# SECTION 2

# MEASURING INEQUALITY BY SOCIAL CATEGORIES

## 2.1 Introduction

This section looks at the different group classifiers or categories that are usually employed in the portrayal of (health) inequalities and examines each in terms of its robustness as a potential indicator or measure. It aims to provide:

- A brief definition and overview of the category.
- Brief evidence of a health-related association.
- A brief discussion of some of the problems of interpretation.
- Summary and recommendations for using the category as a guide to inequalities.
- Principal data sources associated with the category.

### *General problems with categories and classification*

Despite a long history of defining social groups since the 1800s and the work of Karl Marx, there is little consistency and clarity in the concepts and measures used. In particular:

- The wide variety of indexes of social position are often difficult to interpret.
- Few reviews systematically examine all (or even several) social positions in connection with health; and even fewer address the potential influence of different variables (e.g. sex, marital status, ethnicity, occupation and area of residence) upon one another.

Moreover, the relationship between social disadvantage and ill health is complex, the definition of 'health' is rarely made explicit and there are competing definitions (Box 2).

**Box 2**

Blaxter [10], based on interview material, shows that we should distinguish between at least five different definitions of health:

1. Existence or absence of chronic *disease*.
2. *Illness* – freedom from illness not as a present state, but as a frequent occurrence.
3. *Function* or the consequence of health status, often considered in terms of disability.
4. Physical *unfitness/fitness*.
5. Psycho-social ill health or *malaise*.

Last, many forms of disadvantage related to ill health are themselves inter-correlated (for example, being non-white, working in an unskilled occupation living in the inner city, being the female head of a single parent family) and disaggregating these components may be misleading. Indeed, individuals simultaneously occupy a position on several dimensions, so that the interactions between these may have important consequences (Box 3).

**Box 3**

**Example**

A teenage Pakistani woman living in Bradford and married to a self-employed shopkeeper cannot be understood solely in terms of her age, ethnicity, gender, area of residence, occupational class, or household. The influence that all these different socio-cultural and demographic categories have upon one another crucially affect her life chances, albeit in ways that are difficult to measure.

The subtlety of these axes of social differentiation in relation to health are seldom well studied, even by sociologists; and constitute pitfalls for anyone using only one classifier. A thorough examination of the processes connecting a particular social position with health can produce useful insights about linkages between other social positions and health. The testing of resulting hypotheses can clarify and refine knowledge about the specificity or generaliseability of the processes involved.

### *Categorisations which may be used to define health inequalities*

Three broad groups of categorisations are generally employed in the literature and in the arena of public debate upon inequalities, although differentiation between them is rarely explicit:

- Social demography (age, area of residence, sex and ethnicity/race).
- Social and economic status (car ownership, employment, income, occupational social class, socio-economic groupings, tenure status).
- Social environment (housing conditions, social networks, social support).

We shall slightly refine the groups by distinguishing explicitly, first between:

- Demographic variables (age, sex).
- Socio-demographic categories (area of residence, ethnicity).

and second between:

- Measures of economic status.
- Measures of social position.

and finally between:

- Social environment, including housing conditions, rural versus urban.
- Social capital, including social networks and social supports.

## 2.2 The Proposed Categories

### *2.2.1 Demographic*

The demographic categories of age and sex are known to be strongly associated with morbidity and mortality, although the differences between age groups, and between men and women, are not normally seen as an inequity (whilst differences between men and women in terms of employment and income are seen as inequitable and, to a certain extent, the same is true for differences between generations). In geographical terms, however, the age category may be a useful measure for highlighting where one might expect peaks and troughs in health and morbidity in a given region or area. For example, high numbers of residential care homes, or concentrations of people of retirement age, or of young children may signal potential need for access to health and social care. Where age groups are more evenly distributed in a given region or population, this would not be such a useful measure by itself. The sexes are normally quite evenly spread within communities (exceptions include sex-specific schools, care homes, monastic communities or prisons).

#### *Age*

Age is a clearly defined and easily measured category in western industrialised societies.

Examples of age-related health associations [11]

- Death rates are relatively high up to four years of age, then decrease up to later childhood.
- In men, the death rate rises abruptly in late adolescence and continues to rise thereafter, whilst in women there is a more gradual increase.
- Causes of death are different at different ages.
- Self-reported chronic illness increases steadily with age (Table 2.1).
- Height varies with age, both cross-sectionally and, for any given cohort (groups that are born during a particular year of group of years), over time.
- Blood pressure tends to rise with age in individual societies.

***Table 2.1.*** *Proportion reporting long-term illness by sex by age*

| *%* | *Up to 14* | *15–34* | *35–54* | *55–64* | *65–74* | *75–84* | *85+* |
|---|---|---|---|---|---|---|---|
| Men | 24 | 25 | 39 | 54 | 72 | 79 | 75 |
| Women | 22 | 28 | 39 | 56 | 69 | 72 | 78 |

Source: Health Survey for England, 2000.

However, interpreting age gradients is more problematic because some apparent associations may be due to:

- Period effects (what happened during a particular year or decade).
- Cohort effects (the experience of that group born during a particular year or group of years).
- The process of ageing itself.
- The social as well as physiological aspects of growing older.

Moreover, there has been an upward trend in the reporting of sickness, such that twice as many 45–64 year olds are now claiming that their activity has been restricted in the last fortnight (Table 2.2).

***Table 2.2.*** *Trends in self-reported sickness for 45–64-year-olds (1972–1998)*

| *%* | *1972* | *1981* | *1991* | *1998* |
|---|---|---|---|---|
| Long-term illness | 30 | 41 | 41 | 44 |
| Limiting long-term illness | 23 | 26 | 29 | 28 |
| Restricted activity in last 14 days | 9 | 12 | 13 | 19 |
| Reporting general health as ‘not good’ | 12 | 12 | 12 | 14 |

Source: General Household Survey Living in Britain, ONS, 2001.

Only well-designed prospective studies can disentangle these different effects (Section 10).

### *Sex*

Nearly all health data are differentiated at origin by sex. The assumption that there will be distinctive profiles for each sex means that most social and health data are presented and analysed separately. Indeed, there is a relative lack of systematic comparison or attempts to account for the differences between the sexes, whether in terms of gender or anything else.

It is worth noting, routine health and social statistics data are rarely collected for different gender orientations (such as transsexual) or for sexuality (homosexual or lesbian), and, when they are, it is often difficult to believe them.

#### Examples of sex-related health associations

- Mortality in men is higher than in women throughout the life course so that women have a longer life expectancy.
- Causes of death differ, with men more likely to die of circulatory disease and women of cancer.
- Women are more likely to be diagnosed as suffering from psychosomatic conditions and manic depressive psychosis.
- On average, men are taller than women from the age of 15 (Table 2.3) [11].

***Table 2.3.*** *Height (cm) by sex by age*

| | *Up to 14* | *15–34* | *35–54* | *55–64* | *65–74* | *75–84* | *85+* |
|---|---|---|---|---|---|---|---|
| Men | 130.2 | 176.4 | 175.1 | 172.9 | 170.9 | 168.1 | 165.0 |
| Women | 129.9 | 162.9 | 162.2 | 160.1 | 157.8 | 154.5 | 151.3 |

Source: Health Survey for England, 2000.

#### Summary and recommendations

The demographic categories of both age and sex may be a useful initial guide to potential health status and risk, as:

- Both age and sex are strongly related to health outcomes.
- Age and sex are relatively easy to define and measure in any given community.

But, they are rarely sufficient on their own. Whilst the over-representation, or presence of concentrations of a particular age-group in a community (high numbers of children or elderly) may be a useful guide to that community's health inequalities and needs, sex is not as useful. In general, age and sex alone are too specific to be used as inequality measures without additional categories, to indicate disadvantage.

## Data sources

The Decennial Censuses are the main source of information on the age–sex composition of the U.K. population. Apart from national and regional figures, counts are available for the two main tiers of local authorities and electoral wards (postcode sectors in Scotland). The 2001 Census produced a new low-level area base, standard output areas (SOAs) (Census material is available via the ONS website – see Section 8 for more details). In the years between Censuses, estimates of the age–sex populations of local authorities and larger areas are released annually, based on projections from the last Census. A large number of sources are used in calculating these estimates, including birth and death rates, figures on immigration, emigration and mobility, and data on the numbers and location of students and armed forces. There have been concerns that such projections may be less accurate for certain population groups; for example, students and older people. The ONS Neighbourhood Statistics site holds several alternative sets of population estimates by electoral wards.

The registration lists of general practices are the main alternative source of information to the Census on population, age and sex. The Department of Health has produced counts for its administrative areas based on general practice lists and also counts for ward populations. Because of concerns of 'list inflation and deflation', both sets of counts have been reconciled to local authority level Census projections. The figures are available via the Compendium of Clinical and Health Indicators, currently only to people in the NHS, but there are plans to extend the access.

Because age and sex differentiation is so pervasive, researchers frequently standardise data for age and sex before analysing their data to explore the effects of the dimensions (e.g. ethnicity, area of residence). It is important to emphasise that this is not a foolproof procedure (see Section 3.1 for further discussion).

