.)

There is no significant correlation between tenure and SMR in Oxford. Although in many parts of the country and looking at the country as a whole, the greater the proportion of council housing in an area,

Table 2
SMR and housing tenure (%) for Oxford wards (1991 Census)

Ward	% Owner occupied 1991	% LA rented 1991	% Privately rented 1991	SMR 1986–91
Central	1.5	2.5	95.1	48
Blackbird Leys	35.1	54.8	3.9	106
West	36.6	14.4	43.6	97
St.Clement's	43.2	11.6	37.7	111
Headington	46.8	42.7	9.0	79
North	48.9	1.5	46.4	73
South	49.8	28.4	17.3	117
Oxford	54.8	21.2	20.1	*96*
East	57.1	15.4	24.1	103
Wood Farm	57.5	33.2	7.1	104
Cherwell	60.7	18.0	15.3	87
Marston	61.7	21.5	12.8	99
Wolvercote	65.3	4.8	28.0	71
Quarry	68.9	12.6	13.5	80
Iffley	70.6	17.4	9.5	104
Temple Cowley	73.0	12.6	13.4	77

the higher the SMR (e.g. Filakti and Fox, 1995), this is not the case for Oxford. The explanation lies in the composition of tenures of individual wards and in a much more qualitative consideration of tenure. For example, interviews with key informants revealed that owner occupation varies tremendously from one part of the city to another in terms of the quality, value and condition of houses, the facilities of the area and the economic and social situation of those who live there. Privately rented accommodation varies too, from very high quality accommodation to extremely poor quality, unsafe and unhealthy accommodation.

As can be seen from Table 2, Central ward in Oxford provides an example of how a national model may obscure local conditions. This ward is unusual in that it contains only 900 people and covers many University buildings and properties owned and rented out by the various colleges. Hence it has 95% privately rented accommodation and negligible percentages of owner occupation and council housing. The SMR is very low at 48 and does not reflect any national patterns because of Central ward's particular circumstances and character.

Table 3 shows that there is a range in average housing wealth in Oxford from £−1125 per household in Blackbird Leys (in effect a housing debt) to £65,085 per household in Wolvercote. The correlation between housing wealth and SMR is not significant. This is likely to be partly because the wards in Oxford are very diverse in terms of their tenure but also because it is the quality of housing, rather than tenure, that matters. In North Oxford, for example, there are some expensive houses, however there is also a substantial amount of privately rented (including college) accommodation (46.4%; the highest proportion in the city not including Central ward) resulting in an average housing wealth of only £18,901. Headington has a number of expensive owner occupied houses, some middle range and a large number of council houses (42.7%; the second highest in the city) giving an overall housing wealth of £22,403. Marston on the other hand has a large number of people who own their own property (61.7% compared to 48.9% in North ward and 46.8% in Headington), many of whom have bought from the council, so although prices may be

Table 3
SMR and housing wealth for Oxford wards (Dorling, 1995)[a]

Ward	Housing wealth (£) 1980–91	SMR 1981–92
Blackbird Leys	−1125	106
Central	0	70
North	18901	65
West	18975	108
Wood Farm	20825	101
Headington	22403	78
South	23050	130
Temple Cowley	29125	87
East	29177	99
St.Clement's	29210	102
Marston	32557	86
Quarry	39045	88
Iffley	39740	104
Cherwell	41130	82
Wolvercote	65085	74

[a] Housing wealth is the total housing wealth for the ward divided by the number of properties in the ward. The figure is negative for Blackbird Leys because of negative equity in 1991.

Table 4
SMR and Townsend Deprivation Score for Oxford wards (Oxfordshire Health Authority)

Ward	Townsend Deprivation Score 1991	SMR 1986–92
Quarry	0.88	80
Marston	1.33	99
Cherwell	1.44	87
Wolvercote	1.49	71
Wood Farm	1.71	104
Temple Cowley	1.78	77
North	1.97	73
Iffley	2.16	104
Central	3.37	48
Headington	3.6	79
East	4.9	103
West	5.29	97
South	5.37	117
Blackbird Leys	6.53	106
St.Clement's	7.31	111

average to low for Oxford, as there are many owner occupiers the overall average housing wealth is quite high. That is because this measure of wealth is of average positive and negative equity in housing.

Thus it would seem that neither tenure nor a more quantitative measure of material wealth are strongly associated with mortality in Oxford and that a more detailed investigation of housing is needed. However, before this, measures of deprivation will be considered.

