

# DOCTORS and NURSES

## Inequalities in paid healthcare persist

In this report the 2001 Census is used to demonstrate that an 'inverse care law' is still in operation in the provision of paid healthcare, despite more than 50 years of NHS provision free at the point of delivery. In 2001, nearly 4 million people in England and Wales reported poor health and a limiting long-term illness. Overall, there were 23 qualified, practising medical doctors for every 10,000 people, but this figure varies widely by area, from 4 to 56 per 10,000. In a continuing demonstration of an inverse care law, the areas with the greatest needs for health services tend to have the lowest numbers of doctors and other health professionals.

## The 'inverse care law'

It has been known since at least 1971 that an 'inverse care law' exists<sup>1</sup>. This 'law' suggests that the greater the need people have for healthcare, the less likely they are to get their fair share, and that this inequity is more pronounced where medical care is most exposed to market forces. Studies in subsequent decades have found evidence to support this idea, not only in terms of general health and care, but in terms of the prevalence of particular conditions, the quality of care and the availability of relevant medical specialists. This remains the situation in the UK despite over 50 years of a nationalised health service intended to provide services according to need.

The 2001 Census was the first to ask every person in England and Wales<sup>2</sup> about their medical qualifications, their occupation and their health status. It thus provides a straightforward but comprehensive source of detailed information with which to explore and illustrate the persistence of an inverse care law across these two countries. For this analysis the countries were divided into



## Life in Britain

The latest Census reveals that within the UK people live in very different worlds. For some, resources and amenities abound; for others life is characterised by deprivation and difficulties, especially when their need for support is great.

The 2001 Census marked the bi-centenary of Census taking in the UK. It is the most comprehensive social record of life in this country now available. Since 1801 successive governments have asked the population to assist in the taking of a Census.

This report is one of a series of 10 showing key patterns and inequalities in life in the UK revealed by the 2001 Census. These reports focus on geographical inequalities, highlighting where services and opportunities appear not to be available or accessible to those people and places that need them most.

counties, unitary authorities and former metropolitan authorities<sup>TR</sup>. For each of these areas, data from the Census were available on the number of practising, qualified health professionals, and on indicators of the population's health. There were two health questions on the Census form; one asked whether or not the person has a long-term illness, health problem or disability that limits daily activities or work, and the other asked the person to rate their health over the previous 12 months as 'good', 'fairly good' or 'not good'. For this analysis, the group of people most in need of healthcare was defined as those who reported a limiting long-term illness as well as rating their health as 'not good' over the last 12 months.

This definition does not include all people using health services; it excludes, for example, those needing acute emergency care, pregnant women and new born babies. However, it is a good measure of the general health status of the population. Populations in areas with higher rates of limiting long-term illness tend also to have lower life expectancy<sup>TR</sup>. Although the measures of health used here are self-reported by people when they fill in their Census questionnaire, there is very strong evidence to suggest that they reflect real health problems and are not just detecting differences in people's opinions about their own health.

The 2001 Census therefore facilitates a comparison of the number of health professionals per head of population with a measure of the need for healthcare, for each of the areas across England and Wales. This report therefore asks:

**Do areas which have higher proportions of people in poor health also have fewer working health professionals?**

## Comparing areas

In 2001, 3.9 million people in England and Wales reported both poor health and limiting long-term illness. This is 7.6% of the population.

Table 1 shows the total number of qualified, practising health professionals, and the number per 10,000 population for the whole of England and Wales. The table identifies four different types of health professional. The Census did not differentiate between private or state, hospital or community, nor full- or part-time employment of the health professionals listed in Table 1, so this report simply considers their general geographical availability to those most in need.