- Where data is standardised using age groups (the usual procedure), there may still be within-group age-related effects. This is particularly a problem among older age groups (e.g. 75+). The alternative – to adjust for age as a continuous variable – is usually impossible because of insufficient data.
- Whether standardisation is carried out in terms of age as a grouped or continuous variable, the presumption is that age and sex have additive or sometimes multiplicative effects on health. If

the joint effects of age and sex have a different functional form, then there will remain effects after standardisation.

- Several may dispute that one should always adjust for age and sex before examining other inequalities. It could be argued that ethnicity or social class are more important and therefore causally prior in the process of generating inequalities.

### 2.2.2 Socio-demographic Categories

In this section, we examine the socio-demographic categories of area of residence and ethnicity. Depending on the context, the categories in this section may not always be well-differentiated from those in other sections.

#### *Area of residence*

A group may be defined by the type of place of residence of its members, such as the inhabitants of a particular housing estate, or block of flats. The social value and status (including monetary value) attached to different postcodes are now well-accepted in the real estate business. For example, it is used in assessing risk of property crime in household insurance, and increasingly for other commercial or consumer purposes.

Associations between morbidity, mortality and place of residence have long been noted, with research now suggesting an independent effect of area upon the health of individuals and households within that area. The mechanism(s) through which such effects occur are, however, difficult to establish.

Moreover, present-day area boundaries more readily reflect administrative interests (electoral ward, local council, etc.) rather than 'real communities'. And these boundaries also change over time as with Census-derived areas.

Examples of area-related health associations [11]

- There is a gradient in mortality from low in the south and east of the country to high in the north and west. These are found for most causes of death and for all the major causes, e.g. circulatory disease, malignant neoplasms, respiratory disease, and accidents, poisonings and violence.
- People living in the south of England are taller than those living in the north.
- Blood pressure is higher in the north.

- There are variations within as well as between regions with significantly higher standardised mortality for men in inner city areas with lower quality older housing, over-spill estates, mining areas and multi-occupied and immigrant areas.

### Summary and recommendations

- Associations between morbidity, mortality and place of residence have long been noted.
- Research suggests an independent effect of area upon the health of individuals and households within that area.
- The mechanisms through which such effects occur are difficult to interpret.
- Place of residence (monitored through postcode) may be a relatively sensitive measure of potential inequality and need, particularly if combined with other measures of socio-economic or demographic status.

### Data sources

As for data on age and sex, the Census is the main source of the numbers of people living in a locality. In the years between Censuses, sub-local authority level population counts have been estimated (often by local authorities) from the register of electors. Though such figures are not compiled nationally, they may be available from local authorities, or agencies such as the Public Health Observatories.

GP registers provide an alternative source of population counts – see earlier section (on data sources for population age and sex) for details.

A frequently made argument is that the administrative area boundaries used in population statistics do not coincide with the boundaries of communities. In particular, there is concern that some urban electoral wards are too large and heterogeneous to provide a sensible base for analysis or social planning. For the 1991 Census, it was possible to use population counts for sub-ward areas or enumeration districts (EDs) to estimate the numbers in smaller areas. SOAs for the 2001 Census serve a similar purpose. In some, mainly inner-city, areas with high population mobility and a tendency for census under-enumeration, local authorities will make their own population estimates – often by some combination of sources, such as Council Tax returns, the Register of Electors and local surveys or censuses.

Local authorities and charities may also conduct their own censuses covering ‘hard-to-reach’ groups such as the homeless, who are often missed in the national Census.

### *Ethnicity*

The recording of ethnicity has always been problematic in routine data collection, with different definitions of ethnicity in each of the 1981, 1991 and 2001 Censuses. Researchers have attempted to establish ethnicity by using names, or have carried out local or ad hoc studies, often concentrating on specific conditions affecting ethnic minority groups. The complexities are illustrated in Box 4. A more helpful approach may be to include any minority group within a nation state defined by language, nationality or origin. In any particular situation it should be possible to reach a much more precise definition. For example, in a study of the levels of drinking amongst the Irish, it was crucial to distinguish between groups defined not only on their place of birth but also on where they were currently living and on their parents' place of birth (Box 5).

**Box 4**

**Ethnic identity**

". . .ethnic identity is formed in relation to a number of dimensions: self-description, being traditional, participation in the ethnic community, and racialisation. So, rather than being something based solely on country of origin, as would be suggested by definitions of ethnicity used in earlier studies, ethnic identity can be seen to be influenced by the wider social structure. Any measure of ethnicity needs to allow for this. These analyses suggest that the relationship between ethnicity and health is also mediated by structural factors, explored here in terms of socio-economic position, and racial harassment and discrimination.

This would suggest that while traditional measures of ethnic group can allow us to recognise the existence of ethnic inequalities in health, in order to fully investigate the relationship between ethnicity and health, a more sophisticated assessment of ethnicity is required, which can both adequately account for the different forms of social disadvantage experienced by ethnic minority groups and the various ways in which racism itself can impact on physical and mental health. Racism and its accompanying social disadvantage are important aspects of the lives of people from ethnic minority groups, and this must be incorporated into strategies to address ethnic inequalities in health . . ."

<u>Examples of ethnically related health associations</u>

- South Asian and African born male immigrants had lower age-standardised mortality; whilst women had higher rates than the rest of the population.
- Men from Ireland have higher mortality than men in England and Wales.

**Box 5**

**Example**

Although there has been a concerted attempt to introduce ethnic monitoring in the U.K., the Irish as a group are excluded [12], despite the fact that death rates for Irish in England are high (see International Council on Migration). Ultimately this may be due to the way in which they are treated in England but the immediate cause is probably associated with their higher alcohol consumption than the English and the Irish in Ireland (Table 2.4).

***Table 2.4.*** *Distribution between light, moderate and heavy drinking of Irish compared to British*

| | *Republic-Irish* | *Northern-Irish* | *Republic-British* | *Northern Irish-British* | *British-British* | *Total N (100%)* | *Irish in Ireland (% distribution)* |
|---|---|---|---|---|---|---|---|
| Light | 59.0 | 56.8 | 55.7 | 58.3 | 64.3 | 10,774 | 65 |
| Moderate | 28.6 | 31.5 | 33.5 | 25.6 | 27.3 | 4633 | 30 |
| Heavy | 12.3 | 11.7 | 10.9 | 16.1 | 8.4 | 1448 | 5 |
| *N* | 227 | 111 | 442 | 168 | 15,907 | 16,855 | 2724 |

Note 1: Republic-Irish: those born in the Irish Republic; Northern-Irish: those born in Northern Ireland; Republic-British: those born in Britain with one or both parents born in the Irish Republic; Northern Irish-British: those born in Britain with one or both parents born in Northern Ireland; British-British: British-born residents whose parents were also born in Britain.
Note 2: Light: up to 7 units per week for women, 10 units per week for men; Moderate: 7–25 units for women, 10–35 units for men; Heavy: over 25 units for women, over 35 units for men. Source: OPCS (1990)
Source: Harrison et al. [13].

- Early mortality in the second generation is higher.
- Low birth weight rates are higher among children born to mothers from Africa or Asia.

Table 2.5 shows the mortality rates for three different groups of causes and for suicide for different groups of immigrants. Those born in Ireland have higher rates for circulatory and respiratory diseases and for external causes, with very different rates for men and women for suicide; those born in South Asia and the African continent have higher rates only for circulatory diseases and for external causes with men having lower and women having higher rates for suicide, and men and women born in the Caribbean have different experiences for all three groups of causes, but not for suicide.

Although no one group has constantly high or low rates; the pattern defies simple description.

***Table 2.5.*** *Standardised mortality rates for groups of diseases and suicide rates*

| | | *Ireland* | *South Asia* | *Caribbean* | *African* |
|---|---|---|---|---|---|
| All circulatory | M | 117 | 133 | 77 | 127 |
| | F | 118 | 136 | 141 | 136 |
| All respiratory | M | 157 | 88 | 61 | 105 |
| | F | 140 | 104 | 101 | 106 |
| All external causes | M | 190 | 85 | 105 | 99 |
| | F | 59 | 113 | 100 | 136 |
| Suicide | M | 126 | 71 | 80 | – |
| | F | 31 | 149 | 84 | – |

Note: The data for the three groups of diseases, but not for suicide, are standardised by social class (on the assumption that a set of health risk factors may not apply very well to people who have spent half or two-thirds of their lives in the developing world) [11].
Source: Balarajan and Balsa [14]; Britten [15]; Raleigh and Balarajan [16].

## Summary and recommendations

- Although there are some striking health and mortality associations by ethnic group, their interpretation is difficult and may be partially due to the influence of other factors.
- The recording of ethnicity has always been problematic in routine data collection, with different definitions of ethnicity in each of the 1981, 1991 and 2001 Censuses.
- Some vulnerable groups may not be recorded as an ethnic minority, and hence impossible to study through these means (e.g. the Irish).
- Ethnic association can be a useful indicator for measuring potential inequalities, however, it should be carefully applied to specific situations where it is relevant and, when possible, combined with other socio-economic and demographic measures.