Table 4 shows the Townsend deprivation score for Oxford which ranges from a low of 0.88 in Quarry ward to a high of 7.31 in St. Clements. The Townsend deprivation score for an area consists of the percentage of households without access to a car, the percentage of households not in owner occupation, the percentage of households living in overcrowded accommodation (more than one person per room) and the percentage of unemployed as a proportion of the economically active. This is expressed as a combined z score with the higher the score, the higher the deprivation of an area. The SMR and deprivation scores are not correlated. That the correlation is not significant may be because some of the components of the deprivation score, in particular owner occupation, do not adequately reflect the most important factors influencing health inequality in Oxford.

Both female and male unemployment are positively correlated with SMR (Table 5). Female unemployment

Table 5
SMR and unemployment in Oxford wards (1991 Census). Unemployment is defined as unemployed or on a government scheme

Ward	Male unemployment 1991	Female unemployment 1991	SMR 1986–91
Central	3.6	3.2	48
North	6.5	4.7	73
Wolvercote	7.5	5.5	71
Marston	7.6	5.1	99
Cherwell	8.6	4.4	87
Quarry	8.7	3.8	80
Iffley	9.5	4.9	104
Temple Cowley	9.8	5.0	77
Wood Farm	10.5	4.0	104
West	10.7	7.8	97
Oxford	11.5	6.2	96
Headington	12.3	5.3	79
East	14.3	8.0	103
South	15.2	7.6	117
St.Clement's	17.3	11.3	111
Blackbird Leys	17.7	8.8	106

Table 6
SMR and population dependent on income support for Oxford wards (Noble et al., 1994)

Ward	% dependent on IS in 1993	SMR 1986–91
Central	1.6	48
Quarry	3.1	80
Wolvercote	4.9	71
Cherwell	8.5	87
Wood Farm	12.4	104
North	12.7	73
West	12.9	97
Temple Cowley	13.0	77
Oxford	14.2	96
Headington	15.0	79
Iffley	15.0	104
South	16.6	117
East	17.0	103
St.Clement's	17.1	111
Marston	20.0	99
Blackbird Leys	25.2	106

shows a positive correlation of 0.60 and male unemployment a correlation of 0.70 indicating that the higher the unemployment rate in an area the higher the SMR.

Table 6 shows the proportion of people living in households dependent on income support which ranges from 1.6% of the population in Central ward to over a quarter (25.2%) in Blackbird Leys. The SMR of an area is related to the proportion dependent on income support, with a correlation of 0.74. Thus the higher the percentage of the population dependent on income support in an area, the higher the likelihood of dying prematurely. This seems to be a more accurate predictor of premature death in Oxford than Townsend deprivation measures. One reason for this is that such measures can distinguish between, for example, groups of private renters, which is particularly useful in understanding patterns of mortality in Oxford, as well as elsewhere (e.g. Fox and Goldblatt, 1982). A similar percentage of private renting in an area may mask very different experiences. One group of private renters may be working full time in well paid jobs and living in good quality rented accommodation paying high rents. Another group may be unemployed and poor and living in bad quality, but cheap, rented accommodation.

Thus, it would seem that in Oxford tenure is not a good explanatory variable, whereas deprivation measures that do not include tenure are. A more detailed look at two wards in Oxford will illustrate the problems with the broad categories of tenure.

5. South ward

The mortality in South ward is the highest in Oxford. Over the period 1981–92, it was 30% higher than the national average; for men it was 38% higher and for women 15% higher. However, it was significantly higher only for men. South ward has the highest proportion of men living in hostel accommodation in the whole of the city. In that ward there are three main hostels for the homeless with a total of 198 bed spaces, mainly for, or used by, men. In addition there are a number of probation hostels. 6% of the men in South ward live in hostels. A more detailed study (Brimblecombe, 1998) shows that 39 out of the 161 male deaths in South ward over this time period are among those living in hostels or, crucially, among those living in hostels within the last six months prior to their death. Recalculating the SMR for the ward without those deaths gives an SMR of 104 for men and 107 for the ward overall, a rate nearing that of the national average (Fig. 2). The remaining population of South ward live either in large family homes at the North end of the ward or council houses at the South end.