**Table 1: Qualified, practising health professionals in England and Wales (2001)**

| Qualified health professionals in practice           | Number in England and Wales | Per 10,000 population |
|--|-----------------------------|-----------------------|
| Medical doctors                                      | 115,239                     | 23                    |
| Dental practitioners                                 | 20,947                      | 4                     |
| Nurses, midwives and health visitors                 | 403,994                     | 79                    |
| Other health-associated professionals and therapists | 122,209                     | 24                    |
| <b>All health professionals</b>                      | <b>662,389</b>              | <b>130</b>            |

*Note:* The population here and throughout this report is total population of all ages. The numbers of health professionals are simply counts of people in the specified occupation; they do not take into account whether they are in full- or part-time employment.

Figure 1 shows the relationship between the concentration (number per head of population) of each of the four groups of health professionals and the proportion of the population with limiting long-term illness *and* poor health. There is an 'inverse' relationship between the two measures. When one decreases the other tends to increase. In general, the concentration of doctors is lower in areas where there is a higher proportion of people in need of medical care. The correlation coefficient for each graph (a measure of the strength of the relationship) is given in the accompanying technical report.

Of all the four groups of qualified medical professionals identified by the 2001 Census, only the concentration of working nurses, midwives and health visitors has a positive relationship with poor health. That is to say, in general the more people there are in need of these services in an area, the more people providing these services tend also to live in that area. However, there remain a number of areas in the North of England and Wales where many people are in need (more than 10% of the population) but there are less than the national average number of nurses per person; for instance in Hartlepool, Redcar and Cleveland, Blackpool, Halton, Stoke-on-Trent, Caerphilly and Torfaen.

Medical doctors are more likely to live in places where people are less likely to be in need of healthcare (thus the graph shows an inverse relationship). This is despite clusters of doctors near large hospitals that tend to be in areas with higher need. The inverse relationship between dentists per head of population and the prevalence of poor health is stronger, and that for 'Others' (which includes mainly private rather than state provision, such as complementary medicine practitioners) is even more so. This finding is in agreement with previous evidence from 1971 suggesting that the inverse care law is most strongly in effect where market forces are strongest.

Long distance commuting will reduce some of these inequalities. For instance, Tables 2 and 3 give figures for the five areas with the highest percentage of people with poor health and limiting long-term illness, and the five areas with the highest number of medical doctors per head of population. In practice some doctors will commute between these areas and some patients

travel for treatment to the areas where doctors are concentrated.