## Data sources

Again, the Decennial Census is the main national data source. Local surveys are quite common, and ethnic monitoring in support of equal opportunities legislation may be a further source of local information. Most of the main national surveys include questions on ethnicity, but sample sizes are too small to provide local area estimates.

Other routes that have been used to estimate the numbers in ethnic minorities in specific areas include the application of name recognition software to databases such as the electoral register and GP registration lists (the use of the latter will be restricted to GPs and health authorities with access to the lists).

### *Family structure and marital status*

There is substantial evidence that adult health status is strongly influenced by childhood experience. Longitudinal studies of birth cohorts such as the 1946, 1958 and 1970 British Birth Cohort Studies show how a wide range of childhood factors are associated with adult health. It is assumed that most of these effects can best be captured by the socio-economic status of the household or parents, but the family or household structure is also important. There are at least three possible structural dimensions:

- Household size.
- Number of adults and their age–sex breakdown, number of children and their age–sex breakdown.
- Relationship between different household members.

These can be problematic because individuals may be more or less permanent members of the household and relationships are often difficult to capture in a categorical measure. In particular, the increasing trend towards cohabitation makes "marital status" a more complicated variable to collect than previously. In Sweden, official data have not attempted to distinguish between cohabitation and marriage to the opposite sex partner, for some time. Marital status is therefore seldom used as such in analyses, although 'living alone' versus cohabitation is used.

Examples of health-associations related to marital status [11]

- Married people generally have lower death rates than single or formerly married persons.
- Births outside marriage have higher stillbirth, post-neonatal mortality and low birth weight rates.
- Married people are less likely to report long-standing chronic illness than single or formerly married persons.
- Rates of psychiatric disorder as detected by community surveys are higher among the separated and divorced than among the married.
- Blood pressure is higher among the single.
- Average height among remarried couples is lower.

Summary and recommendations

- Whilst powerful associations have been observed between marital status and health, the increasing trend towards cohabitation means that marital status is less used, instead living alone or cohabiting may be used.

- Other relationships, such as that between a teenager and his/her parents, may be important determinants of health but difficult to capture quantitatively.
- Although the family environment is recognised as having a strong influence on current and future health status, the presumption is that those effects are best captured through socio-economic status variables.

Data sources

The Decennial Census is the national data set on household composition and marital status with the greatest population coverage, but several major national surveys, such as Health Survey for England (HSE) and The General Household Survey (GHS) have more detail on household structure than the Census. Provided one is mainly interested in comparing households of different types and is not interested in controlling for local area effects, then such surveys may be preferable to the Census, and it will certainly provide more information on topics such as use of health services and income.

### 2.2.3 Measures of Economic Status

There is a general consensus that economic status (measured by level of income) and health outcomes are intimately related. Hence, the distribution and level of income should be a good indicator of health inequalities in a community. However, whether it is actual level of income (e.g. a 'breadline' threshold), or the relative income level (of an individual to the community average/median income level) that influences health status is still debated [17,18] (see also Section 11). This section examines the different commonly used proxy measures for income or wealth. Income is the 'gold standard' for this section, assuming that total real income can be counted, such that the proxies are evaluated by comparing their power of discrimination against that of income. Other categories that usually reflect social position independent of income and wealth are considered in the next section.

#### *Measures of current income*

Modern definitions and measurements of income and wealth are complex, attracting a commensurate literature. For example:

- There is a wide range of possible sources of income, including actual cash.
- There are usually difficulties in accounting for the distribution of income within individual households.
- Relatively simple definitions such as take-home pay are still complex because of different benefit systems, bonus systems, etc.

- Other than taxable income declared to the Inland Revenue, there is no routine recording of income.
- The reasons and extent of under-reporting vary through the income distribution.
- It is difficult to measure either income or wealth precisely in surveys because direct questioning tends to reduce the overall response rate. The usual procedure therefore is to request for an indication of the household's average income range.

Some of these points are illustrated in Table 2.6, showing what percentage of men and women in households headed by people in different social classes report different sources of income. Just over two-thirds report income from earnings, although this varies between four-fifths of those in professional households to just over half of those in unskilled manual households. It is also striking how there are diametrically opposed gradients for those reporting state benefits and investments. Similarly, there are also interesting trends/differences between men and women. Capturing income, whether through surveys or tax returns, is difficult.

### *Proxies for income and wealth*

In addition to the measurement problems there are unpredictable fluctuations in household income over time. Economists have developed the notion of 'permanent income' to reflect the stable or long-run level of income available to a household. Given the difficulties in measurement in a survey context, a number of proxies are used instead.

#### Car ownership

The Census asks whether a household has one or two or more cars available. Once considered a good proxy for wealth if not for income, car ownership now has to be treated with caution as a proxy measure for the distribution of wealth, for the following reasons:

- In general, car ownership has increased greatly in recent years and across all social sectors; in particular, the decline in public transport in many areas has forced more people to use private transport, regardless of their income.
- There are difficulties of distinguishing between ownership and use of a vehicle. For example, people in employment may have the use of a company car, but not have their own car.
- Car availability depends on the number of other drivers in the household.
- Traffic congestion and parking difficulties in some central cities may cause otherwise wealthy people not to own a car.

***Table 2.6.*** *Percentages reporting various sources of income by social class and sex*

| *Social class* | *Sex* | *Number of persons* | *Earnings from employment or self-employment* | *State retirement pension* | *Pension from former employer* | *Child benefit* | *Other state benefits* | *Interest from savings and investments* | *Other kinds of regular allowance from outside your household* | *No source of income* |
|---|---|---|---|---|---|---|---|---|---|---|
| I | Men | 229 | 81.2 | 17.0 | 21.8 | 28.7 | 7.0 | 41.9 | 7.0 | 0.0 |
| Professional | Women | 66 | 83.3 | 12.1 | 10.6 | 39.4 | 10.6 | 43.9 | 7.6 | 0.0 |
| | Total | 295 | 81.7 | 15.9 | 19.3 | 31.1 | 7.8 | 42.4 | 7.1 | 0.0 |
| II | Men | 1009 | 72.8 | 23.0 | 26.7 | 31.9 | 13.1 | 33.5 | 5.5 | 0.0 |
| Managerial | Women | 1034 | 76.6 | 21.3 | 22.5 | 33.6 | 14.6 | 32.3 | 7.6 | 0.1 |
| technical | Total | 2043 | 74.7 | 22.1 | 24.6 | 32.8 | 13.9 | 32.9 | 6.6 | 0.0 |
| IIIN | Men | 418 | 71.5 | 26.3 | 27.3 | 30.4 | 21.8 | 28.0 | 5.5 | 0.0 |
| Skilled | Women | 1441 | 67.5 | 26.4 | 22.6 | 36.3 | 26.7 | 24.0 | 4.4 | 0.0 |
| non-manual | Total | 1859 | 68.4 | 26.4 | 23.7 | 35.0 | 25.6 | 24.9 | 4.7 | 0.0 |
| IIIM | Men | 1105 | 65.2 | 27.3 | 21.9 | 30.8 | 35.7 | 15.7 | 3.3 | 0.1 |
| Skilled | Women | 318 | 55.3 | 35.8 | 24.2 | 33.6 | 50.3 | 14.8 | 4.7 | 0.0 |
| manual | Total | 1423 | 63.0 | 29.2 | 22.4 | 31.4 | 39.0 | 15.5 | 3.7 | 0.1 |
| IV | Men | 457 | 64.3 | 22.8 | 20.4 | 31.3 | 42.7 | 12.7 | 5.3 | 0.2 |
| Semi-skilled | Women | 723 | 57.8 | 28.2 | 17.7 | 45.6 | 58.5 | 11.8 | 5.0 | 0.1 |
| manual | Total | 1180 | 60.3 | 26.1 | 18.7 | 40.1 | 52.4 | 12.1 | 5.1 | 0.2 |
| V | Men | 133 | 58.6 | 26.3 | 14.3 | 36.1 | 63.2 | 15.0 | 5.3 | 0.0 |
| Unskilled | Women | 309 | 48.2 | 46.3 | 22.7 | 27.5 | 63.1 | 7.4 | 3.9 | 0.3 |
| manual | Total | 442 | 51.4 | 40.3 | 20.1 | 30.1 | 63.1 | 9.7 | 4.3 | 0.2 |
| Total | Men | 3395 | 69.1 | 24.4 | 23.4 | 31.4 | 27.1 | 24.0 | 4.8 | 0.1 |
| | Women | 3919 | 65.9 | 27.4 | 21.6 | 36.5 | 33.8 | 22.1 | 5.5 | 0.1 |
| | Total | 7314 | 67.4 | 26.0 | 22.5 | 34.1 | 30.7 | 23.0 | 5.2 | 0.1 |
| | | SD | 46.9 | 43.9 | 41.7 | 47.4 | 65.2 | 42.1 | 22.1 | 2.6 |

Note: Other state benefits include job-seekers allowance, income support, family credit and housing benefit. Totals includes 12 armed forces (10 men and 2 women) and 60 not fully described (34 men and 26 women).
Source: Health Survey for England, Department of Health, 2000.

Some of these points are illustrated in Table 2.7, which shows the proportions reporting a long-standing illness by car availability in the household and income quintiles.