Calculating mortality rates for male hostel users in South ward (Table 7) shows that, for 16–64 year olds, the SMR is 675, or almost seven times the national average. (Calculation of the SMR uses deaths of males under the age of 65 at all the hostels in South ward, Oxford over the period 1981 to 1992 and an estimate of the number of males under the age of 65 living in hostels in Oxford in 1986. This estimate was derived from 1981 and 1991 Census data.) Of the people living in these hostels, some live there part of the time but also live in other places such as on the streets, other hostels, B&B or bedsits, squats, at friends or relatives, in Oxford or elsewhere. Some live in the hostels on a longer term basis. Many of those living in the hostels have a number of health problems in common with homeless and vulnerably housed people in general, in particular, alcohol and drug dependency, respiratory problems, alcohol-related epilepsy, skeletal problems, skin problems, foot problems and malnutrition. In terms of enduring mental health problems such as schizophrenia, there is little concrete evidence that the homeless population differ greatly from the national average (Abdul-Hamid, 1998). In Oxford, levels of schizophrenia for the homeless population are similar to the rest of the population (Collett, D., 1997. Luther Street Medical Centre, Oxford. Personal Communication). However, functional mental illness such as depression is much higher among the vulnerably housed population (Collett, loc. cit.).

Thus the fact that South ward has a higher mortality rate than areas with high proportions of council housing is largely due to the presence of the hostel popu-

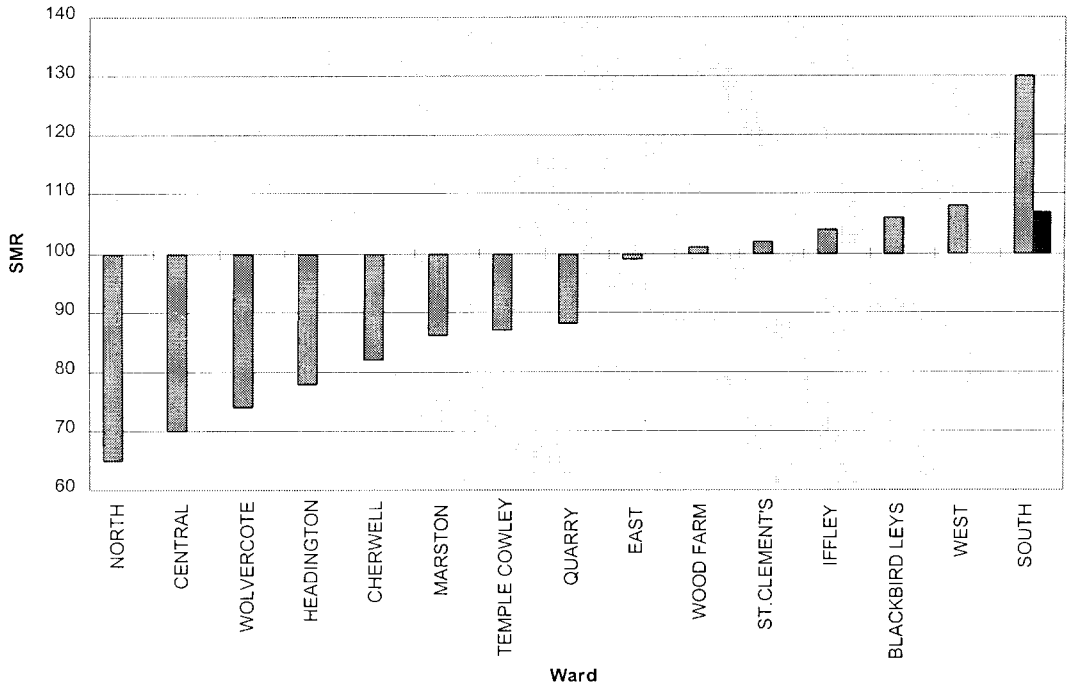

Fig. 2. SMR for men in South ward compared to the rest of Oxford, with and without hostel deaths.

lation. Local informants familiar with the housing situation in Oxford reported that these people often fall through the council housing safety net. They may not be able to obtain council housing as they will not fit many of the allocation criteria and therefore be low on the waiting list. They may not wish to be in council housing or may not have the resources to persevere with the application system. According to local sources, the council does not have the resources, either in terms of staff or money, to support people who are living in council housing and have mental health or other problems. Thus some people will not even apply for council housing, others may live there for a short while and either leave voluntarily because of the difficulties of living unsupported or are evicted because of anti-social behaviour (for instance, setting fire to the property) or neighbours' complaints. Others leave council housing because they are isolated from their friends. Much of the available single person council housing is some way from the city centre and many of their friends may still be in hostels near the city centre or on the streets in the city centre. Those who do end up staying in council housing may be those who need less support services, are less vulnerable and have fewer health problems. For them the council accommodation provides a safe, secure, good quality environment in which to live. Thus the health of this group is likely to be better than those on the streets or in hostels for a number of reasons. In addition, informants also remarked that council housing in Oxford is not the worst quality housing in the city, whereas it may be in other places in the country. Estates like Blackbird Leys had, in 1992, mainly large well-built houses with gardens. In fact, it is some parts of the