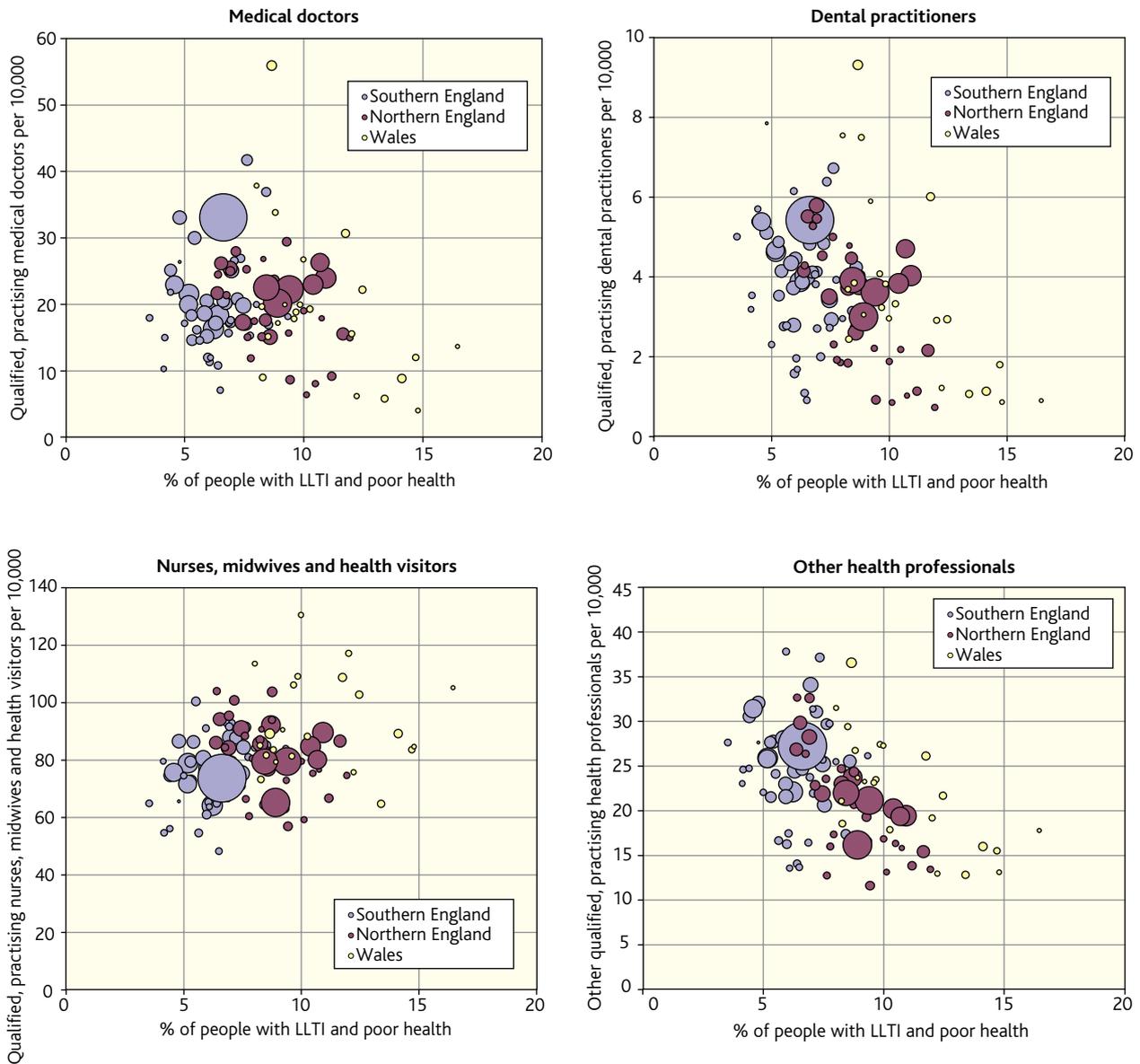


### 100 years ago

**In 1901 there were nearly 33 million people living in England and Wales. There was no National Health Service (NHS), but free healthcare was available for some people at teaching hospitals. For babies born in 1901, life expectancy was then estimated to be 45 for boys and 49 for girls. The 1901 Census returns give 22,698 physicians, surgeons or general practitioners (GPs), of whom 212 were women; 7 doctors per 10,000 population overall compared with 23 today. There were 5,309 dentists – less than 2 per 10,000 population. Health experiences, life expectancy and access to health services would have varied markedly across the country and between social classes in the early 20th century. Although the NHS now exists, inequalities in access to care persist in the early 21st century.**

For more information, see 'A century of change: trends in UK statistics since 1900' ([www.parliament.uk/commons/lib/research/rp99/rp99-111.pdf](http://www.parliament.uk/commons/lib/research/rp99/rp99-111.pdf)); National Archives ([www.nationalarchives.gov.uk](http://www.nationalarchives.gov.uk)); Mohan, J. and Gorsky, M. (2001) *Don't look back? Voluntary and charitable finance of hospitals in Britain, past and present*, London: Office of Health Economics.

**Figure 1: The association between the percentage of people in each area with limiting long-term illness (LLTI) and poor health (X-axis), and each of the measures of the four types of health professional in terms of qualified, practising health professionals per 10,000 people (Y-axis)**



*Note:* Each circle is a county, unitary or former metropolitan authority, drawn with the area in proportion to the total population in 2001 (the largest circle in each graph represents London, with a population of just over 7 million). Areas in northern England are those that lie west or north of the counties of Gloucestershire, Warwickshire, Leicestershire and Lincolnshire (the Severn-Humber divide).