The proportions reporting a long-standing illness declines substantially from those with no cars to households with one or more cars, but the difference between those with one car and those with two or more cars is much less substantial. Whilst the proportion reporting a long-standing illness decreases from the second to the fifth quintile, the gradient is much sharper amongst those with no cars than those with two or more cars.

***Table 2.7.*** *Long-standing illness by car availability in household by income quintiles*

| | *Income quintiles* | | | | | |
|---|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* | *All* |
| No cars available | 49 | 62 | 56 | 41 | 37 | 53 |
| One car in household | 45 | 50 | 39 | 33 | 34 | 39 |
| Two cars + available | 46 | 38 | 36 | 33 | 30 | 33 |
| Total | 47 | 54 | 40 | 34 | 32 | 40 |

Notes: Income quintile (these are adjusted for household composition): first or bottom quintile (≤£7186); second quintile (>£7186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health Survey for England, Department of Health (2000).

## Council tax band

Before the community charge or ‘poll tax’, the rateable value of a house was a very good indication of its actual value, without requiring individual property valuations. The change to council tax has gone some way to restore the *status quo ante*. It can be used as a general proxy for relative income status, although there are several important caveats to consider:

- Every house is ‘banded’ from A (least) to H (greatest) according to its value; but the ranges of each band depend on the overall level of rates in the Council.
- Although in many cases the category or ‘band’ may afford an approximate guide of household income, people of lower income do not always occupy houses of least value, nor people with higher income occupy more affluent homes.
- Professional or other employed single people or couples without children may occupy smaller houses, particularly if ‘first-time buyers’.

- Older, retired people may find it difficult or be reluctant to leave larger one-time family homes that, through size, location or both have come to be valued in the more affluent council tax bands.

## Tenure status

Tenure has been another proxy measure of economic status and the simple three-fold classification of housing tenure into owner–occupiers, private renters and council home tenants, originally demonstrated to be strongly associated with mortality in the Longitudinal Study [19], is now a less sensitive indicator for a number of reasons:

- Since the widespread implementation of the 'right-to-buy' policy, a majority of households in the U.K. now own their own home.
- Mortgage debt and insecure ownership are now accepted as a serious problem for many people.
- Much private accommodation is now as expensive or more expensive to rent than to pay for a mortgage.
- Stringent procedures used in the private rental sector may operate to discriminate against people of low income or insecure employment status.
- Housing may also be provided as part of an overall employment remuneration package resulting in confusion over status, inferred income, etc.

Nevertheless compared to car ownership, there is a more consistent relationship between tenure status and reports of illness. This is illustrated in Table 2.8, looking at the proportions reporting long-standing illness by tenure status within income quintiles. The percentage reporting long-standing illness decreases from 55% for those who own outright to 31% for those buying on mortgage, and there are similar decreases for all income quintiles. In this case, the decline from second to fifth quintile is reproduced at approximately the same rate within each group. However, interpreting these gradients is complex because the values are confounded by age (as those who own outright tend to be older, except among the top income quintile, and those who are renting tend to be younger).

## Summary and recommendations

Although household or individual income may be a useful guide to economic position and potential health status, the following caveats should be considered:

- Real income is difficult to estimate accurately; 'wealth' is even more difficult to define or measure.

***Table 2.8.*** *Long-standing illness by tenure status of household by income quintiles*

| | *Income quintiles* | | | | | |
|---|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* | *All* |
| Own outright | 61 | 68 | 55 | 47 | 45 | 55 |
| Renting | 45 | 54 | 46 | 36 | 30 | 36 |
| Buying on mortgage | 39 | 40 | 32 | 30 | 29 | 31 |
| Total | 47 | 54 | 40 | 34 | 32 | 40 |

Notes: Income quintile (these are adjusted for household composition): first or bottom quintile (≤£7186); second quintile (>£7,186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health Survey for England, Department of Health (2000).

- Categories once considered as valid 'proxies' of wealth or income, such as car ownership or housing tenure, are no longer sensitive indicators of socio-economic variation owing to changes in the last 20 years.
- Thus, although, the Health Survey for England (HSE) show that there is an impact of car ownership and tenure status upon health, these tables show that one cannot assume that that there is a simple direct effect. Thus, great care needs to be taken in its interpretation.
- Whilst council tax band is less affected by these changes, it is only useful variable to indicate relative wealth *within* a single council area.
- Because of these limitations, strategies which seek to target health inequalities based upon measures of income alone may not be adequate.
- Therefore, if measures of personal income are used, other measures are also included to form a more accurate and balanced picture.

At small area level, some of these problems are attenuated especially for council tax band, although it can still only be used as an indicator of relative wealth. However, there are a multiplicity of aggregate measures of poverty (see Section 6).

## Data sources

Rather unusually, at least when compared to many of the other dimensions of socio-economic classification, routine data on some aspects of low income are more widely available than data on average income itself. Thus, there is a wide range of claimant counts available but only one measure of average income.

*Income and benefits*

The New Earnings Survey and Index of Average Earnings are two of the major sources of information on pay and income from work. The former is based on a 1% national sample of employees whose tax is handled via Pay As You Earn (PAYE). Area analyses are available from NOMIS. The Index of Average Earnings results are available from the ONS.

Electoral ward level data on various means-tested and disability-related benefits is available from the ONS Neighbourhood Statistics website.

To be useful, these numbers should be related to ward populations. Unfortunately, the Census-based estimates are not released at sub-local authority level, so other sources must be used. Section 2.2.2 describes several possibilities, including the Index of Multiple Deprivation-2004 related ward level counts and ward level population counts computed by the Department of Health.

*Data sources for proxies for income and wealth*

Data on car ownership and tenure status are available from the Census at small area level. Other sources worth considering are the market research-driven classifications of areas, such as the ACORN or SuperProfile classifications. With suitable permission, or funding to purchase data, further sources include data on council tax banding (from local councils), and insurance company property valuation databases. Land registry details of average house prices, for different types of properties, are now held by local area on the ONS Neighbourhood Statistics website.

### *2.2.4 Measures of Social Position*

#### *Education*

Educational achievement is usually considered a good guide to social position and a robust indicator of inequalities [8,20]. Education has several advantages, including:

- Level of education can be defined on the same basis regardless of level of economic activity (e.g. whether a person is 'gainfully employed' or not).
- Level of education does not generally change after youth and is not normally influenced by illness (excepting in the case of a few rare illnesses), whereas a person's occupation and income level can change as a result of health problems.
- Information on education is more comparable than information on occupational class, both internationally and over time.

## Levels and distribution of education

Until recently, most of the population in Europe has received the same general level of education prescribed by compulsory schooling. Indeed, it used to be difficult to find meaningful differences in, for example, mortality, because level of education does not vary sufficiently in a given population.

In order to develop an up-to-date and useful measure of education, adaptations of earlier systems for classifying and measuring education (e.g. the three-fold classification in Valkonen et al. [8]) take account of the recent lengthening of compulsory education and the distinction between two basic educational levels:

- Compulsory schooling, including primary through secondary school up to the age of 16 years.
- Higher educational experiences, including everything beyond age 16, including vocational qualifications.

Further refinements may distinguish vocational and academic qualifications gained between the ages of 16 and 18, from higher university level qualifications. However, it becomes increasingly difficult to code all the possible educational qualifications consistently over different time periods.

The percentage reporting long-standing illness decreases from 52% for those whose head of household left school at 15 to 36% for those whose head of household left full-time education at 17 or older, but this decline is not reproduced within either the second or the top income quintile (Table 2.9). Further, there are complex interactions with age and sex, because the age of leaving compulsory schooling has been gradually increasing and recently there has been more sex equality in level of education obtained.

***Table 2.9.*** *Long-standing illness by year of leaving full-time education of head of household by income quintiles*

| | *Income quintiles* | | | | | |
|---|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* | *All* |
| Not yet finished | 40 | 40 | 32 | 34 | 28 | 34 |
| Left at 14 or under | 70 | 74 | 73 | 56 | 53 | 71 |
| 15 | 59 | 66 | 53 | 45 | 37 | 52 |
| 16 | 47 | 46 | 38 | 37 | 32 | 39 |
| 17,18,19+ | 36 | 57 | 36 | 32 | 35 | 36 |
| Total | 53 | 61 | 45 | 37 | 34 | 44 |

Notes: Income quintile (these are adjusted for household composition): first or bottom quintile (≤£7186); second quintile (>£7186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health survey for England, 2000.

## Summary and recommendations

Education is widely seen as a good indicator of social position and a robust indicator of inequalities. However:

- In developed industrialised nations, schooling up to a certain age has been compulsory for several decades,[2] making length of education a poor indicator for some age groups (Section 7.4).
- Level of education may be measured by qualification, which also better reflects a person's life chances (though more difficult to categorise).
- The relationship of educational attainment to geographical area may be difficult to map.

It is, therefore, probably not advisable to use education as the only classifier. When it is used, one should always control at least for age, reflecting the period during which the individual was in the school system.

## Data sources

The Decennial Census provides a limited amount of data on education. It asks people aged 16 and over to list their educational attainments and records whether or not a person is a student of full-time student(s) in each household. The Census additionally includes a question on professional and vocational qualifications.