Table 7
Mortality rates for male hostel users in South ward, Oxford (ONS; 1981 and 1991 Census). Analysis by authors

Age group	Male hostel user deaths 1981–1992	Male hostel users	Lower 95%	SMR	Upper 95%
16–29	2	15	0	1030	24367
30–44	6	38	0	572	5334
45–64	31	50	115	684	2147
16–64	39	103	149	675	1895

Table 8
Changes in SMR between 1981–85 and 1986–92 in East ward, Oxford[a]

	1981–85			1986–92		
	SMR	Lower 50%	Upper 50%	SMR	Lower 50%	Upper 50%
All	93	85	101	103	96	112
Men	85	76	96	107	97	117
Women	106	92	122	98	86	113

[a] Calculations from ONS statistics for the 1981-1992 period. 50% confidence intervals are shown as the chance of these overlapping at random is $0.25 \times 0.25 = 0.0625$.

private rented sector that comprise much of the worst quality housing in Oxford.

6. East ward

As can be seen from Table 8, the SMR for East Oxford has increased between 1981 and 1992. For men, it has increased significantly, for women it has decreased although not by as much.

As can be seen from Table 9, there was a slight decrease in council housing in common with the rest of Oxford and the rest of the country; owner occupation and privately rented remained about the same. However, this is another example of how housing tenure categories are not necessarily useful at this level of analysis, as these figures mask the changing nature of a key characteristic of housing in East Oxford. In the area known as the East Oxford triangle, mainly in East ward and St. Clements, over 61% of the properties were Houses in Multiple Occupation (HMOs) in 1992 (Oxford City Council, 1992). According to local informants this area, including part of East ward, now contains some of the worst quality privately rented housing in the city. It is into these bedsits that the growing number of homeless and vulnerably housed became accommodated by the early 1990s. Some of the residents have moved into these places because they cannot, or do not want to, abide by the rules that most of the hostels have regarding alcohol and drugs. Others cannot find other accommodation in the city that will take them, perhaps because of the problems that they already have, whether with alcohol or drugs or anti-social behaviour. Some people want to live in East Oxford because it is a good place to be, because of the drink and drinking culture or because there is a higher level of acceptance of them here than in other areas and, given the diversity of the area, they are less likely to stand out or be harassed. There are a lot of Off Licences in East Oxford, some of which offer credit and some of which hold benefit books and hand out alcohol throughout the week. In addition, drug dealers congregate in the area, increasing the number of drug-users who want to be in the area.

The properties in East ward are often of very poor quality, in need of repair and in many cases lacking facilities. In 1993, 90% had unsafe means of escape in case of a fire, 80% had unsatisfactory management, 70% were lacking adequate facilities, 30% had amenity overcrowding and 5% lacked basic amenities (Oxford City Council, 1994). The places often have damp and condensation from lack of heating and ventilation. The tenants often cannot afford heating. The properties may be in poor condition to start with and/or the tenants may cause damage. The repairs do not get done and the condition of the property deteriorates. The kitchens and bathrooms are often filthy and do not get cleaned up. There are problems with safety both in terms of risk of fire, carbon monoxide poisoning or falls and in terms of security. There are cases of landlords entering rooms without permission and also cases of intimidation (Oxford Housing Rights, 1997, pers. comm.). All this leads to a number of health problems related to poor heating, lack of hygiene, in-

Table 9
Housing tenure in 1981 and 1991 (Census data)

	Owner occupation		Council rented		Privately rented	
	1981	1991	1981	1991	1981	1991
East ward	57.0	57.1	17.3	15.4	23.6	24.1
Oxford	52.2	54.8	25.1	21.2	20.0	20.1

adequate nutrition and food preparation and the stress of living in a poor quality, insecure, unsafe, environment. Added to this, many of the people living in these places are already vulnerable and may have drug, alcohol and functional mental health problems such as depression. These problems are inter-related and serve to further compound the health damaging effects of poor housing.

This accommodation is inhabited by some of the poorest and most vulnerable people because they have the least choice about where to live. Most of these people are unemployed and receiving benefit (21% of private rented accommodation where benefit was received were deemed unfit, the highest proportion in the city, Oxford City Council, 1995). Thus it is likely to be some types of privately rented accommodation that have a detrimental effect on health and it is in the poor quality privately rented accommodation that those with the very poorest health live and die.