**Table 2: The five areas in England and Wales with the highest percentage of people with poor health and limiting long-term illness (LLTI) (2001)**

| Area                             | Qualified medical practitioners per 10,000 population | % of people with poor health and LLTI |
|----------------------------------|---|---------------------------------------|
| Merthyr Tydfil                   | 13.7  | 16.6                                  |
| Blaenau Gwent                    | 4.0   | 14.8                                  |
| Neath Port Talbot                | 12.0  | 14.7                                  |
| Rhondda, Cynon, Taff             | 8.9   | 14.1                                  |
| Caerphilly                       | 5.8   | 13.4                                  |
| <b>England and Wales average</b> | <b>22.6</b>   | <b>7.6</b>                            |

**Table 3: The five areas in England and Wales with the highest number of doctors per 10,000 population (2001)**

| Area                             | Qualified medical practitioners per 10,000 population | % of people with poor health and LLTI |
|----------------------------------|---|---------------------------------------|
| Cardiff                          | 55.9  | 8.7                                   |
| City of Bristol UA               | 41.7  | 7.6                                   |
| Monmouthshire                    | 37.8  | 8.0                                   |
| Leicester UA                     | 36.9  | 8.4                                   |
| Bath and North East Somerset UA  | 34.7  | 5.9                                   |
| <b>England and Wales average</b> | <b>22.6</b>   | <b>7.6</b>                            |

Note: UA = unitary authority.

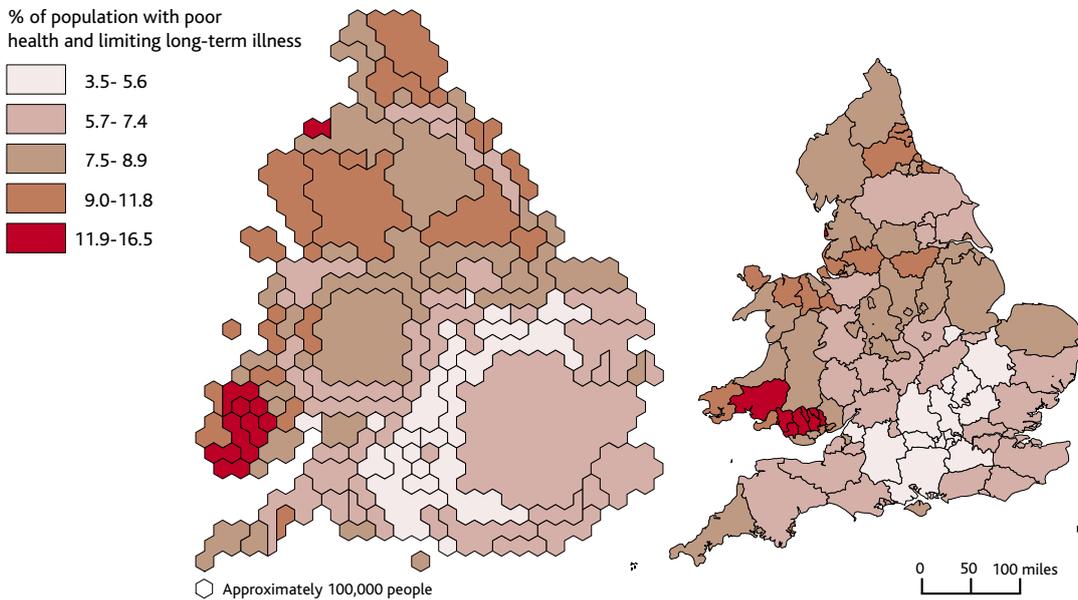
The area with the highest concentration of doctors (Cardiff) is close to areas with very low numbers (the Valleys of South Wales), and it is likely that some doctors live in Cardiff and practise in the Valleys. However, although similar situations can be identified elsewhere, it is unlikely to change the overall pattern substantially, especially given the large regional differences apparent in the maps in Figures 2 and 3. In general doctors and patients do not commute hundreds of miles to meet. Furthermore, there is widespread evidence that more affluent and in general more healthy people are better equipped to secure NHS treatment when they need it.