*Child benefit data* (from NOMIS), broken down by the age of child for those aged 16 and over, provides an indirect estimate of those staying in full-time education after the compulsory education.

The *Labour Force Survey* (from the Data Archive) collects data on adult qualifications.

Non-census sources on educational attainment (e.g. Index of Multiple Deprivation and Office of the Deputy Prime Minister (ODPM)) include data on absenteeism, mainly derived from local educational authorities, or from educational institutions. In the latter case, the catchment area has to be inferred as there are no published details of the distribution of pupil postcodes.

The compilers of the Index of Multiple Deprivation use computerised mapping and spatial data analytical systems (Geographical Information Systems – GIS) to approximate ward maps of primary school catchment areas. This method is unlikely to be valid for the much larger and complicated secondary school areas. There may also be difficulties accurately inferring primary school catchment areas in parts of large towns and cities using GIS. Nevertheless, this is a unique source and the Index of Multiple Deprivation 2004 ward level estimates of *primary school pupils at*

[2] For example, although it is now age 16 in the U.K., it was 14 immediately after the second World War, and successively raised to 15, then 16.

*Key stage 2* (for summer, 2002) are available on the ONS Neighbourhood Statistics site.

Local school-based data together with additional 'local knowledge' may afford a more accurate inference of catchment areas than by using GIS-generated information. However, in areas where schools have very wide or socially diverse catchment areas, problems may be experienced with any method.

Postcode data may provide a simple measure of access to schools, computed from both school and pupil postcodes. Both child benefit data and GP registrations are sources for such data, but may be difficult to obtain.

The Universities and Colleges Admissions service keeps postcoded records of university applicants with details of the outcome of the application. For the Index of Multiple Deprivation 2004, they were prepared to release data on the numbers per ward whose applications were successful. Ward level university admissions data can be found on the ONS Neighbourhood Statistics site.

### *Employment status*

An important measure of social position (as well as a guide to income) may be a person's employment status, that is whether or not they are 'gainfully employed'. The link between unemployment and social disadvantage, is generally accepted with the current socio-economic configuration [21]. Whether or not a person is employed may influence their well being and ability to stay healthy, but the way these categories have been defined, and therefore how sensitive they are as potential measures, in most publicly available datasets is problematic.

#### Definition of employment and unemployment

The International Labour Organisation's (ILO) 1982 definition of employment, agreed upon at the Thirteenth International Conference of Labour Statisticians (ICLS [22]), states that the 'employed' comprise all persons above the age specified for measuring the economically active population who, during a specified (brief) period (usually one week or one day), were in one of the following categories:

- Paid employment: 'at work' or 'with a job but not at work'.
- Self-employment: 'at work': persons who performed some work for profit or family gain, in cash or in kind.
- 'With an enterprise but not at work'.

The notion of 'some work' in self-employment only needs to be work for at least *one hour*.

The conventional and most widely used definition for unemployment was originally agreed upon at the same 1982 ILO conference, and sets three criteria for clarifying people as unemployed. They should be above the age specified for measuring the economically active population and, during a specified (brief) period, should be:

- Without work.
- Available for work during the reference period.
- Actively seeking work, that is, they must have taken specific steps in quest of a job during a specified recent period.

Employment and unemployment are considered to be mutually exclusive, therefore persons engaged in any casual work at all, however small, while seeking employment are still classified as employed. The other two criteria of the definition of unemployment, 'current availability for work' and 'seeking work' aim to distinguish people who would be gainfully employed if they could find employment from people who are not actually seeking paid work (e.g. carers of young children based at home).

Rates of unemployment will clearly vary depending upon which definition is used. For example, the U.S. Bureau of Labor Statistics (BLS) has published seven alternative measures for unemployment since 1976. In 1989, the unemployment rate in the U.S. therefore varied between 1.2% and 7.9% depending upon which measure was used [23].

Under-employment

Unemployment, therefore, is a *relatively* straightforward concept, employment is more complex, as it represents a broad spectrum of working circumstances. It includes people who, though classified as 'with work', may also be looking for further gainful employment for various reasons. This group may be regarded as under-employed.

The 1966 International Congress of Labour Statistics resolution defines under-employment as "when a person's employment is inadequate, in relation to specified norms of alternative employment, account being taken of his occupational skill (training and work experience)" (ICLS, 1966). Two principal forms of under-employment are distinguished:

- 'Visible' under-employment, reflecting an insufficiency in the volume of employment.
- 'Invisible' under-employment, characterised by low income, under-utilisation of skill, low productivity and other factors.

'Visible' under-employment is defined as a sub-category of employment. There are three criteria for identifying those who are visibly under-employed:

- Working less than normal duration.
- Doing so on an involuntary basis.
- Seeking or being available for additional work during the reference period.

To measure 'invisible' under-employment, whether in respect of income, levels of skill or productivity, thresholds have to be established below which:

- The income is considered abnormally low.
- The skill is under-utilised.
- The productivity is insufficient.

## Informal sector employment

The informal sector has played a growing role over the past three decades, in particular in developing countries for its role in absorbing large numbers of unskilled labour in a dualistic economy. In developed countries, however, the labour surplus is smaller and social protection systems exist, therefore the informal sector that does exist (e.g. small-scale units outside the formal economy or services rendered by one household to another) is relatively small. For practical reasons, mainly the difficulties in quantification, it is not considered further here.

Employment status is strongly associated with income (Table 2.10). However, apart from those 'in employment', the association is not straightforward.

***Table 2.10.*** *Percentage in each income quintile by economic status*

| | *Income quintiles* | | | | |
|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* |
| In employment | 4.5 | 7.3 | 22.0 | 28.6 | 37.6 |
| ILO unemployed | 32.8 | 14.2 | 20.7 | 11.1 | 21.1 |
| Retired | 17.2 | 33.6 | 25.4 | 14.0 | 9.8 |
| Other economically inactive | 31.1 | 25.7 | 19.8 | 11.7 | 11.7 |
| | 898 | 1104 | 1499 | 1464 | 1781 |
| | 13.3 | 16.4 | 22.2 | 21.7 | 26.4 |

Note: Income quintile (these are adjusted for household composition): Bottom quintile (≤£7186); second quintile (>£7186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health survey for England, 2000.

The percentage reporting long-standing illness increases from 31% for those whose head of household is in employment to 68% for those whose head of household is retired; but this is not true for all of the income quintiles. (Table 2.11). There is no consistent decline from second to fifth quintile for those in employment or unemployed by the ILO definition.

***Table 2.11.*** *Long-standing illness by economic status of head of household by income quintiles*

| | *Income quintiles* | | | | | |
|---|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* | *All* |
| In employment | 32 | 33 | 32 | 32 | 32 | 31 |
| ILO unemployed | 31 | 33 | 39 | 33 | 22 | 31 |
| Other economically inactive | 61 | 69 | 58 | 48 | 46 | 59 |
| Retired | 68 | 75 | 66 | 61 | 57 | 68 |
| Total | 54 | 61 | 45 | 37 | 34 | 44 |

Notes: Income quintile (these are adjusted for household composition): first or bottom quintile (≤£7186); second quintile (>£7186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health survey for England, 2000.

## Summary and recommendations

Although employment status can be a useful guide to social position, the following caveats should be considered:

- Employment is a very broad term and may include many categories of semi-employed, under-employed or otherwise low-waged earners.
- Unemployment is more explicitly defined and measured, but excludes many people who are in receipt of a low income or otherwise actively seeking more or better-paid employment.
- Strategies which seek to target health inequalities based upon measures of employment status alone may not be adequate.
- It is therefore recommended that if measures of employment status are used, additional measures are also included to form a more accurate and balanced picture.

Whilst many of these problems are attenuated at a small area level, the nature of the employment market and thus employment also varies substantially.

## Data sources

*Unemployment benefit claimant counts* presented in various forms are available down to ward level on the ONS NOMIS website. The main options are counts (age and duration of unemployment), seasonally adjusted counts, unadjusted counts – with corresponding rates for each. The same set of options are available for claimant flows and there is an additional data set of claimant ‘off-flows’ showing the reason for ceasing being a claimant, the claimant’s age, and duration of the most recent claim.

*The Labour Force Survey* provides an alternative estimate of unemployment independent of the frequent changes in the criteria for claiming unemployment benefit. It is a quarterly sample survey which collects information on personal circumstances and employment status. The full data sets are lodged with the Data Archive; a subset of recent data is available on-line from NOMIS.

The *Annual Employment Survey* replaced the annual *Census of Employment* in late 1995. This survey of approximately 130,000 businesses collects information on the nature of the business, the gender of employees, the types of jobs and whether they are full or part-time. Data are produced by ward with considerable detail on the type of business activity. It is available on-line from NOMIS, but there is a special registration procedure for this data set which requires a statement of intended use.

Other relevant data sets held by NOMIS include details of job centre vacancies, by occupation and industry, but most of these are only available at unitary authority level or higher.