As seen from Table 9, the proportion of privately rented properties in East Oxford did not change much between 1981 and 1991. However, the characteristics of the people living there have changed. There has been an increase in the number of single men (from 57.9% of males in 1981 to 67.9% in 1991) and an increase in male unemployment from 12.3% in 1981 (compared to an Oxford average of 11%) to 14.3% in 1991 (compared to an Oxford average of 11.5%). By 1993, almost 1 in 5 people in the ward were dependent on benefits (Table 6). There was also an increase in the number of people with drug and alcohol problems.

7. Conclusions

The two wards in Oxford highlighted in the analyses presented above are those where the very poorest men are most likely to end up living. They are those who are not able or willing to apply for council housing, who cannot become owner occupiers and who have limited choice as regards privately rented accommodation. They live in extreme deprivation and poor housing conditions. As can be seen, broad tenure measures alone do not explain the patterns of mortality seen at the local level in Oxford and a more detailed consideration of the area and the housing within it is needed. Much previous research has focused on the North of England or London where tenure plays a different role and similarly labelled housing stocks may be of different quality and condition compared to their counterparts in the South. In particular, in other areas, it may be council housing that represents the worst quality housing and which provides accommodation for those with least choice — i.e. the poorest. Additionally, if the council housing is of poor quality it will have a detrimental effect on health. For other areas, council housing may be of good quality and may be a better option than many other housing alternatives and will thus not only house a different resident group but may also have a positive effect on health. In these areas and areas lacking council housing, the poorest people may live in the private rented sector. As seen above this is often the worst quality housing in an area. The situation is similar for owner occupation. If houses for sale are affordable and plentiful in an area then the resident group there will differ from areas where houses are less affordable. In some areas, the owner occupied sector contains some quite poor condition houses. Much is also dependent on the type of accommodation in an area. For example, if the council housing is all family homes then single people will have to live elsewhere. Attitudes to tenure may differ for different people in different areas. This will affect not only choice of tenure but also feelings about being in that tenure, again having an effect on health.

Hence, if council housing as a broad group, or only council housing, is targeted in order to improve health and other aspects of quality of life, then many areas equally or more in need will be missed. It is poverty rather than tenure that is defining the patterns of need and thus of poor health. Poverty manifests itself in different ways, in different tenures and in different areas. Poverty means housing conditions are worse through lack of choice about where to live and lack of resources to improve or maintain the dwelling. Thus, in order to reduce geographical inequalities in health, what is needed is to target housing conditions in all tenure groups through a combination of regulation and investment and to target poverty.

The research presented above also shows the need for local studies. National studies may not give the full picture of the relationship between mortality and area due to the effect of regression to the mean and thus they may obscure what is happening at a local level. This is particularly the case for the South of England, where national studies show low mortality yet this local study of Oxford shows pockets of deprivation associated with inequalities in health. This raises the question about how best to identify such areas, whether they be privately rented, hostel accommodation, owner occupied or council housing. Tenure measures alone cannot do this. Nor can, in many cases, deprivation indices. Unemployment rates and proportion dependent on income support identify poor areas to some extent, however they do not identify all poor areas, particularly where the poor in that area make up only a small proportion of the population, or they are in work but on very low wages. Detailed qualitative investigation of specific areas, as reported in this paper, is impractical on a national basis, suggesting that we need to reinforce the role of local

health authorities in assessing local needs. Our findings suggest that analyses of census data and other available data should consider not only the traditional tenure categories but also incorporate into tenure classification both households in multiple occupation in combination with high unemployment and people on low incomes or income support, as well as hostels for the homeless.

What this study has demonstrated is that, within a particular place which does not appear to adhere to national trends, close examination confirms the link between the incidence of poverty and mortality. High incidence of poverty is not always reflected by tenure or unemployment patterns. In the case of Oxford the very poorest are those who have to resort to hostel accommodation which is situated in a mixed tenure, reasonably affluent ward. The ecological association between tenure and mortality at the ward level is weak, but it is still the very poor tenure situation of a few individuals in the ward that is the prime determinant of the highest rate of premature mortality being found there. It is unlikely that this ward was the home of these individuals for long and so its aggregate social circumstances will not accurately reflect their specific life histories, nor the pattern of migration which led them to die in this place. More generally, the worsening situation in East ward shows that a growing concentration of poor quality private rented accommodation can again be the prime determinant of a concentration of mortality due to tenure change but not be reflected by overall trends in tenure.

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