An alternative means to equalise the distribution could be for rates of illness to fall disproportionately in the areas with the poorest health – but that may require greater availability of health services (as well as other resources). Part of the reason for health inequalities existing is that some people in some parts of the

country have received more healthcare than others. This is because the better availability of doctors in healthier areas is likely to result in these populations receiving a greater degree of preventative healthcare, so further improving their health, while fewer doctors for populations in poorer health is likely to lead to fewer opportunities for preventative action.

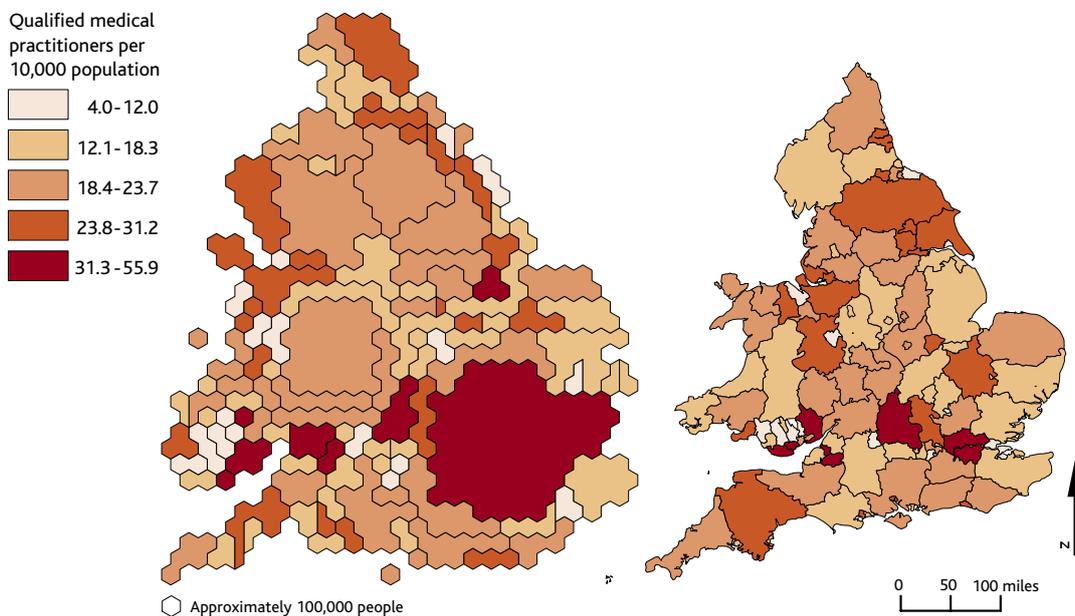
The maps in Figures 2 and 3 make it apparent that ill-health is concentrated in South Wales, the North West and the North East of England. Areas with the best health are those in central southern England. The highest concentrations of doctors are found in London, Oxfordshire, Leicester and the Bristol-Bath-Cardiff area.

**Figure 2: The geographical variation in the prevalence of people with poor health and limiting long-term illness (2001)**



*Note: Both maps in each figure represent the same places, shaded identically. The map on the left is a cartogram – each area is shown in proportion to the size of its population in 2001. The largest area is London, since it has the highest population of any of the places<sup>TR</sup>. The map on the right shows the actual boundaries of the areas.*

**Figure 3: The number of qualified medical practitioners per 10,000 population for each area**



## Since 2001

Between September 2001 and September 2003, the NHS in England and Wales recruited an additional 9,700 whole-time equivalent (WTE) doctors and 30,000 WTE nurses<sup>3</sup>. However, the patterns observed in this report do not change quickly, and the current situation is unlikely to be very different from that measured by the Census in April 2001.