### *Social class*

Occupational social class was first introduced in 1911 by the then Registrar General as a systematic approach to classifying individuals according to their wealth (Box 6). This classification, though modified at nearly every Census since then (and thus losing its original theoretical basis), is still used as a generic measure for discriminating life chances, particularly in terms of death rates, more generally known as 'standardised mortality ratios' (SMRs). Given the origin and the ad hoc nature of the modifications, the extent to which changes in the occupational social class classification reflect the considerable changes in the occupational class structure since 1911 is unknown. Therefore, whether or not individual social class actually reflects real differences in individuals' lives and relative prosperity now is an open question. Without a detailed interview survey over several time periods including both cohort and cross-sectional components, it is impossible to document such changes. The comparison of SMRs between occupational social classes can often mask the nature of the discrimination between groups that are relevant in public health terms.

**Box 6**

**Occupational social class and the 1911 Census**

Stevenson [24] introduced the classification primarily for the analysis of fertility and infant mortality. He said, "the ideal method would classify individuals, not whole populations, by their degree of prosperity", but "doubts the value of income data even if it were routinely collected in Britain as it may fail altogether as an indicator of culture, probably the more important influence".

A number of other classifications have been introduced since the 1960s. The most well known is SEGs. This is described in the 1991 Census User's Guide as "a non-hierarchical classification which uses both occupation and employment status and aims to bring together people with jobs of similar social and economic status" [25]. It has 17 main divisions, including 'personal service workers', 'junior non-manual workers' and 'professional workers: self-employed'.

Nevertheless, despite radical modifications to the social class classification in 1991 making it almost impossible to understand what dimensions of social or economic differentiation were actually being captured, it continued to dominate. A review commissioned for the 2001 Census, kept the social class classification, but with a new set of groupings.

This new formulation for the 2001 Census is the National Statistics Socio-Economic Classification (NS-SeC). It is occupation-based and intended to give an indication of socio-economic position. It is quasi-hierarchical and replaces both the previous classifications into class and SEG (Box 7).

**Box 7**

**NS-SeC**

- Class 1 higher managerial and professional occupations (six sub-groups).
- Class 2 lower managerial and professional (six sub-groups).
- Class 3 intermediate occupations (four sub-groups, includes intermediate clerical and administrative, intermediate engineering and several other sub-groups).
- Class 4 small employers and own account workers (four sub-groups, includes some non-professional groups and some agricultural workers).
- Class 5 lower supervisory and technical occupations (three sub-groups).
- Class 6 semi-routine occupations (seven sub-groups).
- Class 7 routine occupations (five sub-groups).
- Class 8 never-worked and long-term unemployed.

Full-time students are excluded from the classification.

More details of this classification can be found in the Manual of Output Classifications for the 2001 Census, which is available on the National Statistics website.

The 2001 Census also presents its results by 'social grade', using an algorithm developed by the market research society for re-classifying the Census material. This scheme is widely used in market research, but rarely in academic work. There are six main categories:

A. Professional.
B. Middle managers.
C1. All other non-manual workers.
C2. All skilled manual workers.
D. All semi-skilled and unskilled manual workers.
E. On benefit/unemployed.

Examples of occupational social class-related health associations [11]

Despite these many caveats, the associations documented below, years ago, are still largely correct.

- There are consistent gradients by occupational class with death ratios increasing from managerial and professional occupations to unskilled labourers for both men and women.
- Occupational class of father is associated with chances of survival in the perinatal period.
- There are gradients for both chronic and acute illness by occupational class.
- Heights of children and of adults vary systematically by class.

The extent to which the current social class classification has departed from income in its capacity to discriminate health outcomes is illustrated in Table 2.12. There is a steady, although small, increase in the percentage reporting long-standing illness from 35% for those whose head of household is in Social Classes I or II to 45% for those whose head of household is in Social Classes IV or V. But this is not reflected within any of the income quintiles; and the decline from second to fifth quintile in the whole sample is not reproduced for the top two

***Table 2.12.*** *Long-standing illness by Registrar General's occupation social class by income quintile*

| | *Income quintiles* | | | | | |
|---|---|---|---|---|---|---|
| | *First* | *Second* | *Third* | *Fourth* | *Fifth* | *All* |
| I and II | 44 | 52 | 37 | 32 | 32 | 35 |
| III NM | 42 | 54 | 52 | 34 | 35 | 43 |
| III M | 54 | 56 | 37 | 36 | 32 | 43 |
| IV and V | 46 | 54 | 43 | 39 | 22 | 45 |
| Total | 48 | 54 | 41 | 34 | 32 | 40 |

Notes: Income quintile (these are adjusted for household composition): bottom quintile (≤£7186); second quintile (>£7186 ≤£10,834); third quintile (>£10,834 ≤£17,890); fourth quintile (>£17,890 ≤£27,705); top quintile (>£27,705).
Source: Health survey for England, 2000.

social class groups. Whatever social class reflects, it is something very different from income.

### Summary and recommendations

Occupational social class is widely seen as a good indicator of social position. However:

- The use of SMRs as a measure with social class categorisations have been demonstrated to be problematic for a number of reasons.
- Society has changed greatly since the introduction of the classification in 1911, so that it may no longer be a sensitive indicator in its present form.

### Data sources

In theory, individual level data from the 2001 Census could be used to generate a suite of other measures of social position that are more relevant to current socio-economic structures, however, the main measures that are being provided are the reformulated version of social class and the market research classification: social grade.

### *2.2.5 Overview of Measures*

A large number of different possible socio-economic characteristics of individuals have been discussed in addition to age and sex. Table 2.13 provides a brief summary and references.

***Table 2.13.*** *Measures used to define social position*

| *Measure* | *References* |
|---|---|
| Occupation | [26–33] |
| Education level | [34–37] |
| Income | [38,39] |
| Measures of material assets/wealth | [40–42] |
| Composite indexes: e.g. occupation, education and income | [43,44] |
| Economic status during childhood/father's occupation | [45–49] |
| Relative economic position within society | [50,51] |
| Community characteristics/census block or small area data | [52–61] |
| Measures of social structure (family structure, marital status) | [62–64] |
| Measures of control at work/psycho-social factors on the job | [65–67] |
| Deprivation | [68–74] |
| Position in relations of production (class position) | [75,76] |
| Descriptions of actors in a social movement | [77,78] |

## 2.3 Features of the Social Environment that Might Lead to Inequalities

The classifications considered in the previous section are all characteristics of the individual or the household that are portable in the sense that they are independent of the physical and socio-economic environment (even though the salience or interpretation of, for example, car ownership, may not be). But several aspects of the physical and social environment, such as housing conditions, rural or urban residence, or social capital, can influence health differentially. These are considered together in this section.

### *2.3.1 Measurement of Housing Conditions*

Following the Florence Nightingale proposal that "the connection between health and the dwellings of the population is one of the most important that exists" and in accordance with recent WHO definitions of acceptable housing standards in relation to health and well being (WHO 1993), housing conditions may be used as a measure for highlighting potential health inequalities.

'Poor housing'

Poor housing is usually defined in terms of overcrowding, damp and mould, indoor pollutants and infestation, cold and homelessness, including the occupation of temporary accommodation.

Whilst it is certainly the case that the impact of several of these dimensions are contingent on climate (e.g. prevalence of cold, damp and mould) or culture (e.g. what constitutes over crowding), there is a substantial corpus of research from developed western countries linking these to poor health outcomes (Table 2.14). A key issue here is *relative inequality* – subjective experiences of poor housing, overcrowding and lack of privacy compared with accepted national average standards and which may therefore be demonstrated to have detrimental effects on health indicators.

Apart from poor housing, type of housing may also be associated with adverse health consequences. High-rise accommodation and its association with health problems, in particular, has attracted criticism in the U.K. This may, in part, be a cultural artefact in that Britain has developed a housing tradition of 'horizontal urban villages' rather than high-rise apartment blocks [79]. In 1964, only 7% of households in England were living in purpose-built flats (compared with over 50% in some other European countries including Sweden and France). The U.K. changed rapidly between 1969 and 1973, when more than one million people were housed in high-rise blocks following a sudden increase in demand [80]. Almost immediately following this development, research began to link high-rise buildings with stress and mental ill health in adults, as well as slow development and respiratory disease in children [81,82]. It is unclear whether it is the *form* of housing itself or the contrast with another form seen as more appropriate; or indeed its *condition* (in terms of the quality of construction) which is associated with the development of health problems.

**Box 8**

**The WHO definition of healthy housing (WHO, 1993)**

"A human habitation that is structurally sound and relatively free from accidental injury hazards, provides sufficient space for all normal household activities for all members of the family, has readily and easily available an adequate supply of potable and palatable water, has a sanitary means of collection, storage and disposal of all liquid and solid wastes, is provided with appropriate installed facilities for personal and household hygiene, is sufficiently weatherproof and watertight, provides proper protection from the elements, especially for those persons who may be particularly susceptible, for physical and/or physiological reasons to these potentially adverse environmental conditions, provides a hypothermal indoor environment which is healthful and comfortable, is free from excessive noise from both interior and exterior sources of the structure, has natural and artificial means of illumination that are safe and adequate in quality and quantity for the fulfilment of all normal household activities and functions, is free from toxic and/or noxious odours, chemicals and other air contaminants or pollutants, has adequate but not excessive solar radiation, provides adequate protection from insects and rodents which may be reservoirs and/or vectors of disease agents, and is served by the necessary and or desirable health, welfare, social, educational, cultural and protective community services and facilities".

### The link between poor housing and ill health

What actual mechanisms influence the housing and health relationship and how does residential area play a part in this?

To derive a widely applicable 'outcome measure' to use in quantifying the impact of *poor housing* (and/or residential area) upon the health of the resident is not as straight forward as it seems. This assumes that 'the whole package of poverty, illness and social problems could be unravelled into a single long causal chain with housing as one of the early links', whereas in reality, 'residential variables (are) richly embedded in a large matrix of individual and social variables that condition and attenuate the impact of the residential environment' [83]. We are not dealing, with a simple cause and effect, but a relatively complex scenario of interactive social and psycho-social factors for which an appropriately complex data set and analytic strategy is required [84]. Currently, the data sets in the U.K. are insufficient to meet the challenge fully.

Apart from any causal pathway linking poor housing conditions to subsequent ill health, two processes tend to select for people already suffering from ill health to live in poorer quality housing:

- When there is a shrinking social housing sector and a medical priority system operates in the allocation of such housing, people with medical needs will not only be disproportionately represented, as higher quality housing stock tended to be sold under the right to buy legislation, the social housing available may also be of a poorer standard.
- Those with medical needs unable to access social housing may not be able to afford better quality housing because their ill health may compromise their earning power; and thus they will be disproportionately represented in poorer quality accommodations [85].

Table 2.14 summarises key findings associating health problems with poor housing conditions.

***Table 2.14.*** *The consequences of 'poor' housing circumstances for physical health*

| *Housing circumstance* | *Consequence* | *Relevant studies* |
|---|---|---|
| Overcrowding | Increased risk of infectious or respiratory disease | [86] |
| | Reduced stature | |
| Damp and mould | Respiratory problems, e.g. wheezing | [87] |
| | Asthma, rhintis and alveolitis | [88] |
| | Eczema | [89–98] |
| Indoor pollutants and infestation | Asthma | [99–102] |
| Cold | Diminished resistance to respiratory infection | [103,104] |
| | Hypothermia | [105] |
| | Broncohspasm | |
| | Ischaemic heart disease, myocardial infarction and strokes | [106] |
| Homelessness-rooflessness | Problems resulting from facing the elements without protection | [107,108] |
| Homelessness-temporary accommodation | Problems resulting from overcrowding, noise, inadequate cooking and washing facilities | [109] |

Source: OPCS (1990) and Harrison et al. [13].

## Summary and recommendations

- The relationship between housing and health has long been held important.
- The mechanisms that link poor housing with ill health are not as clear or straightforward as they seem and a direct causal pathway is hard to demonstrate.
- Strategies that seek to target health inequalities based upon housing measures alone may not be adequate.
- It is recommended that additional measures be included to form a more accurate and balanced picture.

## Data sources

Apart from the Census, very little information on housing is available at sub-local authority level. There are several national surveys, but samples are too small for sub-LA breakdowns. It is possible to *model* down the survey results, for example in the Index of Multiple Deprivation 2004 and Welsh Deprivation Indexes.

### *Level of occupancy*

- The Census questions on numbers of people in the household and the number of rooms occupied are used to compute a measure of overcrowding, e.g. the numbers of households (and persons in households) living at more than 1 and more than 1.5 persons per room. This calculation periodically changes, as different types of rooms (for example, bathrooms and kitchen) are included in the denominator.

### *Housing amenities*

- Both the 1991 and 2001 Censuses asked whether households have exclusive use of a bath or shower and of a toilet and whether there is central heating. The level of detail has been reduced for 2001, so there may be circumstances in which indicators based on the 1991 classification cannot be computed for 2001.

### *Physical condition of housing*

The main sources on the structural condition of housing are two surveys and local authority returns.

- The English House Condition Survey (there are parallels for Wales and Scotland) includes a professional assessment of physical condition and a valuation, as well as an interview with the residents. It is based on a sample of 25,000 dwellings and is repeated every five years. Half of the properties in the 1991 survey were reassessed in 1995 in order to record any changes. The data sets are available from the ODPM.

- The ODPM conducts a second national survey, the Survey of English Housing. This survey emphasizes the type of accommodation, tenure, the experiences of the household in finding accommodation and moving, and their views of the accommodation and residential area. The survey is repeated annually and is based on a sample of 20,000 households.
- Local authority returns for the Housing Investment Programme (HIP) gives some data on housing stock, vacancies, lettings and homelessness. More specific information is provided by local authority returns on the numbers of unfit dwellings and the reason for their being ‘unfit’.
- The Housing Needs Index is another LA level data source. It is based on data from the Survey of English Housing, the General Households Survey and the English House Condition Survey.

*Housing tenure*

The four basic categories are own outright, own on mortgage, social renting (from either the council or a housing association), and private renting. However, there are several other smaller categories that can be important in specific situations such as tied cottages in farming areas.

There are several sources relating to particular types of tenure:

- Although the Survey of English Housing collects information on tenure, the Census is the main source. The 1991 Census asked if rented accommodation was furnished or unfurnished. In 2001, this question was only asked in Scotland.
- Housing association statistics (collated by the ODPM by LA) give details of the numbers of lettings and new lettings, and a considerable range of information on the tenants.
- Local authority housing performance indicators, from OPDM, will also have some information on tenure.

### 2.3.2 The Urban–Rural Split and Health

Rural living in the U.K., often pictured as idyllic and second country homes for the urban elite, has been associated with higher levels of poverty and ill health in many regions [110,111]. As sparsely populated regions where the population is less nucleated than in urban contexts, they have a higher cost of access to services than urban regions [112]. Adequate provision of healthcare and other services in rural areas, therefore, usually requires deliberate policies of care or service providers.

The Lifestyles in Rural England study also investigated the composition of those households in or on the margins of poverty using the Townsend

Index. Households with just one or two elderly people were groups experiencing poverty in many of the areas surveyed, with many still having to rely on state pensions for their lifestyle needs.

**Box 9**

**Lifestyles in Rural England**

The Lifestyles in Rural England study has done much to refocus attention on the nature and extent of rural poverty. Cloke et al. conclude that, "Our study shows that there is, at an aggregate level, a very important problem of low incomes and poverty in many, if not most, rural areas in England." [110]

### *What is meant by rural?*

A definition of rural would seem useful for the purposes of research and policy making. However, the concept of 'rural' is influenced by various dimensions, such as cultural differences, employment patterns, geographical isolation and so on. Some rural communities may actually have more in common with urban communities with similar employment patterns, than with other rural areas. Population density, land use and remoteness are also important factors [113,79].

**Box 10**

**Definitions of 'rural'**

A common definition is areas with low population density [112]. The OPCS definition, is simply the residual of the definition of urban areas and in effect, covers settlements of up to 1000 persons [114]. On this basis, the population of rural England is just over 4.3 million; if settlements up to 5000 persons are included then it increases to nearly 7.5 million (Rural Development Commission, 1989). The U.S. Census Bureau defines as rural those persons living in open country, on farms or in towns of fewer than 2500 people [115]. Using population size has the advantage of simplicity, but its specificity may be open to criticism; for example, some inner city areas have low resident populations.

Accessibility to services is another approach to defining rurality or remoteness. The Trent Regional Helath Authority (RHA) defined as rural those communities which could not reach out-patient clinics and back in half-a-day (Trent Regional Health Authority, 1991).

**Box 11**

**An example**

One extreme example of accessibility is in Orkney, the Shetland Islands and the Western Islands off the coast of Scotland. In order to provide healthcare services, they receive the Special Islands Needs Allowance (SINA) to reflect the increased cost of (or arising from):

- Delivery of services.
- Travel costs (including lost staff time).
- Staff and goods and services.
- Lack of competition.
- Democratic and fixed management structures.
- Extreme weather conditions.

It is important to distinguish between the various ways in which population distribution might affect accessibility. SINA calibrated the difficulty of movement within and between islands in any one group using a ratio of the land area and coastline length compared with an efficient area (i.e. a circle of the same area). Clearly, this approach is only feasible for wholly island administrations; it is unlikely to be appropriate for land areas where the variation according to the shape of the boundary are unlikely to be large.

## Example of rural related health associations [116]

- A study of regional differences in mental health found that north–south differences in psychiatric morbidity were less marked within urban areas than in rural areas.

## Summary and recommendations

- Different studies have demonstrated relatively high rates of poverty for many rural areas.
- Careful consideration should be given to the definition of rural when undertaking research or interpreting research results.
- The main approaches used in defining rurality are:
  - population density
  - patterns of settlement
  - perceptions of population groups
  - access

- Rural areas may be more diverse than urban areas and there is a distinction between different types of rural settings. An affluent village in the south east commuter belt is quite different from an isolated Cumbrian village.
- The scale at which a definition is applied will have implications for the interpretation of data on rural areas.
- Some wards may include both rural and urban areas; and significant population heterogeneity may be present at a district or even ward level.

Data sources

There has been much effort to derive a measure of rurality driven largely by the need for a variable that can be used to divert resources to cover additional costs of public service delivery in rural areas.