## Discussion

Despite the intention to provide publicly funded health services in the UK that are delivered in response to need, it is apparent that an inverse care law is still in operation. Populations with greater need for care tend to live in areas with lower numbers of doctors, dentists and other health professionals. Only nurses, midwives and health visitors tend to be concentrated more in areas of higher need. This is likely to reflect the tendency for an inverse care law to be more acute under market forces – there is a greater pool of nurses to be drawn from than of dentists and less scope for nurses to work privately. Also, health service bodies have a duty of care to populations most in need, and provision of nurses, midwives and health visitors is likely to reflect that. The higher status, more powerful, and better paid health professionals are more likely to operate in a national job market and have more control over their location.

In the short term, it may be possible to implement policies that will address the geographic distribution of health professionals. Incentives could be given to draw practitioners to areas with low availability, and to finance that, funding could be reduced in those areas with

current relative over-provision. This would have to be explicitly aimed at redressing the distribution of health professionals, as opposed to policies that simply provide more funding in areas of greatest need, such as the deprivation payment scheme for GPs. The alternative is to redistribute those in need of medical services – perhaps one of the elements of current policies aiming to improve access to quality healthcare through increased choice.

The long-term solution would be to have a more sustainable, secure workforce rooted in the areas with greatest need. This may need to be addressed through geographically biasing the intake of medical schools, and even addressing the shortages at an earlier stage in students' education. Part of the explanation of the map of inequalities in health is undoubtedly due to less healthcare being available where it is most needed. Thus the inverse care law can be self-reinforcing; the population's health improves fastest where service provision is best, and that draws yet more provision to those areas.

The Department of Health does not appear to have an effective policy of equalising the availability of care for all (for example, aiming for an even distribution of GPs per head), let alone making it proportional to need. In order to reverse the inverse care law, it would be necessary to instigate an effective policy of encouraging doctors and other health professionals to move towards the areas where people need their services the most. If the UK health service was privately run the persistence of the inverse care law would be understandable and expected; yet it still persists despite a service that is, in theory, provided according to need.

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### Notes

<sup>1</sup> Tudor Hart, J. (1971) 'The inverse care law', *Lancet*, vol 1, pp 406-12.

<sup>2</sup> The Census forms for England and Wales asked specifically about people's medical qualifications, while those for Scotland and Northern Ireland did not; this report therefore only considers England and Wales.

<sup>3</sup> Department of Health ([www.dh.gov.uk/PublicationsAndStatistics/Statistics/fs/en](http://www.dh.gov.uk/PublicationsAndStatistics/Statistics/fs/en)) and National Assembly for Wales ([www.wales.gov.uk/keypubstatisticsforwalesheadline/index.htm](http://www.wales.gov.uk/keypubstatisticsforwalesheadline/index.htm)).

<sup>TR</sup> Further information on this point is available in the accompanying technical report.

## What do we know?

- ▶ Healthcare tends to be provided inversely according to need; that is, the people in most need of medical services are least likely to receive their fair share.
- ▶ Doctors, dentists and other health professionals, including those mainly providing care in the private market, tend not to live in areas of the greatest health need.

## What have we found?

- ▶ The 2001 Census demonstrates that an 'inverse care law' is still in operation, despite more than 50 years of provision by the NHS.
- ▶ The 'inverse care law' does not seem to apply when we consider nurses, midwives and health visitors – these professionals are more likely to be found in proportion to need (and have the least power to influence the location of their employment).



## Other reports in the series

The companion report to this, *In sickness and in health*, shows a strong geographic relationship between the provision of informal care and the need for that care.

- |                                     |                              |
|-------------------------------------|------------------------------|
| 1. <i>Doctors and nurses</i>        | 6. <i>A place in the sun</i> |
| 2. <i>In sickness and in health</i> | 7. <i>The office</i>         |
| 3. <i>Teachers</i>                  | 8. <i>Open all hours</i>     |
| 4. <i>Sons and daughters</i>        | 9. <i>Top gear</i>           |
| 5. <i>Changing rooms</i>            | 10. <i>Home front</i>        |

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