These are three of the major approaches:

- Population density.
- Patterns of settlement.
- Rural occupations.

Population density can be calculated at a ward level from Census population counts and ward areas available from ONS. However, it does not reflect actual patterns of settlement and hence has a similar value for an area in which the entire population was based in a small town, and one in which the population was more evenly, but sparsely, distributed. A number of measures to address access to and ease of provision of services have either been developed, or are in the process of development. In the older and simpler versions, derived from the Census, the measure was a version of “what proportion of an area’s population lived in wards above a certain density”. More recent versions take account of distance from centres of population or ‘settlements’. The Welsh Assembly has commissioned a major programme to produce such measures, but as yet there is not a publicly available ward level settlement measure for either England or Wales. It may be worth trying the Public Health Observatories to see if anything has been developed locally.

With the 2001 Census results, it is possible to use the data on occupational and industrial classifications to measure rurality by the proportion of people employed in agriculture, or in specific types of agricultural occupations. Opinions differ on the utility of such measures. On the one hand, they may be useful in comparing the health and conditions of those in predominately agricultural areas with those in other areas, but may be less successful in capturing those aspects of sparsity and settlement that are of interest to organisations delivering services in rural areas.

### 2.3.3 Social Capital

There is a long tradition of relating characteristics of different types of community to the individual's health. For example, Durkheim [117] showed how rate of suicide varied between Protestant and Catholic communities and formulated the concept of anomie to account for those variations. Whilst still used (albeit with a rather different meaning) in social psychology, the concept has fallen out of favour in social analysis, replaced by socio-political and materialist explanations. Recent reincarnations of that line of argument have been termed 'social capital'. There is no widely accepted definition, but the term refers to features of social organisation that act as resources available to individuals through membership of social networks or communities [118] that facilitate individual and collective action. Trust in others, norms of reciprocity (the expectation that a favour will be returned), and the quantity and quality of social interaction are important components of social capital. Network membership tends to lead to increased access to information and to increased possibilities of informal social control [119].

For Putnam the level of social capital in society can be measured by indicators such as the level of membership in voluntary associations of all kinds, the extent of interpersonal trust between citizens, and their perceptions of the availability of mutual aid [120,121]. But there are competing definitions [122,123]. Despite the lack of agreement on definition, researchers in health have pursued the possibility that social capital is conducive to health. Most agree that:

- Social capital is a collective dimension of society external to the individual.
- Social capital is a feature of the social structure not of the individual actors within the social structure; it is an ecological characteristic.

The argument is that social capital can be distinguished from the concepts of social networks and support, which are seen to be attributes of individuals. The different ways in which the concept has been used are shown in Table 2.15.

General evidence

The first quantitative work investigating the relationship between social capital and health was in the U.S.:

- Neighbourhoods with greater social control and social cohesion were found to have lower homicide rates [124].
- Fewer behavioural and emotional problems in childhood were found in neighbourhoods with higher church attendance and neighbourhood support [125].

***Table 2.15.*** *Concepts used in the measurement of neighbourhood cohesion*[a]

| | *Hunter [126]* | *Riger [127]* | *Unger [128]* | *Buckner [129]* | *Perkins [130]* |
|---|---|---|---|---|---|
| Social interaction; casual interaction (e.g. number of people you can recognise on your block: number of people who live on this block that you know by name) | | ✔ | ✔ | | |
| Frequency that you chat with neighbours | ✔ | | | ✔ | |
| Frequency that you will visit informally in neighbour's home: number of people who have a neighbourly relationship with | ✔ | | ✔ | ✔ | |
| Social support (e.g. socio-emotional support) | | | ✔ | ✔ | ✔ |
| Instrumental support | ✔ | | ✔ | ✔ | ✔ |
| Informational support | ✔ | | ✔ | ✔ | ✔ |
| Social networks (e.g. personal networks (both within and outside neighbourhood)) | | | ✔ | ✔ | |
| Neighbourhood social networks (e.g. neighbourhood groups) | | | ✔ | | |
| Affective bonds sense of mutual aid (e.g. feeling that you can rely on your neighbours; believing that potential help is available) | | | ✔ | | |
| Sense of community (e.g. membership, influence, sharing of values and emotional connection) | ✔ | ✔ | | ✔ | |
| Attachment to place (e.g. plan to remain a resident of this neighbourhood for a number of years; would be sad if one had to move from this neighbourhood) | | ✔ | | ✔ | |
| Number of items | 13 | 6 | 10 | 18 | 10 |
| Reliability | NR | $\alpha = 0.56–0.59$ | $\alpha = 0.88$ | $\alpha = 0.95$ | $\alpha = 0.76$ |
| Validity | NR | 2 Factor analysis | NR | Criterion $p < 0.001$ | NR |

[a] The dimensions of neighbouring are based on Unger and Wundersmann [131]. The cognitive component of neighbouring described in Unger and Wundersmann [131] is not shown because no studies measured this component.
Source: Table 3 in Lochner et al. [132].
NR, not reported.

Some work in the U.K. points to a role for social capital:

- Suicide rates are greater in areas with higher proportions of single person households, unmarried persons, private renters and movers in the last year [133].
- Enjoying living in the neighbourhood, high reciprocity, and higher levels of community activity are associated with better self-rated health for women, although not for men.

Some studies have produced contrasting findings:

- Neighbourhood social cohesion (covering attraction to the neighbourhood, whether neighbours help each other out, and sense of community) in four areas in Glasgow was not related to self-rated health, but it was associated with psychiatric morbidity (measured on the GHQ12) and with the presence of symptoms (including malaise and physical symptoms);
- Work in Luton found that some measures of social capital, such as a high level of local identity, were actually associated with poorer health [134].

HSE 2000 tested whether or not there was any relationship between perceived social support, contact with friends, contact with family, trust, participation, neighbourhood problems and ease of access to services and some health variables, after controlling for age and socio-economic measures. They found that [135]:

- Perceived severe lack of social support and trust in other people were significant predictors of poor self-assessed general health.
- Severe lack of social support was a strong predictor of a high GHQ12 score among both men and women and trust was also a predictor.
- Non-participation in organised activities was a strong predictor of cigarette smoking for both men and women.

The first two points are illustrated in Table 2.16.

Measuring social capital

There have been a large number of small-scale studies using a variety of instruments to capture different dimensions of social capital. In this section, we focus on the instruments used in the HSE in 2000, unless otherwise specified.

Measuring social networks

This includes:

- Perceived social support is measured through seven items about physical and emotional aspects of social support. This was originally

***Table 2.16.*** *Impact of 'social capital' type variables*

| | *Men* | | *Women* | |
|---|---|---|---|---|
| *Perceived social support* | *Odds ratio* | *95% CI* | *Odds ratio* | *95% CI* |
| *Odds of poor self-assessed health* | | | | |
| No lack of support | 1.00 | | 1.00 | |
| Some lack of support | 1.32 | 1.07–1.64 | 1.29 | 1.0–1.57 |
| Severe lack of support | 1.79 | 1.40–2.29 | 1.69 | 1.32–2.16 |
| *Odds of GHQ12 Scores of 4 or more* | | | | |
| No lack of support | 1.00 | | 1.00 | |
| Some lack of support | 1.58 | 1.20–2.09 | 1.41 | 0.94–1.39 |
| Severe lack of support | 2.97 | 2.23–3.97 | 3.35 | 2.59–4.33 |

Note: after controlling for age, social class of household reference person, household income, educational qualifications, car ownership and Townsend index of deprivation.

used in the Health and Lifestyle Survey [136], and has been used in HSE in 1994, 1995, 1998, 1999.

- Contact with family and friends is created from nine questions about whether informant had any contact with friends, family and neighbours in the previous fortnight.

### *Trust*

The concept of trust was captured by three questions, taken from the General Social Survey in the U.S.:

- "Would you say that most of the time people try to be helpful or just look out for themselves?"
- "Do you think most people would take advantage of you if they got the chance or would try to be fair?"
- "Generally speaking, would you say that most people can be trusted or you cannot be too careful in dealing with people?"

### *Participation in organised activity*

Measurement of social capital includes an estimate of participation in organised activity. This includes membership of groups and associations, including political groups, trade unions, environmental groups, parent/school associations, residents' groups or neighbourhood watch, participation in artistic, musical or educational activities through, for example, attending evening classes, religious groups including church attendance, groups for women, youth or the elderly, social or working men's clubs and sporting clubs. Problems can arise, because the pattern of participation in sporting activities is usually rather different from participation in other social activities.

*Neighbourhood problems*

Neighbourhood problems were measured through questions about: rubbish, graffiti and vandalism, teenagers hanging around, whether or not enjoying living with area, noisy neighbourhood/loud parties, not feeling safe walking alone after dark, problem of drunks/tramps, neighbours not looking after each other, and not having good local transport.

*Ease of access to services*

Questions to approximate access to services asked: How easy is it to get to a corner shop, a large supermarket, the post office, a general practitioner, an accident and emergency unit.

## Summary and recommendations, and data sources

Although commonly used findings are ambiguous, so that it is unclear if these measures are adding a great deal to that explained by socio-demographic and socio-economic measures. However, if one is interested in using them, we would recommend scales that have been used by the national surveys.